Langtree PP and First Panattoni

Six 56 Warrington

Addendum to Environmental Statement

Part 2 – Traffic and Transport Technical Paper

Revision - ~~18th March 2019~~ 5th June 2020

Revision Record

Revision Reference	Date of Revision	Nature of Revision	Author	Checked By
V01	17.01.19	Initial Draft	Fred Frempong Alex Vogt	Alex Vogt
V02	29.01.19	Minor Updates	Fred Frempong Alex Vogt	Alex Vogt
V03	13.02.19	Minor Updates	Fred Frempong Alex Vogt	Alex Vogt
V04	18.03.19	Minor Updates	Fred Frempong Alex Vogt	Alex Vogt
V05	05.06.20	Minor Updates	Fred Frempong Alex Vogt	Alex Vogt

Report Author	Alex Vogt BSc MSc TPP FCIHT
Report Date	~~18th March 2019~~ 5th June 2020
Project No.	64076
Document Ref.	
Revision	

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1. Introduction

1.1. This Addendum Paper of the Environmental Statement (ES) has been prepared by Curtins.

1.2. Curtins has been commissioned to provide all traffic and transportation advice for the Six 56 Warrington development.

1.3. This Addendum Paper will outline the methodology and data used in the preparation of the Updated Transport Assessment (TA) (Appendix 2.1) and Updated Travel Plan (TP) (Appendix 2.2) reports for the development, provided as appendices to this Paper. The TA and TP have been used to inform the contents of this Paper.

1.4. From a traffic and transport perspective, the primary potential for traffic and transportation impacts associated with the Proposed Development relate to the amount of new trips on the transport network in the vicinity of the Site.

1.5. The new trips include additional HGVs, LGVs and cars on the highway network as well as additional person trips on the public transport network. The former requires consideration of possible effects upon the capacity and operation of the local road networks (links and junctions), road safety, severance, driver delay and pedestrian delay and amenity.

1.6. Curtins have liaised extensively with the Highways Officers at the local authorities (Warrington) and regional authority; Highways England (North West) to discuss the development proposals and the scope of the necessary assessment work. Highways Officers at Cheshire East have not been consulted on the basis that any increases in traffic within Cheshire East are predicted to be negligible.

1.7. The TA and TP have also been prepared in accordance with the Department for Transport document 'Guidance on Transport Assessment' (2007), whilst the ES has been prepared in accordance with the Institute of Environmental Management and Assessment (IEMA) 'Guidelines for the Environmental Assessment of Road Traffic' (1993) and the professional judgement of the authors.

1.8. In summary, this Addendum Paper considers the traffic and transportation issues relating to the development and identifies environmental effects, the significance of these effects, mitigation or enhancement measures and the significance of the residual effects of each.

1.9. This document now constitutes part of an addendum to the Environmental Statement originally submitted to Warrington Borough Council (WBC) in March 2019 to accompany the outline planning application for warehouse development (Use Class B8 with ancillary B1(a) offices) and associated infrastructure at the Application Site referred to as Six 56 Warrington.

1.10. Since the submission of the planning application, consultation responses have been received from key consultees and further discussions have taken place with the Council and their key consultees (namely WBC Highway Officers, Highways England (HE) and their consultants Atkins, WBC Environmental Protection Officers, Historic England and WBC Conservation Officer and Ramboll landscape designers acting on behalf of WBC).

1.11. Further clarification and information has been provided in line with requests by HE and WBC Highway's Officer relating to the design of the mitigation and the WMMTM traffic model.

1.12. Consequently, the indicative masterplan and parameters plans have evolved to address comments raised by these key consultees. This addendum therefore includes additional and updated information to address the comments raised by key consultees.

1.13. This addendum should however be read in conjunction with the original ES submitted to WBC in April 2019 as the other technical papers (Ground Conditions and Contamination; Socio-Economic, Air Quality, Utilities, Energy, Waste and Agricultural Land and Soils) have not been amended or subject to change and as such are not included within this addendum, but still remain valid and still form part of the ES for the planning application.

1.14. In order to make the addendum more understandable and to avoid extensive cross referencing, changes have been integrated within the original text of this technical paper to form a single addendum to the ES. Wherever changes or additions have been made to the text of the original technical paper, the text has been underlined and anything that is no longer relevant or valid has been struck through but retained within the text. A log is also included within Appendix 4 of this technical paper addendum so that the text to be removed (i.e. the text struck through within the paper) is identified and a reason for its removal provided.

2. Documents Consulted

Planning Policy

2.1. This section of the report sets out the key transport policy and guidance documents that are relevant to this application.

National Planning Policy

National Planning Policy Framework, ~~July 2018~~ Feb 2019

2.2. The National Planning Policy Framework (The Framework) sets out the current national planning policy and outlines the important role that transport policies have to play in facilitating development.

2.3. Section 2 sets out details about achieving sustainable development. In particular, Paragraph 8 of NPPF ~~2018~~ 2019 sets out that there are three dimensions of sustainable development: economic, social and environmental.

2.4. Paragraph 11 states that:

'Plans and decisions should apply a presumption in favour of sustainable development'

2.5. For decision ~~making~~ taking this means granting permission unless:

'…any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this framework taken as a whole.'

2.6. Chapter 9, 'Promoting sustainable transport', requires at Paragraph 102 that:

'transport issues should be considered from the earliest stages of plan-making and development proposals', including the environmental impacts of traffic and transport infrastructure, and opportunities to promote walking, cycling and public transport use.'

2.7. Paragraph 82 also notes that planning decisions should:

'recognise and address the specific locational requirements of different sectors', including making provision *'for storage and distribution operations at a variety of scales and in suitably accessible locations.'*

2.8. Paragraph 103 states that:

'significant development should be focused on locations which are or can be made sustainable". Paragraph 104 (e) requires planning policies to *"provide for any large scale transport facilities that need to be located in the area, and the infrastructure and wider development required to support their operation, expansion, and contribution to the wider economy'.*

2.9. Specifically, Paragraph 107 requires proposals for new distribution centres to:

'make provision for sufficient lorry parking to cater for their anticipated use'.

2.10. Paragraph 109 of 'The Framework' states the following in relation to the impacts of the Proposed Development on the surrounding highway network:

'Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.'

Planning Practice Guidance, March 2014

2.11. In addition to 'The Framework', a Planning Practice Guidance (PPG) has been developed by government. Within this document there is a specific section that clarifies the over-arching principles on transport planning for developments.

2.12. The 'PPG' has been used in the production of the traffic and transportation Paper of this EIA.

Local Transport Policy

Local Plan Core Strategy (Adopted 2014)

2.13. Warrington's Local Plan Core Strategy sets out a planning framework for guiding the location and level of development in the borough up to 2027 via a series of place-specific policies to promote a positive and proactive approach to managing development within the borough. The Core Strategy comprises several transport-related policies as follows:

2.14. Policy CS2 is titled "Quality and Distribution of Development", which states that:

"Major Warehousing and Distribution developments will be located away from areas sensitive to heavy vehicle movements, with direct access to the Primary Road Network, and where possible with access to rail and/or the Ship Canal."

2.15. The Proposed Development accords with this, as evidenced by the ease of connection to the M6 / M56 motorway network, along with HGV restrictions along the roads in the vicinity of the Site.

2.16. Policy CS4 is titled "Transport", which states that:

"Using the principles set out in Policy CS2, development will be located to reduce the need to travel, especially by car, and to enable people as far as possible to meet their needs locally. Early consultation with the Highways Agency will be necessary for any proposal that may affect the Strategic Road Network. In particular, efforts should be aimed at reducing the proportion of car-borne commuting…. and tackling the most congested parts of the Strategic Road Network notably the M6, M56, and M62."

2.17. Under Policy MP1, titled "General Transport Principles", WBC and its partners will support proposals where they:

- "reduce the need for private car use through its location, travel planning and marketing (smarter choices) and any other measures to change travel behaviour;
- consider demand management measures including the effective reallocation of road space in favour of public transport, pedestrians and cyclists;
- adhere to locally determined car and cycle parking standards; and
- mitigate the impact of development or improve the performance of Warrington's Transport Network, including the Strategic Road Network, by delivering Site specific infrastructure which will support the proposed level of development."

2.18. Policy MP3, titled "Active Travel", highlights the Council's expectations for "high priority given to the needs and safety of pedestrians and cyclists in new development. New development should not compromise and should contribute to enhancing and developing integrated networks of continuous, attractive and safe routes for walking and cycling including improvements to roads, Rights of Way and the Greenway Network (as shown on the Policies Map). This should include appropriate segregation of users and appropriate priority should be given to users at junctions."

2.19. With regards to potential improvements to the surrounding public transport network, Policy MP4, titled "Public Transport", states: "In accordance with the Overall Spatial Strategy, development should be located in areas with easy access to public transport. Development should aim to make public transport a viable and attractive alternative by;

- integrating with existing public transport infrastructure and services as far as possible; and
- providing additional public transport infrastructure and services that are reasonably related in scale to the proposed development where existing facilities are not available or are in need of improvement, provided this does not impact on the deliverability of the scheme."

2.20. In Policy MP6, titled "Transport Infrastructure", WBC also expresses its support for "priorities and improvements set out in the Local Transport Plan and other delivery documents by ensuring development will not prejudice the implementation of proposed transport schemes and projects that require land beyond the limits of the public highway".

2.21. Lastly, as stated in Policy MP7, titled "Transport Assessments and Travel Plans", WBC requires all developments to:

- "demonstrate that it will not significantly harm highway safety and that trips generated by the development can adequately be served by Warrington's Transport Network; and
- Identify where there are any significant effects on Warrington's Transport Network and/or the environment and ensure appropriate mitigation measures including any necessary transport infrastructure are in place before the development is used or occupied.
- *Applications for major developments…. must be accompanied by a Transport Assessment, Transport Statement, and Travel Plan in accordance with National Planning Policy and national guidance on transport assessments."*

2.22. All the above policies have been considered in the preparation of this ES Addendum Chapter, Updated Transport Assessment and Updated Travel Plan.

Emerging WBC Local Plan

2.23. Warrington Borough Council's Preferred Development Option Regulation 18 Consultation (July 2017) and Submission Version of the Local Plan (March 2019) identifies the Site for redevelopment for Employment Use. The evidence base prepared to inform the Preferred Development Option Regulation 18 Consultation Document and Submission Version of the Local Plan (March 2019), includes The South Warrington Urban Extension Framework Plan Document (SWUEFP) (June 2017) and Garden Suburb Development Framework (March

2019) produced on behalf of Warrington Borough Council also classifies the Site for redevelopment for Employment Use.

2.24. ~~It is anticipated that the~~ The draft Submission Version of the Local Plan ~~will be~~ was published in March 2019~~. It will then be subject~~ and was subsequently subjected to a further period of public consultation. ~~prior to examination~~ Submission of the Local Plan for its examination in public and formal adoption ~~in late 2019~~ is envisaged to take place later in 2021.

WBC Local Transport Plan 3 (2011)

2.25. WBC published its third Local Transport Plan in March 2011, setting out the plans and spending priorities for Warrington for the period 2011 – 2030.

2.26. In Autumn 2010, the government ministers indicated that the first two aims of the LTP, which are to "support economic growth" and "reduce carbon emissions", would form the overarching national objectives for transport. This was followed by a new government White Paper on transport, titled "Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen". The White Paper collated key messages and initiatives and summarised what the plans meant for Warrington, putting forward the following travel choices as examples of sustainable travel behaviour:

- "Walking or cycling;
- Using bus, train or Light Rapid Transit for all or part of a journey; and
- Car sharing, car clubs or car pooling."

2.27. The Proposed Development presents many opportunities to fulfil the aforementioned travel choices, and hence is in accordance with the general principles of the WBC LTP3.

WBC Standards for Parking in New Development (March 2015)

2.28. WBC prepared a Supplementary Planning Document (SPD) aimed to expand on policies within Warrington's Development Plan and relevant national guidance in relation to development proposals for Parking in New Development. The policy document was also set out to ensure that parking for new development:

- "is sufficient to avoid on-street parking congestion, highway safety and visibility problems;
- avoids over-provision that would result in the inefficient use of land;

- encourages high quality design;
- meets the needs of all users; and
- maintains the principles of sustainable development."

2.29. Sections of the SPD relevant to the proposed development are:

***"PS1 –** Developers will need to demonstrate parking provision in accordance with the standards set out in Appendix A (reproduced below);*

***PS2 –** A travel plan or travel plan statement will be required as a key mechanism to reduce the use of high-emission vehicles and to influence travel behaviour in new developments;*

***PS10 –** Bicycle and motorcycle/scooter/moped parking should meet the standards set out in Appendix A; and*

***PS13 –** It is essential that developments make adequate provision for all service and delivery vehicles to be accommodated without detriment to the safety of other road users or the free flow of all modes of transport."*

2.30. The below outlines the parking standards extracted from Appendix A of the SPD, which the proposed development has considered and accounted for during the allocation of proposed parking spaces.

Use Class	Standard Car Parking	Disabled Parking	Bicycles	Motorcycles
B1 Business and Office	1 space per 26 sqm (stand-alone offices and business parks) OR 1 space per 20 sqm*	5% of total parking provision plus an additional 5% total parking capacity should compromise enlarged standard spaces (3.6m x 6m) for future conversion to disabled spaces if demand increases.	1 space per 200 sqm (minimum of 2 spaces)	1 space per 750 sqm (minimum of 2 spaces)
B8 Storage and Distribution	1 space per 120 sqm OR 1 space per 100 sqm*		1 space per 850 sqm (minimum of 2 spaces)	1 space per 2000 sqm (minimum of 2 spaces)

Table 2.1 – WBC Parking Standards

*Exceptional maximum standard where a travel plan is to be delivered that demonstrates an exceptionally high level of quality, commitment to delivery and availability of alternative modes

2.31. Guidance on travel plans of an 'exceptionally high level of quality' states that:

"Where a travel plan demonstrates an exceptionally high level of quality, commitment to delivery and availability of alternative modes, there may be scope to varying parking standard requirements in liaison with council officers. For example, an exceptional travel plan would typically include: a shuttle bus service; flexible working hours; lockers, showers and changing facilities for cyclists; secure cycle storage car park management rota; pool cars and a successful car sharing scheme although this list is not exhaustive."

2.32. With regards to servicing and deliveries, the SPD also states "developers will be required to demonstrate that there will be adequate provision of space within the Site for parking, manoeuvring, loading and unloading to meet the operational requirements of the development. Vehicles need to be able to enter and exit the Site safely in forward gear."

Other Policies and Guidance

Guidelines for the Environmental Assessment of Road Traffic, 1993

2.33. Guidance from the Institute of Environmental Assessment (IEA) is considered throughout this traffic and transportation Paper. The IEA is now known as the Institute of Environmental Management and Assessment (IEMA). The guidance document entitled "Guidelines for the Environmental Assessment of Road Traffic" has been used to inform the methodology of assessment.

DfT Circular 02/2013

2.34. The DfT Circular 02/2013, titled The Strategic Road Network and the Delivery of Sustainable Development, was issued on 10th September 2013, and is aimed to achieve an effective and efficient strategic road network to make a significant contribution to the delivery of sustainable economic growth.

2.35. The Circular states that:

"Development proposals are likely to be acceptable if they can be accommodated within the existing capacity of a section (link or junction) of the strategic road network, or they do not increase demand for use of a section that is already operating at over-capacity levels, taking account of any travel plan, traffic management and/or capacity enhancement measures that may be agreed. However, development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.

The overall forecast demand should be compared to the ability of the existing network to accommodate traffic over a period up to ten years after the date of registration of a planning application or the end of the relevant Local Plan whichever is greater.

Where the overall forecast demand at the time of opening of the development can be accommodated by the existing infrastructure, further capacity mitigation will not be sought."

Highways England: Planning for the Future

2.36. Published in September 2015, a guide titled The Strategic Road Network set out general principles by which Highways England will seek to engage and support throughout the planning process in order to prepare strong policies and proposals that are sustainable, practical and well-designed.

2.37. Key assessment considerations on all planning matters include transport assessments and travel plans to facilitate the delivery of sustainable development, which the proposed development accords with.

3. Consultations

3.1. Consultations with stakeholders have been undertaken in preparation of the Addendum Technical Paper pre-submission and post-submission. These have taken the form of correspondence, discussions and meetings to determine the geographical scope in terms of highway links and junctions likely to be impacted and the trip rates for the development traffic.

3.2. The stakeholders are the local authorities of Warrington Council together with Atkins, the agents for Highways England North West.

3.3. All post-submission highways correspondence have been appended in the accompanying Updated Transport Assessment.

Theme / Issue	Date	Consultee	Method	Summary of Discussion	Outcome / Output
TA/ES Scoping	19-7-17	Warrington Council	Meeting	To agree a suitable scope of assessment for the Transport Assessment, Travel Plan and ES.	Broad agreement of geographic scope, modelling methodologies and key parameters regarding generation, growth and distribution.
TA/ES Scoping	24-7-17	Highways England	Meeting	To agree a suitable scope of assessment for the Transport Assessment, Travel Plan and ES.	Broad agreement of geographic scope, modelling methodologies and key parameters regarding generation, growth and distribution.
ES Scoping	14-02-18	Warrington Council	Meeting	The various parameters for inclusion within the Environmental Statement were again discussed, including geographic scope, traffic growth, traffic distribution, trip forecasting and committed developments.	Whilst a broad scope of assessment had already been agreed via previous discussions, WBC now confirmed that the Warrington Multi Modal Transport Model (WMMTM) was now complete and this should be used to consider the impact of the Local Plan as part of the cumulative assessment. More conventional junction modelling as per the previously agreed scope is still required but the scope can be limited by the results of the WMMTM.

Theme / Issue	Date	Consultee	Method	Summary of Discussion	Outcome / Output
ES Scoping Opinion	Received 06.04.19	Warrington Council and Highways England	Letter	The official Scoping Opinion sets out the requirements for the ES chapter from a traffic and transport perspective in Section 8.	Section 8 confirms that WBC Highways and HE consider that the information contained within the Traffic & Transportation section of the EISR is acceptable, subject to cumulative assessment being undertaken utilising the information contained within Warrington Multi Modal Transport Model. The opinion also confirms the methodology with regard to trip rates, distribution and assessment years.
Pre-Application Meeting	21-06-18	Warrington Council, Highways England	Memo	To agree a suitable scope of assessment for the Transport Assessment, Travel Plan and ES.	During this meeting WBC and HE expressed some concern regarding the use of TRICS for the traffic generation. This is despite earlier discussions suggesting that TRICS may be suitable. HE also expressed some comments regarding distribution and utilisation of the A50.
M6 J20 Mitigation	11-10-18	Warrington Council, Highways England	Meeting	A meeting was arranged to discuss the mitigation at the M6 J20 in light of the Liberty Properties application.	WBC and HE expressed concerns regarding the initial mitigation and modifications were suggested.
Modelling Parameters	November 18	Warrington Council, Atkins, Highways England	Emails	Numerous emails were circulated to firm up the parameters to be used in the modelling.	Agreement to assess the development using Omega trip rates and to amend the distribution to reduce traffic utilisng the A50.
M6 J20 Mitigation	27-11-18	Warrington Council	Meeting	The revised mitigation was presented to Warrington Council for comment.	WBC were supportive of the proposed mitigation.
M6 J20 Mitigation	12-12.18	Highways England	Meeting	The revised mitigation was presented to Highways England	HE was generally supportive of the mitigation.
WMMTM Discussions	January 2019	Warrington Council	Telephone Discussions/Emails	Discussion regarding the updated WMMTM	Agreement that the updated WMMTM flows would be incorporated into the TA but acknowledged that the model is showing a bias towards traffic travelling west and impacts in this area are likely to be less than the model predicts.

Theme / Issue	Date	Consultee	Method	Summary of Discussion	Outcome / Output
Post-Submission Highways Comments	12-09-19	Warrington Council Highways	Post-Submission Note 1	Request for additional pedestrian and cycle infrastructure, public transport contribution, clarification on traffic forecasting and growth, discussion regarding WMMTM distribution and assessment, capacity assessments, road safety audits and swept path analysis, Grappenhall Lane corridor and M6 J20 mitigation, and travel choices arrangements.	Post submission response provided to WBC Highways. Response from WBC Highways received in March 2020, with acknowledgement that additional details requested will be addressed in the Updated TA and as part of any future submission.
Post-Submission Highways Comments	12-09-19	Highways England	Post-Submission Note 1	Clarification requested on design year, WMMTM, M6 J20 mitigation measures, both M6 J20 base and 'with mitigation' modelling, and queries on merge/diverge assessment.	Updated M6 J20 base and 'with mitigation' modelling issued, with HE agreeing that the base modelling 'can now be regarded as robust at a broad level'. Justification provided on assessment years used for merge/diverge assessments.
Post-Submission Highways Comments	13-11-19	Highways England	Post-Submission Note 2	Outstanding matters on M6 J20 mitigation model and merge/diverge assessment.	Updated M6 J20 mitigation model and merge/diverge assessment results issued.
Post-Submission Highways Comments	21-01-20	Highways England	Post-Submission Note 3 and meeting	Outstanding matters on M6 J20 mitigation model and merge/diverge assessment.	Updated M6 J20 mitigation model and assessment results issued. Similar justification provided regarding merge/diverge assessment where the key issue appears to be the mainline capacity rather than the merge/diverge itself. HE has responded in March 2020 recommending that planning permission be granted subject to conditions.

Table 3.1 - Summary of Consultations and Discussions

4. Methodology and Approach

4.1. The methodology for the Environmental Statement is in accordance with the Institute of Environmental Management and Assessment (IEMA) method set out in the document 'Guidelines for the Environmental Assessment of Road Traffic' 1993.

4.2. The IEMA guidelines recommend that the environmental effects listed in Table 2.1 of the guidance may be considered important when considering traffic from an individual development. These effects include:

- Noise;
- Vibration;
- Visual Impact;
- Severance;
- Driver delay;
- Pedestrian delay;
- Pedestrian amenity;
- Accidents and safety;
- Hazardous loads;
- Air pollution;
- Dust and dirt;
- Ecological impact; and
- Heritage and conservation.

4.3. Of these effects, many are considered in Papers elsewhere in this document due to the specialist skills required; namely noise, vibration, visual impact, air pollution, ecological effects and heritage and conservation.

4.4. With regard to the remaining effects the guidance states that the following rules should be used as a screening process to delimit the scale and extent of the assessment:

- Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles (HGV) will increase by more than 30%); and

- Include any other specifically sensitive areas where traffic flows have increased by 10%, or more.

4.5. The IEMA guidelines go on to state that any increases in traffic flows of less than 10% are generally accepted as having no discernible environmental impact as daily variance in traffic flows can be of equal magnitude.

4.6. The 30% threshold relates to the level at which humans may perceive change and there may therefore be an effect. Impacts above this level therefore do not suggest that there is a significant impact, only that further consideration is required to assess the significance.

4.7. In addition to the above IEMA guidance, consultations have been undertaken with relevant stakeholders to determine the geographical scope in terms of highway links and junctions likely to be impacted and the trip rates for the development traffic.

4.8. The stakeholders include the local authorities of Warrington Council and Highways England North West.

Transport Assessment

4.9. To determine whether the traffic flows at the junctions listed in Section 5 of this paper exceed the 10% or 30% threshold, the assessments carried out within the TA have been referred to. The TA includes:

- An assessment of the local highway network in the vicinity of the Site; the geographic study area consisting of the junctions described later in this report;

- An assessment of the strategic highway network; M6 J20;

- Consideration of the development traffic generation and distribution; and

- Consideration of the 'without development' and 'with development' at future year; the difference being the highway impact.

Travel Plan

4.10. A framework Travel Plan has been prepared, this is an overarching document, from which each individual development can, in due course, provide a Site-specific Travel Plan for each development plot. The TP will:

- Identify the objectives of the TP and how it will link with the occupiers of the Site;
- Provide targets which will need to be achieved and maintained in order to reduce the overall traffic and transportation impact of the Site;
- Identify the measures and initiatives to achieve the objectives of the TP to increase travel to the Site sustainably: on foot, by cycle and/or using public transport;
- Provide details of how the TP will be marketed for residents, staff and visitors;
- Set out realistic and achievable preliminary targets for reducing travel to Site by private car and identify specific timescales to be agreed with the local authorities; and
- Derive a monitoring schedule to assess the effectiveness of the TP.

4.11. The TP is a live document that applies throughout the lifecycle of the project.

Detailed Assessments

4.12. Using the findings of the assessments outlined above, any links with a predicted increase above 30% will be assessed in accordance with IEMA guidelines. As mentioned previously this will include consideration of:

- Severance;
- Driver delay;
- Pedestrian delay;
- Pedestrian amenity; and
- Accidents and safety.

Severance

4.13. Severance is a perceived division that occurs when a traffic link separates part of an existing community. This can occur when a road becomes too heavily trafficked (making crossing the road a problem) or when a new route divides existing land creating a physical barrier.

4.14. The Guidelines for Environmental Assessment of Road Traffic states that:

4.15. *"The measurement and prediction of severance is extremely difficult. The correlation between the extent of severance and the physical barrier of a road is not clear and there are no predictive formulae which give simple relationships between traffic factors and levels of severance."*

4.16. The following indicators are set out in the Guidelines:

- 30% flow increase – slight separation effects
- 60% flow increase – moderate separation effects
- 90% flow increase – substantial separation effects

4.17. These indicators along with consideration of a number of factors including road width, traffic speeds, crossing facilities and existing crossing provision have been used to form the basis of the criteria against which the assessment has been carried out in this Technical Paper.

Driver Delay

4.18. Changes in delay to drivers have been considered throughout the accompanying TA at all junctions using industry standard software packages. These programs give output ratios of flow to capacity (RFC), degrees of saturation (DoS) and queue lengths which give an indication of the overall operational capacity of the junctions.

Pedestrian Delay and Amenity

4.19. A change in vehicular demand affects the ability of pedestrians to cross local routes, which results in an impact on delay and on an individual's desire to make a particular walking journey.

4.20. Changes in the volume, speed or composition of traffic and the physical condition at crossing points affect pedestrian amenity.

4.21. Pedestrian delay and amenity are not precisely defined but should be made with 'knowledge of local factors and conditions'.

Fear and Intimidation

4.22. Fear and intimidation can also increase as a result of rising traffic flows. This is influenced by a number of things including the volume of traffic, HGV content, nature and frequency of cycle infrastructure, and the width of the footpath.

4.23. In addition, The Guidelines for Environmental Assessment of Road Traffic gives the following example of fear and intimidation thresholds:

Degree of Hazard	Average Traffic Flow over 18 hr Day (vehicles/hour)	Total 18 hr HGV Flow	Average Speed over 18 hr day (mph)
Extreme	1,800 +	3,000 +	20 +
Great	1,200 – 1,800	2,000 – 3,000	15 – 20
Moderate	600 – 1,200	1,000 – 2,000	10 – 15

Table 4.1 – Fear and Intimidation Thresholds

4.24. The above thresholds have been used to assess fear and intimidation alongside a professional understanding and appreciation of the existing baseline conditions.

Accidents

4.25. The Guidelines for Environmental Assessment of Road Traffic states that:

4.26. *"From knowing the expected increase in vehicle-kms on different classes of road, it will be possible to make an initial simple statistical assessment of the likely increase or decrease in the number of accidents resulting from changes in traffic flows and composition."*

4.27. Notwithstanding the above, the methodology used to calculate accident likelihood is no longer fit for purpose and therefore the TA/ES provides a detailed review of collision records in order to consider any implications on highway safety.

Receptors

4.28. Receptors are required to be assessed in terms of the effect magnitude and sensitivity of each that are within the vicinity of the Site. The following hierarchy is used to assess the how receptors are considered:

- International
- National
- Regional
- County
- Borough/District
- Local/Neighbourhood

4.29. Below sets out the receptors around the Site and which designation that they fall into.

Designation	Receptors
International	N/A
National	Existing traffic on the M6 and M56 Motorway
Regional	N/A
County	Existing traffic on the A50
Borough / District	Existing traffic on the local highway network
Local/Neighbourhood	Residential Housing in the vicinity of the Site Existing traffic on the local highway network in the vicinity of the Site Pedestrians and cyclists on the local highway network Public transport users in the vicinity of the Site

Table 4.2 - Receptors

4.30. The above table shows that there are no international receptors close to the development. The national receptor would be the existing traffic upon the M56 and M6 Motorways. The county level receptor would be the existing traffic on the A50. A plan showing the locations of receptors is shown on the drawing "Traffic and Transportation – Receptor Plan" which can be found in Appendix 2.3 of this Addendum Paper.

4.31. The local/ neighborhood receptors would be Residential Housing, existing traffic on the local highway network in the vicinity of the Site, Pedestrians and cyclists on the local highway network, public transport users in the vicinity of the Site. The previously mentioned receptors will be assessed by their allotted designation level to assess their environmental impacts.

Environmental Impacts

4.32. For those links that exceed the 30% threshold mentioned above and in addition to the assessment methodologies set out in the previous section, the magnitude and environmental impacts will also be cognisant of the parameters put forward in the scoping note and as presented in Table 4.3 below.

Magnitude	Environmental Impact
Substantial	Construction – Significant number of construction vehicles over a protracted period (over 35% increase) Operational – Sustainable Travel – No provision for pedestrians, cyclists or public transport Operational – HGVs – Significant number of HGVs on a permanent basis (over 35% increase) Operational –Traffic – Significant number of cars on a permanent basis (over 35%)
High	Construction – High number of construction vehicles over a protracted period (30% to 34% increase) Operational – Sustainable Travel – Limited access to sustainable modes of travel Operational – HGVs – High number of HGVs on a permanent basis (30% to 34% increase) Operational – Traffic – High number of cars on a permanent basis (30% to 34% increase)
Moderate	Construction – Moderate number of construction vehicles over a protracted period (15% to 29% increase) Operational – Sustainable Travel – Some access to either walking, cycling or public transport but not all three Operational – HGVs – Moderate number of HGVs on a permanent basis (15% to 29% increase) Operational – Traffic – Moderate number of cars on a permanent basis (15% to 29% increase)
Minor	Construction – Small number of construction vehicles over a protracted period (6% to 14% increase) Operational – Sustainable Travel – Some access to walking, cycling and public transport facilities Operational – HGVs – Small number of HGVs on a permanent basis (6% to 14% increase) Operational –Traffic – Small number of cars on a permanent basis (6% to 14% increase)
Negligible	Construction – Occasional access required (less than 5% increase) Operational – Sustainable Travel – Dedicated access to walking, cycling and public transport facilities Operational – HGVs – Immaterial number of HGVs on a permanent basis (less than 5% increase) Operational – Traffic – Immaterial number of cars on a permanent basis (less than 5%increase)
Neutral	No change

Table 4.3 – Environmental Impact Thresholds Set out In ES Scoping Paper

4.33. Some of the above parameters are subjective; for robustness the worst-case scenario will be taken initially with due consideration of the realistic and practical range of impact.

Significance of Effects

4.34. The significance of effect is determined using the significance matrix in Section 6 of the Environmental Statement Part I Report and its Addendum. This identifies the receptor level across the top of the matrix and the magnitude of environmental impact down the side and where they meet within the matrix identifies the significance of the effect.

Impact Prediction Confidence

4.35. It is also of value to attribute a level of confidence by which the predicted impact has been assessed. The criteria for these definitions are set out below:

Confidence Level	Description
High	The predicted impact is either certain i.e. a direct impact, or believed to be very likely to occur, based on reliable information or previous experience.
Low	The predicted impact and its levels are best estimates, generally derived from first principles of relevant theory and experience of the assessor. More information may be needed to improve confidence levels.

Table 4.4 – Confidence Levels

5. Baseline Information

Background

5.1. This section of the Addendum Paper seeks to identify the existing situation on the surrounding highway network and the future year 'base' conditions as agreed through discussions with the local highway authorities. In summary, this section sets out:

- A description of the surrounding highway network;
- Baseline personal injury accident data;
- Traffic data;
- Committed development traffic flows;
- Trip generation forecasts and distribution; and
- Accessibility by sustainable modes of travel.

Highway Network

B5356 Grappenhall Lane

5.2. The B5356 Grappenhall Lane runs alongside the northern boundary of the Site for circa. 1.6km in an east-west alignment between a three-arm roundabout with the A50 Cliff Lane to the east, continuing southbound past a three-arm roundabout with Broad Lane, before branching off at a priority junction with Barleycastle Lane towards the south and continuing as Grappenhall Lane to the south-west. Here, the B5356 Grappenhall Lane extends further towards the southwest for a length of approximately 1.2km until it reaches a priority junction with Lumb Brook Road and Green Lane, before continuing as the B5356 Stretton Road.

5.3. The carriageway width of the B5356 Grappenhall Lane is around 7.3m along the Site frontage, with verges of varying width on both sides and no pedestrian infrastructure. The road is unlit along most of its length and is subject to a 60mph national speed limit. To the south of the three-arm roundabout, this speed limit is reduced to 40mph, and the road is subject to a 7.5 tonnes weight restriction, which continues to be enforced when the road continues towards the southwest.

5.4. Towards the southwest of the Site, the B5356 Grappenhall Lane narrows to a width of circa. 5.5m with one lane in either direction. There is also a narrow footway of approximately 1m wide on the southern edge of the road, where some footways comprised dropped kerbs and tactile paving, although the road remains unlit throughout its length. There is also a community speed check area in the vicinity of the priority junction with New Lane.

5.5. Vehicular access to the Site from Grappenhall Lane is currently via Bradley Hall Farm from the A50 Cliff Lane, which has direct access to Junction 20 of the M6 Motorway, as well as Junction 9 of the M56 Motorway. There are also four field access points available from the Site's 1.15km long frontage to the B5356 Grappenhall Lane.

5.6. Leading into Appleton Thorn, the speed limit further drops to 30mph, where this is made clear using painted red chevrons and "SLOW" road markings. The footway provision widens to approximately 1.5m, and street lighting is available at more regular intervals in the vicinity of residential dwellings.

5.7. In Appleton Thorn, the B5356 Grappenhall Lane serves primarily as a route for the residential dwellings bordering the road, and provides access to a school, place of worship, public house, and a correctional facility.

B5356 Stretton Road

5.8. The B5356 Stretton Road commences at a priority junction with Lumb Brook Road and Green Lane as a continuation of the B5356 Grappenhall Lane, before extending southwest for circa. 2km into Stretton. The road terminates at a signalised junction with the A49 London Road.

5.9. The road shares similar characteristics with the B5356 Grappenhall Road, however the road widens slightly and the speed limit increases to 40mph past Appleton Thorn. There is also no footway provision nor street lighting outside Appleton Thorn.

5.10. Approaching the three-arm roundabout with Blackcap Road, there is a segregated cycleway which allows cyclists to utilise the road in a safe manner. There are also pedestrian refuge islands outside the roundabout with dropped kerbs and tactile paving to facilitate crossing.

5.11. Leading into Stretton, the speed limit drops to 30mph and the road passes through several school zones and residential dwellings. Here, footway provision of an average width of 1m is present along the northern side of the road and is occasionally separated from the road by a grass verge. Street lighting is also present in more regular intervals, as the road provides access to more schools and places of worship.

5.12. There are several bus stops present in pairs along the B5356 Stretton Road which primarily host school bus services between Warrington, Hatton, and Appleton Thorn. There is additional infrastructure such as a cantilever shelter, pole, and timetable information.

A50 Cliff Lane / M6 J20

5.13. The road commences as a continuation of the A50 Knutsford Road approximately 250m to the north of the Site, heading south until it reaches a three-arm roundabout with the B5356 Grappenhall Lane. Then, as stated above, Cliff Lane runs alongside the north-eastern boundary of the Site in an east-west alignment between the M6 J20 to the east (and beyond to Knutsford) and Grappenhall Lane to the west.

5.14. In the vicinity of the 140m or so long section of frontage that the Site benefits from, the carriageway of Cliff Lane tapers down from the roundabout entry / exit to a width of around 7.4m, with verges on both sides. There is a narrow footway of approximately 0.5m wide on the northern edge of the road, which branches along Junction 20 of the M6 and is separated from the main road with a grass verge. Where it meets the junction, there is an additional dropped kerb and tactile paving to allow pedestrian to cross along the outer circumference of the roundabout.

5.15. The road is lit by regularly spaced lighting columns along the extent of the Site frontage and is subject to a 60mph national speed limit.

5.16. Junction 20 off the M6 takes the form of a dual roundabout above and on either side of the north-south M6 alignment. Vehicles headed towards the west of the Site can either go directly into a slip road which merges with the M6 approximately 500m towards the north, follow both roundabouts to a slip road which merges with the southbound M6 or cross over with the M56, or follow both roundabouts along a continuation of the A50 Cliff Lane which leads to Knutsford in the southeast.

5.17. For this junction, the roundabouts comprise of a single carriageway with two lanes and a width of approximately 8m including the central hatching, whereas the roads connecting the roundabouts comprise a dual carriageway with a total width of approximately 19m. There is also a narrow footway on the northern edge of the road connecting the roundabouts. Flow of traffic along the roundabouts is controlled via numerous traffic lights on several arms of the roundabouts.

A50 Knutsford Road

5.18. The A50 Knutsford Road commences as a continuation of Cliff Lane approximately 250m towards the north of the Site, where it continues in an approximate northwest alignment for a length of circa. 6km, passing through Grappenhall, Latchford, leading directly into the inner circle of Warrington. Here, the A50 Knutsford Road terminates at a signalised four-arm junction with the A49 Wilderspool Causeway.

5.19. In the vicinity of the Site, the A50 Knutsford Road comprises a single carriageway with an approximate width of 5.5m and up to one lane in each direction. There is a narrow footway provision of 0.5m on the eastern edge of the road for its entire length, however the road is mostly unlit. This footway is also complete with dropped kerbs. The road is subject to a national speed limit of 60mph.

5.20. Approaching Grappenhall, the road widens to circa 7.5m including the central hatching, and footway provision is available on both sides of the road, some of which are separated from the road by a grass verge. Past the canal and towards the southeast of Grappenhall, the road narrows as the speed limit drops to 30mph. This is enforced with road markings, the addition of a cycle lane and pedestrian refuge island, along with traffic cameras.

5.21. The road widens after the pinch point to an average width of 8m with up to two lanes in one direction at certain junctions to accommodate turning lanes. The footway separated by the grass verge continues, with the addition of more pedestrian refuge islands along the road to facilitate crossing.

5.22. The A50 Knutsford Road hence runs along the eastern edge of Grappenhall and meets the A56 Stockport Road at a signalised junction at the northeast of Grappenhall, before continuing towards the west and providing access to several amenities such as a Tesco Express, Co-Op, schools, public houses, and several food/drink establishments. Throughout its entire length, the road mainly serves as a route for the residential dwellings bordering the road.

5.23. At the signalised junction in Grappenhall with the A56 Stockport Road, there are wide footways of approximately 2m on each arm of the junction, in addition to pedestrian refuge islands with dropped kerbs to facilitate crossing in a safe manner. The road is also very well-lit to the benefit of all road users.

Broad Lane

5.24. Towards the northwest corner of the Site, Broad Lane commences at a three-arm roundabout with the B5356 Grappenhall Lane and extends towards the north for circa. 600m, before turning towards the north-west for a length of circa. 1.7km. The road terminates at a priority junction with Church Lane towards the southwest of Grappenhall.

5.25. In the vicinity of the Site, Broad Lane comprises a narrow single carriageway of approximately 5.5m wide, with vergeways of varying width on both sides and no pedestrian infrastructure. The road has street lighting at regular intervals along most of its length and is subject to a 60mph national speed limit.

5.26. Along the frontage of lodging and residential dwellings, there is a wide footway of approximately 2m in width with dropped kerbs, however this only extends for a limited length along Broad Lane. Past the residential dwellings, the road is mostly unlit.

5.27. Approaching the outskirts of Grappenhall, Broad Lane narrows to approximately 4m, and the speed limit drops to 40mph. There are stretches of the road which are heavily bordered by tall trees, and the speed limit drops further to 20mph along this stretch as it approaches a residential area, which is made clear by painted "SLOW" road signs.

5.28. In the vicinity of residential dwellings bordering the road, there are footways of approximately 1m wide on at least one side of the road, complete with dropped kerbs and street lighting at regular intervals. Here, it can be observed that some vehicles park half on the road and half on the footway to minimise disruption to traffic. As Broad Lane approaches the priority junction with Church Lane, Traffic Regulation Orders (TROs) are also present in the form of double yellow line parking restrictions on both sides of the road.

M6 / M56 North Cheshire Motorway

5.29. The M6 forms the eastern boundary of the Site, whereas the M56 North Cheshire Motorway forms the southern boundary of the Site. The M6 provides access from the Site to areas such as Wigan, Preston, Knutsford, and Crewe, whereas the M56 connects Site users to Runcorn, Ellesmere Port, Altrincham, and Manchester Airport.

5.30. In the vicinity of the Site, the M6 extends in a north-south alignment and comprises a dual carriageway with an average total width of 60m with a total of up to 5 lanes in either direction, whereas the M56 North Cheshire Motorway extends in a west-east alignment with a dual carriageway of an average with of 40m and up to 5 lanes in either direction.

5.31. As mentioned in Section 2.14 above, there are several routes for which vehicles can access and egress the Site from, and how said routes tie into the wider M6 / M56 network.

Baseline Personal Injury Accident Records

5.32. Personal Injury Accident (PIA) data for the highway network adjacent to the Site has been obtained from WBC Highways for the most recent five years available. A detailed breakdown of the information is contained in the Transport Assessment Section 2.4 and summarised below:

Junction/Link	Severity			Total
	Slight	Serious	Fatal	
B5356 Grappenhall Lane (north of the Site)	2	1	0	**3**
B5356 Grappenhall Lane (to the west of the Site)	2	1	0	**3**
B5356 Grappenhall Lane / Broad Lane roundabout	1	0	0	**1**
B5356 Grappenhall Lane / Barleycastle Lane junction	2	0	0	**2**
B5356 Stretton Road	1	0	0	**1**
B5356 Stretton Road / A49 London Road junction	4	0	0	**4**
A49 London Road	2	0	0	**2**
Broad Lane	0	1	0	**1**
Broad Lane / Church Lane junction	1	1	0	**2**
B5356 Grappenhall Lane / A50 Cliff Lane Roundabout	1	2	0	**3**
A50 Knutsford Road	2	4	0	**6**
A56 Chester Road and A56 Stockport Road	3	0	0	**3**
Glebe Avenue	1	0	0	**1**
M6 Junction 20 Dumbbell Roundabouts	12	2	0	**14**
M6 Junction 20 Merge and Diverge Points	16	2	0	**18**
A50 Cliff Lane (to the east of the Site)	2	0	0	**2**
B5158 Cherry Lane	1	1	0	**2**
Total	**53**	**15**	**0**	**68**

Table 5.1 – Accident Data

5.33. The records show that since July 2013, there have been 68 recorded accidents in the vicinity of the Site, 53 resulted in slight injuries and 15 resulted in serious injuries. There have been no fatal accidents in the search area for this time period.

Traffic Data

5.34. Discussions with Warrington Council and Highways England have informed the geographic scope of assessments and associated data collection exercise.

5.35. As a result of these discussions the following junctions require some form of consideration utilising the Warrington Multi Modal Transport Model (WMMTM), and a more conventional approach (for the junctions that are likely to experience the largest change in traffic flows) using independent traffic surveys (bold):

1. The M6 / M56 interchange;
2. **The A50 Cliff Lane / Lymm services roundabout;**
3. **Both the M6 J20 Cliff Lane dumbbell roundabouts;**
4. **The A50 Cliff Lane / Grappenhall Lane roundabout;**
5. **Grappenhall Lane / Broad Lane roundabout;**
6. Grappenhall Lane / Barleycastle Lane;
7. Cat & Lion staggered crossroads (A49 / B5356);
8. London Road / Lyons Lane;
9. Witherwins Lane / Lyons Lane roundabout;
10. A49 / A56 at Stockton Heath;
11. Lumb Brook Road canal underpass signals;
12. A56 / Ackers Road;
13. Church Lane / A56;
14. **Church Lane / Broad Lane; and**
15. **A50/A56.**

5.36. Traffic data for all junctions has been obtained from the WMMTM for future years of 2021and 2031. This data was requested by WBC so that Curtins could undertake a high-level assessment of the impacts across the wider network, including the emerging Local Plan allocations.

5.37. The WMMTM was first commissioned by Warrington Council in the autumn of 2008 and was developed in conjunction with the Highways Agency, North West Development Agency, Homes and Communities Agency and Peel Holdings

5.38. The primary reason for developing the WMMTM was to provide an evidence base to support and aid decision making regarding spatial development, transport infrastructure and services.

5.39. The model was updated in 2017 and again in May 2018 in order to test the emerging Local Plan and the Consultation 18 documentation states that the WMMTM is a software tool, based on SATURN software, which will *"enable the Council to consider local and borough wide transport impacts arising from new development. It will also allow the Council to confirm the infrastructure required to mitigate these impacts and contribute to the wider New City concept".*

5.40. The WMMTM includes all committed development and Local Plan allocations.

5.41. The junctions highlighted in bold are those junctions that may require a more conventional detailed assessment using stand-alone junction modelling software as a result of the predicted change in traffic flows. For these junctions traffic surveys were undertaken in 2017.

5.42. These junctions form the basis of the Updated Transport Assessment and the ES Addendum Chapter, albeit the WMMTM flows are also considered in the Cumulative Impacts section.

5.43. Highways England are primarily interested in junctions 2, 3 and 4 as these have implications for the strategic highway network.

5.44. The traffic survey data is included within the TA Appendix 2.1. The traffic data required for detailed assessments will be used to compare the future situations: 'without development' and 'with development'.'

5.45. For the 'without development' situation, traffic growth factors are applied to the observed data at each junction to provide a forecast of the future year traffic levels. This involves taking the existing data and extrapolating the expected year-on-year growth rate to determine the future year traffic. In the meantime, a number of other developments will become operational that will also contribute to the future traffic and this is added to give the future situation without the development (being careful not to "double count" committed developments which may already be accounted for within the traffic growth factors).

Design Year

5.46. As a result of discussions with HE / WBC, all traffic impact assessment work has been undertaken for an opening year of 2021 and ten years after the year of application (2029). The WMMTM also considers 2031.

5.47. In order to quantify the level of background traffic growth that could occur on the local network between the year of the traffic surveys (2017) and the future assessment years, National Traffic Model (NTM) growth factors, modified by TEMPRO local growth factors have been used.

5.48. The adjusted growth factors have been applied to the 2017 surveyed traffic flows to obtain the 2021 and 2029 future baseline traffic flows, as shown in the TA Traffic Flow Figures.

Committed Development Traffic Flows

5.49. As agreed with WBC/HE the traffic flows arising from the 3 HCA housing development schemes and one Bloor Homes site to the west / north-west of the Site have been obtained from the TA work carried out for those approved schemes:

- Land off Pewterspear Green Road – 180 dwellings (application ref 2016/28807);
- Appleton Cross – Mixed use scheme including 370 dwellings (application ref 2017/29930);
- Grappenhall Heys – 400 dwellings (application ref 2017/29929); and
- Land to the East of Stretton Road - 74 Dwellings (application ref 2017/31848).

5.50. Where the forecast flows from the committed schemes do not fully overlap with the area of study for this report, appropriate traffic engineering assumptions have been made on the likely origins / destinations of the committed development traffic. The committed development traffic flows are shown in the TA Traffic Flow Figures.

5.51. As requested by WBC/HE during recent discussions, a sensitivity test (i.e. not part of the official cumulative impact assessment) has also been undertaken to take account of the potential 59,010m^2 logistics development scheme (promoted by Liberty Properties) to the west of the Site. ~~This is despite the fact that the recently submitted planning application was refused by WBC and the scheme currently has no committed status.~~ More detail regarding this is included later in this Addendum paper and within the Updated TA.

Trip Generation Forecasts

5.52. The level of trips that could be generated by the scheme were initially estimated through reference to average peak hour trip rates obtained from surveys of 'commercial warehousing' schemes from within the industry standard TRICS Database.

5.53. The TRICS printouts are contained in the TA. And are summarised below:

Mode	AM (07:30 – 08:30)			PM (16:30 – 17:30)		
	Arrive	Depart	Total	Arrive	Depart	Total
Total Vehicles	0.088	0.037	0.125	0.029	0.077	0.106
LGV	0.0595	0.0145	0.074	0.0115	0.051	0.0625
OGV Vehicles	0.0285	0.0225	0.051	0.0175	0.026	0.0435
Mode	AM (07:30 – 08:30)			PM (16:30 – 17:30)		
	Arrive	Depart	Total	Arrive	Depart	Total
Total Vehicles	253	107	360	83	222	305
OGV Vehicles	82	65	147	50	75	125
Non-OGV Vehicles (Staff Movements)	171	42	213	33	147	180

Table 5.2 - Trip Generation – 287,909m² B8 Use using TRICS

5.54. The level of assumed 'staff' vehicle movements has been calculated simply by deducting the estimated number of component HGV trips from the estimated total vehicle trips.

5.55. Whilst the above is considered by Curtins to be an acceptable methodology, WBC and HE requested consideration of Omega North trip rates.

5.56. On this basis Curtins commissioned an ATC traffic survey at Omega North (on Lockheed Road) for a week in July 2018, and the resultant trip rates are as follows:

Mode	AM (07:30 – 08:30)			PM (16:30 – 17:30)		
	Arrive	Depart	Total	Arrive	Depart	Total
Total Vehicles	0.1301	0.0734	0.2035	0.0837	0.1453	0.2290

LGV	0.1041	0.0480	0.1521	0.0430	0.1089	0.1519
OGV Vehicles	0.0261	0.0254	0.0514	0.0407	0.0364	0.0771
Mode	**AM (07:30 – 08:30)**			**PM (16:30 – 17:30)**		
	Arrive	**Depart**	**Total**	**Arrive**	**Depart**	**Total**
Total Vehicles	375	211	586	241	418	659
OGV Vehicles	75	73	148	117	105	222
Non-OGV Vehicles (Staff Movements)	300	138	438	124	313	437

Table 5.3 - Trip Generation – 287,909m² B8 Use using Omega North

Trip Distribution - Staff

5.57. As agreed with WBC and HE, staff-related vehicle trips generated by the proposed development have been distributed on the local highway network based on travel-to-work data obtained from the 2011 Census for all 'in-moves' for the Middle Super Output Area (MSOA) in which the nearby Stretton Green Distribution Park is situated.

5.58. The existing travel-to-work trip distribution pattern at the Stretton Green Distribution Park is considered to represent a good proxy for the likely trip distribution of staff at the proposed development given that it is similarly located to the Site and features a similar overall level of employment uses to the proposed development.

5.59. Census-based 'in-moves' provide an indication of the numbers and destinations (on a MSOA basis) of people who work in the MSOA but who reside elsewhere. The in-moves are assigned to the routes summarised in Table 5.4 below and are expressed as a percentage of the total number of commuting movements into the MSOA: -

Route	Percentage Trip Distribution – Staff Movements
B5356 Grappenhall Lane	17%
Broad Lane	9%
A50 Knutsford Road	10%
A56 Stockport Road	3%

M6 (north)	39%
A50 Cliff Lane	3%
M56 (west)	14%
M6 (south)	5%

Table 5.4 - Trip Distribution – Staff Movements

5.60. The above staff-related trip distribution percentages are shown diagrammatically in the Updated TA.

Trip Distribution - HGVs

5.61. With regard to the distribution of HGV-related trips, and as agreed with HE / WBC during recent discussions, it is assumed that all development-related HGVs will route almost exclusively between the Site and the strategic highway network at the M56 / M6 Lymm Interchange.

5.62. At the M56 / M6 Lymm Interchange, HGV trips have been distributed based on the relative numbers of HGV trips observed to head away from the junction on each mainline during the month of June 2017. This data has been obtained from the online WebTRIS resource (formerly TRADS). Table 5.5 below sets out the calculated trip distribution percentages:

Route	Percentage Trip Distribution – HGV Movements
M6 (north)	43%
M56 (west)	25%
M6 (south)	31%
M56 (east)	2%

Table 5.5 – HGV Trip Distributions

5.63. On this basis, the above HGV-related trip distribution percentages are shown diagrammatically in the TA. The figures add up to 101% as a result of rounding up to ensure robustness.

With and Without Development Flows

5.64. The above data has been used to prepare a series of with and without development flows for use in the Transport Assessment and ES. These flows are contained diagrammatically in the TA.

Accessibility by Sustainable Modes of Travel

5.65. A key element of national, regional and local policy is to ensure that new developments are located in areas where alternative modes of travel are available. It is important to ensure that developments are not isolated but are located close to complementary land uses. This supports the aims of integrating planning and transport, providing more sustainable transport choices, and reducing overall travel and car use.

5.66. The accessibility of the Site is considered in this context for the following modes of travel:

- Pedestrian Accessibility;
- Accessibility by Cycle; and,
- Accessibility by Public Transport.

TRACC Analysis

5.67. The accessibility of the Site has been assessed through the use of TRACC Software. TRACC is the leading multi-modal transport accessibility tool which was developed in conjunction with the Department for Transport (DfT), local authorities and transport planners.

5.68. It is designed to calculate travel time using a multitude of public transport and road travel modes to give accurate journey times from many origins to many destinations in one calculation. The software covers a wide range of transport modes including walking, cycling, driving and public transport.

Pedestrian Accessibility

5.69. Research has indicated that acceptable walking distances depend on a number of factors, including the quality of the development, the type of amenity offered, the surrounding area, and other local facilities. The Chartered Institution for Highways and Transportation (CIHT) document entitled 'Providing for Journeys on Foot' suggests walking distances which are relevant to this planning application. These are reproduced in Table 5.6.

	Town Centres (m)	Commuting/School/ Sightseeing (m)	Elsewhere/Local Services (m)
Desirable	200	500	400
Acceptable	400	1,000	800
Preferred Maximum	800	2,000	1,200

Table 5.6 - CIHT Suggested Acceptable Walking Distances

5.70. To assist in summarising the accessibility of the Site by foot, an indicative pedestrian catchment plan has been produced. Plan 64076-CUR-00-XX-DR-TP-06003-P01 to the rear of the TA shows distances of 500m, 1,000m and 2,000m which are termed 'Desirable', 'Acceptable' and the 'Preferred Maximum' by the CIHT for commuting trips.

5.71. The pedestrian catchment plan confirms that the Site is located within walking distance of one established residential area; namely Appleton Thorn to the west of the Site.

5.72. However, this is based on an assessment of the existing settlement boundaries. If the emerging Local Plan policy for the Warrington Garden Suburb is ultimately adopted, and the area is subsequently developed in accordance with the plan, there would be up to around ~~7,000~~ 7,400 dwellings situated within walking distance of the Site.

5.73. In addition, it could reasonably be expected that a development of this size would transform pedestrian infrastructure in the area and bring with it a large number of associated facilities and amenities (as envisaged in WBC's "Preferred Development Option Regulation 18 Consultation" document and Submission Version Local Plan document (March 2019)).

5.74. This would therefore represent a potentially significant locally based resident workforce from which the companies occupying the proposed development could draw their employees from.

5.75. Internally, the development of the Site presents an opportunity to enhance existing rights of way to include measures such as widening, new surfacing, drainage schemes and lighting schemes to significantly enhance their attractiveness.

Accessibility by Cycle

5.76. In order to assist in assessing the accessibility of the Site by cycle, Plan 64076-CUR-00-XX-DR-TP-06004-P01 to the rear of the TA presents an 8km cycle catchment for the Site. The 8km cycling distance refers to a recommendation by Cycling England in the document 'Integrating Cycling into Development Proposals' (2009).

5.77. The catchment extends as far as Daresbury to the west, central Warrington to the north-west, Warburton to the north-east, and Arley to the south.

5.78. The road network in WBC's administrative area has been graded by the Council from 1 to 5, where grade 1 represents the best type of route in terms of cyclability and grade 5 represents the worst. The network around the Site is shown on Figure 4.3 in the TA.

5.79. Clearly, Figure 4.3 above demonstrates that the road network around the Site is currently less than ideal for cyclists, indicating that Grappenhall Lane and the two dumbbell roundabouts at the M6 J20 are rated as a grade 4 or 5. This is likely to be a reflection of the speed limit of the roads and the type of traffic that they carry in this specific area.

5.80. However, the Site's redevelopment presents an opportunity to improve local cycling infrastructure and thereby increase the attractiveness of cycling to work at the Site.

5.81. Further away from the Site, the existing cycling infrastructure improves, with the majority of existing road links to the north and west graded as 2 or 3 by WBC. Situated around 2.5km (crow fly) distance to the north of the Site center, the National Cycle Route (NCR) 62 provides an excellent off-road facility between south Manchester to the east and south Warrington to the west.

5.82. Elsewhere, local cycle route no. 5 is situated around 1.8km crow-fly distance to the west of the Site, providing a connection between Appleton Thorn, Stockton Heath, NCR 62 and local cycle route no. 2 around the east of Warrington and beyond.

5.83. Furthermore, and as discussed earlier, the potential allocation of the Warrington Garden Suburb around the north and west of the Site brings with it a potentially transformative effect on cycle-related infrastructure in the local area.

5.84. With regard to cycle parking, WBC's adopted parking standards specify that a minimum of 1 secure cycle parking space should be provided per 850m^2 of B8 use floorspace. Based on circa 287,000 of B8 use, this equates to a requirement for at least 340 cycle parking spaces spread across the development.

Accessibility by Public Transport

5.85. Plan 64076-CUR-00-XX-DR-TP-06005-P01 to the rear of the TA demonstrates those areas accessible within a 20, 40 and 60-minute public transport journey from the Site.

5.86. Accessibility by bus and rail are considered in further detail within the subsections below.

Bus Accessibility

5.87. The nearest bus stops to the Site are situated in Appleton Thorn Village some 2.3km walk distance from the center of the Site. Clearly this is less than ideal from a sustainability perspective, with the stops lying well outside the Chartered Institution of Highways and

Transportation's (CIHT's) recommended 400m walk distance threshold to a bus stop from any new development.

5.88. On the above basis it is envisaged that the development will provide new bus infrastructure and funding of a new or enhanced service.

5.89. Currently, the bus stops in Appleton Thorn are served by the following bus services:

Bus Service	Route	Peak Hourly Frequency		
		Mon – Fri	Sat	Sun/ Hols
8/8A/8E	Appleton Thorn - Cobbs Estate - Stockton Heath - Warrington	~60mins	~60mins	-
7	Appleton Thorn/Hatton - Dudlows Green - Stockton Heath - Warrington	3 to 4 services each way	5 to 6 services each way	-

Table 5.7 - Summary of Bus Service Frequencies from Chester Road

5.90. As shown in Table 5.7, bus services are relatively limited in the area which reflects the semi-rural location of Appleton Thorn in the Borough.

5.91. Nonetheless, and setting aside the potential significant improvements to public transport that could be brought about by the Warrington Garden Suburb allocation, there is already a commitment to improve bus services to the west of the Site.

5.92. It is understood that WBC have secured circa £500,000 via a S106 financial obligation from the HCA in connection with their 3 recently-approved residential schemes near Appleton, and that the obligation relates to the improvement of the no.8 bus service provision along Stretton Road (which becomes Grappenhall Lane further towards the Site).

Rail Accessibility

5.93. The nearest railway stations are in Warrington (Warrington Bank Quay and Warrington Central), both situated some 6.5km crow-fly distance from the Site. The stations lie within 8km cycle distance from the Site, making a longer journey by rail / cycle a possibility.

5.94. Both stations are collectively served by a large number of train services that route to a wide variety of destinations across the entire country at a high frequency. Whilst it is not intended to exhaustively list each destination within this report, selected destinations include Manchester, Liverpool, Blackpool, London, Glasgow, Edinburgh and Llandudno.

5.95. Enhanced cycling and public transport infrastructure in the vicinity of the Site may enhance the attractiveness of these modes of travel as part of a multi modal trip that is linked with rail.

6. Alternatives Considered

6.1. A series of alternatives have been considered as part of the evolution of the proposals. These are documented within Section 4 of the ES Part One Report and its Addendum, identifying how environmental considerations have influenced the proposals.

6.2. The alternatives have predominantly focused upon the on-site evolution of the scheme, with off-Site traffic and transport considerations remaining largely similar throughout. The exceptions to this are the site access arrangements and off-site mitigation at the Cliff Lane roundabout.

6.3. The Site access junction was at an earlier stage considered to be designed as a single roundabout. However, two junctions are now proposed to enhance permeability for buses in an attempt to minimise car travel. These two junctions are located along Grappenhall Lane with one towards the western extent of the Site and one in a more central location. Since the original TA was submitted, the easternmost site access roundabout was moved c. 45.5m to the east to alleviate noise impacts on residential properties, but all other geometry remains as per the original planning application.

6.4. With regard to off-site mitigation, amendments to the Cliff Lane roundabout and M6 Junction 20 Dumbbell roundabouts were always envisaged. Earlier iterations of the mitigation involved widening works at all junctions, but through discussions with WBC and HE it became clear that this may not be sufficient and may have unacceptable impacts with regard to pedestrian routes in the area. On this basis a revised mitigation scheme involving the realignment of the Cliff Lane roundabout and full signalisation was developed. The revised scheme is set out in more detail in the TA and later in this report.

7. Potential Environmental Effects

7.1. The key traffic and transportation impacts associated with the Proposed Development will either occur during the construction phase or the operational phase. Both phases have been considered in isolation, albeit in reality there may be a period where construction is occurring at the same time as operational activities. However, by assuming a full build out and full operation of the site in the assessment year of 2021, the traffic flows are considered to exceed anything which could be generated by a combination of construction and operational activities.

7.2. The potential effects during each phase will be considered in this section and if the traffic flow on any link exceeds the 30% threshold set out in the IEA guidance additional assessments will be undertaken to consider:

- Impact on severance;
- Impact on driver delay;
- Impact on pedestrian delay, amenity and consideration of fear and intimidation;
- Impact on accidents and road safety; and,

Impact public transport users.

7.3. The following sections outline the potential impacts of the development proposals on each of the environmental factors outlined above.

Construction Phase

7.4. The construction details for this project are set out earlier in this ES Addendum Paper.

7.5. It is considered that the construction impacts are likely to fall into three main categories, construction traffic including deliveries to Site, workers commuting to Site and Site operation activities.

7.6. There will be an increase in car parking associated with employees and sub-contractors, however it is not expected to affect adjacent streets to the site and that all parking related to workers and vehicles will be contained within the site. The CEMP will have to demonstrate and confirm this is the case.

7.7. While there will be an increase in HGV movements to site, it is considered that these will not be severe as the majority of the construction plant will be stored within the site. In addition, large amounts of material movements to and from site are not anticipated as the cut and fill for the site is anticipated to be contained as much as practical within the site, subject to confirmation of condition of material during excavation.

7.8. Overall, it is envisaged that the construction traffic generated by the above activities will be well below the 30% increase that the IEA guidance suggests as a threshold for significance and well below the figures used to test the operational impact of the scheme. On this basis, the impacts are unlikely to be significant and no detailed assessment of severance, driver delay, pedestrian delay, fear and intimidation and accidents are necessary. This is especially true on the basis that all impacts will be relatively short lived and confined to the construction period.

7.9. Notwithstanding the above and to ensure consistency with the submitted scoping report, the environmental impacts have been assessed against Table 4.2 and the potential environmental impacts that were envisaged in the scoping report. This exercise has been completed using professional judgement and the results are summarised below:

Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level
Increase in HGV traffic flows on the M6 may impact on driver delay due to construction traffic	National	Minor Negative	Moderate Adverse	High
Increase in HGV traffic flows on the M56 may impact on driver delay due to construction traffic	National	Minor Negative	Moderate Adverse	High
Increase in HGV traffic flows on the local highway network may impact on driver delay, road safety, pedestrian amenity and public transport	Local/ Neighbourhood, Borough, County	Minor Negative	Minor Adverse	High
The HGVs associated with the construction process may result in increased dust and dirt	Local/ Neighbourhood	Minor Negative	Minor Adverse	High

Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level
The construction of the Site will create a number of construction jobs over a number of years. These workers may have an impact on the local network in terms of driver delay, pedestrian amenity, road safety and public transport	Local/ Neighbourhood	Minor Negative	Minor Adverse	High
The construction of the Site will create a number of construction jobs over a number of years. These workers may have an impact on key roads.	Borough	Minor Negative	Minor Adverse	High
The construction of the Site will create a number of construction jobs over a number of years. These workers will arrive from all over the region and therefore the additional traffic may have an impact on the M6 and M56 in terms of driver delay	County	Minor Negative	Minor Adverse	High

Table 7.1 -Significance of Effect - Construction Phase - Based on Methodology set out in the Scoping Study

7.10. The high confidence level is on the basis that construction impacts will be well below the 30% threshold.

Operational Phase

7.11. To consider the operational impacts associated with the Proposed Development it is first necessary to quantify the increase in traffic on each link within the study area. This is presented below for a scenario which assumes Liberty and a scenario that doesn't. The analysis is based on the conventional approach to traffic forecasting contained in the TA and not the WMMTM.

	Without Liberty				With Liberty			
	2021 AM Peak	2021 PM Peak	2029 AM Peak	2029 PM Peak	2021 AM Peak	2021 PM Peak	2029 AM Peak	2029 PM Peak
A50 Knutsford Road/A56 Chester Road								
Knutsford Road North	3%	3%	3%	3%	3%	3%	3%	3%
Chester Road East	1%	1%	1%	1%	1%	1%	1%	1%
Knutsford Road South	4%	4%	4%	4%	4%	4%	4%	4%
Chester Road West	0%	0%	0%	0%	0%	0%	0%	0%
A56 Chester Road /Church Lane								
Chester Road East	0%	0%	0%	0%	0%	0%	0%	0%
Church Lane	10%	9%	9%	9%	10%	9%	9%	9%
Chester Road West	4%	4%	4%	3%	4%	4%	4%	3%
Broad Lane/Stockton Lane								
Church Lane North	10%	9%	9%	9%	10%	9%	9%	9%
Stockton Lane	0%	0%	0%	0%	0%	0%	0%	0%
Church Lane South	10%	9%	9%	9%	10%	9%	9%	9%
Broad Lane/Church Lane								
Broad Lane North	10%	9%	9%	9%	10%	9%	9%	9%
Church Lane	0%	0%	0%	0%	0%	0%	0%	0%
Broad Lane South	13%	13%	12%	12%	13%	13%	12%	12%
Broad Lane/Grappenhall Lane								
Broad Lane	13%	13%	12%	12%	13%	13%	12%	12%
Grappenhall Lane East	8%	8%	8%	8%	8%	7%	7%	7%

	Without Liberty				With Liberty			
	2021 AM Peak	2021 PM Peak	2029 AM Peak	2029 PM Peak	2021 AM Peak	2021 PM Peak	2029 AM Peak	2029 PM Peak
Grappenhall Lane South	5%	4%	4%	4%	4%	4%	4%	4%
Barleycastle Lane/Grappenhall Lane								
Grappenhall Hall Lane North	5%	4%	4%	4%	4%	4%	4%	4%
Barleycastle Lane	0%	0%	0%	0%	0%	0%	0%	0%
Grappenhall Hall Lane West	7%	7%	7%	6%	7%	6%	7%	6%
Grappenhall Road Western Access								
Grappenhall Road East	28%	32%	26%	30%	25%	28%	23%	27%
Secondary Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grappenhall Road West	8%	8%	8%	8%	8%	7%	7%	7%
Grappenhall Road Eastern Access								
Grappenhall Road East	47%	56%	44%	53%	42%	50%	39%	47%
Primary Access	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grappenhgall Road West	28%	32%	26%	30%	25%	28%	23%	27%
Knutsford Road/Cliff Lane/Grappenhall Lane								
Knutsford Road	4%	4%	4%	4%	4%	4%	4%	4%
Cliff Lane	21%	27%	20%	25%	20%	25%	19%	24%
Grappenhall Lane	47%	56%	44%	53%	42%	50%	39%	47%
M6 J20								

	Without Liberty				With Liberty			
	2021 AM Peak	2021 PM Peak	2029 AM Peak	2029 PM Peak	2021 AM Peak	2021 PM Peak	2029 AM Peak	2029 PM Peak
Cliff Lane West	21%	27%	20%	25%	20%	25%	19%	24%
M6 Northbound OffSlip	14%	10%	13%	9%	14%	10%	13%	9%
M6 Northbound OnSlip	9%	13%	9%	12%	20%	12%	8%	12%
M6 Southbound Offslip	17%	12%	16%	12%	9%	12%	15%	11%
M6 Southbound Onslip	8%	23%	8%	21%	16%	22%	8%	21%
Cherry Lane	0%	0%	0%	0%	0%	0%	0%	0%
Cliff Lane East	1%	1%	1%	1%	1%	1%	1%	1%
Cliff Lane/Lymm Services								
A50 Cliff Lane East	2%	2%	2%	2%	2%	2%	2%	2%
Lymm Services	0%	0%	0%	0%	0%	0%	0%	0%
Cliff Lane West	1%	1%	1%	1%	1%	1%	1%	1%

Table 7.2 - Quantification of Impact - Percentage Increase on Each Link

7.12. The results of the above exercise demonstrate that the only links to experience an increase of 30% or more is Grappenhall Lane whether the Liberty development comes forward or not. This is logical on the basis that this is the nearest road to the Site and this is the road where the access points are located.

7.13. In line with the IEA guidance it is not necessary to assess the environmental effects on any roads which experience an increase in traffic of less than 30%. Notwithstanding the thresholds, the above junctions have been assessed for capacity and delay in the accompanying TA Section 8.

7.14. Furthermore, to ensure consistency with the submitted scoping report, the potential environmental impacts for all links have been assessed against Table 4.2 and the significance is summarised below. The impact is based purely on the percentage impacts in the above table.

Location of Increased Traffic	Receptor	Environmental Impact	Significance of Effect	Confidence Level
A50 Knutsford Road/A56 Chester Road				
Knutsford Road North	County	Negligible	Negligible	High
Chester Road East	Local	Negligible	Negligible	High
Knutsford Road South	County	Negligible	Negligible	High
Chester Road West	Local	Negligible	Negligible	High
A56 Chester Road /Church Lane				
Chester Road East	Local	Negligible	Negligible	High
Church Lane	Local	Minor Negative	Minor Adverse	High
Chester Road West	Local	Negligible	Negligible	High
Broad Lane/Stockton Lane				
Church Lane North	Local	Minor Negative	Minor Adverse	High
Stockton Lane	Local	Negligible	Negligible	High
Church Lane South	Local	Minor Negative	Minor Adverse	High
Broad Lane/Church Lane				
Broad Lane North	Local	Minor Negative	Minor Adverse	High
Church Lane	Local	Negligible	Negligible	High
Broad Lane South	Local	Minor Negative	Minor Adverse	High
Broad Lane/Grappenhall Lane				
Broad Lane	Local	Minor Negative	Minor Adverse	High

Location of Increased Traffic	Receptor	Environmental Impact	Significance of Effect	Confidence Level
Grappenhall Lane East	Local	Minor Negative	Minor Adverse	High
Grappenhall Lane South	Local	Negligible	Negligible	High
Barleycastle Lane/Grappenhall Lane				
Grappenhall Hall Lane North	Local	Negligible	Negligible	High
Barleycastle Lane	Local	Negligible	Negligible	High
Grappenhall Hall Lane West	Local	Minor Negative	Minor Adverse	High
Grapenhall Road Western Access				
Grappenhall Road East	Local	High	Moderate Adverse	High
Secondary Access	Local	N/A	N/A	N/A
Grappenhall Road West	Local	Minor Negative	Minor Adverse	High
Grapenhall Road Eastern Access				
Grappenhall Road East	Local	Substantial Negative	Moderate Adverse	High
Primary Access	Local	N/A	N/A	N/A
Grappenhall Road West	Local	High Negative	Minor Adverse	High
Knutsford Road/Cliff Lane/Grappenhall Lane				
Knutsford Road	County	Negligible Negative	Negligible	High
Cliff Lane	Local	Moderate Negative	Minor Adverse	High
Grappenhall Lane	County	Substantial Negative	High Adverse	High

Location of Increased Traffic	Receptor	Environmental Impact	Significance of Effect	Confidence Level
M6 J20				
Cliff Lane West	Local	Moderate Negative	Minor Adverse	High
M6 Northbound OffSlip	National	Minor Negative	Moderate Adverse	High
M6 Northbound OnSlip	National	Moderate Negative	High Adverse	High
M6 Southbound Offslip	National	Moderate Negative	High Adverse	High
M6 Southbound Onslip	Regional	Moderate Negative	High Adverse	High
Cherry Lane	Local	Negligible	Negligible	High
Cliff Lane East	Local	Negative	Negligible	High
Cliff Lane/Lymm Services				
A50 Cliff Lane East	Local	Negligible	Negligible	High
Lymm Services	Local	Negligible	Negligible	High
Cliff Lane West	Local	Negligible	Negligible	High

Table 7.3 - Significance of Effect - Operation Phase - Based on Methodology set out in the Scoping Study

Further Assessment of the Highway Network

7.15. In line with the IEA assessment criteria detailed earlier in this report, the effects of the development will be assessed on any link which exceeds the 30% threshold in any of the periods assessed. This threshold has been extended to include links that are predicted to have a Moderate Adverse or greater Impact as per the methodology set out in the scoping study. This includes the following links:

- Grappenhall Lane;
- Cliff Lane;
- M6 Northbound On and Off Slip; and
- M6 Southbound On and Off Slip.

7.16. Further assessment of driver delay, severance, pedestrian amenity and delay, highway safety, and accessibility is provided for the above links in the following subsections.

7.17. It should be noted that all junctions are considered in detail within the Transport Assessment.

Severance

7.18. Severance is the perceived division that can occur when a community is separated. This can be due to a heavily trafficked road or a physical barrier created by the road itself.

7.19. The IEA guidelines indicate that traffic flows would have to increase by more than 30% in order for a 'slight' change in severance to occur, 60% for a 'moderate' change to occur and 90% for a 'substantial' change to occur.

7.20. The only link to experience an increase in excess of 30% is Grappenhall Lane. In line with the IEA guidance, this is considered to be a **Minor Adverse** change in severance.

7.21. However, it must be noted that there are currently very few properties on Grappenhall Lane and therefore the number of people this could impact is considered to be relatively low. There are also no existing footways and no obvious pedestrian desire lines. This means that existing pedestrian flows are limited and there is little requirement for pedestrians to be crossing the road.

7.22. Cliff Lane and the M6 Slip Roads experience increases in traffic of less than 30% and therefore the impact is considered to be **Negligible.**

Driver Delay

7.23. Traffic delays to non-development traffic can occur as a result of increased traffic flows on the network as a result of the development. This generally occurs at junctions where there are additional turning movements.

7.24. As part of the Updated Transport Assessment (Section 8), junction capacity assessments have been undertaken at the two proposed access points on Grappenhall Lane. The capacity assessments confirm that these junctions have sufficient capacity to accommodate all the traffic movements associated with the Development in the key assessment years of 2021 and 2029.

On this basis the impact on driver delay is considered to be **Minor Adverse** at these locations.

7.25. Capacity Assessments have also been undertaken for the Cliff Lane/Grappenhall lane Roundabout and adjacent M6 Dumbbell Roundabouts. The results of the assessment are contained in the Transport Assessment and this demonstrates that there are likely to be capacity issues at these junctions in 2021 and 2029 whether the development comes forward or not. The addition of the development traffic exacerbates the driver delay and therefore the impact is considered to be **Moderate Adverse.**

Pedestrian Delay and Amenity

7.26. Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads and increases in traffic generally lead to greater increases in delay for pedestrians.

7.27. However, as mentioned in the severance section above, there is limited demand for pedestrians at Grappenhall Lane and the M6 Dumbbell roundabouts. As such impacts on pedestrian delay and amenity at these locations are considered to be **Minor Adverse.**

Accidents and Safety

7.28. As part of the Updated TA (Section 2) , highway safety has been considered in detail.

7.29. Having reviewed the accidents on the wider network in detail there is nothing to suggest that the Proposed Development would exacerbate an existing highway safety issue.

7.30. Based on the above it is considered that the significance of the effect on accidents and safety would be **Minor Adverse,** at these locations.

Accessibility

7.31. In addition to the traffic effects considered above, consideration must also be given to the impact on accessibility by sustainable modes of travel.

7.32. As set out in the baseline section the Site is located in a relatively rural area and there are limited options for travel by sustainable modes of travel. The proposed development will seek to enhance this position, but the base impact would be **Negligible.**

7.33. A summary of the above is provided below:

Link Requiring Further Assessment	Receptor	Impact	Magnitude of Environmental Impact	Significance of Effect	Confidence Level
Grappenhall Lane	Local	Severance	Minor Negative	Minor Adverse	High
		Driver Delay	Minor Negative	Minor Adverse	High
		Pedestrian Delay and Amenity	Minor Negative	Minor Adverse	High
		Accidents and Safety	Minor Negative	Minor Adverse	High
		Accessibility by Sustainable Modes	Negligible	Negligible	High
Cliff Lane	Local	Severance	Negligible	Negligible	High
		Driver Delay	Moderate Negative	Minor Adverse	High
		Pedestrian Delay and Amenity	Minor Negative	Minor Adverse	High
		Accidents and Safety	Minor Negative	Minor Adverse	High
		Accessibility by Sustainable Modes	Negligible	Negligible	High
M6 Slip Roads	National	Severance	Negligible	Negligible	High
		Driver Delay	Moderate Negative	High Adverse	High
		Pedestrian Delay and Amenity	Minor Negative	Moderate Adverse	High
		Accidents and Safety	Minor Negative	Moderate Adverse	High
		Accessibility by Sustainable Modes	Negligible	Negligible	High

Table 7.4 - Significance of Effect - Operation Phase - Links Requiring Further Assessment

8. Proposed Mitigation

8.1. This section of the Paper considers the mitigation that is envisaged as part of the Development Proposals.

Construction Phase

8.2. Details of the construction programme are set out in the Phasing section of the ES Part One Report and its Addendum. It is envisaged that best practice measures will be implemented during construction to minimise impact to the local highway network.

8.3. To mitigate against increased traffic movements related to the construction activities, the following should be considered:

- Work to specified hours only to minimize disruptions;
- Co-ordinate on-site construction movements via a Site Logistics Plan. This will be prepared at a later date once a contractor is appointed. It will set out how the construction site will be set up and operated;
- List the vehicle and plant types used in detail, and assurance they can enter and exit the site with minimal disruptions to the existing highways network;
- Manage potential conflicts between construction activities and the local highways networks, including the junctions;
- Co-ordinate Pedestrian Routes and manage conflicts between pedestrian/cycle traffic and construction traffic and include the use of designated walkways, crossing points, and barriers;
- Trip Generation – identification of anticipated level of vehicular traffic during each phase of construction with an aim of reduction of required movements where possible through a combination of route planning, construction activity phasing, and optimal loadings of delivery and construction vehicles;
- Measures which can reduce vehicle use and parking demand such as car sharing, access to public modes of transportation, walking and cycling, etc.;
- Construction Access Strategy;
- Parking provisions within the site;

- Monitoring of the condition of the local highways to identify if any damage has arisen as a result of the construction activities and ensure remedial work will be carried out;
- Implementation and enforcement of safe speed limits within the work site;
- Entrance and egress to and from the site should be controlled via a gateman located within a cabin next to the entrance point;
- Maintaining access for emergency services;
- Signage Requirements;
- Banksman Requirements;
- Notification of public and local businesses;
- Delivery requirements and procedures; and
- Prevention of silt and solids being tracked onto Public Highways.

8.4. A Construction Environmental Management Plan (CEMP) will also be produced to manage the impact of the traffic associated with the construction of the Proposed Development. This is to be agreed with the local authorities and will contain a package of measures to reduce deliveries and manage deliveries to the Site. (A CEMP Framework is included at Appendix 9 of the ES Part One Report) and its Addendum.

Operational Phase

8.5. Section 7 of this Paper acknowledges that increases in traffic will result in operational impacts that range from negligible to high adverse, particularly on Grappenhall Lane, the Cliff Lane roundabout and The M6 J20 Dumbbell roundabouts.

8.6. As part of the Development Proposals, a significant package of highways mitigation is proposed to alleviate these impacts, and this is summarised below:

Highway Mitigation

8.7. An extensive package of mitigation works is proposed at the A50/Cliff Lane roundabout and M6 J20. This mitigation has also been updated in response to issues raised by HE and WBC Highways. The package includes:

- Relocation ~~and realignment~~ of the A50 Cliff Lane roundabout to the west of its existing location to enhance the storage capacity of the link between the roundabout and the motorway;

- Full signalisation of the new realigned A50 Cliff Lane roundabout with widening of all approach arms and reduction of the exit arm onto the A50 to one lane;

- Widening of the A50 link between the A50 Cliff Lane roundabout to provide two lanes for much of the links length;

- Partial signalisation of the two M6 J20 dumbbell roundabouts;

- Widening of the M6 Northbound off-slip;

- Widening of the circulatory carriageway on the two M6 J20 dumbbell roundabouts and rationalisation of the lane markings / directional arrows, implementation of a yellow box and installation of queue detectors;

- Incorporating MOVA delay management (or equivalent technology) and appropriate queue detection; and

- Widening on the eastern approach to the dumbbell roundabouts.

Measures to Enhance Sustainable Travel

- The Development Proposals will be supported by a Framework Travel Plan which seeks to minimise the level of traffic associated with staff trips, single occupancy trips and to promote sustainable modes of travel. Measures detailed in the Travel Plan and those set out below will help to mitigate the impacts of the traffic associated with the development proposals. The Framework Travel Plan is included at Appendix 2.2.

- ~~More than 1.2km of new pedestrian/cycle infrastructure will be provided on Grappenhall Road to the north of the development;~~

- ~~Significant upgrades are proposed to the existing Public Right of Way network that exists within the Site; and~~

- ~~Funding for new Public Transport services will be provided, including the provision of new infrastructure within the site itself.~~

- The Applicant is committed to providing a commuted sum towards continuing a shared cycleway/footway beyond the Application boundary extending the footway to the Grappenhall Lane / Broad Lane roundabout to provide better pedestrian permeability and connections. This would necessitate an additional 175m of footpath on existing highway land to the south of Grappenhall Lane to continue the pedestrian/cycle infrastructure to the Broad Lane roundabout;

- The Applicant is able to commit towards providing a commuted sum towards improvements to further enhance connectivity with Broad Lane in the north and/or the southern section of Grappenhall Lane where the Stobart scheme (referred to the SoS) is implementing a series of pedestrian and cycle enhancements.

- The Applicant has also agreed with WBC to safeguard a section of their land, which will be landscaped within the Application boundary extending from Grappenhall Lane to facilitate any future road widening and improvements required on Grappenhall Lane. This land will not be built upon to ensure the protection of a 25m corridor along Grappenhall Lane can be achieved utilizing the existing adopted highway and a small part of the Applicant's land.

- Following further discussions with WBC following their consultation response the Applicant and Council agreed that a commuted sum of £600,000 towards improve bus services via a S106 financial obligation would be acceptable. This level of funding is comparable to the contribution Stobart agreed on their application which was to fund three shuttle buses from different directions (Warrington, Runcorn and Cadishead).

8.8. Drawings of the mitigation schemes are included in the Updated TA contained at Appendix 1.

9. Potential Residual Effects

9.1. This section of the Addendum Paper considers the residual effects following implementation of the mitigation.

Potential Residual Effects – Construction Phase

9.2. The overall impact of the proposal in terms of traffic and transport issues during the construction phase is highlighted in the table below:

Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level	Mitigation	Residual Significance of Effect
Increase in HGV traffic flows on the M6 may impact on driver delay due to construction traffic	National	Minor Negative	Moderate Adverse	High	CEMP	Minor Adverse
Increase in HGV traffic flows on the M56 may impact on driver delay due to construction traffic	National	Minor Negative	Moderate Adverse	High	CEMP	Minor Adverse
Increase in HGV traffic flows on the local highway network may impact on driver delay, road safety, pedestrian amenity and public transport	Local/ Neighbourhood, Borough, County	High Negative	Moderate Adverse	High	CEMP	Minor Adverse
The HGVs associated with the construction process may result in increased dust and dirt	Local/ Neighbourhood	Minor Negative	Minor Adverse	High	CEMP	Minor Adverse

Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level	Mitigation	Residual Significance of Effect
The construction of the Site will create a number of construction jobs over a number of years. These workers may have an impact on the local network in terms of driver delay, pedestrian amenity, road safety and public transport	Local/ Neighbourhood	Minor Negative	Minor Adverse	High	CEMP	Minor Adverse
The construction of the Site will create a number of construction jobs over a number of years. These workers may have an impact on key roads.	Borough	Minor Negative	Minor Adverse	High	CEMP	Minor Adverse
The construction of the Site will create a number of construction jobs over a number of years. These workers will arrive from all over the region and therefore the additional traffic may have an impact on the M6 and M56 in terms of driver delay	County	Minor Negative	Minor Adverse	High	CEMP	Minor Adverse

Table 9.1 - Quantification of Impact - Residual Significance of Effect - Construction Phase

Potential Residual Effects – Operational Phase

9.3. The overall impact of the proposal in terms of traffic and transport issues during the operational phase is highlighted in the table below:

Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level	Mitigation	Residual Significance of Effect
A50 Knutsford Road/A56 Chester Road						
Knutsford Road North	County	Negligible	Negligible	High	No Specific Mitigation	Negligible
Chester Road East	Local	Negligible	Negligible	High	No Specific Mitigation	Negligible
Knutsford Road South	County	Negligible	Negligible	High	No Specific Mitigation	Negligible
Chester Road West	Local	Negligible	Negligible	High	No Specific Mitigation	Negligible
A56 Chester Road /Church Lane						
Chester Road East	Local	Negligible	Negligible	High	No Specific Mitigation	Negligible
Church Lane	Local	Minor Negative	Minor Adverse	High	No Specific Mitigation	Minor Adverse
Chester Road West	Local	Negligible	Negligible	High	No Specific Mitigation	Negligible
Broad Lane/Stockton Lane						
Church Lane North	Local	Minor Negative	Minor Adverse	High	No Specific Mitigation	Minor Adverse
Stockton Lane	Local	Negligible	Negligible	High	No Specific Mitigation	Negligible
Church Lane South	Local	Minor Negative	Minor Adverse	High	No Specific Mitigation	Minor Adverse
Broad Lane/Church Lane						
Broad Lane North	Local	Minor Negative	Minor Adverse	High	No Specific Mitigation	Minor Adverse
Church Lane	Local	Negligible	Negligible	High	No Specific Mitigation	Negligible
Broad Lane South	Local	Minor Negative	Minor Adverse	High	No Specific Mitigation	Minor Adverse

Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level	Mitigation	Residual Significance of Effect
Broad Lane/Grappenhall Lane						
Broad Lane	Local	Minor Negative	Minor Adverse	High	No Specific Mitigation	Minor Adverse
Grappenhall Lane East	Local	Minor Negative	Minor Adverse	High	No Specific Mitigation	Minor Adverse
Grappenhall Lane South	Local	Negligible	Negligible	High	No Specific Mitigation	Negligible
Barleycastle Lane/Grappenhall Lane						
Grappenhall Hall Lane North	Local	Negligible	Negligible	High	No Specific Mitigation	Negligible
Barleycastle Lane	Local	Negligible	Negligible	High	No Specific Mitigation	Negligible
Grappenhall Hall Lane West	Local	Minor Negative	Minor Adverse	High	No Specific Mitigation	Minor Adverse
Grapenhall Road Western Access						
Grapenhall Road East	Local	High Negative	Moderate Adverse	High	New Sustainable Transport Infrastructure and Highways Improvements	Minor Adverse
Secondary Access	Local	N/A	N/A	N/A	New Sustainable Transport Infrastructure and Highways Improvements	N/A
Grappenhall Road West	Local	Minor	Minor Adverse	High	New Sustainable Transport Infrastructure and Highways Improvements	Minor Adverse

Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level	Mitigation	Residual Significance of Effect
Grapenhall Road Eastern Access						
Grapenhall Road East	Local	Substantial Negative	Moderate Adverse	High	New Sustainable Transport Infrastructure and Highways Improvements	Minor Adverse
Primary Access	Local	N/A	N/A	N/A	New Sustainable Transport Infrastructure and Highways Improvements	N/A
Grappenhall Road West	Local	High	Minor Adverse	High Negative	New Sustainable Transport Infrastructure and Highways Improvements	Minor Adverse
Knutsford Road/Cliff Lane/Grappenhall Lane						
Knutsford Road	County	Negligible	Negligible	High	New Sustainable Transport Infrastructure and Highways Improvements	Negligible
Cliff Lane	Local	Moderate Negative	Minor Adverse	High	New Sustainable Transport Infrastructure and Highways Improvements	Minor Adverse

Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level	Mitigation	Residual Significance of Effect
Grappenhall Lane	County	Substantial Negative	High Adverse	High	New Sustainable Transport Infrastructure and Highways Improvements	Minor Adverse
M6 J20						
Cliff Lane West	Local	Moderate Negative	Minor Adverse	High	New Sustainable Transport Infrastructure and Highways Improvements	Minor Adverse
M6 Northbound OffSlip	National	Minor Negative	Moderate Adverse	High	New Sustainable Transport Infrastructure and Highways Improvements	Minor Adverse
M6 Northbound OnSlip	Regional	Moderate Negative	High Adverse	High	New Sustainable Transport Infrastructure and Highways Improvements	Minor Adverse
M6 Southbound Offslip	Regional	Moderate Negative	High Adverse	High	New Sustainable Transport Infrastructure and Highways Improvements	Minor Adverse
M6 Southbound Onslip	Regional	Moderate Negative	High Adverse	High	New Sustainable Transport Infrastructure and Highways Improvements	Minor Adverse

Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level	Mitigation	Residual Significance of Effect
Cherry Lane	Local	Negligible	Negligible	High	New Sustainable Transport Infrastructure and Highways Improvements	Negligible
Cliff Lane East	Local	Negative	Negligible	High	New Sustainable Transport Infrastructure and Highways Improvements	Negligible
Cliff Lane/Lymm Services						
A50 Cliff Lane East	Local	Negligible	Negligible	High	No Specific Mitigation	Negligible
Lymm Services	Local	Negligible	Negligible	High	No Specific Mitigation	Negligible
Cliff Lane West	Local	Negligible	Negligible	High	No Specific Mitigation	Negligible

Table 9.2 - Residual Significance of Effect - Operation Phase

Link Requiring Further Assessment	Receptor	Impact	Magnitude of Environmental Impact	Significance of Effect	Confidence Level	Mitigation	Residual Significance of Effect
Grappenhall Lane	Local	Severance	Minor Negative	Minor Adverse	High	New Sustainable Transport Infrastructure and Highways Improvements	Negligible
		Driver Delay	Minor Negative	Minor Adverse	High		Minor Adverse
		Pedestrian Delay and Amenity	Minor Negative	Minor Adverse	High		Negligible
		Accidents and Safety	Minor Negative	Minor Adverse	High		Minor Adverse
		Accessibility by Sustainable Modes	Negligible Negative	Negligible	High		Minor Beneficial

Link Requiring Further Assessment	Receptor	Impact	Magnitude of Environmental Impact	Significance of Effect	Confidence Level	Mitigation	Residual Significance of Effect
Cliff Lane	Local	Severance	Negligible	Negligible	High	New Sustainable Transport Infrastructure and Highways Improvements	Negligible
		Driver Delay	Moderate Negative	Minor Adverse	High		Minor Adverse
		Pedestrian Delay and Amenity	Minor Negative	Minor Adverse	High		Negligible
		Accidents and Safety	Minor Negative	Minor Adverse	High		Minor Adverse
		Accessibility by Sustainable Modes	Negligible	Negligible	High		Minor Beneficial
M6 Slip Roads	National	Severance	Negligible	Negligible	High	New Sustainable Transport Infrastructure and Highways Improvements	Negligible
		Driver Delay	Moderate Negative	High Adverse	High		Minor Adverse
		Pedestrian Delay and Amenity	Minor Negative	Moderate Adverse	High		Minor Adverse
		Accidents and Safety	Minor Negative	Moderate Adverse	High		Minor Adverse
		Accessibility by Sustainable Modes	Negligible	Negligible	High		Slight Beneficial

Table 9.3 - Residual Significance of Effect - Operation Phase

10. Additive Impacts (Cumulative Impacts and their Effects)

10.1. For the purposes of this ES we define the additive cumulative effects as:

> ***'Those that result from additive impacts (cumulative) caused by other existing and/or approved projects together with the project itself'***

10.2. The developments that are likely to have a cumulative impact when considered with the proposed development have been scoped with the Local Authority and Key Consultees during the preparation of this ES (a full list is included within Section 9 of the ES Part One Report and its Addendum).

10.3. A number of sites have subsequently been identified that are likely to be relevant for consideration as part of the Cumulative Impact Assessment (CIA) and these are included within the table and figure below. The table also identifies where there is a potential relationship between the Proposed Development and the cumulative development, and which will therefore be considered further in the cumulative assessment within the ES. Where there is not considered to be a link, a reason why this will not form part of the cumulative assessment within the ES is given.

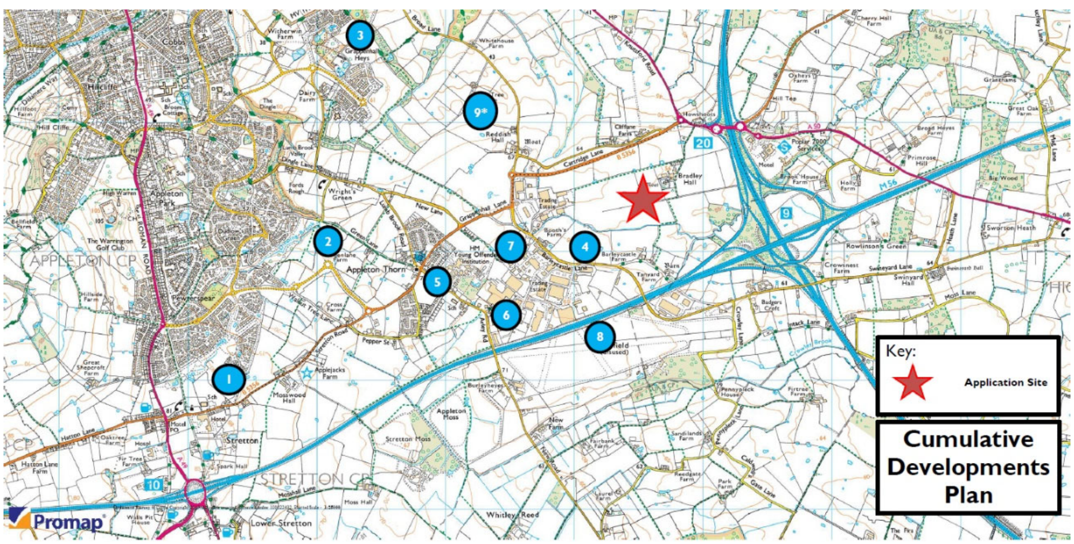


Figure 10.1: Cumulative Development Plans

	Possible Cumulative Development	Details	Status	Justification for Inclusion in Cumulative Assessment
1	Land bounded by Pewterspear Green Road, Ashford Drive, Stretton, Warrington LPA Ref: 2016/28807 Applicant - HCA	Outline Planning Application for 180 dwellings.	Planning permission granted by WMBC 28-09-2017 (3 years to implement planning permission)	It is a committed development and therefore included within the future baseline and assessed within the assessment of the Proposed Development. It does not therefore need reconsidering in the cumulative assessment for traffic and transport, noise and vibration and air quality (applicable to sites 1 to 3).
2	Land bounded by Green Lane &, Dipping Brook Avenue, Appleton, Warrington, WA4 5NN LPA Ref: 2017/29930 Applicant - HCA	Outline Planning Application for 370 dwellings	Planning permission granted by WMBC 22-01-2018 (3 years to implement planning permission)	
3	Land South of Astor Drive, East of Lichfield Avenue &, South of Witherwin Avenue, Grappenhall Heys, Warrington, WA4 3LG LPA Ref: 2017/29929 Applicant - HCA	Outline Planning Application for 400 dwellings	Planning permission granted by WMBC 22-01-2018 (3 years to implement planning permission)	

	Possible Cumulative Development	Details	Status	Justification for Inclusion in Cumulative Assessment
4	Land North of Barleycastle Lane, Appleton, Warrington Liberty Properties Development Ltd & Eddie Stobart LPA Ref: 2017/31757	Full Planning application (Major) - Demolition of all existing on-site buildings and structures and construction of a National Distribution Centre building (Use Class B8) with ancillary office accommodation (Class B1(a)), vehicle maintenance unit, vehicle washing area, internal roads, gatehouse, parking areas, perimeter fencing, waste management area, sustainable urban drainage system, landscaping, highways improvements and other associated works. (Gross internal floor space of 56,197m², together with 1,858m² of ancillary office)	Refused Planning Permission by WMBC 14-11-2018. Decision subsequently appealed (appeal reference: APP/M0655/W/19/3222603) and considered at Public Inquiry. Decision pending following closure of Inquiry. New planning application submitted under Ref: 2019/34739 and granted planning permission at planning committee by WBC in July 2019. Referred to the SoS. On the 21st May 2020, the SoS confirmed that that the new application (Ref: 2019/34739) should be called in. The SoS states that as the appeal scheme and the new application scheme are effectively identical, they should be joined. As an inquiry has already been held into the appeal scheme, he does not consider that a further inquiry is necessary. The SoS has therefore invited representations on any material change in circumstances, fact or policy, that may have arisen since the inquiry. A decision on both these schemes is therefore pending.	~~Whilst the planning application has been refused it is still to form part of a sensitivity test for traffic and therefore included within the assessment of the Proposed Development. It does not therefore need reconsidering in the cumulative assessment for traffic and transport; and in terms of traffic generation in respect of noise and vibration; and air quality.~~ It is a committed development and therefore included within the future baseline and assessed within the assessment of the Proposed Development. It does not therefore need reconsidering in the cumulative assessment for traffic and transport, noise and vibration and air quality.
5	Land to the east of Stretton Road, north of Pepper Street, Stretton Road, Appleton Thorn, Warrington LPA Ref: 2017/31848	Full Planning Application for 71 dwellings	Planning permission granted by WMBC 24-10-2018 (3 years to implement planning permission)	It is a committed development and therefore included within the future baseline and assessed within the assessment of the Proposed Development. It does not therefore need reconsidering in the cumulative assessment for traffic and transport, noise and vibration and air quality.

	Possible Cumulative Development	Details	Status	Justification for Inclusion in Cumulative Assessment
6	Blue Machinery Ltd, Barleycastle Trading Estate, Lyncastle Road, Warrington, WA4 4SY LPA Ref: 2016/28994	Full Planning Application for new industrial warehouse building for storage (replacing smaller storage building), single storey extension to existing building for further storage and two storey extension for additional office space, associated parking provision and landscaping. (1,699m^2 new build, 180m^2 and 265m^2 extensions)	Planning permission granted by WMBC 17-02-2017 (3 years to implement planning permission)	The traffic generation is not considered to be significant and therefore there is not considered to be a relationship in respect of traffic and transport; noise and vibration; and air quality. Any minimal increases in traffic will be captured within the traffic growth applied to the base year traffic flows.
7	Land off Lyncastle Way, Barleycastle Lane, Appleton, Warrington, WA4 4SN LPA Ref: 2015/25255 Morley Estates	Full Planning Application for industrial / warehouse development (Sui Generis) to facilitate a plant hire business with elements of vehicle / plant repair, servicing, maintenance and plant storage / distribution / parking and associated offices / welfare facilities, vehicular access via existing service road, acoustic bunding and fencing and other means of enclosure, soft landscaping, 36 car park spaces, fuel pumps (and associated underground tanks), vehicle / plant wash bay and sub-station (Resubmission of 2014/24618) (4,545sqm industrial warehouse building)	Planning permission granted by WMBC 16-10-2015	The traffic generation and level of car parking proposed is not considered to be significant and therefore there is not considered to be a relationship in respect of traffic and transport; noise and vibration; and air quality. Any minimal increases in traffic will be captured within the traffic growth applied to the base year traffic flows.

	Possible Cumulative Development	Details	Status	Justification for Inclusion in Cumulative Assessment
8	Former Stretton Airfield, Warrington, WA4 4RG LPA Ref: 2014/2332 Hensmill Property	Proposed construction of subterranean car storage facility (B8 Use Class) with ancillary office development and associated demolition and landscaping accessed from Crowley Lane.	Planning permission granted 23-06-2015	The traffic generation is not considered to be significant and therefore there is not considered to be a relationship in respect of traffic and transport; noise and vibration; and air quality. Any minimal increases in traffic will be captured within the traffic growth applied to the base year traffic flows.

Table 10.1 - Cumulative Development

10.4. All the above developments are included in the future baseline flows and the conventional traffic forecasting detailed in previous sections of this paper or do not generate traffic on the scoped network that Curtins considered when undertaking assessments. Therefore, the developments are already fully considered in earlier sections of this paper.

Local Plan

10.5. In addition to the individual committed developments WBC has also requested consideration of the emerging Local Plan.

10.6. The following assumptions have been made with regard to this assessment <u>based on information drawn from the Preferred Development Option Regulation Consultation document which stated the Garden Suburb will provide 7,000 new homes.</u>

10.7. <u>It should be noted that since the original ES was prepared and submitted, the Council have published their Proposed Submission Version Local Plan (March 2019), which states that the Garden Suburb will deliver around 7,400 homes, with around only 5,100 of these homes to be delivered within the Plan Period, up to 2037. Policy MD2 of the Submission Version Local Plan does not identify a phasing or development trajectory, therefore this assessment remains based on the information contained in the Preferred Development Option Consultation Document (July 2017).</u>

10.8. <u>On this basis, the cumulative assessment of 7,000 homes over the plan period of 20 years undertaken as part of the original ES provides a robust assessment.</u>

Warrington Garden Suburb Phase	Uses and Quantum identified in Preferred Development Option (July 2017)	Uses and Quantum to be identified in Six 56 Cumulative Assessment
Phase 1 0-5 years Assumed 2020-2025	406 residential units (non-Green Belt sites) 22ha employment (employment areas include Six 56 Warrington and Land around Barley Castle Lane)	Six 56 Proposals will be under construction, with part delivered within Phase 1 of the Garden Suburb. The following form part of the Garden Suburb Phase 1 and will be included within the Cumulative Assessment: • HCA sites (950 dwgs)* • 71 dwgs associated with land to east of Stretton Road* • Land North of Barley Castle Lane (Liberty Properties and Stobart) (LPA Ref: 2017/31757) - 15.7ha* *Note that these sites are already included as part of the Cumulative Assessment and already referenced as sites 1, 2, 3 and 4.
Phase 2 6-10 years Assumed 2026-2030	2610 residential units (includes 496 non-Green Belt sites and 2,114 Green Belt sites) 30.3 ha employment (employment areas include Six 56 Warrington and Land around Barley Castle Lane)	Six 56 Proposals will be completed during ~~2027/2028~~ 2029. The following form part of the Garden Suburb Phase 2 and will be included within the Cumulative Assessment: Garden City Suburb Phase 1 and 2 employment land equates to 52.3ha, beyond the 30 ha referenced in the Phase 1 and Phase 2 employment trajectory set out in the PDO. Six 56 Warrington developable area and planning application for Land North or Barley Castle Lane (LPA Ref: 2017/31757) already equates to 77.52 ha and is already included as part of the Cumulative Assessment. Garden Suburb Phase 1 and 2 residential units equates to a total of 3016 units. The Cumulative Assessment already includes 1,021 residential units. Therefore this Cumulative Assessments should include an **additional 1995 residential units** (i.e. the residual number of units identified in Preferred Development Option that not already included within Six 56 Cumulative Assessment)
Phase 3 11-15 years Assumed 2031-2035	2,144 ha residential units 45.9 ha employment	The Six 56 Proposals will be fully operational Given this Phase of the Garden City Suburb will be beyond the delivery of Six 56 Proposals this phase will not to be included within the Six 56 Cumulative Assessment
Phase 4 16-20 years Assumed 2036-2040	2,144 residential units 18.6ha employment	The Six 56 Proposals will be fully operational Given this Phase of the Garden City Suburb will be beyond the delivery of Six 56 Proposals this phase will not to be included within the Six 56 Cumulative Assessment

Table 10.2 – Local Plan Assumptions

10.9. It is understood that the above is broadly captured in the WMMTM and WBC have provided traffic data for 2021 and 2031.

10.10. The WMMTM was first commissioned by Warrington Council in the autumn of 2008 and was developed in conjunction with the Highways Agency, North West Development Agency, Homes and Communities Agency and Peel Holdings

10.11. The primary reason for developing the WMMTM was to provide an evidence base to support and aid decision making regarding spatial development, transport infrastructure and services.

10.12. The model was updated in 2017 and again in May 2018 in order to test the emerging Local Plan and the Consultation 18 documentation states that the WMMTM is a software tool, based on SATURN software, which will *"enable the Council to consider local and borough wide transport impacts arising from new development. It will also allow the Council to confirm the infrastructure required to mitigate these impacts and contribute to the wider New City concept".*

- Curtins commissioned use of the model in the summer of 2018 and asked Highways Officers at Warrington to provide outputs for the following scenarios:
  - 2021 (Including Local Plan) without development;
  - 2021 (Including Local Plan) with development;
  - 2031 (Including Local Plan) without development; and
  - 2031 (Including Local Plan) with development.

10.13. All scenarios include all committed development and the emerging Local Plan Allocations that are appropriate for each assessment year. The assessments also consider committed highway improvements, but no mitigation that is proposed as part of the Proposed Development.

10.14. The data was initially provided to Curtins in late summer 2018 but dialogue regarding a number of queries continued until October. Some of the queries related to the trip rates used in the modelling and WBC ultimately revised the modelling to reflect this, with the new data being received on the 11th January 2019.

10.15. In terms of analysing the data, it was agreed during scoping discussions that the modelled flows would not be used in individual junction assessments, but the change in flows at up to 15 individual junctions should be used as guide for whether further conventional assessment is necessary.

10.16. The results of the assessment are summarised in the following subsection.

Junctions	2021 AM Base	2021 AM Base with Dev	Difference	Percentage
1. The M6 / M56 interchange	23828	23829	2	0.0%
2. The A50 Cliff Lane / Lymm services roundabout	n/a	n/a	n/a	n/a
3. Both the M6 J20 Cliff Lane dumb bell roundabouts	3814	4009	195	5.1%
4. The A50 Cliff Lane/Grappenhall Lane roundabout	2620	2867	247	9.4%
5. Grappenhall Lane/Broad Lane roundabout	1555	1985	430	27.7%
6. Stretton Road / Barleycastle Lane	1551	1586	35	2.3%
7. Cat & Lion staggered crossroads (A49 / B5356)	1500	1544	126	8.4%
8. London Road / Lyons Lane	1460	1542	82	5.6%
9. Witherwins Lane / Lyons Lane roundabout	599	649	50	8.3%
10. A49 / A56 at Stockton Heath	1440	1450	10	0.7%
11. Lumb Brook Road canal underpass signals	1341	1349	8	0.6%
12. A56 / Ackers Road	1188	1178	-10	-0.8%
13. Church Lane / A56	823	755	-68	-8.3%

Junctions	2021 AM Base	2021 AM Base with Dev	Difference	Percentage
14. Church Lane / Broad Lane	284	343	59	20.8%
15. A50/A56	2253	2223	-30	-1.3%

Table 10.3 – WMMTM 2021 AM

10.17. The results demonstrate that if the entire development came forward in 2021, impacts in the AM peak period would only be in excess of 5% at six locations. This includes the M6 J20 and Cliff Lane Roundabout to the east of the development which is to be expected given the proximity of the site to the motorway.

10.18. However, the modelling also predicts impacts at the Grappenhall Lane/Broad Lane roundabout, London Road/Lyons Road junction, Witherwins Lane/Lyons Lane roundabout and Church Lane/Broad Lane. These locations are to the north and west. This is not expected on the basis that conventional traffic forecasting set out in the previous section and the forecasting for the Liberty development suggested the vast majority of traffic would travel towards the motorway.

Junctions	2021 PM Base	2021 PM Base with Dev	Difference	Percentage
1. The M6 / M56 interchange	22373	22375	2	0.0%
2. The A50 Cliff Lane / Lymm services roundabout	n/a	n/a	n/a	n/a
3. Both the M6 J20 Cliff Lane dumb bell roundabouts	3638	4141	503	13.8%
4. The A50 Cliff Lane/Grappenhall Lane roundabout	2461	2952	491	20.0%
5. Grappenhall Lane/Broad Lane roundabout	1316	1931	615	46.7%

Junctions	2021 PM Base	2021 PM Base with Dev	Difference	Percentage
6. Stretton Road / Barleycastle Lane	1454	1624	170	11.7%
7. Cat & Lion staggered crossroads (A49 / B5356)	1495	1567	114	7.6%
8. London Road / Lyons Lane	1419	1462	43	3.0%
9. Witherwins Lane / Lyons Lane roundabout	546	597	51	9.3%
10. A49 / A56 at Stockton Heath	1447	1479	32	2.2%
11. Lumb Brook Road canal underpass signals	1408	1388	-20	-1.4%
12. A56 / Ackers Road	1273	1234	-39	-3.1%
13. Church Lane / A56	811	800	-11	-1.4%
14. Church Lane / Broad Lane	143	162	19	13.3%
15. A50/A56	2216	2163	-53	-2.4%

Table 10.4 – WMMTM 2021 PM

10.19. The results demonstrate that if the entire development came forward in 2021, impacts in the PM peak period would also be in excess of 5% at six locations. This includes the M6 J20 and Cliff Lane Roundabout to the east of the development. However, the modelling also predicts impacts at the Grappenhall Lane/Broad Lane roundabout, Stretton Road/Barleycastle Lane, Witherwins Lane/Lyons Lane roundabout and Church Lane/Broad Lane. As with the AM, these locations are to the north and west. Again, as with the AM this is not expected.

10.20. Curtins has discussed the above results with WBC Highways and after a review of all information it would appear that:

- Some of the HGV restrictions to the west of the site have not been included in this version of the WMMTM. These restrictions prohibit HGVs travelling to the west;
- The loading point (Access) for the Proposed Development is located to the south of the Broad Lane roundabout on Barleycastle Lane. This is much further to the west than in reality with the actual access being located on Grappenhall Lane to the east of then Broad Lane roundabout; and
- It is suggested that these routes are predicted by the model due to perceived congestion at the Cliff Lane/M6 J20. However, as mentioned previously the Proposed Development is proposing a major mitigation scheme at the M6 J20 that should encourage more traffic to utilise the M6 to access the M56. This assumption is borne out by the fact that flows through the motorway junction are significantly lower in the WMMTM than the more conventional flows.

10.21. This may explain why there is an apparent bias towards the west and WBC Highways Officers have confirmed that the impacts to the west are likely to be significantly lower in the next iteration of the Local Plan modelling which will seek to address the above matters.

10.22. Notwithstanding the above, the Proposed Development will not be fully operational by 2021 and therefore the above figures also represent a significant overestimation of traffic flows in 2021.

Junctions	2031 AM Base	2031 AM Base with Dev	Difference	Percentage
1. The M6 / M56 interchange	24917	24758	-159	-0.6%
2. The A50 Cliff Lane / Lymm services roundabout	n/a	n/a	n/a	n/a
3. Both the M6 J20 Cliff Lane dumb bell roundabouts	4078	4115	38	0.9%
4. The A50 Cliff Lane/Grappenhall Lane roundabout	3019	3045	26	0.9%

Junctions	2031 AM Base	2031 AM Base with Dev	Difference	Percentage
5. Grappenhall Lane/Broad Lane roundabout	1961	2287	326	16.6%
6. Stretton Road / Barleycastle Lane	1607	1612	5	0.3%
7. Cat & Lion staggered crossroads (A49 / B5356)	1870	1883	12	0.6%
8. London Road / Lyons Lane	1719	1745	26	1.5%
9. Witherwins Lane / Lyons Lane roundabout	783	837	54	6.9%
10. A49 / A56 at Stockton Heath	1595	1621	26	1.6%
11. Lumb Brook Road canal underpass signals	1472	1485	13	0.9%
12. A56 / Ackers Road	1275	1282	7	0.5%
13. Church Lane / A56	752	746	-6	-0.8%
14. Church Lane / Broad Lane	372	390	18	4.8%
15. A50/A56	2112	1827	-285	-13.5%

Table 10.5 – WMMTM 2031 AM

10.23. The results demonstrate that if the entire development was complete by 2031, impacts in the AM in excess of 5% are only predicted at two junctions. This includes the Grappenhall Lane/Broad Lane roundabout and Witherwins Lane/Lyons Lane roundabout. As with 2021 this is not expected as the logical route to and from the development is via the M6 J20.

10.24. The results also demonstrate that by 2031 the impact of the development is significantly less than 2021. This is partly because background traffic flows will have increased as a result of the Local Plan but also because various highway Improvements will have been implemented and vehicles are reassigning to alternative routes.

Junctions	2031 PM Base	2031PM Base with Dev	Difference	Percentage
1. The M6 / M56 interchange	23778	23667	-111	-0.5%
2. The A50 Cliff Lane / Lymm services roundabout	n/a	n/a	n/a	n/a
3. Both the M6 J20 Cliff Lane dumb bell roundabouts	4245	4585	340	8.0%
4. The A50 Cliff Lane/Grappenhall Lane roundabout	3116	3218	102	3.3%
5. Grappenhall Lane/Broad Lane roundabout	2149	2338	189	8.8%
6. Stretton Road / Barleycastle Lane	2233	2303	70	3.1%
7. Cat & Lion staggered crossroads (A49 / B5356)	1898	1995	220	11.6%
8. London Road / Lyons Lane	1570	1611	41	2.6%
9. Witherwins Lane / Lyons Lane roundabout	845	917	72	8.5%
10. A49 / A56 at Stockton Heath	1639	1702	63	3.8%
11. Lumb Brook Road canal underpass signals	1486	1504	18	1.2%
12. A56 / Ackers Road	1289	1307	18	1.4%
13. Church Lane / A56	833	852	19	2.3%
14. Church Lane / Broad Lane	202	240	38	18.8%

Junctions	2031 PM Base	2031PM Base with Dev	Difference	Percentage
15. A50/A56	2294	2264	-30	-1.3%

Table 10.6 – WMMTM 2031 AM

10.25. The results demonstrate that if the entire development was complete by 2031, impacts in the PM in excess of 5% are predicted at five junctions. This includes the M6 J20, Grappenhall Lane/Broad Lane roundabout, Cat and Lion junction, Witherwins Lane/Lyons Lane roundabout and Church Lane Broad Lane. As with all other scenarios this is not expected as the logical route to and from the development is via the M6 J20.

10.26. As with the AM peak period, the results demonstrate that by 2031 the impact of the development is significantly less than 2021. This is again partly because background traffic flows will have increased as a result of the Local Plan but also because various highway Improvements will have been implemented and vehicles are reassigning to alternative routes.

Summary

10.27. Having undertaken a detailed review of the results Curtins has reached the following conclusions.

10.28. The 2021 assessment results assume full completion of the development. In reality the development is unlikely to be completed until 2028/2029 and on this basis, attention should be focused on 2031.

10.29. The results for all scenarios appear to show a significant amount of traffic arriving and departing from the west or north west via the Grappenhall Lane/Broad Lane roundabout. This is counter intuitive given the location of the site adjacent to the M6 J20, and the fact that there are HGV restrictions to the west of the site.

- Some of the HGV restrictions to the west of the site have not been included in this version of the WMMTM;
- The loading point (Access) for the Proposed Development is located to the south of the Broad Lane roundabout on Barleycastle Lane. This is much further

to the west than in reality with the actual access being located on Grappenhall Lane to the east of then Broad Lane roundabout; and

- The model does not include consideration of any mitigation at the M6 J20.

10.30. The above explains the apparent bias towards the west, and the traffic flows predicted by the WMMTM at the M6 J20, Cliff Lane/A50 roundabout and A50/A56 junctions are all less than the flows predicted in the conventional traffic forecasting contained in the previous sections of this report.

10.31. Discussions with Highways Officers at WBC have indicated that flows to the west are likely to be lower than predicted in further iterations of the Local Plan modelling, particularly as a result of the mitigation proposed at the M6 J20.

10.32. The WMMTM appears to confirm that the utilisation of the conventional flow data contained in the TA and earlier in this report is a robust methodology that adequately considers cumulative impacts. The two different assessments correlate well.

10.33. To conclude, it is recognised that there will be environmental impacts resulting from cumulative development, particularly the Local Plan. However, the assessment undertaken as part of this ES is robust and future planning applications for development will consider this in more detail at the relevant time and will include details of any relevant highways mitigation schemes associated with the planning applications.

11. Conclusion

11.1. This ES Technical Paper Addendum 'Traffic and Transportation' has been prepared by Curtins and considers the proposed Six 56 Warrington development upon the traffic and transportation conditions within the vicinity of the Site.

11.2. The redevelopment of this Site provides an opportunity to deliver 287,000m^2 of B1 (a) and B8 uses including office use, associated servicing and infrastructure including car parking and vehicle and pedestrian circulation, alteration of existing access road into Site including works to the M6 Junction 20 dumbbell roundabouts and realignment of the A50 junction, diversion of Public Rights of Way (route no's 23 &28), noise mitigation, earthworks to create development platforms and bunds, landscaping including buffers, creation of drainage features, electrical substation, pumping station, and ecological works.

11.3. The methodology is based on the Institute of Environmental Management and Assessment (IEMA) 'Guidelines for the Environmental Assessment of Road Traffic' (1993) and in accordance with the guidance the following rules will be used as a screening process to delimit the scale and extent of the assessment:

- "Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and
- Include any other specifically sensitive areas where traffic flows have increased by 10%, or more."

11.4. At the various agreed junctions within the study area, the impact in terms of capacities, queues and driver delays have been assessed as part of the TA. The junctions assessed have been shown to either function within capacity or explained as to why those that exceeded capacity did so.

11.5. Any identified highway mitigation associated with the development has also been set out within this ES, with more detail being covered within the Updated TA (Appendix 2.1).

11.6. Whilst the proposals are considered to be appropriate for the Site, it is accepted that the development will have an impact on the environment both in the context of the Site and the wider areas.

11.7. The assessment of the impacts has shown that no higher significance of effects than a moderate adverse impact was shown.

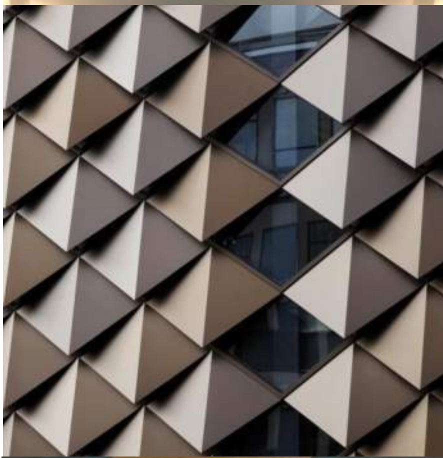
11.8. These impacts can be both positive and negative and for the latter forms it has been demonstrated they can be suitably mitigated against in order to keep residual impacts to a minor averse or negligible level.

11.9. The Updated TA determines the highway impact of the traffic and transportation aspects of the Proposed Development and considers these in full, making recommendations for junction improvements and other highway mitigation as appropriate. Any such mitigation has been developed through close liaison with the relevant highway authority in order to ensure the proposals are appropriate.

11.10. The additional considerations which have been highlighted and discussed within this section of the ES have cumulated in identifying that all residual impacts associated with traffic and transport issues are no greater than minor adverse with regard to their risk and severity.

12. Appendices

Appendix 1 – Transport Assessment

Six 56 Warrington

Updated Transport Assessment

Curtins Ref: 64076/~~TA01~~TAV05
Revision: ~~Final~~ Updated TA to Support ES Addendum
Issue Date: ~~18 February 2019~~ 05 June 2020

Merchant Exchange
17 – 19 Whitworth Street West
Manchester. M1 5WG.
Tel: 0161 236 2394
www.curtins.com

Control Sheet

This report has been prepared for the sole benefit, use, and information for the client. The liability of Curtins with respect to the information contained in the report will not extend to any third party.

Author	Signature	Date
Fred Frempong BSc MSc MCIHT Principal Transport Planner	F. Frempong	~~18 February 2019~~ 05 June 2020

Reviewed	Signature	Date
Alex Vogt BSc (Hons) MSc FCIHT TPP Director of Transport Planning	A. Vogt	~~18 February 2019~~ 05 June 2020

Authorised	Signature	Date
Alex Vogt BSc (Hons) MSc FCIHT TPP Director of Transport Planning	A. Vogt	~~18 February 2019~~ 05 June 2020

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1.0 Introduction

1.1 Project Introduction

1.1.1 This Updated Transport Assessment (TA) has been prepared by Curtins on behalf of Langtree PP and First Panattoni in connection with an outline planning application for a major employment development in Warrington known as Six 56 Warrington.

1.1.2 This document is an update to the existing TA and will be submitted to support the Environmental Statement (ES). The underlined text in this document highlights where text has been updated to resolve issues raised during the application process; whereas text in strikethrough represents text which is no longer relevant and/or has been updated accordingly.

1.1.3 The Site covers approximately 98.09ha in area (including the land required for the roundabout) and is situated to the immediate north-west of the M6 / M56 Lymm motorway interchange and to the south of the B5356 Grappenhall Lane.

1.1.4 The planning description ~~is~~ was as follows:

'The outline application (all matters reserved except for means of access) comprises the construction of up to 287,909m² (3,099,025ft²) (gross internal) of employment floorspace (Use Class B8 and B1(a) offices) including change of use of Bradley Hall Farmhouse to B1 (a) office use (335m² (3,600ft²)) and associated servicing and infrastructure including car parking and vehicle and pedestrian circulation, alteration of existing access road into Site including works to the M6 J20 dumbbell roundabout and realignment of the A50 junction, diversion of Public Rights of Way (route no's 23 &28), noise mitigation, earthworks to create development platforms and bunds, landscaping including buffers, creation of drainage features, electrical substation, pumping station, and ecological works.'

1.1.5 Since the submission of the planning application, consultation responses have been received from key consultees and further discussions have taken place with Warrington Borough Council (WBC) and their key consultees (namely WBC Highway Officers, Highways England (HE) and their consultants Atkins, WBC Environmental Protection Officers, Historic England and WBC Conservation Officer and Ramboll landscape designers acting on behalf of WBC.

1.1.6 The revised application description is as follows:

'The outline application (all matters reserved except for means of access) comprises the construction of up to 287,909m² (3,099,025ft2) (gross internal) of employment floorspace (Use Class B8 and B1(a) offices), demolition of existing agricultural outbuildings and associated servicing and infrastructure

including car parking and vehicle and pedestrian circulation, alteration of existing access road into site including works to the M6 J20 dumbbell roundabouts and realignment of the existing A50 junction, noise mitigation, earthworks to create development platforms and bunds, landscaping including buffers, creation of drainage features, electrical substation, pumping station, and ecological works.'

1.1.7 The location of the Site is shown below in **Figure 1.1**.

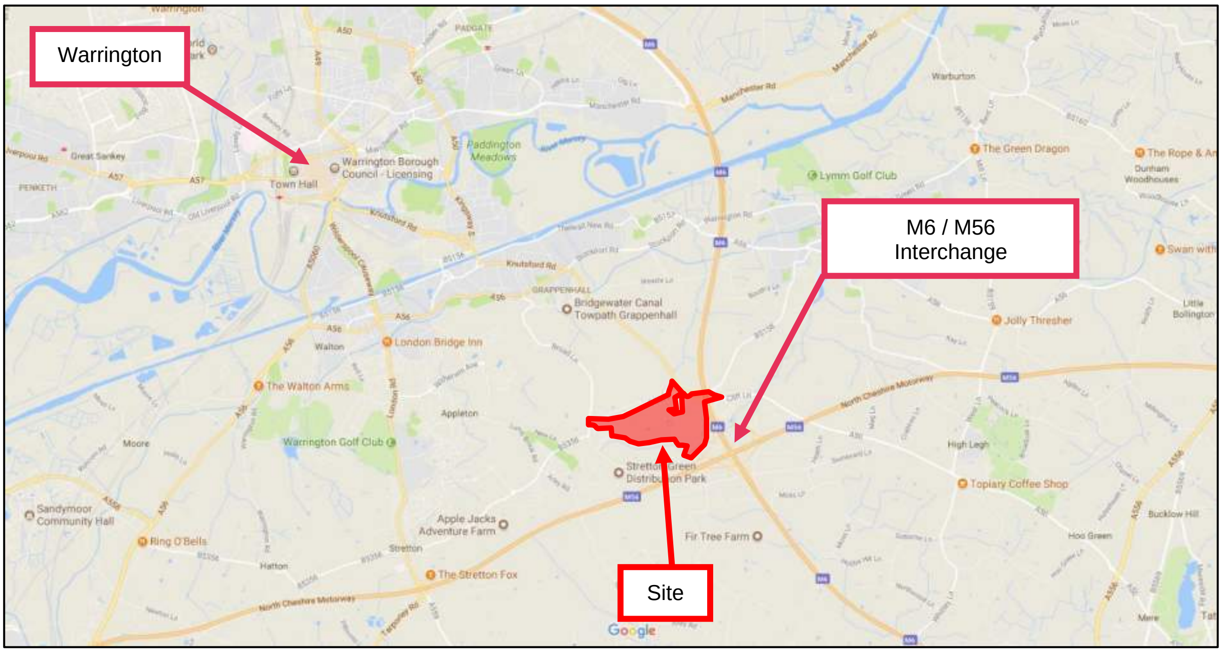


Figure 1.1 – Site Location Plan – Wider Context

1.1.8 The Site is shown in a more local context in **Figure 1.2**:

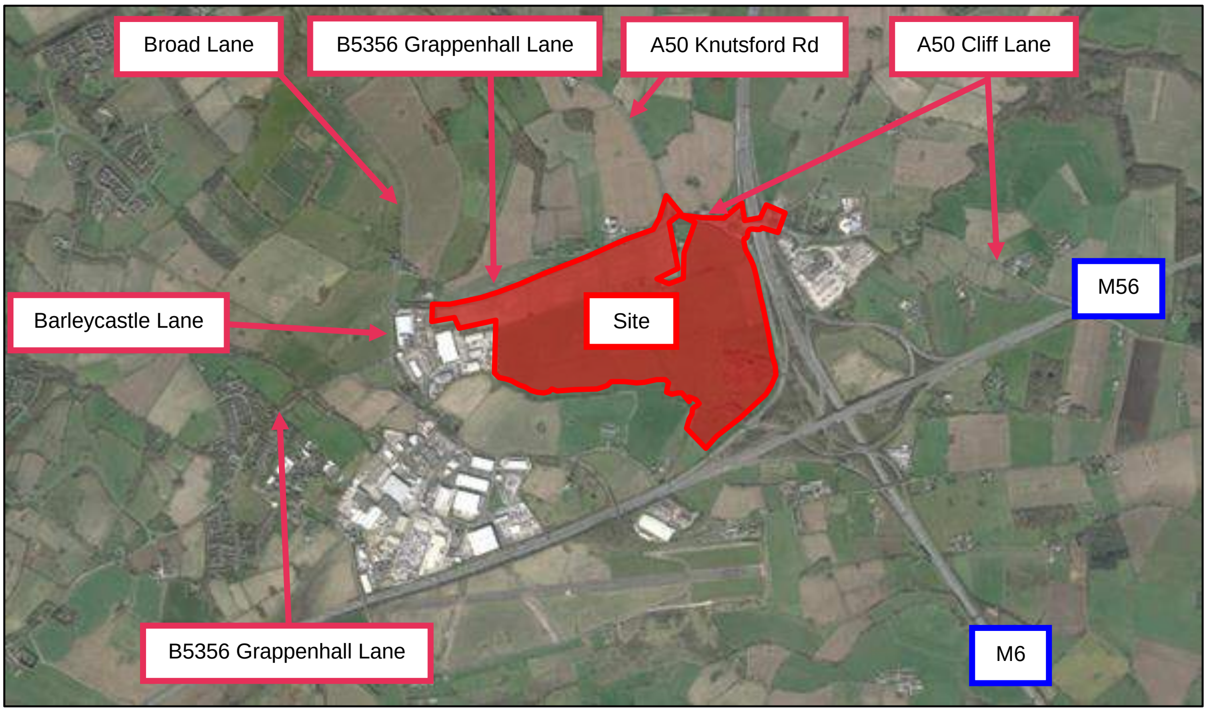


Figure 1.2 – Site Location Plan – Local Context

1.2 Background

1.2.1 Warrington's Local Plan Core Strategy (July 2014) sets out a planning framework for guiding the location and level of development in the borough up to 2027 via a series of place-specific policies to promote a positive and proactive approach to managing development within the borough. These policies are further elaborated in **Section 3**.

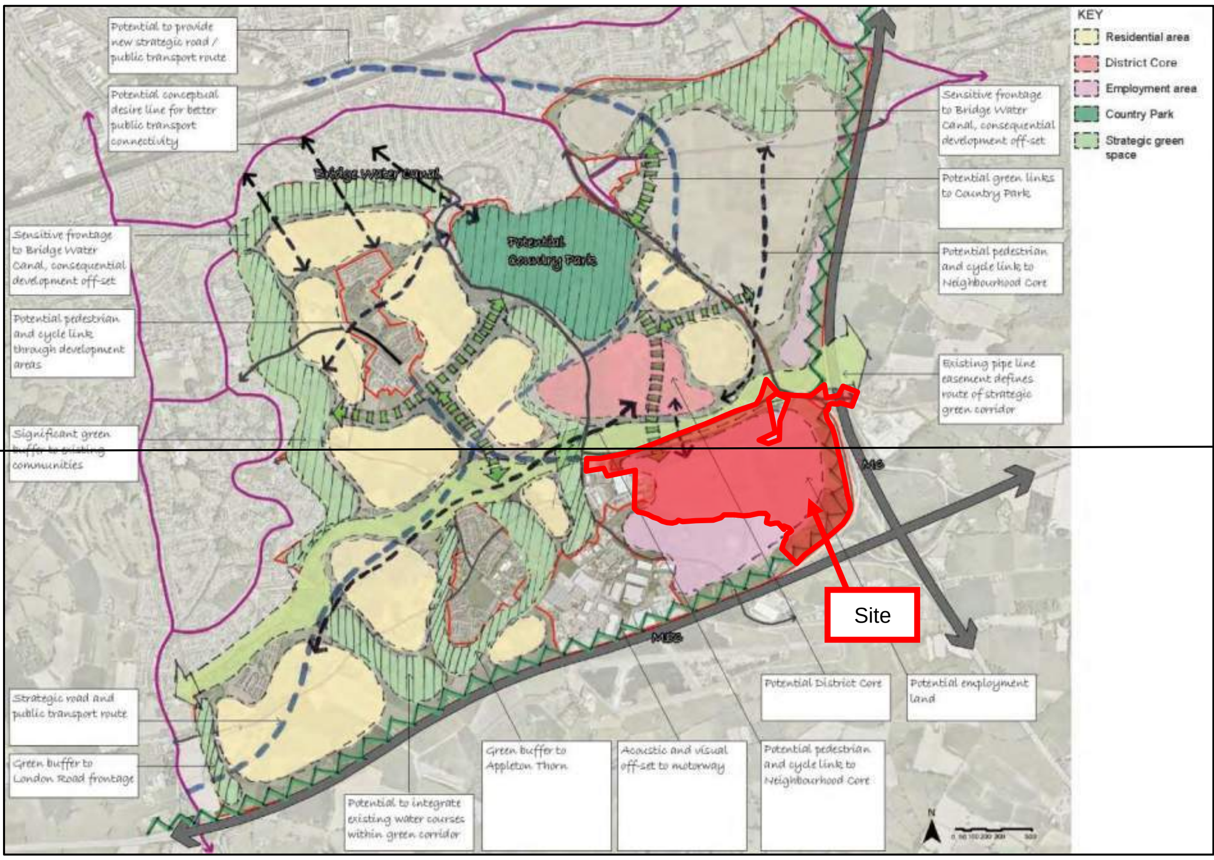
Emerging Local Plan – General

1.2.2 ~~It is anticipated that the draft~~ The Submission Version of the Local Plan ~~will be~~ was published in March 2019~~. It will then be subject~~ and was subsequently subjected to a further period of public consultation. ~~prior to examination~~ Submission of the Local Plan for its examination in public and formal adoption ~~in late 2019~~ is envisaged to take place later in 2020.

1.2.3 Warrington Borough Council's Preferred Development Option Regulation 18 Consultation (July 2017) and Submission Version of the Local Plan (March 2019) both ~~identifies~~ identify the Site for redevelopment for Employment Use.

1.2.4 The evidence base prepared to inform the Preferred Development Option Regulation 18 Consultation Document, includes The South Warrington Urban Extension Framework Plan Document (SWUEFP) (June 2017) and Warrington Garden Suburb Development Framework Document (March 2019) produced on behalf of Warrington Borough Council, ~~which~~ also classifies the Site for redevelopment for Employment Use.

1.2.5 The “Preferred Development Option Regulation 18 Consultation” document ~~indicates~~ indicated that the Warrington Garden Suburb will provide for the development of some 7,000 new homes and other facilities along with some 117ha of land set aside for employment uses, centred around 3 garden neighbourhoods. An extract of the sketch masterplan for this area is shown ~~overleaf~~ on **Figure 1.3**~~:~~. Policy MD2 of the Submission Version of the Local Plan (March 2019) states that the Garden Suburb will deliver around 7,400 homes, with only 5,100 of these homes to be delivered within the Plan period up to 2037.



~~**Figure 1.3** – WBC’s *‘Warrington Garden Suburb’* Land Allocation Proposal (Extract from Figure 7 of *“Preferred Development Option Regulation 18 Consultation”* document dated July 2017)~~

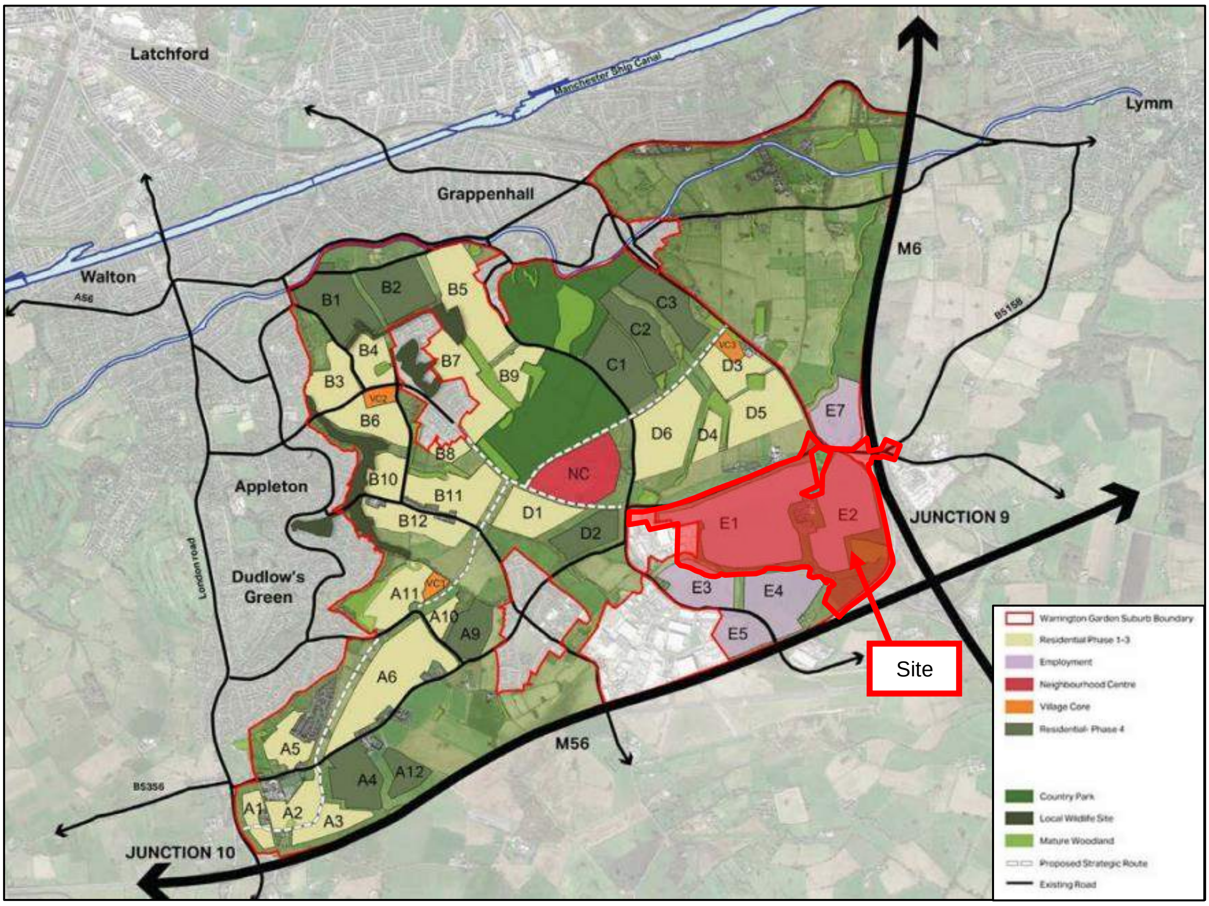


Figure 1.3 – WBC's *'Warrington Garden Suburb'* Land Allocation Proposal (Extract from Figure 5.6 of "*Warrington Garden Suburb Development Framework" document dated March 2019*)

Emerging Planning Policy and Strategic Modelling Tools

1.2.6 The above-mentioned *"Preferred Development Option Regulation 18 Consultation"* document from July 2017 and Submission Version Local Plan (March 2019) indicates that one of the key next steps for the Council would be to develop the Warrington Multi-Modal Transport Model (WMMTM).

1.2.7 The WMMTM is a software tool, based on SATURN software, which will *"enable the Council to consider local and borough wide transport impacts arising from new development. It will also allow the Council to confirm the infrastructure required to mitigate these impacts and contribute to the wider New City concept".*

1.2.8 The WMMTM is now fully operational and available for testing by developers and will be discussed later in this report.

Emerging Planning Policy – Anticipated Phasing and Infrastructure

1.2.9 The Regulation 18 consultation document indicates that *"There is a significant requirement for infrastructure to support this level of growth, including a network of new distributor roads…...To achieve the full development of the area may require a further higher level connection across the Ship Canal".*

1.2.10 Further details on how the Council envisage the development of the area are also provided in WBC's *"South Warrington Urban Extension Framework Plan Document"* dated June 2017 and Garden Suburb Development Framework (March 2019).

1.2.11 This document provides an indication of how the development of the entire sout h Warrington area might be phased over time, and the type of infrastructure that might be required to be in place to help deliver each phase.

1.2.12 The document also envisages 4 phases for the overall scheme, to come forward over the ~~entire~~ plan period of 20 years.

Post-Submission Discussions

1.2.13 As mentioned in the earlier section, consultation responses have been received from key consultees and further discussions have taken place with Warrington Borough Council (WBC) and their key consultees since the submission of the planning application. The comments pertaining to Highways are that further clarification and information has been requested by HE and WBC Highway's Officer relating to the design of the M6 mitigation and the WMMTM traffic model.

1.2.14 The indicative masterplan and parameters plans have also evolved to address comments raised by other key consultees. Curtins have also provided this information to HE and WBC as part of post-submission notes (**Document Reference 64076/PSN1**, **64076/WBCPSN1**, **64076/PSN2**, and **64076/PSN3**), and this is reflected in the updated models in the subsequent sections of the report. The contents of these correspondences have been included in **Appendix A** to the rear of this report.

1.3 Purpose of This Report

1.3.1 The TA has been prepared to inform Highways Officers at WBC and HE with regard to all traffic and transportation matters associated with the development.

1.4 Scope of the Report

1.4.1 Curtins have undertaken significant engagement with senior representatives from both WBC's Highway Development Control team and HE at pre-application stage with a view to submitting a planning application submission ~~in due course~~. These discussions are briefly summarised below.

1.4.2 Curtins first met an officer from WBC (Mr Andy Oates) on 19th July 2017 to discuss the scope of the TA work that would be required to accompany any future submissions.

1.4.3 This was followed by a meeting with a number of WBC Officers on 14th February 2018, including representatives from Highways, to discuss the ES Scoping process and the general approach to assessing the scheme using both a 'conventional' approach and the strategic modelling tools (e.g. WMMTM) that are available.

1.4.4 A formal pre-application meeting with WBC Officers took place in June 2018 and a number of meetings and correspondence has taken place since that time.

1.4.5 Curtins also met representatives from HE (Mr Neville McKenzie from WSP and Mr Ben Laverick, Assistant Asset Manager at HE) on the 24th July 2017 to discuss the scope of the technical work that would be required to accompany any future submissions from HE's perspective. HE Officers were also present at the formal pre-application meeting that took place in June 2018.

1.4.6 Finally, in November and December 2018, email correspondence and meetings took place with officers at WBC and HE to finalise the parameters to be used in this assessment.

1.4.7 The above meetings led to the agreement of the broad scope of the TA / Environmental Impact Assessment (EIA)-related work that is likely to be required, as briefly summarised below:

- A description of the highway network in the vicinity of the Site;
- A review of the accident record in the vicinity of the Site for a five-year period;
- A summary of the development proposals;
- A summary of relevant transport planning policy;
- A review of accessibility by sustainable modes of travel;
- Information regarding traffic generation, distribution, growth, committed development and assignment;
- Consideration of highway impacts at the following junctions utilising the WMMTM, and a more conventional approach (at the junctions that are predicted to have the greatest change in traffic flows) using independent traffic surveys:

1. The M6 / M56 interchange;
2. **The A50 Cliff Lane / Lymm services roundabout;**
3. **Both the M6 J20 Cliff Lane dumbbell roundabouts;**
4. **The A50 Cliff Lane / Grappenhall Lane roundabout;**
5. **Grappenhall Lane / Broad Lane roundabout;**
6. Grappenahll Lane / Barleycastle Lane;
7. Cat & Lion staggered crossroads (A49 / B5356);
8. London Road / Lyons Lane;
9. Witherwins Lane / Lyons Lane roundabout;
10. A49 / A56 at Stockton Heath;
11. Lumb Brook Road canal underpass signals;
12. A56 / Ackers Road;
13. Church Lane / A56;
14. **Church Lane / Broad Lane; and**
15. **A50/A56.**

- Commentary on the highway impact associated with the development proposals; and
- Identification of any necessary mitigation.

1.4.8 Cheshire East Highways were not consulted as part of the scoping discussions on the basis that the predicted traffic flows on their network would be negligible.

1.5 Structure of the Report

1.5.1 Following this introduction, **Section 2** of the report provides a comprehensive description of the existing Site and its location.

1.5.2 **Section 3** provides details regarding the policy context whilst **Section 4** considers the development proposals.

1.5.3 The accessibility of the Site is considered in **Section 5** whilst **Section 6** considers the traffic forecasting.

1.5.4 **Section 7** considers the WMMTM outputs and **Section 8** contains the results of capacity assessments for the local and strategic highway network.

1.5.5 **Section 9** contains a summary of the report and conclusions.

2.0 Existing Conditions

2.1 Site Location and Context

2.1.1 The Site is located in the North West of England, predominantly within the local authority area of Warrington.

2.1.2 It is located to the southeast of the town of Warrington (approximately 6 km (3.5 miles) from the town centre) and between the cities of Liverpool and Manchester (approximately 22km (13 miles) and 31km (19 miles) respectively). It is also located approximately 16km (10 miles) from Manchester Airport.

2.1.3 The M56 Motorway and M6 Motorway interchange (Junction 20 and 20A of the M6 and Junction 9 of the M56 Motorways) is located adjacent to the south east of the Site, with the M56 Motorway running east-west to the south of the Site, providing links to Cheshire and Greater Manchester; and the M6 Motorway running north-south to the east of the Site, provide links to Lancashire, Staffordshire and Greater Manchester, as well as the M62 Motorway at Junction 22A of the M6 Motorway to the north, which provides links east-west to Liverpool, Greater Manchester and Yorkshire.

2.1.4 The Site location is shown on **Figure 1.1 and 1.2** earlier in this report.

2.1.5 The Site is bound by the B5356 Grappenhall Lane and the A50 Cliff Lane to the north and motorway slip road to the east. Appleton Thorn Trading Estate, Barleycastle Trading Estate and Stretton Green Distribution Park are located to the west and Bradley Brook runs east-west to the southern boundary.

2.1.6 The Site is predominantly farm land (arable and pastoral for cattle), with a series of hedges and trees to field boundaries. Bradley Hall Farm consists of farm house and a series of farm buildings as well as a further residential property. There are a number of other neighbouring residential properties that are all within adjacent to, but outside the Application Site.

2.1.7 Bradley Hall moated Site is a Scheduled Ancient Monument (SAM) located within the Site boundary, to the eastern part of the Site, adjacent to the farm buildings. It comprises the buried and earthwork remains of a medieval moated Site for a medieval manor house, which is to be retained. The moated island is partly occupied by the farm house associated with Bradley Hall Farm, which is excluded from the Scheduling, but which will be retained and converted to another use as part of a separate application to be submitted at a later date following the grant of any outline permission ~~the Proposed Development~~.

2.1.8 Beyond the northern boundary of the Site (within the triangle of land outside of the Application Site to the south of Cliff Lane) is a residential property and associated outbuildings, which is accessed from the A50 Cliff Lane via the same access as Bradley Hall Farm.

2.1.9 Vehicular access to the Site is currently via Bradley Hall Farm from the A50 Cliff Lane, which has direct access to Junction 20 of the M6 Motorway, as well as Junction 9 of the M56 Motorway. There are also four field access points available from the Site's 1.15km long frontage to the B5356 Grappenhall Lane.

2.2 Local Highway Network

B5356 Grappenhall Lane

2.2.1 As stated above, the B5356 Grappenhall Lane runs alongside the northern boundary of the Site for circa. 1.6km in an east-west alignment between a three-arm roundabout with the A50 Cliff Lane to the east, continuing southbound past a three-arm roundabout with Broad Lane, before branching off at a priority junction with Barleycastle Lane towards the south and continuing as Grappenhall Lane to the south-west. Here, the B5356 Grappenhall Lane extends further towards the southwest for a length of approximately 1.2km until it reaches a priority junction with Lumb Brook Road and Green Lane, before continuing as the B5356 Stretton Road.

2.2.2 The carriageway width of the B5356 Grappenhall Lane is around 7.3m along the Site frontage, with verges of varying width on both sides and no pedestrian infrastructure. The road is unlit along most of its length and is subject to a 60mph national speed limit. To the south of the three-arm roundabout, this speed limit is reduced to 40mph, and the road is subject to a 7.5 tonnes weight restriction, which continues to be enforced when the road continues towards the southwest.

2.2.3 Towards the southwest of the Site, the B5356 Grappenhall Lane narrows to a width of circa. 5.5m with one lane in either direction. There is also a narrow footway of approximately 1m wide on the southern edge of the road, where some footways comprised dropped kerbs and tactile paving, although the road remains unlit throughout its length. There is also a community speed check area in the vicinity of the priority junction with New Lane.

2.2.4 Leading into Appleton Thorn, the speed limit further drops to 30mph, where this is made clear using painted red chevrons and "SLOW" road markings. The footway provision widens to approximately 1.5m, and street lighting is available at more regular intervals in the vicinity of residential dwellings.

2.2.5 In Appleton Thorn, the B5356 Grappenhall Lane serves primarily as a route for the residential dwellings bordering the road, and provides access to a school, place of worship, public house, and a correctional facility.

B5356 Stretton Road

2.2.6 The B5356 Stretton Road commences at a priority junction with Lumb Brook Road and Green Lane as a continuation of the B5356 Grappenhall Lane, before extending southwest for circa. 2km into Stretton. The road terminates at a signalised junction with the A49 London Road.

2.2.7 The road shares similar characteristics with the B5356 Grappenhall Road, however the road widens slightly, and the speed limit increases to 40mph past Appleton Thorn. There is also no footway provision nor street lighting outside Appleton Thorn.

2.2.8 Approaching the three-arm roundabout with Blackcap Road, there is a segregated cycleway which allows cyclists to utilise the road in a safe manner. There are also pedestrian refuge islands outside the roundabout with dropped kerbs and tactile paving to facilitate crossing.

2.2.9 Leading into Stretton, the speed limit drops to 30mph and the road passes through several school zones and residential dwellings. Here, footway provision of an average width of 1m is present along the northern side of the road and is occasionally separated from the road by a grass verge. Street lighting is also present in more regular intervals, as the road provides access to more schools and places of worship.

2.2.10 There are several bus stops present in pairs along the B5356 Stretton Road which primarily host school bus services between Warrington, Hatton, and Appleton Thorn. There is additional infrastructure such as a cantilever shelter, pole, and timetable information.

A50 Cliff Lane / M6 J20

2.2.11 The road commences as a continuation of the A50 Knutsford Road approximately 250m to the north of the Site, heading south until it reaches a three-arm roundabout with the B5356 Grappenhall Lane. Then, as stated above, Cliff Lane runs alongside the north-eastern boundary of the Site in an east-west alignment between the M6 J20 to the east (and beyond to Knutsford) and Grappenhall Lane to the west.

2.2.12 In the vicinity of the 140m or so long section of frontage that the Site benefits from, the carriageway of Cliff Lane tapers down from the roundabout entry / exit to a width of around 7.4m, with verges on both sides. There is a narrow footway of approximately 0.5m wide on the northern edge of the road, which branches along Junction 20 of the M6 and is separated from the main road with a grass verge. Where it meets the junction, there is an additional dropped kerb and tactile paving to allow pedestrian to cross along the outer circumference of the roundabout.

2.2.13 The road is lit by regularly spaced lighting columns along the extent of the Site frontage and is subject to a 60mph national speed limit.

2.2.14 Junction 20 off the M6 takes the form of a dual roundabout above and on either side of the north-south M6 alignment. Vehicles headed towards the west of the Site can either go directly into a slip road which merges with the M6 approximately 500m towards the north, follow both roundabouts to a slip road which merges with the southbound M6 or cross over with the M56, or follow both roundabouts along a continuation of the A50 Cliff Lane which leads to Knutsford in the southeast.

2.2.15 For this junction, the roundabouts comprise of a single carriageway with two lanes and a width of approximately 8m including the central hatching, whereas the roads connecting the roundabouts comprise a dual carriageway with a total width of approximately 19m. There is also a narrow footway on the northern edge of the road connecting the roundabouts. Flow of traffic along the roundabouts is controlled via numerous traffic lights on several arms of the roundabouts.

A50 Knutsford Road

2.2.16 The A50 Knutsford Road commences as a continuation of Cliff Lane approximately 250m towards the north of the Site, where it continues in an approximate northwest alignment for a length of circa. 6km, passing through Grappenhall, Latchford, leading directly into the inner circle of Warrington. Here, the A50 Knutsford Road terminates at a signalised four-arm junction with the A49 Wilderspool Causeway.

2.2.17 In the vicinity of the Site, the A50 Knutsford Road comprises a single carriageway with an approximate width of 5.5m and up to one lane in each direction. There is a narrow footway provision of 0.5m on the eastern edge of the road for its entire length, however the road is mostly unlit. This footway is also complete with dropped kerbs. The road is subject to a national speed limit of 60mph.

2.2.18 Approaching Grappenhall, the road widens to circa 7.5m including the central hatching, and footway provision is available on both sides of the road, some of which are separated from the road by a grass verge. Past the canal and towards the southeast of Grappenhall, the road narrows as the speed limit drops to 30mph. This is enforced with road markings, the addition of a cycle lane and pedestrian refuge island, along with traffic cameras.

2.2.19 The road widens after the pinch point to an average width of 8m with up to two lanes in one direction at certain junctions to accommodate turning lanes. The footway separated by the grass verge continues, with the addition of more pedestrian refuge islands along the road to facilitate crossing.

2.2.20 The A50 Knutsford Road hence runs along the eastern edge of Grappenhall and meets the A56 Stockport Road at a signalised junction at the northeast of Grappenhall, before continuing towards the west and providing access to several amenities such as a Tesco Express, Co-Op, schools, public houses, and several food/drink establishments. Throughout its entire length, the road mainly serves as a route for the residential dwellings bordering the road.

2.2.21 At the signalised junction in Grappenhall with the A56 Stockport Road, there are wide footways of approximately 2m on each arm of the junction, in addition to pedestrian refuge islands with dropped kerbs to facilitate crossing in a safe manner. The road is also very well-lit to the benefit of all road users.

Broad Lane

2.2.22 Towards the northwest corner of the Site, Broad Lane commences at a three-arm roundabout with the B5356 Grappenhall Lane and extends towards the north for circa. 600m, before turning towards the north-west for a length of circa. 1.7km. The road terminates at a priority junction with Church Lane towards the southwest of Grappenhall.

2.2.23 In the vicinity of the Site, Broad Lane comprises a narrow single carriageway of approximately 5.5m wide, with vergeways of varying width on both sides and no pedestrian infrastructure. The road has street lighting at regular intervals along most of its length and is subject to a 60mph national speed limit.

2.2.24 Along the frontage of lodging and residential dwellings, there is a wide footway of approximately 2m in width with dropped kerbs, however this only extends for a limited length along Broad Lane. Past the residential dwellings, the road is mostly unlit.

2.2.25 Approaching the outskirts of Grappenhall, Broad Lane narrows to approximately 4m, and the speed limit drops to 40mph. There are stretches of the road which are heavily bordered by tall trees, and the speed limit drops further to 20mph along this stretch as it approaches a residential area, which is made clear by painted "SLOW" road signs.

2.2.26 In the vicinity of residential dwellings bordering the road, there are footways of approximately 1m wide on at least one side of the road, complete with dropped kerbs and street lighting at regular intervals. Here, it can be observed that some vehicles park half on the road and half on the footway to minimise disruption to traffic. As Broad Lane approaches the priority junction with Church Lane, Traffic Regulation Orders (TROs) are also present in the form of double yellow line parking restrictions on both sides of the road.

M6 / M56 North Cheshire Motorway

2.2.27 The M6 forms the eastern boundary of the Site, whereas the M56 North Cheshire Motorway forms the southern boundary of the Site. The M6 provides access from the Site to areas such as Wigan, Preston, Knutsford, and Crewe, whereas the M56 connects Site users to Runcorn, Ellesmere Port, Altrincham, and Manchester Airport.

2.2.28 In the vicinity of the Site, the M6 extends in a north-south alignment and comprises a dual carriageway with an average total width of 60m with a total of up to 5 lanes in either direction, whereas the M56

North Cheshire Motorway extends in a west-east alignment with a dual carriageway of an average with of 40m and up to 5 lanes in either direction.

2.2.29 As mentioned in **Section 2.2.14** above, there are several routes for which vehicles can access and egress the Site from, and how said routes tie into the wider M6 / M56 network.

2.3 Public Rights of Way

2.3.1 There are three designated Public Rights of Way across the Site, all of which are Footpaths. Footpath No 28 runs between the residential properties adjacent to Bradley Hall Farm in the east and Appleton Thorn Trading Estate in the west, however no actual connection is available on foot into the trading estate at its western end.

2.3.2 Also, Footpath No's 31 and 23 run north-south across the Site along the route of the main Site access between Howshoots Farm to the north-east and Barleycastle Lane to the south of the Site.

2.4 Highway Safety

2.4.1 Personal Injury Accident (PIA) data for the highway network has been obtained from Warrington Borough Council for the latest five-year period covering July 2013 – July 2018 inclusive. A map showing the injury collision plots is provided in **Appendix ~~A~~ B**.

2.4.2 **Table 2.1** below summarises the accident severity in the vicinity of the Site up to July 2018:

Junction/Link	Severity			Total
	Slight	Serious	Fatal	
B5356 Grappenhall Lane (north of the Site)	2	1	0	**3**
B5356 Grappenhall Lane (to the west of the Site)	2	1	0	**3**
B5356 Grappenhall Lane / Broad Lane roundabout	1	0	0	**1**
B5356 Grappenhall Lane / Barleycastle Lane junction	2	0	0	**2**
B5356 Stretton Road	1	0	0	**1**
B5356 Stretton Road / A49 London Road junction	4	0	0	**4**
A49 London Road	2	0	0	**2**
Broad Lane	0	1	0	**1**
Broad Lane / Church Lane junction	1	1	0	**2**
B5356 Grappenhall Lane / A50 Cliff Lane Roundabout	1	2	0	**3**

Junction/Link	Severity			Total
	Slight	Serious	Fatal	
A50 Knutsford Road	2	4	0	**6**
A56 Chester Road and A56 Stockport Road	3	0	0	**3**
Glebe Avenue	1	0	0	**1**
M6 Junction 20 Dumbbell Roundabouts	12	2	0	**14**
M6 Junction 20 Merge and Diverge Points	16	2	0	**18**
A50 Cliff Lane (to the east of the Site)	2	0	0	**2**
B5158 Cherry Lane	1	1	0	**2**
Total	**53**	**15**	**0**	**68**

Table 2.1 – Summary of Accident Data

2.4.3 The records show that since July 2013, there have been 68 recorded accidents in the vicinity of the Site, 53 resulted in slight injuries and 15 resulted in serious injuries. There have been no fatal accidents in the search area for this time period.

2.4.4 In addition to the above assessment, Ramboll have recently undertaken a similar review for the period December 2012 and November 2017 in support of the Liberty Property development to the west of the Site. Upon submission of this information as part of the planning application they received the following comments from Highways England:

"request that further analysis of selected incident clusters and causation is undertaken to fully understand any patterns and contributory factors. Cluster analysis should include the junction of the A50 / B5356, the M6 Junction 20 dumbbell roundabouts, and the merge and diverge points for the M6. It is noted that there is a potential cluster of incidents on the diverge for the M6 southbound off-slip to Junction 20, which could indicate issues of slip road queues extending onto the mainline."

2.4.5 As a result of these comments further detailed accident analysis has been undertaken:

B5256 Grappenhall Lane / A50 Cliff Lane / A50 Knutsford Road Junction/Roundabout

2.4.6 **Figure ~~2.2~~ 2.1** below shows the area of interest, whereas **Table 2.2** describes the accidents in detail:

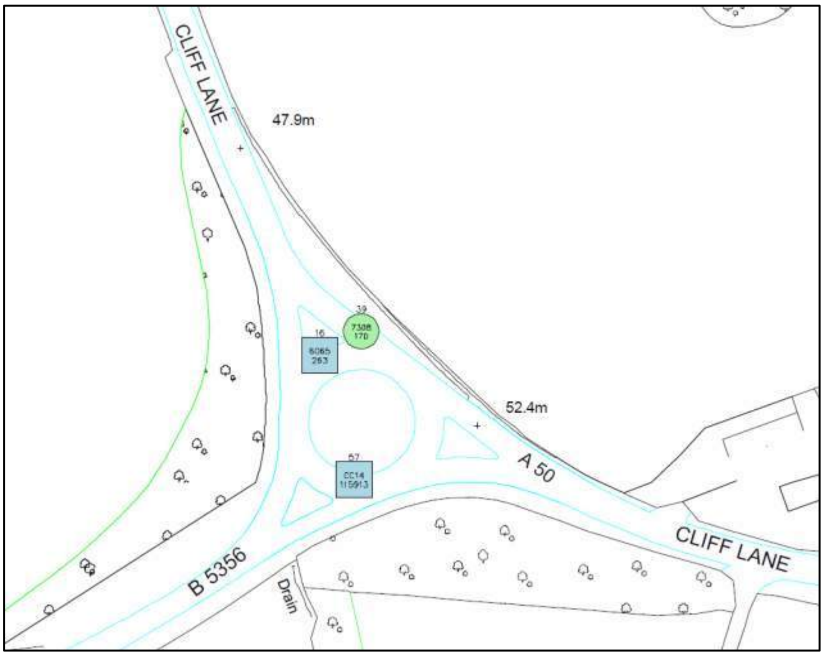


Figure 2.1 – Recorded Accidents at Roundabout Junction of B5356 and A50

No.	Severity	Day and Time	Condi-tions	Description	Contributory Factors
16	Serious	Saturday morning	Dry	A car collided with a pedal cycle, seriously injuring the cyclist.	Junction Restart (Driver/Rider – Error) Dazzling Sun (Driver/Rider – Vision Affected) Failed to Look Properly (Driver/Rider – Error)
39	Slight	Saturday night	Dry	Two cars, both approaching the roundabout from the north, collided when one attempted to overtake the other.	N/A
57	Serious	Friday night	Wet	The rider of the motorcycle was seriously injured but this was the only vehicle involved.	Slippery Road Due to Weather (Road Environment Contribution)

Table 2.2 – Description of Accidents at Roundabout Junction of B5356 and A50

M6 Junction 20 Dumbbell Roundabouts

2.4.7 **Figure ~~2.3~~ 2.2** below shows the area of interest, whereas **Table 2.3** describes the accidents in detail:

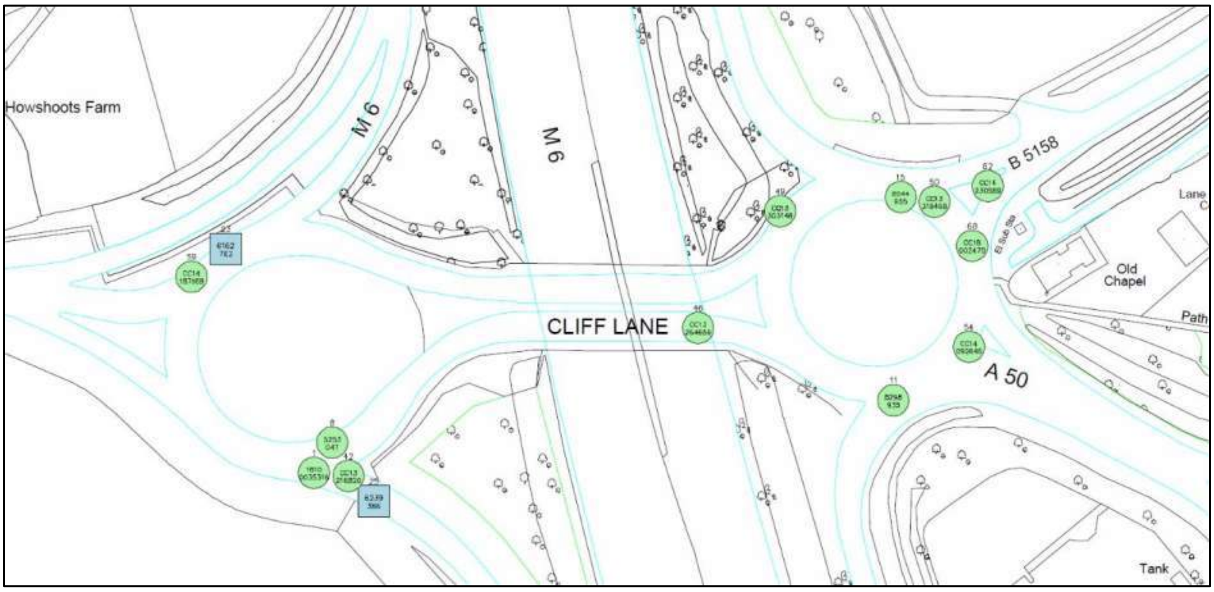


Figure 2.2 – Recorded Accidents at M6 Junction 20 Dumbbell Roundabouts

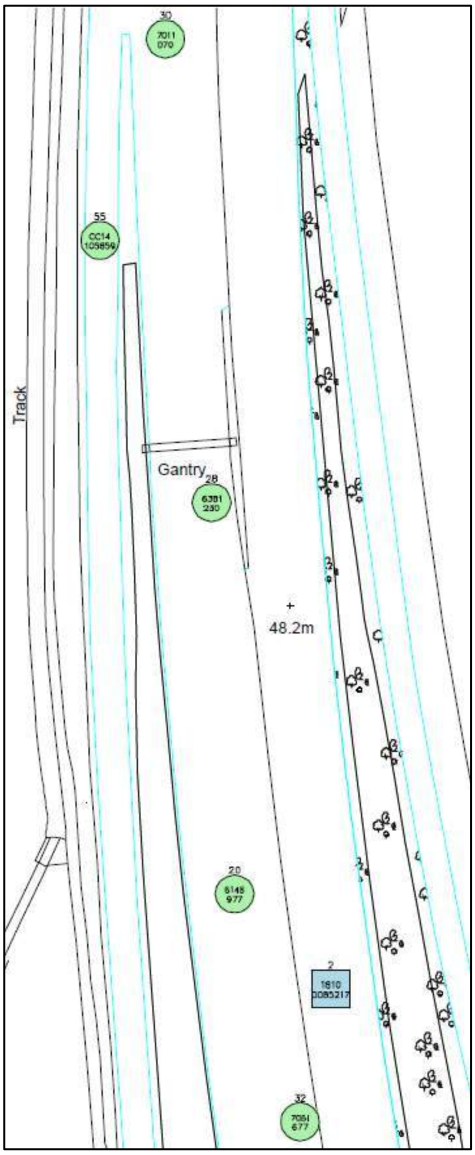
No.	Severity	Day and Time	Condi-tions	Description	Contributory Factors
1	Slight	Saturday morning	Ice and Rain	Two cars collided, the driver of one was slightly injured.	Slippery Road Due to Weather (Road Environment Contribution)
8	Slight	Wednesday afternoon	Dry	Three vehicles were involved: a car approaching the junction and two stationary goods vehicles waiting to enter the junction. The driver of one of the goods vehicles was slightly injured.	Alcohol (Driver/Rider – Impairment) Failed to Look Properly (Driver/Rider – Error) Failed to Judge Other Person's Path/Speed (Driver/Rider – Error)
11	Slight	Wednesday morning	Wet	A car and goods vehicle collided, and the car driver was slightly injured.	Failed to Look Properly (Driver/Rider – Error)
15	Slight	Sunday afternoon	Dry	Two cars collided and the driver of one was slightly injured.	Failed to Look Properly (Driver/Rider – Error)
23	Serious	Friday afternoon	Dry	Rider of a motorcycle was seriously injured, and the passenger was slightly injured but this was the only vehicle involved.	Deposit on Road e.g. Oil, Mud, Chippings (Road Environment Contribution)
25	Serious	Sunday evening	Dry	Driver of a large goods vehicle (14-year-old male) was seriously injured but this was the only vehicle involved.	Other

No.	Severity	Day and Time	Condi-tions	Description	Contributory Factors
42	Slight	Friday morning	Dry	Four vehicles were involved: three cars and one goods vehicle. One of the car drivers was slightly injured.	Stolen Vehicle Vehicle in Course of Crime Aggressive Driving (Driver/Rider – Behaviour) Loss of Control (Driver/Rider – Error) Sudden Braking (Driver/Rider – Error)
46	Slight	Monday morning	Wet	Five vehicles collided with each other: two cars and three goods vehicles. One car driver was seriously injured.	Following Too Close (Driver/Rider – Injudicious)
49	Slight	Thursday morning	Dry	Two cars collided and the driver of each was slightly injured.	Dazzling Sun (Driver/Rider – Vision Affected)
50	Slight	Thursday morning	Dry	Rider of a motorcycle was slightly injured, and this was the only vehicle involved.	Deposit on Road e.g. Oil, Mud, Chippings (Road Environment Contribution)
54	Slight	Thursday night	Wet	Two cars collided, the passenger in one was slightly injured.	Failed to Look Properly (Driver/Rider – Error) Failed to Judge Other Person's Path/Speed (Driver/Rider – Error)
59	Slight	Sunday evening	Dry	A car collided with a motorcycle, slightly injuring the rider and passenger.	Poor Turn or Manoeuvre (Driver/Rider – Error) Failed to Look Properly (Driver/Rider – Error)
62	Slight	Wednesday morning	Wet	The accident involved one car, the driver of which was slightly injured.	Illness or Disability Mental or Physical (Driver/Rider – Impairment)
68	Slight	Wednesday morning	Dry	The accident involved one goods vehicle, the driver of which was slightly injured.	N/A

Table 2.3 – Description of Accidents at M6 Junction 20 Dumbbell Roundabouts

M6 Junction 20 Merge and Diverge Points

2.4.8 **Figure ~~2.4~~ 2.3** below shows the area of interest towards the north of the M6, whereas **Figure ~~2.5~~ 2.4** **s**hows the area of interest towards the south of the M6. **Table 2.4** then describes the accidents in detail:



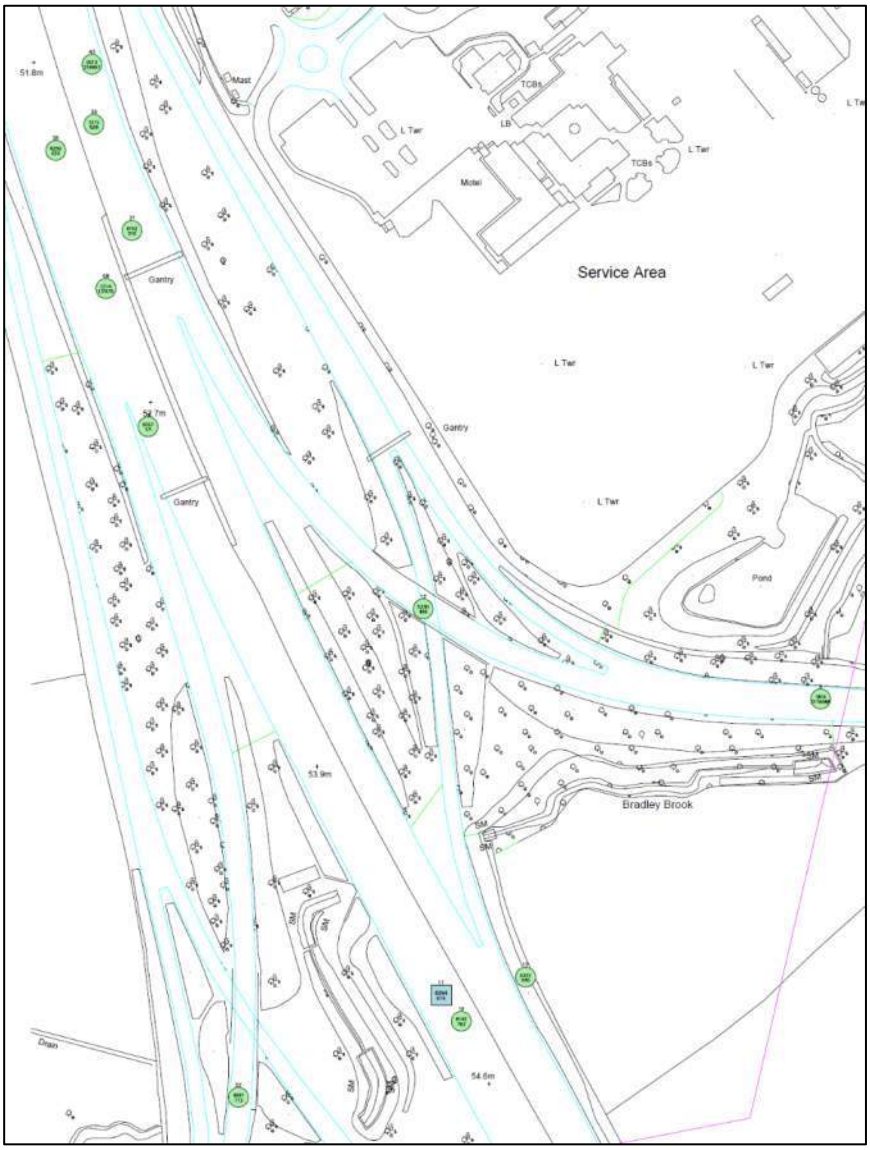


Figure 2.3 (left) and Figure 2.4 (right) – Recorded Accidents at M6 Junction 20 Merge and Diverge Points (North and South)

No.	Severity	Day and Time	Condi-tions	Description	Contributory Factors
North of Dumbbell Roundabout					
2	Serious	Thursday morning	Dry	Two cars collided, the passenger in one was seriously injured.	Slippery Road Due to Weather (Road Environment Contribution)
20	Slight	Friday afternoon	Dry	A car collided onto the back of a goods vehicle. The driver of the car was slightly injured.	Sudden Braking (Driver/Rider – Error)
28	Slight	Friday morning	Dry	The accident involved two cars and one minibus. The driver of one of the cars was slightly injured.	N/A

No.	Severity	Day and Time	Condi-tions	Description	Contributory Factors
30	Slight	Thursday morning	Wet	The accident involved one car and two goods vehicles. The driver of the car was slightly injured.	Failed to Judge Other Person's Path/Speed (Driver/Rider – Error) Spray from Other Vehicles (Driver/Rider – Error) Vehicle Blind Spot (Driver/Rider – Error)
32	Slight	Monday afternoon	Wet	The accident involved one car and one goods vehicle. The driver of the car was slightly injured.	N/A
55	Slight	Wednesday morning	Dry	Two cars collided and the driver of one was slightly injured.	Failed to Judge Other Person's Path/Speed (Driver/Rider – Error)
South of Dumbbell Roundabout					
6	Slight	Thursday morning	Dry	A heavy goods vehicle changing lanes to the left collided with the side of a car who was going ahead on a left-hand bend. The driver of the HGV was slightly injured.	Failed to Judge Other Person's Path/Speed (Driver/Rider – Error)
12	Slight	Wednesday evening	Dry	The accident involved one car and one heavy goods vehicle. The driver and two passengers in the car were slightly injured.	N/A
13	Slight	Thursday morning	Wet	The accident involved one car, the driver of which was slightly injured.	Slippery Road Due to Weather (Road Environment Contribution)
14	Slight	Thursday afternoon	Dry	The accident involved six cars and one goods vehicle. The goods vehicle collided onto the back of the cars which were stopping. The driver of one of the cars was slightly injured.	Sudden Braking (Driver/Rider – Error)
17	Serious	Saturday afternoon	Wet	One car collided onto another stopping car while changing lanes to the right. The driver of this car was seriously injured.	Failed to Judge Other Person's Path/Speed (Driver/Rider – Error)
19	Slight	Tuesday afternoon	Dry	The accident involved three cars, two of whose drivers were slightly injured.	N/A
21	Slight	Wednesday afternoon	Dry	The accident involved one heavy goods vehicle and one car. The driver and two passengers in the car were slightly injured.	N/A
22	Slight	Thursday afternoon	Dry	The accident involved three cars. The driver of one of the cars was slightly injured.	N/A

No.	Severity	Day and Time	Condi-tions	Description	Contributory Factors
26	Slight	Wednesday noon	Dry	Two goods vehicles, one heavy goods vehicle, and one car were involved. The driver and passenger in the car were slightly injured.	N/A
38	Slight	Thursday morning	Dry	A heavy goods vehicle changing lanes to the left collided with the side of a car who was going ahead. The driver and a passenger in the car were slightly injured.	Failed to Judge Other Person's Path/Speed (Driver/Rider – Error)
43	Slight	Monday morning	Wet	A heavy goods vehicle changing lanes to the right collided with the side of a car who was going ahead. The driver of the car was slightly injured.	Failed to Judge Other Person's Path/Speed (Driver/Rider – Error)
58	Slight	Saturday morning	Wet	The accident involved three cars, one of which collided onto the back of another whilst all three cars were stopping. The driver of the middle car was slightly injured.	Sudden Braking (Driver/Rider – Error) Slippery Road Due to Weather (Road Environment Contribution)

Table 2.4 – Description of Accidents at M6 Junction 20 Merge and Diverge Points

2.4.9 For all three key areas studied, there does not appear to be a common pattern of contributory factors of accidents recorded in this area, which have a relatively low frequency (three, fourteen, and eighteen accidents recorded respectively in a five-year period). None of the contributory factors recorded relate to the features of the highway, instead it is mainly environmental factors and driver errors/impairment which are recorded as causes. It can be concluded that features of the highway at these junctions do not represent a specific safety issue.

2.4.10 It is understood that WBC Highways and HE reached the same conclusion when considering the adjacent Liberty development, as they offered no objection to the application.

3.0 Transport Planning Policy

3.1 Introduction

3.1.1 When developing the scheme proposals, it is important to understand the national and local transport related planning policies. This section aims to outline the key policies throughout relevant policy and guidance documents.

3.2 National Planning Policy Framework (NPPF) 2019

3.2.1 The National Planning Policy Framework (The Framework) sets out the current national planning policy and outlines the important role that transport policies have to play in facilitating development.

3.2.2 Section 2 sets out details about achieving sustainable development. In particular, Paragraph 8 of NPPF 2018 sets out that there are three dimensions of sustainable development: economic, social and environmental.

3.2.3 Paragraph 11 states that:

"Plans and decisions should apply a presumption in favour of sustainable development."

3.2.4 For decision taking this means granting permission unless:

"*…any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies*."

3.2.5 Chapter 9, 'Promoting sustainable transport', requires at Paragraph 102 that:

'transport issues should be considered from the earliest stages of development proposals', including the environmental impacts of traffic and transport infrastructure, and opportunities to promote walking, cycling and public transport use.'

3.2.6 Paragraph 82 also notes that planning decisions should:

'recognise and address the specific locational requirements of different sectors', including making provision 'for storage and distribution operations at a variety of scales and in suitably accessible locations.'

3.2.7 Paragraph 103 states that:

'significant development should be focused on locations which are or can be made sustainable". Paragraph 104 (e) requires planning policies to "provide for any large scale transport facilities that need to be located in the area, and the infrastructure and wider development required to support their operation, expansion, and contribution to the wider economy'.

3.2.8 Specifically, Paragraph 107 requires proposals for new distribution centres to:

'make provision for sufficient lorry parking to cater for their anticipated use'.

3.2.9 Paragraph 109 of 'The Framework' states the following in relation to the impacts of the Proposed Development on the surrounding highway network:

'Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.'

3.3 National Planning Practice Guidance (NPPG)

3.3.1 In addition to the NPPF, a National Planning Practice Guidance (NPPG) document has also been developed by the government. Within this document there is a specific section that clarifies the over-arching principles on Travel Plans, Transport Assessments and Transport Statements.

3.3.2 The guidance on Transport Assessments and Statements re-iterates the circumstances in which either document would usually be required. It is appropriate that a Transport Assessment is provided for a development of this scale, but that a separate Travel Plan document would be necessary to help in promoting sustainable travel habits (**Document Reference 64076/FTPV03**).

3.3.3 The NPPG has been considered in the production of this Transport Assessment.

3.4 Warrington Borough Council (WBC) Local Plan Core Strategy (July 2014)

3.4.1 Warrington's Local Plan Core Strategy sets out a planning framework for guiding the location and level of development in the borough up to 2027 via a series of place-specific policies to promote a positive and proactive approach to managing development within the borough. The Core Strategy comprises several transport-related policies as follows:

3.4.2 Policy CS2 is titled "Quality and Distribution of Development", which states that:

"Major Warehousing and Distribution developments will be located away from areas sensitive to heavy vehicle movements, with direct access to the Primary Road Network, and where possible with access to rail and/or the Ship Canal."

3.4.3 The Proposed Development accords with this, as evidenced by the ease of connection to the M6 / M56 motorway network, along with HGV restrictions along the roads in the vicinity of the Site.

3.4.4 Policy CS4 is titled "Transport", which states that:

"Using the principles set out in Policy CS2, development will be located to reduce the need to travel, especially by car, and to enable people as far as possible to meet their needs locally. Early consultation with the Highways Agency will be necessary for any proposal that may affect the Strategic Road Network. In particular, efforts should be aimed at reducing the proportion of car-borne commuting…. and tackling the most congested parts of the Strategic Road Network notably the M6, M56, and M62."

3.4.5 Under Policy MP1, titled "General Transport Principles", WBC and its partners will support proposals where they:

- *"reduce the need for private car use through its location, travel planning and marketing (smarter choices) and any other measures to change travel behaviour;*
- *consider demand management measures including the effective reallocation of road space in favour of public transport, pedestrians and cyclists;*
- *adhere to locally determined car and cycle parking standards; and*
- *mitigate the impact of development or improve the performance of Warrington's Transport Network, including the Strategic Road Network, by delivering Site specific infrastructure which will support the proposed level of development."*

3.4.6 Policy MP3, titled "Active Travel", highlights the Council's expectations for *"high priority given to the needs and safety of pedestrians and cyclists in new development. New development should not compromise and should contribute to enhancing and developing integrated networks of continuous, attractive and safe routes for walking and cycling including improvements to roads, Rights of Way and the Greenway Network (as shown on the Policies Map). This should include appropriate segregation of users and appropriate priority should be given to users at junctions."*

3.4.7 With regards to potential improvements to the surrounding public transport network, Policy MP4, titled "Public Transport", states: *"In accordance with the Overall Spatial Strategy, development should be located in areas with easy access to public transport. Development should aim to make public transport a viable and attractive alternative by;*

- *integrating with existing public transport infrastructure and services as far as possible; and*
- *providing additional public transport infrastructure and services that are reasonably related in scale to the proposed development where existing facilities are not available or are in need of improvement, provided this does not impact on the deliverability of the scheme."*

3.4.8 In Policy MP6, titled "Transport Infrastructure", WBC also expresses its support for *"priorities and improvements set out in the Local Transport Plan and other delivery documents by ensuring* *development will not prejudice the implementation of proposed transport schemes and projects that require land beyond the limits of the public highway".*

3.4.9 Lastly, as stated in Policy MP7, titled "Transport Assessments and Travel Plans", WBC requires all developments to:

- *"demonstrate that it will not significantly harm highway safety and that trips generated by the development can adequately be served by Warrington's Transport Network; and*
- *Identify where there are any significant effects on Warrington's Transport Network and/or the environment and ensure appropriate mitigation measures including any necessary transport infrastructure are in place before the development is used or occupied.*

Applications for major developments…. must be accompanied by a Transport Assessment, Transport Statement, and Travel Plan in accordance with National Planning Policy and national guidance on transport assessments."

3.4.10 All of the above policies have been considered in the preparation of this Updated Transport Assessment and the accompanying Travel Plan (**Document Reference 64075/FTPV03**).

3.5 WBC Planning Obligations SPD (2017)

3.5.1 In addition to the Local Plan Core Strategy, an additional Supplementary Planning Document (SPD) was adopted to set out WBC's approach to seeking planning obligations for the provision of transport/travel infrastructure required as a result of new development, such as town centres and major development Sites of a strategic nature where necessary.

3.5.2 The forms in which contributions should be made are as follows:

- "*Any necessary alterations to the transport/highway network within or in the vicinity of new development will be expected to be incorporated within the development proposals and will be secured by condition; and*
- *The scope of any off-Site works required to mitigate Site specific impacts of a development will be secured under a S278 Agreement and will be carried out by the Council, or by the developer under the supervision of the Council, with the developer responsible for meeting all costs associated with the design and implementation of schemes…. Where a S278 agreement is insufficient, mitigation will be secured through a S106 Agreement. This will be particularly relevant to developments that are larger in scale or are associated with intensive or increased travel demand. Agreement with Warrington Borough Council, as the Local Highway Authority*

on the timing of any infrastructure improvements, or sustainable transport initiatives, will also be secured as part of the S106 or S278 agreement."

3.6 WBC Local Transport Plan 3 (2011)

3.6.1 WBC published its third Local Transport Plan in March 2011, setting out the plans and spending priorities for Warrington for the period 2011 – 2030.

3.6.2 In Autumn 2010, the government ministers indicated that the first two aims of the LTP, which are to *"support economic growth"* and *"reduce carbon emissions"*, would form the overarching national objectives for transport. This was followed by a new government White Paper on transport, titled "Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen". The White Paper collated key messages and initiatives and summarised what the plans meant for Warrington, putting forward the following travel choices as examples of sustainable travel behaviour:

- "*Walking or cycling;*
- *Using bus, train or Light Rapid Transit for all or part of a journey; and*
- *Car sharing, car clubs or car pooling."*

3.6.3 The Proposed Development presents many opportunities to fulfil the aforementioned travel choices, and hence is in accordance with the general principles of the WBC LTP3.

3.7 WBC Standards for Parking in New Development (March 2015)

3.7.1 WBC prepared a Supplementary Planning Document (SPD) aimed to expand on policies within Warrington's Development Plan and relevant national guidance in relation to development proposals for Parking in New Development. The policy document was also set out to ensure that parking for new development:

- *"is sufficient to avoid on-street parking congestion, highway safety and visibility problems;*
- *avoids over-provision that would result in the inefficient use of land;*
- *encourages high quality design;*
- *meets the needs of all users; and*
- *maintains the principles of sustainable development."*

3.7.2 Sections of the SPD relevant to the Proposed Development are:

***"PS1 –** Developers will need to demonstrate parking provision in accordance with the standards set out in Appendix A (reproduced in **Table 3.1** below);*

***PS2 –** A travel plan or travel plan statement will be required as a key mechanism to reduce the use of high-emission vehicles and to influence travel behaviour in new developments;*

***PS10 –** Bicycle and motorcycle/scooter/moped parking should meet the standards set out in Appendix A; and*

***PS13 –** It is essential that developments make adequate provision for all service and delivery vehicles to be accommodated without detriment to the safety of other road users or the free flow of all modes of transport."*

3.7.3 **Table 3.1** below outlines the parking standards extracted from Appendix A of the SPD, which the Proposed Development has considered and accounted for during the allocation of proposed parking spaces. This is further elaborated on in the following **Section 4**.

Use Class	Standard Car Parking	Disabled Parking	Bicycles	Motorcycles
B1 Business and Office	1 space per 26 sqm (stand-alone offices and business parks) OR 1 space per 20 sqm*	5% of total parking provision plus an additional 5% total parking capacity should compromise enlarged standard spaces (3.6m x 6m) for future conversion to disabled spaces if demand increases.	1 space per 200 sqm (minimum of 2 spaces)	1 space per 750 sqm (minimum of 2 spaces)
B8 Storage and Distribution	1 space per 120 sqm OR 1 space per 100 sqm*		1 space per 850 sqm (minimum of 2 spaces)	1 space per 2000 sqm (minimum of 2 spaces)

Table 3.1 – WBC Parking Standards

*Exceptional maximum standard where a travel plan is to be delivered that demonstrates an exceptionally high level of quality, commitment to delivery and availability of alternative modes.

3.7.4 Guidance on travel plans of an 'exceptionally high level of quality' states that:

"Where a travel plan demonstrates an exceptionally high level of quality, commitment to delivery and availability of alternative modes, there may be scope to varying parking standard requirements in liaison with council officers. For example, an exceptional travel plan would typically include: a shuttle bus service; flexible working hours; lockers, showers and changing facilities for cyclists; secure cycle storage car park management rota; pool cars and a successful car sharing scheme although this list is not exhaustive."

3.7.5 With regards to servicing and deliveries, the SPD also states *"developers will be required to demonstrate that there will be adequate provision of space within the Site for parking, manoeuvring, loading and unloading to meet the operational requirements of the development. Vehicles need to be able to enter and exit the Site safely in forward gear."*

3.8 DfT Circular 02/2013

3.8.1 The DfT Circular 02/2013, titled The Strategic Road Network and the Delivery of Sustainable Development, was issued on 10th September 2013, and is aimed to achieve an effective and efficient strategic road network to make a significant contribution to the delivery of sustainable economic growth.

3.8.2 The Circular states that:

"Development proposals are likely to be acceptable if they can be accommodated within the existing capacity of a section (link or junction) of the strategic road network, or they do not increase demand for use of a section that is already operating at over-capacity levels, taking account of any travel plan, traffic management and/or capacity enhancement measures that may be agreed. However, development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.

The overall forecast demand should be compared to the ability of the existing network to accommodate traffic over a period up to ten years after the date of registration of a planning application or the end of the relevant Local Plan whichever is greater.

Where the overall forecast demand at the time of opening of the development can be accommodated by the existing infrastructure, further capacity mitigation will not be sought."

3.9 Highways England: Planning for the Future

3.9.1 Published in September 2015, a guide titled The Strategic Road Network set out general principles by which Highways England will seek to engage and support throughout the planning process in order to prepare strong policies and proposals that are sustainable, practical and well-designed.

3.9.2 Key assessment considerations on all planning matters include transport assessments and travel plans to facilitate the delivery of sustainable development, which the Proposed Development accords with.

3.10 Conclusions

3.10.1 The above sets out the key policy considerations that the development will be tested against and the following sections of this report seek to demonstrate compliance.

4.0 Development Proposals

4.1 Introduction

4.1.1 The project description for the Proposed Development is provided below:

'The outline application (all matters reserved except for means of access) comprises the construction of up to 287,909m² (3,099,025ft2) (gross internal) of employment floorspace (Use Class B8 and B1(a) offices), ~~including change of use of Bradley Hall Farmhouse to B1 (a) office use (335m² (3,600ft²))~~ demolition of existing agricultural outbuildings and associated servicing and infrastructure including car parking and vehicle and pedestrian circulation, alteration of existing access road into site including works to the M6 J20 dumbbell roundabouts and realignment of the existing A50 junction, noise mitigation, earthworks to create development platforms and bunds, landscaping including buffers, creation of drainage features, electrical substation, pumping station, and ecological works.'

4.1.2 All matters, except for the Means of Access are reserved for consideration at a later date.

4.1.3 **Appendix ~~B~~ C** to the rear of this report contains a series of 'parameters plan' which shows the Site boundary and the broad principles that the scheme will encompass.

4.2 Primary Access

4.2.1 It is proposed that the Site will be accessed via two new roundabouts onto Grappenhall Lane with one towards the western extent of the Site and one in a more central location. Curtins have prepared designs for the Site access points which are shown on **Plans 64076-CUR-00-XX-DR-TP-75001-~~P02~~P03 and 64076-CUR-00-XX-DR-TP-75002-P02** in the "**Plans**" section to the rear of this report.

4.2.2 It should be noted that the access points are designed in full accordance with the DMRB Design Standard TD16/07. The roundabouts are also designed to comfortably cater for the movements of a large volume of HGVs.

4.2.3 The Warrington Borough Council (WBC) Highways response (dated 15th August 2019 and 30th August 2019) states that the access points are acceptable subject to the findings of a Stage 1 Road Safety Audit and Swept Path Analysis. The swept path analyses are provided to the rear of this note as **Plans 64076-CUR-00-XX-DR-TP-05001-P03**, **64076-CUR-00-XX-DR-TP-05002-P02**, **64076-CUR-00-XX-DR-TP-05003-P02**, and **64076-CUR-00-XX-DR-TP-05004-P02**. Road Safety Audits have since been completed by WBC officers and a Designers Response has been produced; both are included in **Appendix D** to the rear of this report.

4.3 Pedestrian and Cycle Access

4.3.1 The primary pedestrian and cycle access points into the development will be via the two new roundabouts on Grappenhall Lane.

4.3.2 A new 3.5m shared pedestrian/cycle route will link the two roundabouts and provide connections to the west and east of the Site. This route is envisaged on the southern side of Grappenhall Lane and will extend for a distance of circa 1.2km. The route is shown on the parameter plans contained in **Appendix ~~B~~ C** and Drawing **64076-CUR-00-XX-DR-TP-75014-~~P01~~-P02**.

4.3.3 WBC Highways expressed a desire to extend the shared pedestrian/cycle infrastructure further to the west so that it better connects to the Broad Lane roundabout. This would necessitate an additional 175m of infrastructure.

4.3.4 As part of a Post Submission Note (**Document Reference 64076/PSN1**), Curtins examined the feasibility of this and is of the view that existing highway land to the south of Grappenhall Lane could be used to continue the pedestrian/cycle infrastructure to the Broad Lane roundabout.

4.3.5 It is understood that WBC would also like to see a new pedestrian/cycle crossing facility at the Broad Lane roundabout. This would further enhance connectivity with Broad Lane in the north and/or the southern section of Grappenhall Lane where the Stobart scheme (WBC Planning Reference: 2019/34739) is implementing a series of pedestrian and cycle enhancements. To fully tie into the Stobart infrastructure a new pedestrian/cycle link would also be required on the western side of the highway between the Broad Lane roundabout and Barleycastle Lane. This is a distance of c. 220m.

4.3.6 As the land required to extend the infrastructure between the site boundary and the Broad Lane roundabout or Barleycastle Lane falls outside of the applicant's control, a financial contribution could be used to secure the additional 175m and 220m links. The principle of this is acceptable to the applicant.

4.3.7 WBC have also enquired for an extension of the pedestrian and cycle link to the east and north of the development and to tie into existing / future pedestrian infrastructure at M6 J20. Curtins is of the view that demand to the east is likely to be naturally limited due to the presence of the M6 J20. Additionally, there is already existing infrastructure such as a footway along the north of Cliff Lane and pedestrian crossing facilities at the west-most roundabout at the dumbbell roundabout junction.

4.3.8 Notwithstanding this, the Masterplan included to the rear of this report indicates that there would be pedestrian infrastructure to be tied into the existing road network along the south of Grappenhall Lane up until the Cliff Lane roundabout. From there, pedestrian crossing facilities in the form of an informal 'walk-with-traffic' crossing would be provided to tie into the aforementioned existing infrastructure to the north of Cliff Lane.

4.3.9 Footpath 31 currently follows the line of the current farm access into the Site from the A50 Cliff Lane and continues past the Baradley Hall moated Site and to the south of the Site as Footpath 23. It is proposed to retain Footpath 31 in its general extent albeit it may require a minor variation to the alignment to provide a safe crossing point across an internal estate road.

4.3.10 Footpath 28 currently runs east-west across the Site from Footpath 23 and 31, to the north of the Bradley Hall cottages, across the fields, before terminating at the field boundary to the western extent of the Site. Footpath 28 will be diverted as part of the Proposed Development. Its diverted route will run along the northern boundary of the Site, parallel with the B5356 Grappenhall Lane at the point of the proposed eastern access point. It will then re-enter the Site alongside an internal estate road and re-join Footpath 23.

4.3.11 The delivery of circa 1.5km of new pedestrian and cycle infrastructure and upgrades to the existing PROW network would offer significant benefits over the existing situation. This infrastructure would enhance connectivity between the site and existing/proposed residential areas to the west, connectivity to Broad Lane, connectivity to the M6 Junction 20 and beyond in the east and finally connectivity to the A50 Knutsford Road.

4.3.12 Pedestrian and cycle access within the Site are to be detailed at the Reserved Matters stage.

4.4 General Parking Provision

4.4.1 Parking provision for the Site will seek to accord with the WBC parking standards set out in the March 2015 SPD (WBC Standards for Parking in New Development).

4.4.2 This document sets a standard of one space per 120sqm for non-town centre areas where an exceptional Travel Plan is to be provided.

4.4.3 Utilisation of the SPD equates to circa 2,400 spaces.

4.4.4 The SPD also states that 5% of the spaces should be allocated for disabled users and 5% should be larger bays of 3.6m x 6m which could be converted to disabled space should the demand arise.

4.4.5 As the application is in outline, it is not necessary to provide specific details of car parking at this time. However, the SPD is fully acknowledged, and this matter will be considered as part of any Reserved Matters applications.

4.5 Electric Vehicle Charging

4.5.1 The Parking SPD states that:

'5% of all parking spaces in the development are to be covered by an electric charging point. However, where this allocation is demonstrated to impact on the viability of the development, 5% of spaces should have the capacity to easily retrofit a recharge point for communal use. This will entail provision of ducting and appropriate power supply for highspeed recharging to appropriate locations in the development. The management of the charging points, including the mechanism/procedure for charging, will be the responsibility of the developer/occupier.'

4.5.2 As above, it is not necessary to provide specific details for electric charging points at this time. However, the SPD is fully acknowledged, and this matter will be considered as part of any reserved matters applications.

4.6 Motorcycle Parking

4.6.1 The SPD states that there should be one motorcycle parking space per 2,000 m2 of B8 floor space. This equates to circa 145 spaces.

4.6.2 As above, the SPD is fully acknowledged, and this matter will be considered as part of any Reserved Matters applications.

4.7 Cycle Parking

4.7.1 The SPD states that there should be one cycle parking space per 850 m2 of B8 floor space. This equates to circa 340 spaces.

4.7.2 As above, the SPD is fully acknowledged, and this matter will be considered as part of any Reserved Matters applications.

4.8 Travel Plan

4.8.1 The NPPF and Policy MP7 of the WBC Local Plan Core Strategy requires a Travel Plan to be submitted where developments are likely to have significant transport implications. On this basis, a framework Travel Plan has been submitted with this application to encourage travel by sustainable modes of travel.

4.8.2 It is envisaged that the framework will be a live document that will be developed over time as Reserved Matters applications are submitted, and the individual plots are built out. <u>The Framework Travel Plan is the first part of the travel planning process and a condition to secure a more detailed Travel Plan when more information is available is fully accepted.</u>

4.8.3 <u>WBC have suggested that they collect a Section 106 contribution to fund the Council to be the Travel Plan Coordinator. A figure of £50k (£10k per year over 5 years) has been suggested, which is acceptable in principle to the applicant.</u>

4.8.4 The WBC Travel Choice Team has also requested an enhancement of the pedestrian and cycle network that is proposed as part of the development. This is already considered in this section.

4.9 Establishing a Steering Group

4.9.1 During scoping discussions, the developer was made aware of the Omega Transportation Steering Group. This is a collection of public and private sector bodies that come together:

'To act as a conduit between all relevant parties to discuss and address transportation matters to maximise sustainable travel behaviours.'

4.9.2 It is anticipated that a similar group would be established in relation to the Proposed Development and this is fully supported by the developer.

4.10 Improvements

4.10.1 As part of the development a significant package of infrastructure improvements is proposed. This includes:

- Major infrastructure improvements at the Cliff Lane roundabout and M6 J20 junction, as set out later in this report;
- More than 1.2km of new pedestrian/cycle infrastructure on Grappenhall Road to the north of the development;
- Significant upgrades to the existing Public Right of Way network that exists within the Site; and
- Funding for new Public Transport services, including a potential new bus link through the Site with new bus infrastructure.

4.10.2 At a meeting with WBC Highways on the 28th August 2019, it was suggested that £600,000 would be a suitable sum for the public transport contribution. This level of funding is comparable to the Stobart contribution and as part of that scheme it was agreed that the money could fund 3 shuttle buses from different directions (Warrington, Runcorn and Cadishead).

4.10.3 No specific details were agreed beyond this and it seems logical that a similar approach be adopted for the Site, as there is no requirement to identify any specifics until more information is known on the work force origins/destinations and the operational times. The principle of this contribution is acceptable to the applicant.

4.10.4 WBC Highways also queried the effects of infrastructure improvements at the Cliff Lane roundabout and M6 J20 junction on visibility from the Bradley Hall Cottages. A wider lane width on the section of highway between the M6 Junction 20 and the A50/Grappenhall Lane Roundabout would necessitate the removal of highway verge in the vicinity of the Bradley Hall Farm access.

4.10.5 Visibility to the west is not considered to be a concern, as white double yellow lines are proposed to prohibit vehicles turning right out of the junction. It is envisaged that the small number of vehicles that do use this junction would need to travel west to the roundabout and then back on themselves. This is a relatively standard procedure for this type of access.

4.10.6 Notwithstanding the above, the carriageway widening could be reduced to the nearer the original width should this be required by WBC. This would also enable street furniture in this location, albeit there are already plenty of other opportunities for street furniture along the corridor. Any amendments to the width in this area would not impact on the modelling contained in the later sections of this report.

5.0 Accessibility by Sustainable Modes of Travel

5.1 Introduction

5.1.1 A key element of national, regional and local policy is to ensure that new developments are located in areas where alternative modes of travel are available. It is important to ensure that developments are not isolated but are located close to complementary land uses. This supports the aims of integrating planning and transport, providing more sustainable transport choices, and reducing overall travel and car use.

5.1.2 The accessibility of the Site is considered in this context for the following modes of travel:

- Pedestrian Accessibility;
- Accessibility by Cycle; and,
- Accessibility by Public Transport.

5.2 TRACC Analysis

5.2.1 The accessibility of the Site has been assessed through the use of TRACC Software. TRACC is the leading multi-modal transport accessibility tool which was developed in conjunction with the Department for Transport (DfT), local authorities and transport planners.

5.2.2 It is designed to calculate travel time using a multitude of public transport and road travel modes to give accurate journey times from many origins to many destinations in one calculation. The software covers a wide range of transport modes including walking, cycling, driving and public transport.

5.3 Pedestrian Accessibility

5.3.1 Research has indicated that acceptable walking distances depend on a number of factors, including the quality of the development, the type of amenity offered, the surrounding area, and other local facilities. The Chartered Institution for Highways and Transportation (CIHT) document entitled 'Providing for Journeys on Foot' suggests walking distances which are relevant to this planning application. These are reproduced in **Table 5.1**.

	Town Centres (m)	Commuting/School/ Sightseeing (m)	Elsewhere/Local Services (m)
Desirable	200	500	400
Acceptable	400	1,000	800
Preferred Maximum	800	2,000	1,200

Table 5.1 – CIHT Suggested Acceptable Walking Distances

5.3.2 To assist in summarising the accessibility of the Site by foot, an indicative pedestrian catchment plan has been produced. **Plan 64076-CUR-00-XX-DR-TP-06003-P01** to the rear of this report shows distances of 500m, 1,000m and 2,000m which are termed 'Desirable', 'Acceptable' and the 'Preferred Maximum' by the CIHT for commuting trips. An extract of the plan is illustrated on **Figure 5.1** below:

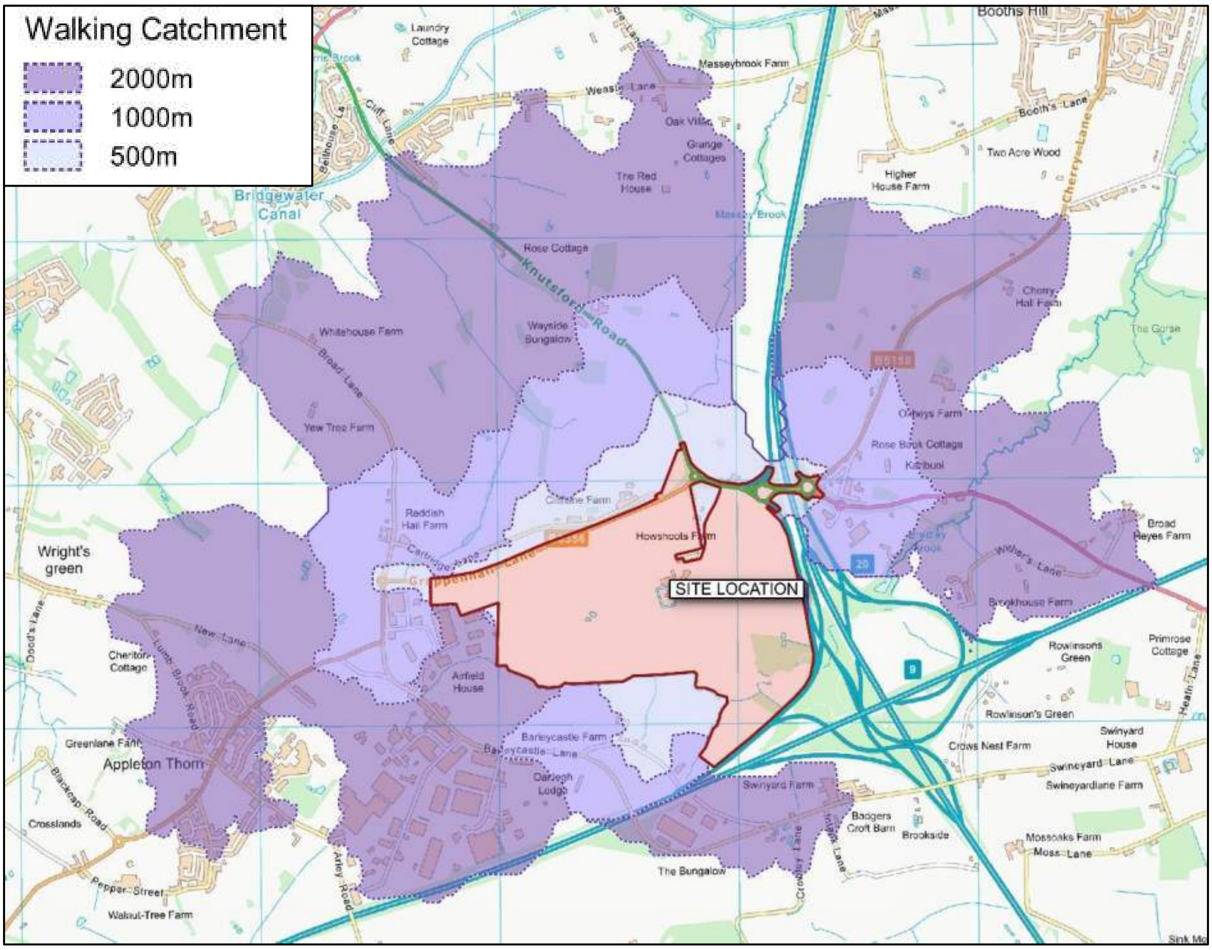


Figure 5.1 – 500m, 1,000m and 2,000m Walk Catchment Isochrones

5.3.3 The pedestrian catchment plan confirms that the Site is located within walking distance of one established residential area, namely Appleton Thorn to the west of the Site.

5.3.4 However, this is based on an assessment of the existing settlement boundaries. If the emerging Local Plan policy for the Warrington Garden Suburb is ultimately adopted, and the area is subsequently developed in accordance with the plan, there could be up to around ~~7,000~~ 7,400 dwellings situated within walking distance of the Site.

5.3.5 In addition, it could reasonably be expected that a development of this size would transform pedestrian infrastructure in the area and bring with it a large number of associated facilities and amenities (as envisaged in WBC's *"Preferred Development Option Regulation 18 Consultation"* document and Submission Version Local Plan document (March 2019)).

5.3.6 This would therefore represent a potentially significant locally based resident workforce from which the companies occupying the Proposed Development could draw their employees from.

5.3.7 Internally, the development of the Site presents an opportunity to enhance existing rights of way to include measures such as widening, new surfacing, drainage schemes and lighting schemes to significantly enhance their attractiveness.

5.3.8 The development proposals also include a significant enhancement of pedestrian infrastructure in the vicinity of the Site via the introduction of a new 3.5m shared pedestrian/cycle link along the northern boundary of the Site. This route also extends into the Site and provides a connection to the motorway service station on the eastern side of the M6.

5.4 Accessibility by Cycle

5.4.1 In order to assist in assessing the accessibility of the Site by cycle, **Plan 64076-CUR-00-XX-DR-TP-06004-P01** to the rear of this report presents an 8km cycle catchment for the Site. The 8km cycling distance refers to a recommendation by Cycling England in the document 'Integrating Cycling into Development Proposals' (2009). An extract of the plan is illustrated on **Figure 5.2** below:

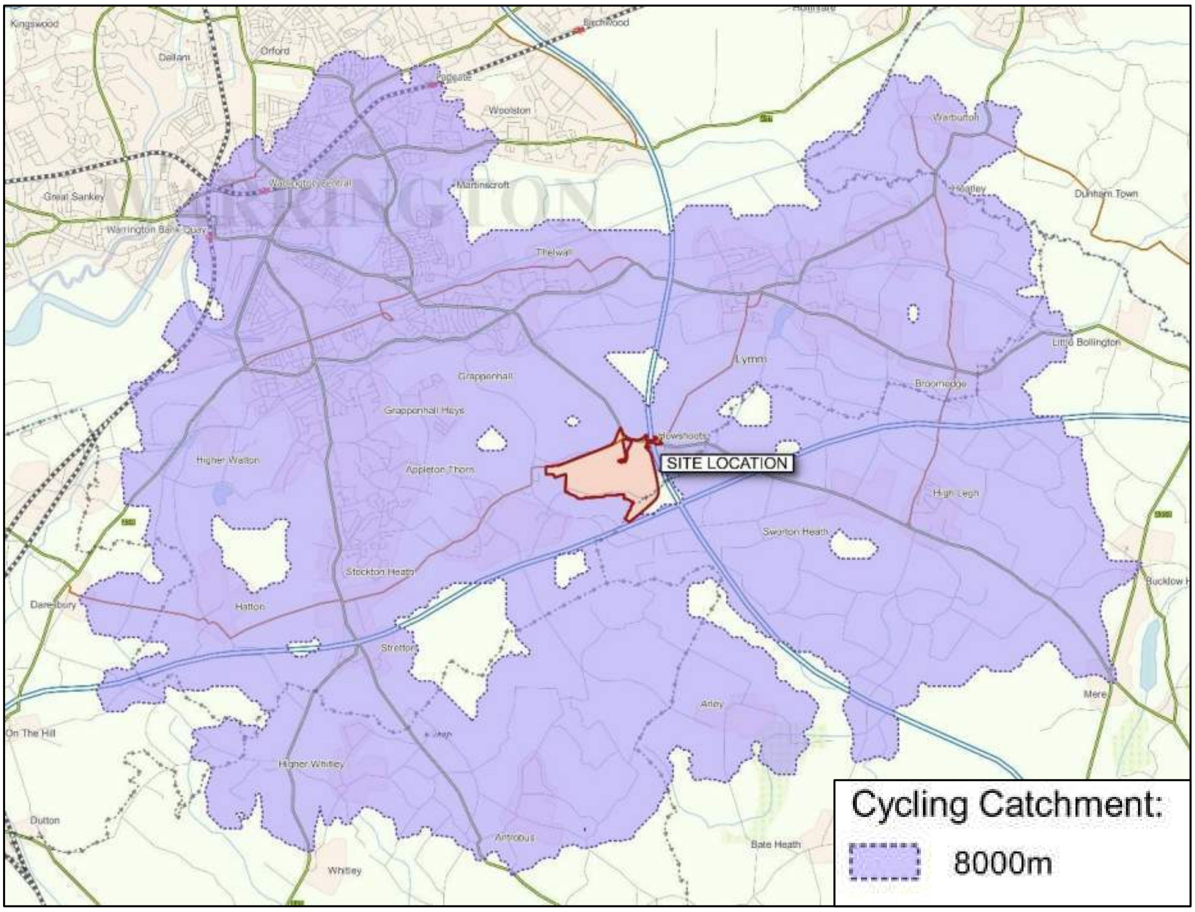


Figure 5.2 – 8,000m Cycle Catchment Isochrone

5.4.2 The catchment extends as far as Daresbury to the west, central Warrington to the north-west, Warburton to the north-east, and Arley to the south.

5.4.3 The road network in WBC's administrative area has been graded by the Council from 1 to 5, where grade 1 represents the best type of route in terms of cyclability and grade 5 represents the worst. The network around the Site is shown on **Figure 5.3** below:

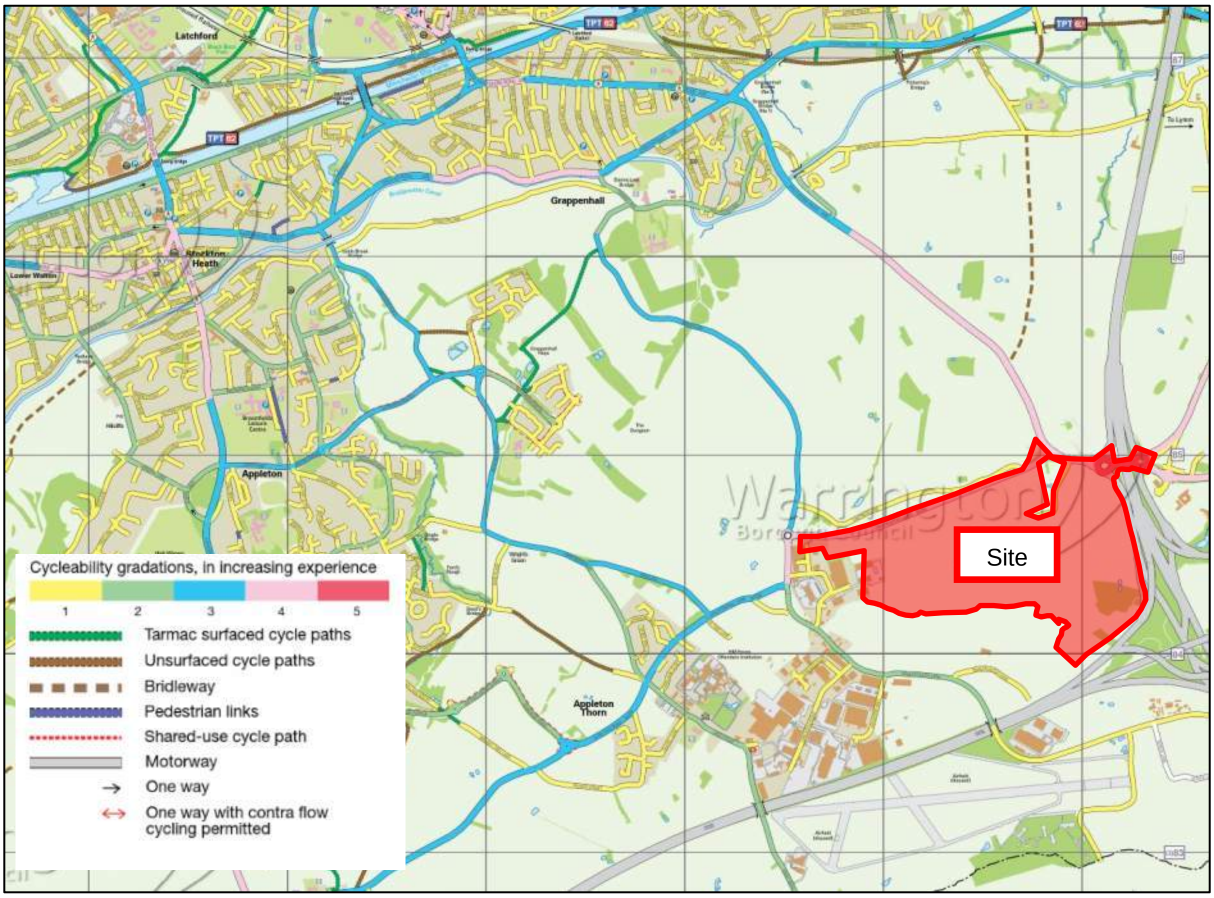


Figure 5.3 – Cycle Route Network Around Site

5.4.4 Clearly, **Figure 5.3** above demonstrates that the road network around the Site is currently less than ideal for cyclists, indicating that Grappenhall Lane and the two dumbbell roundabouts at the M6 J20 are rated as a grade 4 or 5. This is likely to be a reflection of the speed limit of the roads and the type of traffic that they carry in this specific area.

5.4.5 However, the Site's redevelopment presents an opportunity to improve local cycling infrastructure and thereby increase the attractiveness of cycling to work at the Site. As mentioned previously a new off-road cycle route along the northern boundary of the Site will greatly enhance connectivity.

5.4.6 Further away from the Site, the existing cycling infrastructure improves, with the majority of existing road links to the north and west graded as 2 or 3 by WBC. Situated around 2.5km (crow fly) distance to the north of the Site centre, the National Cycle Route (NCR) 62 provides an excellent off-road facility between south Manchester to the east and south Warrington to the west.

5.4.7 Elsewhere, local cycle route no. 5 is situated around 1.8km crow-fly distance to the west of the Site, providing a connection between Appleton Thorn, Stockton Heath, NCR 62 and local cycle route no. 2 around the east of Warrington and beyond.

5.4.8 Furthermore, and as discussed earlier, the potential allocation of the Warrington Garden Suburb around the north and west of the Site brings with it a potentially transformative effect on cycle-related infrastructure in the local area.

5.4.9 With regard to cycle parking, WBC's adopted parking standards (see extract in **Table 3.1** earlier) specify that a minimum of 1 secure cycle parking space should be provided per 850m² of B8 use floorspace. Based on circa 287,090 of B8 use, this equates to a requirement for at least 450 cycle parking spaces spread across the development. This will therefore be accounted for in the development of the scheme in due course.

5.4.10 WBC's adopted parking standards for B1 use floorspace also specify a minimum provision of 1 secure cycle parking space per 200m².

5.5 Accessibility by Public Transport

5.5.1 **Plan 64076-CUR-00-XX-DR-TP-06005-P01** to the rear of this report demonstrates those areas accessible within a 20, 40 and 60-minute public transport journey from the Site. An extract of the plan is illustrated on **Figure 5.4** overleaf:

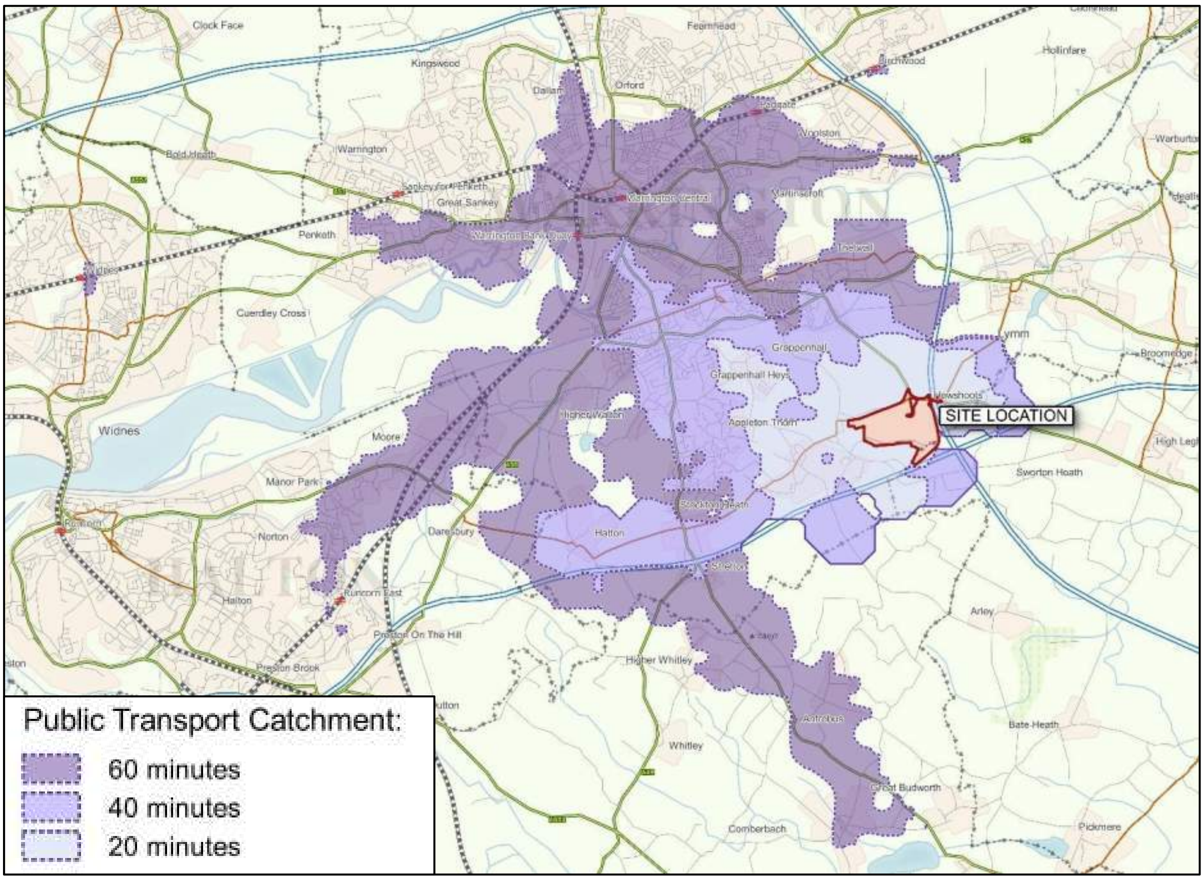


Figure 5.4 – 20 / 40 / 60 Minute Public Transport Accessibility Isochrone

5.5.2 Accessibility by bus and rail are considered in further detail within the subsections below.

Bus Accessibility

5.5.3 The nearest bus stops to the Site are situated in Appleton Thorn Village some 2.3km walk distance from the centre of the Site. Clearly this is less than ideal from a sustainability perspective, with the stops lying well outside the Chartered Institution of Highways and Transportation's (CIHT's) recommended 400m walk distance threshold to a bus stop from any new development.

5.5.4 Currently, the bus stops in Appleton Thorn are served by the following bus services:

Bus Service	Route	Peak Hourly Frequency		
		Mon – Fri	Sat	Sun/Hols
8/8A/8E	Appleton Thorn - Cobbs Estate - Stockton Heath - Warrington	~60mins	~60mins	-
7	Appleton Thorn/Hatton - Dudlows Green - Stockton Heath - Warrington	3 to 4 services each way	5 to 6 services each way	-

Table 5.2 – Summary of Bus Service Frequencies from Chester Road

5.5.5 As shown in **Table 5.2**, bus services are relatively limited in the area which reflects the semi-rural location of Appleton Thorn in the Borough.

5.5.6 Nonetheless, and setting aside the potential significant improvements to public transport that could be brought about by the Warrington Garden Suburb allocation, there is already a commitment to improve bus services to the west of the Site.

5.5.7 It is understood that WBC have already secured circa £500,000 via a S106 financial obligation from the HCA in connection with their 3 recently-approved residential schemes near Appleton, and that the obligation relates to the improvement of the no.8 bus service provision along Stretton Road (which becomes Grappenhall Lane further towards the Site).

5.5.8 Furthermore, it is understood from discussions with WBC Highways Officers that the proposals by Liberty Properties for the adjacent Site included a Section 106 contribution to fund improvements to three new bus services. The precise detail was to be developed as part of the Travel Plan once there was better clarity on where the workforce was likely to originate. The scheme was recently refused by Members, but the principle of the public transport agreement was established.

5.5.9 It is understood that a similar arrangement will be necessary to enhance bus services in the vicinity of the Site and on this basis the proposals have been designed to accommodate bus movements within the Site.

Rail Accessibility

5.5.10 The nearest railway stations are in Warrington (Warrington Bank Quay and Warrington Central), both situated some 6.5km crow-fly distance from the Site. The stations lie within 8km cycle distance from the Site, as shown on **Figure 5.3** earlier, making a longer journey by rail / cycle a possibility.

5.5.11 Both stations are collectively served by a large number of train services that route to a wide variety of destinations across the entire country at a high frequency. Whilst it is not intended to exhaustively list each destination within this report, selected destinations include Manchester, Liverpool, Blackpool, London, Glasgow, Edinburgh and Llandudno.

5.5.12 Enhanced cycling and public transport infrastructure in the vicinity of the Site may enhance the attractiveness of these modes of travel as part of a multi modal trip that is linked with rail.

5.6 Summary

5.6.1 It is acknowledged that, with current infrastructure, the Site is not ideally located to attract trips by non-car modes of transport.

5.6.2 However, there are several proposals to enhance the situation, both as part of the future development itself and by benefitting from other infrastructure that is likely to come forward from nearby committed developments and / or the potential future development of the Warrington Garden Suburb Local Plan allocation.

5.6.3 Infrastructure to be implemented or funded by the development includes a new 1.2km shared pedestrian/cycle route along the northern boundary of the Site and funding towards new public transport services.

5.6.4 In summary, it is considered that the Site can become highly accessible by sustainable modes of travel.

6.0 Traffic Forecasting

6.1 General Approach to Forecasting

6.1.1 As a result of scoping discussions with WBC Highways Officers and HE, a forecasting methodology has been agreed which utilises independent traffic surveys and stand-alone junction modelling software to consider key junctions in the immediate vicinity of the Site.

6.1.2 However, in addition to this conventional assessment, WBC Officers have also requested utilisation of the WMMTM for consideration of the wider highway network and the emerging Local Plan.

6.1.3 This section sets out the forecasting parameters used in the more traditional assessment whilst the results of the WMMTS are included in **Section 7**.

6.2 Introduction to Traditional Forecasting

6.2.1 This section of the report provides an estimate of the vehicular trips that might be generated by the development of the Site during the weekday AM and PM peak hours and over a normal weekday.

6.2.2 The chapter also sets out the methodology used to estimate the distribution of development-related traffic throughout the local road network and the assignment of trips in the appropriate assessment years.

6.2.3 A series of **Traffic Flow Figures** which present this information are presented to the rear of this report. The conventional forecasting includes the following junctions:

1. The A50 Cliff Lane / Lymm services roundabout;
2. Both the M6 J20 Cliff Lane dumbbell roundabouts;
3. The A50 Cliff Lane / Grappenhall Lane roundabout;
4. Grappenhall Lane / Broad Lane roundabout;
5. Grappenahll Lane / Barleycastle Lane;
6. Broad Lane / Church Lane; and
7. A50/A56.

6.3 Trip Generation Forecasts

6.3.1 The level of trips that could be generated by the scheme were initially estimated through reference to average peak hour trip rates obtained from surveys of ‘commercial warehousing’ schemes from within the industry standard TRICS Database.

6.3.2 The TRICS printouts are contained in **Appendix ~~C~~ E** and are summarised in **Table 6.1**, along with the resultant trip forecasts:

Mode	AM (07:30 – 08:30)			PM (16:30 – 17:30)		
	Arrive	Depart	Total	Arrive	Depart	Total
Total Vehicles	0.0915	0.0405	0.132	0.035	0.083	0.118
LGV	0.063	0.0175	0.0805	0.015	0.045	0.0695
OGV Vehicles	0.0285	0.023	0.0515	0.02	0.0285	0.0485
Mode	AM (07:30 – 08:30)			PM (16:30 – 17:30)		
	Arrive	Depart	Total	Arrive	Depart	Total
Total Vehicles	263	117	380	101	239	340
OGV Vehicles	82	66	148	58	82	140
Non-OGV Vehicles (Staff Movements)	181	50	232	43	157	200

Table 6.1 – Trip Generation – 287,909m² B8 Use *(Average trip rates)*

6.3.3 **Table 6.1** confirms that the Proposed Development could generate 380 two-way movements in the AM peak and 340 two-way movements in the PM peak based on average trip rates from the TRICS database.

6.3.4 The level of assumed 'staff' vehicle movements has been calculated simply by deducting the estimated number of component HGV trips from the estimated total vehicle trips.

6.3.5 Whilst the above is considered by Curtins to be an acceptable methodology with flows higher or comparable to these used by WBC Highways in the WMMTM in consideration of the Local Pan, WBC and HE requested consideration of Omega North trip rates.

6.3.6 On this basis, Curtins commissioned an ATC traffic survey at Omega North (on Lockheed Road) for a week in July 2018, and the resultant trip rates are as follows:

Mode	AM (07:30 – 08:30)			PM (16:30 – 17:30)		
	Arrive	Depart	Total	Arrive	Depart	Total
Trip Rates						
Total Vehicles	0.1301	0.0734	0.2035	0.0837	0.1453	0.2290
LGV	0.1041	0.0480	0.1521	0.0430	0.1089	0.1519
OGV Vehicles	0.0261	0.0254	0.0514	0.0407	0.0364	0.0771

Mode	AM (07:30 – 08:30)			PM (16:30 – 17:30)		
	Arrive	Depart	Total	Arrive	Depart	Total
Trip Generation						
Total Vehicles	375	211	586	241	418	659
OGV Vehicles	75	73	148	117	105	222
Non-OGV Vehicles (Staff Movements)	300	138	438	124	313	437

Table 6.2 – Trip Generation – 287,909m² Omega trip rates

6.3.7 The methodology used to derive the above trip rates from the raw traffic survey data are included in **Appendix ~~D~~ F** to the rear of this report.

6.3.8 It is important to note that the above methodology and trips have been agreed with both WBC and HE as acceptable. As the trip rates are significantly higher than those predicted by TRICS it is considered to represent a robust assessment.

6.4 Traffic Flow Forecasts

Traffic Survey Flows

6.4.1 To gain an understanding of existing conditions in the vicinity of the Site, Curtins commissioned an independent survey company Nationwide Data Collection to undertake traffic counts in July 2017 at key off-Site junctions. The raw survey data is included as **Appendix ~~E~~ G** at the rear of this report.

6.4.2 Analysis of this data identified the following peak hours:

- AM Peak (0730-0830); and
- PM Peak (1630-1730).

6.4.3 **Traffic Figures 1 and 2** illustrates the AM and PM peak hour traffic flows.

6.4.4 It should be noted that the surveys were undertaken outside of the school holiday period. To further demonstrate that the traffic flows are fit for purpose, Curtins has undertaken a monthly comparison of the M6 mainline traffic for 2017. The average weekday data obtained from MIDAS count Sites for both northbound (ref:M6/6979A) and southbound (ref: M67000B) directions are summarised in **Table 6.3** below:

Month	M6 Northbound	M6 Southbound	Total
January	53272	83355	136627
February	56536	86453	142989
March	58325	89056	147381

Month	M6 Northbound	M6 Southbound	Total
April	59903	91063	150966
May	58030	90331	148361
June	61429	93052	154481
July	61730	95466	157196
August	60162	93695	153857
September	59891	92185	152076
October	60302	93517	153819
November	57406	90599	148005
December	53286	81593	134879

Table 6.3 – Average Weekday Data, M6 Mainline

6.4.5 It is evident from **Table 6.3** that the highest monthly mainline traffic flows are recorded in July for both the northbound and southbound directions. On the above basis it is reasonable to conclude that the July data is fit for use as the basis for the traffic impact assessment.

6.4.6 The traffic flows have also been compared with the February surveys undertaken by Liberty Properties as part of their application for the adjacent Site. This indicates that the July flows are within +/-5% of the February surveys thus providing consistent approach. Both WBC Highways and HE accepted the February surveys as being suitable.

Committed Development Traffic Flows

6.4.7 As agreed with WBC/HE the traffic flows arising from the 3 Homes England housing developments and the Bloor Homes scheme to the west / north-west of the Site and the Bloor Homes scheme located off Stretton Road have been obtained from the TA work carried out for those approved schemes:

- Land off Pewterspear Green Road – 180 dwellings (application ref 2016/28807);
- Appleton Cross – Mixed use scheme including 370 dwellings (application ref 2017/29930);
- Grappenhall Heys – 400 dwellings (application ref 2017/29929); and
- Land to the East of Stretton Road - 74 Dwellings (application ref 2017/31848)

6.4.8 Where the forecast flows from the committed schemes do not fully overlap with the area of study for this report, appropriate traffic engineering assumptions have been made on the likely origins / destinations of the committed development traffic. The committed development traffic flows are shown on **Traffic Flow Figures 7** to **8**.

Liberty Properties

6.4.9 As requested by WBC/HE during recent discussions, a sensitivity test has also been undertaken to take account of the potential 59,010m² logistics development scheme (promoted by Liberty Properties) to the west of the Site. This is despite the ~~fact that the recently submitted~~ initial planning application was refused by WBC and ~~the scheme has no committed status~~ subsequently appealed, with decision pending. ~~The Warrington Guardian has recently reported that~~ Liberty Properties ~~intend to submit~~ submitted a new application, ~~although there are no fixed dates confirming this~~ which has now been approved at planning committee and subsequently referred to the Secretary of State (SoS). A decision remains pending.

6.4.10 The staff traffic that could be associated with this potential scheme has been estimated using the derived LGV Omega trip rates detailed in **Table 6.2** above. In addition, and as per the submitted TA, it is assumed that 20 office staff will arrive at the Site during the AM peak hour and depart during the PM peak. The HGV trips have also been extracted from the TA.

6.4.11 Applying these trip rates to the floor area, the resultant trips that could be generated by the proposed Liberty scheme is summarised in **Table 6.4** below.

Mode	AM (07:30 – 08:30)			PM (16:30 – 17:30)		
	Arrive	Depart	Total	Arrive	Depart	Total
LGV	0.1041	0.0480	0.1521	0.0430	0.1089	0.1519
Mode	AM (07:30 – 08:30)			PM (16:30 – 17:30)		
	Arrive	Depart	Total	Arrive	Depart	Total
Total Vehicles	96	54	151	42	107	149
OGV Vehicles	15	26	41	25	17	41
Non-OGV Vehicles (Staff Movements)	81	28	90	25	84	90

Table 6.4 – Proposed Liberty Scheme

6.4.12 The staff trips have been assigned to the network based on the distribution adopted for the Liberty Scheme TA. The distribution is reproduced in **Traffic Figure 9** and the resulting traffic assignment is presented in **Traffic Figures 10** and **11** for the AM and PM peak respectively.

6.4.13 The Liberty traffic has been added to the approved committed developments to obtain the total committed development traffic as a sensitivity scenario. This is illustrated in **Traffic Figures 12** and **13** for the AM and PM peaks respectively

6.4.14 It must be noted that the Liberty planning application initially suggested lower trip rates than those used here. However, during post submission discussions their trip generation was amended, and they undertook assessments on the basis that all staff would arrive and depart during the traditional peak hours. This is considered to be unrealistic and on this basis the Omega trip rates agreed with WBC/HE are considered to be more appropriate.

6.4.15 <u>WBC and HE have acknowledged in their response that the traffic generation, committed development and HGV distribution parameters are acceptable.</u>

Future Baseline Traffic Flows - Traffic Growth

6.4.16 As a result of discussions with HE / WBC, all traffic impact assessment work has been undertaken for an opening year of 2021 and ten years after the year of application in 2029.

6.4.17 The above assessment years are consistent with current HE guidance which is provided in the document "*The strategic road network Planning for the future A guide to working with Highways England on planning matters, published September 2015*".

6.4.18 Paragraph 100 of this guidance states that.

'The overall forecast demand on the SRN and surrounding local road network should be assessed and compared to the ability of the existing network to accommodate traffic. For developments which will be brought forward in phases, this assessment should focus on the overall forecast demand of the development as a whole, not just the initial phases(s)'.

6.4.19 Paragraph 101 identifies the assessments that should be undertaken to support developments as follows:

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

6.4.20 Furthermore, the document states that "*The assessment at opening will be used for the determination of impact mitigation needs whilst the latter is necessary to determine the risk which will transfer to us*".

6.4.21 In order to calculate baseline flows for these scenarios, the background traffic flows have been factored to the 2021 assessment year and 2029 assessment year using local growth factors.

6.4.22 Growth factors have been taken from the National Traffic Model (NTM) with TEMPRO for the Warrington area. The growth factors have been derived by applying the alternative assumptions model within the

TEMPRO database. The methodology used to derive the parameters for the alternative assumptions has been detailed below.

6.4.23 TEMPRO uses datasets from the National Trip End Model (NTEM) to derive local growth factors for use in the forecasting in traffic models. NTEM 7.2 datasets are based on aggregated planning policy data from Local Plans. The planning data used as basis for deriving the traffic growth factors include future household numbers and jobs.

6.4.24 An extensive list of committed developments agreed with WBC and detailed above has been considered as part of the Transport Assessment. The Proposed Development Site is also considered to contribute to the future employment forecasted for the Warrington area and therefore it is likely that the traffic associated with these developments have been included in the projected growth figures in the NTEM datasets. **Table 6.5** provides a summary of the residential units and number of jobs associated with committed and Proposed Developments.

Development Stage	Application Ref	No of Residential Units	Full Time Equivalent Jobs
Committed Development	Land off Pewterspear Green Road dwellings (2016/28807)	180	
	Appleton Cross – Mixed use scheme (2017/29930)	370	
	Grappenhall Heys (2017/29929)	400	
	Land at Stretton Road (2017/31848)	74	
	Liberty Development		480
Proposed Development	Warrington Six 56		4900
Total		1024	5380

Table 6.5 – Residential Units and Jobs for Committed and Proposed Developments

6.4.25 It can be seen from **Table 6.5** that the committed and Proposed Developments would result in a total of 1024 residential units and create approximately 5380 full time equivalent jobs.

6.4.26 The traffic associated with the above developments has been assigned on the local highway network as part of the Transport Assessment. In order to avoid double counting, it is considered that the alternative assumptions model within TEMPRO is adopted.

6.4.27 The alternative assumptions model allows the amendment of the future year household numbers and jobs. In order to derive the alternative assumptions parameters, the total number of residential units and jobs shown in **Table 6.5** has been subtracted from the future planning data provided within the NTEM database to derive the alternative assumptions planning data.

6.4.28 **Table 6.6** summarises the base and future year planning data as well as the derived alternative assumptions.

Year of Assessment		Jobs	Households
2017-2021	Base Data	125746	89115
	Future Planning Data from TEMPRO	128027	90951
	Committed and Proposed Development	5380	1024
	Alternative Assumptions	**122647**	**89927**
2017-2029	Future Planning Data from TEMPRO	130887	943396
	Committed and Proposed Development	5380	1024
	Alternative Assumptions	**125507**	**93372**

Table 6.6 – Planning and Alternative Assumptions Data

6.4.29 Applying the above alternative assumptions, the resultant growth factors are shown in **Table 6.7**:

Data Source	Peak	Area	2017-2021	2017-2029
TEMPRO	AM	Warrington	1.0244	1.0946
TEMPRO	PM	Warrington	1.0217	1.0907

Table 6.7 – Traffic Growth Factors

6.4.30 The above factors have been applied to the 2017 background traffic flows to derive 2021 AM and PM background traffic flows (**Traffic Figures 3 - 4**). The 2029 background traffic flows are also provided in **Traffic Figures 5 – 6**.

6.4.31 The committed development traffic has been added to the future base traffic flows for 2021 and 2029 (both including and excluding the potential Liberty Properties logistics scheme), as shown on **Traffic Flow Figures 13** to **19**.

6.4.32 WBC Highways have queried the TEMPRO growth rates that have been applied to the 2029 future year and specifically whether these should have been adjusted, as the Six:56 and Stobart developments are not specifically included in the planning assumption data that is used to inform TEMPRO.

6.4.33 For clarify, TEMPRO is a software tool that utilises the NTEM enabling the calculation of traffic growth factors for specified time periods for selected areas. In developing the NTEM, the following datasets are considered:

- Population projections (by age and gender) in each control area. The change in the number of people of driving age in an area and their gender will influence car ownership and usage;

- Household projections (by size) for the study area. The change in the number of people living in a household will influence travel demand for that household and the propensity for people in that household to travel;
- Employment projections (by sector, gender and working status in each control area). At a simple level more jobs lead to more travel. However, NTEM considers the types of jobs and the locations of these relative to skills. It also considers the propensity of different types of worker to travel by car or other modes; and
- Zonal growth factors for employment in the period modelled (by sector).

6.4.34 Whilst planning data and assumptions in the form of job prediction may be used to inform NTEM, it is not the only factor which affects growth and can only ever be an estimate. Even if there was no new housing or employment planned, it would be expected that travel demand would change over time due to a myriad of reasons including, change in population age, change in location of employment outside of the zone, change in household size etc. The growth factors are therefore not solely reliant on the planning assumptions (which in the case of NTEM are c. 6 years old) and the inclusion or exclusion of the Six:56 or the Stobarts developments is only a small part of the picture.

6.4.35 Discounting the 2029 growth rates from circa 13% to circa 9% is acceptable and necessary to avoid potential double counting. This is because a significant quantum of committed development including over 1200 dwellings to the west of the Site and the Stobart scheme have been accounted for, which equates to almost 1000 PCU's assigned to the network in the vicinity of the site, some of which would undoubtedly be included in the full TEMPRO outputs, albeit not specifically assigned to a certain planning assumption.

6.4.36 Considering individual development traffic increases, based on flows extracted from approved TAs is a more accurate methodology for determining likely increases in background traffic, than the application of blanket growth estimates applied to all arms of every junction, based on a series of forecasts using planning assumptions that are circa 6 years old.

6.4.37 Finally, it must also be noted that the application of the 2029 growth factor only affects the 2029 figures in this TA. The 2021 assessment which is the key test for HE and decision-making purposes assumes full build out of Six:56, Stobarts and the committed residential sites to the west of the development. This is therefore an exceptionally robust assessment as the actual build out is likely to take significantly longer than this.

Trip Distribution - Staff

6.4.38 As agreed with WBC, staff-related vehicle trips generated by the Proposed Development have been distributed on the local highway network based on travel-to-work data obtained from the 2011 Census for all 'in-moves' for the Middle Super Output Area (MSOA) in which the nearby Stretton Green Distribution Park is situated.

6.4.39 The existing travel-to-work trip distribution pattern at the Stretton Green Distribution Park is considered to represent a good proxy for the likely trip distribution of staff at the Proposed Development given that it is similarly located to the Site and features a similar overall level of employment uses to the Proposed Development.

6.4.40 Census-based 'in-moves' provide an indication of the numbers and destinations (on a MSOA basis) of people who work in the MSOA but who reside elsewhere. The in-moves are assigned to the routes summarised in **Table 6.8** below and are expressed as a percentage of the total number of commuting movements into the MSOA: -

Route	Percentage Trip Distribution – Staff Movements
B5356 Grappenhall Lane West	17%
Broad Lane	9%
A50 Knutsford Road	10%
A56 Stockport Road	3%
M6 (north)	39%
A50 Cliff Lane	3%
M56 (west)	14%
M6 (south)	5%

Table 6.8 – Trip Distribution – Staff Movements

6.4.41 The above staff-related trip distribution percentages are shown diagrammatically within the local highway network on **Traffic Figure 20**. These figures are broadly comparable to the Liberty Properties distribution with the exception of Knutsford Road and the town centre which is 7% higher in the Curtins assessment. This is on the basis that 3% travelling to and from the town centre and Latchford is too low. During a pre-application meeting WBC Highways Officers agreed this seemed reasonable.

Trip Distribution - HGVs

6.4.42 With regard to the distribution of HGV-related trips, and as agreed with HE / WBC during recent discussions, it is assumed that all development-related HGVs will route almost exclusively between the Site and the strategic highway network at the M56 / M6 Lymm Interchange.

6.4.43 At the M56 / M6 Lymm Interchange, HGV trips have been distributed based on the relative numbers of HGV trips observed to head away from the junction on each mainline during the month of June 2017. This data has been obtained from the online WebTRIS resource (formerly TRADS). **Table 6.9** below sets out the calculated trip distribution percentages:

Route	Percentage Trip Distribution – HGV Movements
M6 (north)	43%
M56 (west)	25%
M6 (south)	31%
M56 (east)	2%

Table 6.9 – Trip Distribution – HGV Movements

6.4.44 On this basis, the above HGV-related trip distribution percentages are shown diagrammatically within the local highway network on **Traffic Figure 21**. Please note that the figure of 101% is due to robust rounding up.

Traffic Assignment

6.4.45 The forecast level of staff / HGV-related development traffic generated by the Proposed Development has been assigned pro rata to the routes specified above, as shown diagrammatically in **Traffic Figures 22 to 27**.

Assessment Traffic Flows

6.4.46 The 2021 / 2029 assessment traffic flows are equal to the sum of the 2021 future base + committed traffic flows (**Traffic Flow Figures 13 to 19**) and the total assigned development traffic flows (**Traffic Flow Figures 25 to 26**).

6.4.47 The assessment flows are presented diagrammatically in **Traffic Flow Figures 28 to 31** (excluding the potential Liberty Properties logistics scheme) and **32 to 36** (including the potential Liberty Properties logistics scheme). These flows have been used for the purposes of carrying out capacity assessments of the impact of development-related traffic at junctions around the Site, including at the M6 J20 dumbbell roundabouts, as agreed during scoping discussions.

7.0 WMMTM Assessments

7.1 Introduction

7.1.1 In addition to the more conventional forecasting methodology set out in the previous section, WBC Highways Officers also requested consideration of the emerging Local Plan utilising the WMMTM.

7.1.2 The WMMTM was first commissioned by Warrington Council in the autumn of 2008 and was developed in conjunction with the Highways Agency, North West Development Agency, Homes and Communities Agency and Peel Holdings

7.1.3 The primary reason for developing the WMMTM was to provide an evidence base to support and aid decision making regarding spatial development, transport infrastructure and services.

7.1.4 The model was updated in 2017 and again in May 2018 in order to test the ~~emerging~~ Submission Version of the Local Plan and the Consultation 18 documentation states that the WMMTM is a software tool, based on SATURN software, which will *"enable the Council to consider local and borough wide transport impacts arising from new development. It will also allow the Council to confirm the infrastructure required to mitigate these impacts and contribute to the wider New City concept".*

7.1.5 Curtins commissioned use of the model in the summer of 2018 and asked Highways Officers at Warrington to provide outputs for the following scenarios:

- 2021 (Including Local Plan) without development;
- 2021 (Including Local Plan) with development;
- 2031 (Including Local Plan) without development; and
- 2031 (Including Local Plan) with development.

7.1.6 All scenarios include all committed development and the emerging Local Plan Allocations that are appropriate for each assessment year. The assessments also consider committed highway improvements, but no mitigation that is proposed as part of the Proposed Development.

7.1.7 The data was initially provided to Curtins in late summer 2018 but dialogue regarding a number of queries continued until October. Some of the queries related to the trip rates used in the modelling and WBC ultimately revised the modelling to reflect this, with the new data being received on the 11th January 2019.

7.1.8 In terms of analysing the data, it was agreed during scoping discussions that the modelled flows would not be used in individual junction assessments, but the change in flows at up to 15 individual junctions as set out in **Section 1** of this report should be used as guide for whether further conventional assessment is necessary.

7.1.9 The full results are contained in **Appendix ~~F~~ H** and a summary of the assessment is set out in the following subsection.

7.2 Percentage Impacts

2021 AM

Junctions	2021 Base	2021 Base with Dev	Difference	Percentage
1. The M6 / M56 interchange	23828	23829	2	0.0%
2. The A50 Cliff Lane / Lymm services roundabout	n/a	n/a	n/a	n/a
3. Both the M6 J20 Cliff Lane dumb bell roundabouts	3814	4009	195	5.1%
4. The A50 Cliff Lane/Grappenhall Lane roundabout	2620	2867	247	9.4%
5. Grappenhall Lane/Broad Lane roundabout	1555	1985	430	27.7%
6. Stretton Road / Barleycastle Lane	1551	1586	35	2.3%
7. Cat & Lion staggered crossroads (A49 / B5356)	1500	1544	126	8.4%
8. London Road / Lyons Lane	1460	1542	82	5.6%
9. Witherwins Lane / Lyons Lane roundabout	599	649	50	8.3%
10. A49 / A56 at Stockton Heath	1440	1450	10	0.7%
11. Lumb Brook Road canal underpass signals	1341	1349	8	0.6%
12. A56 / Ackers Road	1188	1178	-10	-0.8%
13. Church Lane / A56	823	755	-68	-8.3%
14. Church Lane / Broad Lane	284	343	59	20.8%
15. A50/A56	2253	2223	-30	-1.3%

Table 7.1 – WMMTM 2021 AM

7.2.1 The results demonstrate that if the entire development came forward in 2021, impacts in the AM peak period would be in excess of 5% at six locations. This includes the M6 J20 and Cliff Lane Roundabout to the east of the development which is to be expected given the proximity of the site to the motorway.

7.2.2 However, the modelling also predicts impacts at the Grappenhall Lane/Broad Lane roundabout, London Road/Lyons Road junction, Witherwins Lane/Lyons Lane roundabout and Church Lane/Broad Lane. These locations are to the north and west. This is not expected on the basis that conventional traffic forecasting set out in the previous section and the forecasting for the Liberty development suggested the vast majority of traffic would travel towards the motorway.

7.2.3 Having reviewed the above information it is Curtins view that much of the routing is counter intuitive and the routes predicted by the model are unlikely to be used in reality. For example, it is considered highly unlikely that such a proportion of vehicles would travel west from the site and then utilise relatively rural roads.

7.2.4 It is suggested that these routes are predicted by the model due to perceived congestion at the Cliff Lane/M6 J20. However, as mentioned previously the Proposed Development is proposing a major mitigation scheme at the M6 J20 that should encourage more traffic to utilise the M6 to access the M56. This assumption is borne out by the fact that flows through the motorway junction are significantly lower in the WMMTM than the flows set out in the previous section of this report.

2021 PM

Junctions	2021 Base	2021 Base with Dev	Difference	Percentage
1. The M6 / M56 interchange	22373	22375	2	0.0%
2. The A50 Cliff Lane / Lymm services roundabout	n/a	n/a	n/a	n/a
3. Both the M6 J20 Cliff Lane dumb bell roundabouts	3638	4141	503	13.8%
4. The A50 Cliff Lane/Grappenhall Lane roundabout	2461	2952	491	20.0%
5. Grappenhall Lane/Broad Lane roundabout	1316	1931	615	46.7%
6. Stretton Road / Barleycastle Lane	1454	1624	170	11.7%
7. Cat & Lion staggered crossroads (A49 / B5356)	1495	1567	114	7.6%
8. London Road / Lyons Lane	1419	1462	43	3.0%
9. Witherwins Lane / Lyons Lane roundabout	546	597	51	9.3%
10. A49 / A56 at Stockton Heath	1447	1479	32	2.2%
11. Lumb Brook Road canal underpass signals	1408	1388	-20	-1.4%
12. A56 / Ackers Road	1273	1234	-39	-3.1%
13. Church Lane / A56	811	800	-11	-1.4%
14. Church Lane / Broad Lane	143	162	19	13.3%
15. A50/A56	2216	2163	-53	-2.4%

Table 7.2 – WMMTM 2021 PM

7.2.5 The results demonstrate that if the entire development came forward in 2021, impacts in the PM peak period would also be in excess of 5% at six locations. This includes the M6 J20 and Cliff Lane Roundabout to the east of the development. However, the modelling also predicts impacts at the Grappenhall Lane/Broad Lane roundabout, Stretton Road/Barleycastle Lane, Witherwins Lane/Lyons Lane roundabout and Church Lane/Broad Lane. As with the AM, these locations are to the north and west. Again, as with the AM this is not expected.

7.2.6 Curtins has discussed the above results with WBC Highways and after a review of all information it would appear that:

- Some of the HGV restrictions to the west of the site have not been included in this version of the WMMTM;
- The loading point (Access) for the Proposed Development is located to the south of the Broad Lane roundabout on Barleycastle Lane. This is much further to the west than in reality with the actual access being located on Grappenhall Lane to the east of then Broad Lane roundabout; and
- The model does not include consideration of any mitigation at the M6 J20.

7.2.7 The above reasons explain why there is an apparent bias towards the west and WBC Highways Officers have confirmed that the impacts to the west are likely to be significantly lower in the next iteration of the Local Plan modelling which will seek to address the above matters.

7.2.8 Notwithstanding the above, the Proposed Development will not be fully operational by 2021 and therefore the above figures represent a significant overestimation of traffic flows in 2021.

2031 AM

Junctions	2031 Base	2031 Base with Dev	Difference	Percentage
1. The M6 / M56 interchange	24917	24758	-159	-0.6%
2. The A50 Cliff Lane / Lymm services roundabout	n/a	n/a	n/a	n/a
3. Both the M6 J20 Cliff Lane dumb bell roundabouts	4078	4115	38	0.9%
4. The A50 Cliff Lane/Grappenhall Lane roundabout	3019	3045	26	0.9%
5. Grappenhall Lane/Broad Lane roundabout	1961	2287	326	16.6%
6. Stretton Road / Barleycastle Lane	1607	1612	5	0.3%
7. Cat & Lion staggered crossroads (A49 / B5356)	1870	1883	12	0.6%
8. London Road / Lyons Lane	1719	1745	26	1.5%
9. Witherwins Lane / Lyons Lane roundabout	783	837	54	6.9%
10. A49 / A56 at Stockton Heath	1595	1621	26	1.6%
11. Lumb Brook Road canal underpass signals	1472	1485	13	0.9%
12. A56 / Ackers Road	1275	1282	7	0.5%
13. Church Lane / A56	752	746	-6	-0.8%
14. Church Lane / Broad Lane	372	390	18	4.8%
15. A50/A56	2112	1827	-285	-13.5%

Table 7.3 – WMMTM 2031 AM

7.2.9 The results demonstrate that if the entire development was complete by 2031, impacts in the AM in excess of 5% are only predicted at two junctions. This includes the Grappenhall Lane/Broad Lane roundabout and Witherwins Lane/Lyons Lane roundabout. As with 2021 this is not expected as the logical route to and from the development is via the M6 J20.

7.2.10 The results demonstrate that by 2031 the impact of the development is significantly less than 2021. This is partly because background traffic flows will have increased as a result of the Local Plan but also because various highway Improvements will have been implemented and vehicles are reassigning to alternative routes.

2031 PM

Junctions	2031 Base	2031 Base with Dev	Difference	Percentage
1. The M6 / M56 interchange	23778	23667	-111	-0.5%
2. The A50 Cliff Lane / Lymm services roundabout	n/a	n/a	n/a	n/a
3. Both the M6 J20 Cliff Lane dumb bell roundabouts	4245	4585	340	8.0%
4. The A50 Cliff Lane/Grappenhall Lane roundabout	3116	3218	102	3.3%
5. Grappenhall Lane/Broad Lane roundabout	2149	2338	189	8.8%
6. Stretton Road / Barleycastle Lane	2233	2303	70	3.1%
7. Cat & Lion staggered crossroads (A49 / B5356)	1898	1995	220	11.6%
8. London Road / Lyons Lane	1570	1611	41	2.6%
9. Witherwins Lane / Lyons Lane roundabout	845	917	72	8.5%
10. A49 / A56 at Stockton Heath	1639	1702	63	3.8%
11. Lumb Brook Road canal underpass signals	1486	1504	18	1.2%
12. A56 / Ackers Road	1289	1307	18	1.4%
13. Church Lane / A56	833	852	19	2.3%
14. Church Lane / Broad Lane	202	240	38	18.8%
15. A50/A56	2294	2264	-30	-1.3%

Table 7.4 – WMMTM 2031 PM

7.2.11 The results demonstrate that if the entire development was complete by 2031, impacts in the PM in excess of 5% are predicted at five junctions. This includes the M6 J20, Grappenhall Lane/Broad Lane roundabout, Cat and Lion junction, Witherwins Lane/Lyons Lane roundabout and Church Lane Broad Lane. As with all other scenarios this is not expected as the logical route to and from the development is via the M6 J20.

7.2.12 As with the AM peak period, the results demonstrate that by 2031 the impact of the development is significantly less than 2021. This is partly because background traffic flows will have increased as a result of the Local Plan but also because various highway Improvements will have been implemented and vehicles are reassigning to alternative routes.

7.3 Interpretation of Results

7.3.1 Having undertaken a detailed review of the results Curtins has reached the following conclusions;

- The 2021 assessment results assume full completion of the development. In reality the development is unlikely to be completed until 2028/2029. On this basis attention should be focused on 2031.
- The results for all scenarios appear to show a significant amount of traffic arriving and departing from the west or north west via the Grappenhall Lane/Broad Lane roundabout. This is counter intuitive given the location of the site adjacent to the M6 J20, and the fact that there are HGV restrictions to the west of the site.
- Having discussed this with WBC Curtins understands that:
    - Some of the HGV restrictions to the west of the site have not been included in this version of the WMMTM;
    - The loading point (Access) for the Proposed Development is located to the south of the Broad Lane roundabout on Barleycastle Lane. This is much further to the west than in reality with the actual access being located on Grappenhall Lane to the east of then Broad Lane roundabout; and
    - The model does not include consideration of any mitigation at the M6 J20.
- The above reasons explain why there is an apparent bias towards the west and WBC Highways Officers have confirmed that the impacts to the west are likely to be significantly lower in the next iteration of the Local Plan modelling which will seek to address the above matters.
- The traffic flows predicted by the WMMTM at the M6 J20, Cliff Lane/A50 roundabout and A50/A56 junctions are all less than the flows predicted in the conventional traffic forecasting contained in the previous section of this report. This confirms Curtins suspicions that the modelling is reassigning traffic to the west in favour of these junctions.
- The above also ensures that utilisation of the conventional flows for any capacity assessments is a robust approach.

7.4 Summary

7.4.1 Having reviewed the WMMTM outputs in detail it is considered that the conventional flows should be used for capacity assessments at the following locations:

- The A50 Cliff Lane / Lymm services roundabout;
- Both the M6 J20 Cliff Lane dumbbell roundabouts;
- The A50 Cliff Lane / Grappenhall Lane roundabout;
- Grappenhall Lane / Broad Lane roundabout;
- Broad Lane/Church Road; and
- A50/A56.

8.0 Capacity Assessments

8.1 Introduction

8.1.1 This section of the report summarises the results of the capacity assessments.

8.2 Approach to Modelling

8.2.1 All junctions have been modelled using industry standard software LinSig and Junctions 8 (ARCADY & PICADY).

8.2.1 LinSig is a software tool produced by JCT Consultancy which allows traffic engineers to model traffic signals and their effect on traffic capacities and queuing. As well as modelling the effects of traffic signals LinSig also optimises signal timings to reduce delay or increase capacity at a junction or group of interlinked junctions. It can also be used to model priority-controlled junctions as part of a wider network.

8.2.1 LinSig results refer to the Degree of Saturation (DoS) and Mean Maximum Queue (MMQ) predicted in each lane of the junction. A DoS of 100% indicates that the lane in question is operating at its theoretical capacity (point of saturation), whilst a DoS of 90% or less indicates that the lane is operating within its Practical Reserve Capacity.

ARCADY and PICADY

8.2.2 All ARCADY's and PICADY's have been undertaken using Junctions 8 modelling package. Results refer to the Ratio of Flow to Capacity (RFC) and queue length predicted on each arm of the junction.

8.2.3 An RFC of 1.00 indicates that the arm in question is operating at its theoretical capacity, whilst an RFC of 0.85 or less indicates that the arm is operating within its practical capacity.

The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts

8.2.4 Capacity assessment models of the three roundabouts that lie between the Site and the M56 / M6 motorways have been developed. Whilst the roundabout junctions at the A50 Cliff Lane / Grappenhall Lane and the M6 J20 are the responsibility of the local highway authority at WBC, the slip roads at the M6 J20 (up to the gyratory entry and exit points) are the responsibility of HE.

8.2.5 It has been noted that there is occasionally some queue interaction between the M6 J20 western dumbbell roundabout and the A50 Cliff Lane / B5356 Grappenhall Lane roundabout. It is for this reason that these junctions have been modelled as linked using LinSig, as agreed during scoping discussions.

8.2.6 In order to demonstrate that the LinSig model is fit for purpose, the base model has been validated and calibrated to the observed conditions. To achieve this, the observed queues have been compared with the modelled queues.

Methodology (Validation and Calibration of Base Model)

8.2.7 In setting up the existing base model, these junctions were first assessed using ARCADY to obtain the intercept correction factors and slope to be used in the LinSig model. A summary of the intercept values obtained from ARCADY is summarised in **Table 8.1** to **8.3** below.

Arm / Description		Intercept		Slope	
		Total	Per Lane	Total	Per Lane
1	A50 Cliff Lane (north)	1980.932	990.466	0.688	0.344
2	A50 Cliff Lane (south)	1915.070	957.535	0.675	0.337
3	Grappenhall Lane	1808.618	904.309	0.654	0.327

Table 8.1 – ARCADY Results for the A50 Cliff Lane / B5356 Grappenhall Lane Roundabout

Arm / Description		Intercept		Slope	
		Total	Per Lane	Total	Per Lane
1	M6 Southbound Off-slip	2929.172	1464.5	0.672	0.336
2	B5158 Cherry Lane	1978.213	989	0.521	0.2605
3	A50 Cliff Lane	3505.812	1168.604	0.752	0.2506
4	M6 / M56 On-slip	N/A	N/A	N/A	N/A
5	Internal Link to Western Roundabout	2424	1212	0.596	0.298

Table 8.2 – ARCADY Results for the M6 J20 Eastern Roundabout

Arm / Description		Intercept		Slope	
		Total	Per Lane	Total	Per Lane
1	A50 Cliff Lane West	2240.899	1120.4495	0.747	0.3735
2	A50 Cliff Lane East	1496.155	748.0775	0.598	0.299
3	Service Access	2177.784	1088.5	0.734	0.367

Table 8.3 – Lymm Services Roundabout

8.2.8 The above intercept and slope values were used initially as the basis of the LinSig give way parameters. The values were then adjusted for calibration and validation purposes to ensure that the modelled queues are comparable to the observed queues on Site.

8.2.9 HE raised comments in their response to Planning Application Reference P/2019/34799, dated 13th June 2019, stating the that 'submitted base model could be made to be sufficiently robust that it could be used to draw broad conclusions as to the appropriateness of the proposed mitigation, subject to minor amends.

8.2.10 The base model has been updated on the above basis and is summarised in **Table 8.4** overleaf. The full LinSig output is provided in **Appendix ~~G~~ I** at the rear of the document. The soft copy of the LinSig is also available upon request.

Arm / Description		2017 AM Peak Observed			2017 PM Peak Observed		
		DoS	Modelled Queue	Observed Queue	DoS	Modelled MMQ	Observed Queue
~~J1 M6 Junction 20~~							
~~1/1~~	~~M6 Southbound Offslip Ahead Left~~	~~99.9%~~	~~21.2~~	~~21~~	~~96.1%~~	~~14.7~~	~~14~~
~~1/2~~	~~M6 Southbound Offslip Ahead~~	~~100.0%~~	~~18.1~~	~~19~~	~~98.3%~~	~~17.2~~	~~17~~
~~2/1+2/2~~	~~B5158 Cherry Lane Ahead Left~~	~~98.5 : 103.8%~~	~~23.1~~	~~20~~	~~92.8 : 92.8%~~	~~6.1~~	~~6~~
~~3/1~~	~~Cliff Lane Westbound Left~~	~~87.8%~~	~~6.5~~	~~4~~	~~67.3%~~	~~1.1~~	~~3~~
~~3/2+3/3~~	~~Cliff Lane Westbound Ahead Right~~	~~97.6 : 97.1%~~	~~10.6~~	~~11~~	~~99.8 : 99.6%~~	~~18.7~~	~~19~~
~~4/1~~	~~M6 Northbound Offslip Ahead Left~~	~~74.4%~~	~~7.8~~	~~8~~	~~101.5%~~	~~30.4~~	~~21~~
~~4/2~~	~~M6 Northbound Offslip Ahead~~	~~86.8%~~	~~11.3~~	~~8~~	~~95.1%~~	~~19.8~~	~~20~~
~~5/2+5/1~~	~~Cliff Lane Eastbound Ahead Left~~	~~58.3 : 58.1%~~	~~2.9~~	~~3~~	~~52.1 : 46.5%~~	~~2.5~~	~~4~~
~~5/3~~	~~Cliff Lane Eastbound Ahead~~	~~92.8%~~	~~12.6~~	~~9~~	~~95.6%~~	~~11.6~~	~~11~~
~~6/1~~	~~Westbound Internal Circulatory Road Ahead~~	~~71.3%~~	~~10.1~~	~~n/a~~	~~101.5%~~	~~23.3~~	~~n/a~~
~~6/2~~	~~Westbound Internal Circulatory Road Right~~	~~30.4%~~	~~3.3~~	~~n/a~~	~~42.9%~~	~~4.8~~	~~n/a~~
~~8/1~~	~~Eastbound Internal Circulatory Ahead~~	~~46.6%~~	~~0.0~~	~~n/a~~	~~40.3%~~	~~0.0~~	~~n/a~~
~~8/2~~	~~Eastbound Internal Circulatory Ahead~~	~~41.6%~~	~~0.0~~	~~n/a~~	~~24.4%~~	~~0.0~~	~~n/a~~
~~12/1~~	~~Westbound Left~~	~~25.4%~~	~~0.0~~	~~n/a~~	~~13.7%~~	~~0.0~~	~~n/a~~
~~12/2~~	~~Westbound Ahead Left~~	~~44.2%~~	~~0.0~~	~~n/a~~	~~37.7%~~	~~0.0~~	~~n/a~~
~~17/1~~	~~Cliff Lane Westbound Ahead~~	~~60.5%~~	~~0.8~~	~~n/a~~	~~75.8%~~	~~2.7~~	~~n/a~~
~~J2 A50 Cliff Lane Grappenhall Lane~~							
~~1/1+1/2~~	~~A50 Knutsford Rd Left Ahead~~	~~98.3 : 98.3%~~	~~21.4~~	~~20~~	~~95.7 : 95.7%~~	~~10.4~~	~~10~~

Arm / Description		2017 AM Peak Observed			2017 PM Peak Observed		
		DoS	Modelled Queue	Observed Queue	DoS	Modelled MMQ	Observed Queue
~~2/1+2/2~~	~~A50 Cliff Lane Ahead Right~~	~~73.1 : 72.7%~~	~~1.3~~	~~1~~	~~81.4 : 82.6%~~	~~2.3~~	~~2~~
~~3/1+3/2~~	~~B5356 Grappenhall Lane Left Ahead~~	~~92.3 : 92.3%~~	~~8.9~~	~~8~~	~~99.0 : 99.0%~~	~~20.2~~	~~19~~
~~6/1~~	~~Cliff Lane Eastbound~~	~~84.8%~~	~~2.7~~	~~n/a~~	~~62.1%~~	~~0.8~~	~~n/a~~
~~J3 Lymm Services~~							
~~1/2+1/1~~	~~Cliff Lane East Ahead Left~~	~~28.2 : 28.2%~~	~~0.2~~	~~5~~	~~59.1 : 59.1%~~	~~5.3~~	~~0.7~~
~~2/1+2/2~~	~~Services Access Ahead Left~~	~~77.9 : 77.9%~~	~~1.7~~	~~3~~	~~68.4 : 68.4%~~	~~2.7~~	~~1.1~~
~~3/1+3/2~~	~~A50 Cliff Lane West Ahead Ahead2~~	~~56.5 : 56.5%~~	~~0.6~~	~~6~~	~~41.6 : 41.6%~~	~~1.8~~	~~0.4~~
J1 M6 Junction 20							
1/1	M6 Southbound Offslip Ahead Left	99.3%	20.0	21	96.1%	14.9	14
1/2	M6 Southbound Offslip Ahead	99.6%	17.5	19	98.3%	17.1	17
2/1+2/2	B5158 Cherry Lane Ahead Left	79.1 : 99.3%	6.9	20	92.8 : 92.8%	6.0	6
3/1	Cliff Lane Westbound Left	87.3%	6.1	4	67.3%	1.0	3
3/2+3/3	Cliff Lane Westbound Ahead Right	98.0 : 98.0%	13.0	11	99.6 : 99.6%	17.7	19
4/1	M6 Northbound Offslip Ahead Left	74.4%	7.8	8	97.3%	22.2	21
4/2	M6 Northbound Offslip Ahead	87.4%	11.6	8	91.8%	17.1	20
5/2+5/1	Cliff Lane Eastbound Ahead Left	67.3 : 48.3%	2.2	3	63.7 : 51.4%	3.0	4
5/3	Cliff Lane Eastbound Ahead	93.1%	13.0	9	91.3%	9.5	11
6/1	Westbound Internal Circulatory Road Ahead	53.4%	5.3	n/a	91.6%	12.7	n/a
6/2	Westbound Internal Circulatory Road Right	53.0%	6.4	n/a	63.8%	7.4	n/a
8/1	Eastbound Internal Circulatory Ahead	46.6%	0.0	n/a	40.3%	0.0	n/a
8/2	Eastbound Internal Circulatory Ahead	41.6%	0.0	n/a	24.4%	0.0	n/a

Arm / Description		2017 AM Peak Observed			2017 PM Peak Observed		
		DoS	Modelled Queue	Observed Queue	DoS	Modelled MMQ	Observed Queue
12/1	Westbound Left	25.4%	0.0	n/a	13.7%	0.0	n/a
12/2	Westbound Ahead Left	44.6%	0.0	n/a	37.7%	0.0	n/a
J2 A50 Cliff Lane Grappenhall Lane							
1/1+1/2	A50 Knutsford Rd Left Ahead	99.9 : 99.9%	14.7	20	99.3 : 99.3%	10.2	10
2/1+2/2	A50 Cliff Lane Ahead Right	56.5 : 58.4%	0.7	1	79.6 : 79.6%	1.9	2
3/1+3/2	B5356 Grappenhall Lane Left Ahead	97.1 : 97.1%	8.9	8	99.4 : 99.4%	12.1	19
J3 Lymm Services							
1/2+1/1	Cliff Lane East Ahead Left	28.2 : 28.2%	0.2	5	59.1 : 59.1%	5.3	0.7
2/1+2/2	Services Access Ahead Left	77.9 : 77.9%	1.7	3	68.4 : 68.4%	2.7	1.1
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	56.5 : 56.5%	0.6	6	41.6 : 41.6%	1.8	0.4
Cycle Time (s)		58			61		
PRC (%)		-11.0			-10.7		
Delay (pcuhr)		85.76			96.51		
Delay per Vehicle (s)		33.1			37.4		

Table 8.4 – The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts 2017

8.2.11 It is evident from **Table 8.4** that the observed queues are broadly similar to the modelled queues on majority of the links within the network. On the above basis it is considered that the base model is fit for purpose and therefore provides an effective tool to assess the impact of the Proposed Development.

8.2.12 The validated existing scenario model has been used to assess the capacity of the highway network for the opening year of 2021 and future year of 2029 as summarised in the tables below. The base flows include all committed development set out in **Section 6**.

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
~~2021 Base~~					
~~J1 – M6 Junction 20 Existing Junction~~					
~~1/1~~	~~M6 Southbound Offslip Ahead Left~~	~~110.0%~~	~~53.8~~	~~100.8%~~	~~44.7~~
~~1/2~~	~~M6 Southbound Offslip Ahead~~	~~112.5%~~	~~48.2~~	~~106.6%~~	~~53.7~~

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
~~2/1+2/2~~	~~B5158 Cherry Lane Ahead Left~~	~~100.8 : 105.7%~~	~~25.5~~	~~100.5 : 100.5%~~	~~13.9~~
~~3/1~~	~~Cliff Lane Westbound Left~~	~~90.5%~~	~~7.6~~	~~69.1%~~	~~1.6~~
~~3/2+3/3~~	~~Cliff Lane Westbound Ahead Right~~	~~104.6 : 103.7%~~	~~26.4~~	~~107.0 : 106.7%~~	~~49.2~~
~~4/1~~	~~M6 Northbound Offslip Ahead Left~~	~~73.0%~~	~~7.8~~	~~101.3%~~	~~30.7~~
~~4/2~~	~~M6 Northbound Offslip Ahead~~	~~84.0%~~	~~10.9~~	~~94.7%~~	~~19.8~~
~~5/2+5/1~~	~~Cliff Lane Eastbound Ahead Left~~	~~62.3 : 61.6%~~	~~3.3~~	~~55.3 : 47.4%~~	~~2.7~~
~~5/3~~	~~Cliff Lane Eastbound Ahead~~	~~99.4%~~	~~20.3~~	~~101.4%~~	~~25.1~~
~~6/1~~	~~Westbound Internal Circulatory Road Ahead~~	~~70.6%~~	~~9.5~~	~~104.5%~~	~~37.0~~
~~6/2~~	~~Westbound Internal Circulatory Road Right~~	~~29.6%~~	~~3.0~~	~~42.9%~~	~~4.7~~
~~8/1~~	~~Eastbound Internal Circulatory Ahead~~	~~48.7%~~	~~0.0~~	~~41.5%~~	~~0.0~~
~~8/2~~	~~Eastbound Internal Circulatory Ahead~~	~~44.4%~~	~~0.0~~	~~25.1%~~	~~0.0~~
~~12/1~~	~~Westbound Left~~	~~26.3%~~	~~0.0~~	~~13.8%~~	~~0.0~~
~~12/2~~	~~Westbound Ahead Left~~	~~43.5%~~	~~0.0~~	~~37.9%~~	~~0.0~~
~~17/1~~	~~Cliff Lane Westbound Ahead~~	~~59.7%~~	~~0.7~~	~~76.2%~~	~~2.2~~
~~J2 A50 Cliff Lane Grappenhall Lane Existing Junction~~					
~~1/1+1/2~~	~~A50 Knutsford Rd Left Ahead~~	~~102.7 : 102.7%~~	~~57.2~~	~~97.2 : 97.2%~~	~~12.4~~
~~2/1+2/2~~	~~A50 Cliff Lane Ahead Right~~	~~74.9 : 73.9%~~	~~1.7~~	~~82.0 : 83.0%~~	~~2.3~~
~~3/1+3/2~~	~~B5356 Grappenhall Lane Left Ahead~~	~~106.2 : 106.2%~~	~~61.3~~	~~105.2 : 105.2%~~	~~58.8~~
~~6/1~~	~~Cliff Lane Eastbound~~	~~87.2%~~	~~3.3~~	~~62.2%~~	~~0.8~~
~~J3 Lymm Services~~					
~~1/2+1/1~~	~~Cliff Lane East Ahead Left~~	~~29.0 : 29.0%~~	~~0.2~~	~~60.6 : 60.6%~~	~~0.8~~
~~2/1+2/2~~	~~Services Access Ahead Left~~	~~80.0 : 80.0%~~	~~1.9~~	~~70.5 : 70.5%~~	~~1.2~~
~~3/1+3/2~~	~~A50 Cliff Lane West Ahead Ahead2~~	~~57.9 : 57.9%~~	~~0.7~~	~~42.5 : 42.5%~~	~~0.4~~
2021 Base					
J1 – M6 Junction 20 Existing Junction					
1/1	M6 Southbound Offslip Ahead Left	109.3%	52.4	101.2%	38.7
1/2	M6 Southbound Offslip Ahead	111.6%	46.6	108.5%	53.1
2/1+2/2	B5158 Cherry Lane Ahead Left	81.3 : 101.6%	16.0	102.3 : 102.3%	15.8
3/1	Cliff Lane Westbound Left	90.0%	7.3	69.5%	1.4
3/2+3/3	Cliff Lane Westbound Ahead Right	103.0 : 103.0%	28.6	105.2 : 105.2%	48.1
4/1	M6 Northbound Offslip Ahead Left	73.0%	7.8	101.3%	30.7
4/2	M6 Northbound Offslip Ahead	84.6%	11.0	95.4%	20.6
5/2+5/1	Cliff Lane Eastbound Ahead Left	71.1 : 51.9%	3.8	66.0 : 54.7%	3.2
5/3	Cliff Lane Eastbound Ahead	98.9%	19.4	95.2%	11.7

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
6/1	Westbound Internal Circulatory Road Ahead	52.9%	4.9	93.0%	12.9
6/2	Westbound Internal Circulatory Road Right	51.6%	5.9	60.7%	6.9
8/1	Eastbound Internal Circulatory Ahead	48.7%	0.0	41.5%	0.0
8/2	Eastbound Internal Circulatory Ahead	44.4%	0.0	25.4%	0.0
12/1	Westbound Left	26.3%	0.0	14.2%	0.0
12/2	Westbound Ahead Left	44.0%	0.0	37.8%	0.0
J2 A50 Cliff Lane Grappenhall Lane Existing Junction					
1/1+1/2	A50 Knutsford Rd Left Ahead	103.0 : 103.0%	64.3	101.2 : 101.2%	36.9
2/1+2/2	A50 Cliff Lane Ahead Right	59.5 : 59.8%	0.7	80.1 : 81.3%	2.1
3/1+3/2	B5356 Grappenhall Lane Left Ahead	111.8 : 111.8%	80.1	106.4 : 106.4%	61.8
J3 Lymm Services					
1/2+1/1	Cliff Lane East Ahead Left	29.0 : 29.0%	0.2	60.6 : 60.6%	0.8
2/1+2/2	Services Access Ahead Left	80.0 : 80.0%	1.9	70.5 : 70.5%	1.2
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	57.9 : 57.9%	0.7	42.5 : 42.5%	0.4
Cycle Time (s)		58		61	
PRC (%)		-24.2		-20.6	
Delay (pcuhr)		190.47		176.65	
Delay per Vehicle (s)		70.3		65.7	

Table 8.5 – The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts 2021

8.2.13 **Table 8.5** confirms that certain arms at all three junctions are likely to operate at or over capacity by 2021 as a result of existing traffic flows and committed development within the area. Grappenhall Lane, Knutsford Road and the M6 On and Off slips all show a relatively high levels of queuing.

8.2.14 **Table 8.6** below summarises the model results for the 2029 future year.

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
~~**2029 Base**~~					
~~**J1 – M6 Junction 20 Existing Junction**~~					
~~1/1~~	~~M6 Southbound Offslip Ahead Left~~	~~123.2%~~	~~94.1~~	~~110.1%~~	~~67.7~~
~~1/2~~	~~M6 Southbound Offslip Ahead~~	~~125.0%~~	~~78.5~~	~~114.6%~~	~~74.6~~
~~2/1+2/2~~	~~B5158 Cherry Lane Ahead Left~~	~~104.9 : 110.2%~~	~~34.3~~	~~103.4 : 103.4%~~	~~16.7~~
~~3/1~~	~~Cliff Lane Westbound Left~~	~~85.8%~~	~~5.4~~	~~72.2%~~	~~1.9~~

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
~~3/2+3/3~~	~~Cliff Lane Westbound Ahead Right~~	~~94.2 : 93.8%~~	~~7.8~~	~~112.5 : 112.5%~~	~~68.8~~
~~4/1~~	~~M6 Northbound Offslip Ahead Left~~	~~78.0%~~	~~8.8~~	~~112.6%~~	~~68.5~~
~~4/2~~	~~M6 Northbound Offslip Ahead~~	~~89.6%~~	~~13.0~~	~~105.5%~~	~~44.8~~
~~5/2+5/1~~	~~Cliff Lane Eastbound Ahead Left~~	~~67.3 : 65.7%~~	~~4.2~~	~~58.0 : 50.4%~~	~~2.9~~
~~5/3~~	~~Cliff Lane Eastbound Ahead~~	~~109.1%~~	~~56.4~~	~~106.2%~~	~~31.8~~
~~6/1~~	~~Westbound Internal Circulatory Road Ahead~~	~~71.8%~~	~~9.8~~	~~100.9%~~	~~20.6~~
~~6/2~~	~~Westbound Internal Circulatory Road Right~~	~~29.8%~~	~~3.2~~	~~40.0%~~	~~4.3~~
~~8/1~~	~~Eastbound Internal Circulatory Ahead~~	~~52.0%~~	~~0.0~~	~~42.6%~~	~~0.0~~
~~8/2~~	~~Eastbound Internal Circulatory Ahead~~	~~44.0%~~	~~0.0~~	~~25.6%~~	~~0.0~~
~~12/1~~	~~Westbound Left~~	~~21.7%~~	~~0.0~~	~~13.1%~~	~~0.0~~
~~12/2~~	~~Westbound Ahead Left~~	~~42.6%~~	~~0.0~~	~~37.7%~~	~~0.0~~
~~17/1~~	~~Cliff Lane Westbound Ahead~~	~~61.8%~~	~~0.8~~	~~76.6%~~	~~2.8~~
~~J2 A50 Cliff Lane Grappenhall Lane Existing Junction~~					
~~1/1+1/2~~	~~A50 Knutsford Rd Left Ahead~~	~~109.6 : 109.6%~~	~~91.4~~	~~102.8 : 102.8%~~	~~41.6~~
~~2/1+2/2~~	~~A50 Cliff Lane Ahead Right~~	~~80.0 : 79.0%~~	~~6.1~~	~~87.4 : 88.7%~~	~~7.3~~
~~3/1+3/2~~	~~B5356 Grappenhall Lane Left Ahead~~	~~115.5 : 115.5%~~	~~94.2~~	~~116.0 : 116.0%~~	~~91.3~~
~~6/1~~	~~Cliff Lane Eastbound~~	~~87.1%~~	~~3.3~~	~~62.4%~~	~~0.8~~
~~J3 Lymm Services~~					
~~1/2+1/1~~	~~Cliff Lane East Ahead Left~~	~~31.6 : 31.6%~~	~~0.2~~	~~65.4 : 65.4%~~	~~0.9~~
~~2/1+2/2~~	~~Services Access Ahead Left~~	~~86.2 : 86.2%~~	~~2.9~~	~~76.9 : 76.9%~~	~~1.6~~
~~3/1+3/2~~	~~A50 Cliff Lane West Ahead Ahead2~~	~~62.0 : 62.0%~~	~~0.8~~	~~45.4 : 45.4%~~	~~0.4~~
2029 Base					
J1 – M6 Junction 20 Existing Junction					
1/1	M6 Southbound Offslip Ahead Left	124.3%	96.2	113.3%	74.3
1/2	M6 Southbound Offslip Ahead	123.0%	75.3	116.6%	78.1
2/1+2/2	B5158 Cherry Lane Ahead Left	84.2 : 104.7%	21.7	100.8 : 100.8%	16.3
3/1	Cliff Lane Westbound Left	89.5%	7.3	71.9%	1.3
3/2+3/3	Cliff Lane Westbound Ahead Right	103.3 : 103.3%	34.2	110.3 : 110.3%	67.2
4/1	M6 Northbound Offslip Ahead Left	78.0%	8.8	107.9%	52.9
4/2	M6 Northbound Offslip Ahead	90.2%	13.2	101.8%	33.6
5/2+5/1	Cliff Lane Eastbound Ahead Left	76.9 : 62.9%	4.8	70.6 : 52.1%	3.5
5/3	Cliff Lane Eastbound Ahead	106.4%	50.4	102.4%	31.8
6/1	Westbound Internal Circulatory Road Ahead	52.5%	4.8	94.7%	13.4

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
6/2	Westbound Internal Circulatory Road Right	49.2%	5.6	57.8%	6.4
8/1	Eastbound Internal Circulatory Ahead	52.0%	0.0	43.7%	0.0
8/2	Eastbound Internal Circulatory Ahead	44.9%	0.0	26.5%	0.0
12/1	Westbound Left	23.8%	0.0	13.1%	0.0
12/2	Westbound Ahead Left	43.2%	0.0	37.4%	0.0
J2 A50 Cliff Lane Grappenhall Lane Existing Junction					
1/1+1/2	A50 Knutsford Rd Left Ahead	109.5 : 109.5%	91.1	106.7 : 106.7%	48.5
2/1+2/2	A50 Cliff Lane Ahead Right	63.5 : 64.0%	0.9	86.3 : 86.9%	3.2
3/1+3/2	B5356 Grappenhall Lane Left Ahead	120.8 : 120.8%	107.9	116.9 : 116.9%	93.2
J3 Lymm Services					
1/2+1/1	Cliff Lane East Ahead Left	31.6 : 31.6%	0.2	65.4 : 65.4%	0.9
2/1+2/2	Services Access Ahead Left	86.2 : 86.2%	2.9	76.9 : 76.9%	1.6
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	62.0 : 62.0%	0.8	45.4 : 45.4%	0.4
Cycle Time (s)		58		61	
PRC (%)		-38.1		-29.9	
Delay (pcuhr)		333.57		333.92	
Delay per Vehicle (s)		115.5		116.5	

Table 8.6 – The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts 2029

8.2.15 **Table 8.6** demonstrates that certain arms of all three junctions will continue to operate over capacity in 2029 for both the AM and PM peak with increases in queueing and delay when compared to the 2021 base scenario.

8.2.16 **Table 8.7** summarises the 2021 development scenario which includes the addition of all development traffic i.e. full build out.

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
~~2021 Base plus Development~~					
~~J1 – M6 Junction 20 Existing Junction~~					
~~1/1~~	~~M6 Southbound Offslip Ahead Left~~	~~118.7%~~	~~80.1~~	~~110.7%~~	~~71.0~~
~~1/2~~	~~M6 Southbound Offslip Ahead~~	~~147.1%~~	~~131.0~~	~~116.9%~~	~~86.0~~
~~2/1+2/2~~	~~B5158 Cherry Lane Ahead Left~~	~~98.1 : 102.0%~~	~~24.1~~	~~174.3 : 174.3%~~	~~111.5~~
~~3/1~~	~~Cliff Lane Westbound Left~~	~~79.1%~~	~~2.4~~	~~63.3%~~	~~0.9~~

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
~~3/2+3/3~~	~~Cliff Lane Westbound Ahead Right~~	~~103.8 : 104.2%~~	~~28.9~~	~~111.2 : 110.9%~~	~~65.6~~
~~4/1~~	~~M6 Northbound Offslip Ahead Left~~	~~64.1%~~	~~8.2~~	~~116.2%~~	~~83.9~~
~~4/2~~	~~M6 Northbound Offslip Ahead~~	~~56.0%~~	~~7.0~~	~~108.5%~~	~~57.3~~
~~5/2+5/1~~	~~Cliff Lane Eastbound Ahead Left~~	~~67.2 : 66.2%~~	~~2.6~~	~~60.5 : 57.1%~~	~~3.0~~
~~5/3~~	~~Cliff Lane Eastbound Ahead~~	~~116.2%~~	~~84.6~~	~~143.8%~~	~~111.3~~
~~6/1~~	~~Westbound Internal Circulatory Road Ahead~~	~~106.5%~~	~~43.4~~	~~104.8%~~	~~40.1~~
~~6/2~~	~~Westbound Internal Circulatory Road Right~~	~~39.3%~~	~~3.7~~	~~38.6%~~	~~4.2~~
~~8/1~~	~~Eastbound Internal Circulatory Ahead~~	~~49.0%~~	~~0.0~~	~~39.9%~~	~~0.0~~
~~8/2~~	~~Eastbound Internal Circulatory Ahead~~	~~45.3%~~	~~0.0~~	~~26.3%~~	~~0.0~~
~~12/1~~	~~Westbound Left~~	~~19.6%~~	~~0.0~~	~~8.9%~~	~~0.0~~
~~12/2~~	~~Westbound Ahead Left~~	~~43.6%~~	~~0.0~~	~~38.5%~~	~~0.0~~
~~17/1~~	~~Cliff Lane Westbound Ahead~~	~~66.0%~~	~~1.0~~	~~80.6%~~	~~3.8~~
~~J2 A50 Cliff Lane Grappenhall Lane Existing Junction~~					
~~1/1+1/2~~	~~A50 Knutsford Rd Left Ahead~~	~~101.9 : 101.9%~~	~~59.0~~	~~96.2 : 96.2%~~	~~10.0~~
~~2/1+2/2~~	~~A50 Cliff Lane Ahead Right~~	~~87.2 : 84.2%~~	~~3.0~~	~~98.9 : 93.7%~~	~~27.5~~
~~3/1+3/2~~	~~B5356 Grappenhall Lane Left Ahead~~	~~137.3 : 137.3%~~	~~179.7~~	~~166.2 : 166.2%~~	~~286.1~~
~~6/1~~	~~Cliff Lane Eastbound~~	~~86.5%~~	~~3.1~~	~~61.4%~~	~~0.8~~
~~J3 Lymm Services~~					
~~1/2+1/1~~	~~Cliff Lane East Ahead Left~~	~~30.7 : 30.7%~~	~~0.2~~	~~62.3 : 62.3%~~	~~0.8~~
~~2/1+2/2~~	~~Services Access Ahead Left~~	~~81.6 : 81.6%~~	~~2.2~~	~~73.2 : 73.2%~~	~~1.3~~
~~3/1+3/2~~	~~A50 Cliff Lane West Ahead Ahead2~~	~~60.7 : 60.3%~~	~~0.8~~	~~47.9 : 47.4%~~	~~0.5~~
2021 Base plus Development					
J1 – M6 Junction 20 Existing Junction					
1/1	M6 Southbound Offslip Ahead Left	121.9%	87.3	116.1%	84.0
1/2	M6 Southbound Offslip Ahead	147.5%	131.4	124.3%	102.1
2/1+2/2	B5158 Cherry Lane Ahead Left	80.3 : 99.3%	7.0	102.2 : 102.2%	14.6
3/1	Cliff Lane Westbound Left	82.7%	3.7	64.1%	0.9
3/2+3/3	Cliff Lane Westbound Ahead Right	103.7 : 103.7%	32.1	89.0 : 103.3%	39.5
4/1	M6 Northbound Offslip Ahead Left	64.1%	8.2	111.4%	66.8
4/2	M6 Northbound Offslip Ahead	56.4%	7.2	104.8%	43.5
5/2+5/1	Cliff Lane Eastbound Ahead Left	66.1 : 57.9%	2.3	63.4 : 52.2%	3.2
5/3	Cliff Lane Eastbound Ahead	110.1%	69.6	130.8%	93.1
6/1	Westbound Internal Circulatory Road Ahead	83.5%	10.2	101.2%	20.4
6/2	Westbound Internal Circulatory Road Right	60.9%	6.2	51.9%	5.6

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
8/1	Eastbound Internal Circulatory Ahead	49.0%	0.0	40.9%	0.0
8/2	Eastbound Internal Circulatory Ahead	47.4%	0.0	28.8%	0.0
12/1	Westbound Left	22.0%	0.0	10.0%	0.0
12/2	Westbound Ahead Left	44.2%	0.0	38.1%	0.0
J2 A50 Cliff Lane Grappenhall Lane Existing Junction					
1/1+1/2	A50 Knutsford Rd Left Ahead	103.0 : 103.0%	65.0	101.2 : 101.2%	37.1
2/1+2/2	A50 Cliff Lane Ahead Right	99.3 : 99.3%	16.4	90.8 : 90.8%	4.7
3/1+3/2	B5356 Grappenhall Lane Left Ahead	146.6 : 146.6%	203.8	170.0 : 170.0%	294.1
J3 Lymm Services					
1/2+1/1	Cliff Lane East Ahead Left	30.7 : 30.7%	0.2	62.3 : 62.3%	0.8
2/1+2/2	Services Access Ahead Left	81.6 : 81.6%	2.1	73.2 : 73.2%	1.3
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	60.7 : 60.2%	0.8	48.0 : 47.3%	0.5
Cycle Time (s)		58		61	
PRC (%)		-63.9		-88.9	
Delay (pcuhr)		472.77		612.47	
Delay per Vehicle (s)		155.4		197.3	

Table 8.7 – The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts 2021

8.2.17 The results in **Table 8.7** demonstrate that there would be a worsening of the existing queuing and delay at all the above junctions when the development traffic is added on the network.

8.2.18 The LinSig results for the 2029 base with development scenario is summarised in **Table 8.8**.

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
~~2029 Base plus Development~~					
~~J1 – M6 Junction 20 Existing Junction~~					
~~1/1~~	~~M6 Southbound Offslip Ahead Left~~	~~131.2%~~	~~112.5~~	~~121.9%~~	~~102.5~~
~~1/2~~	~~M6 Southbound Offslip Ahead~~	~~162.9%~~	~~162.5~~	~~126.2%~~	~~112.3~~
~~2/1+2/2~~	~~B5158 Cherry Lane Ahead Left~~	~~95.7 : 100.5%~~	~~17.3~~	~~158.7 : 158.7%~~	~~98.3~~
~~3/1~~	~~Cliff Lane Westbound Left~~	~~78.9%~~	~~2.8~~	~~64.0%~~	~~0.9~~
~~3/2+3/3~~	~~Cliff Lane Westbound Ahead Right~~	~~101.2 : 100.8%~~	~~26.1~~	~~120.4 : 120.7%~~	~~98.3~~
~~4/1~~	~~M6 Northbound Offslip Ahead Left~~	~~75.8%~~	~~10.1~~	~~104.9%~~	~~46.5~~
~~4/2~~	~~M6 Northbound Offslip Ahead~~	~~67.2%~~	~~8.8~~	~~98.0%~~	~~26.9~~

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
~~5/2+5/1~~	~~Cliff Lane Eastbound Ahead Left~~	~~71.0 : 70.9%~~	~~3.5~~	~~67.3 : 59.3%~~	~~3.6~~
~~5/3~~	~~Cliff Lane Eastbound Ahead~~	~~125.6%~~	~~111.7~~	~~172.6%~~	~~148.5~~
~~6/1~~	~~Westbound Internal Circulatory Road Ahead~~	~~93.2%~~	~~17.5~~	~~121.4%~~	~~104.6~~
~~6/2~~	~~Westbound Internal Circulatory Road Right~~	~~33.9%~~	~~3.4~~	~~44.3%~~	~~4.4~~
~~8/1~~	~~Eastbound Internal Circulatory Ahead~~	~~52.2%~~	~~0.0~~	~~44.9%~~	~~0.0~~
~~8/2~~	~~Eastbound Internal Circulatory Ahead~~	~~44.8%~~	~~0.0~~	~~23.5%~~	~~0.0~~
~~12/1~~	~~Westbound Left~~	~~17.1%~~	~~0.0~~	~~7.5%~~	~~0.0~~
~~12/2~~	~~Westbound Ahead Left~~	~~42.7%~~	~~0.0~~	~~37.3%~~	~~0.0~~
~~17/1~~	~~Cliff Lane Westbound Ahead~~	~~70.1%~~	~~1.2~~	~~79.3%~~	~~1.9~~
~~J2 A50 Cliff Lane Grappenhall Lane Existing Junction~~					
~~1/1+1/2~~	~~A50 Knutsford Rd Left Ahead~~	~~109.0 : 109.0%~~	~~91.1~~	~~101.2 : 101.2%~~	~~39.3~~
~~2/1+2/2~~	~~A50 Cliff Lane Ahead Right~~	~~90.8 : 87.5%~~	~~8.4~~	~~104.0 : 97.6%~~	~~116.2~~
~~3/1+3/2~~	~~B5356 Grappenhall Lane Left Ahead~~	~~147.7 : 147.7%~~	~~216.7~~	~~177.0 : 177.0%~~	~~321.1~~
~~6/1~~	~~Cliff Lane Eastbound~~	~~86.7%~~	~~3.2~~	~~61.6%~~	~~0.8~~
~~J3 Lymm Services~~					
~~1/2+1/1~~	~~Cliff Lane East Ahead Left~~	~~33.2 : 33.2%~~	~~0.2~~	~~67.2 : 67.2%~~	~~1.0~~
~~2/1+2/2~~	~~Services Access Ahead Left~~	~~87.7 : 87.7%~~	~~3.3~~	~~79.7 : 79.7%~~	~~1.9~~
~~3/1+3/2~~	~~A50 Cliff Lane West Ahead Ahead2~~	~~64.3 : 63.8%~~	~~0.9~~	~~50.8 : 49.8%~~	~~0.5~~
2029 Base plus Development					
J1 – M6 Junction 20 Existing Junction					
1/1	M6 Southbound Offslip Ahead Left	136.2%	122.3	126.1%	112.0
1/2	M6 Southbound Offslip Ahead	161.0%	159.6	131.3%	122.7
2/1+2/2	B5158 Cherry Lane Ahead Left	83.1 : 102.6%	20.1	103.5 : 103.5%	16.4
3/1	Cliff Lane Westbound Left	82.4%	4.1	69.8%	1.1
3/2+3/3	Cliff Lane Westbound Ahead Right	104.0 : 104.0%	35.6	99.7 : 118.3%	68.5
4/1	M6 Northbound Offslip Ahead Left	75.8%	10.1	118.1%	94.7
4/2	M6 Northbound Offslip Ahead	67.6%	8.9	111.0%	69.3
5/2+5/1	Cliff Lane Eastbound Ahead Left	71.2 : 61.2%	3.0	65.1 : 54.9%	3.4
5/3	Cliff Lane Eastbound Ahead	117.2%	91.7	133.4%	101.2
6/1	Westbound Internal Circulatory Road Ahead	71.5%	7.6	103.3%	30.5
6/2	Westbound Internal Circulatory Road Right	50.0%	5.1	48.5%	5.1
8/1	Eastbound Internal Circulatory Ahead	52.2%	0.0	41.9%	0.0
8/2	Eastbound Internal Circulatory Ahead	47.5%	0.0	29.5%	0.0

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
12/1	Westbound Left	19.3%	0.0	11.2%	0.0
12/2	Westbound Ahead Left	43.5%	0.0	38.0%	0.0
17/1	Cliff Lane Westbound Ahead	70.1%	1.2	38.6%	0.0
J2 A50 Cliff Lane Grappenhall Lane Existing Junction					
1/1+1/2	A50 Knutsford Rd Left Ahead	109.5 : 109.5%	92.8	106.7 : 106.7%	49.0
2/1+2/2	A50 Cliff Lane Ahead Right	103.4 : 103.4%	76.8	95.7 : 95.7%	9.2
3/1+3/2	B5356 Grappenhall Lane Left Ahead	156.1 : 156.1%	236.7	182.5 : 182.5%	331.4
J3 Lymm Services					
1/2+1/1	Cliff Lane East Ahead Left	33.2 : 33.2%	0.2	67.2 : 67.2%	1.0
2/1+2/2	Services Access Ahead Left	87.7 : 87.7%	3.3	79.6 : 79.6%	1.9
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	64.3 : 63.8%	0.9	50.9 : 49.7%	0.5
Cycle Time (s)		58		61	
PRC (%)		-78.9		-102.8	
Delay (pcuhr)		640.85		817.10	
Delay per Vehicle (s)		198.8		248.9	

Table 8.8 – The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts 2029

8.2.19 The above results confirm that improvements will be required in order to mitigate the impact of the development traffic on the highway network.

8.2.20 It is noted that the M6 J20 is identified within WBC's "Preferred Development Option Regulation 18 Consultation" document as one where an 'upgrade' will be necessary to deliver the emerging Local Plan aspirations, although there are no details at this stage on what such an upgrade would entail. Further details are expected to be published by HE/WBC as part of a) the new LTP, and b) the Infrastructure Schedule that will form part of the next stage of the emerging Local Plan (the Draft Local Plan).

8.2.21 Notwithstanding this, a comprehensive improvement scheme for the A50 Cliff Lane / B5356 Grappenhall Lane roundabout and the M6 J20 dumbbell roundabouts has been proposed to mitigate the impacts of the development. The proposed scheme is shown on **Plan 64076-CUR-00-XX-DR-TP-75011-~~P03~~P06** to the rear of this report.

8.2.22 The proposed improvement scheme includes the following:

- ~~Relocation, signalisation and widening of the entry arms into the A50 Cliff Lane / B5356 Grappenhall Lane roundabout to rationalise the lanes / directional arrows, and improve usability for HGV movements;~~

- ~~Signalisation of the two M6 J20 dumbbell roundabouts;~~
- ~~Widening of the circulatory carriageway on the two M6 J20 dumbbell roundabouts and rationalisation of the lane markings / directional arrows; and~~
- ~~Widening of the A50 Cliff Lane link between the Lymm Services roundabout and the dumbbell roundabouts.~~
- Relocation and realignment of the A50 Cliff Lane roundabout to the west of its existing location to enhance the storage capacity of the link between the roundabout and the motorway;
- Full signalisation of the new realigned A50 Cliff Lane roundabout with widening of all approach arms and reduction of the exit arm onto the A50 to one lane;
- Widening of the A50 link between the A50 Cliff Lane roundabout to provide two lanes for much of the links length;
- Partial signalisation of the two M6 J20 dumbbell roundabouts;
- Widening of the M6 Northbound off-slip;
- Widening of the circulatory carriageway on the two M6 J20 dumbbell roundabouts and rationalisation of the lane markings / directional arrows, implementation of a yellow box and installation of queue detectors;
- Incorporating MOVA delay management (or equivalent technology) and appropriate queue detection; and
- Widening on the eastern approach to the dumbbell roundabouts.

8.2.23 The scheme is comparable to the Liberty scheme albeit the relocation of the A50 roundabout offers additional benefits. The scheme has been discussed in detail with WBC Highways and HE who are generally supportive of the proposals.

8.2.24 HE has also issued a series of additional responses dated 16th October 2019 and 20th December 2019, and Curtins have met with HE on 20th January 2020. The purpose of these responses and meeting were to review of the revised mitigation suggested at the M6 Junction 20 and the adjacent Grappenhall Lane / A50 roundabout. The first response dated 13th June 2019 acknowledges that the repositioning of the Grappenhall Lane/A50 roundabout to the west is welcomed. This is something that the Stobart application was unable to offer due to land constraints, but it was agreed by WBC Highways and HE during the pre-application stage that it would result in a significant betterment to the mitigation proposed by Stobart.

8.2.25 Notwithstanding this, subsequent discussions have been undertaken regarding the mitigation model, and Curtins have addressed them as such:

- In Post Submission Note 1, accompanied with **Plan 64076-CUR-00-XX-DR-TP-75011-P04**:
  - Arm J2:4 – The LinSig model has been amended;

- Arm 2:1 – Drawing has been updated;
- Arm J2.2 – Drawing has been updated;
- Arm J1:7 – The LinSig model has been amended;
- Arm J1:9 – The LinSig model has been amended;
- Arm J1:10 – The LinSig model has been amended;
- Arm J1:11 – The LinSig model has been amended;
- Arm J1:8 – This arm has been deleted from the LinSig model;
- Give Way Values – The changes in the give way parameters for arm J1:3 is as result of the improvements proposed in this location as part of the development proposals. With regards J1:2 this has been amended to replicate the base; and
- Saturation Flows – Radius has been included for all arms.

- In Post Submission Note 2, accompanied with **Plan 64076-CUR-00-XX-DR-TP-75011-P05**:
  - Arm J1:1 – Drawing has been updated;
  - Arm J1:3 – The LinSig model has been amended;
  - Arm J1:4 – Drawing has been updated;
  - Arm J1:9 – The LinSig model has been amended;
  - Arm J1:10 – The LinSig model has been amended;
  - Arm J2:1 – Drawing has been updated;
  - Arm J2:2 – Drawing has been updated; and
  - Arm J2:3 – Drawing has been updated.
- In Post Submission Note 3, accompanied with **Plan 64076-CUR-00-XX-DR-TP-75011-P06**:
  - J1:5-2, J1:8-3 and J2:8-1, where queuing on the circulatory carriageway is more than can be accommodated without blocking the upstream exit, which could lead to an overestimation of the capacity of the network – The queues shown on J1:5-2 and J1:8-3 will fit in the available stacking space. Any excess queue in J1:5/2 will extend to J2:10 where the model shows no queues. It is also likely that any excess queue will extend on J2:2. The model indicates that there is space available on this link to store any potential excess queue from J2:8/1;
  - Lanes J2:1-2, J1:5-3, J1:4-3 – The LinSig model has been amended;
  - Request for supporting analysis for the appropriateness of the modelled merges between the two junctions – Link saturation flows were initially used to model the merges between the two junctions, as per the approved model for the Stobart development. This regulated the volume of traffic travelling towards the SRN. Curtins modelled the merge as uncontrolled bottlenecks, a deviation from the Stobarts development following a request by Atkins. The advantage of modelling as uncontrolled bottleneck is that all traffic is able to get through from the Grappenhall Lane roundabout to the M6 J20 and therefore the model demonstrates the worst-case

impact of the development on the SRN. The approved base model has also adopted this methodology and therefore any assessment of the benefits of the mitigation measures is comparable; and

- Arm J1:9-3 – The LinSig model has been amended.

8.2.26 The LinSig summary of the proposed mitigation is provided in **Tables 8.9** and **8.10** below for the base with development scenario. The full LinSig output is provided in **Appendix ~~G~~ I** at the rear of this document.

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
~~2021 Base plus Development~~					
~~J1 – M6 Junction 20 Proposed Mitigation~~					
~~1/1~~	~~M6 Offslip Ahead Left~~	~~97.5%~~	~~19.6~~	~~82.3%~~	~~11.7~~
~~1/2~~	~~M6 Offslip Ahead~~	~~95.3%~~	~~17.1~~	~~82.6%~~	~~11.8~~
~~2/1+2/2~~	~~B5158 Cherry Lane Ahead Left~~	~~84.7 : 79.1%~~	~~5.7~~	~~68.2 : 65.4%~~	~~2.6~~
~~3/1~~	~~Cliff Lane Westbound Left~~	~~58.0%~~	~~0.7~~	~~41.3%~~	~~0.4~~
~~3/2+3/3~~	~~Cliff Lane Westbound Ahead Right~~	~~62.3 : 62.3%~~	~~0.8~~	~~77.9 : 77.9%~~	~~3.3~~
~~4/2+4/1~~	~~M6 Northbound Offslip Ahead Left~~	~~58.9 : 58.9%~~	~~4.9~~	~~101.2 : 101.2%~~	~~33.4~~
~~4/3~~	~~M6 Northbound Offslip Ahead~~	~~92.6%~~	~~14.1~~	~~80.3%~~	~~10.5~~
~~5/2+5/1~~	~~Cliff Lane eastbound Ahead Left~~	~~60.3 : 60.3%~~	~~4.1~~	~~50.3 : 50.3%~~	~~3.1~~
~~5/3~~	~~Cliff Lane eastbound Ahead~~	~~69.4%~~	~~10.1~~	~~88.9%~~	~~11.9~~
~~6/1~~	~~Westbound Internal Circulatory Road Ahead~~	~~43.5%~~	~~6.7~~	~~70.5%~~	~~5.2~~
~~6/2+6/3~~	~~Westbound Internal Circulatory Road Right~~	~~59.7 : 59.7%~~	~~6.0~~	~~78.2 : 78.2%~~	~~9.4~~
~~7/2+7/1~~	~~Northbound Circulatory Ahead~~	~~58.7 : 58.7%~~	~~6.3~~	~~87.6 : 87.6%~~	~~9.3~~
~~7/3~~	~~Northbound Circulatory Right~~	~~67.5%~~	~~5.3~~	~~41.4%~~	~~7.8~~
~~8/1~~	~~Eastbound Internal Road Ahead~~	~~37.2%~~	~~0.0~~	~~32.4%~~	~~0.0~~
~~8/2~~	~~Eastbound Internal Road Ahead~~	~~36.4%~~	~~0.0~~	~~26.2%~~	~~0.0~~
~~10/1~~	~~Eastbound Circulatory Road Right Left~~	~~75.1%~~	~~10.8~~	~~79.2%~~	~~6.7~~
~~10/2~~	~~Eastbound Circulatory Road Right~~	~~74.5%~~	~~13.8~~	~~64.8%~~	~~9.7~~
~~17/1~~	~~Cliff Lane Westbound Ahead~~	~~65.3%~~	~~10.4~~	~~84.9%~~	~~9.2~~
~~J2 A50 Cliff Lane Grappenhall Lane – Proposed Mitigation~~					
~~1/1+1/2~~	~~A50 Knutsford Rd Left Ahead~~	~~97.6 : 97.6%~~	~~24.9~~	~~69.6 : 69.6%~~	~~7.8~~
~~2/1+2/2~~	~~A50 Cliff Lane Ahead Ahead2~~	~~69.2 : 69.2%~~	~~7.8~~	~~88.5 : 88.5%~~	~~11.6~~
~~3/1+3/2~~	~~B5356 Grappenhall Lane Left Ahead~~	~~65.0 : 65.0%~~	~~7.7~~	~~62.2 : 62.2%~~	~~7.5~~
~~6/1~~	~~Cliff Lane Eastbound Ahead~~	~~44.8%~~	~~0.4~~	~~36.6%~~	~~0.3~~
~~6/2~~	~~Cliff Lane Eastbound Ahead~~	~~43.7%~~	~~0.4~~	~~38.1%~~	~~0.3~~
~~7/1~~	~~Westbound Circulatory Right~~	~~15.7%~~	~~0.6~~	~~6.7%~~	~~0.3~~
~~7/2~~	~~Westbound Circulatory Right~~	~~14.4%~~	~~0.6~~	~~6.3%~~	~~0.3~~

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
~~8/1~~	~~Northbound Circulatory Right~~	~~32.3%~~	~~3.1~~	~~74.0%~~	~~6.3~~
~~8/2~~	~~Northbound Circulatory Right~~	~~30.2%~~	~~3.0~~	~~69.4%~~	~~6.3~~
~~9/1~~	~~Eastbound Circulatory Ahead~~	~~53.3%~~	~~0.2~~	~~45.4%~~	~~0.2~~
~~9/2~~	~~Eastbound Circulatory Ahead~~	~~54.1%~~	~~0.2~~	~~49.9%~~	~~0.2~~
~~10/1~~	~~Cliff Lane Eastbound Ahead (Pinch Point)~~	~~87.2%~~	~~18.6~~	~~73.8%~~	~~16.2~~
2021 Base plus Development					
J1 – M6 Junction 20 Proposed Mitigation					
1/1	M6 Offslip Ahead Left	99.4%	22.1	83.6%	12.5
1/2	M6 Offslip Ahead	99.4%	22.1	83.6%	12.5
2/1+2/2	B5158 Cherry Lane Ahead Left	89.1 : 90.2%	7.7	65.9 : 66.4%	1.9
3/1	Cliff Lane Westbound Left	48.8%	0.5	34.8%	0.3
3/2+3/3	Cliff Lane Westbound Ahead Right	66.7 : 66.7%	2.7	72.6 : 72.6%	3.4
4/2+4/1	M6 Northbound Offslip Ahead Left	60.8 : 60.8%	5.2	104.6 : 104.6%	49.4
4/3	M6 Northbound Offslip Ahead	111.0%	42.2	82.1%	11.2
5/2+5/1	Cliff Lane eastbound Ahead Left	89.3 : 89.3%	9.7	100.7 : 100.7%	26.7
5/3	Cliff Lane eastbound Ahead	89.9%	13.3	88.8%	9.5
6/1	Westbound Internal Circulatory Road Ahead	37.0%	5.9	67.8%	7.2
6/2+6/3	Westbound Internal Circulatory Road Right	55.4 : 55.0%	6.0	74.8 : 74.8%	7.3
7/1	Northbound Circulatory Ahead	11.1%	1.3	51.0%	3.3
7/3+7/2	Northbound Circulatory Right	76.3 : 83.4%	9.0	59.2 : 59.2%	10.9
8/2+8/1	Eastbound Internal Road Ahead	79.7 : 78.4%	10.8	89.4 : 89.5%	11.9
8/3	Eastbound Internal Road Ahead	62.9%	10.3	43.7%	3.5
J2 A50 Cliff Lane Grappenhall Lane – Proposed Mitigation					
1/1+1/2	A50 Knutsford Rd Left Ahead	77.2 : 77.2%	12.8	91.4 : 91.4%	9.3
2/1+2/2	A50 Cliff Lane Ahead Ahead2	69.7 : 69.7%	5.7	91.2 : 91.2%	12.2
3/1+3/2	B5356 Grappenhall Lane Left Ahead	96.3 : 95.8%	16.9	88.2 : 87.8%	12.6
7/1	Westbound Circulatory Right	15.9%	0.6	0.0%	0.0
7/2	Westbound Circulatory Right	16.2%	0.6	14.3%	0.3
8/1	Northbound Circulatory	43.1%	6.2	80.2%	6.8
9/1	Eastbound Circulatory Ahead	86.5%	2.4	52.3%	1.4
9/2	Eastbound Circulatory Ahead	93.4%	2.8	61.1%	1.6
Cycle Time (s)		60		60	
PRC (%)		-23.3		-16.3	
Delay (pcuhr)		131.68		130.13	
Delay per Vehicle (s)		43.3		41.9	

Table 8.9 – The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts 2021

8.2.27 It is clear from the above results that the proposed mitigation reduces queuing on key arms to a level that is less than the 2021 base scenario. i.e. it achieves benefits beyond nil detriment. In particular queuing on the motorway slip roads and Grappenhall Lane is significantly better than the 2021 base.

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
~~2029 Base plus Development~~					
~~J1 – M6 Junction 20 Proposed Mitigation~~					
~~1/1~~	~~M6 Offslip Ahead Left~~	~~98.8%~~	~~22.2~~	~~87.4%~~	~~13.7~~
~~1/2~~	~~M6 Offslip Ahead~~	~~95.3%~~	~~17.6~~	~~87.2%~~	~~13.7~~
~~2/1+2/2~~	~~B5158 Cherry Lane Ahead Left~~	~~94.4 : 87.8%~~	~~8.2~~	~~73.3 : 70.2%~~	~~3.0~~
~~3/1~~	~~Cliff Lane Westbound Left~~	~~63.8%~~	~~0.9~~	~~45.1%~~	~~0.4~~
~~3/2+3/3~~	~~Cliff Lane Westbound Ahead Right~~	~~68.8 : 68.8%~~	~~1.1~~	~~85.0 : 85.0%~~	~~4.9~~
~~4/2+4/1~~	~~M6 Northbound Offslip Ahead Left~~	~~42.0 : 42.0%~~	~~3.3~~	~~101.6 : 101.6%~~	~~37.0~~
~~4/3~~	~~M6 Northbound Offslip Ahead~~	~~52.5%~~	~~6.8~~	~~77.2%~~	~~10.3~~
~~5/2+5/1~~	~~Cliff Lane eastbound Ahead Left~~	~~67.7 : 67.7%~~	~~5.0~~	~~53.1 : 53.1%~~	~~3.4~~
~~5/3~~	~~Cliff Lane eastbound Ahead~~	~~82.4%~~	~~13.0~~	~~92.9%~~	~~14.0~~
~~6/1~~	~~Westbound Internal Circulatory Road Ahead~~	~~86.0%~~	~~7.2~~	~~80.3%~~	~~6.8~~
~~6/2+6/3~~	~~Westbound Internal Circulatory Road Right~~	~~98.1 : 98.1%~~	~~14.2~~	~~86.9 : 86.9%~~	~~14.6~~
~~7/2+7/1~~	~~Northbound Circulatory Ahead~~	~~53.4 : 53.4%~~	~~6.4~~	~~92.5 : 92.5%~~	~~9.8~~
~~7/3~~	~~Northbound Circulatory Right~~	~~63.7%~~	~~8.2~~	~~44.2%~~	~~8.3~~
~~8/1~~	~~Eastbound Internal Road Ahead~~	~~39.6%~~	~~0.0~~	~~34.5%~~	~~0.0~~
~~8/2~~	~~Eastbound Internal Road Ahead~~	~~38.5%~~	~~0.0~~	~~27.4%~~	~~0.0~~
~~10/1~~	~~Eastbound Circulatory Road Right Left~~	~~82.7%~~	~~12.6~~	~~84.4%~~	~~8.9~~
~~10/2~~	~~Eastbound Circulatory Road Right~~	~~81.4%~~	~~15.8~~	~~67.7%~~	~~10.3~~
~~17/1~~	~~Cliff Lane Westbound Ahead~~	~~66.9%~~	~~8.1~~	~~89.2%~~	~~10.5~~
~~J2 A50 Cliff Lane Grappenhall Lane – Proposed Mitigation~~					
~~1/1+1/2~~	~~A50 Knutsford Rd Left Ahead~~	~~104.1 : 104.1%~~	~~46.5~~	~~70.8 : 70.8%~~	~~8.2~~
~~2/1+2/2~~	~~A50 Cliff Lane Ahead Ahead2~~	~~77.6 : 77.6%~~	~~10.6~~	~~93.3 : 93.3%~~	~~14.8~~
~~3/1+3/2~~	~~B5356 Grappenhall Lane Left Ahead~~	~~68.0 : 68.0%~~	~~8.3~~	~~66.1 : 66.1%~~	~~8.2~~
~~6/1~~	~~Cliff Lane Eastbound Ahead~~	~~46.5%~~	~~0.4~~	~~38.4%~~	~~0.3~~
~~6/2~~	~~Cliff Lane Eastbound Ahead~~	~~45.2%~~	~~0.4~~	~~40.0%~~	~~0.3~~
~~7/1~~	~~Westbound Circulatory Right~~	~~10.3%~~	~~0.6~~	~~7.0%~~	~~0.3~~
~~7/2~~	~~Westbound Circulatory Right~~	~~9.6%~~	~~0.6~~	~~6.6%~~	~~0.3~~
~~8/1~~	~~Northbound Circulatory Right~~	~~41.8%~~	~~3.7~~	~~74.5%~~	~~6.7~~
~~8/2~~	~~Northbound Circulatory Right~~	~~39.1%~~	~~3.6~~	~~69.7%~~	~~6.6~~
~~9/1~~	~~Eastbound Circulatory Ahead~~	~~55.8%~~	~~0.2~~	~~48.9%~~	~~0.2~~
~~9/2~~	~~Eastbound Circulatory Ahead~~	~~56.5%~~	~~0.2~~	~~53.7%~~	~~0.2~~
~~10/1~~	~~Cliff Lane Eastbound Ahead (Pinch Point)~~	~~90.4%~~	~~21.6~~	~~77.4%~~	~~17.7~~

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
2029 Base plus Development					
J1 – M6 Junction 20 Proposed Mitigation					
1/1	M6 Offslip Ahead Left	105.1%	35.0	88.4%	14.4
1/2	M6 Offslip Ahead	105.1%	35.0	88.6%	14.5
2/1+2/2	B5158 Cherry Lane Ahead Left	103.9 : 103.9%	28.2	77.5 : 78.0%	3.9
3/1	Cliff Lane Westbound Left	53.2%	0.6	37.5%	0.3
3/2+3/3	Cliff Lane Westbound Ahead Right	70.5 : 70.5%	2.7	79.2 : 79.2%	4.9
4/2+4/1	M6 Northbound Offslip Ahead Left	61.9 : 61.9%	5.4	104.5 : 104.5%	51.9
4/3	M6 Northbound Offslip Ahead	111.0%	44.7	79.2%	11.1
5/2+5/1	Cliff Lane eastbound Ahead Left	90.0 : 90.0%	10.6	100.1 : 100.1%	25.7
5/3	Cliff Lane eastbound Ahead	81.1%	11.1	79.8%	8.0
6/1	Westbound Internal Circulatory Road Ahead	40.6%	6.3	76.8%	12.2
6/2+6/3	Westbound Internal Circulatory Road Right	56.6 : 56.9%	6.2	83.6 : 83.5%	13.9
7/2+7/1	Northbound Circulatory Ahead	16.5%	2.0	57.7%	5.0
7/3	Northbound Circulatory Right	86.5 : 90.1%	9.6	66.1 : 65.9%	11.4
8/2+8/1	Eastbound Internal Road Ahead	85.7 : 84.3%	11.8	94.7 : 94.7%	13.8
8/3	Eastbound Internal Road Ahead	65.5%	10.7	45.9%	6.6
J2 A50 Cliff Lane Grappenhall Lane – Proposed Mitigation					
1/1+1/2	A50 Knutsford Rd Left Ahead	82.3 : 82.3%	14.9	97.7 : 97.7%	14.1
2/1+2/2	A50 Cliff Lane Ahead Ahead2	73.3 : 73.3%	6.4	96.1 : 96.1%	17.8
3/1+3/2	B5356 Grappenhall Lane Left Ahead	100.6 : 100.2%	26.3	91.8 : 91.4%	14.6
7/1	Westbound Circulatory Right	16.6%	0.6	0.0%	0.0
7/2	Westbound Circulatory Right	16.6%	0.6	15.1%	0.4
8/1	Northbound Circulatory	46.1%	6.8	85.6%	7.3
9/1	Eastbound Circulatory Ahead	90.0%	3.0	54.4%	1.8
9/2	Eastbound Circulatory Ahead	97.5%	4.0	63.7%	2.0
Cycle Time (s)		60		60	
PRC (%)		-23.3		-16.2	
Delay (pcuhr)		185.59		151.00	
Delay per Vehicle (s)		57.6		46.0	

Table 8.10 – The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts 2029

8.2.28 Again, it is evident from the above results that the proposed improvement scheme is forecast to result in significant betterment and balancing of traffic queues when compared to the 2029 base scenario.

8.2.29 **Tables 8.11** and **8.12** summarises the LinSig assessments for the sensitivity scenario (including traffic associated with the Liberty Scheme) for 2021 and 2029.

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
~~2021 Base plus Development + Stobart~~					
~~J1 – M6 Junction 20 Proposed Mitigation~~					
~~1/1~~	~~M6 Offslip Ahead Left~~	~~101.1%~~	~~26.0~~	~~84.5%~~	~~12.6~~
~~1/2~~	~~M6 Offslip Ahead~~	~~101.1%~~	~~26.0~~	~~84.5%~~	~~12.6~~
~~2/1+2/2~~	~~B5158 Cherry Lane Ahead Left~~	~~92.8 : 86.7%~~	~~7.6~~	~~72.6 : 69.6%~~	~~2.9~~
~~3/1~~	~~Cliff Lane Westbound Left~~	~~59.6%~~	~~0.7~~	~~42.2%~~	~~0.4~~
~~3/2+3/3~~	~~Cliff Lane Westbound Ahead Right~~	~~66.3 : 66.3%~~	~~1.0~~	~~81.2 : 81.2%~~	~~4.2~~
~~4/2+4/1~~	~~M6 Northbound Offslip Ahead Left~~	~~52.9 : 52.9%~~	~~4.5~~	~~102.3 : 102.3%~~	~~38.0~~
~~4/3~~	~~M6 Northbound Offslip Ahead~~	~~71.5%~~	~~9.1~~	~~81.1%~~	~~10.7~~
~~5/2+5/1~~	~~Cliff Lane eastbound Ahead Left~~	~~61.0 : 61.0%~~	~~4.1~~	~~53.6 : 53.6%~~	~~3.2~~
~~5/3~~	~~Cliff Lane eastbound Ahead~~	~~72.1%~~	~~10.8~~	~~94.2%~~	~~15.0~~
~~6/1~~	~~Westbound Internal Circulatory Road Ahead~~	~~54.6%~~	~~3.1~~	~~72.4%~~	~~5.5~~
~~6/2+6/3~~	~~Westbound Internal Circulatory Road Right~~	~~68.1 : 68.8%~~	~~7.4~~	~~78.7 : 78.7%~~	~~9.4~~
~~7/2+7/1~~	~~Northbound Circulatory Ahead~~	~~58.7 : 58.7%~~	~~8.2~~	~~87.4 : 87.4%~~	~~9.3~~
~~7/3~~	~~Northbound Circulatory Right~~	~~67.5%~~	~~9.4~~	~~41.4%~~	~~7.8~~
~~8/1~~	~~Eastbound Internal Road Ahead~~	~~37.2%~~	~~0.0~~	~~32.4%~~	~~0.0~~
~~8/2~~	~~Eastbound Internal Road Ahead~~	~~37.6%~~	~~0.0~~	~~27.7%~~	~~0.0~~
~~10/1~~	~~Eastbound Circulatory Road Right Left~~	~~75.1%~~	~~9.9~~	~~79.2%~~	~~6.7~~
~~10/2~~	~~Eastbound Circulatory Road Right~~	~~76.9%~~	~~14.4~~	~~68.4%~~	~~10.4~~
~~17/1~~	~~Cliff Lane Westbound Ahead~~	~~69.0%~~	~~5.8~~	~~86.9%~~	~~9.8~~
~~J2 A50 Cliff Lane Grappenhall Lane – Proposed Mitigation~~					
~~1/1+1/2~~	~~A50 Knutsford Rd Left Ahead~~	~~97.6 : 97.6%~~	~~25.0~~	~~69.6 : 69.6%~~	~~7.8~~
~~2/1+2/2~~	~~A50 Cliff Lane Ahead Ahead2~~	~~75.3 : 75.3%~~	~~9.4~~	~~91.1 : 91.1%~~	~~13.7~~
~~3/1+3/2~~	~~B5356 Grappenhall Lane Left Ahead~~	~~69.6 : 69.6%~~	~~8.6~~	~~68.1 : 68.1%~~	~~8.7~~
~~6/1~~	~~Cliff Lane Eastbound Ahead~~	~~46.6%~~	~~0.4~~	~~39.2%~~	~~0.3~~
~~6/2~~	~~Cliff Lane Eastbound Ahead~~	~~45.3%~~	~~0.4~~	~~40.7%~~	~~0.3~~
~~7/1~~	~~Westbound Circulatory Right~~	~~16.0%~~	~~0.6~~	~~7.0%~~	~~0.3~~
~~7/2~~	~~Westbound Circulatory Right~~	~~14.7%~~	~~0.6~~	~~6.3%~~	~~0.3~~
~~8/1~~	~~Northbound Circulatory Right~~	~~32.3%~~	~~3.1~~	~~74.0%~~	~~6.3~~
~~8/2~~	~~Northbound Circulatory Right~~	~~30.2%~~	~~3.0~~	~~69.4%~~	~~6.3~~
~~9/1~~	~~Eastbound Circulatory Ahead~~	~~57.3%~~	~~0.2~~	~~50.2%~~	~~0.2~~
~~9/2~~	~~Eastbound Circulatory Ahead~~	~~57.9%~~	~~0.2~~	~~54.6%~~	~~0.2~~
~~10/1~~	~~Cliff Lane Eastbound Ahead (Pinch Point)~~	~~90.5%~~	~~23.4~~	~~78.8%~~	~~19.0~~
2021 Base plus Development + Stobart					
J1 – M6 Junction 20 Proposed Mitigation					
1/1	M6 Offslip Ahead Left	96.0%	17.9	97.8%	21.1
1/2	M6 Offslip Ahead	102.2%	29.0	98.1%	21.5

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
2/1+2/2	B5158 Cherry Lane Ahead Left	113.5 : 113.1%	42.1	70.1 : 70.6%	3.1
3/1	Cliff Lane Westbound Left	54.0%	0.6	35.2%	0.3
3/2+3/3	Cliff Lane Westbound Ahead Right	69.2 : 69.2%	3.1	75.1 : 75.1%	4.2
4/2+4/1	M6 Northbound Offslip Ahead Left	63.2 : 63.2%	5.5	105.5 : 105.5%	53.9
4/3	M6 Northbound Offslip Ahead	111.0%	42.2	83.0%	11.4
5/2+5/1	Cliff Lane eastbound Ahead Left	92.2 : 92.2%	12.1	99.6 : 99.6%	24.4
5/3	Cliff Lane eastbound Ahead	85.9%	11.9	79.4%	7.9
6/1	Westbound Internal Circulatory Road Ahead	65.4%	7.0	69.6%	7.9
6/2+6/3	Westbound Internal Circulatory Road Right	53.1 : 49.9%	7.0	76.5 : 76.5%	7.9
7/2+7/1	Northbound Circulatory Ahead	53.4%	1.8	53.1%	4.6
7/3	Northbound Circulatory Right	54.4 : 53.2%	8.7	62.4 : 62.4%	11.0
8/2+8/1	Eastbound Internal Road Ahead	90.9 : 89.7%	13.2	83.0 : 83.0%	10.5
8/3	Eastbound Internal Road Ahead	59.0%	9.9	40.8%	3.9
J2 A50 Cliff Lane Grappenhall Lane – Proposed Mitigation					
1/1+1/2	A50 Knutsford Rd Left Ahead	79.4 : 79.4%	13.5	91.4 : 91.4%	9.3
2/1+2/2	A50 Cliff Lane Ahead Ahead2	74.0 : 74.0%	6.5	93.8 : 93.8%	14.6
3/1+3/2	B5356 Grappenhall Lane Left Ahead	97.4 : 96.2%	18.7	96.5 : 96.1%	19.7
7/1	Westbound Circulatory Right	16.2%	0.6	0.0%	0.0
7/2	Westbound Circulatory Right	16.6%	0.6	14.7%	0.4
8/1	Northbound Circulatory	44.4%	6.4	80.2%	6.8
9/1	Eastbound Circulatory Ahead	87.8%	2.5	57.7%	2.2
9/2	Eastbound Circulatory Ahead	93.8%	2.9	66.9%	2.6
Cycle Time (s)		60		60	
PRC (%)		-26.1		-17.3	
Delay (pcuhr)		165.24		157.10	
Delay per Vehicle (s)		52.8		49.2	

Table 8.11 – The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts 2021

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
~~**2029 Base plus Development + Stobart**~~					
~~**J1 – M6 Junction 20 Proposed Mitigation**~~					
~~1/1~~	~~M6 Offslip Ahead Left~~	~~101.5%~~	~~27.9~~	~~89.3%~~	~~14.5~~
~~1/2~~	~~M6 Offslip Ahead~~	~~101.5%~~	~~27.9~~	~~89.4%~~	~~14.6~~
~~2/1+2/2~~	~~B5158 Cherry Lane Ahead Left~~	~~106.0 : 98.6%~~	~~24.0~~	~~78.4 : 75.1%~~	~~3.4~~
~~3/1~~	~~Cliff Lane Westbound Left~~	~~65.5%~~	~~0.9~~	~~46.1%~~	~~0.4~~

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
~~3/2+3/3~~	~~Cliff Lane Westbound Ahead Right~~	~~70.9 : 70.9%~~	~~1.2~~	~~88.4 : 88.4%~~	~~6.8~~
~~4/2+4/1~~	~~M6 Northbound Offslip Ahead Left~~	~~57.0 : 57.0%~~	~~4.9~~	~~102.5 : 102.5%~~	~~42.2~~
~~4/3~~	~~M6 Northbound Offslip Ahead~~	~~79.9%~~	~~10.9~~	~~78.0%~~	~~10.6~~
~~5/2+5/1~~	~~Cliff Lane eastbound Ahead Left~~	~~68.4 : 68.4%~~	~~5.0~~	~~56.2 : 56.2%~~	~~3.4~~
~~5/3~~	~~Cliff Lane eastbound Ahead~~	~~85.4%~~	~~14.1~~	~~98.0%~~	~~19.0~~
~~6/1~~	~~Westbound Internal Circulatory Road Ahead~~	~~56.0%~~	~~4.1~~	~~82.4%~~	~~7.3~~
~~6/2+6/3~~	~~Westbound Internal Circulatory Road Right~~	~~68.7 : 69.7%~~	~~7.0~~	~~87.3 : 87.3%~~	~~14.6~~
~~7/2+7/1~~	~~Northbound Circulatory Ahead~~	~~55.5 : 55.5%~~	~~6.6~~	~~92.2 : 92.2%~~	~~9.8~~
~~7/3~~	~~Northbound Circulatory Right~~	~~63.7%~~	~~0.6~~	~~44.2%~~	~~8.3~~
~~8/1~~	~~Eastbound Internal Road Ahead~~	~~39.6%~~	~~0.0~~	~~34.5%~~	~~0.0~~
~~8/2~~	~~Eastbound Internal Road Ahead~~	~~39.7%~~	~~0.0~~	~~28.8%~~	~~0.0~~
~~10/1~~	~~Eastbound Circulatory Road Right Left~~	~~82.7%~~	~~11.5~~	~~84.4%~~	~~8.9~~
~~10/2~~	~~Eastbound Circulatory Road Right~~	~~83.9%~~	~~16.6~~	~~71.2%~~	~~11.1~~
~~17/1~~	~~Cliff Lane Westbound Ahead~~	~~72.1%~~	~~5.4~~	~~91.3%~~	~~17.4~~
~~J2 A50 Cliff Lane Grappenhall Lane – Proposed Mitigation~~					
~~1/1+1/2~~	~~A50 Knutsford Rd Left Ahead~~	~~107.9 : 107.9%~~	~~62.2~~	~~70.8 : 70.8%~~	~~8.2~~
~~2/1+2/2~~	~~A50 Cliff Lane Ahead Ahead2~~	~~78.4 : 78.4%~~	~~10.2~~	~~95.8 : 95.8%~~	~~18.9~~
~~3/1+3/2~~	~~B5356 Grappenhall Lane Left Ahead~~	~~69.7 : 69.7%~~	~~8.9~~	~~71.9 : 71.9%~~	~~9.5~~
~~6/1~~	~~Cliff Lane Eastbound Ahead~~	~~47.4%~~	~~0.5~~	~~41.0%~~	~~0.3~~
~~6/2~~	~~Cliff Lane Eastbound Ahead~~	~~46.2%~~	~~0.4~~	~~42.6%~~	~~0.4~~
~~7/1~~	~~Westbound Circulatory Right~~	~~15.2%~~	~~0.6~~	~~7.0%~~	~~0.3~~
~~7/2~~	~~Westbound Circulatory Right~~	~~14.3%~~	~~0.6~~	~~6.6%~~	~~0.3~~
~~8/1~~	~~Northbound Circulatory Right~~	~~36.1%~~	~~3.4~~	~~74.5%~~	~~6.7~~
~~8/2~~	~~Northbound Circulatory Right~~	~~33.7%~~	~~3.4~~	~~69.7%~~	~~6.6~~
~~9/1~~	~~Eastbound Circulatory Ahead~~	~~57.5%~~	~~0.2~~	~~53.8%~~	~~0.2~~
~~9/2~~	~~Eastbound Circulatory Ahead~~	~~58.1%~~	~~0.2~~	~~58.6%~~	~~0.3~~
~~10/1~~	~~Cliff Lane Eastbound Ahead (Pinch Point)~~	~~92.3%~~	~~26.8~~	~~82.5%~~	~~22.3~~
2029 Base plus Development + Stobart					
J1 – M6 Junction 20 Proposed Mitigation					
1/1	M6 Offslip Ahead Left	108.9%	45.9	98.7%	23.1
1/2	M6 Offslip Ahead	111.1%	52.6	99.1%	23.8
2/1+2/2	B5158 Cherry Lane Ahead Left	117.2 : 117.4%	52.3	79.8 : 80.4%	4.1
3/1	Cliff Lane Westbound Left	57.7%	0.7	37.9%	0.3
3/2+3/3	Cliff Lane Westbound Ahead Right	0.0 : 85.4%	6.0	81.6 : 81.6%	4.6
4/2+4/1	M6 Northbound Offslip Ahead Left	64.1 : 64.1%	5.6	105.6 : 105.6%	57.4
4/3	M6 Northbound Offslip Ahead	111.0%	44.7	80.0%	11.2
5/2+5/1	Cliff Lane eastbound Ahead Left	92.1 : 92.1%	12.1	99.0 : 99.0%	23.4

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
5/3	Cliff Lane eastbound Ahead	89.0%	13.7	72.6%	7.4
6/1	Westbound Internal Circulatory Road Ahead	57.9%	9.2	78.7%	10.6
6/2+6/3	Westbound Internal Circulatory Road Right	46.0 : 50.1%	4.4	85.2 : 84.9%	10.9
7/2+7/1	Northbound Circulatory Ahead	12.4%	1.1	60.1%	5.5
7/3	Northbound Circulatory Right	84.9 : 89.6%	9.0	69.7 : 69.2%	14.7
8/2+8/1	Eastbound Internal Road Ahead	88.0 : 86.8%	14.7	90.3 : 90.3%	13.1
8/3	Eastbound Internal Road Ahead	65.7%	0.7	44.4%	6.2
J2 A50 Cliff Lane Grappenhall Lane – Proposed Mitigation					
1/1+1/2	A50 Knutsford Rd Left Ahead	84.6 : 84.6%	15.9	97.7 : 97.7%	14.1
2/1+2/2	A50 Cliff Lane Ahead Ahead2	77.6 : 77.6%	7.3	98.7 : 98.7%	25.0
3/1+3/2	B5356 Grappenhall Lane Left Ahead	101.1 : 100.8%	29.4	100.0 : 99.7%	28.6
7/1	Westbound Circulatory Right	16.6%	0.6	0.0%	0.0
7/2	Westbound Circulatory Right	17.4%	0.7	15.1%	0.4
8/1	Northbound Circulatory	47.4%	7.0	85.6%	7.3
9/1	Eastbound Circulatory Ahead	90.3%	3.0	59.8%	2.6
9/2	Eastbound Circulatory Ahead	97.5%	4.0	69.4%	3.0
Cycle Time (s)		60		60	
PRC (%)		-30.4		-17.3	
Delay (pcuhr)		249.69		193.94	
Delay per Vehicle (s)		75.4		57.5	

Table 8.12 – The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts 2029

8.2.30 The results demonstrate that even with the addition of the Liberty scheme, the junction is predicted to operate with levels of queuing that are better or comparable to the 2021 and 2029 base years.

8.2.31 In summary, the proposed mitigation scheme is considered to provide significant benefits and the impact of the Proposed Development at this junction could not be considered severe.

8.2.32 Notwithstanding the above, it is understood that HE and WBC Highways are exploring additional mitigation that could be brought forward to enhance the proposed mitigation and to further support the residential element of the Local Plan. Whilst the conventional assessments and WMMTM modelling this report accounts for the Local Plan, more detailed assessments will be required as other land uses start to come forward.

8.2.33 The HE response also raises some general comments on the modelling, including that the model 'cannot accurately reflect the impact of the merges between the two junctions and any knock-on consequences for the M6 northbound off slip.' Curtins disagree with this statement and note that a very similar LinSig model was used for the Stobart development which is now subject of a SoS Call In ~~approved~~.

8.2.34 The HE response states that traffic is being held back at the A50/Grappenhall roundabout and if it was released it may impact on the M6 Junction 20. Curtins would state the control of traffic arriving at the junction is one of the key principles behind the mitigation and the modelling demonstrate this could work effectively. On circulatory queueing, it is Curtins view that the queues on the circulatory lanes can be contained within the available space.

8.2.35 As mentioned in **Section 4.3** earlier, the Masterplan included to the rear of this report indicates that there would be pedestrian infrastructure to be tied into the existing road network along the south of Grappenhall Lane up until the Cliff Lane roundabout. WBC Highways have required that the pedestrian infrastructure is to be incorporated into design and modelling.

8.2.36 It is envisaged that the pedestrian crossing facilities provided would be in the form of an informal 'walk-with-traffic' crossing would be provided to tie into the aforementioned existing infrastructure to the north of Cliff Lane. As such, it is Curtins' view that the modelling does not need updating to reflect this.

8.2.37 WBC Highways have also requested for clarity on the footway along the north of the A50 Cliff Lane and requested for inclusion within modelling. Curtins can confirm that the proposed mitigation scheme would not impact the existing footway width nor the existing infrastructure. Notwithstanding this, the lane widths in the central section of the link between the A50 and the M6 Junction 20 have been widened as part of the mitigation to provide almost 5m lanes. There is an opportunity to reduce the lane widths if a widened footway on the northern side of the carriageway was desirable by WBC.

8.2.38 Curtins have agreed that it could form part of the S278 detailed design if required, and that the reduction in lane widths would not affect the modelling results.

Broad Lane / B5356 Grappenhall Lane Roundabout Capacity Assessment Results

8.2.39 This junction has been modelled using ARCADY and the results are summarised in the **Table 8.12** with the full ARCADY output provided in **Appendix ~~H~~ J.**

Arm / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Queue	RFC	Queue	RFC
2021 Base					
1	Broad Lane	0.69	0.41	0.14	0.12
2	Grappenhall Lane East	1.33	0.57	1.52	0.53
3	Grappenhall Lane South	2.05	0.67	5.19	0.81

Arm / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Queue	RFC	Queue	RFC
2029 Base					
1	Broad Lane	0.83	0.46	0.16	0.14
2	Grappenhall Lane East	1.59	0.62	1.78	0.64
3	Grappenhall Lane South	2.47	0.72	8.15	0.9
2021 Base plus Development					
1	Broad Lane	0.91	0.48	0.17	0.14
2	Grappenhall Lane East	1.54	0.61	2.1	0.68
3	Grappenhall Lane South	2.55	0.72	6.49	0.88
2029 Base plus Development					
1	Broad Lane	1.11	0.53	0.19	0.16
2	Grappenhall Lane East	1.86	0.65	2.5	0.72
3	Grappenhall Lane South	3.14	0.76	11.08	0.93
2021 Base plus Development + Stobart					
1	Broad Lane	1.09	0.53	0.24	0.19
2	Grappenhall Lane East	2.3	0.7	2.65	0.73
3	Grappenhall Lane South	3.57	0.79	19.04	0.98
2029 Base plus Development + Stobart					
1	Broad Lane	1.36	0.58	0.25	0.2
2	Grappenhall Lane East	2.85	0.75	3.22	0.77
3	Grappenhall Lane South	4.59	0.83	40.38	1.04

Table 8.13 – Broad Lane / B5356 Grappenhall Lane Roundabout

8.2.40 **Table 8.13** confirms that all arms of the junction operate within theoretical capacity in the 2021 and 2029 base and base plus development scenarios.

8.2.41 The results of the sensitivity test with Liberty, demonstrate that the junction will continue to operate within theoretical capacity in 2021. By 2029, the junction will still operate within capacity during the AM peak period but may start to operate at or close to capacity during the PM peak period. A brief period of queuing in the PM peak period in a future year of 2029 is not considered to be a severe impact, particularly as highway improvements in this area are planned as part of the Local Plan.

A50 Knutsford Road / A56 Chester Road Capacity Assessment Results

8.2.42 This junction has been assessed using LinSig. The full LinSig output is provided in **Appendix ~~I~~ K.**

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		~~Queue~~ DoS	~~RFC~~ MMQ	~~Queue~~ DoS	~~RFC~~ MMQ
2017 Observed Scenario					
1/2+1/1	Stockport Road Left Ahead	81.7 : 81.7%	9.6	89.1 : 89.1%	11.1
1/3	Stockport Road Right	63.2%	6.8	87.2%	10.7
2/2+2/1	Chester Road Ahead Left	78.1 : 78.1%	9.5	90.8 : 90.8%	14.2
2/3	Chester Road Right	58.8%	6.5	32.1%	3.5
3/1+3/2	Knutsford Road south Right Ahead Left	55.9 : 55.9%	11.3	91.0 : 91.0%	30.8
4/1+4/2	Knutsford Road north Left Ahead Right	80.8 : 80.8%	20.0	50.7 : 50.7%	7.7
Cycle Time (s)		115		120	
PRC (%)		10.1		-1.2	
Delay (pcuhr)		28.36		37.68	
Delay per Vehicle (s)		43.7		56.4	
2021 Base					
1/2+1/1	Stockport Road Left Ahead	83.7 : 83.7%	10.6	94.0 : 94.0%	13.7
1/3	Stockport Road Right	61.5%	6.9	84.1%	10.3
2/2+2/1	Chester Road Ahead Left	81.9 : 81.9%	10.8	95.1 : 95.1%	17.2
2/3	Chester Road Right	57.5%	6.6	31.3%	3.5
3/1+3/2	Knutsford Road south Right Ahead Left	59.2 : 59.2%	12.2	95.9 : 95.9%	36.9
4/1+4/2	Knutsford Road north Left Ahead Right	85.4 : 85.4%	22.5	53.3 : 53.3%	8.2
Cycle Time (s)		115		120	
PRC (%)		5.4		-6.6	
Delay (pcuhr)		31.36		46.31	
Delay per Vehicle (s)		46.6		66.7	
2029 Base					
1/2+1/1	Stockport Road Left Ahead	89.1 : 89.1%	12.4	99.8 : 99.8%	17.8
1/3	Stockport Road Right	65.7%	7.5	89.9%	12.1
2/2+2/1	Chester Road Ahead Left	87.2 : 87.2%	12.3	101.3 : 101.3%	23.4
2/3	Chester Road Right	61.4%	7.1	33.4%	3.8
3/1+3/2	Knutsford Road south Right Ahead Left	63.4 : 63.4%	13.6	102.5 : 102.5%	57.2
4/1+4/2	Knutsford Road north Left Ahead Right	91.4 : 91.4%	27.9	56.8 : 56.8%	8.9
Cycle Time (s)		115		120	
PRC (%)		-1.5		-13.9	
Delay (pcuhr)		37.90		74.26	
Delay per Vehicle (s)		52.7		100.3	
2021 Base plus Development					

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		~~Queue~~ DoS	~~RFC~~ MMQ	~~Queue~~ DoS	~~RFC~~ MMQ
1/2+1/1	Stockport Road Left Ahead	85.7 : 85.7%	11.2	94.9 : 94.9%	14.3
1/3	Stockport Road Right	61.5%	6.9	84.1%	10.3
2/2+2/1	Chester Road Ahead Left	85.9 : 85.9%	11.5	99.3 : 99.3%	20.2
2/3	Chester Road Right	60.3%	6.7	32.7%	3.6
3/1+3/2	Knutsford Road south Right Ahead Left	60.0 : 60.0%	12.5	98.3 : 98.3%	42.3
4/1+4/2	Knutsford Road north Left Ahead Right	87.4 : 87.4%	24.5	54.0 : 54.0%	8.4
Cycle Time (s)		115		120	
PRC (%)		3.0		-10.4	
Delay (pcuhr)		33.45		53.91	
Delay per Vehicle (s)		48.6		75.9	
2029 Base plus Development					
1/2+1/1	Stockport Road Left Ahead	91.1 : 91.1%	13.2	100.7 : 100.7%	18.8
1/3	Stockport Road Right	65.7%	7.5	89.9%	12.1
2/2+2/1	Chester Road Ahead Left	91.5 : 91.5%	13.6	105.8 : 105.8%	29.2
2/3	Chester Road Right	64.5%	7.3	35.0%	3.9
3/1+3/2	Knutsford Road south Right Ahead Left	64.0 : 77.1%	14.0	104.7 : 104.7%	67.9
4/1+4/2	Knutsford Road north Left Ahead Right	93.2 : 93.2%	30.6	57.4 : 57.4%	9.1
Cycle Time (s)		115		120	
PRC (%)		-3.6		-17.5	
Delay (pcuhr)		41.55		90.86	
Delay per Vehicle (s)		56.6		120.2	
2021 Base plus Development + Stobart					
1/2+1/1	Stockport Road Left Ahead	85.7 : 85.7%	11.2	94.9 : 94.9%	14.3
1/3	Stockport Road Right	61.5%	6.9	84.1%	10.3
2/2+2/1	Chester Road Ahead Left	85.9 : 85.9%	11.5	99.3 : 99.3%	20.2
2/3	Chester Road Right	60.3%	6.7	32.7%	3.6
3/1+3/2	Knutsford Road south Right Ahead Left	60.1 : 60.1%	12.5	98.5 : 98.5%	43.1
4/1+4/2	Knutsford Road north Left Ahead Right	87.6 : 87.6%	24.6	54.0 : 54.0%	8.4
Cycle Time (s)		115		120	
PRC (%)		2.7		-10.4	
Delay (pcuhr)		33.55		54.35	
Delay per Vehicle (s)		48.7		76.5	
2029 Base plus Development + Stobart					
1/2+1/1	Stockport Road Left Ahead	91.1 : 91.1%	13.2	100.7 : 100.7%	18.8
1/3	Stockport Road Right	65.7%	7.5	89.9%	12.1
2/2+2/1	Chester Road Ahead Left	91.5 : 91.5%	13.6	105.8 : 105.8%	29.2
2/3	Chester Road Right	64.5%	7.3	35.0%	3.9
3/1+3/2	Knutsford Road south Right Ahead Left	64.1 : 78.5%	14.0	104.9 : 104.9%	68.9
4/1+4/2	Knutsford Road north Left Ahead Right	93.5 : 93.5%	30.9	57.4 : 57.4%	9.1
Cycle Time (s)		115		120	

Lane Number / Description	Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
	~~Queue~~ DoS	~~RFC~~ MMQ	~~Queue~~ DoS	~~RFC~~ MMQ
PRC (%)	-3.8		-17.5	
Delay (pcuhr)	41.76		91.82	
Delay per Vehicle (s)	56.8		121.4	

Table 8.14 – Stockport Road / Chester Road / Knutsford Road

8.2.43 **Table 8.14** confirms that ~~whilst~~ some arms of the junction operate at or close to capacity in the 2021 and 2029 assessment years. For example, the in the PM peak, three of the approaches at the junction are already operating above practical capacity but within theoretical capacity in the 2021 Base scenario, and this increases further beyond theoretical capacity in the 2029 Base scenario.

8.2.44 With both the development and the Stobart scheme in place, it can be seen that the junction would still operate within theoretical capacity at the 2021 Base + Development scenario. However, in the 2029 scenarios, this would result in the junction operating over theoretical capacity, which is expected given that the junction would already operate beyond theoretical capacity in the 2029 Base scenario. The delay per vehicle numbers demonstrate that the maximum delay for a vehicle in the future year 2029 Base + Development + Stobart scenario is c. one cycle time.

8.2.45 **Traffic Figures 25** and **26** also indicate that the increase in traffic at the junction as a result of the development are 52 and 54 two-way movements in the AM and PM peaks respectively. This equates to around one extra vehicle every minute, or two vehicles every cycle.

8.2.46 Overall and considering the above, the increase in Degree of Saturation and queuing is minimal as a result of the development traffic. Furthermore, improvements to sustainable transport and highway schemes proposed as part of the Local Plan may further alleviate congestion at this junction. Such schemes were confirmed in the recently published Local Transport Plan, albeit details are limited at this time.

8.2.47 Notwithstanding, and following discussions with WBC Highways, it is understood that the introduction of Microprocessor Optimised Vehicle Actuation (MOVA) systems or other intelligent signal controls may be beneficial.

8.2.48 On this basis the impact of the Proposed Development is not considered to be severe.

Eastern Site Access / B5356 Grappenhall Lane Roundabout Capacity Assessment Results

8.2.49 This site access junctions have been assessed using Junctions8. The full output is provided in **Appendix ~~K~~ M**.

Arm / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Queue	RFC	Queue	RFC
2021 Base plus Development					
1	Grappenhall Lane East	0.8	0.45	1.05	0.51
2	Site Access	0.12	0.11	0.27	0.21
3	Grappenhall Lane West	1	0.5	1.14	0.53
2029 Base plus Development					
1	Grappenhall Lane East	1.05	0.51	1.14	0.53
2	Site Access	0.13	0.11	0.28	0.22
3	Grappenhall Lane West	1.11	0.53	1.27	0.56
2021 Base plus Development + Stobart					
1	Grappenhall Lane East	1.16	0.54	1.17	0.54
2	Site Access	0.13	0.12	0.28	0.22
3	Grappenhall Lane West	1.17	0.54	1.46	0.6
2029 Base plus Development + Stobart					
1	Grappenhall Lane East	1.26	0.56	1.27	0.56
2	Site Access	0.14	0.12	0.29	0.22
3	Grappenhall Lane West	1.29	0.57	1.64	0.62

Table 8.15 – Eastern Site Access

8.2.50 The results demonstrate that the Site access works well within capacity for all scenarios.

Western Site Access / B5356 Grappenhall Lane Roundabout Capacity Assessment Results

Arm / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Queue	RFC	Queue	RFC
2021 Base plus Development					
1	Grappenhall Lane East	0.68	0.4	0.64	0.39
2	Site Access	0.11	0.1	0.23	0.19
3	Grappenhall Lane West	0.83	0.45	0.77	0.44
2029 Base plus Development					
1	Grappenhall Lane East	0.74	0.47	0.96	0.49
2	Site Access	0.12	0.11	0.26	0.21
3	Grappenhall Lane West	1.07	0.52	1.1	0.52
2021 Base plus Development + Stobart					
1	Grappenhall Lane East	0.82	0.45	0.89	0.47
2	Site Access	0.12	0.11	0.26	0.2
3	Grappenhall Lane West	0.97	0.49	0.99	0.5
2029 Base plus Development + Stobart					

Arm / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Queue	RFC	Queue	RFC
1	Grappenhall Lane East	0.88	0.47	0.96	0.49
2	Site Access	0.12	0.11	0.26	0.21
3	Grappenhall Lane West	1.07	0.52	1.1	0.52

Table 8.16 – Western Site Access

8.2.51 The results demonstrate that the Site access works well within capacity for all scenarios.

Broad Lane/Church Lane

8.2.52 This junction has been modelled using PICADY and the results are summarised in the **Table 8.17** with the full PICADY output provided in **Appendix ~~J~~ L**.

Arm / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Queue	RFC	Queue	RFC
2021 Base					
1	Church Lane	0.11	0.10	0.19	0.16
2	Broad Lane	0.01	0.01	0.04	0.03
2029 Base					
1	Church Lane	0.12	0.11	0.20	0.17
2	Broad Lane	0.01	0.01	0.04	0.03
2021 Base plus Development					
1	Church Lane	0.11	0.10	0.19	0.16
2	Broad Lane	0.01	0.01	0.04	0.03
2029 Base plus Development					
1	Church Lane	0.12	0.11	0.21	0.17
2	Broad Lane	0.02	0.02	0.04	0.03
2021 Base plus Development + Stobart					
1	Church Lane	0.11	0.10	0.19	0.16
2	Broad Lane	0.01	0.01	0.04	0.03
2029 Base plus Development + Stobart					
1	Church Lane	0.12	0.11	0.21	0.17
2	Broad Lane	0.02	0.02	0.04	0.03

Table 8.17 – Broad Lane / Church Lane Junction

8.2.53 **Table 8.17** confirms that all arms of the junction operate within theoretical capacity in the 2021 and 2029 base and base plus development scenarios for all the peaks.

8.2.54 The results of the sensitivity test with Liberty, demonstrate that the junction will continue to operate within capacity for all scenarios. It is therefore considered that this junction has sufficient capacity to accommodate all the traffic associated with the proposed development.

8.3 Modelling Summary

8.3.1 The results of the assessments demonstrate that the Site access points operate well within capacity in a future year of 2021 and 2029.

8.3.2 With regard to the M6 Junction 20, the results of the assessments demonstrate that there is appropriate mitigation for the A50/Cliff Lane roundabout and M6 Junction 20 that achieves betterment when compared to the do-nothing scenario.

8.3.3 With regard to the A50/A56 junction, the results indicate that the impact of the Proposed Development is likely to be immaterial.

8.3.4 With regard to the junctions to the west of the Site, forecasting demonstrates that a limited number of vehicles are likely to travel in this direction during the AM and PM peak periods. This is not considered to be a significant amount of traffic and improvements to the M6 J20 may further reduce this.

8.3.5 It is understood that there are plans to provide additional infrastructure and links to the west of the Site as part of the Local Plan and this it is envisaged that this could be in place by the time the development is built out and fully operational.

8.4 Merge Diverge Assessments

8.4.1 Curtins has undertaken the merge assessments for the M6 northbound and diverge assessment for the M6 southbound. This is summarised in the Tables below.

8.4.2 **Table 8.18** summarises the merge diverge assessment for the existing arrangement based on DMRB TD22/06.

Arm	Existing Situation	Am Peak			PM Peak		
		Mainline Flow	Slip Road	Comments (TD22/06)	Mainline Flow	Slip Road	Comments
Northbound On-slip	Type A- Taper Merge	6107	1079	Meets the Requirement	5975	1458	Type C-Ghost Island Merge Required
Southbound Off-slip	Type A – Taper Diverge	5743	936	Meets the Requirement	5329	1035	Meets Requirement

Table 8.18 – Existing Merge/Diverge Assessment- M6 Junction 20

8.4.3 **Table 8.18** confirms that the existing arrangement is sufficient for the traffic movements associated with the junction for all the peaks with the exception of the northbound on-slip. It demonstrates that the northbound on-slip requires a Type C- Ghost Island merge arrangement during the PM peak, however, it is important to note that the existing arrangements meet the mainline requirement of 4 downstream lanes.

8.4.4 **Table 8.19** summarises the merge-diverge assessment for the 2022 and 2032 base and base with development merge/diverge assessments.

Arm	Existing Situation	Am Peak			PM Peak		
		Mainline Flow	Slip Road	Comments (TD22/06)	Mainline Flow	Slip Road	Comments
2022 Base							
Northbound On-slip	Type A-Taper Merge	6720	1113	Type E- Lane Gain required	6550	1558	Type C-Ghost Island Merge Required
Southbound Off-slip	Type A – Taper Diverge	6313	1003	Type C-Lane Drop required	5842	1122	Meets Requirement
2032 Base							
Northbound On-slip	Type A-Taper Merge	7501	1275	Type B-Parallel Merge with 5 lanes downstream required	7271	1679	Type C-Ghost Island Merge Required
Southbound Off-slip	Type A – Taper Diverge	7045	1082	Type A- Taper Diverge with 5 lanes required	6485	1208	Type C-Lane Drop required -
2022 Base plus Development							
Northbound On-slip	Type A-Taper Merge	6720	1198	Type E- Lane Gain required	6550	1725	Type F- Lane Gain with Ghost Island Merge Required
Southbound Off-slip	Type A – Taper Diverge	6313	1152	Type C-Lane Drop required	5842	1221	Meets Requirement
2032 Base plus Development							
Northbound On-slip	Type A-Taper Merge	7501	1360	Type B-Parallel Merge with 5 lanes downstream required	7271	1846	Type F- Lane Gain with Ghost Island Merge Required
Southbound Off-slip	Type A – Taper Diverge	7045	1231	Type A- Taper Diverge with 5 lanes required	6485	1307	Type C-Lane Drop required

Table 8.19 – 2022 and 2032 Base with Development Merge/Diverge Assessment

8.4.5 **Table 8.19** confirms that in 2022 the northbound on-slip does not meet the required standards in both the AM and PM peak. This is the same in the development scenario. For the southbound off-slip the existing arrangement meets the requirement in the PM peak for both the base and development scenario, however in the AM peak, it is unlikely to meet the requirements.

8.4.6 It is evident from **Table 8.19** that in the future year 2032 the existing arrangement is unlikely to meet the required merge/diverge arrangement as set out in TD22/06 even without the proposed development traffic for the southbound off slip and northbound on-slip.

8.4.7 This is an existing issue that is not considered to be exacerbated by the proposed development and the 2032 assessment is not the year on which HE should base their conclusions.

9.0 Summary and Conclusions

9.1 Summary

9.1.1 This Updated Transport Assessment (TA) has been prepared by Curtins on behalf of First Panattoni and Langtree PP in connection with an outline planning application for a major employment development in Warrington known as Six 56 Warrington.

9.1.2 The planning description is as follows:

'The outline application (all matters reserved except for means of access) comprises the construction of up to 287,909m² (3,099,025ft2) (gross internal) of employment floorspace (Use Class B8 and B1(a) offices), ~~including change of use of Bradley Hall Farmhouse to B1 (a) office use (335m² (3,600ft²))~~ demolition of existing agricultural outbuildings and associated servicing and infrastructure including car parking and vehicle and pedestrian circulation, alteration of existing access road into site including works to the M6 J20 dumbbell roundabouts and realignment of the existing A50 junction, noise mitigation, earthworks to create development platforms and bunds, landscaping including buffers, creation of drainage features, electrical substation, pumping station, and ecological works.'

9.1.3 The Site covers approximately 98.09ha in area (including the land required for the roundabout) and is situated to the immediate north-west of the M6 / M56 Lymm motorway interchange and to the south of the B5356 Grappenhall Lane.

9.1.4 Extensive scoping discussions have taken place with WBC and HE Officers and this report has been prepared to advise WBC and Highways England (HE) of the likely impact of the scheme.

9.1.5 Personal Injury Accident (PIA) data for the highway network around the Site has been obtained from Warrington Borough Council for the most recently available five-year period. There are no unusual clusters that cause a major concern in the context of the development.

9.1.6 It is proposed that the Site will be accessed via two roundabouts from Grappenhall Lane and both junctions are designed fully in accordance with the DMRB Design Standard TD16/07. The roundabouts are also designed to comfortably cater for the movements of a large volume of HGVs.

9.1.7 The accessibility of the Site by non-car modes of transport has been assessed in detail. It is acknowledged that, with current infrastructure, the Site is not ideally located to attract trips by non-car modes of transport.

9.1.8 However, there are several opportunities available for the situation to be improved, by benefitting from other infrastructure that is likely to come forward from nearby committed developments and / or the potential future development of the Warrington Garden Suburb Local Plan allocation.

9.1.9 The Proposed Development will also seek to deliver new bus services, PROW improvements and over 1.2km of pedestrian/cycle infrastructure.

9.1.10 The trip-generating potential of the scheme was initially estimated with reference to TRICS-based trip rates during the weekday AM and PM peak hours and over a normal weekday. This approach was later refined at the request of WBC/HE and information from Omega North was utilised to calculate trip generation.

9.1.11 In order to allow the easy visualisation of various traffic flow scenarios and calculations associated with the Proposed Development, Curtins have developed a bespoke spreadsheet-based traffic model. The model presents a diagrammatic view of the road network around the Site, including those junctions that have recently been subject to traffic and queue surveys.

9.1.12 In order to quantify the level of background traffic growth that could occur on the local network between the year of the traffic surveys (2017) and the future assessment years, National Traffic Model (NTM) growth factors, modified by TEMPRO local growth factors have been used to quantify the 2021 (anticipated year of opening) and 2029 future baseline traffic flows (year of application + 10).

9.1.13 The traffic flows arising from 4 housing development schemes to the west / north-west of the Site have been obtained from the TA work carried out for those approved schemes.

9.1.14 Capacity assessment models of the three roundabouts that lie between the Site and the M56 / M6 motorways have been developed. Whilst the roundabout junctions at the A50 Cliff Lane / Grappenhall Lane and the M6 J20 are the responsibility of the local highway authority at WBC, the slip roads at the M6 J20 (up to the gyratory entry and exit points) are the responsibility of HE.

9.1.15 Based on the results, a comprehensive improvement scheme for the A50 Cliff Lane / B5356 Grappenhall Lane roundabout and the M6 J20 dumbbell roundabouts has been developed by Curtins. The scheme features the following:

- Relocation and signalisation of the A50 Cliff Lane / B5356 Grappenhall Lane roundabout;
- Widening of the A50 link between the A50 Cliff Lane / B5356 Grappenhall Lane roundabout and the western M6 J20 Dumbbell roundabout;
- Partial signalisation of the two M6 J20 dumb bell roundabouts; and,
- Widening of the circulatory carriageway on the 2 M6 J20 dumbbell roundabouts and rationalisation of the lane markings / directional arrows.

9.1.16 The capacity assessment result of the proposed improvements indicates that overall the scheme is forecast to result in betterment and balancing of traffic queues when compared to the 2021 / 2029 without development / improvement scenarios.

9.1.17 Other local junctions have also been tested, and the impact of the development is not considered to be severe.

9.1.18 In addition to the above, an assessment of the Local Plan has been undertaken by utilising the Warrington Multi Modal Transport Model. The results of this predicted that the conventional traffic flows and assessments contained in this report were robust.

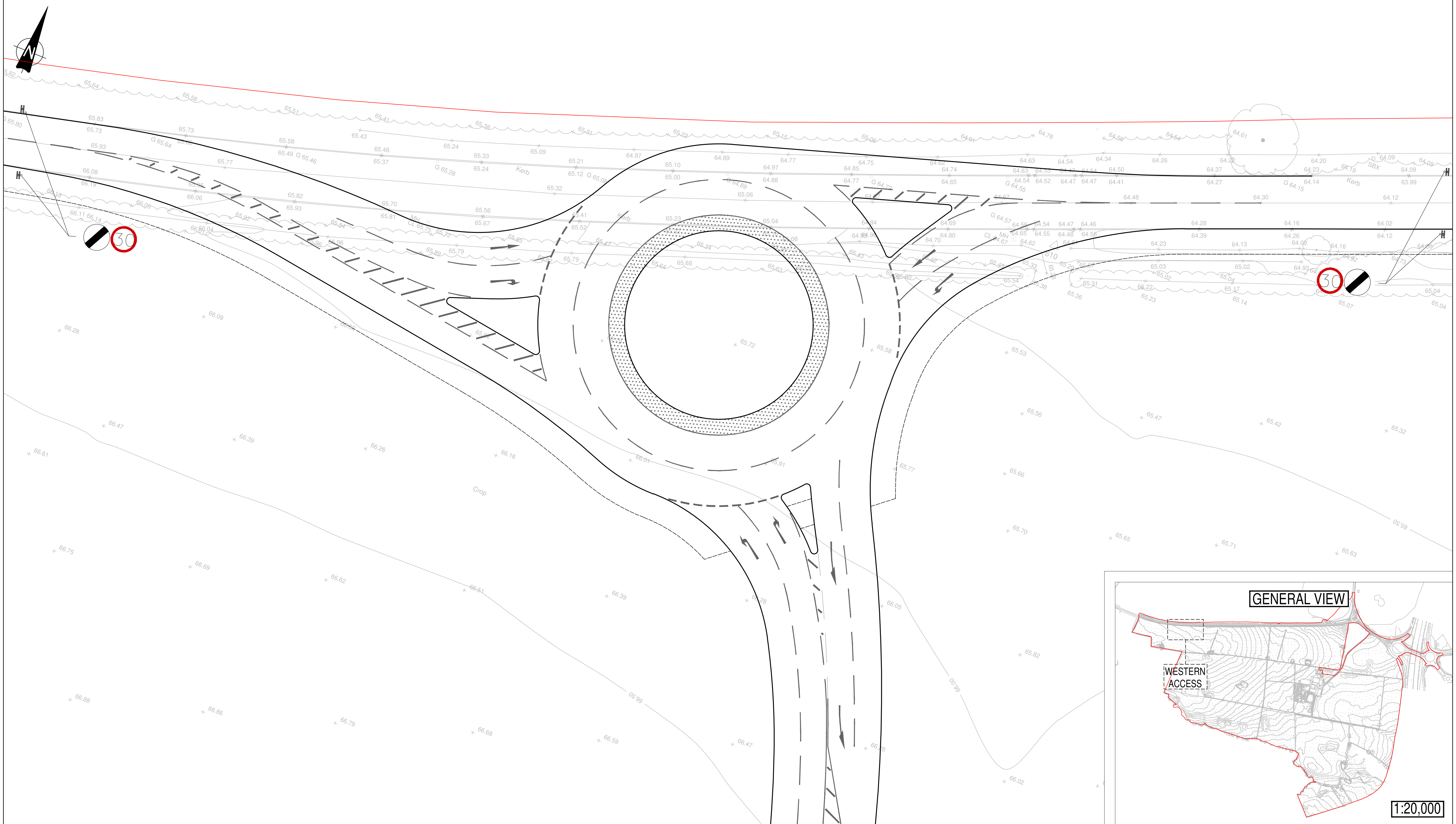
9.2 Conclusions

9.2.1 From a traffic and transport perspective there are no reasons why this development should be refused.

9.2.2 The Proposed Development also accords with the NPPF and would not incur severe impacts to the surrounding highway network.

9.2.3 <u>This document now addresses all comments raised during the application process by WBC Highways and HE.</u>

Plans



KEY:

- INDICATIVE SITE BOUNDARY
- PROPOSED KERB LINE
- PROPOSED FOOTWAY/CYCLEWAY
- PROPOSED ROAD MARKINGS
- PROPOSED OVERRUNNING AREA

GENERAL NOTES:

Rev:	Description:	Date:	By:
P02	Roundabout updated	08/01/19	DD

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Project: WARRINGTON INTERCHANGE

Drg Title: POTENTIAL WESTERN ACCESS ROUNDABOUT

Status: PRELIMINARY

Drawn By:	DD	Checked By:	LK
Designed By:	DD	Date:	06/07/18
Scale:	AS INDICATED		

Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
64076	- CUR -	00 -	XX -	DR -	TP -	75002	-P02

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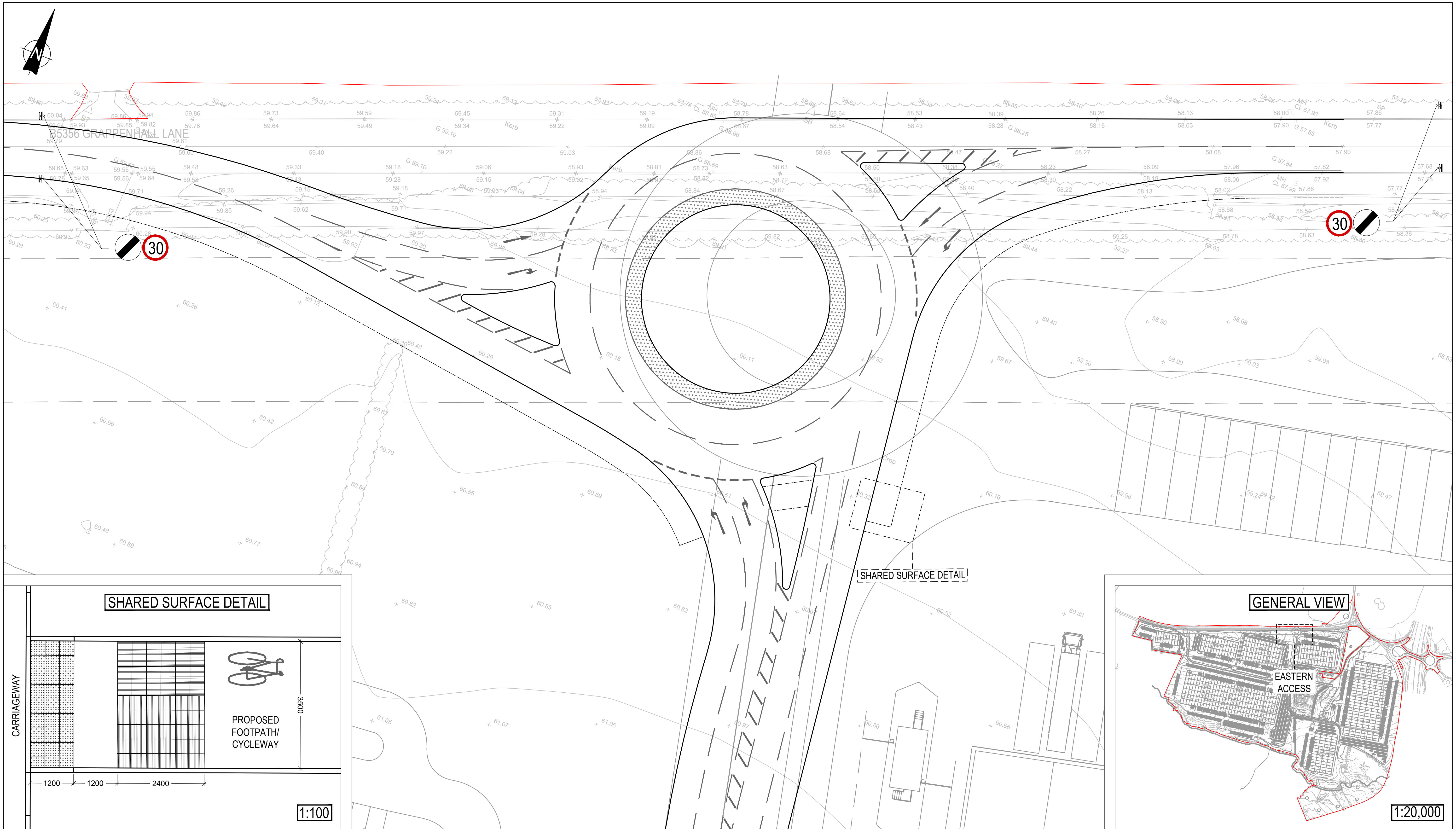

KEY:
- INDICATIVE SITE BOUNDARY
- PROPOSED KERB LINE
- PROPOSED FOOTWAY/CYCLEWAY
- PROPOSED ROAD MARKINGS
- PROPOSED OVERRUNNING AREA

GENERAL NOTES:

Rev:	Description:	Date:	By:
P03	Location updated	04/11/19	DD
P02	Roundabout updated	08/01/19	DD

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Project: WARRINGTON INTERCHANGE

Drg Title: POTENTIAL EASTERN ACCESS ROUNDABOUT

Status: PRELIMINARY

Drawn By:	DD	Checked By:	LK
Designed By:	DD	Date:	06/07/18
Scale: AS INDICATED			

Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
64076	- CUR -	00	- XX -	DR	- TP -	75001	-P03

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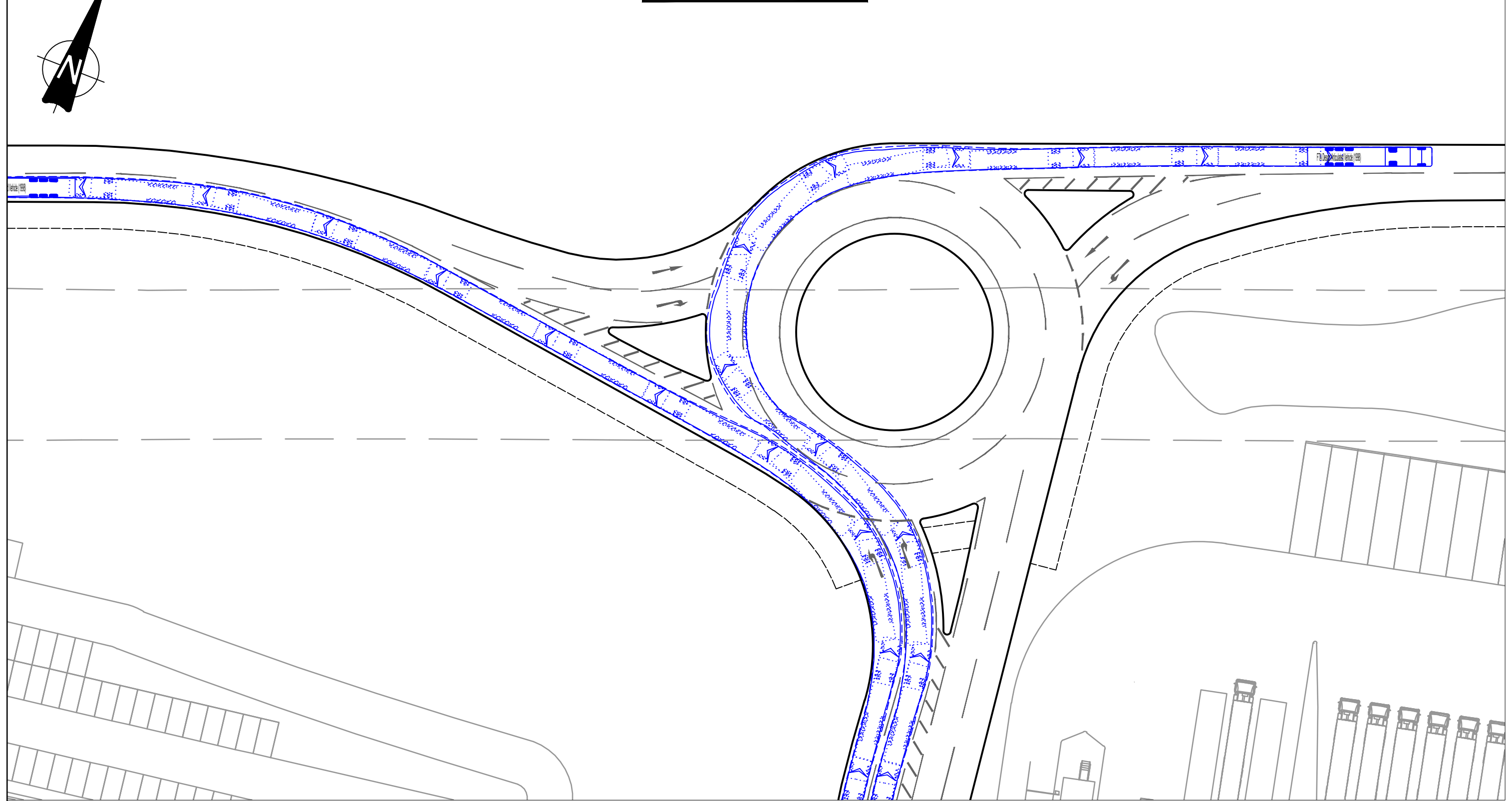
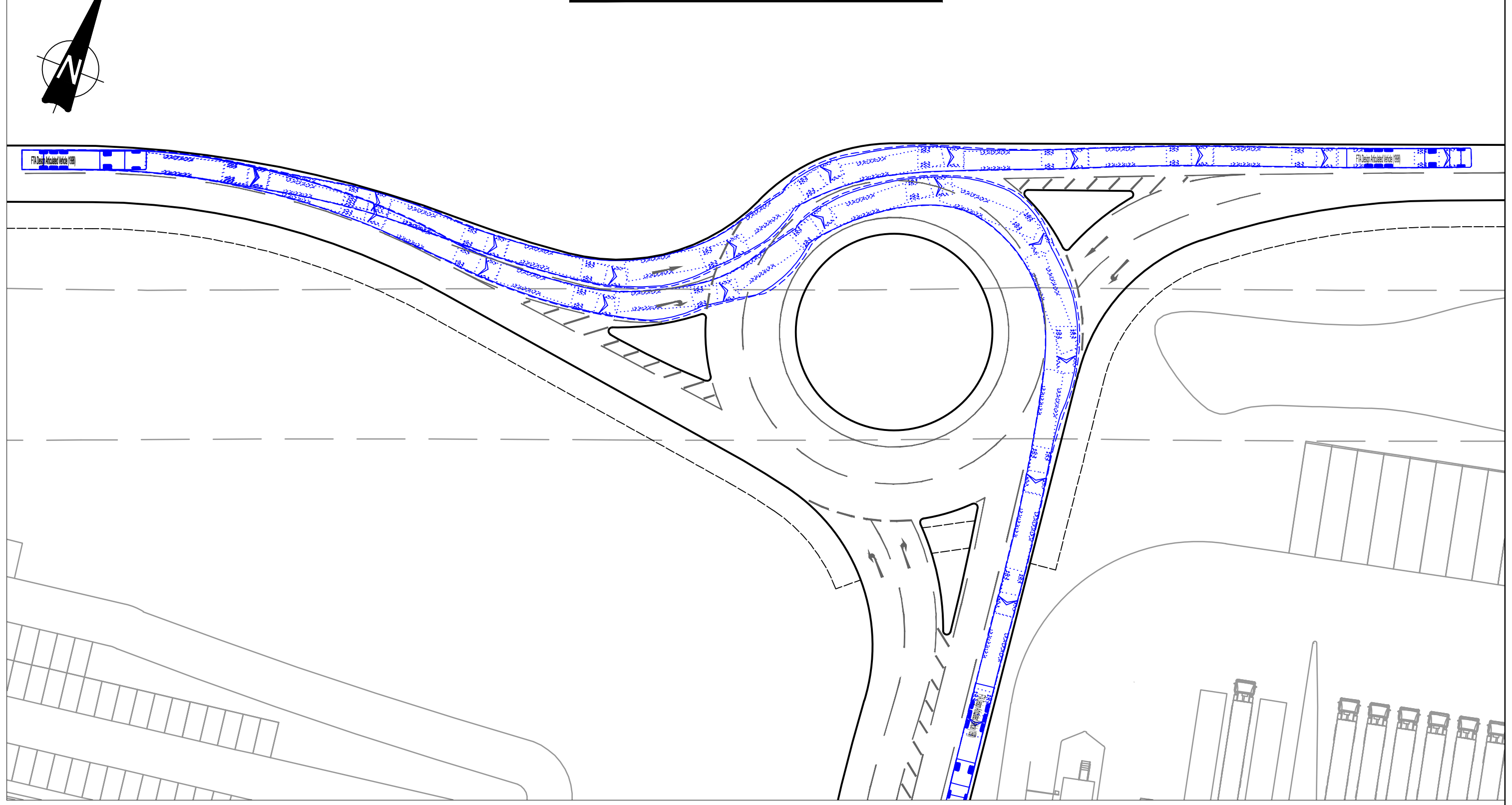
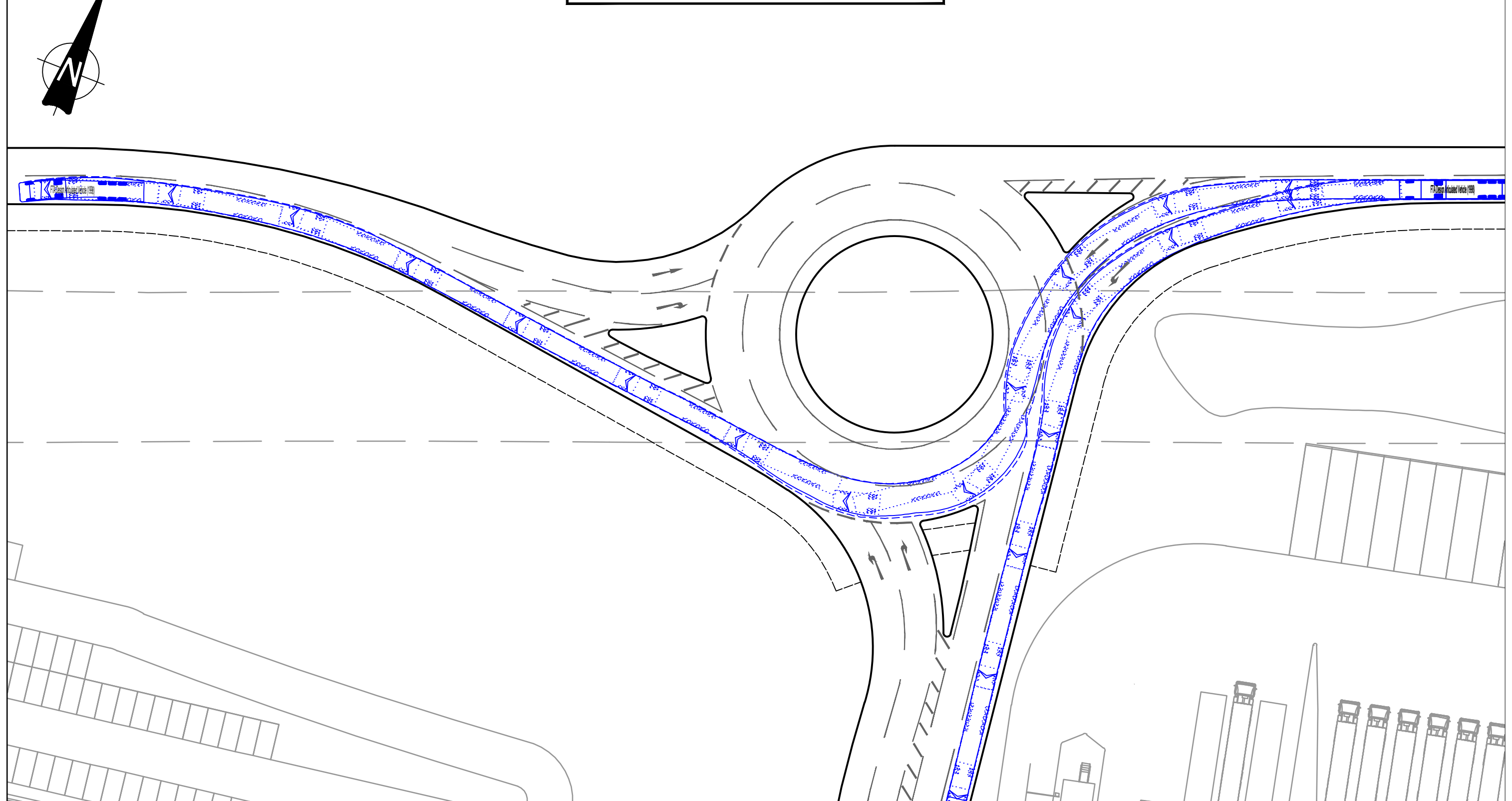
SITE ARM ENTRY



B5356 EASTERN ARM ENTRY



B5356 WESTERN ARM ENTRY



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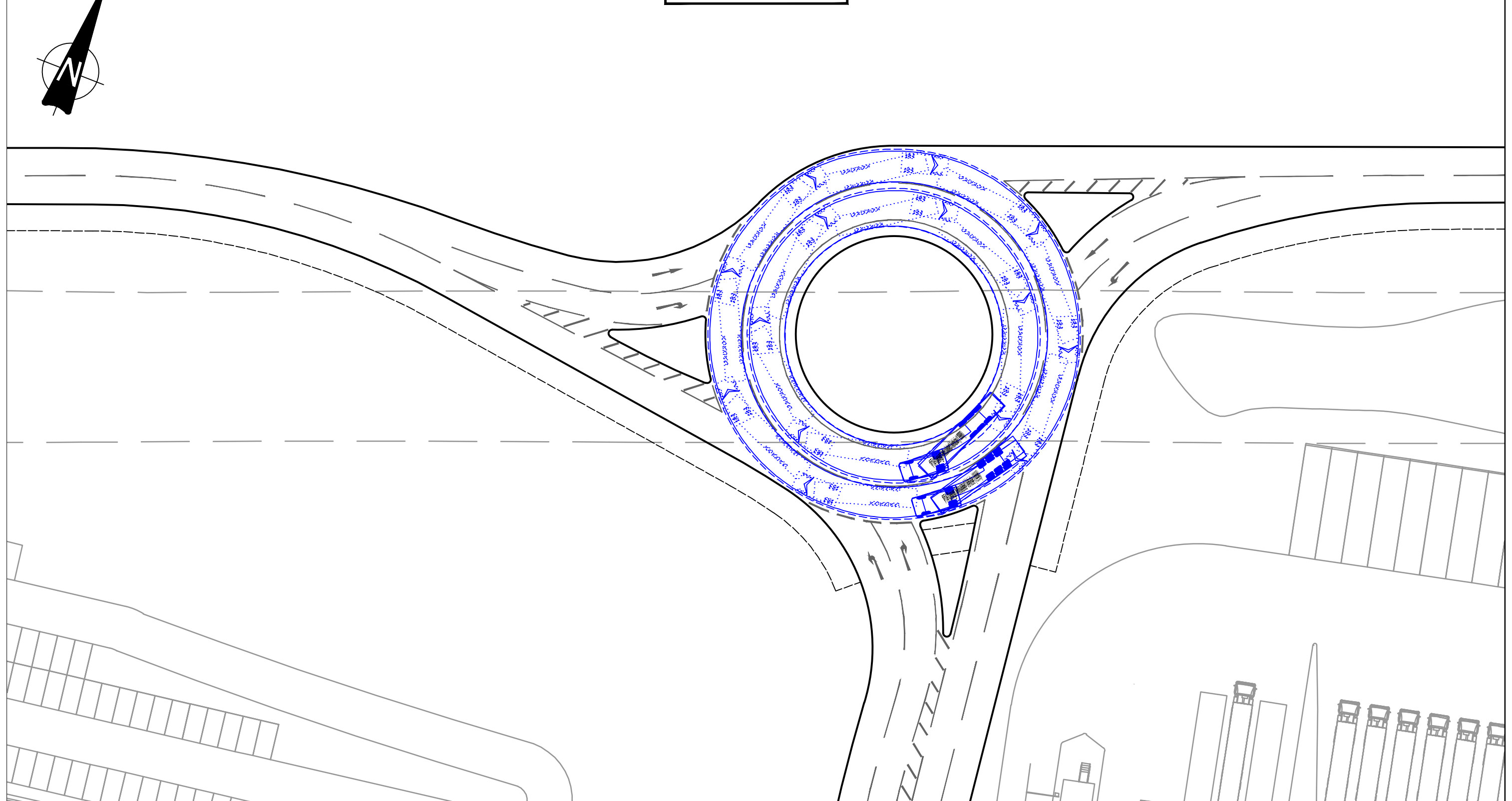

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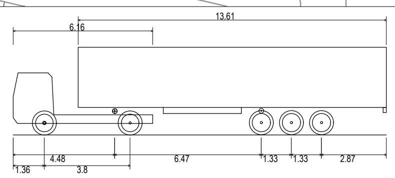

FTA Design Articulated Vehicle (1998)

Overall Length	16.480m
Overall Width	2.550m
Overall Body Height	3.870m
Min Body Ground Clearance	0.515m
Max Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	6.550m

Rev:	Description:	Date:	By:
P03	Layout updated	26/02/20	LL
P02	Layout updated	12/09/19	DD

GENERAL NOTES:

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Project: WARRINGTON SIX 56

Drg Title: ROUNDABOUT ACCESS SWEPT PATH ANALYSIS 16.5m ARTICULATED HGV

Status: PRELIMINARY

Drawn By: DD | Checked By: LK

Designed By: DD | Date: 01/09/17

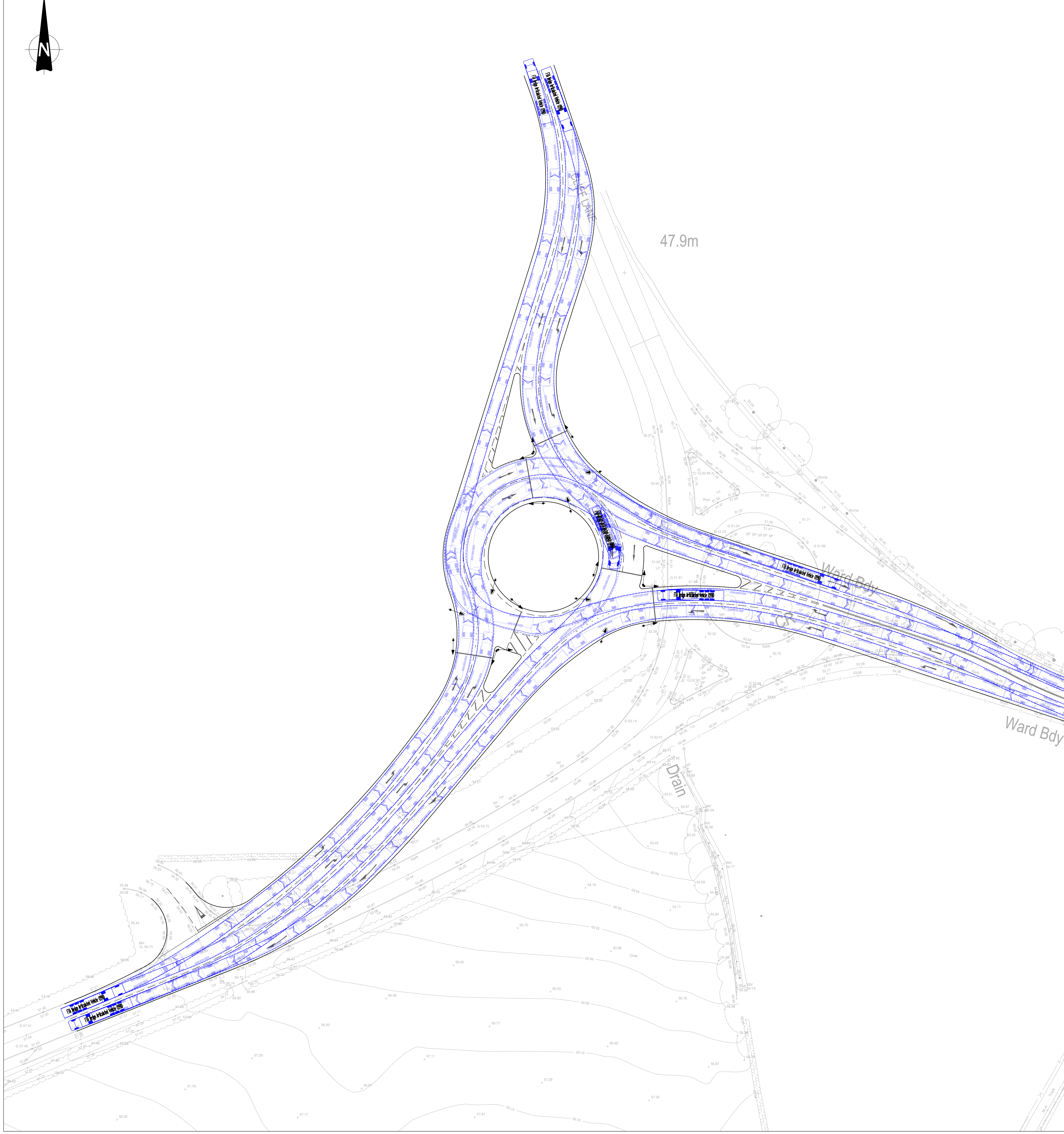
Scale: 1:1000

Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
64076	CUR	00	XX	DR	TP	05001	P03

64076 - CUR - 00 - XX - DR - TP - 05001 -P03

\\mafs011\Projects\064001 - 065000\064076 - Warrington Interchange TPMAE -Drawings\CAD\2-Working\2.2-DWG\06\

CLIFF LANE ROUNDABOUT ARRANGEMENT



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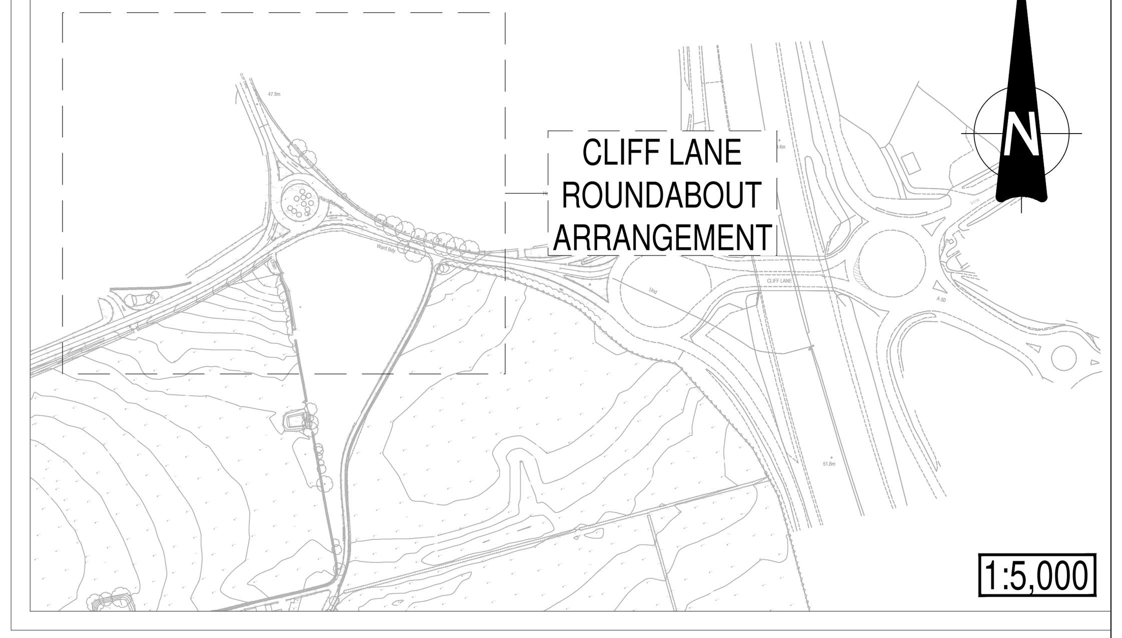
GENERAL VIEW



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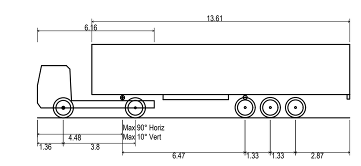
GENERAL NOTES:

KEY:
- PROPOSED KERB LINE
- PROPOSED FOOTWAY
- PROPOSED ROAD MARKINGS

VEHICLE PROFILE:



FTA Design Articulated Vehicle (1998)	
Overall Length	16.480m
Overall Width	2.550m
Overall Body Height	3.870m
Min Body Ground Clearance	0.515m
Max Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	6.550m

Rev:	Description:	Date:	By:	Chkd:
P02	Layout updated	12/09/19	DD	FF

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Status:
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Project:
WARRINGTON INTERCHANGE

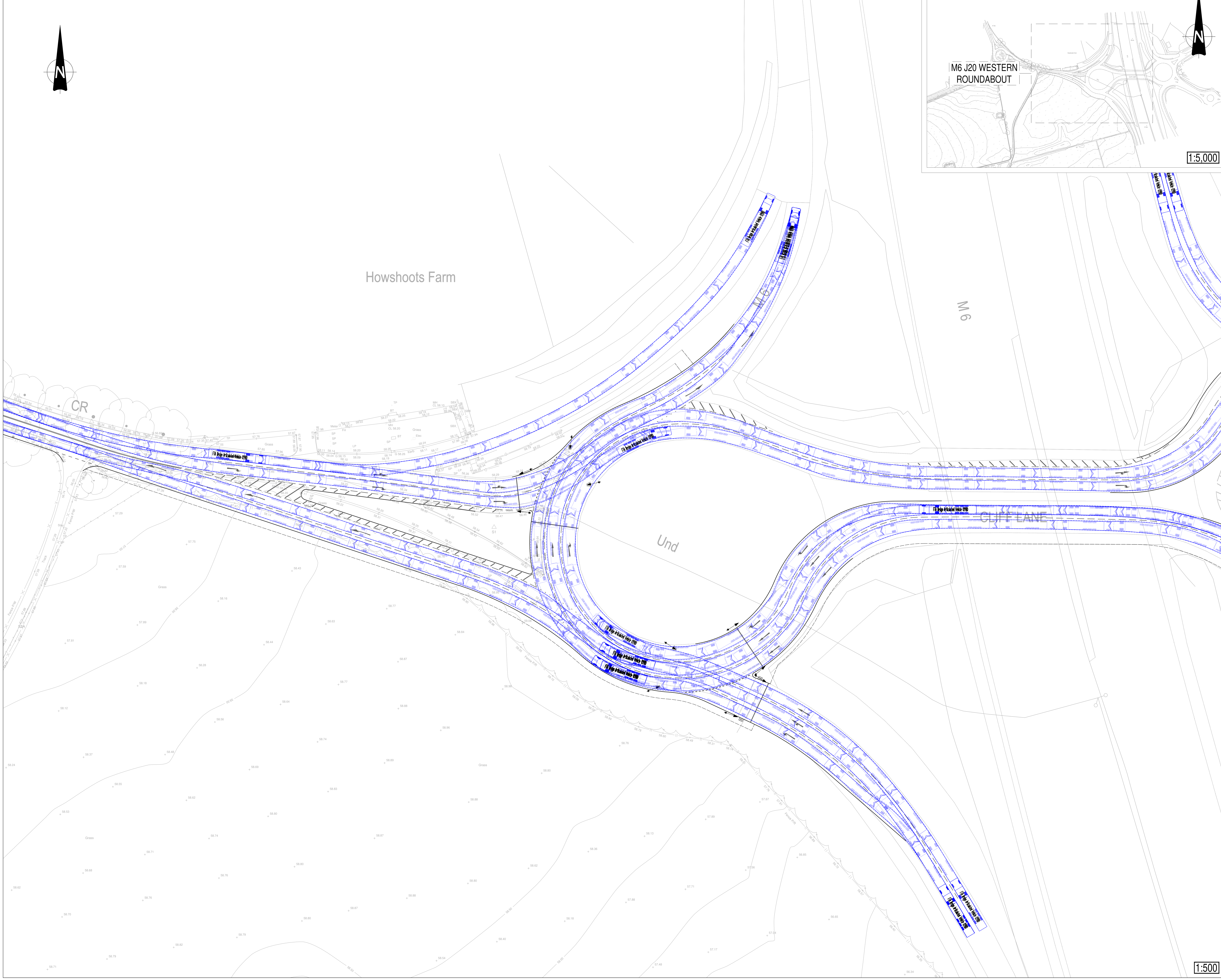
Drg Title:
CLIFF LANE ROUNDABOUT
PROPOSED IMPROVEMENTS
SWEPT PATH ANALYSIS
16.5m ARTICULATED HGV

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	22/10/18	DD	DD	AV
Scale: AS STATED				

Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
64076	- CUR -	00 -	XX -	DR -	TP -	05002	- P02

\\mafs02\Projects\064001 - 065000\064076 - Warrington Interchange TPMA\E -Drawings\2-Working\2.2-DWG\05\

M6 J20 WESTERN ROUNDABOUT ARRANGEMENT



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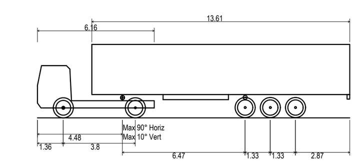
GENERAL NOTES:

KEY:
- PROPOSED KERB LINE
- PROPOSED FOOTWAY
- PROPOSED ROAD MARKINGS

VEHICLE PROFILE:



FTA Design Articulated Vehicle (1998)

Overall Length	16.480m
Overall Width	2.550m
Overall Body Height	3.870m
Min Body Ground Clearance	0.515m
Max Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	6.550m

Rev:	Description:	Date:	By:	Chkd:
P02	Layout updated	12/09/19	DD	FF

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Status:
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Project:
WARRINGTON INTERCHANGE

Drg Title:
M6 J20 - WESTERN ROUNDABOUT
POTENTIAL IMPROVEMENTS
SWEPT PATH ANALYSIS
16.5m ARTICULATED HGV

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	23/10/18	DD	DD	AV
Scale: AS STATED				

Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
64076	CUR	00	XX	DR	TP	05003	P02

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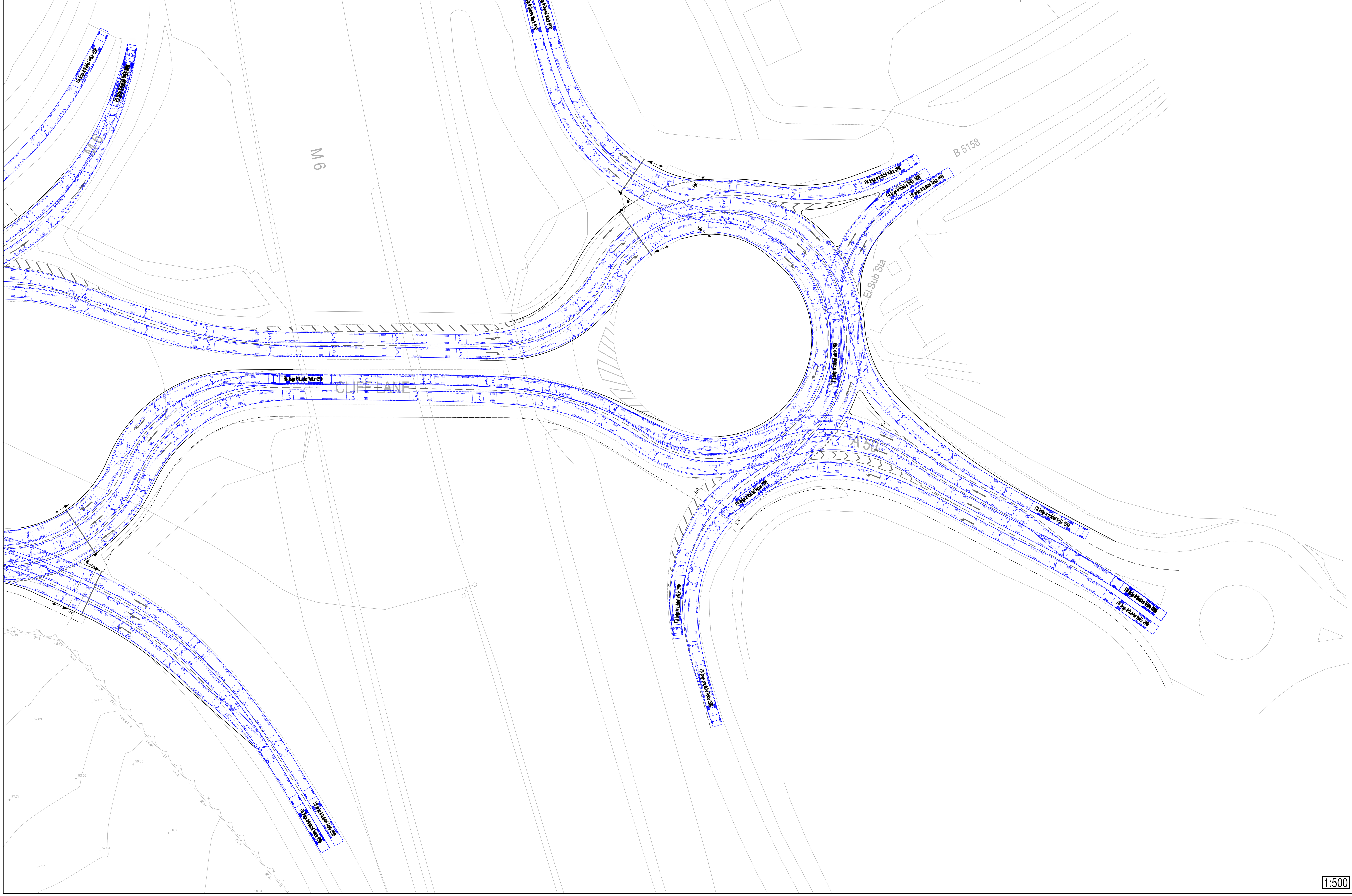
M6 J20 EASTERN ROUNDABOUT ARRANGEMENT



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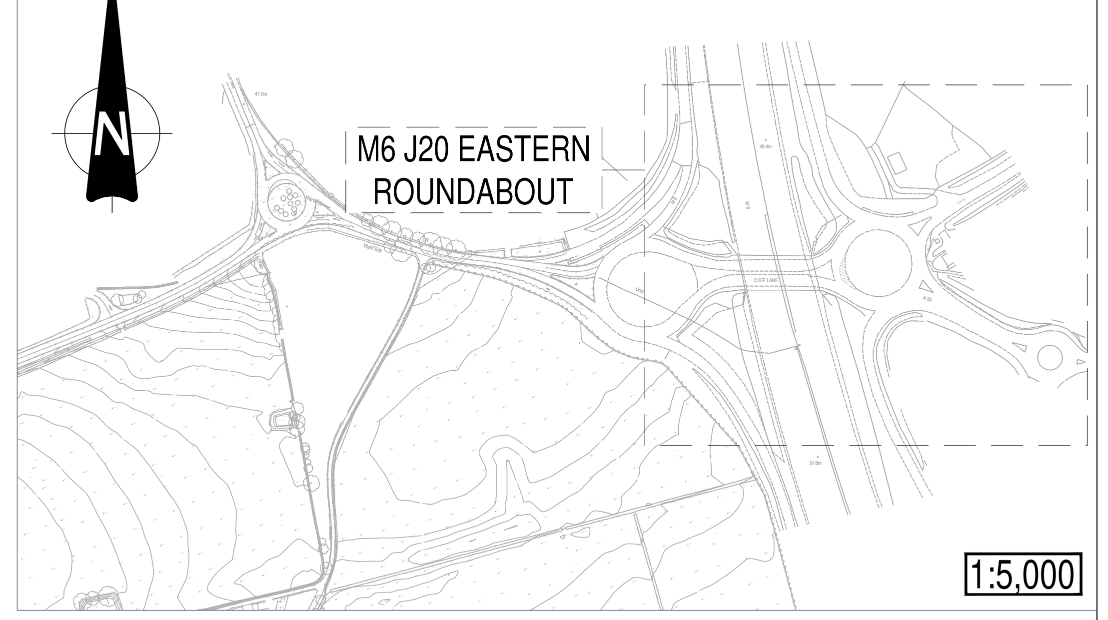
GENERAL VIEW



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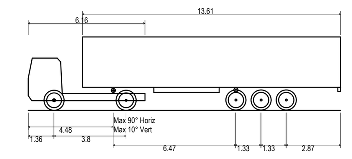
GENERAL NOTES:

KEY:
PROPOSED KERB LINE
PROPOSED FOOTWAY
PROPOSED ROAD MARKINGS

VEHICLE PROFILE:



FTA Design Articulated Vehicle (1998)	
Overall Length	16.480m
Overall Width	2.550m
Overall Body Height	3.870m
Min Body Ground Clearance	0.515m
Max Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	6.550m

Rev:	Description:	Date:	By:	Chkd:
P02	Layout updated	12/09/19	DD	FF

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Status: PRELIMINARY

Project: WARRINGTON INTERCHANGE

Drg Title:
M6 J20 - EASTERN ROUNDABOUT POTENTIAL IMPROVEMENTS SWEPT PATH ANALYSIS 16.5m ARTICULATED HGV

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	23/10/18	DD	DD	AV
Scale: AS STATED				

Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
64076	CUR	00	XX	DR	TP	05004	P02

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GENERAL NOTES:

KEY:

- INDICATIVE RED LINE
- PROPOSED KERB LINE
- PROPOSED 3.5m CYCLE WAY / FOOTWAY
- PROPOSED ROAD MARKINGS

Rev:	Description:	Date:	By:	Chkd:
P02	Location of eastern roundabout updated	03/02/20	LL	AV

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Status:

PRELIMINARY

Project:

WARRINGTON SIX 56

Drg Title:

PEDESTRIAN AND CYCLE IMPROVEMENTS

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	08/01/19	DD	DD	AV
Scale: 1:1,500				

Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
64076	CUR	00	XX	DR	TP	75014	P02

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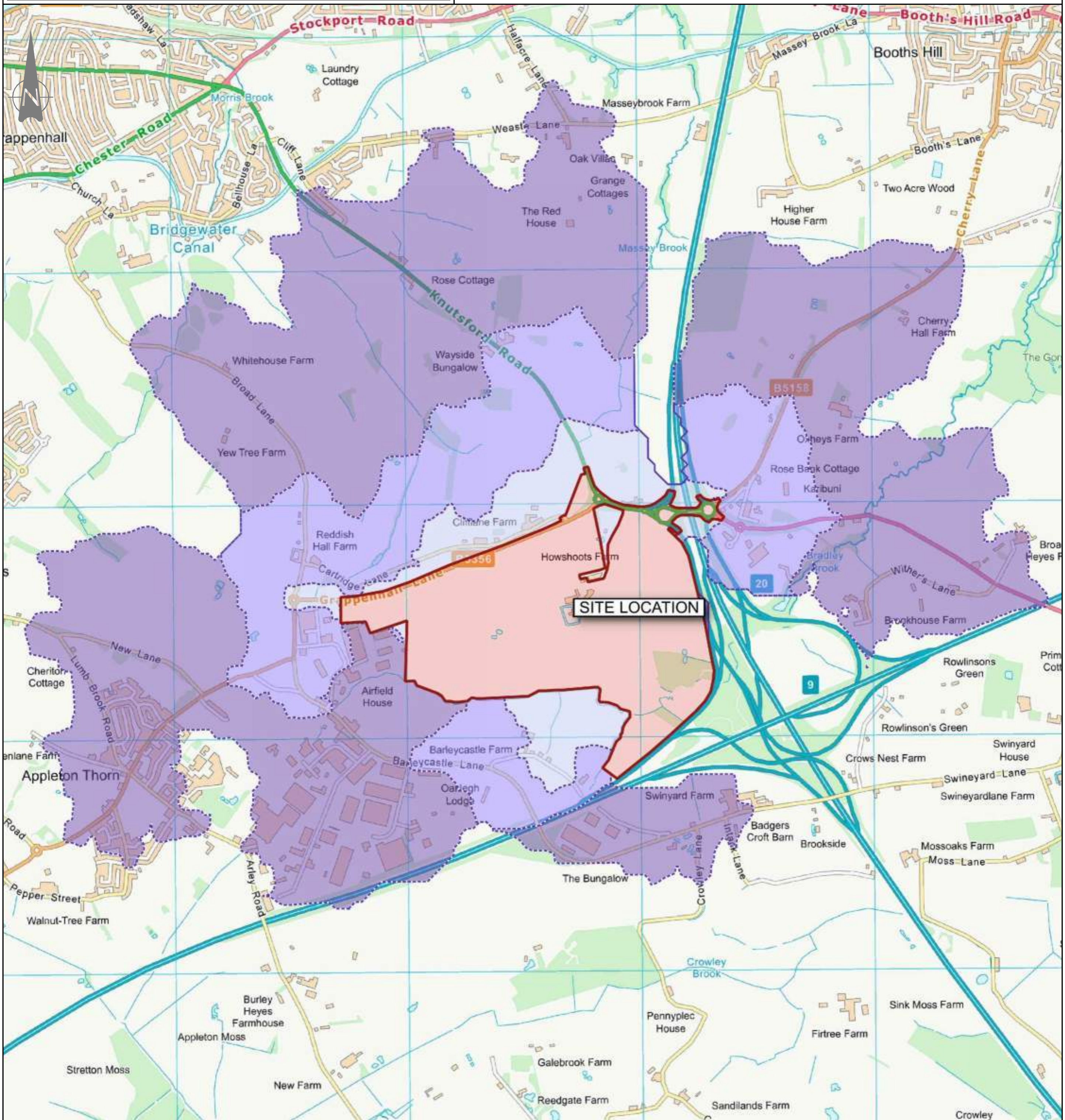
Project:	WARRINGTON INTERCHANGE
Drg Title:	ACCESSIBILITY INDICATIVE WALKING CATCHMENT
Status:	PRELIMINARY
Drawn By: JM	Checked By: MT
Designed By: JM	Date: 24/08/17
Scale: NTS	

Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
64076 -	CUR -	00 -	XX -	DR -	TP -	06003 -	P01



KEY: Site

Walking Catchment
- 2000m
- 1000m
- 500m

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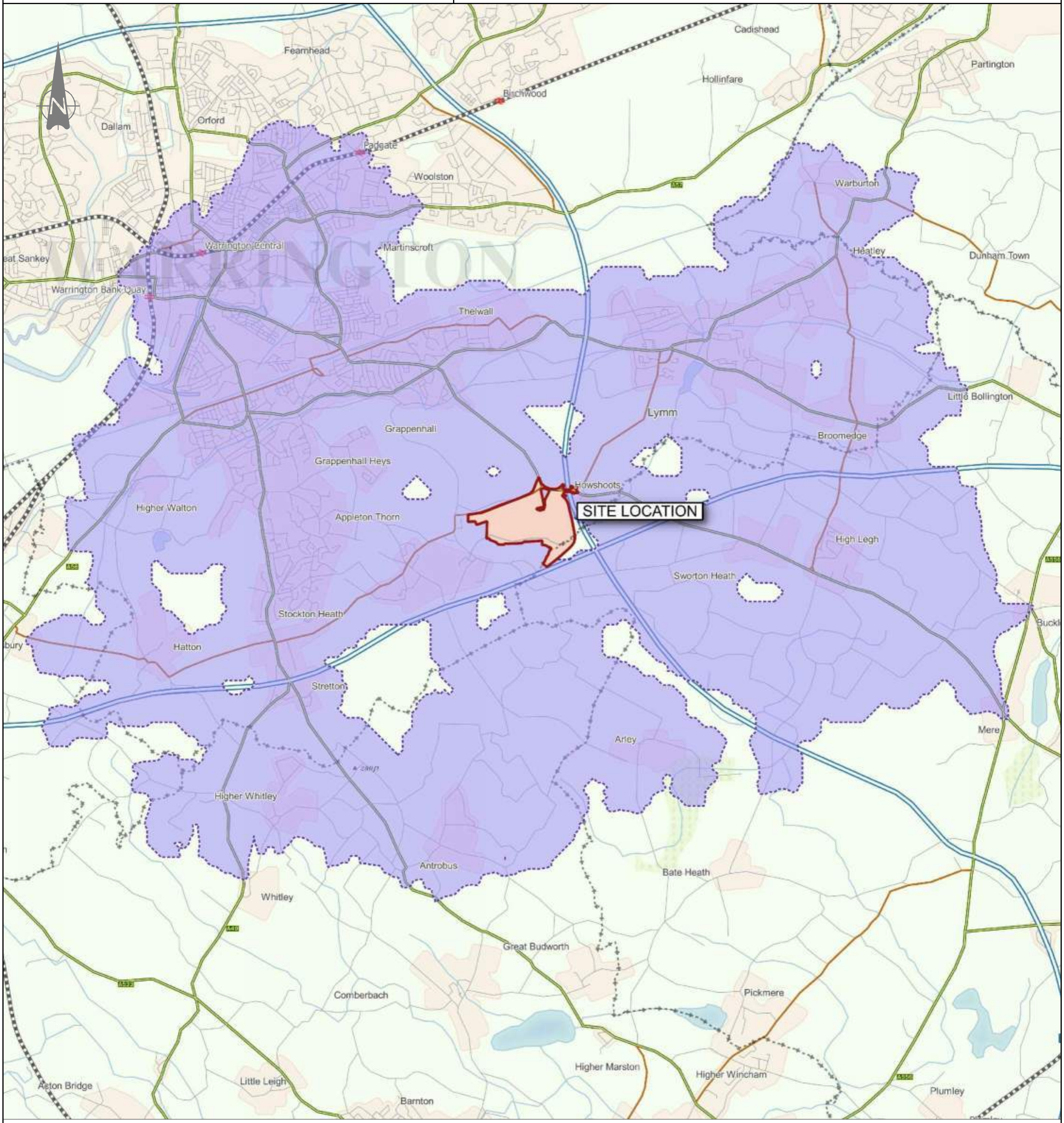
Project: WARRINGTON INTERCHANGE

Drg Title: ACCESSIBILITY INDICATIVE CYCLING CATCHMENT

Status: PRELIMINARY

Drawn By: JM	Checked By: MT
Designed By: JM	Date: 24/08/17
Scale: NTS	

Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
64076 -	CUR -	00 -	XX -	DR -	TP -	06004 -	P01



KEY: Site

Cycling Catchment:

8000m

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Project: WARRINGTON INTERCHANGE

Drg Title: ACCESSIBILITY INDICATIVE PUBLIC TRANSPORT CATCHMENT

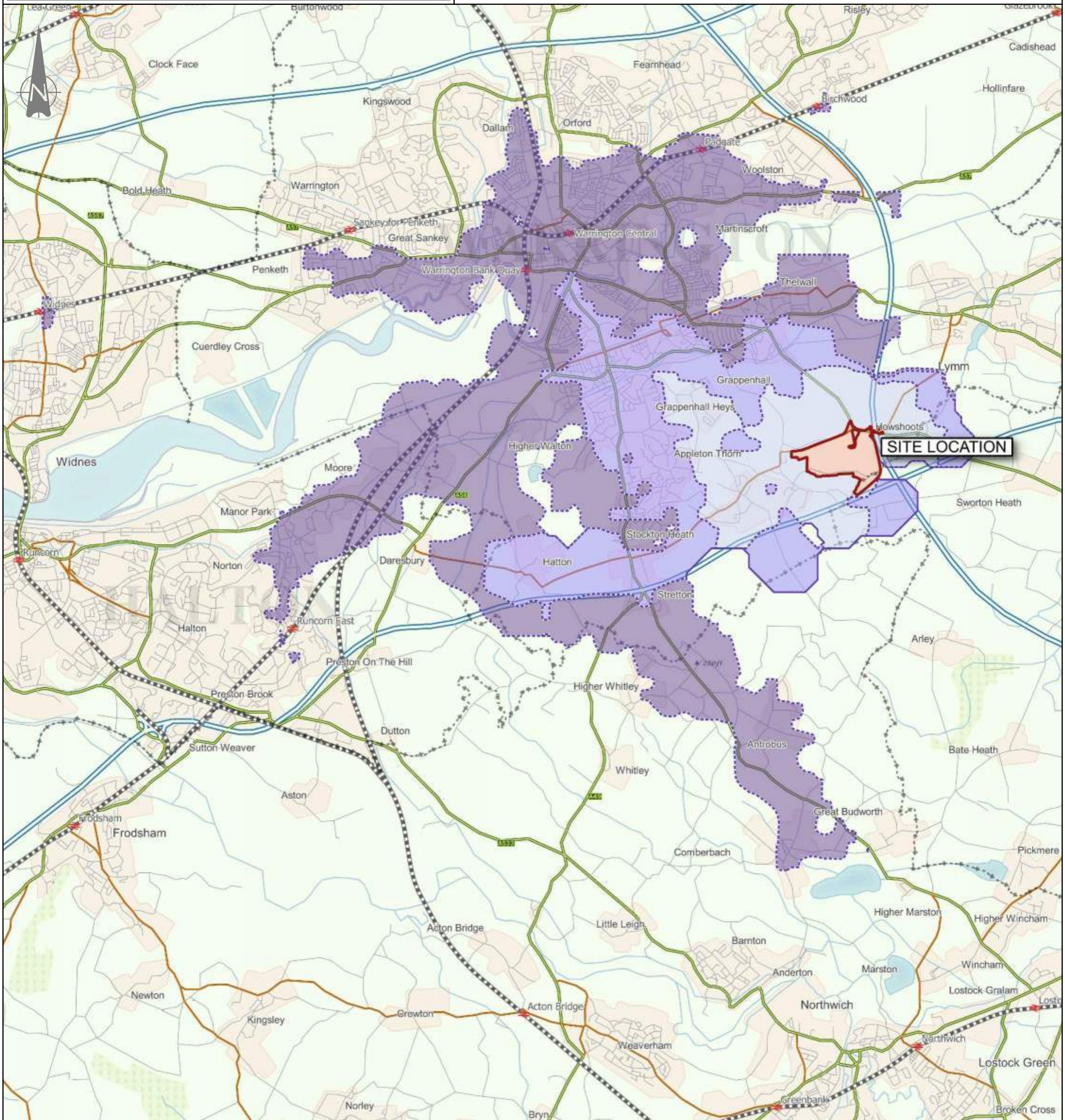
Status: PRELIMINARY

Drawn By: JM | Checked By: MT

Designed By: JM | Date: 24/08/17

Scale: NTS

Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
64076 -	CUR -	00 -	XX -	DR -	TP -	06005 -	P01



KEY: Site

Public Transport Catchment:
- 60 minutes
- 40 minutes
- 20 minutes

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NOTE: The content of this drawing is for indicative information only and NOT suitable for Construction purposes

GENERAL NOTES:

KEY:

- INDICATIVE LAND OWNERSHIP BOUNDARY
- INDICATIVE EXTENTS OF PUBLIC HIGHWAY
- PROPOSED KERB LINE
- PROPOSED FOOTWAY
- PROPOSED ROAD MARKINGS
- PROPOSED TRAFFIC SIGNAL

Rev:	Description:	Date:	By:	Chkd:
P06	Road markings updated	08/11/19	JM	AV
P05	Road markings updated	06/11/19	DD	AV
P04	Road markings updated	29/07/19	DD	AV
P03	Footways updated	08/01/19	DD	AV
P02	Cliff Lane Roundabout. Northern arm entry udpated	28/11/18	DD	AV

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Status:

PRELIMINARY

Project:

WARRINGTON SIX 56

Drg Title:

POTENTIAL IMPROVEMENTS

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	15/11/18	DD	DD	AV
Scale: 1:1,000				

Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
64076	- CUR	- 00	- XX	- DR	- TP -	75011	- P06

\\mafs02\Projects\064001 - 065000\064076 - Warrington Interchange TPMAE -Drawings\2-Working\2.2-DWG\75\

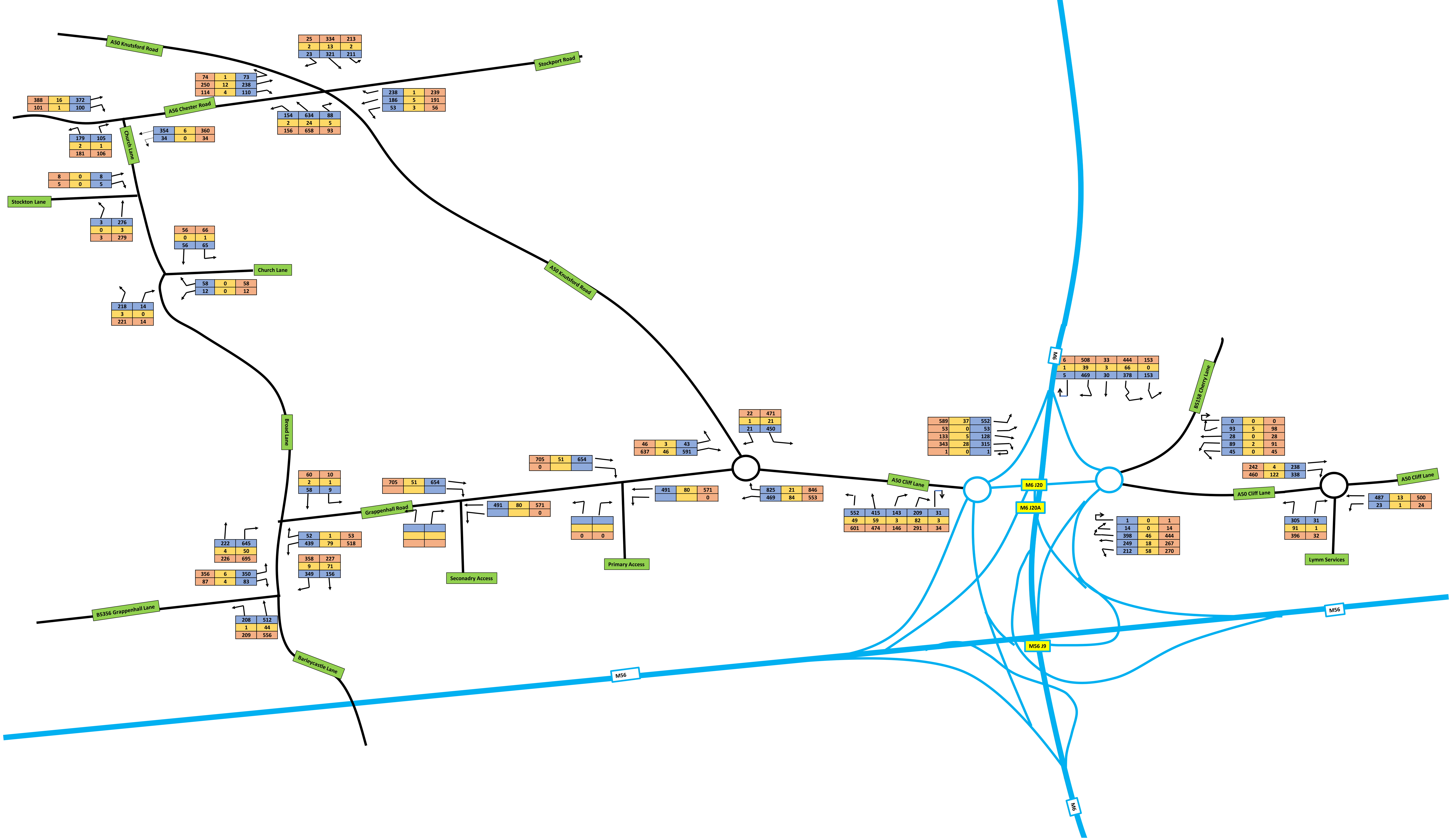
Traffic Figures

Traffic Flow Figure 1
Project: Six 56 Warrington
Scenario: 2017 AM Peak Observed Flows
Note : AM Peak 0730-0830

Passenger car units
HGVs
Total Vehicles

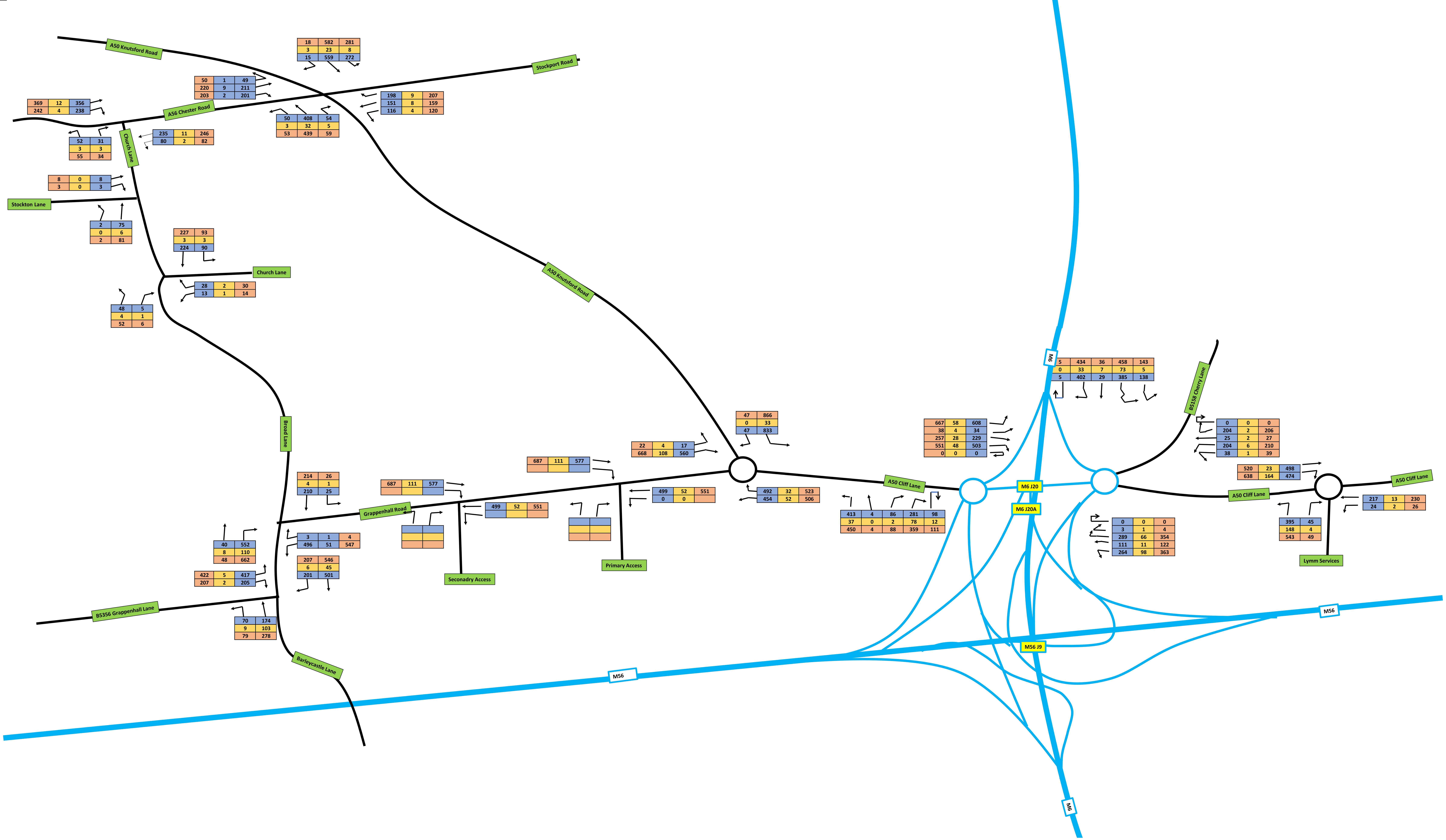
Traffic Flow Figure 2
Project: Warrington South
Project: Six 56 Warrington
Note : PM Peak 1630-1730

Passenger car units
HGVs
Total Vehicles



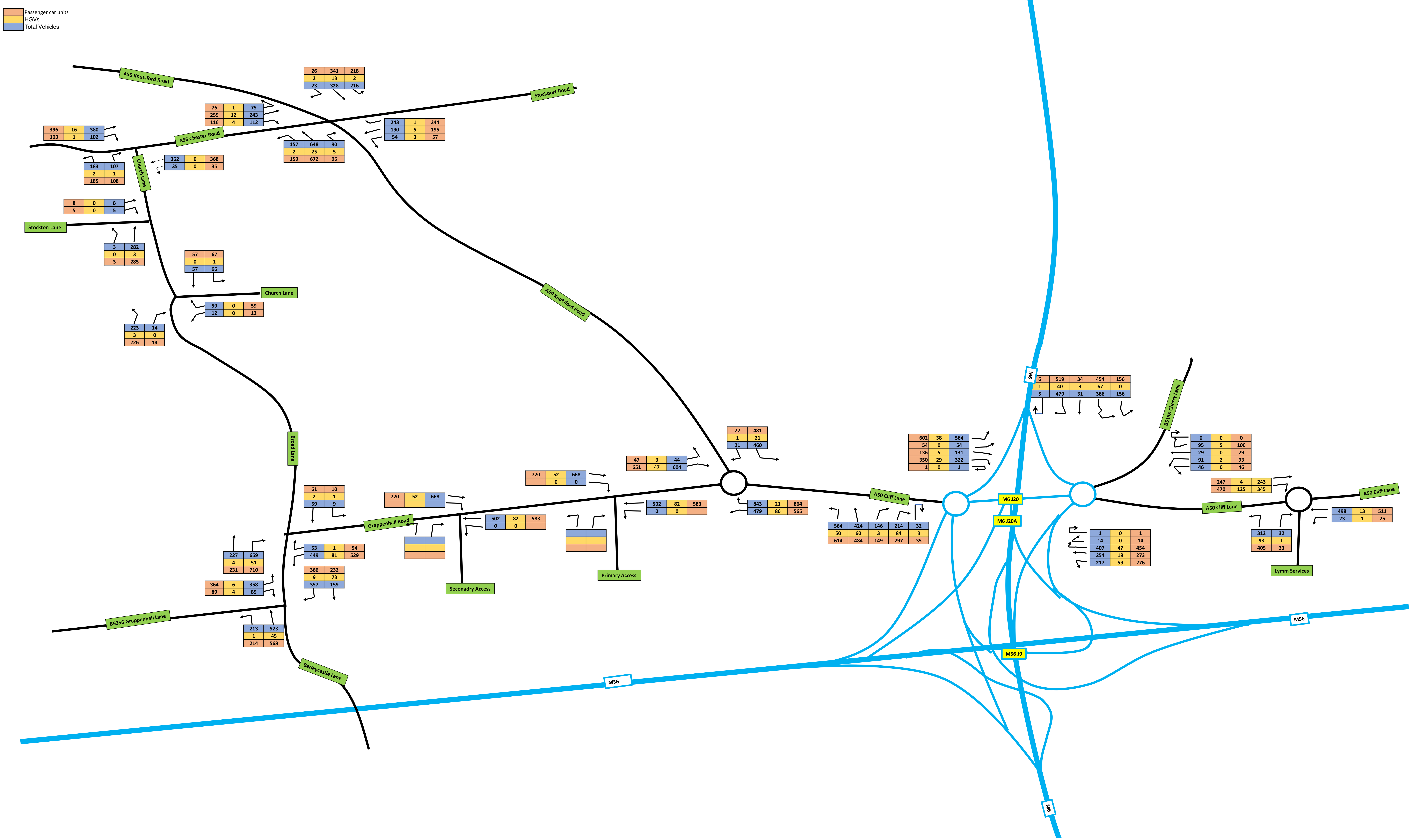
Traffic Flow Figure 3
Project: Six 56 Warrington
Scenario: 2021 AM Background Traffic
Note : AM Peak 0730-0830

Passenger car units
HGVs
Total Vehicles



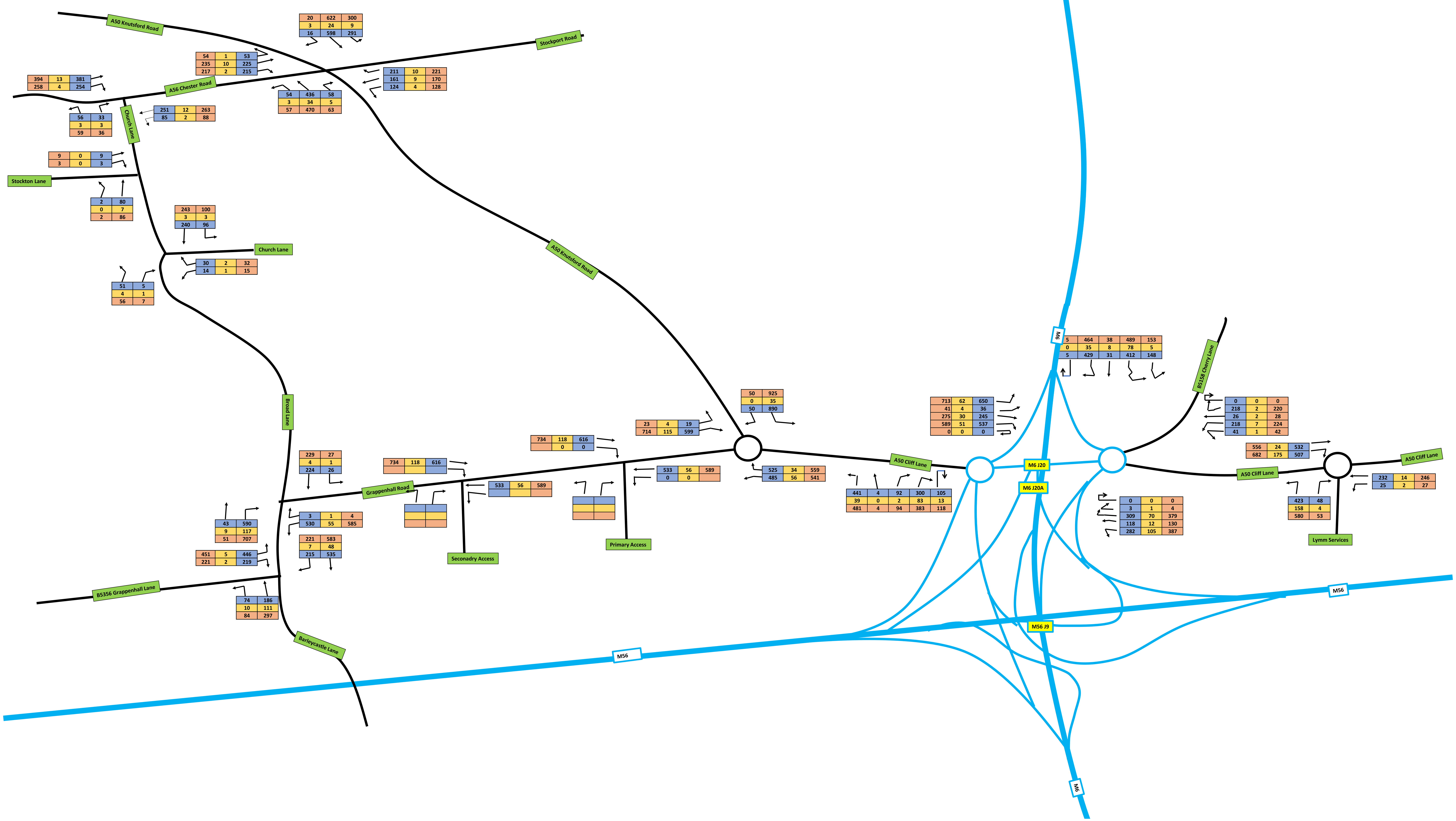
Traffic Flow Figure 4
Project: Six 56 Warrington
Scenario: 2021 PM Background Traffic
Note : PM Peak 1630-1730

Passenger car units
HGVs
Total Vehicles



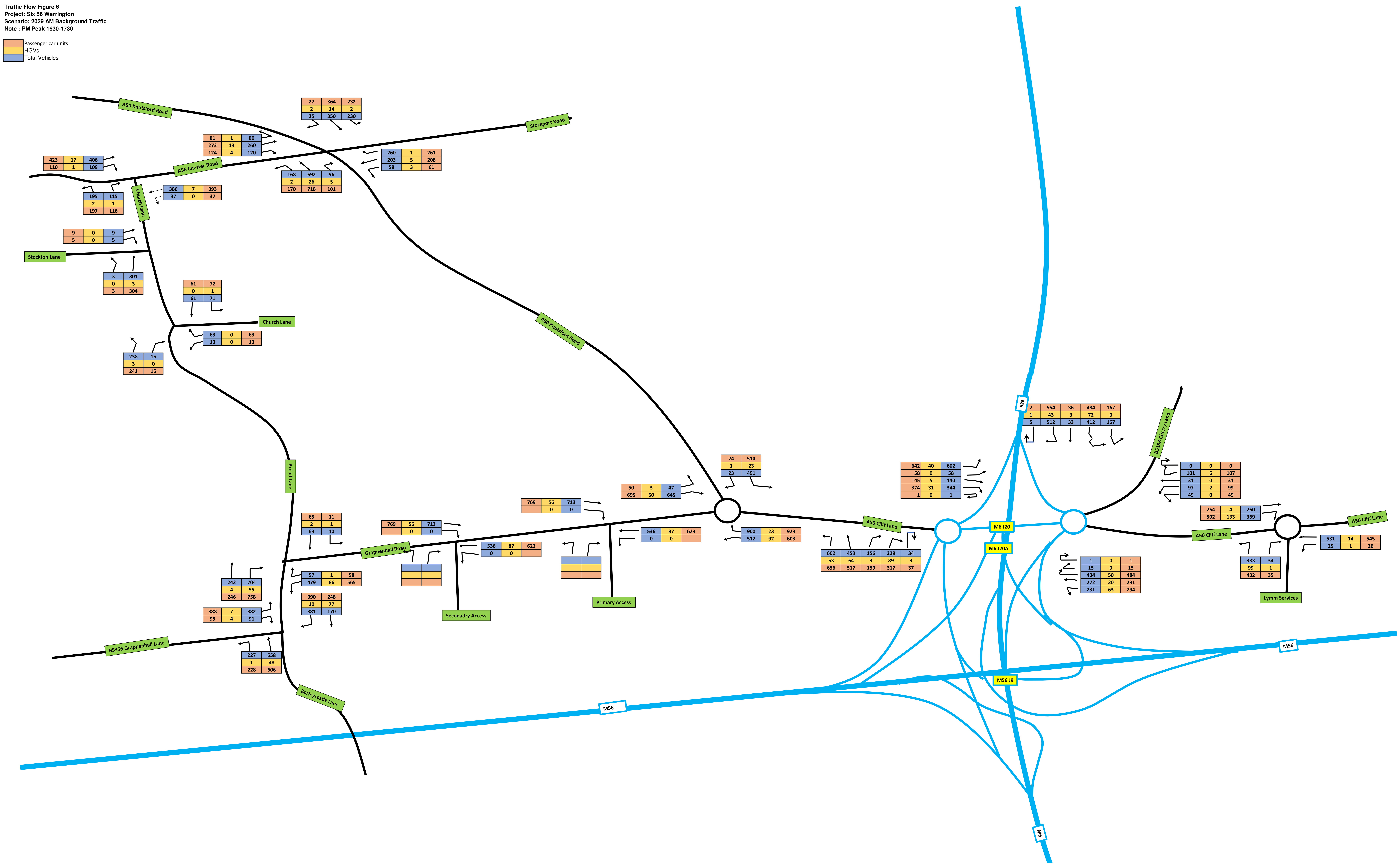
Traffic Flow Figure 5
Project: Six 56 Warrington
Scenario: 2029 AM Background Traffic
Note : AM Peak 0730-0830

Passenger car units
HGVs
Total Vehicles

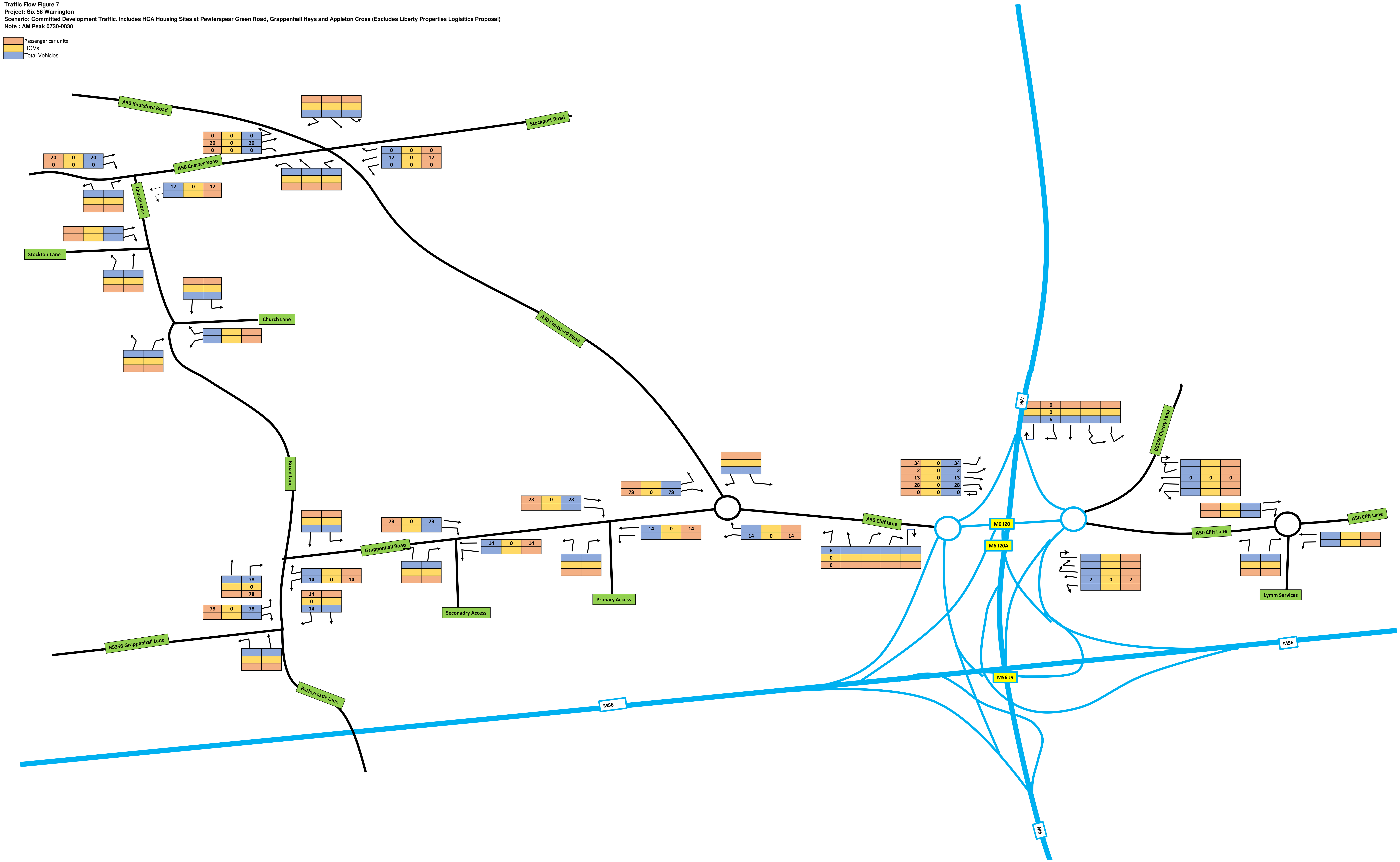


Traffic Flow Figure 6
Project: Six 56 Warrington
Scenario: 2029 AM Background Traffic
Note : PM Peak 1630-1730

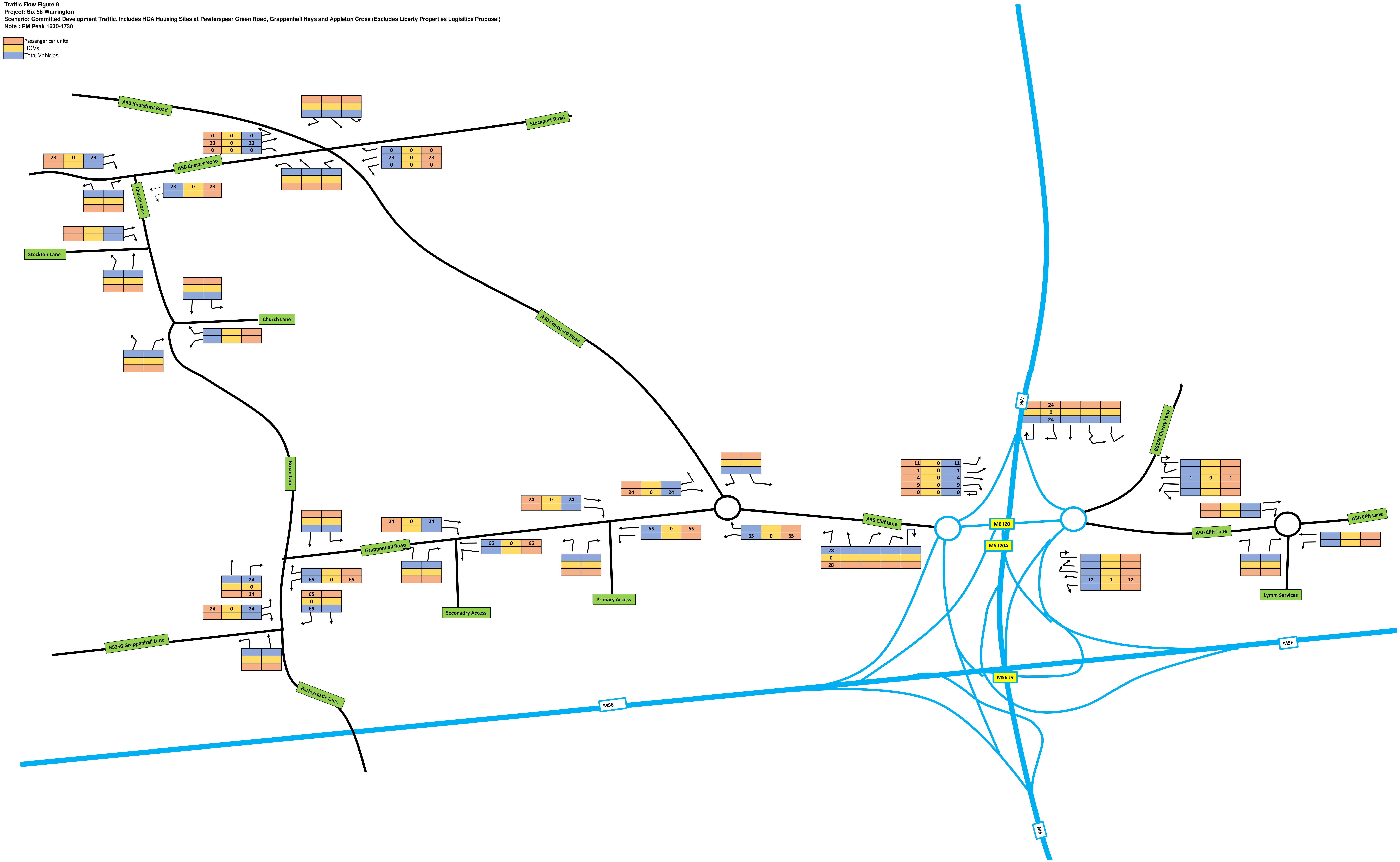
Passenger car units
HGVs
Total Vehicles



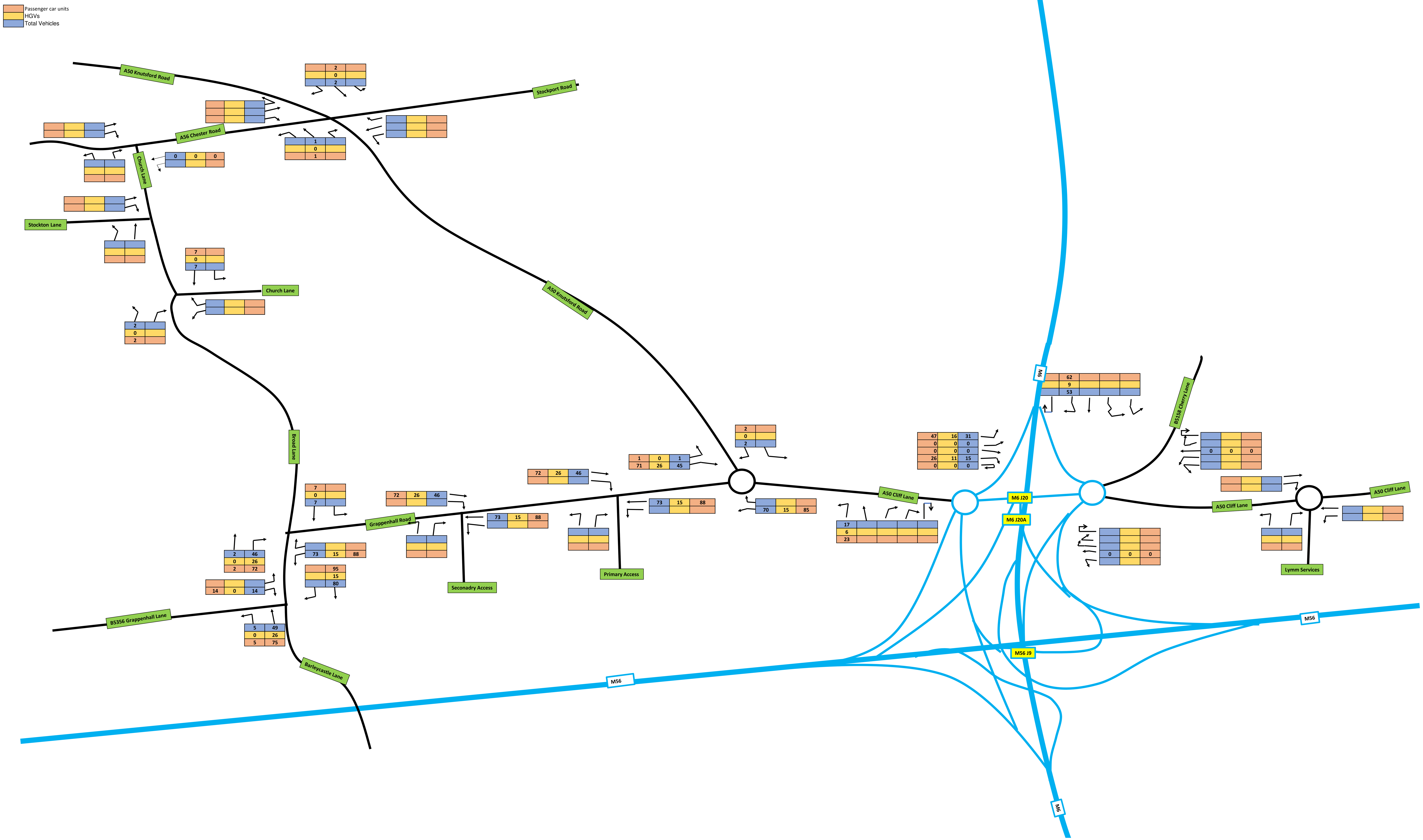
Traffic Flow Figure 7
Project: Six 56 Warrington
Scenario: Committed Development Traffic. Includes HCA Housing Sites at Pewterspear Green Road, Grappenhall Heys and Appleton Cross (Excludes Liberty Properties Logisitics Proposal)
Note : AM Peak 0730-0830



Traffic Flow Figure 8
Project: Six 56 Warrington
Scenario: Committed Development Traffic. Includes HCA Housing Sites at Pewterspear Green Road, Grappenhall Heys and Appleton Cross (Excludes Liberty Properties Logisitics Proposal)
Note : PM Peak 1630-1730

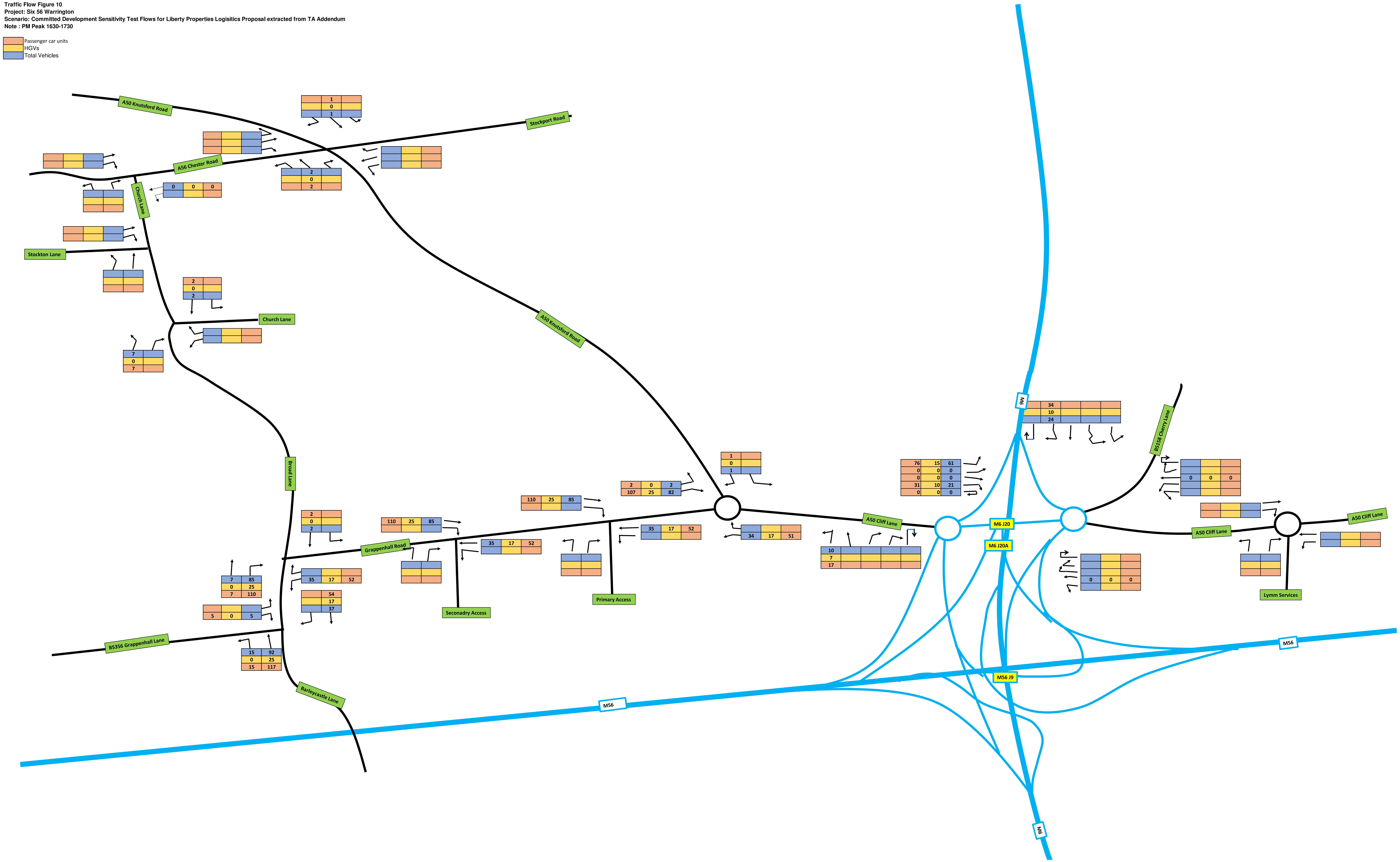


Traffic Flow Figure 9
Project: Six 56 Warrington
Scenario: Committed Development Sensitivity Test Flows for Liberty Properties Logisitics Proposal extracted from TA Addendum
Note : AM Peak 0730-0830



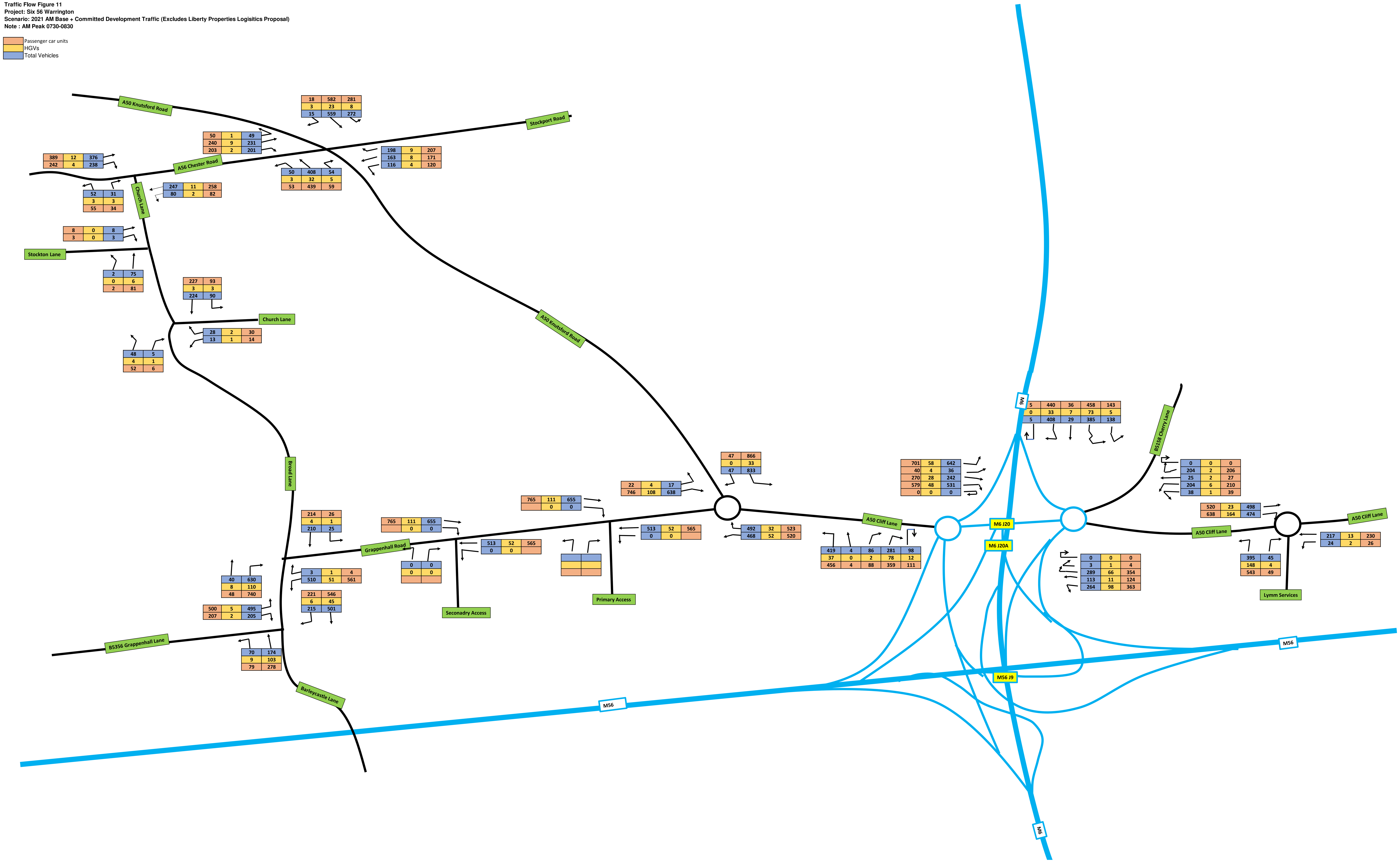
Traffic Flow Figure 10
Project: Six 56 Warrington
Scenario: Committed Development Sensitivity Test Flows for Liberty Properties Logisitics Proposal extracted from TA Addendum
Note : PM Peak 1630-1730

Passenger car units
HGVs
Total Vehicles



Traffic Flow Figure 11
Project: Six 56 Warrington
Scenario: 2021 AM Base + Committed Development Traffic (Excludes Liberty Properties Logisitics Proposal)
Note : AM Peak 0730-0830

Passenger car units
HGVs
Total Vehicles

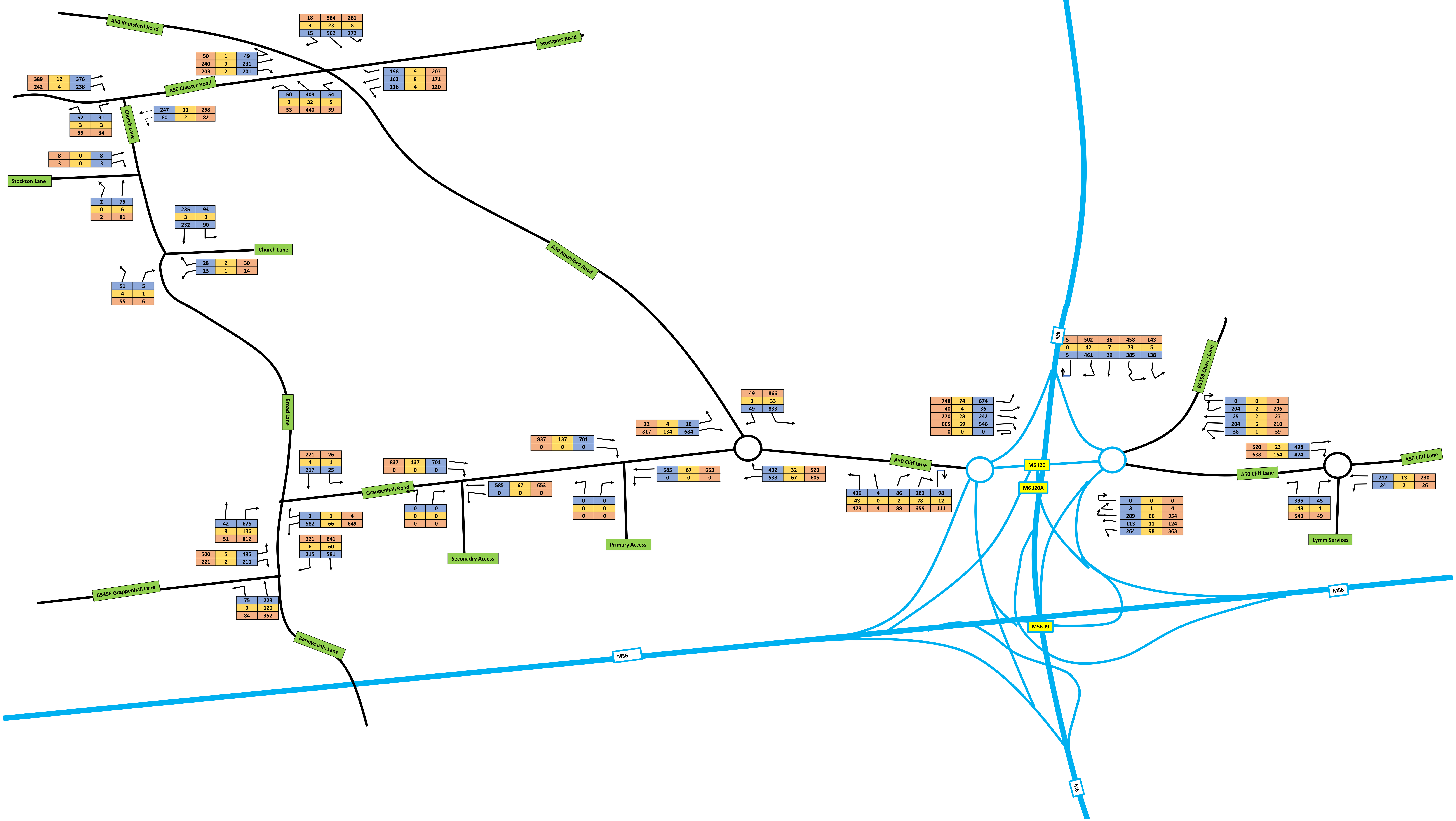


Traffic Flow Figure 12
Project: Six 56 Warrington
Scenario: 2021 PM Base + Committed Development Traffic (Excludes Liberty Properties Logisitics Proposal)
Note : PM Peak 1630-1730

Passenger car units
HGVs
Total Vehicles

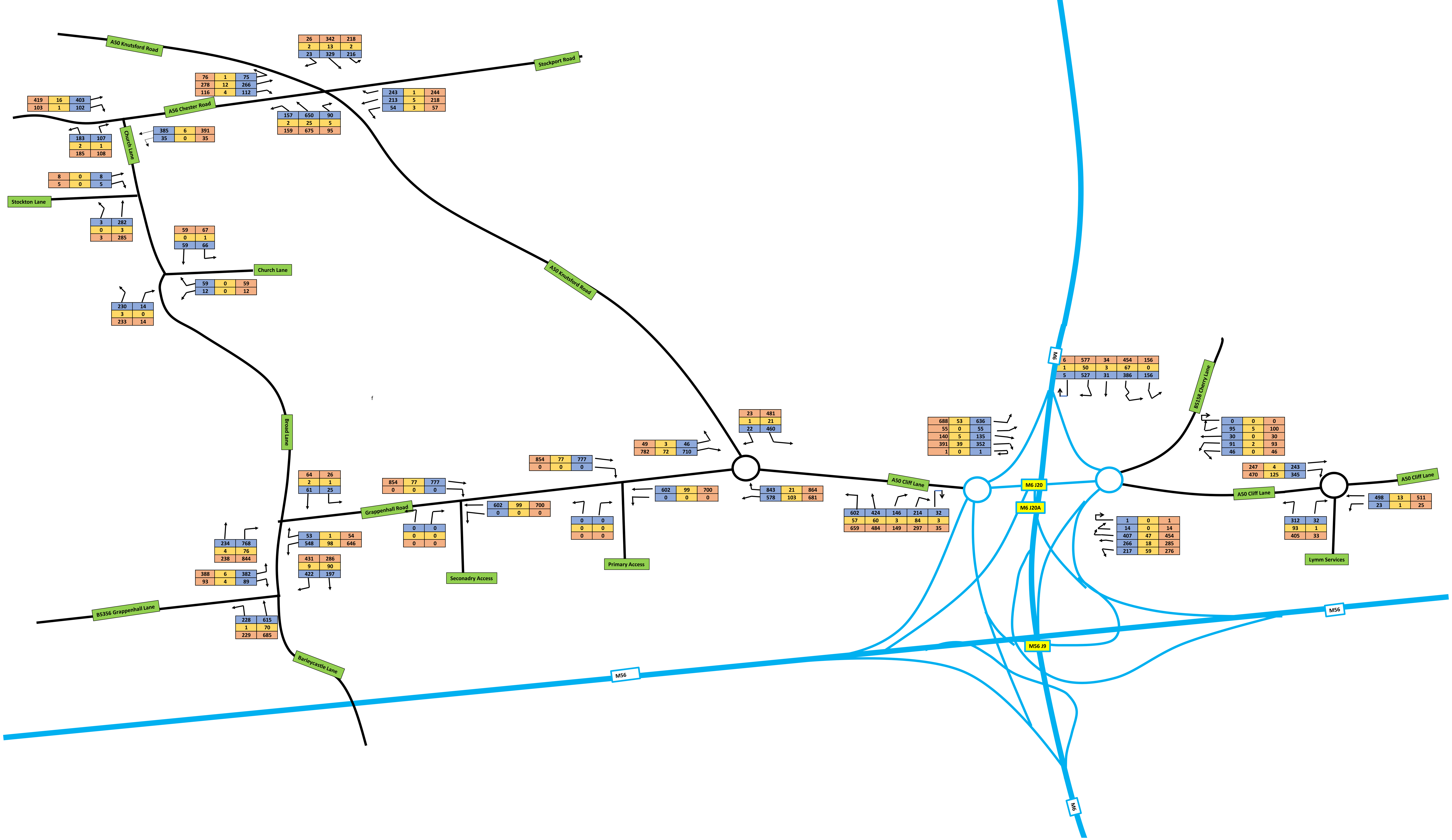
Traffic Flow Figure 13
Project: Six 56 Warrington
Scenario: 2021 AM Base + Committed Development Traffic (Includes Liberty Properties Logisitics Proposal as Sensitivity Test)
Note : AM Peak 0730-0830

Passenger car units
HGVs
Total Vehicles

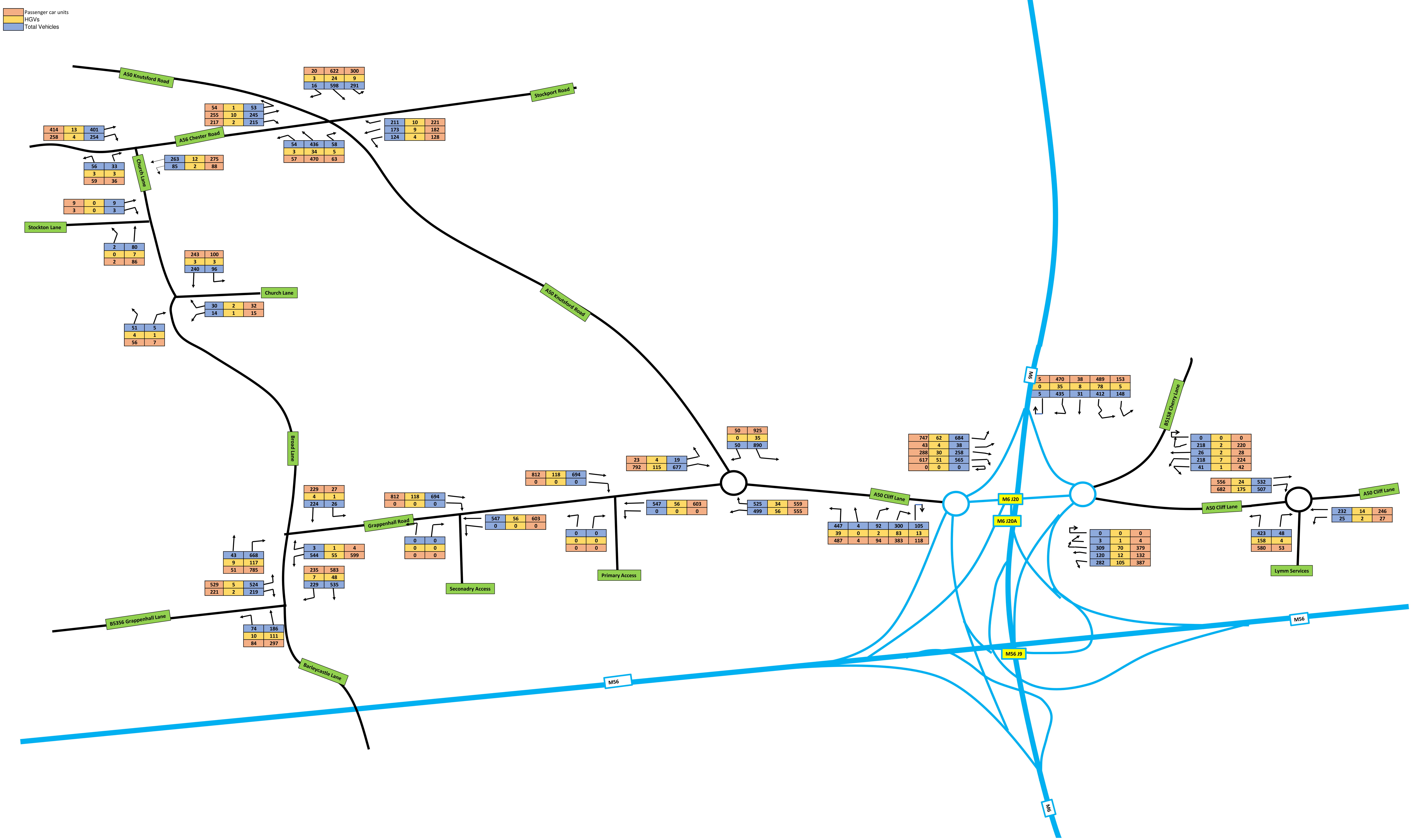


Traffic Flow Figure 14
Project: Six 56 Warrington
Scenario: 2021 PM Base + Committed Development Traffic (Includes Liberty Properties Logisitics Proposal as Sensitivity Test)
Note : PM Peak 1630-1730

Passenger car units
HGVs
Total Vehicles

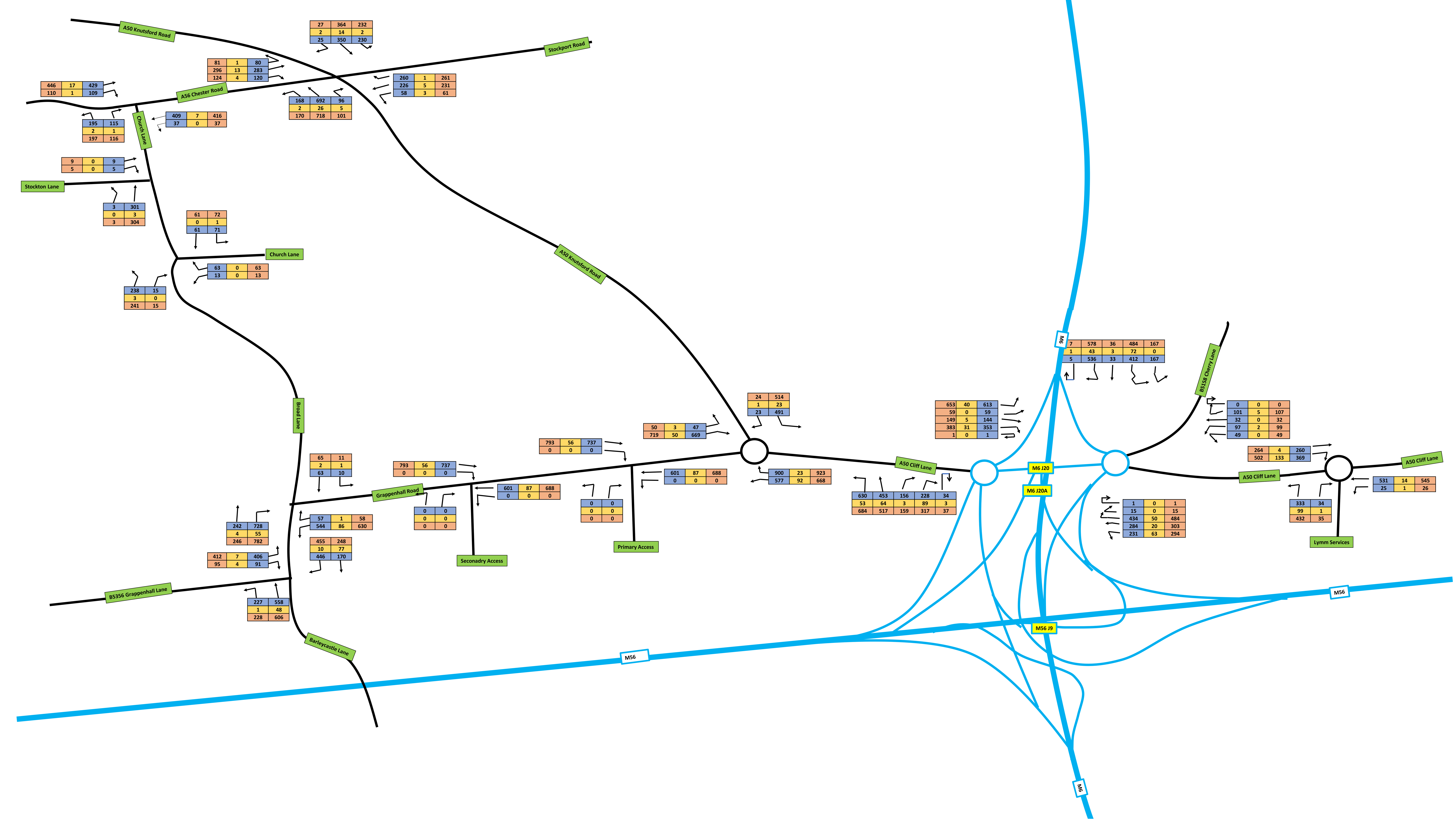


Traffic Flow Figure 15
Project: Six 56 Warrington
Scenario: 2029 AM Base + Committed Development Traffic (Excludes Liberty Properties Logisitics Proposal)
Note : AM Peak 0730-0830



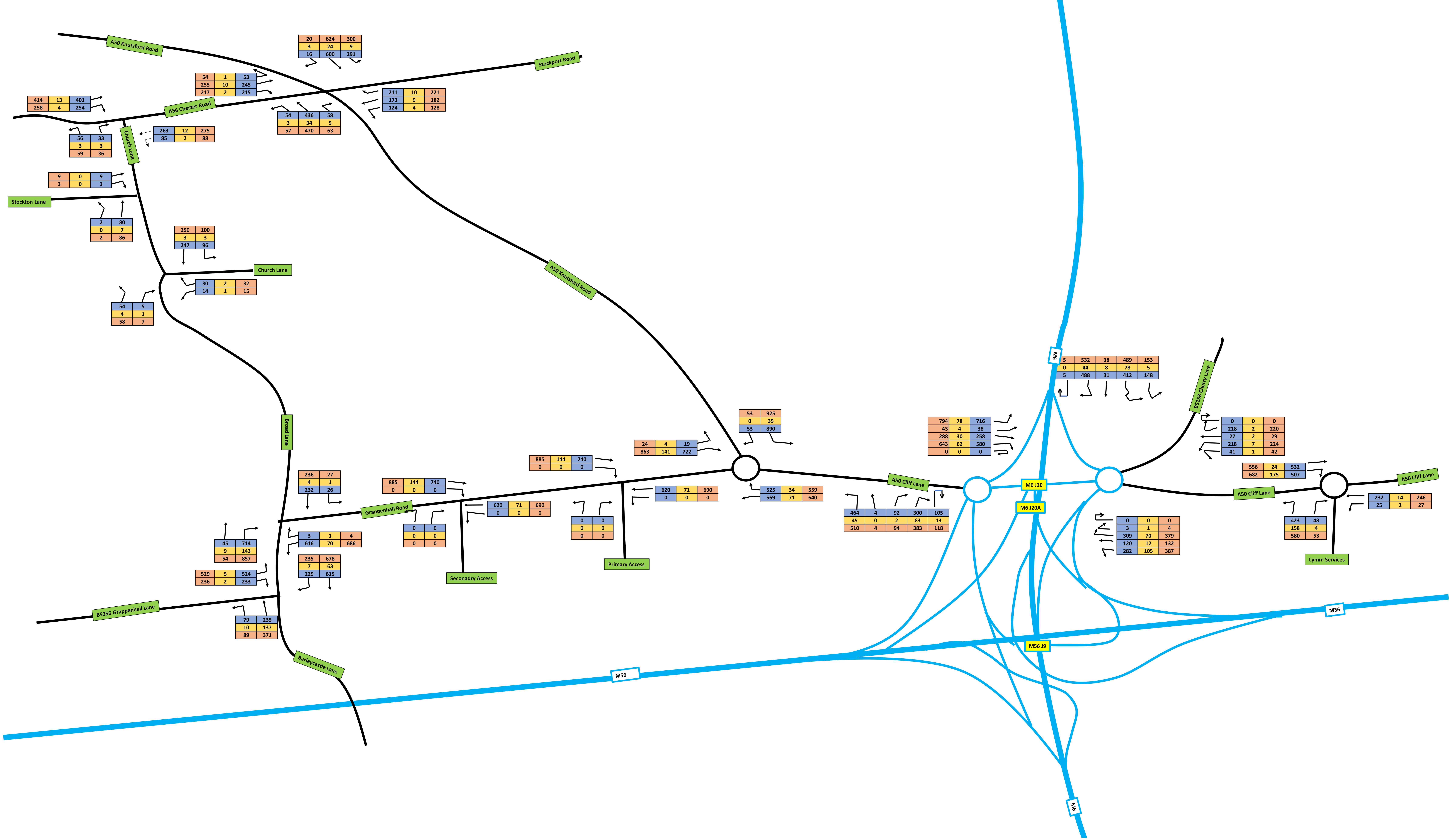
Traffic Flow Figure 16
Project: Six 56 Warrington
Scenario: 2029 PM Base + Committed Development Traffic (Excludes Liberty Properties Logisitics Proposal)
Note : PM Peak 1630-1730

Passenger car units
HGVs
Total Vehicles



Traffic Flow Figure 17
Project: Six 56 Warrington
Scenario: 2029 AM Base + Committed Development Traffic (Includes Liberty Properties Logisitics Proposal as Sensitivity Test)
Note : AM Peak 0730-0830

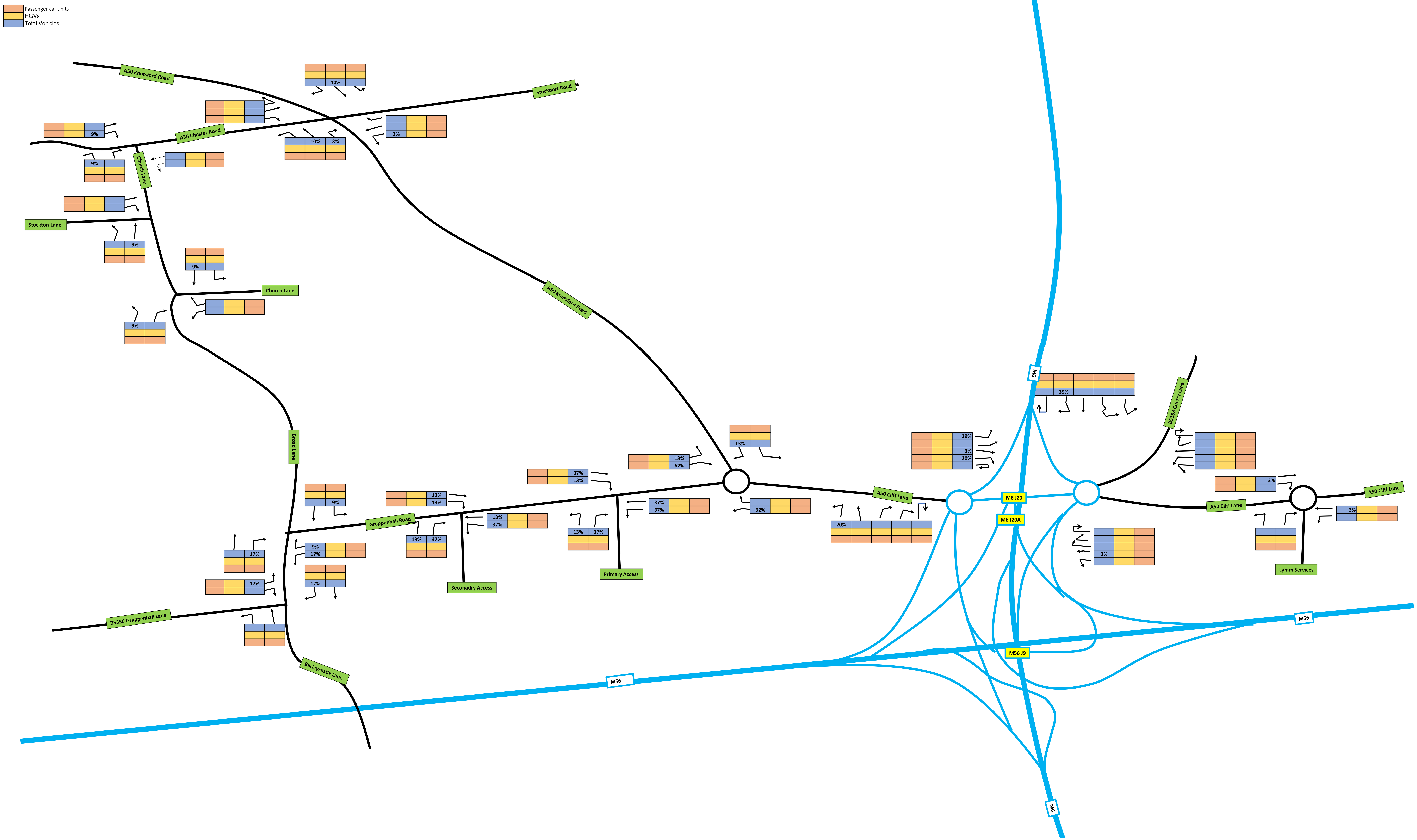
Passenger car units
HGVs
Total Vehicles



Traffic Flow Figure 18
Project: Six 56 Warrington
Scenario: 2031 PM Base + Committed Development Traffic (Includes Liberty Properties Logisitics Proposal as Sensitivity Test)
Note : PM Peak 1630-1730

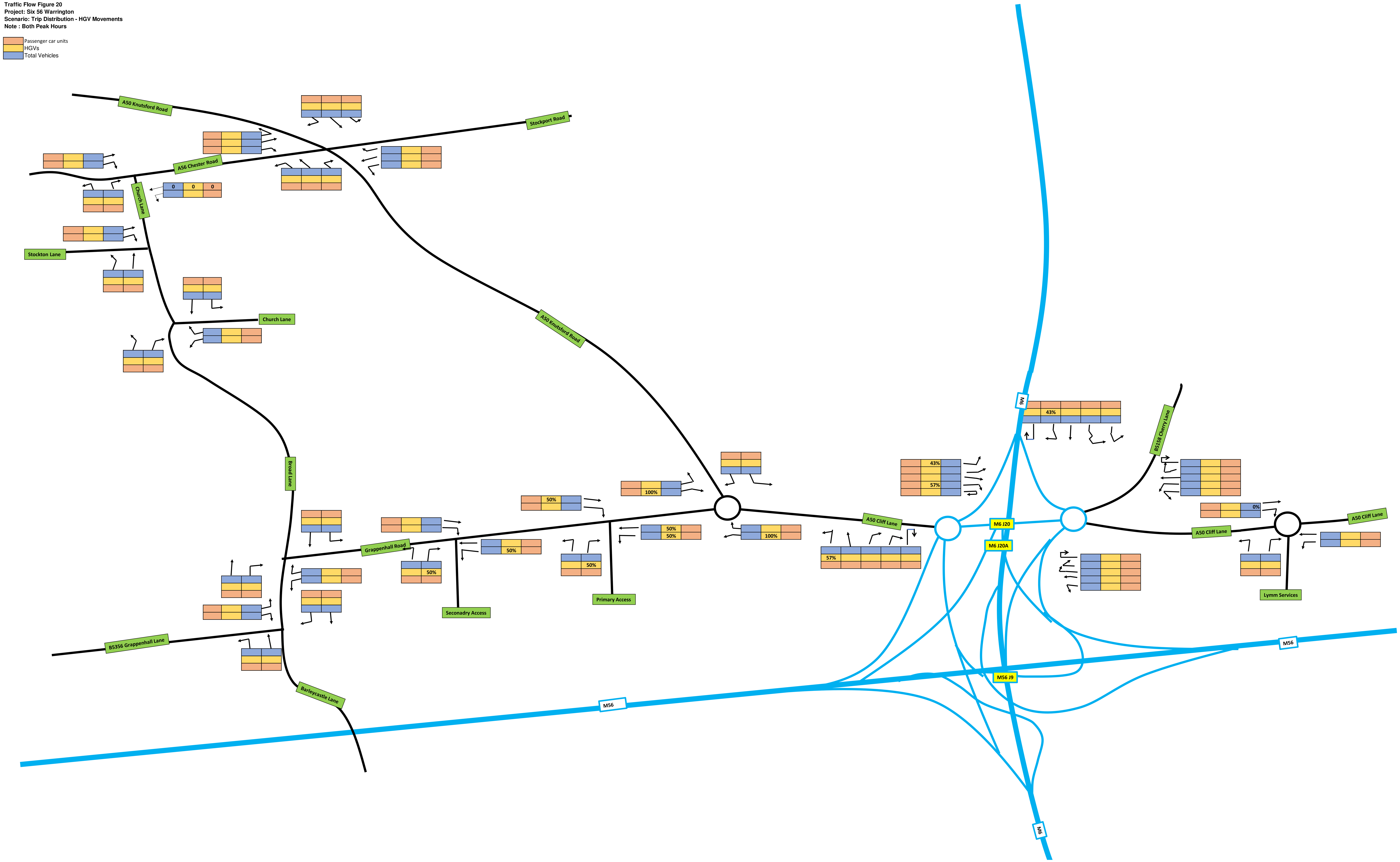
Passenger car units
HGVs
Total Vehicles

Traffic Flow Figure 19
Project: Six 56 Warrington
Scenario: Trip Distribution - Staff Movements
Note : Both Peak Hours



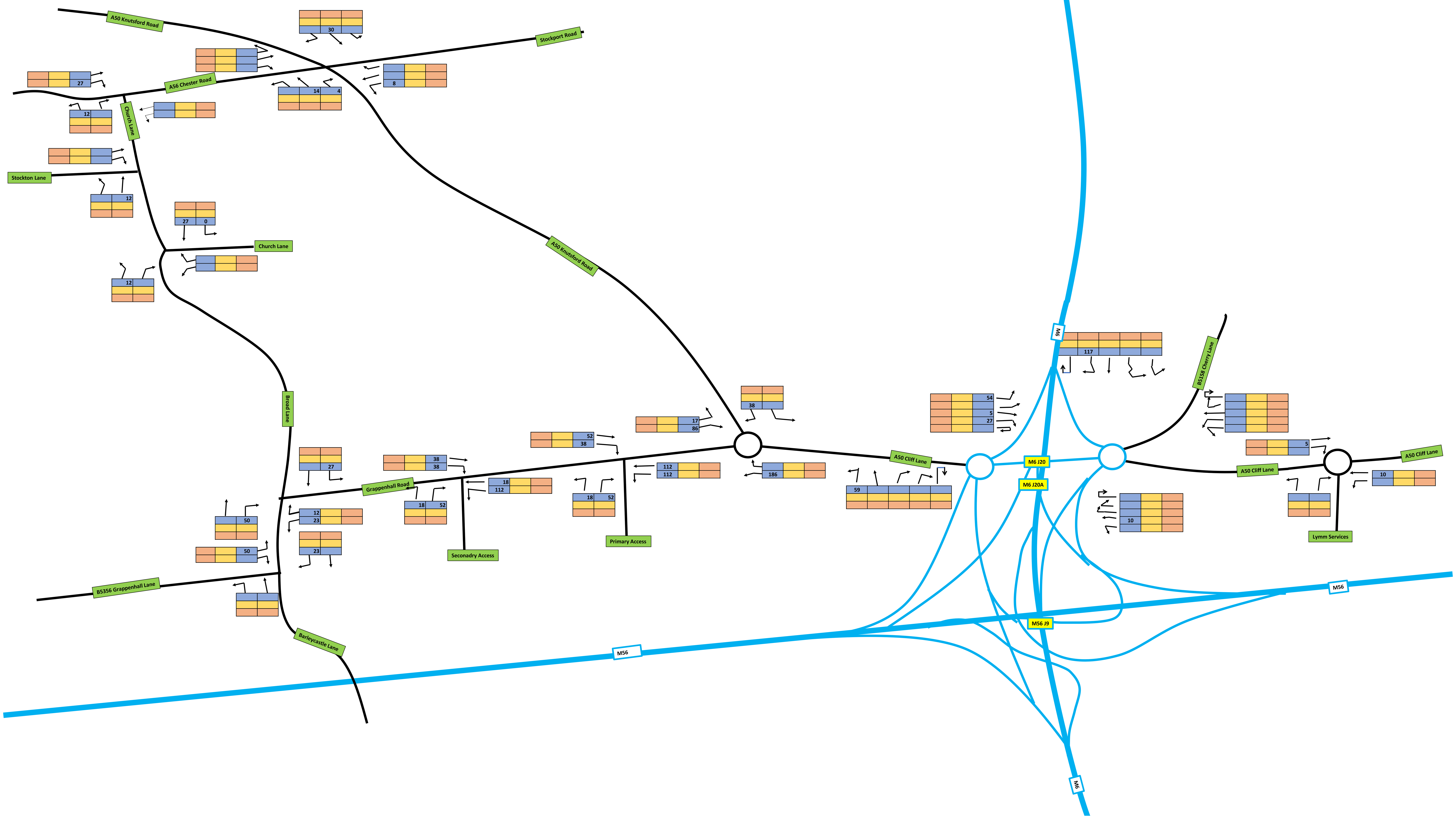
Traffic Flow Figure 20
Project: Six 56 Warrington
Scenario: Trip Distribution - HGV Movements
Note : Both Peak Hours

Passenger car units
HGVs
Total Vehicles

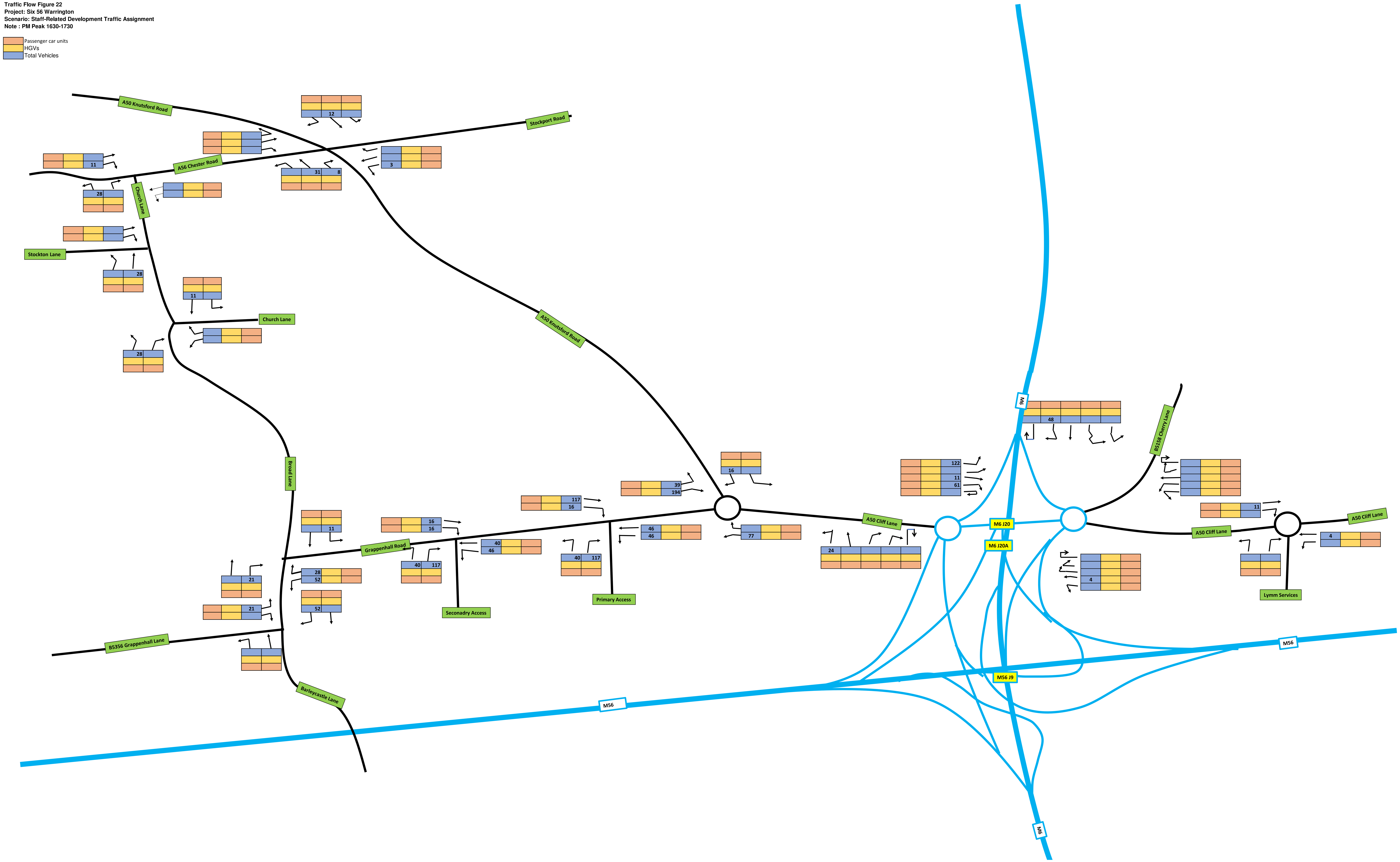


Traffic Flow Figure 21
Project: Six 56 Warrington
Scenario: Staff-Related Development Traffic Assignment
Note : AM Peak 0730-0830

Passenger car units
HGVs
Total Vehicles

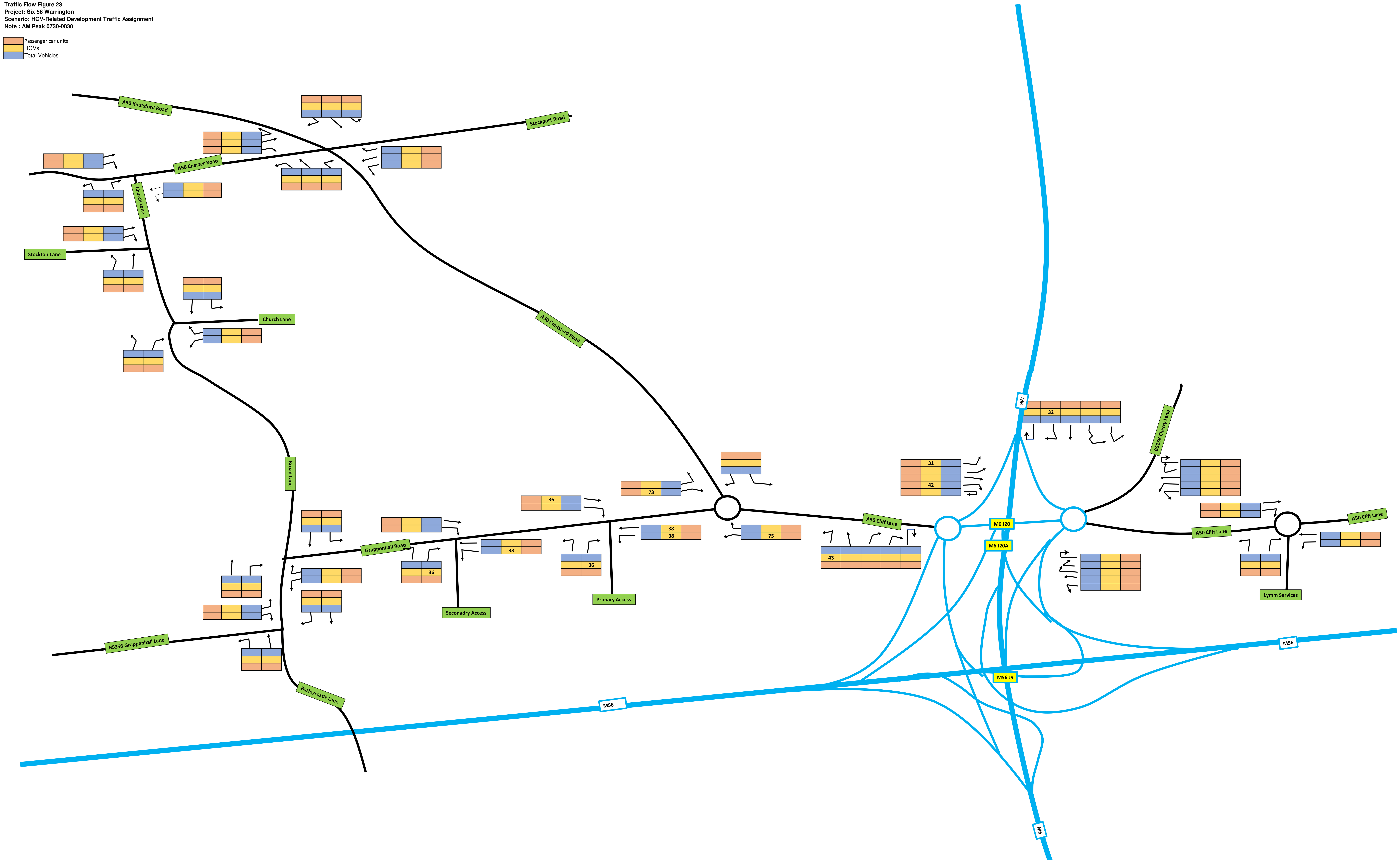


Traffic Flow Figure 22
Project: Six 56 Warrington
Scenario: Staff-Related Development Traffic Assignment
Note : PM Peak 1630-1730

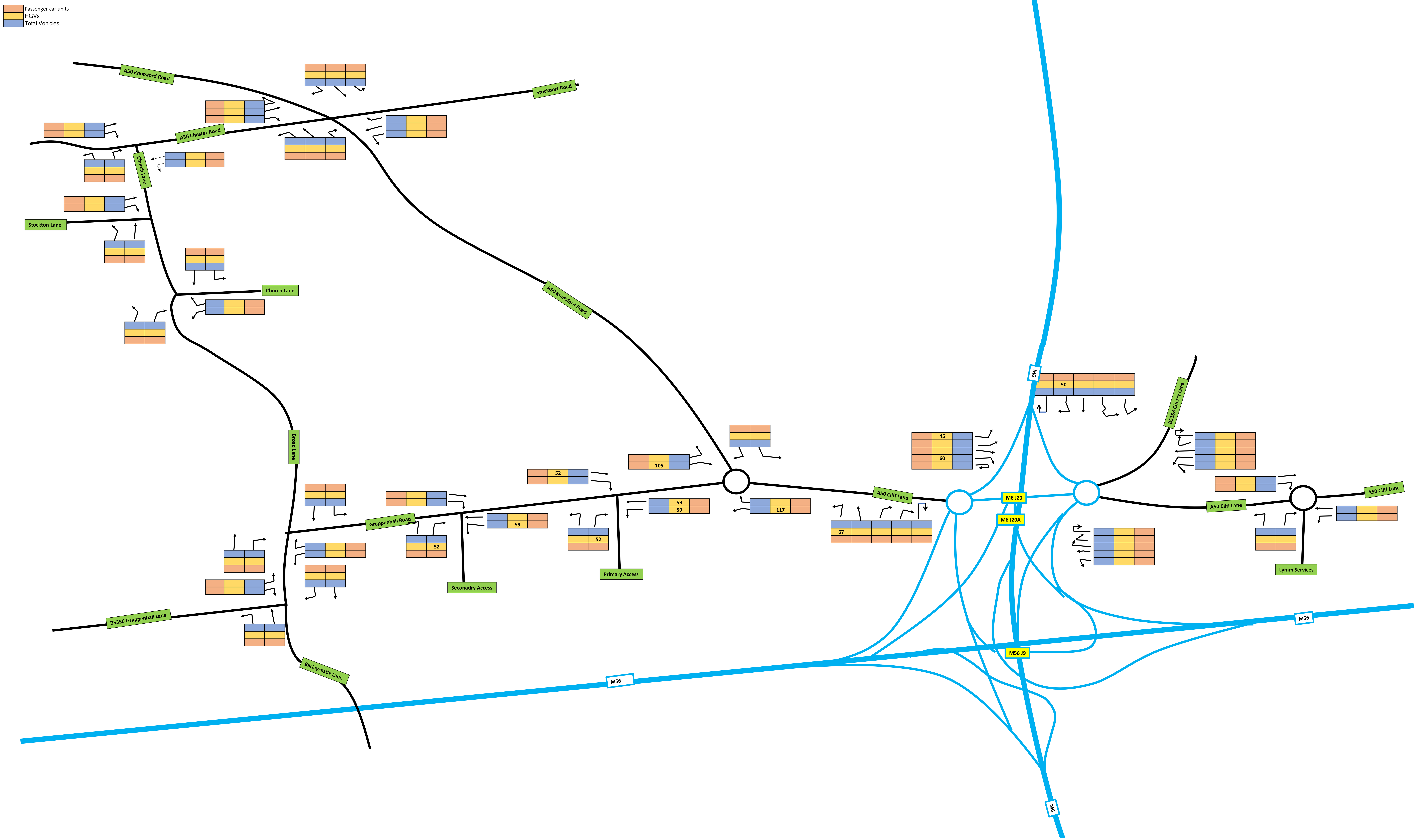


Traffic Flow Figure 23
Project: Six 56 Warrington
Scenario: HGV-Related Development Traffic Assignment
Note : AM Peak 0730-0830

Passenger car units
HGVs
Total Vehicles

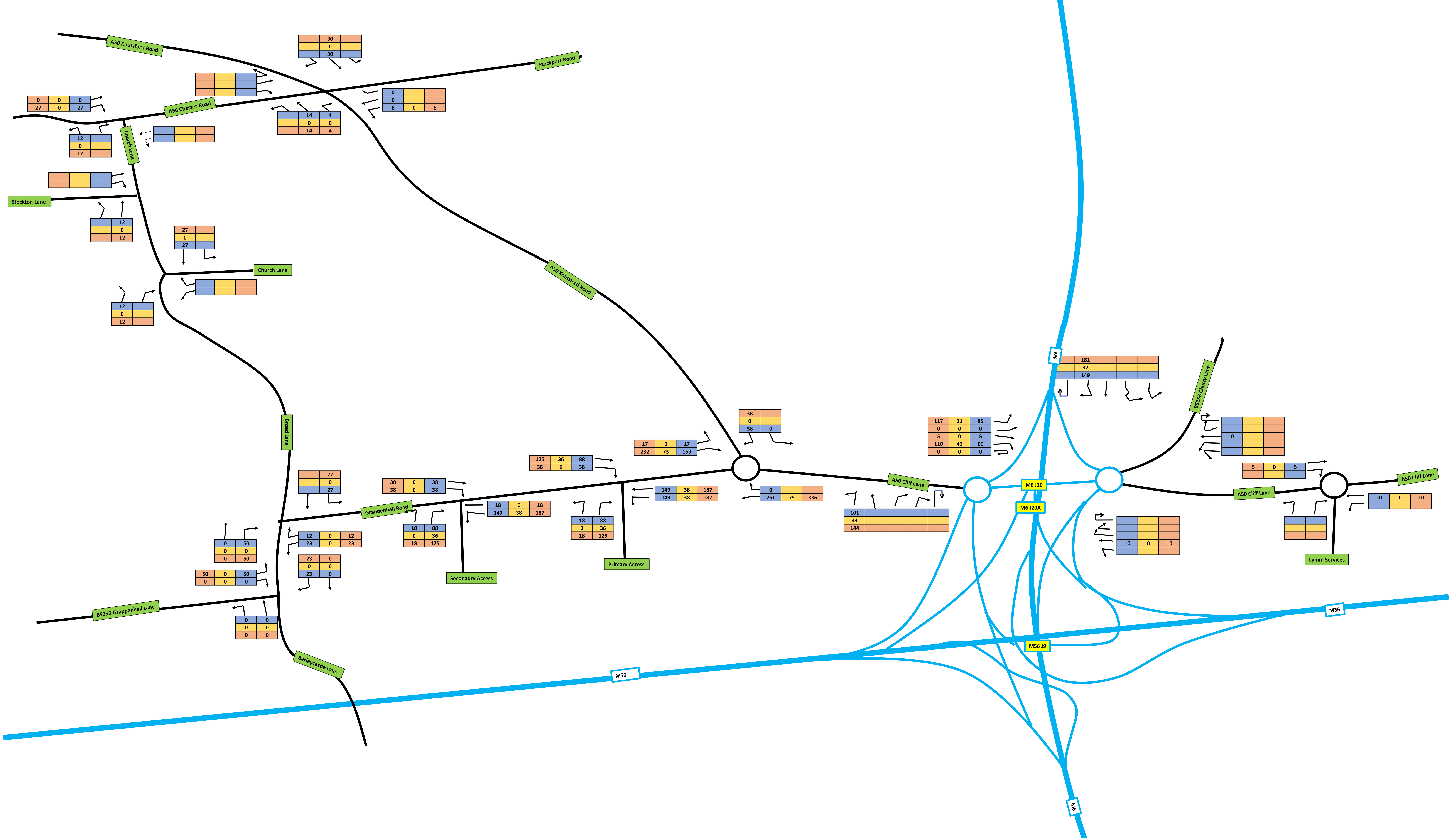


Traffic Flow Figure 24
Project: Six 56 Warrington
Scenario: HGV-Related Development Traffic Assignment
Note : PM Peak 1630-1730

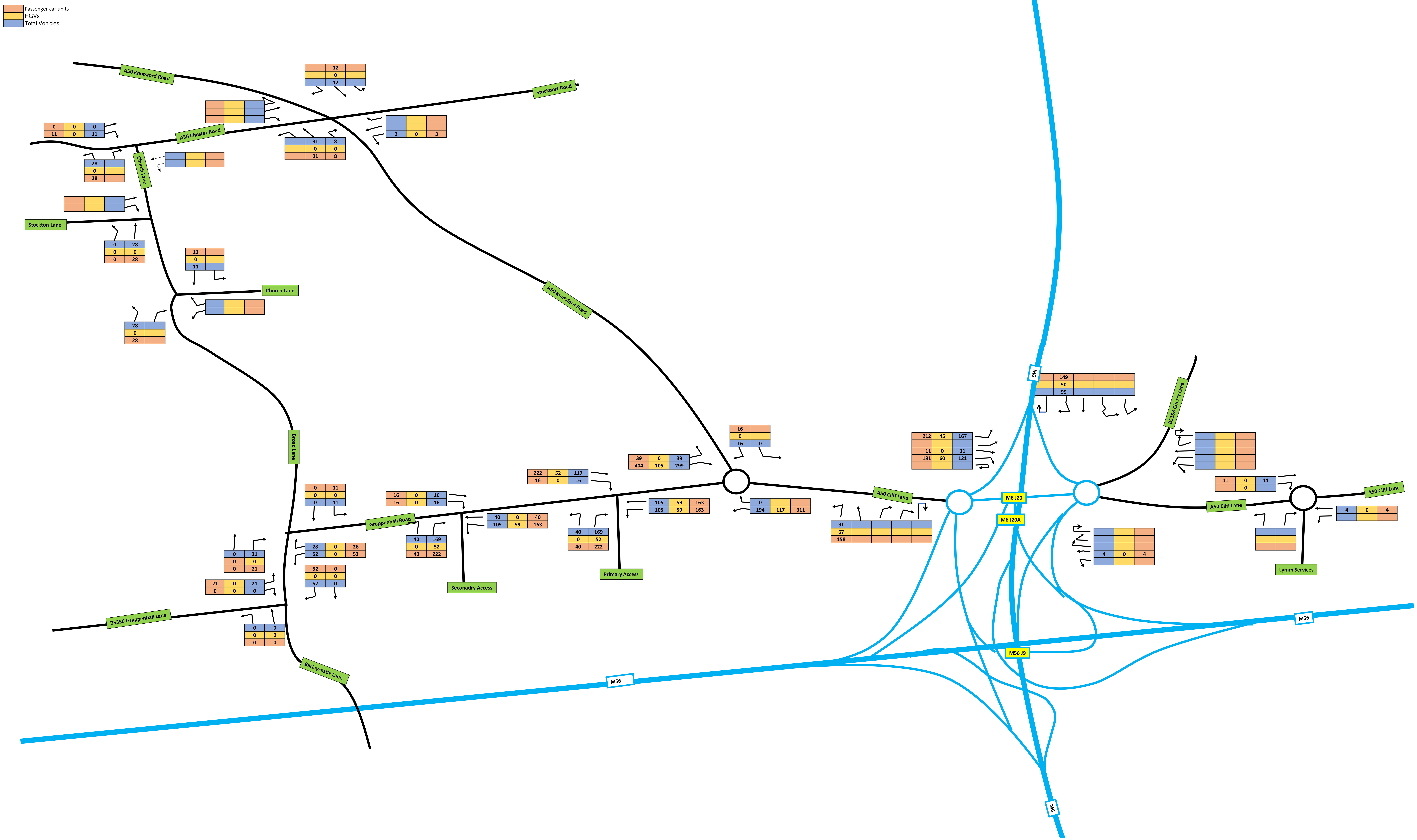


Traffic Flow Figure 25
Project: Six 56 Warrington
Scenario: Total Proposed Development Traffic Assignment
Note : AM Peak 0730-0830

Passenger car units
HGVs
Total Vehicles



Traffic Flow Figure 26
Project: Six 56 Warrington
Scenario: Total Proposed Development Traffic Assignment
Note : PM Peak 1630-1730

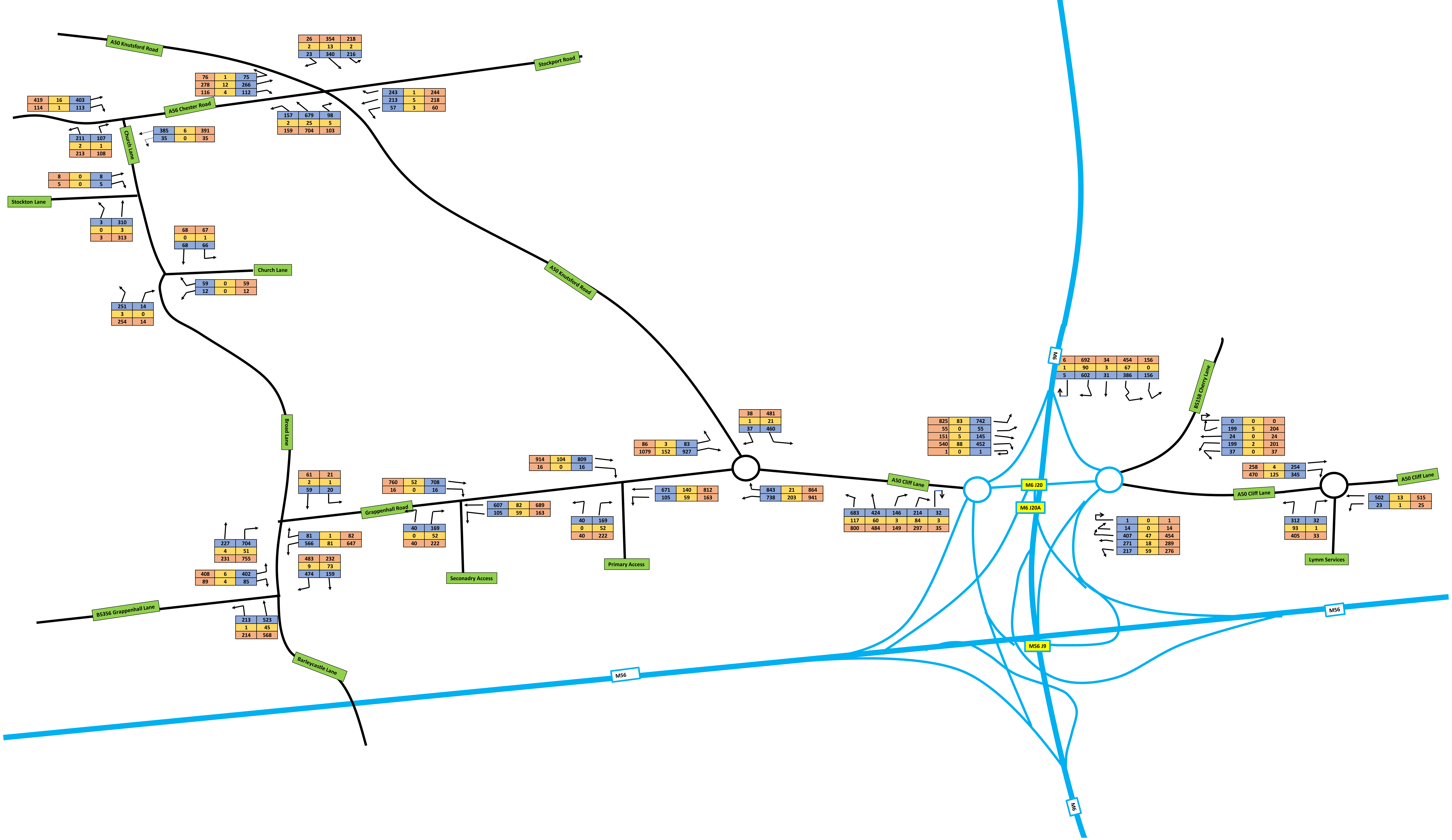


Traffic Flow Figure 27
Project: Six 56 Warrington
Scenario: 2021 AM Base + Committed Development + Proposed Development (Excludes Liberty Properties Logisitics Proposal)
Note : AM Peak 0730-0830

Passenger car units
HGVs
Total Vehicles

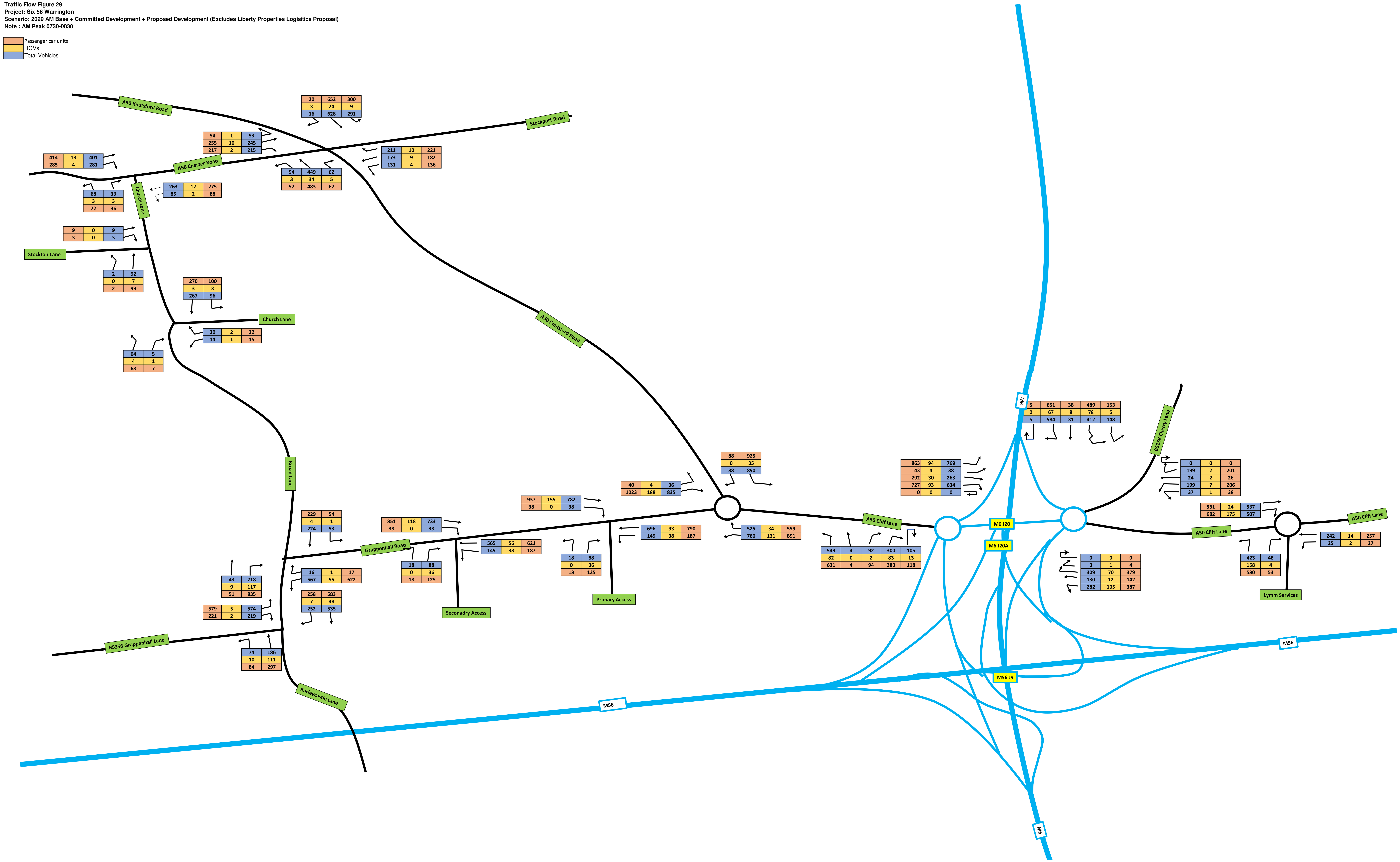
Traffic Flow Figure 28
Project: Six 56 Warrington
Scenario: 2021 PM Base + Committed Development + Proposed Development (Excludes Liberty Properties Logisitics Proposal)
Note : PM Peak 1630-1730

Passenger car units
HGVs
Total Vehicles



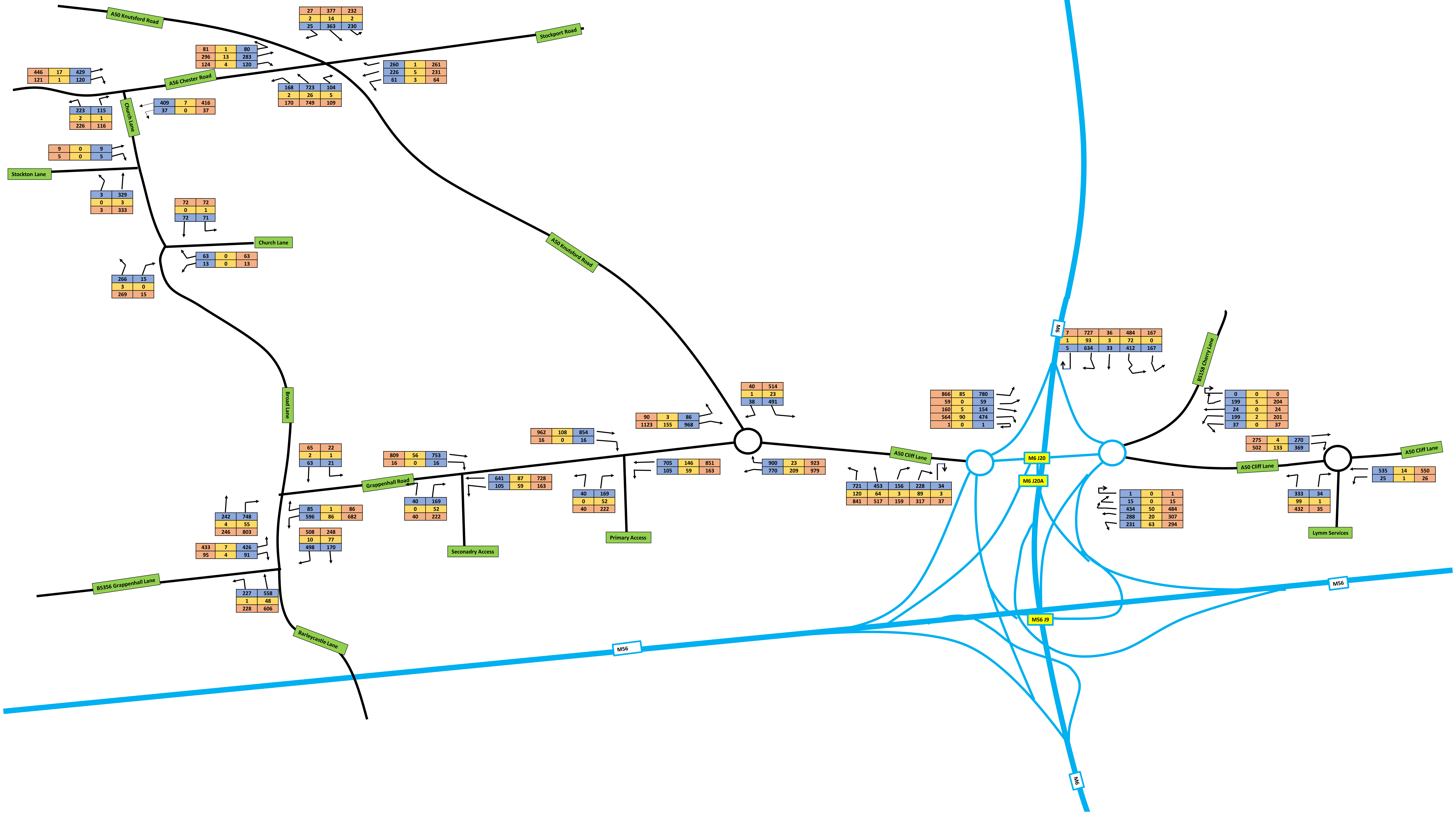
Traffic Flow Figure 29
Project: Six 56 Warrington
Scenario: 2029 AM Base + Committed Development + Proposed Development (Excludes Liberty Properties Logisitics Proposal)
Note : AM Peak 0730-0830

Passenger car units
HGVs
Total Vehicles



Traffic Flow Figure 30
Project: Six 56 Warrington
Scenario: 2029 PM Base + Committed Development + Proposed Development (Excludes Liberty Properties Logisitics Proposal)
Note : PM Peak 1630-1730

Passenger car units
HGVs
Total Vehicles

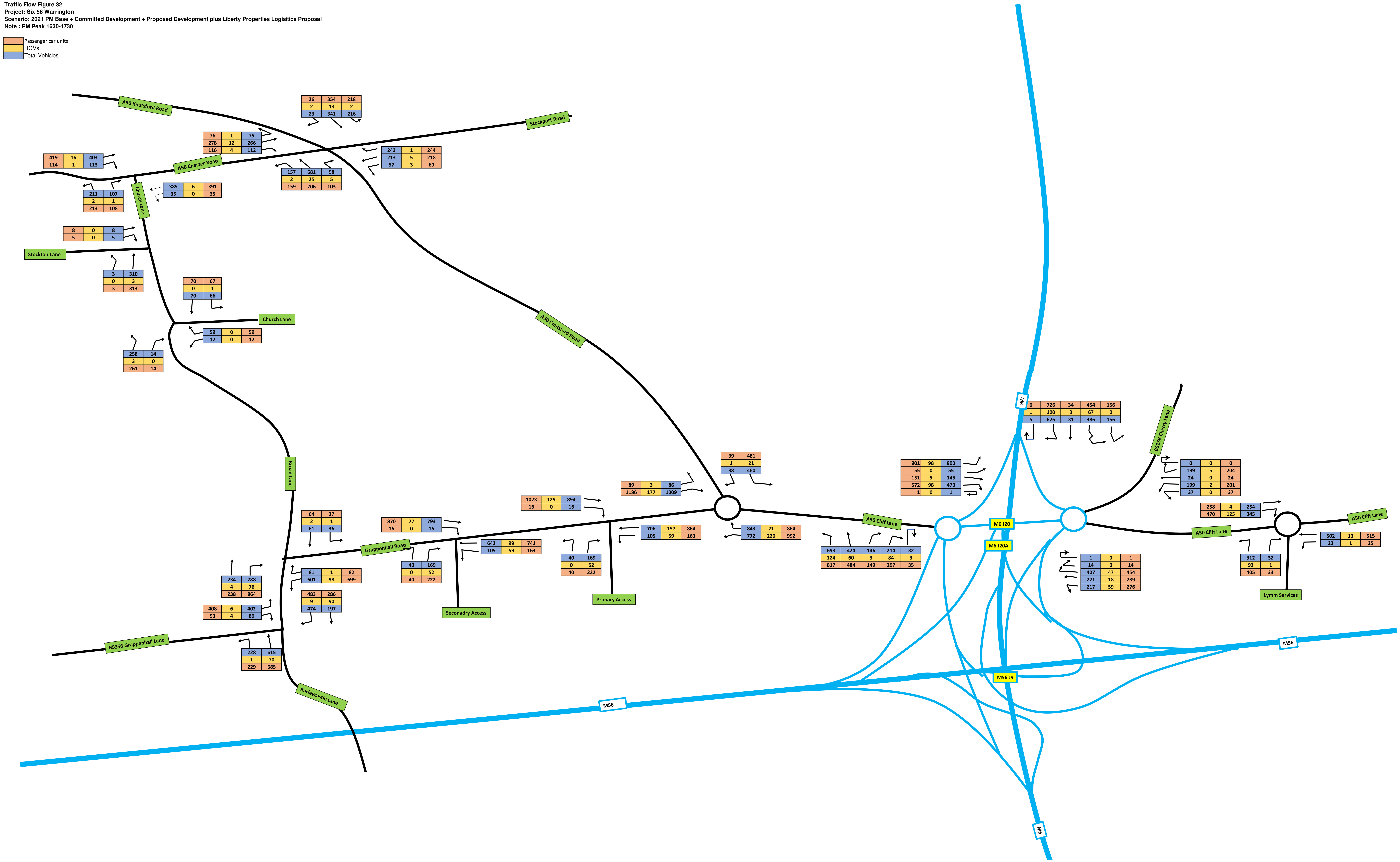


Traffic Flow Figure 31
Project: Six 56 Warrington
Scenario: 2021 AM Base + Committed Development + Proposed Development (Excludes Liberty Properties Logisitics Proposal)
Note : AM Peak 0730-0830

Passenger car units
HGVs
Total Vehicles

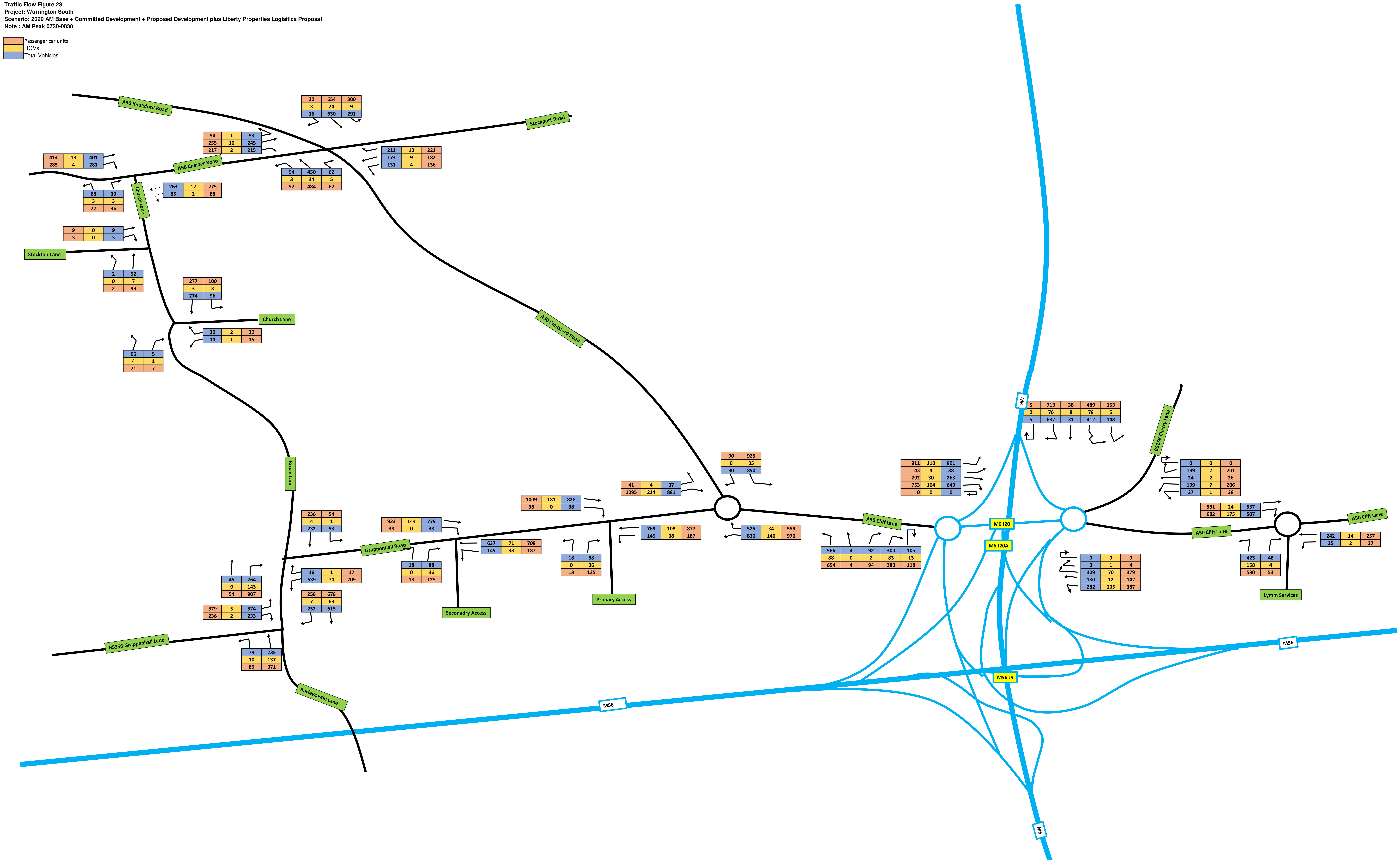
Traffic Flow Figure 32
Project: Six 56 Warrington
Scenario: 2021 PM Base + Committed Development + Proposed Development plus Liberty Properties Logisitics Proposal
Note : PM Peak 1630-1730

Passenger car units
HGVs
Total Vehicles



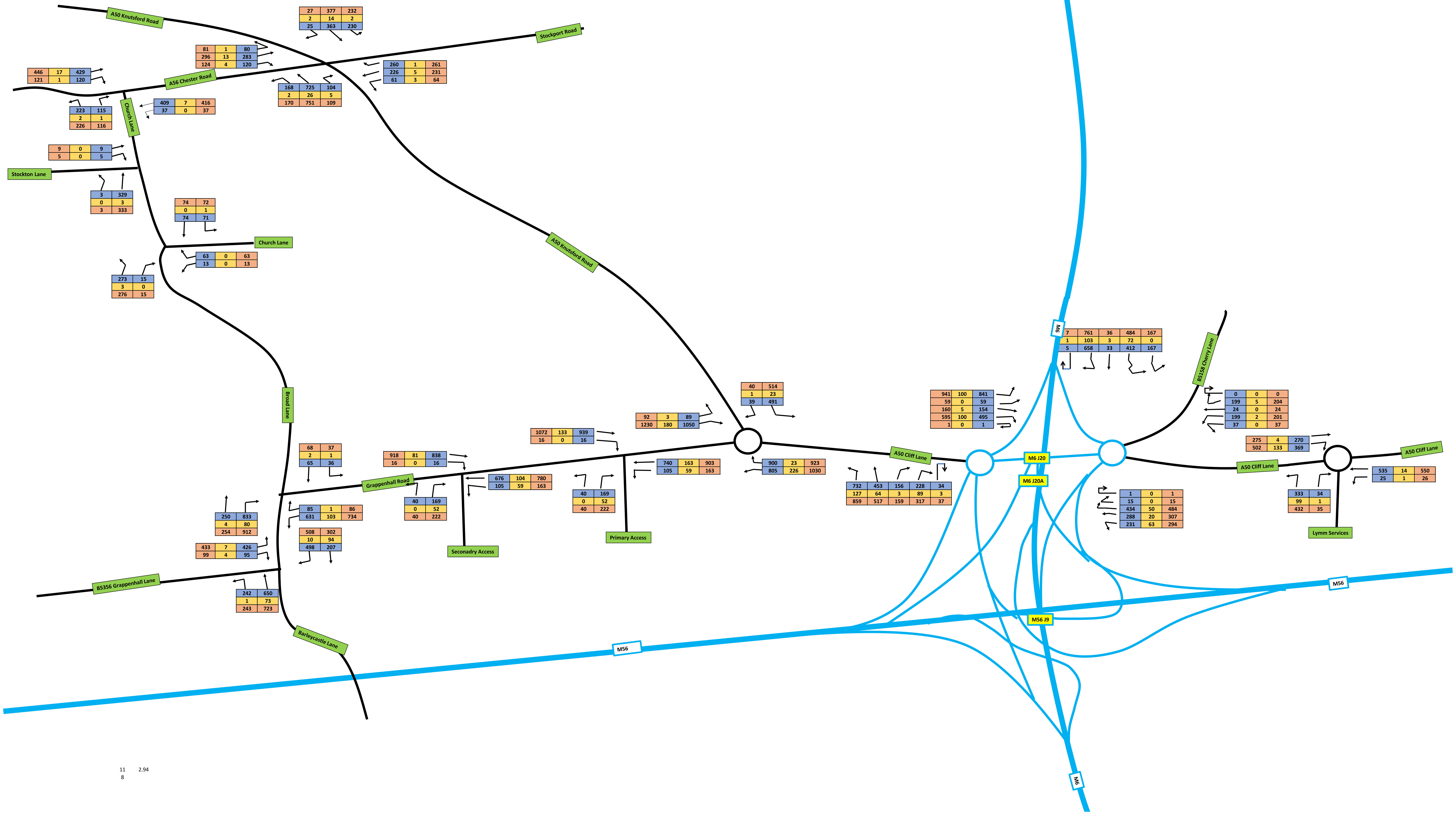
Traffic Flow Figure 23
Project: Warrington South
Scenario: 2029 AM Base + Committed Development + Proposed Development plus Liberty Properties Logisitics Proposal
Note : AM Peak 0730-0830

Passenger car units
HGVs
Total Vehicles



Traffic Flow Figure 34
Project: Warrington South
Scenario: 2031 PM Base + Committed Development + Proposed Development plus Liberty Properties Logisitics Proposal
Note : PM Peak 1630-1730

Passenger car units
HGVs
Total Vehicles



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Appendix A

Merchant Exchange
17 – 19 Whitworth Street West
Manchester
M1 5WG

T. 0161 236 2394

manchester@curtins.com
www.curtins.com

Our Reference: 64076/WBCPSN1

12th September 2019

Mr Mike Taylor
Warrington Borough Council

Re: P/2019/34799 - Warrington Borough Council Highways Post Submission Note 1

Dear Mike

This note has been prepared to address the various comments raised by Warrington Borough Council (WBC) Highways in their response to Planning Application Reference P/2019/34799, dated 15th August 2019 and 30th August 2019.

Many of the comments in the response confirm acceptance of the submitted information, whilst also acknowledging a comprehensive Transport Assessment. However, there are comments that require a response and to assist Curtins attended a meeting with WBC Highways on the 28th August 2019. The meeting was very useful and Curtins has attempted to capture the key points of that discussion in this note.

1. Pedestrian and Cycle Infrastructure

The WBC Highways response acknowledges that the proposed pedestrian and cycle improvements on Grappenhall Lane will offer benefits, but requests further information on connectivity to the wider area.

For clarity, Curtins can confirm that the development proposals include circa 1.2km of new 3.5m wide shared pedestrian/cycle infrastructure on Grappenhall Lane along the site frontage. The proposed infrastructure extends from the Cliff Lane/Grappenhall Road roundabout in the east to the western terminus of the proposed development. This is considered to be a significant enhancement of the existing situation as there are currently no footways or cycle lanes on Grappenhall Lane in the vicinity of the site. It also provides a significant proportion of a new continuous link between the proposed residential elements of the proposed Garden Village in the west and the A50 in the north. It was envisaged that other sections of the route would be provided as other parts of the Garden Village come forward.

Notwithstanding the above, WBC Highways have expressed a desire to extend the shared pedestrian/cycle infrastructure further to the west so that it better connects to the Broad Lane roundabout. This would necessitate an additional 175m of infrastructure.

Curtins has examined the feasibility of this and is of the view that existing highway land to the south of Grappenhall Lane could be used to continue the pedestrian/cycle infrastructure to the Broad Lane roundabout.

Figure 1 - Highway Boundary on Grappenhall Lane

The presence of street furniture and vegetation in this area and the width of the adopted verge may require a reduction of the 3.5m width, but an acceptable link is considered to be achievable, if WBC Highways want to pursue this.

It is understood that WBC would also like to see a new pedestrian/cycle crossing facility at the Broad Lane roundabout. This would further enhance connectivity with Broad Lane in the north and/or the southern section of Grappenhall Lane where the recently approved Stobart scheme is implementing a series of pedestrian and cycle enhancements. To fully tie into the Stobart infrastructure a new pedestrian/cycle link would also be required on the western side of the highway between the Broad Lane roundabout and Barleycastle Lane. This is a distance of circa 220m.

As the land required to extend the infrastructure between the site boundary and the Broad Lane roundabout or Barleycastle Lane falls outside of the applicant’s control, a financial contribution could be used to secure the additional 175m and 220m links. The principle of this is acceptable to the applicant.

During the recent meeting, there was also discussion regarding an extension of the pedestrian and cycle link to the east and north of the proposed development.

Curtins is of the view that demand to the east is likely to be naturally limited by the presence of the M6 Junction 20. There are also existing highway and land constraints that would prohibit enhanced pedestrian/cycle links in this direction. Notwithstanding, it was agreed by all parties that should people wish to travel in this direction the enhanced PROW through the site and existing infrastructure at J20 does provide a continuous link.

With regard to connectivity to the north, it is understood that WBC Highways would ideally like to see new pedestrian and cycle infrastructure on the A50. Curtins has considered this and based on a review of the highway boundary information there appears to be insufficient space to accommodate a continuous off road footway or cycle lane of adequate width. The introduction of such infrastructure is likely to require significant amounts of hedge removal and agreement with third party land owners, that would only be possible when other Local Plan sites that border this corridor come forward.

Notwithstanding the above, the proposed mitigation of the Cliff Lane/Grappenhall Lane roundabout does allow sufficient space for new pedestrian/cycle crossing facilities and these can be developed further as part of the S278 detailed design.

In summary, Curtins is of the view that the delivery of circa 1.5km of new pedestrian and cycle infrastructure and upgrades to the existing PROW network, would offer significant benefits over the existing situation. This infrastructure would enhance connectivity between the site and existing/proposed residential areas to the west, connectivity to Broad Lane, connectivity to the M6 Junction 20 and beyond in the east and finally connectivity to the A50 Knutsford Road.

2. Public Transport

The WBC response requests further information on proposals to enhance public transport connectivity to the site and particularly the extent of any financial contribution to support this.

For clarity, the submitted TA recognised that the Stobart application was seeking to provide a Section 106 financial contribution to support new bus services and stated that a similar arrangement was likely to be necessary for the Six:56 development.

At the recent meeting, WBC Highways suggested that £600,000 would be a suitable sum. This level of funding is comparable to the Stobart contribution and as part of that scheme it was agreed that the money could fund 3 shuttle buses from different directions (Warrington, Runcorn and Cadishead). No specific details were agreed beyond this and it seems logical that a similar approach be adopted for Six:56 i.e. there is no requirement to identify any specifics until more information is known on the work force origins/destinations and the operational times.

On the above basis, the applicant is content with the principle of this contribution.

3. Traffic Forecasting/Growth

The WBC response acknowledges that the traffic generation, committed development and HGV distribution parameters adopted in the Transport Assessment are acceptable.

However, the WBC Highways response queries the TEMPro growth rates that have been applied to the 2029 future year and specifically whether these should have been adjusted, as per the details set out in the submitted TA. WBC has suggested the adjustment is unnecessary as the Six:56 and Stobart developments are not specifically included in the planning assumption data that is used to inform TEMPro.

For clarity, TEMPro is a software tool that utilises the National Trip End Model (NTEM) enabling the calculation of traffic growth factors for specified time periods for selected areas. In developing the NTEM, the following datasets are considered:

- Population projections (by age and gender) in each control area. The change in the number of people of driving age in an area and their gender will influence car ownership and usage;
- Household projections (by size) for the study area. The change in the number of people living in a household will influence travel demand for that household and the propensity for people in that household to travel;
- Employment projections (by sector, gender and working status in each control area). At a simple level more jobs lead to more travel. However, NTEM considers the types of jobs and the locations of these relative to skills. It also considers the propensity of different types of worker to travel by car or other modes; and
- Zonal growth factors for employment in the period modelled (by sector).

It is clear from the above that whilst planning data and assumptions in the form of job prediction may be used to inform NTEM, it is not the only factor which affects growth and can only ever be an estimate. NTEM recognises that even if there was no new housing or employment planned, it would be expected that travel demand would change over time due to a myriad of reasons including, change in population age, change in location of employment outside of the zone, change in household size etc. The growth factors are therefore not solely reliant on the planning assumptions (which in the case of NTEM are circa 6 year old) and the inclusion or exclusion of the Six:56 or Stobarts is only a small part of the picture.

Curtins is of the view that discounting the 2029 growth rates from circa 13% to circa 9% is acceptable and necessary to avoid potential double counting. This is primarily on the basis that the submitted TA individually considers a significant quantum of committed development including over 1200 dwellings to the west of the site and the recently approved Stobart scheme. This accounts for almost 1000 PCU's assigned to the network in the vicinity of the site, some of which would undoubtedly be included in the full TEMPro outputs, albeit not specifically assigned to a certain planning assumption.

It is Curtins view that considering individual development traffic increases, based on flows extracted from approved TA's is considered to be a more accurate methodology for determining likely increases in background traffic, than the application of blanket growth estimates applied to all arms of every junction, based on a series of forecasts using planning assumptions that are circa 6 years old.

Finally, it must also be noted that the application of the 2029 growth factor only affects the 2029 figures in the Transport Assessment. The 2021 assessment which is the key test for Highways England and decision making purposes assumes full build out of Six:56, Stobarts and the committed residential sites to the west of the development. This is therefore an exceptionally robust assessment as the actual build out is likely to take significantly longer than this.

4. WMMTM Distribution and Assessment

The WBC Highways response acknowledges that the distribution of staff related trips using census data is acceptable in principle, but it requests clarity on how these trips have been assigned and how this relates to the Warrington Multi Modal Transport Model (WMMTM).

For clarity, the staff distribution contained in the Curtins TA is based on journey to work data from the 2011 Census, assigned to the network using journey planning tools in Google maps. This is the same methodology adopted by Stobart and the overall results are very similar subject to a few very minor variations.

On the basis that the Stobart application has now been approved, it is considered that applying the same distribution and assignment is a logical and reasonable approach.

Notwithstanding the above, and as set out in the TA, the WMMTM has also been used to consider the impact of the development. The model focuses on the whole of Warrington and is such is very useful for providing an overview of possible development impacts at junctions that are more remote from the site. It is designed to inform strategic decisions and general themes, rather than focus on individual junction operation.

The model outputs are contained in Tables 7.1, 7.2, 7.3 and 7.4 of the submitted TA and the results suggest that in some scenarios more traffic may travel to the west and north of the site than is indicated by the agreed Stobarts and submitted Six:56 distribution.

Curtins is of the view that the differences are largely due to the nature of the model and the fact that the WMMTM is a wide area model, with limited detail at the local level. For example, there are local HGV restrictions to the west of the site that are not included in the model and the actual location of the Six:56 site within the model is further to the west than its actual location.

The lack of HGV restrictions does not affect the overall use or validity of the model for strategic decisions, but it does have a material impact when focusing on smaller areas within the model.

WBC Highways accept the above points, but they also confirmed at the recent meeting that the results cannot be simply dismissed. They have therefore asked for a description of the potential impacts at the locations where the WMMTM predicts increases of 30 two-trips or more in the peak hour. This is provided below for each junction not considered in detail within the TA.

Stretton Road/Barleycastle Lane

The WMMTM predicts an additional 35 and 170 trips through this junction in the 2021 AM and PM peak periods as a result of the development. By 2031 the model predicts 5 in the AM peak period and 70 in the PM peak period.

These results are higher than the flows forecasted by the census data/approved Stobart distribution (less than 70 six:56 two-way trips per peak period) and it is likely that this is largely due to the location of the site within the model, which is placed to the south of the junction. In reality, the site is circa 500m to the north east of the junction and any vehicles travelling to and from the north or east would not travel through the junction.

It must also be noted that the above figures do not consider the junction improvements to the east of the site at the M6 Junction 20 or any of the proposed improvements that are envisaged to come forward as part of the Local Plan Garden Village allocation. The Local Plan strategy for this area includes a new link road that would potentially reduce the number of vehicles that travel through the junction in a westerly direction. Whilst there can be no guarantees of delivery at this stage, it is envisaged that the link road could be in place prior to full build out of the development and much of the Local Plan allocation.

Finally, it is considered that if this junction was improved to enhance capacity, it could have a detrimental effect by attracting additional trips along the corridor. This is not something that should be encouraged and a strategy which encourages more sustainable trips or diversion of traffic to alternative routes should be pursued.

On the above basis, it is considered that the conclusions of the TA remain valid and the impact predicted by the WMMTM is not severe.

Cat and Lion Staggered Crossroads

The WMMTM predicts an additional 126 and 114 trips through this junction in the 2021 AM and PM peak periods as a result of the development. By 2031 the model predicts 12 in the AM peak period and 220 in the PM peak period.

As above, the results are significantly higher than the flows forecasted by the census data/approved Stobart distribution (less than 70 six:56 two-way trips) and again it is likely that this is partly due to the location of the site within the model, and the fact that the model includes the Local Plan sites but none of the proposed highways mitigation that is envisaged as part of the Garden Village allocation, the Six:56 development or the Stobart development.

It is likely that significant highway improvements will come forward in advance of 2031, as part of the wider Local Plan and if they dont it is unlikely that the Local Plan growth could be accommodated. The WMMTM figures are therefore unlikely to reach these levels or have these impacts at this location.

The WMMTM predictions equate to an increase of between 0.6% and 11.6% at the junction. 10% is considered to be the variation that can occur day to day as a result of natural changes in traffic patterns and it is clear that the results are no worse than this potential daily variation. This is evidenced in the Institute of Environmental Management and Assessment Guidelines for the Environmental Assessment of Road Traffic which states that

'Any increases in traffic flows of less than 10% are generally accepted as having no discernible environmental impact as daily variance in traffic flows can be of equal magnitude.'

Also as per the above junction, improvements at this junction have been considered, but there is potential to draw more traffic along the Grappenhall Lane corridor thus having an overall detrimental effect on the corridor as a whole.

On the above basis, it is considered that the conclusions of the TA remain valid and the results of the WMMTM are not considered to be severe.

London Road/Lyons Lane junction

The WMMTM predicts an additional 82 and 43 trips through this junction in the 2021 AM and PM peak periods as a result of the development. By 2031 the model predicts 26 in the AM peak period and 41 in the PM peak period.

This level of traffic is considered to be minimal with the percentage impact of additional traffic ranging from 1.5% to 5.6%. It is Curtins view that increases of this magnitude are likely to be comparable to daily fluctuations in traffic that naturally occur on any network and on this basis the number of trips could not be considered as severe.

Witherwins Lane/Lyons Lane

The WMMTM predicts an additional 50 and 51 trips through this junction in the 2021 AM and PM peak periods as a result of the development. By 2031 the model predicts 54 in the AM peak period and 72 in the PM peak period.

It is Curtins view that this is a relatively convoluted route for traffic to take and may be a function of the site's location within the model and the exclusion of potential mitigation measures. Notwithstanding, Curtins has visited the junction on a number of occasions and it is considered that this level of traffic is unlikely to result in any significant impact, given the scale of the existing junction and the capacity that appears to be available at present. This is evidenced by the modelled flows which suggest less than 1000 vehicles through the junction.

On the above basis, the results of the WMMTM do not result in a severe impact.

A49/A56 Stockton Heath

The WMMTM predicts an additional 10 and 32 trips through this junction in the 2021 AM and PM peak periods as a result of the development. By 2031 the model predicts 26 in the AM peak period and 63 in the PM peak period.

This level of traffic is considered to be minimal with the percentage impact of additional traffic being below 4% in all scenarios. As above, it is Curtins view that increases of this magnitude are likely to be comparable to daily fluctuations in traffic that naturally occur on any network and on this basis the number of trips could not be considered as severe. The level of additional trips is also less 30 or less in three of the four modelled scenarios.

5. Capacity Assessments

The WBC Highways response requests information on Practical Reserve Capacity and Average Delay per Vehicle for the modelling assessments. A summary of this is provided below:

The response also points out a labeling discrepancy in Table 8.14 which has been corrected below:

		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		DoS	MMQ	DoS	MMQ
2017 Observed Scenario					
1/2+1/1	Stockport Road Left Ahead	81.7 : 81.7%	9.6	89.1 : 89.1%	11.1
1/3	Stockport Road Right	63.2%	6.8	87.2%	10.7
2/2+2/1	Chester Road Ahead Left	78.1 : 78.1%	9.5	90.8 : 90.8%	14.2
2/3	Chester Road Right	58.8%	6.5	32.1%	3.5
3/1+3/2	Knutsford Road south Right Ahead Left	55.9 : 55.9%	11.3	91.0 : 91.0%	30.8
4/1+4/2	Knutsford Road north Left Ahead Right	80.8 : 80.8%	20.0	50.7 : 50.7%	7.7
Cycle Time (s)		115		120	
PRC (%)		10.1		-1.2	
Delay (pcuhr)		28.36		37.68	
2021 Base					
1/2+1/1	Stockport Road Left Ahead	83.7 : 83.7%	10.6	94.0 : 94.0%	13.7
1/3	Stockport Road Right	61.5%	6.9	84.1%	10.3
2/2+2/1	Chester Road Ahead Left	81.9 : 81.9%	10.8	95.1 : 95.1%	17.2
2/3	Chester Road Right	57.5%	6.6	31.3%	3.5
3/1+3/2	Knutsford Road south Right Ahead Left	59.2 : 59.2%	12.2	95.9 : 95.9%	36.9
4/1+4/2	Knutsford Road north Left Ahead Right	85.4 : 85.4%	22.5	53.3 : 53.3%	8.2
Cycle Time (s)		115		120	
PRC (%)		5.4		-6.6	
Delay (pcuhr)		31.36		46.31	
2029 Base					
1/2+1/1	Stockport Road Left Ahead	89.1 : 89.1%	12.4	99.8 : 99.8%	17.8
1/3	Stockport Road Right	65.7%	7.5	89.9%	12.1
2/2+2/1	Chester Road Ahead Left	87.2 : 87.2%	12.3	101.3 : 101.3%	23.4
2/3	Chester Road Right	61.4%	7.1	33.4%	3.8
3/1+3/2	Knutsford Road south Right Ahead Left	63.4 : 63.4%	13.6	102.5 : 102.5%	57.2
4/1+4/2	Knutsford Road north Left Ahead Right	91.4 : 91.4%	27.9	56.8 : 56.8%	8.9
Cycle Time (s)		115		120	
PRC (%)		-1.5		-13.9	
Delay (pcuhr)		37.90		74.26	
2021 Base plus Development					
1/2+1/1	Stockport Road Left Ahead	85.7 : 85.7%	11.2	94.9 : 94.9%	14.3
1/3	Stockport Road Right	61.5%	6.9	84.1%	10.3
2/2+2/1	Chester Road Ahead Left	85.9 : 85.9%	11.5	99.3 : 99.3%	20.2
2/3	Chester Road Right	60.3%	6.7	32.7%	3.6
3/1+3/2	Knutsford Road south Right Ahead Left	60.0 : 60.0%	12.5	98.3 : 98.3%	42.3
4/1+4/2	Knutsford Road north Left Ahead Right	87.4 : 87.4%	24.5	54.0 : 54.0%	8.4
Cycle Time (s)		115		120	
PRC (%)		3.0		-10.4	
Delay (pcuhr)		33.45		53.91	
2029 Base plus Development					

1/2+1/1	Stockport Road Left Ahead	91.1 : 91.1%	13.2	100.7 : 100.7%	18.8
1/3	Stockport Road Right	65.7%	7.5	89.9%	12.1
2/2+2/1	Chester Road Ahead Left	91.5 : 91.5%	13.6	105.8 : 105.8%	29.2
2/3	Chester Road Right	64.5%	7.3	35.0%	3.9
3/1+3/2	Knutsford Road south Right Ahead Left	64.0 : 77.1%	14.0	104.7 : 104.7%	67.9
4/1+4/2	Knutsford Road north Left Ahead Right	93.2 : 93.2%	30.6	57.4 : 57.4%	9.1
Cycle Time (s)		115		120	
PRC (%)		-3.6		-17.5	
Delay (pcuhr)		41.55		90.86	
2021 Base plus Development + Stobbarts					
1/2+1/1	Stockport Road Left Ahead	85.7 : 85.7%	11.2	94.9 : 94.9%	14.3
1/3	Stockport Road Right	61.5%	6.9	84.1%	10.3
2/2+2/1	Chester Road Ahead Left	85.9 : 85.9%	11.5	99.3 : 99.3%	20.2
2/3	Chester Road Right	60.3%	6.7	32.7%	3.6
3/1+3/2	Knutsford Road south Right Ahead Left	60.1 : 60.1%	12.5	98.5 : 98.5%	43.1
4/1+4/2	Knutsford Road north Left Ahead Right	87.6 : 87.6%	24.6	54.0 : 54.0%	8.4
Cycle Time (s)		115		120	
PRC (%)		2.7		-10.4	
Delay (pcuhr)		33.55		54.35	
2029 Base plus Development + Stobbarts					
1/2+1/1	Stockport Road Left Ahead	91.1 : 91.1%	13.2	100.7 : 100.7%	18.8
1/3	Stockport Road Right	65.7%	7.5	89.9%	12.1
2/2+2/1	Chester Road Ahead Left	91.5 : 91.5%	13.6	105.8 : 105.8%	29.2
2/3	Chester Road Right	64.5%	7.3	35.0%	3.9
3/1+3/2	Knutsford Road south Right Ahead Left	64.1 : 78.5%	14.0	104.9 : 104.9%	68.9
4/1+4/2	Knutsford Road north Left Ahead Right	93.5 : 93.5%	30.9	57.4 : 57.4%	9.1
Cycle Time (s)		115		120	
PRC (%)		-3.8		-17.5	
Delay (pcuhr)		41.76		91.82	

Table 1 – Stockport Road / Chester Road/Knutsford LinSig Assessment

With regard to the Grappenhall Lane/A50 and M6 Junction 20 signalised junctions, please refer to Curtins Post Submission Response to Highways England. This note includes details of minor modelling amendments taking account of HE comments and the latest results.

6. Road Safety Audits and Swept Path Analysis

Road Safety Audits and Swept Path Analysis

The WBC Highways response states that the access points are acceptable subject to the findings of a Stage 1 Road Safety Audit and Swept Path Analysis.

The swept path analysis is provided to the rear of this note as Appendix A and the Road Safety Audits will be provided in due course once completed.

7. Grappenhall Lane Corridor

The WBC Highways response requests clarity on the applicant's position regarding the protection a 25m corridor along Grappenhall Lane for future highway improvements.

This matter was discussed in the summer of 2018 and at that time Curtins provided a sketch which demonstrated that a 22.6m corridor consisting of 4 x3.65m lanes, 1 x 2m central reserve and 2 x 3m cycleway/footways could be provided by utilising the existing adopted highway and a small part of the applicant's land.

This was again discussed at the recent meeting with WBC Highways and at this time WBC requested an additional 2m of land to make a total corridor of 24.6m. Curtins explained that the northern part of the site adjacent to the adopted highway was envisaged as a landscaped area and there would be no physical structures or buildings in this area that would prohibit the Council's future aspirations. It was agreed that no further action was required at this time as long as this area was kept clear.

8. Grappenhall Lane/A50/M6 J20 mitigation

Finally, the WBC Highways response requests clarity on the Grappenhall Lane/A50/M6 J20 mitigation scheme with regard to the footway provision and visibility from the Bradley Hall Cottages.

With regard to the footway, Curtins can confirm that the proposed mitigation scheme does not impact on the existing footway width on the stretch of highway between the A50 and the M6 Junction 20. It should also be noted that pedestrian movement on this footway is very low and it is unlikely that the development will generate a significant level of pedestrian activity in this area.

Notwithstanding, the lane widths in the central section of the link between the A50 and the M6 Junction 20 have been widened as part of the mitigation to provide almost 5m lanes. There is an opportunity to reduce the lane widths if a widened footway on the northern side of the carriageway was desirable. It is Curtins view that this is unnecessary but it was agreed at the recent meeting with WBC Highways that it could form part of the S278 detailed design if required.

With regard to the visibility query, Curtins can confirm that a wider lane width on the section of highway between the M6 Junction 20 and the A50/Grappenhall Lane Roundabout necessitates the removal of highway verge in the vicinity of the Bradley Hall Farm access.

It is Curtins view that the amendments do not affect visibility to the east as the applicant has full ownership of the land in question. Visibility to the west is not considered to be a concern, as white double yellow lines are proposed to prohibit vehicles turning right out of the junction. It is envisaged that the small number of vehicles that do use this junction would need to travel west to the roundabout and then back on themselves. This is a relatively standard procedure for this type of access.

Notwithstanding the above, if WBC were concerned regarding visibility in this area the carriageway widening could be reduced to the nearer the original width. This would also enable street furniture in this location, albeit there are already plenty of other opportunities for street furniture along the corridor.

9. Travel Choices Team

In addition to the formal response from WBC Highways, Curtins has also received correspondence which sets out four comments raised by the WBC Travel Choices Team. Each of these comments is considered below.

WBC have stated that as with Omega, they will require an overarching framework Travel Plan which the developer is conditioned to take responsibility for. This needs to include more specific obligations than are in the submitted version, and needs to include a section which compels future occupiers to develop their own bespoke travel plans.

Curtins can confirm that the submitted Framework Travel Plan is the first part of the travel planning process and a condition to secure a more detailed Travel Plan when more information is available, is fully accepted.

WBC have suggested, again like Omega, that they collect a S106 contribution to fund the council to be the Travel Plan Coordinator. A figure of £50k (£10k per year over 5 years) has been suggested and Curtins can confirm that this acceptable to the applicant.

The WBC Travel Choice Team has requested an enhancement of the pedestrian and cycle network that is proposed as part of the development. This is already considered in the above response.

Finally, the WBC Travel Choices Team have suggested a contribution of £600,000 towards public transport as per the Stobart application. This is again covered above and is considered to be acceptable to the applicant.

10. Conclusion

It is Curtin's view that the above does not alter the conclusions on the previously submitted Transport Assessment and we trust that the above alleviates the concerns raised in the consultation response.

Our Locations

Birmingham
2 The Wharf
Bridge Street
Birmingham B1 2JS
T. 0121 643 4694
birmingham@curtins.com

Bristol
3/8 Redcliffe Parade West
Bristol
BS1 6SP
T. 0117 925 2825
bristol@curtins.com

Cardiff
3 Cwrt-y-Parc
Earlswood Road
Cardiff
CF14 5GH
T. 029 2068 0900
cardiff@curtins.com

Douglas
Varley House
29-31 Duke Street
Douglas Isle of Man
IM1 2AZ
T. 01624 624 585
douglas@curtins.com

Edinburgh
35 Manor Place
Edinburgh
EH3 7DD
T. 0131 225 2175
edinburgh@curtins.com

Kendal
28 Lower Street
Kendal
Cumbria LA9 4DH
T. 01539 724 823
kendal@curtins.com

Glasgow
Queens House
29 St Vincent Place
Glasgow
G1 2DT
0141 319 8777
glasgow@curtins.com

Leeds
Rose Wharf
Ground Floor
78-80 East Street
Leeds
LS9 8EE

Liverpool
Curtin House
Columbus Quay
Riverside Drive
Liverpool L3 4DB
T. 0151 726 2000
liverpool@curtins.com

London
Units 5/6
40 Compton Street
London
EC1V 0BD
T. 020 73242240
london@curtins.com

Manchester
Merchant Exchange
17-19 Whitworth Street West
Manchester
M1 5WG
T. 0161 236 2394
manchester@curtins.com

Nottingham
7 College Street
Nottingham
NG1 5AQ
T. 0115 941 5551
nottingham@curtins.com

Dublin
39 Fitzwilliam Square
Dublin 2
Ireland
T. 00353 1 507 9447
dublin@curtins.com

Cambridge
50 Cambridge Place
Cambridge
CB2 1NS
01223 631 799
cambridge@curtins.com

Merchant Exchange
17 – 19 Whitworth Street West
Manchester
M1 5WG

T. 0161 236 2394

manchester@curtins.com
www.curtins.com

Our Reference: 64076/PSN1

12th September 2019

Mr Alan Shepherd
Divisional Director
Operations Division
Highways England
North West Region

By Email Only

Re: P/2019/34799 - Highways England Post Submission Note 1

This letter has been prepared to address the various comments raised by Highway England's (HE) in their response to Planning Application Reference P/2019/34799, dated 13th June 2019, but received 17th July 2019.

Many of the comments in the response confirm acceptance of the submitted information and parameters whilst also acknowledging that the general principles and details set out in the Transport Assessment and Environmental Statement are considered acceptable.

However, there are some comments that require a response or clarification and each of these is set out below as a heading with Curtins' response underneath this. For ease of reading, the headings reference the bullet points contained in the summary and recommendations section of the HE response, albeit in a slightly different order.

Curtins has also met with Atkins (HE Advisors) to discuss our response and the below captures these matters.

1. Design Year

Curtins adopted a design year of 2029 in the Transport Assessment, whereby the HE response suggests 2031. Whilst 2031 was mentioned in correspondence in March 2018, discussions later in the year led Curtins to the conclusion that 2029 was more appropriate and acceptable. This was on the basis that:

- 2029 is 10 years after the application and was the year Warrington Highways were requesting. It therefore ensured a level of consistency.

- Ten years after application is the criteria that we are normally asked to adopt by HE.

- The adjacent Stobart development used an assessment year of 2028 which is ten years after the application and we note HE had no objection to this. They were not asked to do a 2031 assessment and it seems that this application should be treated in a comparable manner.

- The only difference between 2029 and 2031 is a small amount of background growth. However, the TA already provides an exceptionally robust assessment via the implementation of growth and consideration of all committed development in the area (which is extensive) at the opening year of 2021. There is an argument that the assessment already has an element of double counting in the figures.

- The assessment year was discussed with Andy Beel of Atkins (HE Advisors) after March 2018 in various meetings and he confirmed 10 years after application was acceptable.

On the above basis 2029 is considered to be acceptable, in accordance with other applications in the vicinity of the site and in accordance with HE guidance. Atkins confirmed this was reasonable at the recent meeting.

2. Warrington Multi Modal Traffic Model.

The HE response identifies some concerns with the WMMTM regarding a potential overestimation of westbound traffic and underestimation of eastbound traffic towards the M6 J20. Curtins would respond as follows to this point:

- Curtins were aware of some concern with the WMMTM from pre-application discussions with Atkins/HE. On this basis it was agreed that Curtins would not use WMMTM for the operational assessment of HE junctions and HE were likely to attach limited weight to that part of the documentation.
- Curtins instead used conventional flow data which HE acknowledge in their response as being robust (significantly higher flows than the WMMTM at M6 J20) and adequately considering cumulative impacts. The operational assessment using LinSig and conventional flows is the key test for impacts on the HE network and this test is in no way reliant on the WMMTM.
- The WMMTM was used at the request of WBC to determine indicative percentage impacts at each junction. If higher flows for the M6 J20 were obtained (by re-running the WMMTM) the base traffic may increase but this would result a lower percentage impact.
- The adjacent Stobarts site used the WMMTM in their assessment and no additional testing was requested for the HE junctions.

On the above basis, re-running the WMMTM is excessive and would have no real benefit in that it is likely to reduce the percentage impact of the development at the HE junction and percentage impacts is all Curtins have used the model data for. Atkins confirmed this was reasonable at the recent meeting.

3. Proposed Mitigation

The HE response includes a review of the mitigation suggested at the M6 Junction 20 and the adjacent Grappenhall Lane/A50 roundabout.

The response acknowledges that the repositioning of the Grappenhall Lane/A50 roundabout to the west is welcomed. This is something that the Stobart application was unable to offer due to land constraints, but it was agreed by WBC Highways and HE during the pre-application stage that it would result in a significant betterment to the mitigation proposed by Stobart.

The response also acknowledges that closing off the circulatory carriageway on the western side of the eastern roundabout would be beneficial.

However, the response raises some concerns and these are summarised in the below table with Curtins corresponding response:

HE Comment	Curtins Response
There is a single lane exit on the A50 northbound and therefore two circulatory lanes at this point is unnecessary.	The Linsig has been amended to reflect a single exit lane.

Lane markings at the M6 J20 require a review;	Some of the lane markings have been reviewed and updated to better match the model. A slightly amended drawing is included at the rear of this response in Appendix A.
The signalised approach to the western dumb-bell roundabout could cause queuing on the circulatory carriageway; and	The modelling in the TA and the revised modelling considered later in this note does not show this as an issue.
The link capacity of the carriageway between the M6 Junction 20 and the Grappenhall Lane/A50 roundabout.	The mitigation package for the M6 J20 and Grappenhall Lane/A50 roundabout was developed to address this concern, which is why the link has been extended and traffic signals introduced to better control the flow of traffic onto the link. The mitigation proposed is a betterment of the Stobart scheme in this regard, and that application was recently approved.

Table 1 - Comments on Mitigtion

In summary, the mitigation is considered to be a betterment of the scheme proposed by Stobart and it is clear from the modeling the TA and the following sections that the scheme offers benefits beyond nil detriment.

4. M6 Junction 20 Base Modelling

The HE response states that the 'submitted base model could be made to be sufficiently robust that it could be used to draw broad conclusions as to the appropriateness of the proposed mitigation.' Curtins would welcome this comment and note that a similar approach was accepted by HE for the adjacent Stobart application.

The HE response then sets out four queries/comments with the base model and each is addressed below:

- Arm J1:13 – Amended to reflect existing operation
- Link J2:3/2 - Amended
- The model is based on counted throughput and validated with the observed queues. This is the same methodology applied for the Stobart application which HE have approved.
- The modelled queues have been compared to the observed queues and evidence of this is included in the TA and the following section.

The base model has been updated on the above basis and the raw model will be forwarded by email separate to this note. The results are summarised below:

Arm / Description		2017 AM Peak Observed			2017 PM Peak Observed		
		DoS	Modeled Queue	Observed Queue	DoS	Modeled MMQ	Observed Queue
J1 M6 Junction 20							
1/1	M6 Southbound Offslip Ahead Left	99.3%	20.0	21	96.1%	14.9	14
1/2	M6 Southbound Offslip Ahead	99.6%	17.5	19	98.3%	17.1	17
2/1+2/2	B5158 Cherry Lane Ahead Left	79.1 : 99.3%	6.9	20	92.8 : 92.8%	6.0	6
3/1	Cliff Lane Westbound Left	87.3%	6.1	4	67.3%	1.0	3
3/2+3/3	Cliff Lane Westbound Ahead Right	98.0 : 98.0%	13.0	11	99.6 : 99.6%	17.7	19
4/1	M6 Northbound Offslip Ahead Left	74.4%	7.8	8	97.3%	22.2	21
4/2	M6 Northbound Offslip Ahead	87.4%	11.6	8	91.8%	17.1	20
5/2+5/1	Cliff Lane Eastbound Ahead Left	67.3 : 48.3%	2.2	3	63.7 : 51.4%	3.0	4
5/3	Cliff Lane Eastbound Ahead	93.1%	13.0	9	91.3%	9.5	11
6/1	Westbound Internal Circulatory Road Ahead	53.4%	5.3	n/a	91.6%	12.7	n/a
6/2	Westbound Internal Circulatory Road Right	53.0%	6.4	n/a	63.8%	7.4	n/a
8/1	Eastbound Internal Circulatory Ahead	46.6%	0.0	n/a	40.3%	0.0	n/a
8/2	Eastbound Internal Circulatory Ahead	41.6%	0.0	n/a	24.4%	0.0	n/a
12/1	Westbound Left	25.4%	0.0	n/a	13.7%	0.0	n/a
12/2	Westbound Ahead Left	44.6%	0.0	n/a	37.7%	0.0	n/a
J2 A50 Cliff Lane Grappenhall Lane							
1/1+1/2	A50 Knutsford Rd Left Ahead	99.9 : 99.9%	14.7	20	99.3 : 99.3%	10.2	10
2/1+2/2	A50 Cllif Lane Ahead Right	56.5 : 58.4%	0.7	1	79.6 : 79.6%	1.9	2
3/1+3/2	B5356 Grappenhall Lane Left Ahead	97.1 : 97.1%	8.9	8	99.4 : 99.4%	12.1	19
J3 Lymm Services							
1/2+1/1	Cliff Lane East Ahead Left	28.2 : 28.2%	0.2	5	59.1 : 59.1%	0.7	5.3
2/1+2/2	Services Access Ahead Left	77.9 : 77.9%	1.7	3	68.4 : 68.4%	1.1	2.7
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	56.5 : 56.5%	0.6	6	41.6 : 41.6%	0.4	1.8
Cycle Time		58			61		
PRC		-11.0			-10.7		
Total		85.76			96.51		

Table 2 – The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts 2017-Survey Scenario

It is evident from Table 2 that the observed queues are broadly similar to the modelled queues on majority of the links within the network. On the above basis it is considered that the base model is fit for purpose and therefore provides an effective tool to assess the impact of the Proposed Development. It should also be borne in mind that the results are comparable to those presented in the TA and the requested amends have no material impact.

The validated existing scenario model has been used to assess the capacity of the highway network for the opening year of 2021 and future year of 2029 as summarised in the tables below. The base flows include all committed development set out in Section 6 of the Transport Assessment.

Lane Number / Description		Weekday AM Peak (07:30 – 08:30) Deg Sat (%)	Weekday AM Peak (07:30 – 08:30) Mean Max Queue	Weekday PM Peak (16:30 – 17:30) Deg Sat (%)	Weekday PM Peak (16:30 – 17:30) Mean Max Queue
J1 – M6 Junction 20 Existing Junction					
2021 Base					
1/1	M6 Southbound Offslip Ahead Left	109.3%	52.4	101.2%	38.7
1/2	M6 Southbound Offslip Ahead	111.6%	46.6	108.5%	53.1
2/1+2/2	B5158 Cherry Lane Ahead Left	81.3 : 101.6%	16.0	102.3 : 102.3%	15.8
3/1	Cliff Lane Westbound Left	90.0%	7.3	69.5%	1.4
3/2+3/3	Cliff Lane Westbound Ahead Right	103.0 : 103.0%	28.6	105.2 : 105.2%	48.1
4/1	M6 Northbound Offslip Ahead Left	73.0%	7.8	101.3%	30.7
4/2	M6 Northbound Offslip Ahead	84.6%	11.0	95.4%	20.6
5/2+5/1	Cliff Lane Eastbound Ahead Left	71.1 : 51.9%	3.8	66.0 : 54.7%	3.2
5/3	Cliff Lane Eastbound Ahead	98.9%	19.4	95.2%	11.7
6/1	Westbound Internal Circulatory Road Ahead	52.9%	4.9	93.0%	12.9
6/2	Westbound Internal Circulatory Road Right	51.6%	5.9	60.7%	6.9
8/1	Eastbound Internal Circulatory Ahead	48.7%	0.0	41.5%	0.0
8/2	Eastbound Internal Circulatory Ahead	44.4%	0.0	25.4%	0.0
12/1	Westbound Left	26.3%	0.0	14.2%	0.0
12/2	Westbound Ahead Left	44.0%	0.0	37.8%	0.0
J2 A50 Cliff Lane Grappenhall Lane Existing Junction					
1/1+1/2	A50 Knutsford Rd Left Ahead	103.0 : 103.0%	64.3	101.2 : 101.2%	36.9
2/1+2/2	A50 Cllif Lane Ahead Right	59.5 : 59.8%	0.7	80.1 : 81.3%	2.1
3/1+3/2	B5356 Grappenhall Lane Left Ahead	111.8 : 111.8%	80.1	106.4 : 106.4%	61.8
J3 Lymm Services					
1/2+1/1	Cliff Lane East Ahead Left	29.0 : 29.0%	0.2	60.6 : 60.6%	0.8
2/1+2/2	Services Access Ahead Left	80.0 : 80.0%	1.9	70.5 : 70.5%	1.2
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	57.9 : 57.9%	0.7	42.5 : 42.5%	0.4
Cycle Time		58		61	
PRC		-24.2		-20.6	
Total		190.47		176.65	
2029 Base					
1/1	M6 Southbound Offslip Ahead Left	124.3%	96.2	113.3%	74.3
1/2	M6 Southbound Offslip Ahead	123.0%	75.3	116.6%	78.1
2/1+2/2	B5158 Cherry Lane Ahead Left	84.2 : 104.7%	21.7	100.8 : 100.8%	16.3
3/1	Cliff Lane Westbound Left	89.5%	7.3	71.9%	1.3
3/2+3/3	Cliff Lane Westbound Ahead Right	103.3 : 103.3%	34.2	110.3 : 110.3%	67.2
4/1	M6 Northbound Offslip Ahead Left	78.0%	8.8	107.9%	52.9
4/2	M6 Northbound Offslip Ahead	90.2%	13.2	101.8%	33.6
5/2+5/1	Cliff Lane Eastbound Ahead Left	76.9 : 62.9%	4.8	70.6 : 52.1%	3.5
5/3	Cliff Lane Eastbound Ahead	106.4%	50.4	102.4%	31.8
6/1	Westbound Internal Circulatory Road Ahead	52.5%	4.8	94.7%	13.4
6/2	Westbound Internal Circulatory Road Right	49.2%	5.6	57.8%	6.4
8/1	Eastbound Internal Circulatory Ahead	52.0%	0.0	43.7%	0.0
8/2	Eastbound Internal Circulatory Ahead	44.9%	0.0	26.5%	0.0
12/1	Westbound Left	23.8%	0.0	13.1%	0.0
12/2	Westbound Ahead Left	43.2%	0.0	37.4%	0.0
J2 A50 Cliff Lane Grappenhall Lane Existing Junction					
1/1+1/2	A50 Knutsford Rd Left Ahead	109.5 : 109.5%	91.1	106.7 : 106.7%	48.5
2/1+2/2	A50 Cllif Lane Ahead Right	63.5 : 64.0%	0.9	86.3 : 86.9%	3.2
3/1+3/2	B5356 Grappenhall Lane Left Ahead	120.8 : 120.8%	107.9	116.9 : 116.9%	93.2
J3 Lymm Services					

1/2+1/1	Cliff Lane East Ahead Left	31.6 : 31.6%	0.2	65.4 : 65.4%	0.9
2/1+2/2	Services Access Ahead Left	86.2 : 86.2%	2.9	76.9 : 76.9%	1.6
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	62.0 : 62.0%	0.8	45.4 : 45.4%	0.4
Cycle Time		58		61	
PRC		-38.1		-29.9	
Total		333.57		333.92	

Table 3 – The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts 2021 and 2029 Base

Lane Number / Description		Weekday AM Peak (07:30 – 08:30) Deg Sat (%)	Weekday AM Peak (07:30 – 08:30) Mean Max Queue	Weekday PM Peak (16:30 – 17:30) Deg Sat (%)	Weekday PM Peak (16:30 – 17:30) Mean Max Queue
J1 – M6 Junction 20 Existing Junction					
2021 Base plus Development					
1/1	M6 Southbound Offslip Ahead Left	121.9%	87.3	116.1%	84.0
1/2	M6 Southbound Offslip Ahead	147.5%	131.4	124.3%	102.1
2/1+2/2	B5158 Cherry Lane Ahead Left	80.3 : 99.3%	7.0	102.2 : 102.2%	14.6
3/1	Cliff Lane Westbound Left	82.7%	3.7	64.1%	0.9
3/2+3/3	Cliff Lane Westbound Ahead Right	103.7 : 103.7%	32.1	89.0 : 103.3%	39.5
4/1	M6 Northbound Offslip Ahead Left	64.1%	8.2	111.4%	66.8
4/2	M6 Northbound Offslip Ahead	56.4%	7.2	104.8%	43.5
5/2+5/1	Cliff Lane Eastbound Ahead Left	66.1 : 57.9%	2.3	63.4 : 52.2%	3.2
5/3	Cliff Lane Eastbound Ahead	110.1%	69.6	130.8%	93.1
6/1	Westbound Internal Circulatory Road Ahead	83.5%	10.2	101.2%	20.4
6/2	Westbound Internal Circulatory Road Right	60.9%	6.2	51.9%	5.6
8/1	Eastbound Internal Circulatory Ahead	49.0%	0.0	40.9%	0.0
8/2	Eastbound Internal Circulatory Ahead	47.4%	0.0	28.8%	0.0
12/1	Westbound Left	22.0%	0.0	10.0%	0.0
12/2	Westbound Ahead Left	44.2%	0.0	38.1%	0.0
J2 A50 Cliff Lane Grappenhall Lane Existing Junction					
1/1+1/2	A50 Knutsford Rd Left Ahead	103.0 : 103.0%	65.0	101.2 : 101.2%	37.1
2/1+2/2	A50 Cllif Lane Ahead Right	99.3 : 99.3%	16.4	90.8 : 90.8%	4.7
3/1+3/2	B5356 Grappenhall Lane Left Ahead	146.6 : 146.6%	203.8	170.0 : 170.0%	294.1
J3 Lymm Services					
1/2+1/1	Cliff Lane East Ahead Left	30.7 : 30.7%	0.2	62.3 : 62.3%	0.8
2/1+2/2	Services Access Ahead Left	81.6 : 81.6%	2.1	73.2 : 73.2%	1.3
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	60.7 : 60.2%	0.8	48.0 : 47.3%	0.5
Cycle Time		58		61	
PRC		-63.9		-88.9	
Total		472.77		612.47	

Table 4 – The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts 2021 with Development

Lane Number / Description		Weekday AM Peak (07:30 – 08:30) Deg Sat (%)	Weekday AM Peak (07:30 – 08:30) Mean Max Queue	Weekday PM Peak (16:30 – 17:30) Deg Sat (%)	Weekday PM Peak (16:30 – 17:30) Mean Max Queue
J1 – M6 Junction 20 Existing Junction					
2029 Base plus Development					
1/1	M6 Southbound Offslip Ahead Left	136.2%	122.3	126.1%	112.0
1/2	M6 Southbound Offslip Ahead	161.0%	159.6	131.3%	122.7
2/1+2/2	B5158 Cherry Lane Ahead Left	83.1 : 102.6%	20.1	103.5 : 103.5%	16.4
3/1	Cliff Lane Westbound Left	82.4%	4.1	69.8%	1.1
3/2+3/3	Cliff Lane Westbound Ahead Right	104.0 : 104.0%	35.6	99.7 : 118.3%	68.5
4/1	M6 Northbound Offslip Ahead Left	75.8%	10.1	118.1%	94.7
4/2	M6 Northbound Offslip Ahead	67.6%	8.9	111.0%	69.3
5/2+5/1	Cliff Lane Eastbound Ahead Left	71.2 : 61.2%	3.0	65.1 : 54.9%	3.4
5/3	Cliff Lane Eastbound Ahead	117.2%	91.7	133.4%	101.2
6/1	Westbound Internal Circulatory Road Ahead	71.5%	7.6	103.3%	30.5
6/2	Westbound Internal Circulatory Road Right	50.0%	5.1	48.5%	5.1
8/1	Eastbound Internal Circulatory Ahead	52.2%	0.0	41.9%	0.0
8/2	Eastbound Internal Circulatory Ahead	47.5%	0.0	29.5%	0.0
12/1	Westbound Left	19.3%	0.0	11.2%	0.0
12/2	Westbound Ahead Left	43.5%	0.0	38.0%	0.0
17/1	Cliff Lane Westbound Ahead	70.1%	1.2	38.6%	0.0
J2 A50 Cliff Lane Grappenhall Lane Existing Junction					
1/1+1/2	A50 Knutsford Rd Left Ahead	109.5 : 109.5%	92.8	106.7 : 106.7%	49.0
2/1+2/2	A50 Cllif Lane Ahead Right	103.4 : 103.4%	76.8	95.7 : 95.7%	9.2
3/1+3/2	B5356 Grappenhall Lane Left Ahead	156.1 : 156.1%	236.7	182.5 : 182.5%	331.4
J3 Lymm Services					
1/2+1/1	Cliff Lane East Ahead Left	33.2 : 33.2%	0.2	67.2 : 67.2%	1.0
2/1+2/2	Services Access Ahead Left	87.7 : 87.7%	3.3	79.6 : 79.6%	1.9
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	64.3 : 63.8%	0.9	50.9 : 49.7%	0.5
Cycle Time		58		61	
PRC		-78.9		-102.8	
Total		640.85		817.10	

Table 5 – The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts 2029 with Development

As concluded in the TA, the above results suggest that mitigation would be beneficial to mitigate the impact of the proposed development traffic on the highway network.

5. M6 Junction 20 'With Mitigation' Modelling

The HE response raises a number of comments with regard to the 'With Mitigation' model. Many of these are very minor and have no material impact on the model. A summary of the action taken in response to each comment is provided below

- Arm J2:4 – The LinSig model has been amended.
- Arm 2:1 – Drawing has been updated.
- Arm J2.2 - Drawing has been updated.
- Arm J1:7 - The LinSig model has been amended.

- Arm J1:9 - The LinSig model has been amended.
- Arm J1:10 - The LinSig model has been amended.
- Arm J1:11 - The LinSig model has been amended.
- Arm J1:8 This arm has been deleted from the LinSig model.
- Give Way Values – The changes in the give way parameters for arm J1:3 is as result of the improvements proposed in this location as part of the development proposals. With regards J1:2 this has been amended to replicate the base.
- Saturation Flows – Radius has been included for all arms.

The base model has been updated on the above basis and the raw models will be forwarded by email separate to this note. The results are summarised below:

Lane Number / Description		Weekday AM Peak (07:30 – 08:30) Deg Sat (%)	Weekday AM Peak (07:30 – 08:30) Mean Max Queue	Weekday PM Peak (16:30 – 17:30) Deg Sat (%)	Weekday PM Peak (16:30 – 17:30) Mean Max Queue
2021 Base plus Development					
J1 – M6 Junction 20 Proposed Mitigation					
1/1	M6 Offslip Ahead Left	96.2%	18.0	97.6%	20.5
1/2	M6 Offslip Ahead	96.5%	18.3	97.3%	20.1
2/1+2/2	B5158 Cherry Lane Ahead Left	92.5 : 81.1%	7.0	64.8 : 60.6%	2.1
3/1	Cliff Lane Westbound Left	52.1%	2.3	35.1%	0.7
3/2+3/3	Cliff Lane Westbound Ahead Right	56.4 : 56.4%	3.1	67.1 : 67.1%	4.8
4/2+4/1	M6 Northbound Offslip Ahead Left	48.0 : 48.0%	4.0	96.0 : 96.0%	19.4
4/3	M6 Northbound Offslip Ahead	65.6%	8.4	72.2%	9.6
5/2+5/1	Cliff Lane eastbound Ahead Left	88.9 : 88.9%	10.9	88.3 : 88.3%	9.1
5/3	Cliff Lane eastbound Ahead	52.9%	6.5	62.5%	6.2
6/1	Westbound Internal Circulatory Road Ahead	43.4%	3.9	63.2%	7.8
6/2+6/3	Westbound Internal Circulatory Road Right	77.5 : 72.5%	9.3	77.5 : 76.8%	7.9
7/2+7/1	Northbound Circulatory Ahead	55.1 : 55.1%	5.8	80.2 : 80.2%	7.4
7/3	Northbound Circulatory Right	69.0%	0.9	42.5%	1.3
8/2+8/1	Eastbound Internal Road Ahead	96.0 : 96.0%	15.8	79.4 : 79.4%	10.5
8/3	Eastbound Internal Road Ahead	55.1%	8.9	40.0%	6.8
J2 A50 Cliff Lane Grappenhall Lane-Proposed Mitigation					
1/1+1/2	A50 Knutsford Rd Left Ahead	74.5 : 74.5%	11.5	90.0 : 90.0%	8.8
2/1+2/2	A50 Cllif Lane Ahead Ahead2	69.9 : 69.9%	7.8	91.4 : 91.4%	12.8
3/1+3/2	B5356 Grappenhall Lane Left Ahead	97.5 : 97.3%	18.9	89.4 : 89.2%	13.0
7/1	Westbound Circulatory Right	15.7%	0.6	6.9%	0.2
7/2	Westbound Circulatory Right	15.3%	0.6	6.9%	0.2
8/1	Northbound Circulatory	42.5%	6.1	78.9%	6.7
9/1	Eastbound Circulatory Ahead	85.8%	2.5	51.9%	1.5
9/2	Eastbound Circulatory Ahead	92.8%	2.9	60.7%	1.8
Cycle Time		60		60	
PRC		-8.4		-8.5	
Total		93.95		99.27	
2029 Base plus Development					
J1 – M6 Junction 20 Proposed Mitigation					
1/1	M6 Offslip Ahead Left	107.2%	40.3	98.6%	22.7
1/2	M6 Offslip Ahead	107.2%	40.3	98.4%	22.4
2/1+2/2	B5158 Cherry Lane Ahead Left	104.3 : 90.9%	22.9	81.0 : 76.0%	4.0
3/1	Cliff Lane Westbound Left	56.3%	2.8	37.8%	1.0
3/2+3/3	Cliff Lane Westbound Ahead Right	59.6 : 59.8%	3.6	71.0 : 71.0%	5.6
4/2+4/1	M6 Northbound Offslip Ahead Left	50.6 : 50.6%	4.2	96.6 : 96.6%	21.7
4/3	M6 Northbound Offslip Ahead	69.9%	9.3	70.3%	9.7
5/2+5/1	Cliff Lane eastbound Ahead Left	96.0 : 96.0%	20.9	92.4 : 92.4%	11.2
5/3	Cliff Lane eastbound Ahead	58.2%	7.3	65.9%	6.6

6/1	Westbound Internal Circulatory Road Ahead	43.8%	3.9	72.3%	9.2
6/2+6/3	Westbound Internal Circulatory Road Right	76.9 : 73.5%	9.5	86.2 : 81.5%	9.2
7/2+7/1	Northbound Circulatory Ahead	54.2 : 54.1%	5.9	83.1 : 83.0%	7.5
7/3	Northbound Circulatory Right	70.5%	1.0	45.3%	1.3
8/2+8/1	Eastbound Internal Road Ahead	98.8 : 98.8%	19.7	86.7 : 86.7%	10.5
8/3	Eastbound Internal Road Ahead	56.4%	9.4	43.5%	7.1
J2 A50 Cliff Lane Grappenhall Lane-Proposed Mitigation					
1/1+1/2	A50 Knutsford Rd Left Ahead	79.4 : 79.4%	13.4	96.2 : 96.2%	12.6
2/1+2/2	A50 Cllif Lane Ahead Ahead2	73.4 : 73.4%	8.5	96.3 : 96.3%	18.6
3/1+3/2	B5356 Grappenhall Lane Left Ahead	101.9 : 101.8%	30.9	93.1 : 92.9%	15.5
7/1	Westbound Circulatory Right	16.0%	0.6	7.3%	0.2
7/2	Westbound Circulatory Right	16.0%	0.6	7.3%	0.2
8/1	Northbound Circulatory	45.4%	6.7	84.3%	7.2
9/1	Eastbound Circulatory Ahead	88.2%	2.9	54.0%	1.9
9/2	Eastbound Circulatory Ahead	95.3%	3.5	63.3%	2.2
Cycle Time		60		60	
PRC		-19.2		-9.5	
Total		171.57		122.44	

Table 6 – The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts 2021 and 2029 with Development

Lane Number / Description		Weekday AM Peak (07:30 – 08:30)		Weekday PM Peak (16:30 – 17:30)	
		Deg Sat (%)	Mean Max Queue	Deg Sat (%)	Mean Max Queue
J1 – M6 Junction 20 Proposed Mitigation					
2021 Base plus Development + Stobbarts					
1/1	M6 Offslip Ahead Left	101.1%	26.0	104.9%	35.5
1/2	M6 Offslip Ahead	101.1%	26.0	104.9%	35.5
2/1+2/2	B5158 Cherry Lane Ahead Left	98.2 : 85.9%	8.7	63.6 : 59.5%	2.0
3/1	Cliff Lane Westbound Left	52.6%	2.4	35.3%	0.8
3/2+3/3	Cliff Lane Westbound Ahead Right	58.6 : 58.7%	3.6	68.4 : 68.5%	5.4
4/2+4/1	M6 Northbound Offslip Ahead Left	49.9 : 49.9%	4.2	99.7 : 99.7%	28.2
4/3	M6 Northbound Offslip Ahead	65.6%	8.4	76.3%	10.2
5/2+5/1	Cliff Lane eastbound Ahead Left	91.6 : 91.6%	13.8	92.5 : 92.5%	11.3
5/3	Cliff Lane eastbound Ahead	54.3%	6.7	65.2%	6.5
6/1	Westbound Internal Circulatory Road Ahead	46.1%	4.2	61.1%	7.6
6/2+6/3	Westbound Internal Circulatory Road Right	77.3 : 71.0%	9.1	72.6 : 75.5%	7.3
7/2+7/1	Northbound Circulatory Ahead	53.4 : 53.4%	5.5	80.4 : 80.4%	7.7
7/3	Northbound Circulatory Right	69.0%	0.9	42.5%	1.5
8/2+8/1	Eastbound Internal Road Ahead	97.2 : 97.2%	16.0	78.6 : 78.6%	11.1
8/3	Eastbound Internal Road Ahead	56.5%	9.2	40.2%	7.1
J2 A50 Cliff Lane Grappenhall Lane-Proposed Mitigation					
1/1+1/2	A50 Knutsford Rd Left Ahead	76.5 : 76.5%	12.2	90.0 : 90.0%	8.8
2/1+2/2	A50 Cllif Lane Ahead Ahead2	77.2 : 77.2%	10.0	94.0 : 94.0%	15.8
3/1+3/2	B5356 Grappenhall Lane Left Ahead	98.3 : 98.1%	21.2	97.8 : 97.6%	22.4
7/1	Westbound Circulatory Right	14.2%	0.6	7.3%	0.2
7/2	Westbound Circulatory Right	13.9%	0.6	6.9%	0.2
8/1	Northbound Circulatory	43.7%	6.5	78.9%	6.7
9/1	Eastbound Circulatory Ahead	86.8%	2.6	57.3%	2.3
9/2	Eastbound Circulatory Ahead	93.5%	3.0	66.5%	2.7
Cycle Time		60		60	
PRC		-12.4		--16.6	
Total		116.09		151.68	

Table 7 – The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts 2021 with Development and Stobarts

Lane Number / Description		Weekday AM Peak (07:30 – 08:30) Deg Sat (%)	Weekday AM Peak (07:30 – 08:30) Mean Max Queue	Weekday PM Peak (16:30 – 17:30) Deg Sat (%)	Weekday PM Peak (16:30 – 17:30) Mean Max Queue
J1 – M6 Junction 20 Proposed Mitigation					
2029 Base plus Development + Stobbarts					
1/1	M6 Offslip Ahead Left	112.4%	55.6	105.6%	39.0
1/2	M6 Offslip Ahead	112.1%	54.6	105.7%	39.4
2/1+2/2	B5158 Cherry Lane Ahead Left	104.5 : 91.5%	23.7	77.2 : 72.5%	3.3
3/1	Cliff Lane Westbound Left	56.7%	2.9	38.1%	1.1
3/2+3/3	Cliff Lane Westbound Ahead Right	61.4 : 62.0%	4.0	72.4 : 72.5%	6.1
4/2+4/1	M6 Northbound Offslip Ahead Left	52.3 : 52.3%	4.5	100.1 : 100.1%	31.5
4/3	M6 Northbound Offslip Ahead	69.9%	9.3	73.9%	10.3
5/2+5/1	Cliff Lane eastbound Ahead Left	96.9 : 96.9%	23.5	96.6 : 96.6%	17.1
5/3	Cliff Lane eastbound Ahead	57.3%	7.3	68.4%	7.1
6/1	Westbound Internal Circulatory Road Ahead	45.4%	4.1	69.3%	8.9
6/2+6/3	Westbound Internal Circulatory Road Right	74.4 : 73.7%	9.5	80.0 : 80.4%	8.5
7/2+7/1	Northbound Circulatory Ahead	55.7 : 55.6%	5.9	83.5 : 83.4%	7.8
7/3	Northbound Circulatory Right	73.6%	1.0	45.3%	1.4
8/2+8/1	Eastbound Internal Road Ahead	100.0 : 100.0%	20.2	85.6 : 85.6%	11.1
8/3	Eastbound Internal Road Ahead	57.7%	9.7	43.6%	7.4
J2 A50 Cliff Lane Grappenhall Lane-Proposed Mitigation					
1/1+1/2	A50 Knutsford Rd Left Ahead	81.7 : 81.7%	14.3	96.2 : 96.2%	12.6
2/1+2/2	A50 Cllif Lane Ahead Ahead2	79.0 : 79.0%	10.3	98.9 : 98.9%	26.7
3/1+3/2	B5356 Grappenhall Lane Left Ahead	102.4 : 102.4%	34.6	101.3 : 101.3%	34.2
7/1	Westbound Circulatory Right	16.4%	0.7	7.3%	0.2
7/2	Westbound Circulatory Right	16.4%	0.7	7.3%	0.2
8/1	Northbound Circulatory	46.7%	7.0	84.3%	7.2
9/1	Eastbound Circulatory Ahead	88.4%	2.9	58.6%	2.5
9/2	Eastbound Circulatory Ahead	95.3%	3.5	68.1%	2.9
Cycle Time		60		60	
PRC		-24.9		-17.5	
Total		209.64		195.24	

Table 8 – The A50 Cliff Lane / B5356 Grappenhall Lane Roundabout and the M6 J20 Roundabouts 2029 with Development and Stobarts

As concluded in the TA, the above results demonstrate that even with the addition of the Stobart scheme, the proposed improvements provide a betterment when compared with the do nothing scenario for both the opening year 2021 and future year 2029. The modelling amends suggested by HE have no material impact on this conclusion.

Finally, the response also raises some general comments on the modeling which are summarised below:

The HE response states that the model 'cannot accurately reflect the impact of the merges between the two junctions and any knock on consequences for the M6 northbound off slip.' Curtins disagree with this statement and note that a very similar LinSig model was used for the Stobart development which is now approved.

The HE response states that traffic is being held back at the A50/Grappenhall roundabout and if it was released it may impact on the M6 Junction 20. Curtins would state the control of traffic arriving at the junction is one of the key principles behind the mitigation and the modelling demonstrate this could work effectively.

Circulatory queuing – It is Curtins view that the queues on the circulatory lanes can be contained within the available space.

6. Merge/Diverge Assessments

The HE response suggests that mitigation should be considered at the M6 Junction 20 as a result of the merge/diverge assessment. It also requests clarity on why a 2022 and 2032 assessment was undertaken.

Curtins can confirm that 2022 and 2032 assessments were used as Curtins were provided with growth factors by Atkins/HE for the mainline for these years. This was discussed at the recent meeting and Atkins confirmed that use of these years was acceptable.

The assessment confirms that the existing arrangement for the northbound on-slip does not meet the required standard based on existing traffic flows during the PM peak. This is mainly due to significant number of northbound through traffic using the slip road to avoid congestion on the mainline. The survey data used to inform the assessment confirms that in the PM peak there were 415 vehicles undertaking this movement.

The assessment also shows that in 2022 the current provision at the north bound on-slip is not sufficient for both the AM and PM peaks even without the addition of the development traffic. For the southbound off-slip the existing arrangement does not meet the requirement in the AM peak base scenario.

With regard to the requirement for mitigation, Curtins would point out that the arrangements do not meet the required standards in the 2022 and 2032 base years. It is therefore not the development traffic that creates the concern but increases in background traffic and traffic from committed developments.

Curtins does not believe that the requirement to upgrade the links should fall on the applicant and it is noted that the adjacent Stobart application has not been asked to upgrade the merge/diverge arrangements, despite comparable results.

7. Conclusion

It is Curtin's view that the above does not alter the conclusions on the previously submitted Transport Assessment and we trust that the above alleviates the concerns raised in the consultation response.

Appendix A – Grappenhall Lane/A50 and M6 Junction 20 Mitigation Scheme

GENERAL NOTES:

KEY:
- INDICATIVE LAND OWNERSHIP BOUNDARY
- INDICATIVE EXTENTS OF PUBLIC HIGHWAY
- PROPOSED KERB LINE
- PROPOSED FOOTWAY
- PROPOSED ROAD MARKINGS
- PROPOSED TRAFFIC SIGNAL

Rev:	Description:	Date:	By:	Chkd:
P04	Road markings updated	29/07/19	DD	AV
P03	Footways updated	08/01/19	DD	AV
P02	Cliff Lane Roundabout. Northern arm entry udpated	28/11/18	DD	AV

curtins
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 236 2394
manchester@curtins.com
www.curtins.com

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Status:
PRELIMINARY

Project:
WARRINGTON SIX 56

Drg Title:
POTENTIAL IMPROVEMENTS

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	15/11/18	DD	DD	AV
Scale: 1:1,000				

Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
64076	CUR	00	XX	DR	TP	75011	P04

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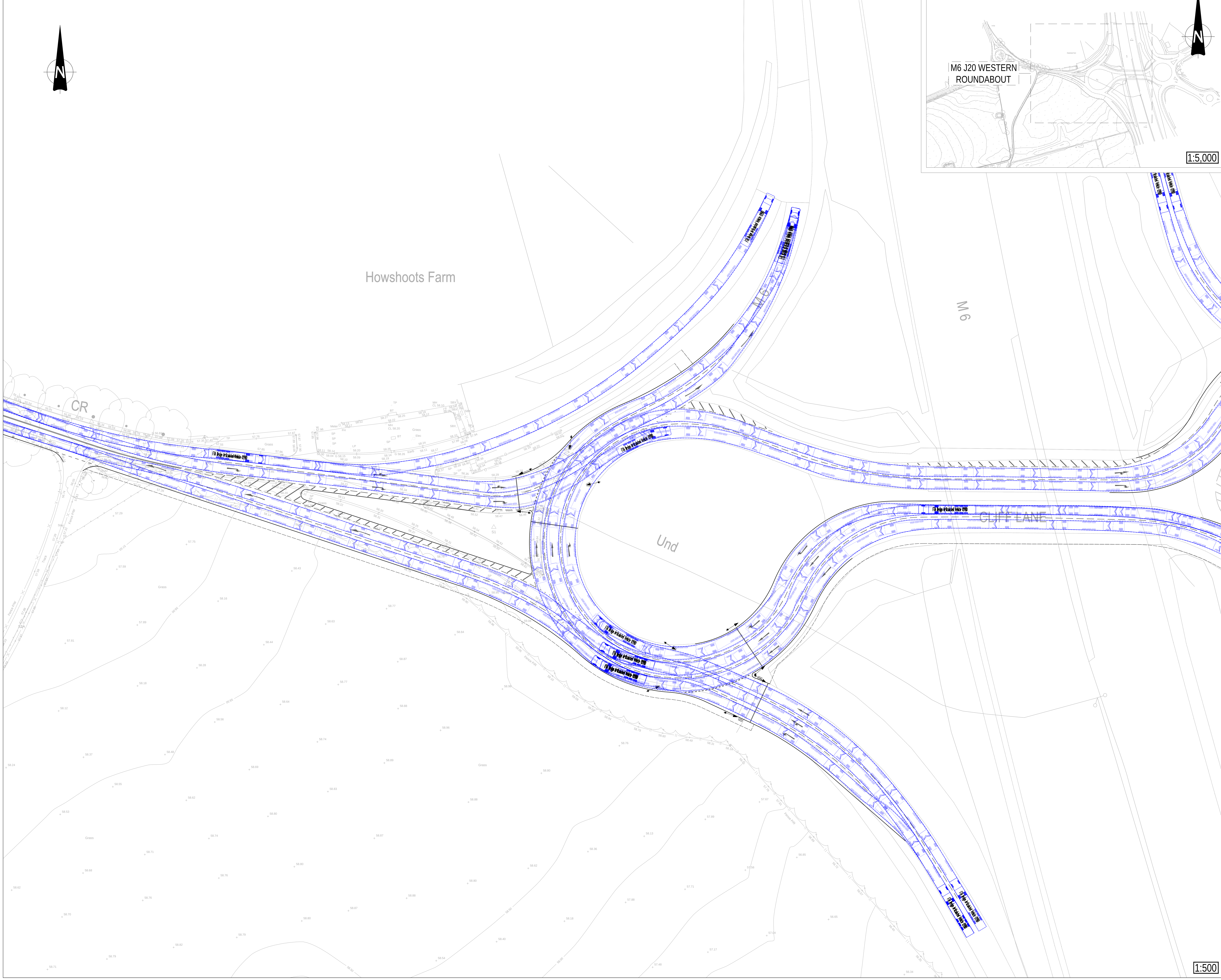
M6 J20 WESTERN ROUNDABOUT ARRANGEMENT



1:500

GENERAL VIEW

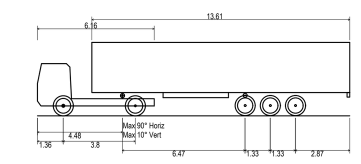
M6 J20 WESTERN ROUNDABOUT

1:5,000

GENERAL NOTES:

KEY:
- PROPOSED KERB LINE
- PROPOSED FOOTWAY
- PROPOSED ROAD MARKINGS

VEHICLE PROFILE:



FTA Design Articulated Vehicle (1998)	
Overall Length	16.480m
Overall Width	2.550m
Overall Body Height	3.870m
Min Body Ground Clearance	0.515m
Max Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	6.550m

Rev:	Description:	Date:	By:	Chkd:
P02	Layout updated	12/09/19	DD	FF

curtins
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 236 2394
manchester@curtins.com
www.curtins.com
Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status:
PRELIMINARY

Project:
WARRINGTON INTERCHANGE

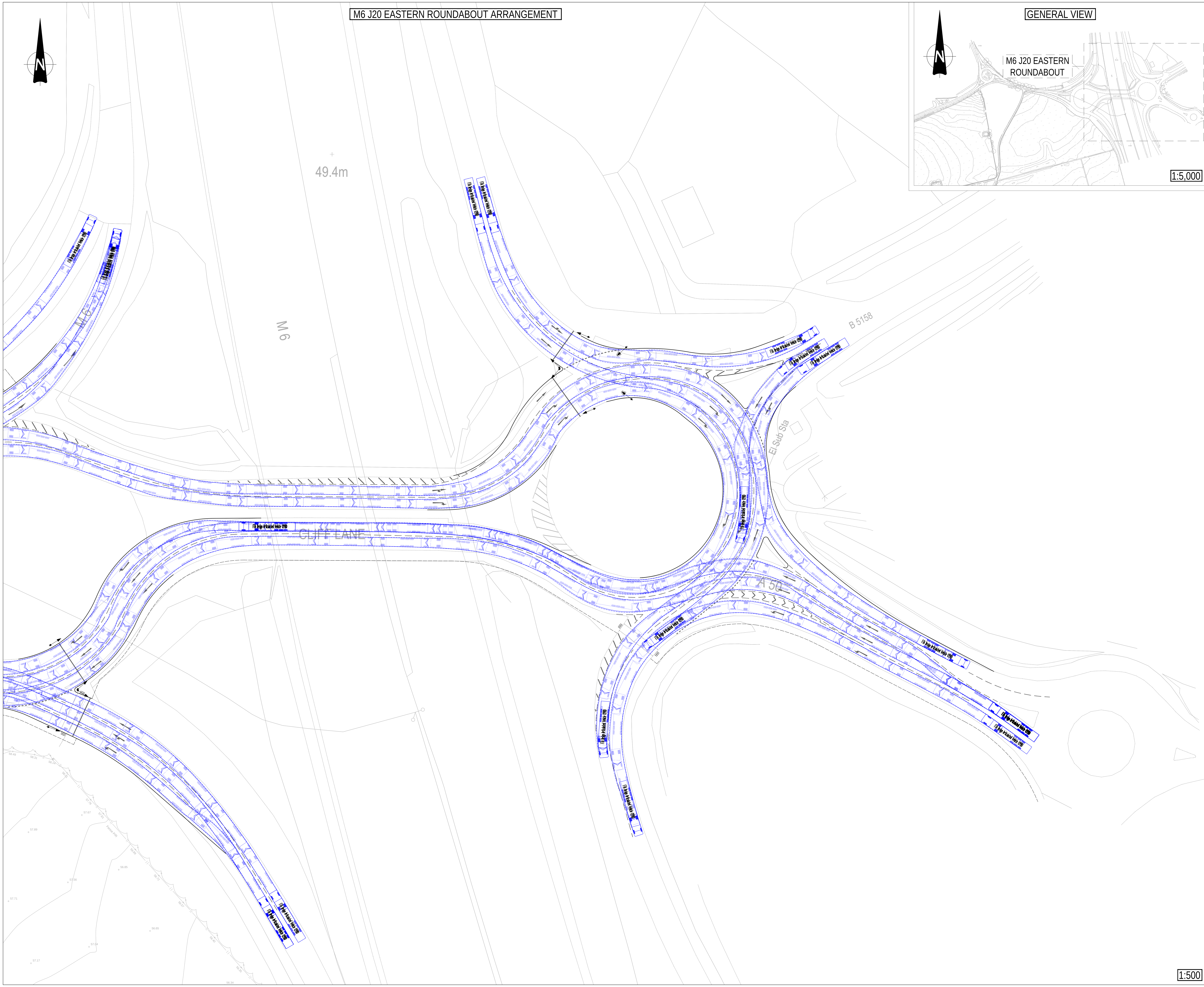
Drg Title:
M6 J20 - WESTERN ROUNDABOUT
POTENTIAL IMPROVEMENTS
SWEPT PATH ANALYSIS
16.5m ARTICULATED HGV

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	23/10/18	DD	DD	AV
Scale: AS STATED				

Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
64076	CUR	00	XX	DR	TP	05003	P02

\\mafs02\Projects\064001 - 065000\064076 - Warrington Interchange TPMA\E -Drawings\2-Working\2.2-DWG\05\

M6 J20 EASTERN ROUNDABOUT ARRANGEMENT



1:500

GENERAL VIEW

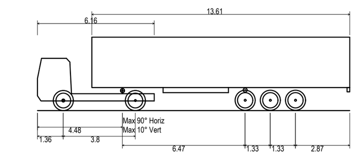
M6 J20 EASTERN ROUNDABOUT

1:5,000

GENERAL NOTES:

KEY:
- PROPOSED KERB LINE
- PROPOSED FOOTWAY
- PROPOSED ROAD MARKINGS

VEHICLE PROFILE:



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curtins

Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 236 2394
manchester@curtins.com
www.curtins.com

Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: PRELIMINARY

Project: WARRINGTON INTERCHANGE

Drg Title: M6 J20 - EASTERN ROUNDABOUT POTENTIAL IMPROVEMENTS SWEPT PATH ANALYSIS 16.5m ARTICULATED HGV

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	23/10/18	DD	DD	AV
Scale: AS STATED				

Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
64076	CUR	00	XX	DR	TP	05004	P02

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Our Locations

Birmingham
2 The Wharf
Bridge Street
Birmingham B1 2JS
T. 0121 643 4694
birmingham@curtins.com

Bristol
3/8 Redcliffe Parade West
Bristol
BS1 6SP
T. 0117 925 2825
bristol@curtins.com

Cardiff
3 Cwrt-y-Parc
Earlswood Road
Cardiff
CF14 5GH
T. 029 2068 0900
cardiff@curtins.com

Douglas
Varley House
29-31 Duke Street
Douglas Isle of Man
IM1 2AZ
T. 01624 624 585
douglas@curtins.com

Edinburgh
35 Manor Place
Edinburgh
EH3 7DD
T. 0131 225 2175
edinburgh@curtins.com

Kendal
28 Lower Street
Kendal
Cumbria LA9 4DH
T. 01539 724 823
kendal@curtins.com

Glasgow
Queens House
29 St Vincent Place
Glasgow
G1 2DT
0141 319 8777
glasgow@curtins.com

Leeds
Rose Wharf
Ground Floor
78-80 East Street
Leeds
LS9 8EE

Liverpool
Curtin House
Columbus Quay
Riverside Drive
Liverpool L3 4DB
T. 0151 726 2000
liverpool@curtins.com

London
Units 5/6
40 Compton Street
London
EC1V 0BD
T. 020 73242240
london@curtins.com

Manchester
Merchant Exchange
17-19 Whitworth Street West
Manchester
M1 5WG
T. 0161 236 2394
manchester@curtins.com

Nottingham
7 College Street
Nottingham
NG1 5AQ
T. 0115 941 5551
nottingham@curtins.com

Dublin
39 Fitzwilliam Square
Dublin 2
Ireland
T. 00353 1 507 9447
dublin@curtins.com

Cambridge
50 Cambridge Place
Cambridge
CB2 1NS
01223 631 799
cambridge@curtins.com

Merchant Exchange
17 – 19 Whitworth Street West
Manchester
M1 5WG

T. 0161 236 2394

manchester@curtins.com
www.curtins.com

Our Reference: 64076/PSN2

14th November 2019

Mr Alan Shepherd
Divisional Director
Operations Division
Highways England
North West Region

By Email Only

Re: P/2019/34799 - Highways England Post Submission Note 2

This letter has been prepared to address the comments raised by Highway England's (HE) in their response to Planning Application Reference P/2019/34799, dated 16th October 2019.

The response is the second response from HE. It confirms that many of the points raised in the first response and addressed by Curtins Post Submission note 1, are now resolved. For example, the response states that the base modelling of the M6 J20 'can now be regarded as robust at a broad level'.

The two primary matters that remain outstanding are agreement on the M6 J20 mitigation model and the merge/diverge assessment.

These matters are considered in detail below:

1. M6 Junction 20 Mitigation Model

The latest HE response acknowledges that number of comments were made on the proposed mitigation modelling in the last HE review and the developer has either amended the design or the model to account for these comments. HE states that this process has introduced a number of new issues which require addressing. These are summarised below with Curtins response underneath in red.

Arm J1:1 is modelled with both the nearside and offside lanes accommodating the movement to the downstream middle of three lanes. The drawing shows only the offside feeding the downstream middle lane.

The model has been amended.

Arm J1:3 there appear to be significant differences in the maximum flow whilst giving-way values used between the base and proposed models without obvious justification.

The maximum flow for J1:3 has been increased to take account of the proposed improvements to this roundabout as shown in Drawing 64076-7501-P06. The ARCADY model for the proposed improvements is attached.

Arm J1:4 has a weave from the offside lane to the downstream middle and nearside lanes. This reflects the base but is not needed to accommodate the movement from M6-M6 due to the provision of a connector from the middle to downstream middle and nearside lanes and should be removed. The lane markings on this part of the network should also be reviewed.

Drawing 64076-7501-P04 and the model have both been amended. The amended drawing (ref: 64076-7501-P06 is provided at the rear of this note.

Arm J1:9 is modelled with both the nearside and middle lanes feeding the nearside immediately downstream and the offside lane feeding the middle and offside downstream lanes. The drawing shows a continuation of all three lanes

The model has been amended.

Arm J1:10 the model shows the middle lane feeding the nearside and middle lanes of the downstream circulatory whereas the drawing shows this lane feeding the offside exit lane and nearside downstream circulatory lane

The model has been amended.

Arm J2:1 is not marked to allow the movement from offside to both downstream lanes on the circulatory although the model allows this.

The model and the lane markings (see Drawing 64076-7501-P06) has been amended.

Arm J2:2 is modelled and drawn with the offside lane being right only but the design allows for it to also be left.

The model and lane markings (see Drawing 64076-7501-P06) has been amended.

Arm J2:3 is drawn with a left only and right only but the nearside is actually left and right.

The model and lane markings (see Drawing 64076-7501-P06) been amended.

In addition, Given the nature of traffic flows on a roundabout, all lanes should be coded as being 'nearside' unless there is strong justification not to do so.

The model and drawing of the proposed mitigation has been updated on the above basis and the drawing is included as Appendix A. The raw model will be forwarded by email separate to this note.

In addition to the above comments, the HE response states that there are some concerns regarding the suitability of the model and its ability to consider merges between the two junctions and/or possible queuing on the circulatory carriageway.

Curtins is of the view that the modelling package is entirely appropriate and would point out that HE offered no objection to the adjacent Stobart scheme which modelled the junction using the same software. If the software was acceptable to draw a conclusion on that scheme the same must apply here.

It should also be noted that previous responses from HE have clearly stated that the model could be made to be 'sufficiently robust that it could be used to draw broad conclusions as to the appropriateness of the proposed mitigation.'

With regard to the benefits of the mitigation, Curtins has compared the overall network performance for the 'base scenario' with the 'base plus development plus mitigation'. A summary of the results is provided in Table 1 below.

Scenario	AM Peak		PM Peak	
	PRC (%)	Delay	PRC (%)	Delay
2021 Base Existing Junction	-24.2	190.47	-20.6	176.65
2021 Base with Proposed Development + Mit	-16.6	131.12	-16.1	131.78
2021 Base with Development plus Stobart + Mit	-23.0	164.61	-17.3	168.02
2029 Base Existing Junction	-38.1	333.57	29.9	333.92
2029 Base with Proposed Development + Mit	-24.3	209.58	17.5	184.76
2029 Base with Development plus Stobart + Mit	-25.9	262.31	-20.8	245.02

Table 1 - Network Performance

It is evident from Table 2 that the network performs better in the development plus mitigation scenario than in the base scenario. It is therefore considered that the conclusions of the TA remain valid and the proposed improvements mitigate the impact of the development.

It is also important to note that MOVA is likely to be installed as part of the junction improvements. Research has identified that installation of MOVA increases throughput and minimise delay by dynamic optimization. The impact of MOVA has not been considered as part of this assessment and therefore it is considered that the above results presents a worse case scenario.

2. Merge/Diverge Assessments

The first HE response suggests that mitigation should be considered at the M6 Junction 20 as a result of the merge/diverge assessment. It also requested clarity on why a 2022 and 2032 assessment was undertaken.

In Post Submission Note 1 Curtins confirmed that 2022 and 2032 assessments were used as Curtins were provided with growth factors by Atkins/HE for the mainline for these years. This was discussed at a meeting with Atkins who confirmed that use of these years was acceptable. This matter is therefore considered to be resolved.

With regard to the assessments, Curtis Post Submission Note 1 stated that that the merge/diverge arrangements on certain arms do not meet the required standards in the 2022 and 2032 base years. It is therefore not the development traffic that creates the concern but increases in background traffic and traffic from committed developments. Curtins did not believe that the requirement to upgrade the links should fall on the applicant and noted that the adjacent Stobart applicant was not been asked to upgrade the merge/diverge arrangements, despite comparable results.

The latest HE response states that:

It was clear from our review as set out in our previous correspondence that the development increases the required standard of arrangement for the northbound on-slip. Whilst Curtins contest this in their latest note, no supporting analysis is provided for review.

Curtins would again point out that the evidence submitted as part of the adjacent Stobart application showed that the standard of arrangement for the northbound off-slip did not meet the necessary requirements and the development exacerbated this as per Table 5.7 extracted from the TA and reproduced below:

Table 5.7 – M6/J20 Northbound On-slip Merge Assessment

Period	Mainline flow		Merge Flow		Junction Form Exceeded?	
	Without Dev	With Dev	Without Dev	With Dev	Without Dev	With Dev
AM Peak	7,388	7,388	1,164	1,288	Yes	Yes
PM Peak	5,888	5,888	1,566	1,700	Yes	Yes

The with development flow of 1288 and 1700 in the AM and PM peak periods are comparable with the Six:56 assessment contained in the TA.

HE made no request for the Stobart applicant to mitigate or contribute to any enhancements and given the comparable values it is not clear why the Six:56 applicant should be expected to provide mitigation where other developments supported in the last 6 months have not had to do so.

It must also be noted that the merge/diverge PM issue at the northbound on-slip is partly due to a significant number of northbound vehicles using the slip road to avoid congestion on the mainline. The survey data used to inform the assessment confirms that in the PM peak there were 415 vehicles undertaking this movement. If these vehicles were removed from the slip road and added to the mainline, it would alleviate the issue to a degree but the junction form would still be exceeded. It is therefore Curtins view that the issue with the merge/diverge in this location is the mainline flows rather than the merge/diverge itself.

3. Conclusion

It is Curtin's view that the above does not alter the conclusions of the previously submitted Transport Assessment and we trust that the above alleviates the concerns raised in the consultation response.

Appendix A – Grappenhall Lane/A50 and M6 Junction 20 Mitigation Scheme

NOTE: The content of this drawing is for indicative information only and NOT suitable for Construction purposes

GENERAL NOTES:

KEY:
- INDICATIVE LAND OWNERSHIP BOUNDARY
- INDICATIVE EXTENTS OF PUBLIC HIGHWAY
- PROPOSED KERB LINE
- PROPOSED FOOTWAY
- PROPOSED ROAD MARKINGS
- PROPOSED TRAFFIC SIGNAL

Rev:	Description:	Date:	By:	Chkd:
P06	Road markings updated	08/11/19	JM	AV
P05	Road markings updated	06/11/19	DD	AV
P04	Road markings updated	29/07/19	DD	AV
P03	Footways updated	08/01/19	DD	AV
P02	Cliff Lane Roundabout. Northern arm entry udpated	28/11/18	DD	AV

curtins
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
0161 236 2394
manchester@curtins.com
www.curtins.com

Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status:

PRELIMINARY

Project:

WARRINGTON SIX 56

Drg Title:

POTENTIAL IMPROVEMENTS

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	15/11/18	DD	DD	AV
Scale: 1:1,000				

Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
64076	CUR	00	XX	DR	TP	75011	P06

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Our Locations

Birmingham
2 The Wharf
Bridge Street
Birmingham B1 2JS
T. 0121 643 4694
birmingham@curtins.com

Bristol
3/8 Redcliffe Parade West
Bristol
BS1 6SP
T. 0117 925 2825
bristol@curtins.com

Cardiff
3 Cwrt-y-Parc
Earlswood Road
Cardiff
CF14 5GH
T. 029 2068 0900
cardiff@curtins.com

Douglas
Varley House
29-31 Duke Street
Douglas Isle of Man
IM1 2AZ
T. 01624 624 585
douglas@curtins.com

Edinburgh
35 Manor Place
Edinburgh
EH3 7DD
T. 0131 225 2175
edinburgh@curtins.com

Kendal
28 Lower Street
Kendal
Cumbria LA9 4DH
T. 01539 724 823
kendal@curtins.com

Glasgow
Queens House
29 St Vincent Place
Glasgow
G1 2DT
0141 319 8777
glasgow@curtins.com

Leeds
Rose Wharf
Ground Floor
78-80 East Street
Leeds
LS9 8EE

Liverpool
Curtin House
Columbus Quay
Riverside Drive
Liverpool L3 4DB
T. 0151 726 2000
liverpool@curtins.com

London
Units 5/6
40 Compton Street
London
EC1V 0BD
T. 020 73242240
london@curtins.com

Manchester
Merchant Exchange
17-19 Whitworth Street West
Manchester
M1 5WG
T. 0161 236 2394
manchester@curtins.com

Nottingham
7 College Street
Nottingham
NG1 5AQ
T. 0115 941 5551
nottingham@curtins.com

Dublin
39 Fitzwilliam Square
Dublin 2
Ireland
T. 00353 1 507 9447
dublin@curtins.com

Cambridge
50 Cambridge Place
Cambridge
CB2 1NS
01223 631 799
cambridge@curtins.com

Merchant Exchange
17 – 19 Whitworth Street West
Manchester
M1 5WG

T. 0161 236 2394

manchester@curtins.com
www.curtins.com

Our Reference: 64076/PSN3

21st January 2020

Mr Alan Shepherd
Divisional Director
Operations Division
Highways England
North West Region

By Email Only

Re: P/2019/34799 - Highways England Post Submission Note 3

This letter has been prepared to address the comments raised by Highway England's (HE) in their response to Planning Application Reference P/2019/34799, dated 20th December 2019 and the subsequent meeting held on 20th January 2020.

The response is the third response from HE. The HE response acknowledges that most of the comments raised have been addressed in the latest version of the model. The two primary matters that remain outstanding are agreement on the M6 J20 mitigation model and the merge/diverge assessment. These matters are considered in detail below.

It was agreed in-principle at the meeting on 20th January that Curtins' response (as outlined in this note) satisfactorily addresses the outstanding points. Formal agreement is now sought in response to this note to enable the planning application to proceed.

1. M6 Junction 20 Mitigation Model

The latest HE response acknowledges that a number of comments were made on the proposed mitigation modelling in the last HE review and the developer has either amended the design or the model to account for these comments. HE states that this process has introduced a number of new issues that need addressing. These are summarised below in *italics* with Curtins response beneath in red.

Supply of geometric take-offs to Atkins in order accurately check the coding of the saturation flows in the revised model.

A CAD version of the geometric take-offs is attached together with the latest LinSig models.

There are a number of locations where queuing on the circulatory carriageway is more than can be accommodated without blocking the upstream exit, which could lead to an overestimation of the capacity of the network. For example, this occurs on J1:5-2, J1:8-3 and J2:8-1;

The LinSig model demonstrates that the queues shown on J1:5-2 and J1:8-3 will fit in the available stacking space. Any excess queue in J1:5/2 will extend to J2:10 where the model shows no queues.

It is acknowledged that the available space for J2:8-1 could be exceeded on occasions during peak hours, however it is worth noting that MOVA is proposed as part of the junction improvements. Research has identified that installation of MOVA increases throughput and minimises delay by dynamic optimisation. The impact of MOVA has not been considered as part of this assessment and therefore it is considered that the above results presents a worse-case scenario.

Any potential blocking would only be opposed by traffic travelling from the A50 Knutsford Road to Grappenhall Lane. A review of the traffic figures shows a maximum of 90pcus in the AM peak and 40pcus in the PM peak undertaking this movement in the 2029 'with development' scenario. This is less than 2 cars every cycle in the AM peak and less than 1 car every cycle in the PM peak, and is therefore not considered a significant issue.

In addition, it is also likely that any excess queue would extend along J2:2. The model indicates that there is space available on this link to store any potential excess queue from J2:8/1. It is Curtins view that any excess queues in this location could also be managed by the implementation of a yellow box and installing queue detectors.

Lanes J2:1-2, J1:5-3, J1:4-3 should be 'nearside'. There still remains no justification for the reason(s) these lanes are coded as other than 'nearside';

The model has been updated to reflect this request.

Supply supporting analysis for the appropriateness of the modelled merges between the two junctions. While our initial review has concluded that the base LinSig model is appropriate to draw broad conclusions to the appropriateness of the proposed mitigation, the addition of merges between junctions in the model with mitigation will not accurately reflect the impact of blocking back from these merges, causing knock-on consequences for the operation of the M6 Junction 20.

Link saturation flows were initially used to model the merges between the two junctions, as per the approved model for the Stobart's development. This regulated the volume of traffic travelling towards the SRN.

Curtins modelled the merge as uncontrolled bottlenecks, a deviation from the approved Stobart's model following a request by Atkins. The consequence of modelling the merge as an uncontrolled bottleneck is that all traffic is able to reach the Grappenhall Lane roundabout unobstructed to the M6 J20 and therefore the model demonstrates the worst-case impacts of the development on the SRN.

It is important to note that the approved base model has also adopted this methodology and therefore any assessment of the benefits of the mitigation measures is comparable.

Curtins have provided the ARCADY model titled 'M6 J20 Eastern Rbt-Proposed Improvement' to support the 'maximum flow while giving way' and coefficient values for movements from arm J1:3. Atkins finds that the modelling of this junction is not suitable due to the segregation of the left turn and ahead lanes at the Cliff Lane approach. It is therefore required to model each of the lanes separately to determine the saturation flow for each lane of traffic.

The methodology used to determine the saturation flow was adopted from the approved Stobart's model and used in Curtins base model which has been accepted by HE as suitable and appropriate. It is therefore considered that using a different methodology to determine the saturation flow for the proposed scenario is not appropriate for a fair comparison.

In addition, Highways England has not yet received geometric take-offs and hence can't review the geometrics in the model. The lane length of 60pcu for J1:9-3 appears unrealistic and should be reassessed.

The length of link J1:9-3 has been updated. A CAD version of the geometric take-offs is also attached.

2. Merge/Diverge Assessments

Concentrating on the evening peak hour assessment, where there is a more onerous requirement, the current proposals deliver more generated traffic than the Stobart proposal; a 10.7% increase in traffic (at 2022 traffic forecasts) against the Stobart proposal's 8.6% increase. Whilst the existing provision does not necessarily meet the design standard required, we would re-iterate that we would welcome Curtins comments regarding the analysis and more substantial mitigation offerings, notwithstanding the similar impact arising from the Stobart proposal.

The capacity of the merges and diverges is a pre-existing issue. This is set out extensively in Section 8.4 of the TA.

It should be noted that the merge/diverge issue in the PM peak at the northbound on-slip is partly due to a significant number of northbound vehicles using the slip road to avoid congestion on the mainline. The survey data used to inform the assessment confirms that in the PM peak there were 415 vehicles undertaking this movement. If these vehicles were removed from the slip road and added to the mainline, it would alleviate the issue to a degree, but the junction form would still be exceeded. It is therefore Curtins view that the key issue with the merge/diverge in this location is the mainline capacity rather than the merge/diverge itself.

Moreover, HE made no request for the Stobart applicant to mitigate or contribute to any enhancements and given the comparable development impacts it is not clear why the Six:56 applicant should be expected to provide mitigation where other developments supported in the last 6 months have not had to do so.

3. Cumulative Impact Assessment

We have not had any comments regarding the cumulative impact of the Warrington Local Plan developments as per our response of 16th October.

The assessment undertaken by Curtins includes traffic associated with 1,024 committed residential units and the Stobart's development. It is our view that any traffic growth along this corridor will largely be as a result of these developments.

In addition to the above, background traffic growth of 2.4% in the AM peak and 2.2% in the PM has been used for the opening year 2021. In the future year of 2029 a growth factor of 9.5% in the AM peak and 9.1% in the PM peak has been used. These are robust traffic growth figures over and above the committed development flows.

The TA also considered the cumulative impact of the emerging local plan using the Warrington Mutil-Modal Transport Model (WMMTM). A review of the WMMTM data, which is summarised in Tables 7.1 – 7.4 of the TA indicates that the development is likely to have an impact of 5% in the AM peak and 13.8% in the PM peak in the opening year of 2021. For the future year of 2031, there is 1% impact in the AM peak and 8% impact in the PM peak.

It is however worth noting that, a comparison of the traffic data from the WMMTM and that used to undertake the assessment by Curtins used for the TA confirms that the traffic data used by Curtins is significantly higher. On this basis, it is our view that the assessment is robust and provides sufficient cumulative assessment of the Warrington Local Plan.

4. Conclusion

It is Curtin's view that the above analysis does not alter the conclusions of the previously submitted Transport Assessment and we trust that the above provides sufficient clarification to the concerns raised in the consultation response.

We trust that the above addresses all your concerns for you to remove your holding objection.

Our Locations

Birmingham
2 The Wharf
Bridge Street
Birmingham
B1 2JS
T. 0121 643 4694
birmingham@curtins.com

Bristol
Quayside
40-58 Hotwell Road
Bristol
BS8 4UQ
T. 0117 302 7560
bristol@curtins.com

Cambridge
50 Cambridge Place
Cambridge
CB2 1NS
T. 01223 631 799
cambridge@curtins.com

Cardiff
3 Cwrt-y-Parc
Earlswood Road
Cardiff
CF14 5GH
T. 029 2068 0900
cardiff@curtins.com

Douglas
Varley House
29-31 Duke Street
Douglas
Isle of Man
IM1 2AZ
T. 01624 624 585
douglas@curtins.com

Dublin
11 Pembroke Lane
Dublin 2
D02 CX82
Ireland
T. +353 1 507 9447
dublin@curtins.com

Edinburgh
1a Belford Road
Edinburgh
EH4 3BL
T. 0131 225 2175
edinburgh@curtins.com

Glasgow
Queens House
29 St Vincent Place
Glasgow
G1 2DT
T. 0141 319 8777
glasgow@curtins.com

Kendal
Units 24 & 25 Riverside Place
K Village
Lound Road
Kendal
LA9 7FH
T. 01539 724 823
kendal@curtins.com

Leeds
Ground Floor
Rose Wharf
78-80 East Street
Leeds
LS9 8EE
T. 0113 274 8509
leeds@curtins.com

Liverpool
51-55 Tithebarn Street
Liverpool
L2 2SB
T. 0151 726 2000
liverpool@curtins.com

London
40 Compton Street
London
EC1V 0BD
T. 020 7324 2240
london@curtins.com

Manchester
Merchant Exchange
17-19 Whitworth Street West
Manchester
M1 5WG
T. 0161 236 2394
manchester@curtins.com

Nottingham
56 The Ropewalk
Nottingham
NG1 5DW
T. 0115 941 5551
nottingham@curtins.com

Appendix B

Appendix C

Areas

Plot No.	Warehouse GIA		Hub		Office		Total GIA		Haunch Height	Ridge Height	Dock Drs.	Level Access Drs.	Net Site Area
	M²	FT²	M²	FT²	M²	FT²	M²	FT²	M	M			Ac.
1	21553.5	232,000	371.6	4,000	1,393.5	15,000	23,318.65	251,000	15	18.5	30	2	11.45
2	78224.3	842,000	743.2	8,000	1,486.4	16,000	80,454.00	866,000	21	24.5	120	8	37.02
3	26802.5	288,500	371.6	4,000	1,393.5	15,000	28,567.67	307,500	21	24.5	26	2	13.26
4	90889.3	978,325	743.2	8,000	1,393.5	15,000	93,026.10	1,001,325	21-40	24.5-43.5	146	8	46.63
5	31354.8	337,500	372	4,000	1,393.5	15,000	33,119.92	356,500	15	18.5	30	2	12.55
6	19017.2	204,700	372	4,000	1,114.8	12,000	20,503.69	220,700	15	18.5	20	2	9.08
7	8175.5	88,000	-	-	743.2	8,000	8918.7	96,000	12.5	16.0	8	2	5.26
Total	276,017.1	2,971,025.0	2,973.7	32,000.0	8,918.7	96,000.0	287,908.7	3,099,025.0			380.0	26.0	135.25

Rev Date By Description

Langtree

PANATTONI

Stephen George + Partners LLP
Architects + Masterplanners
Waterfront House
2a Smith Way
Grove Park
Enderby
Leicester LE19 1SX
t: +44 (0)116 247 0557
www.stephengeorge.co.uk

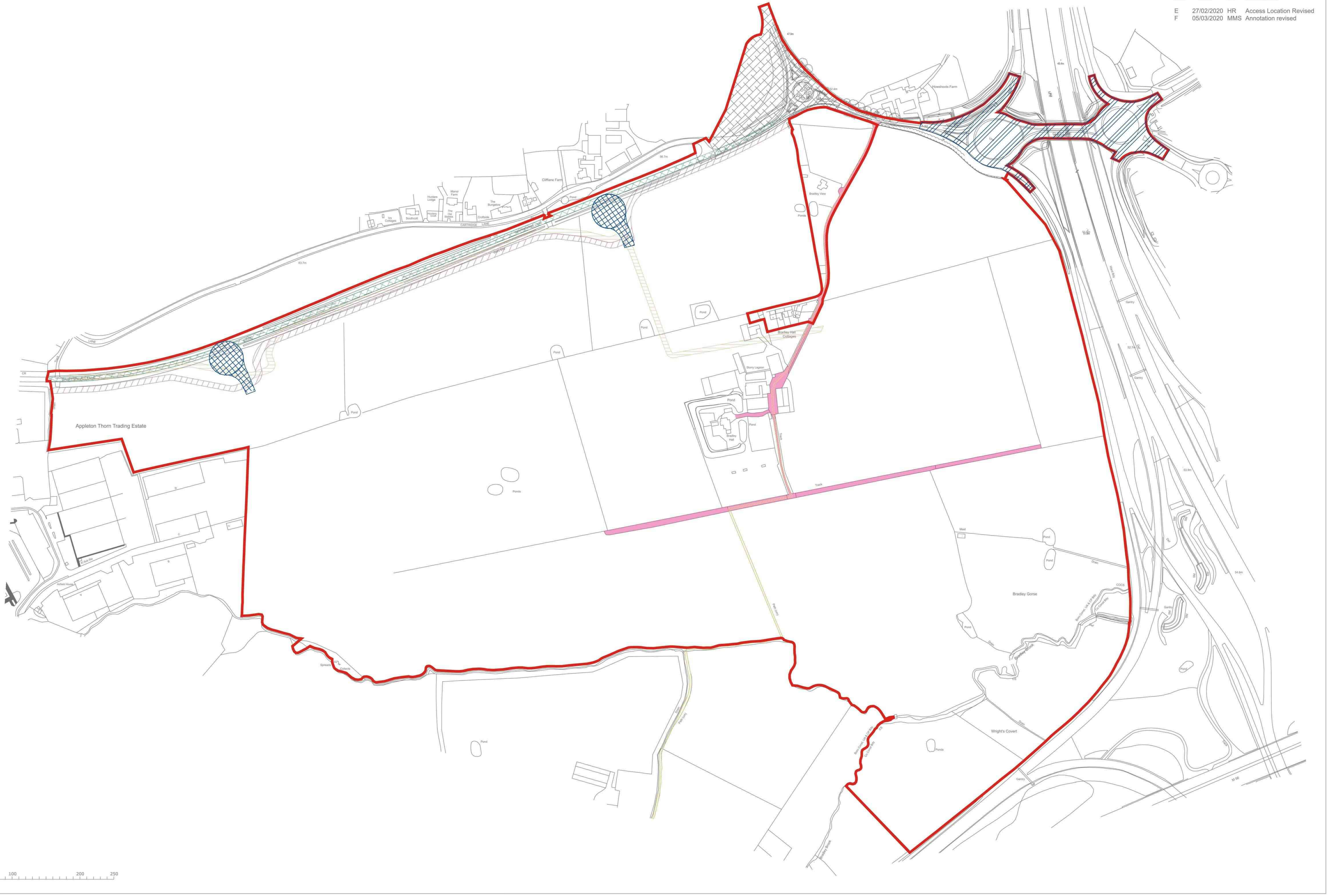
Six 56 Warrington
Illustrative Masterplan

CDE Reference

Drawn:	mjm	Drawing Status:	Preliminary
Team:	MMS	CAD Reference:	16-184-F013-001
Scale:	1:2500 @ A1	Date:	09/2018

Project No:	Dwg No:	Rev:
16-184-F013	001	Z

Rev	Date	By	Description
E	27/02/2020	HR	Access Location Revised
F	05/03/2020	MMS	Annotation revised



	Planning Boundary		**Existing Access road/track**		**Diverted PRoW**		**25m Safeguarded Area** (for potential highway improvements / road widening)		**Highways England/ Highway improvements.**
	Access to the Site		**Existing PRoW**		**Proposed Cycle Way** (3.5m wide shared footway/cycleway - details to be agreed)		**Highway improvements including realignment of roundabout**		

Langtree

PANATTONI

SGP
Architects + Masterplanners

Waterfront House
2a Smith Way
Grove Park
Enderby
Leicester LE19 1SX
t: +44 (0)116 247 0557
www.stephengeorge.co.uk

Six 56, Warrington

Access and Circulation Parameters Plan

CDE Reference

Drawn: HR
Team: MMS
Scale: 1:2500 @ A1

Drawing Status: Planning
CAD Reference: 16-184-P113
Date: 02/20

Project No:	Dwg No:	Rev:
16-184	P113	F

Appendix D



SA564 A50 Cliff Lane Grappenhall Lane – Roundabout Provisions and Upgrade for Six:56 Development

STAGE 1 ROAD SAFETY AUDIT

Transport & Operations
Traffic Management, Road Safety &
Highway Adoptions
New Town House
Buttermarket Street
Warrington
WA1 2NH

WARRINGTON
Borough Council

CONTENTS PAGE

A50 CLIFF LANE & GRAPPENHALL LANE

STAGE 1 ROAD SAFETY AUDIT

1.0 INTRODUCTION

1.1 This report results from a Stage 1 Road Safety Audit carried out by Warrington Borough Council on A50 Cliff Lane and Grappenhall Lane. It was at the request of Frederick Frempong on behalf of Curtins, Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG. The Road Safety Audit was carried out during October 2019.

1.2 The Road Safety Audit Team consisted of:

Jamie Fisher MIHE – Principal Highway Engineer

David Wainwright I.Eng, MICE, FIHE – Principal Highway Engineer

1.3 There were no previous reports to assess as part of this report making.

1.4 The Road Safety Audit comprised an examination of the documents provided by [officer and position] listed below:-

Drawing Number	Title
64076-CUR-00-XX-DR-TP-75001 PO2	Eastern Access Roundabout
64076-CUR-00-XX-DR-TP-75002 PO2	Western Access Roundabout
64076-CUR-00-XX-DR-TP-75011 PO4	Proposed Improvements

1.5 The Road Safety Audit was undertaken in accordance with the Road Safety Audit Brief provided by Frederick Frempong. The Audit Team visited together the site on the 15th October 2019. The road surface was damp with dry spots and the weather was partially cloudy with sporadic light rain and air temperature of approx. 10^{o}C.

1.6 The scheme involved the provision of three new roundabouts and improvement works on Jct 20a of the M6 with Cliff Lane.

1.7 The Terms of Reference of the Audit are as described in GG119.

1.8 The Road Safety Audit team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.

1.9 All comments and recommendations are referenced to the detailed drawings and the locations have been indicated on the plan shown on Appendix C of the report.

1.10 There were 13 recorded personal injury collisions in the vicinity of the proposed scheme. The date range queried included the 36 month period between 1 June 2016 and 31 May 2019.

- 1.10.1 Jct20a east roundabout had 6 slight injury collisions.
- 1.10.2 Jct20a west roundabout had 2 serious and 1 slight injury collisions.
- 1.10.3 Grappenhall Lane / Cliff Lane roundabout had 1 slight injury collision.

1.10.4 Grappenhall Lane / Cartridge Lane jct had 1 slight injury collision
1.10.5 Grappenhall Lane route (away from junctions) had 1 serious and 3 slight injury collisions.

1.11 Issue & Revision Record

Revision	Date	Originator	Checker	Version
A	5th November 2019	JFisher	DWainwright	Draft
B	28th November 2019	JFisher	DWainwright	Final

2.0 THERE ARE NO PREVIOUS ROAD SAFETY AUDITS TO ASSESS AS PART OF THIS PROVISION

3.0 ITEMS RAISED AT THIS STAGE 1 ROAD SAFETY AUDIT

3.1 PROBLEM

Location: Northbound Exit Slip from Motorway

Summary: Nearside kerb alignment forces lane one drivers towards lane two on entering the roundabout increasing risk of side impact injury collision occurrence.

The kerb alignment to the nearside linking northbound motorway off slip with roundabout deflects lane one traffic towards lane two during the transition from slip road to roundabout. This increases the risk of side impact injury collision occurrence between vehicles in lanes one and two.

RECOMMENDATION

It is recommended that the nearside kerb alignment be straightened between off slip and roundabout.

3.2 PROBLEM

Location: M6 Northbound Exit Slip

Summary: Carriageway widening of the exit slip will result in a steeper embankment due to level difference increasing the risk of vehicles rolling if they leave the carriageway resulting in injury collision occurrence.

There is a substantial reduced verge level to the nearside of the northbound exit slip. On widening the carriageway in that direction the level difference will be sufficient that if a vehicles were to leave the carriageway at that point it would likely roll or turn over increasing the risk of occupant injury occurrence.

RECOMMENDATION

It is recommended that a road restrain barrier with P4 or similar terminal be introduced to the nearside carriageway to restrict vehicles from leaving the carriageway.

3.3 PROBLEM

Location: Westbound Crossing Motorway Overbridge

Summary: Widening the offside of the westbound carriageway increases HGV and LGV encroachment into the centre lane when intending to turn right for the M6 northbound entry slip increasing the risk of side impact injury collision occurrence.

The plan shows an intention to widen the westbound over bridge approach to the signals to the offside. This tightens the radius of the bend increasing the risk of heavy and long goods vehicles encroaching into the centre lane whilst attempting to turn right to access the M6 northbound. This increases the risk of side impact collision with vehicles in the centre lane travelling parallel with the goods vehicles.

RECOMMENDATION

It is recommended that the lane width and radius be managed to ensure that heavy and long goods vehicles can be tracked negotiating the 3rd lane provision at this point.

3.4 PROBLEM

Location: Motorway Interchange West Side Gyratory Lanes

Summary: Poor lane manoeuvring increases the risk of injury collisions through late lane crossing as a result of road markings and non-spiral marking provision.

Vehicles crossing the motorway overbridge westbound and around the west side gyratory in the third lane expecting to turn onto the M6 northbound entry slip road will find themselves in the wrong lane further around the gyratory. This will require late lane changing to access desired gyratory exit increasing the risk of injuries through side impact collisions with vehicles driving in parallel.

RECOMMENDATION

It is recommended that spiral markings be provisioned to force the proposed 3rd lane at the westbound signals into the 2nd (middle) lane of the west side gyratory allowing direct access onto the M6 northbound entry slip.

3.5 PROBLEM

Location: Westbound Motorway Overbridge

Summary: Existing drainage cannot support the volume of surface water presently, with additional carriageway width due to proposed widening an increase in standing water will result in vehicle skidding leading to rear end shunt or side impact injury collision occurrence.

At present there is evidence of standing water on the westbound overbridge prior to the traffic signals. This is at a point where it is intended to widen the carriageway to three lanes increasing the carriageway surface area by approximately a third. The existing gully system will not cope with the additional volume of surface water resulting in substantial ponding that increases the risk of skidding particularly during freezing conditions. This may result in rear end shunt or side impact injury collision occurrence.

RECOMMENDATION

It is recommended that the gully system be surveyed and adapted to ensure required flow volumes are met and that surface cross fall clears surface water to gully provisions.

3.6 PROBLEM

Location: A50 Eastbound Approach to West Side Gyratory of Interchange

Summary: There is very little proposed deflection for the offside eastbound approach lane to the west side gyratory. Existing wheel rutting on the central island adjacent to this entry point shows HGV and LGV poor alignment that may increase due to the lack of deflection in the westbound approach 2nd lane.

Lane 2 of the proposed westbound entry to the interchange does not have sufficient deflection to steer entering traffic into the offside lane on the gyratory. Instead it point traffic toward the central kerb reducing HGV and LGH manoeuvrability of the gyratory lane without trailer rear wheels mounting the roundabout island. This may cause wheel damage and draw mud onto the carriageway where the units re-join the carriageway. Both situations increase the risk of loss of control through skidding and/or tyre damage resulting in injury occurrence.

RECOMMENDATION

It is recommended that a greater deflection of the approach lane be introduced to ensure that vehicles are aligned with the gyratory lanes as designated and not the island kerb line.

3.7 PROBLEM

Location: Eastbound Motorway Overbridge

Summary: Eastbound approach to the east side gyratory and preceding carriageway alignments do not align vehicles travelling from the A50 Cliff Lane (south east and services) to Cherry Lane (heading to Lymm). This requires a lane change on the eastbound overbridge increasing the risk of side impact injury collision occurrence.

In the absence of spiral carriageway markings drivers are required to change lanes more regularly to enter and/or exit the gyratory provision. This is particularly evident for vehicles being driven from the A50 (services end) to B5158 Cherry Lane exit. This direction of travel requires a lane change for every vehicle on the eastbound overbridge which increases the risk of side impact injury collision occurrence.

RECOMMENDATION

It is recommended that spiral markings about the west side carriageway of the gyratory to allow all vehicle journeys through the junction to be undertaken without the need for lane changes.

3.8 PROBLEM

Location: Westbound Overbridge to Motorway Northbound Entry

Summary: Proposed markings invite vehicles (particularly HGVs and LGVs) heading to M6 Northbound entry from services or Lymm areas to do so via lane one which cuts across the lane two at the westbound exit towards Grappenhall increasing the risk of side impact injury collisions.

On leaving the A50 Cliff Lane in lane two it is possible to reach the M6 northbound entry slip without changing lanes with the present layout. Given that lane two traffic has the ability to exit westbound being the junction before the M6 northbound entry slip this introduces a conflict point where vehicles cross each other increasing the risk of side impact injury collision occurrence.

RECOMMENDATION

It is recommended that spiral markings as noted in problem 3.7 be considered for the west side of the gyratory.

3.9 PROBLEM

Location: North West of Gyratory between Eastbound Entry and Northbound Motorway Entry Slip

Summary: Pinch-point in lane one of the gyratory exiting onto M6 Northbound entry slip increases the risk of HGV and LGV encroachment into lane two resulting in a side impact injury collision occurrence.

The widening of the North West radius of the gyratory introduces a pinch point where HGVs and LGVs are required to negotiation a right then left turn to gain access to the M6 Northbound entry slip. The start of slip lane one has been measured at 4m, being an approximation given scale of 1:1000 provisioned. The turning requirement of HGVs and LGVs along with this narrow lane one increases the risk of side impact injury collision occurrence due to encroachment into lane two.

RECOMMENDATION

It is recommended that the gyratory radius kerb alignment be straightened into the Northbound entry slip to remove oversteer for larger vehicles.

3.10 PROBLEM

Location: Motorway Interchange Eastbound Approach to Proposed Traffic Signals

Summary: Alignment of the eastbound lane one approach to proposed traffic signals has a tight left-hand then right-hand radius that increases the risk of side impact injury collision occurrence.

The tight left and right carriageway alignment for vehicles in lane one heading East on approach to the proposed traffic signals increases the risk of vehicle encroachment into lane two (particularly for HGVs and LGVs). This has the potential of introducing side impact injury collision with vehicles travelling in parallel.

RECOMMENDATION

It is recommended that the nearside hatching taper is increased to ease the deflection and if possible the kerb radius be extended to extents that the preceding bridge structure will allow.

3.11 PROBLEM

Location: Motorway Interchange East Side of Gyratory

Summary: Reduction in island to provide three lanes reducing the turning radius for HGVs and LGVs in lane three. Increases the risk of side impact injury collision occurrence or loss of control or overturn of high sided vehicles resulting in driver injury.

It is proposed to reduce the size of the roundabout island by means of adjusting the East side radius to allow the provision of three running lanes. These alterations in addition to lane width reductions increases the risk of HGVs and LGVs being unable to keep within their designated lane when in the third lane. This increases the risk of lane two overrun resulting in side impact injury collision with vehicles travelling parallel in lane two. Alternatively this could result in trailer overrun of kerbs onto island increasing the risk of high sided vehicle overturns resulting in driver injury collision occurrence.

RECOMMENDATION

It is recommended that swept paths be undertaken with HGVs and LGVs negotiating the gyratory within lane three to ensure proper alignment is achievable and make onsite adjustment where necessary if encroachment does occur.

3.12 PROBLEM

Location: Motorway Interchange South Side of Gyratory

Summary: Proposed crossing and footpath link places pedestrians in front of the vehicle restraint system in an area substandard in width, does not protect pedestrians and has infrastructure to prevent pedestrian access along the route introducing risk of pedestrian injury through vehicle strikes.

The proposed south side footpath link has several obstacles to overcome before it can be provisioned. The vehicle restraint system on the East side of the motorway restricts a safe standard of footpath width (1.8m) if not relocated. If the footpath is placed behind the restraint system there will need to be at least one break in the barrier and its working width will need to be taken into account. There is signage blocking across the footpath route as approaching the bridge structure and anti-pedestrian paving across the full span of the bridge verge.

RECOMMENDATION

It is recommended that if a pedestrian route is to be provisioned a method of protection from vehicle strikes whilst maintaining a 1.8m wide and where necessary a vehicle restraint system.

3.13 PROBLEM

Location: Motorway Interchange Northbound Exit Slip Road

Summary: The nearside kerb adjustment to introduce a third lane has a sharp deflection at its tie in point with the existing kerb. This may cause tyre damage resulting in loss of control injury collision occurrence.

The point of the proposed tie in to the existing / remaining kerb at the start of the flare to introduce an additional lane on approach to the roundabout deflects sharply which will introduce a tyre hazard increasing the risk of loss of control injury collision occurrence.

RECOMMENDATION

It is recommended that the tie in point of the kerbs is eased to remove any sharp deviations in alignment.

3.14 PROBLEM

Location: Motorway Interchange Northbound Exit Slip Road

Summary: The nearside verge has a reduced forward visibility due to existing foliage which increases the risk of rear end shunt injury collision occurrence.

The provision of this additional lane takes the live carriageway closer to the tree and hedge line which reduces the forward visibility of queuing lengths and of the nearside primary signal head. This has the potential to cause rear end shunts due to late braking.

RECOMMENDATION

It is recommended that the tree and hedge line be cut back to allow ample forward visibility of the carriageway and nearside primary signal head ahead.

3.15 PROBLEM

Location: A50 Cliff Lane West of Motorway Interchange

Summary: South side footpath termination at first access road west of the interchange leave pedestrians stranded to continue journey in live carriageway increasing risk of being struck by passing vehicle resulting in injury.

The proposed footpath on the south side of the carriageway heading away from the interchange in a westerly direction terminates abruptly at the first side road with no continuity of route. This leave pedestrians stranded or requiring to walk in the live carriageway increasing the risk of being struck by passing vehicles resulting in potentially serious injury occurrence.

RECOMMENDATION

It is recommended that the footpath continue to connect to an existing provision or identify further phased work that provides a satisfactory termination point.

3.16 PROBLEM

Location: A50 Cliff Lane West of Motorway Interchange.

Summary: The hatching to the west side of the splitter island is parallel to the single lane return point which may be used as over run to pass slower vehicles to the nearside increasing risk of head on injury collision occurrence.

The hatched area of carriageway that supports the splitter island for the interchange is alongside the point where vehicles are expected to return to single file. Utilisation of the hatching for overtaking purposes may result in a head on injury collision occurrence with opposing traffic.

RECOMMENDATION

It is recommended that the solid white line system be extended to including the splitter island hatching.

3.17 PROBLEM

Location: New Roundabout Cliff Lane jct Grappenhall Lane

Summary: On southbound and eastbound exit lanes a merge of slower moving traffic into lane 2 will increase risk of side impact and rear end shunts

When exiting a junction with two lanes merging into one it is driver expectation and usual practice for lane two to merge into lane one as this in general terms brings faster moving vehicles into a slower platoon of vehicles. The intention, as shown on plan, to merge slower moving vehicles into a faster moving platoon of vehicles increases the risk of rear end shunt or avoidance manoeuvre injury collision occurrence.

RECOMMENDATION

It is recommended that the merge be reversed to bring lane two traffic into lane one.

3.18 PROBLEM

Location: New Roundabout Cliff Lane jct Grappenhall Lane

Summary: Proposed design of signals on the specified roundabout will lead to lane blockages and unexpected braking at short distance resulting in rear end shunt injury collision occurrences. This layout is also likely to cause frustration and risk taking manoeuvres due to carriageway blockage.

The proposal for traffic signals on the gyratory of the proposed roundabout will result in vehicle blocking the preceding junction entry lanes and will lead to unexpected braking rear end shunt injury collision occurrence. It is estimated that the reasoning for this layout is due to peak traffic flows, however; it is also estimated modelling has not taken into account the backing up and blockage of the preceding entry lanes.

It is noted through experience that if a roundabout requires signals it becomes less efficient than a standard signalled junction.

RECOMMENDATION

It is recommended that a three arm traffic signaled junction be introduced instead of a roundabout.

3.19 PROBLEM

Location: Eastern Access Roundabout

Summary: Segregate surface standard detail (incorrectly entitled 'Shared Surface Detail'), is the wrong format of tactile paving provision for a shared surface; being misleading this may lead to pedestrian / cyclists conflicts or avoidance manoeuvre injury collision occurrence.

The standard detail for end of proposed pedestrian / cycle route is incorrect for a shared surface. This specific detail is for segregated surfaces which will require a 3.5m side provision with a white delineator line along the whole length. This may lead to confusion between cyclists and pedestrians resulting injury collision occurrence.

RECOMMENDATION

It is recommended that a decision be made as to the type of 'off road' provision is to be included for pedestrians and cyclists along this route and use the corresponding tactile paving to support it.

If segregated 'ladders and trams' tactile paving should be used to align with the separation line along the route.

If shared then 'ladder' tactile paving only should be used at the start / end of a route.

3.20 PROBLEM

Location: Both Western and Eastern Access Roundabouts

Summary: substantial level difference between existing road and surrounding land may affect carriageway surface water runoff which may lead to vehicle loss of control injury collision occurrence through skidding.

The surrounding ground levels increase the risk of excessive surface water runoff from both the carriageway itself and from surrounding field drainage. This increases the risk of vehicle skidding on surface water (particularly during freezing conditions) resulting in loss of control injury collision occurrence.

RECOMMENDATION

It is recommended that in addition to the carriageway surface water drainage calculations the surrounding ground levels and field water runoff be considered and managed appropriately to ensure no encroachment onto the highway.

3.21 PROBLEM

Location: Throughout Scheme

Summary: Right turn carriageway marking miss use on roundabout approaches may lead to confusion resulting in drivers (particularly foreign) turning right at the end of the splitter islands resulting in head on injury collision occurrence.

Right turn carriageway markings on approach to roundabouts may be mistaken by driver (particularly foreign) to indicate a right turn at the give way markings against the flow of traffic on or joining the gyratory lane of the roundabouts. This increases the risk of head on injury collision occurrence.

RECOMMENDATION

It is recommended that straight ahead carriageway markings be provisioned instead of the proposed right turn on all roundabout approaches.

3.22 PROBLEM

Location: Both Eastern and Western Access Roundabouts

Summary: Redundant carriageway width increases risk of detritus build up and creates wide carriageway exit lane to cross for vehicles turning right at all junction accesses.

There are areas within the gyratory adjacent to each splitter island that will be redundant and detritus will build up over time increasing the risk for motorcycles if this spills back into their alignment whilst leaning into the bend leading to loss of control injury collision occurrence. The present proposals also increase the area of carriageway required to cross for vehicles turning right which increases the risk of side impact injury collision occurrences.

RECOMMENDATION

It is recommended that the refuge islands are extended further into the roundabout to remove the first lane from the gyratory carriageway and projecting the give way markings further into the junction.

4.0 AUDIT TEAM STATEMENT

We certify that this Road Safety Audit has been carried out in accordance with GG119.

ROAD SAFETY AUDIT TEAM LEADER

Jamie Fisher MIHE — Signed:
Principal Highway Engineer — Date: 29th November 2019

ROAD SAFETY AUDIT TEAM MEMBER

Dave Wainwright I.Eng, MICE, FIHE — Signed: D.A.W. Wainwright
Principal Highway Engineer — Date: 29th November 2019

APPENDIX A – PHOTOGRAPHS

Photograph 1 – Problem 3.1

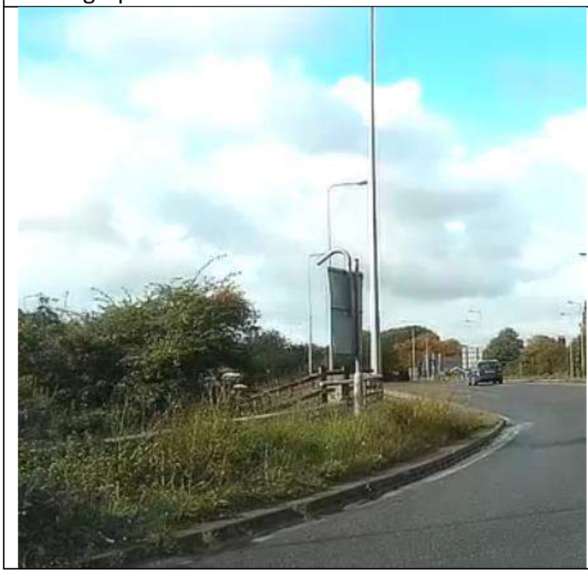
Photograph 2 – Problem 3.2

Photograph 3 – Problem 3.3

Photograph 4 – Problem 3.4

Photograph 5 – Problem 3.5

Photograph 6 – Problem 3.6

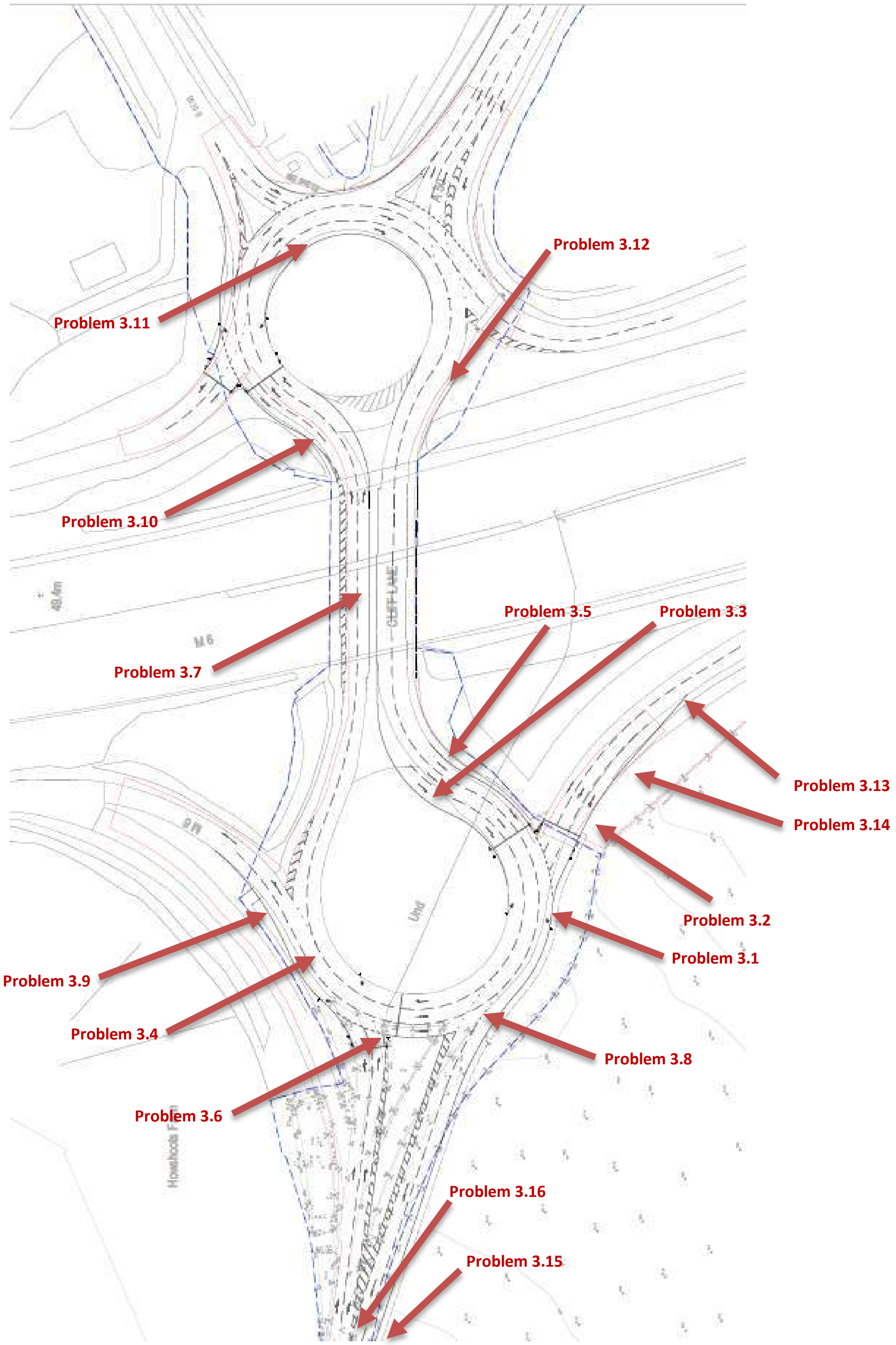
Photograph 7 – Problem 3.7	Photograph 8 – Problem 3.9
	
Photograph 9 – Problem 3.10	Photograph 10 – Problem 3.11
	
Photograph 11 – Problem 3.12	Photograph 12 – Problem 3.13 & 3.14
	

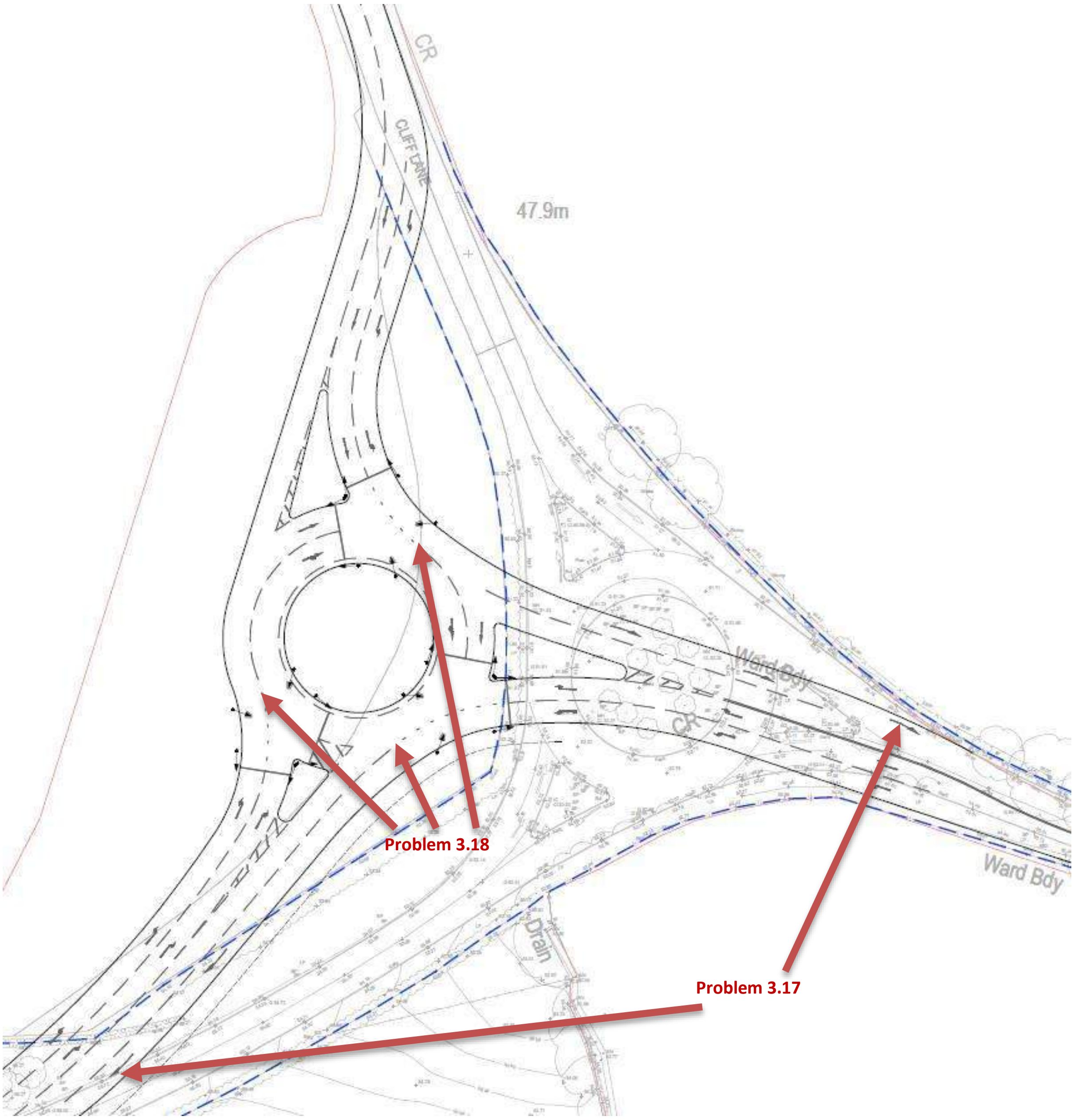
Photograph 13 – Problem 3.15	Photograph 14 – Problem 3.16
	

APPENDIX B – ITEMS OUTSIDE THE SCOPE OF THE AUDIT

There are no items identified outside of the audit scope.

APPENDIX C – PROBLEM LOCATION PLAN

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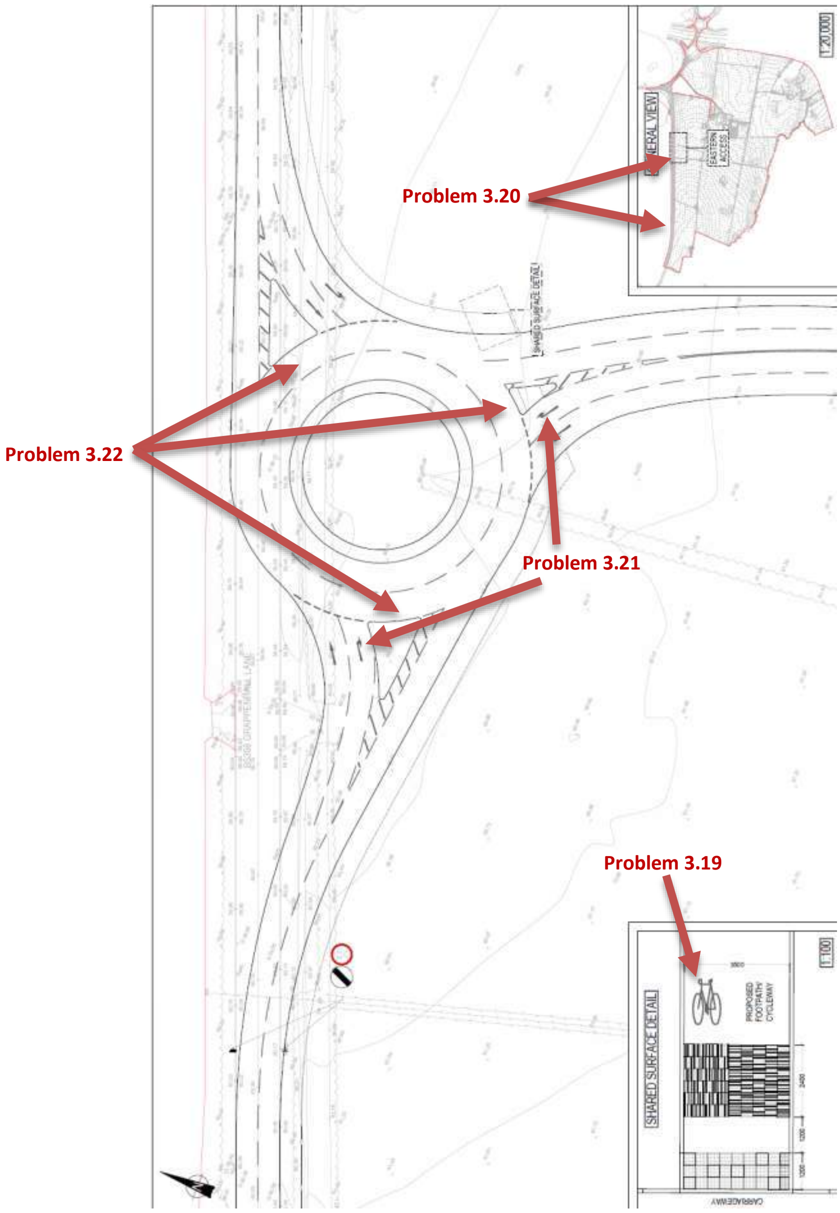
CR
Problem 3.18
Ward Bdy
Drain
Problem 3.17


Problem 3.20
Problem 3.22
Problem 3.21
Problem 3.19
SHARED SURFACE DETAIL
PROPOSED FOOTPATH/ CYCLEWAY
CARRIAGEWAY

WARRINGTON
Borough Council

APPENDIX B: DESIGNERS RESPONSE

Auditors: Jamie Fisher (Team Leader) and David Wainwright (Team Member).

Date Response Completed: 16/03/19

Scheme: Roundabout Provisions and Upgrade for 6:56 Development

This response is to a Stage 1 Road Safety Audit to the design standard detailed within HD19/15 of Volume 5, Section 2, Part 2, of the Design Manual for Roads and Bridges, as detailed by Highways England.

Problem no. in safety audit report	Problem accepted (yes/no)	Recommended measure accepted (yes/no)	Alternative measure (detail description)
3.1	Yes	Yes	To be amended at the detailed design stage.
3.2	Yes	Yes	To be amended at detailed design stage.
3.3	Yes	Yes	To be amended at detailed design stage.
3.4	Yes	Yes	Layout has been updated to incorporate the recommendation (Rev. V06).
3.5	Yes	Yes	Drainage study to be provided at detailed design stage.
3.6	Yes	Yes	To be amended at detailed design stage.
3.7	No	No	The problem describes the longest possible trip along the roundabouts, crossing five arms. Nonetheless, a vehicle would only need to change lane a single time along the northern bridge, with circa 150m to perform the manoeuvre. Notwithstanding, layout has been updated.

3.8	Yes	Yes	Layout has been updated to incorporate the recommendation (Rev. V06).
3.9	Yes	Yes	Amendment appears feasible although swept path analysis software has demonstrated that two 16.5m articulated HGVs can circulate parallel to each other. Nonetheless, the road alignment can be reviewed at detailed stage.
3.10	Yes	Yes	Amendment appears feasible, although it might require extensive changes to the roundabout due to height differences and the proximity to the retaining wall. To be designed at detailed stage.
3.11	No	No	Swept path analysis software was used during the design process to ensure that large articulated HGV vehicles do not encroach onto contiguous lane.
3.12	Yes	Yes	To be amended at detailed design stage.
3.13	Yes	Yes	Kerb alignment to be refined at detailed design stage.
3.14	Yes	Yes	Note to prune / trim vegetation to be added at detailed design stage.
3.15	No	No	The footpath will be linked to the internal footpath within the proposed development. Drawing has been updated to reflect this.
3.16	Yes	Yes	Solid white line has been added to the latest design (V06).
3.17	Yes	Yes	Merge to be reversed at detailed design stage.
3.18	No	No	Modelling has been undertaken to consider blocking back and this does not show a significant concern. On this basis, there are no grounds to suggest that there are safety issues associated with the proposed signalised roundabout.
3.19	Yes	Yes	The text contained a typo, as the surface is to be segregated. On this basis, the note accompanying the detail requires amending, but it is considered that the detail is correct.
3.20	Yes	Yes	Drainage study to be provided at detailed design stage. Recommendation of field water to be considered on the drainage study.

3.21	Yes	Yes	Arrows have been updated and can be reviewed again at the detailed design stage.
3.22	No	No	The additional width is required to accommodate large articulated HGVs. It is considered that the build up of detritus is unlikely given that the roundabout is located at the entrance to a large industrial state. Furthermore, this is considered a maintenance issue.

Principal Engineer’s / Audit Project Sponsor’s Statement:

Road Safety Audit for Hartwood Roundabout between A6 and the M61 Link, Chorley, Lancashire

I certify that I have considered the items raised in the Stage 1 Road Safety Audit Report and I am content to accept all of its recommendations except for the ones listed above. I have stated my reasons for not accepting them and I seek the Chief Engineer’s endorsement of my proposals.

.... Date..

Principal Engineer

Chief Engineer’s / Director’s Decision:

I accept these proposals by the Principal Engineer.

.... Date...

Chief Engineer

Appendix E

Calculation Reference: AUDIT-148301-170802-0831

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : F - WAREHOUSING (COMMERCIAL)

VEHICLES

Selected regions and areas:

04	EAST ANGLIA		
	SF	SUFFOLK	2 days
05	EAST MIDLANDS		
	DS	DERBYSHIRE	1 days
	LN	LINCOLNSHIRE	1 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	2 days
09	NORTH		
	CB	CUMBRIA	1 days
	TV	TEES VALLEY	1 days
	TW	TYNE & WEAR	1 days

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

Secondary Filtering selection:

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

Parameter: Gross floor area
Actual Range: 634 to 31000 (units: sqm)
Range Selected by User: 634 to 80066 (units: sqm)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/09 to 19/09/16

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

Selected survey days:

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

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

Selected survey types:

Manual count	9 days
Directional ATC Count	0 days

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

Selected Locations:

Edge of Town Centre	2
Suburban Area (PPS6 Out of Centre)	2
Edge of Town	5

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

Selected Location Sub Categories:

Industrial Zone	6
Commercial Zone	2
No Sub Category	1

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

Secondary Filtering selection:

Use Class:

B8	8 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5,000	2 days
5,001 to 10,000	2 days
10,001 to 15,000	2 days
25,001 to 50,000	3 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	3 days
25,001 to 50,000	1 days
125,001 to 250,000	1 days
250,001 to 500,000	2 days
500,001 or More	2 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	5 days
1.1 to 1.5	4 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	9 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	9 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 CB-02-F-01 DOMINO'S PIZZA CUMBRIA
COWPER ROAD
GILWILLY IND. ESTATE
PENRITH
Edge of Town
Industrial Zone
Total Gross floor area: 2950 sqm
Survey date: TUESDAY 10/06/14 Survey Type: MANUAL

2 DS-02-F-01 ARMADILLO S. STORAGE DERBYSHIRE
FORRESTERS BUSINESS P..
SINFIN LANE
DERBY
Edge of Town Centre
Commercial Zone
Total Gross floor area: 1900 sqm
Survey date: TUESDAY 05/07/11 Survey Type: MANUAL

3 LN-02-F-01 BOOK SERVICE LINCOLNSHIRE
TRENT ROAD

GRANTHAM
Edge of Town
No Sub Category
Total Gross floor area: 32300 sqm
Survey date: MONDAY 29/11/10 Survey Type: MANUAL

4 SF-02-F-02 WAREHOUSING SUFFOLK
WALTON ROAD

FELIXSTOWE
Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 22270 sqm
Survey date: THURSDAY 11/07/13 Survey Type: MANUAL

5 SF-02-F-03 ROAD HAULAGE SUFFOLK
CENTRAL AVENUE
WARREN HEATH
IPSWICH
Edge of Town
Industrial Zone
Total Gross floor area: 4700 sqm
Survey date: FRIDAY 18/09/15 Survey Type: MANUAL

6 TV-02-F-03 ELECTRICAL COMPONENTS TEES VALLEY
UNIT 8,NAVIGATOR COURT

STOCKTON-ON-TEES
Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 634 sqm
Survey date: TUESDAY 28/06/11 Survey Type: MANUAL

7 TW-02-F-01 ASDA DISTRIBUTION CENTRE TYNE & WEAR
MANDARIN WAY
PATTISON IND. ESTATE
WASHINGTON
Edge of Town
Industrial Zone
Total Gross floor area: 31000 sqm
Survey date: FRIDAY 13/11/15 Survey Type: MANUAL

8 WM-02-F-01 LEGETT LOGIS. WEST MIDLANDS
SAMPSON ROAD NORTH

BIRMINGHAM
Edge of Town Centre
Industrial Zone
Total Gross floor area: 4000 sqm
Survey date: WEDNESDAY 17/06/09 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

9 WM-02-F-02 LOGISTICS FIRM WEST MIDLANDS
SOVEREIGN ROAD
KINGS NORTON
BIRMINGHAM
Edge of Town
Commercial Zone
Total Gross floor area: 3625 sqm
Survey date: MONDAY 09/11/15 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	2	12123	0.029	2	12123	0.037	2	12123	0.066
06:00 - 07:00	2	12123	0.070	2	12123	0.062	2	12123	0.132
07:00 - 08:00	9	11199	0.076	9	11199	0.028	9	11199	0.104
08:00 - 09:00	9	**11199**	**0.107**	9	11199	0.053	9	11199	0.160
09:00 - 10:00	9	11199	0.066	9	11199	0.045	9	11199	0.111
10:00 - 11:00	9	11199	0.065	9	11199	0.063	9	11199	0.128
11:00 - 12:00	9	11199	0.053	9	11199	0.050	9	11199	0.103
12:00 - 13:00	9	11199	0.064	9	11199	0.055	9	11199	0.119
13:00 - 14:00	9	11199	0.102	9	11199	0.063	9	**11199**	**0.165**
14:00 - 15:00	9	11199	0.059	9	11199	0.079	9	11199	0.138
15:00 - 16:00	9	11199	0.054	9	11199	0.069	9	11199	0.123
16:00 - 17:00	9	11199	0.038	9	11199	0.076	9	11199	0.114
17:00 - 18:00	9	11199	0.032	9	**11199**	**0.090**	9	11199	0.122
18:00 - 19:00	9	11199	0.026	9	11199	0.055	9	11199	0.081
19:00 - 20:00	2	12123	0.058	2	12123	0.054	2	12123	0.112
20:00 - 21:00	2	12123	0.025	2	12123	0.045	2	12123	0.070
21:00 - 22:00	1	22270	0.031	1	22270	0.018	1	22270	0.049
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.955			0.942			1.897

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

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

Parameter summary

Trip rate parameter range selected: 634 - 31000 (units: sqm)
Survey date date range: 01/01/09 - 19/09/16
Number of weekdays (Monday-Friday): 9
Number of Saturdays: 0
Number of Sundays: 0
Surveys automatically removed from selection: 0
Surveys manually removed from selection: 0

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

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
TAXIS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	2	12123	0.000	2	12123	0.000	2	12123	0.000
06:00 - 07:00	2	12123	0.000	2	12123	0.000	2	12123	0.000
07:00 - 08:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
08:00 - 09:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
09:00 - 10:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
10:00 - 11:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
11:00 - 12:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
12:00 - 13:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
13:00 - 14:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
14:00 - 15:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
15:00 - 16:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
16:00 - 17:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
17:00 - 18:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
18:00 - 19:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
19:00 - 20:00	2	12123	0.000	2	12123	0.000	2	12123	0.000
20:00 - 21:00	2	12123	0.000	2	12123	0.000	2	12123	0.000
21:00 - 22:00	1	22270	0.000	1	22270	0.000	1	22270	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.000			0.000			0.000

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

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

Parameter summary

Trip rate parameter range selected:	634 - 31000 (units: sqm)
Survey date date range:	01/01/09 - 19/09/16
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
OGVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	2	12123	0.012	2	12123	0.037	2	12123	0.049
06:00 - 07:00	2	12123	0.033	2	**12123**	**0.058**	2	**12123**	**0.091**
07:00 - 08:00	9	11199	0.025	9	11199	0.020	9	11199	0.045
08:00 - 09:00	9	11199	0.032	9	11199	0.026	9	11199	0.058
09:00 - 10:00	9	11199	0.033	9	11199	0.027	9	11199	0.060
10:00 - 11:00	9	11199	0.038	9	11199	0.037	9	11199	0.075
11:00 - 12:00	9	11199	0.025	9	11199	0.022	9	11199	0.047
12:00 - 13:00	9	11199	0.030	9	11199	0.020	9	11199	0.050
13:00 - 14:00	9	**11199**	**0.041**	9	11199	0.025	9	11199	0.066
14:00 - 15:00	9	11199	0.033	9	11199	0.020	9	11199	0.053
15:00 - 16:00	9	11199	0.035	9	11199	0.025	9	11199	0.060
16:00 - 17:00	9	11199	0.023	9	11199	0.025	9	11199	0.048
17:00 - 18:00	9	11199	0.017	9	11199	0.032	9	11199	0.049
18:00 - 19:00	9	11199	0.011	9	11199	0.019	9	11199	0.030
19:00 - 20:00	2	12123	0.016	2	12123	0.045	2	12123	0.061
20:00 - 21:00	2	12123	0.012	2	12123	0.037	2	12123	0.049
21:00 - 22:00	1	22270	0.027	1	22270	0.004	1	22270	0.031
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.443			0.479			0.922

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

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

Parameter summary

Trip rate parameter range selected:	634 - 31000 (units: sqm)
Survey date date range:	01/01/09 - 19/09/16
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
PSVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	2	12123	0.000	2	12123	0.000	2	12123	0.000
06:00 - 07:00	2	12123	0.000	2	12123	0.000	2	12123	0.000
07:00 - 08:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
08:00 - 09:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
09:00 - 10:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
10:00 - 11:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
11:00 - 12:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
12:00 - 13:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
13:00 - 14:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
14:00 - 15:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
15:00 - 16:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
16:00 - 17:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
17:00 - 18:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
18:00 - 19:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
19:00 - 20:00	2	12123	0.000	2	12123	0.000	2	12123	0.000
20:00 - 21:00	2	12123	0.000	2	12123	0.000	2	12123	0.000
21:00 - 22:00	1	22270	0.000	1	22270	0.000	1	22270	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.000			0.000			0.000

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

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

Parameter summary

Trip rate parameter range selected:	634 - 31000 (units: sqm)
Survey date date range:	01/01/09 - 19/09/16
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)

CYCLISTS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	2	12123	0.000	2	12123	0.000	2	12123	0.000
06:00 - 07:00	2	12123	0.004	2	12123	0.000	2	12123	0.004
07:00 - 08:00	9	11199	0.002	9	11199	0.000	9	11199	0.002
08:00 - 09:00	9	11199	0.005	9	11199	0.000	9	11199	0.005
09:00 - 10:00	9	11199	0.003	9	11199	0.000	9	11199	0.003
10:00 - 11:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
11:00 - 12:00	9	11199	0.000	9	11199	0.001	9	11199	0.001
12:00 - 13:00	9	11199	0.000	9	11199	0.000	9	11199	0.000
13:00 - 14:00	9	11199	0.005	9	11199	0.002	9	11199	0.007
14:00 - 15:00	9	11199	0.001	9	**11199**	**0.005**	9	11199	0.006
15:00 - 16:00	9	**11199**	**0.006**	9	11199	0.004	9	**11199**	**0.010**
16:00 - 17:00	9	11199	0.003	9	11199	0.002	9	11199	0.005
17:00 - 18:00	9	11199	0.001	9	11199	0.005	9	11199	0.006
18:00 - 19:00	9	11199	0.000	9	11199	0.004	9	11199	0.004
19:00 - 20:00	2	12123	0.000	2	12123	0.000	2	12123	0.000
20:00 - 21:00	2	12123	0.000	2	12123	0.000	2	12123	0.000
21:00 - 22:00	1	22270	0.000	1	22270	0.000	1	22270	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.030			0.023			0.053

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

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

Parameter summary

Trip rate parameter range selected:	634 - 31000 (units: sqm)
Survey date date range:	01/01/09 - 19/09/16
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

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

Appendix F

Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : EASTBOUND

Wednesday 11/07/2018	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	48	11	2	0	4	0	0	0	2	1	0	0	0	68
2	30	25	0	0	1	0	0	0	2	0	0	1	0	59
3	43	32	2	0	4	0	0	0	0	0	0	1	0	82
4	36	2	0	0	1	0	0	0	0	0	0	2	0	41
5	64	3	1	0	1	0	0	0	1	0	0	2	0	72
6	141	6	4	2	4	0	0	0	2	0	1	30	0	190
7	227	5	4	1	3	0	0	1	3	0	0	36	0	280
8	73	9	2	0	9	0	0	0	8	0	2	1	0	104
9	39	8	1	0	3	0	0	0	6	0	1	2	0	60
10	49	14	2	0	3	0	0	0	8	0	6	1	0	83
11	40	15	0	1	10	0	0	0	8	0	5	4	0	83
12	33	22	2	0	8	0	0	0	10	0	4	5	0	84
13	59	14	1	0	19	0	0	0	3	0	2	3	0	101
14	95	23	4	1	13	0	1	0	3	0	1	5	0	146
15	271	13	1	0	13	0	0	0	3	0	0	2	0	303
16	143	10	0	0	9	0	0	0	1	0	0	2	0	165
17	142	22	0	0	13	0	0	1	1	0	0	2	0	181
18	91	13	0	0	18	0	0	0	4	0	2	5	0	133
19	81	16	1	0	12	0	0	0	4	0	1	2	0	117
20	54	8	1	0	12	0	0	0	4	0	2	3	0	84
21	35	9	1	0	20	0	0	0	3	0	2	0	0	70
22	61	2	0	0	7	0	0	0	4	0	0	1	0	75
23	156	7	0	1	3	0	0	0	5	0	1	3	0	176
24	39	15	1	0	8	0	0	0	4	0	1	0	0	68

7-19	1116	179	14	2	130	0	1	1	59	0	24	34	0	1560
6-22	1493	203	20	3	172	0	1	2	73	0	28	74	0	2069
6-24	1688	225	21	4	183	0	1	2	82	0	30	77	0	2313
0-24	2050	304	30	6	198	0	1	2	89	1	31	113	0	2825

Direction : WESTBOUND

Wednesday 11/07/2018	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	23	24	2	0	5	0	0	0	2	0	0	0	0	56
2	32	11	0	0	4	0	0	0	0	0	1	1	0	49
3	30	3	1	0	3	0	0	0	3	0	0	1	0	41
4	39	2	0	0	5	0	0	0	1	0	1	1	0	49
5	100	7	1	0	2	0	0	0	2	0	0	0	0	112
6	349	8	0	1	5	0	0	1	0	0	1	1	0	366
7	98	7	1	1	7	0	0	0	2	0	1	2	0	119
8	99	6	2	0	5	0	0	0	2	0	3	0	0	117
9	117	14	2	0	9	0	0	0	2	0	7	1	0	152
10	80	14	3	0	10	0	0	0	3	0	6	4	0	120
11	51	26	3	1	8	0	0	0	6	0	4	7	0	106
12	72	20	0	0	8	0	0	0	8	0	2	4	0	114
13	59	14	0	0	5	0	0	0	8	0	5	8	0	99
14	156	14	1	0	6	0	0	0	9	0	5	45	0	236
15	49	7	2	0	11	0	0	0	3	0	0	38	0	110
16	30	16	3	0	15	0	0	0	4	0	2	22	0	92
17	40	17	0	0	15	0	0	0	3	0	2	7	0	84
18	53	15	0	0	9	0	0	0	3	0	2	8	0	90
19	79	17	1	0	29	0	0	0	5	0	2	4	0	137
20	47	6	0	0	11	0	0	0	1	0	2	1	0	68
21	42	6	0	0	13	0	0	0	4	0	2	1	0	68
22	142	16	0	0	5	0	0	0	1	0	1	3	0	168
23	51	16	0	0	10	0	0	0	5	0	1	1	0	84
24	31	22	0	0	7	0	0	0	2	0	0	1	0	63

7-19	885	180	17	1	130	0	0	0	56	0	40	148	0	1457
6-22	1214	215	18	2	166	0	0	0	64	0	46	155	0	1880
6-24	1296	253	18	2	183	0	0	0	71	0	47	157	0	2027
0-24	1869	308	22	3	207	0	0	1	79	0	50	161	0	2700

Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : EASTBOUND

Wednesday 11/07/2018	VEHICLE SPEED (MPH)											TOTAL
Hr Ending	0-10	11-20	21-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-120	
1	0	29	38	1	0	0	0	0	0	0	0	0	68
2	0	24	35	0	0	0	0	0	0	0	0	0	59
3	0	51	31	0	0	0	0	0	0	0	0	0	82
4	0	4	32	5	0	0	0	0	0	0	0	0	41
5	0	8	62	2	0	0	0	0	0	0	0	0	72
6	0	48	140	1	0	0	0	1	0	0	0	0	190
7	2	112	164	2	0	0	0	0	0	0	0	0	280
8	0	37	66	1	0	0	0	0	0	0	0	0	104
9	0	15	43	1	1	0	0	0	0	0	0	0	60
10	0	20	62	1	0	0	0	0	0	0	0	0	83
11	0	25	51	6	1	0	0	0	0	0	0	0	83
12	0	32	50	2	0	0	0	0	0	0	0	0	84
13	0	44	55	2	0	0	0	0	0	0	0	0	101
14	0	51	94	1	0	0	0	0	0	0	0	0	146
15	4	85	200	13	1	0	0	0	0	0	0	0	303
16	1	38	111	13	2	0	0	0	0	0	0	0	165
17	5	46	120	10	0	0	0	0	0	0	0	0	181
18	0	42	86	4	1	0	0	0	0	0	0	0	133
19	0	31	75	9	1	1	0	0	0	0	0	0	117
20	0	27	52	5	0	0	0	0	0	0	0	0	84
21	0	34	35	0	0	1	0	0	0	0	0	0	70
22	0	19	54	1	1	0	0	0	0	0	0	0	75
23	1	55	118	2	0	0	0	0	0	0	0	0	176
24	0	28	39	1	0	0	0	0	0	0	0	0	68

7-19	10	466	1013	63	7	1	0	0	0	0	0	0	1560
6-22	12	658	1318	71	8	2	0	0	0	0	0	0	2069
6-24	13	741	1475	74	8	2	0	0	0	0	0	0	2313
0-24	13	905	1813	83	8	2	0	1	0	0	0	0	2825

Direction : WESTBOUND

Wednesday 11/07/2018	VEHICLE SPEED (MPH)											TOTAL
Hr Ending	0-10	11-20	21-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-120	
1	0	27	29	0	0	0	0	0	0	0	0	0	56
2	0	25	23	1	0	0	0	0	0	0	0	0	49
3	0	21	19	1	0	0	0	0	0	0	0	0	41
4	0	15	30	2	0	0	0	0	2	0	0	0	49
5	0	8	96	6	0	0	0	0	2	0	0	0	112
6	1	29	319	15	2	0	0	0	0	0	0	0	366
7	0	23	90	6	0	0	0	0	0	0	0	0	119
8	0	31	76	10	0	0	0	0	0	0	0	0	117
9	0	30	110	11	0	1	0	0	0	0	0	0	152
10	0	37	80	2	1	0	0	0	0	0	0	0	120
11	0	27	73	6	0	0	0	0	0	0	0	0	106
12	0	20	92	2	0	0	0	0	0	0	0	0	114
13	0	19	74	6	0	0	0	0	0	0	0	0	99
14	0	46	182	7	0	1	0	0	0	0	0	0	236
15	0	27	82	1	0	0	0	0	0	0	0	0	110
16	0	23	68	1	0	0	0	0	0	0	0	0	92
17	0	19	64	1	0	0	0	0	0	0	0	0	84
18	0	18	69	3	0	0	0	0	0	0	0	0	90
19	0	35	96	6	0	0	0	0	0	0	0	0	137
20	0	20	46	1	1	0	0	0	0	0	0	0	68
21	0	19	48	1	0	0	0	0	0	0	0	0	68
22	1	30	123	13	1	0	0	0	0	0	0	0	168
23	0	33	51	0	0	0	0	0	0	0	0	0	84
24	0	22	40	1	0	0	0	0	0	0	0	0	63

7-19	0	332	1066	56	1	2	0	0	0	0	0	0	1457
6-22	1	424	1373	77	3	2	0	0	0	0	0	0	1880
6-24	1	479	1464	78	3	2	0	0	0	0	0	0	2027
0-24	2	604	1980	103	5	2	0	0	4	0	0	0	2700

Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : EASTBOUND

Thursday 12/07/2018	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	38	13	0	1	6	0	0	0	4	0	2	1	0	65
2	28	19	0	0	2	0	0	0	3	0	0	1	0	53
3	29	35	1	0	3	0	0	0	2	0	0	1	0	71
4	32	5	0	0	2	0	0	0	2	0	0	1	0	42
5	52	6	0	0	1	0	0	0	2	0	0	2	0	63
6	107	2	1	0	1	0	0	0	4	0	4	22	0	141
7	225	8	1	0	4	0	0	2	3	0	1	34	0	278
8	59	7	1	0	8	0	0	0	5	0	3	1	0	84
9	28	14	0	0	7	0	0	0	10	0	0	2	0	61
10	44	12	1	0	6	0	0	0	9	0	2	6	0	80
11	40	19	2	0	8	0	0	0	10	0	3	3	0	85
12	25	11	0	0	13	0	0	0	5	0	3	4	0	61
13	62	10	2	0	19	0	0	0	5	0	0	3	0	101
14	87	14	0	0	9	0	0	0	2	0	2	5	0	119
15	209	9	0	0	17	0	0	2	5	0	0	2	0	244
16	130	12	0	0	14	0	0	0	2	0	0	5	0	163
17	117	17	0	0	16	0	0	0	3	0	0	1	0	154
18	95	8	1	0	13	0	0	0	5	0	4	1	0	127
19	67	6	0	0	16	0	0	0	3	0	1	6	0	99
20	58	7	3	1	16	0	0	0	6	0	2	0	0	93
21	60	14	2	0	5	0	0	0	4	0	3	3	0	91
22	50	5	0	0	8	0	0	0	4	0	0	2	0	69
23	149	6	1	0	5	0	0	0	4	0	3	3	0	171
24	45	8	0	0	5	0	0	0	2	0	1	3	0	64
7-19	963	139	7	0	146	0	0	2	64	0	18	39	0	1378
6-22	1356	173	13	1	179	0	0	4	81	0	24	78	0	1909
6-24	1550	187	14	1	189	0	0	4	87	0	28	84	0	2144
0-24	1836	267	16	2	204	0	0	4	104	0	34	112	0	2579

Direction : WESTBOUND

Thursday 12/07/2018	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	16	22	0	0	7	0	0	0	3	0	0	0	0	48
2	21	8	2	0	8	0	0	0	0	0	1	0	0	40
3	30	2	0	0	6	0	0	0	1	0	0	1	0	40
4	32	2	0	0	10	0	0	0	0	0	1	1	0	46
5	83	5	0	0	5	0	0	0	0	0	2	1	0	96
6	334	2	0	0	4	0	0	1	6	0	0	1	0	348
7	96	8	3	0	7	0	0	0	6	0	4	0	0	124
8	90	6	0	0	7	0	0	0	5	0	4	3	0	115
9	92	7	1	0	6	0	0	0	4	0	3	4	0	117
10	74	17	1	0	6	0	0	0	4	0	5	2	0	109
11	60	18	2	0	10	0	0	0	5	0	5	5	0	105
12	45	9	0	0	6	0	0	0	3	0	5	4	0	72
13	54	13	1	0	13	0	0	0	5	0	5	5	0	96
14	193	12	2	0	7	0	0	1	10	0	2	42	0	269
15	68	13	4	0	6	0	0	1	3	0	1	43	0	139
16	36	14	0	0	10	0	0	0	3	0	1	23	0	87
17	35	16	1	0	19	0	0	0	5	0	3	9	0	88
18	56	14	1	0	11	0	0	0	0	0	1	1	0	84
19	68	3	0	0	20	0	0	0	1	0	3	10	0	105
20	61	8	0	0	15	0	0	0	1	0	1	0	0	86
21	53	12	0	0	13	0	0	0	5	0	2	2	0	87
22	149	12	1	0	6	0	0	0	1	0	1	3	0	173
23	50	19	0	0	9	0	0	0	2	0	3	3	0	86
24	31	22	0	0	12	0	0	0	1	0	2	1	0	69
7-19	871	142	13	0	121	0	0	2	48	0	38	151	0	1386
6-22	1230	182	17	0	162	0	0	2	61	0	46	156	0	1856
6-24	1311	223	17	0	183	0	0	2	64	0	51	160	0	2011
0-24	1827	264	19	0	223	0	0	3	74	0	55	164	0	2629

Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : EASTBOUND

Thursday 12/07/2018	VEHICLE SPEED (MPH)												TOTAL
Hr Ending	0-10	11-20	21-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-120	
1	0	31	33	1	0	0	0	0	0	0	0	0	65
2	0	15	36	2	0	0	0	0	0	0	0	0	53
3	1	50	20	0	0	0	0	0	0	0	0	0	71
4	0	8	30	4	0	0	0	0	0	0	0	0	42
5	0	14	45	4	0	0	0	0	0	0	0	0	63
6	0	44	94	3	0	0	0	0	0	0	0	0	141
7	3	94	178	3	0	0	0	0	0	0	0	0	278
8	0	23	60	1	0	0	0	0	0	0	0	0	84
9	0	26	35	0	0	0	0	0	0	0	0	0	61
10	0	30	48	2	0	0	0	0	0	0	0	0	80
11	2	31	52	0	0	0	0	0	0	0	0	0	85
12	0	19	41	1	0	0	0	0	0	0	0	0	61
13	0	50	49	1	1	0	0	0	0	0	0	0	101
14	1	35	77	6	0	0	0	0	0	0	0	0	119
15	14	94	129	6	1	0	0	0	0	0	0	0	244
16	0	28	126	6	2	1	0	0	0	0	0	0	163
17	1	37	107	9	0	0	0	0	0	0	0	0	154
18	6	59	61	1	0	0	0	0	0	0	0	0	127
19	0	25	69	4	1	0	0	0	0	0	0	0	99
20	0	32	56	3	2	0	0	0	0	0	0	0	93
21	1	33	54	3	0	0	0	0	0	0	0	0	91
22	0	26	42	1	0	0	0	0	0	0	0	0	69
23	4	55	111	1	0	0	0	0	0	0	0	0	171
24	0	29	31	4	0	0	0	0	0	0	0	0	64

7-19	24	457	854	37	5	1	0	0	0	0	0	0	1378
6-22	28	642	1184	47	7	1	0	0	0	0	0	0	1909
6-24	32	726	1326	52	7	1	0	0	0	0	0	0	2144
0-24	33	888	1584	66	7	1	0	0	0	0	0	0	2579

Direction : WESTBOUND

Thursday 12/07/2018	VEHICLE SPEED (MPH)												TOTAL
Hr Ending	0-10	11-20	21-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-120	
1	0	22	26	0	0	0	0	0	0	0	0	0	48
2	0	13	27	0	0	0	0	0	0	0	0	0	40
3	0	17	22	0	1	0	0	0	0	0	0	0	40
4	0	15	28	3	0	0	0	0	0	0	0	0	46
5	0	12	79	5	0	0	0	0	0	0	0	0	96
6	0	22	308	17	1	0	0	0	0	0	0	0	348
7	1	25	93	2	0	0	0	0	0	3	0	0	124
8	0	27	83	5	0	0	0	0	0	0	0	0	115
9	0	25	88	3	1	0	0	0	0	0	0	0	117
10	0	37	68	4	0	0	0	0	0	0	0	0	109
11	0	28	75	2	0	0	0	0	0	0	0	0	105
12	0	17	53	2	0	0	0	0	0	0	0	0	72
13	0	24	71	1	0	0	0	0	0	0	0	0	96
14	0	44	218	7	0	0	0	0	0	0	0	0	269
15	0	31	106	2	0	0	0	0	0	0	0	0	139
16	0	20	67	0	0	0	0	0	0	0	0	0	87
17	0	25	61	2	0	0	0	0	0	0	0	0	88
18	15	51	15	3	0	0	0	0	0	0	0	0	84
19	0	24	75	6	0	0	0	0	0	0	0	0	105
20	0	12	70	4	0	0	0	0	0	0	0	0	86
21	0	32	54	1	0	0	0	0	0	0	0	0	87
22	0	35	138	0	0	0	0	0	0	0	0	0	173
23	0	25	60	1	0	0	0	0	0	0	0	0	86
24	0	35	34	0	0	0	0	0	0	0	0	0	69

7-19	15	353	980	37	1	0	0	0	0	0	0	0	1386
6-22	16	457	1335	44	1	0	0	0	0	3	0	0	1856
6-24	16	517	1429	45	1	0	0	0	0	3	0	0	2011
0-24	16	618	1919	70	3	0	0	0	0	3	0	0	2629

Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : EASTBOUND

Friday 13/07/2018	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	31	15	0	0	9	0	0	0	3	0	2	0	0	60
2	22	21	0	0	1	0	0	0	4	0	0	2	0	50
3	22	39	0	0	5	0	0	0	2	0	0	1	0	69
4	42	4	0	0	2	0	0	0	0	0	0	1	0	49
5	52	3	0	0	0	0	0	0	0	0	1	2	0	58
6	142	7	2	0	1	0	0	0	3	0	0	11	0	166
7	243	8	4	0	0	0	0	1	1	0	0	19	0	276
8	61	4	2	0	3	0	0	0	7	0	2	2	0	81
9	49	9	0	0	6	0	0	0	5	0	1	0	0	70
10	58	14	1	0	4	0	0	0	11	0	1	3	0	92
11	49	9	1	0	5	0	0	0	8	0	3	3	0	78
12	54	15	0	0	10	0	0	0	5	0	2	5	0	91
13	94	13	3	0	13	0	0	1	1	0	2	5	0	132
14	101	15	2	0	11	0	0	0	5	0	0	5	0	139
15	192	14	0	0	13	0	0	0	3	0	1	1	0	224
16	131	16	2	0	18	0	0	0	3	0	1	1	0	172
17	114	11	0	0	7	0	0	0	1	0	0	0	0	133
18	83	13	0	0	6	0	0	0	8	0	0	4	0	114
19	87	9	0	0	9	0	0	0	5	0	0	3	0	113
20	66	5	0	0	15	0	0	0	6	0	2	3	0	97
21	37	14	0	0	14	0	0	0	3	0	1	0	0	69
22	44	5	0	0	3	0	0	0	1	0	0	1	0	54
23	156	13	0	0	4	0	0	0	4	0	3	3	0	183
24	40	10	0	0	5	0	0	0	1	0	1	1	0	58

7-19	1073	142	11	0	105	0	0	1	62	0	13	32	0	1439
6-22	1463	174	15	0	137	0	0	2	73	0	16	55	0	1935
6-24	1659	197	15	0	146	0	0	2	78	0	20	59	0	2176
0-24	1970	286	17	0	164	0	0	2	90	0	23	76	0	2628

Direction : WESTBOUND

Friday 13/07/2018	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	20	21	1	0	9	0	0	0	3	0	1	1	0	56
2	18	10	0	0	3	0	0	0	3	0	1	1	0	36
3	22	6	0	1	5	0	0	0	2	0	3	1	0	40
4	35	2	0	0	10	0	0	0	2	0	1	1	0	51
5	90	2	1	0	8	0	0	0	1	0	2	1	0	105
6	325	4	0	0	2	0	0	0	1	0	1	1	0	334
7	130	4	0	0	4	0	0	0	2	0	0	0	0	140
8	93	7	2	0	4	0	0	0	1	0	5	1	0	113
9	92	10	1	0	7	0	0	0	6	0	6	4	0	126
10	73	10	1	0	8	0	0	0	6	0	2	4	0	104
11	63	12	0	0	6	0	0	0	4	0	1	5	0	91
12	60	10	2	0	1	0	0	0	4	0	2	4	0	83
13	68	14	0	0	10	0	0	0	6	0	1	5	0	104
14	170	16	2	0	8	0	0	1	9	0	0	44	0	250
15	43	16	2	0	8	0	0	0	5	0	2	44	0	120
16	29	12	3	1	11	0	0	0	6	0	2	19	0	83
17	28	17	1	0	9	0	0	0	3	0	0	12	0	70
18	37	12	2	0	10	0	0	0	0	0	0	5	0	66
19	71	12	1	0	20	0	0	0	3	0	2	6	0	115
20	38	8	0	0	14	0	0	0	1	0	1	1	0	63
21	44	13	0	0	14	0	0	0	2	0	1	0	0	74
22	145	8	0	0	8	0	0	0	1	0	0	6	0	168
23	47	12	0	0	6	0	0	0	3	0	1	1	0	70
24	19	21	1	0	16	0	0	0	1	0	1	0	0	59

7-19	827	148	17	1	102	0	0	1	53	0	23	153	0	1325
6-22	1184	181	17	1	142	0	0	1	59	0	25	160	0	1770
6-24	1250	214	18	1	164	0	0	1	63	0	27	161	0	1899
0-24	1760	259	20	2	201	0	0	1	75	0	36	167	0	2521

Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : EASTBOUND

Friday 13/07/2018	VEHICLE SPEED (MPH)												TOTAL
Hr Ending	0-10	11-20	21-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-120	
1	0	30	30	0	0	0	0	0	0	0	0	0	60
2	0	18	32	0	0	0	0	0	0	0	0	0	50
3	0	39	28	1	1	0	0	0	0	0	0	0	69
4	0	12	35	2	0	0	0	0	0	0	0	0	49
5	0	9	42	6	1	0	0	0	0	0	0	0	58
6	0	47	115	3	1	0	0	0	0	0	0	0	166
7	9	98	166	3	0	0	0	0	0	0	0	0	276
8	0	32	45	4	0	0	0	0	0	0	0	0	81
9	0	30	39	1	0	0	0	0	0	0	0	0	70
10	0	38	48	3	1	0	0	0	0	0	0	2	92
11	0	30	46	2	0	0	0	0	0	0	0	0	78
12	0	35	54	2	0	0	0	0	0	0	0	0	91
13	0	29	100	3	0	0	0	0	0	0	0	0	132
14	0	29	101	9	0	0	0	0	0	0	0	0	139
15	0	45	163	14	2	0	0	0	0	0	0	0	224
16	0	30	125	11	6	0	0	0	0	0	0	0	172
17	0	24	104	5	0	0	0	0	0	0	0	0	133
18	0	21	89	4	0	0	0	0	0	0	0	0	114
19	0	22	77	12	2	0	0	0	0	0	0	0	113
20	1	34	60	2	0	0	0	0	0	0	0	0	97
21	1	25	40	3	0	0	0	0	0	0	0	0	69
22	0	8	41	3	2	0	0	0	0	0	0	0	54
23	5	81	89	8	0	0	0	0	0	0	0	0	183
24	0	24	30	4	0	0	0	0	0	0	0	0	58
7-19	0	365	991	70	11	0	0	0	0	0	0	2	1439
6-22	11	530	1298	81	13	0	0	0	0	0	0	2	1935
6-24	16	635	1417	93	13	0	0	0	0	0	0	2	2176
0-24	16	790	1699	105	16	0	0	0	0	0	0	2	2628

Direction : WESTBOUND

Friday 13/07/2018	VEHICLE SPEED (MPH)												TOTAL
Hr Ending	0-10	11-20	21-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-120	
1	0	32	24	0	0	0	0	0	0	0	0	0	56
2	0	15	21	0	0	0	0	0	0	0	0	0	36
3	0	12	27	1	0	0	0	0	0	0	0	0	40
4	0	12	37	2	0	0	0	0	0	0	0	0	51
5	0	16	83	6	0	0	0	0	0	0	0	0	105
6	0	37	290	7	0	0	0	0	0	0	0	0	334
7	0	23	108	9	0	0	0	0	0	0	0	0	140
8	0	31	77	5	0	0	0	0	0	0	0	0	113
9	0	38	85	3	0	0	0	0	0	0	0	0	126
10	0	29	74	1	0	0	0	0	0	0	0	0	104
11	0	30	60	1	0	0	0	0	0	0	0	0	91
12	0	12	67	3	1	0	0	0	0	0	0	0	83
13	0	26	74	4	0	0	0	0	0	0	0	0	104
14	0	33	210	7	0	0	0	0	0	0	0	0	250
15	0	20	98	2	0	0	0	0	0	0	0	0	120
16	0	21	62	0	0	0	0	0	0	0	0	0	83
17	0	18	51	1	0	0	0	0	0	0	0	0	70
18	0	21	44	1	0	0	0	0	0	0	0	0	66
19	0	33	79	3	0	0	0	0	0	0	0	0	115
20	0	16	45	1	1	0	0	0	0	0	0	0	63
21	0	20	53	1	0	0	0	0	0	0	0	0	74
22	0	25	130	10	2	1	0	0	0	0	0	0	168
23	4	17	48	0	1	0	0	0	0	0	0	0	70
24	0	31	27	0	1	0	0	0	0	0	0	0	59
7-19	0	312	981	31	1	0	0	0	0	0	0	0	1325
6-22	0	396	1317	52	4	1	0	0	0	0	0	0	1770
6-24	4	444	1392	52	6	1	0	0	0	0	0	0	1899
0-24	4	568	1874	68	6	1	0	0	0	0	0	0	2521

Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : EASTBOUND

Saturday 14/07/2018	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	27	13	0	0	7	0	0	0	5	0	0	0	0	52
2	16	22	0	0	0	0	0	0	2	0	2	1	0	43
3	33	38	0	0	4	0	0	0	0	0	1	0	0	76
4	20	2	0	0	1	0	0	0	0	0	0	0	0	23
5	42	2	0	0	1	0	0	0	1	0	0	1	0	47
6	55	6	0	0	0	0	0	0	0	0	3	8	0	72
7	146	5	0	0	4	0	0	0	2	0	0	9	0	166
8	26	8	1	0	4	0	0	0	0	0	1	0	0	40
9	20	5	1	0	14	0	0	0	1	0	0	0	0	41
10	20	7	0	0	2	0	0	0	1	0	1	1	0	32
11	65	8	1	0	2	0	0	0	0	0	0	2	0	78
12	26	8	0	0	0	0	1	0	0	0	1	0	0	36
13	52	3	0	0	4	0	0	0	0	0	0	0	0	59
14	33	2	0	0	5	0	0	0	0	0	0	0	0	40
15	31	2	0	0	5	0	0	0	0	0	0	1	0	39
16	36	4	0	0	4	0	0	0	0	0	0	0	0	44
17	9	1	0	0	9	0	0	0	0	0	0	0	0	19
18	19	5	0	0	7	0	0	0	0	0	0	1	0	32
19	13	6	0	0	3	0	0	0	0	0	0	0	0	22
20	8	4	0	0	4	0	0	0	3	0	0	0	0	19
21	6	2	0	0	8	0	0	0	1	0	0	0	0	17
22	10	3	0	0	5	0	0	0	1	0	0	0	0	19
23	5	4	0	0	3	0	0	0	1	0	0	1	0	14
24	8	4	0	0	4	0	0	0	2	0	0	1	0	19

7-19	350	59	3	0	59	0	1	0	2	0	3	5	0	482
6-22	520	73	3	0	80	0	1	0	9	0	3	14	0	703
6-24	533	81	3	0	87	0	1	0	12	0	3	16	0	736
0-24	726	164	3	0	100	0	1	0	20	0	9	26	0	1049

Direction : WESTBOUND

Saturday 14/07/2018	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	13	20	0	0	5	0	0	0	5	0	3	0	0	46
2	22	16	0	0	8	0	0	0	2	0	0	0	0	48
3	17	4	1	0	4	0	0	0	5	0	0	0	0	31
4	17	1	0	0	4	0	0	0	2	0	0	0	0	24
5	29	4	1	0	3	0	0	0	0	0	2	0	0	39
6	131	5	0	0	5	0	0	0	1	0	0	0	0	142
7	46	6	0	0	4	0	0	0	1	0	0	1	0	58
8	42	7	1	0	7	0	0	0	2	0	3	0	0	62
9	19	7	1	0	7	0	0	0	0	0	0	1	0	35
10	14	5	1	0	5	0	0	0	3	0	0	1	0	29
11	22	5	0	0	3	0	0	0	0	0	0	2	0	32
12	13	7	0	0	7	0	0	0	0	0	0	4	0	31
13	8	3	0	0	6	0	0	0	2	0	0	13	0	32
14	12	2	3	0	2	0	0	0	0	0	0	18	0	37
15	6	3	0	0	3	0	0	0	0	0	0	11	0	23
16	15	5	0	0	6	0	0	0	0	0	0	5	0	31
17	12	3	0	0	7	0	0	0	1	0	0	3	0	26
18	40	1	0	0	9	0	0	0	1	0	0	1	0	52
19	15	5	0	0	10	0	0	0	2	0	0	0	0	32
20	2	0	0	0	10	0	0	0	2	0	0	0	0	14
21	7	3	0	0	8	0	0	0	0	0	0	0	0	18
22	6	2	0	0	9	0	0	0	1	0	0	0	0	18
23	6	9	0	0	7	0	0	0	0	0	0	1	0	23
24	20	8	0	0	4	0	0	0	2	0	0	1	0	35

7-19	218	53	6	0	72	0	0	0	11	0	3	59	0	422
6-22	279	64	6	0	103	0	0	0	15	0	3	60	0	530
6-24	305	81	6	0	114	0	0	0	17	0	3	62	0	588
0-24	534	131	8	0	143	0	0	0	32	0	8	62	0	918

Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : EASTBOUND

Saturday 14/07/2018	VEHICLE SPEED (MPH)											TOTAL
Hr Ending	0-10	11-20	21-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-120	
1	0	27	24	1	0	0	0	0	0	0	0	0	52
2	0	18	24	1	0	0	0	0	0	0	0	0	43
3	1	37	36	2	0	0	0	0	0	0	0	0	76
4	0	4	19	0	0	0	0	0	0	0	0	0	23
5	0	9	37	1	0	0	0	0	0	0	0	0	47
6	0	9	58	5	0	0	0	0	0	0	0	0	72
7	0	25	132	8	1	0	0	0	0	0	0	0	166
8	0	10	29	1	0	0	0	0	0	0	0	0	40
9	0	16	22	3	0	0	0	0	0	0	0	0	41
10	0	8	24	0	0	0	0	0	0	0	0	0	32
11	0	12	62	2	2	0	0	0	0	0	0	0	78
12	0	4	31	1	0	0	0	0	0	0	0	0	36
13	1	13	42	3	0	0	0	0	0	0	0	0	59
14	0	10	29	1	0	0	0	0	0	0	0	0	40
15	0	8	25	5	1	0	0	0	0	0	0	0	39
16	0	6	29	9	0	0	0	0	0	0	0	0	44
17	0	4	14	1	0	0	0	0	0	0	0	0	19
18	0	3	26	3	0	0	0	0	0	0	0	0	32
19	0	2	19	1	0	0	0	0	0	0	0	0	22
20	0	6	13	0	0	0	0	0	0	0	0	0	19
21	1	10	6	0	0	0	0	0	0	0	0	0	17
22	0	8	9	2	0	0	0	0	0	0	0	0	19
23	0	5	5	4	0	0	0	0	0	0	0	0	14
24	0	9	10	0	0	0	0	0	0	0	0	0	19
7-19	1	96	352	30	3	0	0	0	0	0	0	0	482
6-22	2	145	512	40	4	0	0	0	0	0	0	0	703
6-24	2	159	527	44	4	0	0	0	0	0	0	0	736
0-24	3	263	725	54	4	0	0	0	0	0	0	0	1049

Direction : WESTBOUND

Saturday 14/07/2018	VEHICLE SPEED (MPH)											TOTAL
Hr Ending	0-10	11-20	21-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-120	
1	0	29	16	1	0	0	0	0	0	0	0	0	46
2	0	20	28	0	0	0	0	0	0	0	0	0	48
3	0	13	18	0	0	0	0	0	0	0	0	0	31
4	0	9	13	2	0	0	0	0	0	0	0	0	24
5	0	7	28	4	0	0	0	0	0	0	0	0	39
6	0	14	122	6	0	0	0	0	0	0	0	0	142
7	0	7	49	2	0	0	0	0	0	0	0	0	58
8	0	19	40	3	0	0	0	0	0	0	0	0	62
9	0	9	17	7	2	0	0	0	0	0	0	0	35
10	1	6	22	0	0	0	0	0	0	0	0	0	29
11	0	2	28	2	0	0	0	0	0	0	0	0	32
12	0	8	23	0	0	0	0	0	0	0	0	0	31
13	0	3	29	0	0	0	0	0	0	0	0	0	32
14	0	6	29	1	1	0	0	0	0	0	0	0	37
15	1	4	18	0	0	0	0	0	0	0	0	0	23
16	0	6	25	0	0	0	0	0	0	0	0	0	31
17	0	5	20	1	0	0	0	0	0	0	0	0	26
18	0	8	39	5	0	0	0	0	0	0	0	0	52
19	0	10	20	2	0	0	0	0	0	0	0	0	32
20	0	6	8	0	0	0	0	0	0	0	0	0	14
21	0	9	9	0	0	0	0	0	0	0	0	0	18
22	0	8	9	1	0	0	0	0	0	0	0	0	18
23	0	9	13	1	0	0	0	0	0	0	0	0	23
24	0	17	17	1	0	0	0	0	0	0	0	0	35
7-19	2	86	310	21	3	0	0	0	0	0	0	0	422
6-22	2	116	385	24	3	0	0	0	0	0	0	0	530
6-24	2	142	415	26	3	0	0	0	0	0	0	0	588
0-24	2	234	640	39	3	0	0	0	0	0	0	0	918

Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : EASTBOUND

Sunday 15/07/2018	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	8	3	0	0	3	0	0	0	4	0	0	0	0	18
2	13	4	1	0	3	0	0	0	4	0	0	0	0	25
3	48	16	0	0	3	0	0	0	5	0	0	0	0	72
4	11	0	0	0	1	0	0	0	3	0	0	0	0	15
5	1	0	1	0	0	0	0	0	1	0	0	0	0	3
6	8	0	0	0	0	0	0	0	1	0	0	0	0	9
7	35	3	0	0	1	0	0	0	0	0	1	1	0	41
8	8	1	0	0	2	0	0	0	0	0	0	0	0	11
9	4	1	0	0	1	0	0	0	0	0	0	0	0	6
10	5	0	0	0	4	0	0	0	0	0	0	0	0	9
11	12	0	0	0	4	0	0	0	3	0	0	0	0	19
12	21	1	0	0	5	0	0	0	0	0	1	0	0	28
13	10	0	0	0	14	0	0	0	0	0	0	0	0	24
14	11	0	0	0	3	0	0	0	1	0	0	0	0	15
15	12	3	0	0	5	0	0	0	1	0	0	1	0	22
16	18	5	0	0	10	0	0	0	1	0	1	0	0	35
17	9	0	0	0	14	0	0	0	0	0	0	0	0	23
18	88	4	0	0	12	0	0	0	0	0	1	1	0	106
19	23	3	0	0	9	0	0	0	2	0	0	0	0	37
20	20	3	1	0	14	0	0	0	1	0	1	0	0	40
21	7	1	0	0	11	0	0	0	3	0	2	0	0	24
22	21	0	0	0	6	0	0	0	4	0	1	2	0	34
23	18	6	0	0	2	0	0	0	3	0	1	1	0	31
24	18	7	0	0	6	0	0	0	7	0	1	2	0	41

7-19	221	18	0	0	83	0	0	0	8	0	3	2	0	335
6-22	304	25	1	0	115	0	0	0	16	0	8	5	0	474
6-24	340	38	1	0	123	0	0	0	26	0	10	8	0	546
0-24	429	61	3	0	133	0	0	0	44	0	10	8	0	688

Direction : WESTBOUND

Sunday 15/07/2018	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	14	12	0	0	3	0	0	0	0	0	0	0	0	29
2	11	0	0	0	0	0	0	0	0	0	0	0	0	11
3	8	0	0	0	3	0	0	0	0	0	0	0	0	11
4	5	0	0	0	0	0	0	0	0	0	0	0	0	5
5	7	0	0	0	3	0	0	0	0	0	0	0	0	10
6	16	0	0	0	2	0	0	0	0	0	0	0	0	18
7	85	2	0	0	2	0	0	0	0	0	0	1	0	90
8	10	2	1	0	0	0	0	0	0	0	0	0	0	13
9	17	0	0	0	1	0	0	0	0	0	0	0	0	18
10	5	1	0	0	6	0	0	0	0	0	1	0	0	13
11	5	4	0	0	6	0	0	0	2	0	0	0	0	17
12	35	1	0	0	8	0	0	0	0	0	0	0	0	44
13	6	0	1	0	5	0	0	0	0	0	0	0	0	12
14	9	1	0	0	5	0	0	0	2	0	0	0	0	17
15	11	1	0	0	6	0	0	0	0	0	2	1	0	21
16	18	4	0	0	7	0	0	0	0	0	0	0	0	29
17	31	5	0	0	3	0	0	0	0	0	0	0	0	39
18	93	4	0	0	6	0	0	0	0	0	2	1	0	106
19	49	3	0	0	9	0	0	0	0	0	3	0	0	64
20	41	0	0	0	6	0	0	0	0	0	0	0	0	47
21	28	1	0	0	8	0	0	0	2	0	0	0	0	39
22	16	16	0	0	10	0	0	0	0	0	1	1	0	44
23	16	10	0	0	3	0	0	0	0	0	3	3	0	35
24	16	22	2	0	10	0	0	0	1	0	1	0	0	52

7-19	289	26	2	0	62	0	0	0	4	0	8	2	0	393
6-22	459	45	2	0	88	0	0	0	6	0	9	4	0	613
6-24	491	77	4	0	101	0	0	0	7	0	13	7	0	700
0-24	552	89	4	0	112	0	0	0	7	0	13	7	0	784

Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : EASTBOUND

Sunday 15/07/2018	VEHICLE SPEED (MPH)												TOTAL
Hr Ending	0-10	11-20	21-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-120	
1	0	12	6	0	0	0	0	0	0	0	0	0	18
2	0	13	12	0	0	0	0	0	0	0	0	0	25
3	0	27	42	2	1	0	0	0	0	0	0	0	72
4	0	5	9	0	1	0	0	0	0	0	0	0	15
5	0	0	2	1	0	0	0	0	0	0	0	0	3
6	0	3	6	0	0	0	0	0	0	0	0	0	9
7	0	5	35	1	0	0	0	0	0	0	0	0	41
8	0	3	7	1	0	0	0	0	0	0	0	0	11
9	0	2	4	0	0	0	0	0	0	0	0	0	6
10	0	2	7	0	0	0	0	0	0	0	0	0	9
11	0	6	13	0	0	0	0	0	0	0	0	0	19
12	0	7	18	3	0	0	0	0	0	0	0	0	28
13	0	12	11	1	0	0	0	0	0	0	0	0	24
14	0	5	7	0	3	0	0	0	0	0	0	0	15
15	0	6	16	0	0	0	0	0	0	0	0	0	22
16	0	14	19	2	0	0	0	0	0	0	0	0	35
17	0	12	10	1	0	0	0	0	0	0	0	0	23
18	0	27	77	1	1	0	0	0	0	0	0	0	106
19	0	9	23	5	0	0	0	0	0	0	0	0	37
20	0	26	14	0	0	0	0	0	0	0	0	0	40
21	0	17	7	0	0	0	0	0	0	0	0	0	24
22	0	13	20	1	0	0	0	0	0	0	0	0	34
23	0	12	19	0	0	0	0	0	0	0	0	0	31
24	0	21	19	1	0	0	0	0	0	0	0	0	41
7-19	0	105	212	14	4	0	0	0	0	0	0	0	335
6-22	0	166	288	16	4	0	0	0	0	0	0	0	474
6-24	0	199	326	17	4	0	0	0	0	0	0	0	546
0-24	0	259	403	20	6	0	0	0	0	0	0	0	688

Direction : WESTBOUND

Sunday 15/07/2018	VEHICLE SPEED (MPH)												TOTAL
Hr Ending	0-10	11-20	21-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-120	
1	0	8	20	1	0	0	0	0	0	0	0	0	29
2	0	5	5	1	0	0	0	0	0	0	0	0	11
3	0	4	7	0	0	0	0	0	0	0	0	0	11
4	0	1	4	0	0	0	0	0	0	0	0	0	5
5	0	4	6	0	0	0	0	0	0	0	0	0	10
6	0	2	16	0	0	0	0	0	0	0	0	0	18
7	0	12	71	5	1	1	0	0	0	0	0	0	90
8	0	0	11	2	0	0	0	0	0	0	0	0	13
9	0	2	13	2	1	0	0	0	0	0	0	0	18
10	0	6	6	0	1	0	0	0	0	0	0	0	13
11	0	6	11	0	0	0	0	0	0	0	0	0	17
12	0	11	31	2	0	0	0	0	0	0	0	0	44
13	0	3	8	1	0	0	0	0	0	0	0	0	12
14	0	7	10	0	0	0	0	0	0	0	0	0	17
15	0	5	15	1	0	0	0	0	0	0	0	0	21
16	0	5	22	2	0	0	0	0	0	0	0	0	29
17	0	13	25	0	1	0	0	0	0	0	0	0	39
18	1	19	86	0	0	0	0	0	0	0	0	0	106
19	0	10	50	4	0	0	0	0	0	0	0	0	64
20	0	4	41	2	0	0	0	0	0	0	0	0	47
21	0	13	25	1	0	0	0	0	0	0	0	0	39
22	0	15	28	1	0	0	0	0	0	0	0	0	44
23	0	9	23	3	0	0	0	0	0	0	0	0	35
24	0	20	32	0	0	0	0	0	0	0	0	0	52
7-19	1	87	288	14	3	0	0	0	0	0	0	0	393
6-22	1	131	453	23	4	1	0	0	0	0	0	0	613
6-24	1	160	508	26	4	1	0	0	0	0	0	0	700
0-24	1	184	566	28	4	1	0	0	0	0	0	0	784

Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : EASTBOUND

Monday 16/07/2018	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	30	14	0	0	4	0	0	0	4	0	0	0	0	52
2	14	16	0	0	0	0	0	0	2	0	0	0	0	32
3	59	34	0	0	3	0	0	0	1	0	2	4	0	103
4	35	0	0	0	0	0	0	0	3	0	1	0	0	39
5	59	2	0	0	2	0	0	0	2	0	0	0	0	65
6	103	5	1	0	0	0	0	0	1	0	3	21	0	134
7	118	2	0	0	3	0	0	0	9	1	2	29	0	164
8	33	9	3	0	3	0	0	0	7	0	2	3	0	60
9	42	10	0	0	8	0	0	0	2	0	2	1	0	65
10	44	11	2	0	3	0	0	0	6	0	1	3	0	70
11	53	14	2	0	11	0	0	0	6	0	3	5	0	94
12	34	14	2	0	10	0	0	0	10	0	5	4	0	79
13	36	11	0	0	16	0	0	0	0	0	1	8	0	72
14	106	16	3	1	11	0	0	0	4	0	0	3	0	144
15	205	14	0	0	21	0	0	0	3	0	2	2	0	247
16	109	16	2	0	13	0	0	0	4	0	2	4	0	150
17	137	18	1	0	10	0	0	0	5	0	0	5	0	176
18	79	18	0	0	16	0	0	0	5	0	2	2	0	122
19	68	9	0	0	12	0	0	0	3	0	1	3	0	96
20	63	19	0	0	8	0	0	0	3	0	0	1	0	94
21	49	12	0	0	14	0	0	0	6	0	2	1	0	84
22	58	5	0	0	4	0	0	0	2	0	2	0	0	71
23	162	7	0	0	3	0	0	1	5	0	0	3	0	181
24	35	11	2	0	6	0	0	0	6	0	1	1	0	62

7-19	946	160	15	1	134	0	0	0	55	0	21	43	0	1375
6-22	1234	198	15	1	163	0	0	0	75	1	27	74	0	1788
6-24	1431	216	17	1	172	0	0	1	86	1	28	78	0	2031
0-24	1731	287	18	1	181	0	0	1	99	1	34	103	0	2456

Direction : WESTBOUND

Monday 16/07/2018	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	6	14	1	0	6	0	0	0	0	0	1	0	0	28
2	9	8	0	0	6	0	0	0	1	0	1	2	0	27
3	26	2	0	0	6	0	0	0	1	0	3	0	0	38
4	29	0	0	0	9	0	0	0	0	0	0	0	0	38
5	68	3	0	0	5	0	0	0	2	0	3	0	0	81
6	295	4	0	0	7	0	0	0	2	0	1	3	0	312
7	75	7	0	0	3	0	0	0	2	0	4	3	0	94
8	90	8	0	0	4	0	0	0	5	0	2	0	0	109
9	99	9	0	0	5	0	0	0	3	0	6	4	0	126
10	90	12	1	0	6	0	0	0	5	0	5	4	0	123
11	41	17	1	0	7	0	0	0	4	0	3	5	0	78
12	50	9	2	0	3	0	0	0	6	0	1	9	0	80
13	63	15	2	1	10	0	0	0	8	0	8	5	0	112
14	179	10	3	0	8	0	0	0	11	0	0	40	0	251
15	44	18	2	0	11	0	1	0	10	0	3	46	0	135
16	35	10	1	0	5	0	0	0	4	0	2	25	0	82
17	47	17	0	0	20	0	0	0	4	0	2	9	0	99
18	45	8	0	0	13	0	0	0	3	0	1	2	0	72
19	60	14	0	0	15	0	0	0	0	0	2	7	0	98
20	74	8	2	0	14	0	0	0	1	0	0	0	0	99
21	52	7	0	0	10	0	0	0	4	0	1	1	0	75
22	154	15	0	0	13	0	0	0	1	0	0	1	0	184
23	51	12	3	0	6	0	0	0	1	0	0	4	0	77
24	42	17	1	0	3	0	0	0	0	0	2	0	0	65

7-19	843	147	12	1	107	0	1	0	63	0	35	156	0	1365
6-22	1198	184	14	1	147	0	1	0	71	0	40	161	0	1817
6-24	1291	213	18	1	156	0	1	0	72	0	42	165	0	1959
0-24	1724	244	19	1	195	0	1	0	78	0	51	170	0	2483

Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : EASTBOUND

Monday 16/07/2018	VEHICLE SPEED (MPH)												TOTAL
Hr Ending	0-10	11-20	21-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-120	
1	0	27	23	2	0	0	0	0	0	0	0	0	52
2	0	10	20	2	0	0	0	0	0	0	0	0	32
3	0	33	68	2	0	0	0	0	0	0	0	0	103
4	0	6	30	3	0	0	0	0	0	0	0	0	39
5	0	13	50	2	0	0	0	0	0	0	0	0	65
6	1	37	94	2	0	0	0	0	0	0	0	0	134
7	0	41	120	3	0	0	0	0	0	0	0	0	164
8	0	21	38	1	0	0	0	0	0	0	0	0	60
9	0	34	28	3	0	0	0	0	0	0	0	0	65
10	0	19	49	2	0	0	0	0	0	0	0	0	70
11	0	42	51	1	0	0	0	0	0	0	0	0	94
12	1	36	42	0	0	0	0	0	0	0	0	0	79
13	0	26	44	2	0	0	0	0	0	0	0	0	72
14	0	49	91	4	0	0	0	0	0	0	0	0	144
15	1	55	183	8	0	0	0	0	0	0	0	0	247
16	0	38	103	8	1	0	0	0	0	0	0	0	150
17	6	38	122	10	0	0	0	0	0	0	0	0	176
18	0	44	70	7	1	0	0	0	0	0	0	0	122
19	0	33	63	0	0	0	0	0	0	0	0	0	96
20	0	33	60	1	0	0	0	0	0	0	0	0	94
21	0	46	36	2	0	0	0	0	0	0	0	0	84
22	0	17	52	2	0	0	0	0	0	0	0	0	71
23	12	58	106	5	0	0	0	0	0	0	0	0	181
24	0	35	26	1	0	0	0	0	0	0	0	0	62

7-19	8	435	884	46	2	0	0	0	0	0	0	0	1375
6-22	8	572	1152	54	2	0	0	0	0	0	0	0	1788
6-24	20	665	1284	60	2	0	0	0	0	0	0	0	2031
0-24	21	791	1569	73	2	0	0	0	0	0	0	0	2456

Direction : WESTBOUND

Monday 16/07/2018	VEHICLE SPEED (MPH)												TOTAL
Hr Ending	0-10	11-20	21-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-120	
1	0	12	15	1	0	0	0	0	0	0	0	0	28
2	0	11	15	1	0	0	0	0	0	0	0	0	27
3	0	17	21	0	0	0	0	0	0	0	0	0	38
4	0	9	27	2	0	0	0	0	0	0	0	0	38
5	0	15	63	3	0	0	0	0	0	0	0	0	81
6	1	21	274	14	2	0	0	0	0	0	0	0	312
7	0	16	68	9	1	0	0	0	0	0	0	0	94
8	0	21	82	6	0	0	0	0	0	0	0	0	109
9	0	29	92	5	0	0	0	0	0	0	0	0	126
10	0	35	84	4	0	0	0	0	0	0	0	0	123
11	0	23	52	3	0	0	0	0	0	0	0	0	78
12	0	22	57	1	0	0	0	0	0	0	0	0	80
13	0	25	86	1	0	0	0	0	0	0	0	0	112
14	0	35	214	2	0	0	0	0	0	0	0	0	251
15	0	43	89	2	1	0	0	0	0	0	0	0	135
16	0	12	68	2	0	0	0	0	0	0	0	0	82
17	0	31	67	1	0	0	0	0	0	0	0	0	99
18	0	16	56	0	0	0	0	0	0	0	0	0	72
19	0	32	63	3	0	0	0	0	0	0	0	0	98
20	0	27	70	2	0	0	0	0	0	0	0	0	99
21	0	24	51	0	0	0	0	0	0	0	0	0	75
22	0	38	144	2	0	0	0	0	0	0	0	0	184
23	0	39	38	0	0	0	0	0	0	0	0	0	77
24	0	31	34	0	0	0	0	0	0	0	0	0	65

7-19	0	324	1010	30	1	0	0	0	0	0	0	0	1365
6-22	0	429	1343	43	2	0	0	0	0	0	0	0	1817
6-24	0	499	1415	43	2	0	0	0	0	0	0	0	1959
0-24	1	584	1830	64	4	0	0	0	0	0	0	0	2483

Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : EASTBOUND

Tuesday 17/07/2018	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	44	12	1	0	3	0	0	0	2	0	0	0	0	62
2	32	21	2	0	0	0	0	0	3	0	0	1	0	59
3	50	32	1	0	0	0	0	0	3	0	1	2	0	89
4	38	2	1	0	1	0	0	0	1	0	0	0	0	43
5	76	1	0	0	0	0	0	0	1	0	0	1	0	79
6	145	6	6	0	1	0	0	0	4	0	3	10	0	175
7	252	13	4	0	1	0	0	1	3	0	1	17	0	292
8	39	7	0	0	8	0	0	0	5	0	2	3	0	64
9	47	7	0	0	6	0	0	0	5	0	2	2	0	69
10	43	21	0	0	14	0	0	0	4	0	6	3	0	91
11	38	14	0	0	6	0	0	0	8	0	4	7	0	77
12	45	6	2	0	10	0	0	0	6	0	0	4	0	73
13	69	10	0	0	12	0	0	0	5	0	1	2	0	99
14	96	17	1	0	14	0	0	0	7	0	1	4	0	140
15	249	19	1	0	17	0	0	0	5	0	1	7	0	299
16	130	18	1	0	12	0	0	0	0	0	0	3	0	164
17	113	14	0	0	16	0	0	0	7	0	0	2	0	152
18	94	9	0	0	17	0	0	0	3	0	3	3	0	129
19	87	10	0	0	14	0	0	0	2	0	0	3	0	116
20	59	10	1	0	14	0	0	0	8	0	3	1	0	96
21	33	14	0	0	14	0	0	0	5	0	0	2	0	68
22	40	2	0	0	9	0	0	0	4	0	1	2	0	58
23	185	9	0	0	7	0	0	3	2	0	2	3	0	211
24	44	11	2	0	6	0	0	0	6	0	1	2	0	72

7-19	1050	152	5	0	146	0	0	0	57	0	20	43	0	1473
6-22	1434	191	10	0	184	0	0	1	77	0	25	65	0	1987
6-24	1663	211	12	0	197	0	0	4	85	0	28	70	0	2270
0-24	2048	285	23	0	202	0	0	4	99	0	32	84	0	2777

Direction : WESTBOUND

Tuesday 17/07/2018	VEHICLE CLASSIFICATION													TOTAL
Hr Ending	1	2	3	4	5	6	7	8	9	10	11	12	13	
1	25	17	0	2	4	0	0	0	1	0	2	0	0	51
2	26	4	2	0	8	0	0	0	3	0	3	1	0	47
3	21	1	1	0	7	0	0	0	4	0	2	0	0	36
4	26	2	0	0	7	0	0	0	0	0	1	0	0	36
5	91	2	0	0	2	0	0	0	2	0	2	0	0	99
6	348	4	1	0	1	0	0	1	2	0	2	2	0	361
7	123	3	1	0	5	0	0	0	4	0	0	0	0	136
8	120	7	2	0	2	0	0	0	3	0	1	1	0	136
9	126	7	1	0	8	0	0	0	6	0	12	2	0	162
10	54	8	2	0	10	0	0	0	6	0	10	6	0	96
11	63	18	0	0	15	0	0	0	6	0	2	5	0	109
12	46	7	0	0	7	0	0	0	4	0	2	5	0	71
13	71	11	3	0	11	0	0	0	3	0	2	8	0	109
14	195	17	3	0	8	0	0	0	6	0	3	52	0	284
15	61	11	2	0	13	0	0	0	1	0	4	36	0	128
16	27	16	1	0	16	0	0	0	6	0	1	16	0	83
17	32	14	1	0	19	0	0	0	4	0	2	11	0	83
18	48	10	0	0	17	0	0	0	4	0	2	2	0	83
19	59	10	1	0	22	0	0	0	3	0	0	3	0	98
20	46	11	0	0	17	1	0	0	1	0	2	1	0	79
21	54	11	0	0	13	0	0	0	7	0	1	2	0	88
22	159	13	0	0	7	0	0	0	2	0	1	3	0	185
23	51	16	1	0	8	0	0	0	4	0	2	2	0	84
24	24	22	0	0	13	0	0	0	5	0	1	2	0	67

7-19	902	136	16	0	148	0	0	0	52	0	41	147	0	1442
6-22	1284	174	17	0	190	1	0	0	66	0	45	153	0	1930
6-24	1359	212	18	0	211	1	0	0	75	0	48	157	0	2081
0-24	1896	242	22	2	240	1	0	1	87	0	60	160	0	2711

Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : EASTBOUND

Tuesday 17/07/2018	VEHICLE SPEED (MPH)												TOTAL
Hr Ending	0-10	11-20	21-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-120	
1	0	35	27	0	0	0	0	0	0	0	0	0	62
2	0	29	30	0	0	0	0	0	0	0	0	0	59
3	0	33	53	3	0	0	0	0	0	0	0	0	89
4	0	12	29	2	0	0	0	0	0	0	0	0	43
5	0	6	69	4	0	0	0	0	0	0	0	0	79
6	0	53	120	2	0	0	0	0	0	0	0	0	175
7	1	111	171	7	2	0	0	0	0	0	0	0	292
8	0	34	29	1	0	0	0	0	0	0	0	0	64
9	0	32	35	2	0	0	0	0	0	0	0	0	69
10	0	43	47	1	0	0	0	0	0	0	0	0	91
11	0	28	47	2	0	0	0	0	0	0	0	0	77
12	0	21	51	1	0	0	0	0	0	0	0	0	73
13	0	27	68	3	1	0	0	0	0	0	0	0	99
14	0	39	92	9	0	0	0	0	0	0	0	0	140
15	9	98	182	9	1	0	0	0	0	0	0	0	299
16	1	29	120	13	1	0	0	0	0	0	0	0	164
17	2	46	96	8	0	0	0	0	0	0	0	0	152
18	0	30	94	4	1	0	0	0	0	0	0	0	129
19	0	28	82	4	1	1	0	0	0	0	0	0	116
20	1	30	62	3	0	0	0	0	0	0	0	0	96
21	0	28	39	0	1	0	0	0	0	0	0	0	68
22	0	18	36	3	1	0	0	0	0	0	0	0	58
23	3	79	125	3	1	0	0	0	0	0	0	0	211
24	0	28	43	1	0	0	0	0	0	0	0	0	72

7-19	12	455	943	57	5	1	0	0	0	0	0	0	1473
6-22	14	642	1251	70	9	1	0	0	0	0	0	0	1987
6-24	17	749	1419	74	10	1	0	0	0	0	0	0	2270
0-24	17	917	1747	85	10	1	0	0	0	0	0	0	2777

Direction : WESTBOUND

Tuesday 17/07/2018	VEHICLE SPEED (MPH)												TOTAL
Hr Ending	0-10	11-20	21-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-120	
1	0	29	22	0	0	0	0	0	0	0	0	0	51
2	0	16	30	1	0	0	0	0	0	0	0	0	47
3	0	17	17	2	0	0	0	0	0	0	0	0	36
4	0	12	23	1	0	0	0	0	0	0	0	0	36
5	0	18	77	4	0	0	0	0	0	0	0	0	99
6	0	27	315	18	1	0	0	0	0	0	0	0	361
7	0	29	96	9	2	0	0	0	0	0	0	0	136
8	0	16	113	7	0	0	0	0	0	0	0	0	136
9	1	39	110	12	0	0	0	0	0	0	0	0	162
10	0	23	72	1	0	0	0	0	0	0	0	0	96
11	0	22	85	2	0	0	0	0	0	0	0	0	109
12	0	17	53	1	0	0	0	0	0	0	0	0	71
13	0	18	87	4	0	0	0	0	0	0	0	0	109
14	0	37	241	4	2	0	0	0	0	0	0	0	284
15	0	28	100	0	0	0	0	0	0	0	0	0	128
16	0	23	59	0	1	0	0	0	0	0	0	0	83
17	0	20	63	0	0	0	0	0	0	0	0	0	83
18	0	26	55	2	0	0	0	0	0	0	0	0	83
19	0	22	74	2	0	0	0	0	0	0	0	0	98
20	0	20	56	3	0	0	0	0	0	0	0	0	79
21	0	30	57	1	0	0	0	0	0	0	0	0	88
22	0	32	148	4	1	0	0	0	0	0	0	0	185
23	0	35	48	1	0	0	0	0	0	0	0	0	84
24	0	29	38	0	0	0	0	0	0	0	0	0	67

7-19	1	291	1112	35	3	0	0	0	0	0	0	0	1442
6-22	1	402	1469	52	6	0	0	0	0	0	0	0	1930
6-24	1	466	1555	53	6	0	0	0	0	0	0	0	2081
0-24	1	585	2039	79	7	0	0	0	0	0	0	0	2711

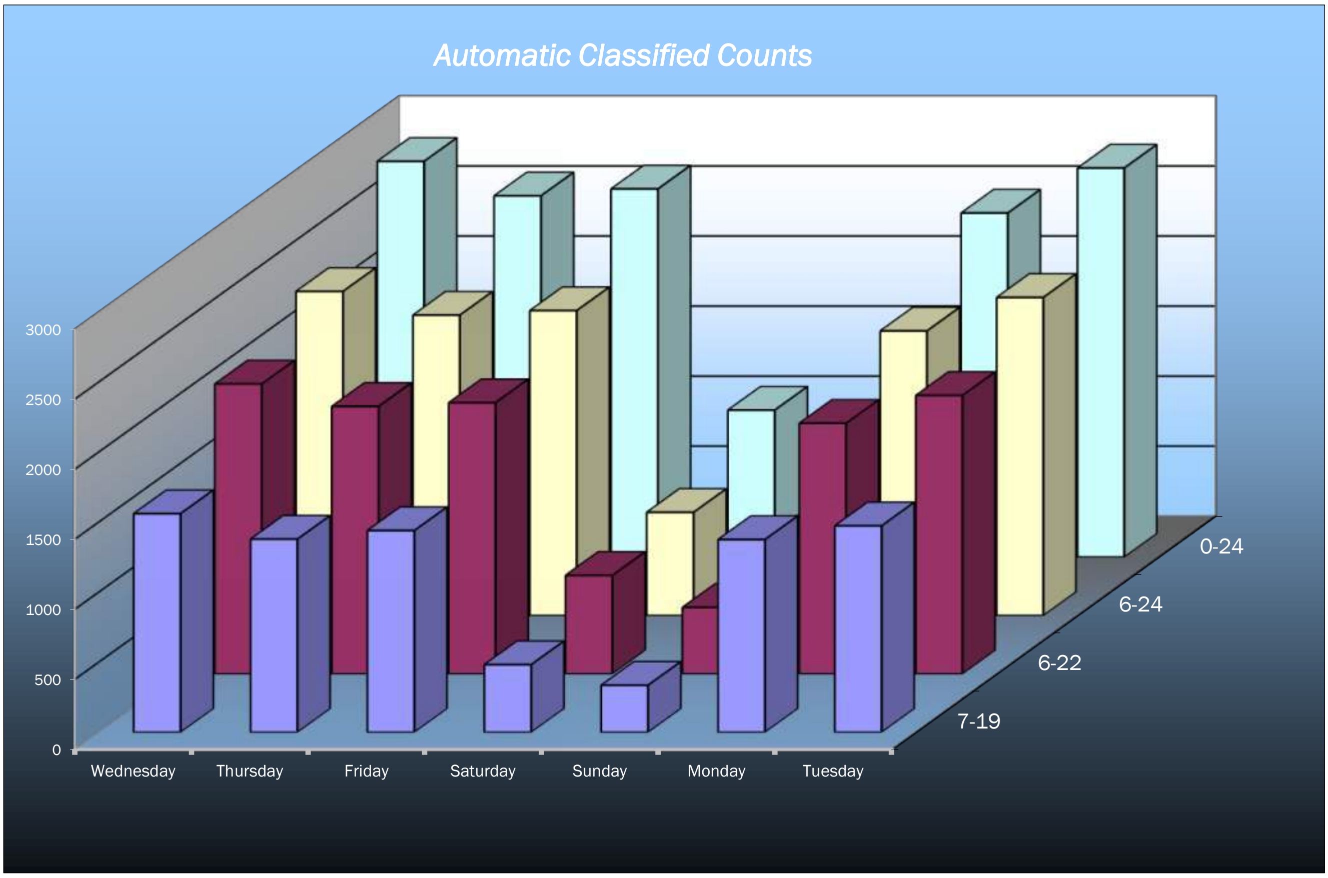
Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : EASTBOUND

VEHICLE FLOWS									
Hr Ending	Wednesday 11-Jul-18	Thursday 12-Jul-18	Friday 13-Jul-18	Saturday 14-Jul-18	Sunday 15-Jul-18	Monday 16-Jul-18	Tuesday 17-Jul-18	WEEKDAY AVERAGE	WEEK AVERAGE
1	68	65	60	52	18	52	62	61	54
2	59	53	50	43	25	32	59	51	46
3	82	71	69	76	72	103	89	83	80
4	41	42	49	23	15	39	43	43	36
5	72	63	58	47	3	65	79	67	55
6	190	141	166	72	9	134	175	161	127
7	280	278	276	166	41	164	292	258	214
8	104	84	81	40	11	60	64	79	63
9	60	61	70	41	6	65	69	65	53
10	83	80	92	32	9	70	91	83	65
11	83	85	78	78	19	94	77	83	73
12	84	61	91	36	28	79	73	78	65
13	101	101	132	59	24	72	99	101	84
14	146	119	139	40	15	144	140	138	106
15	303	244	224	39	22	247	299	263	197
16	165	163	172	44	35	150	164	163	128
17	181	154	133	19	23	176	152	159	120
18	133	127	114	32	106	122	129	125	109
19	117	99	113	22	37	96	116	108	86
20	84	93	97	19	40	94	96	93	75
21	70	91	69	17	24	84	68	76	60
22	75	69	54	19	34	71	58	65	54
23	176	171	183	14	31	181	211	184	138
24	68	64	58	19	41	62	72	65	55

7-19	1560	1378	1439	482	335	1375	1473	1445	1149
6-22	2069	1909	1935	703	474	1788	1987	1938	1552
6-24	2313	2144	2176	736	546	2031	2270	2187	1745
0-24	2825	2579	2628	1049	688	2456	2777	2653	2143

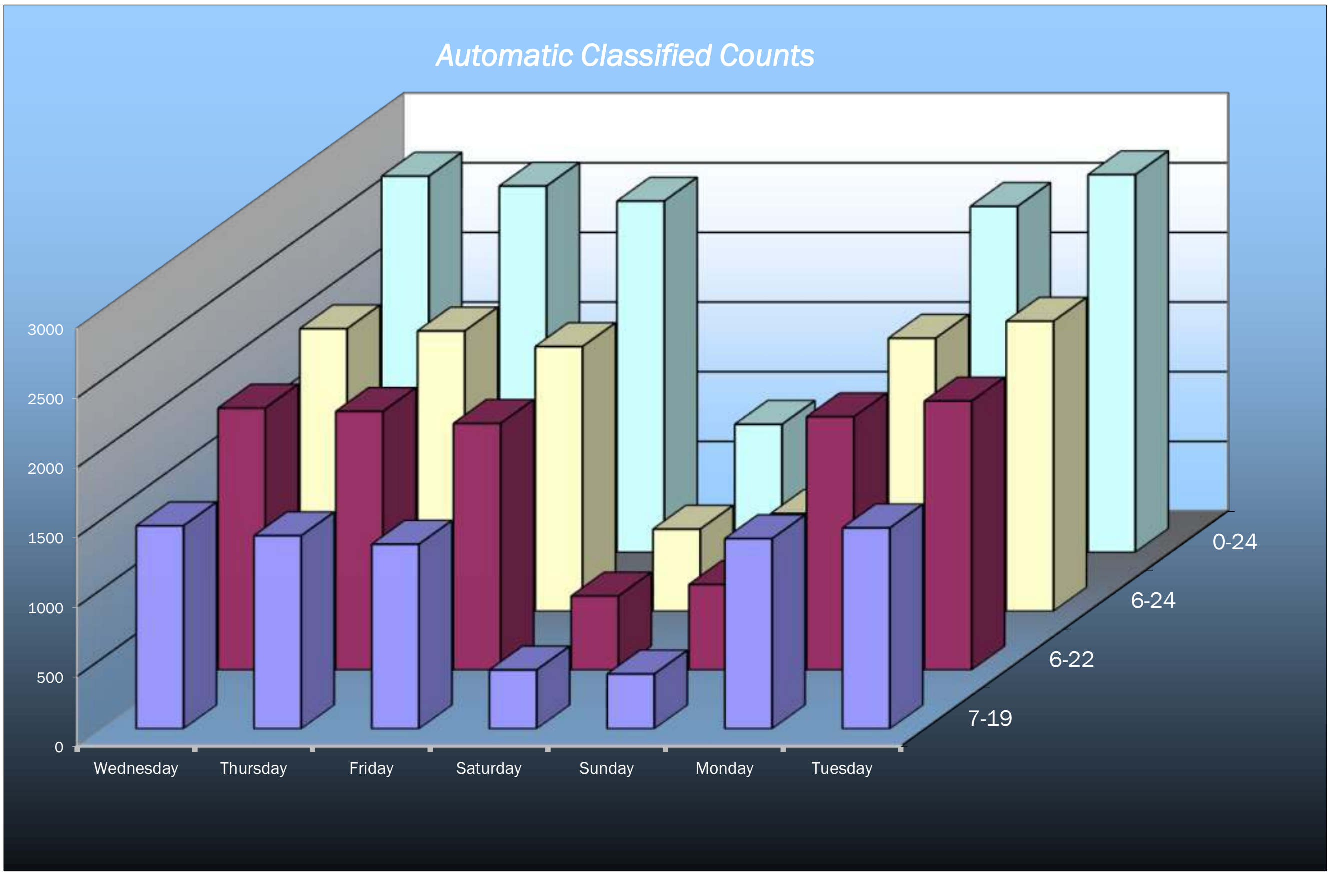


Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : WESTBOUND

WESTBOUND									
Hr Ending	Wednesday 11-Jul-18	Thursday 12-Jul-18	Friday 13-Jul-18	Saturday 14-Jul-18	Sunday 15-Jul-18	Monday 16-Jul-18	Tuesday 17-Jul-18	WEEKDAY AVERAGE	WEEK AVERAGE
1	56	48	56	46	29	28	51	48	45
2	49	40	36	48	11	27	47	40	37
3	41	40	40	31	11	38	36	39	34
4	49	46	51	24	5	38	36	44	36
5	112	96	105	39	10	81	99	99	77
6	366	348	334	142	18	312	361	344	269
7	119	124	140	58	90	94	136	123	109
8	117	115	113	62	13	109	136	118	95
9	152	117	126	35	18	126	162	137	105
10	120	109	104	29	13	123	96	110	85
11	106	105	91	32	17	78	109	98	77
12	114	72	83	31	44	80	71	84	71
13	99	96	104	32	12	112	109	104	81
14	236	269	250	37	17	251	284	258	192
15	110	139	120	23	21	135	128	126	97
16	92	87	83	31	29	82	83	85	70
17	84	88	70	26	39	99	83	85	70
18	90	84	66	52	106	72	83	79	79
19	137	105	115	32	64	98	98	111	93
20	68	86	63	14	47	99	79	79	65
21	68	87	74	18	39	75	88	78	64
22	168	173	168	18	44	184	185	176	134
23	84	86	70	23	35	77	84	80	66
24	63	69	59	35	52	65	67	65	59
7-19	1457	1386	1325	422	393	1365	1442	1395	1113
6-22	1880	1856	1770	530	613	1817	1930	1851	1485
6-24	2027	2011	1899	588	700	1959	2081	1995	1609
0-24	2700	2629	2521	918	784	2483	2711	2609	2107



Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : EASTBOUND

AVERAGE SPEEDS							
Hr Ending	Wednesday 11-Jul-18	Thursday 12-Jul-18	Friday 13-Jul-18	Saturday 14-Jul-18	Sunday 15-Jul-18	Monday 16-Jul-18	Tuesday 17-Jul-18
1	21.3	20.8	20.5	20.5	18.8	20.6	19.9
2	21.4	23.0	21.9	21.5	20.3	22.8	20.6
3	19.3	18.2	20.1	20.6	22.1	22.4	22.0
4	25.4	24.3	23.4	23.8	23.0	24.5	23.1
5	24.6	23.8	24.9	23.7	28.0	23.7	25.1
6	23.2	22.5	22.9	24.8	22.2	22.7	22.6
7	21.4	22.0	21.4	24.4	24.5	23.1	21.9
8	22.0	22.9	21.9	23.2	23.5	22.1	20.3
9	23.3	21.2	21.3	22.1	22.2	20.6	21.1
10	23.2	21.9	23.4	23.0	23.3	23.0	20.9
11	23.2	21.4	21.8	24.5	22.3	21.1	22.1
12	21.9	22.5	21.8	24.6	23.8	20.7	22.7
13	21.3	20.7	23.5	23.3	20.8	22.1	23.1
14	22.1	22.8	23.9	23.2	24.7	22.3	23.2
15	22.8	20.7	24.1	24.7	22.8	23.4	21.9
16	23.8	24.3	24.7	25.7	21.9	23.5	24.3
17	22.8	23.4	24.0	23.8	20.6	23.1	22.6
18	22.7	20.0	23.9	25.3	23.1	22.4	23.5
19	23.7	23.4	24.6	24.9	24.1	22.1	23.6
20	22.7	22.6	21.9	22.3	19.0	22.1	22.4
21	20.9	21.9	21.9	18.4	18.4	20.2	21.6
22	23.2	21.8	24.9	22.1	21.9	23.3	23.0
23	22.3	21.9	20.9	24.1	21.6	21.2	21.6
24	21.5	21.4	21.9	20.8	20.6	20.0	21.7
10-12	22.5	21.9	21.8	24.5	23.1	20.9	22.4
14-16	23.3	22.5	24.4	25.2	22.4	23.4	23.1
0-24	22.5	22.1	22.7	23.1	22.2	22.2	22.3

85TH PERCENTILE							
Hr Ending	Wednesday 11-Jul-18	Thursday 12-Jul-18	Friday 13-Jul-18	Saturday 14-Jul-18	Sunday 15-Jul-18	Monday 16-Jul-18	Tuesday 17-Jul-18
1	26.5	26.1	25.5	25.7	23.7	26.1	24.9
2	26.4	27.9	26.7	26.8	25.4	28.2	25.6
3	24.2	22.9	25.7	26.2	27.6	27.3	27.3
4	29.6	29.2	28.1	27.6	29.3	28.9	28.1
5	28.1	28.6	29.9	27.9	32.3	28.1	28.3
6	28.1	27.4	27.7	28.8	27.2	27.6	27.3
7	26.6	27.1	27.1	28.6	28.0	27.7	27.3
8	26.9	27.5	27.4	27.8	29.0	27.1	25.5
9	28.3	26.2	26.5	27.9	27.3	26.2	26.5
10	27.6	27.1	36.2	27.4	27.7	27.8	26.0
11	28.8	26.8	27.0	29.0	27.1	26.2	27.2
12	27.0	27.4	27.0	28.1	29.2	26.0	27.4
13	26.5	26.2	27.9	28.6	26.4	27.2	28.1
14	26.9	28.1	28.6	27.8	32.9	27.4	28.3
15	28.2	27.1	28.9	30.4	27.3	28.1	27.7
16	29.2	29.0	29.8	30.7	27.5	28.5	29.2
17	28.5	28.5	28.2	28.5	26.3	28.8	28.1
18	27.8	25.9	28.2	29.1	27.8	28.0	28.2
19	29.3	28.4	29.8	28.4	29.6	26.8	28.8
20	28.0	28.2	27.2	27.1	23.8	27.0	27.7
21	26.6	27.4	27.6	24.3	23.1	25.5	26.9
22	28.1	26.9	29.8	28.3	27.2	27.9	28.6
23	27.3	27.2	26.9	31.4	26.6	27.6	27.1
24	26.6	27.2	27.6	25.9	25.9	25.2	26.8
10-12	27.9	27.1	27.0	28.5	28.2	26.1	27.3
14-16	28.7	28.1	29.3	30.6	27.4	28.3	28.5
0-24	27.5	27.3	28.1	28.0	27.4	27.3	27.4

7 DAY AVERAGE SPEED	22.4
7 DAY AVERAGE 85th PERCENTILE	27.6

Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

Direction : WESTBOUND

AVERAGE SPEEDS							
Hr Ending	Wednesday 11-Jul-18	Thursday 12-Jul-18	Friday 13-Jul-18	Saturday 14-Jul-18	Sunday 15-Jul-18	Monday 16-Jul-18	Tuesday 17-Jul-18
1	20.7	20.9	19.8	19.4	23.0	21.5	19.8
2	20.6	22.3	21.3	21.3	21.6	21.7	22.3
3	20.6	21.6	22.7	21.3	21.9	21.0	21.2
4	24.1	22.7	23.4	22.4	23.5	23.5	22.4
5	25.8	24.6	24.4	24.5	21.5	23.9	24.0
6	25.0	25.3	24.5	24.8	24.4	25.2	25.2
7	23.9	24.4	24.3	24.6	24.9	24.6	24.0
8	23.5	23.5	23.1	22.8	26.7	24.0	24.7
9	24.2	23.7	22.7	25.1	25.9	23.5	23.5
10	22.6	22.4	22.8	22.7	21.8	22.9	23.2
11	23.4	23.0	22.3	25.3	22.0	22.8	23.6
12	23.9	23.3	24.5	22.9	23.3	22.8	23.2
13	24.0	23.1	23.3	24.6	23.6	23.3	24.1
14	23.8	24.1	24.4	24.4	21.4	24.2	24.4
15	23.1	23.4	24.0	22.9	23.5	22.5	23.3
16	23.1	23.2	23.0	23.6	24.3	24.2	22.9
17	23.3	22.8	23.0	23.9	22.5	22.4	23.1
18	23.8	16.1	22.4	24.7	23.5	23.3	22.5
19	23.3	23.6	22.8	22.8	24.4	22.5	23.4
20	22.9	24.5	23.3	21.2	25.0	22.9	23.3
21	22.8	21.9	22.9	20.5	22.4	22.3	22.2
22	24.3	23.5	24.7	21.5	22.3	23.5	24.0
23	21.6	22.7	22.1	21.9	23.6	20.4	21.4
24	22.1	20.4	20.5	20.9	21.7	20.7	21.2

10-12	23.6	23.2	23.4	24.1	22.7	22.8	23.4
14-16	23.1	23.3	23.5	23.2	23.9	23.4	23.1
0-24	23.2	22.8	23.0	22.9	23.3	22.9	23.0

85TH PERCENTILE							
Hr Ending	Wednesday 11-Jul-18	Thursday 12-Jul-18	Friday 13-Jul-18	Saturday 14-Jul-18	Sunday 15-Jul-18	Monday 16-Jul-18	Tuesday 17-Jul-18
1	25.7	26.0	24.8	24.6	27.9	26.9	24.8
2	25.9	27.0	26.3	26.3	27.9	27.1	27.3
3	25.9	27.2	27.6	26.3	26.9	26.1	26.9
4	32.8	28.1	28.1	28.2	28.0	28.4	27.5
5	31.2	28.5	28.6	29.3	26.7	28.2	28.3
6	28.5	28.4	27.9	28.3	27.6	28.6	28.4
7	28.4	32.3	28.7	28.2	29.6	29.5	29.1
8	28.7	28.2	28.0	27.9	29.5	28.5	28.5
9	29.1	28.2	27.5	32.0	31.2	28.1	28.7
10	27.7	27.5	27.4	28.0	28.8	27.8	27.6
11	28.3	27.6	27.1	28.5	26.9	27.8	27.8
12	27.9	27.9	28.7	27.4	28.2	27.5	27.7
13	28.6	27.5	28.0	27.5	29.0	27.6	28.2
14	28.3	28.0	28.1	29.0	26.5	27.7	28.1
15	27.5	27.7	27.9	28.3	28.3	27.5	27.5
16	27.6	27.4	27.3	27.6	28.8	28.0	27.7
17	27.7	27.6	27.6	28.3	27.9	27.2	27.4
18	28.1	23.0	27.3	29.2	27.8	27.5	27.5
19	28.1	28.4	27.6	28.2	28.7	27.5	27.8
20	27.9	28.4	28.2	26.3	28.3	27.6	28.0
21	27.5	26.9	27.5	25.6	27.4	27.0	27.1
22	29.2	27.5	29.3	27.2	27.3	27.7	28.1
23	26.5	27.4	28.3	27.4	28.8	25.5	26.5
24	27.1	25.5	26.0	26.3	26.6	25.8	26.2

10-12	28.1	27.8	27.9	27.9	27.5	27.7	27.8
14-16	27.5	27.6	27.6	27.9	28.6	27.8	27.6
0-24	28.1	27.6	27.7	27.8	28.1	27.5	27.6

7 DAY AVERAGE SPEED	23.0
7 DAY AVERAGE 85th PERCENTILE	27.8

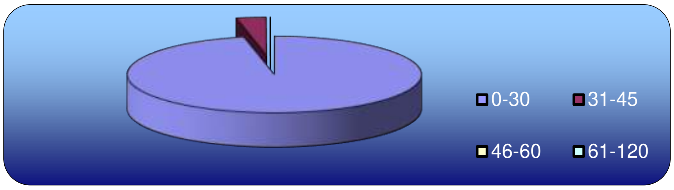
Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

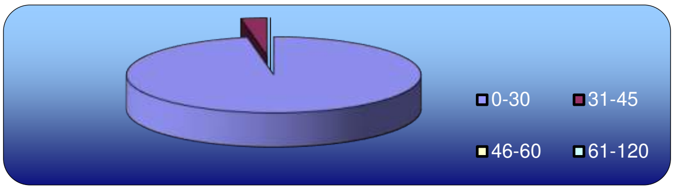
Direction : EASTBOUND

SPEED SUMMARY							
SPEED (MPH)	Wednesday 11-Jul-18	Thursday 12-Jul-18	Friday 13-Jul-18	Saturday 14-Jul-18	Sunday 15-Jul-18	Monday 16-Jul-18	Tuesday 17-Jul-18
0-30	2731	2505	2505	991	662	2381	2681
31-45	93	74	121	58	26	75	96
46-60	1	0	0	0	0	0	0
61-120	0	0	2	0	0	0	0
TOTAL	2825	2579	2628	1049	688	2456	2777

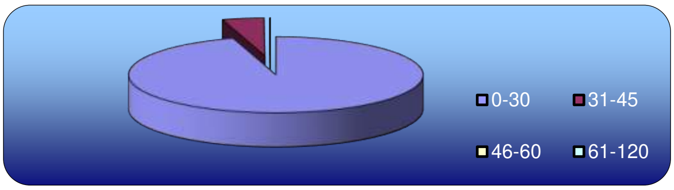
Wednesday
11-Jul-18



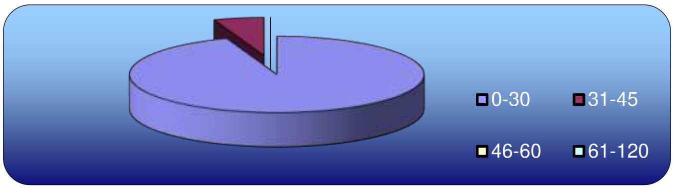
Thursday
12-Jul-18



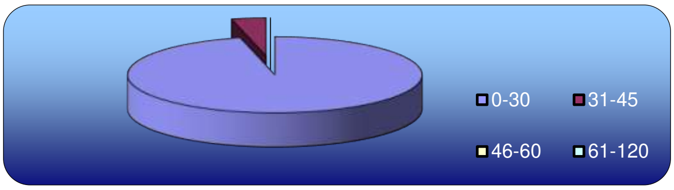
Friday
13-Jul-18



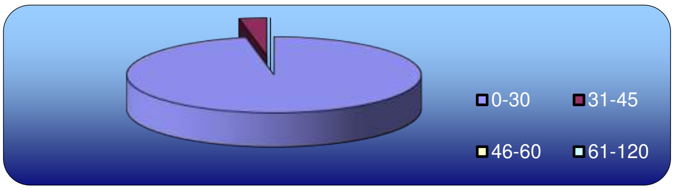
Saturday
14-Jul-18



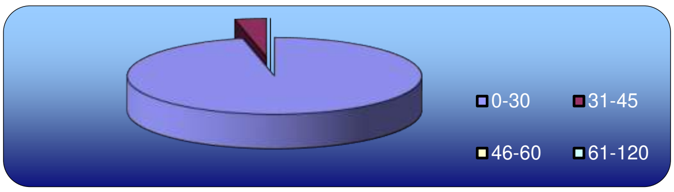
Sunday
15-Jul-18



Monday
16-Jul-18



Tuesday
17-Jul-18



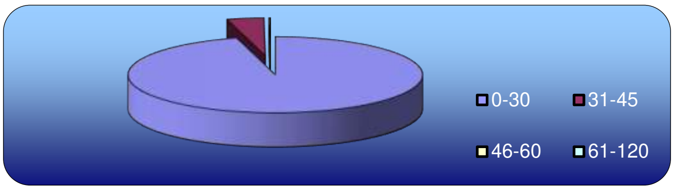
Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

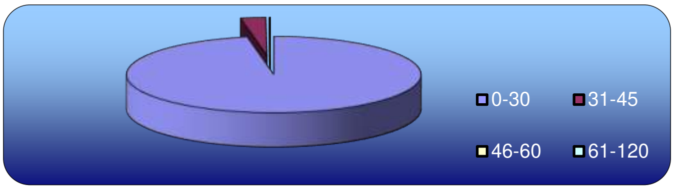
Direction : WESTBOUND

SPEED SUMMARY							
SPEED (MPH)	Wednesday 11-Jul-18	Thursday 12-Jul-18	Friday 13-Jul-18	Saturday 14-Jul-18	Sunday 15-Jul-18	Monday 16-Jul-18	Tuesday 17-Jul-18
0-30	2586	2553	2446	876	751	2415	2625
31-45	110	73	75	42	33	68	86
46-60	4	0	0	0	0	0	0
61-120	0	3	0	0	0	0	0
TOTAL	2700	2629	2521	918	784	2483	2711

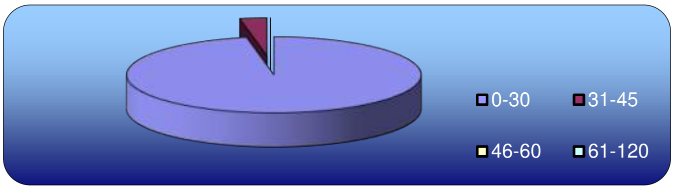
Wednesday
11-Jul-18



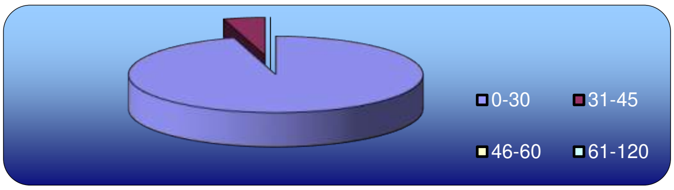
Thursday
12-Jul-18



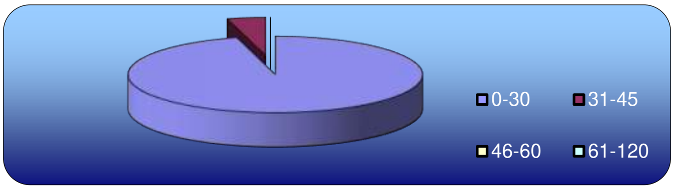
Friday
13-Jul-18



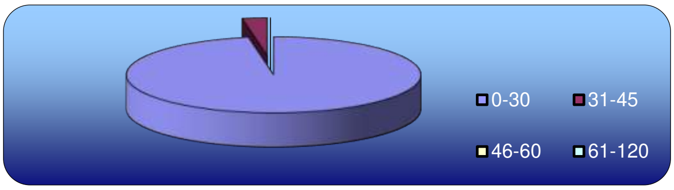
Saturday
14-Jul-18



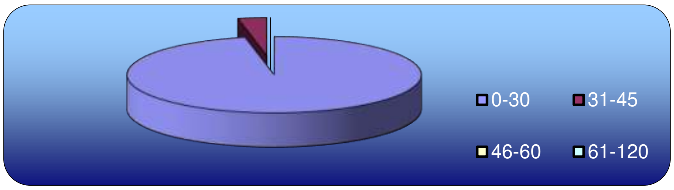
Sunday
15-Jul-18



Monday
16-Jul-18



Tuesday
17-Jul-18

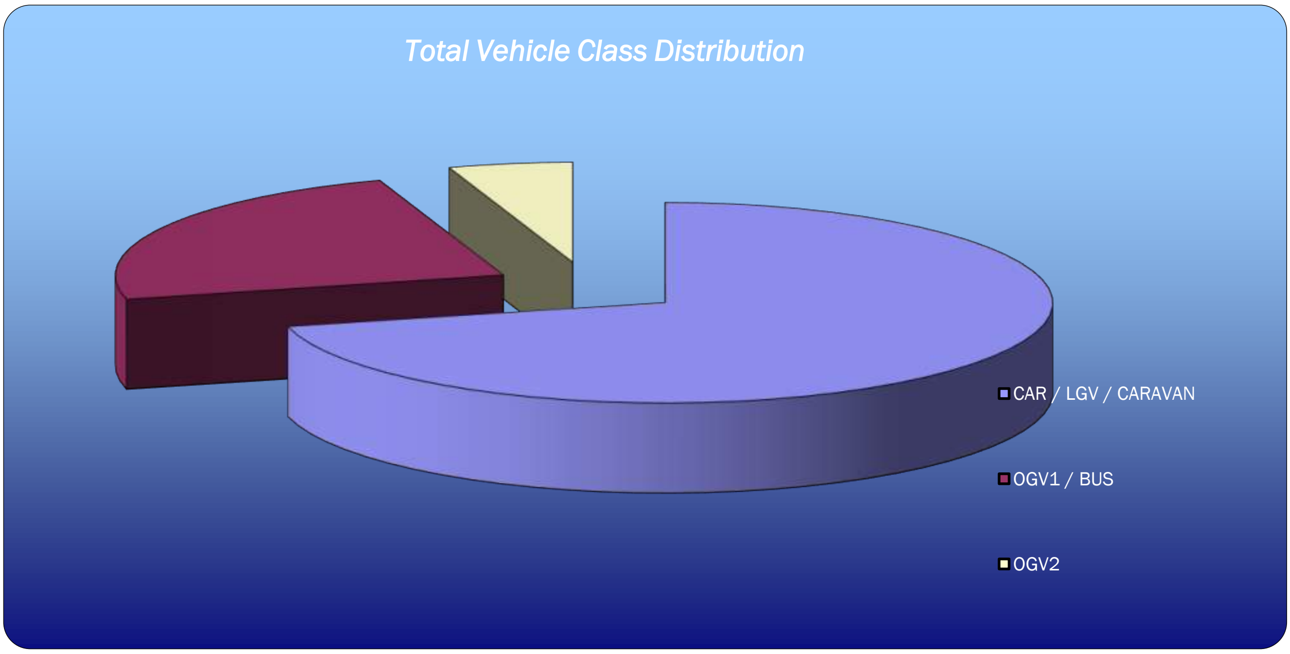


Automatic Classified Counts, Warrington

LOCATION: OMEGA NORTH

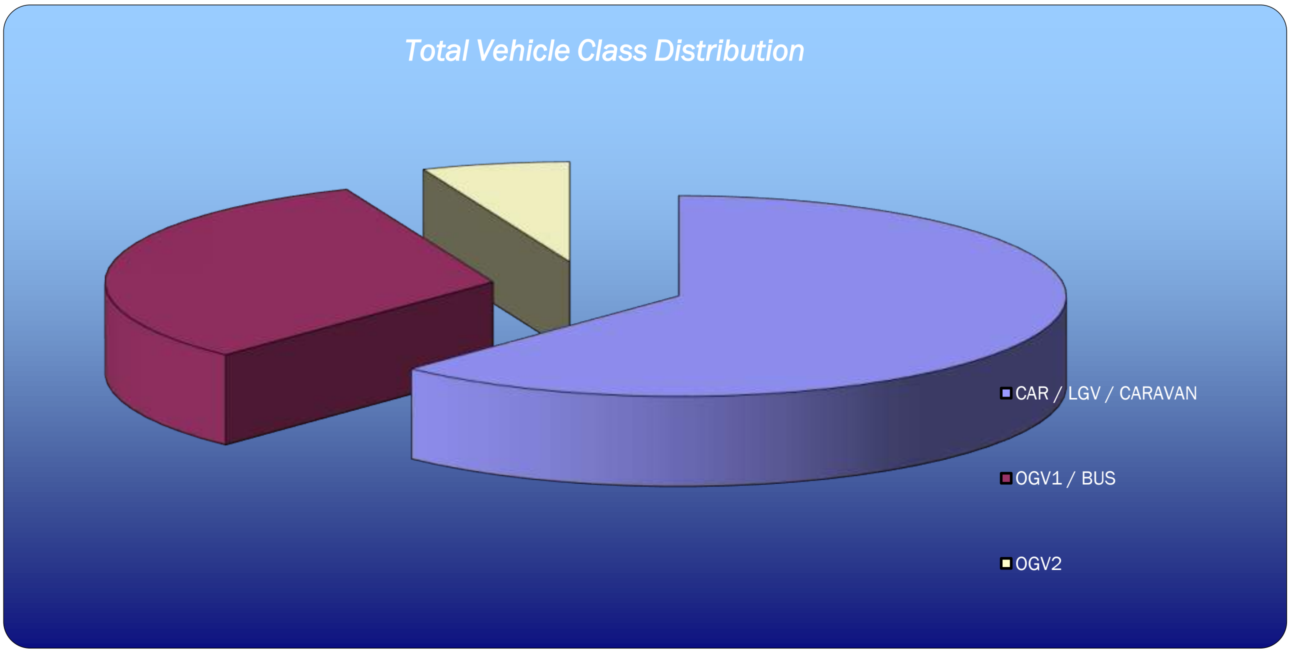
Direction : EASTBOUND

VEHICLE CLASSIFICATION				
	CAR / LGV / CARAVAN	OGV1 / BUS	OGV2	TOTAL
11-Jul-18				
7-19	1116	358	86	1560
6-22	1493	470	106	2069
6-24	1688	507	118	2313
0-24	2050	646	129	2825
12-Jul-18				
7-19	963	331	84	1378
6-22	1356	443	110	1909
6-24	1550	474	120	2144
0-24	1836	599	144	2579
13-Jul-18				
7-19	1073	290	76	1439
6-22	1463	381	91	1935
6-24	1659	417	100	2176
0-24	1970	543	115	2628
14-Jul-18				
7-19	350	127	5	482
6-22	520	171	12	703
6-24	533	188	15	736
0-24	726	294	29	1049
15-Jul-18				
7-19	221	103	11	335
6-22	304	146	24	474
6-24	340	170	36	546
0-24	429	205	54	688
16-Jul-18				
7-19	946	352	77	1375
6-22	1234	450	104	1788
6-24	1431	483	117	2031
0-24	1731	589	136	2456
17-Jul-18				
7-19	1050	346	77	1473
6-22	1434	450	103	1987
6-24	1663	490	117	2270
0-24	2048	594	135	2777
AVERAGE				
7-19	817	272	59	1149
6-22	1115	359	79	1552
6-24	1266	390	89	1745
0-24	1541	496	106	2143



Direction : WESTBOUND

VEHICLE CLASSIFICATION				
	CAR / LGV / CARAVAN	OGV1 / BUS	OGV2	TOTAL
11-Jul-18				
7-19	885	475	97	1457
6-22	1214	554	112	1880
6-24	1296	611	120	2027
0-24	1869	698	133	2700
12-Jul-18				
7-19	871	427	88	1386
6-22	1230	517	109	1856
6-24	1311	583	117	2011
0-24	1827	670	132	2629
13-Jul-18				
7-19	827	420	78	1325
6-22	1184	500	86	1770
6-24	1250	557	92	1899
0-24	1760	647	114	2521
14-Jul-18				
7-19	218	190	14	422
6-22	279	233	18	530
6-24	305	263	20	588
0-24	534	344	40	918
15-Jul-18				
7-19	289	92	12	393
6-22	459	139	15	613
6-24	491	189	20	700
0-24	552	212	20	784
16-Jul-18				
7-19	843	423	99	1365
6-22	1198	507	112	1817
6-24	1291	553	115	1959
0-24	1724	629	130	2483
17-Jul-18				
7-19	902	447	93	1442
6-22	1284	535	111	1930
6-24	1359	599	123	2081
0-24	1896	665	150	2711
AVERAGE				
7-19	691	353	69	1113
6-22	978	426	80	1485
6-24	1043	479	87	1609
0-24	1452	552	103	2107



Appendix G

North

Dearden House,
Dearden St,
Ossett,
WF5 8NR

Tel: 01924 288040
Fax: 01924 278670

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CURTINS
M6 WARRINGTON
MANUAL CLASSIFIED
COUNT/QUEUE LENGTH
SURVEY REPORT
JULY 2017

PROJECT NO.	7634
CHECKED	CW
DATE	24/08/2017
CONTACT	K. SHORTER
REVISION	

email: enquiries@nationwidedatacollection.co.uk
website: www.nationwidedatacollection.co.uk

Registered Office:
Haseley Office Centre, Firs Lane,
Haseley, Warwick, CV35 7LS

CONTENTS

INTRODUCTION

Nationwide Data Collection (NDC) was instructed by Curtins to undertake manual classified counts at Warrington.
A general location plan is given in Diagram 1.

Manual Classified Counts

Manual Classified counts were undertaken at the following sites:

MCC Site 1 – M6/Lymm R/bt
MCC Site 2 – Cliff Lane/Granpenhall Lane
MCC Site 3 – Grapenhall Lane/Broad Lane
MCC Site 4 – Grapenhall Lane/Barleycastle Lane
MCC Site 5 – Broad Lane/Church Lane
MCC Site 6 – Church Lane/A56/Stockton Road
MCC Site 7 – A50/A56

The sites were surveyed using telescopically mounted video cameras from which the information was subsequently extracted.

The survey was carried out on Thursday 6th July 2017. Survey hours were 0700 to 1000 and 1600 to 1800 hours. All information was collected in fifteen-minute intervals and has been tabulated with both hourly and period totals. Details of the site locations are shown on Diagrams 7634/01-07.

Vehicles were classified into the following categories:
Cars and taxis (**CAR**), Light Goods Vehicles (**LGV**), Other Goods Vehicle 1, **(OGV 1)**, Other Goods Vehicle 2 **(OGV 2),** Public Service Vehicles (**PSV**), Motorcycles (**MCL**) and Pedal Cycle **(PCL)**

A detailed description of the vehicles included in each category is included in Appendix A.
The results of the classified counts are contained in Appendix B.

Queue Lengths

Queue lengths were also carried out at the same time as the MCC. Maximum queues have been recorded in vehicle numbers and by each particular lane on each arm in 5 minute intervals.

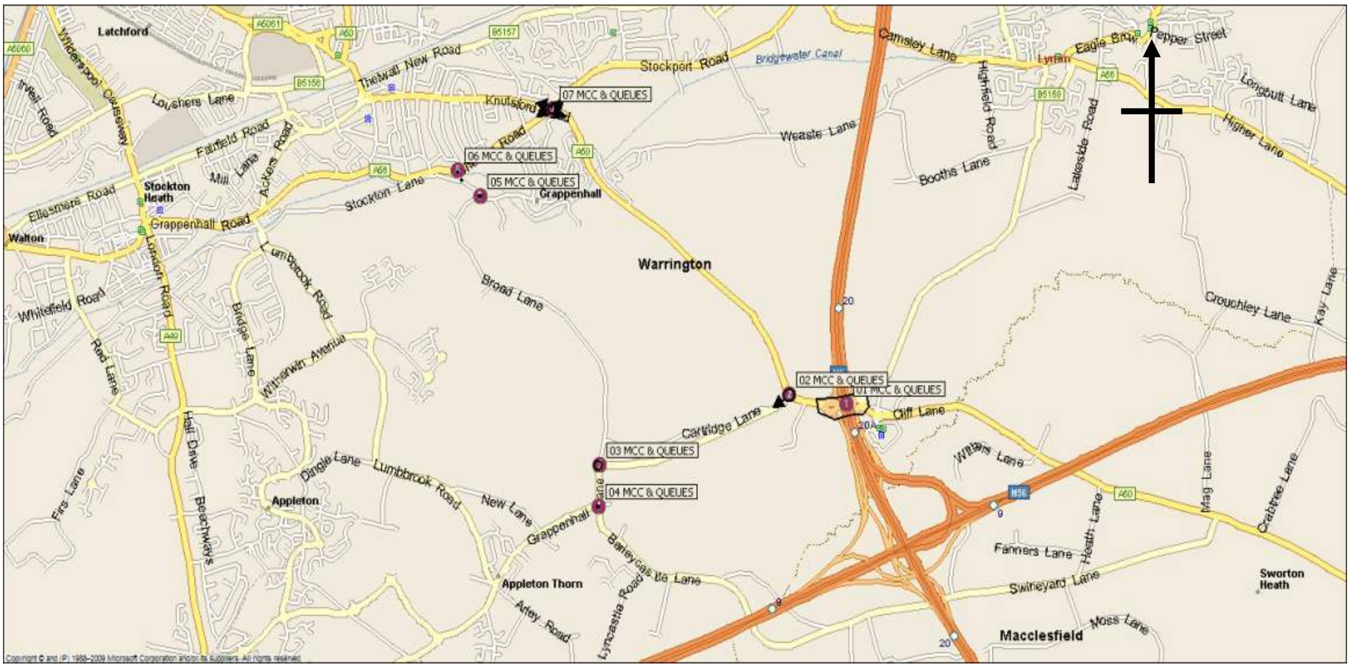
Survey hours and arm labelling are the same as MCC. The results are contained in Appendix C.

Site Notes

Manual count Site Notes
The manual count was carried out with no incidents or disruptions likely to affect the results. At Site 1 on Arm D Cliff Lane at 08:31 OGV2 shunts into back of LGV waiting at junction. Both vehicles stop at the junction causing obstruction in lane 1. Paramedics attend then both vehicles leave at 08:45.

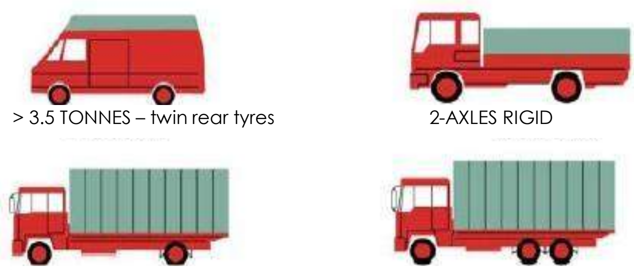
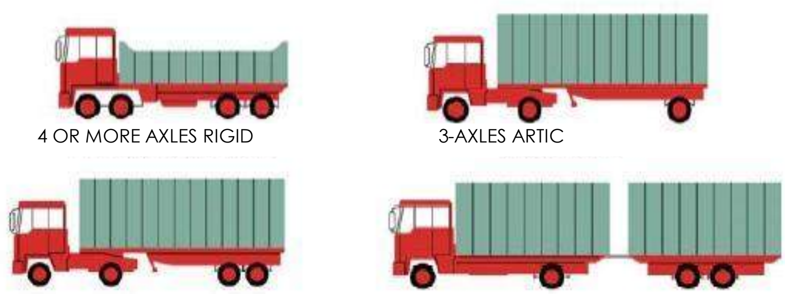
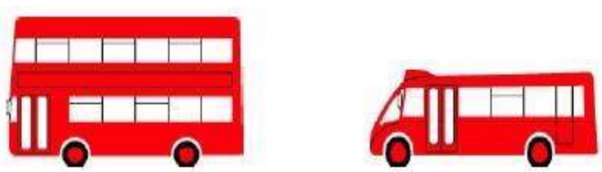
Weather: Fine

Diagram 1 – General Location Plan



Appendix A
Vehicle Catagories

COBA VEHICLE CATEGORIES

CAR	 SALOON; ESTATE; PEOPLE CARRIER; CAR TOWING CARAVAN / TRAILER
LIGHT GOODS VEHICLE (LGV)	 VAN; <3.5 TONNES – single rear tyres; PICK-UP
OTHER GOODS VEHICLE (OGV1)	 > 3.5 TONNES – twin rear tyres; 2-AXLES RIGID; 2-AXLES RIGID; 3 AXLES-RIGID
OTHER GOODS VEHICLE (OGV2)	 4 OR MORE AXLES RIGID; 3-AXLES ARTIC; 4 OR MORE AXLES ARTIC; OTHER GOODS VEHICLE WITH TRAILER
BUSES & COACHES (PSV)	 DOUBLE DECK BUS; SINGLE DECK BUS OR COACH

COBA VEHICLE CATEGORIES

Definition of Categories

The various components of traffic have different characteristics in terms of operating costs, growth and occupancy. The most common categories into which the traffic is split in COBA; these are defined as:

Cars (CARS)

Including taxis, estate cars, 'people carriers' and other passenger vehicles (for example, minibuses and camper vans) with a gross vehicle weight of less than 3.5 tonnes, normally ones which can accommodate not more than 15 seats. Three-wheeled cars, motor invalid carriages, Land Rovers, Range Rovers and Jeeps and smaller ambulances are included. Cars towing caravans or trailers are counted as one vehicle unless included as a separate class.

Light Goods Vehicles (LGV)

Includes all goods vehicles up to 3.5 tonnes gross vehicle weight (goods vehicles over 3.5 tonnes have sideguards fitted between axles), including those towing a trailer or caravan. This includes all car delivery vans and those of the next larger carrying capacity such as transit vans. Included here are small pickup vans, three-wheeled goods vehicles, milk floats and pedestrian controlled motor vehicles. Most of this group is delivery vans of one type or another.

Other Goods Vehicles (OGV 1)

Includes all rigid vehicles over 3.5 tonnes gross vehicle weight with two or three axles Includes larger ambulances, tractors (without trailers), road rollers for tarmac pressing, box vans and similar large vans. A two or three axle motor tractive unit without a trailer is also included.

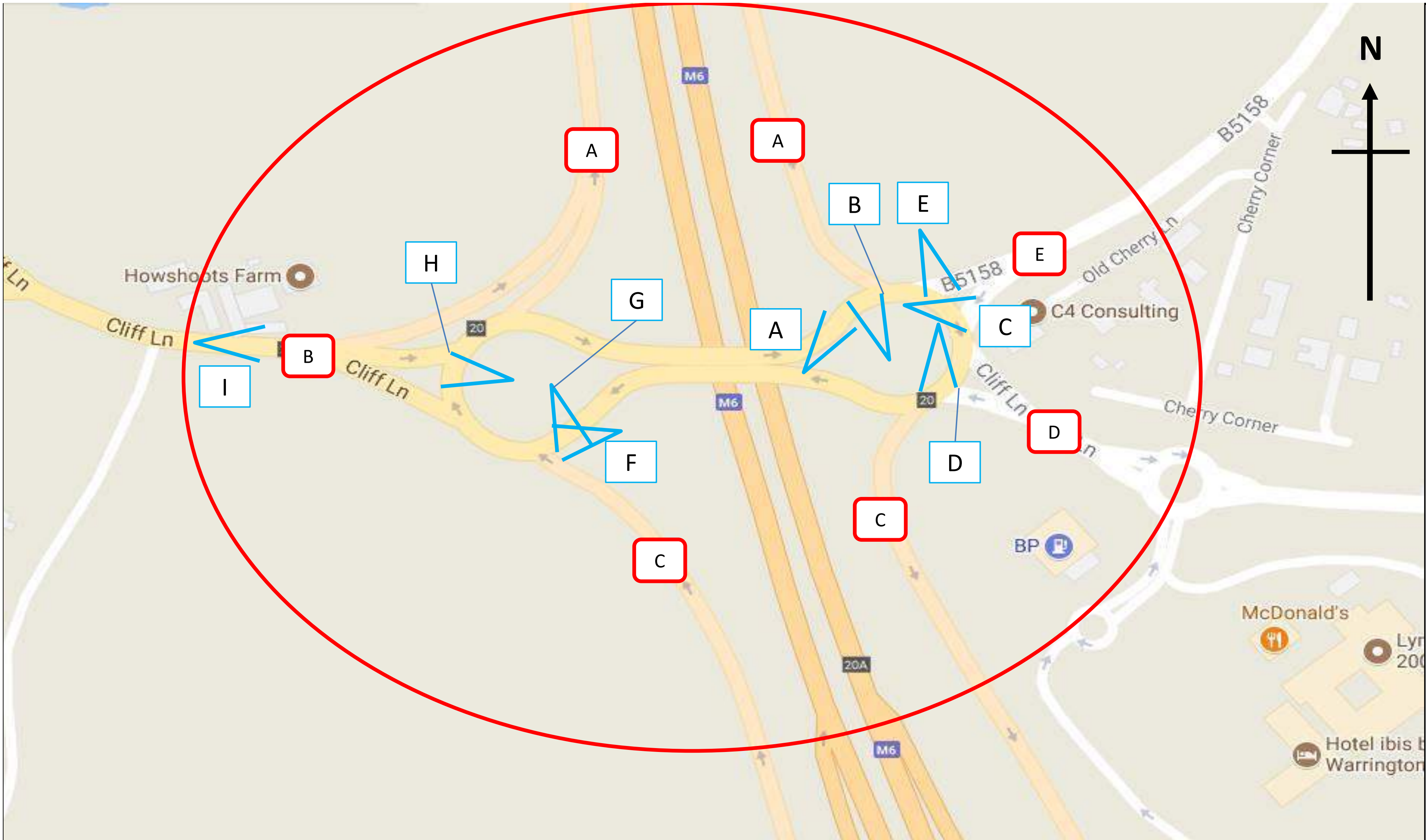
Other Goods Vehicles (OGV 2)

This category includes all rigid vehicles with four or more axles and all articulated vehicles. Also included in this class are OGV1 goods vehicles towing a caravan or trailer.

Buses and Coaches (PSV)

Includes all public service vehicles and works buses with a gross vehicle weight of 3.5 tonnes or more, usually vehicles with more than 16 seats.

Appendix B
Classified Count Data



NDC NATIONWIDE DATA COLLECTION	**Site / Location:**	Site 1, M6/Lymm Dumbbell Roundabout	**Project No:**	7634	**Drawing No:**	7634-01	**Drawn By:** EA
	Survey Date:	Thursday 6th July 2017	**Project Name:**	Warrington M6			
	Survey Times:	07:00 to 10:00 & 16:00 to 18:00	**Drawing Title:**	Site Layout and Observed Movements			

SITE: 1 DATE: 06/07/2017

LOCATION: M6/Lymm Dumbbell Roundabout DAY: Thursday

	A to E								A to D							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	16	5	0	0	0	0	0	21	41	13	7	12	0	0	0	73
07:15	23	5	2	0	0	0	0	30	50	17	5	9	0	2	0	83
07:30	32	2	3	0	0	0	0	37	63	13	6	9	0	1	0	92
07:45	20	2	0	0	0	0	0	22	55	21	4	15	0	0	0	95
H/TOT	91	14	5	0	0	0	0	110	209	64	22	45	0	3	0	343
08:00	26	10	2	0	0	0	0	38	65	16	2	19	0	0	0	102
08:15	31	7	0	0	0	0	0	38	62	9	3	12	1	0	0	87
08:30	20	3	3	0	0	0	0	26	50	11	5	20	0	1	0	87
08:45	15	7	0	0	0	0	0	22	60	17	11	22	0	0	0	110
H/TOT	92	27	5	0	0	0	0	124	237	53	21	73	1	1	0	386
09:00	13	5	0	0	0	0	0	18	50	9	10	19	0	0	0	88
09:15	19	3	1	0	0	0	0	23	46	15	5	24	1	0	0	91
09:30	15	5	0	0	0	0	0	20	43	12	5	31	0	1	0	92
09:45	16	4	0	0	1	0	0	21	38	10	5	25	1	1	0	80
H/TOT	63	17	1	0	1	0	0	82	177	46	25	99	2	2	0	351
P/TOT	246	58	11	0	1	0	0	316	623	163	68	217	3	6	0	1080

	A to E								A to D							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	28	2	0	0	0	0	0	30	56	18	3	15	0	0	0	92
16:15	31	4	1	0	0	0	0	36	56	10	4	14	1	1	0	86
16:30	33	3	0	0	0	0	0	36	79	11	7	12	0	0	0	109
16:45	37	6	0	0	0	0	0	43	63	10	5	13	0	0	0	91
H/TOT	129	15	1	0	0	0	0	145	254	49	19	54	1	1	0	378
17:00	34	0	0	0	0	0	0	34	63	14	3	13	0	0	0	93
17:15	38	2	0	0	0	0	0	40	67	5	5	8	0	0	0	85
17:30	43	5	0	0	0	0	0	48	38	3	5	13	0	1	0	60
17:45	47	1	1	0	0	0	0	49	38	4	2	20	0	0	0	64
H/TOT	162	8	1	0	0	0	0	171	206	26	15	54	0	1	0	302
P/TOT	291	23	2	0	0	0	0	316	460	75	34	108	1	2	0	680

SITE: 1

DATE: 06/07/2017

LOCATION: M6/Lymm Dumbbell Roundabout

DAY: Thursday

	A to C								A to B							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	5	2	1	0	0	0	0	8	41	16	5	5	0	1	0	68
07:15	6	1	0	0	0	0	0	7	65	12	4	4	0	0	0	85
07:30	0	0	0	0	0	0	0	0	70	16	1	4	0	1	0	92
07:45	9	1	3	0	0	0	0	13	68	17	4	7	0	2	0	98
H/TOT	20	4	4	0	0	0	0	28	244	61	14	20	0	4	0	343
08:00	2	1	2	0	0	0	0	5	69	21	3	6	1	2	0	102
08:15	6	2	2	0	0	0	0	10	81	12	2	4	0	1	0	100
08:30	5	1	0	0	0	0	0	6	54	14	7	2	0	0	0	77
08:45	8	1	0	1	0	0	0	10	40	9	5	7	0	0	0	61
H/TOT	21	5	4	1	0	0	0	31	244	56	17	19	1	3	0	340
09:00	8	0	0	0	0	0	0	8	45	7	3	5	0	0	0	60
09:15	5	1	0	0	0	0	0	6	37	9	2	7	0	0	0	55
09:30	8	3	0	0	0	0	0	11	25	7	6	2	1	0	0	41
09:45	6	0	0	1	0	0	0	7	27	9	9	5	3	0	0	53
H/TOT	27	4	0	1	0	0	0	32	134	32	20	19	4	0	0	209
P/TOT	68	13	8	2	0	0	0	91	622	149	51	58	5	7	0	892

	A to C								A to B							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	7	2	0	0	0	0	0	9	55	8	5	7	0	0	0	75
16:15	3	1	0	0	0	0	0	4	82	10	5	9	0	0	0	106
16:30	8	0	0	1	0	0	0	9	77	10	5	4	0	0	0	96
16:45	6	1	0	0	0	0	0	7	87	16	2	2	0	0	0	107
H/TOT	24	4	0	1	0	0	0	29	301	44	17	22	0	0	0	384
17:00	3	0	0	2	0	0	0	5	101	15	16	4	0	1	0	137
17:15	7	2	0	0	0	0	0	9	115	8	0	6	0	0	0	129
17:30	7	0	0	0	0	0	0	7	112	13	2	9	0	0	0	136
17:45	9	0	0	1	0	0	0	10	91	15	2	8	0	0	0	116
H/TOT	26	2	0	3	0	0	0	31	419	51	20	27	0	1	0	518
P/TOT	50	6	0	4	0	0	0	60	720	95	37	49	0	1	0	902

SITE: 1 DATE: 06/07/2017

LOCATION: M6/Lymm Dumbbell Roundabout DAY: Thursday

	A to A							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	1	0	0	0	0	0	1
07:45	1	0	0	0	0	0	0	1
H/TOT	1	1	0	0	0	0	0	2
08:00	0	0	0	0	0	0	0	0
08:15	3	0	0	0	0	0	0	3
08:30	1	0	0	0	0	0	0	1
08:45	1	2	0	0	0	0	0	3
H/TOT	5	2	0	0	0	0	0	7
09:00	2	0	0	0	0	0	0	2
09:15	3	0	0	0	0	0	0	3
09:30	0	1	0	0	0	0	0	1
09:45	1	0	0	0	0	0	0	1
H/TOT	6	1	0	0	0	0	0	7
P/TOT	12	4	0	0	0	0	0	16

	A to A							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	1	1	0	0	0	0	0	2
16:15	2	0	0	0	0	0	0	2
16:30	0	1	0	0	0	0	0	1
16:45	1	1	1	0	0	0	0	3
H/TOT	4	3	1	0	0	0	0	8
17:00	0	1	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0
17:30	1	0	0	0	0	0	0	1
17:45	1	1	0	0	0	0	0	2
H/TOT	2	2	0	0	0	0	0	4
P/TOT	6	5	1	0	0	0	0	12

SITE: 1

DATE: 06/07/2017

LOCATION: M6/Lymm Dumbbell Roundabout

DAY: Thursday

	B to A								B to E							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	89	7	10	2	0	0	0	108	6	1	0	0	0	0	0	7
07:15	106	13	9	5	0	0	0	133	8	0	0	0	0	0	0	8
07:30	105	15	10	7	0	0	0	137	4	0	0	0	0	0	0	4
07:45	132	14	9	5	0	0	0	160	10	0	2	0	0	0	0	12
H/TOT	432	49	38	19	0	0	0	538	28	1	2	0	0	0	0	31
08:00	119	13	6	6	0	1	0	145	8	1	2	0	0	0	0	11
08:15	127	11	3	11	0	0	0	152	6	0	0	0	0	0	0	6
08:30	97	8	1	8	1	3	0	118	6	0	0	0	0	0	0	6
08:45	99	13	3	9	0	0	0	124	9	2	1	0	0	0	0	12
H/TOT	442	45	13	34	1	4	0	539	29	3	3	0	0	0	0	35
09:00	93	14	6	7	0	0	0	120	7	2	0	0	0	0	0	9
09:15	51	7	4	3	0	0	0	65	13	0	0	0	0	0	0	13
09:30	58	10	5	2	0	2	0	77	17	4	0	0	0	0	0	21
09:45	38	16	7	2	0	0	0	63	4	0	0	0	0	0	0	4
H/TOT	240	47	22	14	0	2	0	325	41	6	0	0	0	0	0	47
P/TOT	1114	141	73	67	1	6	0	1402	98	10	5	0	0	0	0	113

	B to A								B to E							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	99	18	5	0	1	1	0	124	6	1	0	0	0	1	0	8
16:15	52	21	5	7	2	0	0	87	12	0	0	0	0	0	0	12
16:30	105	19	3	9	0	0	0	136	12	0	0	0	0	0	0	12
16:45	88	11	2	7	0	1	0	109	13	2	0	0	0	0	0	15
H/TOT	344	69	15	23	3	2	0	456	43	3	0	0	0	1	0	47
17:00	120	16	1	4	1	2	0	144	10	0	0	0	0	0	0	10
17:15	135	18	5	5	0	0	0	163	16	0	0	0	0	0	0	16
17:30	105	16	0	5	0	4	0	130	15	1	0	0	0	0	0	16
17:45	84	22	2	1	0	1	0	110	12	0	0	0	0	0	0	12
H/TOT	444	72	8	15	1	7	0	547	53	1	0	0	0	0	0	54
P/TOT	788	141	23	38	4	9	0	1003	96	4	0	0	0	1	0	101

SITE: 1

DATE: 06/07/2017

LOCATION: M6/Lymm Dumbbell Roundabout

DAY: Thursday

				B to D									B to C				
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	33	5	1	4	0	0	0	43	113	14	5	5	0	0	0	137
07:15	37	10	6	3	0	0	2	58	111	16	4	14	0	0	0	145
07:30	39	9	6	1	0	0	0	55	100	12	4	3	1	0	0	120
07:45	40	4	10	1	0	2	0	57	105	6	5	9	0	0	0	125
H/TOT	149	28	23	9	0	2	2	213	429	48	18	31	1	0	0	527
08:00	52	4	6	0	0	0	0	62	116	8	7	6	0	0	0	137
08:15	40	7	1	2	0	0	0	50	89	8	3	8	1	0	0	109
08:30	53	5	3	1	0	0	0	62	85	15	2	4	0	0	0	106
08:45	32	10	3	3	0	0	0	48	70	13	6	8	1	0	0	98
H/TOT	177	26	13	6	0	0	0	222	360	44	18	26	2	0	0	450
09:00	32	4	0	5	0	0	0	41	83	18	4	6	0	0	0	111
09:15	28	7	4	3	0	0	0	42	57	7	6	5	0	1	0	76
09:30	17	4	0	4	0	0	0	25	42	10	5	9	1	0	0	67
09:45	22	1	3	5	0	0	0	31	46	11	5	8	1	0	0	71
H/TOT	99	16	7	17	0	0	0	139	228	46	20	28	2	1	0	325
P/TOT	425	70	43	32	0	2	2	574	1017	138	56	85	5	1	0	1302

				B to D									B to C				
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	26	4	1	0	0	0	0	31	63	11	4	5	2	1	0	86
16:15	31	2	1	1	0	0	0	35	58	10	1	6	0	0	0	75
16:30	27	1	1	0	0	2	0	31	74	10	3	2	0	0	0	89
16:45	30	1	0	2	0	2	0	35	55	8	3	6	0	1	0	73
H/TOT	114	8	3	3	0	4	0	132	250	39	11	19	2	2	0	323
17:00	26	1	1	1	0	1	0	30	59	8	1	6	0	1	0	75
17:15	29	2	0	0	0	1	0	32	64	7	1	6	0	0	0	78
17:30	26	1	0	0	0	0	0	27	60	6	2	4	0	0	0	72
17:45	19	3	2	0	0	0	0	24	63	5	1	3	0	0	0	72
H/TOT	100	7	3	1	0	2	0	113	246	26	5	19	0	1	0	297
P/TOT	214	15	6	4	0	6	0	245	496	65	16	38	2	3	0	620

SITE: 1 DATE: 06/07/2017

LOCATION: M6/Lymm Dumbbell Roundabout DAY: Thursday

	B to B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	1	1	0	0	0	0	0	2
H/TOT	1	1	0	0	0	0	0	2
09:00	1	0	0	0	0	0	0	1
09:15	1	0	0	0	0	0	0	1
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
H/TOT	2	0	0	0	0	0	0	2
P/TOT	3	1	0	0	0	0	0	4

	B to B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	1	0	0	0	0	0	0	1
16:15	1	0	0	0	0	0	0	1
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
H/TOT	2	0	0	0	0	0	0	2
17:00	0	0	0	0	0	0	0	0
17:15	1	0	0	0	0	0	0	1
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
H/TOT	1	0	0	0	0	0	0	1
P/TOT	3	0	0	0	0	0	0	3

SITE: 1 DATE: 06/07/2017

LOCATION: M6/Lymm Dumbbell Roundabout DAY: Thursday

	C to B								C to A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	67	12	3	8	0	1	0	91	2	0	0	0	0	0	0	2
07:15	57	14	6	5	1	0	0	83	1	1	0	1	0	0	0	3
07:30	82	13	3	8	0	1	0	107	1	0	0	0	0	0	0	1
07:45	81	8	5	5	0	1	0	100	1	0	0	0	0	0	0	1
H/TOT	287	47	17	26	1	3	0	381	5	1	0	1	0	0	0	7
08:00	95	8	3	7	0	0	0	113	1	1	0	0	0	0	0	2
08:15	69	9	1	4	0	0	0	83	0	0	0	0	0	0	0	0
08:30	75	6	7	6	0	0	0	94	0	0	0	0	0	0	0	0
08:45	78	8	3	7	2	0	0	98	0	0	0	0	0	0	0	0
H/TOT	317	31	14	24	2	0	0	388	1	1	0	0	0	0	0	2
09:00	56	8	4	4	0	0	0	72	1	0	0	0	0	0	0	1
09:15	48	9	1	6	0	1	0	65	0	1	0	0	0	0	0	1
09:30	49	9	4	6	0	0	0	68	1	2	0	0	0	1	0	4
09:45	43	17	9	10	0	1	0	80	2	0	0	0	0	0	0	2
H/TOT	196	43	18	26	0	2	0	285	4	3	0	0	0	1	0	8
P/TOT	800	121	49	76	3	5	0	1054	10	5	0	1	0	1	0	17

	C to B								C to A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	88	21	11	10	0	0	0	130	47	19	5	10	0	0	0	81
16:15	110	21	5	11	0	0	0	147	72	23	2	7	0	0	0	104
16:30	108	13	6	5	1	0	0	133	74	23	3	14	1	0	0	115
16:45	129	9	3	10	0	0	0	151	78	25	6	10	0	0	0	119
H/TOT	435	64	25	36	1	0	0	561	271	90	16	41	1	0	0	419
17:00	103	24	3	8	0	0	0	138	69	24	4	7	0	0	0	104
17:15	102	13	6	7	0	2	0	130	48	15	4	10	0	0	0	77
17:30	108	14	7	7	0	0	0	136	59	16	4	12	1	0	0	92
17:45	121	9	2	5	1	0	0	138	45	9	3	5	1	0	0	63
H/TOT	434	60	18	27	1	2	0	542	221	64	15	34	2	0	0	336
P/TOT	869	124	43	63	2	2	0	1103	492	154	31	75	3	0	0	755

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DATE: 06/07/2017

LOCATION: M6/Lymm Dumbbell Roundabout

DAY: Thursday

	C to E								C to D							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	20	8	1	0	0	0	0	29	31	9	8	21	1	0	0	70
07:15	18	3	0	0	0	0	0	21	31	10	6	16	0	0	0	63
07:30	25	3	0	0	0	0	0	28	44	8	3	16	1	0	0	72
07:45	20	3	0	0	0	0	0	23	30	16	8	7	1	0	0	62
H/TOT	83	17	1	0	0	0	0	101	136	43	25	60	3	0	0	267
08:00	15	1	0	0	0	0	0	16	39	6	2	12	0	0	0	59
08:15	11	4	2	0	0	0	0	17	48	7	1	25	0	0	0	81
08:30	13	4	1	0	0	0	0	18	43	12	4	14	0	0	0	73
08:45	8	3	2	0	0	0	0	13	40	14	7	17	0	0	0	78
H/TOT	47	12	5	0	0	0	0	64	170	39	14	68	0	0	0	291
09:00	20	4	1	1	1	0	0	27	47	6	4	24	0	0	0	81
09:15	13	3	0	0	0	0	0	16	42	4	4	28	2	1	0	81
09:30	8	1	1	0	0	0	0	10	33	8	5	23	0	1	0	70
09:45	12	4	0	0	0	0	0	16	34	7	11	34	2	1	0	89
H/TOT	53	12	2	1	1	0	0	69	156	25	24	109	4	3	0	321
P/TOT	183	41	8	1	1	0	0	234	462	107	63	237	7	3	0	879

	C to E								C to D							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	18	7	0	0	1	0	0	26	22	10	6	10	0	0	0	48
16:15	16	7	0	0	0	0	0	23	33	5	5	19	0	1	0	63
16:30	14	4	1	0	0	0	0	19	32	2	2	14	0	0	0	50
16:45	41	3	0	0	0	0	0	44	23	10	3	22	0	0	0	58
H/TOT	89	21	1	0	1	0	0	112	110	27	16	65	0	1	0	219
17:00	35	6	0	0	0	0	0	41	26	2	6	18	0	0	0	52
17:15	34	3	2	0	0	0	0	39	29	3	2	15	0	0	0	49
17:30	27	1	0	0	0	0	0	28	32	7	5	16	0	0	0	60
17:45	20	3	0	0	0	0	0	23	43	2	3	19	0	0	0	67
H/TOT	116	13	2	0	0	0	0	131	130	14	16	68	0	0	0	228
P/TOT	205	34	3	0	1	0	0	243	240	41	32	133	0	1	0	447

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DATE: 06/07/2017

LOCATION: M6/Lymm Dumbbell Roundabout

DAY: Thursday

	C to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	2	0	0	0	0	0	0	2
07:15	2	1	1	2	0	0	0	6
07:30	10	2	0	0	0	0	0	12
07:45	23	1	3	3	1	0	0	31
H/TOT	37	4	4	5	1	0	0	51
08:00	18	2	0	1	0	0	0	21
08:15	23	5	2	2	0	0	0	32
08:30	22	1	0	6	0	0	0	29
08:45	23	4	3	2	0	0	0	32
H/TOT	86	12	5	11	0	0	0	114
09:00	11	2	3	2	0	1	0	19
09:15	14	4	1	4	1	0	0	24
09:30	11	3	1	0	0	0	0	15
09:45	6	1	0	2	0	0	0	9
H/TOT	42	10	5	8	1	1	0	67
P/TOT	165	26	14	24	2	1	0	232

	C to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	8	0	0	2	0	0	0	10
16:15	6	0	1	0	0	0	0	7
16:30	7	1	0	0	0	0	0	8
16:45	7	1	0	1	0	0	0	9
H/TOT	28	2	1	3	0	0	0	34
17:00	6	0	0	2	0	0	0	8
17:15	4	2	0	0	0	0	0	6
17:30	11	1	0	0	0	0	0	12
17:45	9	0	0	0	0	0	0	9
H/TOT	30	3	0	2	0	0	0	35
P/TOT	58	5	1	5	0	0	0	69

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LOCATION: M6/Lymm Dumbbell Roundabout

DAY: Thursday

	D to C								D to B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	15	8	6	21	0	0	0	50	7	3	0	0	0	0	0	10
07:15	16	9	9	27	0	0	0	61	17	2	2	3	0	0	0	24
07:30	28	12	6	24	0	0	0	70	13	4	2	4	0	0	0	23
07:45	24	14	6	15	0	0	0	59	28	3	2	1	0	0	0	34
H/TOT	83	43	27	87	0	0	0	240	65	12	6	8	0	0	0	91
08:00	25	11	11	14	1	0	0	62	27	1	0	0	0	0	0	28
08:15	38	10	3	16	0	0	0	67	19	2	1	1	0	0	0	23
08:30	36	5	4	21	0	0	0	66	20	0	0	1	1	1	0	23
08:45	28	19	8	26	0	0	0	81	24	2	2	1	0	0	0	29
H/TOT	127	45	26	77	1	0	0	276	90	5	3	3	1	1	0	103
09:00	35	11	12	20	0	0	0	78	27	1	2	1	0	0	0	31
09:15	27	10	6	25	0	0	0	68	31	4	1	0	0	0	0	36
09:30	44	8	11	41	0	0	0	104	15	5	0	0	0	0	0	20
09:45	19	14	3	22	0	0	0	58	26	2	2	1	0	0	0	31
H/TOT	125	43	32	108	0	0	0	308	99	12	5	2	0	0	0	118
P/TOT	335	131	85	272	1	0	0	824	254	29	14	13	1	1	0	312

	D to C								D to B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	25	4	4	9	0	0	0	42	32	4	3	0	0	1	0	40
16:15	24	10	3	14	0	0	0	51	43	6	1	1	1	0	0	52
16:30	25	7	5	12	0	0	0	49	52	4	4	2	0	1	0	63
16:45	26	4	2	9	0	0	0	41	31	2	3	2	0	0	0	38
H/TOT	100	25	14	44	0	0	0	183	158	16	11	5	1	2	0	193
17:00	43	8	1	12	1	0	0	65	66	3	3	1	0	0	0	73
17:15	33	8	1	14	1	0	0	57	68	4	2	1	0	0	0	75
17:30	43	1	4	9	1	0	0	58	54	2	2	0	0	0	0	58
17:45	37	5	3	6	1	0	0	52	65	4	0	1	0	0	0	70
H/TOT	156	22	9	41	4	0	0	232	253	13	7	3	0	0	0	276
P/TOT	256	47	23	85	4	0	0	415	411	29	18	8	1	2	0	469

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LOCATION: M6/Lymm Dumbbell Roundabout DAY: Thursday

	D to A								D to E							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	28	9	1	15	0	0	0	53	1	0	0	0	0	0	0	1
07:15	30	8	4	22	0	1	0	65	0	0	0	0	0	0	0	0
07:30	37	8	5	12	0	0	0	62	0	0	0	0	0	0	0	0
07:45	55	7	4	5	0	1	0	72	0	0	0	0	0	0	0	0
H/TOT	150	32	14	54	0	2	0	252	1	0	0	0	0	0	0	1
08:00	50	11	12	7	1	0	0	81	0	1	0	0	0	0	0	1
08:15	40	8	7	11	0	1	0	67	1	0	1	0	0	0	0	2
08:30	52	12	7	8	0	0	0	79	1	1	0	0	0	0	0	2
08:45	40	8	4	11	0	0	0	63	0	0	1	0	0	0	0	1
H/TOT	182	39	30	37	1	1	0	290	2	2	2	0	0	0	0	6
09:00	53	6	3	13	1	0	0	76	2	1	1	0	0	0	0	4
09:15	38	7	5	12	1	0	0	63	0	0	0	0	0	0	0	0
09:30	47	7	4	17	1	0	0	76	2	2	1	0	0	0	0	5
09:45	39	8	8	18	0	0	0	73	1	2	0	0	0	0	0	3
H/TOT	177	28	20	60	3	0	0	288	5	5	2	0	0	0	0	12
P/TOT	509	99	64	151	4	3	0	830	8	7	4	0	0	0	0	19

	D to A								D to E							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	27	17	2	10	0	0	0	56	2	0	0	0	0	0	0	2
16:15	50	9	4	8	0	3	0	74	2	1	0	0	1	0	0	4
16:30	50	13	6	6	0	1	0	76	0	0	0	0	0	0	0	0
16:45	66	15	4	8	0	1	0	94	6	1	0	0	0	0	0	7
H/TOT	193	54	16	32	0	5	0	300	10	2	0	0	1	0	0	13
17:00	90	25	5	6	1	0	0	127	2	0	0	0	0	0	1	3
17:15	72	19	6	4	0	0	0	101	4	0	0	0	0	0	0	4
17:30	72	11	4	3	0	0	0	90	0	0	0	0	0	0	0	0
17:45	125	12	4	11	0	3	0	155	0	0	0	0	0	0	0	0
H/TOT	359	67	19	24	1	3	0	473	6	0	0	0	0	0	1	7
P/TOT	552	121	35	56	1	8	0	773	16	2	0	0	1	0	1	20

SITE: 1

DATE: 06/07/2017

LOCATION: M6/Lymm Dumbbell Roundabout

DAY: Thursday

	D to D							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	1	0	0	0	1
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	1	0	0	0	1
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
09:00	1	0	0	0	0	0	0	1
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
H/TOT	1	0	0	0	0	0	0	1
P/TOT	1	0	0	1	0	0	0	2

	D to D							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	0	1	0	0	0	0	0	1
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
H/TOT	0	1	0	0	0	0	0	1
17:00	0	0	0	0	0	0	0	0
17:15	1	0	0	0	0	0	0	1
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	1	0	0	0	1
H/TOT	1	0	0	1	0	0	0	2
P/TOT	1	1	0	1	0	0	0	3

SITE: 1 DATE: 06/07/2017

LOCATION: M6/Lymm Dumbbell Roundabout DAY: Thursday

	E to D								E to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	4	2	0	0	0	0	0	6	26	3	1	0	0	0	0	30
07:15	5	1	1	0	0	0	0	7	36	5	0	0	0	0	0	41
07:30	9	1	0	0	0	0	0	10	43	4	0	0	0	0	0	47
07:45	5	3	0	0	0	0	0	8	53	5	3	0	0	0	0	61
H/TOT	23	7	1	0	0	0	0	31	158	17	4	0	0	0	0	179
08:00	8	1	1	0	0	0	0	10	42	1	1	0	0	0	0	44
08:15	8	1	0	0	0	0	0	9	44	1	1	1	0	0	0	47
08:30	9	4	0	0	0	0	0	13	32	1	0	0	0	0	0	33
08:45	8	1	1	0	0	0	0	10	23	2	0	0	0	0	0	25
H/TOT	33	7	2	0	0	0	0	42	141	5	2	1	0	0	0	149
09:00	11	2	0	0	0	0	0	13	26	4	1	0	0	0	0	31
09:15	11	5	0	0	0	0	0	16	16	2	0	0	0	0	0	18
09:30	11	3	0	0	0	0	0	14	20	1	0	0	2	0	0	23
09:45	6	0	1	0	0	0	0	7	16	1	0	0	0	0	0	17
H/TOT	39	10	1	0	0	0	0	50	78	8	1	0	2	0	0	89
P/TOT	95	24	4	0	0	0	0	123	377	30	7	1	2	0	0	417

	E to D								E to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	10	2	0	0	0	0	0	12	21	1	2	0	0	0	0	24
16:15	5	1	0	0	0	0	0	6	16	4	0	0	1	0	0	21
16:30	8	1	0	0	0	0	0	9	20	6	0	0	0	0	0	26
16:45	14	0	0	0	0	0	0	14	16	7	1	0	0	0	0	24
H/TOT	37	4	0	0	0	0	0	41	73	18	3	0	1	0	0	95
17:00	10	1	0	0	0	0	0	11	17	1	0	0	0	0	0	18
17:15	11	0	0	0	0	0	0	11	20	0	0	0	1	0	0	21
17:30	10	2	0	1	0	0	0	13	30	3	1	0	0	0	0	34
17:45	8	0	0	0	0	0	0	8	13	2	0	0	0	0	0	15
H/TOT	39	3	0	1	0	0	0	43	80	6	1	0	1	0	0	88
P/TOT	76	7	0	1	0	0	0	84	153	24	4	0	2	0	0	183

SITE: 1

DATE: 06/07/2017

LOCATION: M6/Lymm Dumbbell Roundabout

DAY: Thursday

				E to B									E to A				
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	4	0	0	0	0	0	0	4	27	1	0	0	0	0	0	28
07:15	6	0	0	0	0	1	0	7	36	3	0	0	0	0	0	39
07:30	3	0	0	0	0	1	0	4	50	2	0	0	0	0	0	52
07:45	8	0	0	0	0	0	0	8	48	4	0	0	0	0	0	52
H/TOT	21	0	0	0	0	2	0	23	161	10	0	0	0	0	0	171
08:00	4	0	0	0	0	0	0	4	37	1	1	0	0	0	0	39
08:15	6	0	1	0	1	0	0	8	52	2	1	0	0	1	0	56
08:30	5	0	0	0	0	0	0	5	30	2	0	0	0	0	0	32
08:45	6	2	0	0	0	0	0	8	28	1	0	0	0	0	0	29
H/TOT	21	2	1	0	1	0	0	25	147	6	2	0	0	1	0	156
09:00	3	0	1	0	0	0	0	4	27	5	0	0	0	0	0	32
09:15	7	0	0	0	0	0	0	7	17	0	1	0	0	0	0	18
09:30	3	1	0	0	0	0	0	4	22	2	1	0	0	0	0	25
09:45	4	1	0	0	0	0	0	5	17	0	0	0	0	0	0	17
H/TOT	17	2	1	0	0	0	0	20	83	7	2	0	0	0	0	92
P/TOT	59	4	2	0	1	2	0	68	391	23	4	0	0	1	0	419

				E to B									E to A				
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	6	2	0	0	0	0	0	8	16	6	1	0	0	0	0	23
16:15	10	0	0	0	0	0	0	10	19	7	0	0	0	0	0	26
16:30	5	2	0	0	0	0	0	7	23	7	2	0	0	0	0	32
16:45	5	1	0	0	0	0	0	6	11	1	0	1	0	0	0	13
H/TOT	26	5	0	0	0	0	0	31	69	21	3	1	0	0	0	94
17:00	6	1	0	0	0	0	0	7	23	2	2	0	0	0	0	27
17:15	8	0	0	0	0	0	0	8	21	0	0	0	0	0	0	21
17:30	10	1	0	0	0	0	0	11	37	0	0	0	0	0	0	37
17:45	8	0	0	0	0	0	0	8	24	1	2	0	0	0	0	27
H/TOT	32	2	0	0	0	0	0	34	105	3	4	0	0	0	0	112
P/TOT	58	7	0	0	0	0	0	65	174	24	7	1	0	0	0	206

SITE: 1 DATE: 06/07/2017

LOCATION: M6/Lymm Dumbbell Roundabout DAY: Thursday

	E to E							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	1	0	0	0	0	0	0	1
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
H/TOT	1	0	0	0	0	0	0	1
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	1	0	0	0	0	0	0	1

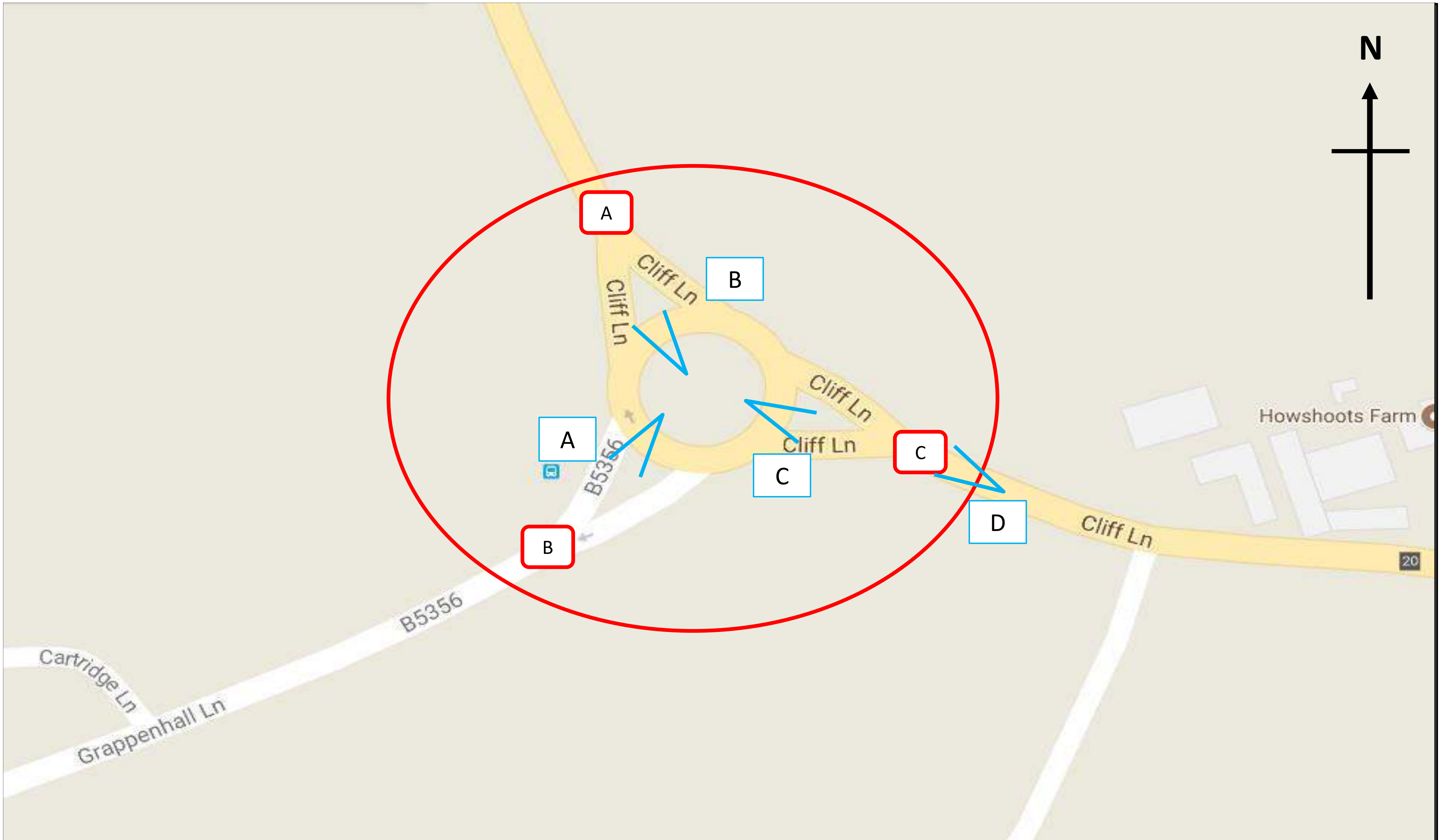
	E to E							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

SITE: 1 DATE: 06/07/2017 SITE: 1

LOCATION: M6/Lymm Dumbbell Roundabout DAY: Thursday LOCATION: M6/Lymm Dum

	TO ARM A								FROM ARM A									TO ARM B		
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	TIME	CAR	LGV	OGV1
07:00	146	17	11	17	0	0	0	191	103	36	13	17	0	1	0	170	07:00	119	31	8
07:15	173	25	13	28	0	1	0	240	144	35	11	13	0	2	0	205	07:15	145	28	12
07:30	193	26	15	19	0	0	0	253	165	32	10	13	0	2	0	222	07:30	168	33	6
07:45	237	25	13	10	0	1	0	286	153	41	11	22	0	2	0	229	07:45	185	28	11
H/TOT	749	93	52	74	0	2	0	970	565	144	45	65	0	7	0	826	H/TOT	617	120	37
08:00	207	26	19	13	1	1	0	267	162	48	9	25	1	2	0	247	08:00	195	30	6
08:15	222	21	11	22	0	2	0	278	183	30	7	16	1	1	0	238	08:15	175	23	5
08:30	180	22	8	16	1	3	0	230	130	29	15	22	0	1	0	197	08:30	154	20	14
08:45	168	24	7	20	0	0	0	219	124	36	16	30	0	0	0	206	08:45	149	22	10
H/TOT	777	93	45	71	2	6	0	994	599	143	47	93	2	4	0	888	H/TOT	673	95	35
09:00	176	25	9	20	1	0	0	231	118	21	13	24	0	0	0	176	09:00	132	16	10
09:15	109	15	10	15	1	0	0	150	110	28	8	31	1	0	0	178	09:15	124	22	4
09:30	128	22	10	19	1	3	0	183	91	28	11	33	1	1	0	165	09:30	92	22	10
09:45	97	24	15	20	0	0	0	156	88	23	14	31	5	1	0	162	09:45	100	29	20
H/TOT	510	86	44	74	3	3	0	720	407	100	46	119	7	2	0	681	H/TOT	448	89	44
P/TOT	2036	272	141	219	5	11	0	2684	1571	387	138	277	9	13	0	2395	P/TOT	1738	304	116

	TO ARM A								FROM ARM A									TO ARM B		
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	TIME	CAR	LGV	OGV1
16:00	190	61	13	20	1	1	0	286	147	31	8	22	0	0	0	208	16:00	182	35	19
16:15	195	60	11	22	2	3	0	293	174	25	10	23	1	1	0	234	16:15	246	37	11
16:30	252	63	14	29	1	1	0	360	197	25	12	17	0	0	0	251	16:30	242	29	15
16:45	244	53	13	26	0	2	0	338	194	34	8	15	0	0	0	251	16:45	252	28	8
H/TOT	881	237	51	97	4	7	0	1277	712	115	38	77	1	1	0	944	H/TOT	922	129	53
17:00	302	68	12	17	2	2	0	403	201	30	19	19	0	1	0	270	17:00	276	43	22
17:15	276	52	15	19	0	0	0	362	227	17	5	14	0	0	0	263	17:15	294	25	8
17:30	274	43	8	20	1	4	0	350	201	21	7	22	0	1	0	252	17:30	284	30	11
17:45	279	45	11	17	1	4	0	357	186	21	5	29	0	0	0	241	17:45	285	28	4
H/TOT	1131	208	46	73	4	10	0	1472	815	89	36	84	0	2	0	1026	H/TOT	1139	126	45
P/TOT	2012	445	97	170	8	17	0	2749	1527	204	74	161	1	3	0	1970	P/TOT	2061	255	98



NDC NATIONWIDE DATA COLLECTION	**Site / Location:**	Site 2, Cliff Ln/Grappenhall Ln	**Project No:**	7634	**Drawing No:**	7634-02	**Drawn By:** EA
	Survey Date:	Thursday 6th July 2017	**Project Name:**	Warrington M6			
	Survey Times:	07:00 to 10:00 & 16:00 to 18:00	**Drawing Title:**	Site Layout and Observed Movements			

SITE: 2 DATE: 06/07/2017

LOCATION: Cliff Ln/Grappenhall Ln DAY: Thursday

	A to C								A to B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	176	14	4	6	0	0	0	200	4	0	0	0	0	0	0	4
07:15	190	22	3	5	0	0	0	220	0	1	0	0	0	2	0	3
07:30	173	21	6	0	1	0	0	201	7	2	0	0	0	1	0	10
07:45	184	15	8	0	0	1	0	208	10	5	0	0	0	0	0	15
H/TOT	723	72	21	11	1	1	0	829	21	8	0	0	0	3	0	32
08:00	191	16	3	6	0	0	0	216	8	1	0	0	0	0	0	9
08:15	167	13	5	3	0	0	0	188	12	0	0	0	0	0	0	12
08:30	148	14	2	1	0	2	0	167	13	2	1	1	0	0	0	17
08:45	121	22	4	4	1	1	0	153	16	0	1	0	0	0	0	17
H/TOT	627	65	14	14	1	3	0	724	49	3	2	1	0	0	0	55
09:00	128	17	2	9	0	0	0	156	17	0	0	0	0	0	0	17
09:15	98	15	6	3	0	1	0	123	6	3	0	0	0	0	0	9
09:30	79	14	5	5	0	2	0	105	4	1	2	0	0	1	0	8
09:45	66	11	8	2	1	1	0	89	3	1	0	0	0	0	0	4
H/TOT	371	57	21	19	1	4	0	473	30	5	2	0	0	1	0	38
P/TOT	1721	194	56	44	3	8	0	2026	100	16	4	1	0	4	0	125

	A to C								A to B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	104	18	9	0	1	1	0	133	7	3	1	0	0	0	0	11
16:15	95	16	2	1	2	0	0	116	3	1	0	0	0	1	0	5
16:30	106	11	4	2	0	2	0	125	5	0	0	0	0	0	0	5
16:45	70	9	3	3	0	1	0	86	6	0	0	0	0	1	0	7
H/TOT	375	54	18	6	3	4	0	460	21	4	1	0	0	2	0	28
17:00	103	6	2	4	0	1	0	116	3	1	0	1	0	0	0	5
17:15	109	10	2	1	0	0	1	123	2	2	0	0	0	0	0	4
17:30	83	8	0	0	0	1	0	92	5	1	0	0	0	0	0	6
17:45	84	6	1	0	0	0	0	91	6	1	0	0	0	0	2	9
H/TOT	379	30	5	5	0	2	1	422	16	5	0	1	0	0	2	24
P/TOT	754	84	23	11	3	6	1	882	37	9	1	1	0	2	2	52

SITE: 2

DATE: 06/07/2017

LOCATION: Cliff Ln/Grappenhall Ln

DAY: Thursday

	A to A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

	A to A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	1	0	0	0	0	0	0	1
H/TOT	1	0	0	0	0	0	0	1
17:00	0	0	0	0	0	0	0	0
17:15	1	0	0	0	0	0	0	1
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
H/TOT	1	0	0	0	0	0	0	1
P/TOT	2	0	0	0	0	0	0	2

SITE: 2

DATE: 06/07/2017

LOCATION: Cliff Ln/Grappenhall Ln

DAY: Thursday

	B to A								B to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	1	3	1	0	0	0	0	5	75	9	12	7	0	0	0	103
07:15	1	0	0	1	0	0	0	2	73	15	16	15	0	0	1	120
07:30	3	0	0	0	1	0	0	4	76	13	15	11	0	0	0	115
07:45	2	1	1	0	0	0	0	4	110	9	18	15	0	1	0	153
H/TOT	7	4	2	1	1	0	0	15	334	46	61	48	0	1	1	491
08:00	4	0	0	0	0	0	0	4	98	13	15	8	0	1	0	135
08:15	2	1	1	1	0	0	0	5	111	10	7	15	1	0	0	144
08:30	6	0	1	1	1	0	0	9	88	13	3	11	2	1	0	118
08:45	7	2	0	1	0	0	0	10	92	19	8	15	0	0	0	134
H/TOT	19	3	2	3	1	0	0	28	389	55	33	49	3	2	0	531
09:00	8	4	0	0	0	0	0	12	88	18	8	11	0	0	0	125
09:15	7	1	1	0	0	0	0	9	36	8	5	10	0	0	0	59
09:30	5	3	1	2	0	0	0	11	44	14	4	9	0	0	0	71
09:45	7	2	0	1	0	0	0	10	48	17	8	12	0	0	0	85
H/TOT	27	10	2	3	0	0	0	42	216	57	25	42	0	0	0	340
P/TOT	53	17	6	7	2	0	0	85	939	158	119	139	3	3	1	1362

	B to A								B to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	17	0	0	1	1	2	0	21	93	16	3	5	2	1	0	120
16:15	6	1	2	0	0	0	0	9	56	23	4	13	0	0	0	96
16:30	10	2	2	0	0	0	0	14	130	15	4	10	0	0	0	159
16:45	10	0	0	0	0	0	0	10	97	14	3	9	0	3	0	126
H/TOT	43	3	4	1	1	2	0	54	376	68	14	37	2	4	0	501
17:00	15	0	0	0	0	0	0	15	123	16	0	8	1	2	0	150
17:15	3	0	0	1	0	0	0	4	127	18	3	8	0	0	0	156
17:30	13	1	0	1	1	0	0	16	117	23	0	9	0	4	0	153
17:45	9	0	0	0	0	0	0	9	95	21	3	6	0	1	0	126
H/TOT	40	1	0	2	1	0	0	44	462	78	6	31	1	7	0	585
P/TOT	83	4	4	3	2	2	0	98	838	146	20	68	3	11	0	1086

SITE: 2 DATE: 06/07/2017

LOCATION: Cliff Ln/Grappenhall Ln DAY: Thursday

	B to B							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

	B to B							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

SITE: 2 DATE: 06/07/2017

LOCATION: Cliff Ln/Grappenhall Ln DAY: Thursday

	C to B								C to A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	58	19	6	11	0	1	0	95	64	12	1	4	0	1	0	82
07:15	71	17	5	6	1	1	0	101	76	11	6	6	0	0	0	99
07:30	79	19	3	9	0	2	0	112	90	16	4	7	0	1	0	118
07:45	101	13	9	7	0	2	0	132	84	15	2	4	0	1	0	106
H/TOT	309	68	23	33	1	6	0	440	314	54	13	21	0	3	0	405
08:00	78	19	2	12	0	0	0	111	114	12	4	3	1	2	0	136
08:15	72	7	0	8	1	0	0	88	98	16	5	1	0	0	0	120
08:30	58	11	9	5	1	1	0	85	102	10	5	4	0	1	0	122
08:45	68	11	7	11	0	0	0	97	80	12	3	3	2	0	0	100
H/TOT	276	48	18	36	2	1	0	381	394	50	17	11	3	3	0	478
09:00	39	10	4	8	0	0	0	61	91	6	5	3	0	0	0	105
09:15	44	7	1	11	0	0	0	63	77	14	4	2	0	1	0	98
09:30	43	11	8	7	1	0	0	70	54	11	2	1	0	0	0	68
09:45	34	11	10	7	3	0	0	65	67	17	8	10	0	1	0	103
H/TOT	160	39	23	33	4	0	0	259	289	48	19	16	0	2	0	374
P/TOT	745	155	64	102	7	7	0	1080	997	152	49	48	3	8	0	1257

	C to B								C to A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	56	21	14	16	0	0	0	107	121	21	4	0	0	2	0	148
16:15	79	6	8	18	0	0	0	111	161	24	2	3	1	0	0	191
16:30	68	8	12	8	0	1	1	98	178	24	3	3	1	0	1	210
16:45	71	12	5	9	0	0	0	97	179	16	3	5	0	0	1	204
H/TOT	274	47	39	51	0	1	1	413	639	85	12	11	2	2	2	753
17:00	97	9	18	12	0	1	0	137	173	29	3	0	0	1	0	206
17:15	101	15	7	13	0	0	1	137	189	10	1	2	0	3	0	205
17:30	96	14	2	14	0	1	0	127	196	14	6	2	0	0	0	218
17:45	90	13	1	15	0	0	0	119	199	16	2	0	1	0	0	218
H/TOT	384	51	28	54	0	2	1	520	757	69	12	4	1	4	0	847
P/TOT	658	98	67	105	0	3	2	933	1396	154	24	15	3	6	2	1600

SITE: 2

DATE: 06/07/2017

LOCATION: Cliff Ln/Grappenhall Ln

DAY: Thursday

	C to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	2	0	0	0	0	0	0	2
H/TOT	2	0	0	0	0	0	0	2
09:00	0	0	0	0	0	0	0	0
09:15	0	1	0	0	0	0	0	1
09:30	0	0	0	0	0	0	0	0
09:45	1	0	0	0	0	0	0	1
H/TOT	1	1	0	0	0	0	0	2
P/TOT	3	1	0	0	0	0	0	4

	C to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	1	0	0	0	0	0	0	1
16:15	0	0	0	0	0	0	0	0
16:30	0	1	0	0	0	0	0	1
16:45	0	0	0	0	0	0	0	0
H/TOT	1	1	0	0	0	0	0	2
17:00	3	0	1	0	0	0	0	4
17:15	4	0	1	1	0	0	0	6
17:30	0	0	0	0	0	0	0	0
17:45	1	0	0	1	0	0	0	2
H/TOT	8	0	2	2	0	0	0	12
P/TOT	9	1	2	2	0	0	0	14

SITE: 2 DATE: 06/07/2017

LOCATION: Cliff Ln/Grappenhall Ln DAY: Thursday

	TO ARM A								FROM ARM A							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	65	15	2	4	0	1	0	87	180	14	4	6	0	0	0	204
07:15	77	11	6	7	0	0	0	101	190	23	3	5	0	2	0	223
07:30	93	16	4	7	1	1	0	122	180	23	6	0	1	1	0	211
07:45	86	16	3	4	0	1	0	110	194	20	8	0	0	1	0	223
H/TOT	321	58	15	22	1	3	0	420	744	80	21	11	1	4	0	861
08:00	118	12	4	3	1	2	0	140	199	17	3	6	0	0	0	225
08:15	100	17	6	2	0	0	0	125	179	13	5	3	0	0	0	200
08:30	108	10	6	5	1	1	0	131	161	16	3	2	0	2	0	184
08:45	87	14	3	4	2	0	0	110	137	22	5	4	1	1	0	170
H/TOT	413	53	19	14	4	3	0	506	676	68	16	15	1	3	0	779
09:00	99	10	5	3	0	0	0	117	145	17	2	9	0	0	0	173
09:15	84	15	5	2	0	1	0	107	104	18	6	3	0	1	0	132
09:30	59	14	3	3	0	0	0	79	83	15	7	5	0	3	0	113
09:45	74	19	8	11	0	1	0	113	69	12	8	2	1	1	0	93
H/TOT	316	58	21	19	0	2	0	416	401	62	23	19	1	5	0	511
P/TOT	1050	169	55	55	5	8	0	1342	1821	210	60	45	3	12	0	2151

	TO ARM A								FROM ARM A							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	138	21	4	1	1	4	0	169	111	21	10	0	1	1	0	144
16:15	167	25	4	3	1	0	0	200	98	17	2	1	2	1	0	121
16:30	188	26	5	3	1	0	1	224	111	11	4	2	0	2	0	130
16:45	190	16	3	5	0	0	1	215	77	9	3	3	0	2	0	94
H/TOT	683	88	16	12	3	4	2	808	397	58	19	6	3	6	0	489
17:00	188	29	3	0	0	1	0	221	106	7	2	5	0	1	0	121
17:15	193	10	1	3	0	3	0	210	112	12	2	1	0	0	1	128
17:30	209	15	6	3	1	0	0	234	88	9	0	0	0	1	0	98
17:45	208	16	2	0	1	0	0	227	90	7	1	0	0	0	2	100
H/TOT	798	70	12	6	2	4	0	892	396	35	5	6	0	2	3	447
P/TOT	1481	158	28	18	5	8	2	1700	793	93	24	12	3	8	3	936

SITE: 2

DATE: 06/07/2017

LOCATION: Cliff Ln/Grappenhall Ln

DAY: Thursday

	TO ARM B								FROM ARM B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	62	19	6	11	0	1	0	99	76	12	13	7	0	0	0	108
07:15	71	18	5	6	1	3	0	104	74	15	16	16	0	0	1	122
07:30	86	21	3	9	0	3	0	122	79	13	15	11	1	0	0	119
07:45	111	18	9	7	0	2	0	147	112	10	19	15	0	1	0	157
H/TOT	330	76	23	33	1	9	0	472	341	50	63	49	1	1	1	506
08:00	86	20	2	12	0	0	0	120	102	13	15	8	0	1	0	139
08:15	84	7	0	8	1	0	0	100	113	11	8	16	1	0	0	149
08:30	71	13	10	6	1	1	0	102	94	13	4	12	3	1	0	127
08:45	84	11	8	11	0	0	0	114	99	21	8	16	0	0	0	144
H/TOT	325	51	20	37	2	1	0	436	408	58	35	52	4	2	0	559
09:00	56	10	4	8	0	0	0	78	96	22	8	11	0	0	0	137
09:15	50	10	1	11	0	0	0	72	43	9	6	10	0	0	0	68
09:30	47	12	10	7	1	1	0	78	49	17	5	11	0	0	0	82
09:45	37	12	10	7	3	0	0	69	55	19	8	13	0	0	0	95
H/TOT	190	44	25	33	4	1	0	297	243	67	27	45	0	0	0	382
P/TOT	845	171	68	103	7	11	0	1205	992	175	125	146	5	3	1	1447

	TO ARM B								FROM ARM B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	63	24	15	16	0	0	0	118	110	16	3	6	3	3	0	141
16:15	82	7	8	18	0	1	0	116	62	24	6	13	0	0	0	105
16:30	73	8	12	8	0	1	1	103	140	17	6	10	0	0	0	173
16:45	77	12	5	9	0	1	0	104	107	14	3	9	0	3	0	136
H/TOT	295	51	40	51	0	3	1	441	419	71	18	38	3	6	0	555
17:00	100	10	18	13	0	1	0	142	138	16	0	8	1	2	0	165
17:15	103	17	7	13	0	0	1	141	130	18	3	9	0	0	0	160
17:30	101	15	2	14	0	1	0	133	130	24	0	10	1	4	0	169
17:45	96	14	1	15	0	0	2	128	104	21	3	6	0	1	0	135
H/TOT	400	56	28	55	0	2	3	544	502	79	6	33	2	7	0	629
P/TOT	695	107	68	106	0	5	4	985	921	150	24	71	5	13	0	1184

SITE: 2 DATE: 06/07/2017

LOCATION: Cliff Ln/Grappenhall Ln DAY: Thursday

	TO ARM C								FROM ARM C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	251	23	16	13	0	0	0	303	122	31	7	15	0	2	0	177
07:15	263	37	19	20	0	0	1	340	147	28	11	12	1	1	0	200
07:30	249	34	21	11	1	0	0	316	169	35	7	16	0	3	0	230
07:45	294	24	26	15	0	2	0	361	185	28	11	11	0	3	0	238
H/TOT	1057	118	82	59	1	2	1	1320	623	122	36	54	1	9	0	845
08:00	289	29	18	14	0	1	0	351	192	31	6	15	1	2	0	247
08:15	278	23	12	18	1	0	0	332	170	23	5	9	1	0	0	208
08:30	236	27	5	12	2	3	0	285	160	21	14	9	1	2	0	207
08:45	215	41	12	19	1	1	0	289	150	23	10	14	2	0	0	199
H/TOT	1018	120	47	63	4	5	0	1257	672	98	35	47	5	4	0	861
09:00	216	35	10	20	0	0	0	281	130	16	9	11	0	0	0	166
09:15	134	24	11	13	0	1	0	183	121	22	5	13	0	1	0	162
09:30	123	28	9	14	0	2	0	176	97	22	10	8	1	0	0	138
09:45	115	28	16	14	1	1	0	175	102	28	18	17	3	1	0	169
H/TOT	588	115	46	61	1	4	0	815	450	88	42	49	4	2	0	635
P/TOT	2663	353	175	183	6	11	1	3392	1745	308	113	150	10	15	0	2341

	TO ARM C								FROM ARM C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	198	34	12	5	3	2	0	254	178	42	18	16	0	2	0	256
16:15	151	39	6	14	2	0	0	212	240	30	10	21	1	0	0	302
16:30	236	27	8	12	0	2	0	285	246	33	15	11	1	1	2	309
16:45	167	23	6	12	0	4	0	212	250	28	8	14	0	0	1	301
H/TOT	752	123	32	43	5	8	0	963	914	133	51	62	2	3	3	1168
17:00	229	22	3	12	1	3	0	270	273	38	22	12	0	2	0	347
17:15	240	28	6	10	0	0	1	285	294	25	9	16	0	3	1	348
17:30	200	31	0	9	0	5	0	245	292	28	8	16	0	1	0	345
17:45	180	27	4	7	0	1	0	219	290	29	3	16	1	0	0	339
H/TOT	849	108	13	38	1	9	1	1019	1149	120	42	60	1	6	1	1379
P/TOT	1601	231	45	81	6	17	1	1982	2063	253	93	122	3	9	4	2547

SITE: 2

DATE: 06/07/2017

LOCATION: Cliff Ln/Grappenhall Ln

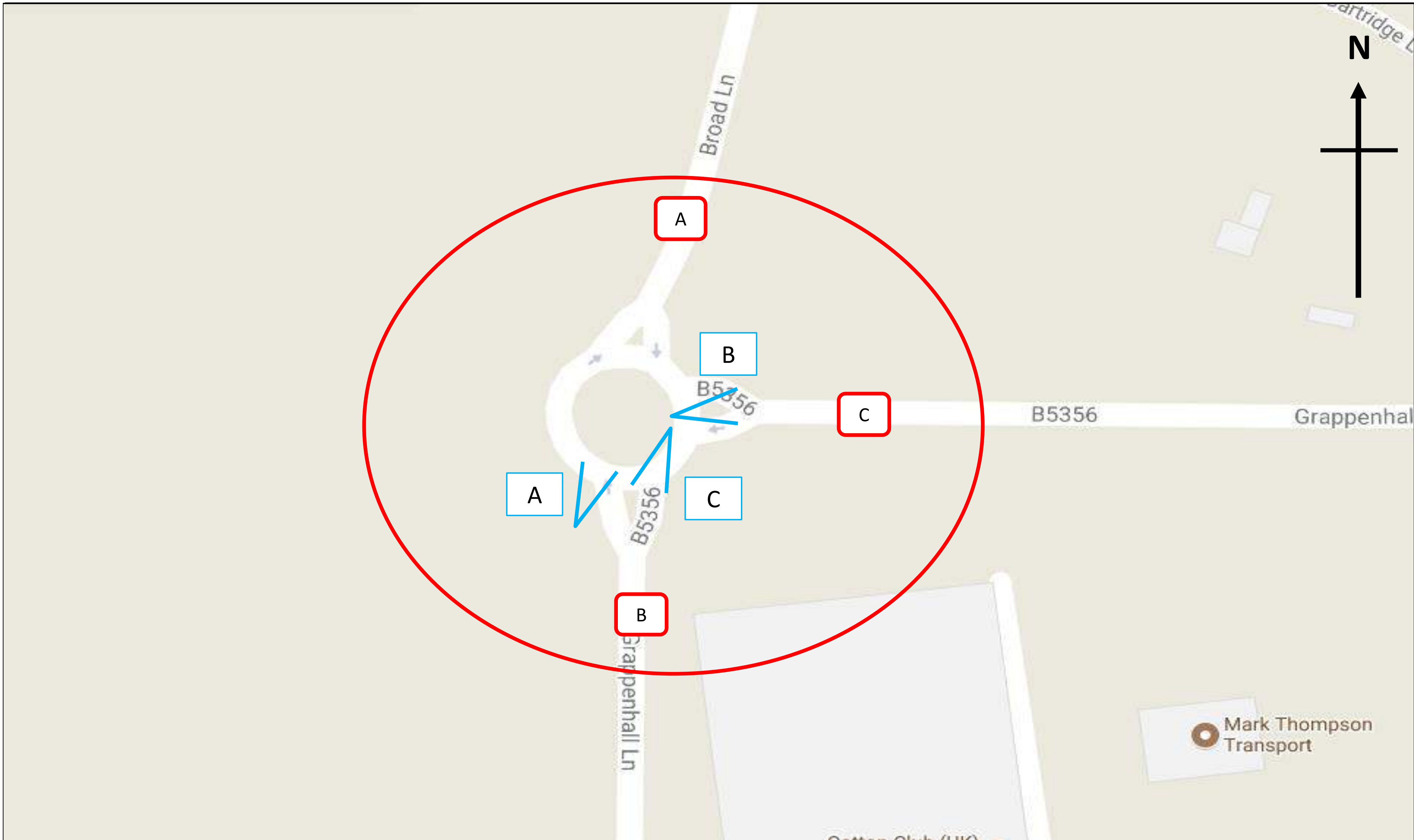
DAY: Thursday

TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
	JUNCTION TOTAL							
07:00	378	57	24	28	0	2	0	489
07:15	411	66	30	33	1	3	1	545
07:30	428	71	28	27	2	4	0	560
07:45	491	58	38	26	0	5	0	618
H/TOT	1708	252	120	114	3	14	1	2212
08:00	493	61	24	29	1	3	0	611
08:15	462	47	18	28	2	0	0	557
08:30	415	50	21	23	4	5	0	518
08:45	386	66	23	34	3	1	0	513
H/TOT	1756	224	86	114	10	9	0	2199
09:00	371	55	19	31	0	0	0	476
09:15	268	49	17	26	0	2	0	362
09:30	229	54	22	24	1	3	0	333
09:45	226	59	34	32	4	2	0	357
H/TOT	1094	217	92	113	5	7	0	1528
P/TOT	4558	693	298	341	18	30	1	5939

PEAK HOUR CALCULATION	TOT
07:00 to 08:00	2212
07:15 to 08:15	2334
07:30 to 08:30	**2346**
07:45 to 08:45	2304
08:00 to 09:00	2199
08:15 to 09:15	2064
08:30 to 09:30	1869
08:45 to 09:45	1684
09:00 to 10:00	1528
PEAK VALUE	**2346**

TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
	JUNCTION TOTAL							
16:00	399	79	31	22	4	6	0	541
16:15	400	71	18	35	3	1	0	528
16:30	497	61	25	23	1	3	2	612
16:45	434	51	14	26	0	5	1	531
H/TOT	1730	262	88	106	8	15	3	2212
17:00	517	61	24	25	1	5	0	633
17:15	536	55	14	26	0	3	2	636
17:30	510	61	8	26	1	6	0	612
17:45	484	57	7	22	1	1	2	574
H/TOT	2047	234	53	99	3	15	4	2455
P/TOT	3777	496	141	205	11	30	7	4667

PEAK HOUR CALCULATION	TOT
16:00 to 17:00	2212
16:15 to 17:15	2304
16:30 to 17:30	2412
16:45 to 17:45	2412
17:00 to 18:00	**2455**
PEAK VALUE	**2455**



NDC NATIONWIDE DATA COLLECTION	**Site / Location:**	Site 3, Grappenhall Ln/Broad Ln	**Project No:**	7634	**Drawing No:**	7634-03	**Drawn By:** EA
	Survey Date:	Thursday 6th July 2017	**Project Name:**	Warrington M6			
	Survey Times:	07:00 to 10:00 & 16:00 to 18:00	**Drawing Title:**	Site Layout and Observed Movements			

SITE: 3

DATE: 06/07/2017

LOCATION: Grappenhall Ln/Broad Ln

DAY: Thursday

	A to C								A to B							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	2	0	1	1	0	0	0	4	14	8	0	0	0	0	1	23
07:15	4	1	0	0	0	0	0	5	43	4	0	0	0	0	2	49
07:30	2	0	0	0	0	0	0	2	45	6	0	0	0	4	0	55
07:45	7	0	0	0	0	0	0	7	45	6	1	0	0	0	2	54
H/TOT	15	1	1	1	0	0	0	18	147	24	1	0	0	4	5	181
08:00	6	1	1	0	0	0	0	8	37	3	0	0	0	1	2	43
08:15	7	0	0	0	0	0	0	7	47	1	0	1	2	2	0	53
08:30	4	1	0	0	0	0	0	5	27	4	1	0	1	0	0	33
08:45	2	0	0	0	0	0	0	2	34	2	0	0	0	0	0	36
H/TOT	19	2	1	0	0	0	0	22	145	10	1	1	3	3	2	165
09:00	3	0	0	0	0	0	0	3	21	2	0	0	0	0	1	24
09:15	1	0	0	0	0	0	0	1	10	1	0	0	0	0	0	11
09:30	2	0	0	0	0	0	0	2	3	0	1	0	0	0	0	4
09:45	0	0	0	0	0	0	0	0	8	1	0	0	0	0	1	10
H/TOT	6	0	0	0	0	0	0	6	42	4	1	0	0	0	2	49
P/TOT	40	3	2	1	0	0	0	46	334	38	3	1	3	7	9	395

	A to C								A to B							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	2	0	0	0	0	0	0	2	10	4	0	0	0	0	0	14
16:15	1	1	1	0	0	0	0	3	10	2	0	0	0	2	0	14
16:30	1	1	0	0	0	0	0	2	11	0	0	0	0	0	2	13
16:45	2	0	1	0	0	0	0	3	9	4	0	0	0	0	1	14
H/TOT	6	2	2	0	0	0	0	10	40	10	0	0	0	2	3	55
17:00	3	0	0	0	0	0	0	3	14	0	2	0	0	0	0	16
17:15	1	0	0	0	0	0	0	1	11	2	0	0	0	0	2	15
17:30	3	0	0	0	0	0	0	3	10	1	0	0	0	2	2	15
17:45	0	0	0	0	0	0	0	0	9	1	1	0	0	0	0	11
H/TOT	7	0	0	0	0	0	0	7	10	4	3	0	0	2	4	57
P/TOT	13	2	2	0	0	0	0	17	50	14	3	0	0	4	7	112

SITE: 3 DATE: 06/07/2017

LOCATION: Grappenhall Ln/Broad Ln DAY: Thursday

	A to A							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

	A to A							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

SITE: 3 DATE: 06/07/2017

LOCATION: Grappenhall Ln/Broad Ln DAY: Thursday

	B to A								B to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	3	1	1	0	0	0	0	5	76	13	9	8	0	0	0	106
07:15	5	1	0	0	0	0	2	8	69	10	14	16	0	0	0	109
07:30	4	1	1	0	1	1	1	9	76	11	20	11	0	0	0	118
07:45	4	1	2	0	0	0	0	7	115	10	14	16	0	1	0	156
H/TOT	16	4	4	0	1	1	3	29	336	44	57	51	0	1	0	489
08:00	9	1	1	0	0	0	0	11	89	11	13	8	0	1	0	122
08:15	6	2	3	0	0	0	1	12	106	12	7	16	2	0	0	143
08:30	14	2	1	0	0	0	0	17	86	13	5	12	2	0	0	118
08:45	8	4	0	0	1	1	0	14	103	19	11	17	0	0	0	150
H/TOT	37	9	5	0	1	1	1	54	384	55	36	53	4	1	0	533
09:00	13	2	1	0	0	2	0	18	81	17	6	11	0	0	0	115
09:15	12	4	0	0	0	0	0	16	41	10	6	8	0	0	0	65
09:30	5	0	0	0	0	0	0	5	47	19	6	13	0	0	0	85
09:45	7	1	0	0	0	0	0	8	51	17	7	9	0	0	0	84
H/TOT	37	7	1	0	0	2	0	47	220	63	25	41	0	0	0	349
P/TOT	90	20	10	0	2	4	4	130	940	162	118	145	4	2	0	1371

	B to A								B to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	34	3	0	0	0	3	0	40	102	14	5	7	2	3	0	133
16:15	21	5	0	0	0	1	0	27	60	25	4	11	0	0	0	100
16:30	46	3	1	0	0	0	1	51	156	16	4	11	0	0	0	187
16:45	28	6	1	1	0	1	0	37	94	11	2	9	0	4	0	120
H/TOT	129	17	2	1	0	5	1	155	412	66	15	38	2	7	0	540
17:00	71	2	1	0	0	1	1	76	170	21	1	10	1	1	0	204
17:15	45	11	0	0	0	1	1	58	102	19	2	10	0	1	0	134
17:30	40	5	1	0	0	1	1	48	107	15	2	7	1	4	0	136
17:45	40	6	0	0	0	2	0	48	88	13	3	4	0	0	0	108
H/TOT	196	24	2	0	0	5	3	230	467	68	8	31	2	6	0	582
P/TOT	325	41	4	1	0	10	4	385	879	134	23	69	4	13	0	1122

SITE: 3 DATE: 06/07/2017

LOCATION: Grappenhall Ln/Broad Ln DAY: Thursday

				B to B				
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	2	0	0	0	0	0	0	2
H/TOT	2	0	0	0	0	0	0	2
08:00	0	0	0	0	0	0	0	0
08:15	2	0	0	0	0	0	0	2
08:30	0	0	0	0	0	0	0	0
08:45	1	0	0	0	0	0	0	1
H/TOT	3	0	0	0	0	0	0	3
09:00	0	0	0	0	0	0	0	0
09:15	1	1	0	0	0	0	0	2
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
H/TOT	1	1	0	0	0	0	0	2
P/TOT	6	1	0	0	0	0	0	7

				B to B				
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	1	0	0	0	0	0	0	1
16:45	0	0	0	0	0	0	0	0
H/TOT	1	0	0	0	0	0	0	1
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	1	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0
H/TOT	0	0	1	0	0	0	0	1
P/TOT	1	0	1	0	0	0	0	2

SITE: 3 DATE: 06/07/2017

LOCATION: Grappenhall Ln/Broad Ln DAY: Thursday

	C to B								C to A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	58	24	7	10	0	1	0	100	1	1	0	0	0	0	0	2
07:15	67	19	5	7	1	2	0	101	0	0	0	0	0	0	0	0
07:30	91	21	3	9	0	3	0	127	1	0	0	0	0	0	0	1
07:45	106	18	9	7	0	2	0	142	1	0	0	0	0	0	0	1
H/TOT	322	82	24	33	1	8	0	470	3	1	0	0	0	0	0	4
08:00	80	17	3	12	0	0	0	112	0	0	0	0	0	0	0	0
08:15	88	8	0	6	1	0	0	103	0	0	0	1	0	0	0	1
08:30	73	12	9	8	1	1	0	104	0	0	0	0	0	0	0	0
08:45	80	12	9	11	0	0	0	112	1	0	0	0	0	0	0	1
H/TOT	321	49	21	37	2	1	0	431	1	0	0	1	0	0	0	2
09:00	52	10	4	9	0	0	0	75	1	0	0	0	0	0	0	1
09:15	49	10	2	10	0	0	0	71	0	0	0	0	0	0	0	0
09:30	41	10	11	9	1	1	0	73	0	0	0	0	0	0	0	0
09:45	32	11	9	8	2	0	0	62	2	0	0	0	0	0	0	2
H/TOT	174	41	26	36	3	1	0	281	3	0	0	0	0	0	0	3
P/TOT	817	172	71	106	6	10	0	1182	7	1	0	1	0	0	0	9

	C to B								C to A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	61	17	12	15	0	0	0	105	2	1	1	0	0	0	0	4
16:15	77	8	10	17	0	1	0	113	3	0	0	0	0	0	0	3
16:30	63	7	10	9	0	1	0	90	4	1	0	0	0	0	0	5
16:45	65	16	4	8	0	1	0	94	8	0	0	0	0	0	0	8
H/TOT	266	48	36	49	0	3	0	402	17	2	1	0	0	0	0	20
17:00	90	9	14	13	0	1	0	127	13	2	1	0	0	0	0	16
17:15	97	9	8	13	0	0	1	128	17	6	0	0	0	0	0	23
17:30	88	10	2	14	0	1	0	115	10	1	0	0	0	0	0	11
17:45	89	10	1	13	0	0	2	115	9	1	0	0	0	0	0	10
H/TOT	364	38	25	53	0	2	3	485	49	10	1	0	0	0	0	60
P/TOT	630	86	61	102	0	5	3	887	66	12	2	0	0	0	0	80

SITE: 3

DATE: 06/07/2017

LOCATION: Grappenhall Ln/Broad Ln

DAY: Thursday

	C to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	1	0	0	0	0	0	0	1
08:45	0	0	0	0	0	0	0	0
H/TOT	1	0	0	0	0	0	0	1
09:00	1	0	0	0	0	0	0	1
09:15	1	0	0	0	0	0	0	1
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
H/TOT	2	0	0	0	0	0	0	2
P/TOT	3	0	0	0	0	0	0	3

	C to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	1	0	0	0	0	0	0	1
16:15	0	0	0	1	0	0	0	1
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
H/TOT	1	0	0	1	0	0	0	2
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	1	0	0	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0
H/TOT	1	0	0	0	0	0	0	1
P/TOT	2	0	0	1	0	0	0	3

SITE: 3

DATE: 06/07/2017

LOCATION: Grappenhall Ln/Broad Ln

DAY: Thursday

	TO ARM A								FROM ARM A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	4	2	1	0	0	0	0	7	16	8	1	1	0	0	1	27
07:15	5	1	0	0	0	0	2	8	47	5	0	0	0	0	2	54
07:30	5	1	1	0	1	1	1	10	47	6	0	0	0	4	0	57
07:45	5	1	2	0	0	0	0	8	52	6	1	0	0	0	2	61
H/TOT	19	5	4	0	1	1	3	33	162	25	2	1	0	4	5	199
08:00	9	1	1	0	0	0	0	11	43	4	1	0	0	1	2	51
08:15	6	2	3	1	0	0	1	13	54	1	0	1	2	2	0	60
08:30	14	2	1	0	0	0	0	17	31	5	1	0	1	0	0	38
08:45	9	4	0	0	1	1	0	15	36	2	0	0	0	0	0	38
H/TOT	38	9	5	1	1	1	1	56	164	12	2	1	3	3	2	187
09:00	14	2	1	0	0	2	0	19	24	2	0	0	0	0	1	27
09:15	12	4	0	0	0	0	0	16	11	1	0	0	0	0	0	12
09:30	5	0	0	0	0	0	0	5	5	0	1	0	0	0	0	6
09:45	9	1	0	0	0	0	0	10	8	1	0	0	0	0	1	10
H/TOT	40	7	1	0	0	2	0	50	48	4	1	0	0	0	2	55
P/TOT	97	21	10	1	2	4	4	139	374	41	5	2	3	7	9	441

	TO ARM A								FROM ARM A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	36	4	1	0	0	3	0	44	12	4	0	0	0	0	0	16
16:15	24	5	0	0	0	1	0	30	11	3	1	0	0	2	0	17
16:30	50	4	1	0	0	0	1	56	12	1	0	0	0	0	2	15
16:45	36	6	1	1	0	1	0	45	11	4	1	0	0	0	1	17
H/TOT	146	19	3	1	0	5	1	175	46	12	2	0	0	2	3	65
17:00	84	4	2	0	0	1	1	92	17	0	2	0	0	0	0	19
17:15	62	17	0	0	0	1	1	81	12	2	0	0	0	0	2	16
17:30	50	6	1	0	0	1	1	59	13	1	0	0	0	2	2	18
17:45	49	7	0	0	0	2	0	58	9	1	1	0	0	0	0	11
H/TOT	245	34	3	0	0	5	3	290	51	4	3	0	0	2	4	64
P/TOT	391	53	6	1	0	10	4	465	97	16	5	0	0	4	7	129

7634 / WARRINGTON M6
JULY 2017
CLASSIFIED TURNING COUNT

SITE: 3 DATE: 06/07/2017

LOCATION: Grappenhall Ln/Broad Ln DAY: Thursday

	TO ARM B								FROM ARM B							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	72	32	7	10	0	1	1	123	79	14	10	8	0	0	0	111
07:15	110	23	5	7	1	2	2	150	74	11	14	16	0	0	2	117
07:30	136	27	3	9	0	7	0	182	80	12	21	11	1	1	1	127
07:45	153	24	10	7	0	2	2	198	121	11	16	16	0	1	0	165
H/TOT	471	106	25	33	1	12	5	653	354	48	61	51	1	2	3	520
08:00	117	20	3	12	0	1	2	155	98	12	14	8	0	1	0	133
08:15	137	9	0	7	3	2	0	158	114	14	10	16	2	0	1	157
08:30	100	16	10	8	2	1	0	137	100	15	6	12	2	0	0	135
08:45	115	14	9	11	0	0	0	149	112	23	11	17	1	1	0	165
H/TOT	469	59	22	38	5	4	2	599	424	64	41	53	5	2	1	590
09:00	73	12	4	9	0	0	1	99	94	19	7	11	0	2	0	133
09:15	60	12	2	10	0	0	0	84	54	15	6	8	0	0	0	83
09:30	44	10	12	9	1	1	0	77	52	19	6	13	0	0	0	90
09:45	40	12	9	8	2	0	1	72	58	18	7	9	0	0	0	92
H/TOT	217	46	27	36	3	1	2	332	258	71	26	41	0	2	0	398
P/TOT	1157	211	74	107	9	17	9	1584	1036	183	128	145	6	6	4	1508

	TO ARM B								FROM ARM B							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	71	21	12	15	0	0	0	119	136	17	5	7	2	6	0	173
16:15	87	10	10	17	0	3	0	127	81	30	4	11	0	1	0	127
16:30	75	7	10	9	0	1	2	104	203	19	5	11	0	0	1	239
16:45	74	20	4	8	0	1	1	108	122	17	3	10	0	5	0	157
H/TOT	307	58	36	49	0	5	3	458	542	83	17	39	2	12	1	696
17:00	104	9	16	13	0	1	0	143	241	23	2	10	1	2	1	280
17:15	108	11	8	13	0	0	3	143	147	30	2	10	0	2	1	192
17:30	98	11	3	14	0	3	2	131	147	20	4	7	1	5	1	185
17:45	98	11	2	13	0	0	2	126	128	19	3	4	0	2	0	156
H/TOT	408	42	29	53	0	4	7	543	663	92	11	31	2	11	3	813
P/TOT	715	100	65	102	0	9	10	1001	1205	175	28	70	4	23	4	1509

SITE: 3 DATE: 06/07/2017

LOCATION: Grappenhall Ln/Broad Ln DAY: Thursday

	TO ARM C								FROM ARM C							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	78	13	10	9	0	0	0	110	59	25	7	10	0	1	0	102
07:15	73	11	14	16	0	0	0	114	67	19	5	7	1	2	0	101
07:30	78	11	20	11	0	0	0	120	92	21	3	9	0	3	0	128
07:45	122	10	14	16	0	1	0	163	107	18	9	7	0	2	0	143
H/TOT	351	45	58	52	0	1	0	507	325	83	24	33	1	8	0	474
08:00	95	12	14	8	0	1	0	130	80	17	3	12	0	0	0	112
08:15	113	12	7	16	2	0	0	150	88	8	0	7	1	0	0	104
08:30	91	14	5	12	2	0	0	124	74	12	9	8	1	1	0	105
08:45	105	19	11	17	0	0	0	152	81	12	9	11	0	0	0	113
H/TOT	404	57	37	53	4	1	0	556	323	49	21	38	2	1	0	434
09:00	85	17	6	11	0	0	0	119	54	10	4	9	0	0	0	77
09:15	43	10	6	8	0	0	0	67	50	10	2	10	0	0	0	72
09:30	49	19	6	13	0	0	0	87	41	10	11	9	1	1	0	73
09:45	51	17	7	9	0	0	0	84	34	11	9	8	2	0	0	64
H/TOT	228	63	25	41	0	0	0	357	179	41	26	36	3	1	0	286
P/TOT	983	165	120	146	4	2	0	1420	827	173	71	107	6	10	0	1194

	TO ARM C								FROM ARM C							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	105	14	5	7	2	3	0	136	64	18	13	15	0	0	0	110
16:15	61	26	5	12	0	0	0	104	80	8	10	18	0	1	0	117
16:30	157	17	4	11	0	0	0	189	67	8	10	9	0	1	0	95
16:45	96	11	3	9	0	4	0	123	73	16	4	8	0	1	0	102
H/TOT	419	68	17	39	2	7	0	552	284	50	37	50	0	3	0	424
17:00	173	21	1	10	1	1	0	207	103	11	15	13	0	1	0	143
17:15	103	19	2	10	0	1	0	135	114	15	8	13	0	0	1	151
17:30	111	15	2	7	1	4	0	140	99	11	2	14	0	1	0	127
17:45	88	13	3	4	0	0	0	108	98	11	1	13	0	0	2	125
H/TOT	475	68	8	31	2	6	0	590	414	48	26	53	0	2	3	546
P/TOT	894	136	25	70	4	13	0	1142	698	98	63	103	0	5	3	970

SITE: 3

DATE: 06/07/2017

LOCATION: Grappenhall Ln/Broad Ln

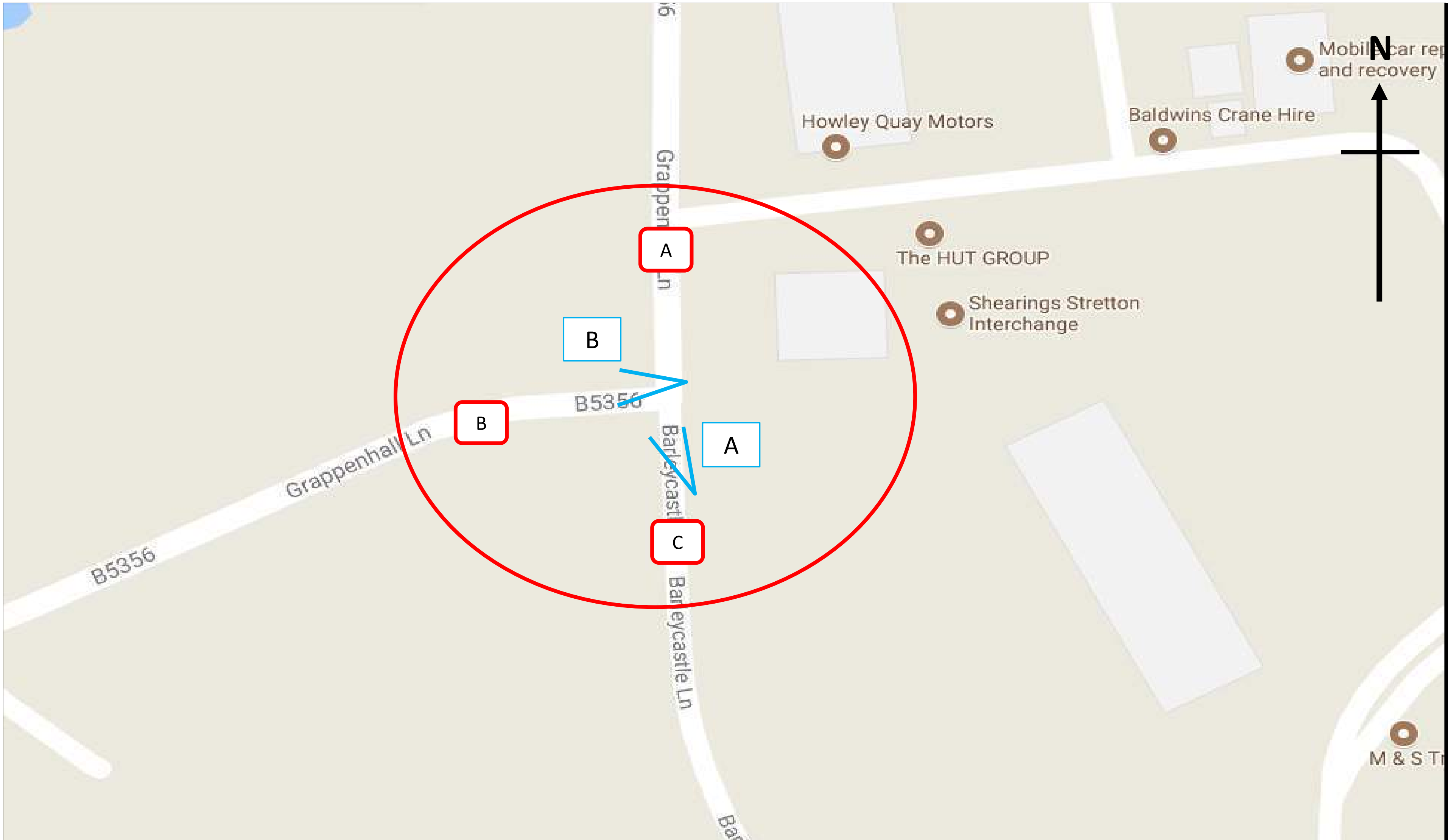
DAY: Thursday

TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
	JUNCTION TOTAL							
07:00	154	47	18	19	0	1	1	240
07:15	188	35	19	23	1	2	4	272
07:30	219	39	24	20	1	8	1	312
07:45	280	35	26	23	0	3	2	369
H/TOT	841	156	87	85	2	14	8	1193
08:00	221	33	18	20	0	2	2	296
08:15	256	23	10	24	5	2	1	321
08:30	205	32	16	20	4	1	0	278
08:45	229	37	20	28	1	1	0	316
H/TOT	911	125	64	92	10	6	3	1211
09:00	172	31	11	20	0	2	1	237
09:15	115	26	8	18	0	0	0	167
09:30	98	29	18	22	1	1	0	169
09:45	100	30	16	17	2	0	1	166
H/TOT	485	116	53	77	3	3	2	739
P/TOT	2237	397	204	254	15	23	13	3143

PEAK HOUR CALCULATION	TOT
07:00 to 08:00	1193
07:15 to 08:15	1249
07:30 to 08:30	**1298**
07:45 to 08:45	1264
08:00 to 09:00	1211
08:15 to 09:15	1152
08:30 to 09:30	998
08:45 to 09:45	889
09:00 to 10:00	739
PEAK VALUE	**1298**

TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
	JUNCTION TOTAL							
16:00	212	39	18	22	2	6	0	299
16:15	172	41	15	29	0	4	0	261
16:30	282	28	15	20	0	1	3	349
16:45	206	37	8	18	0	6	1	276
H/TOT	872	145	56	89	2	17	4	1185
17:00	361	34	19	23	1	3	1	442
17:15	273	47	10	23	0	2	4	359
17:30	259	32	6	21	1	8	3	330
17:45	235	31	5	17	0	2	2	292
H/TOT	1128	144	40	84	2	15	10	1423
P/TOT	2000	289	96	173	4	32	14	2608

PEAK HOUR CALCULATION	TOT
16:00 to 17:00	1185
16:15 to 17:15	1328
16:30 to 17:30	**1426**
16:45 to 17:45	1407
17:00 to 18:00	1423
PEAK VALUE	**1426**



NDC NATIONWIDE DATA COLLECTION	**Site / Location:**	Site 4, Grappenhall lane/Barleycastle Lane	**Project No:**	7634	**Drawing No:**	7634-04	**Drawn By:** EA
	Survey Date:	Thursday 6th July 2017	**Project Name:**	Warrington M6			
	Survey Times:	07:00 to 10:00 & 16:00 to 18:00	**Drawing Title:**	Site Layout and Observed Movements			

SITE: 4 DATE: 06/07/2017

LOCATION: Grappenhall lane/Barleycastle Lane DAY: Thursday

				A to C									**A to B**				
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	56	27	5	10	0	0	1	99	14	1	1	0	0	1	0	17
07:15	79	16	5	6	0	3	1	110	28	4	0	0	1	0	1	34
07:30	89	23	2	9	0	5	0	128	41	7	0	1	0	2	0	51
07:45	120	16	8	7	0	1	2	154	37	5	1	0	0	0	0	43
H/TOT	344	82	20	32	0	9	4	491	120	17	2	1	1	3	1	145
08:00	76	12	3	7	0	1	1	100	42	8	0	0	0	0	1	51
08:15	91	7	0	8	0	1	0	107	44	3	0	1	3	0	0	51
08:30	45	12	8	8	0	2	0	75	50	4	0	0	1	0	0	55
08:45	68	9	6	11	0	0	0	94	43	5	5	0	0	0	0	53
H/TOT	280	40	17	34	0	4	1	376	179	20	5	1	4	0	1	210
09:00	37	7	1	9	0	0	0	54	35	6	0	0	0	0	1	42
09:15	35	10	3	8	0	0	0	56	22	2	2	0	0	0	0	26
09:30	24	9	10	9	0	1	0	53	19	1	2	0	1	0	0	23
09:45	20	8	9	7	0	0	0	44	18	3	2	0	0	0	1	24
H/TOT	116	34	23	33	0	1	0	207	94	12	6	0	1	0	2	115
P/TOT	740	156	60	99	0	14	5	1074	393	49	13	2	6	3	4	470

				A to C									**A to B**				
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	8	15	7	17	0	0	0	47	66	6	0	0	0	0	0	72
16:15	18	3	8	17	0	2	0	48	68	7	1	0	0	1	0	77
16:30	7	3	8	9	1	0	1	29	69	6	0	0	0	1	0	76
16:45	14	10	3	8	0	0	1	36	59	10	1	0	1	1	1	73
H/TOT	47	31	26	51	1	2	2	160	262	29	2	0	1	3	1	298
17:00	12	8	9	12	0	0	0	41	88	0	6	0	0	1	0	95
17:15	17	10	6	15	0	0	2	50	100	3	1	0	0	0	1	105
17:30	14	7	5	10	0	2	0	38	86	5	0	0	0	0	3	94
17:45	19	6	2	12	0	0	2	41	83	2	1	0	0	0	0	86
H/TOT	62	31	22	49	0	2	4	170	357	10	8	0	0	1	4	380
P/TOT	109	62	48	100	1	4	6	330	619	39	10	0	1	4	5	678

SITE: 4

DATE: 06/07/2017

LOCATION: Grappenhall lane/Barleycastle Lane

DAY: Thursday

	A to A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

	A to A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

SITE: 4 DATE: 06/07/2017

LOCATION: Grappenhall lane/Barleycastle Lane DAY: Thursday

	B to A								B to C							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	72	8	1	0	0	0	0	81	28	8	0	0	0	2	0	38
07:15	67	4	1	0	0	0	2	74	38	8	0	0	0	1	0	47
07:30	71	4	0	0	1	0	0	76	33	6	0	1	0	0	0	40
07:45	112	4	2	0	0	1	0	119	58	8	0	0	0	0	0	66
H/TOT	322	20	4	0	1	1	2	350	157	30	0	1	0	3	0	191
08:00	91	6	0	0	0	1	0	98	45	3	1	0	0	0	0	49
08:15	107	5	0	0	2	0	0	114	42	2	0	0	0	1	0	45
08:30	94	3	2	0	2	1	0	102	36	1	0	1	0	1	0	39
08:45	94	11	0	0	1	0	0	106	35	2	1	1	0	0	2	41
H/TOT	386	25	2	0	5	2	0	420	158	8	2	2	0	2	2	174
09:00	82	6	0	0	0	0	0	88	18	4	1	0	0	1	0	24
09:15	47	6	0	0	0	0	0	53	14	2	0	0	0	1	1	18
09:30	39	4	1	0	0	0	0	44	9	3	0	0	0	0	0	12
09:45	50	3	1	0	0	0	0	54	7	4	2	0	0	0	1	14
H/TOT	218	19	2	0	0	0	0	239	48	13	3	0	0	2	2	68
P/TOT	926	64	8	0	6	3	2	1009	363	51	5	3	0	7	4	433

	B to A								B to C							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	51	10	0	0	2	1	0	64	5	3	3	0	0	0	0	11
16:15	43	14	0	0	0	0	0	57	5	2	1	0	0	0	0	8
16:30	76	8	1	0	0	0	1	86	17	7	1	0	0	0	0	25
16:45	67	3	1	1	0	1	1	74	6	7	1	1	0	0	0	15
H/TOT	237	35	2	1	2	2	2	281	33	19	6	1	0	0	0	59
17:00	93	10	1	0	1	0	0	105	14	7	0	1	0	0	0	22
17:15	70	13	1	0	0	0	1	85	17	4	0	0	0	0	0	21
17:30	73	8	2	0	1	1	1	86	8	2	0	0	0	0	0	10
17:45	77	7	0	0	0	0	2	86	11	5	0	0	0	0	2	18
H/TOT	313	38	4	0	2	1	4	362	50	18	0	1	0	0	2	71
P/TOT	550	73	6	1	4	3	6	643	83	37	6	2	0	0	2	130

SITE: 4

DATE: 06/07/2017

LOCATION: Grappenhall lane/Barleycastle Lane

DAY: Thursday

	B to B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

	B to B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

SITE: 4 DATE: 06/07/2017

LOCATION: Grappenhall lane/Barleycastle Lane DAY: Thursday

	C to B								C to A							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	3	6	1	0	0	1	0	11	6	5	8	7	0	0	0	26
07:15	4	2	0	0	0	0	1	7	6	7	10	15	0	0	0	38
07:30	3	6	2	0	0	0	0	11	10	7	21	11	0	1	1	51
07:45	11	8	2	0	0	0	0	21	10	6	10	16	0	0	0	42
H/TOT	21	22	5	0	0	1	1	50	32	25	49	49	0	1	1	157
08:00	10	6	3	0	0	0	0	19	8	6	11	7	0	0	0	32
08:15	7	8	1	1	0	0	0	17	9	10	10	15	0	0	1	45
08:30	6	8	0	0	0	0	0	14	8	13	4	12	0	0	0	37
08:45	4	10	0	0	0	0	0	14	16	17	6	17	0	0	0	56
H/TOT	27	32	4	1	0	0	0	64	41	46	31	51	0	0	1	170
09:00	10	8	1	1	0	0	0	20	9	11	6	11	0	1	0	38
09:15	10	6	2	1	0	0	0	19	6	8	6	7	0	0	0	27
09:30	5	6	1	0	0	0	1	13	9	17	3	14	0	0	0	43
09:45	5	5	0	0	0	0	0	10	8	14	4	12	0	0	0	38
H/TOT	30	25	4	2	0	0	1	62	32	50	19	44	0	1	0	146
P/TOT	78	79	13	3	0	1	2	176	105	121	99	144	0	2	2	473

	C to B								C to A							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	26	4	1	0	0	1	1	33	77	10	4	8	0	3	1	103
16:15	25	4	1	0	1	1	0	32	38	18	3	12	0	1	0	72
16:30	35	5	0	0	0	1	2	43	123	7	4	8	0	1	1	144
16:45	32	8	1	0	0	2	1	44	58	18	1	11	0	2	0	90
H/TOT	118	21	3	0	1	5	4	152	296	53	12	39	0	7	2	409
17:00	60	4	0	0	0	1	2	67	155	13	0	8	0	2	1	179
17:15	46	6	0	0	0	1	1	54	65	20	1	11	0	2	0	99
17:30	38	8	0	0	0	2	1	49	74	11	0	6	0	4	0	95
17:45	22	3	0	1	0	0	1	27	49	14	1	5	0	2	0	71
H/TOT	166	21	0	1	0	4	5	197	343	58	2	30	0	10	1	444
P/TOT	284	42	3	1	1	9	9	349	639	111	14	69	0	17	3	853

SITE: 4 DATE: 06/07/2017

LOCATION: Grappenhall lane/Barleycastle Lane DAY: Thursday

	C to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	1	0	0	0	0	1
H/TOT	0	0	1	0	0	0	0	1
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	1	0	0	0	0	1

	C to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

SITE: 4

DATE: 06/07/2017

LOCATION: Grappenhall lane/Barleycastle Lane

DAY: Thursday

	TO ARM A								FROM ARM A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	78	13	9	7	0	0	0	107	70	28	6	10	0	1	1	116
07:15	73	11	11	15	0	0	2	112	107	20	5	6	1	3	2	144
07:30	81	11	21	11	1	1	1	127	130	30	2	10	0	7	0	179
07:45	122	10	12	16	0	1	0	161	157	21	9	7	0	1	2	197
H/TOT	354	45	53	49	1	2	3	507	464	99	22	33	1	12	5	636
08:00	99	12	11	7	0	1	0	130	118	20	3	7	0	1	2	151
08:15	116	15	10	15	2	0	1	159	135	10	0	9	3	1	0	158
08:30	102	16	6	12	2	1	0	139	95	16	8	8	1	2	0	130
08:45	110	28	6	17	1	0	0	162	111	14	11	11	0	0	0	147
H/TOT	427	71	33	51	5	2	1	590	459	60	22	35	4	4	2	586
09:00	91	17	6	11	0	1	0	126	72	13	1	9	0	0	1	96
09:15	53	14	6	7	0	0	0	80	57	12	5	8	0	0	0	82
09:30	48	21	4	14	0	0	0	87	43	10	12	9	1	1	0	76
09:45	58	17	5	12	0	0	0	92	38	11	11	7	0	0	1	68
H/TOT	250	69	21	44	0	1	0	385	210	46	29	33	1	1	2	322
P/TOT	1031	185	107	144	6	5	4	1482	1133	205	73	101	6	17	9	1544

	TO ARM A								FROM ARM A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	128	20	4	8	2	4	1	167	74	21	7	17	0	0	0	119
16:15	81	32	3	12	0	1	0	129	86	10	9	17	0	3	0	125
16:30	199	15	5	8	0	1	2	230	76	9	8	9	1	1	1	105
16:45	125	21	2	12	0	3	1	164	73	20	4	8	1	1	2	109
H/TOT	533	88	14	40	2	9	4	690	309	60	28	51	2	5	3	458
17:00	248	23	1	8	1	2	1	284	100	8	15	12	0	1	0	136
17:15	135	33	2	11	0	2	1	184	117	13	7	15	0	0	3	155
17:30	147	19	2	6	1	5	1	181	100	12	5	10	0	2	3	132
17:45	126	21	1	5	0	2	2	157	102	8	3	12	0	0	2	127
H/TOT	656	96	6	30	2	11	5	806	419	41	30	49	0	3	8	550
P/TOT	1189	184	20	70	4	20	9	1496	728	101	58	100	2	8	11	1008

SITE: 4

DATE: 06/07/2017

LOCATION: Grappenhall lane/Barleycastle Lane

DAY: Thursday

	TO ARM B								FROM ARM B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	17	7	2	0	0	2	0	28	100	16	1	0	0	2	0	119
07:15	32	6	0	0	1	0	2	41	105	12	1	0	0	1	2	121
07:30	44	13	2	1	0	2	0	62	104	10	0	1	1	0	0	116
07:45	48	13	3	0	0	0	0	64	170	12	2	0	0	1	0	185
H/TOT	141	39	7	1	1	4	2	195	479	50	4	1	1	4	2	541
08:00	52	14	3	0	0	0	1	70	136	9	1	0	0	1	0	147
08:15	51	11	1	2	3	0	0	68	149	7	0	0	2	1	0	159
08:30	56	12	0	0	1	0	0	69	130	4	2	1	2	2	0	141
08:45	47	15	5	0	0	0	0	67	129	13	1	1	1	0	2	147
H/TOT	206	52	9	2	4	0	1	274	544	33	4	2	5	4	2	594
09:00	45	14	1	1	0	0	1	62	100	10	1	0	0	1	0	112
09:15	32	8	4	1	0	0	0	45	61	8	0	0	0	1	1	71
09:30	24	7	3	0	1	0	1	36	48	7	1	0	0	0	0	56
09:45	23	8	2	0	0	0	1	34	57	7	3	0	0	0	1	68
H/TOT	124	37	10	2	1	0	3	177	266	32	5	0	0	2	2	307
P/TOT	471	128	26	5	6	4	6	646	1289	115	13	3	6	10	6	1442

	TO ARM B								FROM ARM B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	92	10	1	0	0	1	1	105	56	13	3	0	2	1	0	75
16:15	93	11	2	0	1	2	0	109	48	16	1	0	0	0	0	65
16:30	104	11	0	0	0	2	2	119	93	15	2	0	0	0	1	111
16:45	91	18	2	0	1	3	2	117	73	10	2	2	0	1	1	89
H/TOT	380	50	5	0	2	8	5	450	270	54	8	2	2	2	2	340
17:00	148	4	6	0	0	2	2	162	107	17	1	1	1	0	0	127
17:15	146	9	1	0	0	1	2	159	87	17	1	0	0	0	1	106
17:30	124	13	0	0	0	2	4	143	81	10	2	0	1	1	1	96
17:45	105	5	1	1	0	0	1	113	88	12	0	0	0	0	4	104
H/TOT	523	31	8	1	0	5	9	577	363	56	4	1	2	1	6	433
P/TOT	903	81	13	1	2	13	14	1027	633	110	12	3	4	3	8	773

SITE: 4 DATE: 06/07/2017

LOCATION: Grappenhall lane/Barleycastle Lane DAY: Thursday

	TO ARM C								FROM ARM C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	84	35	5	10	0	2	1	137	9	11	9	7	0	1	0	37
07:15	117	24	5	6	0	4	1	157	10	9	10	15	0	0	1	45
07:30	122	29	2	10	0	5	0	168	13	13	23	11	0	1	1	62
07:45	178	24	8	7	0	1	2	220	21	14	12	16	0	0	0	63
H/TOT	501	112	20	33	0	12	4	682	53	47	54	49	0	2	2	207
08:00	121	15	4	7	0	1	1	149	18	12	14	7	0	0	0	51
08:15	133	9	0	8	0	2	0	152	16	18	11	16	0	0	1	62
08:30	81	13	8	9	0	3	0	114	14	21	4	12	0	0	0	51
08:45	103	11	8	12	0	0	2	136	20	27	7	17	0	0	0	71
H/TOT	438	48	20	36	0	6	3	551	68	78	36	52	0	0	1	235
09:00	55	11	2	9	0	1	0	78	19	19	7	12	0	1	0	58
09:15	49	12	3	8	0	1	1	74	16	14	8	8	0	0	0	46
09:30	33	12	10	9	0	1	0	65	14	23	4	14	0	0	1	56
09:45	27	12	11	7	0	0	1	58	13	19	4	12	0	0	0	48
H/TOT	164	47	26	33	0	3	2	275	62	75	23	46	0	1	1	208
P/TOT	1103	207	66	102	0	21	9	1508	183	200	113	147	0	3	4	650

	TO ARM C								FROM ARM C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	13	18	10	17	0	0	0	58	103	14	5	8	0	4	2	136
16:15	23	5	9	17	0	2	0	56	63	22	4	12	1	2	0	104
16:30	24	10	9	9	1	0	1	54	158	12	4	8	0	2	3	187
16:45	20	17	4	9	0	0	1	51	90	26	2	11	0	4	1	134
H/TOT	80	50	32	52	1	2	2	219	414	74	15	39	1	12	6	561
17:00	26	15	9	13	0	0	0	63	215	17	0	8	0	3	3	246
17:15	34	14	6	15	0	0	2	71	111	26	1	11	0	3	1	153
17:30	22	9	5	10	0	2	0	48	112	19	0	6	0	6	1	144
17:45	30	11	2	12	0	0	4	59	71	17	1	6	0	2	1	98
H/TOT	112	49	22	50	0	2	6	241	509	79	2	31	0	14	6	641
P/TOT	192	99	54	102	1	4	8	460	923	153	17	70	1	26	12	1202

SITE: 4

DATE: 06/07/2017

LOCATION: Grappenhall lane/Barleycastle Lane

DAY: Thursday

	JUNCTION TOTAL							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	179	55	16	17	0	4	1	272
07:15	222	41	16	21	1	4	5	310
07:30	247	53	25	22	1	8	1	357
07:45	348	47	23	23	0	2	2	445
H/TOT	996	196	80	83	2	18	9	1384
08:00	272	41	18	14	0	2	2	349
08:15	300	35	11	25	5	2	1	379
08:30	239	41	14	21	3	4	0	322
08:45	260	54	19	29	1	0	2	365
H/TOT	1071	171	62	89	9	8	5	1415
09:00	191	42	9	21	0	2	1	266
09:15	134	34	13	16	0	1	1	199
09:30	105	40	17	23	1	1	1	188
09:45	108	37	18	19	0	0	2	184
H/TOT	538	153	57	79	1	4	5	837
P/TOT	2605	520	199	251	12	30	19	3636

PEAK HOUR CALCULATION	TOT
07:00 to 08:00	1384
07:15 to 08:15	1461
07:30 to 08:30	1530
07:45 to 08:45	1495
08:00 to 09:00	1415
08:15 to 09:15	1332
08:30 to 09:30	1152
08:45 to 09:45	1018
09:00 to 10:00	837
PEAK VALUE	1530

	JUNCTION TOTAL							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	233	48	15	25	2	5	2	330
16:15	197	48	14	29	1	5	0	294
16:30	327	36	14	17	1	3	5	403
16:45	236	56	8	21	1	6	4	332
H/TOT	993	188	51	92	5	19	11	1359
17:00	422	42	16	21	1	4	3	509
17:15	315	56	9	26	0	3	5	414
17:30	293	41	7	16	1	9	5	372
17:45	261	37	4	18	0	2	7	329
H/TOT	1291	176	36	81	2	18	20	1624
P/TOT	2284	364	87	173	7	37	31	2983

PEAK HOUR CALCULATION	TOT
16:00 to 17:00	1359
16:15 to 17:15	1538
16:30 to 17:30	1658
16:45 to 17:45	1627
17:00 to 18:00	1624
PEAK VALUE	1658

NDC NATIONWIDE DATA COLLECTION	**Site / Location:**	Site 5, Broad Lane/Church Lane	**Project No:**	7634	**Drawing No:**	7634-05	**Drawn By:** EA
	Survey Date:	Thursday 6th July 2017	**Project Name:**	Warrington M6			
	Survey Times:	07:00 to 10:00 & 16:00 to 18:00	**Drawing Title:**	Site Layout and Observed Movements			

SITE: 5 DATE: 06/07/2017

LOCATION: Broad Lane/Church Lane DAY: Thursday

				A to C									A to B				
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	2	0	0	0	0	0	0	2	18	9	0	0	0	0	0	27
07:15	4	1	0	0	0	0	0	5	44	6	0	0	0	2	1	53
07:30	9	2	1	0	0	0	1	13	43	6	0	0	0	2	2	53
07:45	10	0	0	0	0	0	0	10	62	5	1	0	0	0	3	71
H/TOT	25	3	1	0	0	0	1	30	167	26	1	0	0	4	6	204
08:00	10	2	2	0	0	0	2	16	33	3	0	0	1	1	0	38
08:15	45	3	0	0	0	0	1	49	49	2	0	0	1	2	3	57
08:30	32	1	0	0	1	0	4	38	29	4	1	0	1	0	0	35
08:45	14	0	0	0	1	0	1	16	28	3	0	0	0	0	0	31
H/TOT	101	6	2	0	2	0	8	119	139	12	1	0	3	3	3	161
09:00	4	2	1	0	0	0	0	7	18	3	0	0	0	0	0	21
09:15	4	0	0	0	0	0	0	4	9	1	0	0	0	0	2	12
09:30	5	1	0	0	0	0	0	6	9	1	0	0	0	0	0	10
09:45	4	1	0	0	0	0	0	5	9	1	0	0	0	0	1	11
H/TOT	17	4	1	0	0	0	0	22	45	6	0	0	0	0	3	54
P/TOT	143	13	4	0	2	0	9	171	351	44	2	0	3	7	12	419

				A to C									A to B				
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	17	3	0	0	0	0	0	20	14	2	0	0	0	0	0	16
16:15	5	0	0	0	1	0	0	6	6	1	0	0	0	2	2	11
16:30	8	0	0	0	0	0	0	8	12	2	0	0	0	0	1	15
16:45	31	0	0	0	0	0	2	33	16	2	0	0	0	0	0	18
H/TOT	61	3	0	0	1	0	2	67	48	7	0	0	0	2	3	60
17:00	14	1	0	0	0	0	0	15	7	0	0	0	0	0	2	9
17:15	6	0	1	0	0	0	2	9	11	1	0	0	0	1	1	14
17:30	11	0	0	0	0	0	0	11	12	1	0	0	0	1	3	17
17:45	34	1	0	0	0	0	0	35	14	2	1	0	0	0	0	17
H/TOT	65	2	1	0	0	0	2	70	44	4	1	0	0	2	6	57
P/TOT	126	5	1	0	1	0	4	137	92	11	1	0	0	4	9	117

SITE: 5

DATE: 06/07/2017

LOCATION: Broad Lane/Church Lane

DAY: Thursday

	A to A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

	A to A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

SITE: 5 DATE: 06/07/2017

LOCATION: Broad Lane/Church Lane DAY: Thursday

	B to A								B to C							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	3	0	0	0	0	0	1	4	1	1	0	0	0	0	0	2
07:15	4	3	1	0	0	0	0	8	1	0	0	0	0	0	0	1
07:30	6	2	1	0	0	1	1	11	0	0	0	0	0	0	1	1
07:45	9	1	0	0	0	0	1	11	0	0	0	0	0	0	0	0
H/TOT	22	6	2	0	0	1	3	34	2	1	0	0	0	0	1	4
08:00	11	1	1	0	0	0	0	13	0	0	1	0	0	0	0	1
08:15	8	1	2	0	0	0	1	12	3	0	0	0	0	0	0	3
08:30	10	3	1	0	0	0	1	15	2	0	0	0	0	0	0	2
08:45	22	3	0	0	1	1	0	27	1	1	0	0	0	0	0	2
H/TOT	51	8	4	0	1	1	2	67	6	1	1	0	0	0	0	8
09:00	13	5	1	0	0	2	0	21	2	0	0	0	0	0	0	2
09:15	12	2	0	0	0	0	1	15	1	0	0	0	0	0	0	1
09:30	6	0	0	0	0	0	0	6	1	0	0	0	0	0	0	1
09:45	4	1	1	0	0	0	0	6	1	0	0	0	0	0	0	1
H/TOT	35	8	2	0	0	2	1	48	5	0	0	0	0	0	0	5
P/TOT	108	22	8	0	1	4	6	149	13	2	1	0	0	0	1	17

	B to A								B to C							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	35	4	0	0	0	3	2	44	2	0	0	0	0	0	0	2
16:15	24	3	0	0	0	0	0	27	2	0	0	0	0	0	0	2
16:30	43	5	1	0	0	1	0	50	3	0	0	0	0	0	0	3
16:45	31	5	0	0	0	1	1	38	4	0	0	0	0	0	0	4
H/TOT	133	17	1	0	0	5	3	159	11	0	0	0	0	0	0	11
17:00	68	4	1	0	0	1	0	74	4	0	0	0	0	0	0	4
17:15	39	13	1	0	0	1	2	56	2	1	0	0	0	0	0	3
17:30	42	8	1	0	0	1	1	53	3	0	0	0	0	0	1	4
17:45	45	4	0	0	0	1	0	50	7	1	0	0	0	0	1	9
H/TOT	194	29	3	0	0	4	3	233	16	2	0	0	0	0	2	20
P/TOT	327	46	4	0	0	9	6	392	27	2	0	0	0	0	2	31

SITE: 5 DATE: 06/07/2017

LOCATION: Broad Lane/Church Lane DAY: Thursday

	B to B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	1	0	0	0	0	0	0	1
H/TOT	1	0	0	0	0	0	0	1
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	1	0	0	0	0	0	0	1

	B to B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

SITE: 5 DATE: 06/07/2017

LOCATION: Broad Lane/Church Lane DAY: Thursday

	C to B								C to A							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	1	0	0	0	0	0	1	2	1	0	0	0	0	0	0	1
07:15	1	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	8	0	0	0	0	0	1	9
07:45	3	0	0	0	0	0	0	3	7	0	1	0	0	0	0	8
H/TOT	5	0	0	0	0	0	2	7	16	0	1	0	0	0	1	18
08:00	0	1	1	0	0	0	0	2	3	1	0	0	0	0	0	4
08:15	8	0	0	0	0	0	0	8	3	1	1	0	0	0	1	6
08:30	2	0	0	0	0	0	0	2	8	0	0	0	0	0	1	9
08:45	2	1	0	0	0	0	1	4	34	0	0	0	0	0	2	36
H/TOT	12	2	1	0	0	0	1	16	48	2	1	0	0	0	4	55
09:00	1	0	0	0	0	0	0	1	15	1	1	0	0	0	0	17
09:15	0	0	0	0	0	0	0	0	6	2	1	0	0	0	0	9
09:30	0	0	0	0	0	0	0	0	4	3	1	0	0	0	0	8
09:45	1	0	0	0	0	0	0	1	5	1	0	0	0	0	0	6
H/TOT	2	0	0	0	0	0	0	2	30	7	3	0	0	0	0	40
P/TOT	19	2	1	0	0	0	3	25	94	9	5	0	0	0	5	113

	C to B								C to A							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	1	0	0	0	0	0	0	1	13	2	0	0	0	0	0	15
16:15	2	1	0	0	0	0	0	3	13	1	0	0	0	0	0	14
16:30	1	0	0	0	0	0	0	1	6	1	0	0	0	0	0	7
16:45	1	1	0	0	0	0	0	2	11	2	0	0	0	0	0	13
H/TOT	5	2	0	0	0	0	0	7	43	6	0	0	0	0	0	49
17:00	6	0	0	0	0	0	1	7	27	0	0	0	0	0	1	28
17:15	2	0	0	0	0	0	0	2	9	1	0	0	0	0	0	10
17:30	1	0	0	0	0	0	0	1	7	2	0	0	0	0	4	13
17:45	0	0	0	0	0	0	0	0	8	0	0	0	0	0	1	9
H/TOT	9	0	0	0	0	0	1	10	51	3	0	0	0	0	6	60
P/TOT	14	2	0	0	0	0	1	17	94	9	0	0	0	0	6	109

SITE: 5 DATE: 06/07/2017

LOCATION: Broad Lane/Church Lane DAY: Thursday

	C to C							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

	C to C							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0

SITE: 5

DATE: 06/07/2017

LOCATION: Broad Lane/Church Lane

DAY: Thursday

	TO ARM A								FROM ARM A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	4	0	0	0	0	0	1	5	20	9	0	0	0	0	0	29
07:15	4	3	1	0	0	0	0	8	48	7	0	0	0	2	1	58
07:30	14	2	1	0	0	1	2	20	52	8	1	0	0	2	3	66
07:45	16	1	1	0	0	0	1	19	72	5	1	0	0	0	3	81
H/TOT	38	6	3	0	0	1	4	52	192	29	2	0	0	4	7	234
08:00	14	2	1	0	0	0	0	17	43	5	2	0	1	1	2	54
08:15	11	2	3	0	0	0	2	18	94	5	0	0	1	2	4	106
08:30	18	3	1	0	0	0	2	24	61	5	1	0	2	0	4	73
08:45	56	3	0	0	1	1	2	63	42	3	0	0	1	0	1	47
H/TOT	99	10	5	0	1	1	6	122	240	18	3	0	5	3	11	280
09:00	28	6	2	0	0	2	0	38	22	5	1	0	0	0	0	28
09:15	18	4	1	0	0	0	1	24	13	1	0	0	0	0	2	16
09:30	10	3	1	0	0	0	0	14	14	2	0	0	0	0	0	16
09:45	9	2	1	0	0	0	0	12	13	2	0	0	0	0	1	16
H/TOT	65	15	5	0	0	2	1	88	62	10	1	0	0	0	3	76
P/TOT	202	31	13	0	1	4	11	262	494	57	6	0	5	7	21	590

	TO ARM A								FROM ARM A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	48	6	0	0	0	3	2	59	31	5	0	0	0	0	0	36
16:15	37	4	0	0	0	0	0	41	11	1	0	0	1	2	2	17
16:30	49	6	1	0	0	1	0	57	20	2	0	0	0	0	1	23
16:45	42	7	0	0	0	1	1	51	47	2	0	0	0	0	2	51
H/TOT	176	23	1	0	0	5	3	208	109	10	0	0	1	2	5	127
17:00	95	4	1	0	0	1	1	102	21	1	0	0	0	0	2	24
17:15	48	14	1	0	0	1	2	66	17	1	1	0	0	1	3	23
17:30	49	10	1	0	0	1	5	66	23	1	0	0	0	1	3	28
17:45	53	4	0	0	0	1	1	59	48	3	1	0	0	0	0	52
H/TOT	245	32	3	0	0	4	9	293	109	6	2	0	0	2	8	127
P/TOT	421	55	4	0	0	9	12	501	218	16	2	0	1	4	13	254

SITE: 5 DATE: 06/07/2017

LOCATION: Broad Lane/Church Lane DAY: Thursday

	TO ARM B								FROM ARM B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	19	9	0	0	0	0	1	29	4	1	0	0	0	0	1	6
07:15	45	6	0	0	0	2	2	55	5	3	1	0	0	0	0	9
07:30	43	6	0	0	0	2	2	53	6	2	1	0	0	1	2	12
07:45	65	5	1	0	0	0	3	74	9	1	0	0	0	0	1	11
H/TOT	172	26	1	0	0	4	8	211	24	7	2	0	0	1	4	38
08:00	33	4	1	0	1	1	0	40	11	1	2	0	0	0	0	14
08:15	57	2	0	0	1	2	3	65	11	1	2	0	0	0	1	15
08:30	31	4	1	0	1	0	0	37	12	3	1	0	0	0	1	17
08:45	31	4	0	0	0	0	1	36	24	4	0	0	1	1	0	30
H/TOT	152	14	2	0	3	3	4	178	58	9	5	0	1	1	2	76
09:00	19	3	0	0	0	0	0	22	15	5	1	0	0	2	0	23
09:15	9	1	0	0	0	0	2	12	13	2	0	0	0	0	1	16
09:30	9	1	0	0	0	0	0	10	7	0	0	0	0	0	0	7
09:45	10	1	0	0	0	0	1	12	5	1	1	0	0	0	0	7
H/TOT	47	6	0	0	0	0	3	56	40	8	2	0	0	2	1	53
P/TOT	371	46	3	0	3	7	15	445	122	24	9	0	1	4	7	167

	TO ARM B								FROM ARM B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	15	2	0	0	0	0	0	17	37	4	0	0	0	3	2	46
16:15	8	2	0	0	0	2	2	14	26	3	0	0	0	0	0	29
16:30	13	2	0	0	0	0	1	16	46	5	1	0	0	1	0	53
16:45	17	3	0	0	0	0	0	20	35	5	0	0	0	1	1	42
H/TOT	53	9	0	0	0	2	3	67	144	17	1	0	0	5	3	170
17:00	13	0	0	0	0	0	3	16	72	4	1	0	0	1	0	78
17:15	13	1	0	0	0	1	1	16	41	14	1	0	0	1	2	59
17:30	13	1	0	0	0	1	3	18	45	8	1	0	0	1	2	57
17:45	14	2	1	0	0	0	0	17	52	5	0	0	0	1	1	59
H/TOT	53	4	1	0	0	2	7	67	210	31	3	0	0	4	5	253
P/TOT	106	13	1	0	0	4	10	134	354	48	4	0	0	9	8	423

SITE: 5

DATE: 06/07/2017

LOCATION: Broad Lane/Church Lane

DAY: Thursday

	TO ARM C								FROM ARM C							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	3	1	0	0	0	0	0	4	2	0	0	0	0	0	1	3
07:15	5	1	0	0	0	0	0	6	1	0	0	0	0	0	1	2
07:30	9	2	1	0	0	0	2	14	8	0	0	0	0	0	1	9
07:45	10	0	0	0	0	0	0	10	10	0	1	0	0	0	0	11
H/TOT	27	4	1	0	0	0	2	34	21	0	1	0	0	0	3	25
08:00	10	2	3	0	0	0	2	17	3	2	1	0	0	0	0	6
08:15	48	3	0	0	0	0	1	52	11	1	1	0	0	0	1	14
08:30	34	1	0	0	1	0	4	40	10	0	0	0	0	0	1	11
08:45	15	1	0	0	1	0	1	18	36	1	0	0	0	0	3	40
H/TOT	107	7	3	0	2	0	8	127	60	4	2	0	0	0	5	71
09:00	6	2	1	0	0	0	0	9	16	1	1	0	0	0	0	18
09:15	5	0	0	0	0	0	0	5	6	2	1	0	0	0	0	9
09:30	6	1	0	0	0	0	0	7	4	3	1	0	0	0	0	8
09:45	5	1	0	0	0	0	0	6	6	1	0	0	0	0	0	7
H/TOT	22	4	1	0	0	0	0	27	32	7	3	0	0	0	0	42
P/TOT	156	15	5	0	2	0	10	188	113	11	6	0	0	0	8	138

	TO ARM C								FROM ARM C							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	19	3	0	0	0	0	0	22	14	2	0	0	0	0	0	16
16:15	7	0	0	0	1	0	0	8	15	2	0	0	0	0	0	17
16:30	11	0	0	0	0	0	0	11	7	1	0	0	0	0	0	8
16:45	35	0	0	0	0	0	2	37	12	3	0	0	0	0	0	15
H/TOT	72	3	0	0	1	0	2	78	48	8	0	0	0	0	0	56
17:00	18	1	0	0	0	0	0	19	33	0	0	0	0	0	2	35
17:15	8	1	1	0	0	0	2	12	11	1	0	0	0	0	0	12
17:30	14	0	0	0	0	0	1	15	8	2	0	0	0	0	4	14
17:45	41	2	0	0	0	0	1	44	8	0	0	0	0	0	1	9
H/TOT	81	4	1	0	0	0	4	90	60	3	0	0	0	0	7	70
P/TOT	153	7	1	0	1	0	6	168	108	11	0	0	0	0	7	126

SITE: 5

DATE: 06/07/2017

LOCATION: Broad Lane/Church Lane

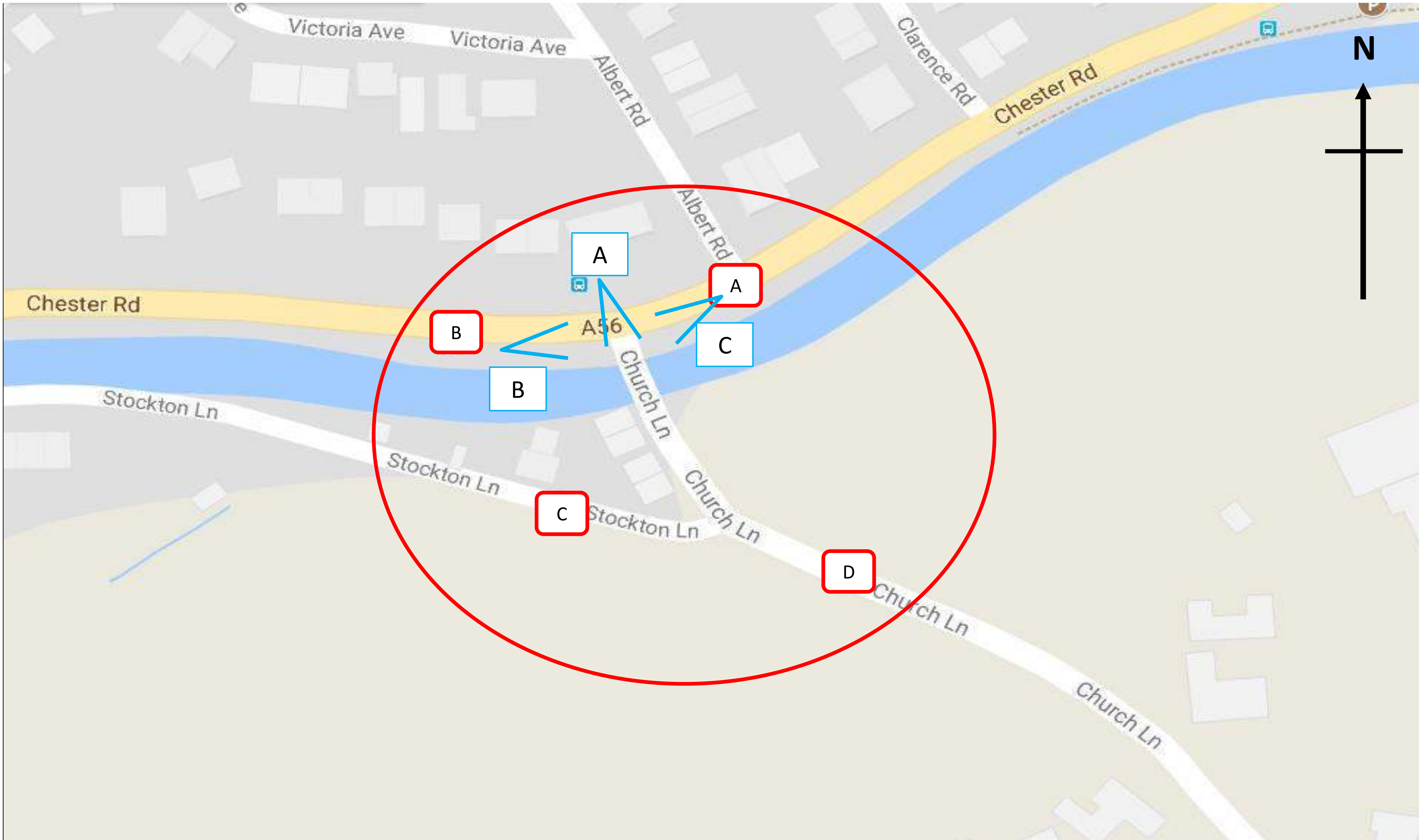
DAY: Thursday

	JUNCTION TOTAL							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	26	10	0	0	0	0	2	38
07:15	54	10	1	0	0	2	2	69
07:30	66	10	2	0	0	3	6	87
07:45	91	6	2	0	0	0	4	103
H/TOT	237	36	5	0	0	5	14	297
08:00	57	8	5	0	1	1	2	74
08:15	116	7	3	0	1	2	6	135
08:30	83	8	2	0	2	0	6	101
08:45	102	8	0	0	2	1	4	117
H/TOT	358	31	10	0	6	4	18	427
09:00	53	11	3	0	0	2	0	69
09:15	32	5	1	0	0	0	3	41
09:30	25	5	1	0	0	0	0	31
09:45	24	4	1	0	0	0	1	30
H/TOT	134	25	6	0	0	2	4	171
P/TOT	729	92	21	0	6	11	36	895

PEAK HOUR CALCULATION	**TOT**
07:00 to 08:00	297
07:15 to 08:15	333
07:30 to 08:30	399
07:45 to 08:45	413
08:00 to 09:00	**427**
08:15 to 09:15	422
08:30 to 09:30	328
08:45 to 09:45	258
09:00 to 10:00	171
PEAK VALUE	**427**

	JUNCTION TOTAL							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	82	11	0	0	0	3	2	98
16:15	52	6	0	0	1	2	2	63
16:30	73	8	1	0	0	1	1	84
16:45	94	10	0	0	0	1	3	108
H/TOT	301	35	1	0	1	7	8	353
17:00	126	5	1	0	0	1	4	137
17:15	69	16	2	0	0	2	5	94
17:30	76	11	1	0	0	2	9	99
17:45	108	8	1	0	0	1	2	120
H/TOT	379	40	5	0	0	6	20	450
P/TOT	680	75	6	0	1	13	28	803

PEAK HOUR CALCULATION	**TOT**
16:00 to 17:00	353
16:15 to 17:15	392
16:30 to 17:30	423
16:45 to 17:45	438
17:00 to 18:00	**450**
PEAK VALUE	**450**



NDC NATIONWIDE DATA COLLECTION	**Site / Location:**	Site 6, Church Lane/A56/Stockton Lane	**Project No:**	7634	**Drawing No:**	7634-06	**Drawn By:** EA
	Survey Date:	Thursday 6th July 2017	**Project Name:**	Warrington M6			
	Survey Times:	07:00 to 10:00 & 16:00 to 18:00	**Drawing Title:**	Site Layout and Observed Movements			

SITE: 6

DATE: 06/07/2017

LOCATION: Church Lane/A56/Stockton Lane

DAY: Thursday

	A to D								A to C							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	3	3	0	0	0	0	0	6	0	0	0	0	0	0	0	0
07:15	9	1	0	0	0	1	0	11	0	0	0	0	0	0	0	0
07:30	8	0	0	0	0	0	0	8	1	0	0	0	0	0	0	1
07:45	19	2	0	0	0	0	2	23	0	0	0	0	0	0	0	0
H/TOT	39	6	0	0	0	1	2	48	1	0	0	0	0	0	0	1
08:00	12	0	1	0	0	0	0	13	2	0	0	0	0	0	0	2
08:15	24	2	0	0	1	0	3	30	1	0	0	0	0	0	0	1
08:30	20	1	0	0	2	0	2	25	0	0	0	0	0	0	0	0
08:45	16	2	0	0	0	0	0	18	0	1	0	0	0	0	0	1
H/TOT	72	5	1	0	3	0	5	86	3	1	0	0	0	0	0	4
09:00	6	2	0	0	0	0	0	8	0	0	0	0	0	0	1	1
09:15	5	0	0	0	0	0	2	7	0	0	0	0	0	0	0	0
09:30	3	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0
09:45	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
H/TOT	16	3	0	0	0	0	2	21	0	0	0	0	0	0	1	1
P/TOT	127	14	1	0	3	1	9	155	4	1	0	0	0	0	1	6

	A to D								A to C							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	8	1	0	0	0	0	0	9	0	0	0	0	0	0	0	0
16:15	2	0	0	0	1	0	0	3	1	0	0	0	0	0	0	1
16:30	8	1	0	0	0	0	0	9	0	1	0	0	0	0	0	1
16:45	11	0	0	0	0	0	0	11	1	0	0	0	0	0	0	1
H/TOT	29	2	0	0	1	0	0	32	2	1	0	0	0	0	0	3
17:00	6	0	0	0	0	0	1	7	0	0	0	0	0	0	0	0
17:15	3	0	0	0	0	0	0	3	2	0	0	0	0	0	0	2
17:30	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
17:45	13	2	0	0	0	0	0	15	0	0	0	0	0	0	0	0
H/TOT	27	2	0	0	0	0	1	30	2	0	0	0	0	0	0	2
P/TOT	56	4	0	0	1	0	1	62	4	1	0	0	0	0	0	5

SITE: 6

DATE: 06/07/2017

LOCATION: Church Lane/A56/Stockton Lane

DAY: Thursday

				A to B									A to A				
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	22	5	1	0	0	0	0	28	0	0	0	0	0	0	0	0
07:15	20	4	2	0	1	0	0	27	0	0	0	0	0	0	0	0
07:30	41	11	0	0	1	0	0	53	0	0	0	0	0	0	0	0
07:45	43	3	1	0	1	0	1	49	0	0	0	0	0	0	0	0
H/TOT	126	23	4	0	3	0	1	157	0	0	0	0	0	0	0	0
08:00	40	9	3	1	2	0	2	57	0	0	0	0	0	0	0	0
08:15	62	6	1	0	1	0	0	70	0	0	0	0	0	0	0	0
08:30	68	9	2	0	0	0	0	79	0	0	0	0	0	0	0	0
08:45	43	6	1	1	1	0	0	52	0	0	0	0	0	0	0	0
H/TOT	213	30	7	2	4	0	2	258	0	0	0	0	0	0	0	0
09:00	48	7	0	1	1	1	1	59	0	0	0	0	0	0	0	0
09:15	52	6	1	1	1	0	0	61	0	0	0	0	0	0	0	0
09:30	44	9	0	1	0	0	0	54	0	0	0	0	0	0	0	0
09:45	28	3	1	2	1	0	0	35	0	0	0	0	0	0	0	0
H/TOT	172	25	2	5	3	1	1	209	0	0	0	0	0	0	0	0
P/TOT	511	78	13	7	10	1	4	624	0	0	0	0	0	0	0	0

				A to B									A to A				
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	60	4	2	0	0	1	0	67	0	0	0	0	0	0	0	0
16:15	78	5	1	0	4	0	1	89	0	0	0	0	0	0	0	0
16:30	69	8	2	0	0	0	0	79	0	0	0	0	0	0	0	0
16:45	60	5	1	0	2	0	0	68	0	0	0	0	0	0	0	0
H/TOT	267	22	6	0	6	1	1	303	0	0	0	0	0	0	0	0
17:00	83	12	0	0	0	1	0	96	0	0	0	0	0	0	0	0
17:15	100	9	0	0	1	0	1	111	0	0	0	0	0	0	0	0
17:30	88	1	1	0	0	0	1	91	0	0	0	0	0	0	0	0
17:45	70	2	1	1	1	4	0	79	0	0	0	0	0	0	0	0
H/TOT	341	24	2	1	2	5	2	377	0	0	0	0	0	0	0	0
P/TOT	608	46	8	1	8	6	3	680	0	0	0	0	0	0	0	0

SITE: 6

DATE: 06/07/2017

LOCATION: Church Lane/A56/Stockton Lane

DAY: Thursday

	B to A								B to D							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	54	1	3	1	1	1	0	61	17	5	0	0	0	0	0	22
07:15	69	4	2	0	0	1	1	77	39	6	0	0	0	1	1	47
07:30	81	5	2	0	0	1	1	90	45	7	1	0	0	2	2	57
07:45	81	13	0	0	4	1	0	99	54	3	1	0	0	0	0	58
H/TOT	285	23	7	1	5	4	2	327	155	21	2	0	0	3	3	184
08:00	77	11	2	1	1	0	1	93	28	4	1	0	1	1	1	36
08:15	60	4	0	1	1	0	0	66	67	3	0	0	0	2	0	72
08:30	59	3	1	1	1	0	0	65	43	5	1	0	0	0	4	53
08:45	53	6	1	0	0	0	0	60	24	0	0	0	1	0	0	25
H/TOT	249	24	4	3	3	0	1	284	162	12	2	0	2	3	5	186
09:00	66	8	0	1	1	0	1	77	15	3	1	0	0	0	0	19
09:15	53	10	0	0	0	0	0	63	8	1	0	0	0	0	0	9
09:30	45	7	0	3	0	1	0	56	10	1	0	0	0	0	0	11
09:45	44	4	3	0	1	1	0	53	12	2	0	0	0	0	1	15
H/TOT	208	29	3	4	2	2	1	249	45	7	1	0	0	0	1	54
P/TOT	742	76	14	8	10	6	4	860	362	40	5	0	2	6	9	424

	B to A								B to D							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	66	8	0	0	1	1	0	76	18	4	0	0	0	0	0	22
16:15	65	8	2	0	2	0	1	78	9	0	0	0	0	2	2	13
16:30	73	8	2	1	1	0	0	85	13	1	0	0	0	0	1	15
16:45	72	13	2	2	1	0	2	92	37	2	0	0	0	0	1	40
H/TOT	276	37	6	3	5	1	3	331	77	7	0	0	0	2	4	90
17:00	77	8	3	0	3	1	2	94	15	1	0	0	0	0	2	18
17:15	87	13	1	0	0	0	0	101	15	1	1	0	0	1	0	18
17:30	68	6	2	0	1	0	2	79	17	1	0	0	0	1	1	20
17:45	68	4	0	0	0	0	0	72	33	1	1	0	0	0	0	35
H/TOT	300	31	6	0	4	1	4	346	80	4	2	0	0	2	3	91
P/TOT	576	68	12	3	9	2	7	677	157	11	2	0	0	4	7	181

SITE: 6

DATE: 06/07/2017

LOCATION: Church Lane/A56/Stockton Lane

DAY: Thursday

	B to C								B to B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0
07:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
H/TOT	3	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0
08:00	2	0	0	0	0	0	2	4	1	0	0	0	0	0	0	1
08:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
08:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	4	0	0	0	0	0	2	6	1	0	0	0	0	0	0	1
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0
H/TOT	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0
P/TOT	7	3	0	0	0	0	2	12	1	0	0	0	0	0	0	1

	B to C								B to B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0
16:30	1	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
16:45	3	0	0	0	0	1	0	4	0	0	0	0	0	0	0	0
H/TOT	5	1	0	0	0	1	1	8	0	0	0	0	0	0	0	0
17:00	2	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
17:45	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
H/TOT	6	0	0	0	0	0	1	7	0	0	0	0	0	0	0	0
P/TOT	11	1	0	0	0	1	2	15	0	0	0	0	0	0	0	0

SITE: 6 DATE: 06/07/2017

LOCATION: Church Lane/A56/Stockton Lane DAY: Thursday

	C to B								C to A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
07:15	2	0	0	0	0	0	0	2	3	0	0	0	0	0	0	3
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	4
H/TOT	2	0	0	0	0	0	0	2	7	1	0	0	0	0	0	8
08:00	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
08:15	2	0	0	0	0	0	0	2	0	0	0	0	0	0	1	1
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	2
H/TOT	4	0	0	0	0	0	0	4	2	0	0	0	0	0	1	3
09:00	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	1	0	0	0	0	1	2	0	0	0	0	0	0	0	0
P/TOT	6	1	0	0	0	0	1	8	9	1	0	0	0	0	1	11

	C to B								C to A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
H/TOT	1	0	0	0	0	0	1	2	1	0	0	0	0	0	0	1
17:00	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	2
17:15	1	0	0	0	0	0	0	1	1	1	0	0	0	0	0	2
17:30	1	0	0	0	0	0	1	2	2	0	0	0	0	0	0	2
17:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
H/TOT	4	0	0	0	0	0	1	5	5	1	0	0	0	0	0	6
P/TOT	5	0	0	0	0	0	2	7	6	1	0	0	0	0	0	7

SITE: 6

DATE: 06/07/2017

LOCATION: Church Lane/A56/Stockton Lane

DAY: Thursday

	C to D								C to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	1	0	0	0	0	1	2	0	0	0	0	0	0	0	0
07:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
H/TOT	1	1	0	0	0	0	1	3	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
P/TOT	2	1	0	0	0	0	2	5	0	0	0	0	0	0	0	0

	C to D								C to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
16:15	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	1	1	0	0	0	0	1	3	0	0	0	0	0	0	0	0
17:00	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
17:15	1	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0
17:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
H/TOT	3	0	0	0	0	0	4	7	0	0	0	0	0	0	0	0
P/TOT	4	1	0	0	0	0	5	10	0	0	0	0	0	0	0	0

SITE: 6 DATE: 06/07/2017

LOCATION: Church Lane/A56/Stockton Lane DAY: Thursday

				D to C									D to B				
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	2
07:15	0	0	0	0	0	0	0	0	3	2	1	0	0	0	0	6
07:30	0	0	0	0	0	0	1	1	7	1	0	0	0	1	1	10
07:45	0	0	0	0	0	0	0	0	12	1	1	0	0	0	1	15
H/TOT	0	0	0	0	0	0	2	2	24	4	2	0	0	1	2	33
08:00	0	0	0	0	0	0	0	0	10	1	0	0	0	0	0	11
08:15	0	0	0	0	0	0	1	1	7	2	2	0	0	0	1	12
08:30	0	0	0	0	0	1	0	1	11	3	0	0	0	0	0	14
08:45	1	0	0	0	0	0	1	2	37	0	0	0	1	1	0	39
H/TOT	1	0	0	0	0	1	2	4	65	6	2	0	1	1	1	76
09:00	0	0	0	0	0	0	0	0	21	3	1	0	0	1	0	26
09:15	0	0	0	0	0	0	0	0	12	5	0	0	0	0	0	17
09:30	0	0	0	0	0	0	0	0	9	2	1	0	0	0	0	12
09:45	0	0	0	0	0	0	0	0	8	3	1	0	0	0	0	12
H/TOT	0	0	0	0	0	0	0	0	50	13	3	0	0	1	0	67
P/TOT	1	0	0	0	0	1	4	6	139	23	7	0	1	3	3	176

				D to C									D to B				
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	0	0	0	0	0	0	0	0	32	1	0	0	0	3	2	38
16:15	0	0	0	0	0	0	0	0	22	1	0	0	0	0	0	23
16:30	1	0	0	0	0	0	0	1	31	6	1	0	0	1	0	39
16:45	0	1	0	0	0	0	0	1	23	6	0	0	0	1	1	31
H/TOT	1	1	0	0	0	0	0	2	108	14	1	0	0	5	3	131
17:00	1	0	0	0	0	0	0	1	62	5	0	0	0	0	0	67
17:15	0	0	0	0	0	0	0	0	25	10	1	0	0	1	2	39
17:30	0	0	0	0	0	0	2	2	27	5	1	0	0	1	2	36
17:45	1	0	0	0	0	0	1	2	32	2	0	0	0	0	0	34
H/TOT	2	0	0	0	0	0	3	5	146	22	2	0	0	2	4	176
P/TOT	3	1	0	0	0	0	3	7	254	36	3	0	0	7	7	307

SITE: 6

DATE: 06/07/2017

LOCATION: Church Lane/A56/Stockton Lane

DAY: Thursday

	D to A								D to D							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
07:15	2	2	0	0	0	0	0	4	0	0	0	0	0	0	0	0
07:30	5	1	1	0	0	0	0	7	0	0	0	0	0	0	0	0
07:45	5	1	0	0	0	0	0	6	0	0	0	0	0	0	0	0
H/TOT	13	4	1	0	0	0	0	18	0	0	0	0	0	0	0	0
08:00	5	1	1	0	0	0	0	7	0	0	0	0	0	0	0	0
08:15	4	0	1	0	0	0	0	5	0	0	0	0	0	0	0	0
08:30	5	0	1	0	0	0	0	6	0	0	0	0	0	0	0	0
08:45	21	3	0	0	0	0	1	25	0	0	0	0	0	0	0	0
H/TOT	35	4	3	0	0	0	1	43	0	0	0	0	0	0	0	0
09:00	7	3	1	0	0	1	0	12	0	0	0	0	0	0	0	0
09:15	5	1	1	0	0	0	1	8	0	0	0	0	0	0	0	0
09:30	2	2	0	0	0	0	0	4	0	0	0	0	0	0	0	0
09:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
H/TOT	15	6	2	0	0	1	1	25	0	0	0	0	0	0	0	0
P/TOT	63	14	6	0	0	1	2	86	0	0	0	0	0	0	0	0

	D to A								D to D							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	18	4	0	0	0	0	0	22	0	0	0	0	0	0	0	0
16:15	15	3	0	0	0	0	0	18	0	0	0	0	0	0	0	0
16:30	17	1	0	0	0	0	0	18	0	0	0	0	0	0	0	0
16:45	16	1	0	0	0	0	0	17	0	0	0	0	0	0	0	0
H/TOT	66	9	0	0	0	0	0	75	0	0	0	0	0	0	0	0
17:00	32	0	1	0	0	1	0	34	0	0	0	0	0	0	0	0
17:15	27	4	0	0	0	0	0	31	0	0	0	0	0	0	0	0
17:30	23	3	0	0	0	0	0	26	0	0	0	0	0	0	0	0
17:45	21	2	0	0	0	0	0	23	0	0	0	0	0	0	0	0
H/TOT	103	9	1	0	0	1	0	114	0	0	0	0	0	0	0	0
P/TOT	169	18	1	0	0	1	0	189	0	0	0	0	0	0	0	0

SITE: 6

DATE: 06/07/2017

LOCATION: Church Lane/A56/Stockton Lane

DAY: Thursday

				TO ARM A								FROM ARM A				
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	56	1	3	1	1	1	0	63	25	8	1	0	0	0	0	34
07:15	74	6	2	0	0	1	1	84	29	5	2	0	1	1	0	38
07:30	86	6	3	0	0	1	1	97	50	11	0	0	1	0	0	62
07:45	89	15	0	0	4	1	0	109	62	5	1	0	1	0	3	72
H/TOT	305	28	8	1	5	4	2	353	166	29	4	0	3	1	3	206
08:00	82	12	3	1	1	0	1	100	54	9	4	1	2	0	2	72
08:15	64	4	1	1	1	0	1	72	87	8	1	0	2	0	3	101
08:30	64	3	2	1	1	0	0	71	88	10	2	0	2	0	2	104
08:45	76	9	1	0	0	0	1	87	59	9	1	1	1	0	0	71
H/TOT	286	28	7	3	3	0	3	330	288	36	8	2	7	0	7	348
09:00	73	11	1	1	1	1	1	89	54	9	0	1	1	1	2	68
09:15	58	11	1	0	0	0	1	71	57	6	1	1	1	0	2	68
09:30	47	9	0	3	0	1	0	60	47	10	0	1	0	0	0	58
09:45	45	4	3	0	1	1	0	54	30	3	1	2	1	0	0	37
H/TOT	223	35	5	4	2	3	2	274	188	28	2	5	3	1	4	231
P/TOT	814	91	20	8	10	7	7	957	642	93	14	7	13	2	14	785

				TO ARM A								FROM ARM A				
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	84	12	0	0	1	1	0	98	68	5	2	0	0	1	0	76
16:15	80	11	2	0	2	0	1	96	81	5	1	0	5	0	1	93
16:30	90	9	2	1	1	0	0	103	77	10	2	0	0	0	0	89
16:45	89	14	2	2	1	0	2	110	72	5	1	0	2	0	0	80
H/TOT	343	46	6	3	5	1	3	407	298	25	6	0	7	1	1	338
17:00	111	8	4	0	3	2	2	130	89	12	0	0	0	1	1	103
17:15	115	18	1	0	0	0	0	134	105	9	0	0	1	0	1	116
17:30	93	9	2	0	1	0	2	107	93	1	1	0	0	0	1	96
17:45	89	6	0	0	0	0	0	95	83	4	1	1	1	4	0	94
H/TOT	408	41	7	0	4	2	4	466	370	26	2	1	2	5	3	409
P/TOT	751	87	13	3	9	3	7	873	668	51	8	1	9	6	4	747

SITE: 6 DATE: 06/07/2017

LOCATION: Church Lane/A56/Stockton Lane DAY: Thursday

	TO ARM B								FROM ARM B							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	24	5	1	0	0	0	0	30	72	6	3	1	1	1	0	84
07:15	25	6	3	0	1	0	0	35	108	10	2	0	0	2	2	124
07:30	48	12	0	0	1	1	1	63	127	13	3	0	0	3	3	149
07:45	55	4	2	0	1	0	2	64	136	16	1	0	4	1	0	158
H/TOT	152	27	6	0	3	1	3	192	443	45	9	1	5	7	5	515
08:00	52	10	3	1	2	0	2	70	108	15	3	1	2	1	4	134
08:15	71	8	3	0	1	0	1	84	128	7	0	1	1	2	0	139
08:30	79	12	2	0	0	0	0	93	103	8	2	1	1	0	4	119
08:45	81	6	1	1	2	1	0	92	77	6	1	0	1	0	0	85
H/TOT	283	36	9	2	5	1	3	339	416	36	6	3	5	3	8	477
09:00	69	11	1	1	1	2	1	86	81	11	1	1	1	0	1	96
09:15	64	11	1	1	1	0	1	79	61	11	0	0	0	0	0	72
09:30	53	11	1	1	0	0	0	66	55	8	0	3	0	1	0	67
09:45	36	6	2	2	1	0	0	47	56	8	3	0	1	1	1	70
H/TOT	222	39	5	5	3	2	2	278	253	38	4	4	2	2	2	305
P/TOT	657	102	20	7	11	4	8	809	1112	119	19	8	12	12	15	1297

	TO ARM B								FROM ARM B							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	92	5	2	0	0	4	3	106	84	12	0	0	1	1	0	98
16:15	100	6	1	0	4	0	1	112	75	9	2	0	2	2	3	93
16:30	101	14	3	0	0	1	0	119	87	9	2	1	1	0	2	102
16:45	83	11	1	0	2	1	1	99	112	15	2	2	1	1	3	136
H/TOT	376	36	7	0	6	6	5	436	358	45	6	3	5	4	8	429
17:00	146	17	0	0	0	1	0	164	94	9	3	0	3	1	5	115
17:15	126	19	1	0	1	1	3	151	102	14	2	0	0	1	0	119
17:30	116	6	2	0	0	1	4	129	86	7	2	0	1	1	3	100
17:45	103	4	1	1	1	4	0	114	104	5	1	0	0	0	0	110
H/TOT	491	46	4	1	2	7	7	558	386	35	8	0	4	3	8	444
P/TOT	867	82	11	1	8	13	12	994	744	80	14	3	9	7	16	873

SITE: 6

DATE: 06/07/2017

LOCATION: Church Lane/A56/Stockton Lane

DAY: Thursday

	TO ARM C								FROM ARM C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	1	0	0	0	0	0	1	2	1	0	0	0	0	0	0	1
07:15	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5
07:30	2	1	0	0	0	0	1	4	0	1	0	0	0	0	1	2
07:45	1	0	0	0	0	0	0	1	4	1	0	0	0	0	0	5
H/TOT	4	1	0	0	0	0	2	7	10	2	0	0	0	0	1	13
08:00	4	0	0	0	0	0	2	6	1	0	0	0	0	0	0	1
08:15	2	0	0	0	0	0	1	3	2	0	0	0	0	0	1	3
08:30	1	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0
08:45	1	1	0	0	0	0	1	3	3	0	0	0	0	0	1	4
H/TOT	8	1	0	0	0	1	4	14	6	0	0	0	0	0	2	8
09:00	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	1
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
09:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
09:45	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0
H/TOT	0	2	0	0	0	0	1	3	1	1	0	0	0	0	1	3
P/TOT	12	4	0	0	0	1	7	24	17	3	0	0	0	0	4	24

	TO ARM C								FROM ARM C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2
16:15	2	1	0	0	0	0	0	3	0	1	0	0	0	0	0	1
16:30	2	1	0	0	0	0	1	4	1	0	0	0	0	0	0	1
16:45	4	1	0	0	0	1	0	6	1	0	0	0	0	0	1	2
H/TOT	8	3	0	0	0	1	1	13	3	1	0	0	0	0	2	6
17:00	3	0	0	0	0	0	1	4	4	0	0	0	0	0	0	4
17:15	2	0	0	0	0	0	0	2	3	1	0	0	0	0	2	6
17:30	1	0	0	0	0	0	2	3	3	0	0	0	0	0	3	6
17:45	4	0	0	0	0	0	1	5	2	0	0	0	0	0	0	2
H/TOT	10	0	0	0	0	0	4	14	12	1	0	0	0	0	5	18
P/TOT	18	3	0	0	0	1	5	27	15	2	0	0	0	0	7	24

SITE: 6

DATE: 06/07/2017

LOCATION: Church Lane/A56/Stockton Lane

DAY: Thursday

	TO ARM D								FROM ARM D							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	20	8	0	0	0	0	0	28	3	0	0	0	0	0	1	4
07:15	48	7	0	0	0	2	1	58	5	4	1	0	0	0	0	10
07:30	53	8	1	0	0	2	3	67	12	2	1	0	0	1	2	18
07:45	74	5	1	0	0	0	2	82	17	2	1	0	0	0	1	21
H/TOT	195	28	2	0	0	4	6	235	37	8	3	0	0	1	4	53
08:00	40	4	2	0	1	1	1	49	15	2	1	0	0	0	0	18
08:15	91	5	0	0	1	2	3	102	11	2	3	0	0	0	2	18
08:30	63	6	1	0	2	0	6	78	16	3	1	0	0	1	0	21
08:45	40	2	0	0	1	0	1	44	59	3	0	0	1	1	2	66
H/TOT	234	17	3	0	5	3	11	273	101	10	5	0	1	2	4	123
09:00	21	5	1	0	0	0	0	27	28	6	2	0	0	2	0	38
09:15	13	1	0	0	0	0	2	16	17	6	1	0	0	0	1	25
09:30	14	2	0	0	0	0	0	16	11	4	1	0	0	0	0	16
09:45	14	2	0	0	0	0	1	17	9	3	1	0	0	0	0	13
H/TOT	62	10	1	0	0	0	3	76	65	19	5	0	0	2	1	92
P/TOT	491	55	6	0	5	7	20	584	203	37	13	0	1	5	9	268

	TO ARM D								FROM ARM D							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	27	5	0	0	0	0	0	32	50	5	0	0	0	3	2	60
16:15	11	1	0	0	1	2	2	17	37	4	0	0	0	0	0	41
16:30	21	2	0	0	0	0	1	24	49	7	1	0	0	1	0	58
16:45	48	2	0	0	0	0	2	52	39	8	0	0	0	1	1	49
H/TOT	107	10	0	0	1	2	5	125	175	24	1	0	0	5	3	208
17:00	22	1	0	0	0	0	3	26	95	5	1	0	0	1	0	102
17:15	19	1	1	0	0	1	2	24	52	14	1	0	0	1	2	70
17:30	22	1	0	0	0	1	3	27	50	8	1	0	0	1	4	64
17:45	47	3	1	0	0	0	0	51	54	4	0	0	0	0	1	59
H/TOT	110	6	2	0	0	2	8	128	251	31	3	0	0	3	7	295
P/TOT	217	16	2	0	1	4	13	253	426	55	4	0	0	8	10	503

SITE: 6

DATE: 06/07/2017

LOCATION: Church Lane/A56/Stockton Lane

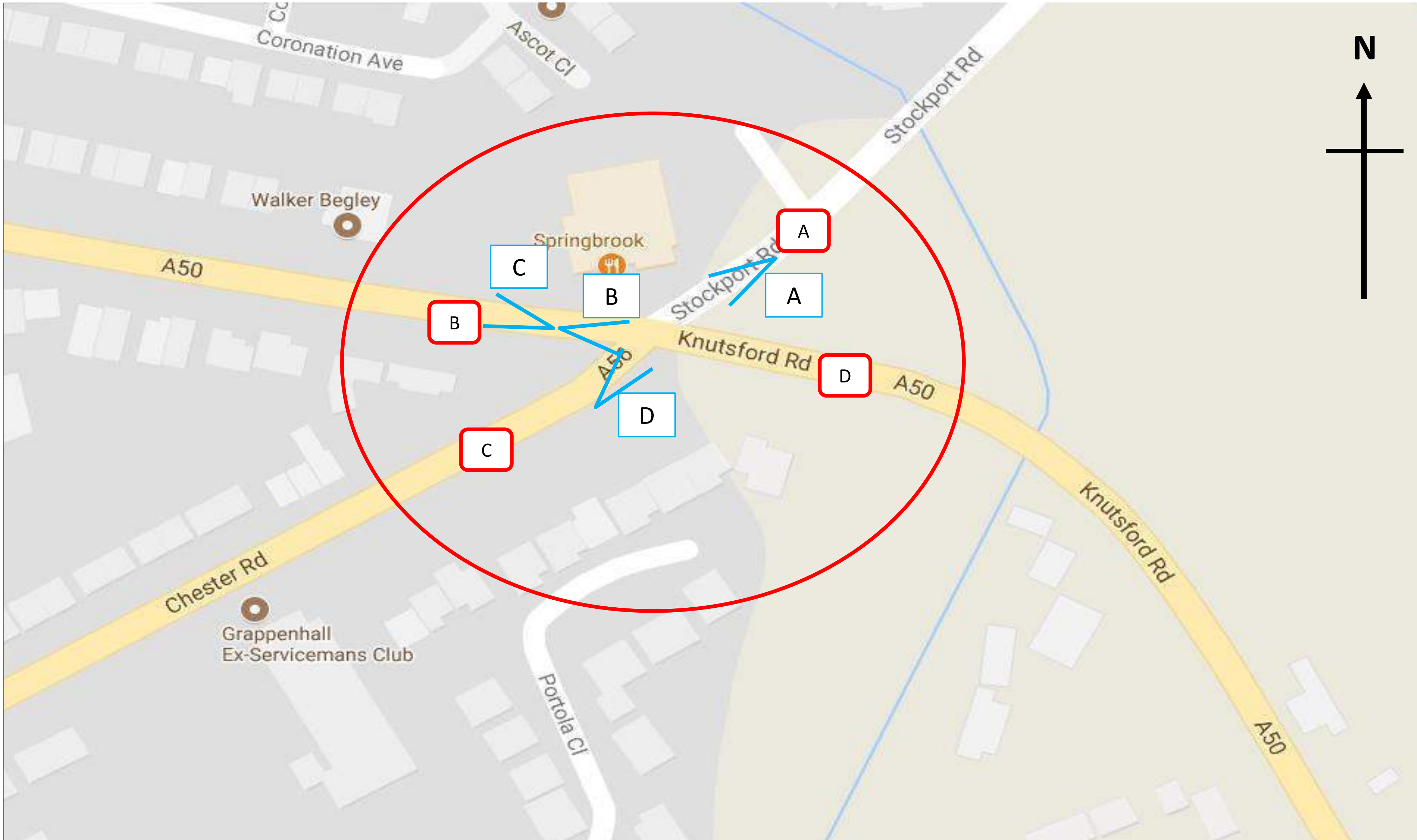
DAY: Thursday

TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
	JUNCTION TOTAL							
07:00	101	14	4	1	1	1	1	123
07:15	147	19	5	0	1	3	2	177
07:30	189	27	4	0	1	4	6	231
07:45	219	24	3	0	5	1	4	256
H/TOT	656	84	16	1	8	9	13	787
08:00	178	26	8	2	4	1	6	225
08:15	228	17	4	1	3	2	6	261
08:30	207	21	5	1	3	1	6	244
08:45	198	18	2	1	3	1	3	226
H/TOT	811	82	19	5	13	5	21	956
09:00	163	27	3	2	2	3	3	203
09:15	135	23	2	1	1	0	4	166
09:30	114	22	1	4	0	1	0	142
09:45	95	14	5	2	2	1	1	120
H/TOT	507	86	11	9	5	5	8	631
P/TOT	1974	252	46	15	26	19	42	2374

PEAK HOUR CALCULATION	TOT
07:00 to 08:00	787
07:15 to 08:15	889
07:30 to 08:30	973
07:45 to 08:45	**986**
08:00 to 09:00	956
08:15 to 09:15	934
08:30 to 09:30	839
08:45 to 09:45	737
09:00 to 10:00	631
PEAK VALUE	**986**

TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
	JUNCTION TOTAL							
16:00	203	22	2	0	1	5	3	236
16:15	193	19	3	0	7	2	4	228
16:30	214	26	5	1	1	1	2	250
16:45	224	28	3	2	3	2	5	267
H/TOT	834	95	13	3	12	10	14	981
17:00	282	26	4	0	3	3	6	324
17:15	262	38	3	0	1	2	5	311
17:30	232	16	4	0	1	2	11	266
17:45	243	13	2	1	1	4	1	265
H/TOT	1019	93	13	1	6	11	23	1166
P/TOT	1853	188	26	4	18	21	37	2147

PEAK HOUR CALCULATION	TOT
16:00 to 17:00	981
16:15 to 17:15	1069
16:30 to 17:30	1152
16:45 to 17:45	**1168**
17:00 to 18:00	1166
PEAK VALUE	**1168**



NDC NATIONWIDE DATA COLLECTION	**Site / Location:**	Site 7, A50/A56	**Project No:**	7634	**Drawing No:**	7634-07	**Drawn By:** EA
	Survey Date:	Thursday 6th July 2017	**Project Name:**	Warrington M6			
	Survey Times:	07:00 to 10:00 & 16:00 to 18:00	**Drawing Title:**	Site Layout and Observed Movements			

SITE: 7 DATE: 06/07/2017

LOCATION: A50/A56 DAY: Thursday

	A to D								A to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	17	3	3	0	0	0	0	23	13	2	1	0	0	0	0	16
07:15	22	5	0	0	0	0	0	27	10	2	0	0	0	0	0	12
07:30	20	1	2	0	0	0	0	23	24	5	0	0	1	0	1	31
07:45	32	2	0	0	0	0	0	34	24	4	1	0	0	0	0	29
H/TOT	91	11	5	0	0	0	0	107	71	13	2	0	1	0	1	88
08:00	24	2	1	0	0	0	0	27	30	4	2	1	1	0	0	38
08:15	25	3	1	0	0	0	0	29	44	3	1	0	1	0	0	49
08:30	26	3	1	1	0	0	0	31	47	5	0	0	0	0	0	52
08:45	24	3	2	0	0	0	0	29	19	5	0	1	0	0	0	25
H/TOT	99	11	5	1	0	0	0	116	140	17	3	2	2	0	0	164
09:00	31	3	1	0	0	0	0	35	23	1	0	0	0	0	0	24
09:15	19	3	3	0	0	0	0	25	26	3	2	0	0	0	0	31
09:30	10	1	1	0	0	1	0	13	26	4	0	0	0	0	0	30
09:45	20	2	5	0	0	0	0	27	19	2	1	1	0	0	0	23
H/TOT	80	9	10	0	0	1	0	100	94	10	3	1	0	0	0	108
P/TOT	270	31	20	1	0	1	0	323	305	40	8	3	3	0	1	360

	A to D								A to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	20	3	1	0	0	0	0	24	27	0	1	0	1	1	0	30
16:15	10	2	0	1	0	0	0	13	27	2	0	0	1	0	0	30
16:30	8	0	0	1	0	0	0	9	38	6	2	0	0	0	0	46
16:45	9	0	0	0	0	0	0	9	34	2	1	0	1	0	0	38
H/TOT	47	5	1	2	0	0	0	55	126	10	4	0	3	1	0	144
17:00	14	0	0	0	0	0	0	14	38	4	1	0	0	0	0	43
17:15	17	2	1	1	0	0	0	21	58	1	0	0	0	0	0	59
17:30	10	1	0	0	0	0	0	11	50	0	1	0	0	0	1	52
17:45	15	2	0	0	0	0	0	17	42	0	1	1	0	0	0	44
H/TOT	56	5	1	1	0	0	0	63	188	5	3	1	0	0	1	198
P/TOT	103	10	2	3	0	0	0	118	314	15	7	1	3	1	1	342

SITE: 7

DATE: 06/07/2017

LOCATION: A50/A56

DAY: Thursday

	A to B								A to A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	20	1	0	1	1	0	0	23	0	0	0	0	0	0	0	0
07:15	29	5	1	0	0	0	0	35	0	0	0	0	0	0	0	0
07:30	31	3	1	0	0	1	0	36	0	0	0	0	0	0	0	0
07:45	44	4	0	0	0	0	0	48	0	0	0	0	0	0	0	0
H/TOT	124	13	2	1	1	1	0	142	0	0	0	0	0	0	0	0
08:00	39	4	2	0	1	0	0	46	0	0	0	0	0	0	0	0
08:15	51	7	1	1	3	0	0	63	0	0	0	0	0	0	0	0
08:30	52	5	0	0	5	0	0	62	0	0	0	0	0	0	0	0
08:45	46	5	1	0	1	0	0	53	0	0	0	0	0	0	0	0
H/TOT	188	21	4	1	10	0	0	224	0	0	0	0	0	0	0	0
09:00	56	7	1	1	1	2	0	68	0	0	0	0	0	0	0	0
09:15	34	11	2	0	0	0	0	47	0	0	0	0	0	0	0	0
09:30	41	4	0	0	0	0	0	45	0	0	0	0	0	0	0	0
09:45	41	3	2	0	0	0	0	46	0	0	0	0	0	0	0	0
H/TOT	172	25	5	1	1	2	0	206	0	0	0	0	0	0	0	0
P/TOT	484	59	11	3	12	3	0	572	0	0	0	0	0	0	0	0

	A to B								A to A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	42	5	5	1	0	0	2	55	0	0	0	0	0	0	0	0
16:15	41	11	3	0	1	0	0	56	0	0	0	0	0	0	0	0
16:30	54	8	0	0	0	0	0	62	0	0	0	0	0	0	0	0
16:45	46	7	0	0	1	1	0	55	0	0	0	0	0	0	0	0
H/TOT	183	31	8	1	2	1	2	228	0	0	0	0	0	0	0	0
17:00	49	6	0	0	0	1	0	56	0	0	0	0	0	0	0	0
17:15	61	3	0	0	0	1	0	65	0	0	0	0	0	0	0	0
17:30	37	5	1	0	0	0	2	45	0	0	0	0	0	0	0	0
17:45	51	3	0	1	1	1	0	57	0	0	0	0	0	0	0	0
H/TOT	198	17	1	1	1	3	2	223	0	0	0	0	0	0	0	0
P/TOT	381	48	9	2	3	4	4	451	0	0	0	0	0	0	0	0

SITE: 7 DATE: 06/07/2017

LOCATION: A50/A56 DAY: Thursday

	B to A								B to D							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	32	7	0	1	0	1	0	41	109	14	0	6	0	1	0	130
07:15	63	9	2	0	1	1	0	76	130	17	2	4	1	1	0	155
07:30	50	8	1	0	0	1	0	60	125	17	2	0	1	2	0	147
07:45	49	17	2	0	1	0	0	69	106	16	4	0	0	0	0	126
H/TOT	194	41	5	1	2	3	0	246	470	64	8	10	2	4	0	558
08:00	63	7	1	0	1	0	0	72	114	11	3	6	0	0	0	134
08:15	56	6	2	0	0	1	0	65	117	16	2	4	0	0	0	139
08:30	54	6	3	0	0	0	0	63	84	17	4	2	0	2	0	109
08:45	44	9	3	0	0	0	0	56	80	11	3	2	0	0	0	96
H/TOT	217	28	9	0	1	1	0	256	395	55	12	14	0	2	0	478
09:00	23	3	2	1	1	0	1	31	71	13	3	6	1	0	0	94
09:15	29	5	1	0	0	1	0	36	60	12	6	3	0	1	0	82
09:30	36	2	3	1	1	0	0	43	49	7	8	3	0	1	0	68
09:45	29	7	2	1	0	0	0	39	43	6	1	2	1	0	0	53
H/TOT	117	17	8	3	2	1	1	149	223	38	18	14	2	2	0	297
P/TOT	528	86	22	4	5	5	1	651	1088	157	38	38	4	8	0	1333

	B to A								B to D							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	41	2	0	0	0	0	0	43	69	15	4	0	2	1	0	91
16:15	61	4	0	0	0	0	0	65	66	7	2	2	1	1	1	80
16:30	35	4	1	0	0	0	0	40	72	5	2	0	0	3	0	82
16:45	54	5	0	0	0	0	0	59	66	6	3	2	0	2	1	80
H/TOT	191	15	1	0	0	0	0	207	273	33	11	4	3	7	2	333
17:00	51	5	0	0	0	0	1	57	76	5	3	3	0	2	0	89
17:15	52	2	0	1	0	0	0	55	61	7	0	0	0	1	1	70
17:30	57	4	0	0	0	1	1	63	70	5	2	0	0	1	0	78
17:45	48	2	1	0	0	0	1	52	62	3	2	0	0	0	0	67
H/TOT	208	13	1	1	0	1	3	227	269	20	7	3	0	4	1	304
P/TOT	399	28	2	1	0	1	3	434	542	53	18	7	3	11	3	637

SITE: 7

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LOCATION: A50/A56

DAY: Thursday

	B to C								B to B							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
07:15	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
07:30	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
07:45	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
H/TOT	6	0	0	0	1	0	0	7	0	0	0	0	0	0	0	0
08:00	2	0	1	0	1	0	0	4	0	0	0	0	0	0	0	0
08:15	5	0	0	0	1	0	0	6	0	0	0	0	0	0	0	0
08:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
08:45	1	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0
H/TOT	9	0	1	0	3	0	0	13	0	0	0	0	0	0	0	0
09:00	4	1	0	0	0	0	0	5	0	0	0	0	0	0	0	0
09:15	6	0	0	0	1	0	0	7	0	0	0	0	0	0	0	0
09:30	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
09:45	1	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0
H/TOT	14	1	0	0	2	0	0	17	0	0	0	0	0	0	0	0
P/TOT	29	1	1	0	6	0	0	37	0	0	0	0	0	0	0	0

	B to C								B to B							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	1	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0
16:15	4	0	0	0	1	0	1	6	0	0	0	0	0	0	0	0
16:30	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
16:45	5	1	0	0	1	0	0	7	0	0	0	0	0	0	0	0
H/TOT	14	1	1	0	2	0	1	19	0	0	0	0	0	0	0	0
17:00	5	0	0	0	0	0	1	6	0	0	0	0	0	0	0	0
17:15	5	0	0	0	1	0	0	6	0	0	0	0	0	0	0	0
17:30	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
17:45	6	0	0	0	1	0	0	7	0	0	0	0	0	0	0	0
H/TOT	19	0	0	0	2	0	1	22	0	0	0	0	0	0	0	0
P/TOT	33	1	1	0	4	0	2	41	0	0	0	0	0	0	0	0

SITE: 7 DATE: 06/07/2017

LOCATION: A50/A56 DAY: Thursday

	C to B								C to A							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	7	0	0	1	0	0	0	8	24	1	1	0	1	1	0	28
07:15	3	0	0	0	0	0	0	3	36	2	2	0	0	0	1	41
07:30	14	0	0	0	0	0	0	14	43	5	1	0	0	1	1	51
07:45	11	3	0	0	0	0	0	14	51	4	1	0	2	1	0	59
H/TOT	35	3	0	1	0	0	0	39	154	12	5	0	3	3	2	179
08:00	9	3	1	0	0	0	0	13	51	6	1	1	3	0	0	62
08:15	7	0	0	0	0	0	0	7	31	3	0	0	0	0	0	34
08:30	13	0	1	1	0	0	0	15	32	4	1	1	2	0	0	40
08:45	11	4	0	0	1	0	0	16	27	2	1	0	0	0	0	30
H/TOT	40	7	2	1	1	0	0	51	141	15	3	2	5	0	0	166
09:00	15	0	0	0	0	0	0	15	24	5	0	0	1	0	0	30
09:15	8	2	0	0	0	0	0	10	27	7	0	0	0	0	0	34
09:30	8	0	0	0	0	0	0	8	22	4	0	1	0	0	0	27
09:45	10	1	0	0	0	0	0	11	22	2	2	0	1	0	0	27
H/TOT	41	3	0	0	0	0	0	44	95	18	0	1	2	0	0	118
P/TOT	116	13	2	2	1	0	0	134	390	45	8	3	10	3	2	463

	C to B								C to A							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	11	1	0	0	0	0	0	12	39	6	0	0	1	1	0	47
16:15	10	0	0	0	0	0	0	10	35	5	1	0	1	0	0	42
16:30	19	1	0	0	0	0	0	20	34	1	0	1	1	0	0	37
16:45	11	6	0	0	0	0	0	17	58	3	1	0	1	1	0	64
H/TOT	51	8	0	0	0	0	0	59	166	15	2	1	4	2	0	190
17:00	14	2	1	0	0	0	0	17	50	10	3	0	1	0	1	65
17:15	16	3	0	0	0	0	0	19	62	6	2	0	2	0	0	72
17:30	11	3	0	0	0	0	0	14	43	7	2	0	1	0	0	53
17:45	15	3	0	0	0	0	0	18	39	1	0	0	0	0	0	40
H/TOT	56	11	1	0	0	0	0	68	194	24	7	0	4	0	1	230
P/TOT	107	19	1	0	0	0	0	127	360	39	9	1	8	2	1	420

SITE: 7 DATE: 06/07/2017

LOCATION: A50/A56 DAY: Thursday

	C to D								C to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	48	1	2	0	0	0	0	51	0	0	0	0	0	0	0	0
07:15	42	3	0	0	0	0	0	45	0	0	0	0	0	0	0	0
07:30	47	2	0	0	0	0	0	49	0	0	0	0	0	0	0	0
07:45	60	8	1	0	0	0	0	69	0	0	0	0	0	0	0	0
H/TOT	197	14	3	0	0	0	0	214	0	0	0	0	0	0	0	0
08:00	32	6	0	0	0	0	0	38	0	0	0	0	0	0	0	0
08:15	38	1	0	0	1	0	0	40	0	0	0	0	0	0	0	0
08:30	38	2	0	0	0	0	0	40	0	0	0	0	0	0	0	0
08:45	38	5	0	0	0	0	0	43	0	0	0	0	0	0	0	0
H/TOT	146	14	0	0	1	0	0	161	0	0	0	0	0	0	0	0
09:00	41	2	0	1	0	0	0	44	0	0	0	0	0	0	0	0
09:15	38	4	1	0	0	0	0	43	0	0	0	0	0	0	0	0
09:30	23	6	0	2	0	1	0	32	0	0	0	0	0	0	0	0
09:45	15	3	0	0	0	0	0	18	0	0	0	0	0	0	0	0
H/TOT	117	15	1	3	0	1	0	137	0	0	0	0	0	0	0	0
P/TOT	460	43	4	3	1	1	0	512	0	0	0	0	0	0	0	0

	C to D								C to C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	21	3	2	0	0	0	0	26	0	0	0	0	0	0	0	0
16:15	25	6	1	0	1	0	0	33	0	0	0	0	0	0	0	0
16:30	24	2	2	0	0	0	0	28	0	0	0	0	0	0	0	0
16:45	18	4	0	2	0	0	0	24	0	0	0	0	0	0	0	0
H/TOT	88	15	5	2	1	0	0	111	0	0	0	0	0	0	0	0
17:00	29	1	0	0	0	0	0	30	0	0	0	0	0	0	0	0
17:15	24	4	0	0	0	0	0	28	0	0	0	0	0	0	0	0
17:30	24	0	0	0	0	0	2	26	0	0	0	0	0	0	0	0
17:45	20	1	0	0	0	0	0	21	0	0	0	0	0	0	0	0
H/TOT	97	6	0	0	0	0	2	105	0	0	0	0	0	0	0	0
P/TOT	185	21	5	2	1	0	2	216	0	0	0	0	0	0	0	0

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LOCATION: A50/A56 DAY: Thursday

	D to C								D to B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	6	1	1	0	0	0	0	8	42	8	1	3	0	0	0	54
07:15	10	1	0	0	0	0	0	11	59	14	3	3	0	0	0	79
07:30	6	3	0	0	0	0	0	9	69	8	5	10	0	0	0	92
07:45	7	1	0	0	1	0	1	10	80	11	2	5	0	2	1	101
H/TOT	29	6	1	0	1	0	1	38	250	41	11	21	0	2	1	326
08:00	10	1	1	0	0	0	0	12	84	5	2	2	1	1	0	95
08:15	14	3	1	0	0	0	0	18	97	9	2	2	0	0	0	110
08:30	15	3	1	0	0	0	0	19	76	7	4	3	0	1	0	91
08:45	17	0	2	0	1	0	0	20	100	10	1	5	0	0	0	116
H/TOT	56	7	5	0	1	0	0	69	357	31	9	12	1	2	0	412
09:00	15	3	1	1	0	0	1	21	74	9	1	1	0	1	0	86
09:15	13	4	0	1	0	0	0	18	67	10	3	2	0	1	0	83
09:30	12	5	0	1	0	0	0	18	50	4	1	2	1	0	0	58
09:45	7	2	0	1	0	0	0	10	70	14	3	6	0	1	0	94
H/TOT	47	14	1	4	0	0	1	67	261	37	8	11	1	3	0	321
P/TOT	132	27	7	4	2	0	2	174	868	109	28	44	2	7	1	1059

	D to C								D to B							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	30	3	0	0	0	0	0	33	99	15	3	1	1	0	0	119
16:15	32	4	1	0	1	0	0	38	110	21	2	3	0	0	0	136
16:30	34	1	0	0	0	0	0	35	134	22	3	3	1	0	0	163
16:45	33	1	0	0	0	0	0	34	139	17	5	4	1	0	2	168
H/TOT	129	9	1	0	1	0	0	140	482	75	13	11	3	0	2	586
17:00	37	4	2	0	0	0	0	43	132	20	3	0	0	1	0	156
17:15	35	4	0	0	0	0	1	40	130	12	2	2	0	1	0	147
17:30	46	2	0	0	1	0	0	49	134	9	6	3	0	1	0	153
17:45	43	2	1	0	0	0	0	46	135	13	2	1	1	0	0	152
H/TOT	161	12	3	0	1	0	1	178	531	54	13	6	1	3	0	608
P/TOT	290	21	4	0	2	0	1	318	1013	129	26	17	4	3	2	1194

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DAY: Thursday

	D to A								D to D							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	6	1	0	0	0	1	0	8	0	0	0	0	0	0	0	0
07:15	5	0	1	0	0	0	0	6	0	0	0	0	0	0	0	0
07:30	8	1	1	1	0	0	0	11	0	0	0	0	0	0	0	0
07:45	12	2	0	0	0	0	0	14	0	0	0	0	0	0	0	0
H/TOT	31	4	2	1	0	1	0	39	0	0	0	0	0	0	0	0
08:00	6	3	1	0	0	0	0	10	0	0	0	0	0	0	0	0
08:15	13	2	1	0	1	1	0	18	0	0	0	0	0	0	0	0
08:30	14	2	2	0	0	0	0	18	0	0	0	0	0	0	0	0
08:45	18	1	0	0	0	0	0	19	0	0	0	0	0	0	0	0
H/TOT	51	8	4	0	1	1	0	65	0	0	0	0	0	0	0	0
09:00	10	2	0	0	0	0	0	12	0	0	0	0	0	0	0	0
09:15	12	0	1	0	0	0	0	13	0	0	0	0	0	0	0	0
09:30	8	0	1	0	0	0	0	9	0	0	0	0	0	0	0	0
09:45	11	5	4	0	0	0	0	20	0	0	0	0	0	0	0	0
H/TOT	41	7	6	0	0	0	0	54	0	0	0	0	0	0	0	0
P/TOT	123	19	12	1	1	2	0	158	0	0	0	0	0	0	0	0

	D to A								D to D							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	10	3	1	0	0	0	0	14	0	0	0	0	0	0	0	0
16:15	24	1	0	0	0	0	0	25	0	0	0	0	0	0	0	0
16:30	14	2	1	2	0	0	0	19	0	0	0	0	0	0	0	0
16:45	20	3	0	1	0	0	0	24	0	0	0	0	0	0	0	0
H/TOT	68	9	2	3	0	0	0	82	0	0	0	0	0	0	0	0
17:00	29	0	0	0	0	0	0	29	0	0	0	0	0	0	0	0
17:15	13	1	1	0	0	1	0	16	0	0	0	0	0	0	0	0
17:30	20	1	0	0	0	0	0	21	0	0	0	0	0	0	0	0
17:45	34	0	0	0	0	0	0	34	0	0	0	0	0	0	0	0
H/TOT	96	2	1	0	0	1	0	100	0	0	0	0	0	0	0	0
P/TOT	164	11	3	3	0	1	0	182	0	0	0	0	0	0	0	0

SITE: 7

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LOCATION: A50/A56

DAY: Thursday

	TO ARM A								FROM ARM A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	62	9	1	1	1	3	0	77	50	6	4	1	1	0	0	62
07:15	104	11	5	0	1	1	1	123	61	12	1	0	0	0	0	74
07:30	101	14	3	1	0	2	1	122	75	9	3	0	1	1	1	90
07:45	112	23	3	0	3	1	0	142	100	10	1	0	0	0	0	111
H/TOT	379	57	12	2	5	7	2	464	286	37	9	1	2	1	1	337
08:00	120	16	3	1	4	0	0	144	93	10	5	1	2	0	0	111
08:15	100	11	3	0	1	2	0	117	120	13	3	1	4	0	0	141
08:30	100	12	6	1	2	0	0	121	125	13	1	1	5	0	0	145
08:45	89	12	4	0	0	0	0	105	89	13	3	1	1	0	0	107
H/TOT	409	51	16	2	7	2	0	487	427	49	12	4	12	0	0	504
09:00	57	10	2	1	2	0	1	73	110	11	2	1	1	2	0	127
09:15	68	12	2	0	0	1	0	83	79	17	7	0	0	0	0	103
09:30	66	6	4	2	1	0	0	79	77	9	1	0	0	1	0	88
09:45	62	14	8	1	1	0	0	86	80	7	8	1	0	0	0	96
H/TOT	253	42	16	4	4	1	1	321	346	44	18	2	1	3	0	414
P/TOT	1041	150	44	8	16	10	3	1272	1059	130	39	7	15	4	1	1255

	TO ARM A								FROM ARM A							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	90	11	1	0	1	1	0	104	89	8	7	1	1	1	2	109
16:15	120	10	1	0	1	0	0	132	78	15	3	1	2	0	0	99
16:30	83	7	2	3	1	0	0	96	100	14	2	1	0	0	0	117
16:45	132	11	1	1	1	1	0	147	89	9	1	0	2	1	0	102
H/TOT	425	39	5	4	4	2	0	479	356	46	13	3	5	2	2	427
17:00	130	15	3	0	1	0	2	151	101	10	1	0	0	1	0	113
17:15	127	9	3	1	2	1	0	143	136	6	1	1	0	1	0	145
17:30	120	12	2	0	1	1	1	137	97	6	2	0	0	0	3	108
17:45	121	3	1	0	0	0	1	126	108	5	1	2	1	1	0	118
H/TOT	498	39	9	1	4	2	4	557	442	27	5	3	1	3	3	484
P/TOT	923	78	14	5	8	4	4	1036	798	73	18	6	6	5	5	911

SITE: 7 DATE: 06/07/2017

LOCATION: A50/A56 DAY: Thursday

	TO ARM B								FROM ARM B							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	69	9	1	5	1	0	0	85	142	21	0	7	0	2	0	172
07:15	91	19	4	3	0	0	0	117	193	26	4	4	3	2	0	232
07:30	114	11	6	10	0	1	0	142	177	25	3	0	1	3	0	209
07:45	135	18	2	5	0	2	1	163	158	33	6	0	1	0	0	198
H/TOT	409	57	13	23	1	3	1	507	670	105	13	11	5	7	0	811
08:00	132	12	5	2	2	1	0	154	179	18	5	6	2	0	0	210
08:15	155	16	3	3	3	0	0	180	178	22	4	5	0	1	0	210
08:30	141	12	5	4	5	1	0	168	139	23	7	2	0	2	0	173
08:45	157	19	2	5	2	0	0	185	125	20	6	2	1	0	0	154
H/TOT	585	59	15	14	12	2	0	687	621	83	22	15	3	3	0	747
09:00	145	16	2	2	1	3	0	169	98	17	5	7	2	0	1	130
09:15	109	23	5	2	0	1	0	140	95	17	7	3	1	2	0	125
09:30	99	8	1	2	1	0	0	111	88	9	11	4	1	1	0	114
09:45	121	18	5	6	0	1	0	151	73	13	3	3	2	0	0	94
H/TOT	474	65	13	12	2	5	0	571	354	56	26	17	6	3	1	463
P/TOT	1468	181	41	49	15	10	1	1765	1645	244	61	43	14	13	1	2021

	TO ARM B								FROM ARM B							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	152	21	8	2	1	0	2	186	111	17	5	0	2	1	0	136
16:15	161	32	5	3	1	0	0	202	131	11	2	2	2	1	2	151
16:30	207	31	3	3	1	0	0	245	111	9	3	0	0	3	0	126
16:45	196	30	5	4	2	1	2	240	125	12	3	2	1	2	1	146
H/TOT	716	114	21	12	5	1	4	873	478	49	13	4	5	7	3	559
17:00	195	28	4	0	0	2	0	229	132	10	3	3	0	2	2	152
17:15	207	18	2	2	0	2	0	231	118	9	0	1	1	1	1	131
17:30	182	17	7	3	0	1	2	212	130	9	2	0	0	2	1	144
17:45	201	19	2	2	2	1	0	227	116	5	3	0	1	0	1	126
H/TOT	785	82	15	7	2	6	2	899	496	33	8	4	2	5	5	553
P/TOT	1501	196	36	19	7	7	6	1772	974	82	21	8	7	12	8	1112

SITE: 7 DATE: 06/07/2017

LOCATION: A50/A56 DAY: Thursday

	TO ARM C								FROM ARM C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	20	3	2	0	0	0	0	25	79	2	3	1	1	1	0	87
07:15	20	3	0	0	1	0	0	24	81	5	2	0	0	0	1	89
07:30	32	8	0	0	1	0	1	42	104	7	1	0	0	1	1	114
07:45	34	5	1	0	1	0	1	42	122	15	2	0	2	1	0	142
H/TOT	106	19	3	0	3	0	2	133	386	29	8	1	3	3	2	432
08:00	42	5	4	1	2	0	0	54	92	15	2	1	3	0	0	113
08:15	63	6	2	1	1	0	0	73	76	4	0	0	1	0	0	81
08:30	63	8	1	0	0	0	0	72	83	6	2	2	2	0	0	95
08:45	37	5	2	1	2	0	0	47	76	11	1	0	1	0	0	89
H/TOT	205	24	9	3	5	0	0	246	327	36	5	3	7	0	0	378
09:00	42	5	1	1	0	0	1	50	80	7	0	1	1	0	0	89
09:15	45	7	2	1	1	0	0	56	73	13	1	0	0	0	0	87
09:30	41	9	0	1	0	0	0	51	53	10	0	3	0	1	0	67
09:45	27	4	1	2	1	0	0	35	47	6	2	0	1	0	0	56
H/TOT	155	25	4	5	2	0	1	192	253	36	3	4	2	1	0	299
P/TOT	466	68	16	8	10	0	3	571	966	101	16	8	12	4	2	1109

	TO ARM C								FROM ARM C							
TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	58	3	2	0	1	1	0	65	71	10	2	0	1	1	0	85
16:15	63	6	1	0	3	0	1	74	70	11	2	0	2	0	0	85
16:30	76	7	2	0	0	0	0	85	77	4	2	1	1	0	0	85
16:45	72	4	1	0	2	0	0	79	87	13	1	2	1	1	0	105
H/TOT	269	20	6	0	6	1	1	303	305	38	7	3	5	2	0	360
17:00	80	8	3	0	0	0	1	92	93	13	4	0	1	0	1	112
17:15	98	5	0	0	1	0	1	105	102	13	2	0	2	0	0	119
17:30	99	2	1	0	1	0	1	104	78	10	2	0	1	0	2	93
17:45	91	2	2	1	1	0	0	97	74	5	0	0	0	0	0	79
H/TOT	368	17	6	1	3	0	3	398	347	41	8	0	4	0	3	403
P/TOT	637	37	12	1	9	1	4	701	652	79	15	3	9	2	3	763

SITE: 7

DATE: 06/07/2017

LOCATION: A50/A56

DAY: Thursday

	TO ARM D								FROM ARM D							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
07:00	174	18	5	6	0	1	0	204	54	10	2	3	0	1	0	70
07:15	194	25	2	4	1	1	0	227	74	15	4	3	0	0	0	96
07:30	192	20	4	0	1	2	0	219	83	12	6	11	0	0	0	112
07:45	198	26	5	0	0	0	0	229	99	14	2	5	1	2	2	125
H/TOT	758	89	16	10	2	4	0	879	310	51	14	22	1	3	2	403
08:00	170	19	4	6	0	0	0	199	100	9	4	2	1	1	0	117
08:15	180	20	3	4	1	0	0	208	124	14	4	2	1	1	0	146
08:30	148	22	5	3	0	2	0	180	105	12	7	3	0	1	0	128
08:45	142	19	5	2	0	0	0	168	135	11	3	5	1	0	0	155
H/TOT	640	80	17	15	1	2	0	755	464	46	18	12	3	3	0	546
09:00	143	18	4	7	1	0	0	173	99	14	2	2	0	1	1	119
09:15	117	19	10	3	0	1	0	150	92	14	4	3	0	1	0	114
09:30	82	14	9	5	0	3	0	113	70	9	2	3	1	0	0	85
09:45	78	11	6	2	1	0	0	98	88	21	7	7	0	1	0	124
H/TOT	420	62	29	17	2	4	0	534	349	58	15	15	1	3	1	442
P/TOT	1818	231	62	42	5	10	0	2168	1123	155	47	49	5	9	3	1391

	TO ARM D								FROM ARM D							
TIME	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**MCL**	**PCL**	**TOT**
16:00	110	21	7	0	2	1	0	141	139	21	4	1	1	0	0	166
16:15	101	15	3	3	2	1	1	126	166	26	3	3	1	0	0	199
16:30	104	7	4	1	0	3	0	119	182	25	4	5	1	0	0	217
16:45	93	10	3	4	0	2	1	113	192	21	5	5	1	0	2	226
H/TOT	408	53	17	8	4	7	2	499	679	93	16	14	4	0	2	808
17:00	119	6	3	3	0	2	0	133	198	24	5	0	0	1	0	228
17:15	102	13	1	1	0	1	1	119	178	17	3	2	0	2	1	203
17:30	104	6	2	0	0	1	2	115	200	12	6	3	1	1	0	223
17:45	97	6	2	0	0	0	0	105	212	15	3	1	1	0	0	232
H/TOT	422	31	8	4	0	4	3	472	788	68	17	6	2	4	1	886
P/TOT	830	84	25	12	4	11	5	971	1467	161	33	20	6	4	3	1694

SITE: 7

DATE: 06/07/2017

LOCATION: A50/A56

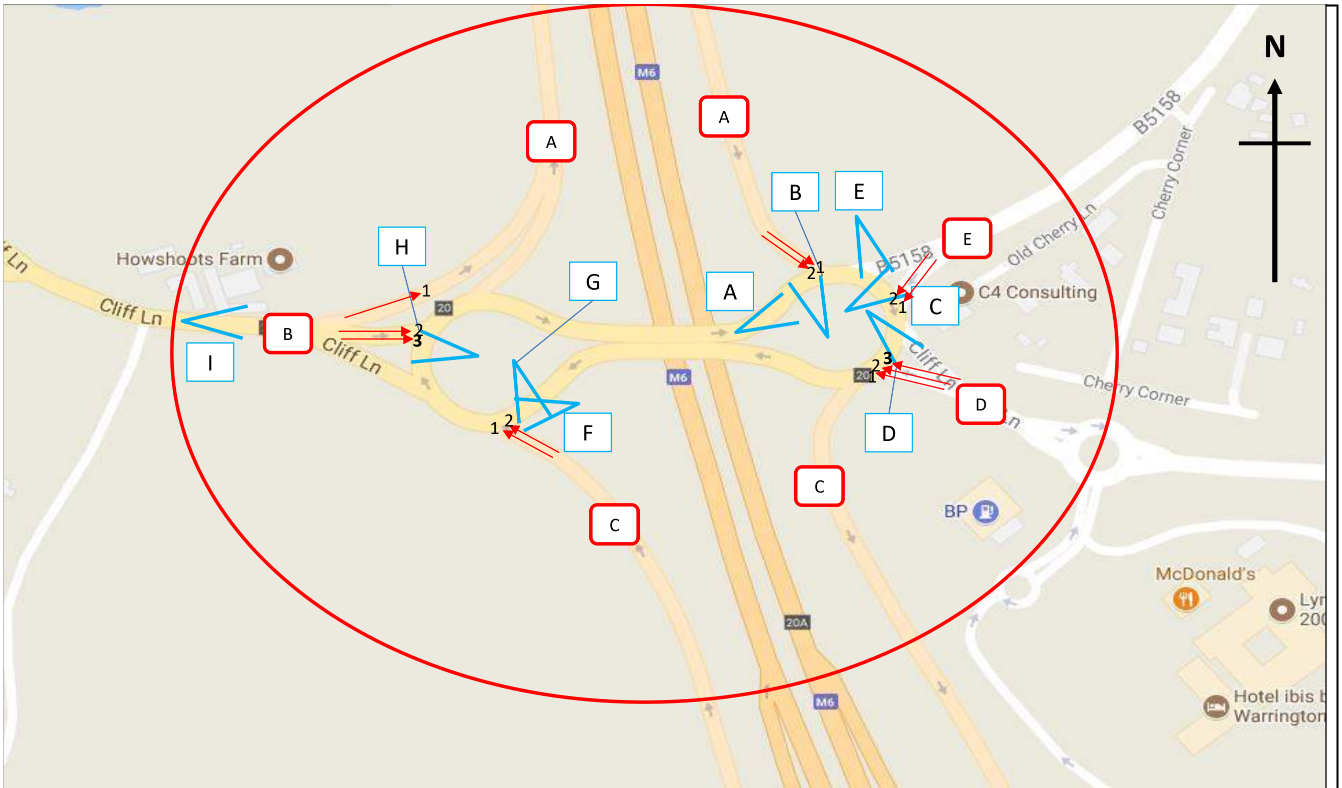
DAY: Thursday

TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
	JUNCTION TOTAL							
07:00	325	39	9	12	2	4	0	391
07:15	409	58	11	7	3	2	1	491
07:30	439	53	13	11	2	5	2	525
07:45	479	72	11	5	4	3	2	576
H/TOT	1652	222	44	35	11	14	5	1983
08:00	464	52	16	10	8	1	0	551
08:15	498	53	11	8	6	2	0	578
08:30	452	54	17	8	7	3	0	541
08:45	425	55	13	8	4	0	0	505
H/TOT	1839	214	57	34	25	6	0	2175
09:00	387	49	9	11	4	3	2	465
09:15	339	61	19	6	1	3	0	429
09:30	288	37	14	10	2	3	0	354
09:45	288	47	20	11	3	1	0	370
H/TOT	1302	194	62	38	10	10	2	1618
P/TOT	4793	630	163	107	46	30	7	5776

PEAK HOUR CALCULATION	TOT
07:00 to 08:00	1983
07:15 to 08:15	2143
07:30 to 08:30	2230
07:45 to 08:45	**2246**
08:00 to 09:00	2175
08:15 to 09:15	2089
08:30 to 09:30	1940
08:45 to 09:45	1753
09:00 to 10:00	1618
PEAK VALUE	**2246**

TIME	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
	JUNCTION TOTAL							
16:00	410	56	18	2	5	3	2	496
16:15	445	63	10	6	7	1	2	534
16:30	470	52	11	7	2	3	0	545
16:45	493	55	10	9	5	4	3	579
H/TOT	1818	226	49	24	19	11	7	2154
17:00	524	57	13	3	1	4	3	605
17:15	534	45	6	4	3	4	2	598
17:30	505	37	12	3	2	3	6	568
17:45	510	30	7	3	3	1	1	555
H/TOT	2073	169	38	13	9	12	12	2326
P/TOT	3891	395	87	37	28	23	19	4480

PEAK HOUR CALCULATION	TOT
16:00 to 17:00	2154
16:15 to 17:15	2263
16:30 to 17:30	2327
16:45 to 17:45	**2350**
17:00 to 18:00	2326
PEAK VALUE	**2350**



NDC NATIONWIDE DATA COLLECTION	Site / Location:	Site 1, M6/Lymm Dumbbell Roundabout	Project No:	7634	Drawing No:	7634-01	Drawn By: EA
	Survey Date:	Thursday 06th July 2017	Project Name:	Warrington M6			
	Survey Times:	07:00 to 10:00 & 16:00 to 18:00	Drawing Title:	Site Layout and Observed Movements			

SITE: 1 DAY: Thursday

LOCATION: M6/Lymm Dumbbell Roundabout DATE: 06/07/2017

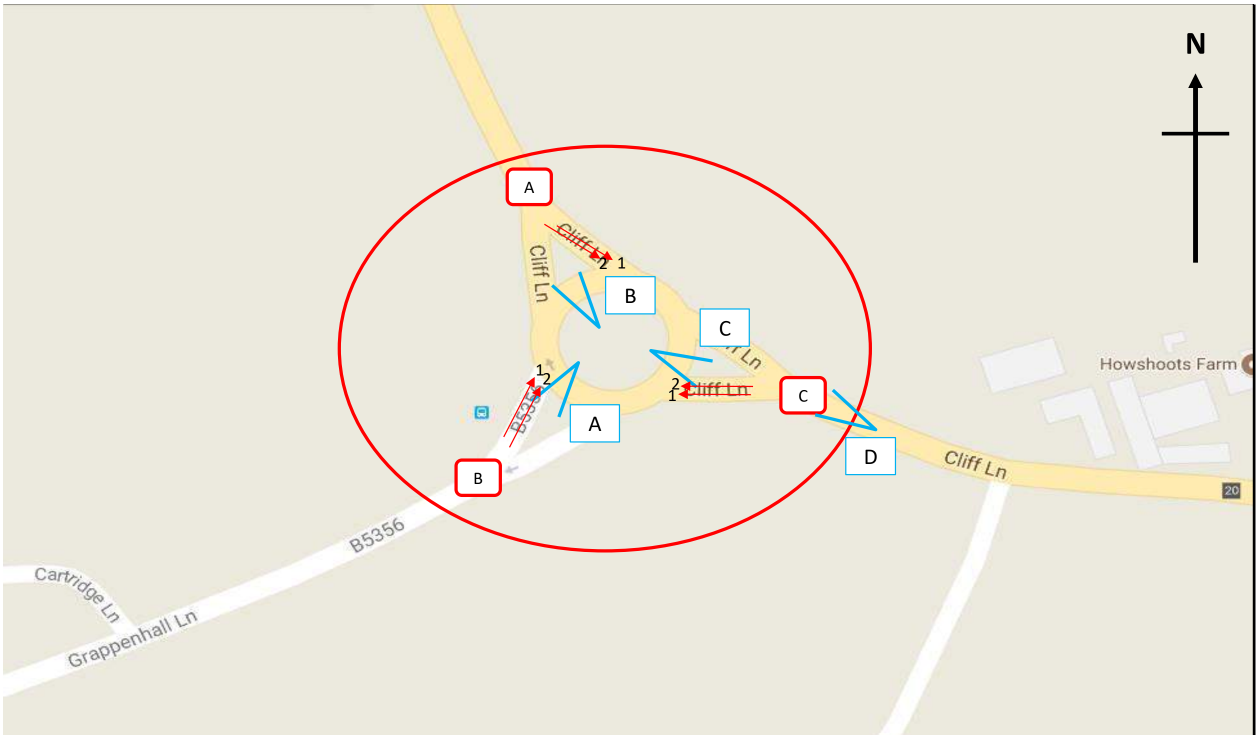
Note:
Lanes are numbered outwards from the nearside kerb in the direction of travel.
Lane 1 will always be nearest the footway. Queues measured in vehicle numbers.

	ARM A M6 SB Offslip		ARM B Cliff Lane W			ARM C M6 NB On-slip		ARM D Cliff Lane E			ARM E B5158	
TIME	LANE 1	LANE 2	LANE 1	LANE 2	LANE 3	LANE 1	LANE 2	LANE 1	LANE 2	LANE 3	LANE 1	LANE 2
07:00	10	5	0	2	5	6	6	3	3	3	2	3
07:05	7	8	0	2	4	5	6	4	3	3	4	3
07:10	7	5	0	3	12	7	8	2	2	0	2	2
07:15	6	7	0	3	13	6	5	8	10	3	6	4
07:20	11	4	0	7	16	8	9	8	2	3	4	6
07:25	18	20	0	3	9	8	5	4	2	4	15	7
07:30	10	9	0	3	4	5	7	4	1	5	12	11
07:35	15	8	0	4	8	6	11	2	3	2	5	7
07:40	25	20	0	3	8	13	7	10	9	2	17	11
07:45	25	24	0	3	3	4	4	3	4	4	24	11
07:50	26	25	0	4	5	7	8	2	6	7	18	9
07:55	26	26	0	3	11	7	6	7	3	4	7	4
08:00	24	23	0	3	8	8	8	3	5	6	4	5
08:05	25	24	0	2	15	7	8	4	10	5	10	7
08:10	23	22	0	2	5	13	7	7	6	7	4	7
08:15	25	20	0	3	8	5	9	5	3	5	4	9
08:20	13	14	0	2	16	6	10	3	3	4	16	11
08:25	16	18	0	4	17	6	8	3	5	12	25	7
08:30	20	18	0	3	5	11	12	5	3	12	7	3
08:35	20	19	0	2	5	6	7	5	6	12	11	10
08:40	22	20	0	3	6	5	6	6	16	7	5	5
08:45	20	18	0	3	8	6	7	7	15	6	5	5
08:50	23	22	0	5	14	6	9	2	4	2	3	6
08:55	18	14	0	2	5	6	6	3	1	3	3	11
09:00	20	7	0	3	9	3	8	3	3	3	5	9
09:05	13	7	0	2	12	3	6	3	3	2	10	7
09:10	6	7	0	2	6	5	9	2	3	2	3	2
09:15	11	4	0	4	5	2	7	3	2	5	2	3
09:20	7	5	0	3	6	7	16	4	1	2	5	2
09:25	8	7	0	2	5	3	4	6	4	4	5	8
09:30	8	4	0	2	7	6	7	3	1	2	6	4
09:35	8	4	0	3	4	1	3	4	1	2	3	2
09:40	4	2	0	1	5	7	8	5	2	4	1	2
09:45	15	2	0	2	8	3	9	7	3	3	2	1
09:50	16	6	0	1	9	5	7	2	2	1	2	7
09:55	8	2	0	3	3	5	11	1	2	4	2	2

MAX	26	26	0	7	17	13	16	10	16	12	25	11
MIN	4	2	0	1	3	1	3	1	1	0	1	1

	ARM A M6 SB Offslip		ARM B Cliff Lane W			ARM C M6 NB On-slip		ARM D Cliff Lane E			ARM E B5158	
TIME	LANE 1	LANE 2	LANE 1	LANE 2	LANE 3	LANE 1	LANE 2	LANE 1	LANE 2	LANE 3	LANE 1	LANE 2
16:00	6	4	0	1	4	6	13	4	2	3	3	2
16:05	10	6	0	6	5	8	12	1	2	6	4	2
16:10	10	2	0	2	6	11	8	3	4	3	3	2
16:15	6	5	0	3	5	12	22	3	3	2	2	4
16:20	7	8	0	2	5	18	12	5	5	5	3	3
16:25	9	9	0	3	4	17	13	2	5	5	5	2
16:30	15	14	0	2	7	20	22	2	5	7	3	4
16:35	14	5	0	2	6	22	16	2	4	4	4	3
16:40	11	7	0	5	16	20	17	2	3	6	3	6
16:45	20	20	0	7	5	17	20	5	2	7	3	2
16:50	23	21	0	4	4	22	21	2	5	6	3	2
16:55	22	20	0	6	9	22	23	3	15	15	2	4
17:00	18	22	0	3	7	25	23	3	17	17	2	2
17:05	15	18	0	2	16	25	20	2	10	12	2	4
17:10	6	21	0	3	15	24	18	2	17	15	5	5
17:15	14	20	0	3	16	20	18	4	15	12	4	2
17:20	7	12	0	4	17	23	24	1	7	6	4	2
17:25	8	17	0	5	17	17	19	7	12	10	1	3
17:30	8	22	0	2	10	17	24	2	6	13	2	5
17:35	7	15	0	4	18	18	20	5	13	8	7	3
17:40	4	8	0	3	18	25	20	2	11	18	4	4
17:45	15	18	0	3	4	25	25	2	7	17	2	2
17:50	10	20	0	5	17	26	25	2	8	5	2	3
17:55	7	22	0	6	18	25	24	4	14	16	1	3

MAX	23	22	0	7	18	26	25	7	17	18	7	6
MIN	4	2	0	1	4	6	8	1	2	2	1	2



NDC	Site / Location:	Site 2, Cliff Ln/Grappenhall Ln	Project No: 7634	Drawing No:	7634-02	Drawn By:	EA
	Survey Date:	Thursday 06th July 2017	Project Name:	Warrington M6			
	Survey Times:	07:00 to 10:00 & 16:00 to 18:00	Drawing Title:	Site Layout and Observed Movements			

7634 / WARRINGTON M6
JULY 17
QUEUE LENGTHS

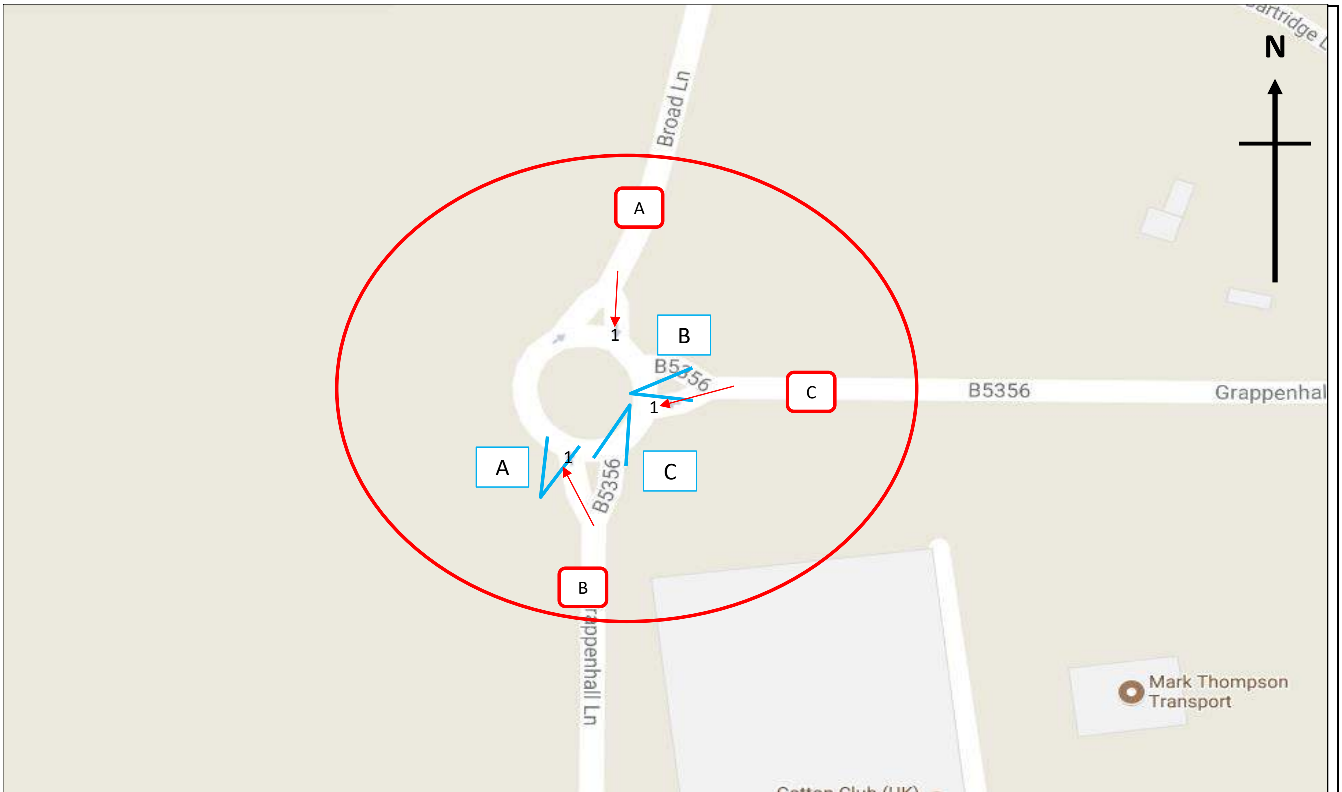
SITE: 2 DAY: Thursday

LOCATION: Cliff Ln/Grappenhall Ln DATE: 06/07/2017

Note:
Lanes are numbered outwards from the nearside kerb in the direction of travel.
Lane 1 will always be nearest the footway. Queues measured in vehicle numbers.

	ARM A Cliff Ln(N)		ARM B Grappenhall Ln		ARM C Cliff Ln(S)	
TIME	LANE 1	LANE 2	LANE 1	LANE 2	LANE 1	LANE 2
07:00	1	0	1	5	0	0
07:05	9	0	0	5	2	0
07:10	5	0	0	3	0	0
07:15	15	1	0	6	0	1
07:20	15	1	0	12	1	0
07:25	12	0	0	12	0	2
07:30	10	1	0	5	0	0
07:35	16	1	0	10	0	0
07:40	14	1	1	8	0	1
07:45	16	1	0	7	0	2
07:50	10	2	0	7	1	0
07:55	39	2	0	8	0	0
08:00	19	1	0	12	0	0
08:05	18	1	0	4	0	1
08:10	9	1	1	9	0	1
08:15	25	1	1	8	0	0
08:20	30	1	1	9	0	0
08:25	38	1	0	9	0	0
08:30	4	1	1	5	0	3
08:35	5	1	0	10	2	3
08:40	17	1	1	5	0	2
08:45	19	1	0	13	0	2
08:50	10	2	0	15	0	3
08:55	5	0	1	9	2	0
09:00	13	1	1	4	0	0
09:05	8	1	0	3	0	1
09:10	4	1	1	2	3	6
09:15	2	0	1	5	0	0
09:20	3	1	1	3	0	0
09:25	2	1	0	2	1	0
09:30	1	1	0	4	0	0
09:35	1	1	1	2	1	1
09:40	3	0	1	7	0	0
09:45	13	0	2	1	0	0
09:50	3	0	0	2	0	0
09:55	5	0	0	5	0	0
MAX	39	2	2	15	3	6
MIN	1	0	0	1	0	0

	ARM A Cliff Ln(N)		ARM B Grappenhall Ln		ARM C Cliff Ln(S)	
TIME	LANE 1	LANE 2	LANE 1	LANE 2	LANE 1	LANE 2
16:00	2	0	2	11	0	1
16:05	6	1	1	7	0	2
16:10	5	0	2	4	1	0
16:15	3	0	1	7	0	0
16:20	7	1	1	6	1	5
16:25	7	1	1	9	0	0
16:30	4	0	1	16	1	0
16:35	9	1	3	20	2	0
16:40	4	0	2	18	0	0
16:45	6	1	1	19	0	3
16:50	4	1	2	8	0	5
16:55	2	0	1	10	1	0
17:00	8	1	3	20	1	0
17:05	17	0	2	18	0	0
17:10	19	0	1	20	0	0
17:15	14	1	1	21	0	2
17:20	10	1	1	17	0	0
17:25	18	0	1	19	4	0
17:30	5	1	1	17	1	1
17:35	7	1	1	20	1	0
17:40	8	1	2	19	0	0
17:45	3	0	1	18	3	2
17:50	9	1	1	11	1	0
17:55	3	0	1	8	0	1
MAX	19	1	3	21	4	5
MIN	2	0	1	4	0	0



NDC NATIONWIDE DATA COLLECTION	**Site / Location:**	Site 3, Grappenhall Ln/Broad Ln	**Project No:**	7634	**Drawing No:**	7634-03	**Drawn By:**	EA
	Survey Date:	Thursday 06th July 2017	**Project Name:**	Warrington M6				
	Survey Times:	07:00 to 10:00 & 16:00 to 18:00	**Drawing Title:**	Site Layout and Observed Movements				

SITE:	3	DAY:	Thursday
LOCATION:	Grappenhall Ln/Broad Ln	DATE:	06/07/2017

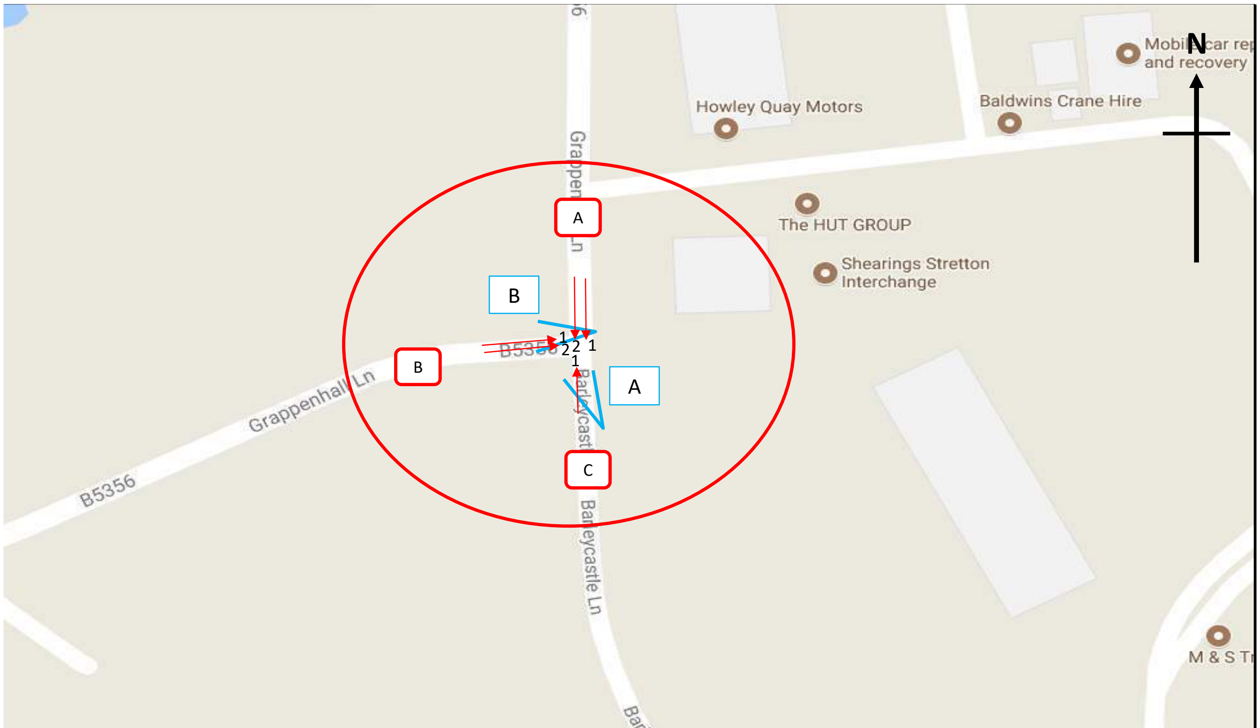
Note:
Lanes are numbered outwards from the nearside kerb in the direction of travel.
Lane 1 will always be nearest the footway. Queues measured in vehicle numbers.

TIME	ARM A Broad Ln LANE 1	ARM B Grappenhall Ln(S) LANE 1	ARM C Grappenhall Ln(E) LANE 1
07:00	1	0	3
07:05	2	0	5
07:10	0	0	0
07:15	5	0	4
07:20	2	0	7
07:25	3	0	2
07:30	3	0	7
07:35	2	0	1
07:40	3	0	5
07:45	3	0	1
07:50	5	0	11
07:55	4	0	4
08:00	3	0	3
08:05	1	0	2
08:10	5	0	4
08:15	2	1	2
08:20	12	0	4
08:25	1	2	6
08:30	3	0	6
08:35	2	0	3
08:40	3	0	0
08:45	4	0	2
08:50	2	0	2
08:55	3	0	4
09:00	1	0	0
09:05	1	0	1
09:10	3	0	0
09:15	0	0	1
09:20	2	0	1
09:25	1	0	0
09:30	1	0	0
09:35	0	0	0
09:40	0	1	0
09:45	1	1	0
09:50	0	0	0
09:55	1	4	0

MAX	12	4	11
MIN	0	0	0

TIME	ARM A Broad Ln LANE 1	ARM B Grappenhall Ln(S) LANE 1	ARM C Grappenhall Ln(E) LANE 1
16:00	2	0	4
16:05	2	0	0
16:10	1	2	1
16:15	2	2	0
16:20	0	1	2
16:25	1	0	0
16:30	2	0	1
16:35	1	0	0
16:40	0	0	4
16:45	1	2	2
16:50	1	0	0
16:55	1	1	1
17:00	2	4	3
17:05	3	3	0
17:10	1	7	0
17:15	1	4	5
17:20	2	7	13
17:25	1	1	2
17:30	1	0	1
17:35	1	4	12
17:40	2	4	0
17:45	1	0	1
17:50	1	1	2
17:55	0	1	1

MAX	3	7	13
MIN	0	0	0



Site / Location:	Site 4, Grappenhall lane/Barleycastle Lane	Project No:	7634	Drawing No:	7634-04	Drawn By:	EA
Survey Date:	Thursday 06th July 2017	Project Name:	Warrington M6				
Survey Times:	07:00 to 10:00 & 16:00 to 18:00	Drawing Title:	Site Layout and Observed Movements				

7634 / WARRINGTON M6
JULY 17
QUEUE LENGTHS

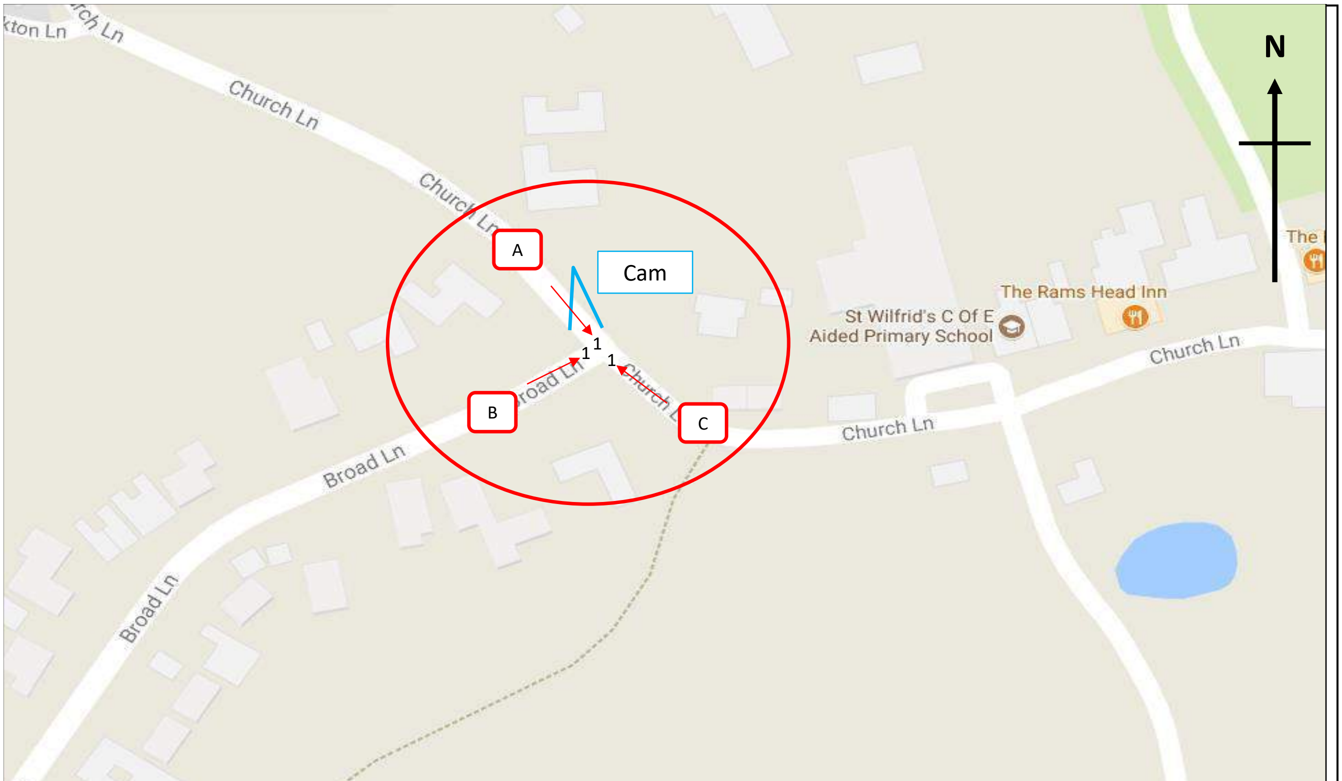
SITE: 4 DAY: Thursday

LOCATION: Grappenhall lane/Barleycastle Lane DATE: 06/07/2017

Note:
Lanes are numbered outwards from the nearside kerb in the direction of travel.
Lane 1 will always be nearest the footway. Queues measured in vehicle numbers.

	ARM A Grappenhall lane(N)		ARM B Grapenhall Lane(W)		ARM C Barleycastle Lane(S)
TIME	LANE 1	LANE 2	LANE 1	LANE 2	LANE 1
07:00	0	1	0	4	0
07:05	0	1	2	4	0
07:10	0	1	1	2	0
07:15	0	1	5	2	0
07:20	0	1	4	3	0
07:25	0	1	2	5	0
07:30	0	2	4	4	0
07:35	0	1	3	2	0
07:40	0	2	3	15	0
07:45	0	2	7	20	0
07:50	0	2	6	15	0
07:55	0	2	5	12	0
08:00	0	1	1	3	0
08:05	0	3	2	5	0
08:10	0	3	4	5	0
08:15	0	1	3	5	0
08:20	0	3	5	4	0
08:25	0	1	2	3	0
08:30	0	1	1	5	0
08:35	0	1	5	3	0
08:40	0	3	4	2	0
08:45	0	2	3	2	0
08:50	1	2	3	3	0
08:55	0	2	2	3	0
09:00	0	3	4	2	0
09:05	0	2	3	4	0
09:10	0	1	4	1	0
09:15	0	1	1	3	0
09:20	0	2	2	1	0
09:25	0	0	2	3	0
09:30	0	1	1	2	0
09:35	0	1	2	1	0
09:40	0	1	2	1	0
09:45	0	2	2	2	0
09:50	0	0	0	1	0
09:55	0	1	2	1	0
MAX	1	3	7	20	0
MIN	0	0	0	1	0

	ARM A Grappenhall lane(N)		ARM B Grapenhall Lane(W)		ARM C Barleycastle Lane(S)
TIME	LANE 1	LANE 2	LANE 1	LANE 2	LANE 1
16:00	0	4	2	8	0
16:05	0	4	5	1	0
16:10	0	1	2	1	0
16:15	0	7	2	1	0
16:20	0	2	2	2	0
16:25	0	3	3	1	0
16:30	0	11	7	3	0
16:35	0	15	7	13	0
16:40	0	2	4	5	0
16:45	0	3	4	1	0
16:50	0	3	2	4	0
16:55	0	5	7	9	5
17:00	0	11	7	4	4
17:05	0	12	8	7	7
17:10	0	15	8	16	0
17:15	0	4	4	2	0
17:20	0	6	4	3	0
17:25	0	10	6	2	2
17:30	0	5	4	2	0
17:35	0	6	7	2	0
17:40	0	5	6	1	0
17:45	0	3	7	2	0
17:50	0	2	2	1	0
17:55	0	5	9	2	0
MAX	0	15	9	16	7
MIN	0	1	2	1	0



NDC NATIONWIDE DATA COLLECTION	**Site / Location:**	Site 5, Broad Lane/Church Lane	**Project No:**	7634	**Drawing No:**	7634-05	**Drawn By:** EA
	Survey Date:	Thursday 06th July 2017	**Project Name:**	Warrington M6			
	Survey Times:	07:00 to 10:00 & 16:00 to 18:00	**Drawing Title:**	Site Layout and Observed Movements			

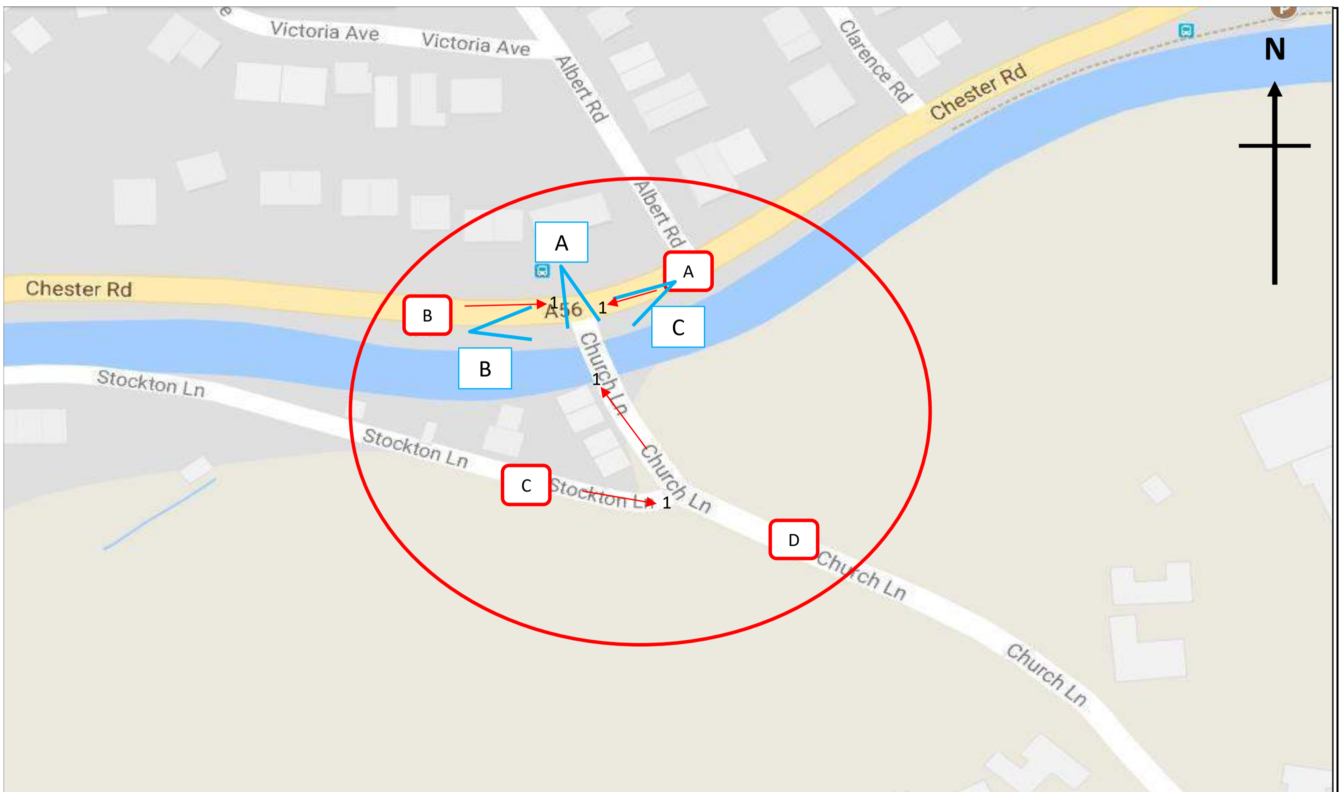
7634 / WARRINGTON M6
JULY 17
QUEUE LENGTHS

SITE:	5	DAY:	Thursday
LOCATION:	Broad Lane/Church Lane	DATE:	06/07/2017

Note:
Lanes are numbered outwards from the nearside kerb in the direction of travel.
Lane 1 will always be nearest the footway. Queues measured in vehicle numbers.

	ARM A	ARM B	ARM C
	Church Lane(W)	Broad Lane	Church Lane(E)
TIME	LANE 1	LANE 1	LANE 1
07:00	0	0	0
07:05	0	1	0
07:10	0	0	0
07:15	0	0	0
07:20	0	0	0
07:25	0	0	0
07:30	0	0	0
07:35	0	0	0
07:40	0	0	1
07:45	0	0	1
07:50	0	0	0
07:55	0	0	0
08:00	0	0	0
08:05	0	0	0
08:10	0	0	0
08:15	0	1	1
08:20	0	1	1
08:25	2	0	1
08:30	0	0	1
08:35	0	1	1
08:40	0	1	1
08:45	0	0	2
08:50	0	1	5
08:55	0	0	1
09:00	0	0	2
09:05	0	1	1
09:10	0	0	1
09:15	0	0	0
09:20	0	0	1
09:25	0	0	2
09:30	0	0	1
09:35	0	0	0
09:40	0	0	0
09:45	1	0	1
09:50	0	0	0
09:55	0	0	0
MAX	2	1	5
MIN	0	0	0

	ARM A	ARM B	ARM C
	Church Lane(W)	Broad Lane	Church Lane(E)
TIME	LANE 1	LANE 1	LANE 1
16:00	0	0	2
16:05	0	1	1
16:10	0	0	1
16:15	0	0	0
16:20	0	0	1
16:25	0	2	1
16:30	0	0	0
16:35	0	0	2
16:40	0	2	1
16:45	0	0	1
16:50	0	0	3
16:55	0	0	0
17:00	0	0	1
17:05	0	0	3
17:10	0	1	2
17:15	0	0	0
17:20	0	2	1
17:25	0	1	1
17:30	0	0	1
17:35	0	0	2
17:40	0	0	1
17:45	0	0	0
17:50	0	3	1
17:55	0	1	1
MAX	0	3	3
MIN	0	0	0



NDC NATIONWIDE DATA COLLECTION	Site / Location:	Site 6, Church Lane/A56/Stockton Lane	Project No:	7634	Drawing No:	7634-06	Drawn By:	EA
	Survey Date:	Thursday 06th July 2017	Project Name:	Warrington M6				
	Survey Times:	07:00 to 10:00 & 16:00 to 18:00	Drawing Title:	Site Layout and Observed Movements				

SITE:	6	DAY:	Thursday
LOCATION:	Church Lane/A56/Stockton Lane	DATE:	06/07/2017

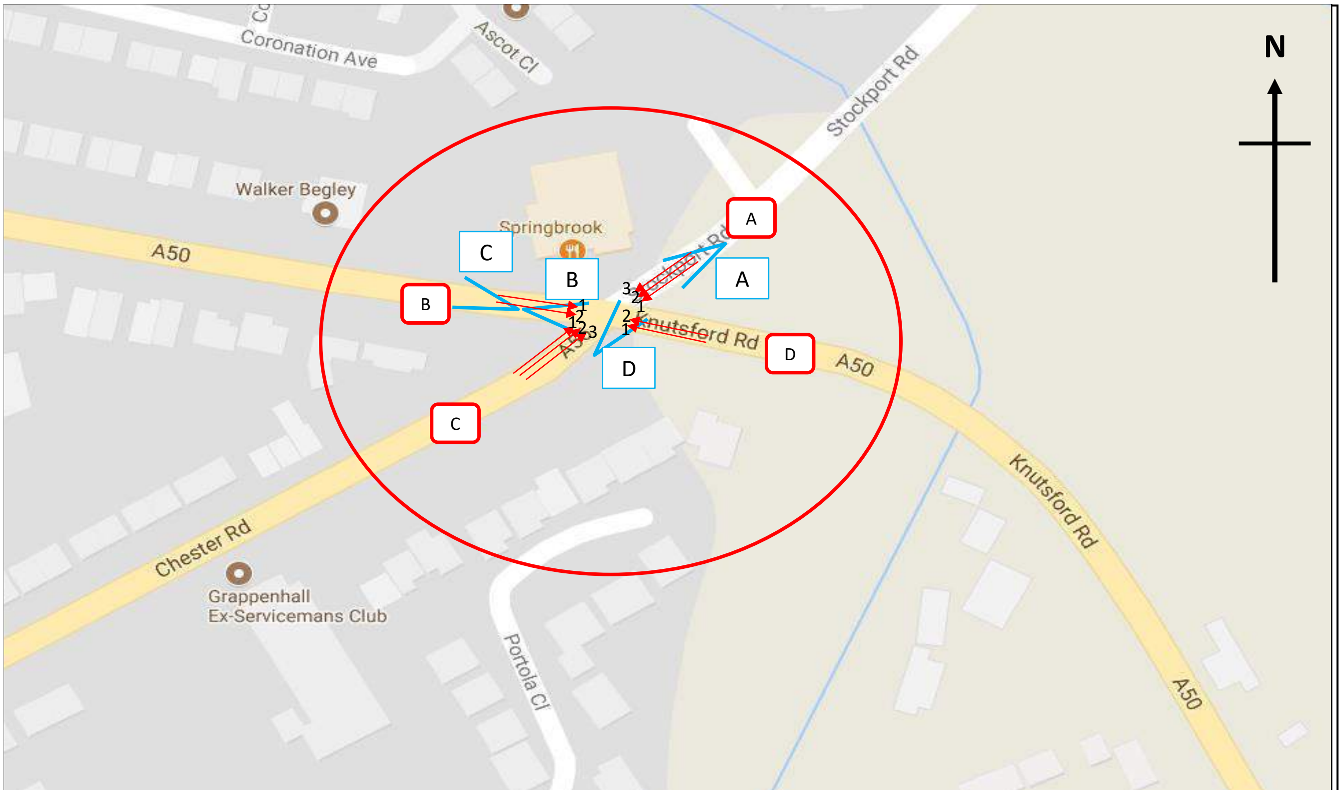
Note:
Lanes are numbered outwards from the nearside kerb in the direction of travel.
Lane 1 will always be nearest the footway. Queues measured in vehicle numbers.

TIME	ARM A Chester Rd(E) LANE 1	ARM B Chester Rd(W) LANE 1	ARM C Stockton ln LANE 1	ARM D Church Lane LANE 1
07:00	1	4	0	1
07:05	1	3	0	1
07:10	2	10	0	0
07:15	3	7	0	2
07:20	1	8	0	1
07:25	3	4	0	2
07:30	3	4	0	1
07:35	3	11	1	1
07:40	6	16	0	5
07:45	9	10	1	2
07:50	3	10	0	2
07:55	4	14	1	4
08:00	8	6	0	4
08:05	7	5	0	1
08:10	12	13	0	3
08:15	11	16	0	2
08:20	7	22	0	3
08:25	15	16	0	4
08:30	19	19	0	4
08:35	6	13	0	3
08:40	8	10	0	2
08:45	8	10	0	5
08:50	7	11	1	6
08:55	6	6	0	3
09:00	4	13	0	6
09:05	5	7	0	3
09:10	6	10	0	4
09:15	5	3	0	2
09:20	3	5	0	1
09:25	4	5	0	3
09:30	5	4	1	2
09:35	2	5	0	2
09:40	0	2	0	1
09:45	2	4	0	1
09:50	3	5	0	2
09:55	2	8	0	1

MAX	19	22	1	6
MIN	0	2	0	0

TIME	ARM A Chester Rd(E) LANE 1	ARM B Chester Rd(W) LANE 1	ARM C Stockton ln LANE 1	ARM D Church Lane LANE 1
16:00	3	6	1	4
16:05	3	10	0	6
16:10	8	9	0	5
16:15	7	10	0	4
16:20	9	10	0	3
16:25	4	11	1	2
16:30	5	6	0	3
16:35	7	8	0	4
16:40	8	12	0	4
16:45	2	7	0	2
16:50	4	14	0	12
16:55	7	18	1	5
17:00	12	15	0	12
17:05	7	9	1	17
17:10	16	15	0	13
17:15	14	13	1	10
17:20	13	15	1	11
17:25	7	15	0	4
17:30	9	8	0	7
17:35	4	4	0	5
17:40	12	9	0	6
17:45	10	16	0	2
17:50	12	17	0	8
17:55	6	9	1	5

MAX	16	18	1	17
MIN	2	4	0	2



NDC NATIONWIDE DATA COLLECTION	**Site / Location:**	Site 7, A50/A56	**Project No:**	7634	**Drawing No:**	7634-07	**Drawn By:** EA
	Survey Date:	Thursday 06th July 2017	**Project Name:**	Warrington M6			
	Survey Times:	07:00 to 10:00 & 16:00 to 18:00	**Drawing Title:**	Site Layout and Observed Movements			

SITE: 7 DAY: Thursday

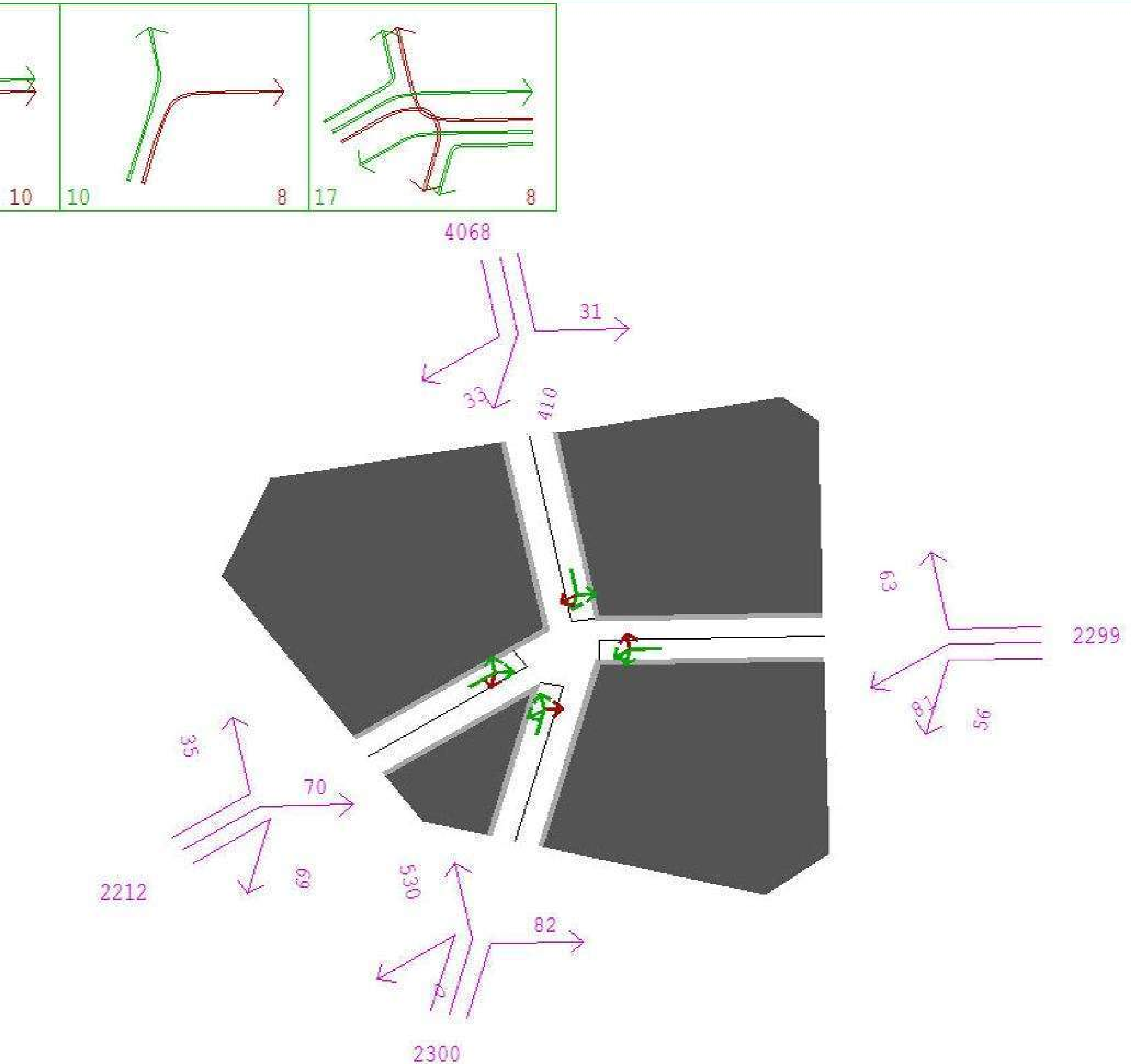
LOCATION: A50/A56 DATE: 06/07/2017

Note:
Lanes are numbered outwards from the nearside kerb in the direction of travel.
Lane 1 will always be nearest the footway. Queues measured in vehicle numbers.

	ARM A Stockport Rd			ARM B Knutsford Rd(W)		ARM C Chester Rd			ARM D Knutsford Rd(E)	
TIME	LANE 1	LANE 2	LANE 3	LANE 1	LANE 2	LANE 1	LANE 2	LANE 3	LANE 1	LANE 2
07:00	2	1	2	3	15	0	3	6	5	1
07:05	2	3	1	4	14	1	3	10	6	3
07:10	2	2	4	5	21	0	4	4	4	1
07:15	2	5	6	9	5	0	7	10	12	1
07:20	2	3	6	4	17	1	5	3	5	1
07:25	2	3	3	6	16	0	5	6	10	1
07:30	1	3	4	4	22	1	4	6	14	3
07:35	2	15	6	3	24	0	7	9	12	1
07:40	2	6	2	8	23	1	13	4	13	1
07:45	2	10	6	8	11	1	12	5	22	1
07:50	2	4	6	5	18	1	5	8	8	1
07:55	2	10	4	8	14	1	13	8	11	5
08:00	2	7	3	9	15	0	10	5	13	2
08:05	2	6	13	6	18	0	8	15	6	2
08:10	0	12	10	6	17	1	15	4	14	1
08:15	1	4	4	7	20	0	9	6	22	4
08:20	2	15	8	5	16	2	4	6	15	2
08:25	1	5	4	4	17	1	3	6	11	2
08:30	2	8	14	7	6	2	5	7	13	3
08:35	2	8	5	4	18	1	5	5	10	4
08:40	1	13	6	4	7	2	7	5	14	2
08:45	2	7	15	3	7	2	5	4	21	6
08:50	2	7	6	3	6	1	5	6	16	1
08:55	1	4	6	3	8	1	4	5	7	1
09:00	2	5	3	3	12	1	7	7	9	3
09:05	2	3	7	4	11	2	5	5	10	4
09:10	2	8	6	3	11	2	3	7	12	1
09:15	2	5	3	7	12	1	4	11	11	3
09:20	2	3	11	2	5	0	4	6	7	1
09:25	2	4	3	4	6	2	3	2	9	2
09:30	1	6	14	5	5	1	3	4	7	2
09:35	1	5	2	4	4	1	3	5	8	2
09:40	1	6	5	2	5	2	6	1	4	1
09:45	1	3	4	3	4	2	5	2	12	3
09:50	2	4	6	4	4	1	5	2	7	1
09:55	2	5	3	4	4	1	4	3	6	1
MAX	2	15	15	9	24	2	15	15	22	6
MIN	0	1	1	2	4	0	3	1	4	1

	ARM A Stockport Rd			ARM B Knutsford Rd(W)		ARM C Chester Rd			ARM D Knutsford Rd(E)	
TIME	LANE 1	LANE 2	LANE 3	LANE 1	LANE 2	LANE 1	LANE 2	LANE 3	LANE 1	LANE 2
16:00	2	6	5	3	12	1	5	2	10	3
16:05	2	3	7	3	11	0	3	3	12	1
16:10	1	5	6	4	8	1	7	5	20	1
16:15	1	3	6	6	10	1	8	3	15	5
16:20	1	3	7	4	8	1	6	5	11	2
16:25	1	6	15	7	9	1	7	6	18	2
16:30	1	4	8	4	7	1	8	4	20	1
16:35	1	6	11	5	9	1	6	5	22	5
16:40	1	10	7	2	11	1	10	4	15	2
16:45	1	4	7	6	6	2	11	1	19	2
16:50	0	4	4	3	5	0	15	4	22	4
16:55	1	8	8	9	10	1	16	4	23	3
17:00	2	8	8	6	10	0	17	4	20	5
17:05	1	13	16	2	13	1	17	5	21	1
17:10	2	4	9	6	6	1	15	4	21	3
17:15	1	7	16	4	7	1	16	3	20	1
17:20	1	15	7	5	13	0	15	3	20	2
17:25	1	13	11	5	4	1	16	3	17	1
17:30	1	8	7	10	7	1	10	4	20	3
17:35	1	12	5	3	8	1	9	6	16	2
17:40	1	6	5	6	6	1	8	3	19	3
17:45	2	9	7	1	17	1	9	2	22	4
17:50	1	12	7	12	8	1	16	4	14	4
17:55	0	7	14	2	4	2	5	3	18	7
MAX	2	15	16	12	17	2	17	6	23	7
MIN	0	3	4	1	4	0	3	1	10	1

Appendix H



Node 1370

Node Graphic
Master Menu:

NODE 1370

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
9 Warnings
8 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

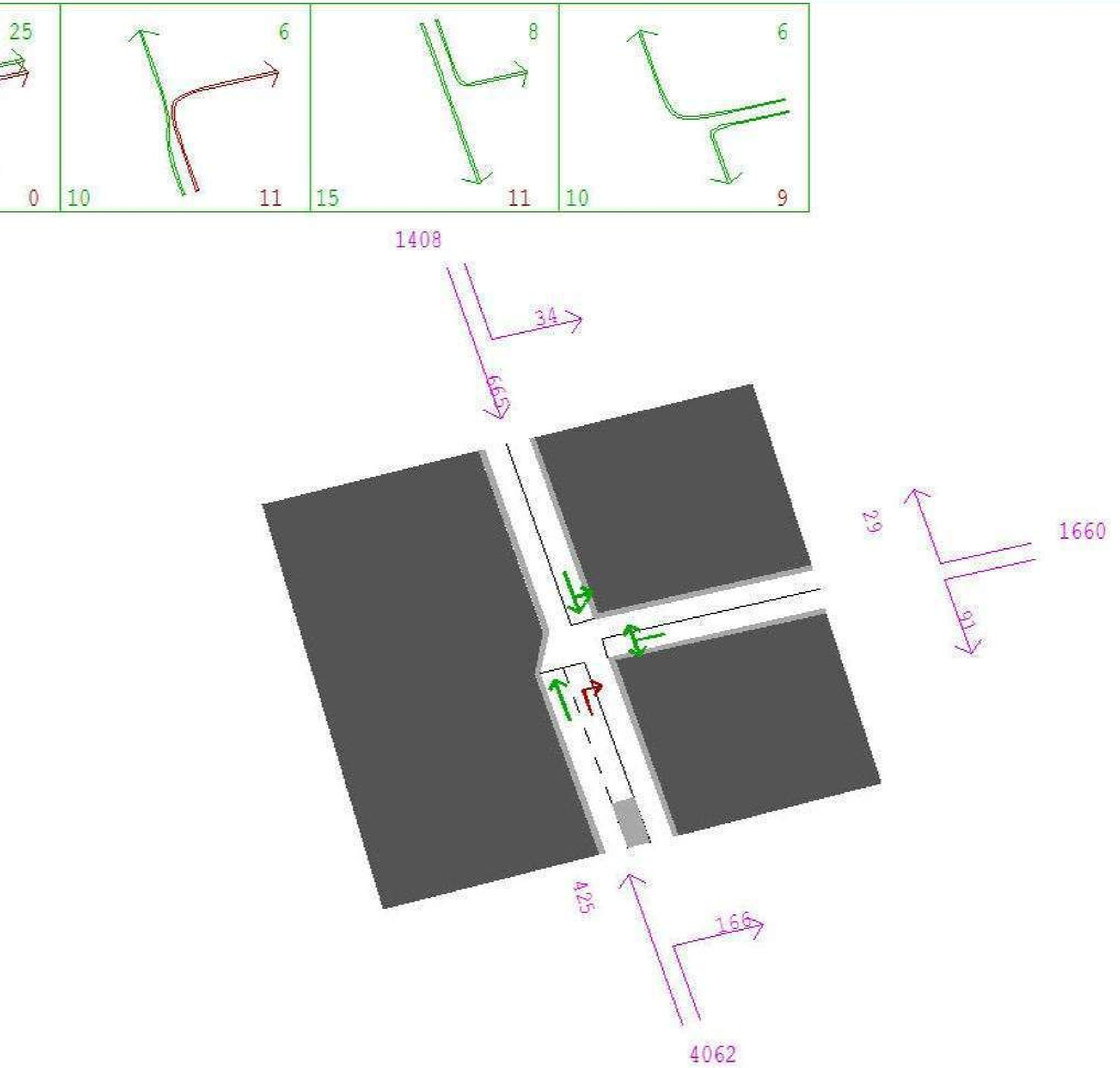
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 1410

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

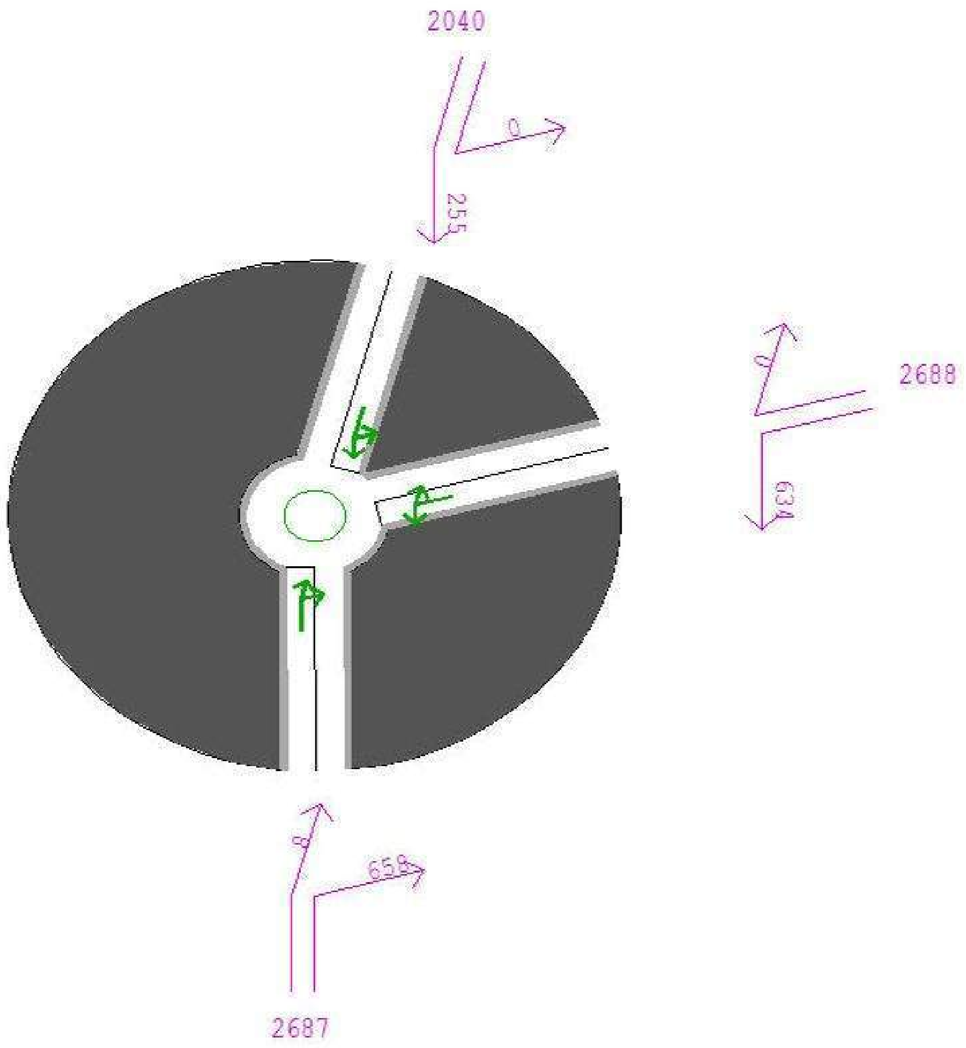
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 1410



Node 1654

Node Graphic
Master Menu:

NODE 1654

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

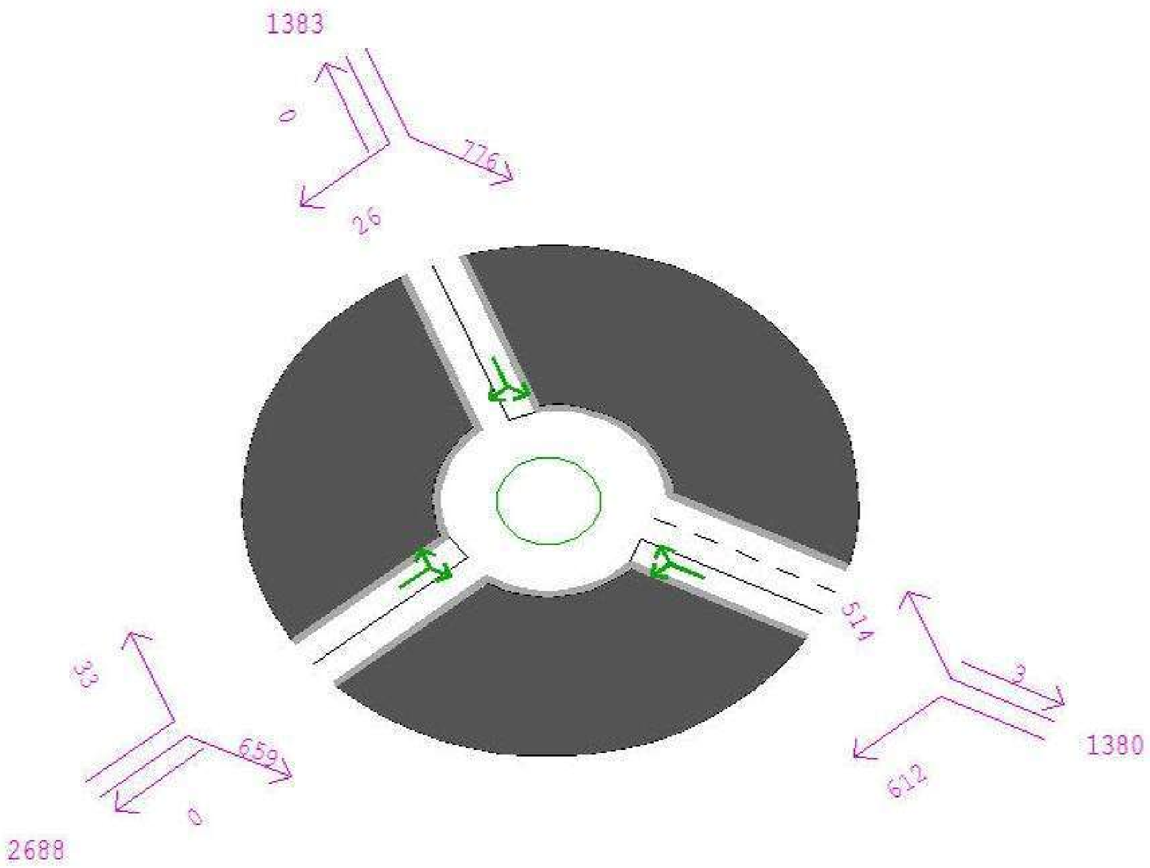
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node-based
Data display
Choices:

Current data

Arrive flow

New choice:

Cancel (none x
nOde data ON
Link data >
Turn data >

Display mode s
Arrows

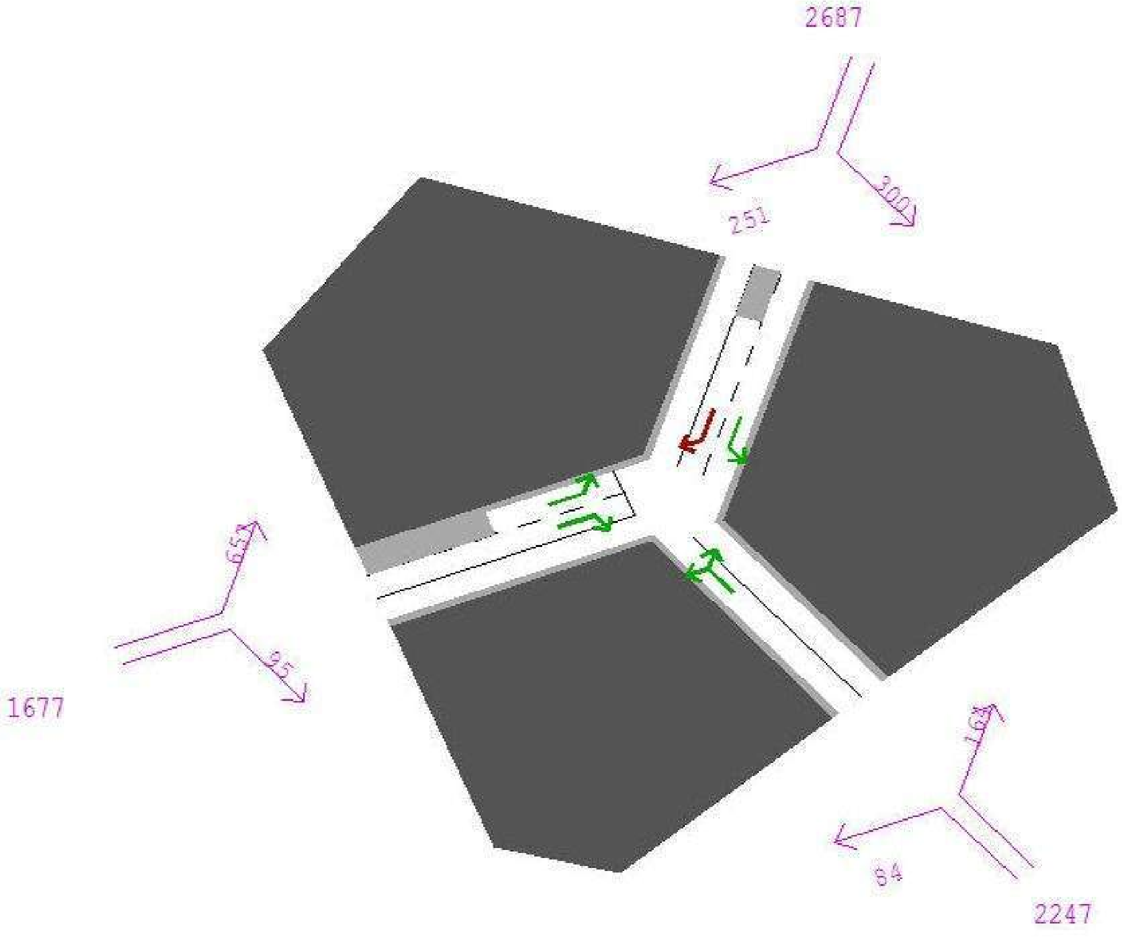
Arrow type: s
line+number

Banner >

Q - Return

+ Menu bar!

Node 1665



Node Graphic
Master Menu:

NODE 1678

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
2 Warnings
1 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

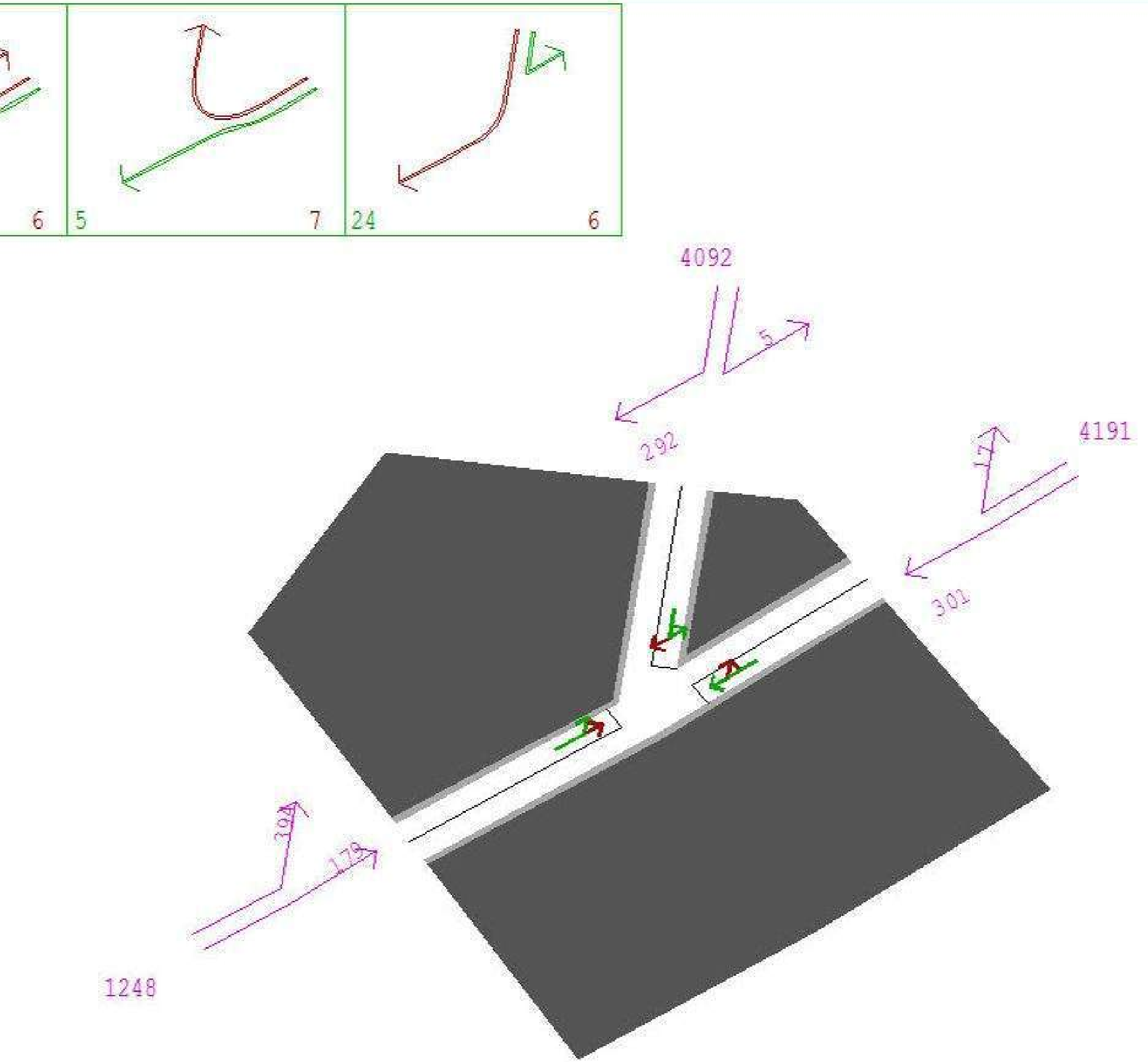
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 1678



Node Graphic
Master Menu:

NODE 2016

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
4 Warnings
7 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

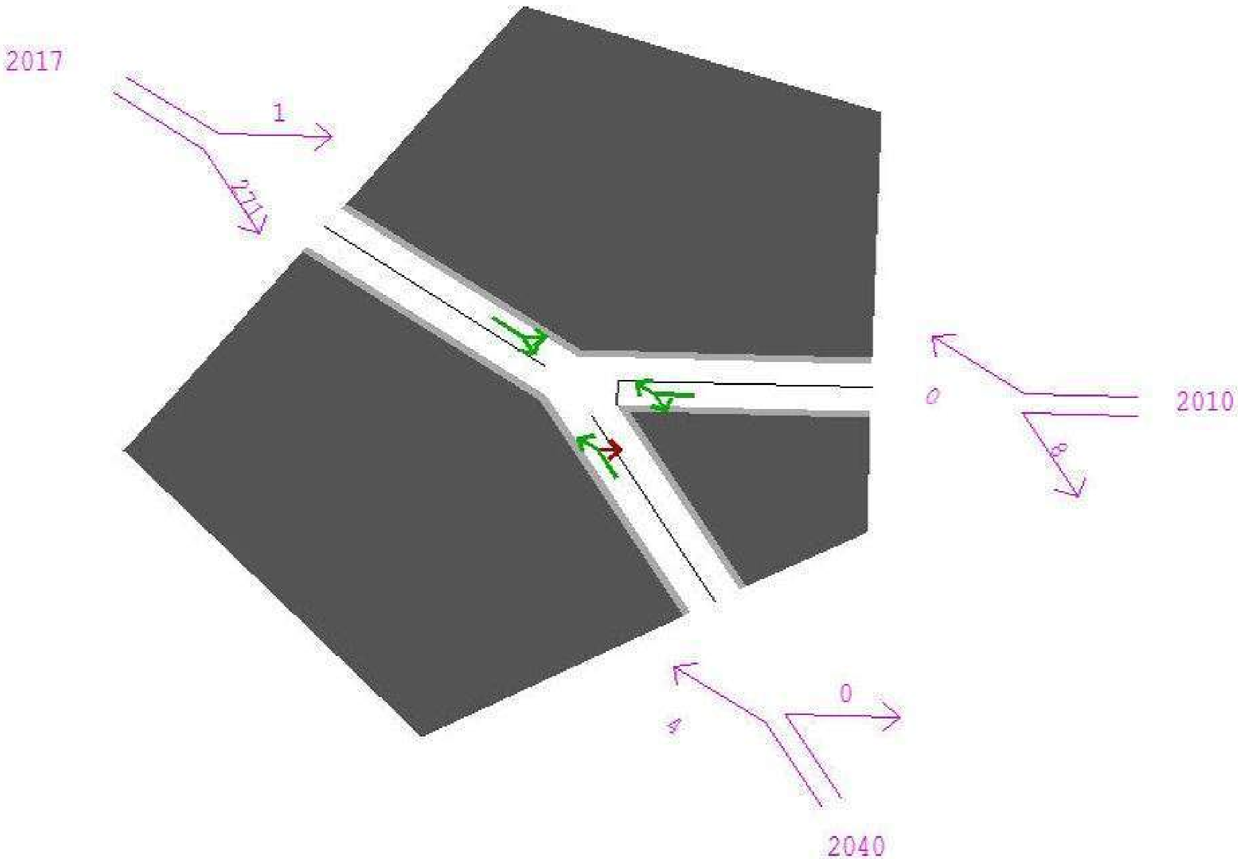
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 2756

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings
2 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

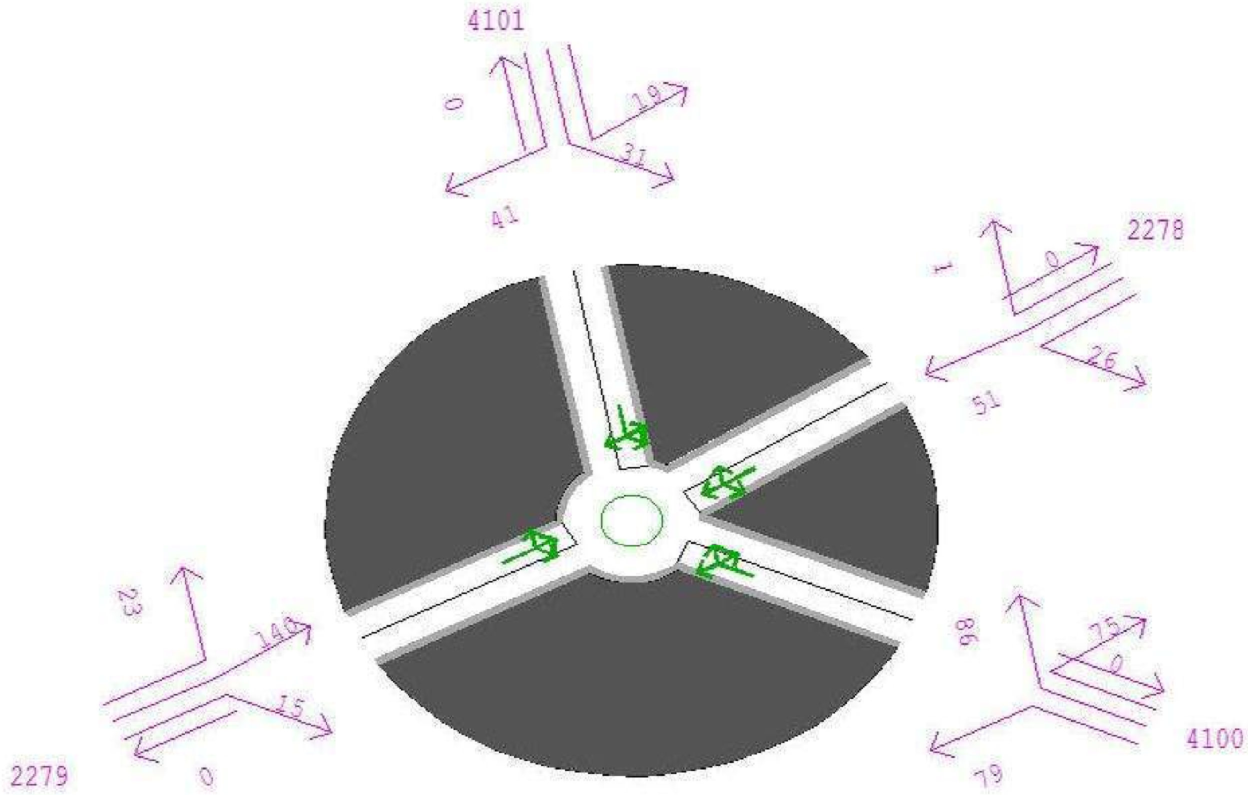
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 2756



Node Graphic
Master Menu:

NODE 2761

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

No errors

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

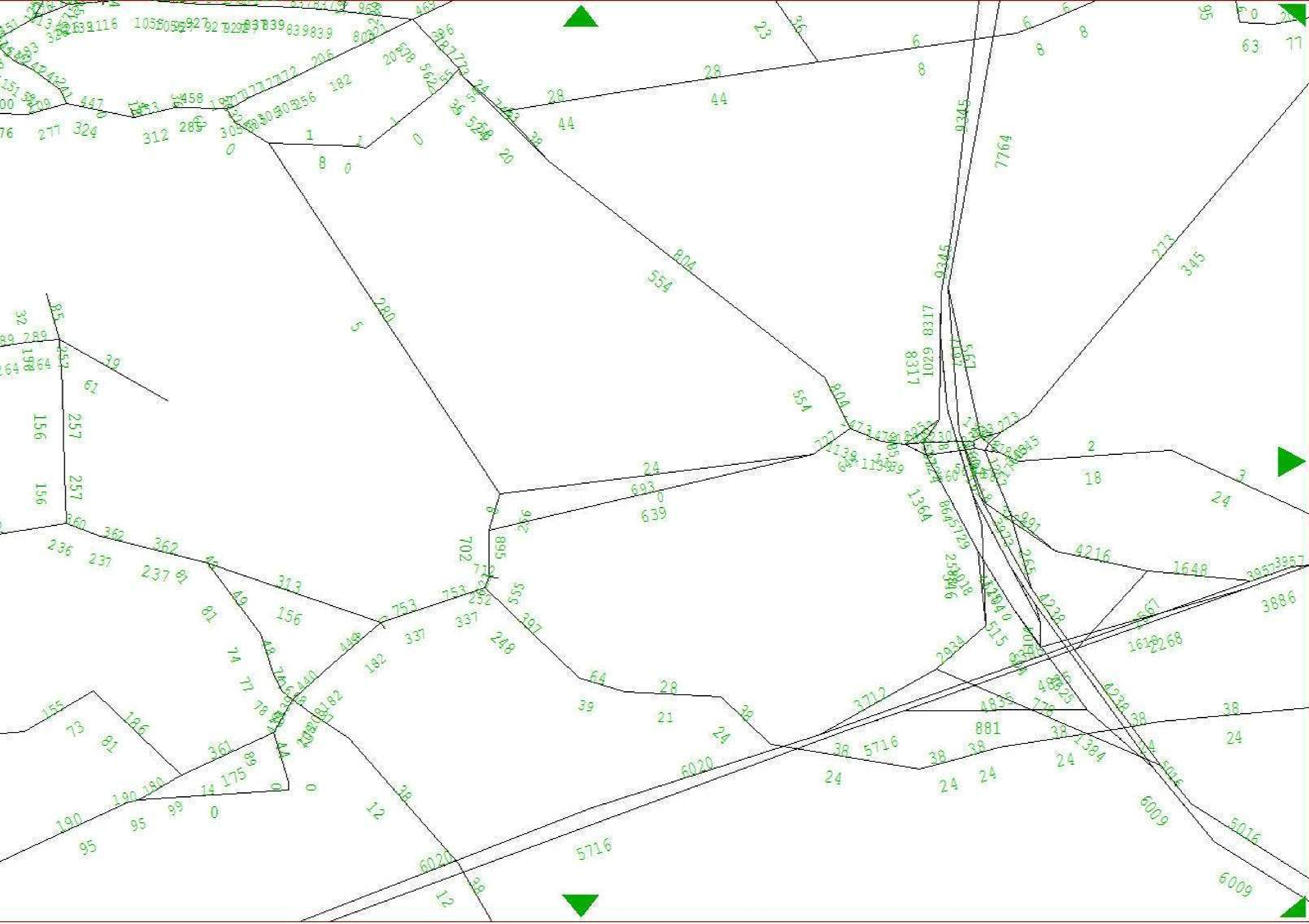
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 2761



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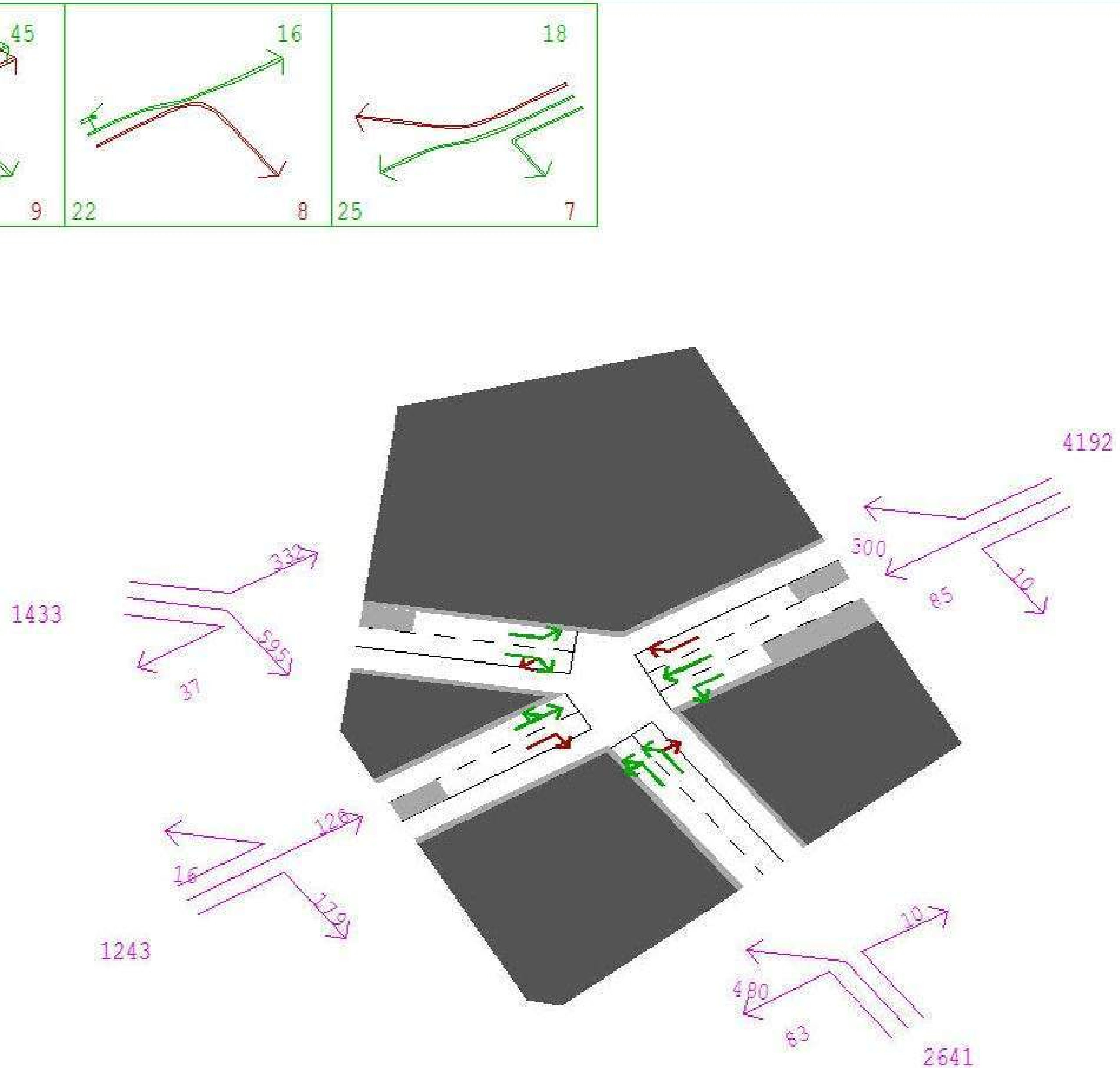
Direc

Pen a
rang

Q - F

+ Me



Node 1230

Node Graphic
Master Menu:

NODE 1230

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
4 Warnings
6 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

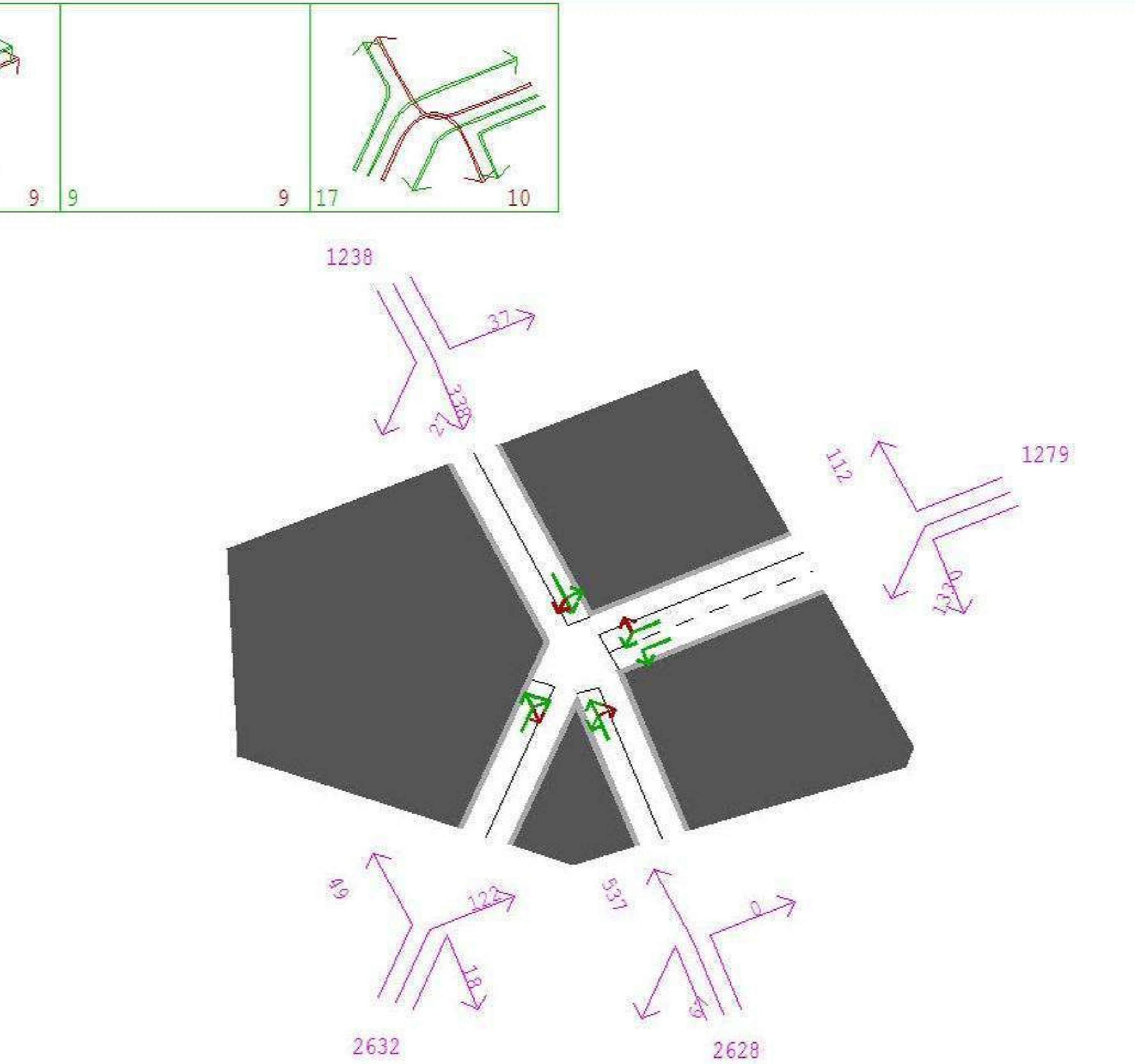
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node 1237

Node Graphic
Master Menu:

NODE 1237

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
7 Warnings
8 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

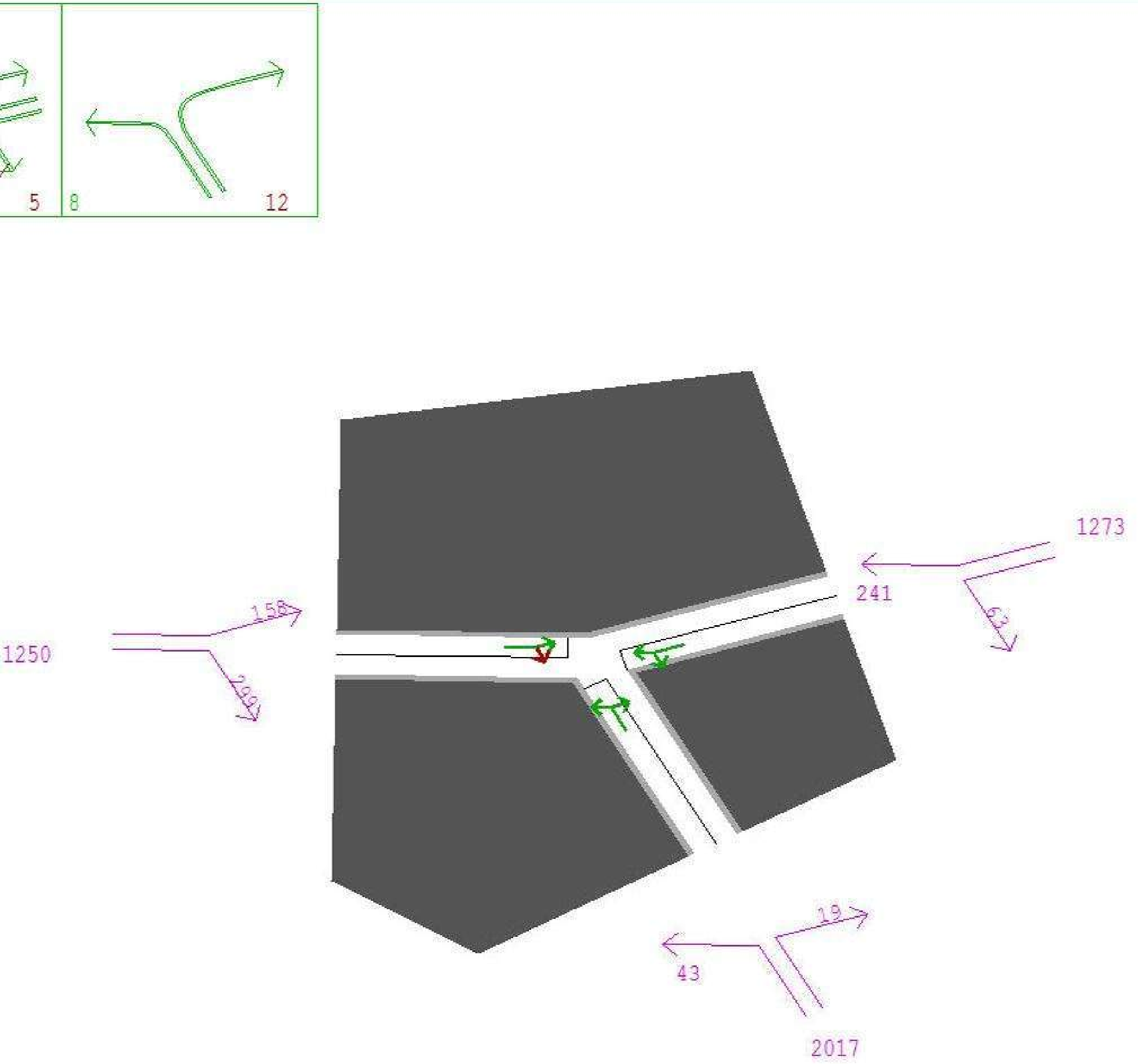
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node 1242

Node Graphic
Master Menu:

NODE 1242

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
4 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

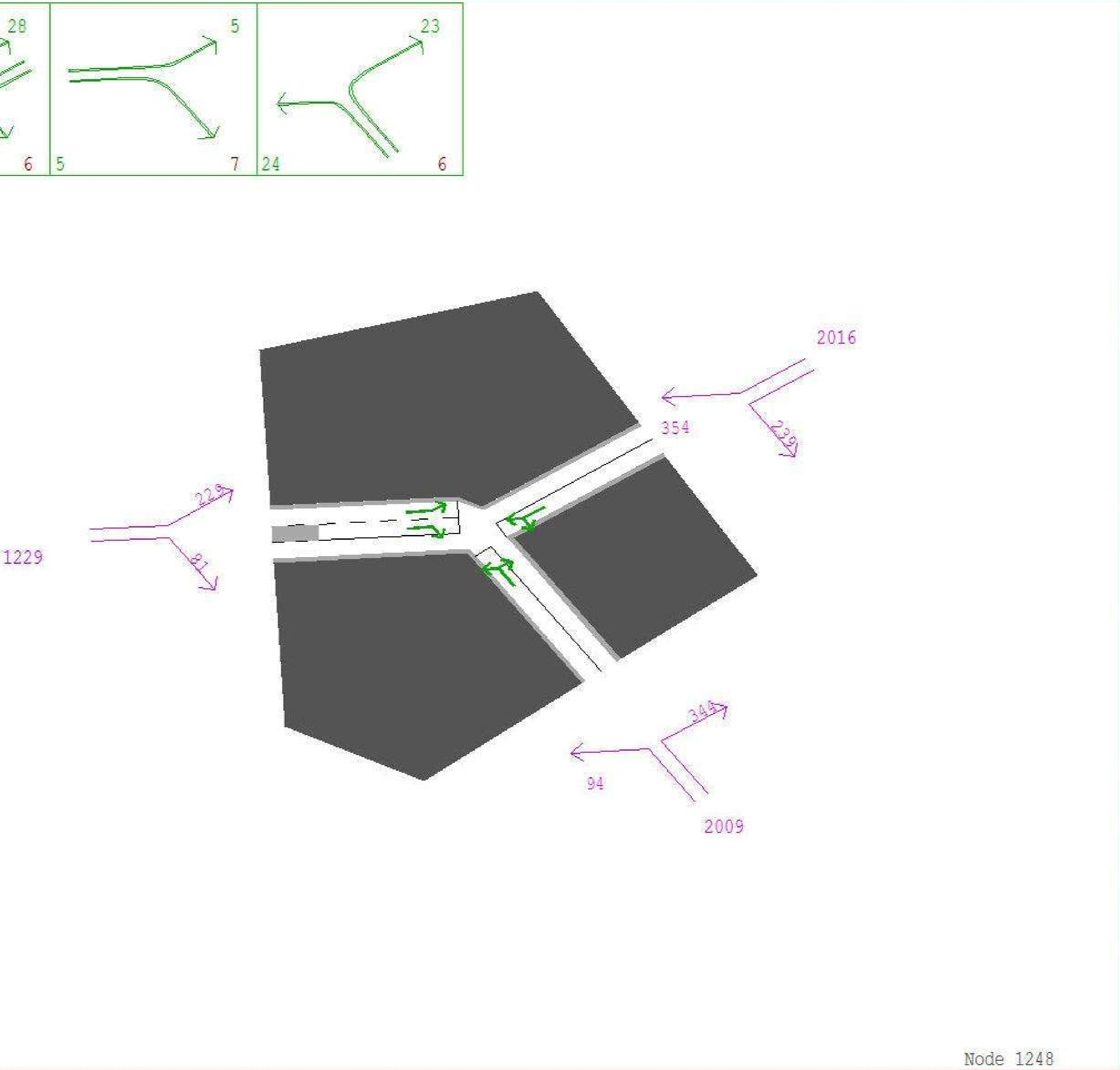
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 1248

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
1 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

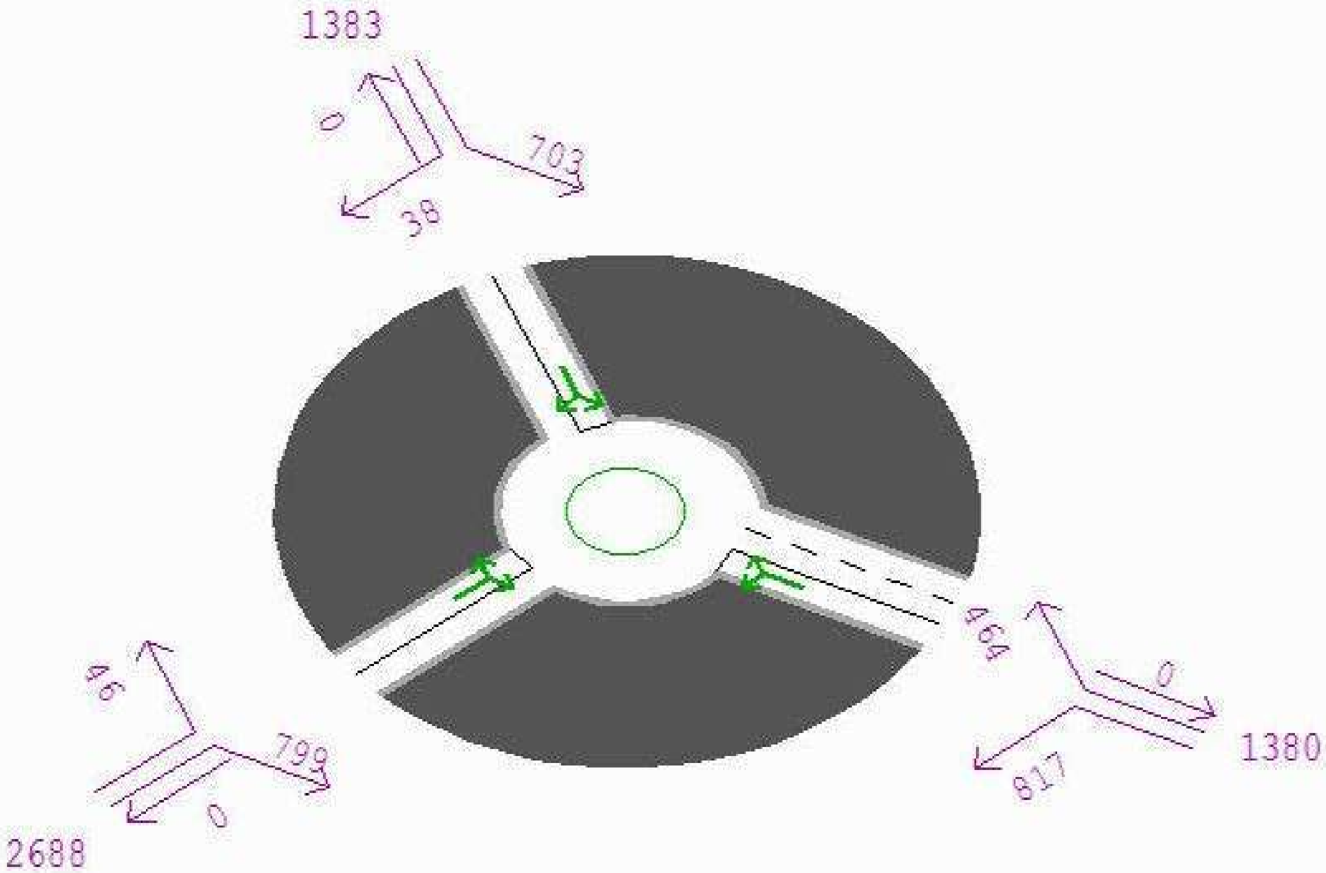
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node 1665

Node-based
Data display
Choices:

Current data

Arrive flow

New choice:

Cancel (none X
nOde data ON
Link data >
Turn data >

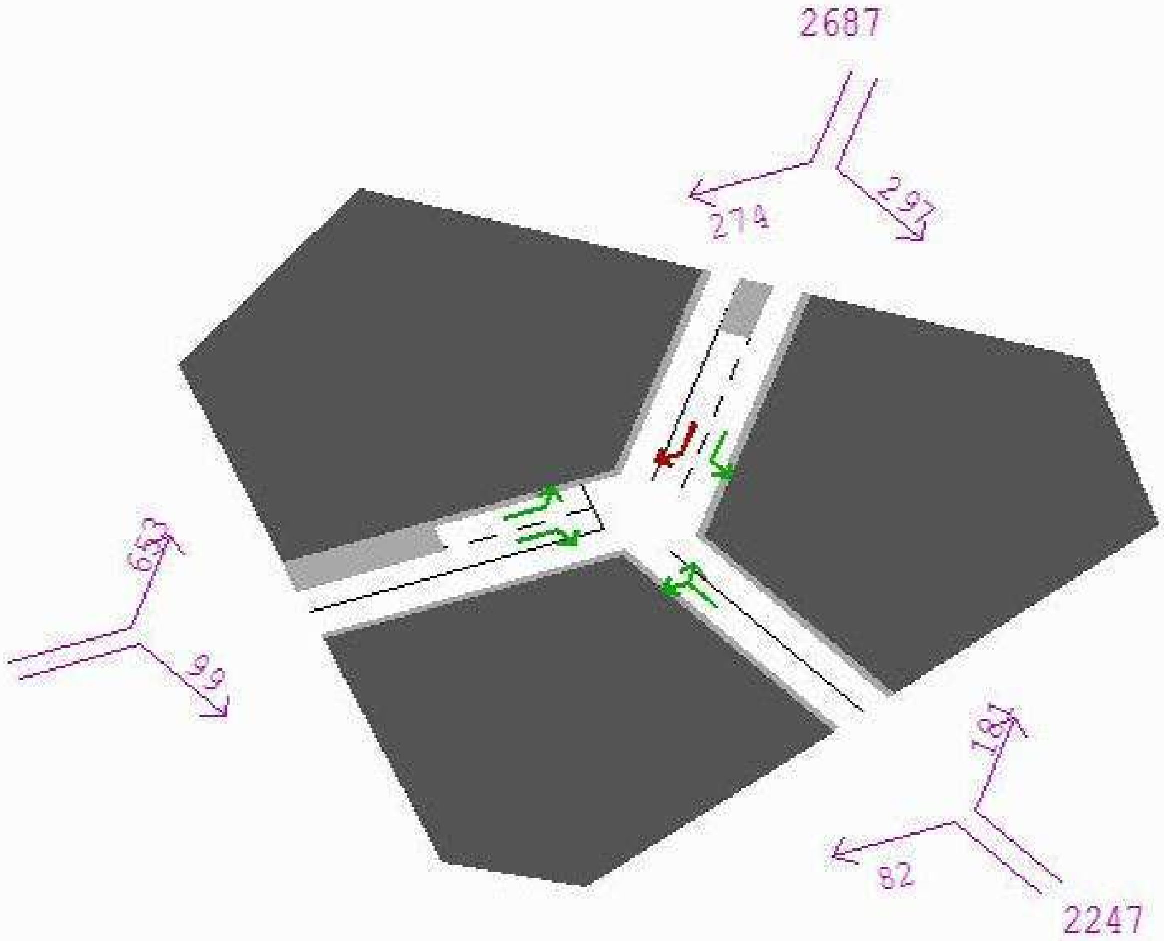
Display mode S
Arrows

Arrow type: S
line+number

Banner >

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 1678

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
2 Warnings
1 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

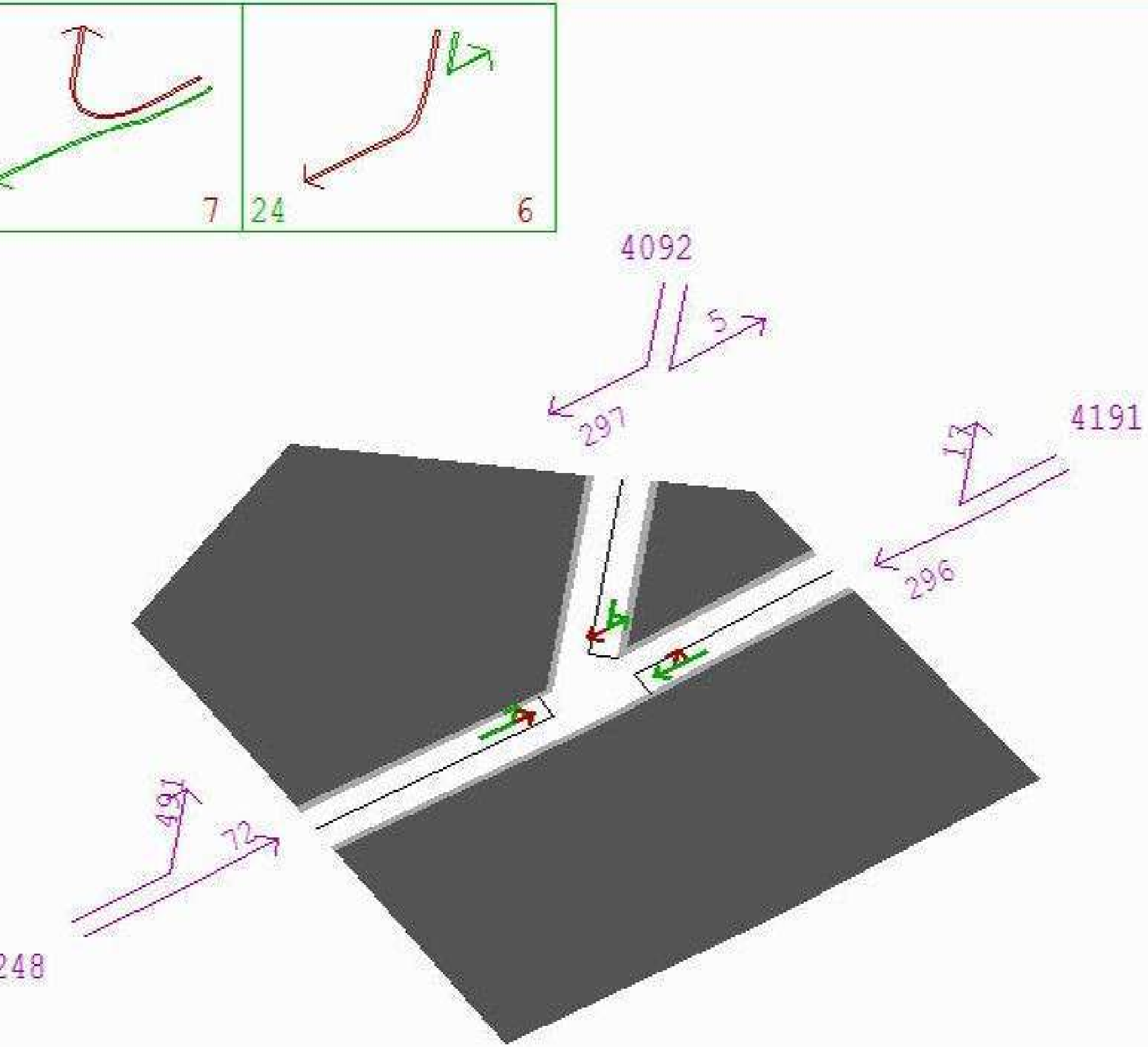
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 1678



Node Graphic
Master Menu:

NODE 2016

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
4 Warnings
7 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

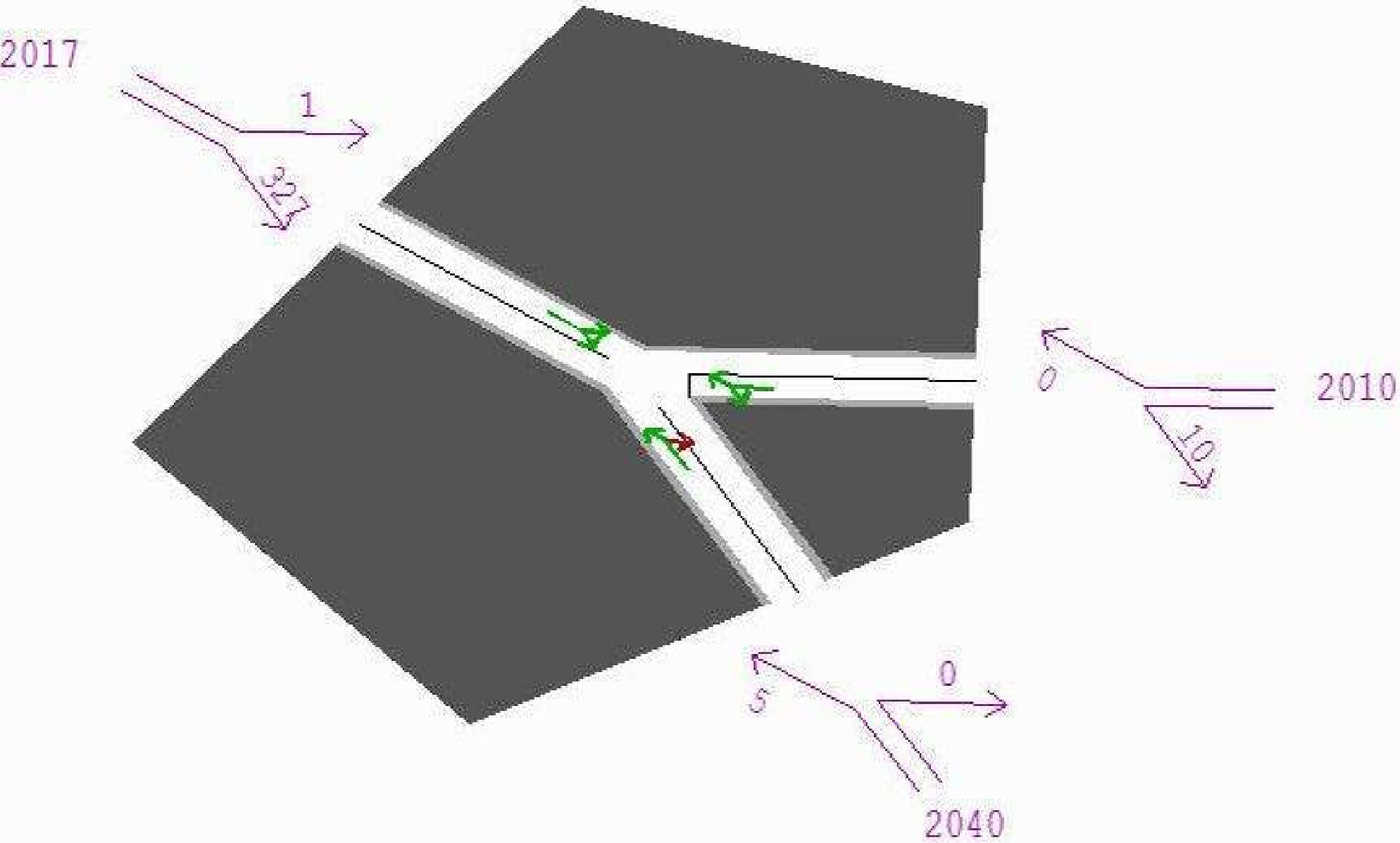
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 2016



Node 2756

Node Graphic
Master Menu:

NODE 2756

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings
2 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

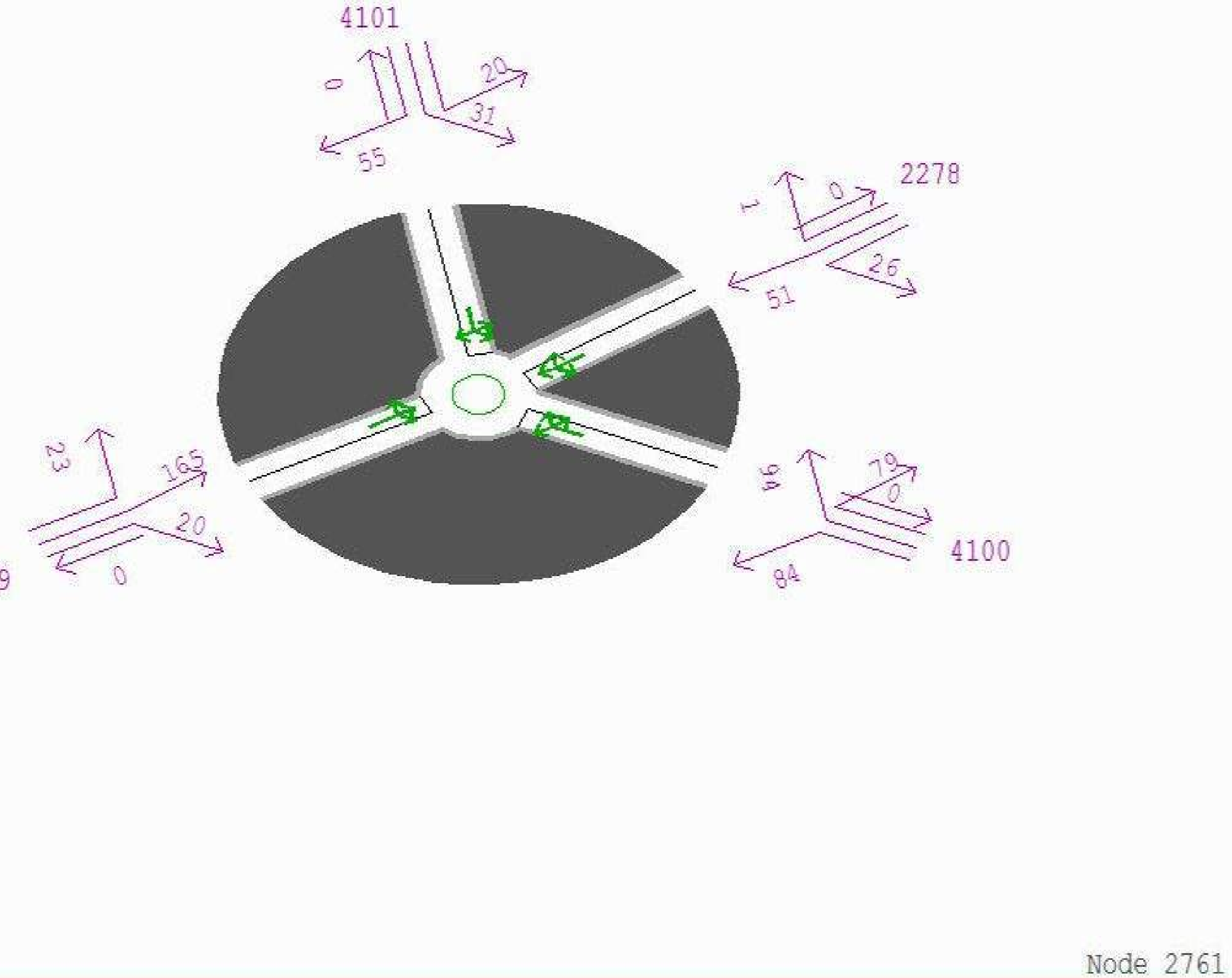
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 2761

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

No errors

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

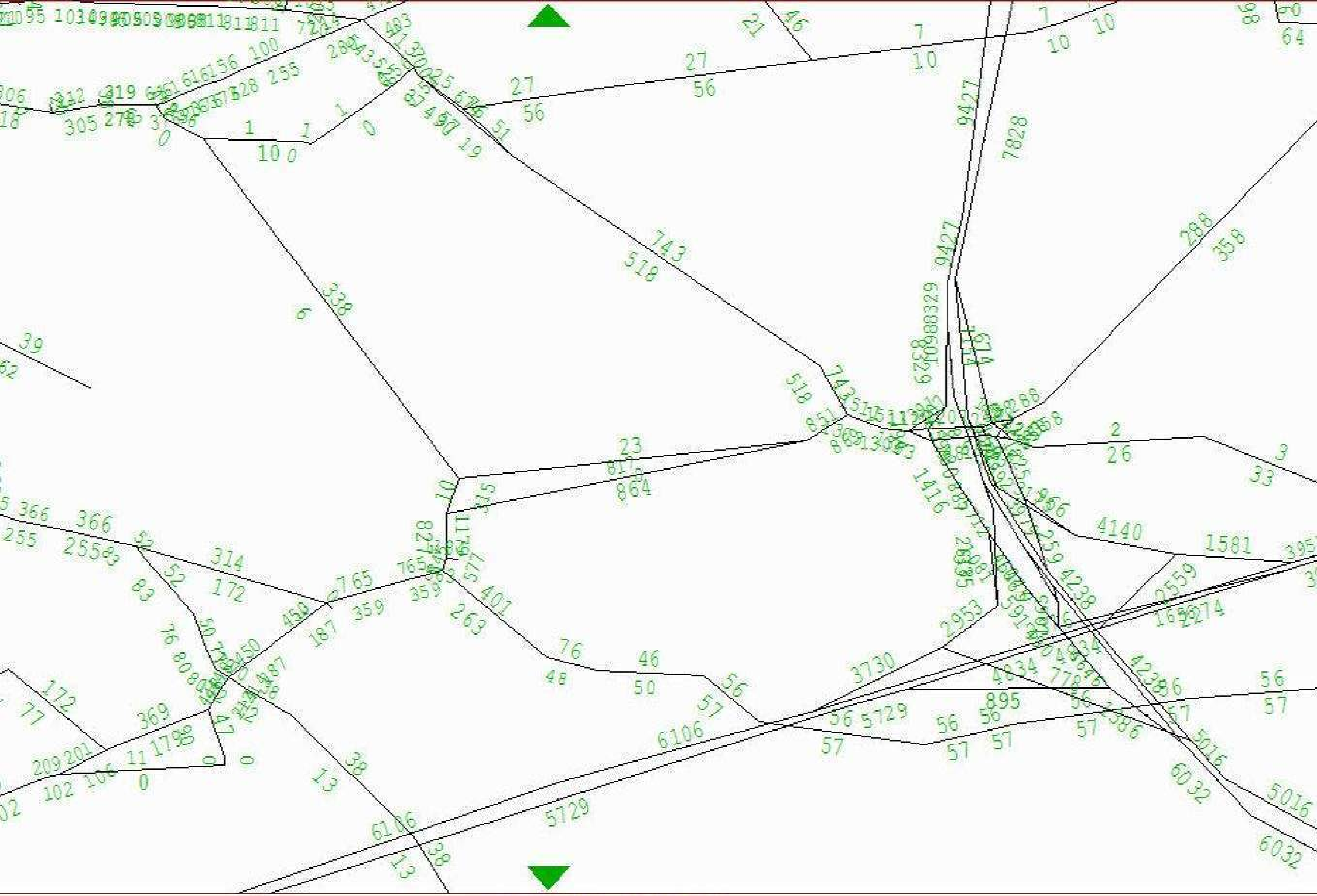
Centered >
network plot

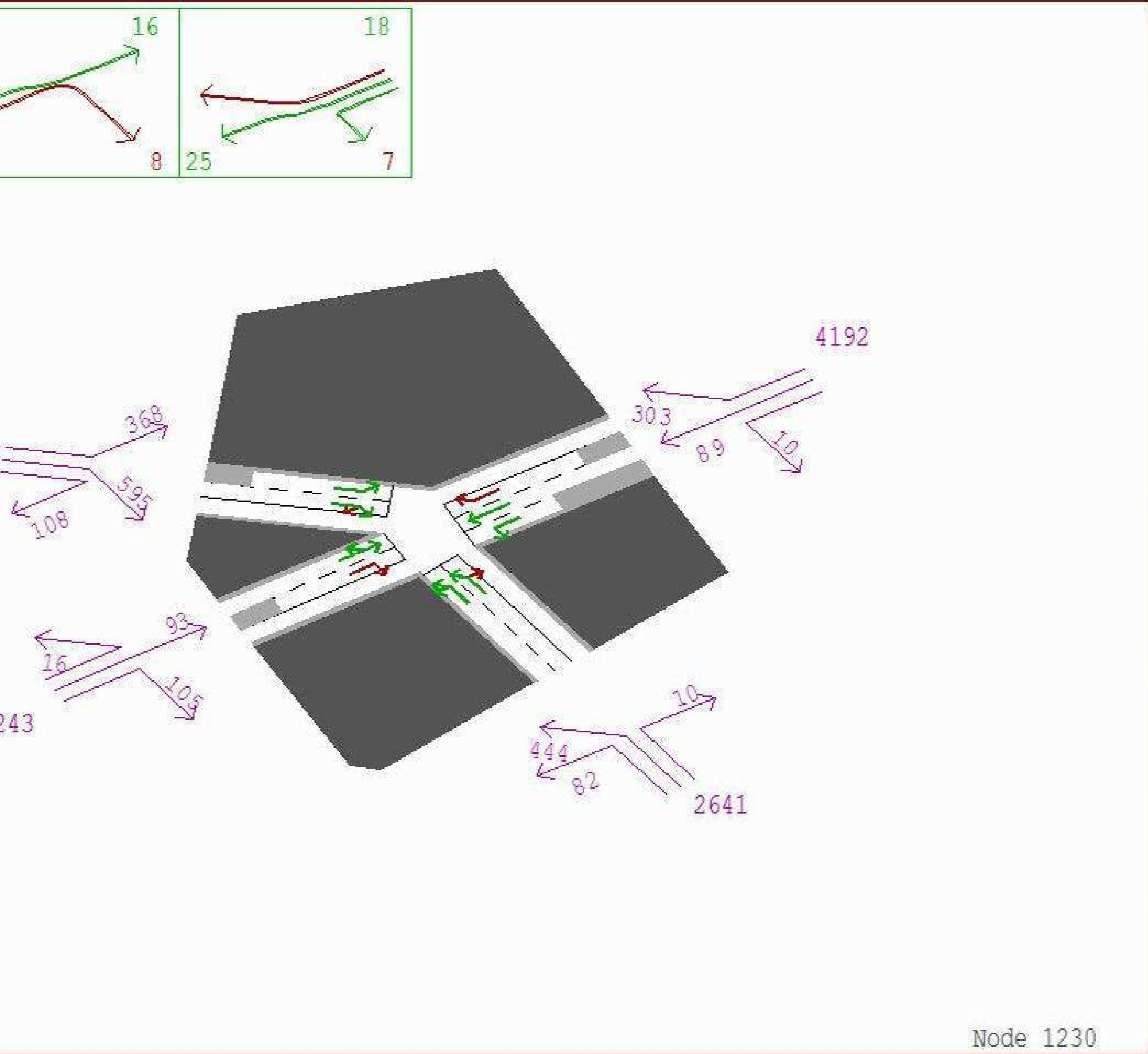
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!


27
56
7
10
743
518
338
6
39
23
864
366
255
314
172
765
359
401
263
76
48
46
50
56
57
3730
6106
5729
5129
4140
1581
2
26
3
33
288
358
7828
9427
2953
895
5016
6032
369
209
201
102
106
11
0
13
38



Node Graphic
Master Menu:

NODE 1230

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
4 Warnings
6 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

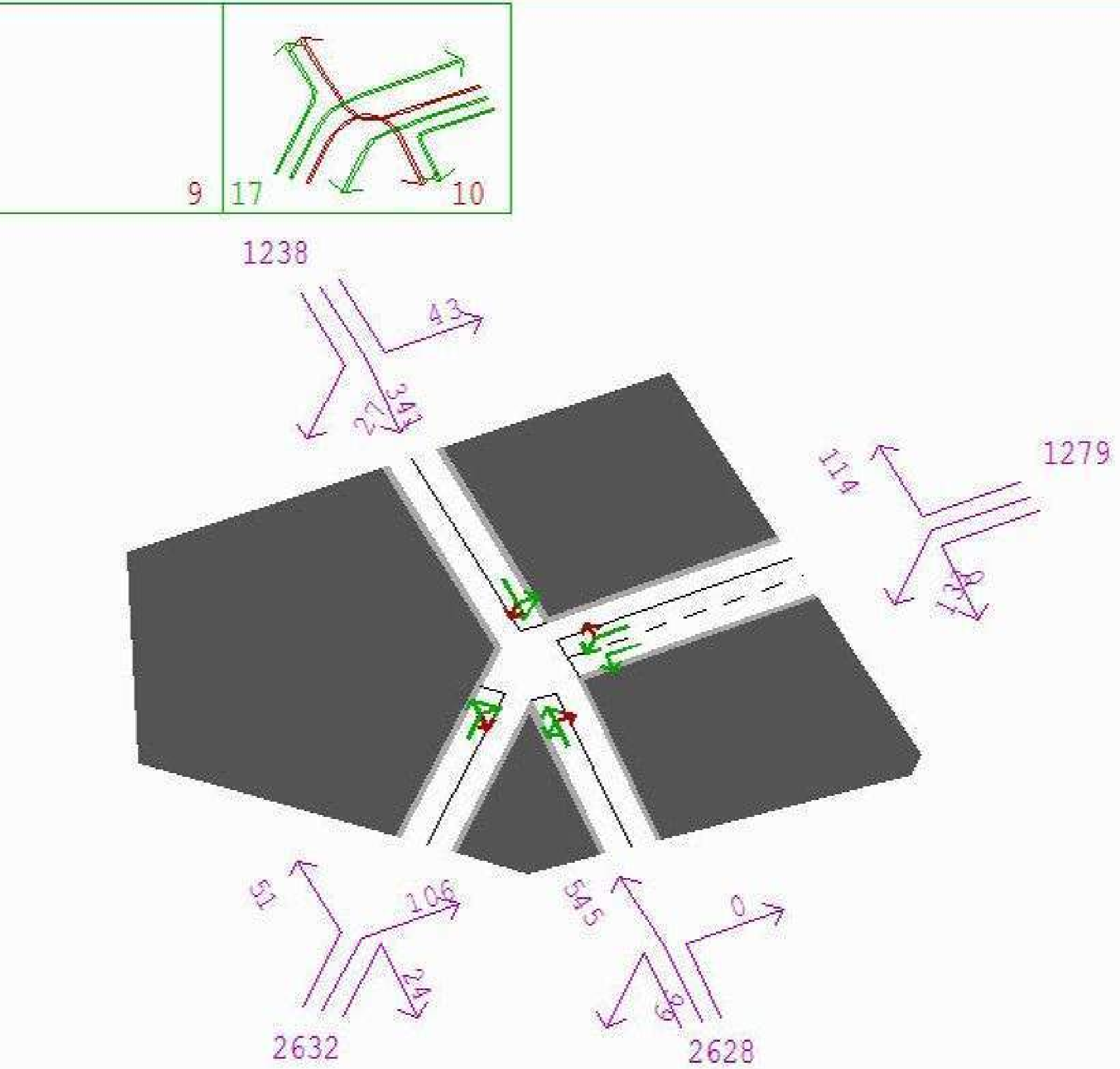
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 1237

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
7 Warnings
8 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

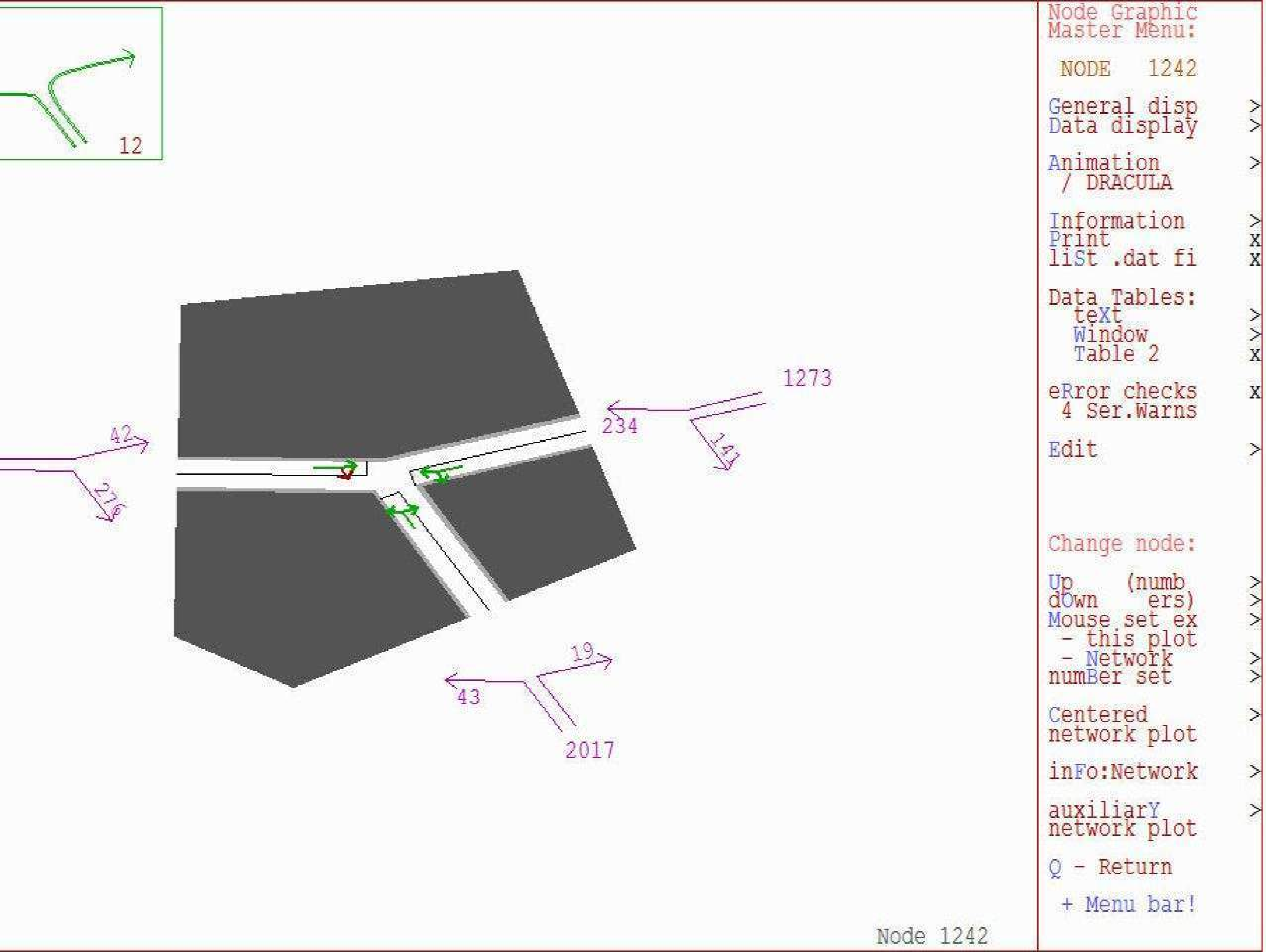
inFo:Network >

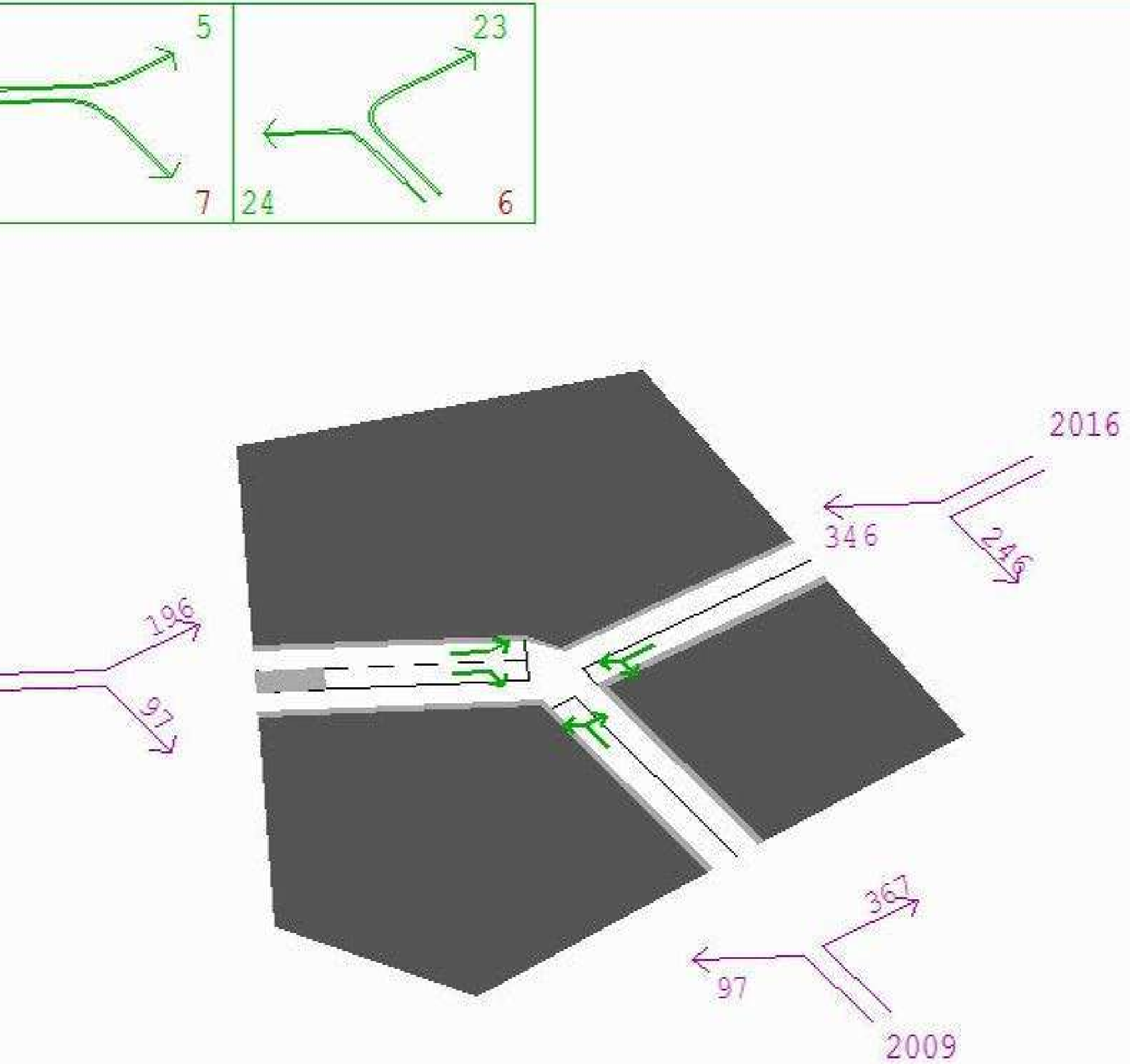
auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 1237


12
1273
234
141
42
276
19
43
2017
Node 1242
Node Graphic
Master Menu:
NODE 1242
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print x
liSt .dat fi x
Data Tables:
teXt >
Window >
Table 2 x
eRror checks x
4 Ser.Warns
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!



Node 1248

Node Graphic
Master Menu:

NODE 1248

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
1 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

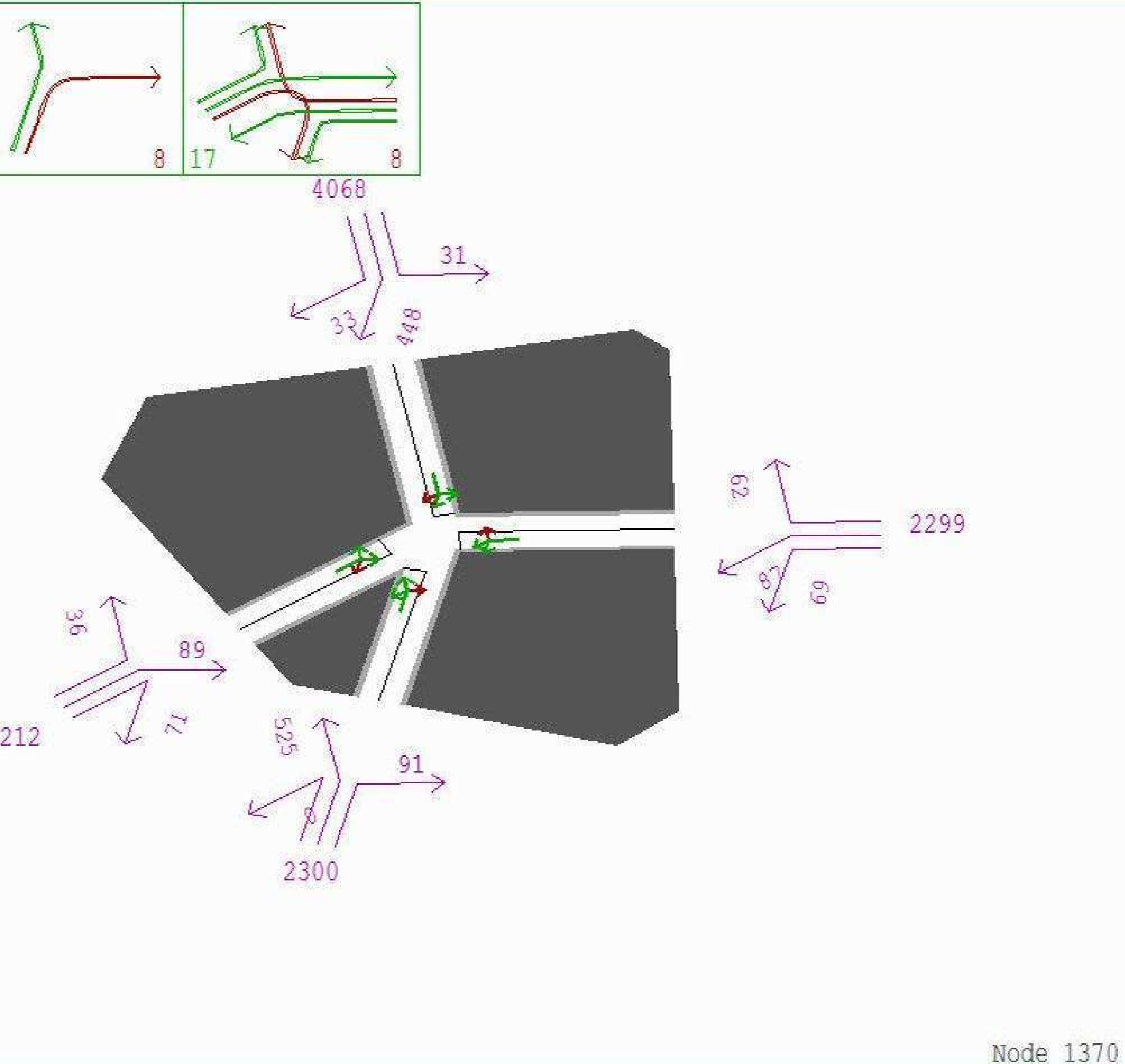
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 1370

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
9 Warnings
8 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

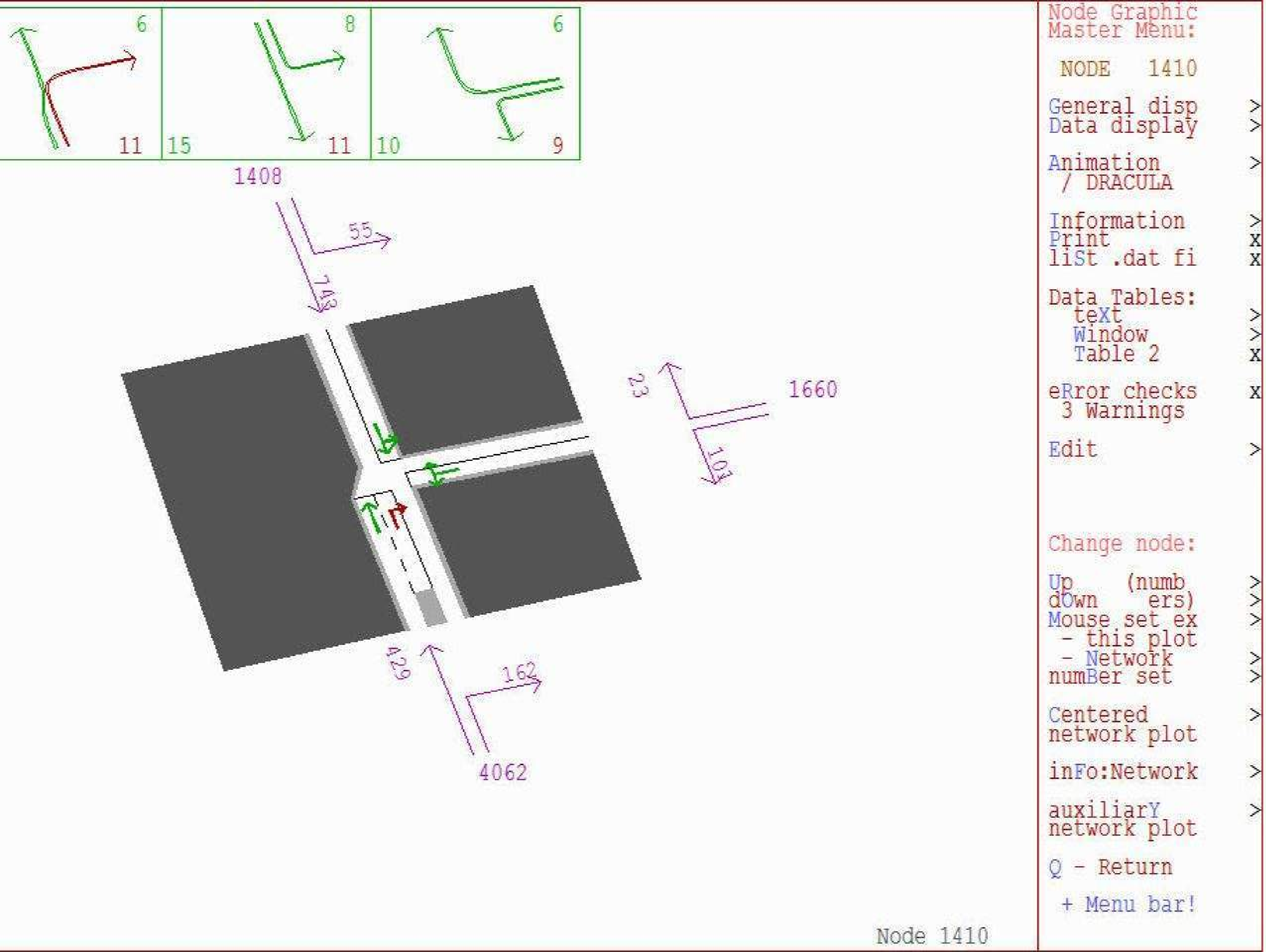
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



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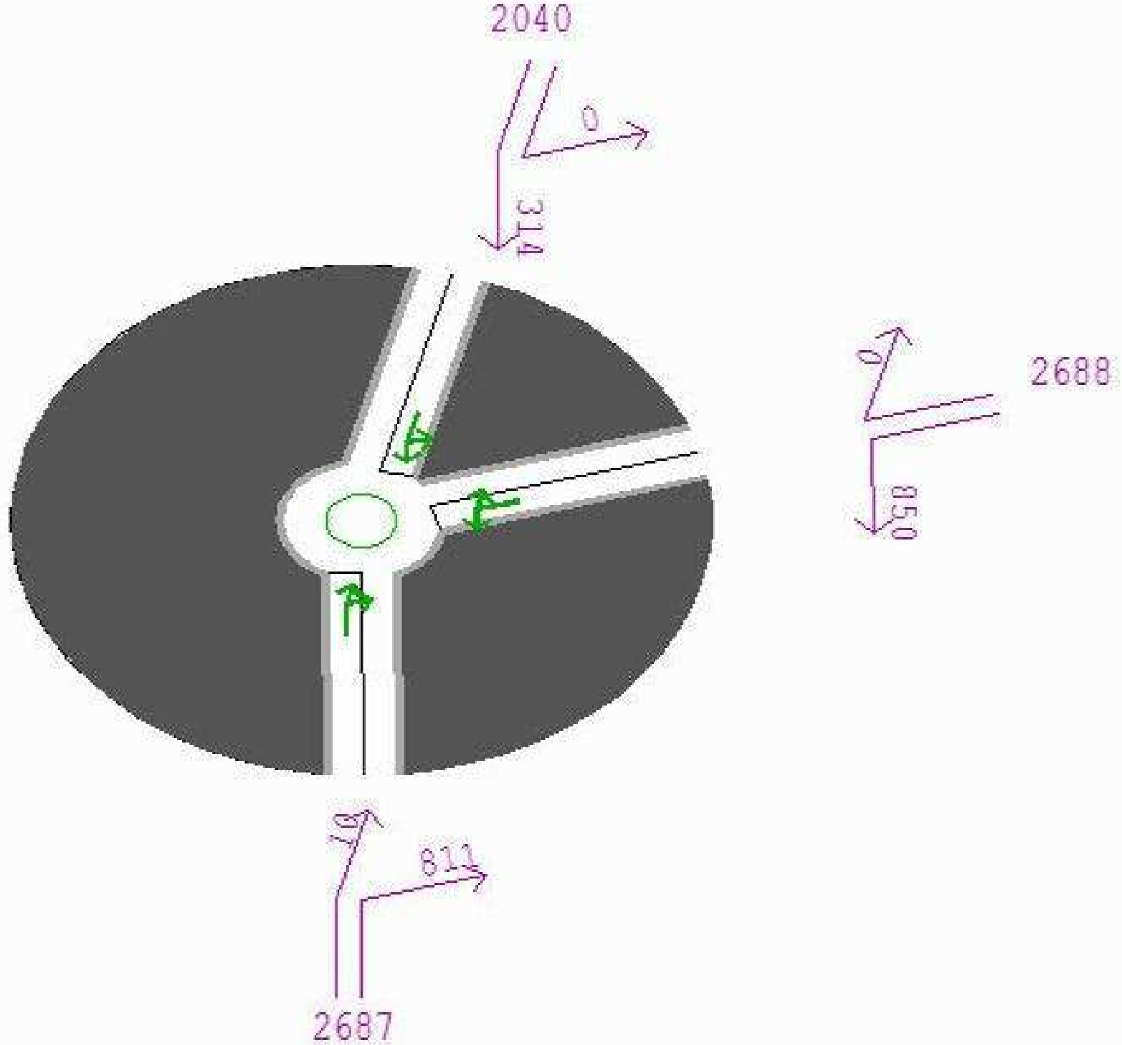
1660
23
101
429
162
4062
Node Graphic
Master Menu:
NODE 1410
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print x
liSt .dat fi x
Data Tables:
teXt >
Window >
Table 2 x
eRror checks x
3 Warnings
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!
Node 1410



Node 1654

Node Graphic
Master Menu:

NODE 1654

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

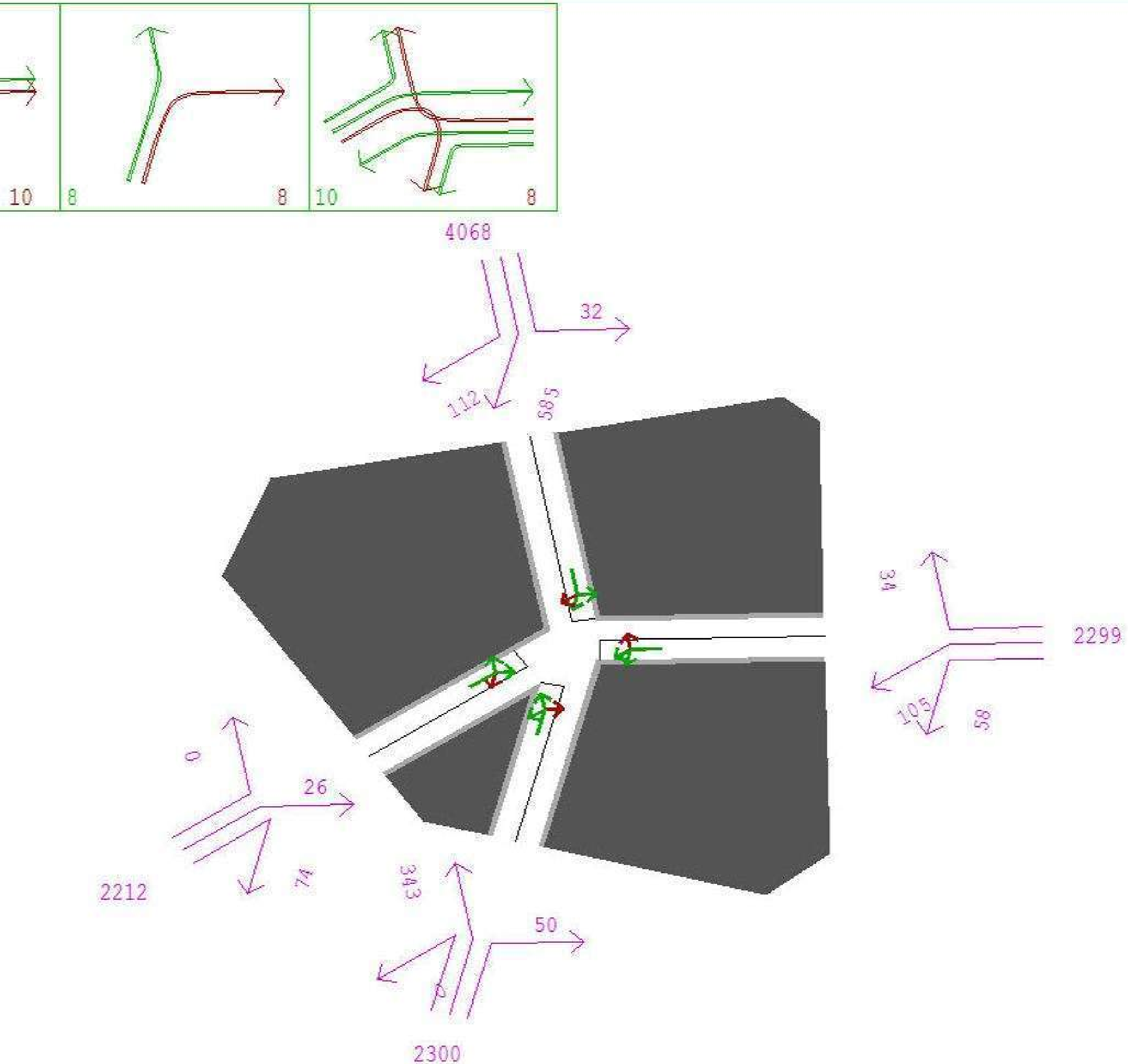
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node 1370

Node Graphic
Master Menu:

NODE 1370

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
9 Warnings
8 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

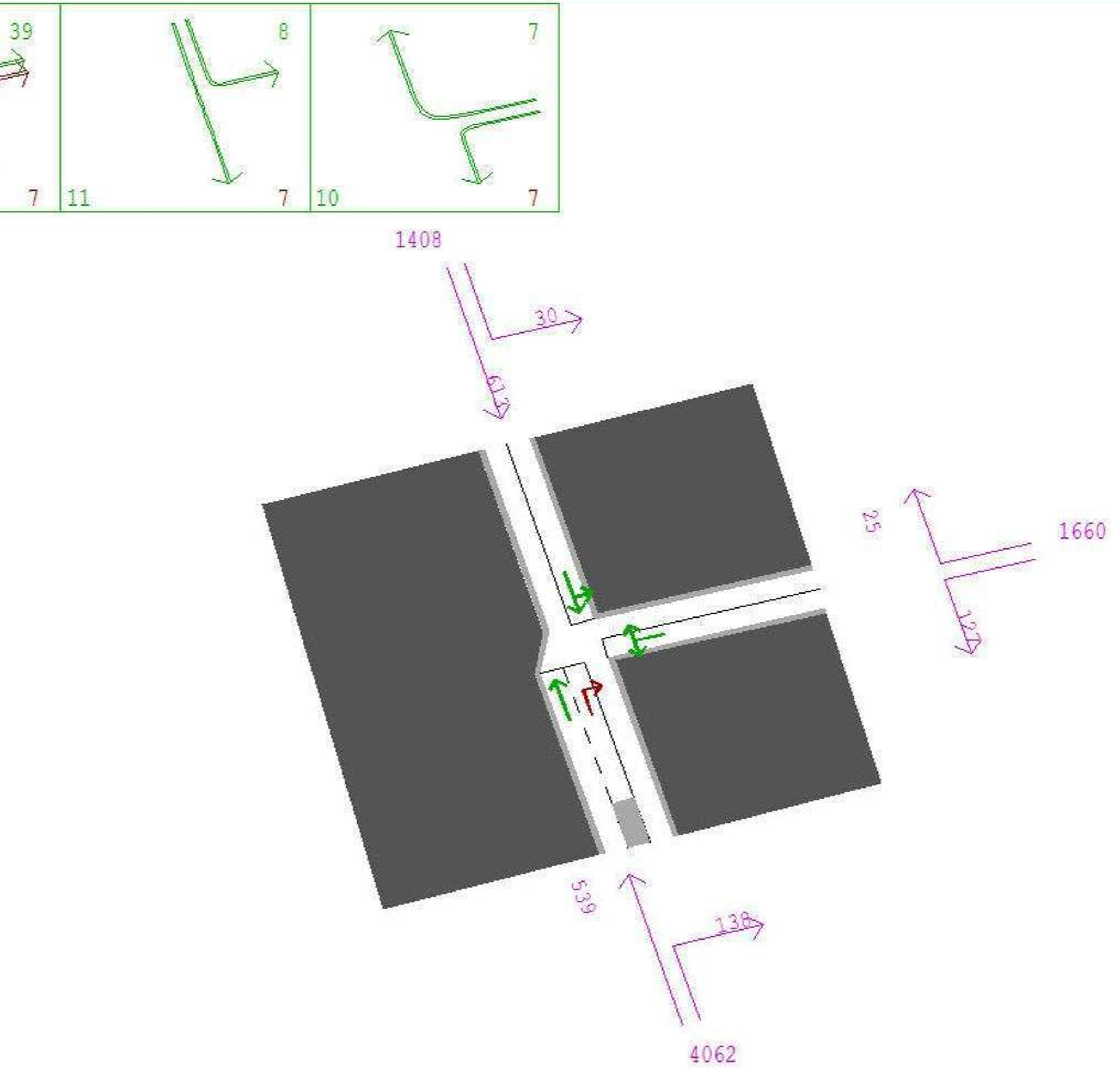
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 1410

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings
1 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

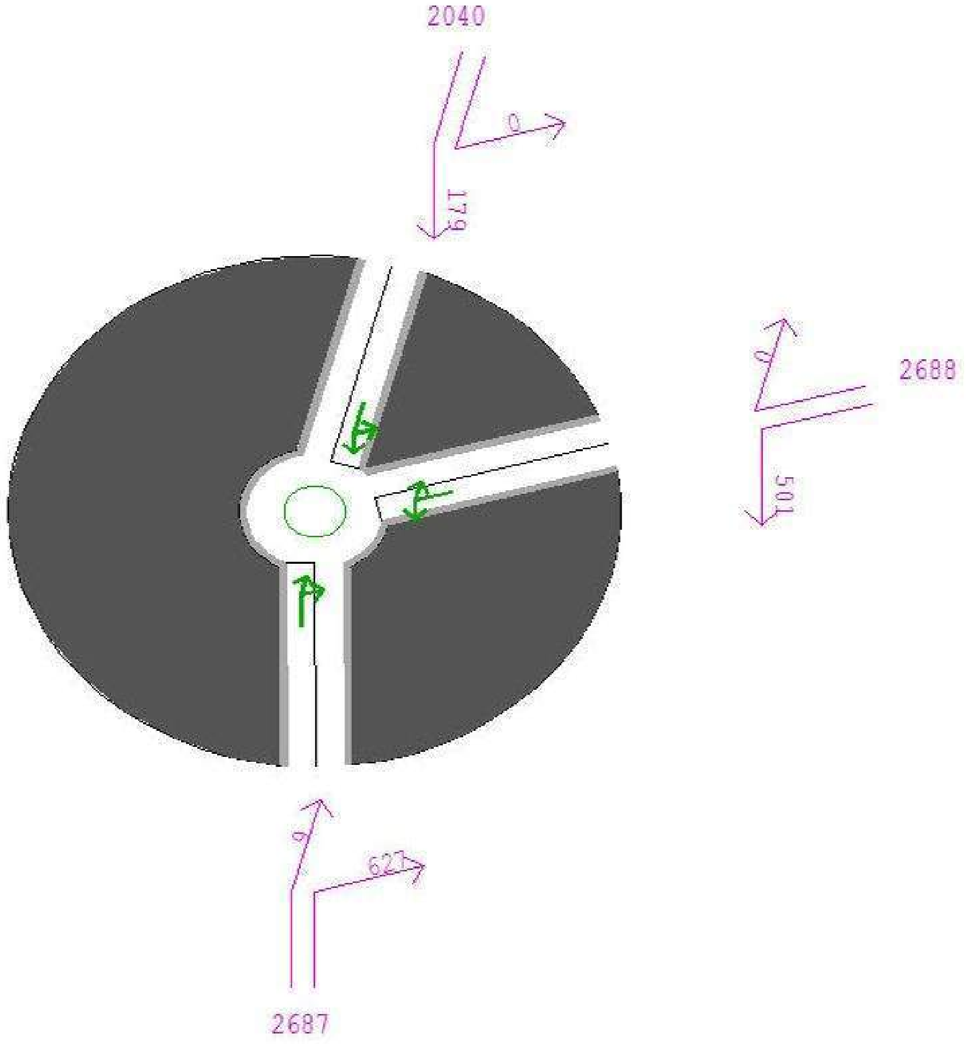
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 1410



Node Graphic
Master Menu:

NODE 1654

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
2 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

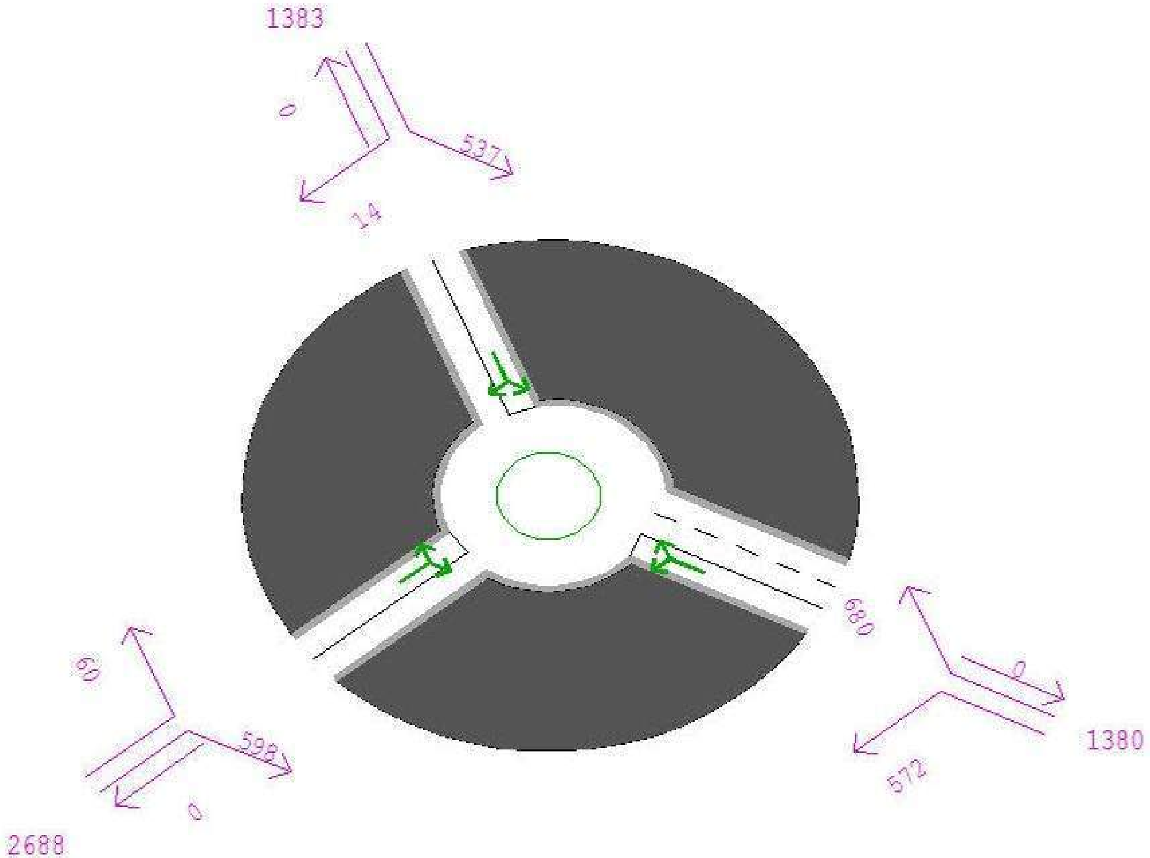
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 1654



Node-based
Data display
Choices:

Current data

Arrive flow

New choice:

Cancel (none X
nOde data ON
Link data >
Turn data >

Display mode s
Arrows

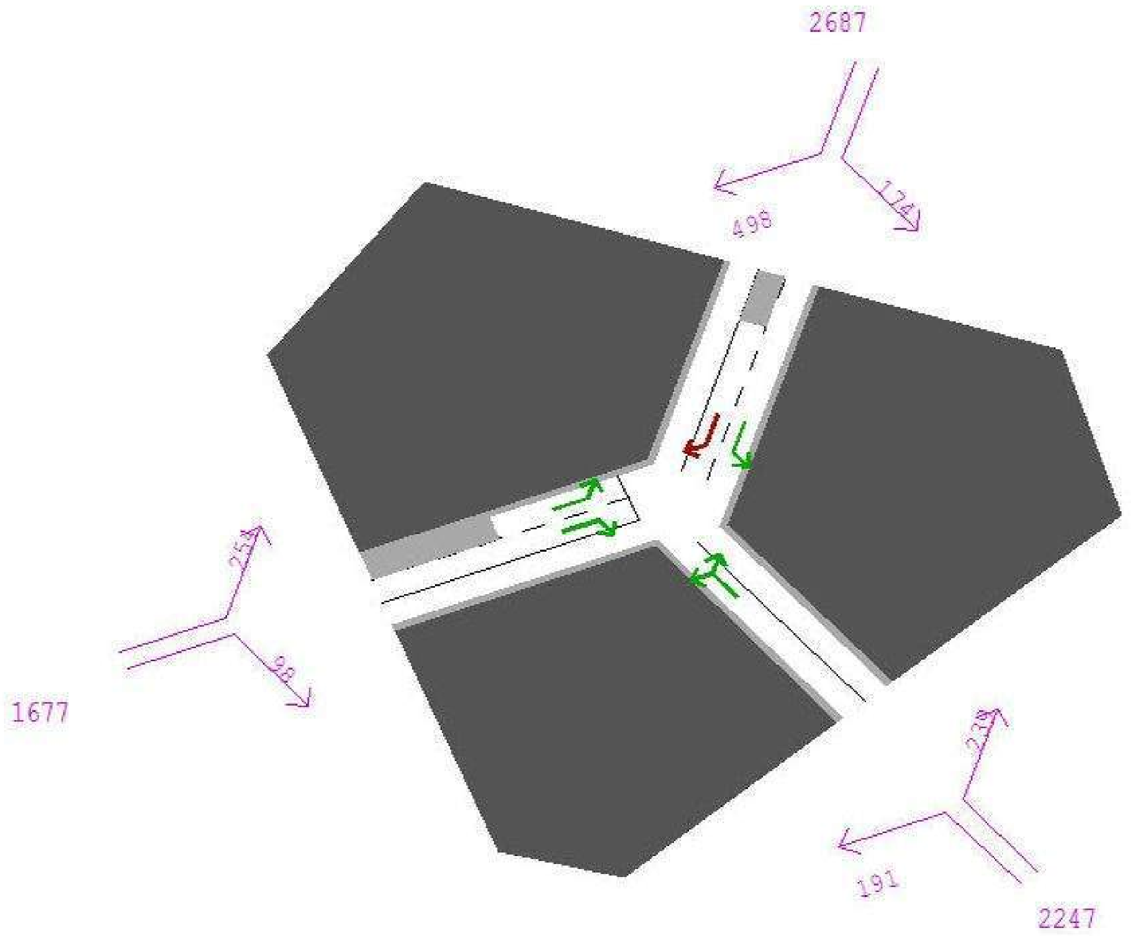
Arrow type: s
line+number

Banner >

Q - Return

+ Menu bar!

Node 1665



Node Graphic
Master Menu:

NODE 1678

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
2 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

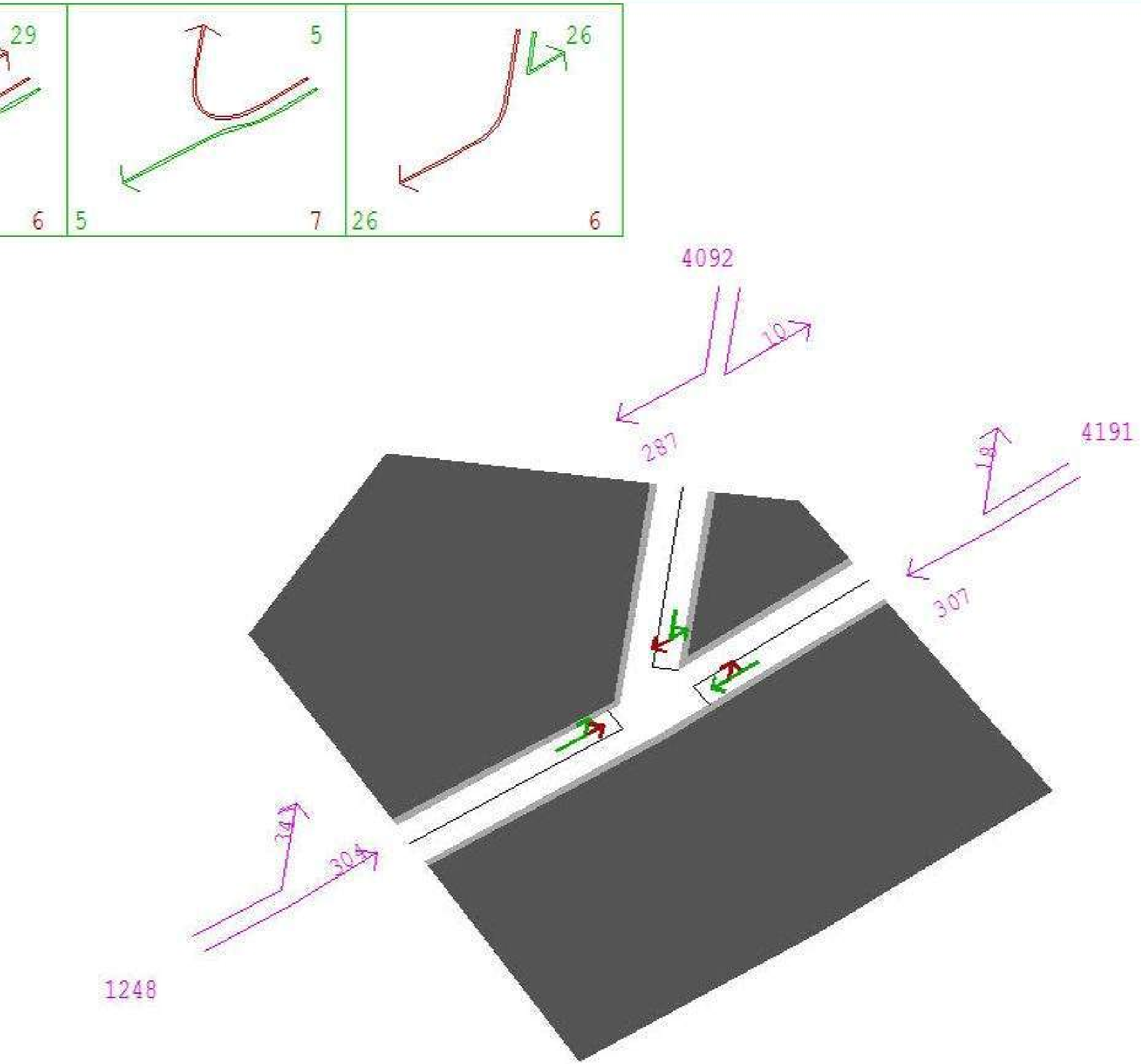
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 1678



Node 2016

Node Graphic
Master Menu:

NODE 2016

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
4 Warnings
7 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

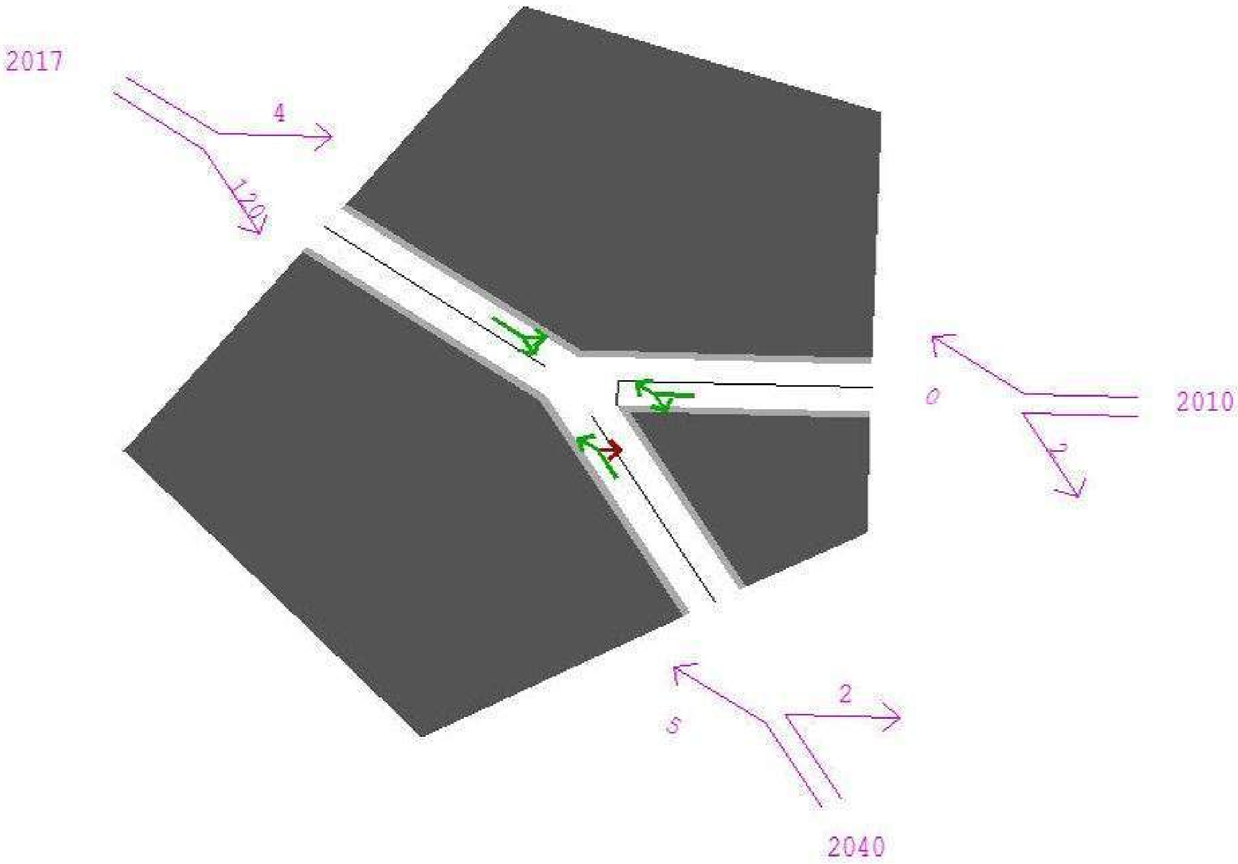
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node 2756

Node Graphic
Master Menu:

NODE 2756

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings
2 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

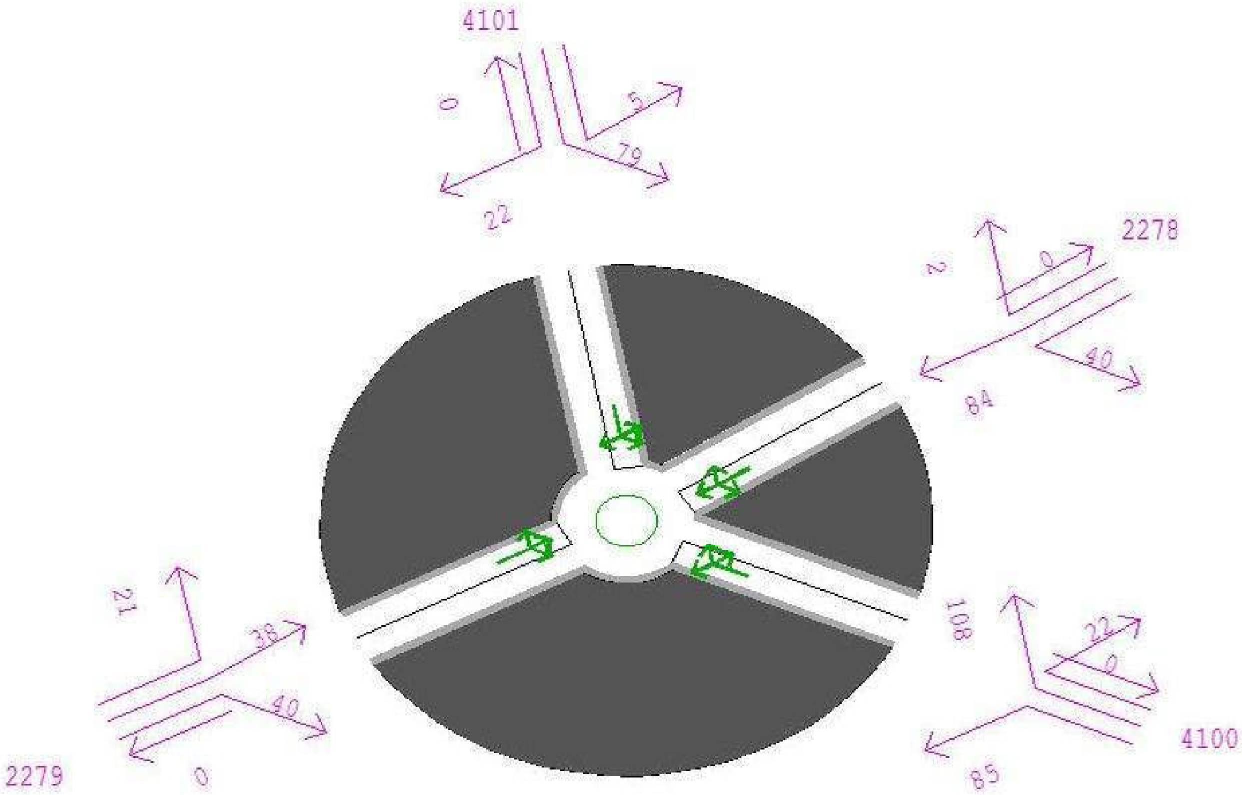
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node 2761

Node Graphic
Master Menu:

NODE 2761

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

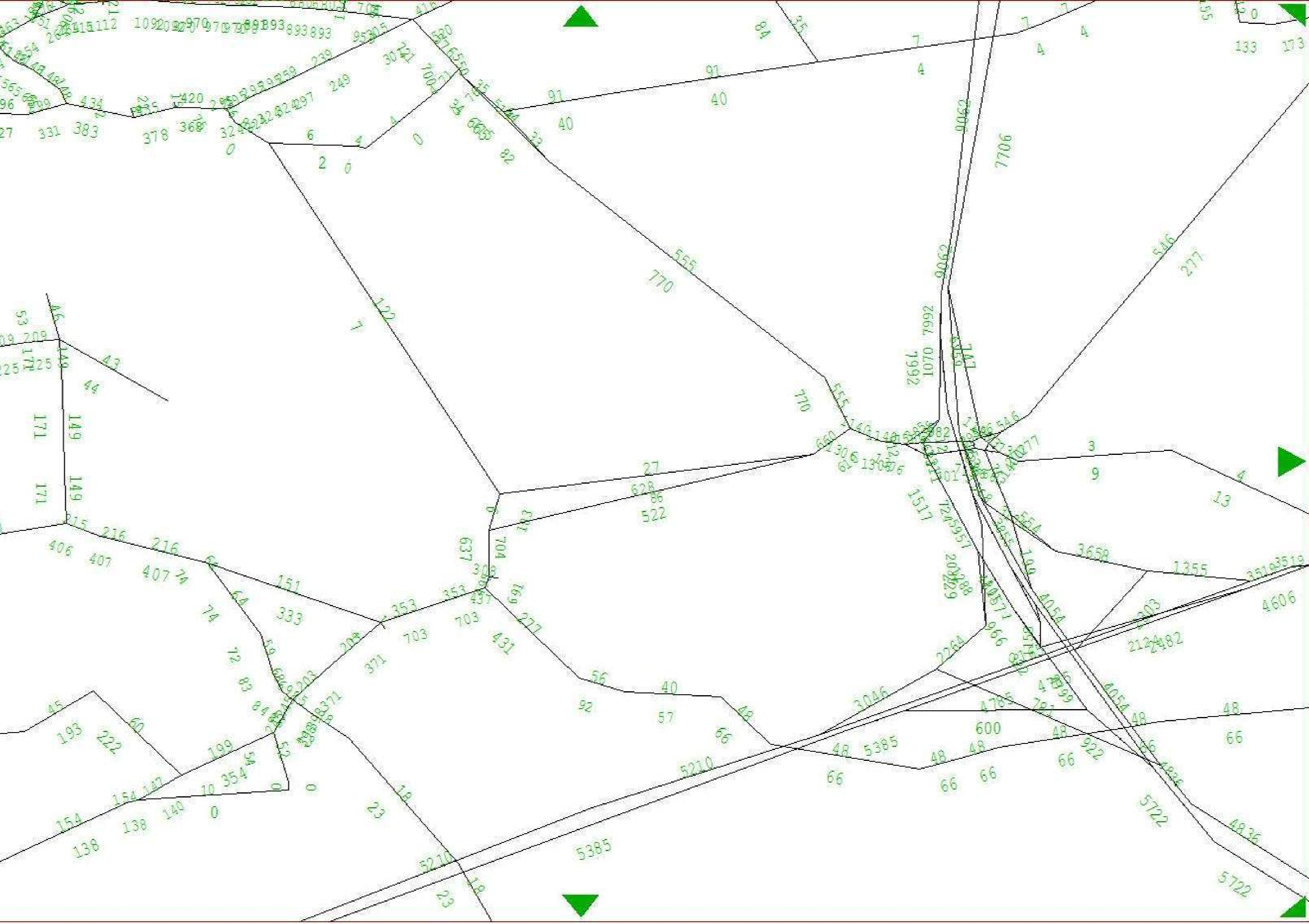
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Li
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Opt

Displ
Numer

Toggl
/ ge

Annot

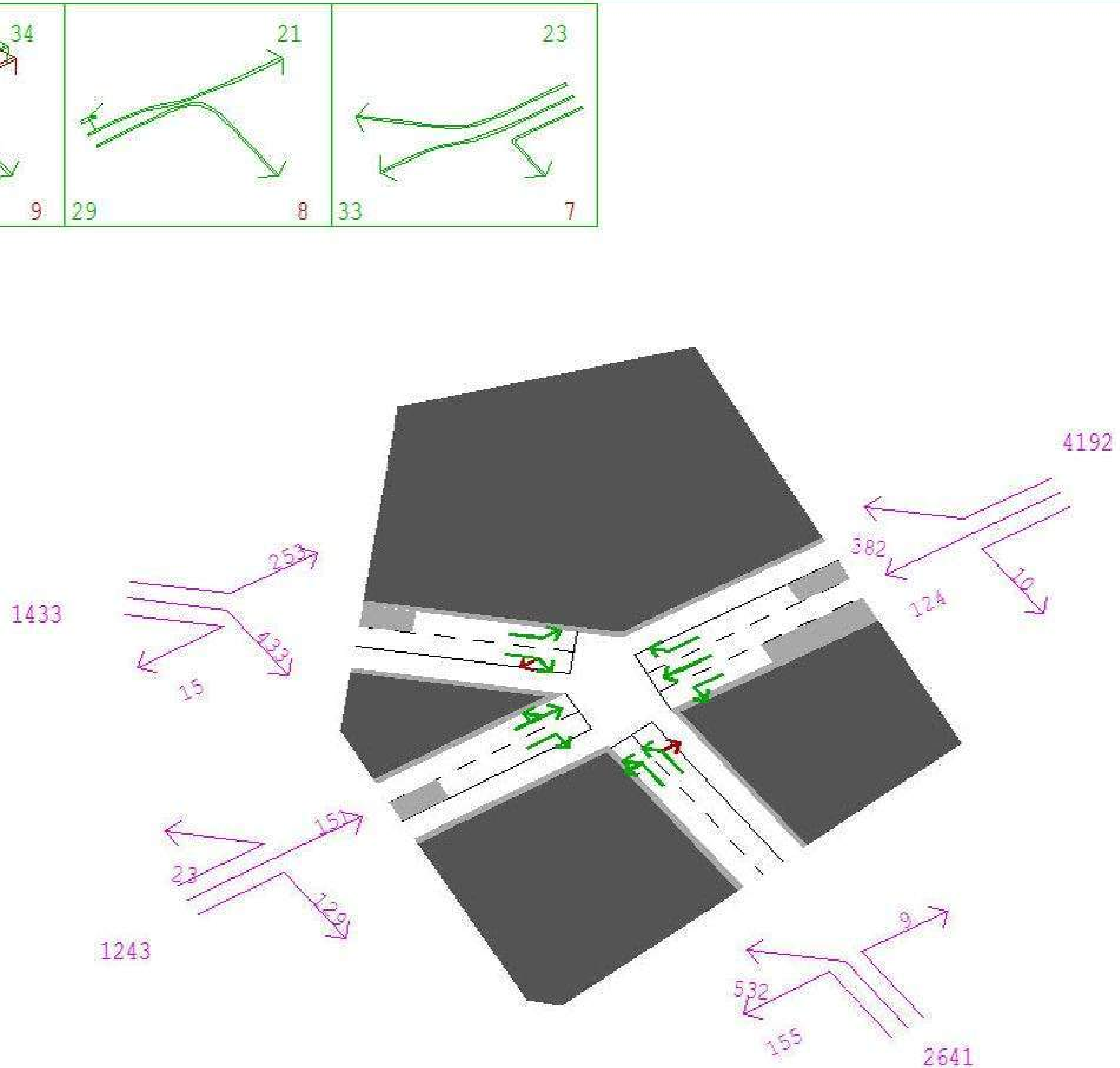
Numer
lecti
catio

2-way
anno
Direc

Pen a
rang

Q - F

+ Me



Node 1230

Node Graphic
Master Menu:

NODE 1230

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
2 Warnings
4 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

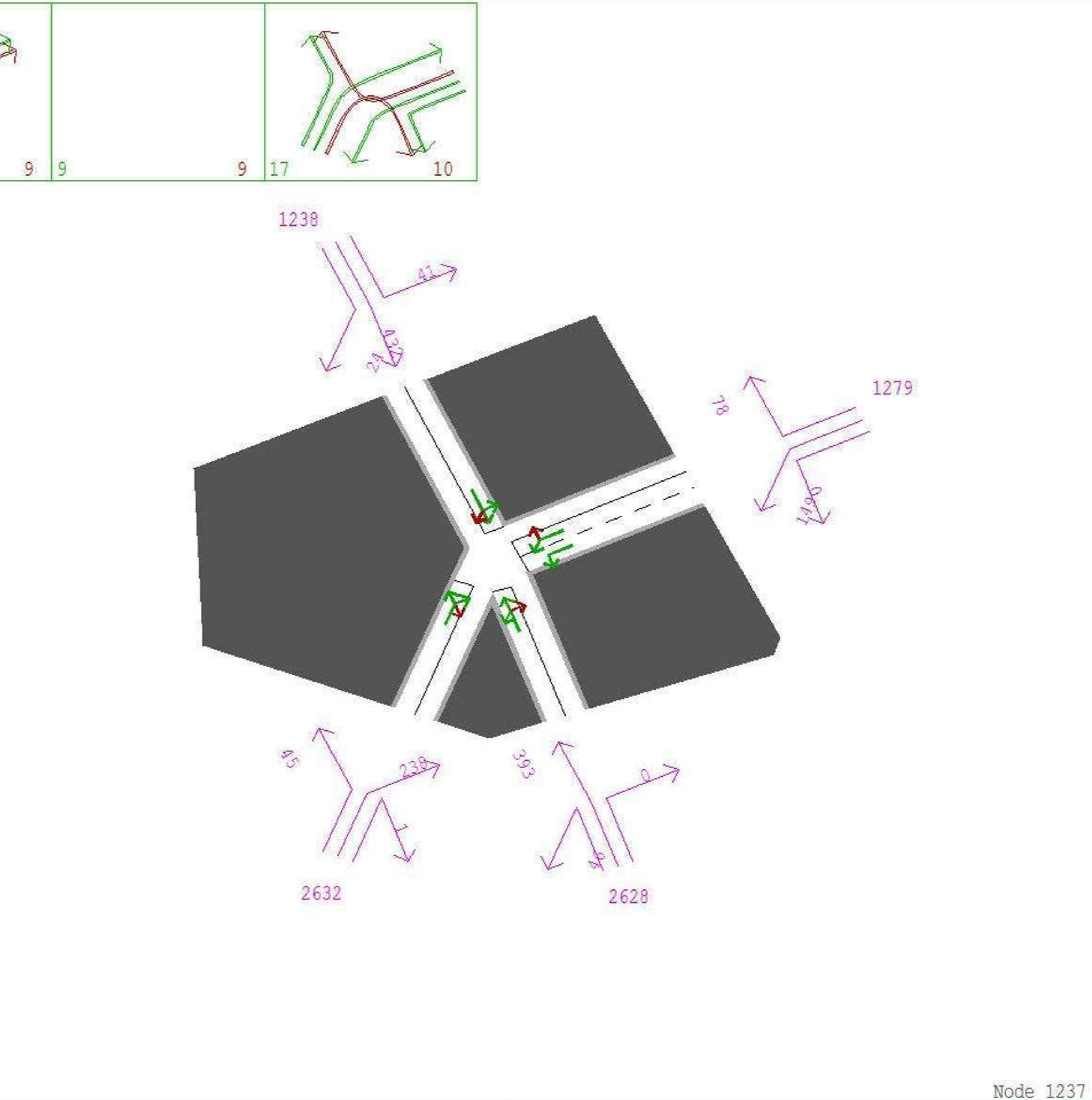
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 1237

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
7 Warnings
8 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

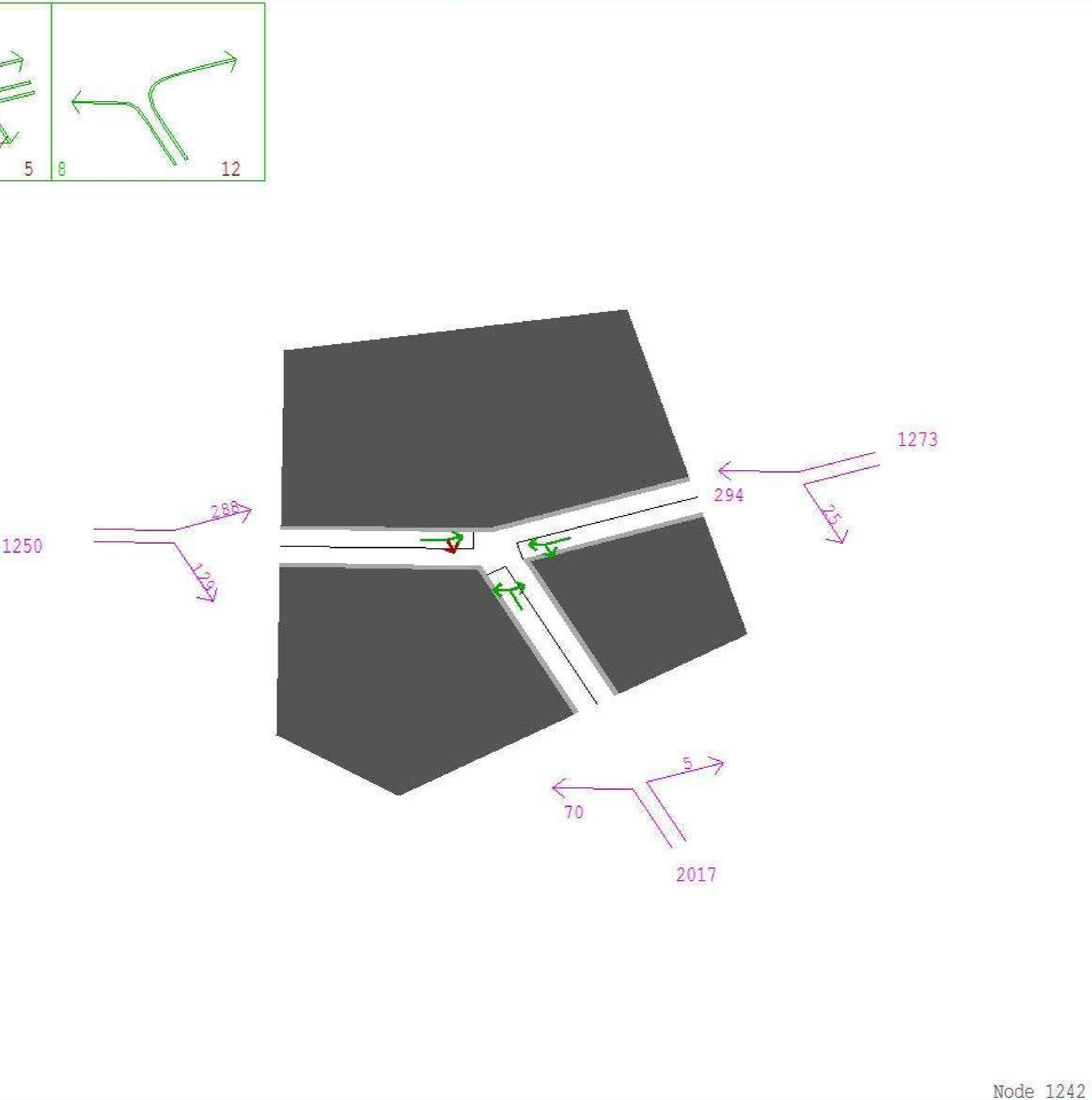
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 1242

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
4 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

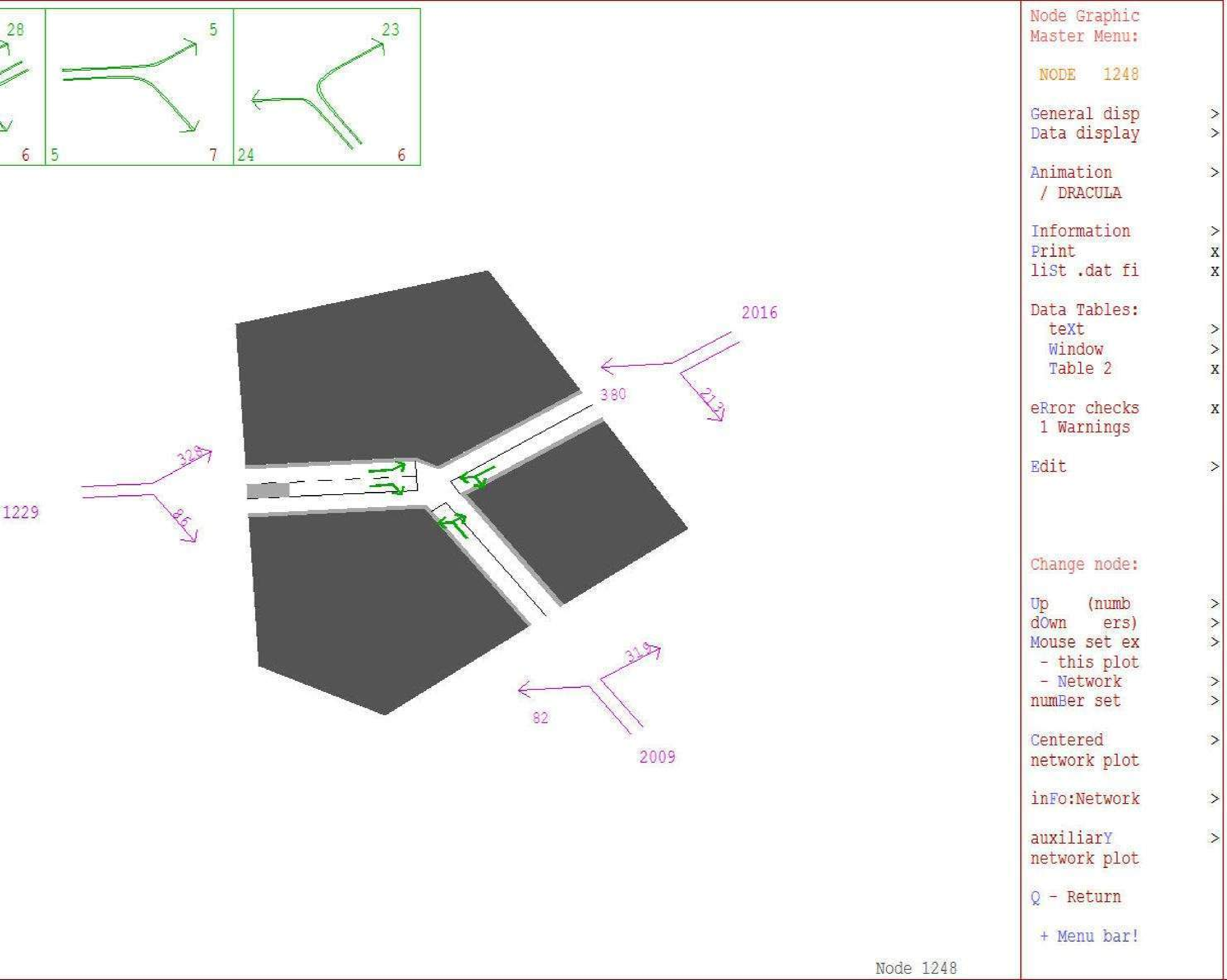
Centered >
network plot

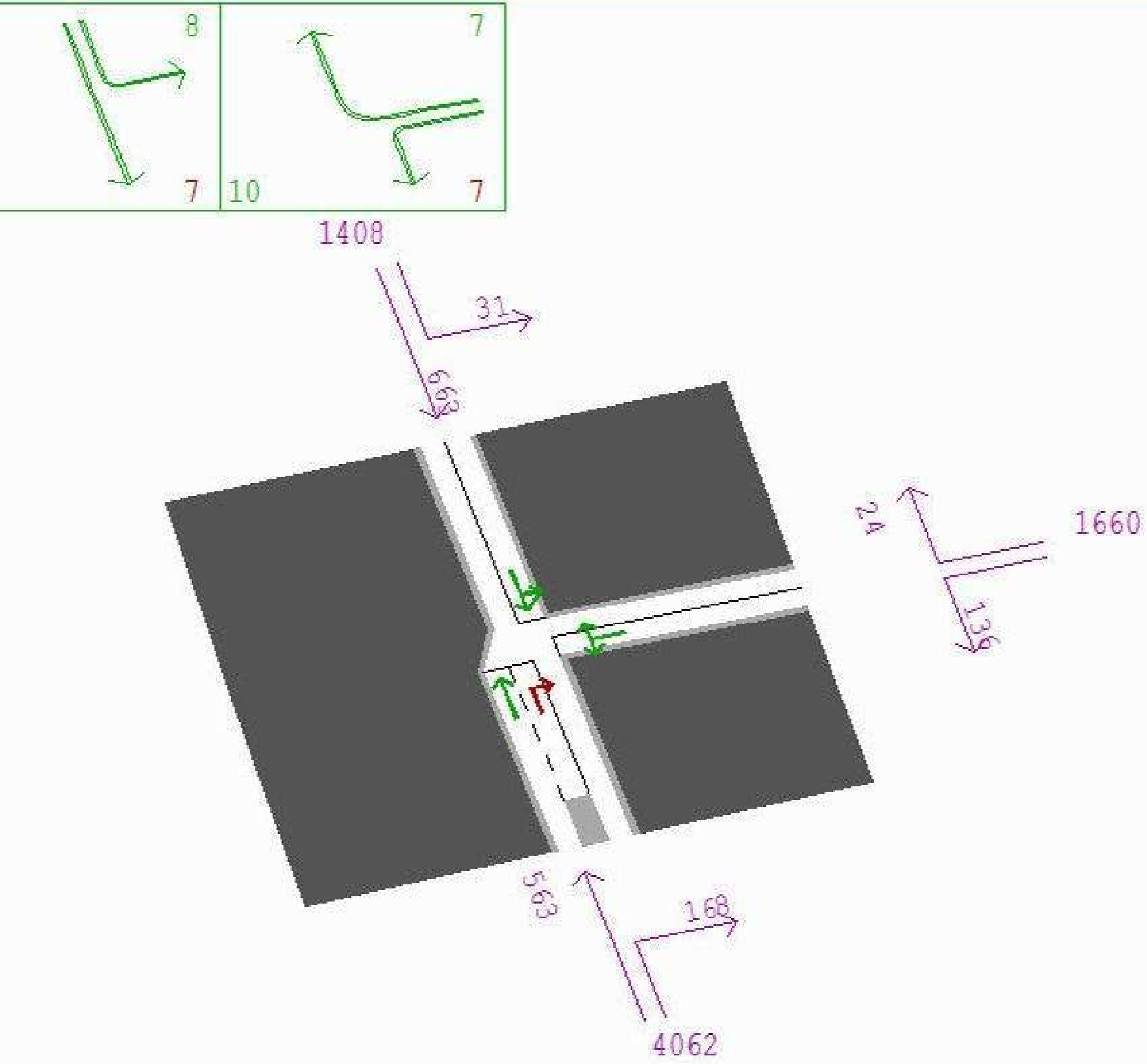
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!


28
6
5
5
7
23
24
6
2016
380
212
328
1229
86
319
82
2009
Node 1248
Node Graphic
Master Menu:
NODE 1248
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print x
liSt .dat fi x
Data Tables:
teXt >
Window >
Table 2 x
eRror checks x
1 Warnings
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!



Node Graphic
Master Menu:

NODE 1410

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings
1 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

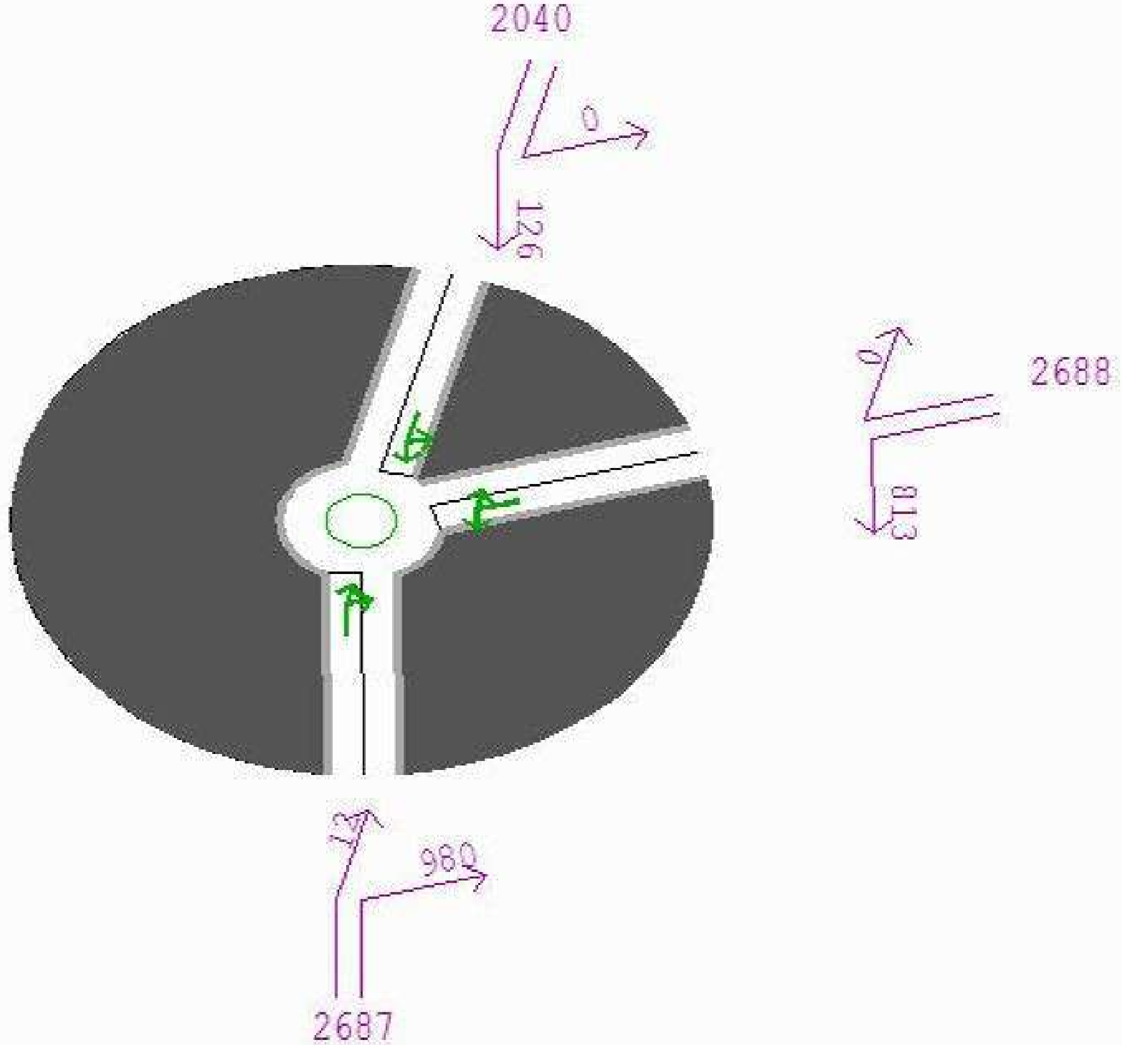
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 1410



Node 1654

Node Graphic
Master Menu:

NODE 1654

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
2 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

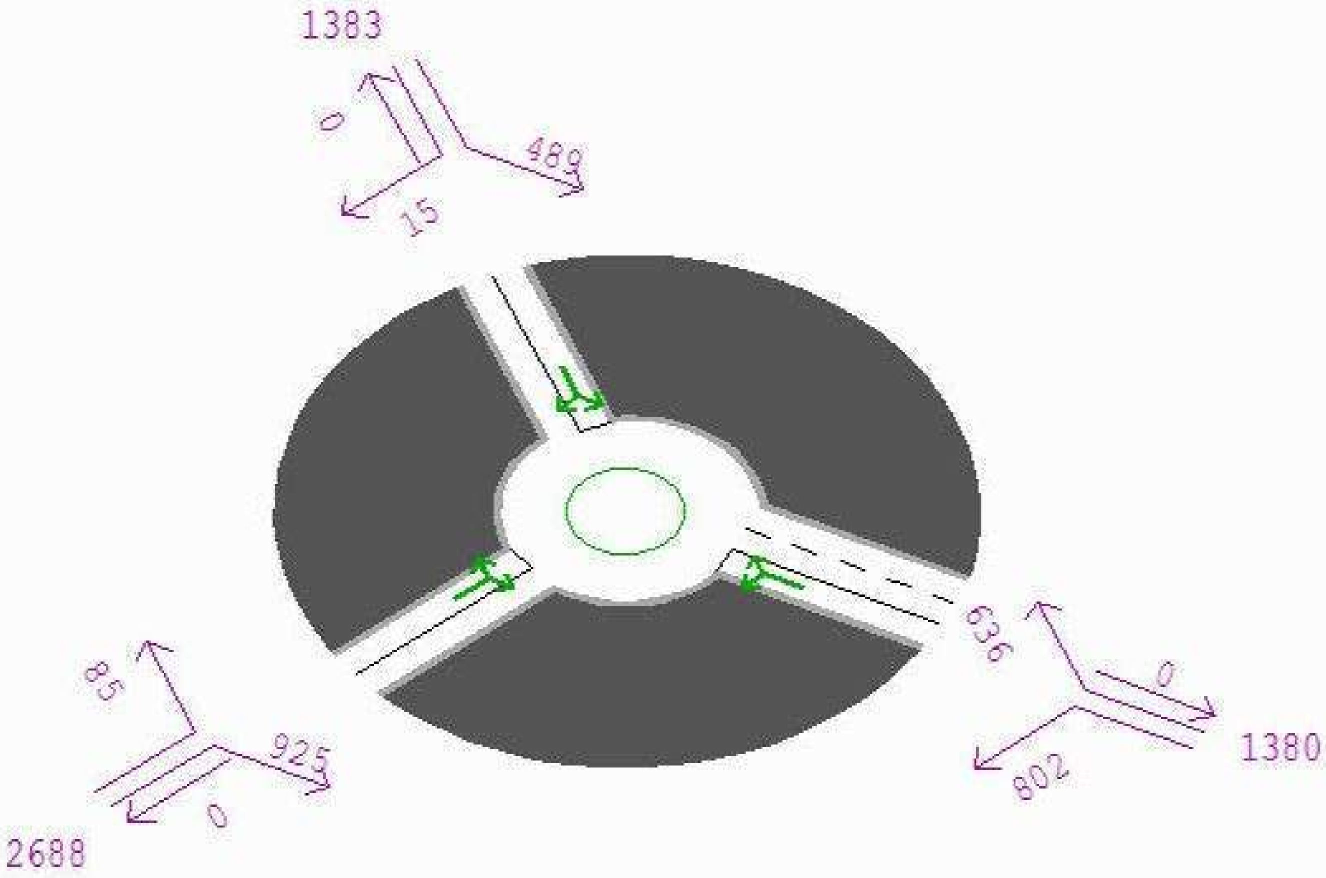
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node 1665

Node-based
Data display
Choices:

Current data

Arrive flow

New choice:

Cancel (none X
nOde data ON
Link data >
Turn data >

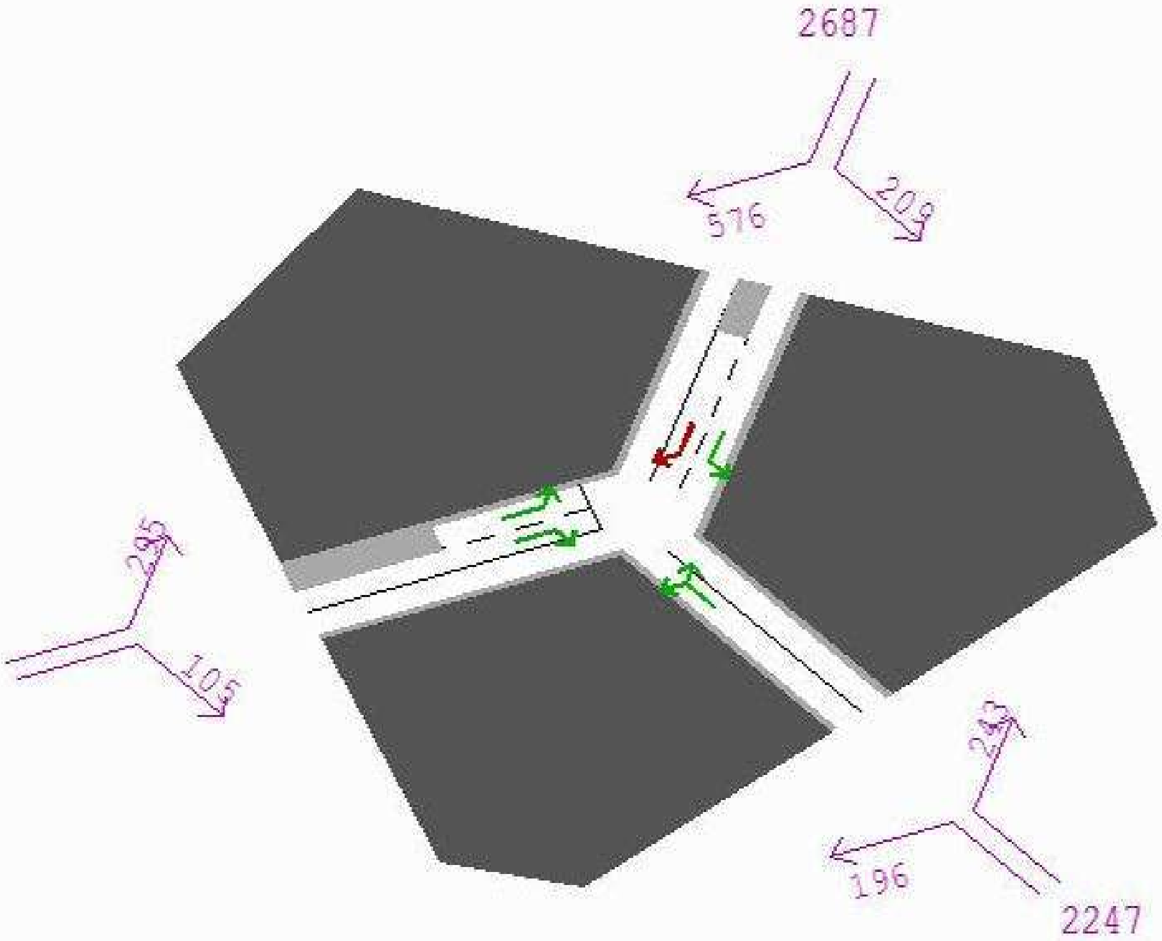
Display mode S
Arrows

Arrow type: S
line+number

Banner >

Q - Return

+ Menu bar!



Node 1678

Node Graphic
Master Menu:

NODE 1678

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
2 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

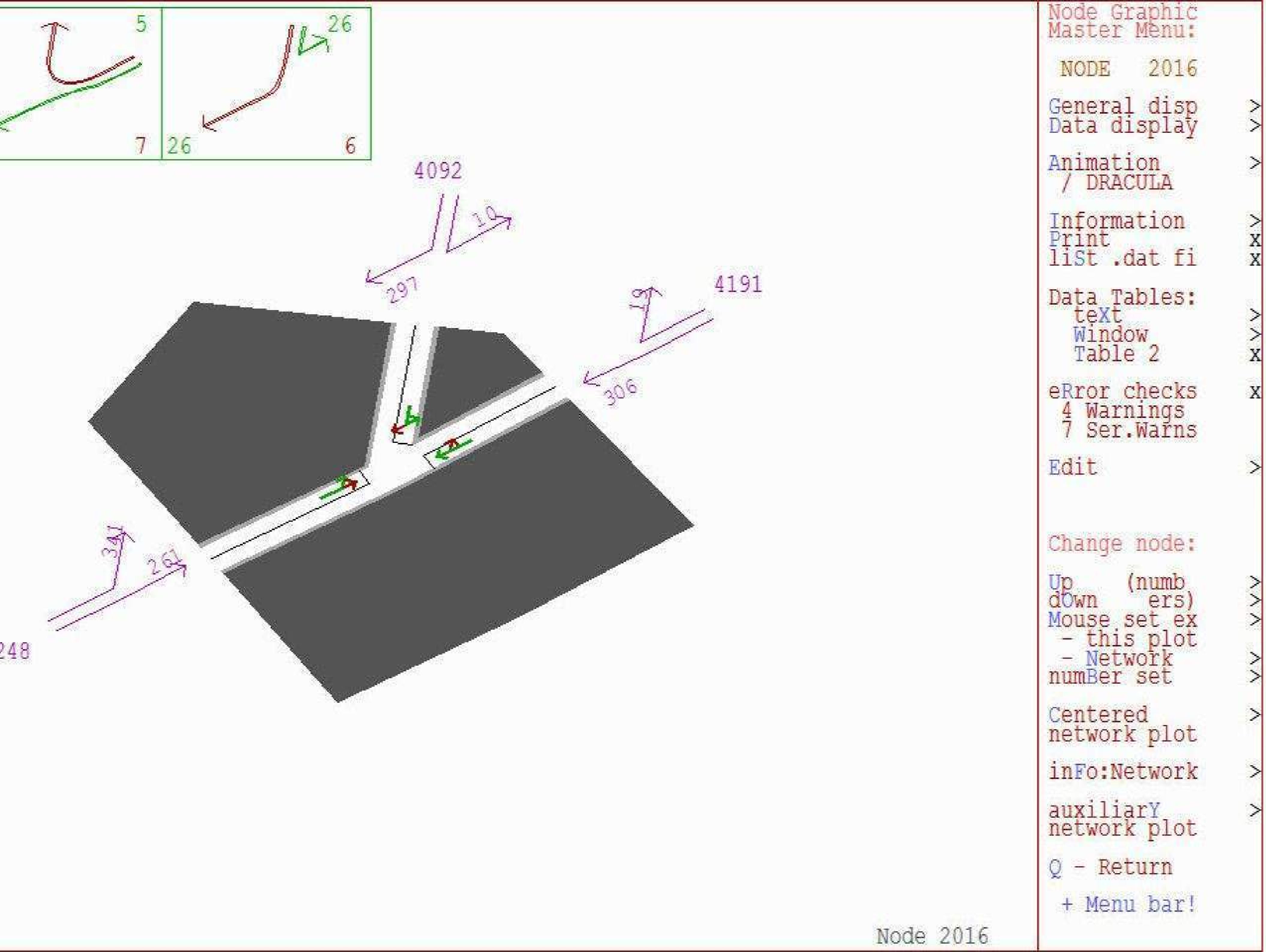
Centered >
network plot

inFo:Network >

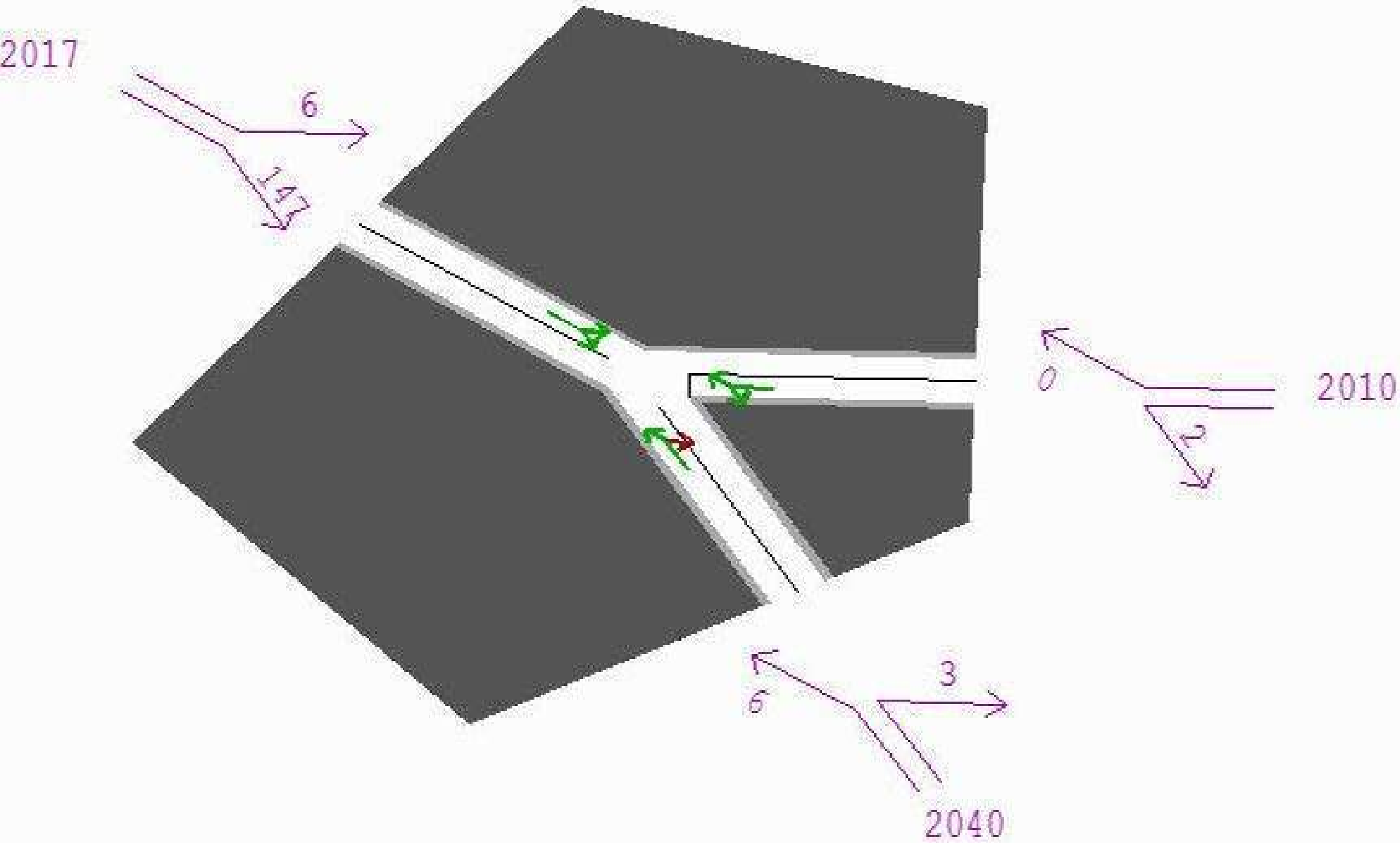
auxiliarY >
network plot

Q - Return

+ Menu bar!



5
26
7
26
6
4092
10
297
4191
19
306
341
261
248
Node 2016
Node Graphic
Master Menu:
NODE 2016
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print X
liSt .dat fi X
Data Tables:
teXt >
Window >
Table 2 X
eRror checks X
4 Warnings
7 Ser.Warns
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!



Node Graphic
Master Menu:

NODE 2756

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings
2 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

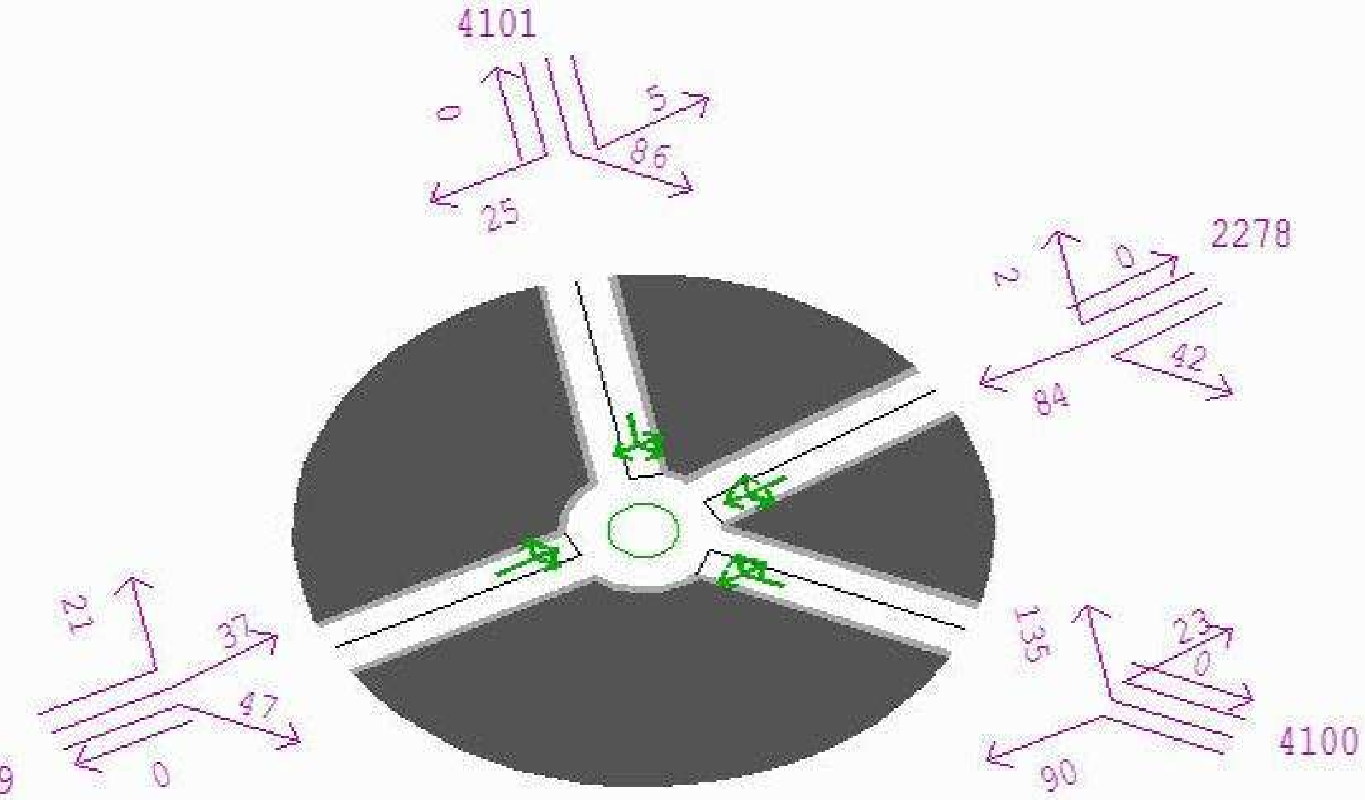
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 2756



Node Graphic
Master Menu:

NODE 2761

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

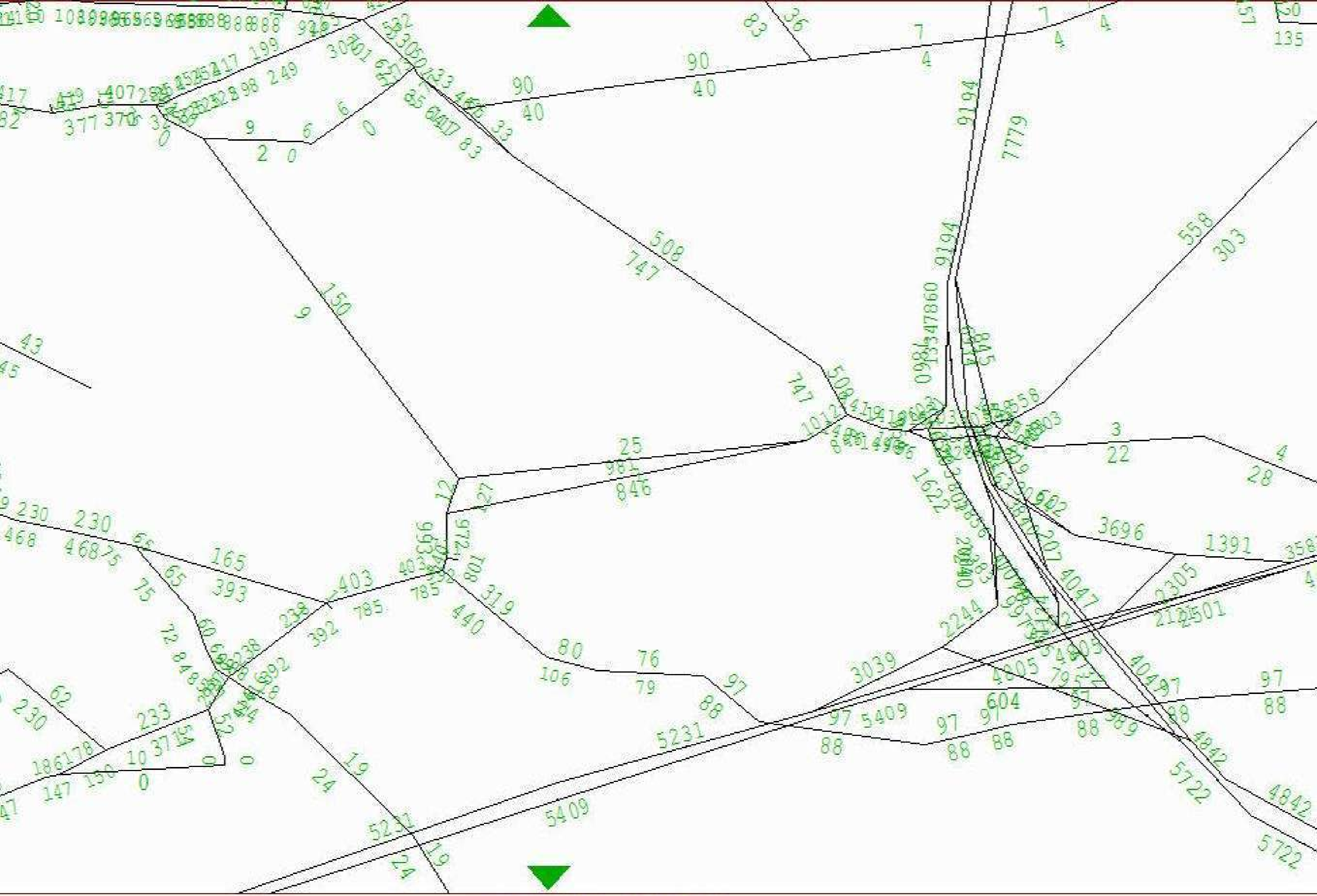
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 2761


90
40
7
4
9194
7779
508
747
150
9
558
303
25
846
3
22
4
28
230
468
165
393
403
785
392
319
440
80
106
76
79
97
88
3696
1391
2244
3039
5409
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2305
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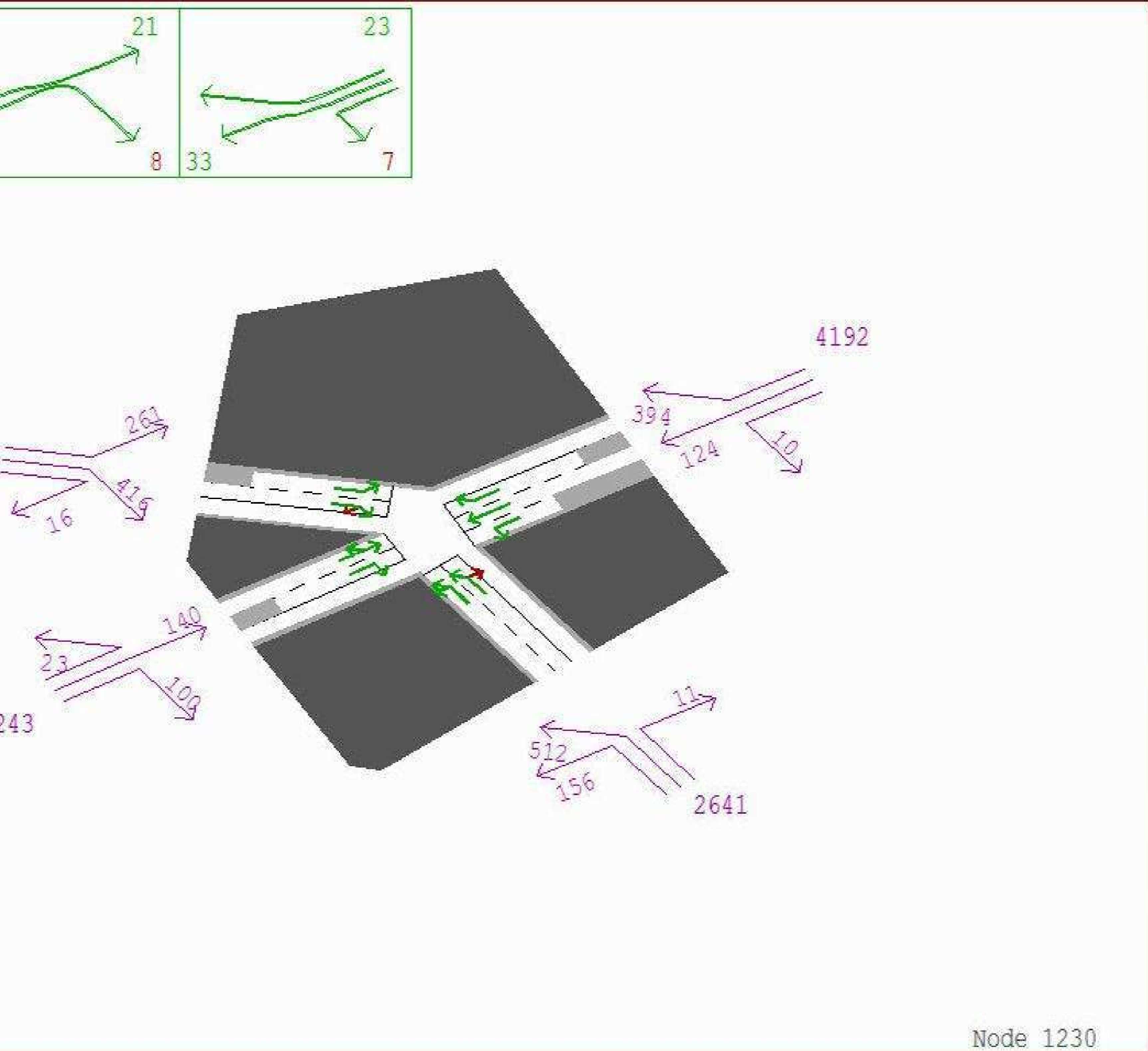
4842
19
24
233
0



Node Graphic
Master Menu:

NODE 1230

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
2 Warnings
4 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

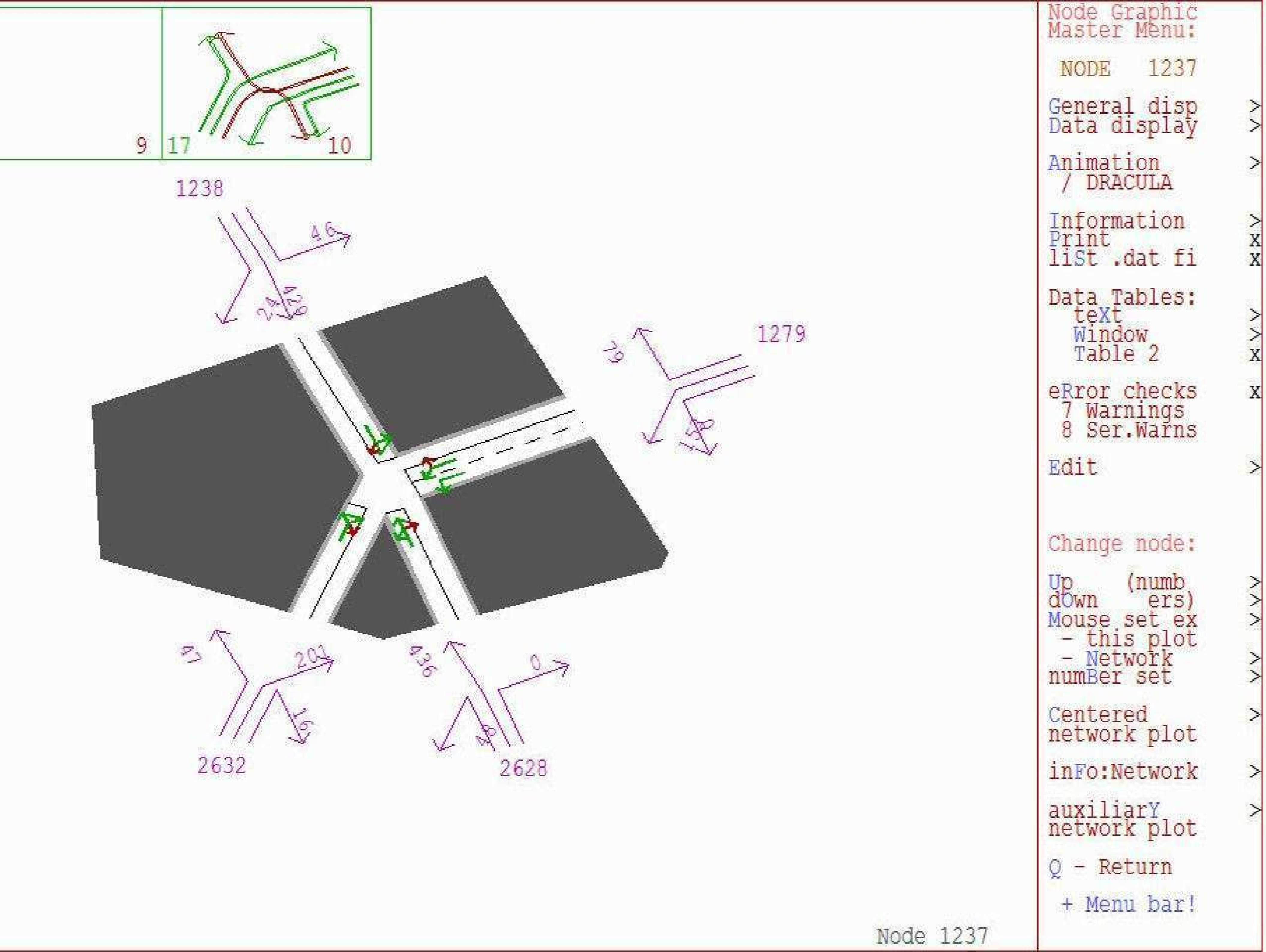
Centered >
network plot

inFo:Network >

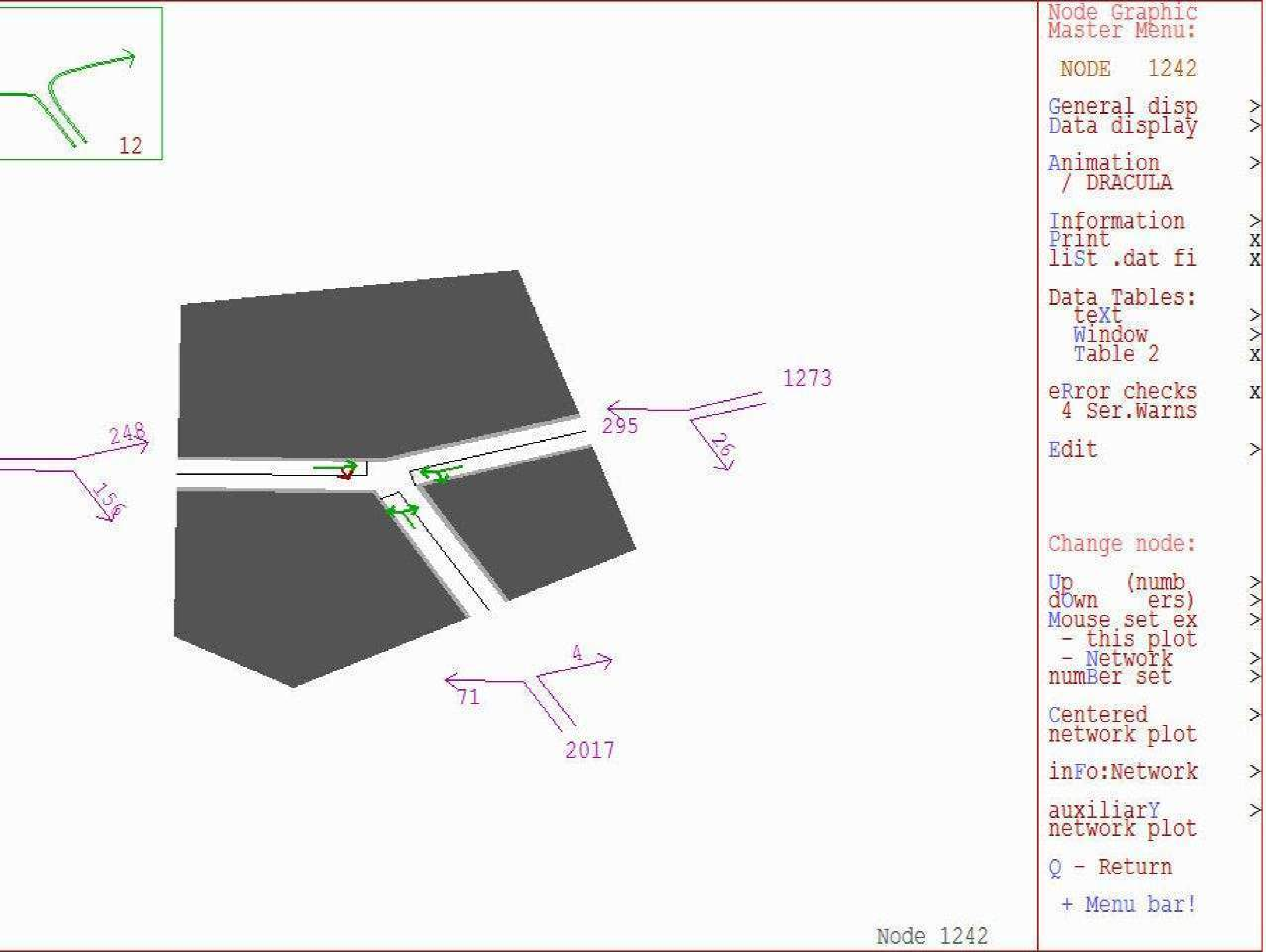
auxiliarY >
network plot

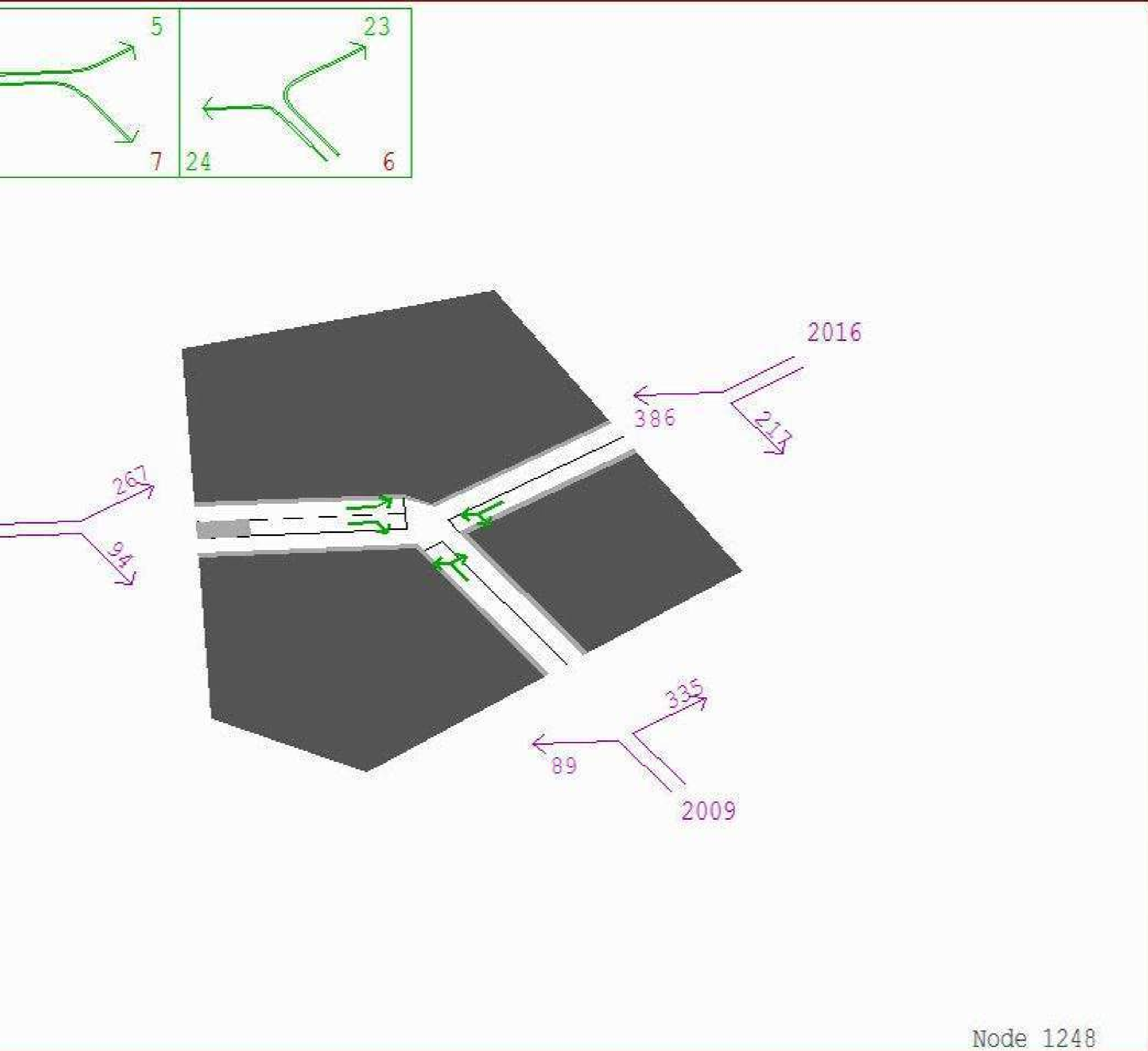
Q - Return

+ Menu bar!



9
17
10
1238
46
24
429
1279
79
130
47
201
436
0
16
48
2632
2628
Node 1237
Node Graphic
Master Menu:
NODE 1237
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print x
liSt .dat fi x
Data Tables:
teXt >
Window >
Table 2 x
eRror checks x
7 Warnings
8 Ser.Warns
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!


12
248
156
1273
295
26
4
71
2017
Node Graphic
Master Menu:
NODE 1242
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print X
liSt .dat fi X
Data Tables:
teXt >
Window >
Table 2 X
eRror checks X
4 Ser.Warns
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!
Node 1242



Node Graphic
Master Menu:

NODE 1248

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
1 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

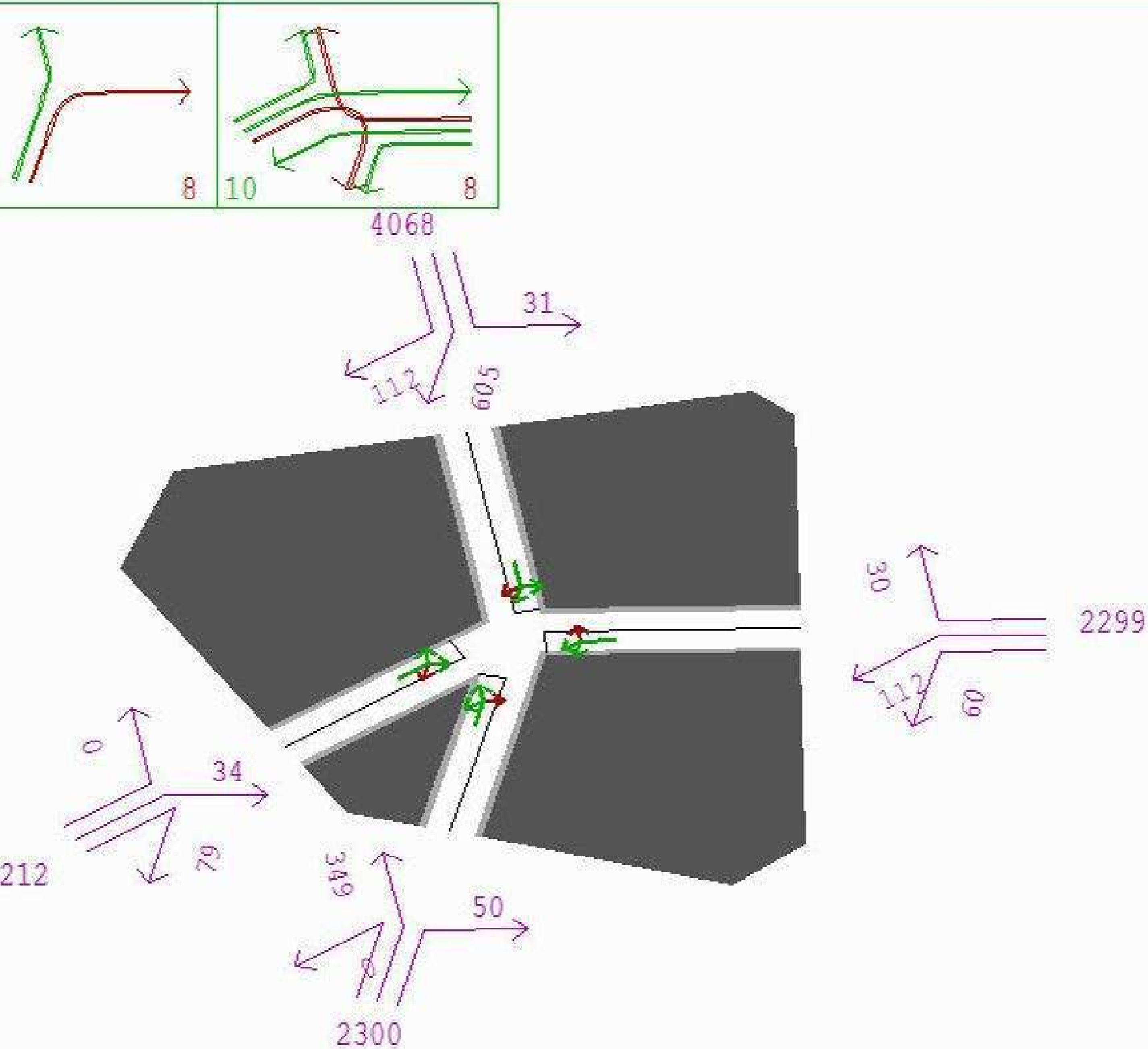
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node 1370

Node Graphic
Master Menu:

NODE 1370

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
9 Warnings
8 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

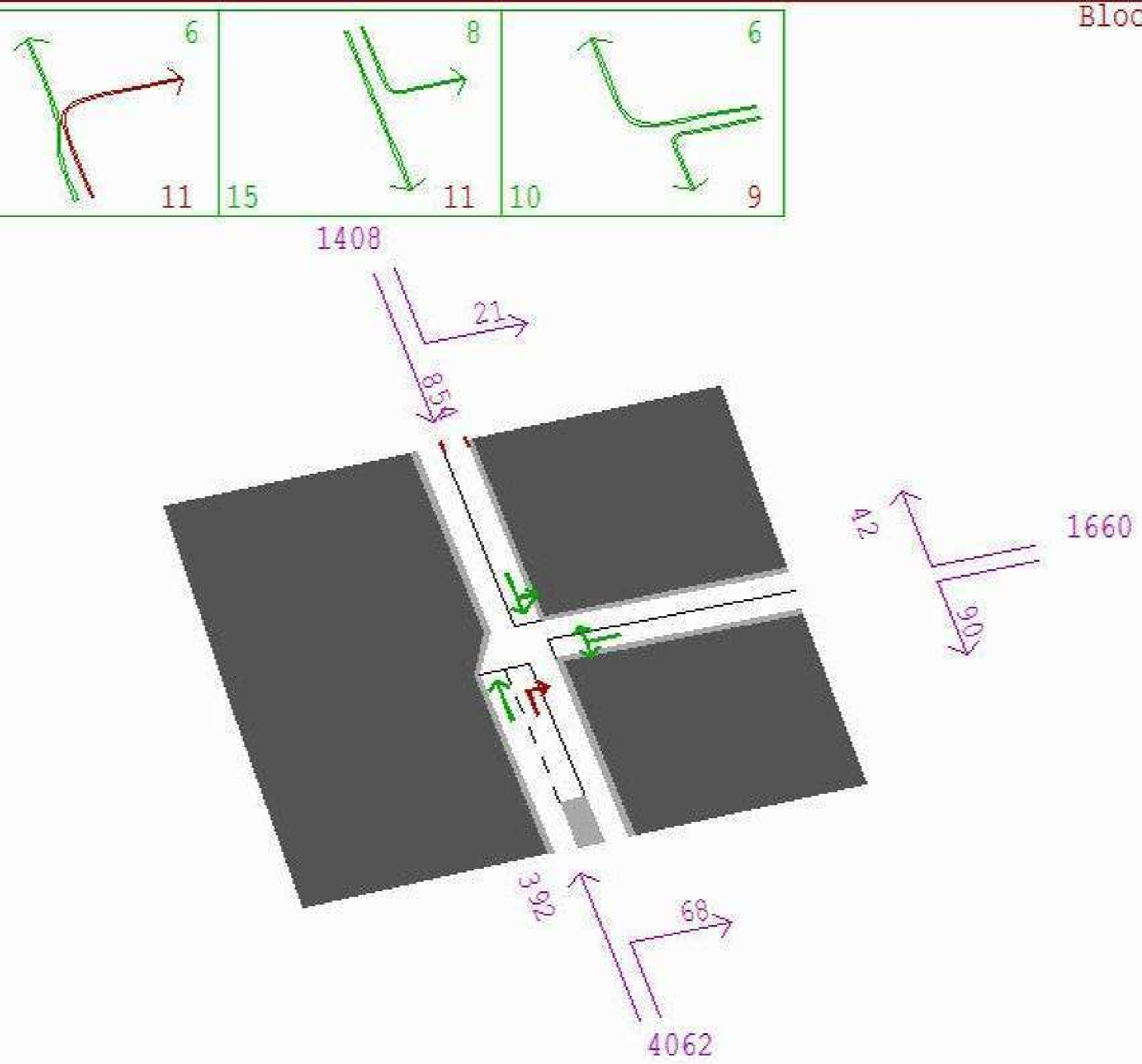
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Blocks Back

Node Graphic
Master Menu:

NODE 1410

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

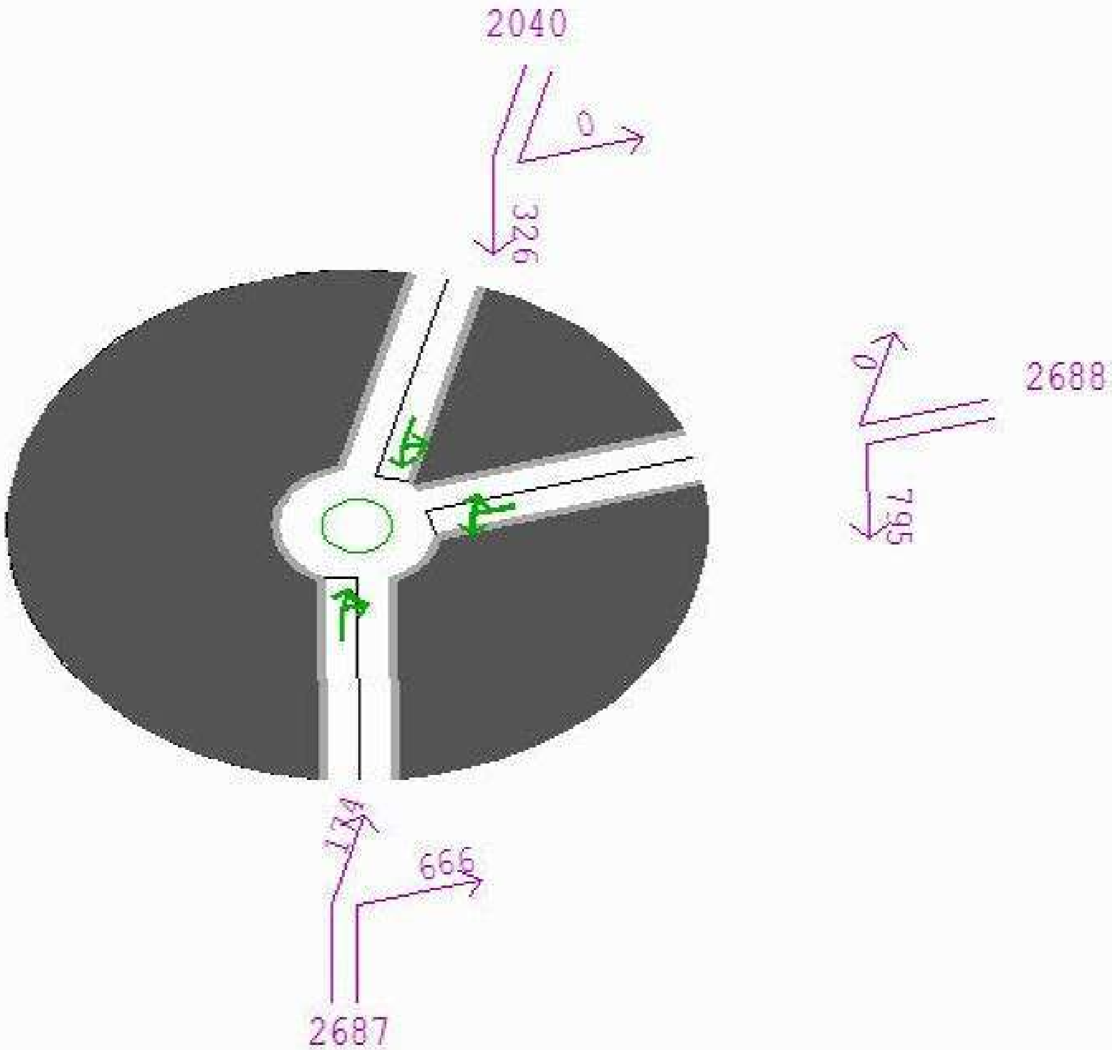
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 1410



Node Graphic
Master Menu:

NODE 1654

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

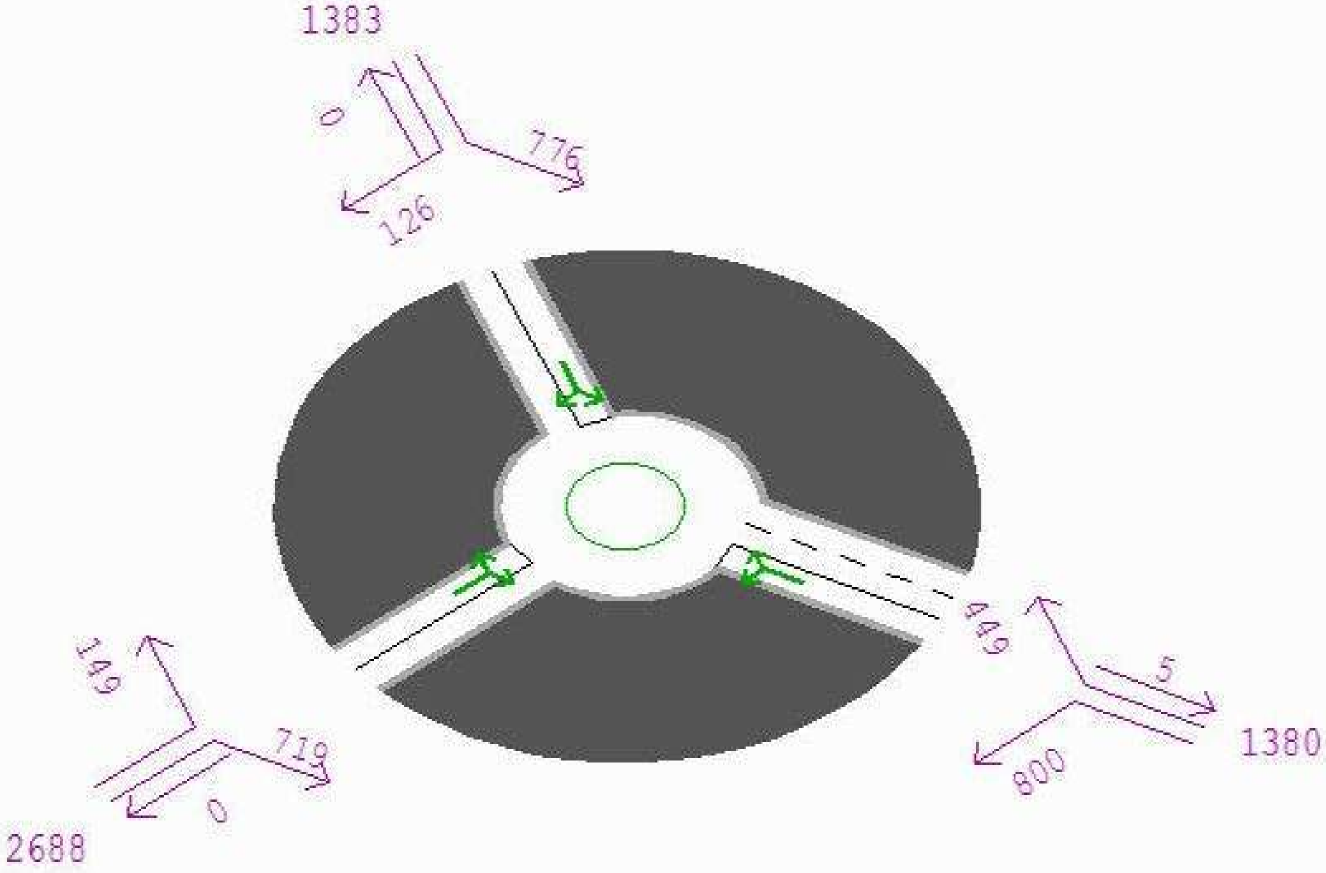
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 1654



Node-based
Data display
Choices:

Current data

Arrive flow

New choice:

Cancel (none X
nOde data ON
Link data >
Turn data >

Display mode S
Arrows

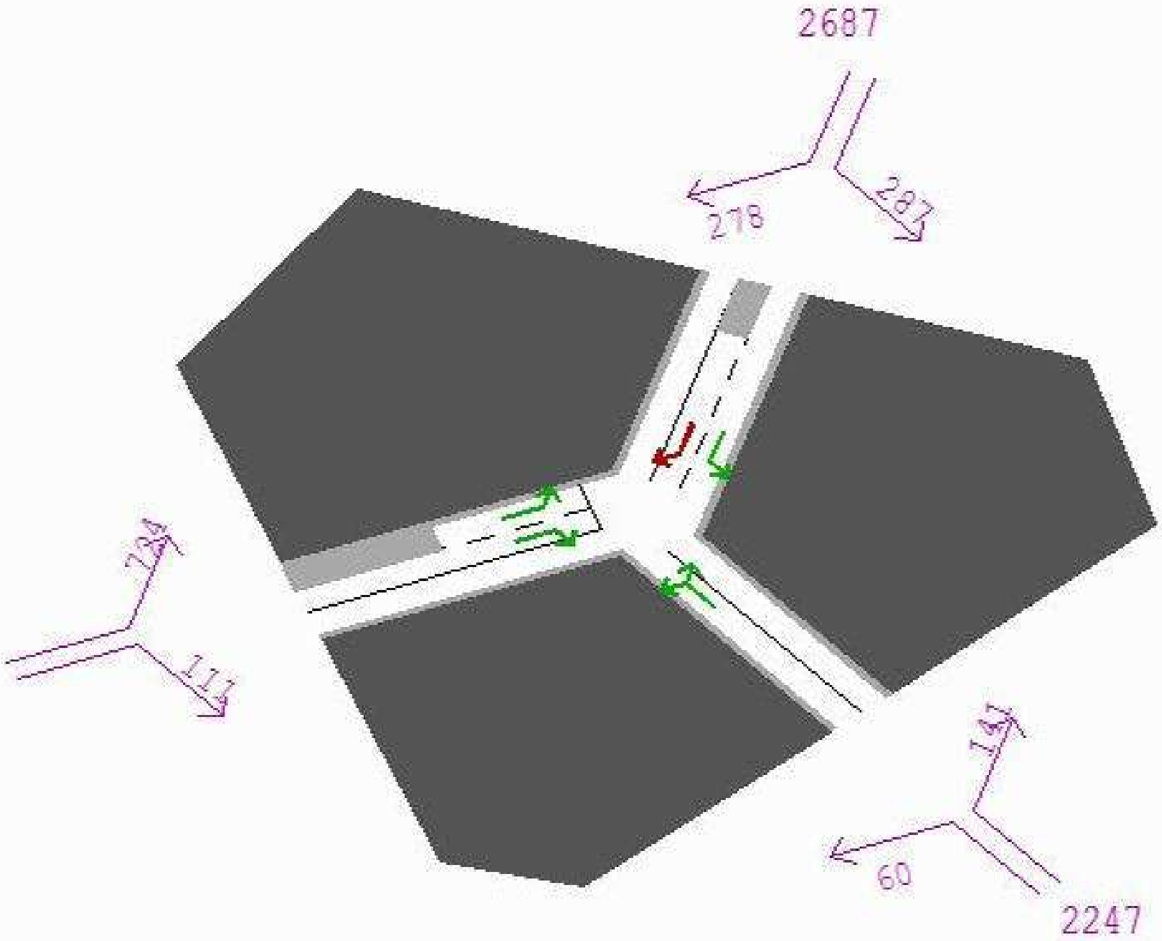
Arrow type: S
line+number

Banner >

Q - Return

+ Menu bar!

Node 1665



Node 1678

Node Graphic
Master Menu:

NODE 1678

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
2 Warnings
1 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

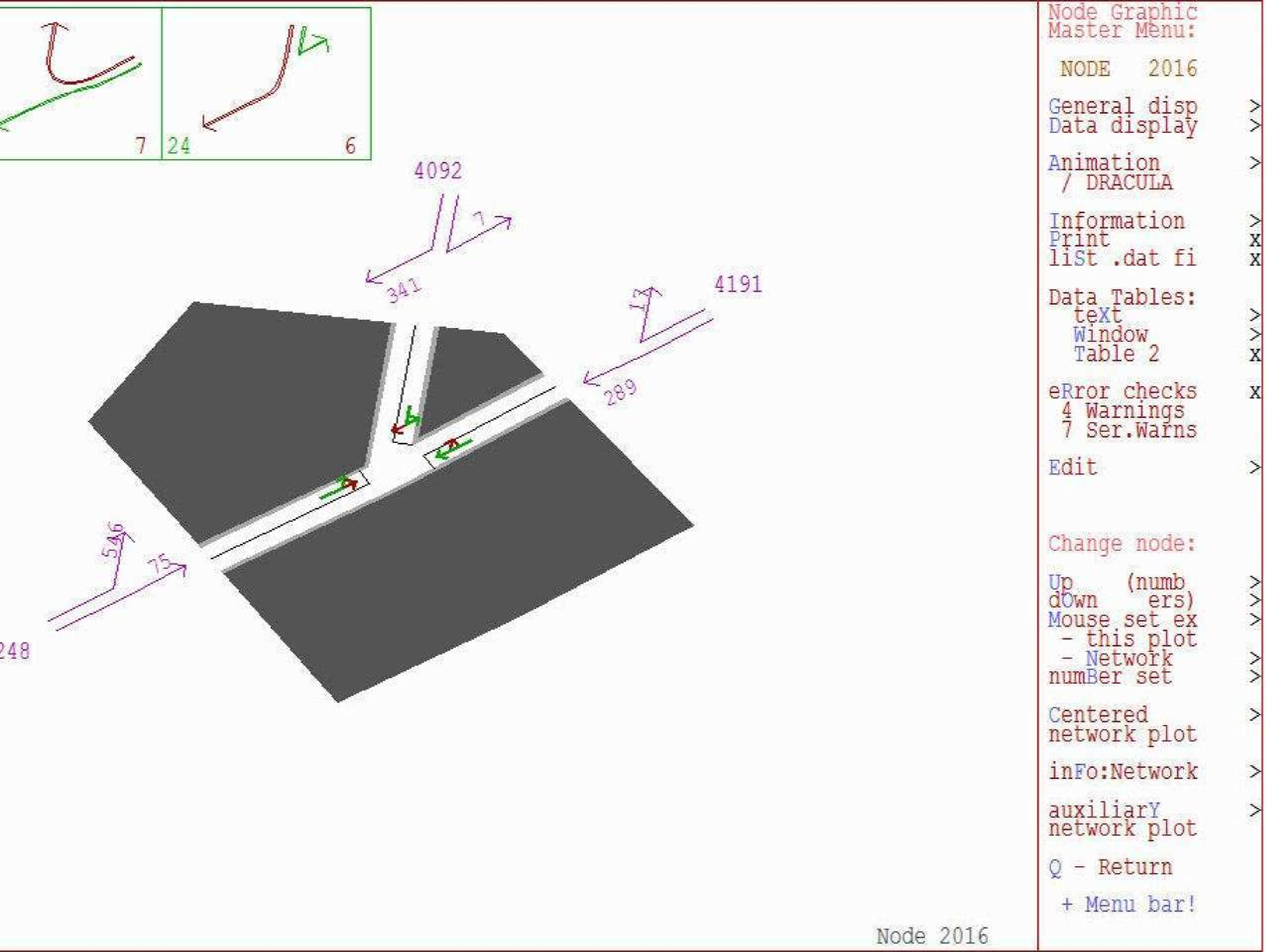
Centered >
network plot

inFo:Network >

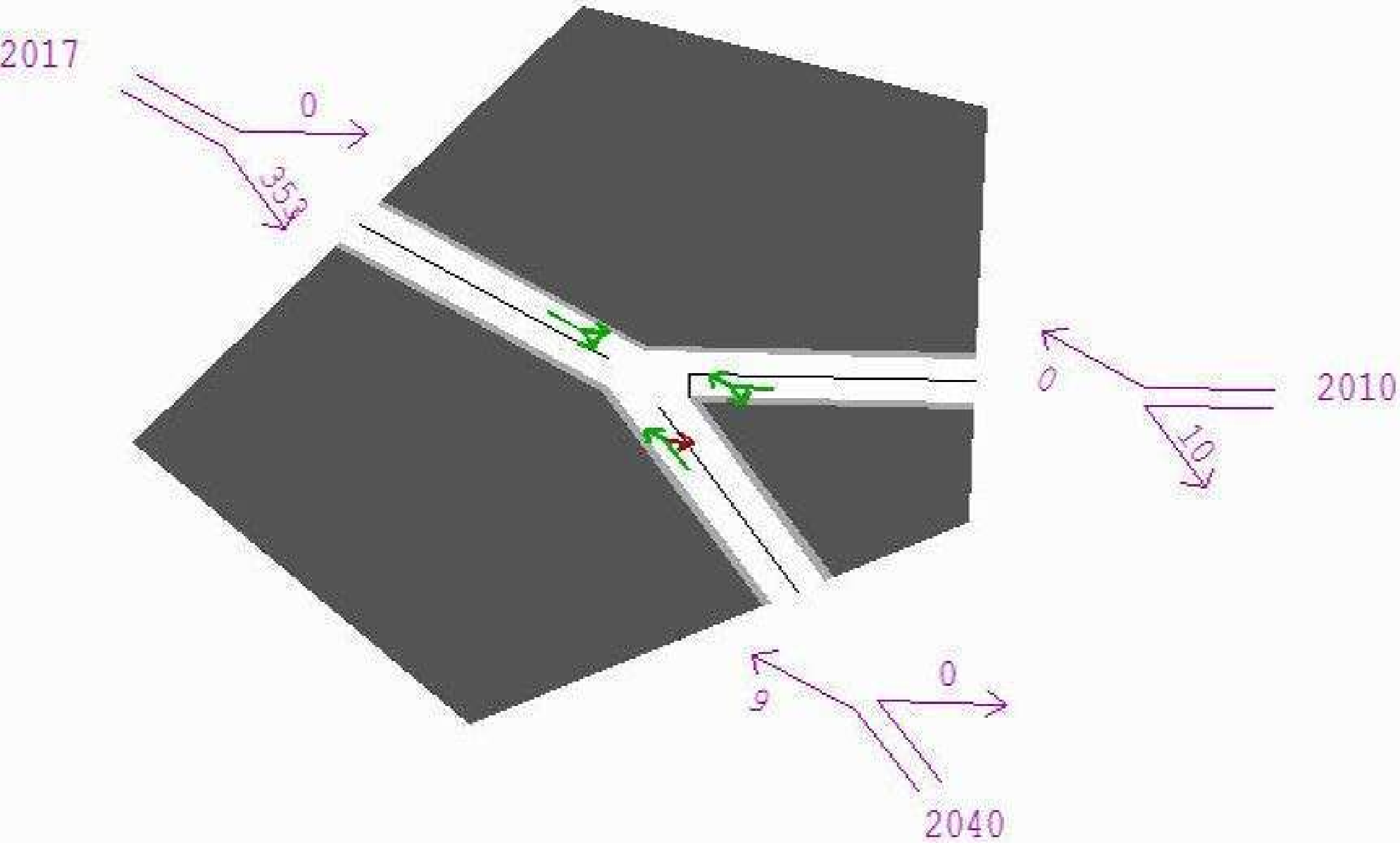
auxiliarY >
network plot

Q - Return

+ Menu bar!



7
24
6
4092
7
341
4191
13
289
546
75
248
Node 2016
Node Graphic
Master Menu:
NODE 2016
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print x
liSt .dat fi x
Data Tables:
teXt >
Window >
Table 2 x
eRror checks x
4 Warnings
7 Ser.Warns
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!



Node 2756

Node Graphic
Master Menu:

NODE 2756

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings
2 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
\- this plot
\- Network >
numBer set >

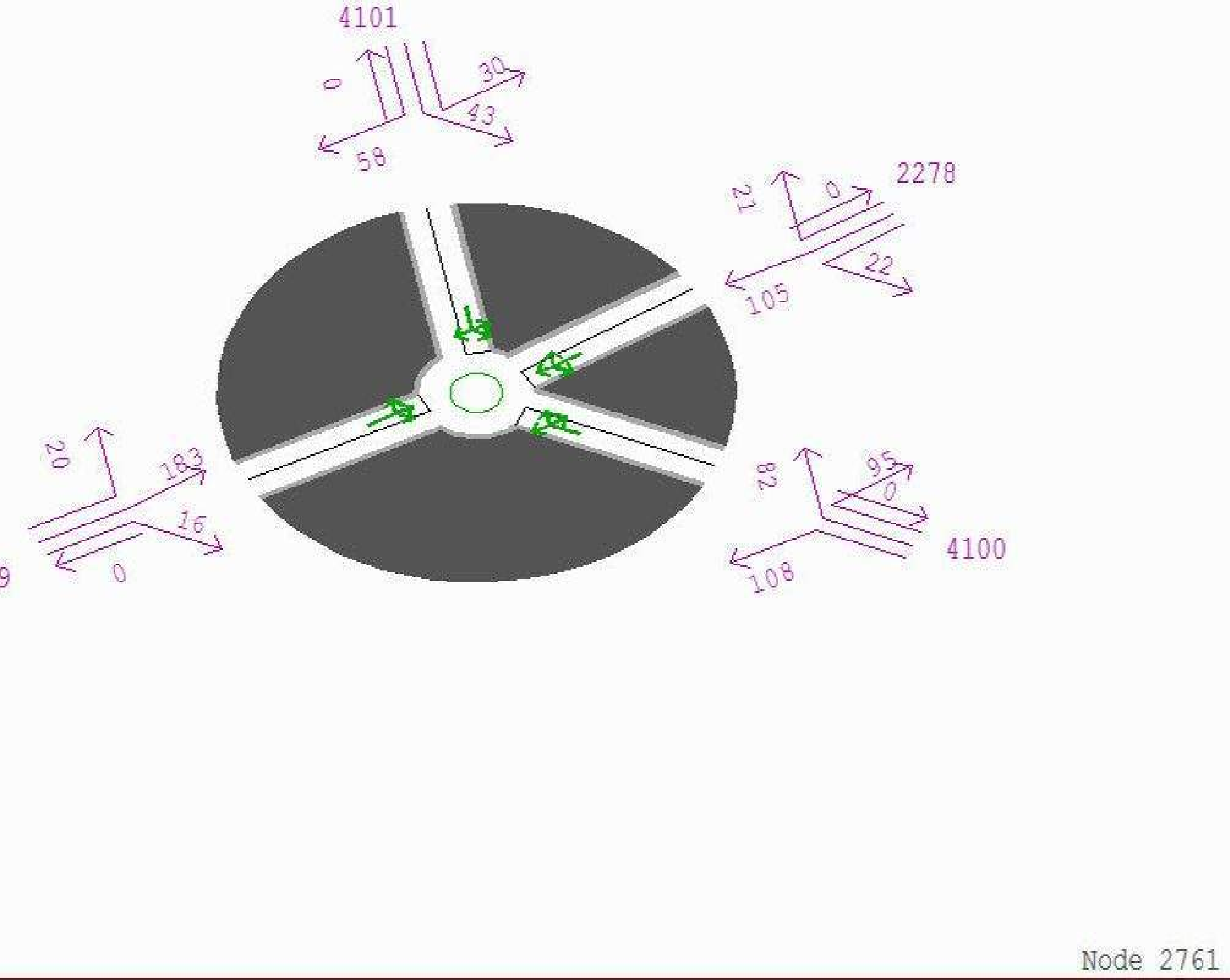
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

\+ Menu bar!



Node Graphic
Master Menu:

NODE 2761

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

No errors

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

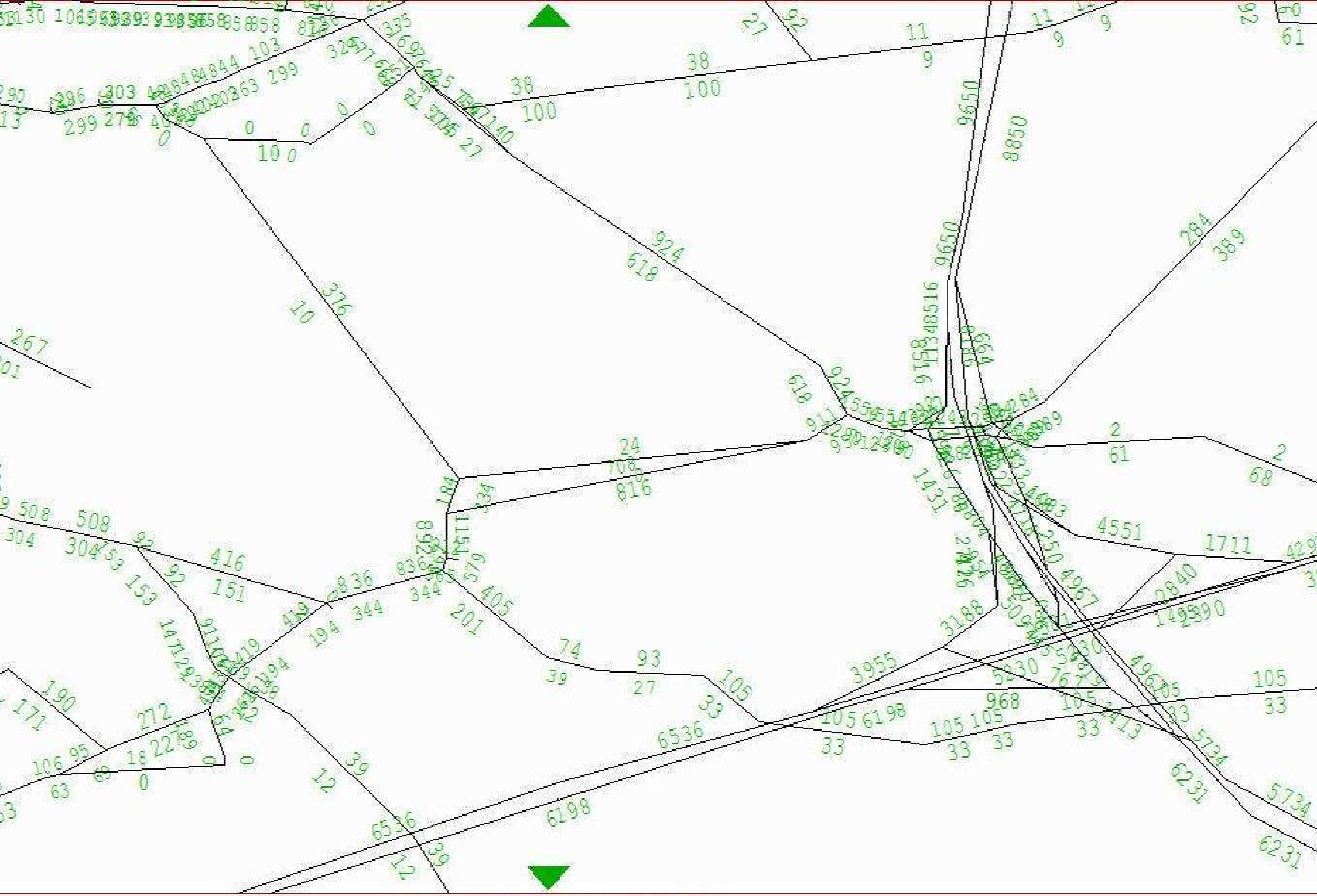
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



38
100
38
100
11
9
11
9
9650
8850
924
618
376
10
267
284
389
9650
618
924
911
24
708
816
184
334
508
304
416
151
92
153
836
344
194
405
201
74
39
93
27
105
33
3955
3188
2
61
2
68
4551
1711
1431
4967
2840
2390
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33
6536
6198
105
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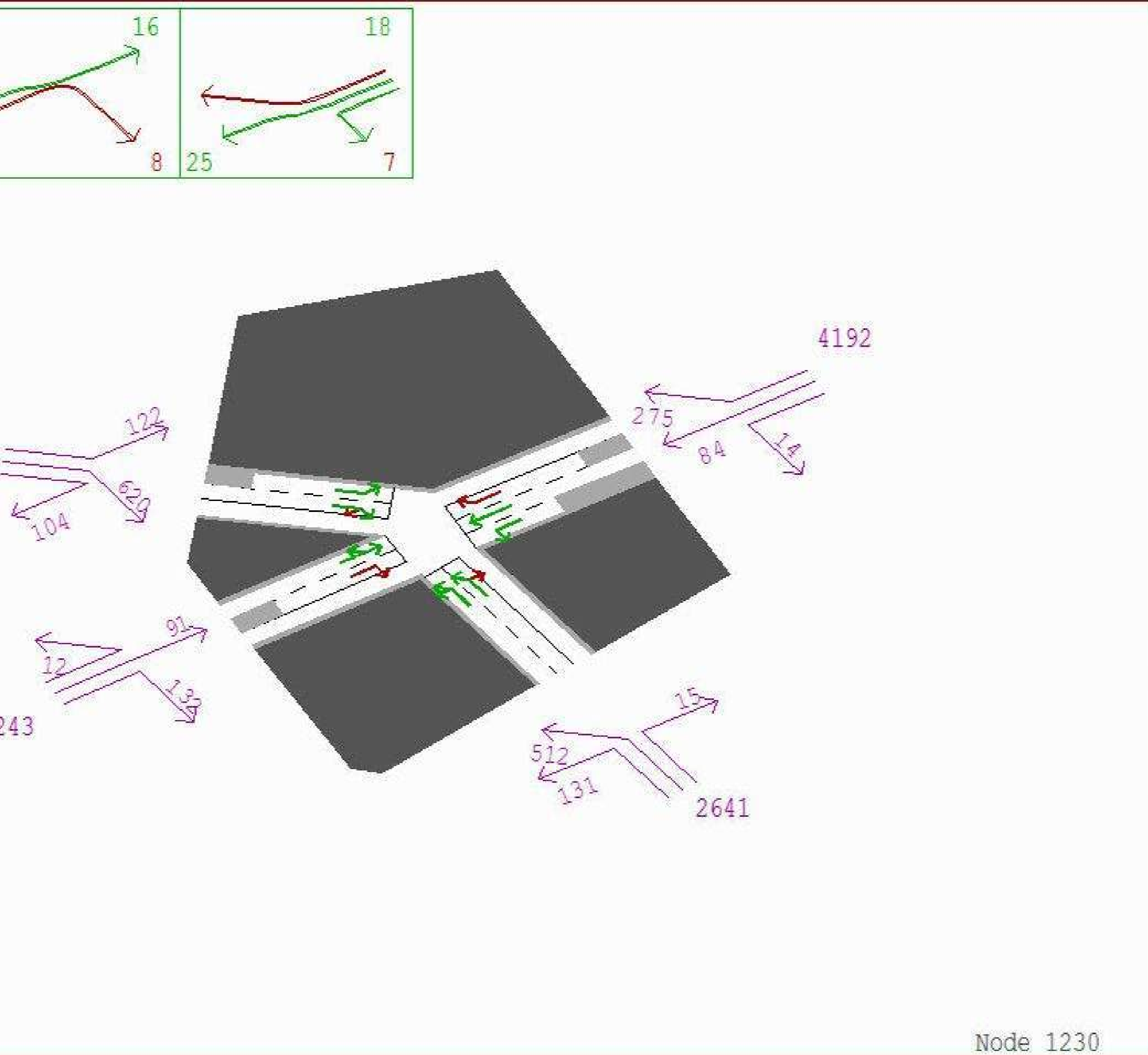
105
33
968
5734
6231
190
171
272
106
63
39
12



Node Graphic
Master Menu:

NODE 1230

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
4 Warnings
6 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

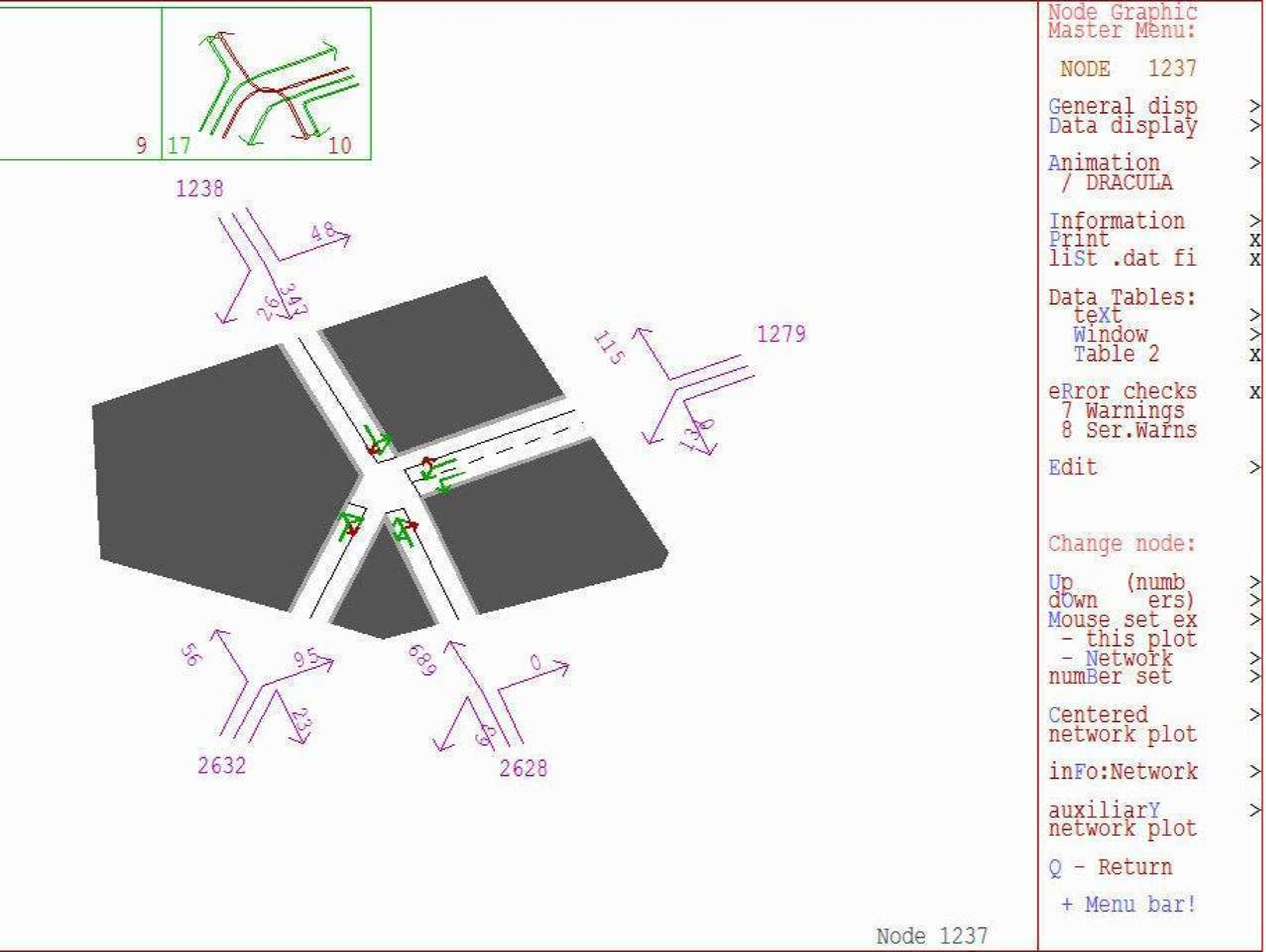
Centered >
network plot

inFo:Network >

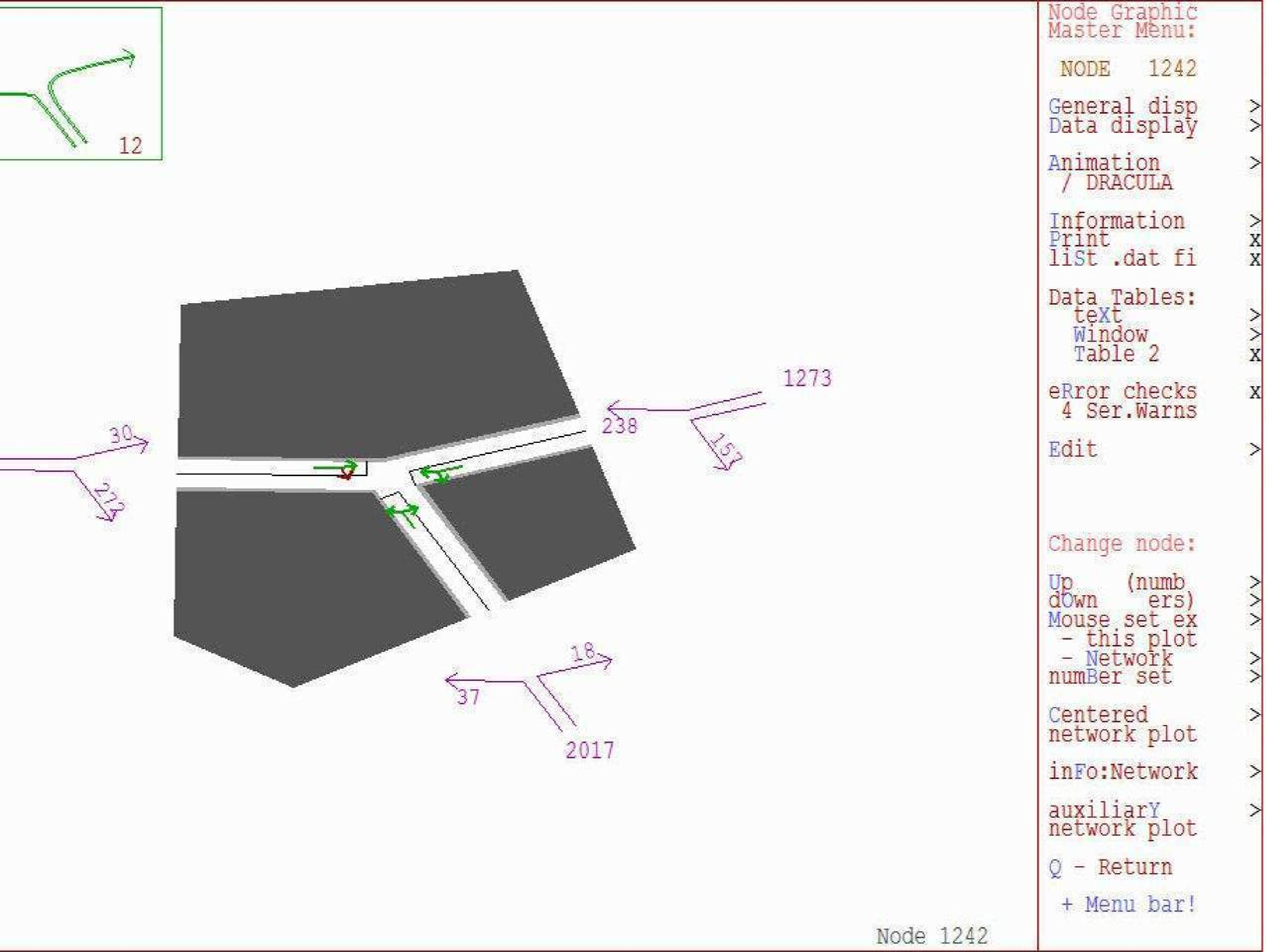
auxiliarY >
network plot

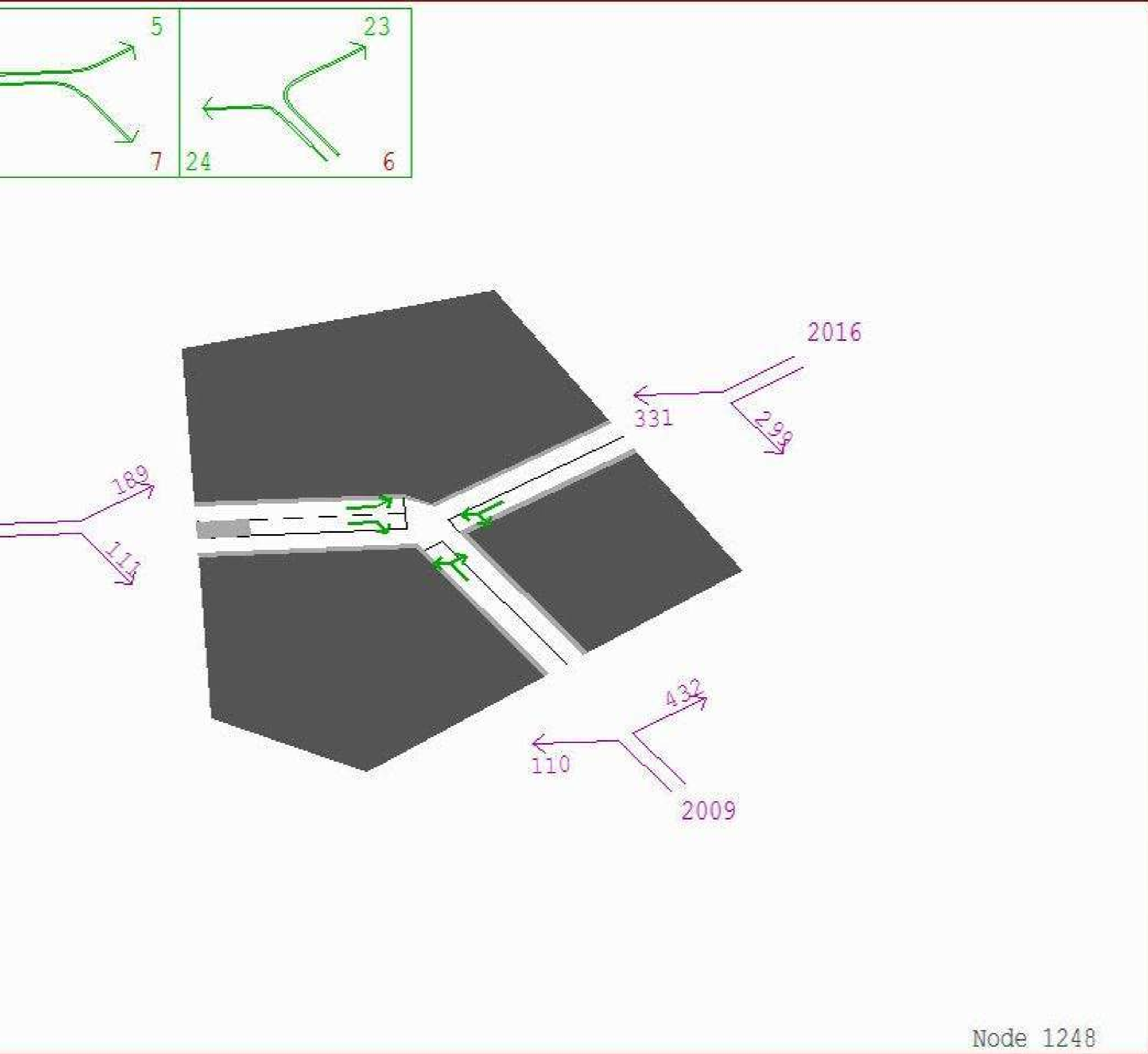
Q - Return

+ Menu bar!



Node Graphic
Master Menu:
NODE 1237
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print x
liSt .dat fi x
Data Tables:
teXt >
Window >
Table 2 x
eRror checks x
7 Warnings
8 Ser.Warns
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!
Node 1237
1238
1279
2632
2628
9
17
10
48
26
343
115
130
56
95
23
689
0
65


12
1273
238
151
30
272
18
37
2017
Node 1242
Node Graphic
Master Menu:
NODE 1242
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print x
liSt .dat fi x
Data Tables:
teXt >
Window >
Table 2 x
eRror checks x
4 Ser.Warns
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!



Node Graphic
Master Menu:

NODE 1248

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
1 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

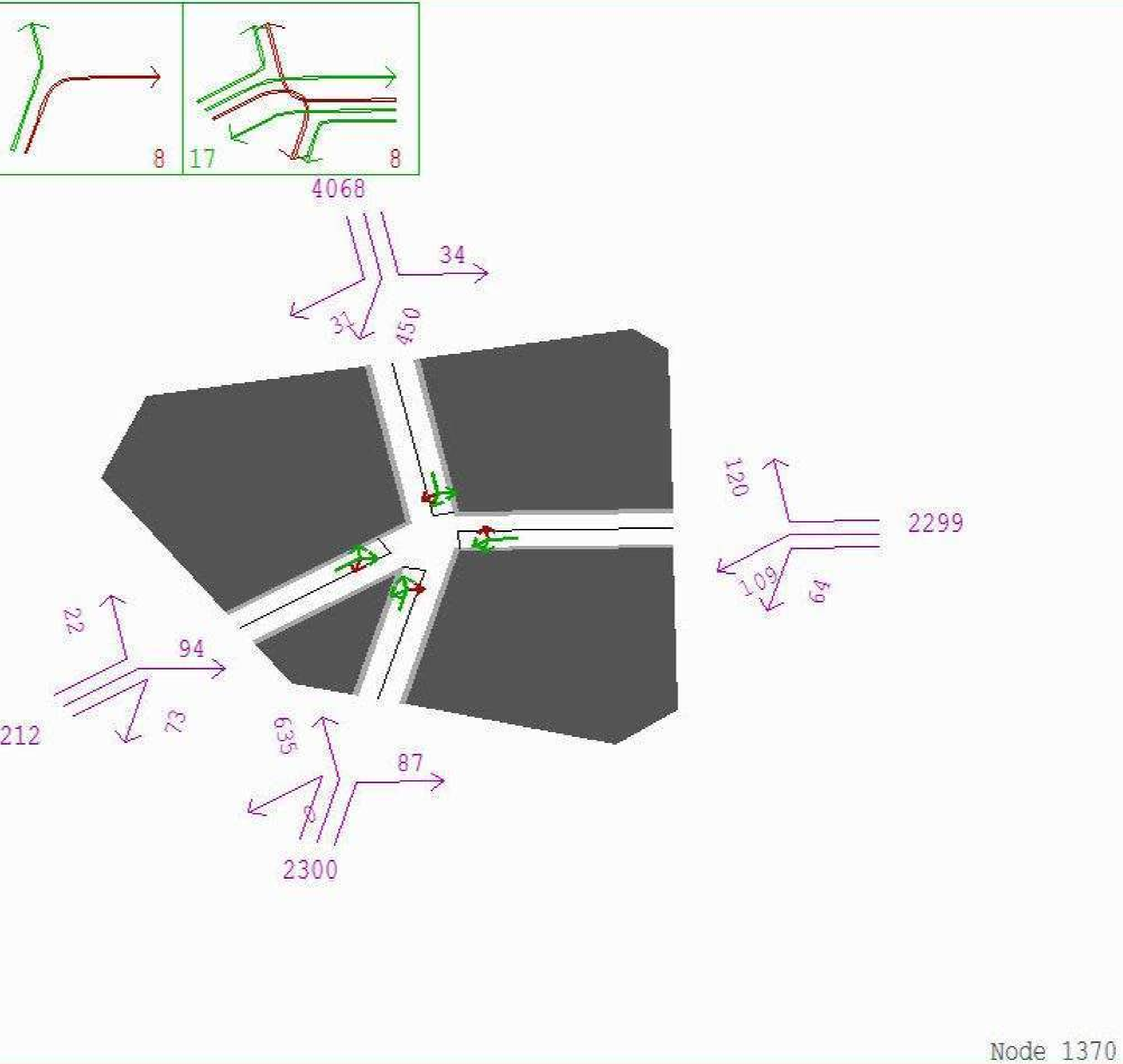
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 1370

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
9 Warnings
8 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

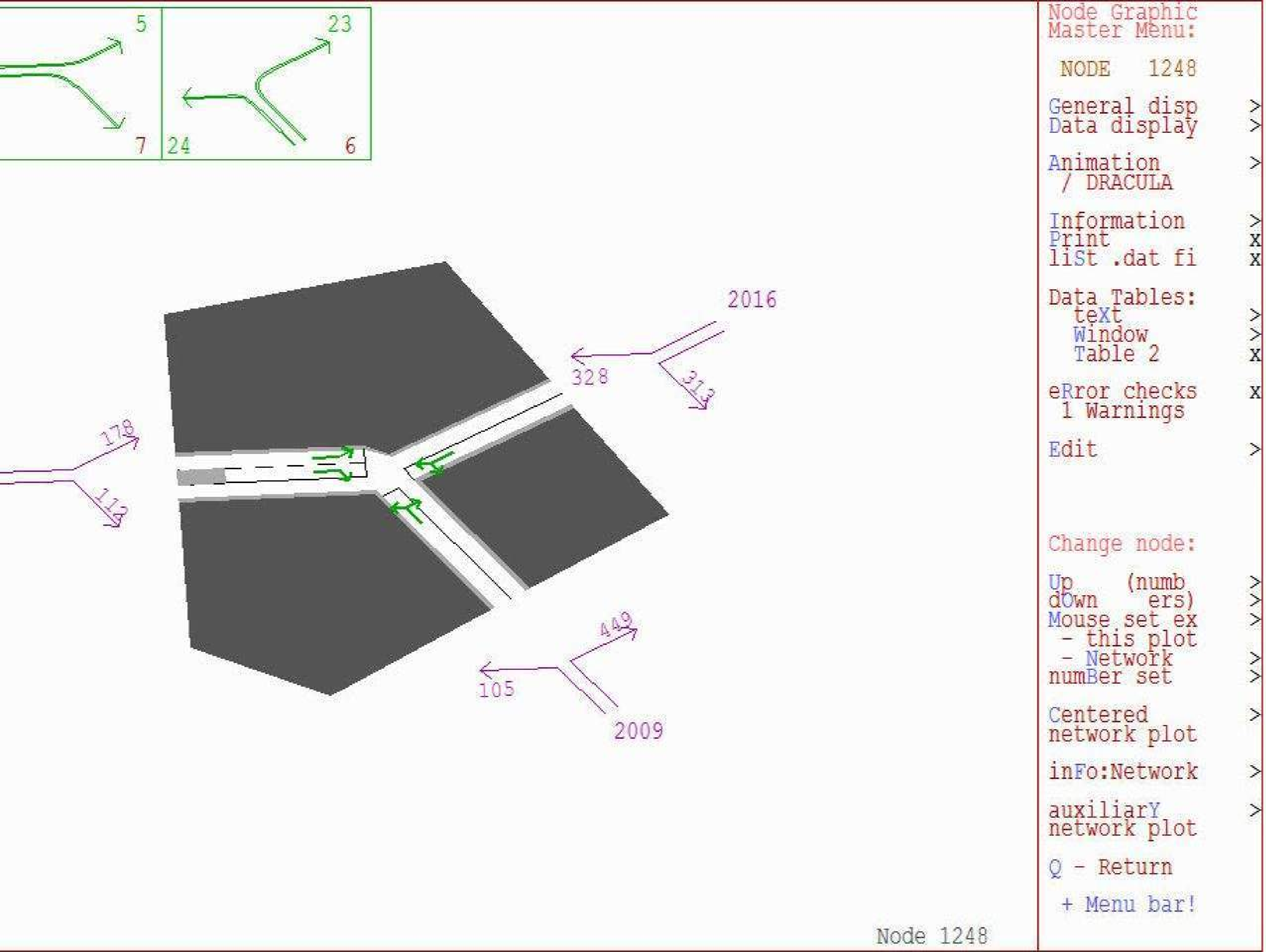
Centered >
network plot

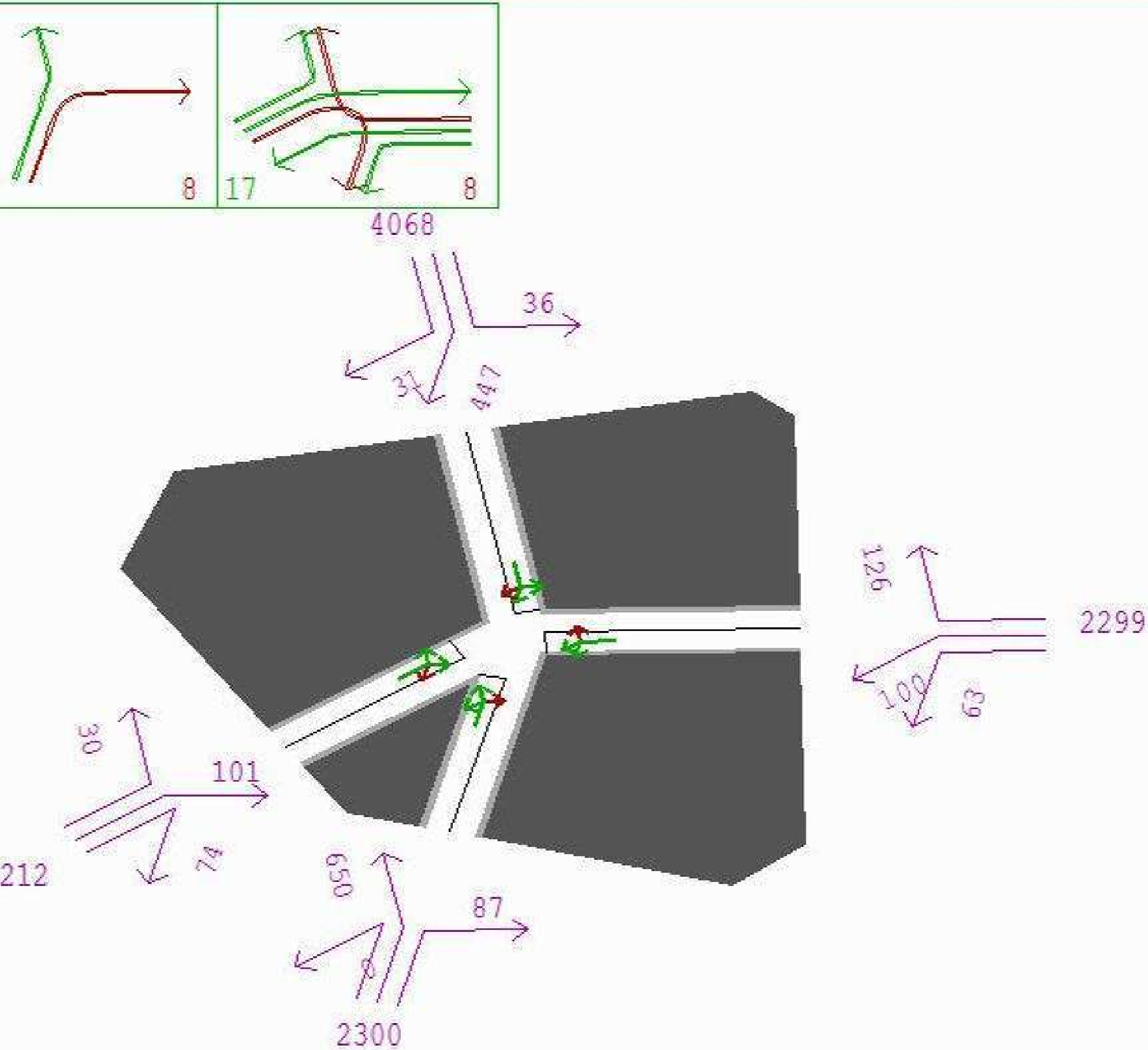
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!


5
23
7
24
6
2016
328
313
178
112
449
105
2009
Node Graphic Master Menu:
NODE 1248
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print x
liSt .dat fi x
Data Tables:
teXt >
Window >
Table 2 x
eRror checks x
1 Warnings
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!
Node 1248



Node 1370

Node Graphic
Master Menu:

NODE 1370

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
9 Warnings
8 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

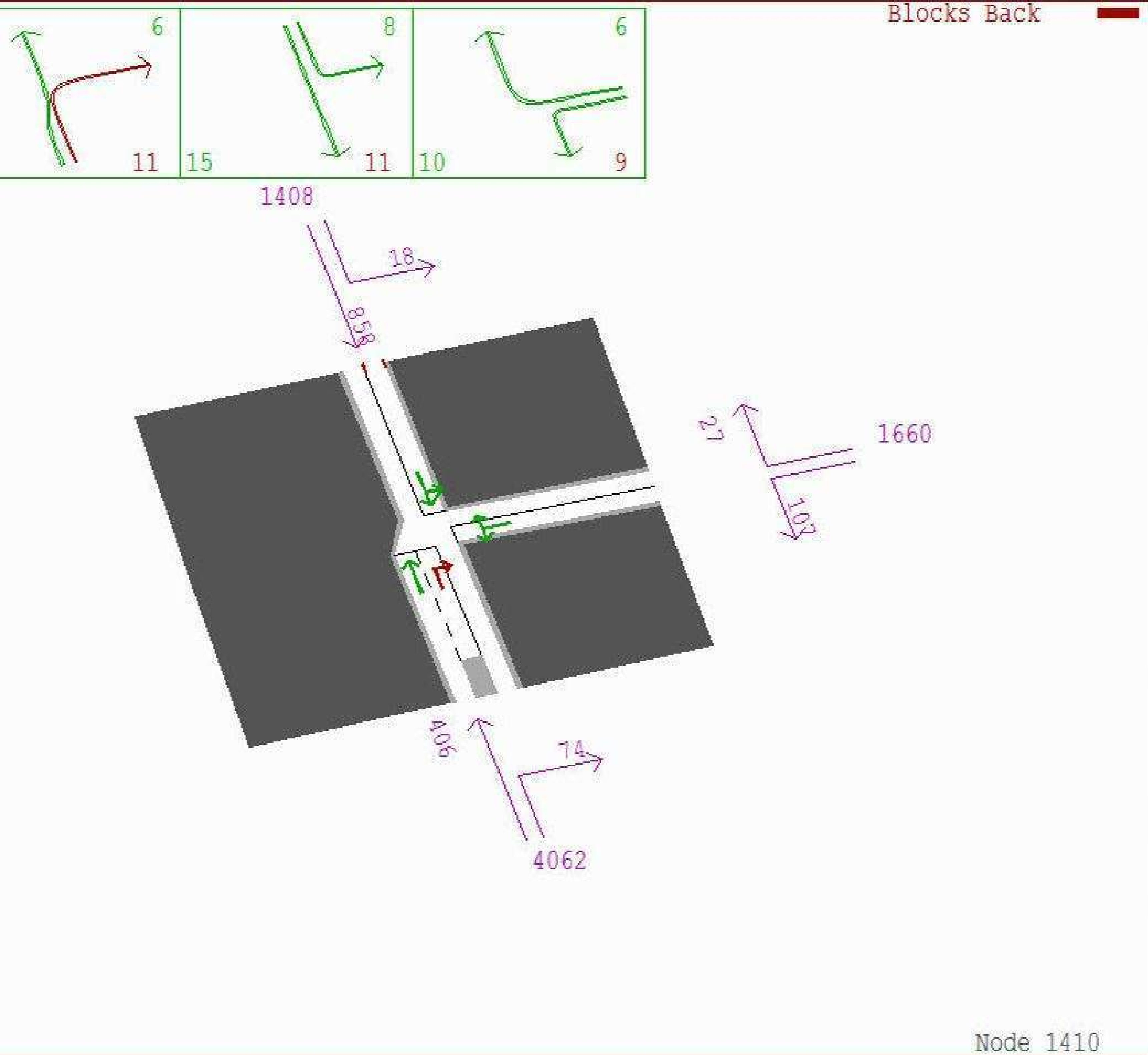
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 1410

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
3 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

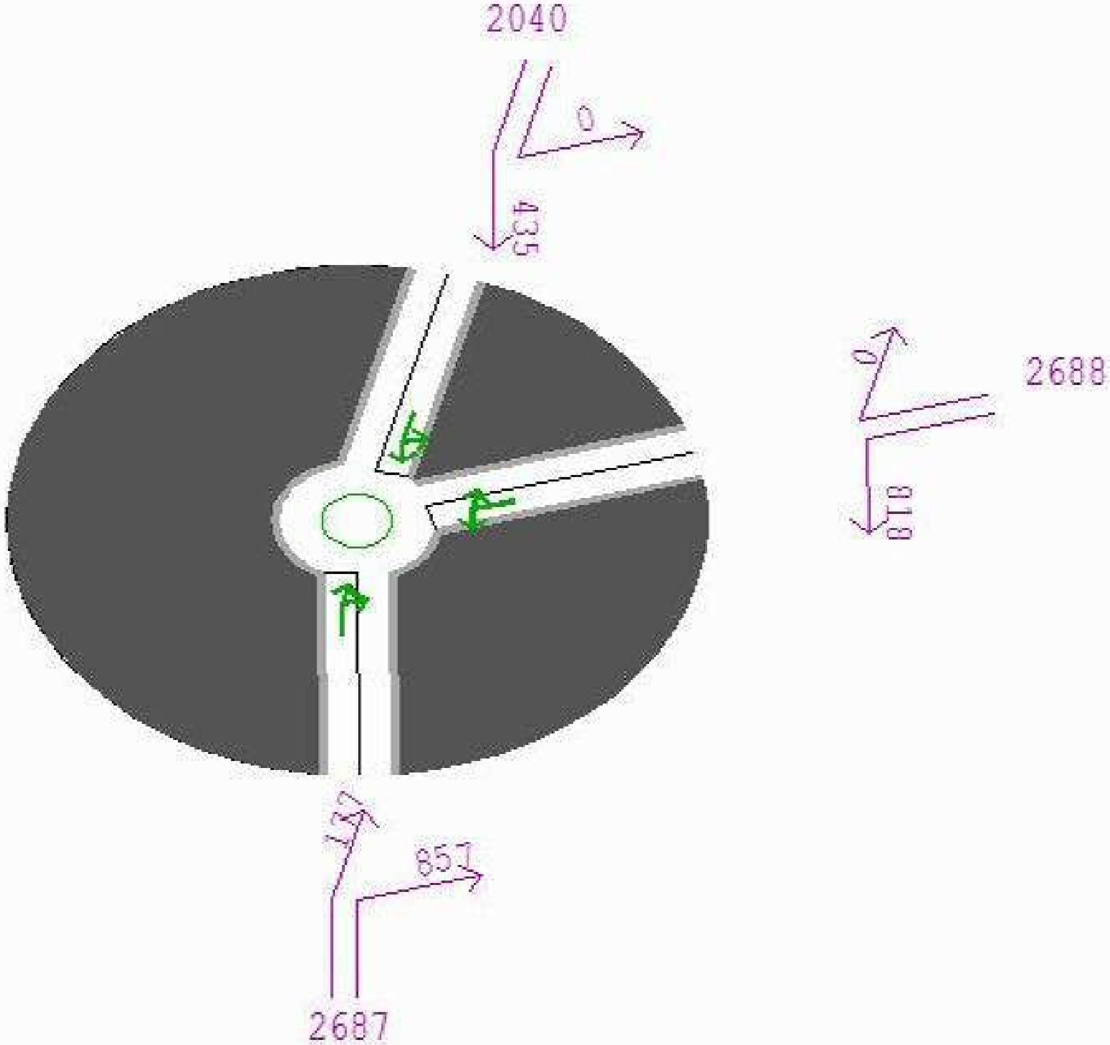
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 1654

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

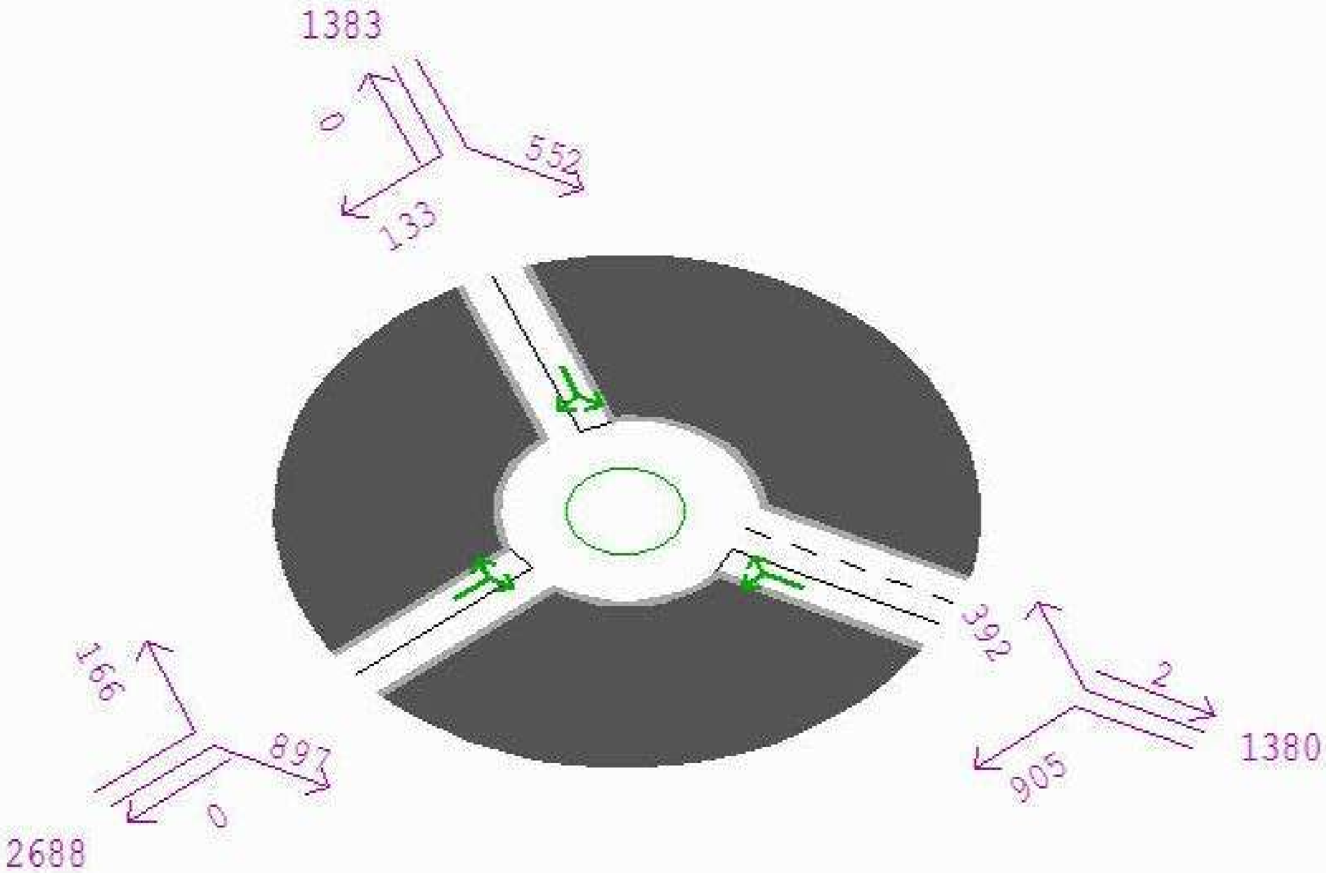
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 1654



Node 1665

Node-based
Data display
Choices:

Current data

Arrive flow

New choice:

Cancel (none X
nOde data ON
Link data >
Turn data >

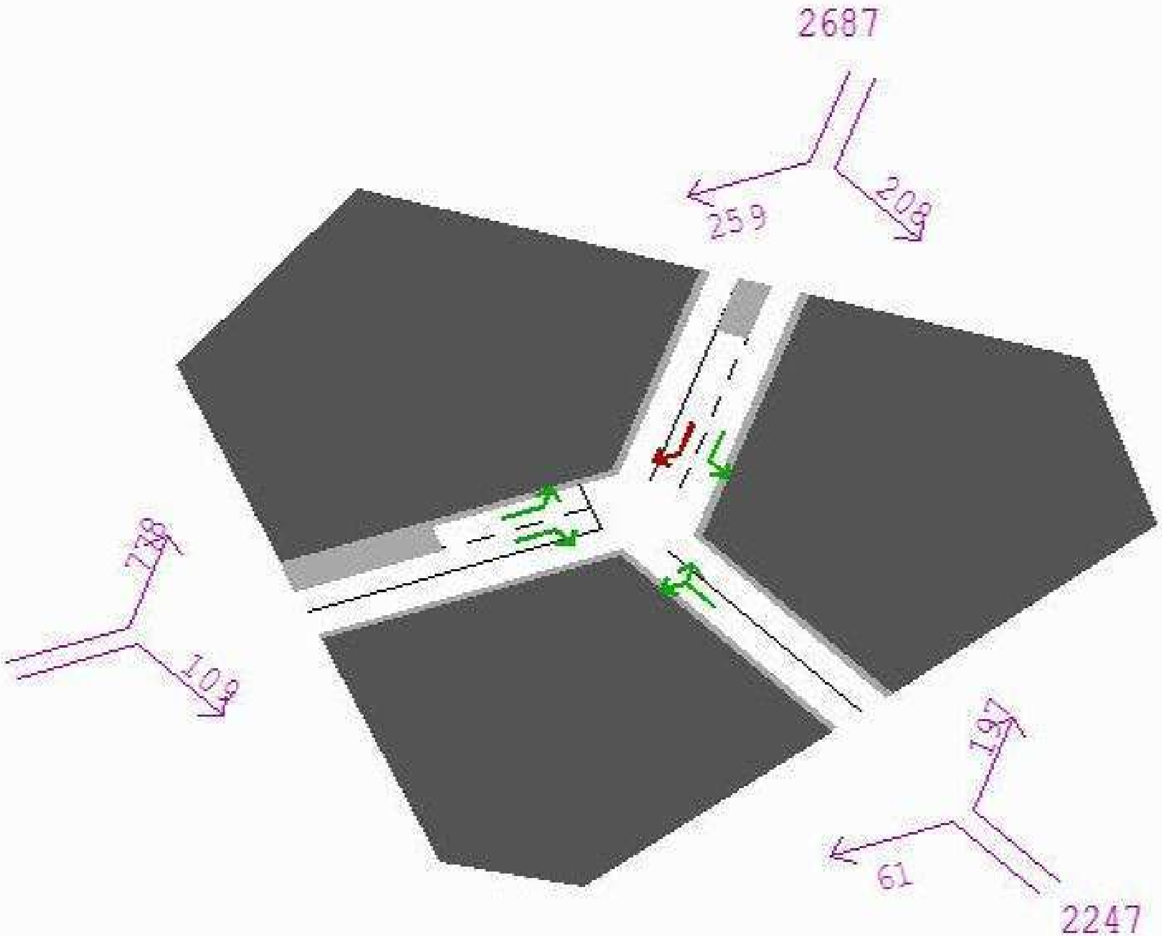
Display mode S
Arrows

Arrow type: S
line+number

Banner >

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 1678

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
2 Warnings
1 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

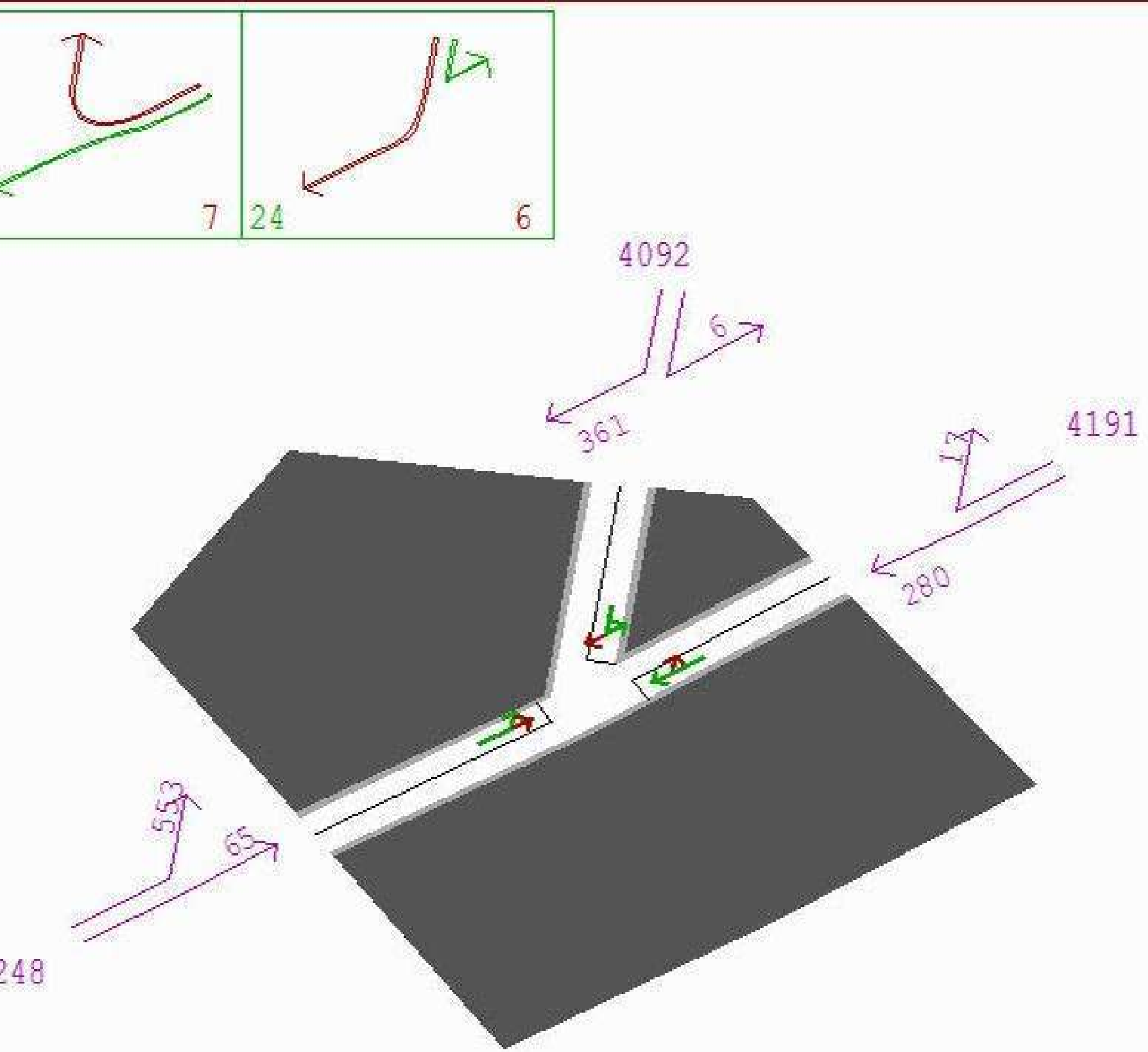
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 1678



Node Graphic
Master Menu:

NODE 2016

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
4 Warnings
7 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

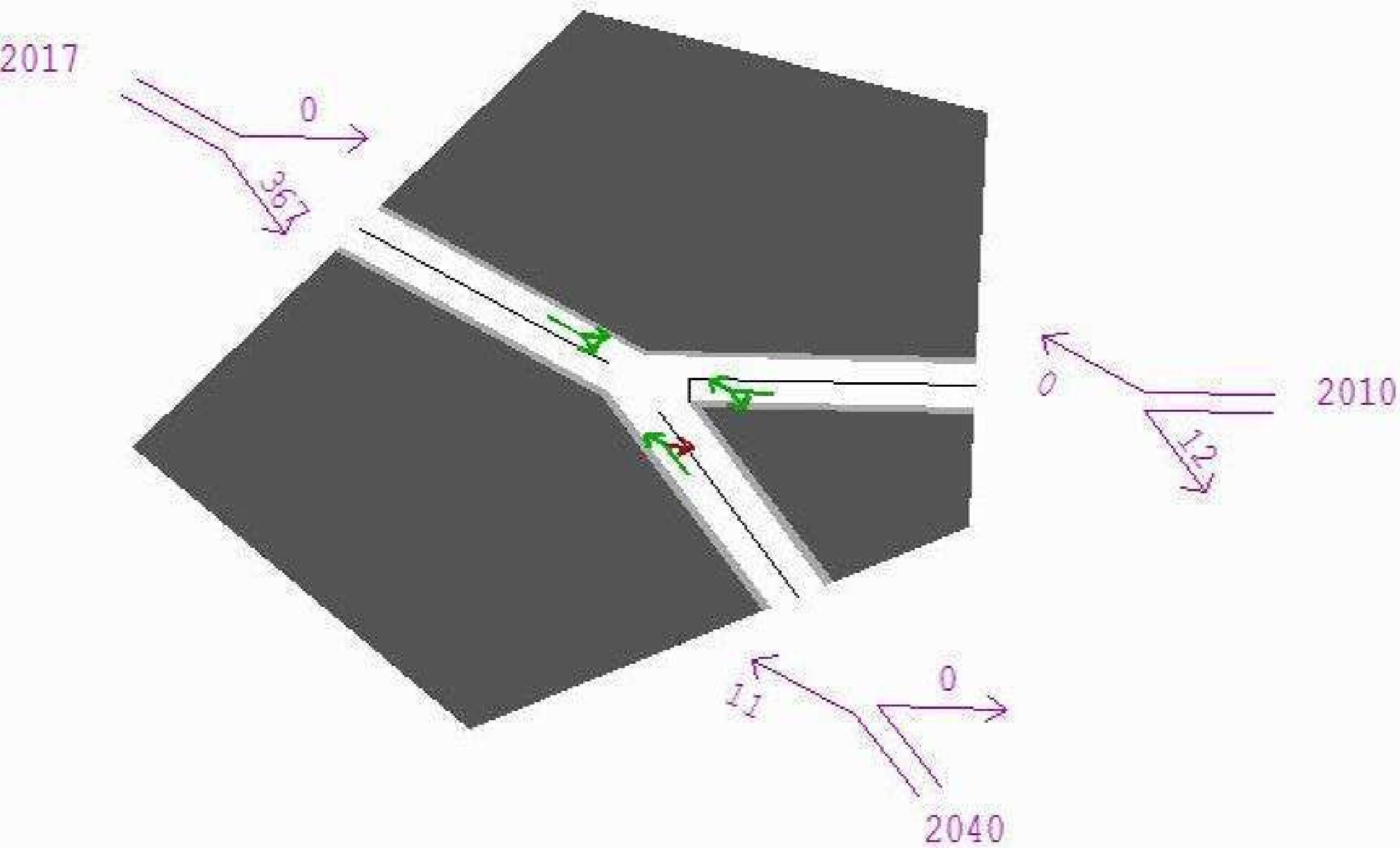
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 2016



Node Graphic
Master Menu:

NODE 2756

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings
2 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

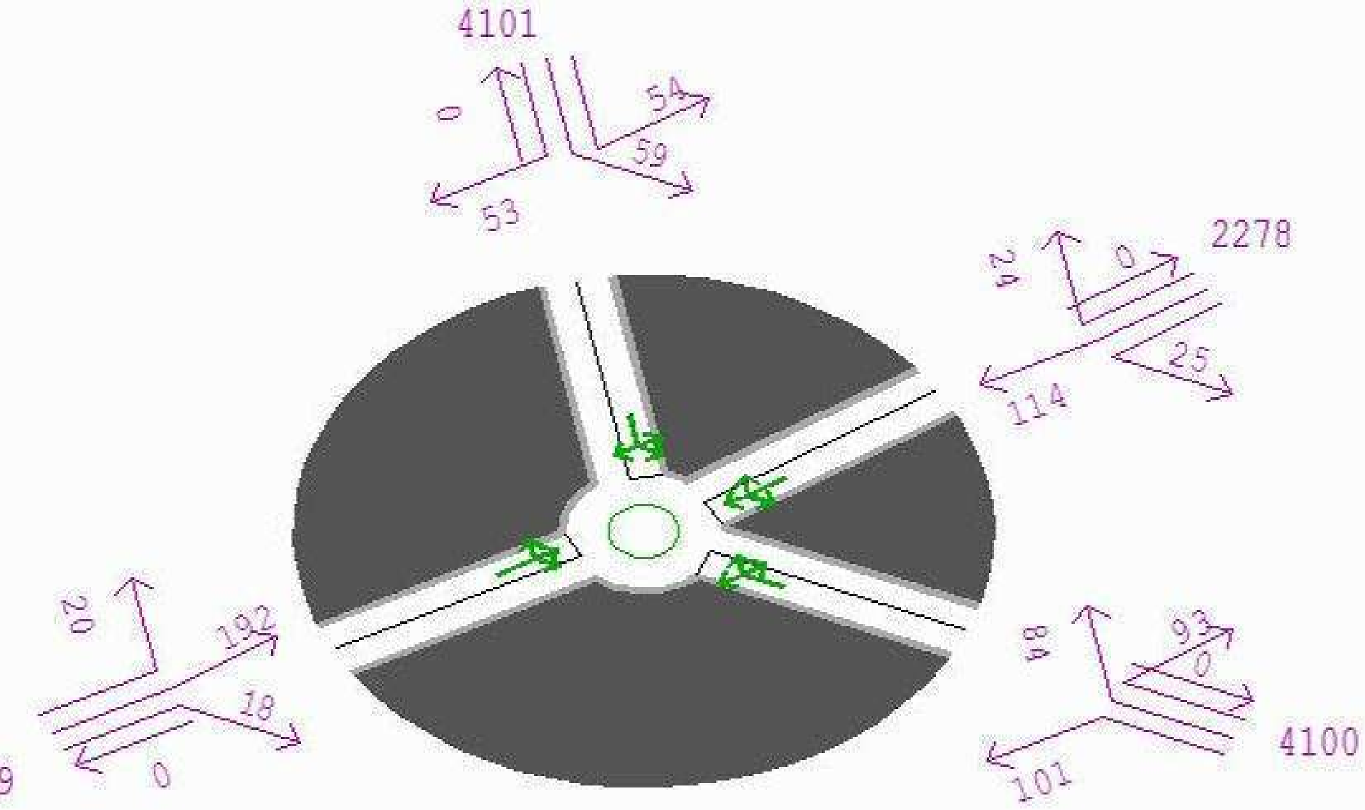
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 2756



Node 2761

Node Graphic
Master Menu:

NODE 2761

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

No errors

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

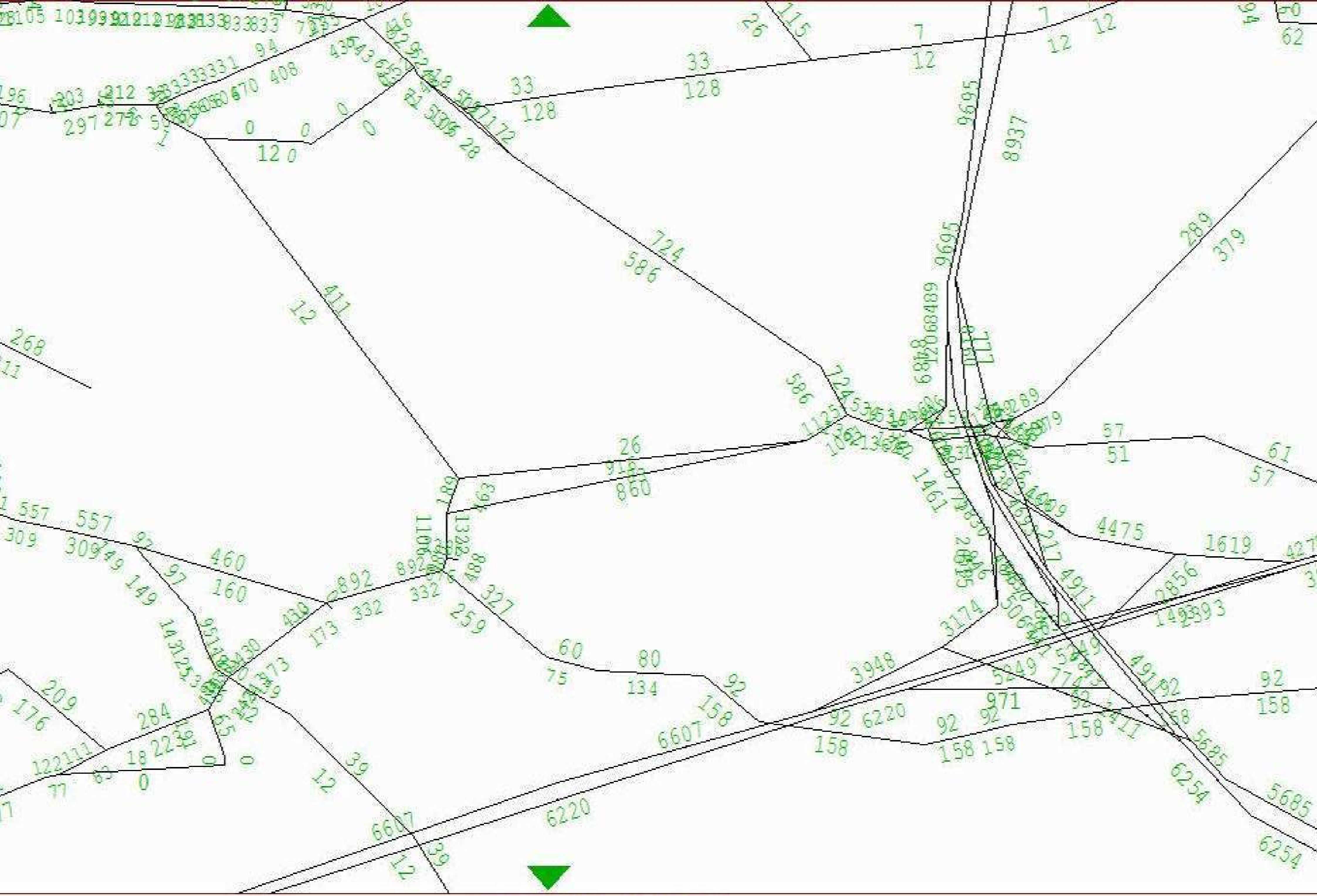
Centered >
network plot

inFo:Network >

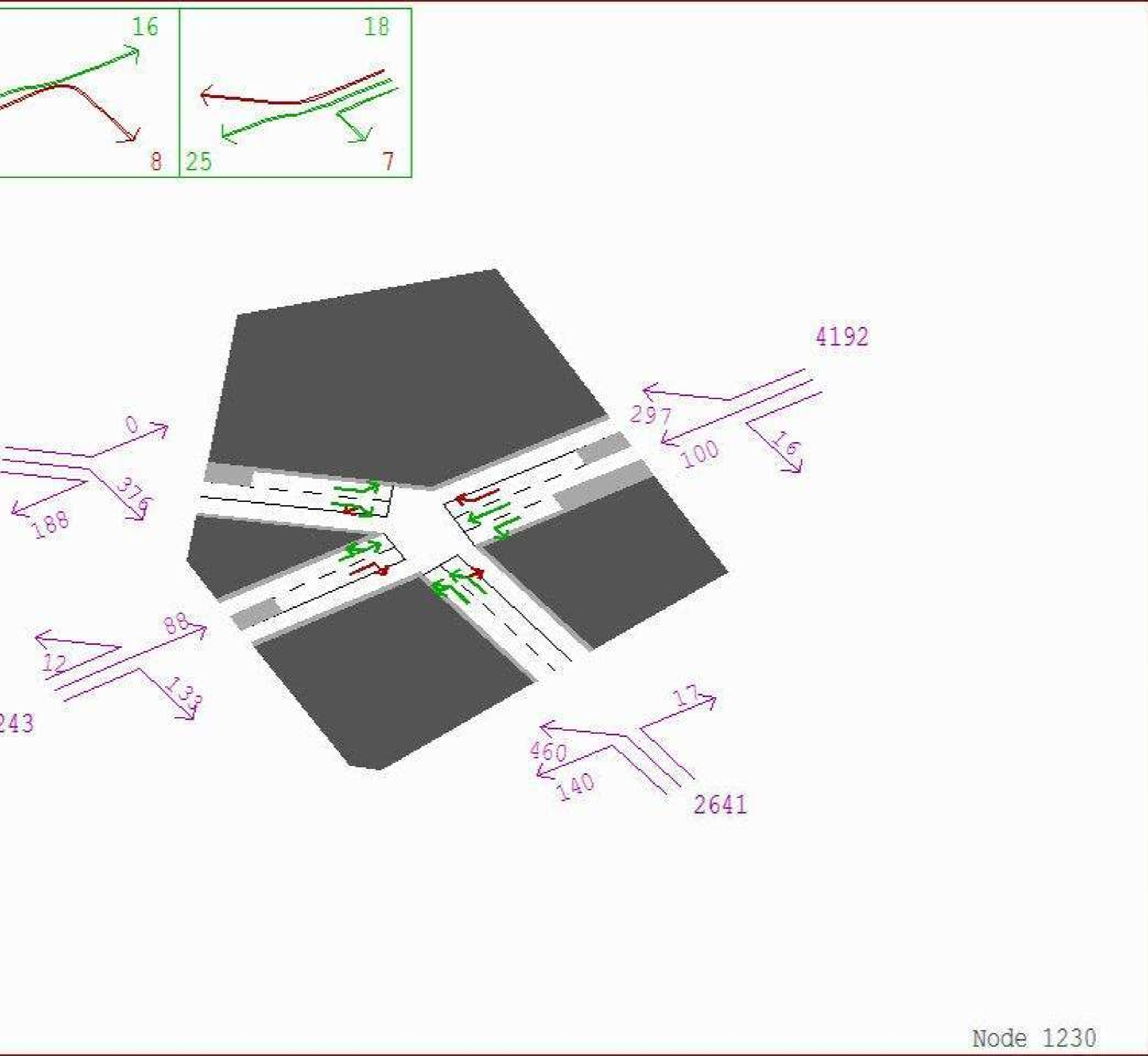
auxiliarY >
network plot

Q - Return

+ Menu bar!



WMMTM 2016 10- 1-19



Node Graphic
Master Menu:

NODE 1230

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
4 Warnings
6 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

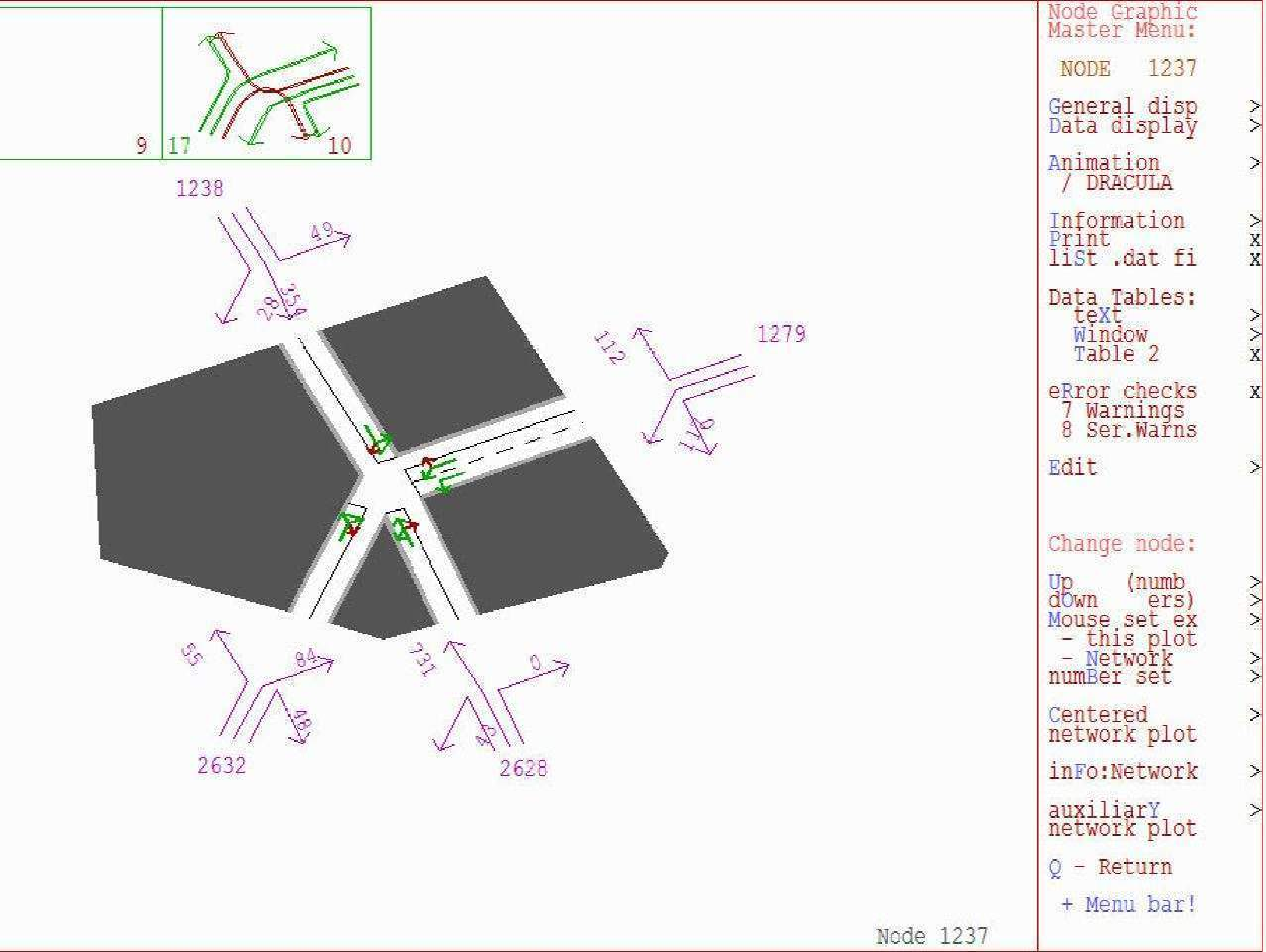
Centered >
network plot

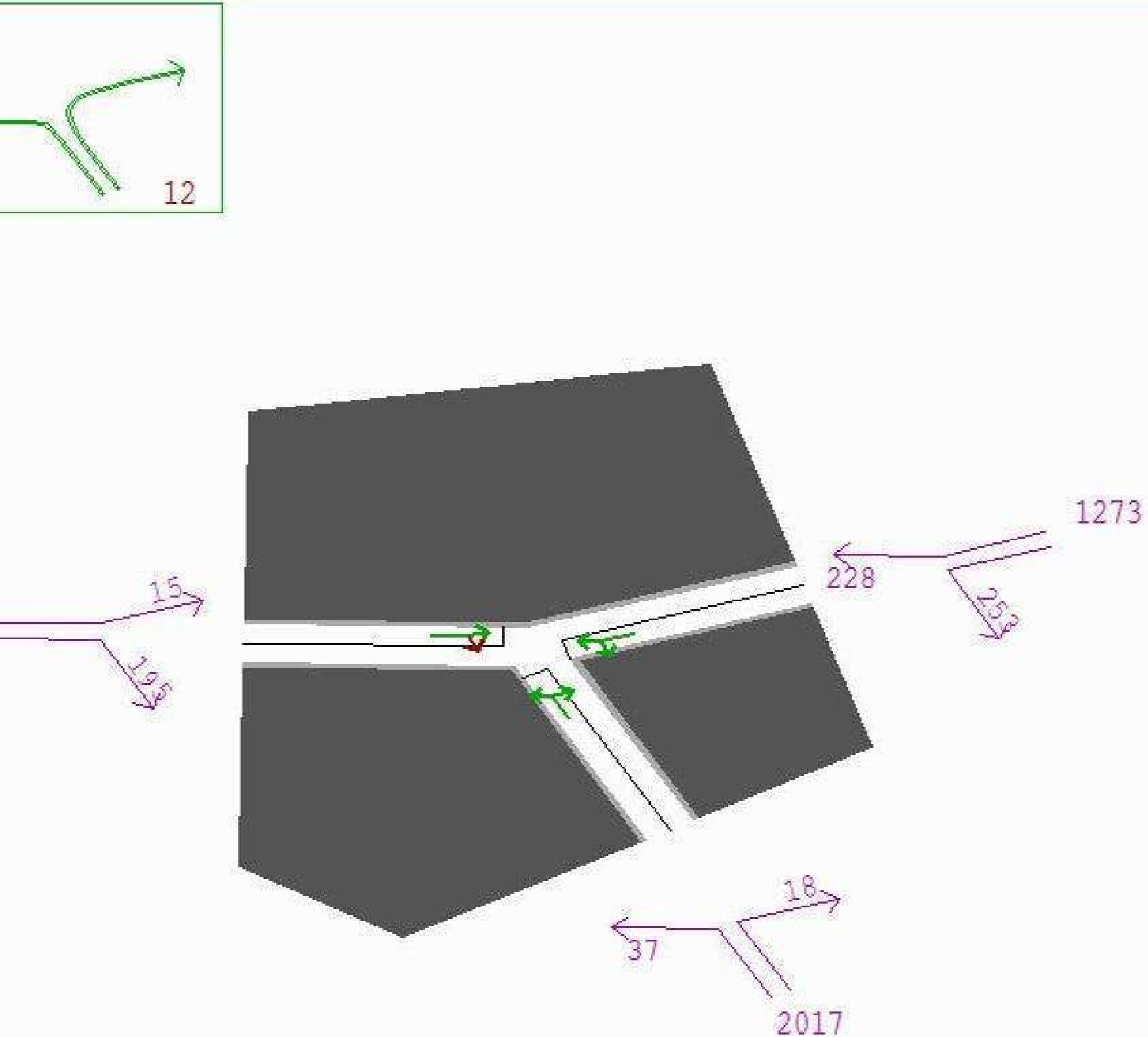
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!


9
17
10
1238
49
354
28
112
1279
9
447
55
84
48
731
0
45
2632
2628
Node 1237
Node Graphic
Master Menu:
NODE 1237
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print X
liSt .dat fi X
Data Tables:
teXt >
Window >
Table 2 X
eRror checks X
7 Warnings
8 Ser.Warns
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!



Node Graphic
Master Menu:

NODE 1242

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
4 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

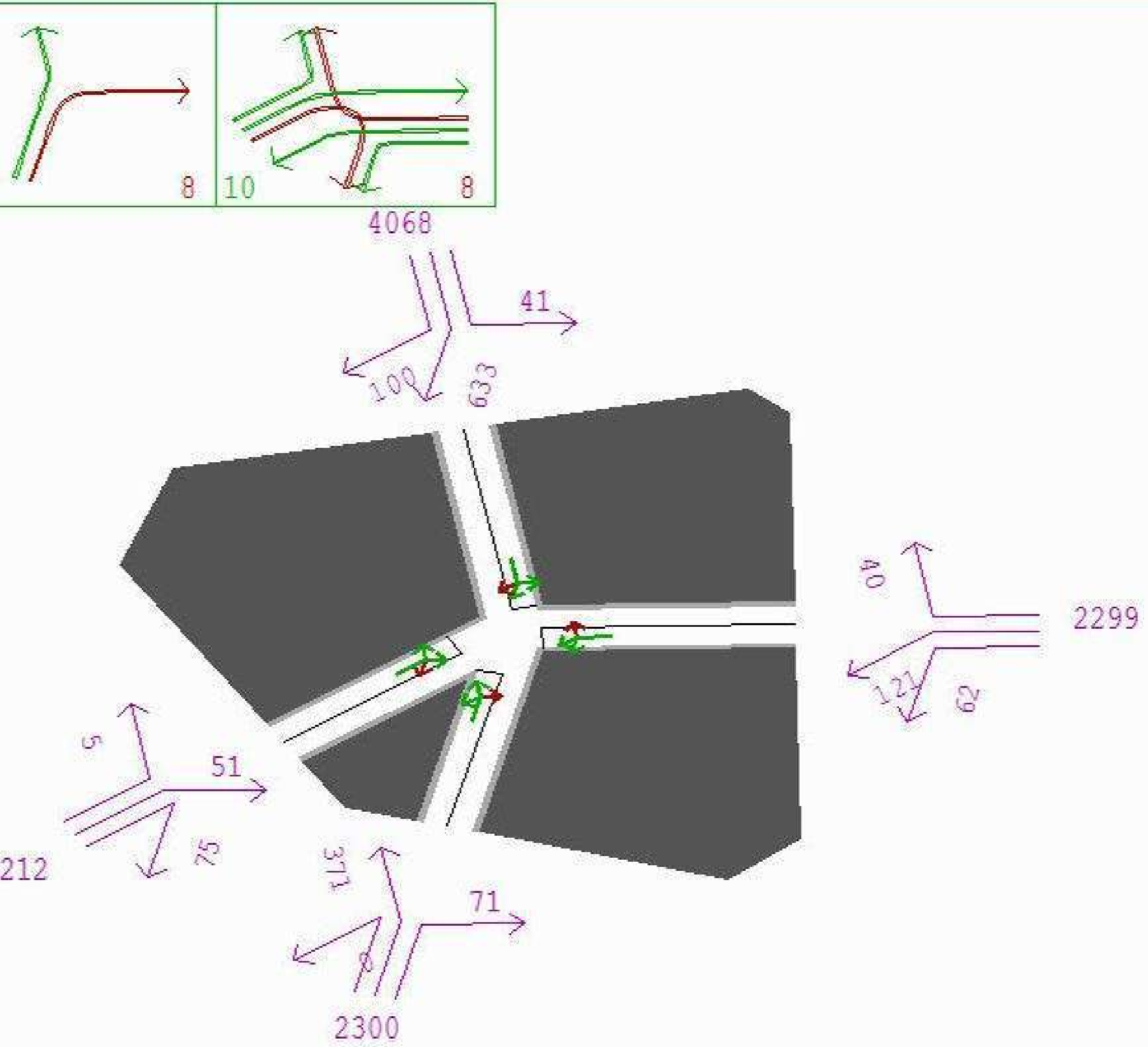
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 1242



Node Graphic
Master Menu:

NODE 1370

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
9 Warnings
8 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

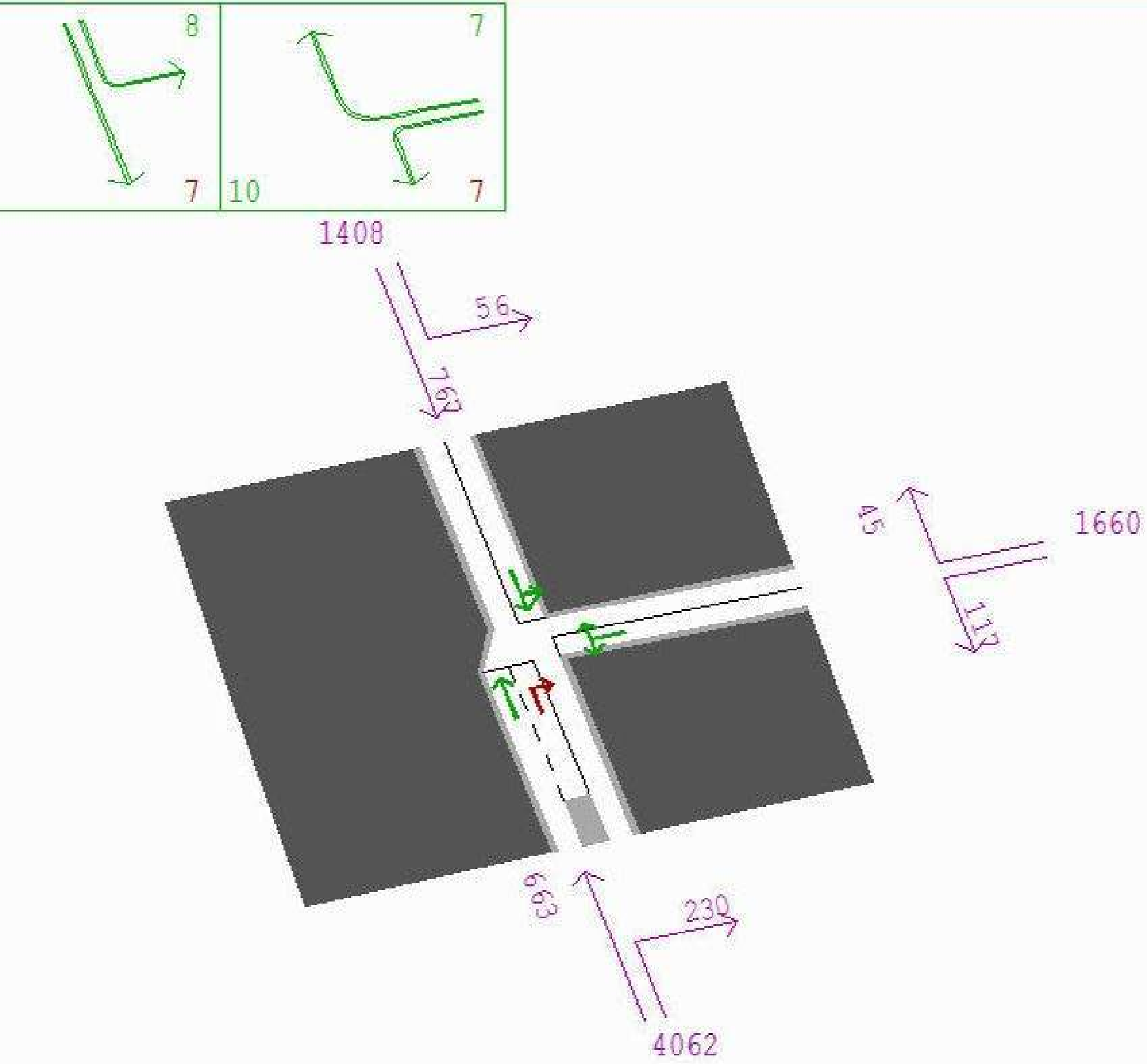
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 1370



Node Graphic
Master Menu:

NODE 1410

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
3 Warnings
1 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

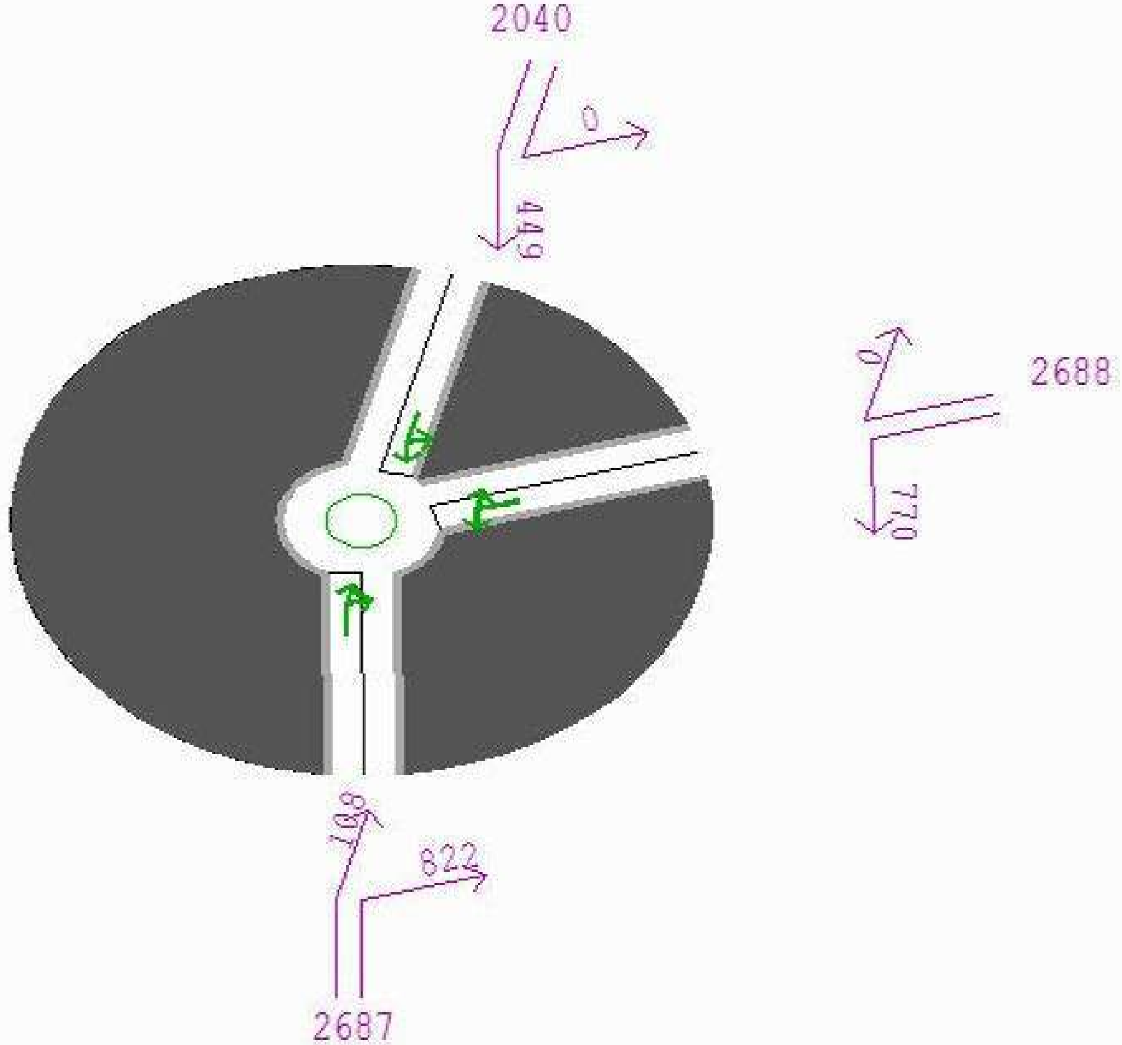
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 1410



Node 1654

Node Graphic
Master Menu:

NODE 1654

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
2 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

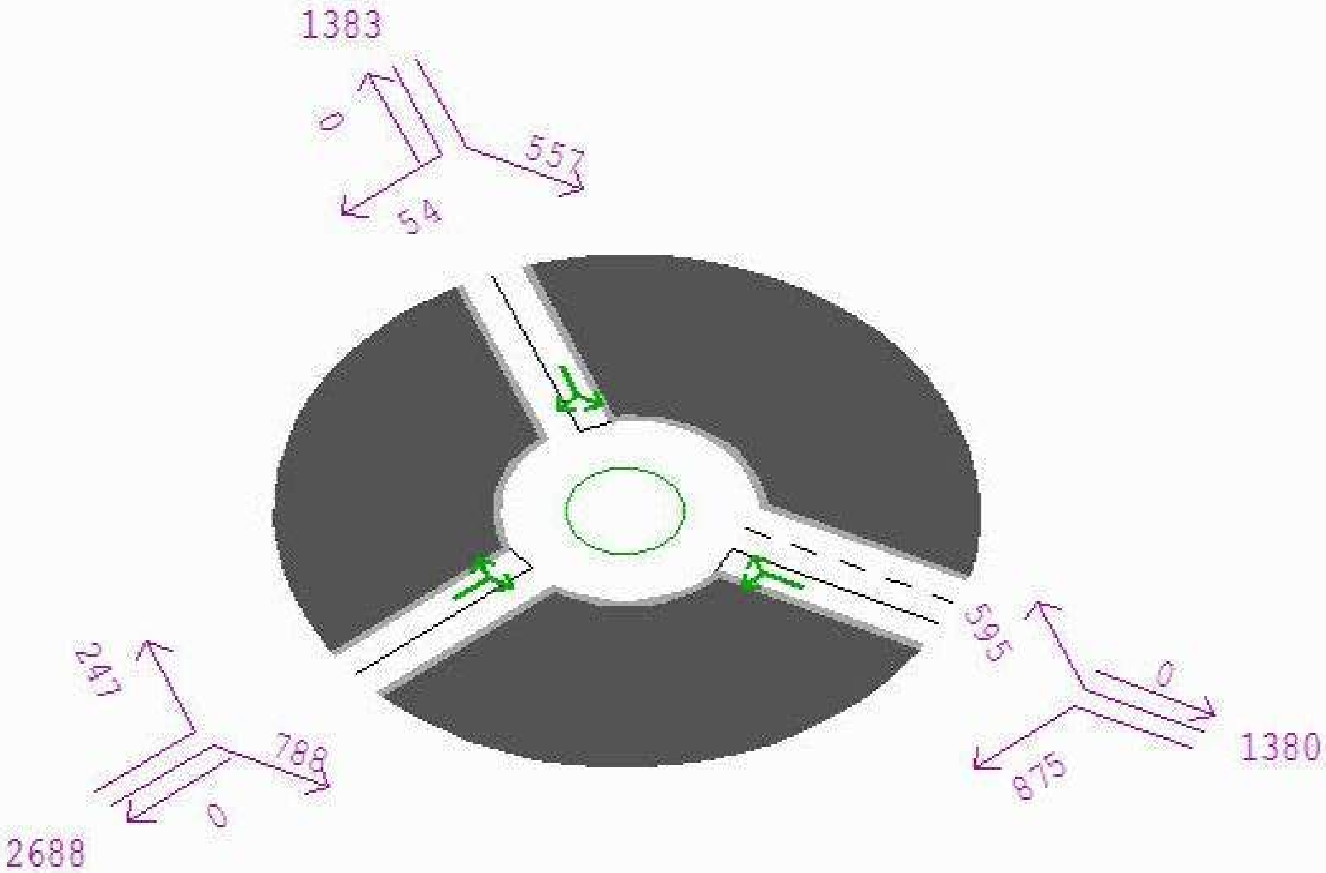
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node-based
Data display
Choices:

Current data

Arrive flow

New choice:

Cancel (none X
nOde data ON
Link data >
Turn data >

Display mode S
Arrows

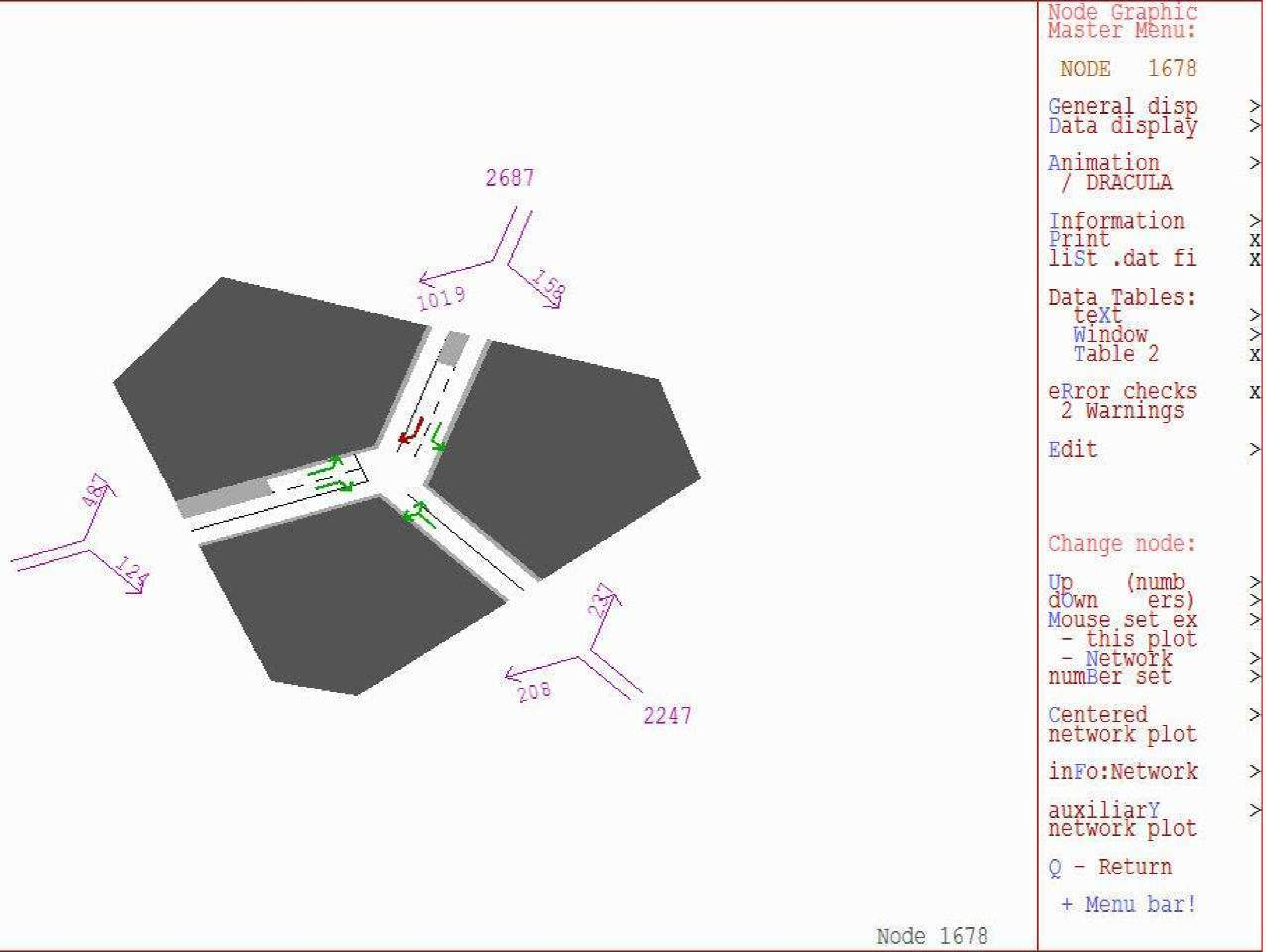
Arrow type: S
line+number

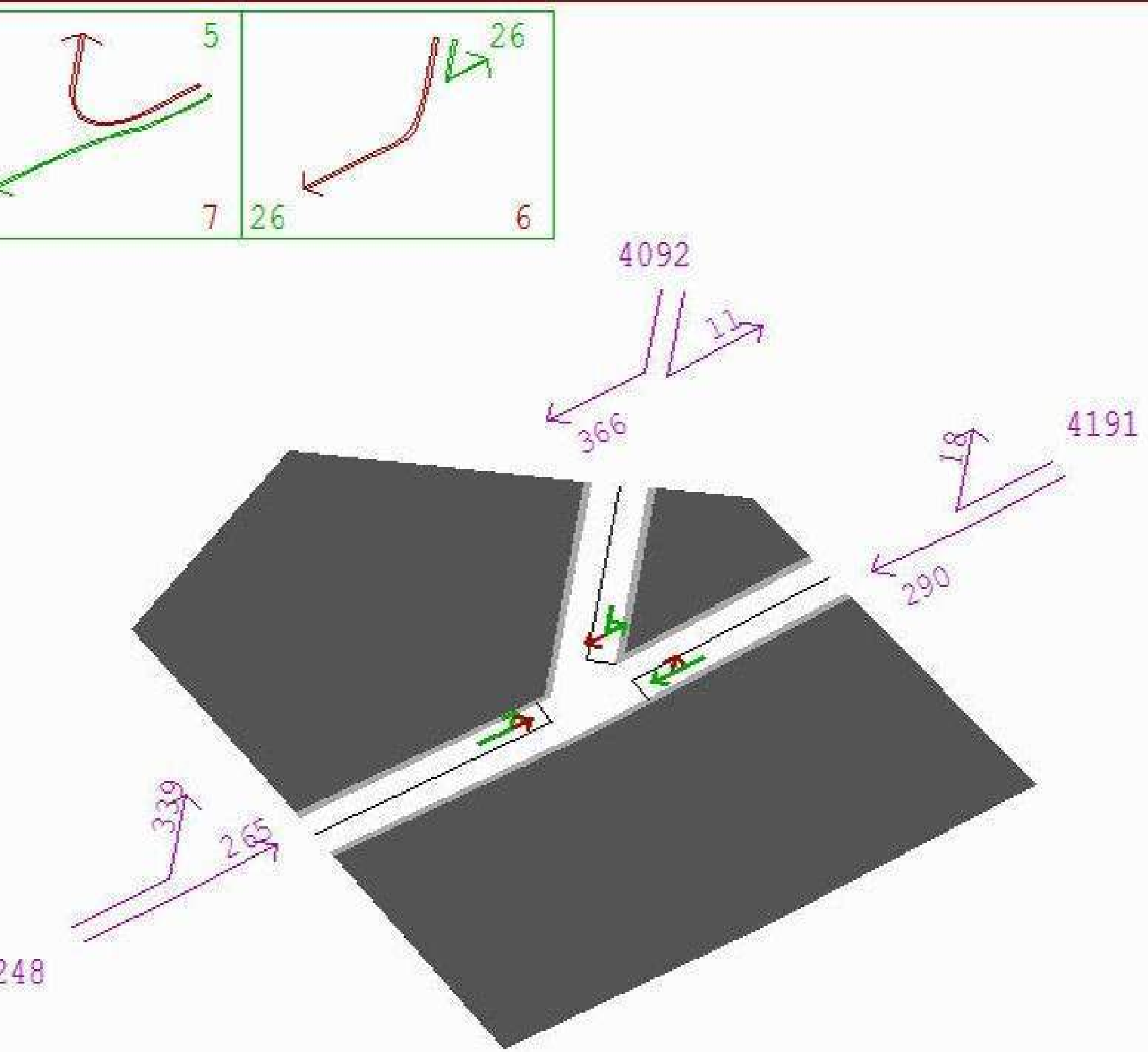
Banner >

Q - Return

+ Menu bar!

Node 1665


2687
1019
158
487
124
237
208
2247
Node 1678
Node Graphic
Master Menu:
NODE 1678
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print x
liSt .dat fi x
Data Tables:
teXt >
Window >
Table 2 x
eRror checks x
2 Warnings
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!



Node 2016

Node Graphic
Master Menu:

NODE 2016

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
4 Warnings
7 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

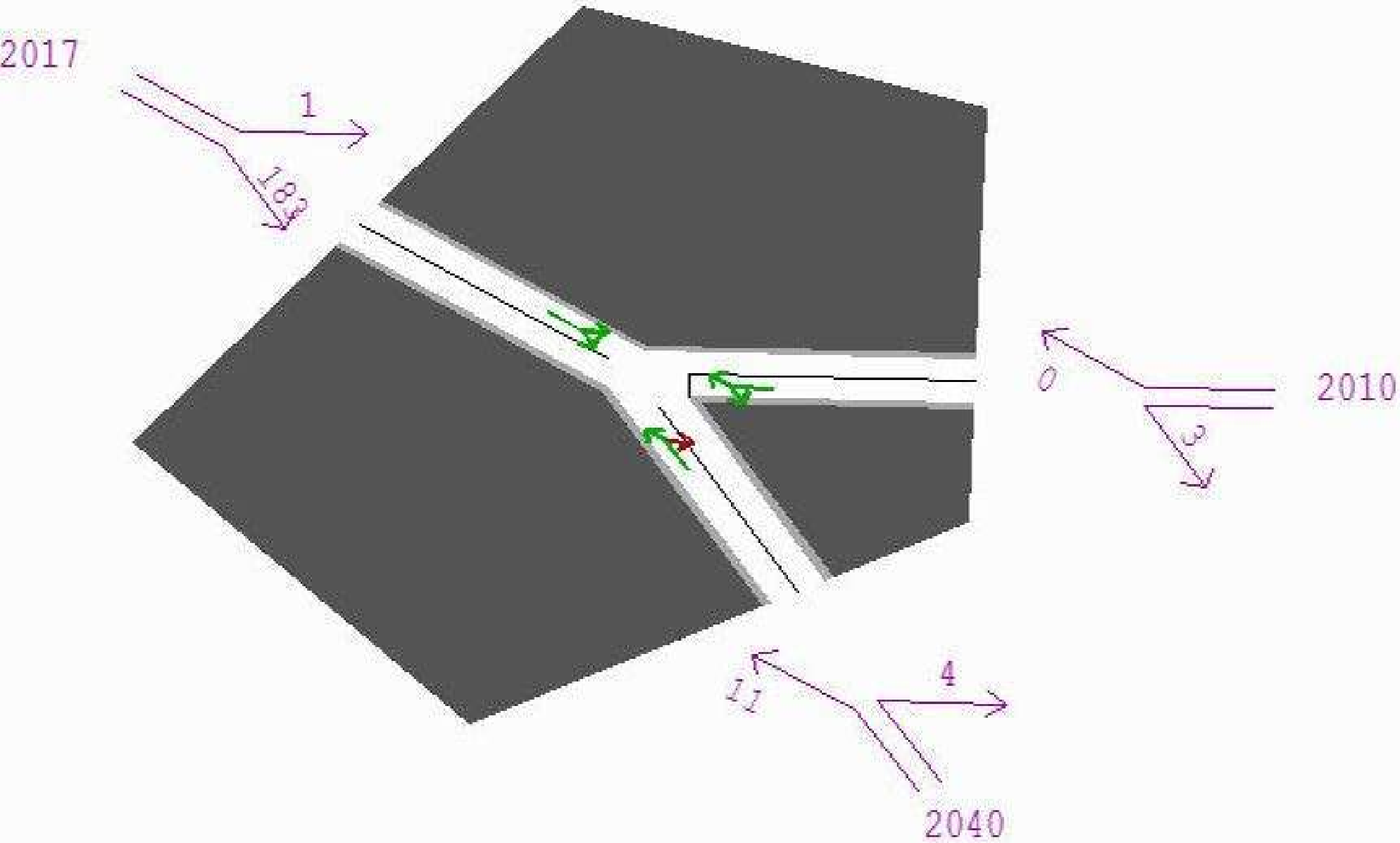
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 2756

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings
2 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

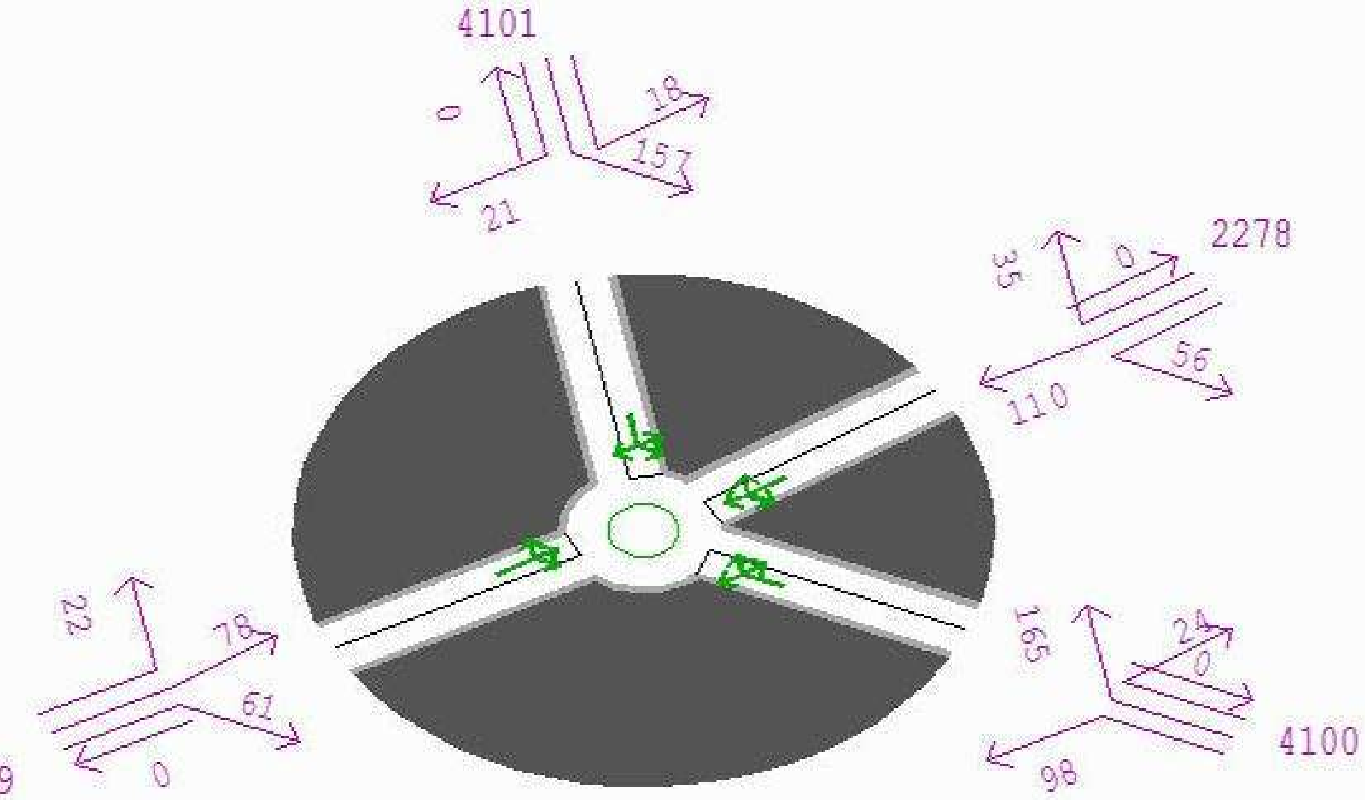
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 2756



Node Graphic
Master Menu:

NODE 2761

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
3 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

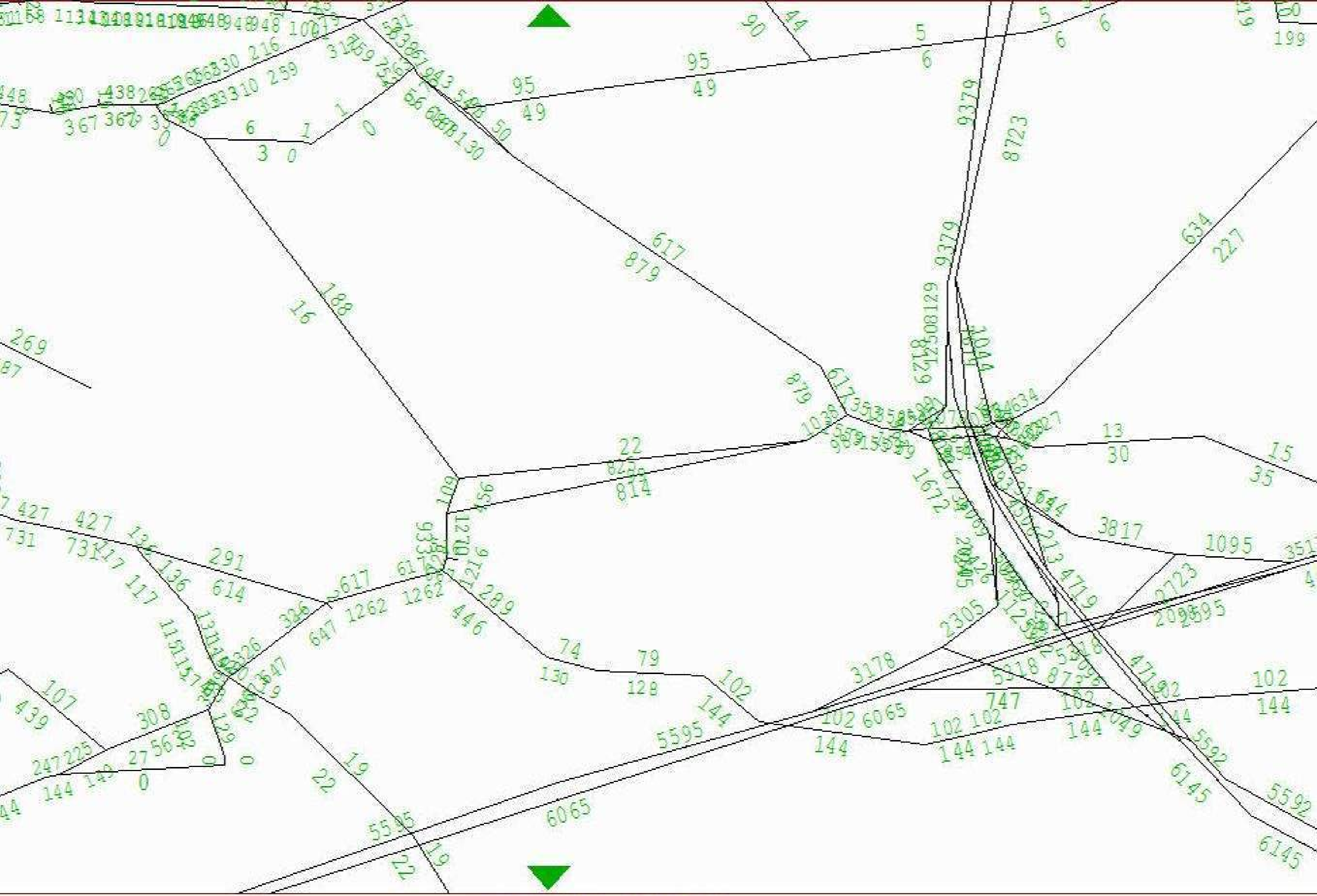
inFo:Network >

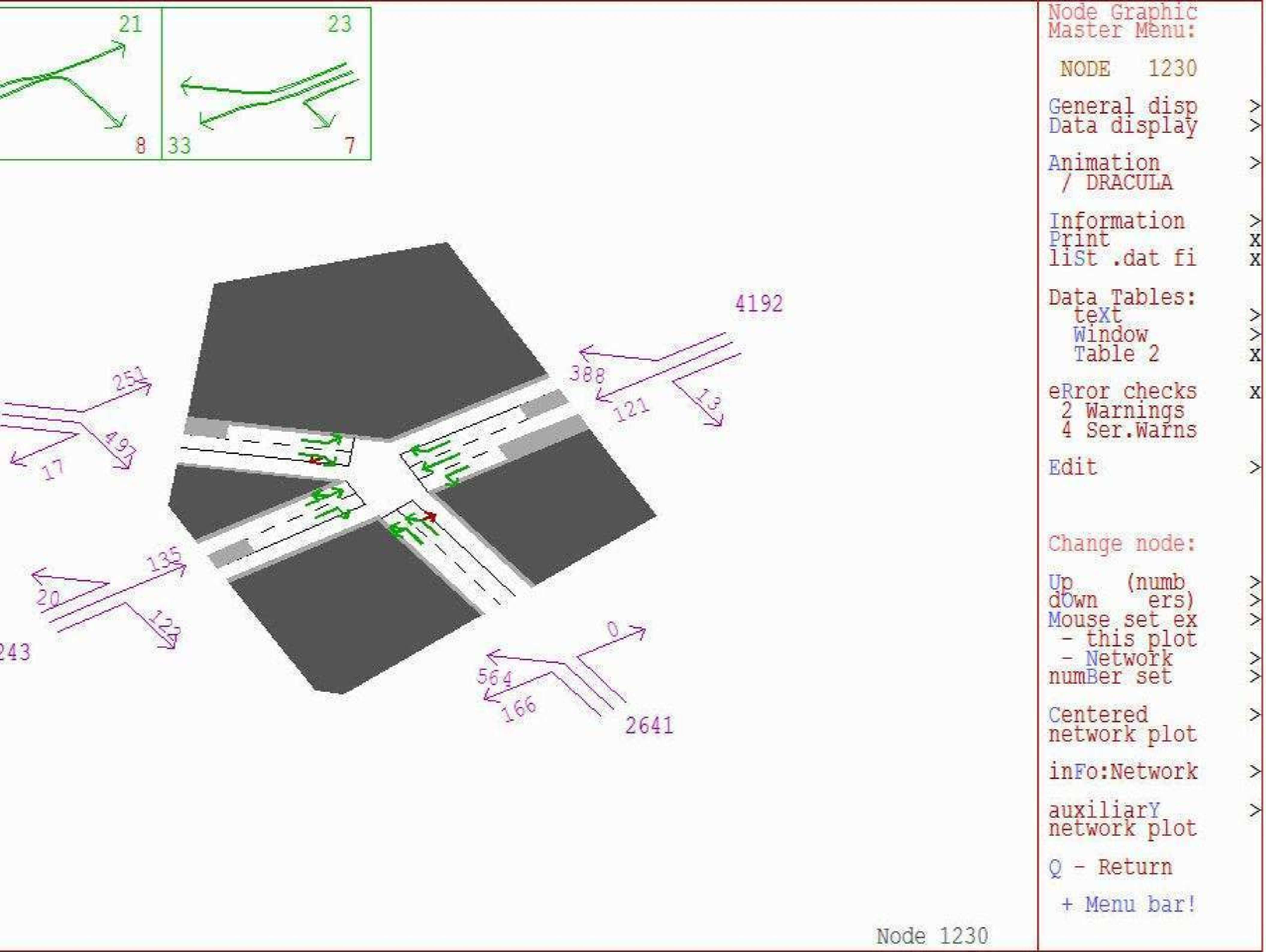
auxiliarY >
network plot

Q - Return

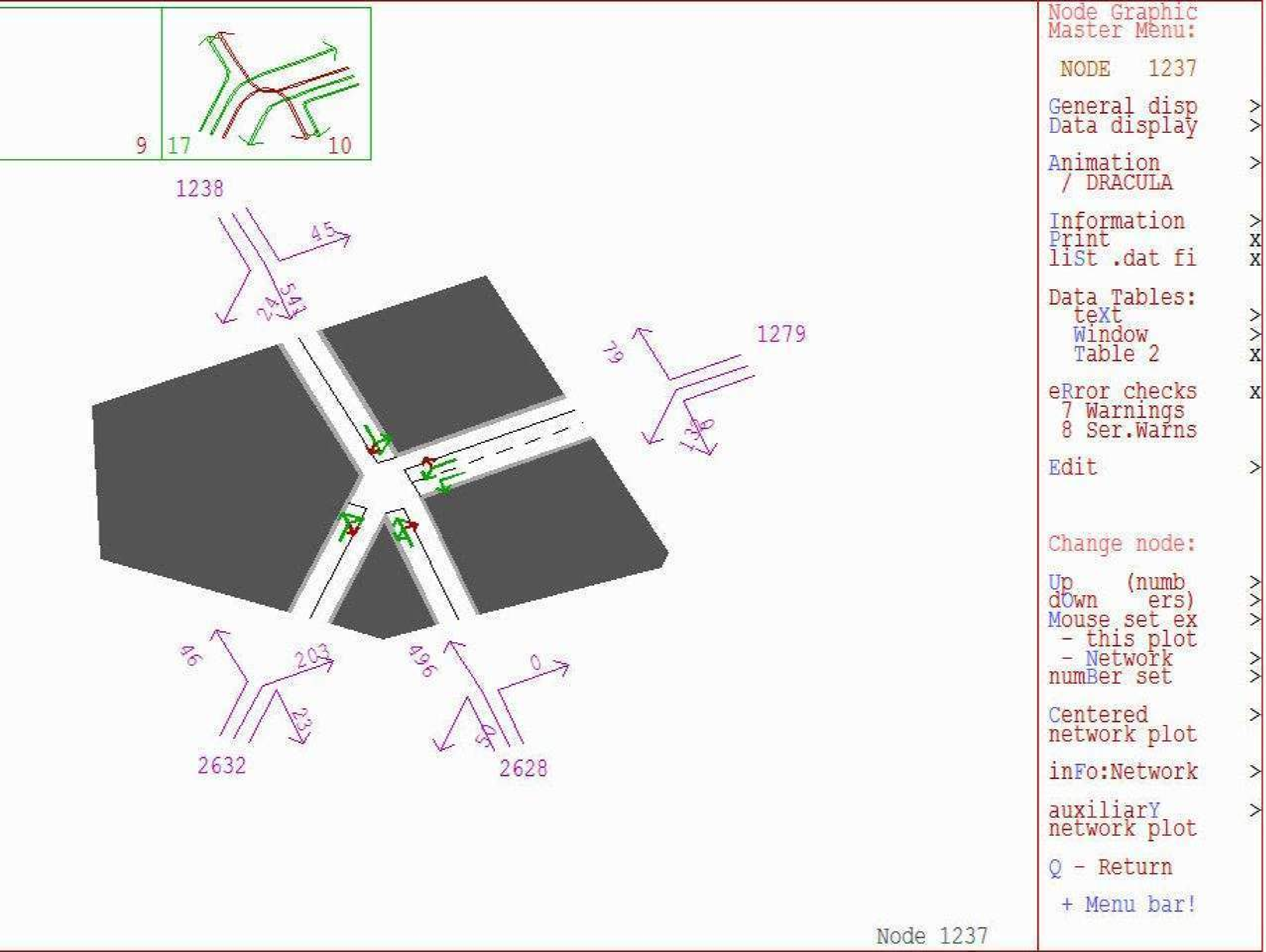
+ Menu bar!

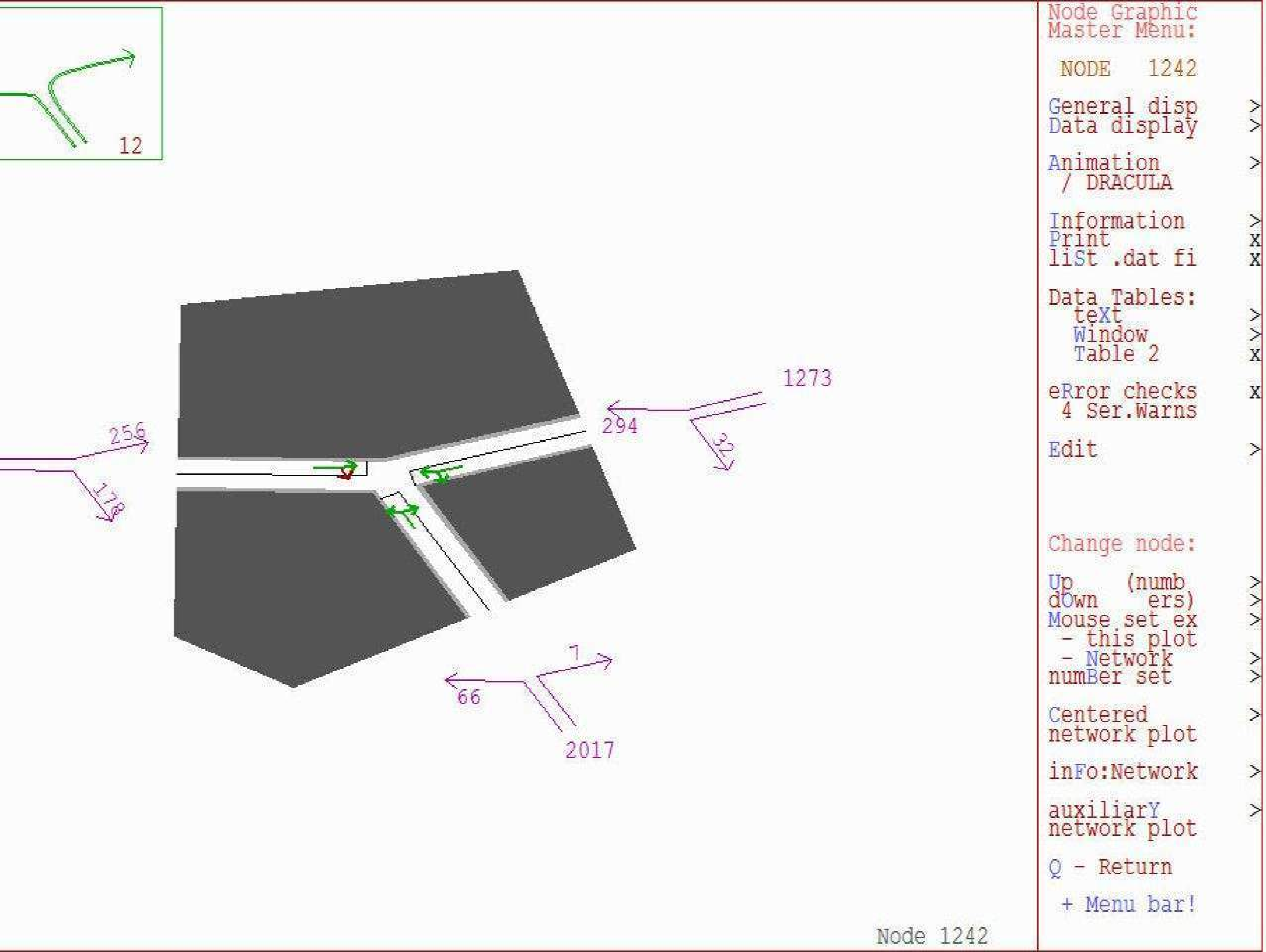
Node 2761

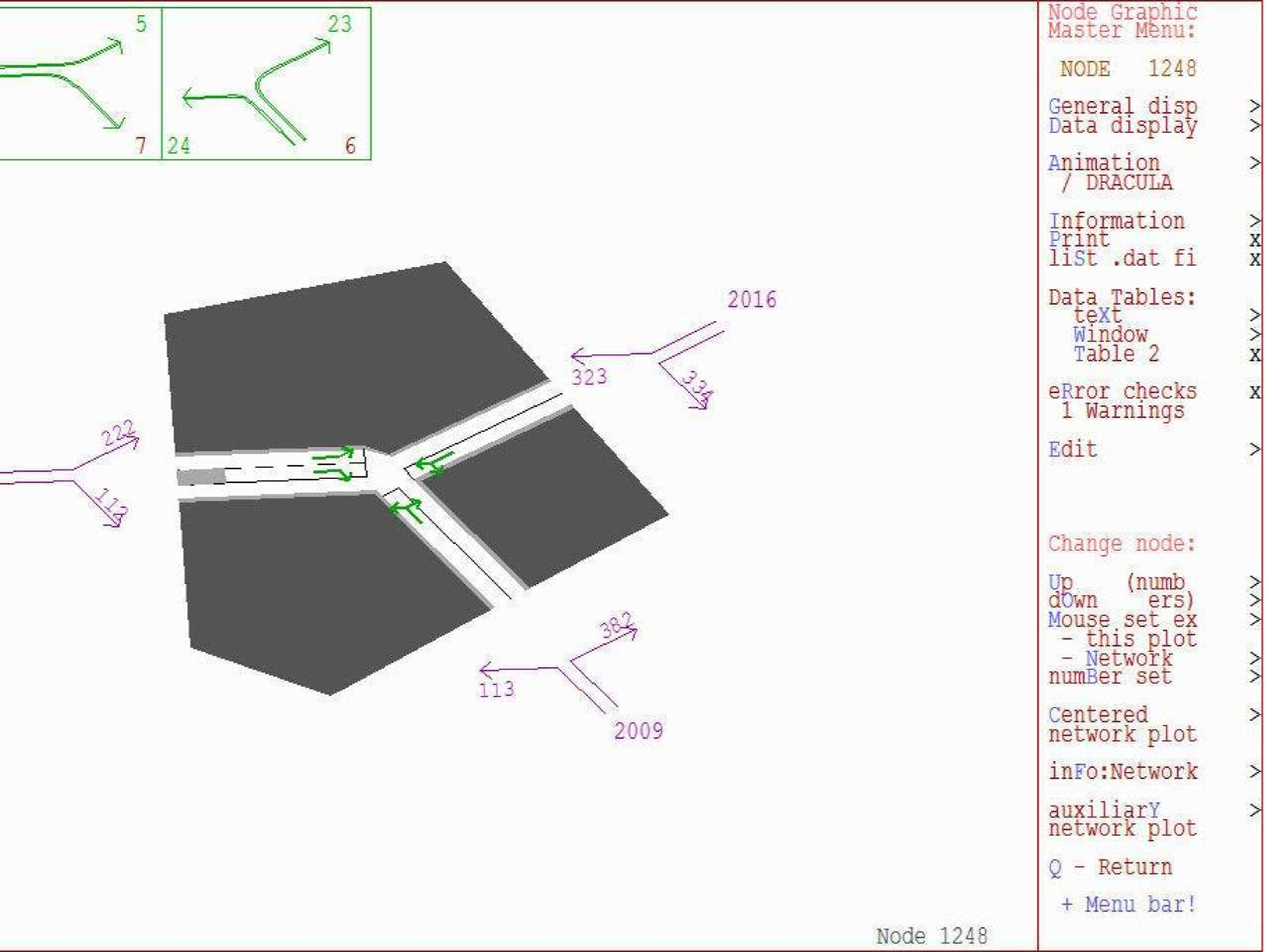

95
49
617
879
188
16
269
22
814
427
731
291
614
617
1262
647
289
446
74
130
79
128
102
144
5595
3178
2305
6065
747
102
144
13
30
15
35
3817
1095
634
227
9379
8723
5592
6145
308
439
107
19
22

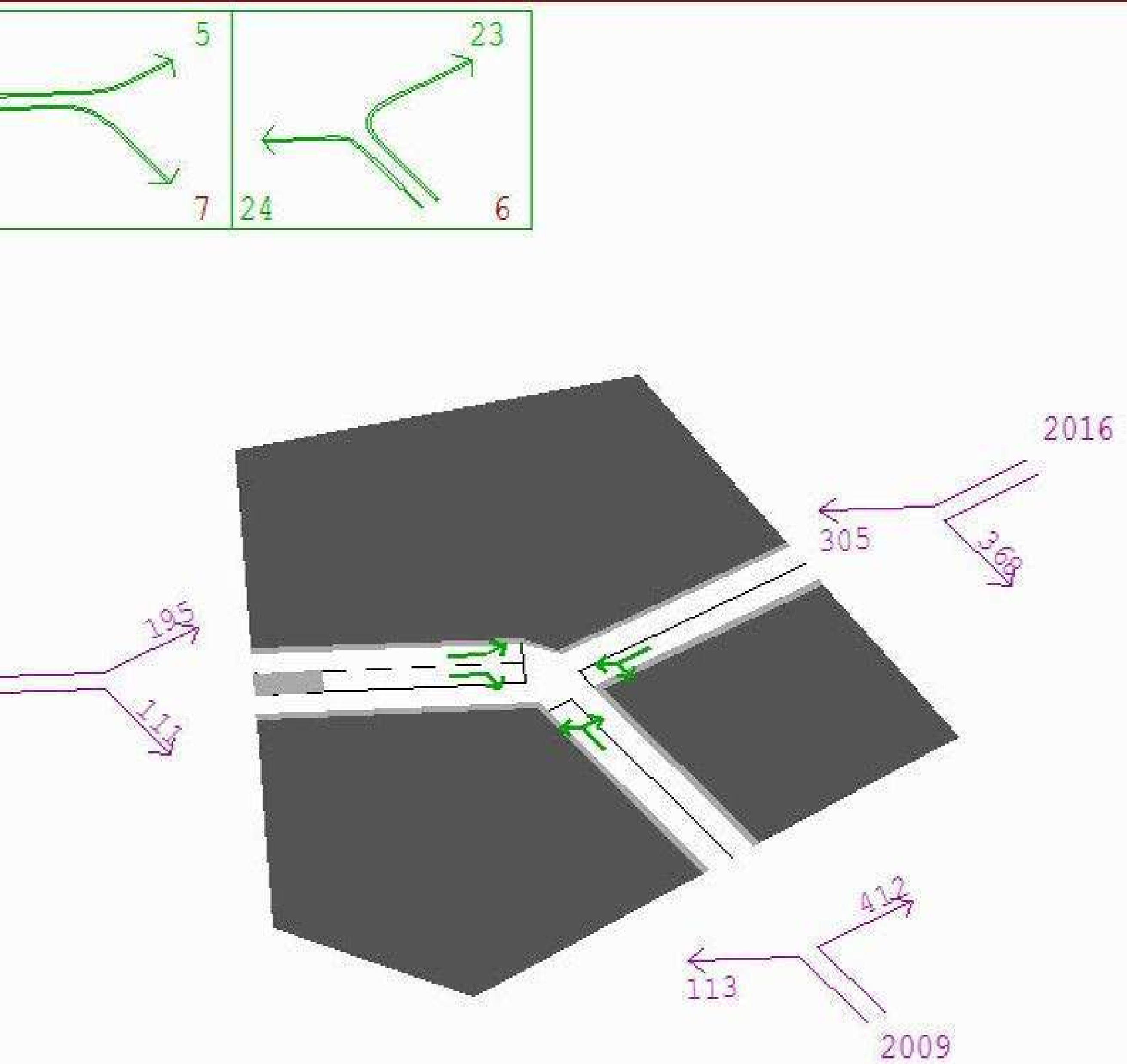


21
8
23
33
7
4192
388
121
13
251
497
17
135
20
122
243
0
564
166
2641
Node 1230
Node Graphic
Master Menu:
NODE 1230
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print X
liSt .dat fi X
Data Tables:
teXt >
Window >
Table 2 X
eRror checks X
2 Warnings
4 Ser.Warns
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!


Node Graphic
Master Menu:
NODE 1237
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print X
liSt .dat fi X
Data Tables:
teXt >
Window >
Table 2 X
eRror checks X
7 Warnings
8 Ser.Warns
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!
9
17
10
1238
45
24
543
1279
79
2632
46
203
23
2628
496
0
Node 1237


12
256
178
1273
294
32
7
66
2017
Node 1242
Node Graphic
Master Menu:
NODE 1242
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print X
liSt .dat fi X
Data Tables:
teXt >
Window >
Table 2 X
eRror checks X
4 Ser.Warns
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!


5
7
23
24
6
2016
323
334
222
112
382
113
2009
Node Graphic
Master Menu:
NODE 1248
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print x
liSt .dat fi x
Data Tables:
teXt >
Window >
Table 2 x
eRror checks x
1 Warnings
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!
Node 1248



Node 1248

Node Graphic
Master Menu:

NODE 1248

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
1 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

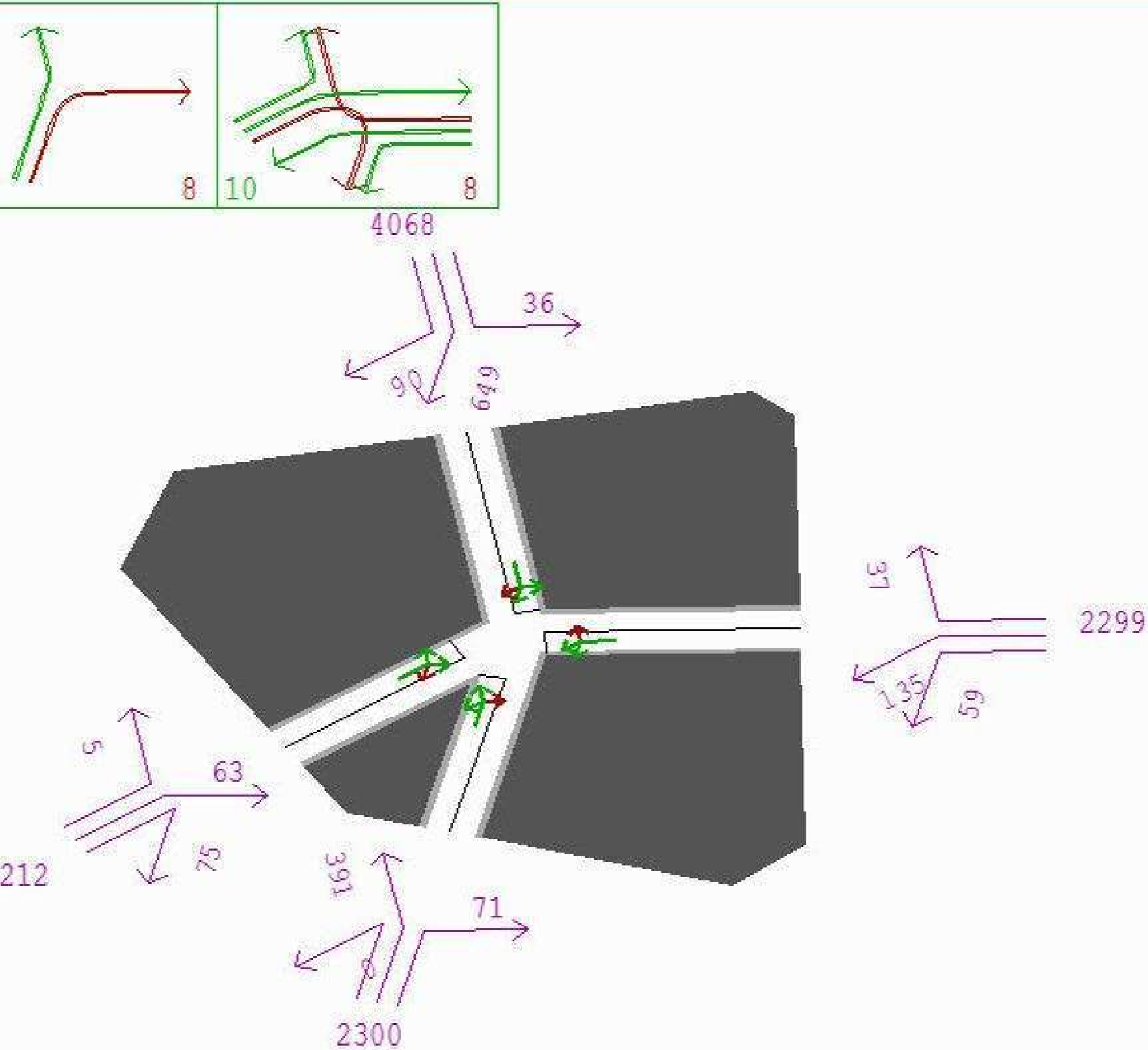
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node 1370

Node Graphic
Master Menu:

NODE 1370

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
9 Warnings
8 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

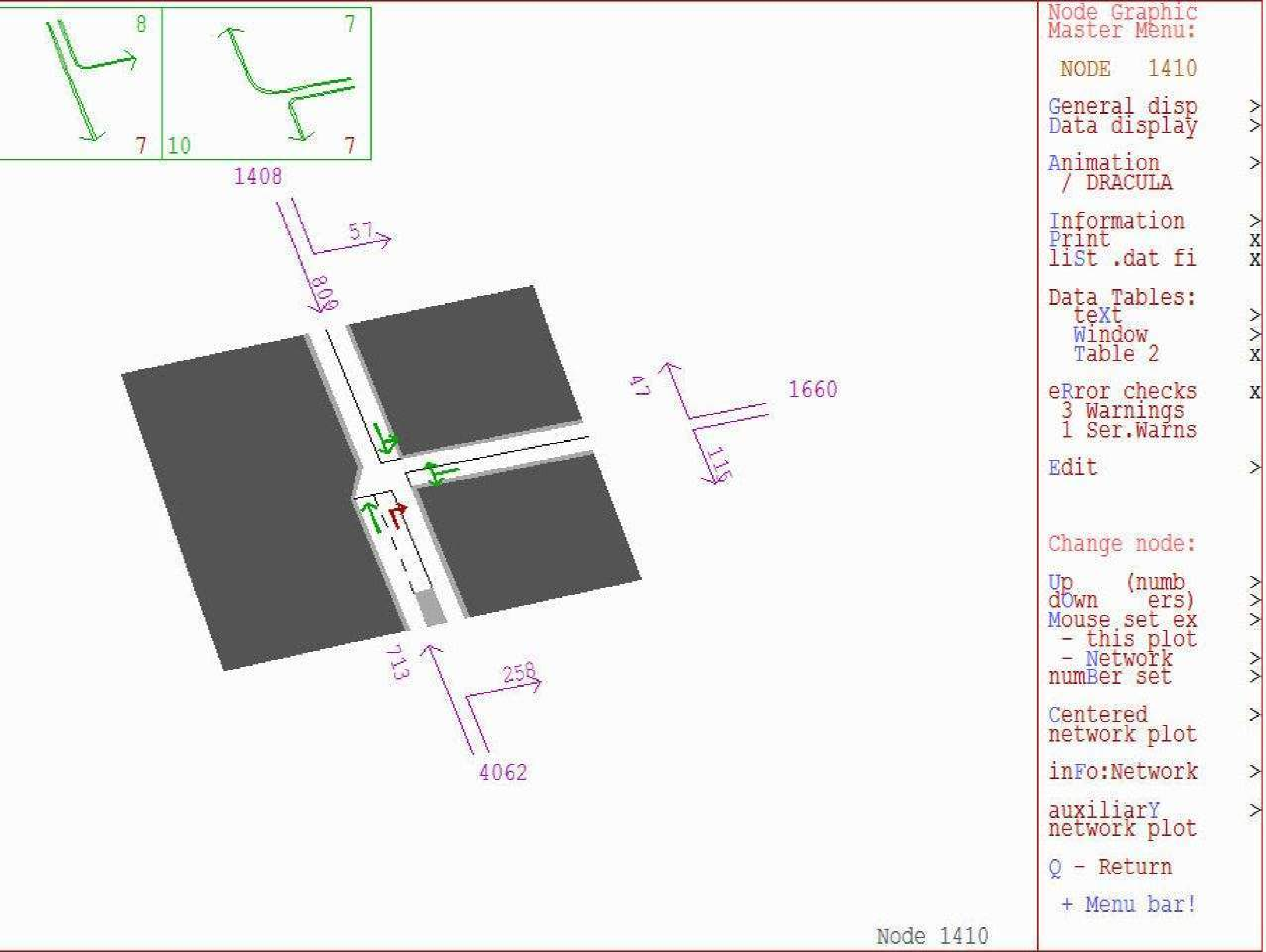
Centered >
network plot

inFo:Network >

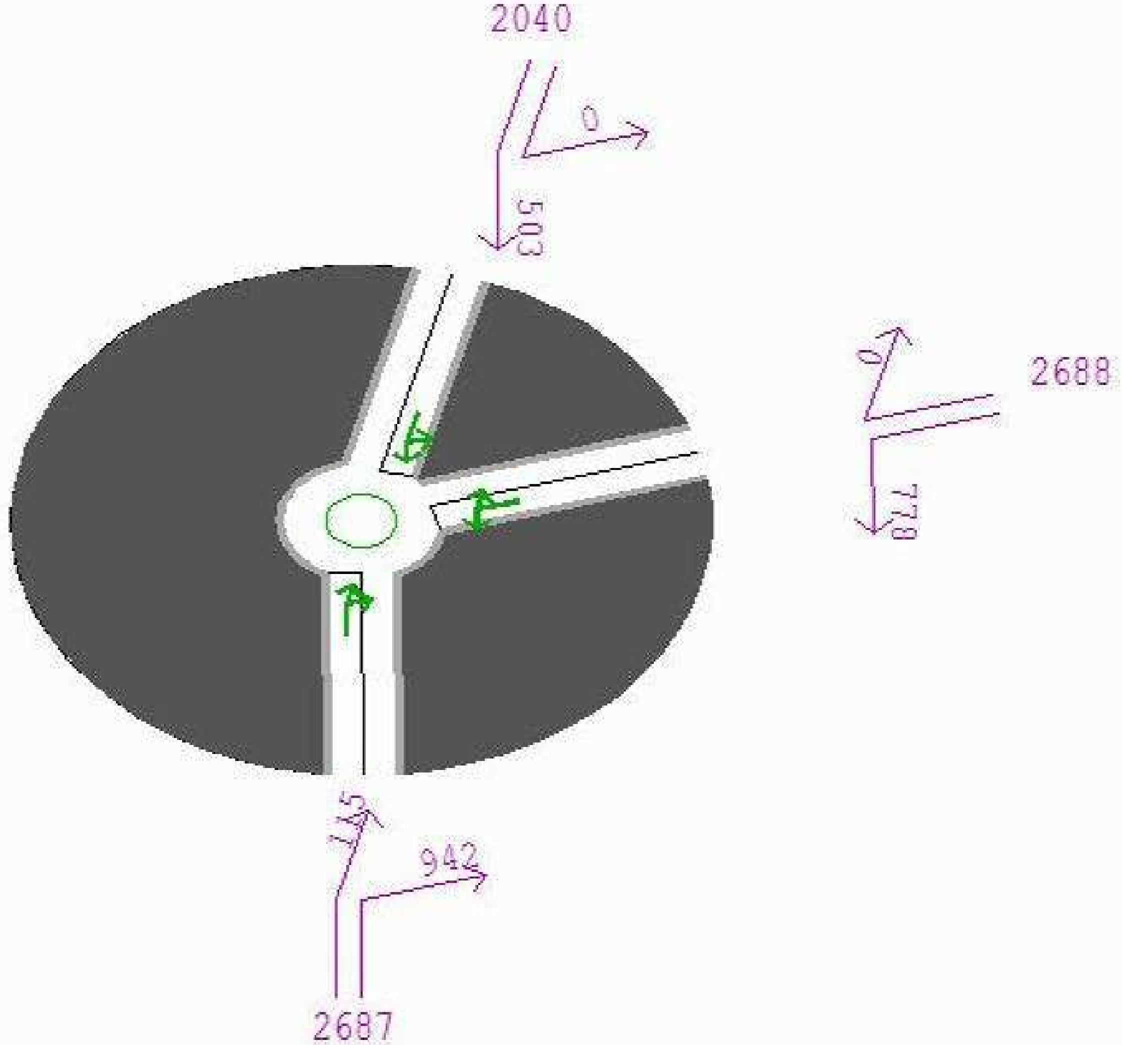
auxiliarY >
network plot

Q - Return

+ Menu bar!



8
7
7
10
7
1408
57
809
1660
47
115
713
258
4062
Node 1410
Node Graphic
Master Menu:
NODE 1410
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print X
liSt .dat fi X
Data Tables:
teXt >
Window >
Table 2 X
eRror checks X
3 Warnings
1 Ser.Warns
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!



Node 1654

Node Graphic
Master Menu:

NODE 1654

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
2 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

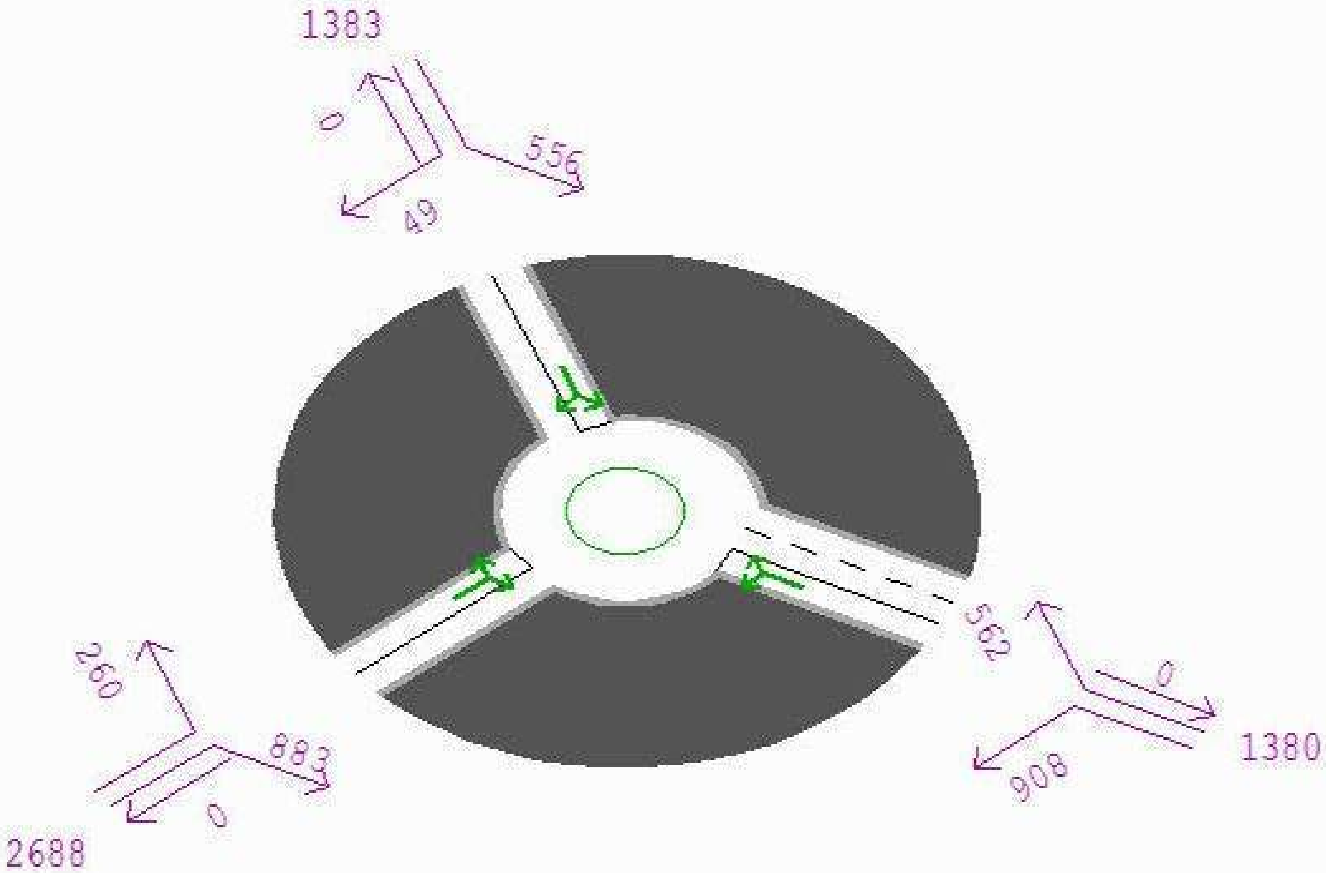
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node 1665

Node-based
Data display
Choices:

Current data

Arrive flow

New choice:

Cancel (none X
nOde data ON
Link data >
Turn data >

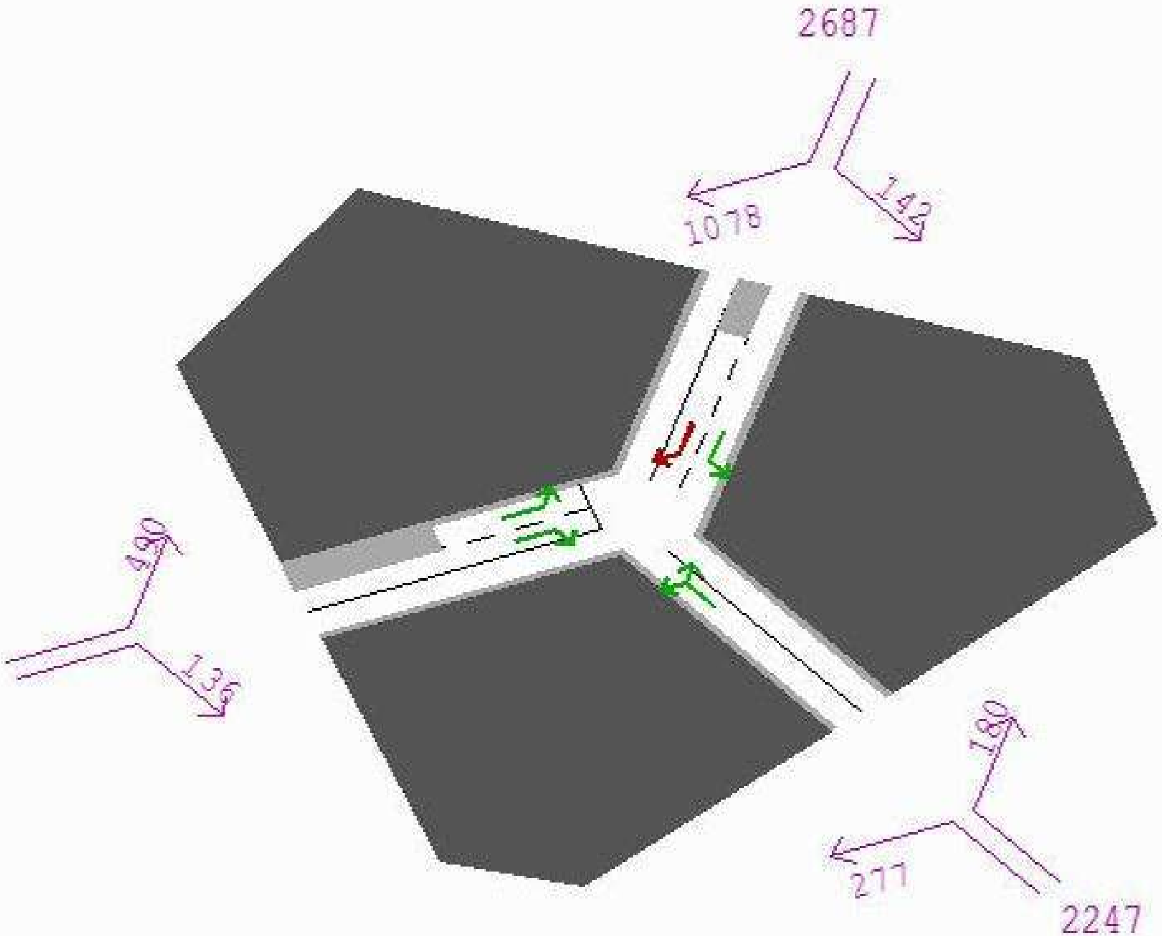
Display mode S
Arrows

Arrow type: S
line+number

Banner >

Q - Return

+ Menu bar!



Node 1678

Node Graphic
Master Menu:

NODE 1678

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
2 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

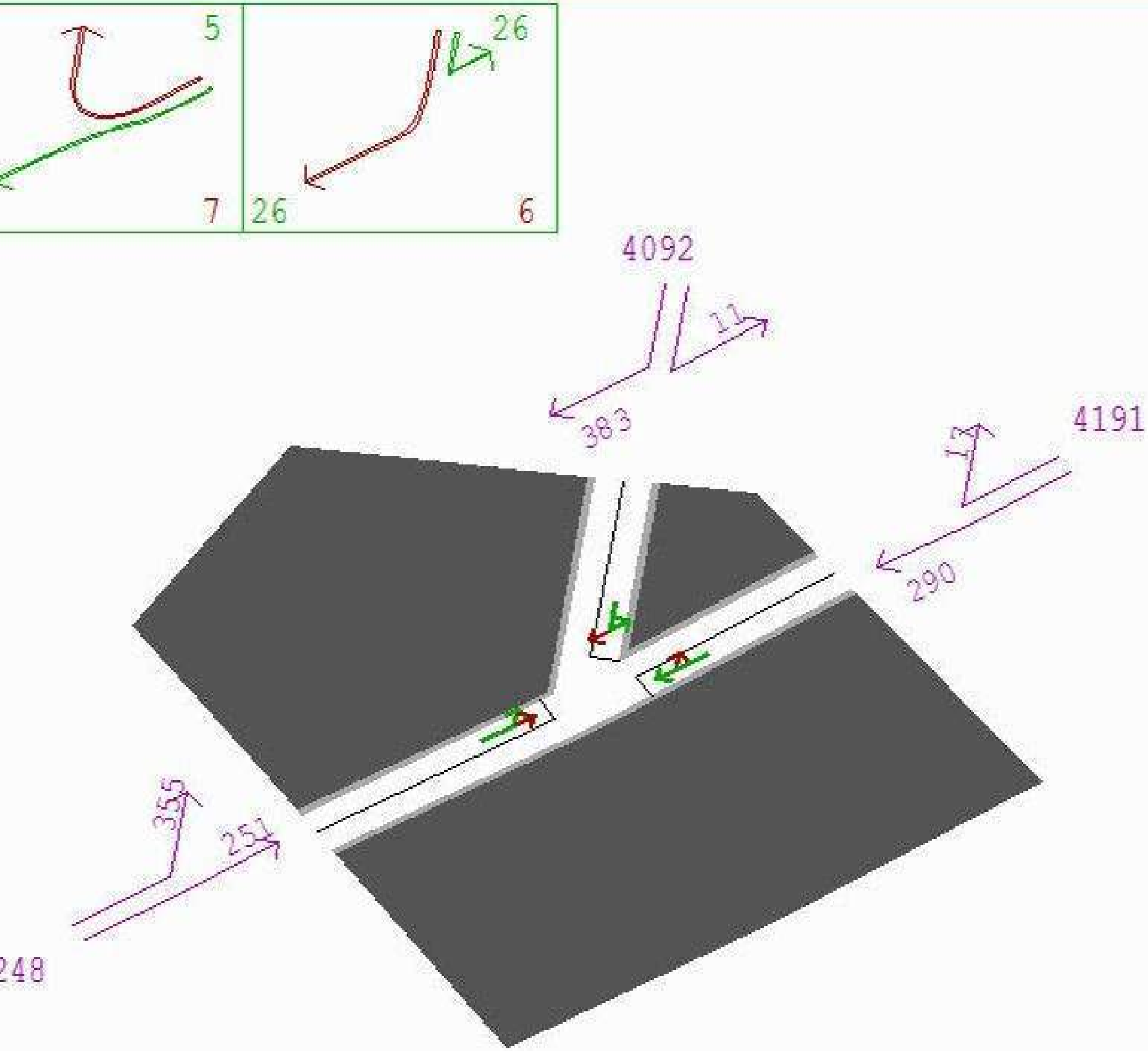
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 2016

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print X
liSt .dat fi X

Data Tables:
teXt >
Window >
Table 2 X

eRror checks X
4 Warnings
7 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

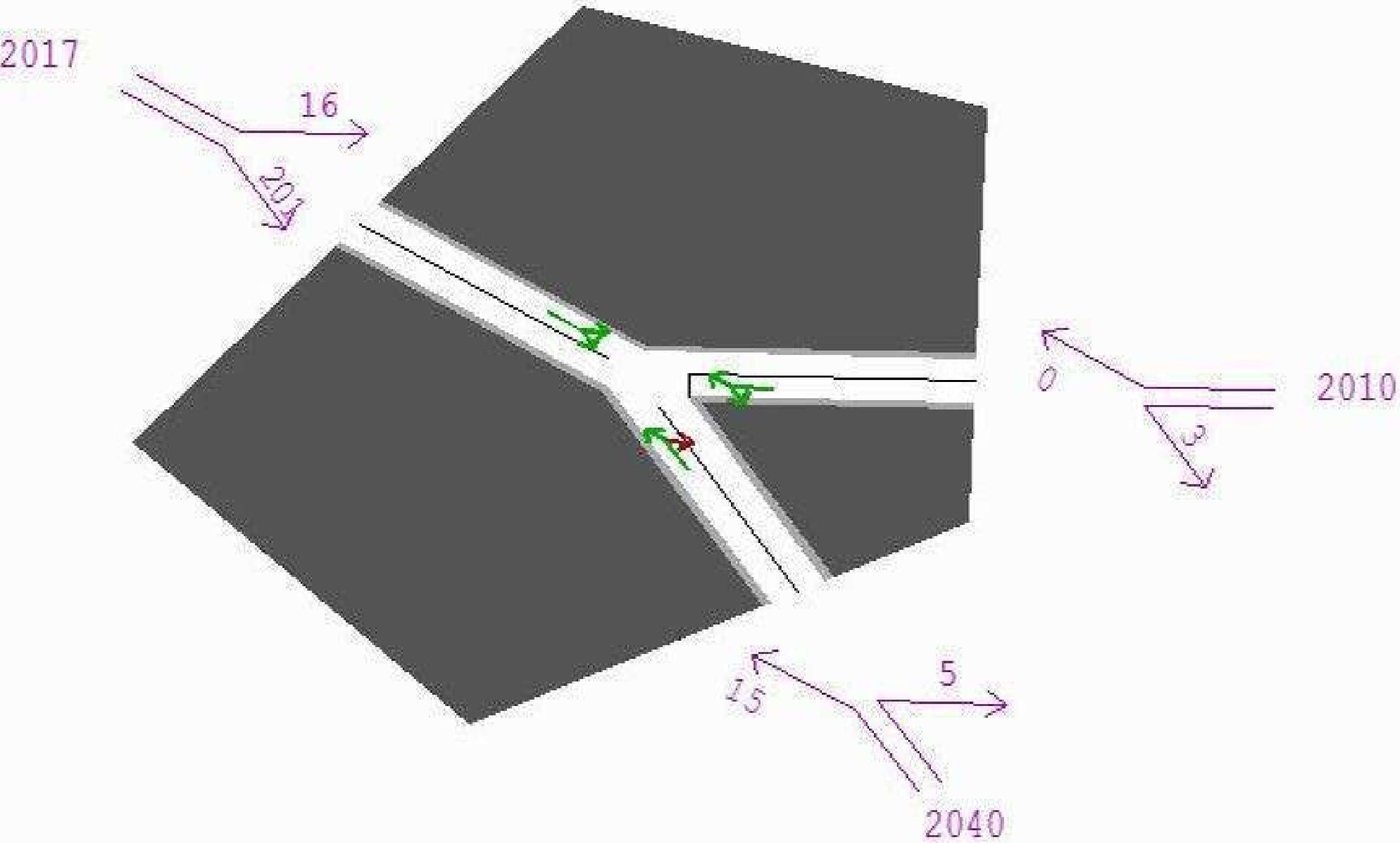
inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!

Node 2016



Node 2756

Node Graphic
Master Menu:

NODE 2756

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings
2 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

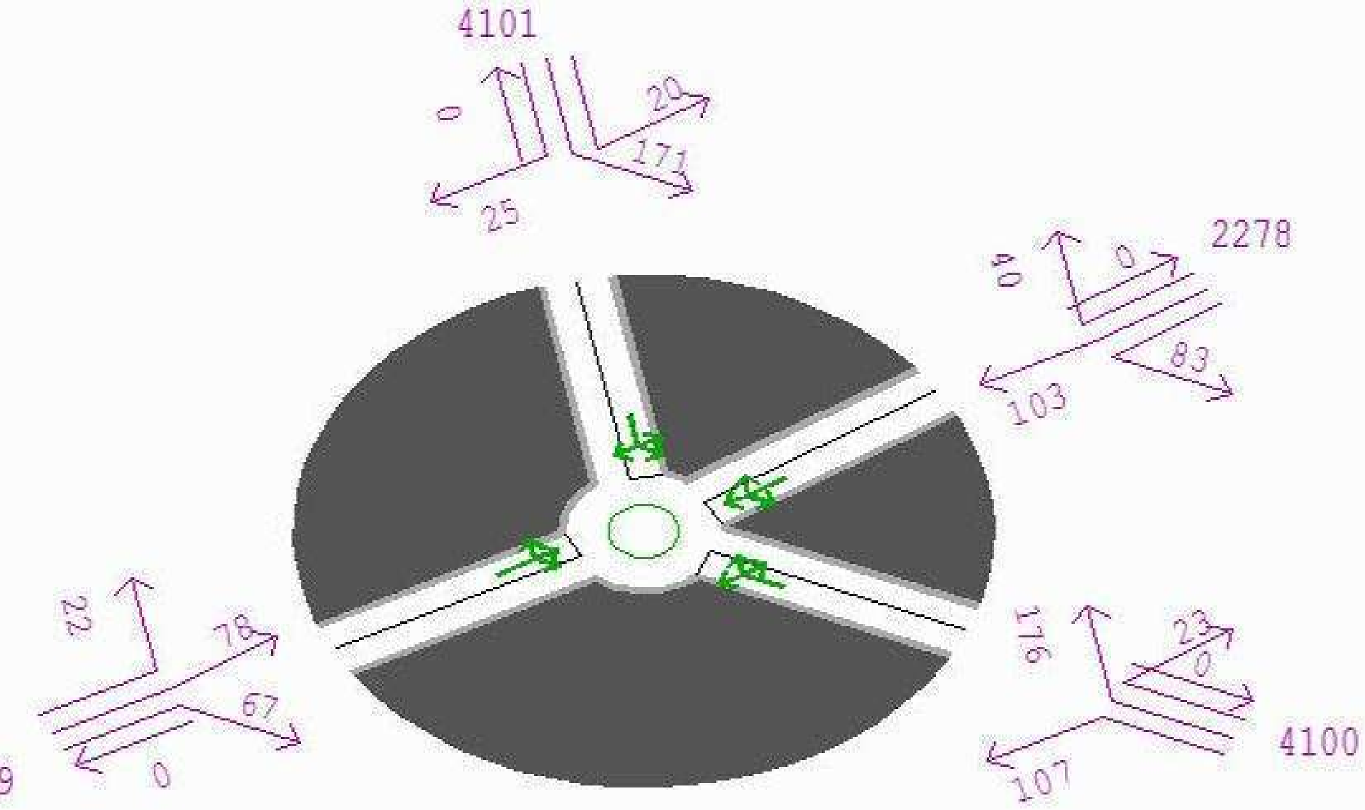
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node Graphic
Master Menu:

NODE 2761

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
3 Warnings

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

Centered >
network plot

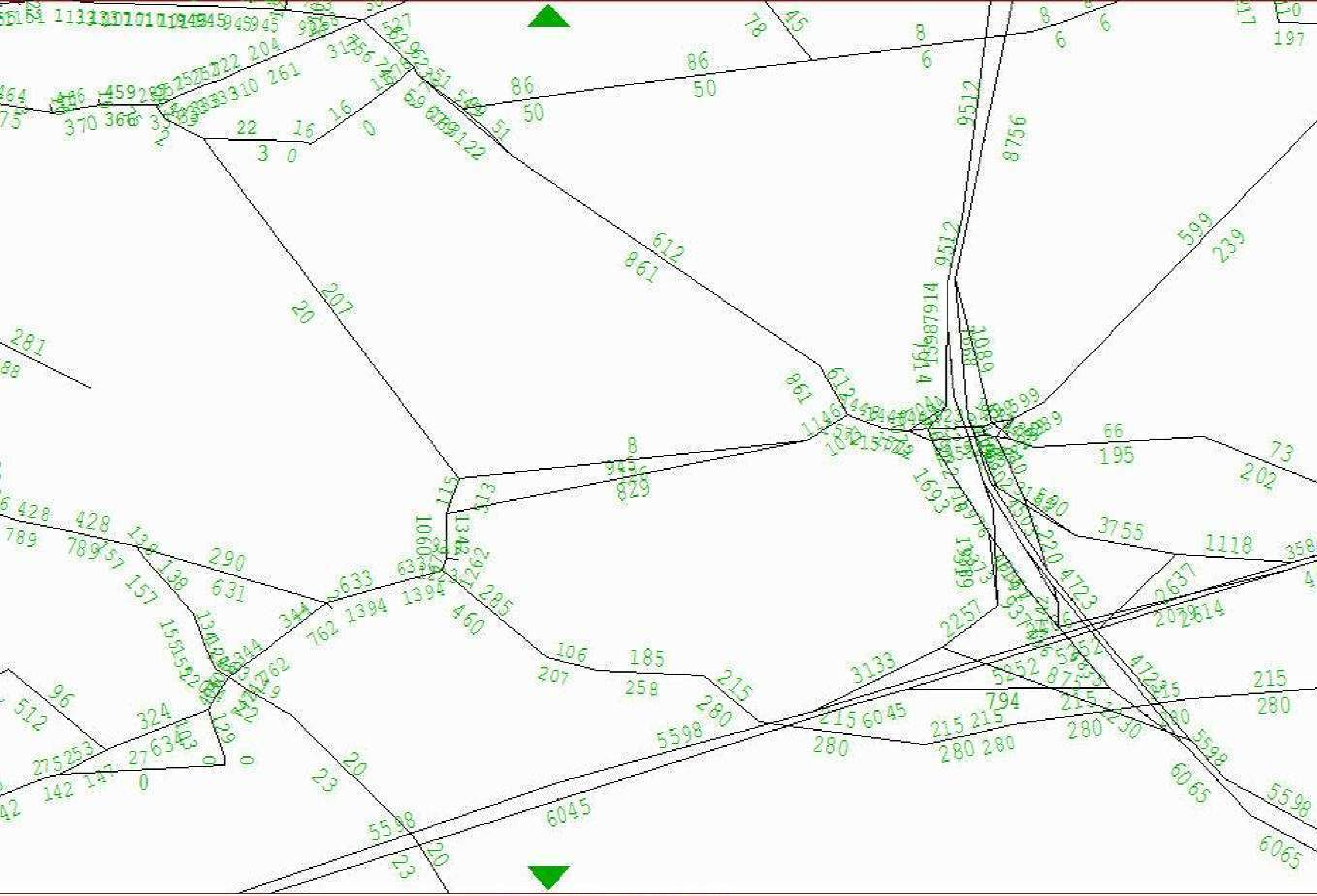
inFo:Network >

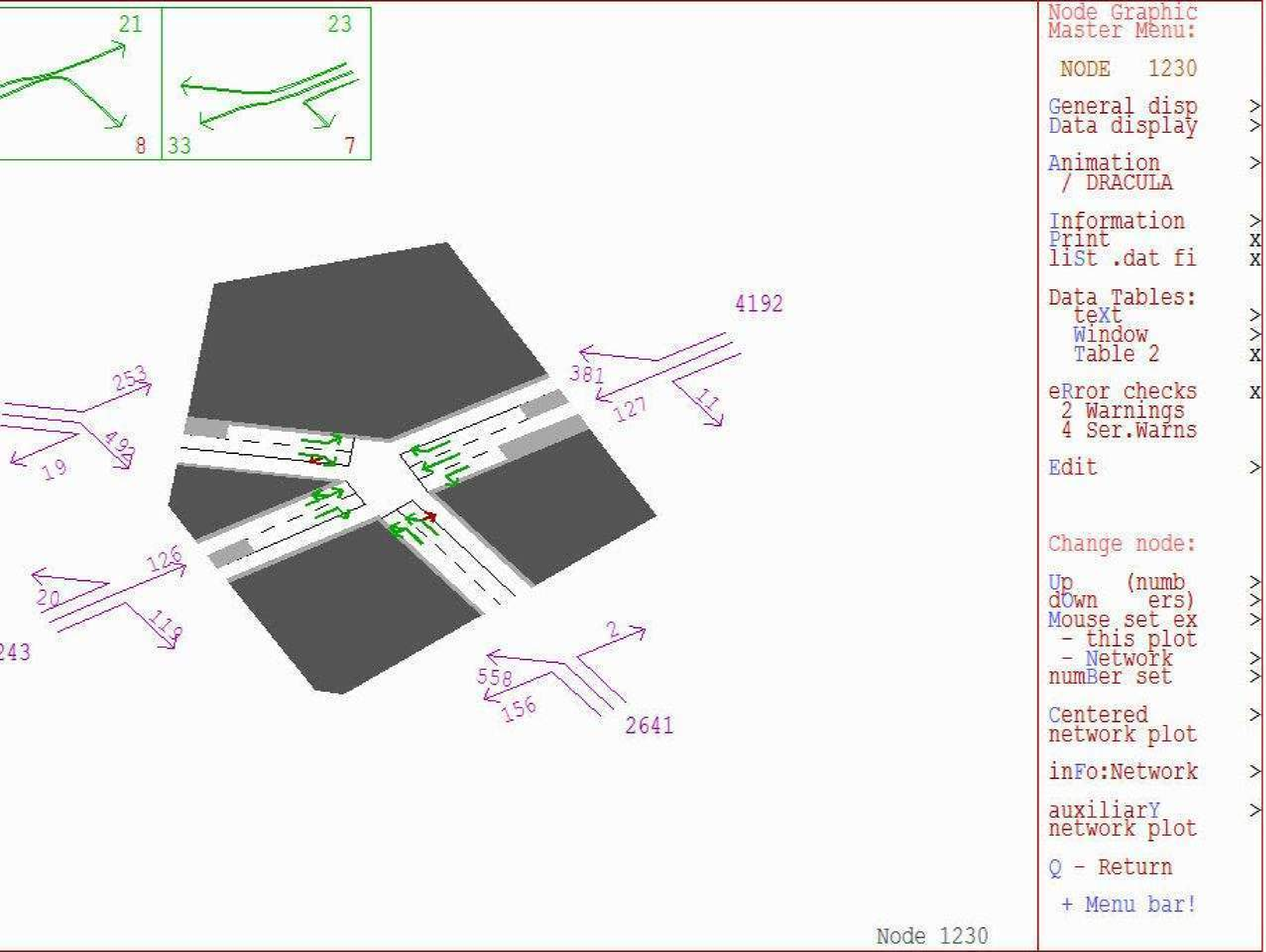
auxiliarY >
network plot

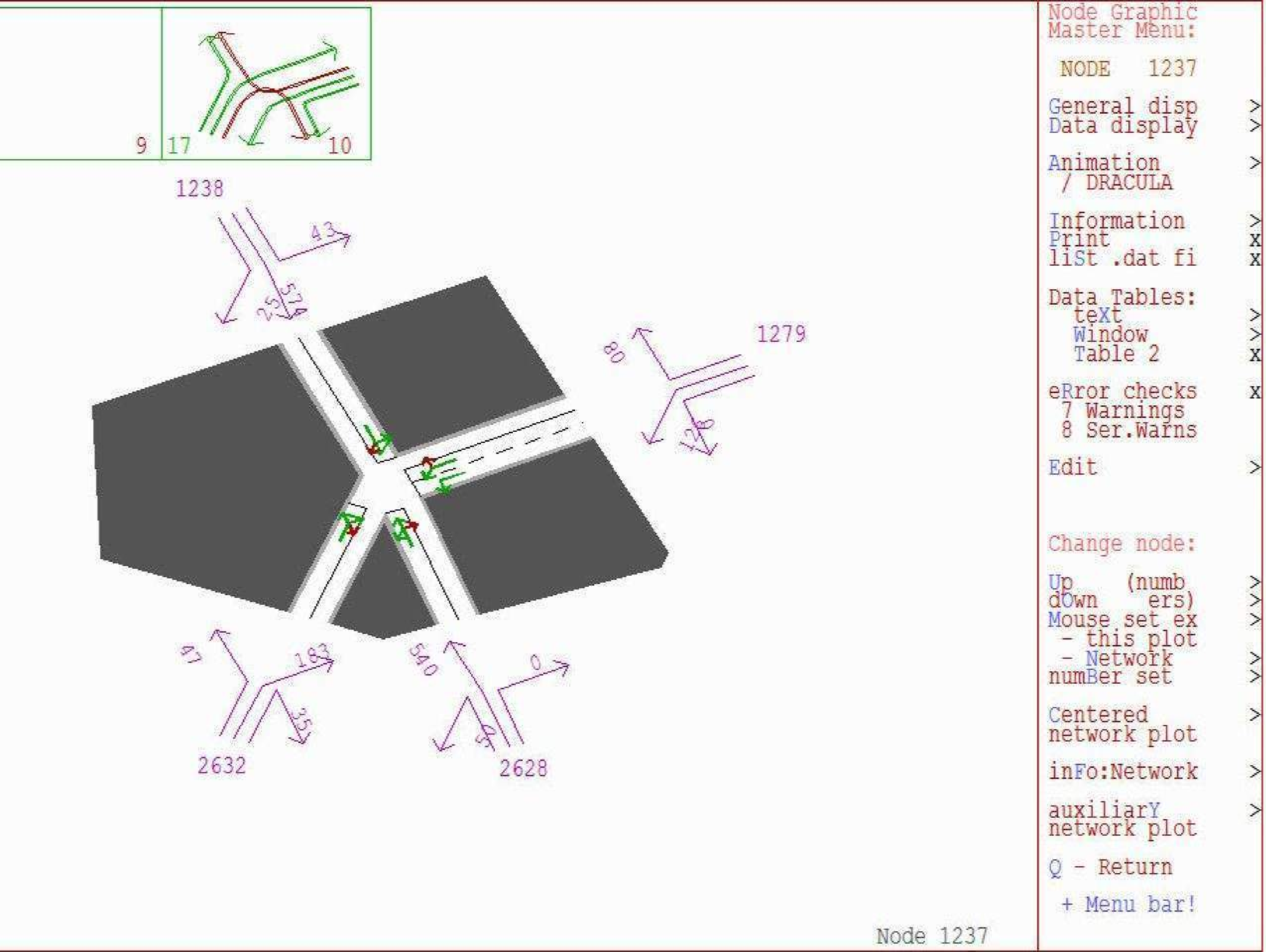
Q - Return

+ Menu bar!

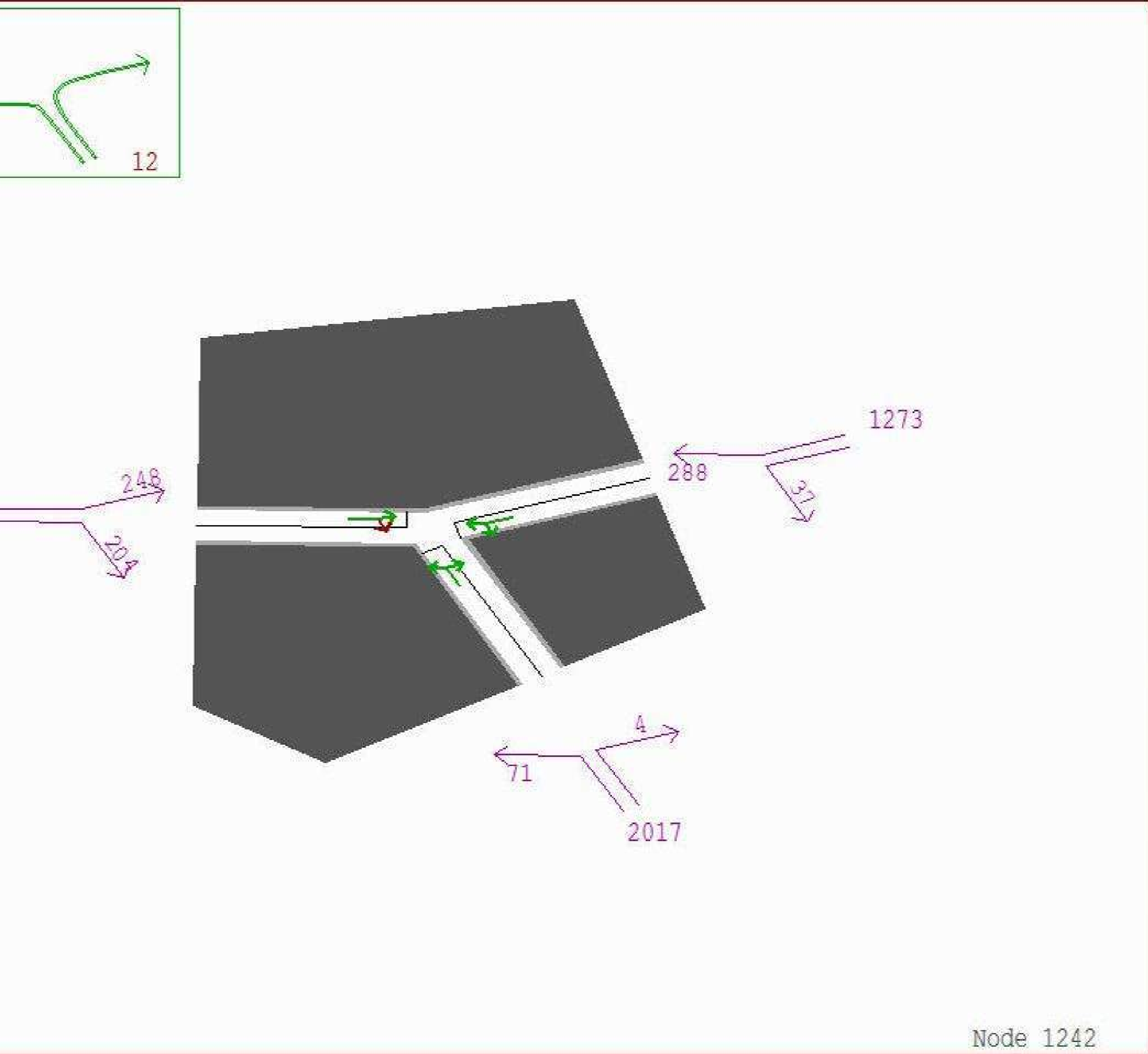
Node 2761


86
50
8
6
612
861
207
20
281
9512
8756
599
239
66
195
73
202
3755
1118
428
789
290
631
633
1394
762
285
460
106
207
185
258
215
280
3133
2257
5598
6045
6065
794
4723
512
324
96
23
22
3
16
0
204
261
370
366
197


21
8
23
33
7
4192
381
127
11
253
49
19
126
20
119
243
2
558
156
2641
Node Graphic
Master Menu:
NODE 1230
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print X
liSt .dat fi X
Data Tables:
teXt >
Window >
Table 2 X
eRror checks X
2 Warnings
4 Ser.Warns
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!
Node 1230



9
17
10
1238
43
25
574
1279
80
126
47
163
35
540
0
2632
2628
Node 1237
Node Graphic
Master Menu:
NODE 1237
General disp >
Data display >
Animation >
/ DRACULA
Information >
Print X
liSt .dat fi X
Data Tables:
teXt >
Window >
Table 2 X
eRror checks X
7 Warnings
8 Ser.Warns
Edit >
Change node:
Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >
Centered >
network plot
inFo:Network >
auxiliarY >
network plot
Q - Return
+ Menu bar!



Node Graphic
Master Menu:

NODE 1242

General disp >
Data display >

Animation >
/ DRACULA

Information >
Print x
liSt .dat fi x

Data Tables:
teXt >
Window >
Table 2 x

eRror checks x
4 Ser.Warns

Edit >

Change node:

Up (numb >
dOwn ers) >
Mouse set ex >
- this plot
- Network >
numBer set >

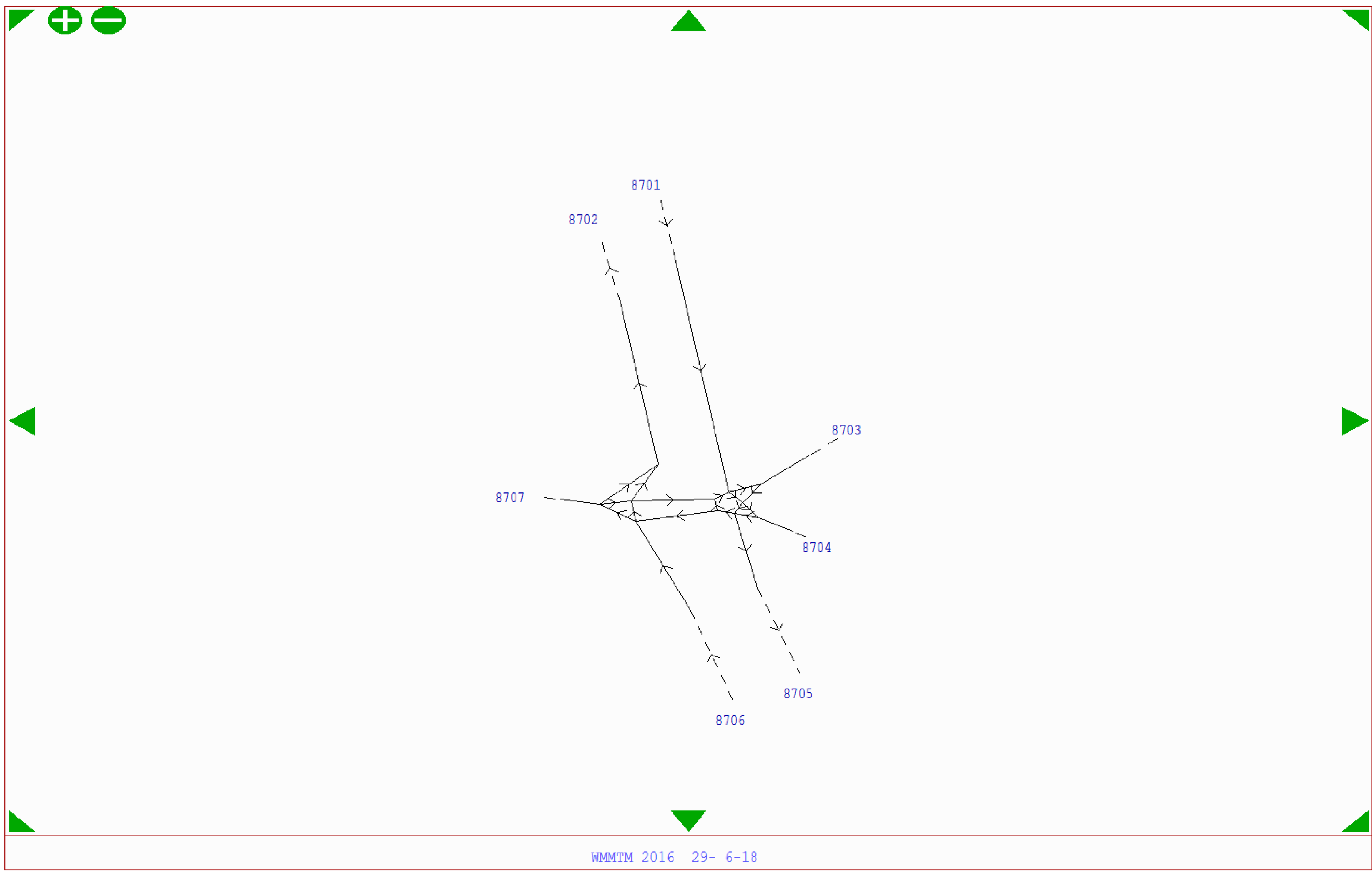
Centered >
network plot

inFo:Network >

auxiliarY >
network plot

Q - Return

+ Menu bar!



Node Display
Menu:

Display Mode
numerical

Choice of
Node data:

Currently:
Node number

Node Shapes
are excluded

Line Width
= 0.00 mm.

no Colours
by node type

Magnify by:
1.20

Offset Names
- No

SeLect ON
SElect menu

Annotation
if space OK

SATDB Opts

Hilite Error
marKers OFF

onlY nodes F

4STAR - OFF

Q - Return

+ Menu bar!

Without Development

Car

	8707 A50 W	8702 M6 North	8701 M6 North	8703 B5158	8704 A50 E	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	222	0	48	60	750	0	**1080**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	351	0	0	85	18	0	0	**455**
8703 **B5158**	21	42	0	0	11	212	0	**285**
8704 **A50 E**	14	4	0	7	0	19	0	**44**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	428	465	0	55	6	0	0	**955**
Total	**814**	**733**	**0**	**195**	**95**	**981**	**0**	**2819**

LGV

	8707 A50 W	8702 M6 North	8701 M6 North	8703 B5158	8704 A50 E	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	23	0	23	9	103	0	**159**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	41	0	0	13	4	0	0	**58**
8703 **B5158**	11	5	0	0	1	9	0	**27**
8704 **A50 E**	10	2	0	2	0	2	0	**16**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	57	83	0	6	1	0	0	**147**
Total	**118**	**114**	**0**	**43**	**16**	**114**	**0**	**406**

HGV

	8707 A50 W	8702 M6 North	8701 M6 North	8703 B5158	8704 A50 E	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	76	0	4	0	139	0	**219**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	26	0	0	19	2	0	0	**48**
8703 **B5158**	0	19	0	0	0	7	0	**26**
8704 **A50 E**	0	4	0	0	0	2	0	**6**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	169	111	0	8	2	0	0	**291**
Total	**196**	**209**	**0**	**31**	**5**	**149**	**0**	**590**

Total

	8707 A50 W	8702 M6 North	8701 M6 North	8703 B5158	8704 A50 E	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	321	0	75	69	993	0	**1458**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	418	0	0	117	25	0	0	**560**
8703 **B5158**	32	66	0	0	12	228	0	**338**
8704 **A50 E**	24	10	0	8	0	23	0	**66**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	654	660	0	69	10	0	0	**1393**
Total	**1129**	**1057**	**0**	**269**	**116**	**1244**	**0**	**3815**

With Development

Car

	8707 A50	8702 M6 North	8701 M6 North	8703 B5158	8704 A50	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	175	0	38	59	639	0	**911**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	394	0	0	84	18	0	0	**496**
8703 **B5158**	24	44	0	0	11	213	0	**291**
8704 **A50 E**	15	4	0	7	0	21	0	**47**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	400	466	0	61	7	0	0	**935**
Total	**832**	**690**	**0**	**189**	**96**	**873**	**0**	**2680**

LGV

	8707 A50	8702 M6 North	8701 M6 North	8703 B5158	8704 A50	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	29	0	35	12	120	0	**197**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	45	0	0	12	4	0	0	**62**
8703 **B5158**	16	5	0	0	1	9	0	**32**
8704 **A50 E**	11	2	0	2	0	3	0	**18**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	58	70	0	5	1	0	0	**134**
Total	**130**	**107**	**0**	**55**	**19**	**132**	**0**	**443**

HGV

	8707 A50	8702 M6 North	8701 M6 North	8703 B5158	8704 A50	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	175	0	11	0	194	0	**381**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	83	0	0	19	2	0	0	**104**
8703 **B5158**	1	19	0	0	0	7	0	**27**
8704 **A50 E**	0	4	0	0	0	2	0	**6**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	252	105	0	8	2	0	0	**367**
Total	**336**	**303**	**0**	**38**	**5**	**204**	**0**	**886**

Total

	8707 A50	8702 M6 North	8701 M6 North	8703 B5158	8704 A50	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	379	0	85	72	954	0	**1489**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	521	0	0	115	25	0	0	**662**
8703 **B5158**	41	68	0	0	12	229	0	**350**
8704 **A50 E**	26	11	0	8	0	26	0	**71**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	710	642	0	74	11	0	0	**1436**
Total	**1298**	**1099**	**0**	**282**	**120**	**1209**	**0**	**4009**

Without Development

Car

		8707 A50 W	8702 M6 North	8701 M6 North	8703 B5158	8704 A50 E	8705 M6 South	8706 M6 South	Total
8707	A50 W	0	255	0	49	52	743	0	1100
8702	M6 North	0	0	0	0	0	0	0	0
8701	M6 North	404	0	0	78	14	0	0	497
8703	B5158	24	50	0	0	7	241	0	323
8704	A50 E	12	5	0	5	0	63	0	85
8705	M6 South	0	0	0	0	0	0	0	0
8706	M6 South	448	428	0	55	6	0	0	937
	Total	889	739	0	187	80	1047	0	2943

LGV

		8707 A50 W	8702 M6 North	8701 M6 North	8703 B5158	8704 A50 E	8705 M6 South	8706 M6 South	Total
8707	A50 W	0	33	0	35	11	110	0	189
8702	M6 North	0	0	0	0	0	0	0	0
8701	M6 North	58	0	0	11	5	0	0	74
8703	B5158	15	6	0	0	1	11	0	33
8704	A50 E	10	3	0	2	0	4	0	19
8705	M6 South	0	0	0	0	0	0	0	0
8706	M6 South	65	101	0	5	1	0	0	173
	Total	148	143	0	53	18	125	0	487

HGV

		8707 A50 W	8702 M6 North	8701 M6 North	8703 B5158	8704 A50 E	8705 M6 South	8706 M6 South	Total
8707	A50 W	0	91	0	5	0	133	0	230
8702	M6 North	0	0	0	0	0	0	0	0
8701	M6 North	37	0	0	19	2	0	0	58
8703	B5158	0	19	0	0	0	8	0	28
8704	A50 E	0	4	0	0	0	2	0	6
8705	M6 South	0	0	0	0	0	0	0	0
8706	M6 South	176	140	0	7	2	0	0	324
	Total	213	254	0	31	5	143	0	646

Total

		8707 A50 W	8702 M6 North	8701 M6 North	8703 B5158	8704 A50 E	8705 M6 South	8706 M6 South	Total
8707	A50 W	0	379	0	89	64	987	0	1519
8702	M6 North	0	0	0	0	0	0	0	0
8701	M6 North	500	0	0	108	21	0	0	629
8703	B5158	39	76	0	0	9	260	0	384
8704	A50 E	23	12	0	7	0	68	0	110
8705	M6 South	0	0	0	0	0	0	0	0
8706	M6 South	688	670	0	67	9	0	0	1434
	Total	1250	1136	0	272	103	1315	0	4076

With Development

Car

	8707 A50	8702 M6 North	8701 M6 North	8703 B5158	8704 A50	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	214	0	39	49	609	0	**910**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	397	0	0	75	62	0	0	**534**
8703 **B5158**	13	54	0	0	9	241	0	**317**
8704 **A50 E**	12	7	0	5	0	46	0	**69**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	398	453	0	55	8	0	0	**914**
Total	**820**	**727**	**0**	**173**	**127**	**895**	**0**	**2744**

LGV

	8707 A50	8702 M6 North	8701 M6 North	8703 B5158	8704 A50	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	34	0	43	13	120	0	**210**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	65	0	0	10	6	0	0	**81**
8703 **B5158**	12	6	0	0	1	11	0	**31**
8704 **A50 E**	8	3	0	2	0	4	0	**16**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	63	95	0	6	2	0	0	**166**
Total	**148**	**139**	**0**	**61**	**22**	**134**	**0**	**504**

HGV

	8707 A50	8702 M6 North	8701 M6 North	8703 B5158	8704 A50	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	183	0	12	0	143	0	**338**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	93	0	0	19	2	0	0	**114**
8703 **B5158**	1	19	0	0	0	8	0	**28**
8704 **A50 E**	0	4	0	0	0	2	0	**6**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	245	128	0	7	2	0	0	**381**
Total	**339**	**333**	**0**	**38**	**5**	**153**	**0**	**868**

Total

	8707 A50	8702 M6 North	8701 M6 North	8703 B5158	8704 A50	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	431	0	94	62	871	0	**1458**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	555	0	0	104	70	0	0	**729**
8703 **B5158**	26	80	0	0	10	259	0	**376**
8704 **A50 E**	21	13	0	7	0	51	0	**92**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	706	676	0	68	11	0	0	**1461**
Total	**1308**	**1200**	**0**	**272**	**154**	**1182**	**0**	**4115**

Without Development

Car

	8707 A50 W	8702 M6 North	8701 M6 North	8703 B5158	8704 A50 E	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	241	0	32	22	571	0	**866**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	368	0	0	200	13	0	0	**581**
8703 **B5158**	35	96	0	0	8	59	0	**198**
8704 **A50 E**	20	7	0	11	0	5	0	**44**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	556	466	0	179	6	0	0	**1207**
Total	**979**	**809**	**0**	**422**	**50**	**636**	**0**	**2896**

LGV

	8707 A50 W	8702 M6 North	8701 M6 North	8703 B5158	8704 A50 E	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	77	0	15	8	23	0	**124**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	49	0	0	22	7	0	0	**78**
8703 **B5158**	14	20	0	0	1	6	0	**41**
8704 **A50 E**	7	10	0	1	0	1	0	**19**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	84	24	0	15	2	0	0	**126**
Total	**154**	**131**	**0**	**54**	**19**	**29**	**0**	**387**

HGV

	8707 A50 W	8702 M6 North	8701 M6 North	8703 B5158	8704 A50 E	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	65	0	2	0	82	0	**149**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	29	0	0	38	1	0	0	**69**
8703 **B5158**	3	26	0	0	0	6	0	**34**
8704 **A50 E**	0	3	0	0	0	1	0	**3**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	87	2	0	9	1	0	0	**100**
Total	**119**	**95**	**0**	**49**	**3**	**88**	**0**	**355**

Total

	8707 A50 W	8702 M6 North	8701 M6 North	8703 B5158	8704 A50 E	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	382	0	50	30	676	0	**1138**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	446	0	0	260	22	0	0	**728**
8703 **B5158**	52	142	0	0	10	70	0	**274**
8704 **A50 E**	27	20	0	12	0	7	0	**66**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	727	492	0	203	10	0	0	**1432**
Total	**1252**	**1036**	**0**	**526**	**72**	**753**	**0**	**3639**

With Development

Car

		8707 A50	8702 M6 North	8701 M6 North	8703 B5158	8704 A50	8705 M6 South	8706 M6 South	Total
8707	A50 W	0	263	0	36	21	565	0	**885**
8702	M6 North	0	0	0	0	0	0	0	**0**
8701	M6 North	360	0	0	198	14	0	0	**571**
8703	B5158	34	107	0	0	8	59	0	**209**
8704	A50 E	20	7	0	12	0	18	0	**57**
8705	M6 South	0	0	0	0	0	0	0	**0**
8706	M6 South	493	481	0	179	6	0	0	**1160**
	Total	**907**	**858**	**0**	**424**	**50**	**642**	**0**	**2882**

LGV

		8707 A50	8702 M6 North	8701 M6 North	8703 B5158	8704 A50	8705 M6 South	8706 M6 South	Total
8707	A50 W	0	96	0	20	9	27	0	**152**
8702	M6 North	0	0	0	0	0	0	0	**0**
8701	M6 North	63	0	0	22	7	0	0	**92**
8703	B5158	18	20	0	0	1	5	0	**46**
8704	A50 E	8	10	0	1	0	1	0	**20**
8705	M6 South	0	0	0	0	0	0	0	**0**
8706	M6 South	90	42	0	15	2	0	0	**149**
	Total	**179**	**169**	**0**	**59**	**19**	**34**	**0**	**458**

HGV

		8707 A50	8702 M6 North	8701 M6 North	8703 B5158	8704 A50	8705 M6 South	8706 M6 South	Total
8707	A50 W	0	239	0	11	0	118	0	**369**
8702	M6 North	0	0	0	0	0	0	0	**0**
8701	M6 North	119	0	0	37	2	0	0	**159**
8703	B5158	12	26	0	0	0	6	0	**43**
8704	A50 E	0	3	0	0	0	1	0	**4**
8705	M6 South	0	0	0	0	0	0	0	**0**
8706	M6 South	215	2	0	7	1	0	0	**226**
	Total	**347**	**270**	**0**	**56**	**3**	**125**	**0**	**801**

Total

		8707 A50	8702 M6 North	8701 M6 North	8703 B5158	8704 A50	8705 M6 South	8706 M6 South	Total
8707	A50 W	0	598	0	67	30	710	0	**1406**
8702	M6 North	0	0	0	0	0	0	0	**0**
8701	M6 North	542	0	0	257	22	0	0	**822**
8703	B5158	65	153	0	0	10	70	0	**298**
8704	A50 E	28	20	0	13	0	20	0	**81**
8705	M6 South	0	0	0	0	0	0	0	**0**
8706	M6 South	798	526	0	202	10	0	0	**1535**
	Total	**1433**	**1297**	**0**	**539**	**72**	**800**	**0**	**4141**

Without Development

Car

	8707 A50 W	8702 M6 North	8701 M6 North	8703 B5158	8704 A50 E	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	307	0	41	21	647	0	**1017**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	520	0	0	270	20	0	0	**810**
8703 **B5158**	22	51	0	0	7	64	0	**144**
8704 **A50 E**	19	7	0	14	0	19	0	**60**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	578	473	0	174	6	0	0	**1231**
Total	**1139**	**838**	**0**	**499**	**54**	**731**	**0**	**3262**

LGV

	8707 A50 W	8702 M6 North	8701 M6 North	8703 B5158	8704 A50 E	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	110	0	21	9	26	0	**166**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	81	0	0	25	8	0	0	**115**
8703 **B5158**	19	19	0	0	1	6	0	**46**
8704 **A50 E**	7	11	0	2	0	1	0	**21**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	117	118	0	12	2	0	0	**250**
Total	**224**	**258**	**0**	**60**	**20**	**34**	**0**	**596**

HGV

	8707 A50 W	8702 M6 North	8701 M6 North	8703 B5158	8704 A50 E	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	75	0	3	0	82	0	**159**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	35	0	0	39	1	0	0	**75**
8703 **B5158**	2	25	0	0	0	6	0	**33**
8704 **A50 E**	0	2	0	0	0	1	0	**3**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	85	27	0	3	1	0	0	**117**
Total	**122**	**129**	**0**	**45**	**3**	**88**	**0**	**387**

Total

	8707 A50 W	8702 M6 North	8701 M6 North	8703 B5158	8704 A50 E	8705 M6 South	8706 M6 South	Total
8707 **A50 W**	0	491	0	66	30	755	0	**1342**
8702 **M6 North**	0	0	0	0	0	0	0	**0**
8701 **M6 North**	636	0	0	334	29	0	0	**999**
8703 **B5158**	43	95	0	0	9	76	0	**223**
8704 **A50 E**	26	20	0	16	0	21	0	**83**
8705 **M6 South**	0	0	0	0	0	0	0	**0**
8706 **M6 South**	781	618	0	189	10	0	0	**1598**
Total	**1486**	**1224**	**0**	**604**	**78**	**852**	**0**	**4245**

With Development

Car

		8707	8702	8701	8703	8704	8705	8706	
		A50	M6 North	M6 North	B5158	A50	M6 South	M6 South	Total
8707	A50 W	0	313	0	26	20	496	0	854
8702	M6 North	0	0	0	0	0	0	0	0
8701	M6 North	440	0	0	267	41	0	0	749
8703	B5158	17	56	0	0	7	66	0	146
8704	A50 E	15	81	0	18	0	74	0	187
8705	M6 South	0	0	0	0	0	0	0	0
8706	M6 South	474	475	0	141	6	0	0	1096
	Total	945	925	0	452	75	636	0	3033

LGV

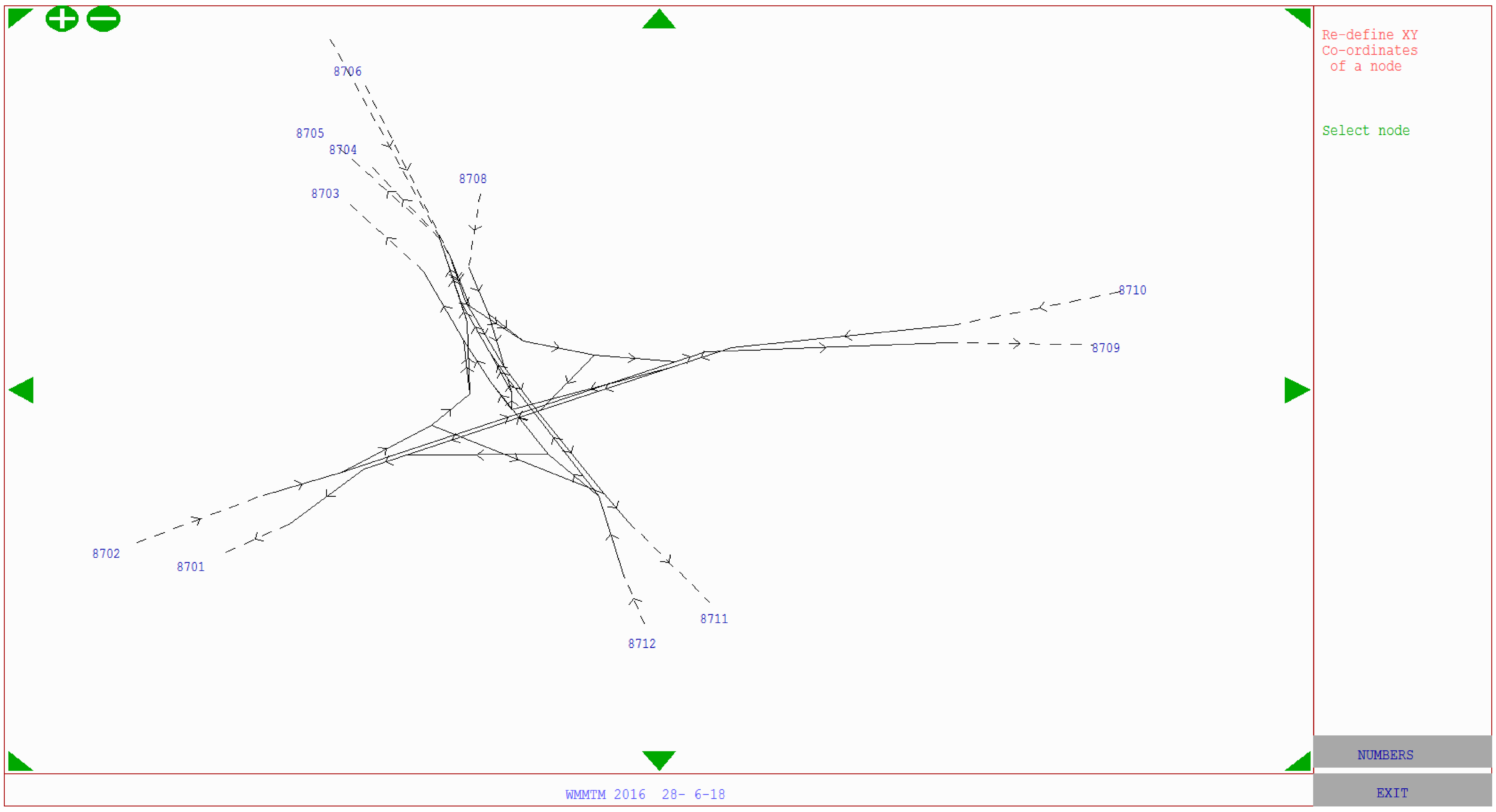
		8707	8702	8701	8703	8704	8705	8706	
		A50	M6 North	M6 North	B5158	A50	M6 South	M6 South	Total
8707	A50 W	0	127	0	22	10	23	0	182
8702	M6 North	0	0	0	0	0	0	0	0
8701	M6 North	71	0	0	25	29	0	0	125
8703	B5158	19	19	0	0	4	6	0	49
8704	A50 E	8	31	0	4	0	4	0	47
8705	M6 South	0	0	0	0	0	0	0	0
8706	M6 South	120	121	0	11	2	0	0	254
	Total	218	298	0	62	46	34	0	657

HGV

		8707	8702	8701	8703	8704	8705	8706	
		A50	M6 North	M6 North	B5158	A50	M6 South	M6 South	Total
8707	A50 W	0	241	0	11	0	117	0	370
8702	M6 North	0	0	0	0	0	0	0	0
8701	M6 North	117	0	0	38	7	0	0	163
8703	B5158	9	25	0	0	0	6	0	39
8704	A50 E	0	2	0	0	0	2	0	5
8705	M6 South	0	0	0	0	0	0	0	0
8706	M6 South	217	97	0	3	1	0	0	318
	Total	343	365	0	52	9	125	0	895

Total

		8707	8702	8701	8703	8704	8705	8706	
		A50	M6 North	M6 North	B5158	A50	M6 South	M6 South	Total
8707	A50 W	0	682	0	58	31	636	0	1407
8702	M6 North	0	0	0	0	0	0	0	0
8701	M6 North	628	0	0	331	77	0	0	1036
8703	B5158	45	100	0	0	11	78	0	234
8704	A50 E	22	114	0	22	0	81	0	239
8705	M6 South	0	0	0	0	0	0	0	0
8706	M6 South	811	693	0	155	10	0	0	1669
	Total	1506	1589	0	566	129	795	0	4585


8706
8705
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8702
8701
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Re-define XY
Co-ordinates
of a node
Select node
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EXIT
WMMTM 2016 28- 6-18

Without Development

Car

			8701	8703	8704 8705	8709	8711	
			M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
	8702	**M56 W**	0	274	1381	1397	472	**3524**
	8708	**A50**	170	0	0	622	191	**983**
8707	8706	**M6N**	1094	0	0	500	2058	**3652**
	8710	**M56E**	1479	345	649	0	0	**2473**
	8712	**M6 South**	437	336	1976	0	0	**2750**
		Total	**3181**	**955**	**4007**	**2519**	**2721**	**13382**

LGV

			M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
	8702	**M56 W**	0	28	215	436	97	**777**
	8708	**A50**	7	0	0	85	23	**115**
8707	8706	**M6N**	263	0	0	168	449	**880**
	8710	**M56E**	355	63	166	0	0	**584**
	8712	**M6 South**	89	56	451	0	0	**596**
		Total	**714**	**147**	**832**	**690**	**569**	**2952**

HGV

			M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
	8702	**M56 W**	0	73	922	451	200	**1646**
	8708	**A50**	5	0	0	94	50	**149**
8707	8706	**M6N**	964	0	0	136	1412	**2511**
	8710	**M56E**	371	75	254	0	0	**699**
	8712	**M6 South**	347	144	1997	0	0	**2488**
		Total	**1686**	**292**	**3173**	**682**	**1661**	**7494**

All

			M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
	8702	**M56 W**	0	375	2518	2285	769	**5946**
	8708	**A50**	182	0	0	802	264	**1248**
8707	8706	**M6N**	2321	0	0	805	3918	**7044**
	8710	**M56E**	2205	482	1069	0	0	**3756**
	8712	**M6 South**	873	536	4424	0	0	**5834**
		Total	**5581**	**1393**	**8011**	**3891**	**4951**	**23828**

With Development

Car

		8701	8703	8704 8705	8709	8711	
		M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
8707	**M56 W**	0	270	1424	1478	478	**3650**
8702	**A50**	167	0	0	533	168	**868**
8701	**M6N**	1083	0	0	454	2040	**3577**
8703	**M56E**	1483	372	611	0	0	**2465**
8704	**M6 South**	447	293	1986	0	0	**2726**
8705							
8706							
	Total	**3180**	**935**	**4020**	**2464**	**2686**	**13286**

LGV

		M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
8707	**M56 W**	0	25	221	437	94	**777**
8702	**A50**	7	0	0	98	26	**131**
8701	**M6N**	251	0	0	167	443	**861**
8703	**M56E**	361	61	169	0	0	**591**
8704	**M6 South**	90	48	452	0	0	**591**
8705							
8706							
	Total	**709**	**134**	**842**	**702**	**563**	**2951**

HGV

		M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
8707	**M56 W**	0	56	930	452	200	**1638**
8702	**A50**	5	0	0	137	60	**202**
8701	**M6N**	947	0	0	135	1397	**2479**
8703	**M56E**	371	114	257	0	0	**741**
8704	**M6 South**	347	199	1986	0	0	**2532**
8705							
8706							
	Total	**1671**	**369**	**3173**	**724**	**1657**	**7593**

HGV

		M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
8707	**M56 W**	0	351	2575	2367	771	**6064**
8702	**A50**	179	0	0	768	255	**1201**
8701	**M6N**	2281	0	0	756	3880	**6917**
8703	**M56E**	2215	546	1036	0	0	**3798**
8704	**M6 South**	885	540	4424	0	0	**5849**
8705							
8706							
	Total	**5560**	**1438**	**8036**	**3890**	**4906**	**23829**

Without Development

Car

		8701	8703	8704 8705	8709	8711	Total
		M56 W	A50	M6N	M56E	M6 South	Total
	8702 **M56 W**	0	337	1365	1557	443	**3702**
	8708 **A50**	216	0	0	637	188	**1041**
8707	8706 **M6N**	1133	0	0	486	2296	**3914**
	8710 **M56E**	1485	313	565	0	0	**2364**
	8712 **M6 South**	458	287	2139	0	0	**2883**
	Total	**3292**	**937**	**4069**	**2679**	**2926**	**13904**

LGV

		M56 W	A50	M6N	M56E	M6 South	Total
	8702 **M56 W**	0	36	303	451	88	**879**
	8708 **A50**	9	0	0	95	21	**125**
8707	8706 **M6N**	334	0	0	197	532	**1063**
	8710 **M56E**	445	74	193	0	0	**711**
	8712 **M6 South**	125	63	527	0	0	**714**
	Total	**912**	**173**	**1023**	**743**	**641**	**3492**

HGV

		M56 W	A50	M6N	M56E	M6 South	Total
	8702 **M56 W**	0	60	931	453	113	**1556**
	8708 **A50**	6	0	0	90	47	**143**
8707	8706 **M6N**	980	0	0	136	1439	**2555**
	8710 **M56E**	398	79	232	0	0	**709**
	8712 **M6 South**	391	188	1978	0	0	**2558**
	Total	**1776**	**327**	**3141**	**679**	**1598**	**7521**

All

		M56 W	A50	M6N	M56E	M6 South	Total
	8702 **M56 W**	0	434	2599	2460	644	**6137**
	8708 **A50**	231	0	0	822	256	**1309**
8707	8706 **M6N**	2447	0	0	819	4266	**7532**
	8710 **M56E**	2328	466	989	0	0	**3783**
	8712 **M6 South**	974	538	4644	0	0	**6155**
	Total	**5980**	**1437**	**8232**	**4102**	**5166**	**24917**

With Development

Car

		8701	8703	8704 8705	8709	8711	
		M56 W	A50	M6N	M56E	M6 South	Total
8707	M56 W	0	353	1339	1581	444	3717
8702	A50	227	0	0	507	156	890
8701	M6N	1121	0	0	481	2272	3874
8703	M56E	1483	313	527	0	0	2324
8704	M6 South	461	245	2162	0	0	2867
8705							
8706							
	Total	3292	912	4028	2568	2873	13673

LGV

		M56 W	A50	M6N	M56E	M6 South	Total
8707	M56 W	0	53	268	481	88	890
8702	A50	23	0	0	91	21	135
8701	M6N	320	0	0	197	524	1041
8703	M56E	449	60	198	0	0	707
8704	M6 South	125	53	532	0	0	711
8705							
8706							
	Total	916	166	999	768	634	3483

HGV

		M56 W	A50	M6N	M56E	M6 South	Total
8707	M56 W	0	59	924	449	112	1544
8702	A50	6	0	0	114	34	154
8701	M6N	968	0	0	143	1444	2556
8703	M56E	398	114	235	0	0	748
8704	M6 South	390	212	1998	0	0	2600
8705							
8706							
	Total	1763	386	3157	707	1590	7602

HGV

		M56 W	A50	M6N	M56E	M6 South	Total
8707	M56 W	0	465	2531	2511	644	6151
8702	A50	256	0	0	711	211	1179
8701	M6N	2409	0	0	821	4241	7471
8703	M56E	2331	488	960	0	0	3779
8704	M6 South	975	511	4692	0	0	6178
8705							
8706							
	Total	5971	1464	8183	4043	5096	24758

Without Development

Car

		8701	8703	8704 8705	8709	8711	
		M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
	8702 **M56 W**	0	212	1048	1454	496	**3210**
	8708 **A50**	110	0	0	368	151	**628**
8707	8706 **M6N**	1235	0	0	750	2150	**4135**
	8710 **M56E**	1842	808	628	0	0	**3277**
	8712 **M6 South**	306	229	2369	0	0	**2905**
	Total	**3492**	**1250**	**4045**	**2571**	**2797**	**14155**

LGV

		M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
	8702 **M56 W**	0	13	256	345	75	**689**
	8708 **A50**	6	0	0	17	6	**29**
8707	8706 **M6N**	270	0	0	104	442	**816**
	8710 **M56E**	364	88	228	0	0	**681**
	8712 **M6 South**	78	29	414	0	0	**521**
	Total	**718**	**130**	**899**	**467**	**523**	**2736**

HGV

		M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
	8702 **M56 W**	0	7	712	350	207	**1276**
	8708 **A50**	5	0	0	39	43	**87**
8707	8706 **M6N**	597	0	0	45	1018	**1659**
	8710 **M56E**	181	30	256	0	0	**467**
	8712 **M6 South**	213	68	1712	0	0	**1993**
	Total	**995**	**105**	**2680**	**434**	**1268**	**5482**

All

		M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
	8702 **M56 W**	0	233	2016	2149	778	**5175**
	8708 **A50**	121	0	0	423	200	**744**
8707	8706 **M6N**	2101	0	0	899	3610	**6610**
	8710 **M56E**	2387	926	1113	0	0	**4425**
	8712 **M6 South**	597	326	4495	0	0	**5418**
	Total	**5205**	**1485**	**7624**	**3472**	**4588**	**22373**

With Development

Car

		8701	8703	8704 8705	8709	8711	Total
		M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
8707	**M56 W**	0	229	1019	1478	507	**3233**
8702	**A50**	127	0	0	369	138	**634**
8701	**M6N**	1215	0	0	751	2158	**4124**
8703	**M56E**	1849	750	618	0	0	**3217**
8704	**M6 South**	310	215	2293	0	0	**2818**
8705							
8706							
	Total	**3501**	**1194**	**3931**	**2597**	**2803**	**14026**

LGV

		M56 W	A50	M6N	M56E	M6 South	Total
8707	**M56 W**	0	15	251	347	76	**689**
8702	**A50**	6	0	0	21	7	**33**
8701	**M6N**	269	0	0	105	438	**812**
8703	**M56E**	362	111	212	0	0	**685**
8704	**M6 South**	78	26	414	0	0	**517**
8705							
8706							
	Total	**715**	**152**	**877**	**472**	**520**	**2736**

HGV

		M56 W	A50	M6N	M56E	M6 South	Total
8707	**M56 W**	0	7	707	351	207	**1271**
8702	**A50**	5	0	0	62	56	**123**
8701	**M6N**	593	0	0	44	1017	**1654**
8703	**M56E**	156	79	256	0	0	**491**
8704	**M6 South**	213	151	1710	0	0	**2073**
8705							
8706							
	Total	**967**	**236**	**2672**	**458**	**1279**	**5613**

HGV

		M56 W	A50	M6N	M56E	M6 South	Total
8707	**M56 W**	0	251	1977	2176	790	**5193**
8702	**A50**	138	0	0	452	200	**790**
8701	**M6N**	2077	0	0	900	3613	**6590**
8703	**M56E**	2367	940	1086	0	0	**4394**
8704	**M6 South**	600	392	4417	0	0	**5409**
8705							
8706							
	Total	**5182**	**1583**	**7480**	**3527**	**4603**	**22375**

Without Development

Car

		8701	8703	8704 8705	8709	8711	
		M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
	8702 **M56 W**	0	235	992	1582	578	**3387**
	8708 **A50**	160	0	0	399	159	**717**
8707	8706 **M6N**	1331	0	0	488	2545	**4363**
	8710 **M56E**	1932	804	458	0	0	**3194**
	8712 **M6 South**	377	214	2582	0	0	**3172**
	Total	**3799**	**1253**	**4031**	**2468**	**3281**	**14833**

LGV

		M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
	8702 **M56 W**	0	15	295	426	62	**798**
	8708 **A50**	8	0	0	19	6	**33**
8707	8706 **M6N**	455	0	0	84	526	**1065**
	8710 **M56E**	334	202	227	0	0	**763**
	8712 **M6 South**	106	36	511	0	0	**652**
	Total	**903**	**253**	**1032**	**530**	**594**	**3312**

HGV

		M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
	8702 **M56 W**	0	8	691	369	213	**1281**
	8708 **A50**	5	0	0	39	42	**86**
8707	8706 **M6N**	641	0	0	31	1057	**1729**
	8710 **M56E**	165	48	245	0	0	**457**
	8712 **M6 South**	262	65	1752	0	0	**2079**
	Total	**1073**	**121**	**2688**	**439**	**1313**	**5633**

All

		M56 W	**A50**	**M6N**	**M56E**	**M6 South**	**Total**
	8702 **M56 W**	0	258	1978	2377	853	**5466**
	8708 **A50**	172	0	0	457	207	**837**
8707	8706 **M6N**	2428	0	0	603	4127	**7158**
	8710 **M56E**	2431	1054	929	0	0	**4414**
	8712 **M6 South**	745	314	4844	0	0	**5903**
	Total	**5775**	**1626**	**7752**	**3437**	**5187**	**23778**

With Development

Car

		8701	8703	8704 8705	8709	8711	
		M56 W	A50	M6N	M56E	M6 South	Total
8707	M56 W	0	262	920	1626	580	3388
8702	A50	92	0	0	389	150	631
8701	M6N	1310	0	0	492	2552	4354
8703	M56E	1965	565	619	0	0	3149
8704	M6 South	419	279	2376	0	0	3075
8705							
8706							
	Total	3786	1106	3915	2507	3282	14596

LGV

		M56 W	A50	M6N	M56E	M6 South	Total
8707	M56 W	0	35	271	428	62	795
8702	A50	8	0	0	20	5	34
8701	M6N	455	0	0	84	523	1063
8703	M56E	335	174	262	0	0	771
8704	M6 South	106	46	474	0	0	625
8705							
8706							
	Total	905	254	1007	531	591	3288

HGV

		M56 W	A50	M6N	M56E	M6 South	Total
8707	M56 W	0	42	648	370	213	1273
8702	A50	5	0	0	63	57	124
8701	M6N	636	0	0	30	1052	1719
8703	M56E	164	104	239	0	0	507
8704	M6 South	262	179	1719	0	0	2160
8705							
8706							
	Total	1068	325	2605	463	1322	5783

HGV

		M56 W	A50	M6N	M56E	M6 South	Total
8707	M56 W	0	338	1839	2423	855	5455
8702	A50	104	0	0	472	213	789
8701	M6N	2402	0	0	606	4128	7136
8703	M56E	2465	843	1120	0	0	4427
8704	M6 South	788	504	4568	0	0	5860
8705							
8706							
	Total	5759	1685	7527	3501	5195	23667

Appendix I

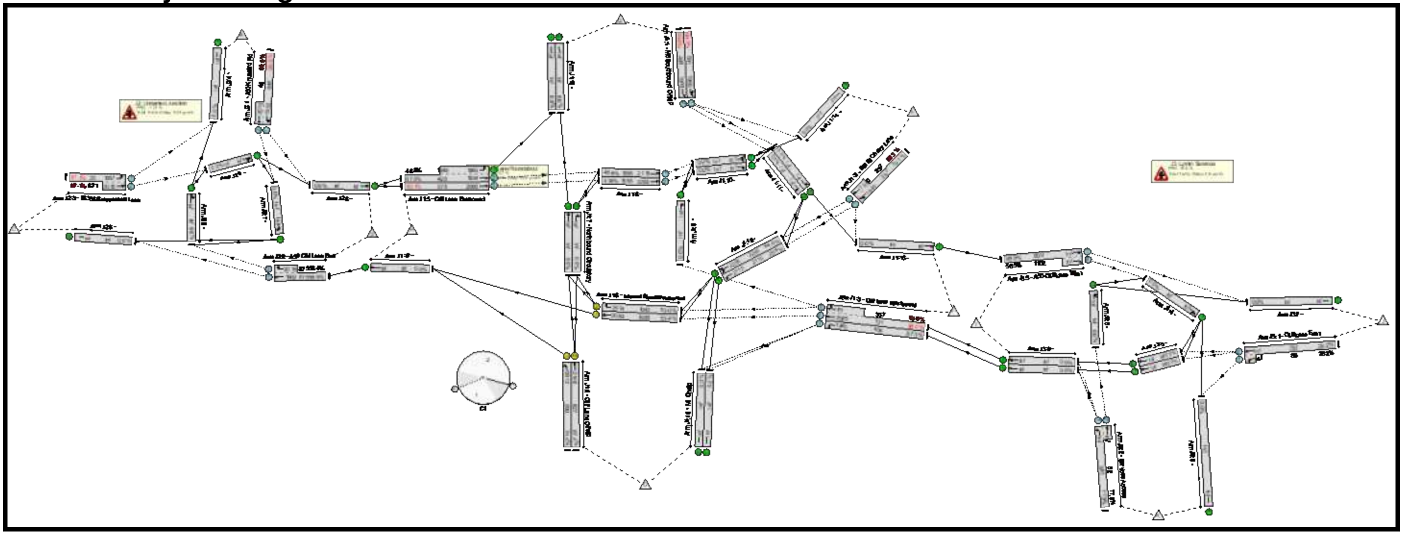
Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	AM Peak Existing Network.lsg3x
Author:	
Company:	
Address:	

Scenario 1: 'AM Observed' (FG1: '2017 AM Observed', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

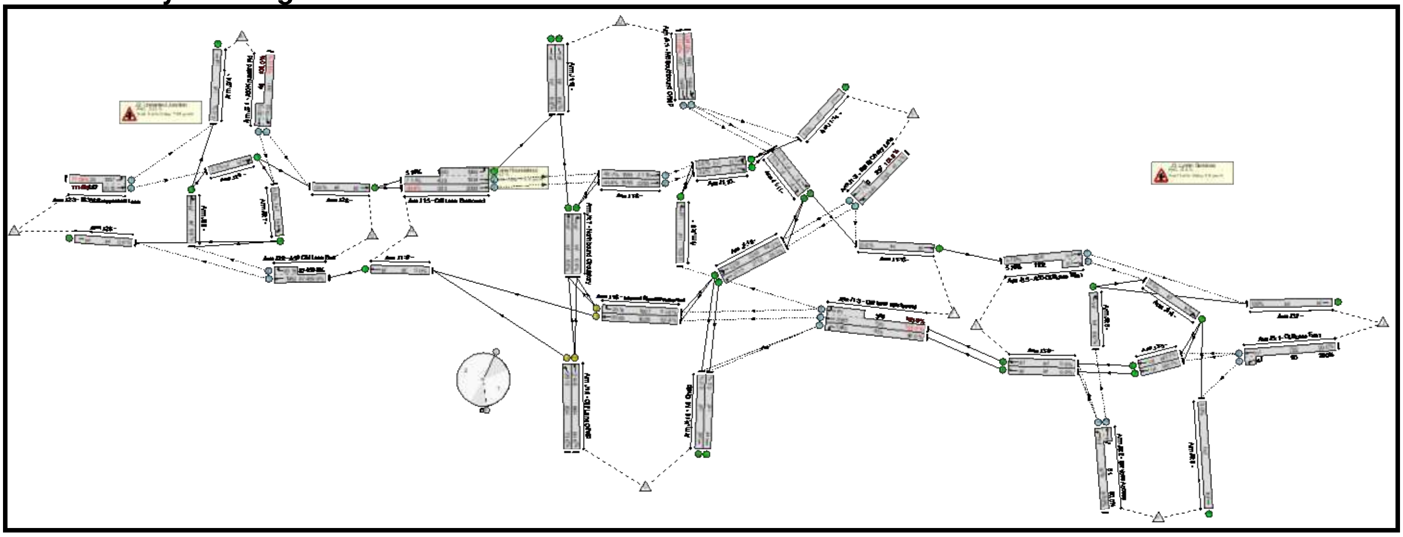
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**99.9%**	**14535**	**0**	**0**	**85.8**	-	-
J1: Cliff Lane Roundabout	-	-	-		-	-	-	-	-	-	**99.6%**	**5479**	**0**	**0**	**58.9**	-	-
1/1	M6 Southbound Offslip Ahead Left	O	-		-	-	-	587	1940	591	99.3%	587	0	0	11.9	73.2	20.0
1/2	M6 Southbound Offslip Ahead	O	-		-	-	-	464	1940	466	99.6%	464	0	0	11.2	86.6	17.5
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	470	1940:1940	297+237	79.1 : 99.3%	940	0	0	3.5	26.9	6.9
3/1	Cliff Lane Westbound Left	O	-		-	-	-	354	1940	406	87.3%	354	0	0	3.1	31.6	6.1
3/2+3/3	Cliff Lane Westbound Ahead Right	O	-		-	-	-	469	2065: Inf	121+357	98.0 : 98.0%	938	0	0	8.7	67.0	13.0
4/1	Cliff Lane Offslip Left	U	B		1	16	-	439	2012	590	74.4%	-	-	-	3.7	30.3	7.8
4/2	Cliff Lane Offslip Ahead	U	B		1	16	-	548	2140	627	87.4%	-	-	-	6.2	40.5	11.6
5/2+5/1	Cliff Lane Eastbound Ahead Left	O+U	-		-	-	-	939	1934:1965	428+1349	67.3 : 48.3%	288	0	0	0.7	2.8	2.2
5/3	Cliff Lane Eastbound Ahead	O	-		-	-	-	538	2068	578	93.1%	538	0	0	6.0	39.9	13.0
6/1	Internal Road Westbound Ahead	U	A		1	29	-	569	2059	1065	53.4%	-	-	-	1.9	12.1	5.3
6/2	Internal Road Westbound Right	U	A		1	29	-	552	2014	1042	53.0%	-	-	-	2.0	12.9	6.4
8/1	Ahead	O	-		-	-	-	724	2115	1555	46.6%	724	0	0	0.0	0.0	0.0

Basic Results Summary

8/2	Ahead	O	-		-	-	-	646	2255	1555	41.6%	646	0	0	0.0	0.0	0.0
12/1	Left	U	-		-	-	-	537	2115	2115	25.4%	-	-	-	0.0	0.0	0.0
12/2	Ahead Left	U	-		-	-	-	1005	2255	2255	44.6%	-	-	-	0.0	0.0	0.0
J2: Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**99.9%**	**5138**	**0**	**0**	**24.3**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	O	-		-	-	-	891	1955:2015	846+46	99.9 : 99.9%	1782	0	0	14.7	59.5	14.7
2/1+2/2	A50 Cllif Lane East Ahead Right	O	-		-	-	-	1005	1962:2015	875+875	56.5 : 58.4%	2010	0	0	0.7	2.4	0.7
3/1+3/2	B5356 Grappenhall Lane Left Ahead	O	-		-	-	-	673	1957:2015	22+671	97.1 : 97.1%	1346	0	0	8.9	47.7	8.9
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.9%**	**3918**	**0**	**0**	**2.6**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	250	Inf : Inf	797+89	28.2 : 28.2%	500	0	0	0.2	2.8	0.2
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	578	Inf : Inf	681+62	77.9 : 77.9%	1156	0	0	1.7	10.7	1.7
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	1131	Inf : Inf	899+1102	56.5 : 56.5%	2262	0	0	0.6	2.1	0.6

C1 PRC for Signalled Lanes (%): 3.0 Total Delay for Signalled Lanes (pcuHr): 13.75 Cycle Time (s): 58
PRC Over All Lanes (%): -11.0 Total Delay Over All Lanes(pcuHr): 85.76

Basic Results Summary
Scenario 2: '21 AM Base' (FG2: '2021 AM Base', Plan 1: 'Network Control Plan 1')
Network Layout Diagram



Basic Results Summary

Network Results

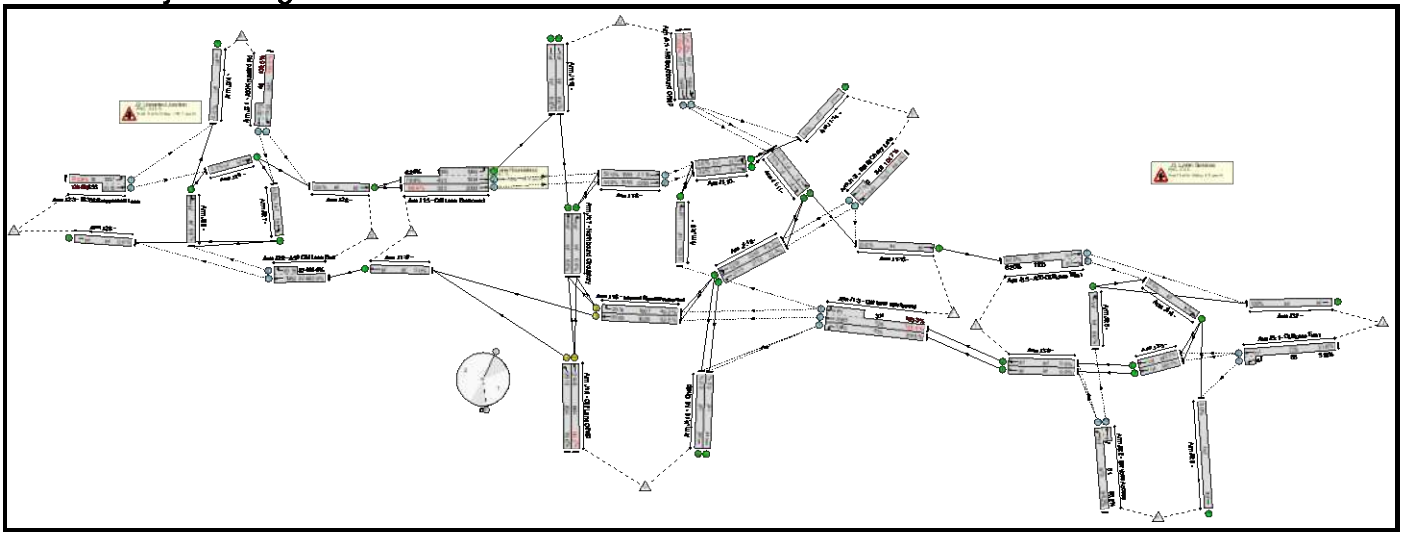
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**111.8%**	**14831**	**0**	**0**	**190.5**	**-**	**-**
J1: Cliff Lane Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**111.6%**	**5580**	**0**	**0**	**114.8**	**-**	**-**
1/1	M6 Southbound Offslip Ahead Left	O	-		-	-	-	601	1940	550	109.3%	550	0	0	32.8	196.7	52.4
1/2	M6 Southbound Offslip Ahead	O	-		-	-	-	481	1940	431	111.6%	431	0	0	31.4	234.8	46.6
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	482	1940:1940	296+237	81.3 : 101.6%	956	0	0	6.3	47.0	16.0
3/1	Cliff Lane Westbound Left	O	-		-	-	-	363	1940	403	90.0%	363	0	0	3.9	38.2	7.3
3/2+3/3	Cliff Lane Westbound Ahead Right	O	-		-	-	-	482	2065: Inf	120+348	103.0 : 103.0%	943	0	0	15.4	114.7	28.6
4/1	Cliff Lane Offslip Left	U	B		1	17	-	456	2012	624	73.0%	-	-	-	3.6	28.4	7.8
4/2	Cliff Lane Offslip Ahead	U	B		1	17	-	562	2140	664	84.6%	-	-	-	5.5	35.5	11.0
5/2+5/1	Cliff Lane Eastbound Ahead Left	O+U	-		-	-	-	1011	1934:1965	436+1350	71.1 : 51.9%	310	0	0	0.9	3.1	3.8
5/3	Cliff Lane Eastbound Ahead	O	-		-	-	-	579	2068	585	98.9%	579	0	0	11.4	70.7	19.4
6/1	Internal Road Westbound Ahead	U	A		1	28	-	591	2059	1029	52.9%	-	-	-	1.8	12.2	4.9
6/2	Internal Road Westbound Right	U	A		1	28	-	565	2014	1007	51.6%	-	-	-	1.9	13.1	5.9
8/1	Ahead	O	-		-	-	-	757	2115	1555	48.7%	757	0	0	0.0	0.0	0.0

Basic Results Summary

8/2	Ahead	O	-		-	-	-	690	2255	1555	44.4%	690	0	0	0.0	0.0	0.0
12/1	Left	U	-		-	-	-	564	2115	2115	26.3%	-	-	-	0.0	0.0	0.0
12/2	Ahead Left	U	-		-	-	-	1050	2255	2255	44.0%	-	-	-	0.0	0.0	0.0
J2: Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**111.8%**	**5240**	**0**	**0**	**72.8**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	O	-		-	-	-	913	1955:2015	841+46	103.0 : 103.0%	1775	0	0	24.2	95.3	64.3
2/1+2/2	A50 Cllif Lane East Ahead Right	O	-		-	-	-	1043	1962:2015	874+874	59.5 : 59.8%	2086	0	0	0.7	2.5	0.7
3/1+3/2	B5356 Grappenhall Lane Left Ahead	O	-		-	-	-	768	1957:2015	20+667	111.8 : 111.8%	1378	0	0	47.9	224.6	80.1
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.0%**	**4012**	**0**	**0**	**2.8**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	256	Inf : Inf	792+90	29.0 : 29.0%	512	0	0	0.2	2.9	0.2
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	592	Inf : Inf	679+61	80.0 : 80.0%	1184	0	0	1.9	11.8	1.9
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	1158	Inf : Inf	898+1102	57.9 : 57.9%	2316	0	0	0.7	2.1	0.7

C1 PRC for Signalled Lanes (%): 6.4 Total Delay for Signalled Lanes (pcuHr): 12.86 Cycle Time (s): 58
PRC Over All Lanes (%): -24.2 Total Delay Over All Lanes(pcuHr): 190.47

Basic Results Summary
Scenario 3: '29 AM Base' (FG3: '2029 AM Base', 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	-	-	-		-	-	-	-	-	-	**124.3%**	**15400**	**0**	**0**	**333.6**	-	-
J1: Cliff Lane Roundabout	-	-	-		-	-	-	-	-	-	**124.3%**	**5748**	**0**	**0**	**199.5**	-	-
1/1	M6 Southbound Offslip Ahead Left	O	-		-	-	-	642	1940	517	124.3%	517	0	0	70.0	392.3	96.2
1/2	M6 Southbound Offslip Ahead	O	-		-	-	-	513	1940	417	123.0%	417	0	0	54.1	380.0	75.3
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	514	1940:1940	305+245	84.2 : 104.7%	1005	0	0	11.7	82.2	21.7
3/1	Cliff Lane Westbound Left	O	-		-	-	-	387	1940	433	89.5%	387	0	0	3.7	34.6	7.3
3/2+3/3	Cliff Lane Westbound Ahead Right	O	-		-	-	-	515	2065: Inf	128+371	103.3 : 103.3%	1005	0	0	16.7	116.6	34.2
4/1	Cliff Lane Offslip Left	U	B		1	17	-	487	2012	624	78.0%	-	-	-	4.2	31.0	8.8
4/2	Cliff Lane Offslip Ahead	U	B		1	17	-	599	2140	664	90.2%	-	-	-	7.3	43.7	13.2
5/2+5/1	Cliff Lane Eastbound Ahead Left	O+U	-		-	-	-	1078	1934:1965	430+1188	76.9 : 62.9%	331	0	0	1.4	4.6	4.8
5/3	Cliff Lane Eastbound Ahead	O	-		-	-	-	617	2068	580	106.4%	580	0	0	26.9	156.9	50.4
6/1	Internal Road Westbound Ahead	U	A		1	28	-	630	2059	1029	52.5%	-	-	-	1.8	11.7	4.8
6/2	Internal Road Westbound Right	U	A		1	28	-	604	2014	1007	49.2%	-	-	-	1.8	12.9	5.6
8/1	Ahead	O	-		-	-	-	808	2115	1555	52.0%	808	0	0	0.0	0.0	0.0

Basic Results Summary

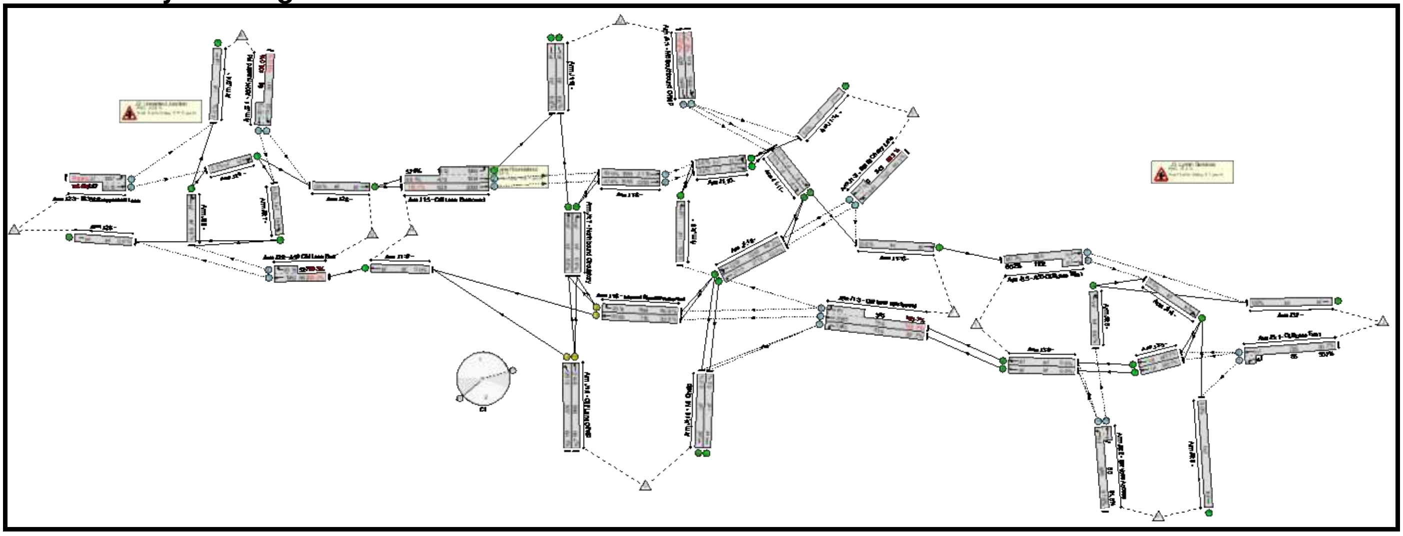
8/2	Ahead	O	-		-	-	-	735	2255	1555	44.9%	698	0	0	0.0	0.0	0.0
12/1	Left	U	-		-	-	-	601	2115	2115	23.8%	-	-	-	0.0	0.0	0.0
12/2	Ahead Left	U	-		-	-	-	1119	2255	2255	43.2%	-	-	-	0.0	0.0	0.0
J2: Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**120.8%**	**5364**	**0**	**0**	**130.1**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	O	-		-	-	-	975	1955:2015	845+46	109.5 : 109.5%	1787	0	0	50.7	187.1	91.1
2/1+2/2	A50 Cllif Lane East Ahead Right	O	-		-	-	-	1114	1962:2015	874+874	63.5 : 64.0%	2228	0	0	0.9	2.8	0.9
3/1+3/2	B5356 Grappenhall Lane Left Ahead	O	-		-	-	-	815	1957:2015	19+655	120.8 : 120.8%	1349	0	0	78.5	346.9	107.9
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**86.2%**	**4288**	**0**	**0**	**4.0**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	273	Inf : Inf	779+86	31.6 : 31.6%	546	0	0	0.2	3.0	0.2
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	633	Inf : Inf	673+61	86.2 : 86.2%	1266	0	0	2.9	16.8	2.9
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	1238	Inf : Inf	897+1100	62.0 : 62.0%	2476	0	0	0.8	2.4	0.8

C1 PRC for Signalled Lanes (%): -0.2 Total Delay for Signalled Lanes (pcuHr): 15.01 Cycle Time (s): 58
PRC Over All Lanes (%): -38.1 Total Delay Over All Lanes(pcuHr): 333.57

Basic Results Summary

Scenario 4: '21 AM with Dev' (FG4: '2021 AM Base with Dev', 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	-	-	-		-	-	-	-	-	-	**147.5%**	**15827**	**0**	**0**	**472.8**	-	-
J1: Cliff Lane Roundabout	-	-	-		-	-	-	-	-	-	**147.5%**	**5734**	**0**	**0**	**252.7**	-	-
1/1	M6 Southbound Offslip Ahead Left	O	-		-	-	-	632	1940	519	121.9%	519	0	0	64.4	366.8	87.3
1/2	M6 Southbound Offslip Ahead	O	-		-	-	-	632	1940	428	147.5%	428	0	0	111.7	636.5	131.4
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	482	1940:1940	300+243	80.3 : 99.3%	964	0	0	3.7	27.3	7.0
3/1	Cliff Lane Westbound Left	O	-		-	-	-	363	1940	439	82.7%	363	0	0	2.3	22.5	3.7
3/2+3/3	Cliff Lane Westbound Ahead Right	O	-		-	-	-	523	2065: Inf	159+345	103.7 : 103.7%	1020	0	0	17.5	120.7	32.1
4/1	Cliff Lane Offslip Left	U	B		1	26	-	600	2012	937	64.1%	-	-	-	2.9	17.1	8.2
4/2	Cliff Lane Offslip Ahead	U	B		1	26	-	562	2140	996	56.4%	-	-	-	2.4	15.4	7.2
5/2+5/1	Cliff Lane Eastbound Ahead Left	O+U	-		-	-	-	1133	1934:1965	476+1412	66.1 : 57.9%	315	0	0	0.9	2.8	2.3
5/3	Cliff Lane Eastbound Ahead	O	-		-	-	-	689	2068	626	110.1%	626	0	0	39.4	205.7	69.6
6/1	Internal Road Westbound Ahead	U	A		1	19	-	783	2059	710	83.5%	-	-	-	5.0	30.4	10.2
6/2	Internal Road Westbound Right	U	A		1	19	-	565	2014	694	60.9%	-	-	-	2.6	22.1	6.2
8/1	Ahead	O	-		-	-	-	762	2115	1555	49.0%	762	0	0	0.0	0.0	0.0

Basic Results Summary

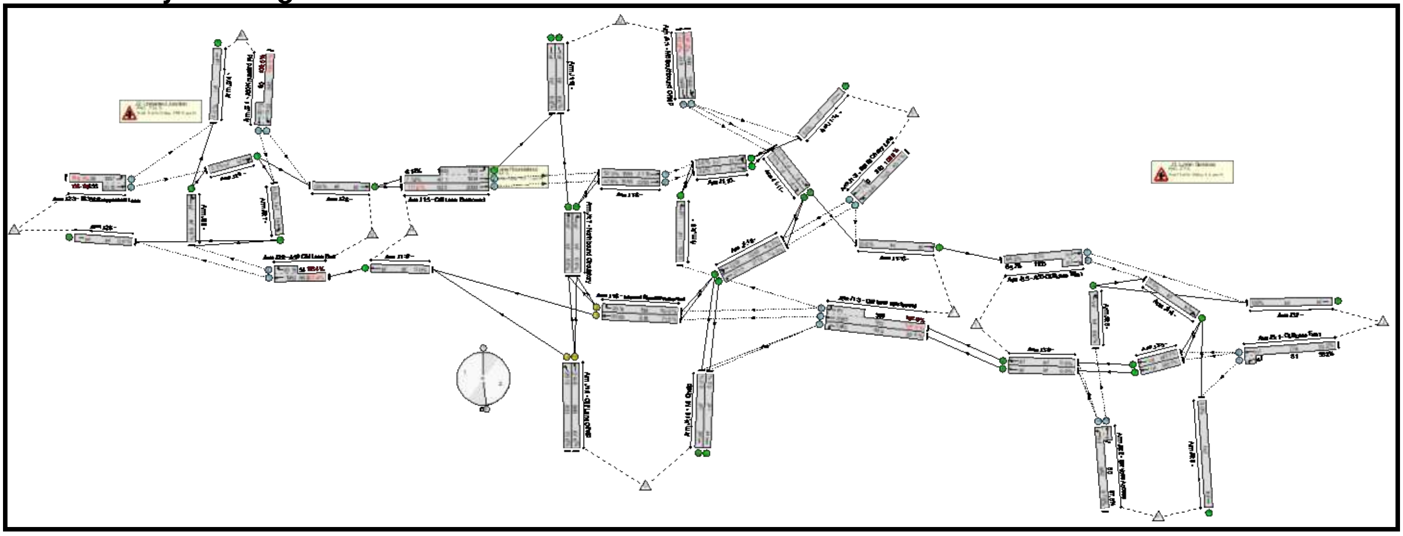
8/2	Ahead	O	-		-	-	-	800	2255	1555	47.4%	737	0	0	0.0	0.0	0.0
12/1	Left	U	-		-	-	-	619	2115	2115	22.0%	-	-	-	0.0	0.0	0.0
12/2	Ahead Left	U	-		-	-	-	1256	2255	2255	44.2%	-	-	-	0.0	0.0	0.0
J2: Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**146.6%**	**5997**	**0**	**0**	**217.0**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	O	-		-	-	-	951	1955:2015	841+83	103.0 : 103.0%	1851	0	0	24.9	94.1	65.0
2/1+2/2	A50 Cllif Lane East Ahead Right	O	-		-	-	-	1379	1962:2015	862+527	99.3 : 99.3%	2758	0	0	16.4	42.7	16.4
3/1+3/2	B5356 Grappenhall Lane Left Ahead	O	-		-	-	-	1017	1957:2015	27+667	146.6 : 146.6%	1388	0	0	175.8	622.1	203.8
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.6%**	**4095**	**0**	**0**	**3.1**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	267	Inf : Inf	785+85	30.7 : 30.7%	534	0	0	0.2	3.0	0.2
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	592	Inf : Inf	665+60	81.6 : 81.6%	1184	0	0	2.1	13.1	2.1
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	1194	Inf : Inf	865+1102	60.7 : 60.2%	2377	0	0	0.8	2.3	0.8

C1 PRC for Signalled Lanes (%): 7.8 Total Delay for Signalled Lanes (pcuHr): 12.86 Cycle Time (s): 58
PRC Over All Lanes (%): -63.9 Total Delay Over All Lanes(pcuHr): 472.77

Basic Results Summary

Scenario 5: '29 AM with Dev' (FG5: '2029 AM Base with Dev', 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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**161.0%**	**16308**	**0**	**0**	**640.9**	**-**	**-**
J1: Cliff Lane Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**161.0%**	**5886**	**0**	**0**	**341.1**	**-**	**-**
1/1	M6 Southbound Offslip Ahead Left	O	-		-	-	-	668	1940	490	136.2%	490	0	0	98.4	530.4	122.3
1/2	M6 Southbound Offslip Ahead	O	-		-	-	-	668	1940	415	161.0%	415	0	0	138.8	748.0	159.6
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	514	1940:1940	309+250	83.1 : 102.6%	1015	0	0	8.3	58.3	20.1
3/1	Cliff Lane Westbound Left	O	-		-	-	-	387	1940	469	82.4%	387	0	0	2.2	20.8	4.1
3/2+3/3	Cliff Lane Westbound Ahead Right	O	-		-	-	-	551	2065: Inf	162+368	104.0 : 104.0%	1073	0	0	18.8	122.8	35.6
4/1	Cliff Lane Offslip Left	U	B		1	23	-	631	2012	833	75.8%	-	-	-	4.1	23.3	10.1
4/2	Cliff Lane Offslip Ahead	U	B		1	23	-	599	2140	886	67.6%	-	-	-	3.3	20.1	8.9
5/2+5/1	Cliff Lane Eastbound Ahead Left	O+U	-		-	-	-	1198	1934:1965	471+1409	71.2 : 61.2%	335	0	0	1.1	3.2	3.0
5/3	Cliff Lane Eastbound Ahead	O	-		-	-	-	727	2068	620	117.2%	620	0	0	60.8	301.1	91.7
6/1	Internal Road Westbound Ahead	U	A		1	22	-	821	2059	816	71.5%	-	-	-	3.3	20.3	7.6
6/2	Internal Road Westbound Right	U	A		1	22	-	604	2014	799	50.0%	-	-	-	1.9	17.1	5.1
8/1	Ahead	O	-		-	-	-	812	2115	1555	52.2%	812	0	0	0.0	0.0	0.0

Basic Results Summary

8/2	Ahead	O	-		-	-	-	845	2255	1555	47.5%	738	0	0	0.0	0.0	0.0
12/1	Left	U	-		-	-	-	656	2115	2115	19.3%	-	-	-	0.0	0.0	0.0
12/2	Ahead Left	U	-		-	-	-	1329	2255	2255	43.5%	-	-	-	0.0	0.0	0.0
J2: Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**156.1%**	**6064**	**0**	**0**	**295.3**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	O	-		-	-	-	1013	1955:2015	845+80	109.5 : 109.5%	1861	0	0	52.3	186.0	92.8
2/1+2/2	A50 Cllif Lane East Ahead Right	O	-		-	-	-	1450	1962:2015	862+541	103.4 : 103.4%	2841	0	0	35.7	88.5	76.8
3/1+3/2	B5356 Grappenhall Lane Left Ahead	O	-		-	-	-	1063	1957:2015	26+655	156.1 : 156.1%	1362	0	0	207.3	702.2	236.7
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.6%**	**4358**	**0**	**0**	**4.4**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	284	Inf : Inf	774+81	33.2 : 33.2%	568	0	0	0.2	3.2	0.2
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	633	Inf : Inf	662+60	87.6 : 87.6%	1266	0	0	3.3	18.8	3.3
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	1269	Inf : Inf	872+1100	64.3 : 63.7%	2524	0	0	0.9	2.5	0.9

C1 PRC for Signalled Lanes (%): 18.7 Total Delay for Signalled Lanes (pcuHr): 12.62 Cycle Time (s): 58
PRC Over All Lanes (%): -78.9 Total Delay Over All Lanes(pcuHr): 640.85

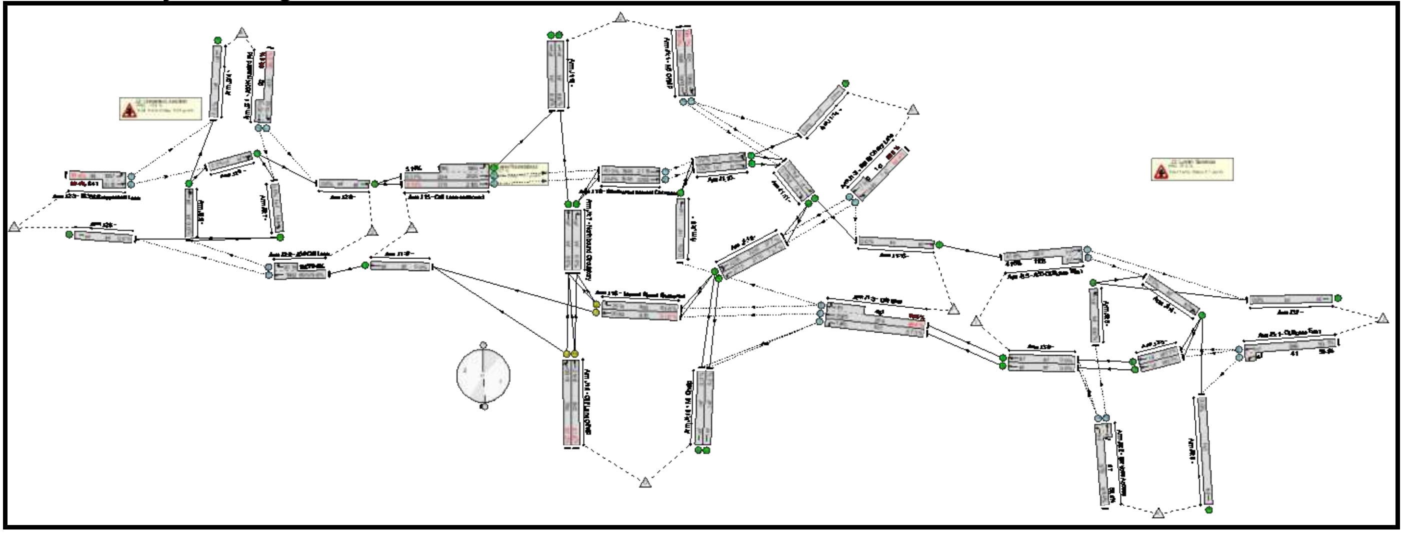
Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	PM Peak Existing Network.lsg3x
Author:	
Company:	
Address:	

Scenario 1: 'PM Observed' (FG1: '2017 PM Observed', 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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**99.6%**	**13383**	**0**	**0**	**96.5**	**-**	**-**
J1: Cliff Lane Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**99.6%**	**4923**	**0**	**0**	**70.1**	**-**	**-**
1/1	M6 Offslip Ahead Left	O	-		-	-	-	597	1940	621	96.1%	597	0	0	7.9	47.7	14.9
1/2	M6 Offslip Ahead	O	-		-	-	-	547	1940	556	98.3%	547	0	0	9.9	65.4	17.1
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	262	1940:1940	141+141	92.8 : 92.8%	524	0	0	4.6	62.6	6.0
3/1	Cliff Lane Left	O	-		-	-	-	270	1940	401	67.3%	270	0	0	1.0	13.5	1.0
3/2+3/3	Cliff Lane Ahead Right	O	-		-	-	-	727	2065: Inf	269+461	99.6 : 99.6%	1454	0	0	12.9	63.8	17.7
4/1	Cliff Lane Offslip Ahead Left	U	B		1	23	-	773	2019	794	97.3%	-	-	-	13.5	62.7	22.2
4/2	Cliff Lane Offslip Ahead	U	B		1	23	-	773	2140	842	91.8%	-	-	-	8.7	40.4	17.1
5/2+5/1	Cliff Lane eastbound Ahead Left	O+U	-		-	-	-	776	2025:1965	294+1145	63.7 : 51.4%	187	0	0	0.9	4.4	3.0
5/3	Cliff Lane eastbound Ahead	O	-		-	-	-	343	2165	376	91.3%	343	0	0	5.1	54.0	9.5
6/1	Internal Roaad Eastbound Ahead	U	A		1	25	-	804	2059	878	91.6%	-	-	-	3.5	15.5	12.7
6/2	Internal Roaad Eastbound Right	U	A		1	25	-	548	2014	858	63.8%	-	-	-	2.1	13.8	7.4
8/1	Westbound Internal Circulatory Ahead	O	-		-	-	-	624	2115	1548	40.3%	624	0	0	0.0	0.0	0.0

Basic Results Summary

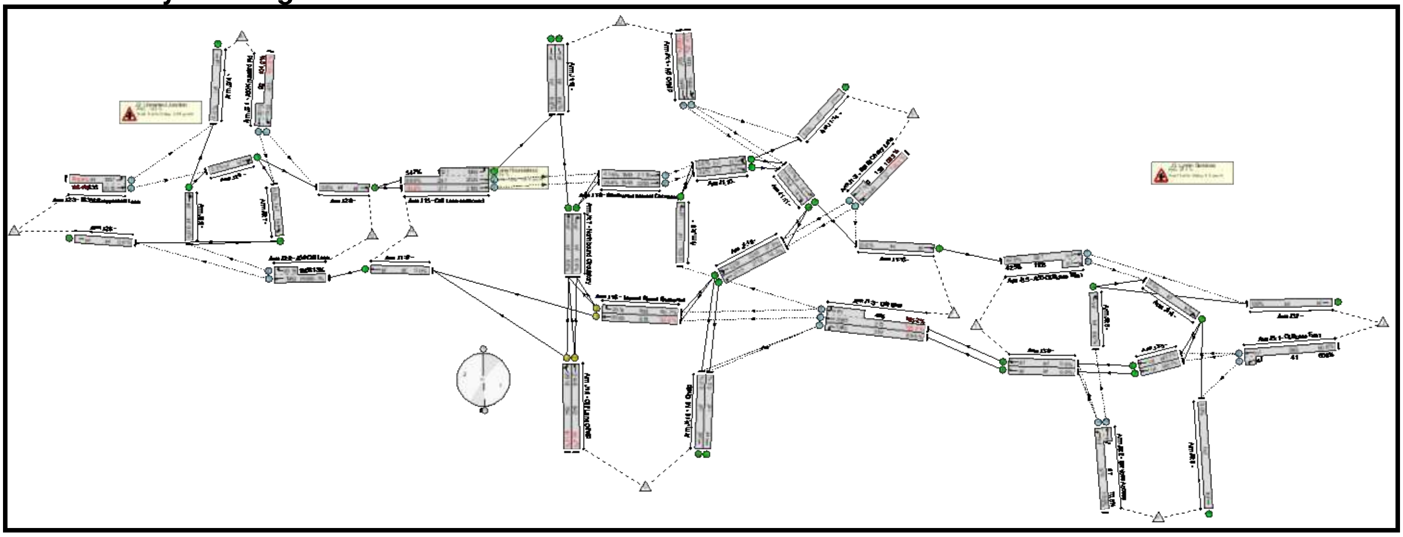
8/2	Westbound Internal Circulatory Ahead	O	-		-	-	-	377	2255	1548	24.4%	377	0	0	0.0	0.0	0.0
12/1	Left	U	-		-	-	-	290	2115	2115	13.7%	-	-	-	0.0	0.0	0.0
12/2	Ahead Left	U	-		-	-	-	851	2255	2255	37.7%	-	-	-	0.0	0.0	0.0
J2: Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**99.4%**	**5150**	**0**	**0**	**24.3**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	O	-		-	-	-	493	1955:2015	475+22	99.3 : 99.3%	986	0	0	10.2	74.6	10.2
2/1+2/2	A50 Cllif Lane Ahead Right	O	-		-	-	-	1399	1962:2015	695+1063	79.6 : 79.6%	2798	0	0	1.9	5.0	1.9
3/1+3/2	B5356 Grappenhall Lane Left Ahead	O	-		-	-	-	683	1957:2015	46+641	99.4 : 99.4%	1366	0	0	12.1	64.0	12.1
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**68.4%**	**3310**	**0**	**0**	**2.1**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	524	Inf : Inf	846+41	59.1 : 59.1%	1048	0	0	0.7	5.0	0.7
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	428	Inf : Inf	579+47	68.4 : 68.4%	856	0	0	1.1	9.0	1.1
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	703	Inf : Inf	582+1108	41.6 : 41.6%	1406	0	0	0.4	1.8	0.4

C1 PRC for Signalled Lanes (%): -8.1 Total Delay for Signalled Lanes (pcuHr): 27.70 Cycle Time (s): 61
PRC Over All Lanes (%): -10.7 Total Delay Over All Lanes(pcuHr): 96.51

Basic Results Summary

Scenario 2: '21PM Base' (FG3: '2021 PM Base', 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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**108.5%**	**13732**	**0**	**0**	**176.6**	**-**	**-**
J1: Cliff Lane Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**108.5%**	**5002**	**0**	**0**	**129.5**	**-**	**-**
1/1	M6 Offslip Ahead Left	O	-		-	-	-	610	1940	603	101.2%	603	0	0	14.9	88.0	38.7
1/2	M6 Offslip Ahead	O	-		-	-	-	583	1940	537	108.5%	537	0	0	30.0	185.3	53.1
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	269	1940:1940	131+132	102.3 : 102.3%	532	0	0	10.1	135.5	15.8
3/1	Cliff Lane Left	O	-		-	-	-	276	1940	397	69.5%	276	0	0	1.1	14.6	1.4
3/2+3/3	Cliff Lane Ahead Right	O	-		-	-	-	755	2065: Inf	272+446	105.2 : 105.2%	1463	0	0	27.0	128.5	48.1
4/1	Cliff Lane Offslip Ahead Left	U	B		1	23	-	804	2018	794	101.3%	-	-	-	21.3	95.5	30.7
4/2	Cliff Lane Offslip Ahead	U	B		1	23	-	803	2140	842	95.4%	-	-	-	11.5	51.4	20.6
5/2+5/1	Cliff Lane eastbound Ahead Left	O+U	-		-	-	-	809	2025:1965	297+1121	66.0 : 54.7%	196	0	0	1.1	4.9	3.2
5/3	Cliff Lane eastbound Ahead	O	-		-	-	-	359	2165	377	95.2%	359	0	0	7.1	71.4	11.7
6/1	Internal Roaad Eastbound Ahead	U	A		1	25	-	859	2059	878	93.0%	-	-	-	3.5	15.3	12.9
6/2	Internal Roaad Eastbound Right	U	A		1	25	-	560	2014	858	60.7%	-	-	-	1.9	13.3	6.9
8/1	Westbound Internal Circulatory Ahead	O	-		-	-	-	642	2115	1548	41.5%	642	0	0	0.0	0.0	0.0

Basic Results Summary

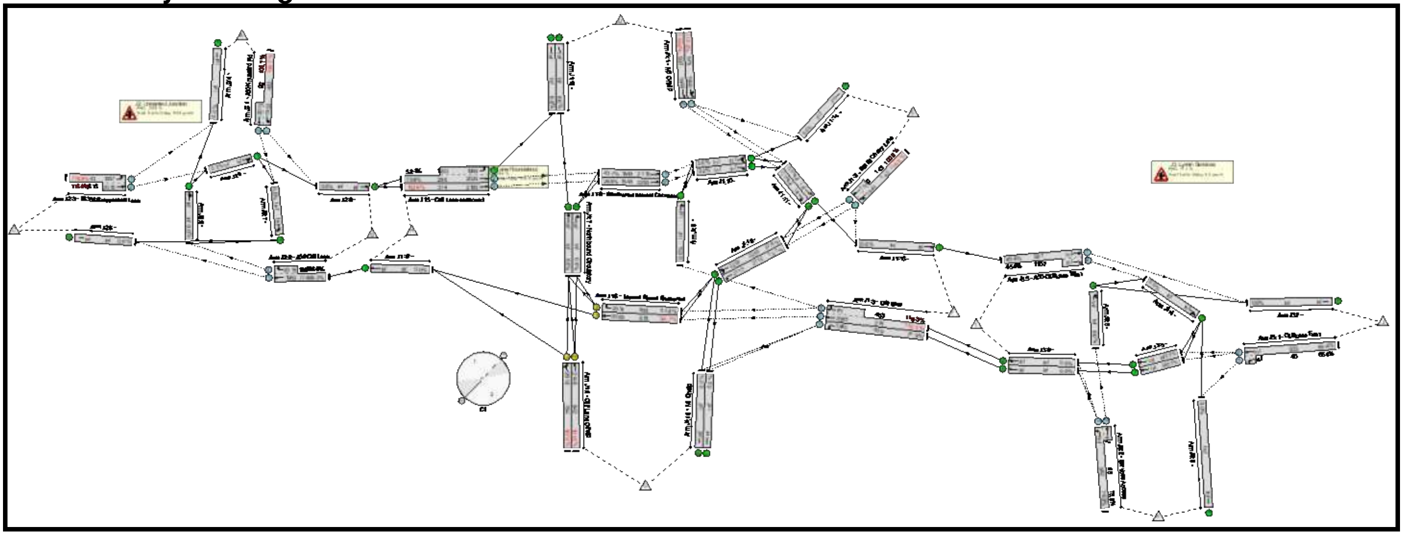
8/2	Westbound Internal Circulatory Ahead	O	-		-	-	-	394	2255	1548	25.4%	394	0	0	0.0	0.0	0.0
12/1	Left	U	-		-	-	-	301	2115	2115	14.2%	-	-	-	0.0	0.0	0.0
12/2	Ahead Left	U	-		-	-	-	899	2255	2255	37.8%	-	-	-	0.0	0.0	0.0
J2: Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**106.4%**	**5346**	**0**	**0**	**44.8**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	O	-		-	-	-	503	1955:2015	475+22	101.2 : 101.2%	995	0	0	13.0	93.4	36.9
2/1+2/2	A50 Cllif Lane Ahead Right	O	-		-	-	-	1494	1962:2015	786+1063	80.1 : 81.3%	2988	0	0	2.1	5.0	2.1
3/1+3/2	B5356 Grappenhall Lane Left Ahead	O	-		-	-	-	722	1957:2015	44+635	106.4 : 106.4%	1363	0	0	29.7	148.0	61.8
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**70.5%**	**3384**	**0**	**0**	**2.3**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	536	Inf : Inf	843+41	60.6 : 60.6%	1072	0	0	0.8	5.2	0.8
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	438	Inf : Inf	574+47	70.5 : 70.5%	876	0	0	1.2	9.7	1.2
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	718	Inf : Inf	581+1108	42.5 : 42.5%	1436	0	0	0.4	1.9	0.4

C1 PRC for Signalled Lanes (%): -12.5 Total Delay for Signalled Lanes (pcuHr): 38.18 Cycle Time (s): 61
PRC Over All Lanes (%): -20.6 Total Delay Over All Lanes(pcuHr): 176.65

Basic Results Summary

Scenario 3: '29 PM Base' (FG4: '2029 PM Base', 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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**116.9%**	**14278**	**0**	**0**	**333.9**	**-**	**-**
J1: Cliff Lane Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**116.6%**	**5157**	**0**	**0**	**240.5**	**-**	**-**
1/1	M6 Offslip Ahead Left	O	-		-	-	-	651	1940	575	113.3%	575	0	0	45.7	252.7	74.3
1/2	M6 Offslip Ahead	O	-		-	-	-	621	1940	532	116.6%	532	0	0	51.7	299.8	78.1
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	287	1940:1940	142+143	100.8 : 100.8%	572	0	0	9.3	116.1	16.3
3/1	Cliff Lane Left	O	-		-	-	-	294	1940	409	71.9%	294	0	0	1.3	15.3	1.3
3/2+3/3	Cliff Lane Ahead Right	O	-		-	-	-	804	2065: Inf	275+453	110.3 : 110.3%	1514	0	0	44.5	199.1	67.2
4/1	Cliff Lane Offslip Ahead Left	U	B		1	23	-	857	2018	794	107.9%	-	-	-	43.8	184.2	52.9
4/2	Cliff Lane Offslip Ahead	U	B		1	23	-	857	2140	842	101.8%	-	-	-	23.8	100.0	33.6
5/2+5/1	Cliff Lane eastbound Ahead Left	O+U	-		-	-	-	862	2025:1965	296+1253	70.6 : 52.1%	209	0	0	1.2	5.0	3.5
5/3	Cliff Lane eastbound Ahead	O	-		-	-	-	383	2165	374	102.4%	374	0	0	14.0	131.2	31.8
6/1	Internal Roaad Eastbound Ahead	U	A		1	25	-	914	2059	878	94.7%	-	-	-	3.5	15.2	13.4
6/2	Internal Roaad Eastbound Right	U	A		1	25	-	598	2014	858	57.8%	-	-	-	1.8	12.9	6.4
8/1	Westbound Internal Circulatory Ahead	O	-		-	-	-	685	2115	1548	43.7%	677	0	0	0.0	0.0	0.0

Basic Results Summary

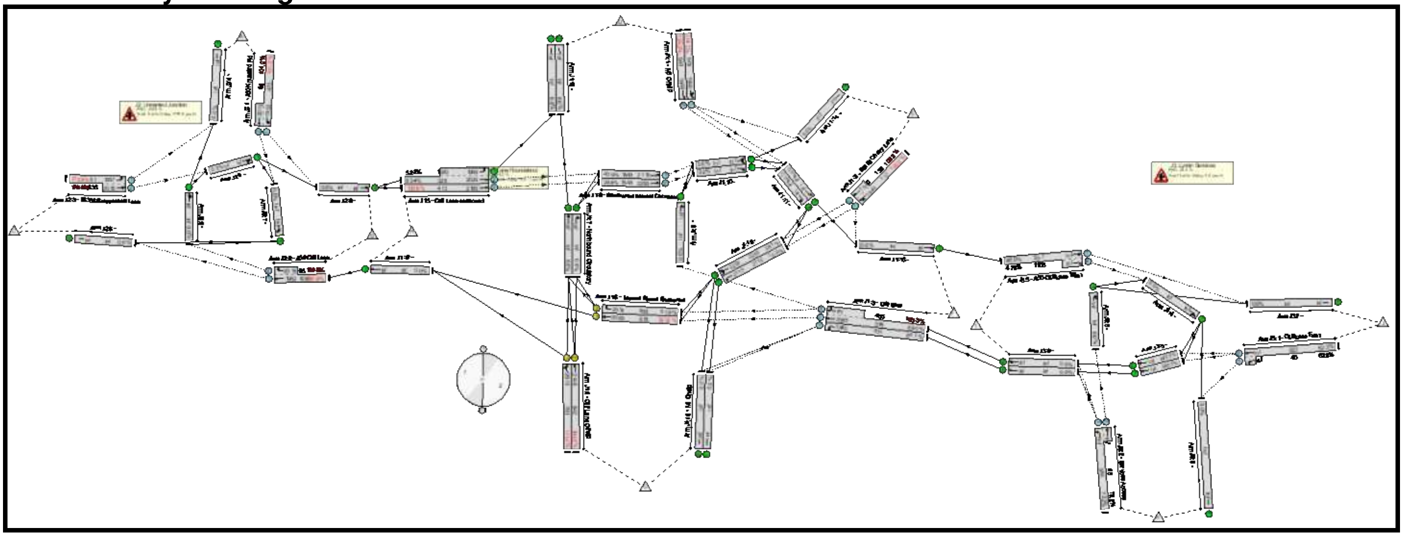
8/2	Westbound Internal Circulatory Ahead	O	-		-	-	-	420	2255	1548	26.5%	410	0	0	0.0	0.0	0.0
12/1	Left	U	-		-	-	-	321	2115	2115	13.1%	-	-	-	0.0	0.0	0.0
12/2	Ahead Left	U	-		-	-	-	958	2255	2255	37.4%	-	-	-	0.0	0.0	0.0
J2: Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**116.9%**	**5511**	**0**	**0**	**90.5**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	O	-		-	-	-	538	1955:2015	482+22	106.7 : 106.7%	1011	0	0	24.1	161.6	48.5
2/1+2/2	A50 Cllif Lane Ahead Right	O	-		-	-	-	1591	1962:2015	774+1062	86.3 : 86.9%	3182	0	0	3.2	7.2	3.2
3/1+3/2	B5356 Grappenhall Lane Left Ahead	O	-		-	-	-	769	1957:2015	43+615	116.9 : 116.9%	1318	0	0	63.1	295.6	93.2
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.9%**	**3610**	**0**	**0**	**3.0**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	571	Inf : Inf	833+40	65.4 : 65.4%	1142	0	0	0.9	5.9	0.9
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	467	Inf : Inf	562+46	76.9 : 76.9%	934	0	0	1.6	12.5	1.6
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	767	Inf : Inf	581+1107	45.4 : 45.4%	1534	0	0	0.4	2.0	0.4

C1 PRC for Signalled Lanes (%): -19.9 Total Delay for Signalled Lanes (pcuHr): 72.93 Cycle Time (s): 61
PRC Over All Lanes (%): -29.9 Total Delay Over All Lanes(pcuHr): 333.92

Basic Results Summary

Scenario 4: '21 PM with Dev' (FG6: '2021 PM Base with Dev', 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	-	-	-		-	-	-	-	-	-	**170.0%**	**14762**	**0**	**0**	**612.5**	-	-
J1: Cliff Lane Roundabout	-	-	-		-	-	-	-	-	-	**130.8%**	**5236**	**0**	**0**	**331.1**	-	-
1/1	M6 Offslip Ahead Left	O	-		-	-	-	671	1940	578	116.1%	578	0	0	54.2	290.6	84.0
1/2	M6 Offslip Ahead	O	-		-	-	-	671	1940	540	124.3%	540	0	0	74.0	396.9	102.1
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	269	1940:1940	131+132	102.2 : 102.2%	532	0	0	10.0	133.5	14.6
3/1	Cliff Lane Left	O	-		-	-	-	276	1940	431	64.1%	276	0	0	0.9	11.5	0.9
3/2+3/3	Cliff Lane Ahead Right	O	-		-	-	-	820	2065: Inf	393+455	89.0 : 103.3%	1610	0	0	17.0	74.7	39.5
4/1	Cliff Lane Offslip Ahead Left	U	B		1	23	-	883	2015	793	111.4%	-	-	-	57.4	234.0	66.8
4/2	Cliff Lane Offslip Ahead	U	B		1	23	-	882	2140	842	104.8%	-	-	-	33.9	138.4	43.5
5/2+5/1	Cliff Lane eastbound Ahead Left	O+U	-		-	-	-	1032	2025:1965	326+1580	63.4 : 52.2%	207	0	0	1.0	3.6	3.2
5/3	Cliff Lane eastbound Ahead	O	-		-	-	-	540	2165	413	130.8%	413	0	0	71.7	478.0	93.1
6/1	Internal Roaad Eastbound Ahead	U	A		1	25	-	1012	2059	878	101.2%	-	-	-	9.5	38.5	20.4
6/2	Internal Roaad Eastbound Right	U	A		1	25	-	560	2014	858	51.9%	-	-	-	1.5	12.5	5.6
8/1	Westbound Internal Circulatory Ahead	O	-		-	-	-	653	2115	1548	40.9%	633	0	0	0.0	0.0	0.0

Basic Results Summary

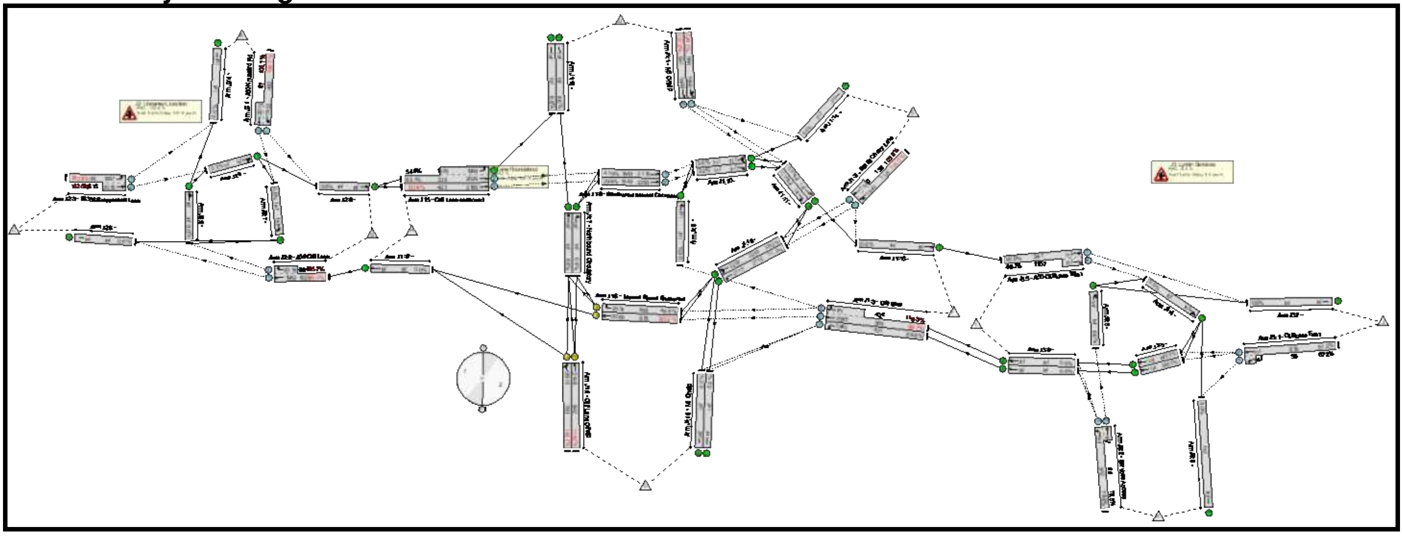
8/2	Westbound Internal Circulatory Ahead	O	-		-	-	-	575	2255	1548	28.8%	446	0	0	0.0	0.0	0.0
12/1	Left	U	-		-	-	-	392	2115	2115	10.0%	-	-	-	0.0	0.0	0.0
12/2	Ahead Left	U	-		-	-	-	1077	2255	2255	38.1%	-	-	-	0.0	0.0	0.0
J2: Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**170.0%**	**6007**	**0**	**0**	**278.8**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	O	-		-	-	-	519	1955:2015	475+38	101.2 : 101.2%	1027	0	0	13.3	92.1	37.1
2/1+2/2	A50 Cllif Lane Ahead Right	O	-		-	-	-	1805	1962:2015	1036+951	90.8 : 90.8%	3610	0	0	4.7	9.4	4.7
3/1+3/2	B5356 Grappenhall Lane Left Ahead	O	-		-	-	-	1165	1957:2015	51+635	170.0 : 170.0%	1371	0	0	260.8	805.8	294.1
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.2%**	**3519**	**0**	**0**	**2.6**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	540	Inf : Inf	827+40	62.3 : 62.3%	1080	0	0	0.8	5.5	0.8
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	438	Inf : Inf	554+45	73.2 : 73.2%	876	0	0	1.3	11.0	1.3
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	790	Inf : Inf	537+1108	48.0 : 47.3%	1563	0	0	0.5	2.1	0.5

C1 PRC for Signalled Lanes (%): -23.8 Total Delay for Signalled Lanes (pcuHr): 102.34 Cycle Time (s): 61
PRC Over All Lanes (%): -88.9 Total Delay Over All Lanes(pcuHr): 612.47

Basic Results Summary

Scenario 5: '29 PM with Dev' (FG7: '2029 PM Base with Dev', 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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**182.5%**	**15205**	**0**	**0**	**817.1**	**-**	**-**
J1: Cliff Lane Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**133.4%**	**5292**	**0**	**0**	**481.9**	**-**	**-**
1/1	M6 Offslip Ahead Left	O	-		-	-	-	711	1940	564	126.1%	564	0	0	82.6	418.0	112.0
1/2	M6 Offslip Ahead	O	-		-	-	-	710	1940	541	131.3%	541	0	0	94.3	478.4	122.7
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	287	1940:1940	138+139	103.5 : 103.5%	564	0	0	11.5	144.5	16.4
3/1	Cliff Lane Left	O	-		-	-	-	294	1940	421	69.8%	294	0	0	1.1	13.9	1.1
3/2+3/3	Cliff Lane Ahead Right	O	-		-	-	-	868	2065: Inf	368+424	99.7 : 118.3%	1581	0	0	47.1	195.1	68.5
4/1	Cliff Lane Offslip Ahead Left	U	B		1	23	-	936	2015	793	118.1%	-	-	-	84.8	326.1	94.7
4/2	Cliff Lane Offslip Ahead	U	B		1	23	-	935	2140	842	111.0%	-	-	-	59.3	228.3	69.3
5/2+5/1	Cliff Lane eastbound Ahead Left	O+U	-		-	-	-	1086	2025:1965	338+1576	65.1 : 54.9%	220	0	0	1.2	3.8	3.4
5/3	Cliff Lane eastbound Ahead	O	-		-	-	-	564	2165	423	133.4%	423	0	0	79.2	505.7	101.2
6/1	Internal Roaad Eastbound Ahead	U	A		1	25	-	1067	2059	878	103.3%	-	-	-	19.5	77.2	30.5
6/2	Internal Roaad Eastbound Right	U	A		1	25	-	598	2014	858	48.5%	-	-	-	1.4	12.2	5.1
8/1	Westbound Internal Circulatory Ahead	O	-		-	-	-	696	2115	1549	41.9%	649	0	0	0.0	0.0	0.0

Basic Results Summary

8/2	Westbound Internal Circulatory Ahead	O	-		-	-	-	601	2255	1549	29.5%	456	0	0	0.0	0.0	0.0
12/1	Left	U	-		-	-	-	412	2115	2115	11.2%	-	-	-	0.0	0.0	0.0
12/2	Ahead Left	U	-		-	-	-	1137	2255	2255	38.0%	-	-	-	0.0	0.0	0.0
J2: Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**182.5%**	**6176**	**0**	**0**	**331.8**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	O	-		-	-	-	554	1955:2015	482+37	106.7 : 106.7%	1043	0	0	24.7	160.4	49.0
2/1+2/2	A50 Cllif Lane Ahead Right	O	-		-	-	-	1902	1962:2015	1023+964	95.7 : 95.7%	3804	0	0	9.2	17.4	9.2
3/1+3/2	B5356 Grappenhall Lane Left Ahead	O	-		-	-	-	1213	1957:2015	49+615	182.5 : 182.5%	1329	0	0	297.9	884.1	331.4
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**79.6%**	**3737**	**0**	**0**	**3.4**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	576	Inf : Inf	819+39	67.2 : 67.2%	1152	0	0	1.0	6.4	1.0
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	467	Inf : Inf	542+44	79.6 : 79.6%	934	0	0	1.9	14.6	1.9
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	838	Inf : Inf	541+1107	50.9 : 49.7%	1651	0	0	0.5	2.2	0.5

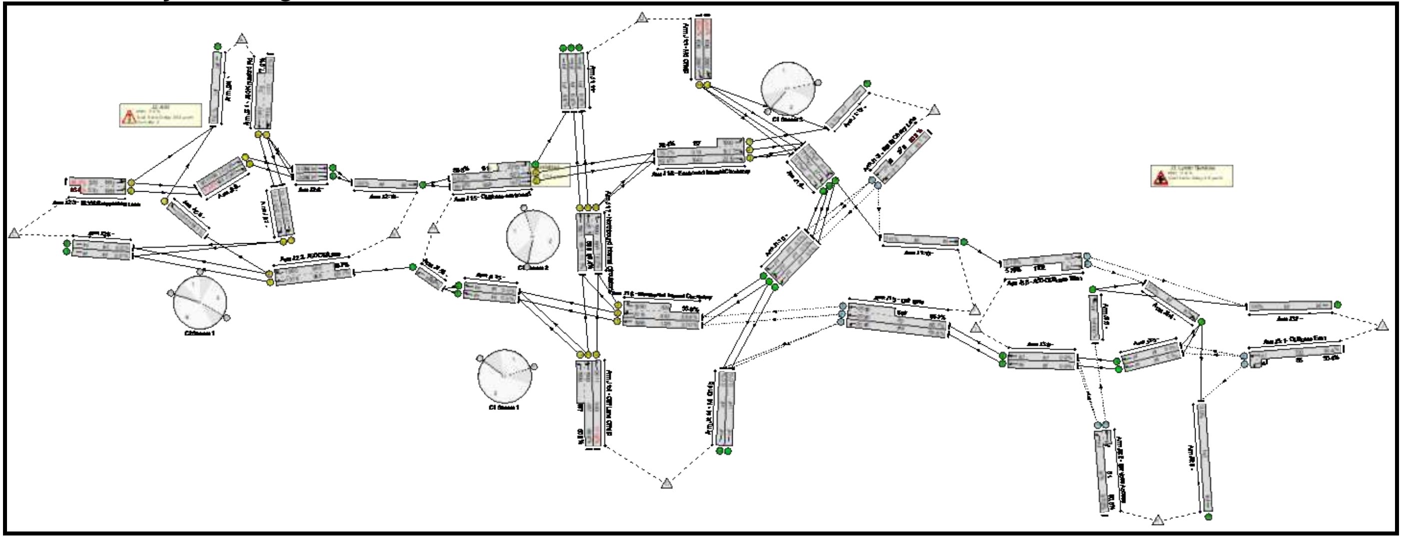
C1 PRC for Signalled Lanes (%): -31.2 Total Delay for Signalled Lanes (pcuHr): 164.94 Cycle Time (s): 61
PRC Over All Lanes (%): -102.8 Total Delay Over All Lanes(pcuHr): 817.10

Basic Results Summary
Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	Proposed Mitigation-AM Peak V3.lsg3x
Author:	
Company:	
Address:	

Scenario 1: '21AM with Dev' (FG7: '2021 AM Base with Dev ', Plan 2: 'Network Control Plan 2')
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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**111.0%**	**6355**	**0**	**0**	**131.7**	**-**	**-**
J1: Cliff Lane Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**111.0%**	**2311**	**0**	**0**	**102.4**	**-**	**-**
1/1	M6 Offslip Ahead U-Turn	U	C1:F		1	18	-	632	2007	636	99.4%	-	-	-	15.3	87.2	22.1
1/2	M6 Offslip Ahead	U	C1:F		1	18	-	632	2007	636	99.4%	-	-	-	15.3	87.2	22.1
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	482	2015:2035	262+275	89.1 : 90.2%	964	0	0	5.5	40.9	7.7
3/1	Cliff Lane Left	O	-		-	-	-	363	2090	744	48.8%	363	0	0	0.5	4.7	0.5
3/2+3/3	Cliff Lane Ahead	O	-		-	-	-	492	2090:2090	40+697	66.7 : 66.7%	984	0	0	1.0	7.3	2.7
4/2+4/1	Cliff Lane Offslip Ahead Left	U	C1:B		1	14	-	604	1998:1996	497+497	60.8 : 60.8%	-	-	-	4.1	24.5	5.2
4/3	Cliff Lane Offslip Ahead	U	C1:B		1	14	-	558	2011	503	111.0%	-	-	-	37.2	240.1	42.2
5/2+5/1	Cliff Lane eastbound Ahead Left	U	C1:D -		1	19	-	1231	1973:2065	462+916	89.3 : 89.3%	-	-	-	5.9	17.3	9.7
5/3	Cliff Lane eastbound Ahead	U	C1:D		1	19	-	591	1973	658	89.9%	-	-	-	7.1	43.2	13.3
6/1	Westbound Internal Circulatory Ahead	U	C1:A		1	33	-	417	1986	1125	37.0%	-	-	-	2.2	18.6	5.9
6/2+6/3	Westbound Internal Circulatory Right Ahead	U	C1:A		1	33	-	935	2015:1990	852+825	55.4 : 55.0%	-	-	-	3.0	11.6	6.0
7/1	Northbound Internal Circulatory Ahead	U	C1:C		1	29	-	113	1981	991	11.1%	-	-	-	0.4	14.0	1.3

Basic Results Summary

7/3+7/2	Northbound Internal Circulatory Right Ahead	U	C1:C		1	29	-	1018	1990:2019	664+539	76.3 : 83.4%	-	-	-	1.3	4.9	9.0
8/2+8/1	Eastbound Internal Circulatory Right Left	U	C1:E		1	30	-	903	1971:1990	918+157	79.7 : 78.4%	-	-	-	3.0	12.8	10.8
8/3	Eastbound Internal Circulatory Right	U	C1:E		1	30	-	663	2019	1043	62.9%	-	-	-	0.6	3.4	10.3
J2: A50	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**96.3%**	**0**	**0**	**0**	**26.3**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	U	C2:A		1	35	-	951	1973:1957	1177+56	77.2 : 77.2%	-	-	-	4.0	15.0	12.8
2/1+2/2	A50 Cllif Lane Ahead Right	U	C2:D C2:C		1	43	-	1379	1976:1980	988+990	69.7 : 69.7%	-	-	-	2.4	6.3	5.7
3/1+3/2	B5356 Grappenhall Lane Left Ahead	U	C2:G		1	15	-	1017	1983:1988	529+530	96.3 : 95.8%	-	-	-	14.7	52.1	16.9
7/1	Right	U	C2:B		1	7	-	42	1987	265	15.9%	-	-	-	0.2	14.2	0.6
7/2	Right	U	C2:B		1	7	-	43	1987	265	16.2%	-	-	-	0.2	18.1	0.6
8/1	Right	U	C2:E		1	35	-	523	2021	1213	43.1%	-	-	-	1.2	8.2	6.2
9/1	Ahead	U	C2:F		1	15	-	470	2038	543	86.5%	-	-	-	1.8	13.5	2.4
9/2	Ahead	U	C2:F		1	15	-	508	2040	544	93.4%	-	-	-	1.9	13.4	2.8
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.5%**	**4044**	**0**	**0**	**2.9**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	267	Inf : Inf	792+85	30.4 : 30.4%	534	0	0	0.2	2.9	0.2
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	592	Inf : Inf	675+61	80.5 : 80.5%	1184	0	0	2.0	12.2	2.0
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	1163	Inf : Inf	907+1102	57.9 : 57.9%	2326	0	0	0.7	2.1	0.7

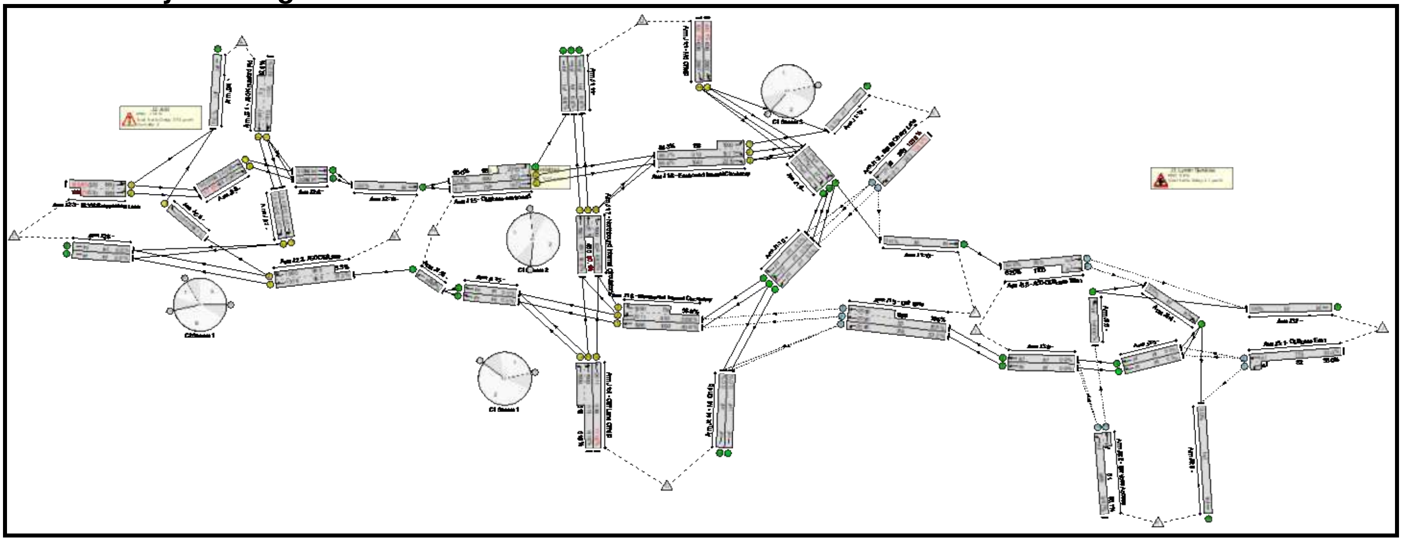
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	-23.3	Total Delay for Signalled Lanes (pcuHr):	46.46	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	0.2	Total Delay for Signalled Lanes (pcuHr):	14.73	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	-10.5	Total Delay for Signalled Lanes (pcuHr):	34.27	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	0.0	Total Delay for Signalled Lanes (pcuHr):	0.00	Cycle Time (s):	60
C2	Stream: 1	PRC for Signalled Lanes (%):	-7.0	Total Delay for Signalled Lanes (pcuHr):	26.34	Cycle Time (s):	60
		PRC Over All Lanes (%):	-23.3	Total Delay Over All Lanes(pcuHr):	131.68		

Basic Results Summary

Scenario 2: '29 AM with Dev' (FG9: '2029 AM Base with Dev', Plan 2: 'Network Control Plan 2')

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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**111.0%**	**6747**	**0**	**0**	**185.6**	**-**	**-**
J1: Cliff Lane Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**111.0%**	**2427**	**0**	**0**	**144.0**	**-**	**-**
1/1	M6 Offslip Ahead U-Turn	U	C1:F		1	18	-	668	2007	636	105.1%	-	-	-	28.0	150.8	35.0
1/2	M6 Offslip Ahead	U	C1:F		1	18	-	668	2007	636	105.1%	-	-	-	28.0	150.8	35.0
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	514	2015:2035	242+253	103.9 : 103.9%	990	0	0	19.7	138.2	28.2
3/1	Cliff Lane Left	O	-		-	-	-	387	2090	728	53.2%	387	0	0	0.6	5.3	0.6
3/2+3/3	Cliff Lane Ahead	O	-		-	-	-	525	2090:2090	55+689	70.5 : 70.5%	1050	0	0	1.2	8.2	2.7
4/2+4/1	Cliff Lane Offslip Ahead Left	U	C1:B		1	15	-	635	1998:1996	513+512	61.9 : 61.9%	-	-	-	4.2	23.8	5.4
4/3	Cliff Lane Offslip Ahead	U	C1:B		1	15	-	595	2011	536	111.0%	-	-	-	39.2	237.4	44.7
5/2+5/1	Cliff Lane eastbound Ahead Left	U	C1:D -		1	22	-	1312	1973:2065	499+959	90.0 : 90.0%	-	-	-	6.1	16.7	10.6
5/3	Cliff Lane eastbound Ahead	U	C1:D		1	22	-	613	1973	756	81.1%	-	-	-	4.9	28.8	11.1
6/1	Westbound Internal Circulatory Ahead	U	C1:A		1	32	-	468	1986	1092	40.6%	-	-	-	2.4	19.6	6.3
6/2+6/3	Westbound Internal Circulatory Right Ahead	U	C1:A		1	32	-	961	2011:1990	852+735	56.6 : 56.9%	-	-	-	3.2	12.6	6.2
7/1	Northbound Internal Circulatory Ahead	U	C1:C		1	26	-	167	1981	891	16.5%	-	-	-	0.8	18.8	2.0

Basic Results Summary

7/3+7/2	Northbound Internal Circulatory Right Ahead	U	C1:C		1	26	-	1040	1990:2019	624+460	86.5 : 90.1%	-	-	-	1.5	5.5	9.6
8/2+8/1	Eastbound Internal Circulatory Right Left	U	C1:E		1	30	-	970	1971:1990	919+156	85.7 : 84.3%	-	-	-	3.5	13.8	11.8
8/3	Eastbound Internal Circulatory Right	U	C1:E		1	30	-	691	2019	1043	65.5%	-	-	-	0.8	4.4	10.7
J2: A50	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**100.6%**	**0**	**0**	**0**	**37.4**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	U	C2:A		1	35	-	1013	1973:1957	1178+53	82.3 : 82.3%	-	-	-	4.9	17.3	14.9
2/1+2/2	A50 Cllif Lane Ahead Right	U	C2:D C2:C		1	43	-	1450	1976:1980	989+989	73.3 : 73.3%	-	-	-	2.7	6.8	6.4
3/1+3/2	B5356 Grappenhall Lane Left Ahead	U	C2:G		1	15	-	1063	1983:1988	529+530	100.6 : 100.2%	-	-	-	24.0	81.2	26.3
7/1	Right	U	C2:B		1	7	-	44	1987	265	16.6%	-	-	-	0.2	13.7	0.6
7/2	Right	U	C2:B		1	7	-	44	1987	265	16.6%	-	-	-	0.2	17.9	0.6
8/1	Right	U	C2:E		1	35	-	559	2021	1213	46.1%	-	-	-	1.3	8.4	6.8
9/1	Ahead	U	C2:F		1	15	-	492	2038	543	90.0%	-	-	-	2.0	14.7	3.0
9/2	Ahead	U	C2:F		1	15	-	531	2040	544	97.5%	-	-	-	2.2	14.8	4.0
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**86.7%**	**4320**	**0**	**0**	**4.1**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	284	Inf : Inf	779+82	33.0 : 33.0%	568	0	0	0.2	3.1	0.2
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	633	Inf : Inf	669+61	86.7 : 86.7%	1266	0	0	3.1	17.5	3.1
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	1243	Inf : Inf	905+1100	62.0 : 62.0%	2486	0	0	0.8	2.4	0.8

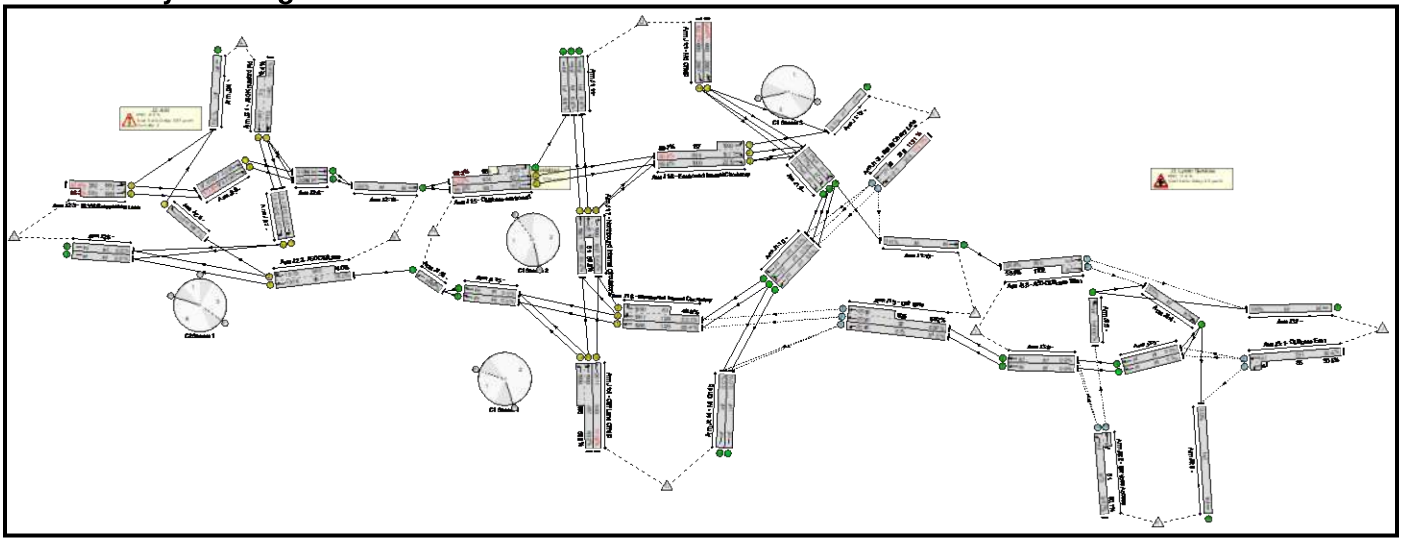
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	-23.3	Total Delay for Signalled Lanes (pcuHr):	49.02	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-0.1	Total Delay for Signalled Lanes (pcuHr):	13.20	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	-16.8	Total Delay for Signalled Lanes (pcuHr):	60.32	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	0.0	Total Delay for Signalled Lanes (pcuHr):	0.00	Cycle Time (s):	60
C2	Stream: 1	PRC for Signalled Lanes (%):	-11.8	Total Delay for Signalled Lanes (pcuHr):	37.43	Cycle Time (s):	60
		PRC Over All Lanes (%):	-23.3	Total Delay Over All Lanes(pcuHr):	185.59		

Basic Results Summary

Scenario 3: '21AM with Dev with Stobbart' (FG3: '2021 AM Base with Dev with Stobbart ', Plan 2: 'Network Control Plan 2')

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	-	-	-		-	-	-	-	-	-	**113.5%**	**6262**	**0**	**0**	**165.2**	-	-
J1: Cliff Lane Roundabout	-	-	-		-	-	-	-	-	-	**113.5%**	**2208**	**0**	**0**	**133.6**	-	-
1/1	M6 Offslip Ahead U-Turn	U	C1:F		1	19	-	642	2007	669	96.0%	-	-	-	11.1	62.3	17.9
1/2	M6 Offslip Ahead	U	C1:F		1	19	-	684	2007	669	102.2%	-	-	-	21.5	113.2	29.0
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	482	2015:2035	206+219	113.5 : 113.1%	851	0	0	35.4	264.4	42.1
3/1	Cliff Lane Left	O	-		-	-	-	363	2090	673	54.0%	363	0	0	0.6	5.8	0.6
3/2+3/3	Cliff Lane Ahead	O	-		-	-	-	497	2090:2090	92+626	69.2 : 69.2%	994	0	0	1.1	8.2	3.1
4/2+4/1	Cliff Lane Offslip Ahead Left	U	C1:B		1	14	-	627	1998:1996	497+495	63.2 : 63.2%	-	-	-	4.3	24.9	5.5
4/3	Cliff Lane Offslip Ahead	U	C1:B		1	14	-	558	2011	503	111.0%	-	-	-	36.7	236.5	42.2
5/2+5/1	Cliff Lane eastbound Ahead Left	U	C1:D -		1	20	-	1302	1973:2065	474+938	92.2 : 92.2%	-	-	-	7.4	20.4	12.1
5/3	Cliff Lane eastbound Ahead	U	C1:D		1	20	-	593	1973	691	85.9%	-	-	-	5.9	35.6	11.9
6/1	Westbound Internal Circulatory Ahead	U	C1:A		1	33	-	752	1986	1125	65.4%	-	-	-	1.2	6.1	7.0
6/2+6/3	Westbound Internal Circulatory Right Ahead	U	C1:A		1	33	-	662	1987:1990	1126+63	53.1 : 49.9%	-	-	-	2.1	12.1	7.0
7/1	Northbound Internal Circulatory Ahead	U	C1:C		1	28	-	538	1981	957	53.4%	-	-	-	0.5	3.3	1.8

Basic Results Summary

7/3+7/2	Northbound Internal Circulatory Right Ahead	U	C1:C		1	28	-	593	1990:2019	932+51	54.4 : 53.2%	-	-	-	2.8	18.6	8.7
8/2+8/1	Eastbound Internal Circulatory Right Left	U	C1:E		1	29	-	996	1971:1990	899+137	90.9 : 89.7%	-	-	-	1.3	4.8	13.2
8/3	Eastbound Internal Circulatory Right	U	C1:E		1	29	-	596	2019	1009	59.0%	-	-	-	1.8	10.6	9.9
J2: A50	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**97.4%**	**0**	**0**	**0**	**28.7**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	U	C2:A		1	34	-	953	1973:1957	1145+55	79.4 : 79.4%	-	-	-	4.4	16.6	13.5
2/1+2/2	A50 Cllif Lane Ahead Right	U	C2:D C2:C		1	43	-	1464	1976:1979	987+990	74.0 : 74.0%	-	-	-	2.8	6.9	6.5
3/1+3/2	B5356 Grappenhall Lane Left Ahead	U	C2:G		1	16	-	1089	1983:1988	562+563	97.4 : 96.2%	-	-	-	16.2	53.6	18.7
7/1	Right	U	C2:B		1	7	-	43	1987	265	16.2%	-	-	-	0.2	13.4	0.6
7/2	Right	U	C2:B		1	7	-	44	1987	265	16.6%	-	-	-	0.2	17.6	0.6
8/1	Right	U	C2:E		1	34	-	523	2021	1179	44.4%	-	-	-	1.3	8.8	6.4
9/1	Ahead	U	C2:F		1	16	-	507	2038	577	87.8%	-	-	-	1.8	12.7	2.5
9/2	Ahead	U	C2:F		1	16	-	542	2040	578	93.8%	-	-	-	1.9	12.4	2.9
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.7%**	**4054**	**0**	**0**	**3.0**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	267	Inf : Inf	791+85	30.5 : 30.5%	534	0	0	0.2	3.0	0.2
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	592	Inf : Inf	673+61	80.7 : 80.7%	1184	0	0	2.0	12.4	2.0
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	1168	Inf : Inf	900+1102	58.4 : 58.4%	2336	0	0	0.7	2.2	0.7

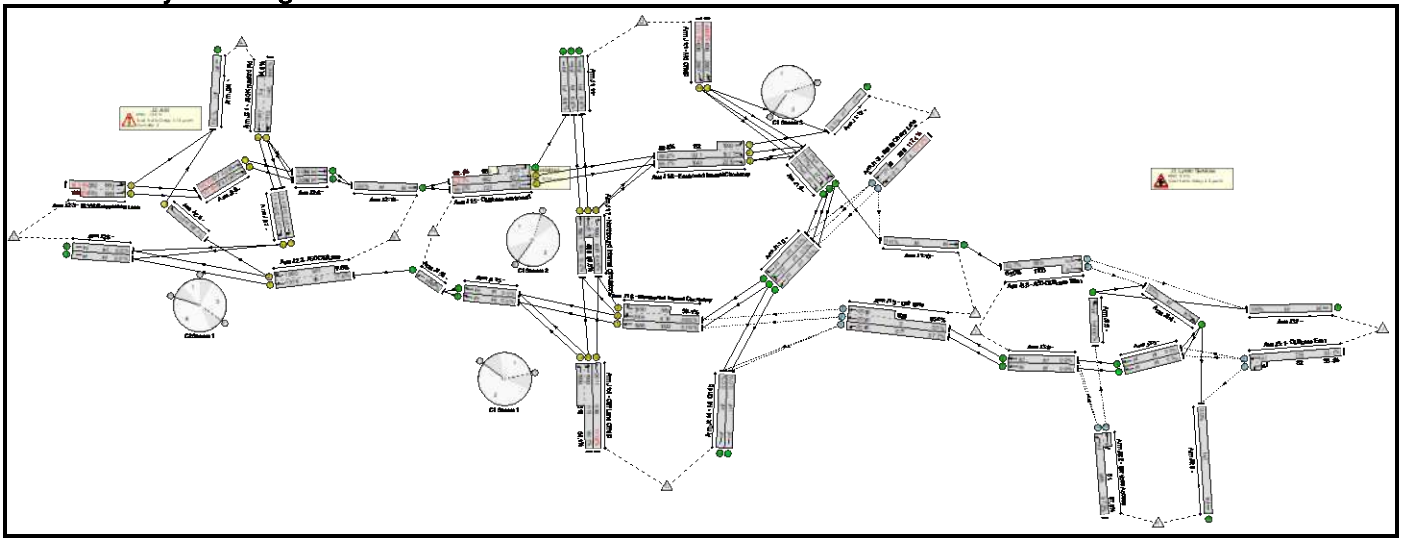
Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	-23.3	Total Delay for Signalled Lanes (pcuHr):	44.35	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-2.5	Total Delay for Signalled Lanes (pcuHr):	16.48	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	-13.6	Total Delay for Signalled Lanes (pcuHr):	35.63	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	0.0	Total Delay for Signalled Lanes (pcuHr):	0.00	Cycle Time (s):	60
C2	Stream: 1	PRC for Signalled Lanes (%):	-8.2	Total Delay for Signalled Lanes (pcuHr):	28.72	Cycle Time (s):	60
		PRC Over All Lanes (%):	-26.1	Total Delay Over All Lanes(pcuHr):	165.24		

Basic Results Summary

Scenario 4: '29 AM with Dev with Stobbart' (FG5: '2029 AM Base with Dev with Stobbart', Plan 2: 'Network Control Plan 2')

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	-	-	-		-	-	-	-	-	-	**117.4%**	**6679**	**0**	**0**	**249.7**	-	-
J1: Cliff Lane Roundabout	-	-	-		-	-	-	-	-	-	**117.4%**	**2337**	**0**	**0**	**203.9**	-	-
1/1	M6 Offslip Ahead U-Turn	U	C1:F		1	18	-	692	2007	636	108.9%	-	-	-	38.8	201.7	45.9
1/2	M6 Offslip Ahead	U	C1:F		1	18	-	706	2007	636	111.1%	-	-	-	45.5	231.9	52.6
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	515	2015:2035	214+225	117.2 : 117.4%	878	0	0	45.3	316.9	52.3
3/1	Cliff Lane Left	O	-		-	-	-	387	2090	671	57.7%	387	0	0	0.7	6.3	0.7
3/2+3/3	Cliff Lane Ahead	O	-		-	-	-	537	2090:2090	0+628	0.0 : 85.4%	1072	0	0	2.8	18.9	6.0
4/2+4/1	Cliff Lane Offslip Ahead Left	U	C1:B		1	15	-	658	1998:1996	513+513	64.1 : 64.1%	-	-	-	4.4	24.2	5.6
4/3	Cliff Lane Offslip Ahead	U	C1:B		1	15	-	595	2011	536	111.0%	-	-	-	39.2	237.4	44.7
5/2+5/1	Cliff Lane eastbound Ahead Left	U	C1:D -		1	21	-	1355	1973:2065	482+989	92.1 : 92.1%	-	-	-	7.2	19.2	12.1
5/3	Cliff Lane eastbound Ahead	U	C1:D		1	21	-	644	1973	723	89.0%	-	-	-	6.9	38.6	13.7
6/1	Westbound Internal Circulatory Ahead	U	C1:A		1	32	-	703	1986	1092	57.9%	-	-	-	4.1	23.6	9.2
6/2+6/3	Westbound Internal Circulatory Right Ahead	U	C1:A		1	32	-	789	2005:1990	618+882	46.0 : 50.1%	-	-	-	1.8	8.8	4.4
7/1	Northbound Internal Circulatory Ahead	U	C1:C		1	27	-	148	1981	924	12.4%	-	-	-	0.3	10.7	1.1

Basic Results Summary

7/3+7/2	Northbound Internal Circulatory Right Ahead	U	C1:C		1	27	-	1059	1990:2019	636+489	84.9 : 89.6%	-	-	-	1.8	6.6	9.0
8/2+8/1	Eastbound Internal Circulatory Right Left	U	C1:E		1	30	-	997	1971:1990	921+152	88.0 : 86.8%	-	-	-	4.7	18.1	14.7
8/3	Eastbound Internal Circulatory Right	U	C1:E		1	30	-	690	2019	1043	65.7%	-	-	-	0.2	1.3	0.7
J2: A50	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**101.1%**	**0**	**0**	**0**	**41.5**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	U	C2:A		1	34	-	1015	1973:1957	1145+54	84.6 : 84.6%	-	-	-	5.5	19.5	15.9
2/1+2/2	A50 Cllif Lane Ahead Right	U	C2:D C2:C		1	43	-	1535	1976:1980	987+991	77.6 : 77.6%	-	-	-	3.2	7.5	7.3
3/1+3/2	B5356 Grappenhall Lane Left Ahead	U	C2:G		1	16	-	1136	1983:1988	562+563	101.1 : 100.8%	-	-	-	26.9	85.2	29.4
7/1	Right	U	C2:B		1	7	-	44	1987	265	16.6%	-	-	-	0.2	12.9	0.6
7/2	Right	U	C2:B		1	7	-	46	1987	265	17.4%	-	-	-	0.2	17.4	0.7
8/1	Right	U	C2:E		1	34	-	559	2021	1179	47.4%	-	-	-	1.4	9.0	7.0
9/1	Ahead	U	C2:F		1	16	-	527	2038	577	90.3%	-	-	-	2.0	13.5	3.0
9/2	Ahead	U	C2:F		1	16	-	568	2040	578	97.5%	-	-	-	2.1	13.6	4.0
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.3%**	**4342**	**0**	**0**	**4.3**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	284	Inf : Inf	776+82	33.1 : 33.1%	568	0	0	0.2	3.1	0.2
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	633	Inf : Inf	665+61	87.3 : 87.3%	1266	0	0	3.2	18.2	3.2
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	1255	Inf : Inf	889+1100	63.1 : 63.0%	2508	0	0	0.9	2.4	0.9

Basic Results Summary

C1	Stream: 1	PRC for Signalled Lanes (%):	-23.3	Total Delay for Signalled Lanes (pcuHr):	49.60	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-2.3	Total Delay for Signalled Lanes (pcuHr):	16.28	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	-23.4	Total Delay for Signalled Lanes (pcuHr):	89.21	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	0.0	Total Delay for Signalled Lanes (pcuHr):	0.00	Cycle Time (s):	60
C2	Stream: 1	PRC for Signalled Lanes (%):	-12.3	Total Delay for Signalled Lanes (pcuHr):	41.46	Cycle Time (s):	60
		PRC Over All Lanes (%):	-30.4	Total Delay Over All Lanes(pcuHr):	249.69		

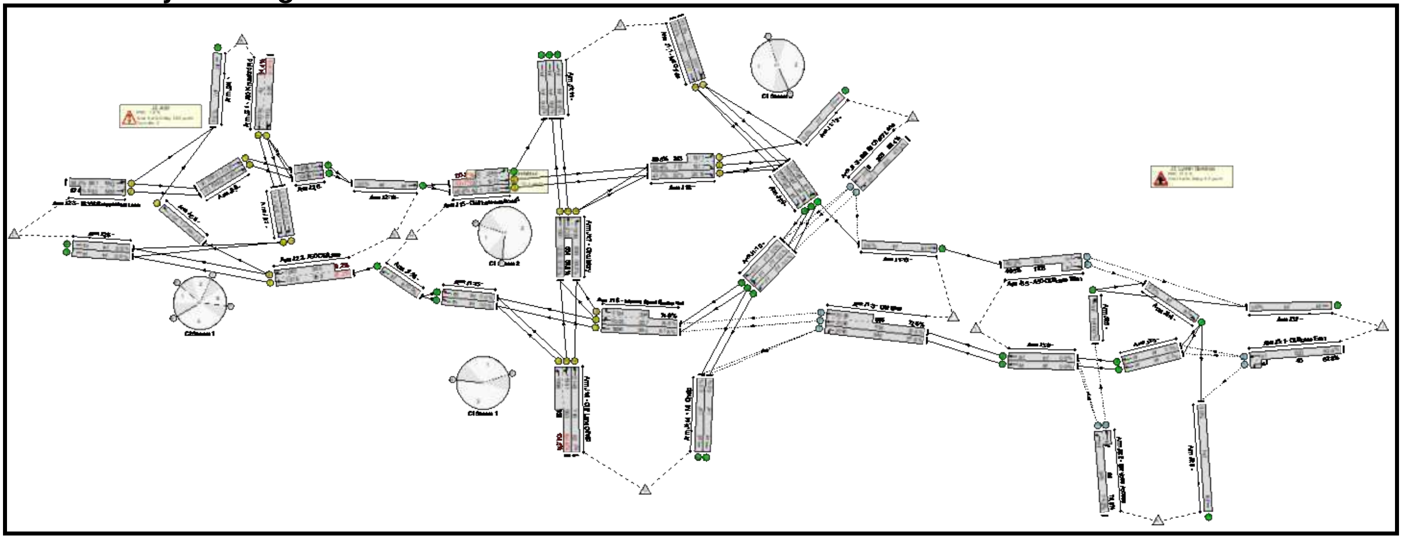
Basic Results Summary
Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	Proposed Mitigation-PM Peak V3.lsg3x
Author:	
Company:	
Address:	

Scenario 1: '2021 PM with Dev' (FG8: '2021 PM Base with Dev', Plan 3: 'Network Control Plan 3')

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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**104.6%**	**6028**	**0**	**0**	**130.1**	**-**	**-**
J1: Cliff Lane Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**104.6%**	**2464**	**0**	**0**	**101.4**	**-**	**-**
1/1	M6 Offslip Ahead Left	U	C1:F		1	23	-	671	2007	803	83.6%	-	-	-	5.5	29.4	12.5
1/2	M6 Offslip Ahead	U	C1:F		1	23	-	671	2007	803	83.6%	-	-	-	5.5	29.4	12.5
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	269	2015:2035	203+203	65.9 : 66.4%	538	0	0	1.5	20.2	1.9
3/1	Cliff Lane Left	O	-		-	-	-	294	2090	846	34.8%	294	0	0	0.3	3.3	0.3
3/2+3/3	Cliff Lane Ahead	O	-		-	-	-	816	2090:2090	438+686	72.6 : 72.6%	1632	0	0	1.4	6.0	3.4
4/2+4/1	Cliff Lane Offslip Ahead Left	U	C1:B		1	19	-	1177	1981:1996	563+562	104.6 : 104.6%	-	-	-	42.3	129.3	49.4
4/3	Cliff Lane Offslip Ahead	U	C1:B		1	19	-	588	2148	716	82.1%	-	-	-	5.2	32.0	11.2
5/2+5/1	Cliff Lane eastbound Ahead Left	U	C1:D -		1	11	-	1198	1973:2065	371+820	100.7 : 100.7%	-	-	-	21.9	65.7	26.7
5/3	Cliff Lane eastbound Ahead	U	C1:D		1	11	-	374	2106	421	88.8%	-	-	-	5.9	56.6	9.5
6/1	Internal Road Eastbound Ahead	U	C1:A		1	28	-	651	1986	960	67.8%	-	-	-	3.1	17.0	7.2
6/2+6/3	Internal Road Eastbound Right Ahead	U	C1:A		1	28	-	936	2005:2124	857+394	74.8 : 74.8%	-	-	-	4.1	15.9	7.3
7/1	Circulatory Ahead	U	C1:C		1	37	-	657	1981	1255	51.0%	-	-	-	0.9	5.3	3.3
7/3+7/2	Circulatory Right Ahead	U	C1:C		1	37	-	883	1990:2155	838+654	59.2 : 59.2%	-	-	-	0.5	2.0	10.9

Basic Results Summary

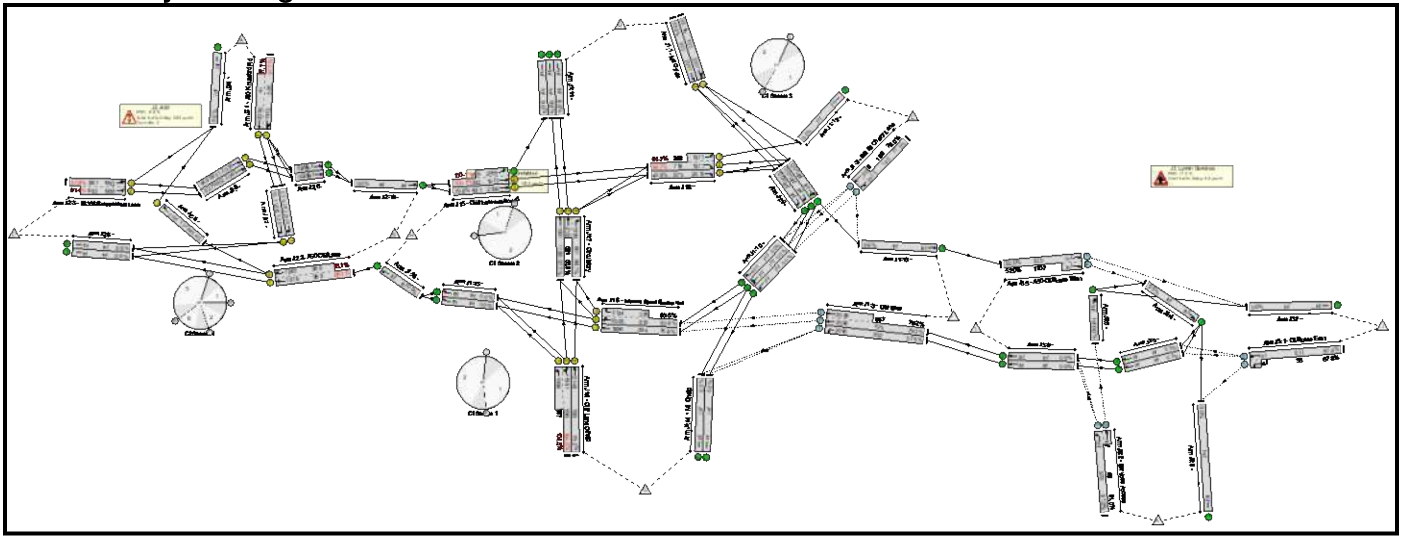
8/2+8/1	Right Left	U	C1:E		1	25	-	861	1971:1971	717+243	89.4 : 89.5%	-	-	-	3.3	14.0	11.9
8/3	Right	U	C1:E		1	25	-	382	2019	875	43.7%	-	-	-	0.1	0.5	3.5
J2: A50	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.4%**	**0**	**0**	**0**	**26.0**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	U	C2:A		2	14	-	519	1973:2090	526+42	91.4 : 91.4%	-	-	-	6.3	43.5	9.3
2/1+2/2	A50 Cllif Lane Ahead Right	U	C2:D C2:C		1	43	-	1805	1976:1981	989+990	91.2 : 91.2%	-	-	-	6.9	13.7	12.2
3/1+3/2	B5356 Grappenhall Lane Left Ahead	U	C2:G		1	19	-	1165	1983:1988	661+663	88.2 : 87.8%	-	-	-	9.6	29.7	12.6
7/1	Right	U	C2:B		1	7	-	0	2115	282	0.0%	-	-	-	0.0	0.0	0.0
7/2	Right	U	C2:B		1	7	-	38	1987	265	14.3%	-	-	-	0.2	18.8	0.3
8/1	Right	U	C2:E		1	31	-	864	2021	1078	80.2%	-	-	-	2.3	9.4	6.8
9/1	Ahead	U	C2:F		2	26	-	497	2038	951	52.3%	-	-	-	0.4	2.6	1.4
9/2	Ahead	U	C2:F		2	26	-	582	2040	952	61.1%	-	-	-	0.4	2.5	1.6
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**74.3%**	**3564**	**0**	**0**	**2.7**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	540	Inf : Inf	820+40	62.8 : 62.8%	1080	0	0	0.8	5.6	0.8
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	438	Inf : Inf	545+44	74.3 : 74.3%	876	0	0	1.4	11.6	1.4
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	804	Inf : Inf	523+1108	49.3 : 49.3%	1608	0	0	0.5	2.2	0.5

C1 Stream: 1 PRC for Signalled Lanes (%): -16.3 Total Delay for Signalled Lanes (pcuHr): 54.72 Cycle Time (s): 60
C1 Stream: 2 PRC for Signalled Lanes (%): -11.8 Total Delay for Signalled Lanes (pcuHr): 29.19 Cycle Time (s): 60
C1 Stream: 3 PRC for Signalled Lanes (%): 0.5 Total Delay for Signalled Lanes (pcuHr): 14.34 Cycle Time (s): 60
C1 Stream: 4 PRC for Signalled Lanes (%): 0.0 Total Delay for Signalled Lanes (pcuHr): 0.00 Cycle Time (s): 60
C2 Stream: 1 PRC for Signalled Lanes (%): -1.6 Total Delay for Signalled Lanes (pcuHr): 26.00 Cycle Time (s): 60
PRC Over All Lanes (%): -16.3 Total Delay Over All Lanes(pcuHr): 130.13

Basic Results Summary

Scenario 2: '29 PM with Dev' (FG10: '2029 PM Base with Dev', Plan 3: 'Network Control Plan 3')

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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**104.5%**	**6400**	**0**	**0**	**151.0**	**-**	**-**
J1: Cliff Lane Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**104.5%**	**2612**	**0**	**0**	**109.2**	**-**	**-**
1/1	M6 Offslip Ahead Left	U	C1:F		1	23	-	710	2007	803	88.4%	-	-	-	6.8	34.7	14.4
1/2	M6 Offslip Ahead	U	C1:F		1	23	-	711	2007	803	88.6%	-	-	-	6.9	34.9	14.5
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	287	2015:2035	185+185	77.5 : 78.0%	574	0	0	2.4	29.9	3.9
3/1	Cliff Lane Left	O	-		-	-	-	312	2090	832	37.5%	312	0	0	0.3	3.5	0.3
3/2+3/3	Cliff Lane Ahead	O	-		-	-	-	863	2090:2090	423+667	79.2 : 79.2%	1726	0	0	2.0	8.3	4.9
4/2+4/1	Cliff Lane Offslip Ahead Left	U	C1:B		1	21	-	1247	1981:1996	596+597	104.5 : 104.5%	-	-	-	43.3	124.9	51.9
4/3	Cliff Lane Offslip Ahead	U	C1:B		1	21	-	624	2148	788	79.2%	-	-	-	4.8	27.7	11.1
5/2+5/1	Cliff Lane eastbound Ahead Left	U	C1:D -		1	13	-	1258	1973:2065	392+865	100.1 : 100.1%	-	-	-	20.4	58.3	25.7
5/3	Cliff Lane eastbound Ahead	U	C1:D		1	13	-	392	2106	491	79.8%	-	-	-	4.3	39.1	8.0
6/1	Internal Road Eastbound Ahead	U	C1:A		1	26	-	687	1986	894	76.8%	-	-	-	4.9	25.7	12.2
6/2+6/3	Internal Road Eastbound Right Ahead	U	C1:A		1	26	-	994	2005:2124	810+376	83.6 : 83.5%	-	-	-	6.9	25.2	13.9
7/1	Circulatory Ahead	U	C1:C		1	35	-	705	1981	1189	57.7%	-	-	-	1.1	5.8	5.0
7/3+7/2	Circulatory Right Ahead	U	C1:C		1	35	-	939	1990:2155	801+621	66.1 : 65.9%	-	-	-	1.0	3.7	11.4

Basic Results Summary

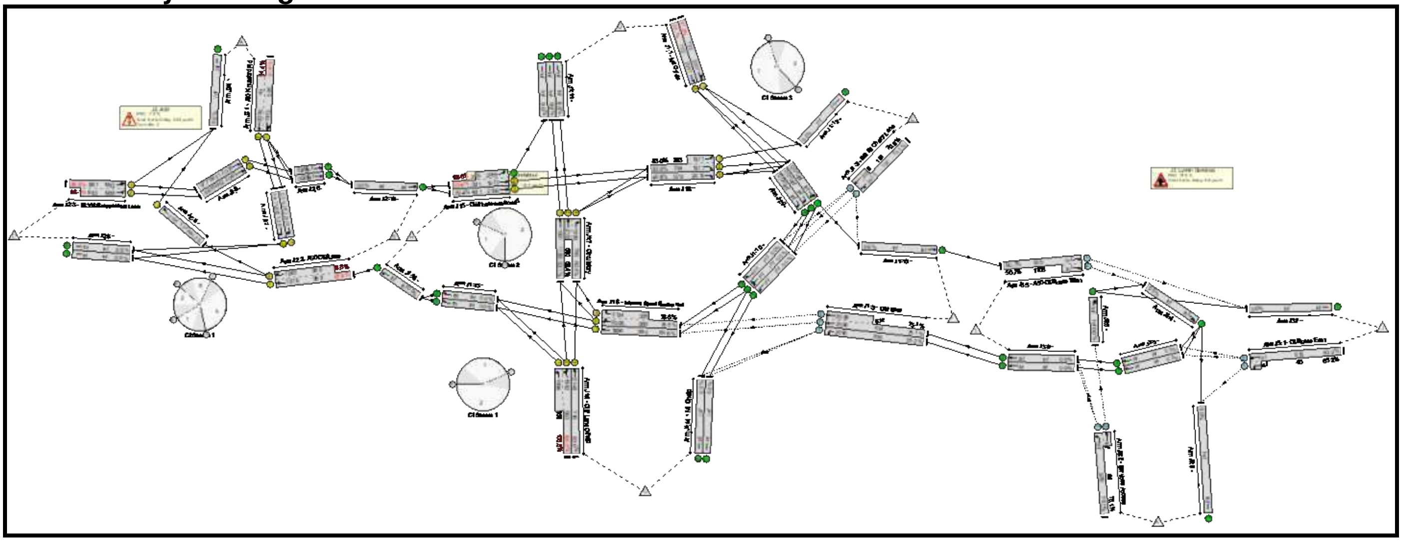
8/2+8/1	Right Left	U	C1:E		1	25	-	911	1971:1971	716+246	94.7 : 94.7%	-	-	-	2.3	9.3	13.8
8/3	Right	U	C1:E		1	25	-	402	2019	875	45.9%	-	-	-	1.8	15.8	6.6
J2: A50	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**97.7%**	**0**	**0**	**0**	**38.2**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	U	C2:A		2	14	-	554	1973:2090	526+41	97.7 : 97.7%	-	-	-	11.0	71.4	14.1
2/1+2/2	A50 Cllif Lane Ahead Right	U	C2:D C2:C		1	43	-	1902	1976:1981	989+989	96.1 : 96.1%	-	-	-	12.1	22.8	17.8
3/1+3/2	B5356 Grappenhall Lane Left Ahead	U	C2:G		1	19	-	1213	1983:1988	661+663	91.8 : 91.4%	-	-	-	11.5	34.1	14.6
7/1	Right	U	C2:B		1	7	-	0	2115	282	0.0%	-	-	-	0.0	0.0	0.0
7/2	Right	U	C2:B		1	7	-	40	1987	265	15.1%	-	-	-	0.2	18.8	0.4
8/1	Right	U	C2:E		1	31	-	923	2021	1078	85.6%	-	-	-	2.5	9.7	7.3
9/1	Ahead	U	C2:F		2	26	-	517	2038	951	54.4%	-	-	-	0.4	3.1	1.8
9/2	Ahead	U	C2:F		2	26	-	606	2040	952	63.7%	-	-	-	0.5	3.1	2.0
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.0%**	**3788**	**0**	**0**	**3.6**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	576	Inf : Inf	811+38	67.8 : 67.8%	1152	0	0	1.0	6.5	1.0
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	467	Inf : Inf	533+43	81.0 : 81.0%	934	0	0	2.1	15.9	2.1
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	851	Inf : Inf	529+1107	52.0 : 52.0%	1702	0	0	0.5	2.3	0.5

C1	Stream: 1	PRC for Signalled Lanes (%):	-16.2	Total Delay for Signalled Lanes (pcuHr):	59.90	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-11.2	Total Delay for Signalled Lanes (pcuHr):	26.73	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	-5.3	Total Delay for Signalled Lanes (pcuHr):	17.86	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	0.0	Total Delay for Signalled Lanes (pcuHr):	0.00	Cycle Time (s):	60
C2	Stream: 1	PRC for Signalled Lanes (%):	-8.5	Total Delay for Signalled Lanes (pcuHr):	38.19	Cycle Time (s):	60
		PRC Over All Lanes (%):	-16.2	Total Delay Over All Lanes(pcuHr):	151.00		

Basic Results Summary

Scenario 3: '21 PM with Dev with Stobbart' (FG4: '2021 PM Base with Dev with Stobbart', Plan 3: 'Network Control Plan 3')

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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**105.5%**	**6092**	**0**	**0**	**157.1**	**-**	**-**
J1: Cliff Lane Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**105.5%**	**2496**	**0**	**0**	**119.0**	**-**	**-**
1/1	M6 Offslip Ahead Left	U	C1:F		1	20	-	687	2007	702	97.8%	-	-	-	13.5	70.6	21.1
1/2	M6 Offslip Ahead	U	C1:F		1	20	-	689	2007	702	98.1%	-	-	-	13.9	72.5	21.5
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	269	2015:2035	191+191	70.1 : 70.6%	538	0	0	1.8	23.6	3.1
3/1	Cliff Lane Left	O	-		-	-	-	294	2090	835	35.2%	294	0	0	0.3	3.3	0.3
3/2+3/3	Cliff Lane Ahead	O	-		-	-	-	832	2090:2090	434+674	75.1 : 75.1%	1664	0	0	1.6	6.9	4.2
4/2+4/1	Cliff Lane Offslip Ahead Left	U	C1:B		1	19	-	1188	1982:1996	563+563	105.5 : 105.5%	-	-	-	46.9	142.1	53.9
4/3	Cliff Lane Offslip Ahead	U	C1:B		1	19	-	594	2148	716	83.0%	-	-	-	5.4	32.6	11.4
5/2+5/1	Cliff Lane eastbound Ahead Left	U	C1:D -		1	13	-	1290	1973:2065	391+905	99.6 : 99.6%	-	-	-	19.0	53.0	24.4
5/3	Cliff Lane eastbound Ahead	U	C1:D		1	13	-	390	2106	491	79.4%	-	-	-	4.2	38.8	7.9
6/1	Internal Road Eastbound Ahead	U	C1:A		1	28	-	668	1986	960	69.6%	-	-	-	3.4	18.3	7.9
6/2+6/3	Internal Road Eastbound Right Ahead	U	C1:A		1	28	-	953	2006:2124	860+385	76.5 : 76.5%	-	-	-	4.4	16.7	7.9
7/1	Circulatory Ahead	U	C1:C		1	35	-	651	1981	1189	53.1%	-	-	-	1.2	6.6	4.6
7/3+7/2	Circulatory Right Ahead	U	C1:C		1	35	-	889	1990:2155	795+630	62.4 : 62.4%	-	-	-	0.6	2.4	11.0

Basic Results Summary

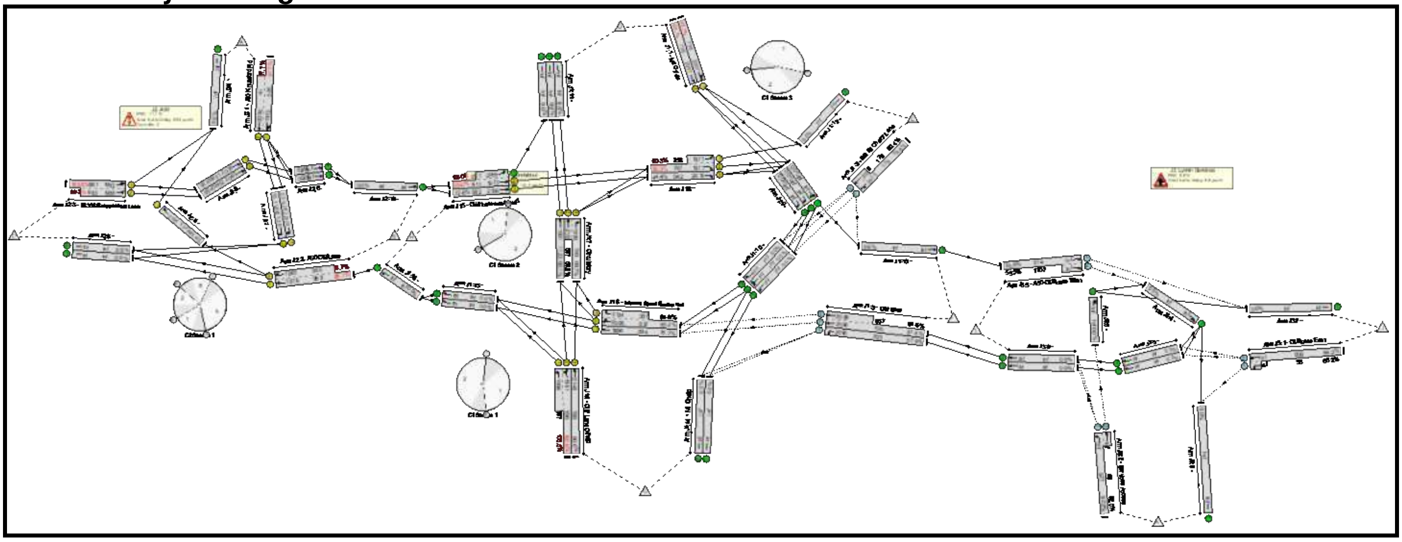
8/2+8/1	Right Left	U	C1:E		1	28	-	877	1971:1971	794+263	83.0 : 83.0%	-	-	-	2.9	11.9	10.5
8/3	Right	U	C1:E		1	28	-	398	2019	976	40.8%	-	-	-	0.0	0.4	3.9
J2: A50	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**96.5%**	**0**	**0**	**0**	**35.3**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	U	C2:A		2	14	-	520	1973:2090	526+43	91.4 : 91.4%	-	-	-	6.3	43.5	9.3
2/1+2/2	A50 Cllif Lane Ahead Right	U	C2:D C2:C		1	43	-	1856	1976:1981	989+989	93.8 : 93.8%	-	-	-	8.9	17.2	14.6
3/1+3/2	B5356 Grappenhall Lane Left Ahead	U	C2:G		1	19	-	1275	1983:1988	661+663	96.5 : 96.1%	-	-	-	16.4	46.3	19.7
7/1	Right	U	C2:B		1	7	-	0	2115	282	0.0%	-	-	-	0.0	0.0	0.0
7/2	Right	U	C2:B		1	7	-	39	1987	265	14.7%	-	-	-	0.2	18.8	0.4
8/1	Right	U	C2:E		1	31	-	864	2021	1078	80.2%	-	-	-	2.3	9.4	6.8
9/1	Ahead	U	C2:F		2	26	-	549	2038	951	57.7%	-	-	-	0.6	3.7	2.2
9/2	Ahead	U	C2:F		2	26	-	637	2040	952	66.9%	-	-	-	0.7	3.7	2.6
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.1%**	**3596**	**0**	**0**	**2.8**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	540	Inf : Inf	815+40	63.2 : 63.2%	1080	0	0	0.9	5.7	0.9
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	438	Inf : Inf	539+44	75.1 : 75.1%	876	0	0	1.5	12.1	1.5
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	820	Inf : Inf	509+1108	50.7 : 50.7%	1640	0	0	0.5	2.3	0.5

C1	Stream: 1	PRC for Signalled Lanes (%):	-17.3	Total Delay for Signalled Lanes (pcuHr):	60.10	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-10.6	Total Delay for Signalled Lanes (pcuHr):	24.95	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	-9.0	Total Delay for Signalled Lanes (pcuHr):	30.32	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	0.0	Total Delay for Signalled Lanes (pcuHr):	0.00	Cycle Time (s):	60
C2	Stream: 1	PRC for Signalled Lanes (%):	-7.2	Total Delay for Signalled Lanes (pcuHr):	35.26	Cycle Time (s):	60
		PRC Over All Lanes (%):	-17.3	Total Delay Over All Lanes(pcuHr):	157.10		

Basic Results Summary

Scenario 4: '2029 PM with Dev with Stobbart' (FG6: '2029 PM Base with Dev with Stobbart', Plan 3: 'Network Control Plan 3')

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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**105.6%**	**6464**	**0**	**0**	**193.9**	**-**	**-**
J1: Cliff Lane Roundabout	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**105.6%**	**2644**	**0**	**0**	**131.0**	**-**	**-**
1/1	M6 Offslip Ahead Left	U	C1:F		1	21	-	726	2007	736	98.7%	-	-	-	15.0	74.5	23.1
1/2	M6 Offslip Ahead	U	C1:F		1	21	-	729	2007	736	99.1%	-	-	-	15.7	77.6	23.8
2/1+2/2	B5158 Cherry Lane Ahead Left	O	-		-	-	-	287	2015:2035	179+179	79.8 : 80.4%	574	0	0	3.0	37.7	4.1
3/1	Cliff Lane Left	O	-		-	-	-	312	2090	823	37.9%	312	0	0	0.3	3.5	0.3
3/2+3/3	Cliff Lane Ahead	O	-		-	-	-	879	2090:2090	420+657	81.6 : 81.6%	1758	0	0	2.2	8.9	4.6
4/2+4/1	Cliff Lane Offslip Ahead Left	U	C1:B		1	21	-	1259	1981:1996	596+597	105.6 : 105.6%	-	-	-	48.7	139.2	57.4
4/3	Cliff Lane Offslip Ahead	U	C1:B		1	21	-	630	2148	788	80.0%	-	-	-	4.9	28.2	11.2
5/2+5/1	Cliff Lane eastbound Ahead Left	U	C1:D -		1	15	-	1348	1973:2065	411+951	99.0 : 99.0%	-	-	-	17.5	46.8	23.4
5/3	Cliff Lane eastbound Ahead	U	C1:D		1	15	-	408	2106	562	72.6%	-	-	-	3.6	31.5	7.4
6/1	Internal Road Eastbound Ahead	U	C1:A		1	26	-	704	1986	894	78.7%	-	-	-	5.0	25.8	10.6
6/2+6/3	Internal Road Eastbound Right Ahead	U	C1:A		1	26	-	1011	2006:2124	812+367	85.2 : 84.9%	-	-	-	6.7	23.9	10.9
7/1	Circulatory Ahead	U	C1:C		1	33	-	699	1981	1123	60.1%	-	-	-	1.4	7.4	5.5
7/3+7/2	Circulatory Right Ahead	U	C1:C		1	33	-	945	1990:2155	759+597	69.7 : 69.2%	-	-	-	2.0	7.6	14.7

Basic Results Summary

8/2+8/1	Right Left	U	C1:E		1	27	-	926	1971:1971	767+258	90.3 : 90.3%	-	-	-	4.8	18.7	13.1
8/3	Right	U	C1:E		1	27	-	418	2019	942	44.4%	-	-	-	0.1	1.0	6.2
J2: A50	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**100.0%**	**0**	**0**	**0**	**59.2**	**-**	**-**
1/1+1/2	A50 Knutsford Rd Left Ahead	U	C2:A		2	14	-	554	1973:2090	526+41	97.7 : 97.7%	-	-	-	11.0	71.4	14.1
2/1+2/2	A50 Cllif Lane Ahead Right	U	C2:D C2:C		1	43	-	1953	1976:1981	989+990	98.7 : 98.7%	-	-	-	18.9	34.9	25.0
3/1+3/2	B5356 Grappenhall Lane Left Ahead	U	C2:G		1	19	-	1322	1983:1988	661+663	100.0 : 99.7%	-	-	-	25.1	68.4	28.6
7/1	Right	U	C2:B		1	7	-	0	2115	282	0.0%	-	-	-	0.0	0.0	0.0
7/2	Right	U	C2:B		1	7	-	40	1987	265	15.1%	-	-	-	0.2	18.8	0.4
8/1	Right	U	C2:E		1	31	-	923	2021	1078	85.6%	-	-	-	2.5	9.8	7.3
9/1	Ahead	U	C2:F		2	26	-	569	2038	951	59.8%	-	-	-	0.7	4.1	2.6
9/2	Ahead	U	C2:F		2	26	-	661	2040	952	69.4%	-	-	-	0.8	4.2	3.0
J3: Lymm Services	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.0%**	**3820**	**0**	**0**	**3.8**	**-**	**-**
1/2+1/1	Cliff Lane East Ahead Left	O	-		-	-	-	576	Inf : Inf	806+38	68.2 : 68.2%	1152	0	0	1.1	6.7	1.1
2/1+2/2	Services Access Ahead Left	O	-		-	-	-	467	Inf : Inf	527+43	82.0 : 82.0%	934	0	0	2.2	16.8	2.2
3/1+3/2	A50 Cliff Lane West Ahead Ahead2	O	-		-	-	-	867	Inf : Inf	514+1107	53.5 : 53.5%	1734	0	0	0.6	2.4	0.6

C1 Stream: 1 PRC for Signalled Lanes (%): -17.3 Total Delay for Signalled Lanes (pcuHr): 65.34 Cycle Time (s): 60
C1 Stream: 2 PRC for Signalled Lanes (%): -10.0 Total Delay for Signalled Lanes (pcuHr): 24.47 Cycle Time (s): 60
C1 Stream: 3 PRC for Signalled Lanes (%): -10.1 Total Delay for Signalled Lanes (pcuHr): 35.66 Cycle Time (s): 60
C1 Stream: 4 PRC for Signalled Lanes (%): 0.0 Total Delay for Signalled Lanes (pcuHr): 0.00 Cycle Time (s): 60
C2 Stream: 1 PRC for Signalled Lanes (%): -11.1 Total Delay for Signalled Lanes (pcuHr): 59.15 Cycle Time (s): 60
PRC Over All Lanes (%): -17.3 Total Delay Over All Lanes(pcuHr): 193.94

Appendix J

Junctions 8

ARCADY 8 - Roundabout Module

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

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

Filename: Broad Lane -Grappenhall Lane V1.arc8
Path: C:\Users\frempong_f\Desktop\PSE\Models\ARCADY V2
Report generation date: 10/12/2018 09:49:07

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2017 Observed							
Arm 1	0.58	8.23	0.37	A	0.13	6.09	0.12	A
Arm 2	1.18	7.25	0.54	A	1.13	6.53	0.53	A
Arm 3	1.45	6.89	0.59	A	4.03	14.77	0.81	B
	A1 - 2021 Base							
Arm 1	0.69	9.53	0.41	A	0.14	6.34	0.12	A
Arm 2	1.33	7.77	0.57	A	1.52	7.73	0.61	A
Arm 3	2.05	8.60	0.67	A	5.19	18.33	0.85	C
	A1 - 2021 Base with Dev							
Arm 1	0.91	11.25	0.48	B	0.17	6.62	0.14	A
Arm 2	1.54	8.49	0.61	A	2.10	9.55	0.68	A
Arm 3	2.55	10.12	0.72	B	6.49	22.71	0.88	C
	A1 - 2021 Base with Dev+Stobbarts							
Arm 1	1.09	13.25	0.53	B	0.24	7.70	0.19	A
Arm 2	2.30	11.14	0.70	B	2.65	11.31	0.73	B
Arm 3	3.57	13.13	0.79	B	19.04	58.49	0.98	F
	A1 - 2029 Base							
Arm 1	0.83	10.75	0.46	B	0.16	6.72	0.14	A
Arm 2	1.59	8.73	0.62	A	1.78	8.58	0.64	A
Arm 3	2.47	9.84	0.72	A	8.15	27.59	0.90	D
	A1 - 2029 Base with Dev							
Arm 1	1.11	13.00	0.53	B	0.19	7.02	0.16	A
Arm 2	1.86	9.65	0.65	A	2.50	10.85	0.72	B
Arm 3	3.14	11.86	0.76	B	11.08	36.90	0.93	E
	A1 - 2029 Base with Dev+Stobbarts							
Arm 1	1.36	15.73	0.58	C	0.25	7.95	0.20	A
Arm 2	2.85	13.15	0.75	B	3.22	13.17	0.77	B
Arm 3	4.59	16.18	0.83	C	40.38	106.69	1.04	F

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

"D1 - 2017 Observed, AM " model duration: 08:00 - 09:30
"D2 - 2017 Observed, PM" model duration: 16:00 - 17:30
"D3 - 2021 Base, AM" model duration: 08:00 - 09:30
"D4 - 2021 Base, PM" model duration: 16:00 - 17:30
"D5 - 2029 Base, AM" model duration: 08:00 - 09:30
"D6 - 2029 Base, PM" model duration: 16:00 - 17:30
"D7 - 2021 Base with Dev, AM" model duration: 08:00 - 09:30
"D8 - 2021 Base with Dev, PM" model duration: 16:00 - 17:30
"D9 - 2029 Base with Dev, AM" model duration: 08:00 - 09:30
"D10 - 2029 Base with Dev, PM" model duration: 16:00 - 17:30
"D11 - 2021 Base with Dev+Stobbarts, AM" model duration: 08:00 - 09:30
"D12 - 2021 Base with Dev+Stobbarts, PM" model duration: 16:00 - 17:30
"D13 - 2029 Base with Dev+Stobbarts, AM" model duration: 08:00 - 09:30
"D14 - 2029 Base with Dev+Stobbarts, PM" model duration: 16:00 - 17:30

Run using Junctions 8.0.6.541 at 10/12/2018 09:48:55

File summary

Title	(untitled)
Location	
Site Number	
Date	23/08/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	frempong_f
Description	

Analysis Options

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

Units

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

(Default Analysis Set) - 2017 Observed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relatio
2017 Observed, AM	2017 Observed	AM		ONE HOUR	08:00	09:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3				7.23	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Broad Lane north	Broad Lane north
2	2	Grappenhall Lane east	Grappenhall Lane east
3	3	Grappenhall Lane south	Grappenhall Lane south

Capacity Options

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

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.10	4.50	1.50	24.00	42.00	28.00	
2	3.50	4.50	1.50	27.30	42.00	19.00	
3	4.00	4.50	1.50	27.00	42.00	33.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.515	1061.484
2		(calculated)	(calculated)	0.556	1216.504
3		(calculated)	(calculated)	0.556	1288.221

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	234.00	100.000
2	ONE HOUR	✓	538.00	100.000
3	ONE HOUR	✓	693.00	100.000

Turning Proportions

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

		To		
From		1	2	3
	1	0.000	25.000	209.000
	2	4.000	0.000	534.000
	3	47.000	646.000	0.000

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

		To		
From		1	2	3
	1	0.00	0.11	0.89
	2	0.01	0.00	0.99
	3	0.07	0.93	0.00

Vehicle Mix

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

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

Heavy Vehicle Percentages - Junction 1 (for whole period)

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.37	8.23	0.58	A	214.72	322.08	36.90	6.87	0.41	36.90	6.87
2	0.54	7.25	1.18	A	493.68	740.52	74.53	6.04	0.83	74.54	6.04
3	0.59	6.89	1.45	A	635.91	953.86	90.96	5.72	1.01	90.97	5.72

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	176.17	44.04	175.07	38.20	483.82	0.00	812.36	445.14	0.217	0.00	0.27	5.640	A
2	405.03	101.26	402.82	502.53	156.36	0.00	1129.49	995.27	0.359	0.00	0.55	4.939	A
3	521.73	130.43	519.02	556.19	2.99	0.00	1286.56	1284.11	0.406	0.00	0.68	4.675	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	210.36	52.59	209.95	45.77	579.80	0.00	762.95	445.14	0.276	0.27	0.38	6.506	A
2	483.65	120.91	482.82	602.23	187.52	0.00	1112.16	995.27	0.435	0.55	0.76	5.713	A
3	622.99	155.75	621.98	666.75	3.59	0.00	1286.23	1284.11	0.484	0.68	0.93	5.412	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	257.64	64.41	256.83	56.00	709.38	0.00	696.23	445.14	0.370	0.38	0.58	8.177	A
2	592.35	148.09	590.70	736.82	229.39	0.00	1088.86	995.27	0.544	0.76	1.17	7.201	A
3	763.01	190.75	760.99	815.70	4.39	0.00	1285.78	1284.11	0.593	0.93	1.43	6.834	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	257.64	64.41	257.62	56.15	711.21	0.00	695.28	445.14	0.371	0.58	0.58	8.225	A
2	592.35	148.09	592.31	738.74	230.10	0.00	1088.46	995.27	0.544	1.17	1.18	7.255	A
3	763.01	190.75	762.96	818.00	4.40	0.00	1285.77	1284.11	0.593	1.43	1.45	6.885	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	210.36	52.59	211.16	45.99	582.59	0.00	761.51	445.14	0.276	0.58	0.39	6.552	A
2	483.65	120.91	485.27	605.15	188.60	0.00	1111.56	995.27	0.435	1.18	0.78	5.762	A
3	622.99	155.75	624.98	670.26	3.61	0.00	1286.22	1284.11	0.484	1.45	0.95	5.460	A

Main results: (09:15-09:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	176.17	44.04	176.59	38.47	487.32	0.00	810.56	445.14	0.217	0.39	0.28	5.683	A
2	405.03	101.26	405.89	506.19	157.72	0.00	1128.74	995.27	0.359	0.78	0.56	4.987	A
3	521.73	130.43	522.77	560.60	3.02	0.00	1286.54	1284.11	0.406	0.95	0.69	4.721	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	4.00	0.27	5.640	A	A
2	8.06	0.54	4.939	A	A
3	9.82	0.65	4.675	A	A

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	5.52	0.37	6.506	A	A
2	11.12	0.74	5.713	A	A
3	13.56	0.90	5.412	A	A

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	8.40	0.56	8.177	A	A
2	16.94	1.13	7.201	A	A
3	20.67	1.38	6.834	A	A

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	8.74	0.58	8.225	A	A
2	17.69	1.18	7.255	A	A
3	21.62	1.44	6.885	A	A

Queueing Delay results: (09:00-09:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	5.95	0.40	6.552	A	A
2	12.05	0.80	5.762	A	A
3	14.71	0.98	5.460	A	A

Queueing Delay results: (09:15-09:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	4.30	0.29	5.683	A	A
2	8.67	0.58	4.987	A	A
3	10.57	0.70	4.721	A	A

(Default Analysis Set) - 2017 Observed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relatio
2017 Observed, PM	2017 Observed	PM		ONE HOUR	16:00	17:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3				11.37	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Broad Lane north	Broad Lane north
2	2	Grappenhall Lane east	Grappenhall Lane east
3	3	Grappenhall Lane south	Grappenhall Lane south

Capacity Options

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

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.10	4.50	1.50	24.00	42.00	28.00	
2	3.50	4.50	1.50	27.30	42.00	19.00	
3	4.00	4.50	1.50	27.00	42.00	33.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.515	1061.484
2		(calculated)	(calculated)	0.556	1216.504
3		(calculated)	(calculated)	0.556	1288.221

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	70.00	100.000
2	ONE HOUR	✓	571.00	100.000
3	ONE HOUR	✓	921.00	100.000

Turning Proportions

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

		To		
		1	2	3
From	1	0.000	10.000	60.000
	2	53.000	0.000	518.000
	3	226.000	695.000	0.000

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

		To		
		1	2	3
From	1	0.00	0.14	0.86
	2	0.09	0.00	0.91
	3	0.25	0.75	0.00

Vehicle Mix

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

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

Heavy Vehicle Percentages - Junction 1 (for whole period)

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.12	6.09	0.13	A	64.23	96.35	8.77	5.46	0.10	8.77	5.46
2	0.53	6.53	1.13	A	523.96	785.94	73.04	5.58	0.81	73.05	5.58
3	0.81	14.77	4.03	B	845.13	1267.69	206.30	9.76	2.29	206.34	9.77

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	52.70	13.17	52.42	208.67	519.63	0.00	793.93	579.79	0.066	0.00	0.07	4.854	A
2	429.88	107.47	427.64	527.12	44.93	0.00	1191.50	939.96	0.361	0.00	0.56	4.700	A
3	693.38	173.34	688.61	432.87	39.69	0.00	1266.15	1239.71	0.548	0.00	1.19	6.183	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	62.93	15.73	62.84	250.09	622.77	0.00	740.82	579.79	0.085	0.07	0.09	5.310	A
2	513.32	128.33	512.54	631.75	53.86	0.00	1186.53	939.96	0.433	0.56	0.75	5.333	A
3	827.96	206.99	825.29	518.83	47.57	0.00	1261.77	1239.71	0.656	1.19	1.86	8.196	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	77.07	19.27	76.92	305.06	759.08	0.00	670.63	579.79	0.115	0.09	0.13	6.062	A
2	628.68	157.17	627.21	770.07	65.94	0.00	1179.81	939.96	0.533	0.75	1.12	6.498	A
3	1014.04	253.51	1005.92	634.93	58.22	0.00	1255.85	1239.71	0.807	1.86	3.89	13.958	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	77.07	19.27	77.07	307.04	764.79	0.00	667.70	579.79	0.115	0.13	0.13	6.094	A
2	628.68	157.17	628.65	775.80	66.06	0.00	1179.75	939.96	0.533	1.12	1.13	6.532	A
3	1014.04	253.51	1013.48	636.36	58.35	0.00	1255.78	1239.71	0.808	3.89	4.03	14.766	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	62.93	15.73	63.07	252.98	631.04	0.00	736.56	579.79	0.085	0.13	0.09	5.348	A
2	513.32	128.33	514.76	640.05	54.06	0.00	1186.42	939.96	0.433	1.13	0.77	5.370	A
3	827.96	206.99	836.25	521.05	47.78	0.00	1261.66	1239.71	0.656	4.03	1.96	8.619	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	52.70	13.17	52.79	210.84	525.43	0.00	790.94	579.79	0.067	0.09	0.07	4.879	A
2	429.88	107.47	430.68	532.98	45.25	0.00	1191.33	939.96	0.361	0.77	0.57	4.737	A
3	693.38	173.34	696.29	435.96	39.98	0.00	1266.00	1239.71	0.548	1.96	1.23	6.352	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.03	0.07	4.854	A	A
2	8.14	0.54	4.700	A	A
3	17.06	1.14	6.183	A	A

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.36	0.09	5.310	A	A
2	11.05	0.74	5.333	A	A
3	26.58	1.77	8.196	A	A

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.89	0.13	6.062	A	A
2	16.29	1.09	6.498	A	A
3	52.54	3.50	13.958	B	B

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.94	0.13	6.094	A	A
2	16.93	1.13	6.532	A	A
3	59.61	3.97	14.766	B	B

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.44	0.10	5.348	A	A
2	11.90	0.79	5.370	A	A
3	31.33	2.09	8.619	A	A

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.10	0.07	4.879	A	A
2	8.73	0.58	4.737	A	A
3	19.18	1.28	6.352	A	A

(Default Analysis Set) - 2021 Base, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2021 Base, AM	2021 Base	AM		ONE HOUR	08:00	09:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3				8.44	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Broad Lane north	Broad Lane north
2	2	Grappenhall Lane east	Grappenhall Lane east
3	3	Grappenhall Lane south	Grappenhall Lane south

Capacity Options

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

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.10	4.50	1.50	24.00	42.00	28.00	
2	3.50	4.50	1.50	27.30	42.00	19.00	
3	4.00	4.50	1.50	27.00	42.00	33.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.515	1061.484
2		(calculated)	(calculated)	0.556	1216.504
3		(calculated)	(calculated)	0.556	1288.221

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	240.00	100.000
2	ONE HOUR	✓	565.00	100.000
3	ONE HOUR	✓	788.00	100.000

Turning Proportions

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

		To		
		1	2	3
From	1	0.000	26.000	214.000
	2	4.000	0.000	561.000
	3	48.000	740.000	0.000

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

		To		
		1	2	3
From	1	0.00	0.11	0.89
	2	0.01	0.00	0.99
	3	0.06	0.94	0.00

Vehicle Mix

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

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

Heavy Vehicle Percentages - Junction 1 (for whole period)

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.41	9.53	0.69	A	220.23	330.34	42.23	7.67	0.47	42.24	7.67
2	0.57	7.77	1.33	A	518.45	777.68	82.34	6.35	0.91	82.35	6.35
3	0.67	8.60	2.05	A	723.08	1084.62	121.75	6.74	1.35	121.77	6.74

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	180.68	45.17	179.48	38.93	553.93	0.00	776.27	440.48	0.233	0.00	0.30	6.020	A
2	425.36	106.34	422.96	573.37	160.04	0.00	1127.45	997.95	0.377	0.00	0.60	5.093	A
3	593.25	148.31	589.86	580.00	2.99	0.00	1286.56	1284.29	0.461	0.00	0.85	5.143	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	215.76	53.94	215.26	46.65	663.89	0.00	719.65	440.48	0.300	0.30	0.42	7.129	A
2	507.92	126.98	506.99	687.21	191.94	0.00	1109.69	997.95	0.458	0.60	0.83	5.962	A
3	708.40	177.10	706.95	695.34	3.59	0.00	1286.23	1284.29	0.551	0.85	1.21	6.200	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	264.24	66.06	263.20	57.04	811.71	0.00	643.53	440.48	0.411	0.42	0.68	9.439	A
2	622.08	155.52	620.15	840.23	234.69	0.00	1085.91	997.95	0.573	0.83	1.32	7.697	A
3	867.60	216.90	864.36	850.45	4.39	0.00	1285.78	1284.29	0.675	1.21	2.02	8.475	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	264.24	66.06	264.21	57.25	814.65	0.00	642.02	440.48	0.412	0.68	0.69	9.527	A
2	622.08	155.52	622.02	843.28	235.59	0.00	1085.41	997.95	0.573	1.32	1.33	7.766	A
3	867.60	216.90	867.50	853.21	4.40	0.00	1285.77	1284.29	0.675	2.02	2.05	8.600	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	215.76	53.94	216.79	46.96	668.25	0.00	717.40	440.48	0.301	0.69	0.43	7.204	A
2	507.92	126.98	509.82	691.74	193.30	0.00	1108.94	997.95	0.458	1.33	0.86	6.029	A
3	708.40	177.10	711.60	699.51	3.61	0.00	1286.21	1284.29	0.551	2.05	1.24	6.301	A

Main results: (09:15-09:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	180.68	45.17	181.20	39.25	558.54	0.00	773.89	440.48	0.233	0.43	0.31	6.078	A
2	425.36	106.34	426.33	578.17	161.57	0.00	1126.60	997.95	0.378	0.86	0.61	5.149	A
3	593.25	148.31	594.77	584.88	3.02	0.00	1286.54	1284.29	0.461	1.24	0.86	5.214	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	4.37	0.29	6.020	A	A
2	8.71	0.58	5.093	A	A
3	12.24	0.82	5.143	A	A

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	6.18	0.41	7.129	A	A
2	12.17	0.81	5.962	A	A
3	17.53	1.17	6.200	A	A

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	9.87	0.66	9.439	A	A
2	18.92	1.26	7.697	A	A
3	28.68	1.91	8.475	A	A

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	10.35	0.69	9.527	A	A
2	19.86	1.32	7.766	A	A
3	30.52	2.03	8.600	A	A

Queueing Delay results: (09:00-09:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	6.74	0.45	7.204	A	A
2	13.27	0.88	6.029	A	A
3	19.43	1.30	6.301	A	A

Queueing Delay results: (09:15-09:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	4.72	0.32	6.078	A	A
2	9.42	0.63	5.149	A	A
3	13.35	0.89	5.214	A	A

(Default Analysis Set) - 2021 Base, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2021 Base, PM	2021 Base	PM		ONE HOUR	16:00	17:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3				13.75	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Broad Lane north	Broad Lane north
2	2	Grappenhall Lane east	Grappenhall Lane east
3	3	Grappenhall Lane south	Grappenhall Lane south

Capacity Options

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

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.10	4.50	1.50	24.00	42.00	28.00	
2	3.50	4.50	1.50	27.30	42.00	19.00	
3	4.00	4.50	1.50	27.00	42.00	33.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.515	1061.484
2		(calculated)	(calculated)	0.556	1216.504
3		(calculated)	(calculated)	0.556	1288.221

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	71.00	100.000
2	ONE HOUR	✓	648.00	100.000
3	ONE HOUR	✓	965.00	100.000

Turning Proportions

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

		To		
		1	**2**	**3**
From	**1**	0.000	10.000	61.000
	2	54.000	0.000	594.000
	3	231.000	734.000	0.000

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

		To		
		1	**2**	**3**
From	**1**	0.00	0.14	0.86
	2	0.08	0.00	0.92
	3	0.24	0.76	0.00

Vehicle Mix

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

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

Heavy Vehicle Percentages - Junction 1 (for whole period)

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.12	6.34	0.14	A	65.15	97.73	9.17	5.63	0.10	9.17	5.63
2	0.61	7.73	1.52	A	594.62	891.92	94.01	6.32	1.04	94.02	6.32
3	0.85	18.33	5.19	C	885.50	1328.25	248.73	11.24	2.76	248.78	11.24

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	53.45	13.36	53.16	213.07	548.56	0.00	779.03	574.05	0.069	0.00	0.07	4.957	A
2	487.85	121.96	485.10	556.05	45.67	0.00	1191.09	942.06	0.410	0.00	0.69	5.080	A
3	726.50	181.63	721.20	490.35	40.42	0.00	1265.75	1244.57	0.574	0.00	1.32	6.550	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	63.83	15.96	63.74	255.34	657.38	0.00	723.00	574.05	0.088	0.07	0.10	5.460	A
2	582.54	145.63	581.47	666.35	54.76	0.00	1186.03	942.06	0.491	0.69	0.95	5.943	A
3	867.52	216.88	864.26	587.78	48.46	0.00	1261.28	1244.57	0.688	1.32	2.14	8.992	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	78.17	19.54	78.01	310.94	799.66	0.00	649.74	574.05	0.120	0.10	0.14	6.295	A
2	713.46	178.37	711.27	810.64	67.03	0.00	1179.21	942.06	0.605	0.95	1.50	7.656	A
3	1062.48	265.62	1051.32	719.03	59.27	0.00	1255.27	1244.57	0.846	2.14	4.93	16.784	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	78.17	19.54	78.17	313.54	807.36	0.00	645.77	574.05	0.121	0.14	0.14	6.341	A
2	713.46	178.37	713.40	818.37	67.16	0.00	1179.13	942.06	0.605	1.50	1.52	7.727	A
3	1062.48	265.62	1061.45	721.11	59.45	0.00	1255.17	1244.57	0.846	4.93	5.19	18.332	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	63.83	15.96	63.98	259.18	668.72	0.00	717.16	574.05	0.089	0.14	0.10	5.514	A
2	582.54	145.63	584.69	677.73	54.97	0.00	1185.91	942.06	0.491	1.52	0.98	6.010	A
3	867.52	216.88	879.17	590.94	48.72	0.00	1261.13	1244.57	0.688	5.19	2.27	9.697	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	53.45	13.36	53.55	215.52	555.34	0.00	775.54	574.05	0.069	0.10	0.07	4.988	A
2	487.85	121.96	488.96	562.88	46.01	0.00	1190.90	942.06	0.410	0.98	0.70	5.138	A
3	726.50	181.63	730.11	494.22	40.75	0.00	1265.57	1244.57	0.574	2.27	1.37	6.769	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.07	0.07	4.957	A	A
2	9.96	0.66	5.080	A	A
3	18.88	1.26	6.550	A	A

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.42	0.09	5.460	A	A
2	13.89	0.93	5.943	A	A
3	30.32	2.02	8.992	A	A

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.99	0.13	6.295	A	A
2	21.54	1.44	7.656	A	A
3	64.77	4.32	16.784	C	B

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	2.05	0.14	6.341	A	A
2	22.65	1.51	7.727	A	A
3	76.24	5.08	18.332	C	B

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.51	0.10	5.514	A	A
2	15.18	1.01	6.010	A	A
3	37.05	2.47	9.697	A	A

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.14	0.08	4.988	A	A
2	10.78	0.72	5.138	A	A
3	21.47	1.43	6.769	A	A

(Default Analysis Set) - 2029 Base, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2029 Base, AM	2029 Base	AM		ONE HOUR	08:00	09:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3				9.58	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Broad Lane north	Broad Lane north
2	2	Grappenhall Lane east	Grappenhall Lane east
3	3	Grappenhall Lane south	Grappenhall Lane south

Capacity Options

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

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.10	4.50	1.50	24.00	42.00	28.00	
2	3.50	4.50	1.50	27.30	42.00	19.00	
3	4.00	4.50	1.50	27.00	42.00	33.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.515	1061.484
2		(calculated)	(calculated)	0.556	1216.504
3		(calculated)	(calculated)	0.556	1288.221

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	256.00	100.000
2	ONE HOUR	✓	603.00	100.000
3	ONE HOUR	✓	836.00	100.000

Turning Proportions

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

		To		
		1	2	3
From	1	0.000	27.000	229.000
	2	4.000	0.000	599.000
	3	51.000	785.000	0.000

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

		To		
		1	2	3
From	1	0.00	0.11	0.89
	2	0.01	0.00	0.99
	3	0.06	0.94	0.00

Vehicle Mix

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

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

Heavy Vehicle Percentages - Junction 1 (for whole period)

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.46	10.75	0.83	B	234.91	352.37	49.21	8.38	0.55	49.21	8.38
2	0.62	8.73	1.59	A	553.32	829.99	95.70	6.92	1.06	95.71	6.92
3	0.72	9.84	2.47	A	767.13	1150.69	142.10	7.41	1.58	142.12	7.41

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	192.73	48.18	191.38	41.16	587.43	0.00	759.01	440.42	0.254	0.00	0.34	6.322	A
2	453.97	113.49	451.28	607.62	171.20	0.00	1121.24	997.27	0.405	0.00	0.67	5.352	A
3	629.38	157.35	625.60	619.48	2.99	0.00	1286.56	1284.54	0.489	0.00	0.95	5.417	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	230.14	57.53	229.55	49.33	704.06	0.00	698.96	440.42	0.329	0.34	0.48	7.659	A
2	542.08	135.52	540.96	728.27	205.34	0.00	1102.24	997.27	0.492	0.67	0.95	6.400	A
3	751.55	187.89	749.81	742.71	3.59	0.00	1286.23	1284.54	0.584	0.95	1.38	6.690	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	281.86	70.47	280.52	60.28	860.36	0.00	618.49	440.42	0.456	0.48	0.82	10.610	B
2	663.92	165.98	661.46	889.95	250.93	0.00	1076.87	997.27	0.617	0.95	1.57	8.615	A
3	920.45	230.11	916.26	908.00	4.39	0.00	1285.78	1284.54	0.716	1.38	2.43	9.632	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	281.86	70.47	281.81	60.55	864.14	0.00	616.54	440.42	0.457	0.82	0.83	10.751	B
2	663.92	165.98	663.83	893.86	252.09	0.00	1076.23	997.27	0.617	1.57	1.59	8.725	A
3	920.45	230.11	920.28	911.52	4.40	0.00	1285.77	1284.54	0.716	2.43	2.47	9.836	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	230.14	57.53	231.47	49.71	709.62	0.00	696.10	440.42	0.331	0.83	0.50	7.771	A
2	542.08	135.52	544.51	734.03	207.05	0.00	1101.29	997.27	0.492	1.59	0.98	6.493	A
3	751.55	187.89	755.72	747.96	3.61	0.00	1286.21	1284.54	0.584	2.47	1.43	6.837	A

Main results: (09:15-09:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	192.73	48.18	193.35	41.53	592.72	0.00	756.29	440.42	0.255	0.50	0.35	6.403	A
2	453.97	113.49	455.15	613.11	172.96	0.00	1120.26	997.27	0.405	0.98	0.69	5.423	A
3	629.38	157.35	631.23	625.09	3.02	0.00	1286.54	1284.54	0.489	1.43	0.97	5.510	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	4.89	0.33	6.322	A	A
2	9.75	0.65	5.352	A	A
3	13.65	0.91	5.417	A	A

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	7.06	0.47	7.659	A	A
2	13.88	0.93	6.400	A	A
3	19.97	1.33	6.690	A	A

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	11.74	0.78	10.610	B	B
2	22.41	1.49	8.615	A	A
3	34.18	2.28	9.632	A	A

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	12.41	0.83	10.751	B	B
2	23.73	1.58	8.725	A	A
3	36.85	2.46	9.836	A	A

Queueing Delay results: (09:00-09:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	7.78	0.52	7.771	A	A
2	15.31	1.02	6.493	A	A
3	22.45	1.50	6.837	A	A

Queueing Delay results: (09:15-09:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	5.32	0.35	6.403	A	A
2	10.61	0.71	5.423	A	A
3	15.00	1.00	5.510	A	A

(Default Analysis Set) - 2029 Base, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2029 Base, PM	2029 Base	PM		ONE HOUR	16:00	17:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3				19.40	C

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Broad Lane north	Broad Lane north
2	2	Grappenhall Lane east	Grappenhall Lane east
3	3	Grappenhall Lane south	Grappenhall Lane south

Capacity Options

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

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.10	4.50	1.50	24.00	42.00	28.00	
2	3.50	4.50	1.50	27.30	42.00	19.00	
3	4.00	4.50	1.50	27.00	42.00	33.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.515	1061.484
2		(calculated)	(calculated)	0.556	1216.504
3		(calculated)	(calculated)	0.556	1288.221

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	76.00	100.000
2	ONE HOUR	✓	688.00	100.000
3	ONE HOUR	✓	1028.00	100.000

Turning Proportions

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

		To		
		1	2	3
From	1	0.000	11.000	65.000
	2	58.000	0.000	630.000
	3	246.000	782.000	0.000

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

		To		
		1	2	3
From	1	0.00	0.14	0.86
	2	0.08	0.00	0.92
	3	0.24	0.76	0.00

Vehicle Mix

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

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

Heavy Vehicle Percentages - Junction 1 (for whole period)

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.14	6.72	0.16	A	69.74	104.61	10.28	5.89	0.11	10.28	5.89
2	0.64	8.58	1.78	A	631.32	946.98	107.78	6.83	1.20	107.80	6.83
3	0.90	27.59	8.15	D	943.31	1414.97	343.15	14.55	3.81	343.21	14.55

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	57.22	14.30	56.89	227.13	584.02	0.00	760.77	574.22	0.075	0.00	0.08	5.112	A
2	517.96	129.49	514.91	592.26	48.66	0.00	1189.43	943.22	0.435	0.00	0.76	5.314	A
3	773.93	193.48	767.75	520.16	43.41	0.00	1264.09	1244.01	0.612	0.00	1.55	7.168	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	68.32	17.08	68.22	272.13	699.66	0.00	701.23	574.22	0.097	0.08	0.11	5.687	A
2	618.50	154.62	617.24	709.53	58.34	0.00	1184.04	943.22	0.522	0.76	1.08	6.337	A
3	924.15	231.04	919.75	623.55	52.03	0.00	1259.29	1244.01	0.734	1.55	2.65	10.464	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	83.68	20.92	83.49	329.93	846.55	0.00	625.60	574.22	0.134	0.11	0.15	6.639	A
2	757.50	189.38	754.77	858.63	71.41	0.00	1176.77	943.22	0.644	1.08	1.76	8.475	A
3	1131.85	282.96	1112.85	762.55	63.63	0.00	1252.85	1244.01	0.903	2.65	7.40	23.069	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	83.68	20.92	83.67	333.98	858.69	0.00	619.35	574.22	0.135	0.15	0.16	6.719	A
2	757.50	189.38	757.41	870.80	71.56	0.00	1176.68	943.22	0.644	1.76	1.78	8.581	A
3	1131.85	282.96	1128.81	765.12	63.85	0.00	1252.72	1244.01	0.904	7.40	8.15	27.586	D

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	68.32	17.08	68.50	278.57	719.05	0.00	691.24	574.22	0.099	0.16	0.11	5.781	A
2	618.50	154.62	621.19	728.97	58.59	0.00	1183.90	943.22	0.522	1.78	1.11	6.429	A
3	924.15	231.04	945.25	627.41	52.37	0.00	1259.11	1244.01	0.734	8.15	2.88	12.173	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	57.22	14.30	57.33	230.19	592.59	0.00	756.36	574.22	0.076	0.11	0.08	5.152	A
2	517.96	129.49	519.28	600.89	49.03	0.00	1189.22	943.22	0.436	1.11	0.78	5.383	A
3	773.93	193.48	779.01	524.54	43.78	0.00	1263.88	1244.01	0.612	2.88	1.61	7.502	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.18	0.08	5.112	A	A
2	11.04	0.74	5.314	A	A
3	21.90	1.46	7.168	A	A

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.58	0.11	5.687	A	A
2	15.67	1.04	6.337	A	A
3	37.06	2.47	10.464	B	B

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	2.25	0.15	6.639	A	A
2	25.12	1.67	8.475	A	A
3	91.41	6.09	23.069	C	C

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	2.32	0.15	6.719	A	A
2	26.63	1.78	8.581	A	A
3	117.57	7.84	27.586	D	C

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.69	0.11	5.781	A	A
2	17.30	1.15	6.429	A	A
3	49.78	3.32	12.173	B	B

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.26	0.08	5.152	A	A
2	12.03	0.80	5.383	A	A
3	25.44	1.70	7.502	A	A

(Default Analysis Set) - 2021 Base with Dev, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2021 Base with Dev, AM	2021 Base with Dev	AM		ONE HOUR	08:00	09:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3				9.72	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Broad Lane north	Broad Lane north
2	2	Grappenhall Lane east	Grappenhall Lane east
3	3	Grappenhall Lane south	Grappenhall Lane south

Capacity Options

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

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.10	4.50	1.50	24.00	42.00	28.00	
2	3.50	4.50	1.50	27.30	42.00	19.00	
3	4.00	4.50	1.50	27.00	42.00	33.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.515	1061.484
2		(calculated)	(calculated)	0.556	1216.504
3		(calculated)	(calculated)	0.556	1288.221

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	267.00	100.000
2	ONE HOUR	✓	601.00	100.000
3	ONE HOUR	✓	838.00	100.000

Turning Proportions

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

		To		
From		1	2	3
	1	0.000	53.000	214.000
	2	17.000	0.000	584.000
	3	48.000	790.000	0.000

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

		To		
From		1	2	3
	1	0.00	0.20	0.80
	2	0.03	0.00	0.97
	3	0.06	0.94	0.00

Vehicle Mix

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

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

Heavy Vehicle Percentages - Junction 1 (for whole period)

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.48	11.25	0.91	B	245.00	367.51	53.03	8.66	0.59	53.03	8.66
2	0.61	8.49	1.54	A	551.49	827.23	93.50	6.78	1.04	93.52	6.78
3	0.72	10.12	2.55	B	768.96	1153.45	145.28	7.56	1.61	145.30	7.56

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	201.01	50.25	199.58	48.64	591.14	0.00	757.11	443.95	0.266	0.00	0.36	6.442	A
2	452.46	113.12	449.81	630.76	159.96	0.00	1127.49	1018.50	0.401	0.00	0.66	5.293	A
3	630.89	157.72	627.06	597.05	12.72	0.00	1281.15	1272.20	0.492	0.00	0.96	5.472	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	240.03	60.01	239.38	58.30	708.51	0.00	696.67	443.95	0.345	0.36	0.52	7.861	A
2	540.29	135.07	539.20	756.02	191.87	0.00	1109.74	1018.50	0.487	0.66	0.94	6.298	A
3	753.34	188.34	751.55	715.81	15.25	0.00	1279.74	1272.20	0.589	0.96	1.41	6.792	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	293.97	73.49	292.48	71.25	865.67	0.00	615.75	443.95	0.477	0.52	0.89	11.084	B
2	661.71	165.43	659.36	923.73	234.42	0.00	1086.06	1018.50	0.609	0.94	1.52	8.390	A
3	922.66	230.66	918.27	875.13	18.65	0.00	1277.85	1272.20	0.722	1.41	2.50	9.889	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	293.97	73.49	293.92	71.55	869.63	0.00	613.71	443.95	0.479	0.89	0.91	11.252	B
2	661.71	165.43	661.64	927.98	235.57	0.00	1085.42	1018.50	0.610	1.52	1.54	8.491	A
3	922.66	230.66	922.47	878.50	18.72	0.00	1277.82	1272.20	0.722	2.50	2.55	10.115	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	240.03	60.01	241.51	58.75	714.31	0.00	693.69	443.95	0.346	0.91	0.54	7.988	A
2	540.29	135.07	542.61	762.25	193.57	0.00	1108.79	1018.50	0.487	1.54	0.96	6.383	A
3	753.34	188.34	757.71	720.83	15.35	0.00	1279.69	1272.20	0.589	2.55	1.46	6.955	A

Main results: (09:15-09:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	201.01	50.25	201.69	49.08	596.55	0.00	754.32	443.95	0.266	0.54	0.37	6.524	A
2	452.46	113.12	453.61	636.58	161.65	0.00	1126.55	1018.50	0.402	0.96	0.68	5.360	A
3	630.89	157.72	632.79	602.43	12.83	0.00	1281.09	1272.20	0.492	1.46	0.98	5.570	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	5.18	0.35	6.442	A	A
2	9.61	0.64	5.293	A	A
3	13.82	0.92	5.472	A	A

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	7.55	0.50	7.861	A	A
2	13.63	0.91	6.298	A	A
3	20.31	1.35	6.792	A	A

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	12.75	0.85	11.084	B	B
2	21.80	1.45	8.390	A	A
3	35.10	2.34	9.889	A	A

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	13.53	0.90	11.252	B	B
2	23.03	1.54	8.491	A	A
3	37.95	2.53	10.115	B	B

Queueing Delay results: (09:00-09:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	8.35	0.56	7.988	A	A
2	14.99	1.00	6.383	A	A
3	22.90	1.53	6.955	A	A

Queueing Delay results: (09:15-09:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	5.66	0.38	6.524	A	A
2	10.44	0.70	5.360	A	A
3	15.21	1.01	5.570	A	A

(Default Analysis Set) - 2021 Base with Dev, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2021 Base with Dev, PM	2021 Base with Dev	PM		ONE HOUR	16:00	17:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3				16.63	C

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Broad Lane north	Broad Lane north
2	2	Grappenhall Lane east	Grappenhall Lane east
3	3	Grappenhall Lane south	Grappenhall Lane south

Capacity Options

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

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.10	4.50	1.50	24.00	42.00	28.00	
2	3.50	4.50	1.50	27.30	42.00	19.00	
3	4.00	4.50	1.50	27.00	42.00	33.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.515	1061.484
2		(calculated)	(calculated)	0.556	1216.504
3		(calculated)	(calculated)	0.556	1288.221

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

1	ONE HOUR	✓	82.00	100.000
2	ONE HOUR	✓	729.00	100.000
3	ONE HOUR	✓	986.00	100.000

Turning Proportions

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

		To		
		1	2	3
From	1	0.000	21.000	61.000
	2	82.000	0.000	647.000
	3	231.000	755.000	0.000

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

		To		
		1	2	3
From	1	0.00	0.26	0.74
	2	0.11	0.00	0.89
	3	0.23	0.77	0.00

Vehicle Mix

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

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

Heavy Vehicle Percentages - Junction 1 (for whole period)

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.14	6.62	0.17	A	75.24	112.87	10.95	5.82	0.12	10.95	5.82
2	0.68	9.55	2.10	A	668.94	1003.41	123.33	7.37	1.37	123.34	7.38
3	0.88	22.71	6.49	C	904.77	1357.16	291.22	12.87	3.24	291.27	12.88

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	61.73	15.43	61.39	233.93	564.04	0.00	771.06	577.68	0.080	0.00	0.09	5.070	A
2	548.83	137.21	545.45	579.77	45.67	0.00	1191.09	977.37	0.461	0.00	0.84	5.547	A
3	742.31	185.58	736.62	529.76	61.35	0.00	1254.11	1227.10	0.592	0.00	1.42	6.884	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	73.72	18.43	73.60	280.33	675.83	0.00	713.50	577.68	0.103	0.09	0.11	5.626	A
2	655.36	163.84	653.87	694.68	54.75	0.00	1186.04	977.37	0.553	0.84	1.22	6.745	A
3	886.39	221.60	882.61	635.08	73.55	0.00	1247.33	1227.10	0.711	1.42	2.37	9.767	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	90.28	22.57	90.09	340.79	820.02	0.00	639.26	577.68	0.141	0.11	0.16	6.554	A
2	802.64	200.66	799.24	843.09	67.02	0.00	1179.21	977.37	0.681	1.22	2.07	9.389	A
3	1085.61	271.40	1070.91	776.36	89.90	0.00	1238.24	1227.10	0.877	2.37	6.04	19.941	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	90.28	22.57	90.28	344.18	829.89	0.00	634.17	577.68	0.142	0.16	0.17	6.618	A
2	802.64	200.66	802.52	853.01	67.16	0.00	1179.13	977.37	0.681	2.07	2.10	9.550	A
3	1085.61	271.40	1083.80	779.40	90.27	0.00	1238.03	1227.10	0.877	6.04	6.49	22.706	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	73.72	18.43	73.91	285.46	690.81	0.00	705.78	577.68	0.104	0.17	0.12	5.698	A
2	655.36	163.84	658.73	709.74	54.98	0.00	1185.91	977.37	0.553	2.10	1.26	6.873	A
3	886.39	221.60	902.18	639.61	74.10	0.00	1247.03	1227.10	0.711	6.49	2.55	10.881	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	61.73	15.43	61.85	236.82	571.68	0.00	767.12	577.68	0.080	0.12	0.09	5.104	A
2	548.83	137.21	550.39	587.52	46.01	0.00	1190.90	977.37	0.461	1.26	0.86	5.633	A
3	742.31	185.58	746.60	534.50	61.91	0.00	1253.80	1227.10	0.592	2.55	1.48	7.155	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.26	0.08	5.070	A	A
2	12.19	0.81	5.547	A	A
3	20.22	1.35	6.884	A	A

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.68	0.11	5.626	A	A
2	17.60	1.17	6.745	A	A
3	33.41	2.23	9.767	A	A

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	2.39	0.16	6.554	A	A
2	29.23	1.95	9.389	A	A
3	77.08	5.14	19.941	C	B

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	2.47	0.16	6.618	A	A
2	31.28	2.09	9.550	A	A
3	94.65	6.31	22.706	C	C

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.80	0.12	5.698	A	A
2	19.66	1.31	6.873	A	A
3	42.61	2.84	10.881	B	B

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.35	0.09	5.104	A	A
2	13.37	0.89	5.633	A	A
3	23.25	1.55	7.155	A	A

(Default Analysis Set) - 2029 Base with Dev, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2029 Base with Dev, AM	2029 Base with Dev	AM		ONE HOUR	08:00	09:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3				11.26	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Broad Lane north	Broad Lane north
2	2	Grappenhall Lane east	Grappenhall Lane east
3	3	Grappenhall Lane south	Grappenhall Lane south

Capacity Options

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

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.10	4.50	1.50	24.00	42.00	28.00	
2	3.50	4.50	1.50	27.30	42.00	19.00	
3	4.00	4.50	1.50	27.00	42.00	33.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.515	1061.484
2		(calculated)	(calculated)	0.556	1216.504
3		(calculated)	(calculated)	0.556	1288.221

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	283.00	100.000
2	ONE HOUR	✓	639.00	100.000
3	ONE HOUR	✓	886.00	100.000

Turning Proportions

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

		To		
		1	2	3
From	1	0.000	54.000	229.000
	2	17.000	0.000	622.000
	3	51.000	835.000	0.000

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

		To		
		1	2	3
From	1	0.00	0.19	0.81
	2	0.03	0.00	0.97
	3	0.06	0.94	0.00

Vehicle Mix

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

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

Heavy Vehicle Percentages - Junction 1 (for whole period)

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.53	13.00	1.11	B	259.69	389.53	62.26	9.59	0.69	62.26	9.59
2	0.65	9.65	1.86	A	586.36	879.54	109.01	7.44	1.21	109.02	7.44
3	0.76	11.86	3.14	B	813.01	1219.51	171.40	8.43	1.90	171.43	8.43

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	213.06	53.26	211.46	50.87	624.59	0.00	739.88	443.66	0.288	0.00	0.40	6.792	A
2	481.07	120.27	478.10	664.94	171.11	0.00	1121.29	1016.73	0.429	0.00	0.74	5.571	A
3	667.03	166.76	662.74	636.49	12.72	0.00	1281.15	1273.18	0.521	0.00	1.07	5.783	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	254.41	63.60	253.63	60.97	748.60	0.00	676.03	443.66	0.376	0.40	0.59	8.506	A
2	574.45	143.61	573.13	797.00	205.24	0.00	1102.30	1016.73	0.521	0.74	1.07	6.787	A
3	796.50	199.12	794.33	763.12	15.25	0.00	1279.74	1273.18	0.622	1.07	1.61	7.381	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	311.59	77.90	309.63	74.45	913.88	0.00	590.93	443.66	0.527	0.59	1.08	12.708	B
2	703.55	175.89	700.52	972.96	250.55	0.00	1077.08	1016.73	0.653	1.07	1.83	9.482	A
3	975.50	243.88	969.69	932.43	18.64	0.00	1277.86	1273.18	0.763	1.61	3.07	11.466	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	311.59	77.90	311.50	74.85	919.07	0.00	588.26	443.66	0.530	1.08	1.11	12.998	B
2	703.55	175.89	703.44	978.51	252.06	0.00	1076.24	1016.73	0.654	1.83	1.86	9.646	A
3	975.50	243.88	975.20	936.78	18.71	0.00	1277.82	1273.18	0.763	3.07	3.14	11.863	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	254.41	63.60	256.37	61.55	756.15	0.00	672.14	443.66	0.379	1.11	0.62	8.699	A
2	574.45	143.61	577.45	805.07	207.45	0.00	1101.07	1016.73	0.522	1.86	1.11	6.913	A
3	796.50	199.12	802.33	769.54	15.36	0.00	1279.68	1273.18	0.622	3.14	1.68	7.630	A

Main results: (09:15-09:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	213.06	53.26	213.89	51.37	630.83	0.00	736.67	443.66	0.289	0.62	0.41	6.896	A
2	481.07	120.27	482.46	671.64	173.07	0.00	1120.20	1016.73	0.429	1.11	0.76	5.658	A
3	667.03	166.76	669.36	642.70	12.84	0.00	1281.09	1273.18	0.521	1.68	1.10	5.906	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	5.78	0.39	6.792	A	A
2	10.74	0.72	5.571	A	A
3	15.39	1.03	5.783	A	A

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	8.62	0.57	8.506	A	A
2	15.54	1.04	6.787	A	A
3	23.21	1.55	7.381	A	A

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	15.34	1.02	12.708	B	B
2	25.94	1.73	9.482	A	A
3	42.39	2.83	11.466	B	B

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	16.48	1.10	12.998	B	B
2	27.71	1.85	9.646	A	A
3	46.68	3.11	11.863	B	B

Queueing Delay results: (09:00-09:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	9.68	0.65	8.699	A	A
2	17.32	1.15	6.913	A	A
3	26.62	1.77	7.630	A	A

Queueing Delay results: (09:15-09:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	6.36	0.42	6.896	A	A
2	11.75	0.78	5.658	A	A
3	17.10	1.14	5.906	A	A

(Default Analysis Set) - 2029 Base with Dev, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2029 Base with Dev, PM	2029 Base with Dev	PM		ONE HOUR	16:00	17:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3				25.02	D

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Broad Lane north	Broad Lane north
2	2	Grappenhall Lane east	Grappenhall Lane east
3	3	Grappenhall Lane south	Grappenhall Lane south

Capacity Options

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

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.10	4.50	1.50	24.00	42.00	28.00	
2	3.50	4.50	1.50	27.30	42.00	19.00	
3	4.00	4.50	1.50	27.00	42.00	33.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.515	1061.484
2		(calculated)	(calculated)	0.556	1216.504
3		(calculated)	(calculated)	0.556	1288.221

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	87.00	100.000
2	ONE HOUR	✓	768.00	100.000
3	ONE HOUR	✓	1049.00	100.000

Turning Proportions

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

		To		
		1	2	3
From	1	0.000	22.000	65.000
	2	86.000	0.000	682.000
	3	246.000	803.000	0.000

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

		To		
		1	2	3
From	1	0.00	0.25	0.75
	2	0.11	0.00	0.89
	3	0.23	0.77	0.00

Vehicle Mix

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

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

Heavy Vehicle Percentages - Junction 1 (for whole period)

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.16	7.02	0.19	A	79.83	119.75	12.18	6.10	0.14	12.18	6.10
2	0.72	10.85	2.50	B	704.73	1057.10	142.14	8.07	1.58	142.16	8.07
3	0.93	36.90	11.08	E	962.58	1443.87	422.45	17.55	4.69	422.52	17.56

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	65.50	16.37	65.12	247.96	599.43	0.00	752.84	577.69	0.087	0.00	0.09	5.232	A
2	578.19	144.55	574.45	615.90	48.65	0.00	1189.43	976.33	0.486	0.00	0.93	5.820	A
3	789.74	197.44	783.07	558.78	64.33	0.00	1252.46	1227.44	0.631	0.00	1.67	7.567	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	78.21	19.55	78.08	297.04	717.90	0.00	691.84	577.69	0.113	0.09	0.13	5.863	A
2	690.42	172.60	688.66	737.64	58.34	0.00	1184.04	976.33	0.583	0.93	1.37	7.240	A
3	943.03	235.76	937.82	669.88	77.12	0.00	1245.35	1227.44	0.757	1.67	2.97	11.509	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	95.79	23.95	95.57	358.89	863.98	0.00	616.62	577.69	0.155	0.13	0.18	6.905	A
2	845.58	211.40	841.26	888.15	71.40	0.00	1176.77	976.33	0.719	1.37	2.45	10.591	B
3	1154.97	288.74	1128.67	818.46	94.20	0.00	1235.85	1227.44	0.935	2.97	9.55	28.352	D

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	95.79	23.95	95.78	364.08	879.42	0.00	608.67	577.69	0.157	0.18	0.19	7.018	A
2	845.58	211.40	845.39	903.64	71.56	0.00	1176.69	976.33	0.719	2.45	2.50	10.848	B
3	1154.97	288.74	1148.84	822.28	94.67	0.00	1235.59	1227.44	0.935	9.55	11.08	36.897	E

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	78.21	19.55	78.43	306.25	745.72	0.00	677.51	577.69	0.115	0.19	0.13	6.013	A
2	690.42	172.60	694.72	765.55	58.60	0.00	1183.90	976.33	0.583	2.50	1.43	7.424	A
3	943.03	235.76	974.17	675.52	77.79	0.00	1244.97	1227.44	0.757	11.08	3.29	14.643	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	65.50	16.37	65.64	251.61	609.28	0.00	747.77	577.69	0.088	0.13	0.10	5.278	A
2	578.19	144.55	580.06	625.88	49.04	0.00	1189.22	976.33	0.486	1.43	0.96	5.927	A
3	789.74	197.44	795.93	564.15	64.95	0.00	1252.11	1227.44	0.631	3.29	1.75	7.995	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.38	0.09	5.232	A	A
2	13.44	0.90	5.820	A	A
3	23.52	1.57	7.567	A	A

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.86	0.12	5.863	A	A
2	19.81	1.32	7.240	A	A
3	41.21	2.75	11.509	B	B

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	2.67	0.18	6.905	A	A
2	34.35	2.29	10.591	B	B
3	112.37	7.49	28.352	D	C

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	2.77	0.18	7.018	A	A
2	37.24	2.48	10.848	B	B
3	156.27	10.42	36.897	E	D

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	2.02	0.13	6.013	A	A
2	22.44	1.50	7.424	A	A
3	61.39	4.09	14.643	B	B

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.48	0.10	5.278	A	A
2	14.85	0.99	5.927	A	A
3	27.69	1.85	7.995	A	A

(Default Analysis Set) - 2021 Base with Dev+Stobbarts, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationsh
2021 Base with Dev+Stobbarts, AM	2021 Base with Dev+Stobbarts	AM		ONE HOUR	08:00	09:30	90	15				✓	

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3				12.42	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Broad Lane north	Broad Lane north
2	2	Grappenhall Lane east	Grappenhall Lane east
3	3	Grappenhall Lane south	Grappenhall Lane south

Capacity Options

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

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.10	4.50	1.50	24.00	42.00	28.00	
2	3.50	4.50	1.50	27.30	42.00	19.00	
3	4.00	4.50	1.50	27.00	42.00	33.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.515	1061.484
2		(calculated)	(calculated)	0.556	1216.504
3		(calculated)	(calculated)	0.556	1288.221

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	274.00	100.000
2	ONE HOUR	✓	689.00	100.000
3	ONE HOUR	✓	913.00	100.000

Turning Proportions

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

		To		
From		1	2	3
	1	0.000	53.000	221.000
	2	17.000	0.000	672.000
	3	51.000	862.000	0.000

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

		To		
From		1	2	3
	1	0.00	0.19	0.81
	2	0.02	0.00	0.98
	3	0.06	0.94	0.00

Vehicle Mix

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

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

Heavy Vehicle Percentages - Junction 1 (for whole period)

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.53	13.25	1.09	B	251.43	377.14	61.11	9.72	0.68	61.12	9.72
2	0.70	11.14	2.30	B	632.24	948.36	130.02	8.23	1.44	130.04	8.23
3	0.79	13.13	3.57	B	837.78	1256.68	189.12	9.03	2.10	189.15	9.03

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	206.28	51.57	204.72	50.86	644.65	0.00	729.55	442.02	0.283	0.00	0.39	6.838	A
2	518.72	129.68	515.33	684.25	165.12	0.00	1124.62	1018.11	0.461	0.00	0.85	5.878	A
3	687.35	171.84	682.79	667.74	12.72	0.00	1281.15	1274.26	0.537	0.00	1.14	5.971	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	246.32	61.58	245.55	60.96	772.63	0.00	663.66	442.02	0.371	0.39	0.58	8.595	A
2	619.40	154.85	617.78	820.13	198.06	0.00	1106.29	1018.11	0.560	0.85	1.25	7.343	A
3	820.77	205.19	818.34	800.59	15.24	0.00	1279.75	1274.26	0.641	1.14	1.75	7.760	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	301.68	75.42	299.74	74.39	942.58	0.00	576.15	442.02	0.524	0.58	1.07	12.933	B
2	758.60	189.65	754.57	1000.56	241.76	0.00	1081.98	1018.11	0.701	1.25	2.26	10.860	B
3	1005.23	251.31	998.35	977.71	18.62	0.00	1277.87	1274.26	0.787	1.75	3.47	12.571	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	301.68	75.42	301.58	74.84	948.69	0.00	573.00	442.02	0.526	1.07	1.09	13.252	B
2	758.60	189.65	758.42	1007.03	243.25	0.00	1081.15	1018.11	0.702	2.26	2.30	11.136	B
3	1005.23	251.31	1004.82	982.95	18.71	0.00	1277.82	1274.26	0.787	3.47	3.57	13.133	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	246.32	61.58	248.27	61.62	781.49	0.00	659.10	442.02	0.374	1.09	0.61	8.804	A
2	619.40	154.85	623.42	829.51	200.24	0.00	1105.08	1018.11	0.561	2.30	1.30	7.537	A
3	820.77	205.19	827.73	808.28	15.38	0.00	1279.67	1274.26	0.641	3.57	1.83	8.085	A

Main results: (09:15-09:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	206.28	51.57	207.10	51.38	651.44	0.00	726.06	442.02	0.284	0.61	0.40	6.947	A
2	518.72	129.68	520.44	691.50	167.04	0.00	1123.55	1018.11	0.462	1.30	0.87	5.987	A
3	687.35	171.84	689.98	674.64	12.84	0.00	1281.08	1274.26	0.537	1.83	1.17	6.118	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	5.64	0.38	6.838	A	A
2	12.18	0.81	5.878	A	A
3	16.36	1.09	5.971	A	A

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	8.43	0.56	8.595	A	A
2	18.04	1.20	7.343	A	A
3	25.04	1.67	7.760	A	A

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	15.10	1.01	12.933	B	B
2	31.63	2.11	10.860	B	B
3	47.43	3.16	12.571	B	B

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	16.25	1.08	13.252	B	B
2	34.29	2.29	11.136	B	B
3	52.94	3.53	13.133	B	B

Queueing Delay results: (09:00-09:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	9.49	0.63	8.804	A	A
2	20.42	1.36	7.537	A	A
3	29.07	1.94	8.085	A	A

Queueing Delay results: (09:15-09:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	6.20	0.41	6.947	A	A
2	13.45	0.90	5.987	A	A
3	18.28	1.22	6.118	A	A

(Default Analysis Set) - 2021 Base with Dev+Stobbarts, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationsh
2021 Base with Dev+Stobbarts, PM	2021 Base with Dev+Stobbarts	PM		ONE HOUR	16:00	17:30	90	15				✓	

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3				37.33	E

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Broad Lane north	Broad Lane north
2	2	Grappenhall Lane east	Grappenhall Lane east
3	3	Grappenhall Lane south	Grappenhall Lane south

Capacity Options

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

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.10	4.50	1.50	24.00	42.00	28.00	
2	3.50	4.50	1.50	27.30	42.00	19.00	
3	4.00	4.50	1.50	27.00	42.00	33.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.515	1061.484
2		(calculated)	(calculated)	0.556	1216.504
3		(calculated)	(calculated)	0.556	1288.221

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	101.00	100.000
2	ONE HOUR	✓	781.00	100.000
3	ONE HOUR	✓	1102.00	100.000

Turning Proportions

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

		To		
		1	2	3
From	1	0.000	37.000	64.000
	2	82.000	0.000	699.000
	3	238.000	864.000	0.000

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

		To		
		1	2	3
From	1	0.00	0.37	0.63
	2	0.10	0.00	0.90
	3	0.22	0.78	0.00

Vehicle Mix

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

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

Heavy Vehicle Percentages - Junction 1 (for whole period)

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.19	7.70	0.24	A	92.68	139.02	15.26	6.59	0.17	15.26	6.59
2	0.73	11.31	2.65	B	716.66	1074.99	148.80	8.30	1.65	148.82	8.31
3	0.98	58.49	19.04	F	1011.21	1516.82	619.69	24.51	6.89	619.79	24.52

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	76.04	19.01	75.58	238.86	644.50	0.00	729.63	565.40	0.104	0.00	0.12	5.500	A
2	587.98	146.99	584.12	672.18	47.89	0.00	1189.86	1017.14	0.494	0.00	0.96	5.944	A
3	829.64	207.41	822.03	570.68	61.33	0.00	1254.12	1228.85	0.662	0.00	1.90	8.195	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	90.80	22.70	90.63	286.00	771.36	0.00	664.31	565.40	0.137	0.12	0.16	6.273	A
2	702.10	175.53	700.25	804.56	57.43	0.00	1184.55	1017.14	0.593	0.96	1.43	7.405	A
3	990.68	247.67	983.84	684.16	73.52	0.00	1247.35	1228.85	0.794	1.90	3.61	13.315	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	111.20	27.80	110.91	342.41	917.08	0.00	589.28	565.40	0.189	0.16	0.23	7.520	A
2	859.90	214.97	855.23	957.71	70.28	0.00	1177.40	1017.14	0.730	1.43	2.59	11.012	B
3	1213.32	303.33	1169.70	835.71	89.79	0.00	1238.30	1228.85	0.980	3.61	14.52	38.399	E

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	111.20	27.80	111.18	348.40	937.10	0.00	578.97	565.40	0.192	0.23	0.24	7.695	A
2	859.90	214.97	859.68	977.83	70.45	0.00	1177.30	1017.14	0.730	2.59	2.65	11.312	B
3	1213.32	303.33	1195.24	839.87	90.26	0.00	1238.04	1228.85	0.980	14.52	19.04	58.492	F

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	90.80	22.70	91.07	300.99	823.28	0.00	637.58	565.40	0.142	0.24	0.17	6.589	A
2	702.10	175.53	706.76	856.64	57.71	0.00	1184.39	1017.14	0.593	2.65	1.48	7.608	A
3	990.68	247.67	1050.06	690.26	74.21	0.00	1246.97	1228.85	0.794	19.04	4.19	22.669	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	76.04	19.01	76.23	243.01	657.31	0.00	723.03	565.40	0.105	0.17	0.12	5.566	A
2	587.98	146.99	589.96	685.24	48.31	0.00	1189.62	1017.14	0.494	1.48	0.99	6.022	A
3	829.64	207.41	838.38	576.32	61.94	0.00	1253.78	1228.85	0.662	4.19	2.01	8.841	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.69	0.11	5.500	A	A
2	13.86	0.92	5.944	A	A
3	26.63	1.78	8.195	A	A

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	2.31	0.15	6.273	A	A
2	20.57	1.37	7.405	A	A
3	49.29	3.29	13.315	B	B

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	3.36	0.22	7.520	A	A
2	36.18	2.41	11.012	B	B
3	156.72	10.45	38.399	E	D

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	3.51	0.23	7.695	A	A
2	39.41	2.63	11.312	B	B
3	254.42	16.96	58.492	F	E

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	2.57	0.17	6.589	A	A
2	23.41	1.56	7.608	A	A
3	100.41	6.69	22.669	C	C

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.81	0.12	5.566	A	A
2	15.36	1.02	6.022	A	A
3	32.22	2.15	8.841	A	A

(Default Analysis Set) - 2029 Base with Dev+Stobbarts, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationsh
2029 Base with Dev+Stobbarts, AM	2029 Base with Dev+Stobbarts	AM		ONE HOUR	08:00	09:30	90	15				✓	

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3				15.00	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Broad Lane north	Broad Lane north
2	2	Grappenhall Lane east	Grappenhall Lane east
3	3	Grappenhall Lane south	Grappenhall Lane south

Capacity Options

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

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.10	4.50	1.50	24.00	42.00	28.00	
2	3.50	4.50	1.50	27.30	42.00	19.00	
3	4.00	4.50	1.50	27.00	42.00	33.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.515	1061.484
2		(calculated)	(calculated)	0.556	1216.504
3		(calculated)	(calculated)	0.556	1288.221

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	290.00	100.000
2	ONE HOUR	✓	726.00	100.000
3	ONE HOUR	✓	961.00	100.000

Turning Proportions

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

		To		
		1	2	3
From	1	0.000	54.000	236.000
	2	17.000	0.000	709.000
	3	54.000	907.000	0.000

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

		To		
		1	2	3
From	1	0.00	0.19	0.81
	2	0.02	0.00	0.98
	3	0.06	0.94	0.00

Vehicle Mix

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

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

Heavy Vehicle Percentages - Junction 1 (for whole period)

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.58	15.73	1.36	C	266.11	399.16	72.76	10.94	0.81	72.77	10.94
2	0.75	13.15	2.85	B	666.19	999.29	153.49	9.22	1.71	153.51	9.22
3	0.83	16.18	4.59	C	881.83	1322.75	228.42	10.36	2.54	228.46	10.36

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	218.33	54.58	216.58	53.08	678.02	0.00	712.37	441.88	0.306	0.00	0.44	7.237	A
2	546.57	136.64	542.80	718.35	176.25	0.00	1118.43	1016.40	0.489	0.00	0.94	6.215	A
3	723.49	180.87	718.39	706.34	12.71	0.00	1281.15	1274.99	0.565	0.00	1.28	6.341	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	260.70	65.18	259.77	63.61	812.56	0.00	643.09	441.88	0.405	0.44	0.67	9.368	A
2	652.66	163.16	650.70	860.94	211.40	0.00	1098.87	1016.40	0.594	0.94	1.43	7.996	A
3	863.92	215.98	860.94	846.86	15.24	0.00	1279.75	1274.99	0.675	1.28	2.02	8.533	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	319.30	79.82	316.69	77.51	989.65	0.00	551.91	441.88	0.579	0.67	1.32	15.113	C
2	799.34	199.84	793.98	1048.62	257.72	0.00	1073.09	1016.40	0.745	1.43	2.77	12.656	B
3	1058.08	264.52	1048.57	1033.11	18.59	0.00	1277.88	1274.99	0.828	2.02	4.40	15.095	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	319.30	79.82	319.12	78.12	997.92	0.00	547.66	441.88	0.583	1.32	1.36	15.725	C
2	799.34	199.84	799.03	1057.34	259.70	0.00	1071.99	1016.40	0.746	2.77	2.85	13.148	B
3	1058.08	264.52	1057.33	1040.02	18.71	0.00	1277.82	1274.99	0.828	4.40	4.59	16.181	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	260.70	65.18	263.34	64.50	824.62	0.00	636.89	441.88	0.409	1.36	0.71	9.705	A
2	652.66	163.16	658.06	873.66	214.31	0.00	1097.25	1016.40	0.595	2.85	1.50	8.295	A
3	863.92	215.98	873.72	856.96	15.41	0.00	1279.65	1274.99	0.675	4.59	2.14	9.073	A

Main results: (09:15-09:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	218.33	54.58	219.35	53.69	685.93	0.00	708.30	441.88	0.308	0.71	0.45	7.376	A
2	546.57	136.64	548.69	726.77	178.50	0.00	1117.17	1016.40	0.489	1.50	0.97	6.357	A
3	723.49	180.87	726.77	714.34	12.85	0.00	1281.08	1274.99	0.565	2.14	1.32	6.531	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	6.30	0.42	7.237	A	A
2	13.54	0.90	6.215	A	A
3	18.23	1.22	6.341	A	A

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	9.68	0.65	9.368	A	A
2	20.58	1.37	7.996	A	A
3	28.77	1.92	8.533	A	A

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	18.46	1.23	15.113	C	B
2	38.25	2.55	12.656	B	B
3	58.69	3.91	15.095	C	B

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	20.24	1.35	15.725	C	B
2	42.29	2.82	13.148	B	B
3	67.66	4.51	16.181	C	B

Queueing Delay results: (09:00-09:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	11.11	0.74	9.705	A	A
2	23.74	1.58	8.295	A	A
3	34.46	2.30	9.073	A	A

Queueing Delay results: (09:15-09:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	6.99	0.47	7.376	A	A
2	15.09	1.01	6.357	A	A
3	20.61	1.37	6.531	A	A

(Default Analysis Set) - 2029 Base with Dev+Stobbarts, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationsh
2029 Base with Dev+Stobbarts, PM	2029 Base with Dev+Stobbarts	PM		ONE HOUR	16:00	17:30	90	15				✓	

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3				65.06	F

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Broad Lane north	Broad Lane north
2	2	Grappenhall Lane east	Grappenhall Lane east
3	3	Grappenhall Lane south	Grappenhall Lane south

Capacity Options

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

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	3.10	4.50	1.50	24.00	42.00	28.00	
2	3.50	4.50	1.50	27.30	42.00	19.00	
3	4.00	4.50	1.50	27.00	42.00	33.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.515	1061.484
2		(calculated)	(calculated)	0.556	1216.504
3		(calculated)	(calculated)	0.556	1288.221

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	105.00	100.000
2	ONE HOUR	✓	820.00	100.000
3	ONE HOUR	✓	1166.00	100.000

Turning Proportions

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

		To		
		1	2	3
From	1	0.000	37.000	68.000
	2	86.000	0.000	734.000
	3	254.000	912.000	0.000

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

		To		
		1	2	3
From	1	0.00	0.35	0.65
	2	0.10	0.00	0.90
	3	0.22	0.78	0.00

Vehicle Mix

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

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

Heavy Vehicle Percentages - Junction 1 (for whole period)

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

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.20	7.95	0.25	A	96.35	144.52	16.65	6.91	0.18	16.65	6.91
2	0.77	13.17	3.22	B	752.45	1128.67	173.29	9.21	1.93	173.32	9.21
3	1.04	106.69	40.38	F	1069.94	1604.91	1182.03	44.19	13.13	1182.17	44.20

Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	79.05	19.76	78.55	253.55	679.52	0.00	711.60	566.45	0.111	0.00	0.12	5.687	A
2	617.34	154.33	613.08	707.20	50.87	0.00	1188.20	1012.37	0.520	0.00	1.07	6.214	A
3	877.83	219.46	868.77	599.65	64.30	0.00	1252.47	1229.19	0.701	0.00	2.26	9.178	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	94.39	23.60	94.21	303.23	811.99	0.00	643.39	566.45	0.147	0.12	0.17	6.554	A
2	737.16	184.29	734.95	845.19	61.01	0.00	1182.55	1012.37	0.623	1.07	1.62	8.001	A
3	1048.21	262.05	1038.14	718.88	77.08	0.00	1245.37	1229.19	0.842	2.26	4.78	16.593	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	115.61	28.90	115.30	355.75	939.63	0.00	577.67	566.45	0.200	0.17	0.25	7.781	A
2	902.84	225.71	896.77	980.26	74.67	0.00	1174.95	1012.37	0.768	1.62	3.13	12.665	B
3	1283.79	320.95	1201.32	877.39	94.05	0.00	1235.93	1229.19	1.039	4.78	25.40	57.189	F

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	115.61	28.90	115.58	361.26	957.26	0.00	568.59	566.45	0.203	0.25	0.25	7.947	A
2	902.84	225.71	902.49	997.99	74.85	0.00	1174.85	1012.37	0.768	3.13	3.22	13.171	B
3	1283.79	320.95	1223.86	882.69	94.65	0.00	1235.60	1229.19	1.039	25.40	40.38	106.686	F

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	94.39	23.60	94.63	335.63	925.20	0.00	585.10	566.45	0.161	0.25	0.19	7.342	A
2	737.16	184.29	743.27	958.54	61.28	0.00	1182.40	1012.37	0.623	3.22	1.69	8.309	A
3	1048.21	262.05	1182.88	726.60	77.95	0.00	1244.88	1229.19	0.842	40.38	6.72	67.775	F

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	79.05	19.76	79.31	259.96	700.02	0.00	701.05	566.45	0.113	0.19	0.13	5.794	A
2	617.34	154.33	619.72	727.96	51.37	0.00	1187.92	1012.37	0.520	1.69	1.10	6.364	A
3	877.83	219.46	894.98	606.09	65.00	0.00	1252.09	1229.19	0.701	6.72	2.43	10.530	B

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.81	0.12	5.687	A	A
2	15.28	1.02	6.214	A	A
3	31.33	2.09	9.178	A	A

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	2.50	0.17	6.554	A	A
2	23.21	1.55	8.001	A	A
3	63.32	4.22	16.593	C	B

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	3.61	0.24	7.781	A	A
2	43.06	2.87	12.665	B	B
3	244.92	16.33	57.189	F	E

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	3.77	0.25	7.947	A	A
2	47.80	3.19	13.171	B	B
3	495.66	33.04	106.686	F	F

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	2.98	0.20	7.342	A	A
2	26.87	1.79	8.309	A	A
3	305.91	20.39	67.775	F	E

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

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	1.97	0.13	5.794	A	A
2	17.08	1.14	6.364	A	A
3	40.88	2.73	10.530	B	B

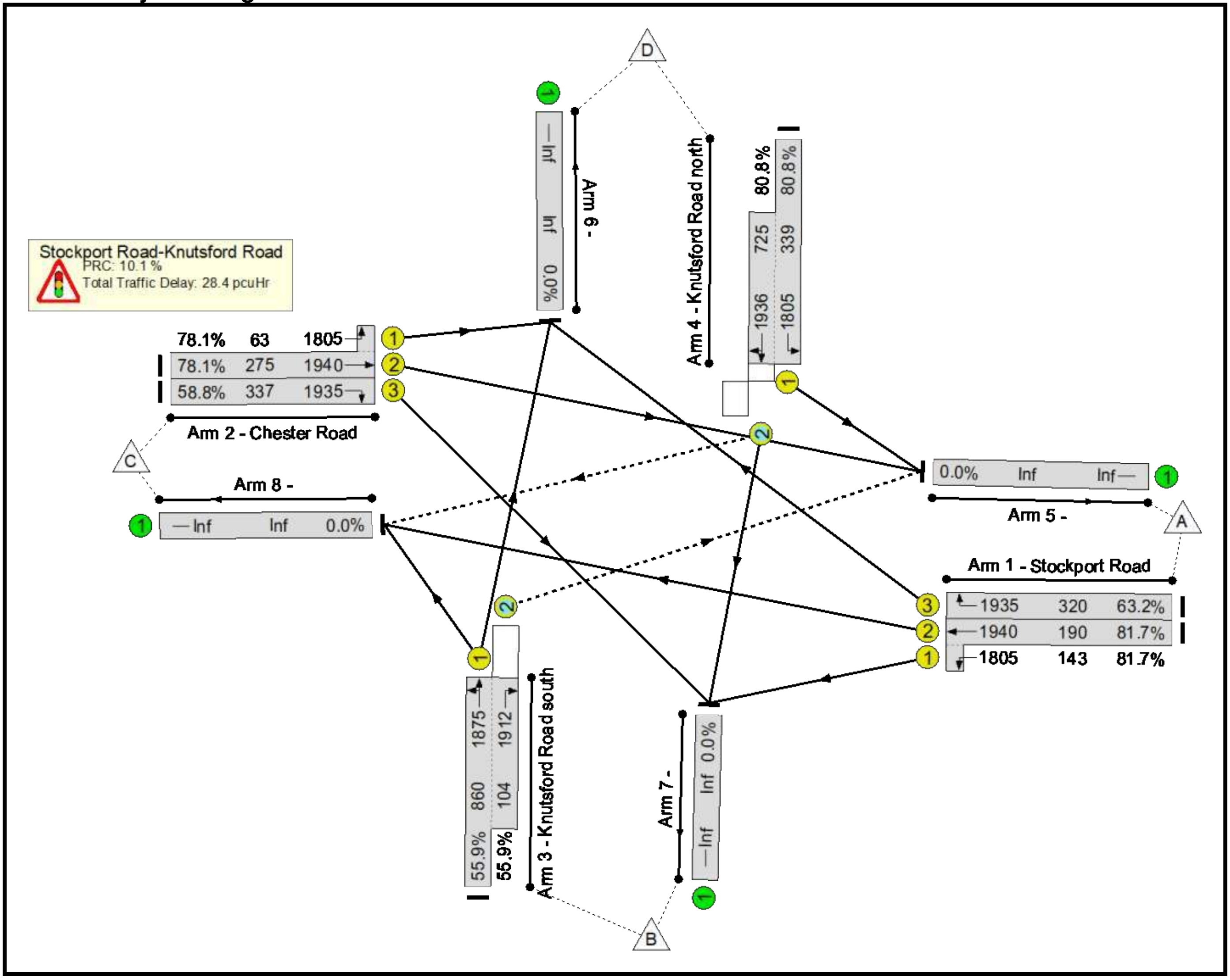
Appendix K

Basic Results Summary
Basic Results Summary

User and Project Details

Project:	**Six 56**
Title:	
Location:	
Additional detail:	
File name:	Stockport Road-Chester Road.lsg3x
Author:	
Company:	
Address:	

Scenario 1: 'AM Observed' (FG1: '2017 AM Observed', 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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.7%**	**75**	**0**	**1**	**28.4**	**-**	**-**
Stockport Road-Knutsford Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.7%**	**75**	**0**	**1**	**28.4**	**-**	**-**
1/2+1/1	Stockport Road Left Ahead	U	D		1	18	-	272	1940:1805	190+143	81.7 : 81.7%	-	-	-	5.5	73.4	9.6
1/3	Stockport Road Right	U	D		1	18	-	202	1935	320	63.2%	-	-	-	3.4	59.8	6.8
2/2+2/1	Chester Road Ahead Left	U	C		1	19	-	264	1940:1805	275+63	78.1 : 78.1%	-	-	-	5.0	68.5	9.5
2/3	Chester Road Right	U	C		1	19	-	198	1935	337	58.8%	-	-	-	3.1	56.6	6.5
3/1+3/2	Knutsford Road south Right Ahead Left	U+O	A		1	55	-	539	1875:1912	860+104	55.9 : 55.9%	57	0	1	4.0	26.9	11.3
4/1+4/2	Knutsford Road north Left Ahead Right	U+O	B		1	55	-	860	1805:1936	339+725	80.8 : 80.8%	18	0	0	7.3	30.5	20.0

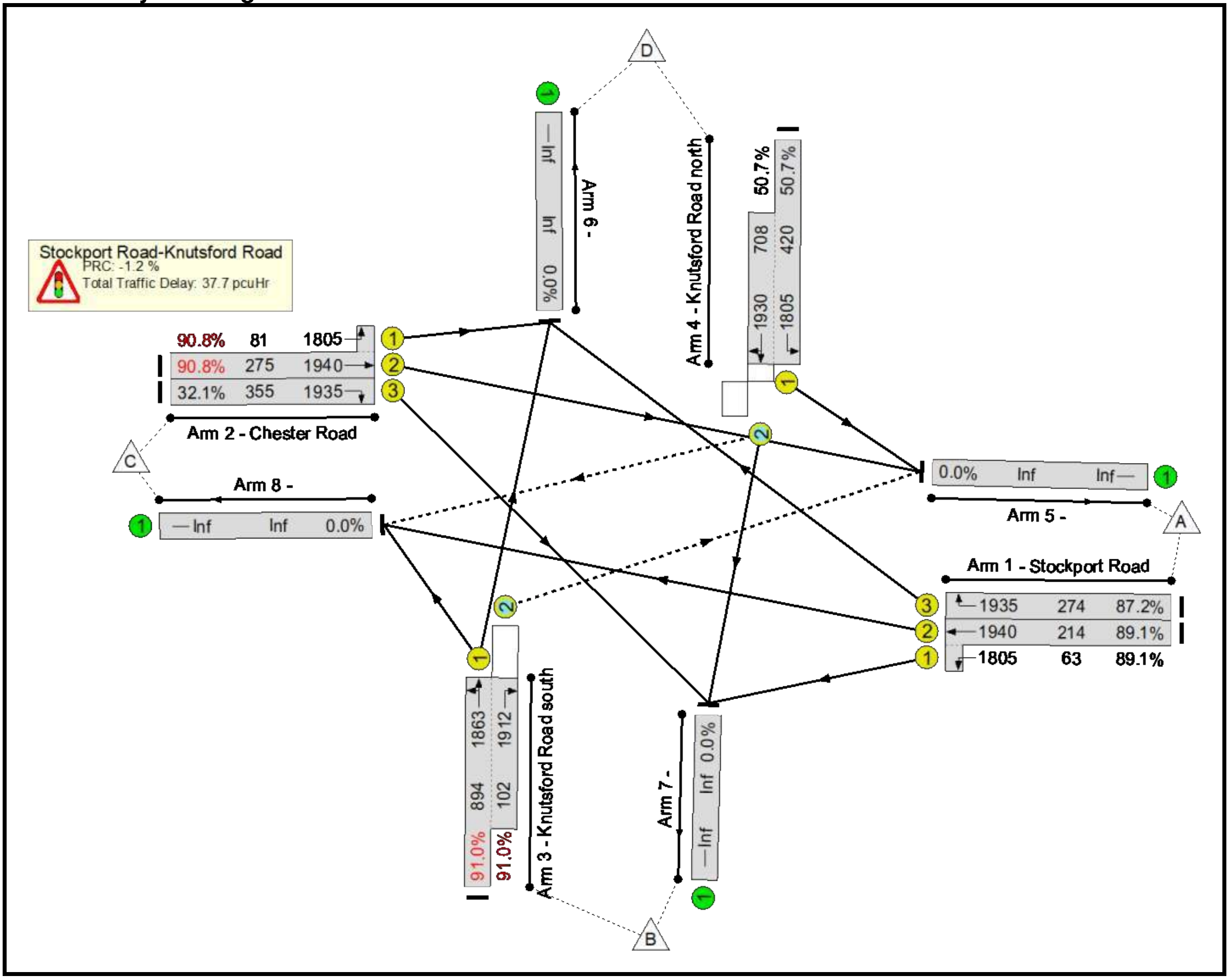
C1 PRC for Signalled Lanes (%): 10.1 Total Delay for Signalled Lanes (pcuHr): 28.36 Cycle Time (s): 115

PRC Over All Lanes (%): 10.1 Total Delay Over All Lanes(pcuHr): 28.36

Basic Results Summary

Scenario 2: 'PM Observed' (FG2: '2017 PM Observed', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

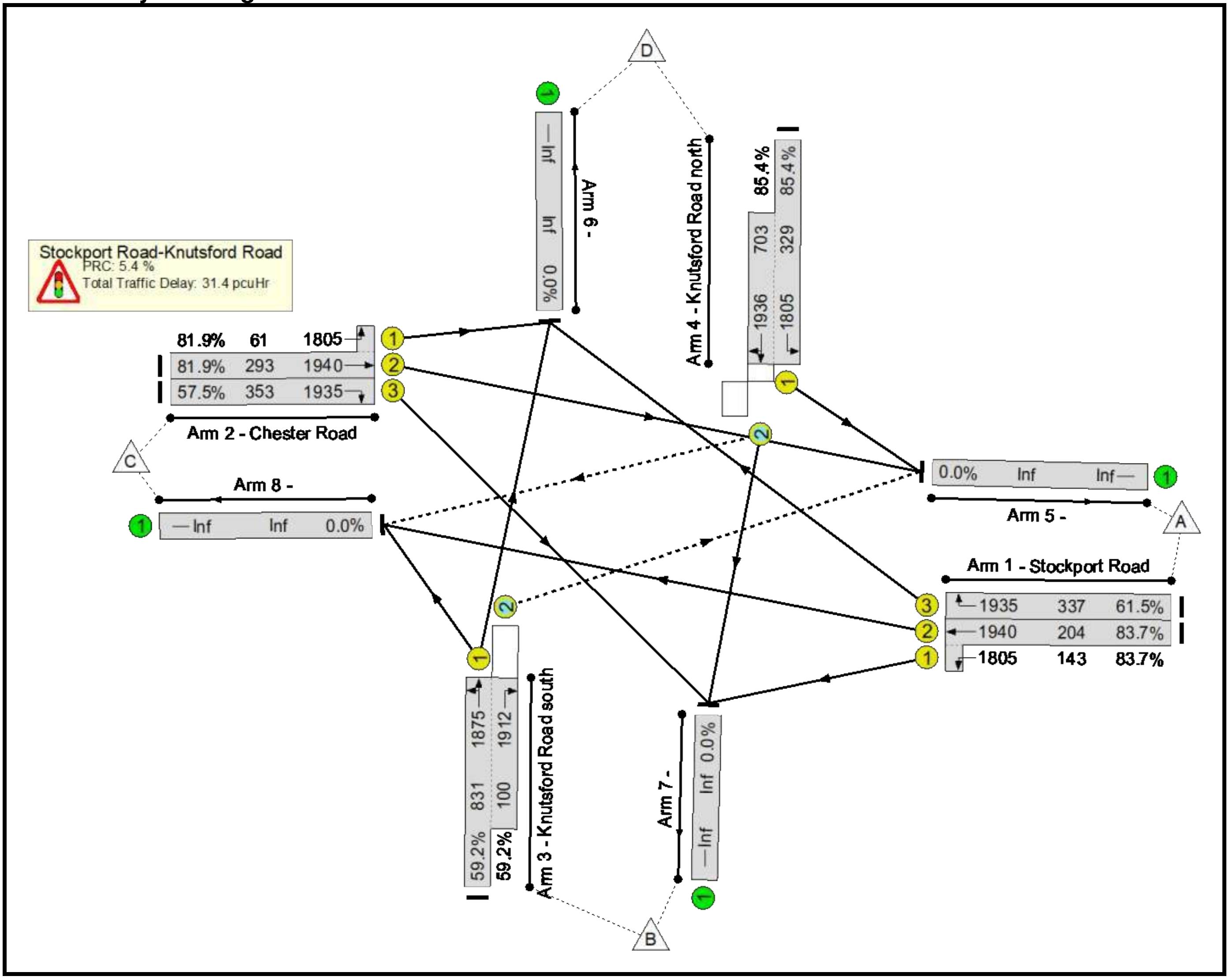
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**91.0%**	**117**	**0**	**1**	**37.7**	-	-
Stockport Road-Knutsford Road	-	-	-		-	-	-	-	-	-	**91.0%**	**117**	**0**	**1**	**37.7**	-	-
1/2+1/1	Stockport Road Left Ahead	U	D		1	16	-	247	1940:1805	214+63	89.1 : 89.1%	-	-	-	6.8	99.1	11.1
1/3	Stockport Road Right	U	D		1	16	-	239	1935	274	87.2%	-	-	-	6.3	94.4	10.7
2/2+2/1	Chester Road Ahead Left	U	C		1	21	-	324	1940:1805	275+81	90.8 : 90.8%	-	-	-	8.3	92.0	14.2
2/3	Chester Road Right	U	C		1	21	-	114	1935	355	32.1%	-	-	-	1.6	50.0	3.5
3/1+3/2	Knutsford Road south Right Ahead Left	U+O	A		1	60	-	907	1863:1912	894+102	91.0 : 91.0%	92	0	1	11.3	44.7	30.8
4/1+4/2	Knutsford Road north Left Ahead Right	U+O	B		1	60	-	572	1805:1930	420+708	50.7 : 50.7%	25	0	0	3.5	22.0	7.7

C1 PRC for Signalled Lanes (%): -1.2 Total Delay for Signalled Lanes (pcuHr): 37.68 Cycle Time (s): 120
PRC Over All Lanes (%): -1.2 Total Delay Over All Lanes(pcuHr): 37.68

Basic Results Summary

Scenario 3: '21 AM Base' (FG3: '2021 AM Base', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



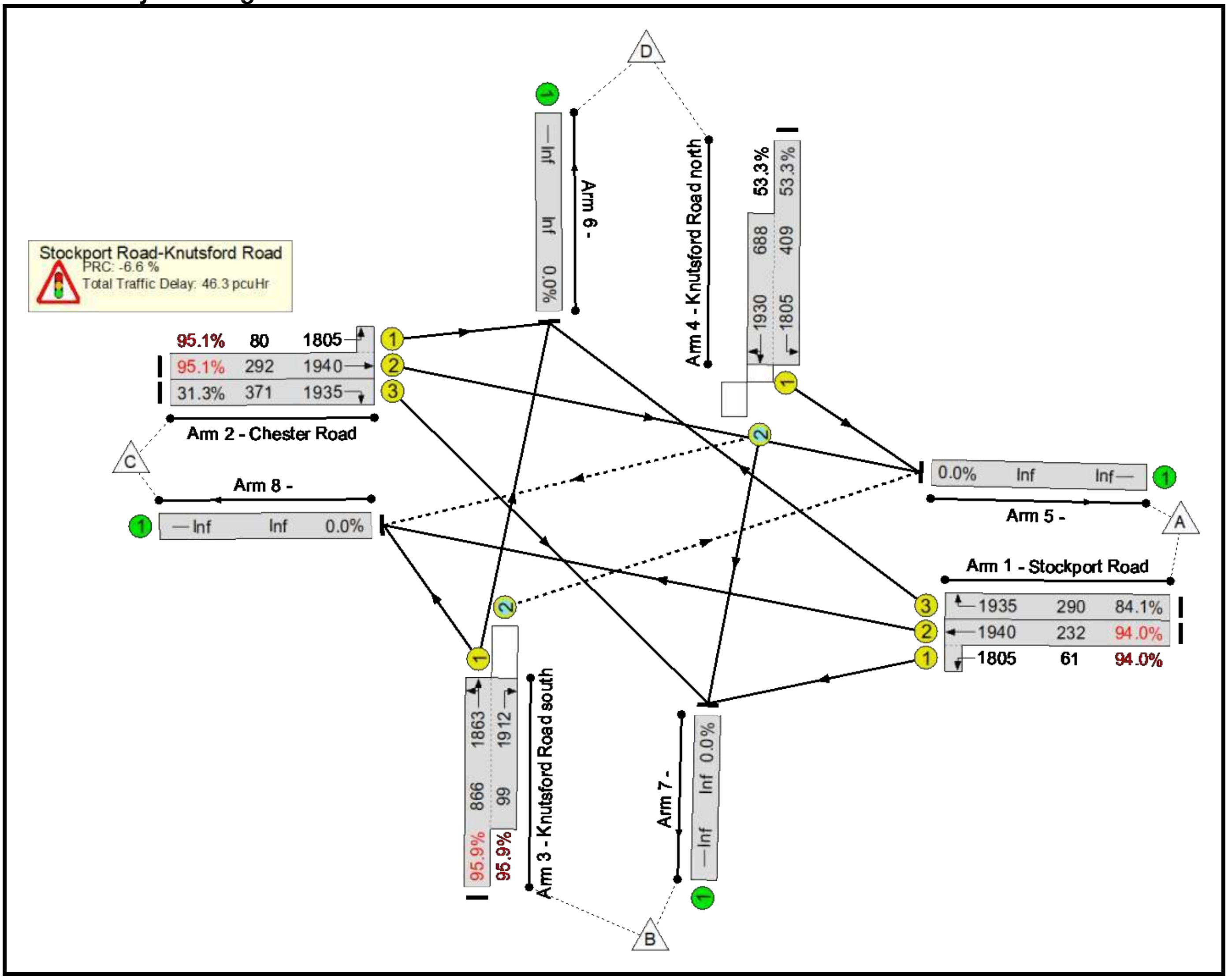
Basic Results Summary

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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**85.4%**	**76**	**0**	**1**	**31.4**	**-**	**-**
Stockport Road-Knutsford Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**85.4%**	**76**	**0**	**1**	**31.4**	**-**	**-**
1/2+1/1	Stockport Road Left Ahead	U	D		1	19	-	291	1940:1805	204+143	83.7 : 83.7%	-	-	-	6.0	74.5	10.6
1/3	Stockport Road Right	U	D		1	19	-	207	1935	337	61.5%	-	-	-	3.3	57.7	6.9
2/2+2/1	Chester Road Ahead Left	U	C		1	20	-	290	1940:1805	293+61	81.9 : 81.9%	-	-	-	5.7	71.3	10.8
2/3	Chester Road Right	U	C		1	20	-	203	1935	353	57.5%	-	-	-	3.1	54.8	6.6
3/1+3/2	Knutsford Road south Right Ahead Left	U+O	A		1	53	-	551	1875:1912	831+100	59.2 : 59.2%	58	0	1	4.5	29.4	12.2
4/1+4/2	Knutsford Road north Left Ahead Right	U+O	B		1	53	-	881	1805:1936	329+703	85.4 : 85.4%	18	0	0	8.7	35.5	22.5

C1 PRC for Signalled Lanes (%): 5.4 Total Delay for Signalled Lanes (pcuHr): 31.36 Cycle Time (s): 115
PRC Over All Lanes (%): 5.4 Total Delay Over All Lanes(pcuHr): 31.36

Basic Results Summary
Scenario 4: '21 PM Base' (FG4: '2021 PM Base', Plan 1: 'Network Control Plan 1')
Network Layout Diagram



Basic Results Summary

Network Results

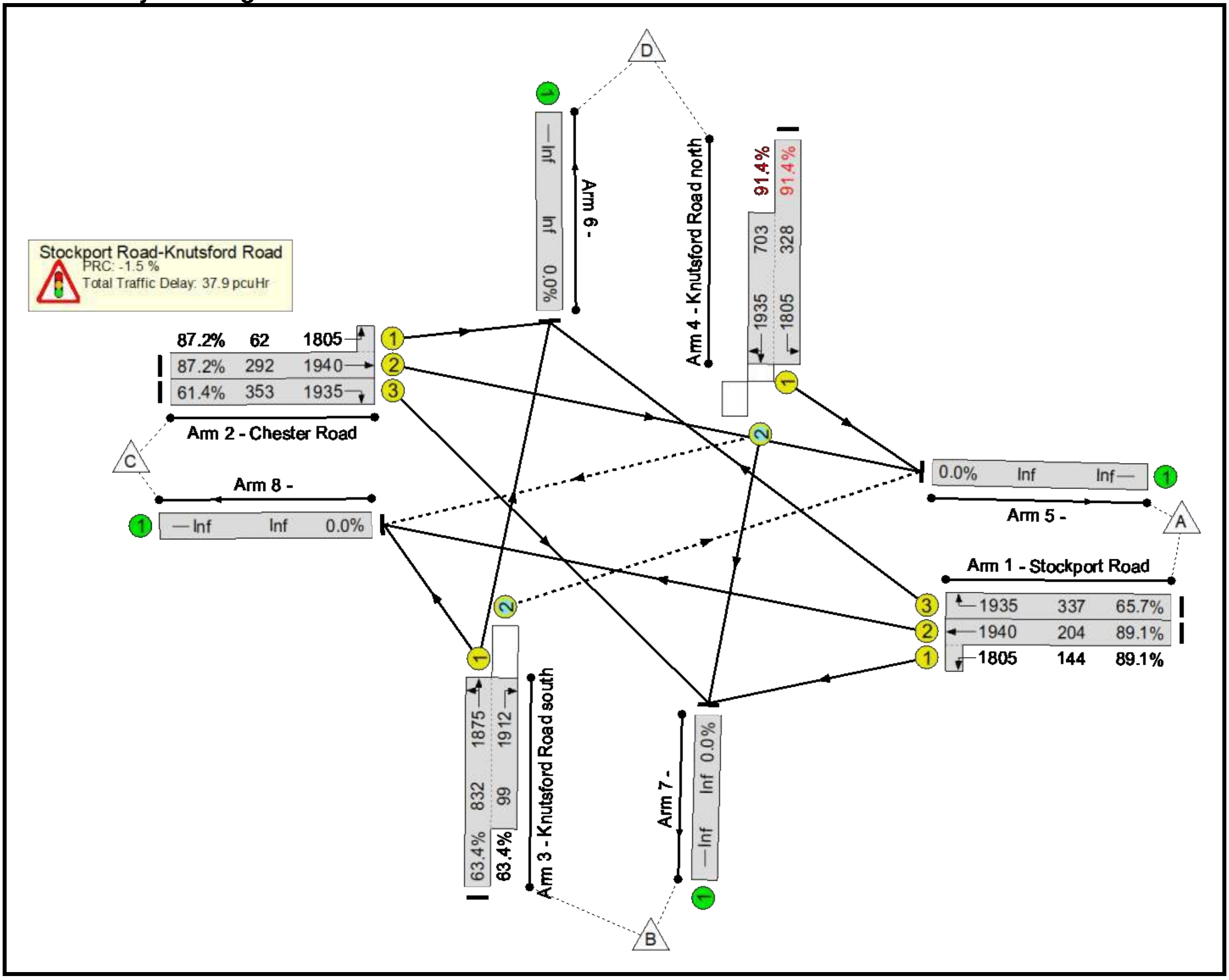
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**95.9%**	**116**	**0**	**5**	**46.3**	**-**	**-**
Stockport Road-Knutsford Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**95.9%**	**116**	**0**	**5**	**46.3**	**-**	**-**
1/2+1/1	Stockport Road Left Ahead	U	D		1	17	-	275	1940:1805	232+61	94.0 : 94.0%	-	-	-	8.8	115.6	13.7
1/3	Stockport Road Right	U	D		1	17	-	244	1935	290	84.1%	-	-	-	5.8	84.9	10.3
2/2+2/1	Chester Road Ahead Left	U	C		1	22	-	354	1940:1805	292+80	95.1 : 95.1%	-	-	-	10.6	107.5	17.2
2/3	Chester Road Right	U	C		1	22	-	116	1935	371	31.3%	-	-	-	1.6	48.8	3.5
3/1+3/2	Knutsford Road south Right Ahead Left	U+O	A		1	58	-	926	1863:1912	866+99	95.9 : 95.9%	94	0	1	15.7	61.1	36.9
4/1+4/2	Knutsford Road north Left Ahead Right	U+O	B		1	58	-	585	1805:1930	409+688	53.3 : 53.3%	22	0	4	3.9	23.8	8.2

C1 PRC for Signalled Lanes (%): -6.6 Total Delay for Signalled Lanes (pcuHr): 46.31 Cycle Time (s): 120
PRC Over All Lanes (%): -6.6 Total Delay Over All Lanes(pcuHr): 46.31

Basic Results Summary

Scenario 5: '29 AM Base' (FG5: '2029 AM Base', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

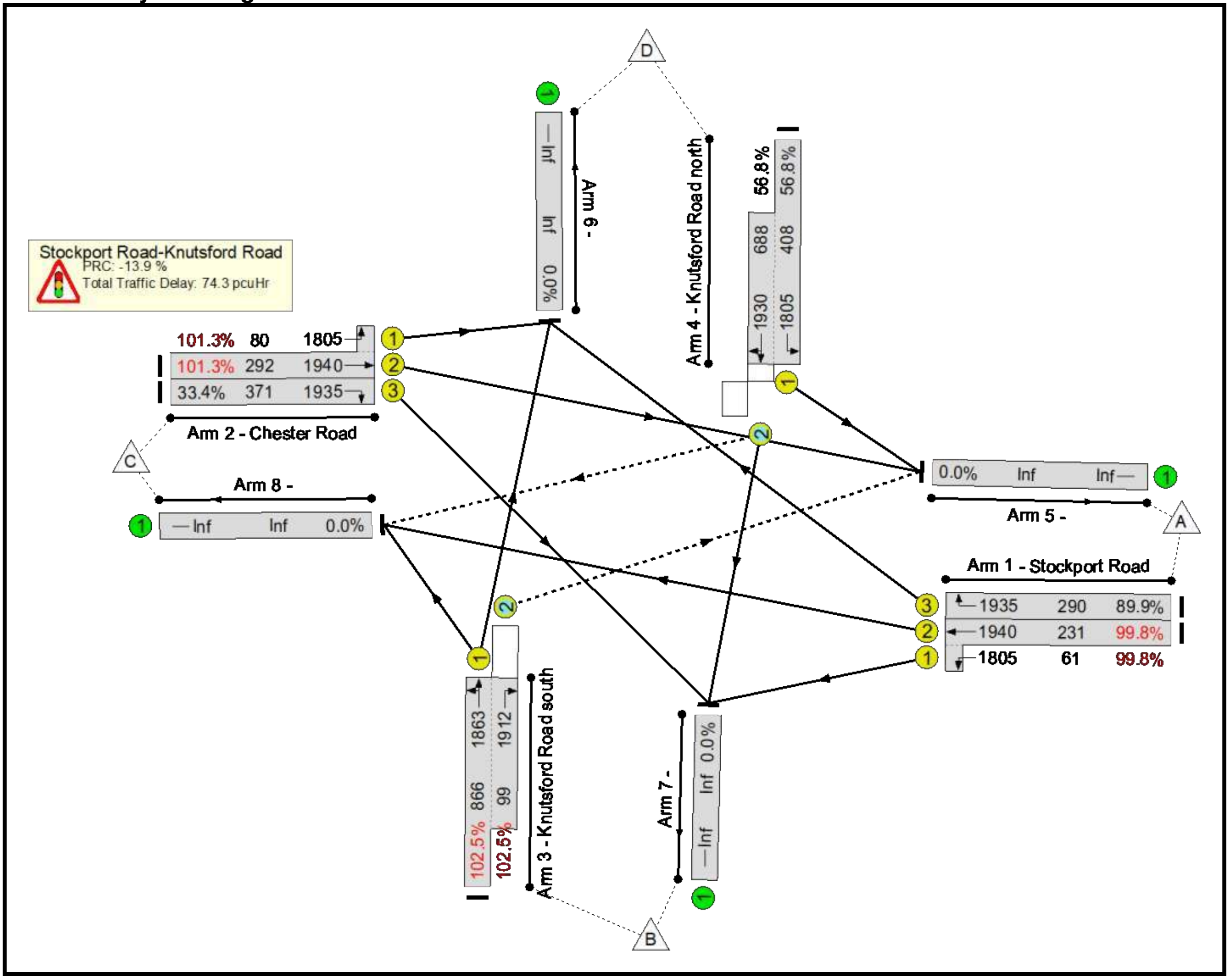
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.4%**	**53**	**0**	**30**	**37.9**	**-**	**-**
Stockport Road-Knutsford Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.4%**	**53**	**0**	**30**	**37.9**	**-**	**-**
1/2+1/1	Stockport Road Left Ahead	U	D		1	19	-	310	1940:1805	204+144	89.1 : 89.1%	-	-	-	7.4	86.0	12.4
1/3	Stockport Road Right	U	D		1	19	-	221	1935	337	65.7%	-	-	-	3.7	59.6	7.5
2/2+2/1	Chester Road Ahead Left	U	C		1	20	-	309	1940:1805	292+62	87.2 : 87.2%	-	-	-	6.9	80.6	12.3
2/3	Chester Road Right	U	C		1	20	-	217	1935	353	61.4%	-	-	-	3.4	56.3	7.1
3/1+3/2	Knutsford Road south Right Ahead Left	U+O	A		1	53	-	590	1875:1912	832+99	63.4 : 63.4%	34	0	29	5.1	31.2	13.6
4/1+4/2	Knutsford Road north Left Ahead Right	U+O	B		1	53	-	942	1805:1935	328+703	91.4 : 91.4%	20	0	0	11.4	43.6	27.9

C1 PRC for Signalled Lanes (%): -1.5 Total Delay for Signalled Lanes (pcuHr): 37.90 Cycle Time (s): 115
PRC Over All Lanes (%): -1.5 Total Delay Over All Lanes(pcuHr): 37.90

Basic Results Summary

Scenario 6: '29 PM Base' (FG6: '2029 PM Base', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

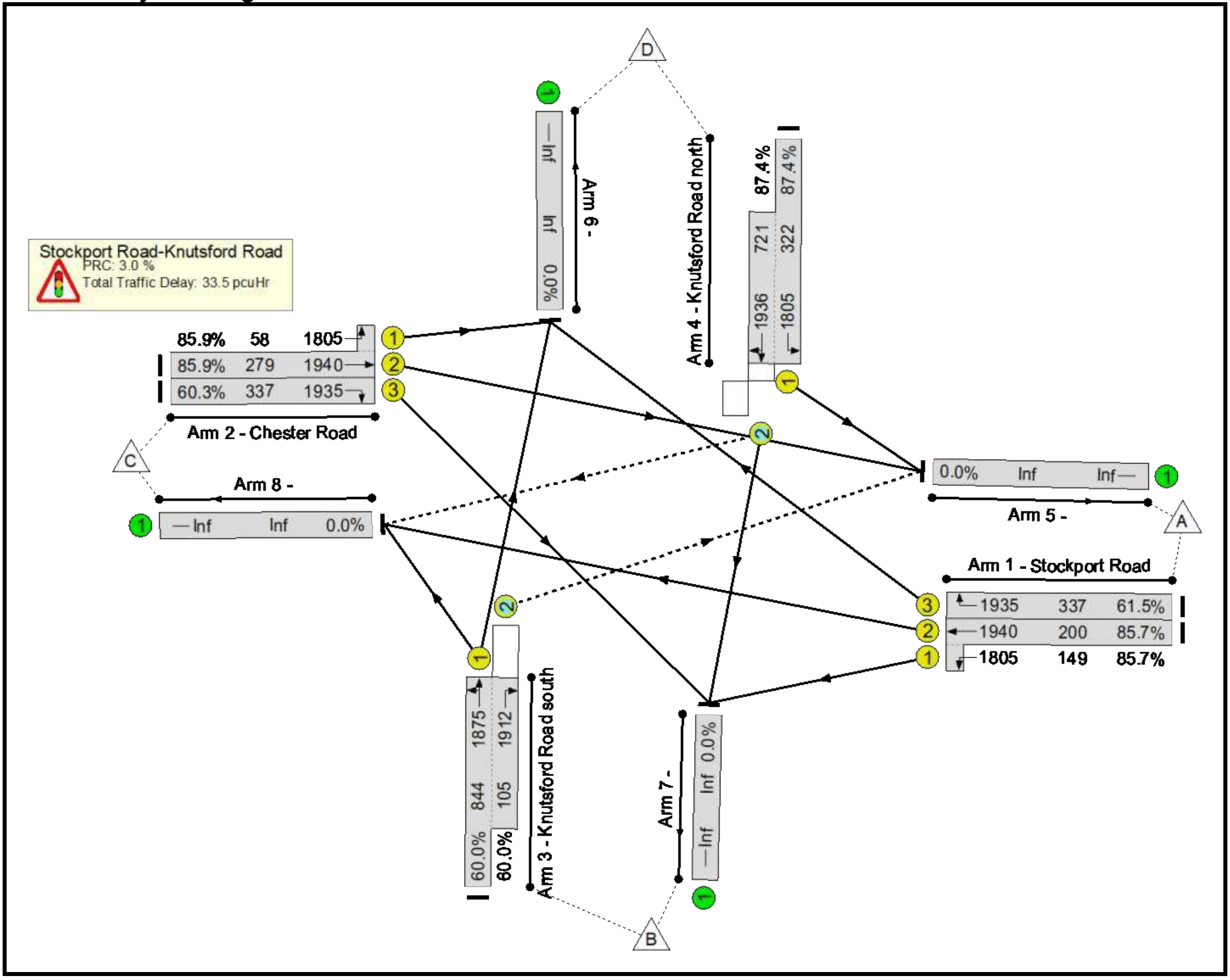
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**102.5%**	**97**	**0**	**29**	**74.3**	**-**	**-**
Stockport Road-Knutsford Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**102.5%**	**97**	**0**	**29**	**74.3**	**-**	**-**
1/2+1/1	Stockport Road Left Ahead	U	D		1	17	-	292	1940:1805	231+61	99.8 : 99.8%	-	-	-	12.5	154.3	17.8
1/3	Stockport Road Right	U	D		1	17	-	261	1935	290	89.9%	-	-	-	7.2	99.5	12.1
2/2+2/1	Chester Road Ahead Left	U	C		1	22	-	377	1940:1805	292+80	101.3 : 101.3%	-	-	-	16.2	154.7	23.4
2/3	Chester Road Right	U	C		1	22	-	124	1935	371	33.4%	-	-	-	1.7	49.2	3.8
3/1+3/2	Knutsford Road south Right Ahead Left	U+O	A		1	58	-	989	1863:1912	866+99	102.5 : 102.5%	97	0	2	32.4	118.0	57.2
4/1+4/2	Knutsford Road north Left Ahead Right	U+O	B		1	58	-	623	1805:1930	408+688	56.8 : 56.8%	0	0	27	4.2	24.4	8.9

C1 PRC for Signalled Lanes (%): -13.9 Total Delay for Signalled Lanes (pcuHr): 74.26 Cycle Time (s): 120
PRC Over All Lanes (%): -13.9 Total Delay Over All Lanes(pcuHr): 74.26

Basic Results Summary

Scenario 7: '21 AM with Dev' (FG7: '2021 AM Base with Dev', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

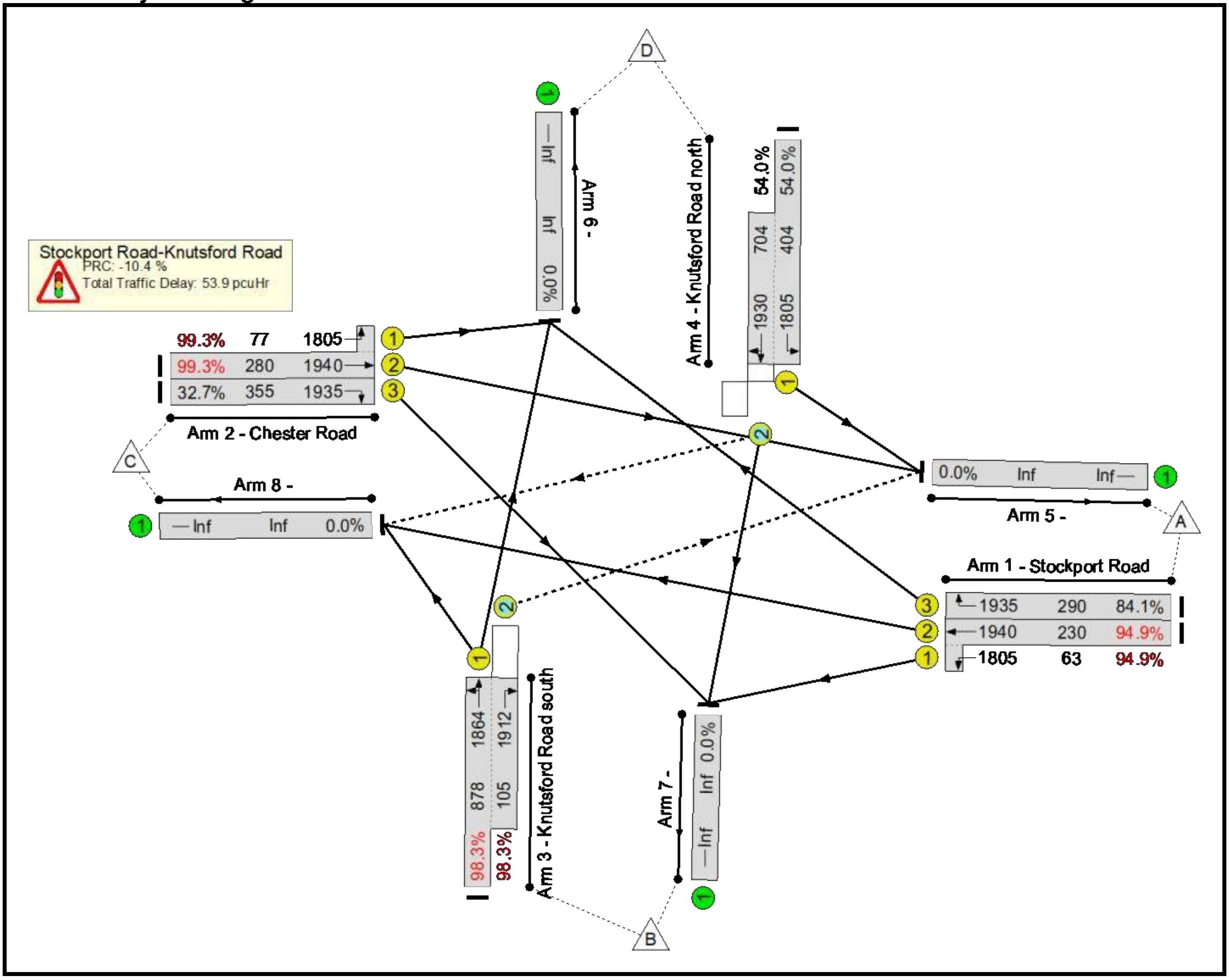
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.4%**	**72**	**0**	**9**	**33.5**	**-**	**-**
Stockport Road-Knutsford Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.4%**	**72**	**0**	**9**	**33.5**	**-**	**-**
1/2+1/1	Stockport Road Left Ahead	U	D		1	19	-	299	1940:1805	200+149	85.7 : 85.7%	-	-	-	6.5	78.0	11.2
1/3	Stockport Road Right	U	D		1	19	-	207	1935	337	61.5%	-	-	-	3.3	57.7	6.9
2/2+2/1	Chester Road Ahead Left	U	C		1	19	-	290	1940:1805	279+58	85.9 : 85.9%	-	-	-	6.4	79.9	11.5
2/3	Chester Road Right	U	C		1	19	-	203	1935	337	60.3%	-	-	-	3.2	57.2	6.7
3/1+3/2	Knutsford Road south Right Ahead Left	U+O	A		1	54	-	569	1875:1912	844+105	60.0 : 60.0%	54	0	9	4.6	29.4	12.5
4/1+4/2	Knutsford Road north Left Ahead Right	U+O	B		1	54	-	911	1805:1936	322+721	87.4 : 87.4%	18	0	0	9.4	37.0	24.5

C1 PRC for Signalled Lanes (%): 3.0 Total Delay for Signalled Lanes (pcuHr): 33.45 Cycle Time (s): 115
PRC Over All Lanes (%): 3.0 Total Delay Over All Lanes(pcuHr): 33.45

Basic Results Summary

Scenario 8: '21 PM with Dev' (FG8: '2021 PM Base with Dev', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

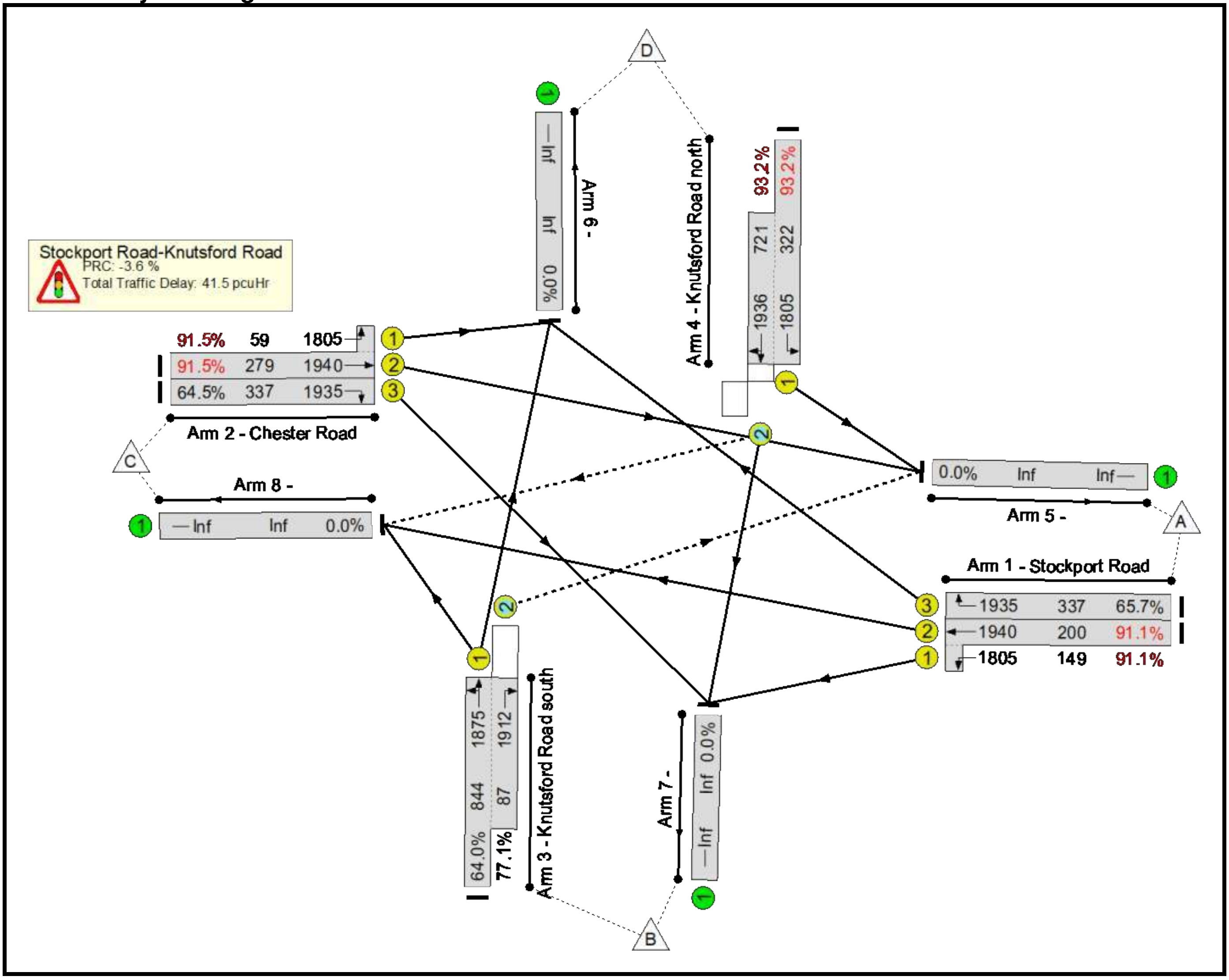
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**99.3%**	**110**	**0**	**19**	**53.9**	**-**	**-**
Stockport Road-Knutsford Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**99.3%**	**110**	**0**	**19**	**53.9**	**-**	**-**
1/2+1/1	Stockport Road Left Ahead	U	D		1	17	-	278	1940:1805	230+63	94.9 : 94.9%	-	-	-	9.3	120.5	14.3
1/3	Stockport Road Right	U	D		1	17	-	244	1935	290	84.1%	-	-	-	5.8	84.9	10.3
2/2+2/1	Chester Road Ahead Left	U	C		1	21	-	354	1940:1805	280+77	99.3 : 99.3%	-	-	-	13.6	138.4	20.2
2/3	Chester Road Right	U	C		1	21	-	116	1935	355	32.7%	-	-	-	1.6	50.1	3.6
3/1+3/2	Knutsford Road south Right Ahead Left	U+O	A		1	59	-	966	1864:1912	878+105	98.3 : 98.3%	102	0	1	19.7	73.6	42.3
4/1+4/2	Knutsford Road north Left Ahead Right	U+O	B		1	59	-	598	1805:1930	404+704	54.0 : 54.0%	8	0	18	3.9	23.4	8.4

C1 PRC for Signalled Lanes (%): -10.4 Total Delay for Signalled Lanes (pcuHr): 53.91 Cycle Time (s): 120
PRC Over All Lanes (%): -10.4 Total Delay Over All Lanes(pcuHr): 53.91

Basic Results Summary

Scenario 9: '29 AM with Dev' (FG9: '2029 AM Base with Dev', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

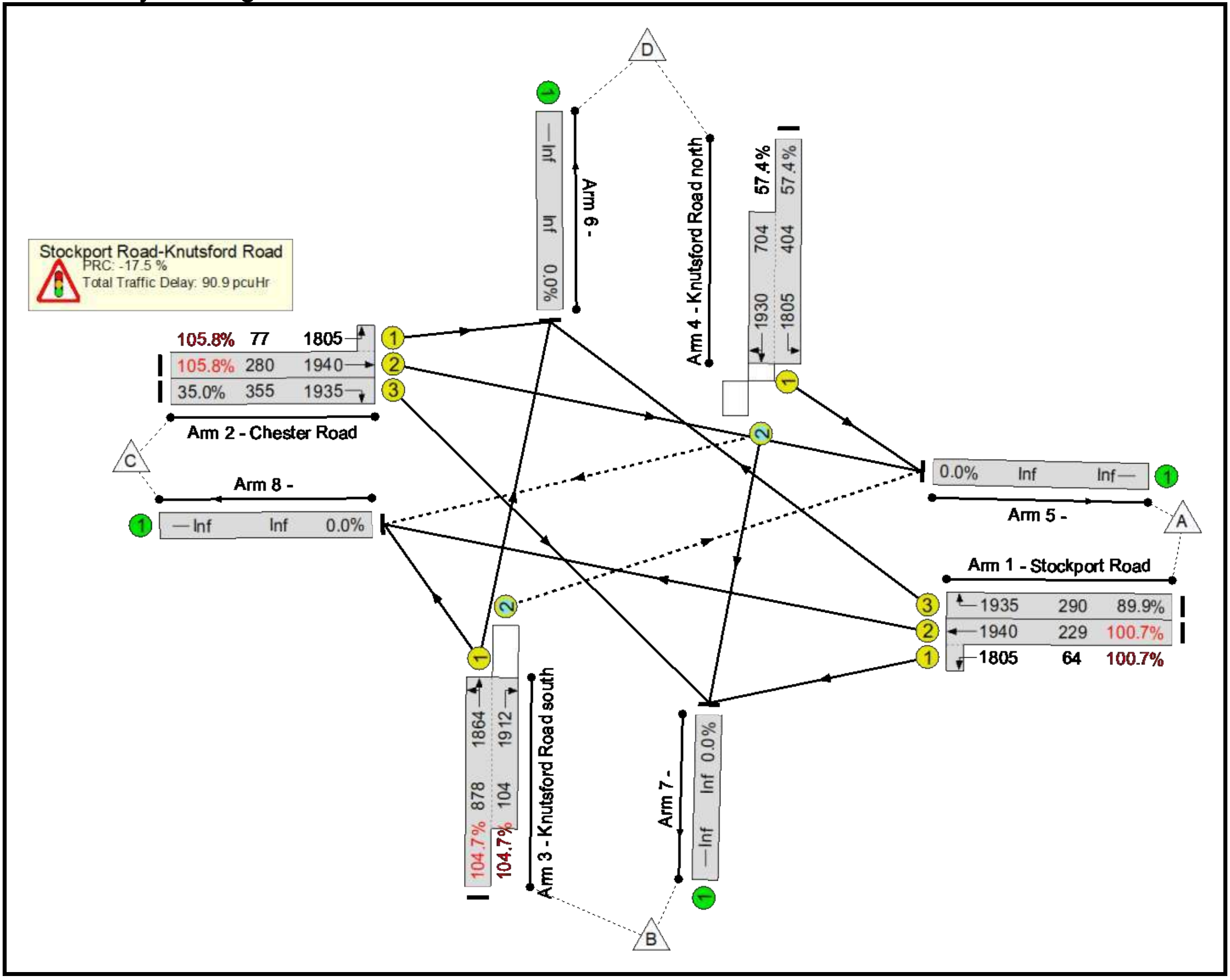
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.2%**	**44**	**0**	**43**	**41.5**	**-**	**-**
Stockport Road-Knutsford Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.2%**	**44**	**0**	**43**	**41.5**	**-**	**-**
1/2+1/1	Stockport Road Left Ahead	U	D		1	19	-	318	1940:1805	200+149	91.1 : 91.1%	-	-	-	8.1	92.1	13.2
1/3	Stockport Road Right	U	D		1	19	-	221	1935	337	65.7%	-	-	-	3.7	59.6	7.5
2/2+2/1	Chester Road Ahead Left	U	C		1	19	-	309	1940:1805	279+59	91.5 : 91.5%	-	-	-	8.2	95.1	13.6
2/3	Chester Road Right	U	C		1	19	-	217	1935	337	64.5%	-	-	-	3.6	59.0	7.3
3/1+3/2	Knutsford Road south Right Ahead Left	U+O	A		1	54	-	607	1875:1912	844+87	64.0 : 77.1%	24	0	43	5.3	31.3	14.0
4/1+4/2	Knutsford Road north Left Ahead Right	U+O	B		1	54	-	972	1805:1936	322+721	93.2 : 93.2%	20	0	0	12.7	47.2	30.6

C1 PRC for Signalled Lanes (%): -3.6 Total Delay for Signalled Lanes (pcuHr): 41.55 Cycle Time (s): 115
PRC Over All Lanes (%): -3.6 Total Delay Over All Lanes(pcuHr): 41.55

Basic Results Summary

Scenario 10: '29 PM with Dev' (FG10: '2029 PM Base with Dev', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

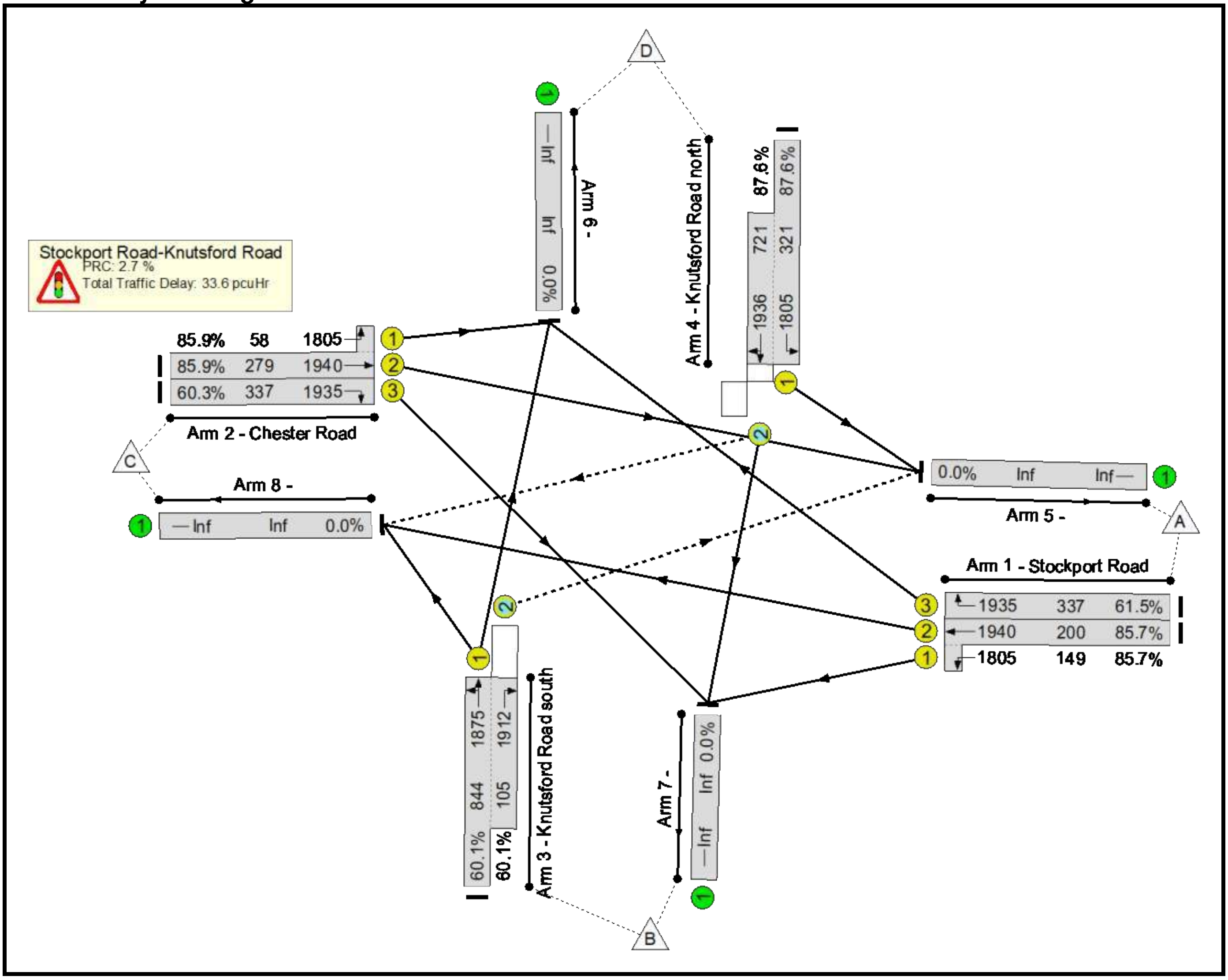
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**105.8%**	**103**	**0**	**29**	**90.9**	-	-
Stockport Road-Knutsford Road	-	-	-		-	-	-	-	-	-	**105.8%**	**103**	**0**	**29**	**90.9**	-	-
1/2+1/1	Stockport Road Left Ahead	U	D		1	17	-	295	1940:1805	229+64	100.7 : 100.7%	-	-	-	13.5	164.2	18.8
1/3	Stockport Road Right	U	D		1	17	-	261	1935	290	89.9%	-	-	-	7.2	99.5	12.1
2/2+2/1	Chester Road Ahead Left	U	C		1	21	-	377	1940:1805	280+77	105.8 : 105.8%	-	-	-	22.1	211.2	29.2
2/3	Chester Road Right	U	C		1	21	-	124	1935	355	35.0%	-	-	-	1.7	50.6	3.9
3/1+3/2	Knutsford Road south Right Ahead Left	U+O	A		1	59	-	1028	1864:1912	878+104	104.7 : 104.7%	103	0	2	42.1	147.5	67.9
4/1+4/2	Knutsford Road north Left Ahead Right	U+O	B		1	59	-	636	1805:1930	404+704	57.4 : 57.4%	0	0	27	4.2	23.9	9.1

C1 PRC for Signalled Lanes (%): -17.5 Total Delay for Signalled Lanes (pcuHr): 90.86 Cycle Time (s): 120
PRC Over All Lanes (%): -17.5 Total Delay Over All Lanes(pcuHr): 90.86

Basic Results Summary

Scenario 11: '21 AM with Dev+Stobbart' (FG11: '2021 AM Base with Dev+Stobbart', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

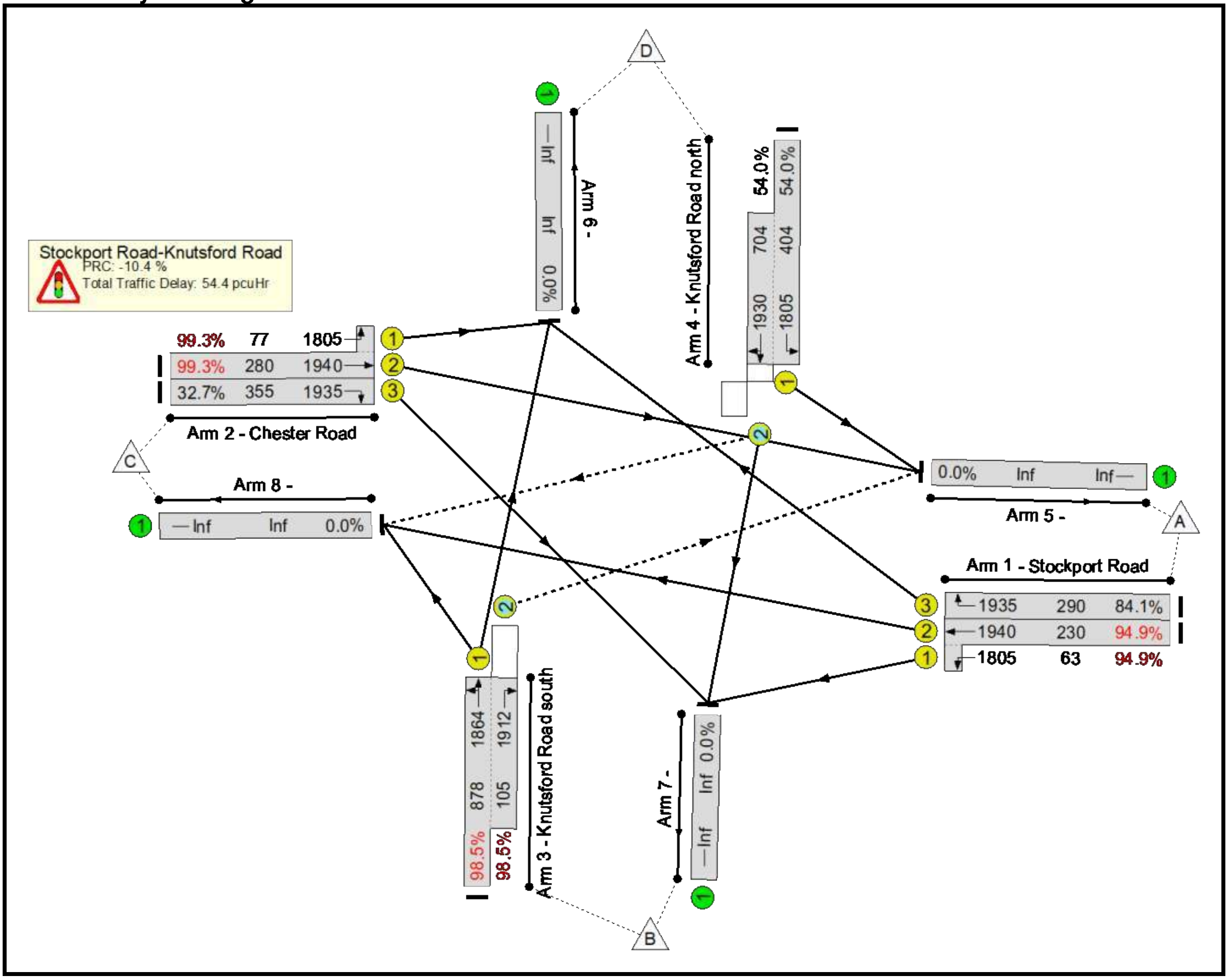
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.6%**	**72**	**0**	**9**	**33.6**	**-**	**-**
Stockport Road-Knutsford Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.6%**	**72**	**0**	**9**	**33.6**	**-**	**-**
1/2+1/1	Stockport Road Left Ahead	U	D		1	19	-	299	1940:1805	200+149	85.7 : 85.7%	-	-	-	6.5	78.0	11.2
1/3	Stockport Road Right	U	D		1	19	-	207	1935	337	61.5%	-	-	-	3.3	57.7	6.9
2/2+2/1	Chester Road Ahead Left	U	C		1	19	-	290	1940:1805	279+58	85.9 : 85.9%	-	-	-	6.4	79.9	11.5
2/3	Chester Road Right	U	C		1	19	-	203	1935	337	60.3%	-	-	-	3.2	57.2	6.7
3/1+3/2	Knutsford Road south Right Ahead Left	U+O	A		1	54	-	570	1875:1912	844+105	60.1 : 60.1%	54	0	9	4.7	29.4	12.5
4/1+4/2	Knutsford Road north Left Ahead Right	U+O	B		1	54	-	913	1805:1936	321+721	87.6 : 87.6%	18	0	0	9.4	37.2	24.6

C1 PRC for Signalled Lanes (%): 2.7 Total Delay for Signalled Lanes (pcuHr): 33.55 Cycle Time (s): 115
PRC Over All Lanes (%): 2.7 Total Delay Over All Lanes(pcuHr): 33.55

Basic Results Summary

Scenario 12: '21 PM with Dev+Stobbart' (FG12: '2021 PM Base with Dev+Stobbart', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

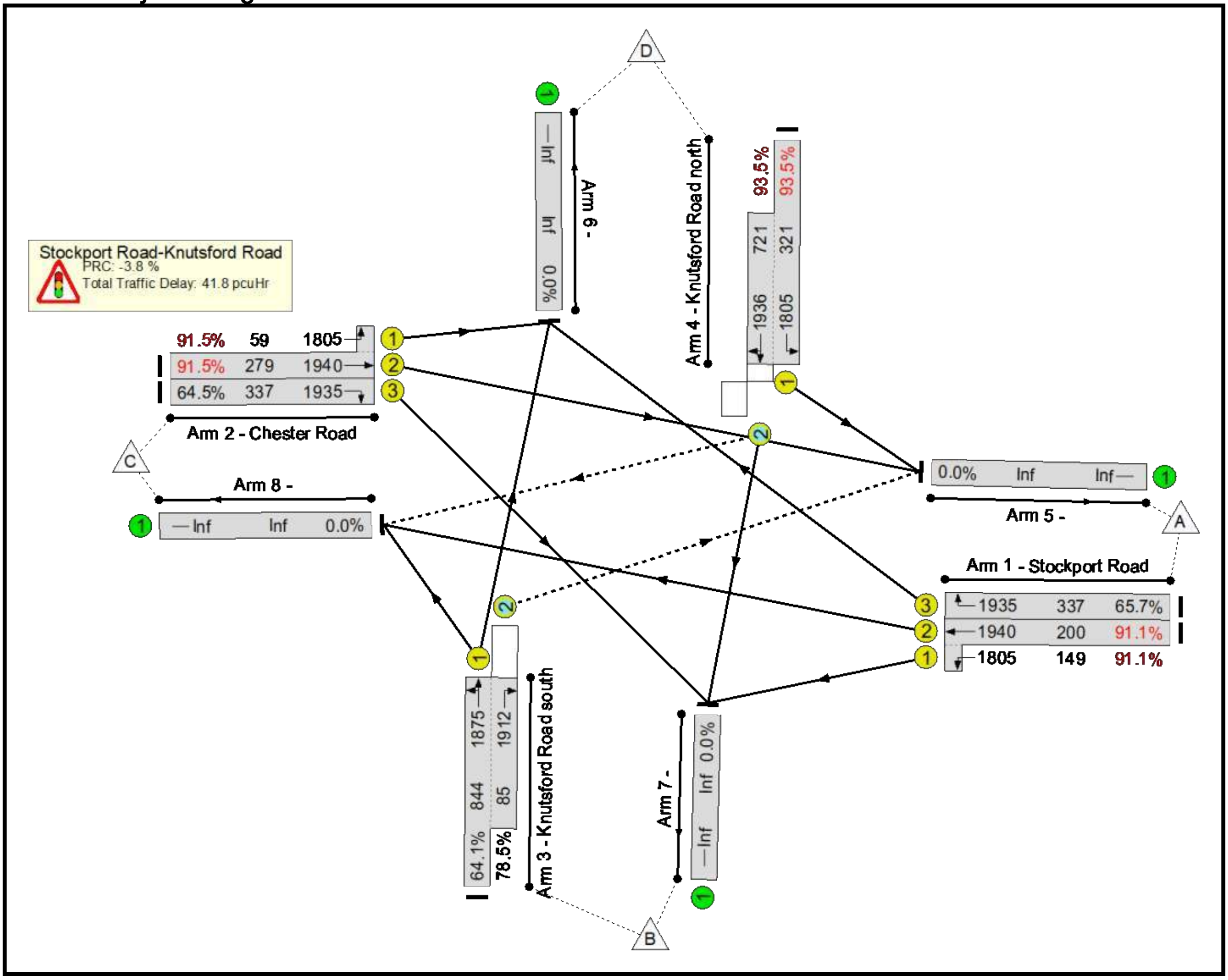
Network Results

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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**99.3%**	**110**	**0**	**19**	**54.4**	**-**	**-**
Stockport Road-Knutsford Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**99.3%**	**110**	**0**	**19**	**54.4**	**-**	**-**
1/2+1/1	Stockport Road Left Ahead	U	D		1	17	-	278	1940:1805	230+63	94.9 : 94.9%	-	-	-	9.3	120.5	14.3
1/3	Stockport Road Right	U	D		1	17	-	244	1935	290	84.1%	-	-	-	5.8	84.9	10.3
2/2+2/1	Chester Road Ahead Left	U	C		1	21	-	354	1940:1805	280+77	99.3 : 99.3%	-	-	-	13.6	138.4	20.2
2/3	Chester Road Right	U	C		1	21	-	116	1935	355	32.7%	-	-	-	1.6	50.1	3.6
3/1+3/2	Knutsford Road south Right Ahead Left	U+O	A		1	59	-	968	1864:1912	878+105	98.5 : 98.5%	102	0	1	20.2	75.0	43.1
4/1+4/2	Knutsford Road north Left Ahead Right	U+O	B		1	59	-	598	1805:1930	404+704	54.0 : 54.0%	8	0	18	3.9	23.4	8.4

C1 PRC for Signalled Lanes (%): -10.4 Total Delay for Signalled Lanes (pcuHr): 54.35 Cycle Time (s): 120

PRC Over All Lanes (%): -10.4 Total Delay Over All Lanes(pcuHr): 54.35

Basic Results Summary
Scenario 13: '29 AM with Dev+Stobbart' (FG13: '2029 AM Base with Dev+Stobbart', Plan 1: 'Network Control Plan 1')
Network Layout Diagram



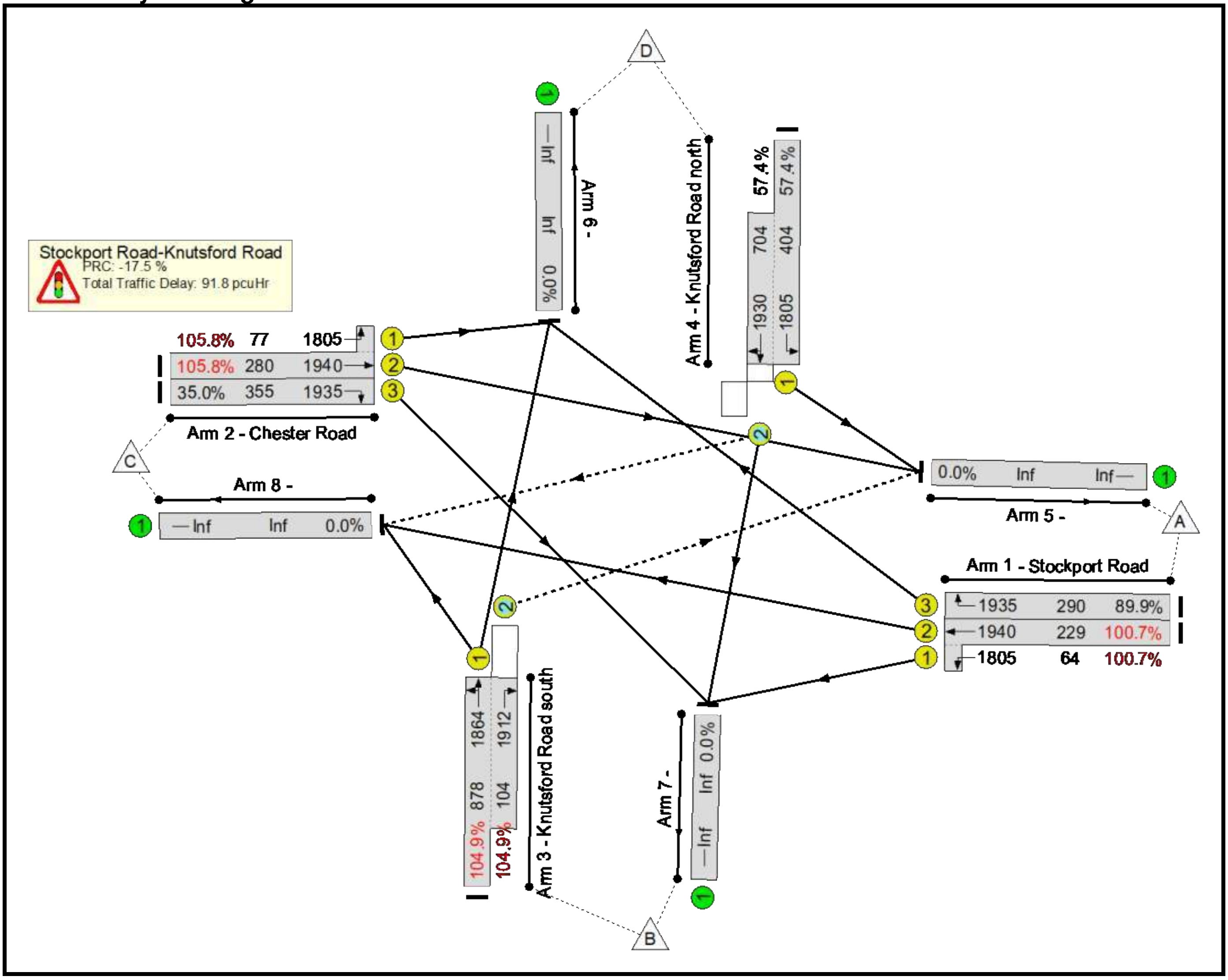
Basic Results Summary

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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.5%**	**43**	**0**	**44**	**41.8**	**-**	**-**
Stockport Road-Knutsford Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.5%**	**43**	**0**	**44**	**41.8**	**-**	**-**
1/2+1/1	Stockport Road Left Ahead	U	D		1	19	-	318	1940:1805	200+149	91.1 : 91.1%	-	-	-	8.1	92.1	13.2
1/3	Stockport Road Right	U	D		1	19	-	221	1935	337	65.7%	-	-	-	3.7	59.6	7.5
2/2+2/1	Chester Road Ahead Left	U	C		1	19	-	309	1940:1805	279+59	91.5 : 91.5%	-	-	-	8.2	95.1	13.6
2/3	Chester Road Right	U	C		1	19	-	217	1935	337	64.5%	-	-	-	3.6	59.0	7.3
3/1+3/2	Knutsford Road south Right Ahead Left	U+O	A		1	54	-	608	1875:1912	844+85	64.1 : 78.5%	23	0	44	5.3	31.4	14.0
4/1+4/2	Knutsford Road north Left Ahead Right	U+O	B		1	54	-	974	1805:1936	321+721	93.5 : 93.5%	20	0	0	12.9	47.8	30.9

C1 PRC for Signalled Lanes (%): -3.8 Total Delay for Signalled Lanes (pcuHr): 41.76 Cycle Time (s): 115
PRC Over All Lanes (%): -3.8 Total Delay Over All Lanes(pcuHr): 41.76

Basic Results Summary
Scenario 14: '29 PM with Dev+Stobbart' (FG14: '2029 PM Base with Dev+Stobbart', 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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**105.8%**	**102**	**0**	**29**	**91.8**	**-**	**-**
Stockport Road-Knutsford Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**105.8%**	**102**	**0**	**29**	**91.8**	**-**	**-**
1/2+1/1	Stockport Road Left Ahead	U	D		1	17	-	295	1940:1805	229+64	100.7 : 100.7%	-	-	-	13.5	164.2	18.8
1/3	Stockport Road Right	U	D		1	17	-	261	1935	290	89.9%	-	-	-	7.2	99.5	12.1
2/2+2/1	Chester Road Ahead Left	U	C		1	21	-	377	1940:1805	280+77	105.8 : 105.8%	-	-	-	22.1	211.2	29.2
2/3	Chester Road Right	U	C		1	21	-	124	1935	355	35.0%	-	-	-	1.7	50.6	3.9
3/1+3/2	Knutsford Road south Right Ahead Left	U+O	A		1	59	-	1030	1864:1912	878+104	104.9 : 104.9%	102	0	2	43.1	150.6	68.9
4/1+4/2	Knutsford Road north Left Ahead Right	U+O	B		1	59	-	636	1805:1930	404+704	57.4 : 57.4%	0	0	27	4.2	23.9	9.1

C1 PRC for Signalled Lanes (%): -17.5 Total Delay for Signalled Lanes (pcuHr): 91.82 Cycle Time (s): 120
PRC Over All Lanes (%): -17.5 Total Delay Over All Lanes(pcuHr): 91.82

Appendix L

Junctions 8

PICADY 8 - Priority Intersection Module

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

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

Filename: Broad Lane-Church Lane.arc8
Path: \\mafs02\Projects\064001 - 065000\064076 - Warrington Interchange TPMA\I -Calculations\Models\ARCADY V2
Report generation date: 16/01/2019 11:25:11

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2017 Observed							
Stream B-AC	0.10	8.00	0.10	A	0.18	8.59	0.16	A
Stream C-AB	0.01	6.25	0.01	A	0.04	5.20	0.03	A
Stream C-A	-	-	-	-	-	-	-	-
Stream A-B	-	-	-	-	-	-	-	-
Stream A-C	-	-	-	-	-	-	-	-
	A1 - 2021 Base							
Stream B-AC	0.11	8.07	0.10	A	0.19	8.64	0.16	A
Stream C-AB	0.01	6.26	0.01	A	0.04	5.19	0.03	A
Stream C-A	-	-	-	-	-	-	-	-
Stream A-B	-	-	-	-	-	-	-	-
Stream A-C	-	-	-	-	-	-	-	-
	A1 - 2021 Base with Dev							
Stream B-AC	0.11	8.24	0.10	A	0.19	8.80	0.16	A
Stream C-AB	0.01	6.27	0.01	A	0.04	5.12	0.03	A
Stream C-A	-	-	-	-	-	-	-	-
Stream A-B	-	-	-	-	-	-	-	-
Stream A-C	-	-	-	-	-	-	-	-
	A1 - 2021 Base with Dev+Stobbarts							
Stream B-AC	0.11	8.29	0.10	A	0.19	8.84	0.16	A

Stream C-AB	0.01	6.25	0.01	A	0.04	5.10	0.03	A
Stream C-A	-	-	-	-	-	-	-	-
Stream A-B	-	-	-	-	-	-	-	-
Stream A-C	-	-	-	-	-	-	-	-
	A1 - 2029 Base							
Stream B-AC	0.12	8.24	0.11	A	0.20	8.85	0.17	A
Stream C-AB	0.02	6.31	0.01	A	0.04	5.16	0.03	A
Stream C-A	-	-	-	-	-	-	-	-
Stream A-B	-	-	-	-	-	-	-	-
Stream A-C	-	-	-	-	-	-	-	-
	A1 - 2029 Base with Dev							
Stream B-AC	0.12	8.42	0.11	A	0.21	9.01	0.17	A
Stream C-AB	0.02	6.30	0.02	A	0.04	5.10	0.03	A
Stream C-A	-	-	-	-	-	-	-	-
Stream A-B	-	-	-	-	-	-	-	-
Stream A-C	-	-	-	-	-	-	-	-
	A1 - 2029 Base with Dev+Stobbarts							
Stream B-AC	0.12	8.47	0.11	A	0.21	9.05	0.17	A
Stream C-AB	0.02	6.30	0.02	A	0.04	5.08	0.03	A
Stream C-A	-	-	-	-	-	-	-	-
Stream A-B	-	-	-	-	-	-	-	-
Stream A-C	-	-	-	-	-	-	-	-

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

"D1 - 2017 Observed, AM " model duration: 08:00 - 09:30
"D2 - 2017 Observed, PM" model duration: 16:00 - 17:30
"D3 - 2021 Base, AM" model duration: 08:00 - 09:30
"D4 - 2021 Base, PM" model duration: 16:00 - 17:30
"D5 - 2029 Base, AM" model duration: 08:00 - 09:30
"D6 - 2029 Base, PM" model duration: 16:00 - 17:30
"D7 - 2021 Base with Dev, AM" model duration: 08:00 - 09:30
"D8 - 2021 Base with Dev, PM" model duration: 16:00 - 17:30
"D9 - 2029 Base with Dev, AM" model duration: 08:00 - 09:30
"D10 - 2029 Base with Dev, PM" model duration: 16:00 - 17:30
"D11 - 2021 Base with Dev+Stobbarts, AM" model duration: 08:00 - 09:30
"D12 - 2021 Base with Dev+Stobbarts, PM" model duration: 16:00 - 17:30
"D13 - 2029 Base with Dev+Stobbarts, AM" model duration: 08:00 - 09:30
"D14 - 2029 Base with Dev+Stobbarts, PM" model duration: 16:00 - 17:30

Run using Junctions 8.0.6.541 at 16/01/2019 11:25:01

File summary

Title	(untitled)
Location	
Site Number	
Date	23/08/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	frempong_f
Description	

Analysis Options

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

Units

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

(Default Analysis Set) - 2017 Observed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relatio
2017 Observed, AM	2017 Observed	AM		ONE HOUR	08:00	09:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	A,B,C		7.77	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description	Arm Type
Church Lane north	A	Church Lane north	Church Lane north	Major
Church Lane south	B	Church Lane south	Church Lane south	Minor
Broad Lane	C	Broad Lane	Broad Lane	Major

Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
Broad Lane	6.00		0.00		2.20	99.00	✓	0.01

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

Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Church Lane south	One lane	3.20										30	80

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	537.183	0.098	0.247	0.156	0.353
1	B-C	687.801	0.105	0.266	-	-
1	C-B	631.295	0.245	0.245	-	-

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

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

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Church Lane north	ONE HOUR	✓	313.00	100.000
Church Lane south	ONE HOUR	✓	43.00	100.000
Broad Lane	ONE HOUR	✓	57.00	100.000

Turning Proportions

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.000	91.000	222.000
	Church Lane south	29.000	0.000	14.000
	Broad Lane	51.000	6.000	0.000

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.00	0.29	0.71
	Church Lane south	0.67	0.00	0.33
	Broad Lane	0.89	0.11	0.00

Vehicle Mix

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	1.000	1.000	1.000
	Church Lane south	1.000	1.000	1.000
	Broad Lane	1.000	1.000	1.000

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.0	0.0	0.0
	Church Lane south	0.0	0.0	0.0
	Broad Lane	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-AC	0.10	8.00	0.10	A	39.46	59.19	7.52	7.62	0.08	7.52	7.62
C-AB	0.01	6.25	0.01	A	5.96	8.94	0.97	6.50	0.01	0.97	6.50
C-A	-	-	-	-	46.35	69.52	-	-	-	-	-
A-B	-	-	-	-	83.50	125.25	-	-	-	-	-
A-C	-	-	-	-	203.71	305.57	-	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	32.37	8.09	32.11	0.00	522.92	0.062	0.00	0.07	7.332	A
C-AB	4.81	1.20	4.77	0.00	598.08	0.008	0.00	0.01	6.067	A
C-A	38.11	9.53	38.11	0.00	-	-	-	-	-	-
A-B	68.51	17.13	68.51	0.00	-	-	-	-	-	-
A-C	167.13	41.78	167.13	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	38.66	9.66	38.59	0.00	512.12	0.075	0.07	0.08	7.602	A
C-AB	5.81	1.45	5.81	0.00	591.85	0.010	0.01	0.01	6.142	A
C-A	45.43	11.36	45.43	0.00	-	-	-	-	-	-
A-B	81.81	20.45	81.81	0.00	-	-	-	-	-	-
A-C	199.57	49.89	199.57	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	47.34	11.84	47.25	0.00	497.17	0.095	0.08	0.10	7.999	A
C-AB	7.25	1.81	7.24	0.00	583.32	0.012	0.01	0.01	6.248	A
C-A	55.50	13.88	55.50	0.00	-	-	-	-	-	-
A-B	100.19	25.05	100.19	0.00	-	-	-	-	-	-
A-C	244.43	61.11	244.43	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	47.34	11.84	47.34	0.00	497.17	0.095	0.10	0.10	8.002	A
C-AB	7.25	1.81	7.25	0.00	583.32	0.012	0.01	0.01	6.248	A
C-A	55.50	13.88	55.50	0.00	-	-	-	-	-	-
A-B	100.19	25.05	100.19	0.00	-	-	-	-	-	-
A-C	244.43	61.11	244.43	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	38.66	9.66	38.75	0.00	512.11	0.075	0.10	0.08	7.605	A
C-AB	5.81	1.45	5.83	0.00	591.85	0.010	0.01	0.01	6.142	A
C-A	45.43	11.36	45.43	0.00	-	-	-	-	-	-
A-B	81.81	20.45	81.81	0.00	-	-	-	-	-	-
A-C	199.57	49.89	199.57	0.00	-	-	-	-	-	-

Main results: (09:15-09:30)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	32.37	8.09	32.44	0.00	522.91	0.062	0.08	0.07	7.339	A
C-AB	4.81	1.20	4.81	0.00	598.08	0.008	0.01	0.01	6.069	A
C-A	38.11	9.53	38.11	0.00	-	-	-	-	-	-
A-B	68.51	17.13	68.51	0.00	-	-	-	-	-	-
A-C	167.13	41.78	167.13	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	0.95	0.06	7.332	A	A
C-AB	0.13	0.01	6.067	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:15-08:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.19	0.08	7.602	A	A
C-AB	0.16	0.01	6.142	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:30-08:45)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.53	0.10	7.999	A	A
C-AB	0.20	0.01	6.248	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:45-09:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.57	0.10	8.002	A	A
C-AB	0.20	0.01	6.248	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (09:00-09:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.26	0.08	7.605	A	A
C-AB	0.16	0.01	6.142	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (09:15-09:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.02	0.07	7.339	A	A
C-AB	0.13	0.01	6.069	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

(Default Analysis Set) - 2017 Observed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relatic
2017 Observed, PM	2017 Observed	PM		ONE HOUR	16:00	17:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	A,B,C		7.88	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description	Arm Type
Church Lane north	A	Church Lane north	Church Lane north	Major
Church Lane south	B	Church Lane south	Church Lane south	Minor
Broad Lane	C	Broad Lane	Broad Lane	Major

Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
Broad Lane	6.00		0.00		2.20	99.00	✓	0.01

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

Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Church Lane south	One lane	3.20										30	80

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	537.183	0.098	0.247	0.156	0.353
1	B-C	687.801	0.105	0.266	-	-
1	C-B	631.295	0.245	0.245	-	-

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

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

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Church Lane north	ONE HOUR	✓	122.00	100.000
Church Lane south	ONE HOUR	✓	70.00	100.000
Broad Lane	ONE HOUR	✓	235.00	100.000

Turning Proportions

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.000	66.000	56.000
	Church Lane south	58.000	0.000	12.000
	Broad Lane	221.000	14.000	0.000

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.00	0.54	0.46
	Church Lane south	0.83	0.00	0.17
	Broad Lane	0.94	0.06	0.00

Vehicle Mix

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	1.000	1.000	1.000
	Church Lane south	1.000	1.000	1.000
	Broad Lane	1.000	1.000	1.000

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.0	0.0	0.0
	Church Lane south	0.0	0.0	0.0
	Broad Lane	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-AC	0.16	8.59	0.18	A	64.23	96.35	13.05	8.12	0.14	13.05	8.12
C-AB	0.03	5.20	0.04	A	17.11	25.66	2.61	6.10	0.03	2.61	6.10
C-A	-	-	-	-	198.53	297.80	-	-	-	-	-
A-B	-	-	-	-	60.56	90.84	-	-	-	-	-
A-C	-	-	-	-	51.39	77.08	-	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	52.70	13.17	52.25	0.00	515.87	0.102	0.00	0.11	7.758	A
C-AB	13.31	3.33	13.22	0.00	705.94	0.019	0.00	0.02	5.197	A
C-A	163.61	40.90	163.61	0.00	-	-	-	-	-	-
A-B	49.69	12.42	49.69	0.00	-	-	-	-	-	-
A-C	42.16	10.54	42.16	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	62.93	15.73	62.82	0.00	507.58	0.124	0.11	0.14	8.092	A
C-AB	16.57	4.14	16.54	0.00	719.23	0.023	0.02	0.03	5.122	A
C-A	194.69	48.67	194.69	0.00	-	-	-	-	-	-
A-B	59.33	14.83	59.33	0.00	-	-	-	-	-	-
A-C	50.34	12.59	50.34	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	77.07	19.27	76.90	0.00	496.12	0.155	0.14	0.18	8.583	A
C-AB	21.46	5.36	21.42	0.00	736.98	0.029	0.03	0.04	5.030	A
C-A	237.28	59.32	237.28	0.00	-	-	-	-	-	-
A-B	72.67	18.17	72.67	0.00	-	-	-	-	-	-
A-C	61.66	15.41	61.66	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	77.07	19.27	77.07	0.00	496.11	0.155	0.18	0.18	8.590	A
C-AB	21.46	5.36	21.46	0.00	736.98	0.029	0.04	0.04	5.033	A
C-A	237.28	59.32	237.28	0.00	-	-	-	-	-	-
A-B	72.67	18.17	72.67	0.00	-	-	-	-	-	-
A-C	61.66	15.41	61.66	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	62.93	15.73	63.09	0.00	507.57	0.124	0.18	0.14	8.102	A
C-AB	16.57	4.14	16.60	0.00	719.23	0.023	0.04	0.03	5.125	A
C-A	194.69	48.67	194.69	0.00	-	-	-	-	-	-
A-B	59.33	14.83	59.33	0.00	-	-	-	-	-	-
A-C	50.34	12.59	50.34	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	52.70	13.17	52.81	0.00	515.84	0.102	0.14	0.11	7.776	A
C-AB	13.31	3.33	13.33	0.00	705.94	0.019	0.03	0.02	5.199	A
C-A	163.61	40.90	163.61	0.00	-	-	-	-	-	-
A-B	49.69	12.42	49.69	0.00	-	-	-	-	-	-
A-C	42.16	10.54	42.16	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.63	0.11	7.758	A	A
C-AB	0.33	0.02	5.197	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.06	0.14	8.092	A	A
C-AB	0.42	0.03	5.122	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.66	0.18	8.583	A	A
C-AB	0.55	0.04	5.030	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.74	0.18	8.590	A	A
C-AB	0.55	0.04	5.033	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.20	0.15	8.102	A	A
C-AB	0.42	0.03	5.125	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.76	0.12	7.776	A	A
C-AB	0.33	0.02	5.199	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

(Default Analysis Set) - 2021 Base, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2021 Base, AM	2021 Base	AM		ONE HOUR	08:00	09:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	A,B,C		7.84	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description	Arm Type
Church Lane north	A	Church Lane north	Church Lane north	Major
Church Lane south	B	Church Lane south	Church Lane south	Minor
Broad Lane	C	Broad Lane	Broad Lane	Major

Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
Broad Lane	6.00		0.00		2.20	99.00	✓	0.01

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

Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Church Lane south	One lane	3.20										30	80

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	537.183	0.098	0.247	0.156	0.353
1	B-C	687.801	0.105	0.266	-	-
1	C-B	631.295	0.245	0.245	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Church Lane north	ONE HOUR	✓	320.00	100.000
Church Lane south	ONE HOUR	✓	44.00	100.000
Broad Lane	ONE HOUR	✓	58.00	100.000

Turning Proportions

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.000	93.000	227.000
	Church Lane south	30.000	0.000	14.000
	Broad Lane	52.000	6.000	0.000

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.00	0.29	0.71
	Church Lane south	0.68	0.00	0.32
	Broad Lane	0.90	0.10	0.00

Vehicle Mix

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	1.000	1.000	1.000
	Church Lane south	1.000	1.000	1.000
	Broad Lane	1.000	1.000	1.000

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.0	0.0	0.0
	Church Lane south	0.0	0.0	0.0
	Broad Lane	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-AC	0.10	8.07	0.11	A	40.38	60.56	7.75	7.68	0.09	7.75	7.68
C-AB	0.01	6.26	0.01	A	5.97	8.95	0.97	6.52	0.01	0.97	6.52
C-A	-	-	-	-	47.25	70.88	-	-	-	-	-
A-B	-	-	-	-	85.34	128.01	-	-	-	-	-
A-C	-	-	-	-	208.30	312.45	-	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	33.13	8.28	32.86	0.00	520.70	0.064	0.00	0.07	7.376	A
C-AB	4.81	1.20	4.78	0.00	597.29	0.008	0.00	0.01	6.075	A
C-A	38.85	9.71	38.85	0.00	-	-	-	-	-	-
A-B	70.02	17.50	70.02	0.00	-	-	-	-	-	-
A-C	170.90	42.72	170.90	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	39.56	9.89	39.49	0.00	509.66	0.078	0.07	0.08	7.656	A
C-AB	5.82	1.46	5.82	0.00	590.91	0.010	0.01	0.01	6.152	A
C-A	46.32	11.58	46.32	0.00	-	-	-	-	-	-
A-B	83.61	20.90	83.61	0.00	-	-	-	-	-	-
A-C	204.07	51.02	204.07	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	48.44	12.11	48.35	0.00	494.38	0.098	0.08	0.11	8.069	A
C-AB	7.27	1.82	7.26	0.00	582.18	0.012	0.01	0.01	6.261	A
C-A	56.59	14.15	56.59	0.00	-	-	-	-	-	-
A-B	102.39	25.60	102.39	0.00	-	-	-	-	-	-
A-C	249.93	62.48	249.93	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	48.44	12.11	48.44	0.00	494.38	0.098	0.11	0.11	8.072	A
C-AB	7.27	1.82	7.27	0.00	582.18	0.012	0.01	0.01	6.261	A
C-A	56.59	14.15	56.59	0.00	-	-	-	-	-	-
A-B	102.39	25.60	102.39	0.00	-	-	-	-	-	-
A-C	249.93	62.48	249.93	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	39.56	9.89	39.65	0.00	509.65	0.078	0.11	0.08	7.660	A
C-AB	5.82	1.46	5.83	0.00	590.91	0.010	0.01	0.01	6.154	A
C-A	46.32	11.58	46.32	0.00	-	-	-	-	-	-
A-B	83.61	20.90	83.61	0.00	-	-	-	-	-	-
A-C	204.07	51.02	204.07	0.00	-	-	-	-	-	-

Main results: (09:15-09:30)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	33.13	8.28	33.19	0.00	520.69	0.064	0.08	0.07	7.387	A
C-AB	4.81	1.20	4.82	0.00	597.29	0.008	0.01	0.01	6.078	A
C-A	38.85	9.71	38.85	0.00	-	-	-	-	-	-
A-B	70.02	17.50	70.02	0.00	-	-	-	-	-	-
A-C	170.90	42.72	170.90	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	0.98	0.07	7.376	A	A
C-AB	0.13	0.01	6.075	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:15-08:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.23	0.08	7.656	A	A
C-AB	0.16	0.01	6.152	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:30-08:45)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.58	0.11	8.069	A	A
C-AB	0.20	0.01	6.261	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:45-09:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.62	0.11	8.072	A	A
C-AB	0.20	0.01	6.261	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (09:00-09:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.30	0.09	7.660	A	A
C-AB	0.16	0.01	6.154	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (09:15-09:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.05	0.07	7.387	A	A
C-AB	0.13	0.01	6.078	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

(Default Analysis Set) - 2021 Base, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2021 Base, PM	2021 Base	PM		ONE HOUR	16:00	17:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	A,B,C		7.92	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description	Arm Type
Church Lane north	A	Church Lane north	Church Lane north	Major
Church Lane south	B	Church Lane south	Church Lane south	Minor
Broad Lane	C	Broad Lane	Broad Lane	Major

Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
Broad Lane	6.00		0.00		2.20	99.00	✓	0.01

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

Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Church Lane south	One lane	3.20										30	80

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	537.183	0.098	0.247	0.156	0.353
1	B-C	687.801	0.105	0.266	-	-
1	C-B	631.295	0.245	0.245	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Church Lane north	ONE HOUR	✓	124.00	100.000
Church Lane south	ONE HOUR	✓	71.00	100.000
Broad Lane	ONE HOUR	✓	240.00	100.000

Turning Proportions

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

		To		
		Church Lane north	**Church Lane south**	**Broad Lane**
From	**Church Lane north**	0.000	67.000	57.000
	Church Lane south	59.000	0.000	12.000
	Broad Lane	226.000	14.000	0.000

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

		To		
		Church Lane north	**Church Lane south**	**Broad Lane**
From	**Church Lane north**	0.00	0.54	0.46
	Church Lane south	0.83	0.00	0.17
	Broad Lane	0.94	0.06	0.00

Vehicle Mix

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

		To		
		Church Lane north	**Church Lane south**	**Broad Lane**
From	**Church Lane north**	1.000	1.000	1.000
	Church Lane south	1.000	1.000	1.000
	Broad Lane	1.000	1.000	1.000

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.0	0.0	0.0
	Church Lane south	0.0	0.0	0.0
	Broad Lane	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-AC	0.16	8.64	0.19	A	65.15	97.73	13.30	8.17	0.15	13.30	8.17
C-AB	0.03	5.19	0.04	A	17.21	25.81	2.63	6.10	0.03	2.63	6.10
C-A	-	-	-	-	203.02	304.53	-	-	-	-	-
A-B	-	-	-	-	61.48	92.22	-	-	-	-	-
A-C	-	-	-	-	52.30	78.46	-	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	53.45	13.36	52.99	0.00	514.72	0.104	0.00	0.11	7.788	A
C-AB	13.37	3.34	13.28	0.00	707.61	0.019	0.00	0.02	5.184	A
C-A	167.31	41.83	167.31	0.00	-	-	-	-	-	-
A-B	50.44	12.61	50.44	0.00	-	-	-	-	-	-
A-C	42.91	10.73	42.91	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	63.83	15.96	63.72	0.00	506.27	0.126	0.11	0.14	8.133	A
C-AB	16.66	4.16	16.64	0.00	721.17	0.023	0.02	0.03	5.109	A
C-A	199.10	49.77	199.10	0.00	-	-	-	-	-	-
A-B	60.23	15.06	60.23	0.00	-	-	-	-	-	-
A-C	51.24	12.81	51.24	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	78.17	19.54	78.00	0.00	494.58	0.158	0.14	0.19	8.638	A
C-AB	21.60	5.40	21.56	0.00	739.27	0.029	0.03	0.04	5.015	A
C-A	242.65	60.66	242.65	0.00	-	-	-	-	-	-
A-B	73.77	18.44	73.77	0.00	-	-	-	-	-	-
A-C	62.76	15.69	62.76	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	78.17	19.54	78.17	0.00	494.57	0.158	0.19	0.19	8.645	A
C-AB	21.60	5.40	21.60	0.00	739.27	0.029	0.04	0.04	5.018	A
C-A	242.65	60.66	242.65	0.00	-	-	-	-	-	-
A-B	73.77	18.44	73.77	0.00	-	-	-	-	-	-
A-C	62.76	15.69	62.76	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	63.83	15.96	63.99	0.00	506.26	0.126	0.19	0.15	8.142	A
C-AB	16.66	4.16	16.69	0.00	721.17	0.023	0.04	0.03	5.112	A
C-A	199.10	49.77	199.10	0.00	-	-	-	-	-	-
A-B	60.23	15.06	60.23	0.00	-	-	-	-	-	-
A-C	51.24	12.81	51.24	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	53.45	13.36	53.57	0.00	514.69	0.104	0.15	0.12	7.808	A
C-AB	13.37	3.34	13.39	0.00	707.61	0.019	0.03	0.02	5.185	A
C-A	167.31	41.83	167.31	0.00	-	-	-	-	-	-
A-B	50.44	12.61	50.44	0.00	-	-	-	-	-	-
A-C	42.91	10.73	42.91	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.66	0.11	7.788	A	A
C-AB	0.33	0.02	5.184	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.10	0.14	8.133	A	A
C-AB	0.42	0.03	5.109	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.72	0.18	8.638	A	A
C-AB	0.56	0.04	5.015	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.79	0.19	8.645	A	A
C-AB	0.56	0.04	5.018	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.24	0.15	8.142	A	A
C-AB	0.42	0.03	5.112	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.79	0.12	7.808	A	A
C-AB	0.34	0.02	5.185	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

(Default Analysis Set) - 2029 Base, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2029 Base, AM	2029 Base	AM		ONE HOUR	08:00	09:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	A,B,C		7.97	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description	Arm Type
Church Lane north	A	Church Lane north	Church Lane north	Major
Church Lane south	B	Church Lane south	Church Lane south	Minor
Broad Lane	C	Broad Lane	Broad Lane	Major

Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
Broad Lane	6.00		0.00		2.20	99.00	✓	0.01

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

Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Church Lane south	One lane	3.20										30	80

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	537.183	0.098	0.247	0.156	0.353
1	B-C	687.801	0.105	0.266	-	-
1	C-B	631.295	0.245	0.245	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Church Lane north	ONE HOUR	✓	343.00	100.000
Church Lane south	ONE HOUR	✓	47.00	100.000
Broad Lane	ONE HOUR	✓	63.00	100.000

Turning Proportions

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.000	100.000	243.000
	Church Lane south	32.000	0.000	15.000
	Broad Lane	56.000	7.000	0.000

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.00	0.29	0.71
	Church Lane south	0.68	0.00	0.32
	Broad Lane	0.89	0.11	0.00

Vehicle Mix

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	1.000	1.000	1.000
	Church Lane south	1.000	1.000	1.000
	Broad Lane	1.000	1.000	1.000

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.0	0.0	0.0
	Church Lane south	0.0	0.0	0.0
	Broad Lane	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-AC	0.11	8.24	0.12	A	43.13	64.69	8.42	7.81	0.09	8.42	7.81
C-AB	0.01	6.31	0.02	A	7.01	10.52	1.16	6.59	0.01	1.16	6.59
C-A	-	-	-	-	50.80	76.20	-	-	-	-	-
A-B	-	-	-	-	91.76	137.64	-	-	-	-	-
A-C	-	-	-	-	222.98	334.47	-	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	35.38	8.85	35.09	0.00	516.64	0.068	0.00	0.07	7.470	A
C-AB	5.64	1.41	5.60	0.00	595.06	0.009	0.00	0.01	6.106	A
C-A	41.79	10.45	41.79	0.00	-	-	-	-	-	-
A-B	75.29	18.82	75.29	0.00	-	-	-	-	-	-
A-C	182.94	45.74	182.94	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	42.25	10.56	42.18	0.00	504.77	0.084	0.07	0.09	7.781	A
C-AB	6.84	1.71	6.83	0.00	588.28	0.012	0.01	0.01	6.190	A
C-A	49.80	12.45	49.80	0.00	-	-	-	-	-	-
A-B	89.90	22.47	89.90	0.00	-	-	-	-	-	-
A-C	218.45	54.61	218.45	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	51.75	12.94	51.64	0.00	488.36	0.106	0.09	0.12	8.241	A
C-AB	8.55	2.14	8.54	0.00	579.01	0.015	0.01	0.02	6.310	A
C-A	60.81	15.20	60.81	0.00	-	-	-	-	-	-
A-B	110.10	27.53	110.10	0.00	-	-	-	-	-	-
A-C	267.55	66.89	267.55	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	51.75	12.94	51.75	0.00	488.36	0.106	0.12	0.12	8.245	A
C-AB	8.55	2.14	8.55	0.00	579.01	0.015	0.02	0.02	6.312	A
C-A	60.81	15.20	60.81	0.00	-	-	-	-	-	-
A-B	110.10	27.53	110.10	0.00	-	-	-	-	-	-
A-C	267.55	66.89	267.55	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	42.25	10.56	42.36	0.00	504.77	0.084	0.12	0.09	7.786	A
C-AB	6.84	1.71	6.85	0.00	588.28	0.012	0.02	0.01	6.191	A
C-A	49.80	12.45	49.80	0.00	-	-	-	-	-	-
A-B	89.90	22.47	89.90	0.00	-	-	-	-	-	-
A-C	218.45	54.61	218.45	0.00	-	-	-	-	-	-

Main results: (09:15-09:30)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	35.38	8.85	35.46	0.00	516.62	0.068	0.09	0.07	7.484	A
C-AB	5.64	1.41	5.65	0.00	595.06	0.009	0.01	0.01	6.107	A
C-A	41.79	10.45	41.79	0.00	-	-	-	-	-	-
A-B	75.29	18.82	75.29	0.00	-	-	-	-	-	-
A-C	182.94	45.74	182.94	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.06	0.07	7.470	A	A
C-AB	0.15	0.01	6.106	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:15-08:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.33	0.09	7.781	A	A
C-AB	0.19	0.01	6.190	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:30-08:45)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.72	0.11	8.241	A	A
C-AB	0.24	0.02	6.310	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:45-09:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.77	0.12	8.245	A	A
C-AB	0.24	0.02	6.312	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (09:00-09:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.42	0.09	7.786	A	A
C-AB	0.19	0.01	6.191	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (09:15-09:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.14	0.08	7.484	A	A
C-AB	0.15	0.01	6.107	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

(Default Analysis Set) - 2029 Base, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2029 Base, PM	2029 Base	PM		ONE HOUR	16:00	17:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	A,B,C		8.07	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description	Arm Type
Church Lane north	A	Church Lane north	Church Lane north	Major
Church Lane south	B	Church Lane south	Church Lane south	Minor
Broad Lane	C	Broad Lane	Broad Lane	Major

Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
Broad Lane	6.00		0.00		2.20	99.00	✓	0.01

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

Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Church Lane south	One lane	3.20										30	80

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	537.183	0.098	0.247	0.156	0.353
1	B-C	687.801	0.105	0.266	-	-
1	C-B	631.295	0.245	0.245	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Church Lane north	ONE HOUR	✓	133.00	100.000
Church Lane south	ONE HOUR	✓	76.00	100.000
Broad Lane	ONE HOUR	✓	256.00	100.000

Turning Proportions

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

		To		
		Church Lane north	**Church Lane south**	**Broad Lane**
From	**Church Lane north**	0.000	72.000	61.000
	Church Lane south	63.000	0.000	13.000
	Broad Lane	241.000	15.000	0.000

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

		To		
		Church Lane north	**Church Lane south**	**Broad Lane**
From	**Church Lane north**	0.00	0.54	0.46
	Church Lane south	0.83	0.00	0.17
	Broad Lane	0.94	0.06	0.00

Vehicle Mix

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

		To		
		Church Lane north	**Church Lane south**	**Broad Lane**
From	**Church Lane north**	1.000	1.000	1.000
	Church Lane south	1.000	1.000	1.000
	Broad Lane	1.000	1.000	1.000

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.0	0.0	0.0
	Church Lane south	0.0	0.0	0.0
	Broad Lane	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-AC	0.17	8.85	0.20	A	69.74	104.61	14.51	8.32	0.16	14.51	8.32
C-AB	0.03	5.16	0.04	A	18.77	28.15	2.88	6.14	0.03	2.88	6.14
C-A	-	-	-	-	216.14	324.21	-	-	-	-	-
A-B	-	-	-	-	66.07	99.10	-	-	-	-	-
A-C	-	-	-	-	55.97	83.96	-	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	57.22	14.30	56.72	0.00	512.04	0.112	0.00	0.12	7.897	A
C-AB	14.54	3.63	14.44	0.00	712.17	0.020	0.00	0.02	5.159	A
C-A	178.19	44.55	178.19	0.00	-	-	-	-	-	-
A-B	54.21	13.55	54.21	0.00	-	-	-	-	-	-
A-C	45.92	11.48	45.92	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	68.32	17.08	68.20	0.00	503.01	0.136	0.12	0.16	8.276	A
C-AB	18.16	4.54	18.13	0.00	726.45	0.025	0.02	0.03	5.082	A
C-A	211.98	53.00	211.98	0.00	-	-	-	-	-	-
A-B	64.73	16.18	64.73	0.00	-	-	-	-	-	-
A-C	54.84	13.71	54.84	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	83.68	20.92	83.49	0.00	490.51	0.171	0.16	0.20	8.841	A
C-AB	23.62	5.90	23.58	0.00	745.46	0.032	0.03	0.04	4.986	A
C-A	258.25	64.56	258.25	0.00	-	-	-	-	-	-
A-B	79.27	19.82	79.27	0.00	-	-	-	-	-	-
A-C	67.16	16.79	67.16	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	83.68	20.92	83.67	0.00	490.50	0.171	0.20	0.20	8.848	A
C-AB	23.62	5.90	23.62	0.00	745.46	0.032	0.04	0.04	4.989	A
C-A	258.25	64.56	258.25	0.00	-	-	-	-	-	-
A-B	79.27	19.82	79.27	0.00	-	-	-	-	-	-
A-C	67.16	16.79	67.16	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	68.32	17.08	68.51	0.00	502.99	0.136	0.20	0.16	8.288	A
C-AB	18.16	4.54	18.20	0.00	726.45	0.025	0.04	0.03	5.084	A
C-A	211.98	53.00	211.98	0.00	-	-	-	-	-	-
A-B	64.73	16.18	64.73	0.00	-	-	-	-	-	-
A-C	54.84	13.71	54.84	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	57.22	14.30	57.34	0.00	512.01	0.112	0.16	0.13	7.919	A
C-AB	14.54	3.63	14.56	0.00	712.17	0.020	0.03	0.02	5.162	A
C-A	178.19	44.55	178.19	0.00	-	-	-	-	-	-
A-B	54.21	13.55	54.21	0.00	-	-	-	-	-	-
A-C	45.92	11.48	45.92	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.80	0.12	7.897	A	A
C-AB	0.36	0.02	5.159	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.28	0.15	8.276	A	A
C-AB	0.46	0.03	5.082	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.97	0.20	8.841	A	A
C-AB	0.61	0.04	4.986	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	3.06	0.20	8.848	A	A
C-AB	0.61	0.04	4.989	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.44	0.16	8.288	A	A
C-AB	0.46	0.03	5.084	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.95	0.13	7.919	A	A
C-AB	0.37	0.02	5.162	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

(Default Analysis Set) - 2021 Base with Dev, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2021 Base with Dev, AM	2021 Base with Dev	AM		ONE HOUR	08:00	09:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	A,B,C		7.98	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description	Arm Type
Church Lane north	A	Church Lane north	Church Lane north	Major
Church Lane south	B	Church Lane south	Church Lane south	Minor
Broad Lane	C	Broad Lane	Broad Lane	Major

Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
Broad Lane	6.00		0.00		2.20	99.00	✓	0.01

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

Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Church Lane south	One lane	3.20										30	80

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	537.183	0.098	0.247	0.156	0.353
1	B-C	687.801	0.105	0.266	-	-
1	C-B	631.295	0.245	0.245	-	-

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

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

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Church Lane north	ONE HOUR	✓	347.00	100.000
Church Lane south	ONE HOUR	✓	44.00	100.000
Broad Lane	ONE HOUR	✓	67.00	100.000

Turning Proportions

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.000	93.000	254.000
	Church Lane south	30.000	0.000	14.000
	Broad Lane	61.000	6.000	0.000

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.00	0.27	0.73
	Church Lane south	0.68	0.00	0.32
	Broad Lane	0.91	0.09	0.00

Vehicle Mix

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	1.000	1.000	1.000
	Church Lane south	1.000	1.000	1.000
	Broad Lane	1.000	1.000	1.000

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.0	0.0	0.0
	Church Lane south	0.0	0.0	0.0
	Broad Lane	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-AC	0.10	8.24	0.11	A	40.38	60.56	7.88	7.81	0.09	7.88	7.81
C-AB	0.01	6.27	0.01	A	6.05	9.08	1.00	6.59	0.01	1.00	6.59
C-A	-	-	-	-	55.43	83.14	-	-	-	-	-
A-B	-	-	-	-	85.34	128.01	-	-	-	-	-
A-C	-	-	-	-	233.07	349.61	-	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	33.13	8.28	32.85	0.00	514.67	0.064	0.00	0.07	7.469	A
C-AB	4.87	1.22	4.83	0.00	596.65	0.008	0.00	0.01	6.082	A
C-A	45.58	11.39	45.58	0.00	-	-	-	-	-	-
A-B	70.02	17.50	70.02	0.00	-	-	-	-	-	-
A-C	191.22	47.81	191.22	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	39.56	9.89	39.49	0.00	502.44	0.079	0.07	0.08	7.775	A
C-AB	5.90	1.48	5.89	0.00	590.18	0.010	0.01	0.01	6.160	A
C-A	54.33	13.58	54.33	0.00	-	-	-	-	-	-
A-B	83.61	20.90	83.61	0.00	-	-	-	-	-	-
A-C	228.34	57.09	228.34	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	48.44	12.11	48.34	0.00	485.53	0.100	0.08	0.11	8.232	A
C-AB	7.40	1.85	7.38	0.00	581.36	0.013	0.01	0.01	6.271	A
C-A	66.37	16.59	66.37	0.00	-	-	-	-	-	-
A-B	102.39	25.60	102.39	0.00	-	-	-	-	-	-
A-C	279.66	69.91	279.66	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	48.44	12.11	48.44	0.00	485.53	0.100	0.11	0.11	8.236	A
C-AB	7.40	1.85	7.40	0.00	581.36	0.013	0.01	0.01	6.271	A
C-A	66.37	16.59	66.37	0.00	-	-	-	-	-	-
A-B	102.39	25.60	102.39	0.00	-	-	-	-	-	-
A-C	279.66	69.91	279.66	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	39.56	9.89	39.65	0.00	502.44	0.079	0.11	0.09	7.781	A
C-AB	5.90	1.48	5.91	0.00	590.18	0.010	0.01	0.01	6.163	A
C-A	54.33	13.58	54.33	0.00	-	-	-	-	-	-
A-B	83.61	20.90	83.61	0.00	-	-	-	-	-	-
A-C	228.34	57.09	228.34	0.00	-	-	-	-	-	-

Main results: (09:15-09:30)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	33.13	8.28	33.19	0.00	514.66	0.064	0.09	0.07	7.480	A
C-AB	4.87	1.22	4.87	0.00	596.65	0.008	0.01	0.01	6.085	A
C-A	45.58	11.39	45.58	0.00	-	-	-	-	-	-
A-B	70.02	17.50	70.02	0.00	-	-	-	-	-	-
A-C	191.22	47.81	191.22	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	0.99	0.07	7.469	A	A
C-AB	0.13	0.01	6.082	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:15-08:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.24	0.08	7.775	A	A
C-AB	0.16	0.01	6.160	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:30-08:45)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.61	0.11	8.232	A	A
C-AB	0.21	0.01	6.271	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:45-09:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.65	0.11	8.236	A	A
C-AB	0.21	0.01	6.271	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (09:00-09:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.32	0.09	7.781	A	A
C-AB	0.16	0.01	6.163	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (09:15-09:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.06	0.07	7.480	A	A
C-AB	0.13	0.01	6.085	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

(Default Analysis Set) - 2021 Base with Dev, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2021 Base with Dev, PM	2021 Base with Dev	PM		ONE HOUR	16:00	17:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	A,B,C		8.01	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description	Arm Type
Church Lane north	A	Church Lane north	Church Lane north	Major
Church Lane south	B	Church Lane south	Church Lane south	Minor
Broad Lane	C	Broad Lane	Broad Lane	Major

Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
Broad Lane	6.00		0.00		2.20	99.00	✓	0.01

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

Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Church Lane south	One lane	3.20										30	80

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	537.183	0.098	0.247	0.156	0.353
1	B-C	687.801	0.105	0.266	-	-
1	C-B	631.295	0.245	0.245	-	-

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

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

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Church Lane north	ONE HOUR	✓	135.00	100.000
Church Lane south	ONE HOUR	✓	71.00	100.000
Broad Lane	ONE HOUR	✓	268.00	100.000

Turning Proportions

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.000	67.000	68.000
	Church Lane south	59.000	0.000	12.000
	Broad Lane	254.000	14.000	0.000

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.00	0.50	0.50
	Church Lane south	0.83	0.00	0.17
	Broad Lane	0.95	0.05	0.00

Vehicle Mix

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	1.000	1.000	1.000
	Church Lane south	1.000	1.000	1.000
	Broad Lane	1.000	1.000	1.000

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.0	0.0	0.0
	Church Lane south	0.0	0.0	0.0
	Broad Lane	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-AC	0.16	8.80	0.19	A	65.15	97.73	13.50	8.29	0.15	13.50	8.29
C-AB	0.03	5.12	0.04	A	17.77	26.66	2.72	6.13	0.03	2.72	6.13
C-A	-	-	-	-	228.15	342.23	-	-	-	-	-
A-B	-	-	-	-	61.48	92.22	-	-	-	-	-
A-C	-	-	-	-	62.40	93.60	-	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	53.45	13.36	52.99	0.00	509.65	0.105	0.00	0.12	7.875	A
C-AB	13.73	3.43	13.64	0.00	716.93	0.019	0.00	0.02	5.118	A
C-A	188.03	47.01	188.03	0.00	-	-	-	-	-	-
A-B	50.44	12.61	50.44	0.00	-	-	-	-	-	-
A-C	51.19	12.80	51.19	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	63.83	15.96	63.71	0.00	500.19	0.128	0.12	0.14	8.246	A
C-AB	17.18	4.30	17.16	0.00	731.96	0.023	0.02	0.03	5.036	A
C-A	223.75	55.94	223.75	0.00	-	-	-	-	-	-
A-B	60.23	15.06	60.23	0.00	-	-	-	-	-	-
A-C	61.13	15.28	61.13	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	78.17	19.54	78.00	0.00	487.11	0.160	0.14	0.19	8.796	A
C-AB	22.40	5.60	22.36	0.00	751.93	0.030	0.03	0.04	4.934	A
C-A	272.67	68.17	272.67	0.00	-	-	-	-	-	-
A-B	73.77	18.44	73.77	0.00	-	-	-	-	-	-
A-C	74.87	18.72	74.87	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	78.17	19.54	78.17	0.00	487.10	0.160	0.19	0.19	8.803	A
C-AB	22.40	5.60	22.40	0.00	751.93	0.030	0.04	0.04	4.936	A
C-A	272.67	68.17	272.67	0.00	-	-	-	-	-	-
A-B	73.77	18.44	73.77	0.00	-	-	-	-	-	-
A-C	74.87	18.72	74.87	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	63.83	15.96	64.00	0.00	500.18	0.128	0.19	0.15	8.258	A
C-AB	17.18	4.30	17.22	0.00	731.96	0.023	0.04	0.03	5.038	A
C-A	223.75	55.94	223.75	0.00	-	-	-	-	-	-
A-B	60.23	15.06	60.23	0.00	-	-	-	-	-	-
A-C	61.13	15.28	61.13	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	53.45	13.36	53.57	0.00	509.61	0.105	0.15	0.12	7.897	A
C-AB	13.73	3.43	13.76	0.00	716.93	0.019	0.03	0.02	5.121	A
C-A	188.03	47.01	188.03	0.00	-	-	-	-	-	-
A-B	50.44	12.61	50.44	0.00	-	-	-	-	-	-
A-C	51.19	12.80	51.19	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.68	0.11	7.875	A	A
C-AB	0.34	0.02	5.118	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.12	0.14	8.246	A	A
C-AB	0.44	0.03	5.036	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.76	0.18	8.796	A	A
C-AB	0.58	0.04	4.934	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.85	0.19	8.803	A	A
C-AB	0.58	0.04	4.936	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.27	0.15	8.258	A	A
C-AB	0.44	0.03	5.038	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.81	0.12	7.897	A	A
C-AB	0.35	0.02	5.121	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

(Default Analysis Set) - 2029 Base with Dev, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2029 Base with Dev, AM	2029 Base with Dev	AM		ONE HOUR	08:00	09:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	A,B,C		8.12	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description	Arm Type
Church Lane north	A	Church Lane north	Church Lane north	Major
Church Lane south	B	Church Lane south	Church Lane south	Minor
Broad Lane	C	Broad Lane	Broad Lane	Major

Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
Broad Lane	6.00		0.00		2.20	99.00	✓	0.01

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

Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Church Lane south	One lane	3.20										30	80

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	537.183	0.098	0.247	0.156	0.353
1	B-C	687.801	0.105	0.266	-	-
1	C-B	631.295	0.245	0.245	-	-

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

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

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Church Lane north	ONE HOUR	✓	370.00	100.000
Church Lane south	ONE HOUR	✓	47.00	100.000
Broad Lane	ONE HOUR	✓	75.00	100.000

Turning Proportions

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.000	100.000	270.000
	Church Lane south	32.000	0.000	15.000
	Broad Lane	68.000	7.000	0.000

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.00	0.27	0.73
	Church Lane south	0.68	0.00	0.32
	Broad Lane	0.91	0.09	0.00

Vehicle Mix

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	1.000	1.000	1.000
	Church Lane south	1.000	1.000	1.000
	Broad Lane	1.000	1.000	1.000

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.0	0.0	0.0
	Church Lane south	0.0	0.0	0.0
	Broad Lane	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-AC	0.11	8.42	0.12	A	43.13	64.69	8.57	7.95	0.10	8.57	7.95
C-AB	0.02	6.30	0.02	A	7.15	10.72	1.19	6.67	0.01	1.19	6.67
C-A	-	-	-	-	61.68	92.51	-	-	-	-	-
A-B	-	-	-	-	91.76	137.64	-	-	-	-	-
A-C	-	-	-	-	247.76	371.64	-	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	35.38	8.85	35.09	0.00	510.32	0.069	0.00	0.07	7.570	A
C-AB	5.73	1.43	5.69	0.00	595.85	0.010	0.00	0.01	6.099	A
C-A	50.74	12.68	50.74	0.00	-	-	-	-	-	-
A-B	75.29	18.82	75.29	0.00	-	-	-	-	-	-
A-C	203.27	50.82	203.27	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	42.25	10.56	42.18	0.00	497.22	0.085	0.07	0.09	7.910	A
C-AB	6.96	1.74	6.95	0.00	589.26	0.012	0.01	0.01	6.181	A
C-A	60.46	15.12	60.46	0.00	-	-	-	-	-	-
A-B	89.90	22.47	89.90	0.00	-	-	-	-	-	-
A-C	242.72	60.68	242.72	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	51.75	12.94	51.64	0.00	479.09	0.108	0.09	0.12	8.420	A
C-AB	8.75	2.19	8.73	0.00	580.28	0.015	0.01	0.02	6.298	A
C-A	73.83	18.46	73.83	0.00	-	-	-	-	-	-
A-B	110.10	27.53	110.10	0.00	-	-	-	-	-	-
A-C	297.28	74.32	297.28	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	51.75	12.94	51.75	0.00	479.09	0.108	0.12	0.12	8.423	A
C-AB	8.75	2.19	8.75	0.00	580.28	0.015	0.02	0.02	6.300	A
C-A	73.83	18.46	73.83	0.00	-	-	-	-	-	-
A-B	110.10	27.53	110.10	0.00	-	-	-	-	-	-
A-C	297.28	74.32	297.28	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	42.25	10.56	42.36	0.00	497.21	0.085	0.12	0.09	7.916	A
C-AB	6.96	1.74	6.98	0.00	589.26	0.012	0.02	0.01	6.184	A
C-A	60.46	15.12	60.46	0.00	-	-	-	-	-	-
A-B	89.90	22.47	89.90	0.00	-	-	-	-	-	-
A-C	242.72	60.68	242.72	0.00	-	-	-	-	-	-

Main results: (09:15-09:30)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	35.38	8.85	35.46	0.00	510.31	0.069	0.09	0.08	7.584	A
C-AB	5.73	1.43	5.74	0.00	595.85	0.010	0.01	0.01	6.100	A
C-A	50.74	12.68	50.74	0.00	-	-	-	-	-	-
A-B	75.29	18.82	75.29	0.00	-	-	-	-	-	-
A-C	203.27	50.82	203.27	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.07	0.07	7.570	A	A
C-AB	0.15	0.01	6.099	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:15-08:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.35	0.09	7.910	A	A
C-AB	0.19	0.01	6.181	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:30-08:45)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.76	0.12	8.420	A	A
C-AB	0.25	0.02	6.298	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:45-09:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.80	0.12	8.423	A	A
C-AB	0.25	0.02	6.300	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (09:00-09:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.44	0.10	7.916	A	A
C-AB	0.19	0.01	6.184	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (09:15-09:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.15	0.08	7.584	A	A
C-AB	0.15	0.01	6.100	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

(Default Analysis Set) - 2029 Base with Dev, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2029 Base with Dev, PM	2029 Base with Dev	PM		ONE HOUR	16:00	17:30	90	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	A,B,C		8.16	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description	Arm Type
Church Lane north	A	Church Lane north	Church Lane north	Major
Church Lane south	B	Church Lane south	Church Lane south	Minor
Broad Lane	C	Broad Lane	Broad Lane	Major

Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
Broad Lane	6.00		0.00		2.20	99.00	✓	0.01

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

Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Church Lane south	One lane	3.20										30	80

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	537.183	0.098	0.247	0.156	0.353
1	B-C	687.801	0.105	0.266	-	-
1	C-B	631.295	0.245	0.245	-	-

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

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

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Church Lane north	ONE HOUR	✓	144.00	100.000
Church Lane south	ONE HOUR	✓	76.00	100.000
Broad Lane	ONE HOUR	✓	284.00	100.000

Turning Proportions

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

		To		
		Church Lane north	**Church Lane south**	**Broad Lane**
From	**Church Lane north**	0.000	72.000	72.000
	Church Lane south	63.000	0.000	13.000
	Broad Lane	269.000	15.000	0.000

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

		To		
		Church Lane north	**Church Lane south**	**Broad Lane**
From	**Church Lane north**	0.00	0.50	0.50
	Church Lane south	0.83	0.00	0.17
	Broad Lane	0.95	0.05	0.00

Vehicle Mix

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	1.000	1.000	1.000
	Church Lane south	1.000	1.000	1.000
	Broad Lane	1.000	1.000	1.000

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.0	0.0	0.0
	Church Lane south	0.0	0.0	0.0
	Broad Lane	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-AC	0.17	9.01	0.21	A	69.74	104.61	14.73	8.45	0.16	14.73	8.45
C-AB	0.03	5.10	0.04	A	19.38	29.06	2.98	6.16	0.03	2.99	6.16
C-A	-	-	-	-	241.23	361.84	-	-	-	-	-
A-B	-	-	-	-	66.07	99.10	-	-	-	-	-
A-C	-	-	-	-	66.07	99.10	-	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	57.22	14.30	56.71	0.00	506.96	0.113	0.00	0.13	7.987	A
C-AB	14.93	3.73	14.83	0.00	721.40	0.021	0.00	0.03	5.095	A
C-A	198.88	49.72	198.88	0.00	-	-	-	-	-	-
A-B	54.21	13.55	54.21	0.00	-	-	-	-	-	-
A-C	54.21	13.55	54.21	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	68.32	17.08	68.20	0.00	496.92	0.137	0.13	0.16	8.394	A
C-AB	18.72	4.68	18.69	0.00	737.11	0.025	0.03	0.03	5.010	A
C-A	236.59	59.15	236.59	0.00	-	-	-	-	-	-
A-B	64.73	16.18	64.73	0.00	-	-	-	-	-	-
A-C	64.73	16.18	64.73	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	83.68	20.92	83.48	0.00	483.03	0.173	0.16	0.21	9.005	A
C-AB	24.48	6.12	24.44	0.00	757.95	0.032	0.03	0.04	4.907	A
C-A	288.21	72.05	288.21	0.00	-	-	-	-	-	-
A-B	79.27	19.82	79.27	0.00	-	-	-	-	-	-
A-C	79.27	19.82	79.27	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	83.68	20.92	83.67	0.00	483.02	0.173	0.21	0.21	9.014	A
C-AB	24.48	6.12	24.48	0.00	757.95	0.032	0.04	0.04	4.910	A
C-A	288.21	72.05	288.21	0.00	-	-	-	-	-	-
A-B	79.27	19.82	79.27	0.00	-	-	-	-	-	-
A-C	79.27	19.82	79.27	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	68.32	17.08	68.51	0.00	496.91	0.138	0.21	0.16	8.408	A
C-AB	18.72	4.68	18.76	0.00	737.11	0.025	0.04	0.03	5.013	A
C-A	236.59	59.15	236.59	0.00	-	-	-	-	-	-
A-B	64.73	16.18	64.73	0.00	-	-	-	-	-	-
A-C	64.73	16.18	64.73	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	57.22	14.30	57.35	0.00	506.93	0.113	0.16	0.13	8.011	A
C-AB	14.93	3.73	14.95	0.00	721.40	0.021	0.03	0.03	5.097	A
C-A	198.88	49.72	198.88	0.00	-	-	-	-	-	-
A-B	54.21	13.55	54.21	0.00	-	-	-	-	-	-
A-C	54.21	13.55	54.21	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.82	0.12	7.987	A	A
C-AB	0.37	0.02	5.095	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.31	0.15	8.394	A	A
C-AB	0.48	0.03	5.010	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	3.03	0.20	9.005	A	A
C-AB	0.64	0.04	4.907	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	3.12	0.21	9.014	A	A
C-AB	0.64	0.04	4.910	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.48	0.17	8.408	A	A
C-AB	0.48	0.03	5.013	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.97	0.13	8.011	A	A
C-AB	0.38	0.03	5.097	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

(Default Analysis Set) - 2021 Base with Dev+Stobbarts, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationsh
2021 Base with Dev+Stobbarts, AM	2021 Base with Dev+Stobbarts	AM		ONE HOUR	08:00	09:30	90	15				✓	

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	A,B,C		8.03	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description	Arm Type
Church Lane north	A	Church Lane north	Church Lane north	Major
Church Lane south	B	Church Lane south	Church Lane south	Minor
Broad Lane	C	Broad Lane	Broad Lane	Major

Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
Broad Lane	6.00		0.00		2.20	99.00	✓	0.01

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

Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Church Lane south	One lane	3.20										30	80

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	537.183	0.098	0.247	0.156	0.353
1	B-C	687.801	0.105	0.266	-	-
1	C-B	631.295	0.245	0.245	-	-

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

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

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Church Lane north	ONE HOUR	✓	355.00	100.000
Church Lane south	ONE HOUR	✓	44.00	100.000
Broad Lane	ONE HOUR	✓	73.00	100.000

Turning Proportions

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.000	93.000	262.000
	Church Lane south	30.000	0.000	14.000
	Broad Lane	67.000	6.000	0.000

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.00	0.26	0.74
	Church Lane south	0.68	0.00	0.32
	Broad Lane	0.92	0.08	0.00

Vehicle Mix

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	1.000	1.000	1.000
	Church Lane south	1.000	1.000	1.000
	Broad Lane	1.000	1.000	1.000

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.0	0.0	0.0
	Church Lane south	0.0	0.0	0.0
	Broad Lane	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-AC	0.10	8.29	0.11	A	40.38	60.56	7.93	7.85	0.09	7.93	7.85
C-AB	0.01	6.25	0.01	A	6.11	9.17	1.01	6.61	0.01	1.01	6.61
C-A	-	-	-	-	60.88	91.31	-	-	-	-	-
A-B	-	-	-	-	85.34	128.01	-	-	-	-	-
A-C	-	-	-	-	240.42	360.62	-	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	33.13	8.28	32.85	0.00	512.57	0.065	0.00	0.07	7.501	A
C-AB	4.90	1.23	4.87	0.00	598.02	0.008	0.00	0.01	6.068	A
C-A	50.06	12.51	50.06	0.00	-	-	-	-	-	-
A-B	70.02	17.50	70.02	0.00	-	-	-	-	-	-
A-C	197.25	49.31	197.25	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	39.56	9.89	39.49	0.00	499.93	0.079	0.07	0.09	7.817	A
C-AB	5.95	1.49	5.95	0.00	591.83	0.010	0.01	0.01	6.143	A
C-A	59.67	14.92	59.67	0.00	-	-	-	-	-	-
A-B	83.61	20.90	83.61	0.00	-	-	-	-	-	-
A-C	235.53	58.88	235.53	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	48.44	12.11	48.34	0.00	482.45	0.100	0.09	0.11	8.291	A
C-AB	7.48	1.87	7.46	0.00	583.41	0.013	0.01	0.01	6.250	A
C-A	72.90	18.22	72.90	0.00	-	-	-	-	-	-
A-B	102.39	25.60	102.39	0.00	-	-	-	-	-	-
A-C	288.47	72.12	288.47	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	48.44	12.11	48.44	0.00	482.45	0.100	0.11	0.11	8.294	A
C-AB	7.48	1.87	7.48	0.00	583.41	0.013	0.01	0.01	6.250	A
C-A	72.90	18.22	72.90	0.00	-	-	-	-	-	-
A-B	102.39	25.60	102.39	0.00	-	-	-	-	-	-
A-C	288.47	72.12	288.47	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	39.56	9.89	39.65	0.00	499.93	0.079	0.11	0.09	7.822	A
C-AB	5.95	1.49	5.97	0.00	591.83	0.010	0.01	0.01	6.146	A
C-A	59.67	14.92	59.67	0.00	-	-	-	-	-	-
A-B	83.61	20.90	83.61	0.00	-	-	-	-	-	-
A-C	235.53	58.88	235.53	0.00	-	-	-	-	-	-

Main results: (09:15-09:30)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	33.13	8.28	33.19	0.00	512.55	0.065	0.09	0.07	7.513	A
C-AB	4.90	1.23	4.91	0.00	598.02	0.008	0.01	0.01	6.069	A
C-A	50.06	12.51	50.06	0.00	-	-	-	-	-	-
A-B	70.02	17.50	70.02	0.00	-	-	-	-	-	-
A-C	197.25	49.31	197.25	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	0.99	0.07	7.501	A	A
C-AB	0.13	0.01	6.068	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:15-08:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.25	0.08	7.817	A	A
C-AB	0.16	0.01	6.143	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:30-08:45)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.62	0.11	8.291	A	A
C-AB	0.21	0.01	6.250	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:45-09:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.66	0.11	8.294	A	A
C-AB	0.21	0.01	6.250	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (09:00-09:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.33	0.09	7.822	A	A
C-AB	0.16	0.01	6.146	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (09:15-09:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.07	0.07	7.513	A	A
C-AB	0.13	0.01	6.069	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

(Default Analysis Set) - 2021 Base with Dev+Stobbarts, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationsh
2021 Base with Dev+Stobbarts, PM	2021 Base with Dev+Stobbarts	PM		ONE HOUR	16:00	17:30	90	15				✓	

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	A,B,C		8.03	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description	Arm Type
Church Lane north	A	Church Lane north	Church Lane north	Major
Church Lane south	B	Church Lane south	Church Lane south	Minor
Broad Lane	C	Broad Lane	Broad Lane	Major

Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
Broad Lane	6.00		0.00		2.20	99.00	✓	0.01

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

Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Church Lane south	One lane	3.20										30	80

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	537.183	0.098	0.247	0.156	0.353
1	B-C	687.801	0.105	0.266	-	-
1	C-B	631.295	0.245	0.245	-	-

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

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

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Church Lane north	ONE HOUR	✓	137.00	100.000
Church Lane south	ONE HOUR	✓	71.00	100.000
Broad Lane	ONE HOUR	✓	275.00	100.000

Turning Proportions

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.000	67.000	70.000
	Church Lane south	59.000	0.000	12.000
	Broad Lane	261.000	14.000	0.000

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.00	0.49	0.51
	Church Lane south	0.83	0.00	0.17
	Broad Lane	0.95	0.05	0.00

Vehicle Mix

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	1.000	1.000	1.000
	Church Lane south	1.000	1.000	1.000
	Broad Lane	1.000	1.000	1.000

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.0	0.0	0.0
	Church Lane south	0.0	0.0	0.0
	Broad Lane	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-AC	0.16	8.84	0.19	A	65.15	97.73	13.54	8.32	0.15	13.55	8.32
C-AB	0.03	5.10	0.04	A	17.91	26.87	2.75	6.13	0.03	2.75	6.14
C-A	-	-	-	-	234.43	351.65	-	-	-	-	-
A-B	-	-	-	-	61.48	92.22	-	-	-	-	-
A-C	-	-	-	-	64.23	96.35	-	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	53.45	13.36	52.99	0.00	508.52	0.105	0.00	0.12	7.895	A
C-AB	13.82	3.46	13.73	0.00	719.35	0.019	0.00	0.02	5.102	A
C-A	193.21	48.30	193.21	0.00	-	-	-	-	-	-
A-B	50.44	12.61	50.44	0.00	-	-	-	-	-	-
A-C	52.70	13.17	52.70	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	63.83	15.96	63.71	0.00	498.84	0.128	0.12	0.15	8.272	A
C-AB	17.31	4.33	17.29	0.00	734.76	0.024	0.02	0.03	5.017	A
C-A	229.91	57.48	229.91	0.00	-	-	-	-	-	-
A-B	60.23	15.06	60.23	0.00	-	-	-	-	-	-
A-C	62.93	15.73	62.93	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	78.17	19.54	77.99	0.00	485.44	0.161	0.15	0.19	8.832	A
C-AB	22.60	5.65	22.56	0.00	755.22	0.030	0.03	0.04	4.913	A
C-A	280.18	70.05	280.18	0.00	-	-	-	-	-	-
A-B	73.77	18.44	73.77	0.00	-	-	-	-	-	-
A-C	77.07	19.27	77.07	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	78.17	19.54	78.17	0.00	485.44	0.161	0.19	0.19	8.839	A
C-AB	22.60	5.65	22.60	0.00	755.22	0.030	0.04	0.04	4.913	A
C-A	280.18	70.05	280.18	0.00	-	-	-	-	-	-
A-B	73.77	18.44	73.77	0.00	-	-	-	-	-	-
A-C	77.07	19.27	77.07	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	63.83	15.96	64.00	0.00	498.82	0.128	0.19	0.15	8.283	A
C-AB	17.31	4.33	17.35	0.00	734.76	0.024	0.04	0.03	5.018	A
C-A	229.91	57.48	229.91	0.00	-	-	-	-	-	-
A-B	60.23	15.06	60.23	0.00	-	-	-	-	-	-
A-C	62.93	15.73	62.93	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	53.45	13.36	53.57	0.00	508.48	0.105	0.15	0.12	7.917	A
C-AB	13.82	3.46	13.85	0.00	719.35	0.019	0.03	0.02	5.102	A
C-A	193.21	48.30	193.21	0.00	-	-	-	-	-	-
A-B	50.44	12.61	50.44	0.00	-	-	-	-	-	-
A-C	52.70	13.17	52.70	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.68	0.11	7.895	A	A
C-AB	0.35	0.02	5.102	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.13	0.14	8.272	A	A
C-AB	0.44	0.03	5.017	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.78	0.19	8.832	A	A
C-AB	0.58	0.04	4.913	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.86	0.19	8.839	A	A
C-AB	0.59	0.04	4.913	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.28	0.15	8.283	A	A
C-AB	0.44	0.03	5.018	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.82	0.12	7.917	A	A
C-AB	0.35	0.02	5.102	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

(Default Analysis Set) - 2029 Base with Dev+Stobbarts, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationsh
2029 Base with Dev+Stobbarts, AM	2029 Base with Dev+Stobbarts	AM		ONE HOUR	08:00	09:30	90	15				✓	

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	A,B,C		8.16	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description	Arm Type
Church Lane north	A	Church Lane north	Church Lane north	Major
Church Lane south	B	Church Lane south	Church Lane south	Minor
Broad Lane	C	Broad Lane	Broad Lane	Major

Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
Broad Lane	6.00		0.00		2.20	99.00	✓	0.01

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

Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Church Lane south	One lane	3.20										30	80

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	537.183	0.098	0.247	0.156	0.353
1	B-C	687.801	0.105	0.266	-	-
1	C-B	631.295	0.245	0.245	-	-

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

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

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Church Lane north	ONE HOUR	✓	377.00	100.000
Church Lane south	ONE HOUR	✓	47.00	100.000
Broad Lane	ONE HOUR	✓	78.00	100.000

Turning Proportions

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.000	100.000	277.000
	Church Lane south	32.000	0.000	15.000
	Broad Lane	71.000	7.000	0.000

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

		To		
From		Church Lane north	Church Lane south	Broad Lane
	Church Lane north	0.00	0.27	0.73
	Church Lane south	0.68	0.00	0.32
	Broad Lane	0.91	0.09	0.00

Vehicle Mix

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	1.000	1.000	1.000
	Church Lane south	1.000	1.000	1.000
	Broad Lane	1.000	1.000	1.000

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.0	0.0	0.0
	Church Lane south	0.0	0.0	0.0
	Broad Lane	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-AC	0.11	8.47	0.12	A	43.13	64.69	8.61	7.99	0.10	8.61	7.99
C-AB	0.02	6.30	0.02	A	7.18	10.77	1.20	6.69	0.01	1.20	6.69
C-A	-	-	-	-	64.39	96.59	-	-	-	-	-
A-B	-	-	-	-	91.76	137.64	-	-	-	-	-
A-C	-	-	-	-	254.18	381.27	-	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	35.38	8.85	35.09	0.00	508.69	0.070	0.00	0.07	7.596	A
C-AB	5.75	1.44	5.71	0.00	596.00	0.010	0.00	0.01	6.098	A
C-A	52.97	13.24	52.97	0.00	-	-	-	-	-	-
A-B	75.29	18.82	75.29	0.00	-	-	-	-	-	-
A-C	208.54	52.14	208.54	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	42.25	10.56	42.18	0.00	495.27	0.085	0.07	0.09	7.944	A
C-AB	6.99	1.75	6.98	0.00	589.45	0.012	0.01	0.01	6.180	A
C-A	63.13	15.78	63.13	0.00	-	-	-	-	-	-
A-B	89.90	22.47	89.90	0.00	-	-	-	-	-	-
A-C	249.02	62.25	249.02	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	51.75	12.94	51.64	0.00	476.70	0.109	0.09	0.12	8.467	A
C-AB	8.80	2.20	8.78	0.00	580.53	0.015	0.01	0.02	6.295	A
C-A	77.08	19.27	77.08	0.00	-	-	-	-	-	-
A-B	110.10	27.53	110.10	0.00	-	-	-	-	-	-
A-C	304.98	76.25	304.98	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	51.75	12.94	51.75	0.00	476.70	0.109	0.12	0.12	8.471	A
C-AB	8.80	2.20	8.80	0.00	580.53	0.015	0.02	0.02	6.296	A
C-A	77.08	19.27	77.08	0.00	-	-	-	-	-	-
A-B	110.10	27.53	110.10	0.00	-	-	-	-	-	-
A-C	304.98	76.25	304.98	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	42.25	10.56	42.36	0.00	495.27	0.085	0.12	0.09	7.951	A
C-AB	6.99	1.75	7.01	0.00	589.45	0.012	0.02	0.01	6.180	A
C-A	63.13	15.78	63.13	0.00	-	-	-	-	-	-
A-B	89.90	22.47	89.90	0.00	-	-	-	-	-	-
A-C	249.02	62.25	249.02	0.00	-	-	-	-	-	-

Main results: (09:15-09:30)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	35.38	8.85	35.46	0.00	508.68	0.070	0.09	0.08	7.610	A
C-AB	5.75	1.44	5.76	0.00	596.00	0.010	0.01	0.01	6.098	A
C-A	52.97	13.24	52.97	0.00	-	-	-	-	-	-
A-B	75.29	18.82	75.29	0.00	-	-	-	-	-	-
A-C	208.54	52.14	208.54	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.07	0.07	7.596	A	A
C-AB	0.15	0.01	6.098	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:15-08:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.36	0.09	7.944	A	A
C-AB	0.19	0.01	6.180	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:30-08:45)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.77	0.12	8.467	A	A
C-AB	0.25	0.02	6.295	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (08:45-09:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.81	0.12	8.471	A	A
C-AB	0.25	0.02	6.296	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (09:00-09:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.45	0.10	7.951	A	A
C-AB	0.19	0.01	6.180	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Queueing Delay results: (09:15-09:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.16	0.08	7.610	A	A
C-AB	0.16	0.01	6.098	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

(Default Analysis Set) - 2029 Base with Dev+Stobbarts, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

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

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationsh
2029 Base with Dev+Stobbarts, PM	2029 Base with Dev+Stobbarts	PM		ONE HOUR	16:00	17:30	90	15				✓	

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	A,B,C		8.18	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description	Arm Type
Church Lane north	A	Church Lane north	Church Lane north	Major
Church Lane south	B	Church Lane south	Church Lane south	Minor
Broad Lane	C	Broad Lane	Broad Lane	Major

Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
Broad Lane	6.00		0.00		2.20	99.00	✓	0.01

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

Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Church Lane south	One lane	3.20										30	80

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	537.183	0.098	0.247	0.156	0.353
1	B-C	687.801	0.105	0.266	-	-
1	C-B	631.295	0.245	0.245	-	-

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

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

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Church Lane north	ONE HOUR	✓	146.00	100.000
Church Lane south	ONE HOUR	✓	76.00	100.000
Broad Lane	ONE HOUR	✓	291.00	100.000

Turning Proportions

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.000	72.000	74.000
	Church Lane south	63.000	0.000	13.000
	Broad Lane	276.000	15.000	0.000

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.00	0.49	0.51
	Church Lane south	0.83	0.00	0.17
	Broad Lane	0.95	0.05	0.00

Vehicle Mix

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	1.000	1.000	1.000
	Church Lane south	1.000	1.000	1.000
	Broad Lane	1.000	1.000	1.000

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

		To		
		Church Lane north	Church Lane south	Broad Lane
From	Church Lane north	0.0	0.0	0.0
	Church Lane south	0.0	0.0	0.0
	Broad Lane	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-AC	0.17	9.05	0.21	A	69.74	104.61	14.78	8.48	0.16	14.78	8.48
C-AB	0.03	5.08	0.04	A	19.53	29.29	3.01	6.17	0.03	3.01	6.17
C-A	-	-	-	-	247.50	371.25	-	-	-	-	-
A-B	-	-	-	-	66.07	99.10	-	-	-	-	-
A-C	-	-	-	-	67.90	101.86	-	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	57.22	14.30	56.71	0.00	505.83	0.113	0.00	0.13	8.007	A
C-AB	15.02	3.76	14.92	0.00	723.80	0.021	0.00	0.03	5.078	A
C-A	204.06	51.01	204.06	0.00	-	-	-	-	-	-
A-B	54.21	13.55	54.21	0.00	-	-	-	-	-	-
A-C	55.71	13.93	55.71	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	68.32	17.08	68.19	0.00	495.57	0.138	0.13	0.16	8.420	A
C-AB	18.86	4.72	18.83	0.00	739.88	0.025	0.03	0.03	4.992	A
C-A	242.74	60.69	242.74	0.00	-	-	-	-	-	-
A-B	64.73	16.18	64.73	0.00	-	-	-	-	-	-
A-C	66.52	16.63	66.52	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	83.68	20.92	83.48	0.00	481.36	0.174	0.16	0.21	9.043	A
C-AB	24.70	6.17	24.65	0.00	761.19	0.032	0.03	0.04	4.887	A
C-A	295.70	73.93	295.70	0.00	-	-	-	-	-	-
A-B	79.27	19.82	79.27	0.00	-	-	-	-	-	-
A-C	81.48	20.37	81.48	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	83.68	20.92	83.67	0.00	481.35	0.174	0.21	0.21	9.052	A
C-AB	24.70	6.17	24.69	0.00	761.19	0.032	0.04	0.04	4.888	A
C-A	295.70	73.93	295.70	0.00	-	-	-	-	-	-
A-B	79.27	19.82	79.27	0.00	-	-	-	-	-	-
A-C	81.48	20.37	81.48	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	68.32	17.08	68.51	0.00	495.55	0.138	0.21	0.16	8.433	A
C-AB	18.86	4.72	18.90	0.00	739.88	0.025	0.04	0.03	4.995	A
C-A	242.74	60.69	242.74	0.00	-	-	-	-	-	-
A-B	64.73	16.18	64.73	0.00	-	-	-	-	-	-
A-C	66.52	16.63	66.52	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	57.22	14.30	57.35	0.00	505.80	0.113	0.16	0.13	8.031	A
C-AB	15.02	3.76	15.05	0.00	723.80	0.021	0.03	0.03	5.079	A
C-A	204.06	51.01	204.06	0.00	-	-	-	-	-	-
A-B	54.21	13.55	54.21	0.00	-	-	-	-	-	-
A-C	55.71	13.93	55.71	0.00	-	-	-	-	-	-

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.83	0.12	8.007	A	A
C-AB	0.38	0.03	5.078	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.32	0.15	8.420	A	A
C-AB	0.48	0.03	4.992	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	3.04	0.20	9.043	A	A
C-AB	0.64	0.04	4.887	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	3.13	0.21	9.052	A	A
C-AB	0.64	0.04	4.888	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.49	0.17	8.433	A	A
C-AB	0.48	0.03	4.995	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.98	0.13	8.031	A	A
C-AB	0.38	0.03	5.079	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

Appendix M

Junctions 8

ARCADY 8 - Roundabout Module

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

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

Filename: Proposed Site Access-Eastern.arc8
Path: \\mafs02\Projects\064001 - 065000\064076 - Warrington Interchange TPMA\I -Calculations\Models\ARCADY
Report generation date: 30/01/2019 14:19:32

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2021 Base with Dev+Stobbart							
Grappenhall Lane east	1.16	3.72	0.54	A	1.17	3.73	0.54	A
Site Access	0.13	3.05	0.12	A	0.28	3.50	0.22	A
Grappenhall Lane west	1.17	3.84	0.54	A	1.46	4.54	0.60	A
	A1 - 2021 with Development							
Grappenhall Lane east	0.80	3.10	0.45	A	1.05	3.52	0.51	A
Site Access	0.12	2.74	0.11	A	0.27	3.37	0.21	A
Grappenhall Lane west	1.00	3.54	0.50	A	1.14	3.94	0.53	A
	A1 - 2029 Base with Dev+Stobbart							
Grappenhall Lane east	1.26	3.89	0.56	A	1.27	3.90	0.56	A
Site Access	0.14	3.13	0.12	A	0.29	3.60	0.22	A
Grappenhall Lane west	1.29	4.06	0.57	A	1.64	4.87	0.62	A
	A1 - 2029 with Development							
Grappenhall Lane east	1.05	3.53	0.51	A	1.14	3.67	0.53	A
Site Access	0.13	2.96	0.11	A	0.28	3.46	0.22	A
Grappenhall Lane west	1.11	3.73	0.53	A	1.27	4.18	0.56	A

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

"D1 - 2021 with Development, AM " model duration: 08:00 - 09:30
"D2 - 2021 with Development, PM" model duration: 16:00 - 17:30
"D3 - 2029 with Development, AM" model duration: 08:00 - 09:30
"D4 - 2029 with Development, PM" model duration: 16:00 - 17:30
"D5 - 2021 Base with Dev+Stobbart, AM" model duration: 08:00 - 09:30
"D6 - 2021 Base with Dev+Stobbart, PM" model duration: 16:00 - 17:30
"D7 - 2029 Base with Dev+Stobbart, AM" model duration: 08:00 - 09:30
"D8 - 2029 Base with Dev+Stobbart, PM" model duration: 16:00 - 17:30

Run using Junctions 8.0.6.541 at 30/01/2019 14:19:29

File summary

Title	(untitled)
Location	
Site Number	
Date	16/10/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	frempong_f
Description	

Analysis Options

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

Units

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

(Default Analysis Set) - 2021 with Development, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	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
2021 with Development, AM	2021 with Development	AM		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Site Access	Roundabout	1,2,3			3.28	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description
Grappenhall Lane east	1	Grappenhall Lane east	Grappenhall Lane east
Site Access	2	Site Access	Site Access
Grappenhall Lane west	3	Grappenhall Lane west	Grappenhall Lane west

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
Grappenhall Lane east	0.00	99999.00
Site Access	0.00	99999.00
Grappenhall Lane west	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Grappenhall Lane east	4.00	9.00	18.00	35.00	45.00	20.00	
Site Access	4.00	8.80	15.00	35.00	45.00	30.00	
Grappenhall Lane west	4.50	8.80	15.00	35.00	45.00	22.50	

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)
Grappenhall Lane east		(calculated)	(calculated)	0.728	2126.156
Site Access		(calculated)	(calculated)	0.687	1971.036
Grappenhall Lane west		(calculated)	(calculated)	0.727	2139.024

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 (%)
Grappenhall Lane east	ONE HOUR	✓	849.00	100.000
Site Access	ONE HOUR	✓	143.00	100.000
Grappenhall Lane west	ONE HOUR	✓	928.00	100.000

Turning Proportions

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

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.000	187.000	662.000
	Site Access	125.000	0.000	18.000
	Grappenhall Lane west	890.000	38.000	0.000

Turning Proportions (PCU) - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.00	0.22	0.78
	Site Access	0.87	0.00	0.13
	Grappenhall Lane west	0.96	0.04	0.00

Vehicle Mix

Average PCU Per Vehicle - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	1.000	1.000	1.000
	Site Access	1.000	1.000	1.000
	Grappenhall Lane west	1.000	1.000	1.000

Heavy Vehicle Percentages - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.0	0.0	0.0
	Site Access	0.0	0.0	0.0
	Grappenhall Lane west	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
Grappenhall Lane east	0.45	3.10	0.80	A
Site Access	0.11	2.74	0.12	A
Grappenhall Lane west	0.50	3.54	1.00	A

Main Results for each time segment

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
Grappenhall Lane east	639.17	637.43	28.53	0.00	2105.40	0.304	0.43	2.449	A
Site Access	107.66	107.38	497.03	0.00	1629.60	0.066	0.07	2.364	A
Grappenhall Lane west	698.65	696.62	93.86	0.00	2070.75	0.337	0.51	2.617	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
Grappenhall Lane east	763.23	762.70	34.13	0.00	2101.32	0.363	0.57	2.687	A
Site Access	128.55	128.48	594.71	0.00	1562.51	0.082	0.09	2.510	A
Grappenhall Lane west	834.25	833.57	112.31	0.00	2057.33	0.406	0.68	2.940	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
Grappenhall Lane east	934.77	933.84	41.79	0.00	2095.76	0.446	0.80	3.095	A
Site Access	157.45	157.33	728.15	0.00	1470.84	0.107	0.12	2.740	A
Grappenhall Lane west	1021.75	1020.47	137.52	0.00	2038.98	0.501	1.00	3.529	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
Grappenhall Lane east	934.77	934.76	41.84	0.00	2095.72	0.446	0.80	3.100	A
Site Access	157.45	157.44	728.87	0.00	1470.35	0.107	0.12	2.741	A
Grappenhall Lane west	1021.75	1021.73	137.63	0.00	2038.91	0.501	1.00	3.538	A

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

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
Grappenhall Lane east	763.23	764.15	34.21	0.00	2101.27	0.363	0.57	2.695	A
Site Access	128.55	128.67	595.84	0.00	1561.73	0.082	0.09	2.513	A
Grappenhall Lane west	834.25	835.51	112.48	0.00	2057.20	0.406	0.69	2.951	A

Main results: (09:15-09:30)

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
Grappenhall Lane east	639.17	639.71	28.64	0.00	2105.32	0.304	0.44	2.456	A
Site Access	107.66	107.73	498.81	0.00	1628.38	0.066	0.07	2.368	A
Grappenhall Lane west	698.65	699.34	94.17	0.00	2070.52	0.337	0.51	2.626	A

(Default Analysis Set) - 2021 with Development, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	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
2021 with Development, PM	2021 with Development	PM		ONE HOUR	16:00	17:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Site Access	Roundabout	1,2,3			3.69	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description
Grappenhall Lane east	1	Grappenhall Lane east	Grappenhall Lane east
Site Access	2	Site Access	Site Access
Grappenhall Lane west	3	Grappenhall Lane west	Grappenhall Lane west

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
Grappenhall Lane east	0.00	99999.00
Site Access	0.00	99999.00
Grappenhall Lane west	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Grappenhall Lane east	4.00	9.00	18.00	35.00	45.00	20.00	
Site Access	4.00	8.80	15.00	35.00	45.00	30.00	
Grappenhall Lane west	4.50	8.80	15.00	35.00	45.00	22.50	

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)
Grappenhall Lane east		(calculated)	(calculated)	0.728	2126.156
Site Access		(calculated)	(calculated)	0.687	1971.036
Grappenhall Lane west		(calculated)	(calculated)	0.727	2139.024

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 (%)
Grappenhall Lane east	ONE HOUR	✓	975.00	100.000
Site Access	ONE HOUR	✓	262.00	100.000
Grappenhall Lane west	ONE HOUR	✓	952.00	100.000

Turning Proportions

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

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.000	163.000	812.000
	Site Access	222.000	0.000	40.000
	Grappenhall Lane west	914.000	38.000	0.000

Turning Proportions (PCU) - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.00	0.17	0.83
	Site Access	0.85	0.00	0.15
	Grappenhall Lane west	0.96	0.04	0.00

Vehicle Mix

Average PCU Per Vehicle - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	1.000	1.000	1.000
	Site Access	1.000	1.000	1.000
	Grappenhall Lane west	1.000	1.000	1.000

Heavy Vehicle Percentages - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.0	0.0	0.0
	Site Access	0.0	0.0	0.0
	Grappenhall Lane west	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
Grappenhall Lane east	0.51	3.52	1.05	A
Site Access	0.21	3.37	0.27	A
Grappenhall Lane west	0.53	3.94	1.14	A

Main Results for each time segment

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

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
Grappenhall Lane east	734.03	731.90	28.52	0.00	2105.41	0.349	0.53	2.618	A
Site Access	197.25	196.67	609.54	0.00	1552.32	0.127	0.15	2.654	A
Grappenhall Lane west	716.72	714.52	166.64	0.00	2017.80	0.355	0.55	2.757	A

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

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
Grappenhall Lane east	876.51	875.79	34.13	0.00	2101.33	0.417	0.71	2.936	A
Site Access	235.53	235.35	729.38	0.00	1470.00	0.160	0.19	2.915	A
Grappenhall Lane west	855.83	855.03	199.42	0.00	1993.96	0.429	0.75	3.159	A

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
Grappenhall Lane east	1073.50	1072.17	41.78	0.00	2095.76	0.512	1.04	3.512	A
Site Access	288.47	288.15	892.93	0.00	1357.65	0.212	0.27	3.366	A
Grappenhall Lane west	1048.17	1046.61	244.16	0.00	1961.41	0.534	1.14	3.929	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
Grappenhall Lane east	1073.50	1073.48	41.84	0.00	2095.72	0.512	1.05	3.520	A
Site Access	288.47	288.46	894.02	0.00	1356.90	0.213	0.27	3.368	A
Grappenhall Lane west	1048.17	1048.15	244.42	0.00	1961.22	0.534	1.14	3.942	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
Grappenhall Lane east	876.51	877.81	34.22	0.00	2101.26	0.417	0.72	2.945	A
Site Access	235.53	235.84	731.06	0.00	1468.84	0.160	0.19	2.919	A
Grappenhall Lane west	855.83	857.37	199.84	0.00	1993.65	0.429	0.76	3.174	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
Grappenhall Lane east	734.03	734.76	28.64	0.00	2105.32	0.349	0.54	2.627	A
Site Access	197.25	197.43	611.92	0.00	1550.68	0.127	0.15	2.662	A
Grappenhall Lane west	716.72	717.53	167.29	0.00	2017.33	0.355	0.55	2.772	A

(Default Analysis Set) - 2029 with Development, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	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
2029 with Development, AM	2029 with Development	AM		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Site Access	Roundabout	1,2,3			3.58	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description
Grappenhall Lane east	1	Grappenhall Lane east	Grappenhall Lane east
Site Access	2	Site Access	Site Access
Grappenhall Lane west	3	Grappenhall Lane west	Grappenhall Lane west

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
Grappenhall Lane east	0.00	99999.00
Site Access	0.00	99999.00
Grappenhall Lane west	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Grappenhall Lane east	4.00	9.00	18.00	35.00	45.00	20.00	
Site Access	4.00	8.80	15.00	35.00	45.00	30.00	
Grappenhall Lane west	4.50	8.80	15.00	35.00	45.00	22.50	

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)
Grappenhall Lane east		(calculated)	(calculated)	0.728	2126.156
Site Access		(calculated)	(calculated)	0.687	1971.036
Grappenhall Lane west		(calculated)	(calculated)	0.727	2139.024

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 (%)
Grappenhall Lane east	ONE HOUR	✓	977.00	100.000
Site Access	ONE HOUR	✓	143.00	100.000
Grappenhall Lane west	ONE HOUR	✓	975.00	100.000

Turning Proportions

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

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.000	187.000	790.000
	Site Access	125.000	0.000	18.000
	Grappenhall Lane west	937.000	38.000	0.000

Turning Proportions (PCU) - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.00	0.19	0.81
	Site Access	0.87	0.00	0.13
	Grappenhall Lane west	0.96	0.04	0.00

Vehicle Mix

Average PCU Per Vehicle - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	1.000	1.000	1.000
	Site Access	1.000	1.000	1.000
	Grappenhall Lane west	1.000	1.000	1.000

Heavy Vehicle Percentages - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.0	0.0	0.0
	Site Access	0.0	0.0	0.0
	Grappenhall Lane west	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
Grappenhall Lane east	0.51	3.53	1.05	A
Site Access	0.11	2.96	0.13	A
Grappenhall Lane west	0.53	3.73	1.11	A

Main Results for each time segment

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
Grappenhall Lane east	735.54	733.40	28.52	0.00	2105.40	0.349	0.53	2.621	A
Site Access	107.66	107.36	593.02	0.00	1563.66	0.069	0.07	2.472	A
Grappenhall Lane west	734.03	731.84	93.85	0.00	2070.75	0.354	0.55	2.684	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
Grappenhall Lane east	878.30	877.58	34.13	0.00	2101.33	0.418	0.71	2.940	A
Site Access	128.55	128.47	709.61	0.00	1483.58	0.087	0.09	2.656	A
Grappenhall Lane west	876.51	875.74	112.30	0.00	2057.33	0.426	0.74	3.045	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
Grappenhall Lane east	1075.70	1074.37	41.78	0.00	2095.76	0.513	1.05	3.520	A
Site Access	157.45	157.31	868.73	0.00	1374.27	0.115	0.13	2.957	A
Grappenhall Lane west	1073.50	1072.04	137.51	0.00	2038.99	0.526	1.10	3.718	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
Grappenhall Lane east	1075.70	1075.68	41.84	0.00	2095.72	0.513	1.05	3.528	A
Site Access	157.45	157.44	869.79	0.00	1373.54	0.115	0.13	2.959	A
Grappenhall Lane west	1073.50	1073.48	137.63	0.00	2038.91	0.527	1.11	3.728	A

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

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
Grappenhall Lane east	878.30	879.62	34.22	0.00	2101.26	0.418	0.72	2.951	A
Site Access	128.55	128.69	711.26	0.00	1482.45	0.087	0.10	2.661	A
Grappenhall Lane west	876.51	877.95	112.49	0.00	2057.19	0.426	0.75	3.058	A

Main results: (09:15-09:30)

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
Grappenhall Lane east	735.54	736.27	28.64	0.00	2105.32	0.349	0.54	2.632	A
Site Access	107.66	107.74	595.34	0.00	1562.07	0.069	0.07	2.476	A
Grappenhall Lane west	734.03	734.81	94.18	0.00	2070.51	0.355	0.55	2.696	A

(Default Analysis Set) - 2029 with Development, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	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
2029 with Development, PM	2029 with Development	PM		ONE HOUR	16:00	17:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Site Access	Roundabout	1,2,3			3.87	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description
Grappenhall Lane east	1	Grappenhall Lane east	Grappenhall Lane east
Site Access	2	Site Access	Site Access
Grappenhall Lane west	3	Grappenhall Lane west	Grappenhall Lane west

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
Grappenhall Lane east	0.00	99999.00
Site Access	0.00	99999.00
Grappenhall Lane west	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Grappenhall Lane east	4.00	9.00	18.00	35.00	45.00	20.00	
Site Access	4.00	8.80	15.00	35.00	45.00	30.00	
Grappenhall Lane west	4.50	8.80	15.00	35.00	45.00	22.50	

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)
Grappenhall Lane east		(calculated)	(calculated)	0.728	2126.156
Site Access		(calculated)	(calculated)	0.687	1971.036
Grappenhall Lane west		(calculated)	(calculated)	0.727	2139.024

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 (%)
Grappenhall Lane east	ONE HOUR	✓	1014.00	100.000
Site Access	ONE HOUR	✓	262.00	100.000
Grappenhall Lane west	ONE HOUR	✓	1000.00	100.000

Turning Proportions

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

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.000	163.000	851.000
	Site Access	222.000	0.000	40.000
	Grappenhall Lane west	962.000	38.000	0.000

Turning Proportions (PCU) - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.00	0.16	0.84
	Site Access	0.85	0.00	0.15
	Grappenhall Lane west	0.96	0.04	0.00

Vehicle Mix

Average PCU Per Vehicle - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	1.000	1.000	1.000
	Site Access	1.000	1.000	1.000
	Grappenhall Lane west	1.000	1.000	1.000

Heavy Vehicle Percentages - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.0	0.0	0.0
	Site Access	0.0	0.0	0.0
	Grappenhall Lane west	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
Grappenhall Lane east	0.53	3.67	1.14	A
Site Access	0.22	3.46	0.28	A
Grappenhall Lane west	0.56	4.18	1.27	A

Main Results for each time segment

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

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
Grappenhall Lane east	763.39	761.13	28.52	0.00	2105.41	0.363	0.57	2.673	A
Site Access	197.25	196.66	638.78	0.00	1532.24	0.129	0.15	2.693	A
Grappenhall Lane west	752.85	750.48	166.63	0.00	2017.81	0.373	0.59	2.836	A

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

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
Grappenhall Lane east	911.57	910.78	34.13	0.00	2101.33	0.434	0.76	3.022	A
Site Access	235.53	235.35	764.38	0.00	1445.96	0.163	0.19	2.973	A
Grappenhall Lane west	898.98	898.09	199.42	0.00	1993.96	0.451	0.82	3.281	A

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
Grappenhall Lane east	1116.43	1114.96	41.77	0.00	2095.77	0.533	1.13	3.666	A
Site Access	288.47	288.14	935.73	0.00	1328.25	0.217	0.28	3.461	A
Grappenhall Lane west	1101.02	1099.22	244.15	0.00	1961.42	0.561	1.27	4.167	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
Grappenhall Lane east	1116.43	1116.42	41.84	0.00	2095.72	0.533	1.14	3.675	A
Site Access	288.47	288.46	936.95	0.00	1327.41	0.217	0.28	3.464	A
Grappenhall Lane west	1101.02	1100.99	244.42	0.00	1961.22	0.561	1.27	4.184	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
Grappenhall Lane east	911.57	913.02	34.23	0.00	2101.25	0.434	0.77	3.032	A
Site Access	235.53	235.86	766.25	0.00	1444.67	0.163	0.20	2.980	A
Grappenhall Lane west	898.98	900.77	199.85	0.00	1993.64	0.451	0.83	3.301	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
Grappenhall Lane east	763.39	764.19	28.64	0.00	2105.32	0.363	0.57	2.687	A
Site Access	197.25	197.44	641.35	0.00	1530.47	0.129	0.15	2.700	A
Grappenhall Lane west	752.85	753.77	167.29	0.00	2017.33	0.373	0.60	2.852	A

(Default Analysis Set) - 2021 Base with Dev+Stobbart, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	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
2021 Base with Dev+Stobbart, AM	2021 Base with Dev+Stobbart	AM		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Site Access	Roundabout	1,2,3			3.73	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description
Grappenhall Lane east	1	Grappenhall Lane east	Grappenhall Lane east
Site Access	2	Site Access	Site Access
Grappenhall Lane west	3	Grappenhall Lane west	Grappenhall Lane west

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
Grappenhall Lane east	0.00	99999.00
Site Access	0.00	99999.00
Grappenhall Lane west	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Grappenhall Lane east	4.00	9.00	18.00	35.00	45.00	20.00	
Site Access	4.00	8.80	15.00	35.00	45.00	30.00	
Grappenhall Lane west	4.50	8.80	15.00	35.00	45.00	22.50	

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)
Grappenhall Lane east		(calculated)	(calculated)	0.728	2126.156
Site Access		(calculated)	(calculated)	0.687	1971.036
Grappenhall Lane west		(calculated)	(calculated)	0.727	2139.024

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 (%)
Grappenhall Lane east	ONE HOUR	✓	1026.00	100.000
Site Access	ONE HOUR	✓	143.00	100.000
Grappenhall Lane west	ONE HOUR	✓	1000.00	100.000

Turning Proportions

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

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.000	187.000	839.000
	Site Access	125.000	0.000	18.000
	Grappenhall Lane west	962.000	38.000	0.000

Turning Proportions (PCU) - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.00	0.18	0.82
	Site Access	0.87	0.00	0.13
	Grappenhall Lane west	0.96	0.04	0.00

Vehicle Mix

Average PCU Per Vehicle - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	1.000	1.000	1.000
	Site Access	1.000	1.000	1.000
	Grappenhall Lane west	1.000	1.000	1.000

Heavy Vehicle Percentages - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.0	0.0	0.0
	Site Access	0.0	0.0	0.0
	Grappenhall Lane west	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
Grappenhall Lane east	0.54	3.72	1.16	A
Site Access	0.12	3.05	0.13	A
Grappenhall Lane west	0.54	3.84	1.17	A

Main Results for each time segment

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
Grappenhall Lane east	772.43	770.12	28.52	0.00	2105.41	0.367	0.58	2.691	A
Site Access	107.66	107.36	629.76	0.00	1538.43	0.070	0.08	2.515	A
Grappenhall Lane west	752.85	750.58	93.84	0.00	2070.76	0.364	0.57	2.722	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
Grappenhall Lane east	922.35	921.55	34.13	0.00	2101.33	0.439	0.78	3.050	A
Site Access	128.55	128.47	753.59	0.00	1453.37	0.088	0.10	2.716	A
Grappenhall Lane west	898.98	898.17	112.30	0.00	2057.33	0.437	0.77	3.104	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
Grappenhall Lane east	1129.65	1128.12	41.78	0.00	2095.76	0.539	1.16	3.713	A
Site Access	157.45	157.30	922.51	0.00	1337.33	0.118	0.13	3.050	A
Grappenhall Lane west	1101.02	1099.45	137.50	0.00	2039.00	0.540	1.16	3.825	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
Grappenhall Lane east	1129.65	1129.63	41.84	0.00	2095.72	0.539	1.16	3.725	A
Site Access	157.45	157.44	923.74	0.00	1336.48	0.118	0.13	3.052	A
Grappenhall Lane west	1101.02	1101.00	137.63	0.00	2038.91	0.540	1.17	3.837	A

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

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
Grappenhall Lane east	922.35	923.86	34.22	0.00	2101.26	0.439	0.79	3.063	A
Site Access	128.55	128.70	755.48	0.00	1452.07	0.089	0.10	2.722	A
Grappenhall Lane west	898.98	900.53	112.50	0.00	2057.19	0.437	0.78	3.115	A

Main results: (09:15-09:30)

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
Grappenhall Lane east	772.43	773.25	28.64	0.00	2105.32	0.367	0.58	2.705	A
Site Access	107.66	107.75	632.31	0.00	1536.68	0.070	0.08	2.521	A
Grappenhall Lane west	752.85	753.68	94.18	0.00	2070.51	0.364	0.57	2.735	A

(Default Analysis Set) - 2021 Base with Dev+Stobbart, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	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
2021 Base with Dev+Stobbart, PM	2021 Base with Dev+Stobbart	PM		ONE HOUR	16:00	17:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Site Access	Roundabout	1,2,3			4.07	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description
Grappenhall Lane east	1	Grappenhall Lane east	Grappenhall Lane east
Site Access	2	Site Access	Site Access
Grappenhall Lane west	3	Grappenhall Lane west	Grappenhall Lane west

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
Grappenhall Lane east	0.00	99999.00
Site Access	0.00	99999.00
Grappenhall Lane west	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Grappenhall Lane east	4.00	9.00	18.00	35.00	45.00	20.00	
Site Access	4.00	8.80	15.00	35.00	45.00	30.00	
Grappenhall Lane west	4.50	8.80	15.00	35.00	45.00	22.50	

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)
Grappenhall Lane east		(calculated)	(calculated)	0.728	2126.156
Site Access		(calculated)	(calculated)	0.687	1971.036
Grappenhall Lane west		(calculated)	(calculated)	0.727	2139.024

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 (%)
Grappenhall Lane east	ONE HOUR	✓	1027.00	100.000
Site Access	ONE HOUR	✓	262.00	100.000
Grappenhall Lane west	ONE HOUR	✓	1061.00	100.000

Turning Proportions

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

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.000	163.000	864.000
	Site Access	222.000	0.000	40.000
	Grappenhall Lane west	1023.000	38.000	0.000

Turning Proportions (PCU) - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.00	0.16	0.84
	Site Access	0.85	0.00	0.15
	Grappenhall Lane west	0.96	0.04	0.00

Vehicle Mix

Average PCU Per Vehicle - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	1.000	1.000	1.000
	Site Access	1.000	1.000	1.000
	Grappenhall Lane west	1.000	1.000	1.000

Heavy Vehicle Percentages - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.0	0.0	0.0
	Site Access	0.0	0.0	0.0
	Grappenhall Lane west	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
Grappenhall Lane east	0.54	3.73	1.17	A
Site Access	0.22	3.50	0.28	A
Grappenhall Lane west	0.60	4.54	1.46	A

Main Results for each time segment

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

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
Grappenhall Lane east	773.18	770.87	28.52	0.00	2105.41	0.367	0.58	2.693	A
Site Access	197.25	196.66	648.52	0.00	1525.54	0.129	0.15	2.707	A
Grappenhall Lane west	798.78	796.17	166.63	0.00	2017.81	0.396	0.65	2.940	A

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

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
Grappenhall Lane east	923.25	922.45	34.12	0.00	2101.33	0.439	0.78	3.052	A
Site Access	235.53	235.34	776.04	0.00	1437.94	0.164	0.20	2.993	A
Grappenhall Lane west	953.82	952.78	199.41	0.00	1993.96	0.478	0.91	3.454	A

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
Grappenhall Lane east	1130.75	1129.22	41.76	0.00	2095.77	0.540	1.16	3.717	A
Site Access	288.47	288.13	949.99	0.00	1318.45	0.219	0.28	3.494	A
Grappenhall Lane west	1168.18	1166.00	244.14	0.00	1961.42	0.596	1.45	4.513	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
Grappenhall Lane east	1130.75	1130.73	41.84	0.00	2095.72	0.540	1.17	3.729	A
Site Access	288.47	288.46	951.26	0.00	1317.57	0.219	0.28	3.497	A
Grappenhall Lane west	1168.18	1168.15	244.42	0.00	1961.22	0.596	1.46	4.539	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
Grappenhall Lane east	923.25	924.76	34.24	0.00	2101.25	0.439	0.79	3.065	A
Site Access	235.53	235.86	777.99	0.00	1436.60	0.164	0.20	2.998	A
Grappenhall Lane west	953.82	955.98	199.85	0.00	1993.64	0.478	0.92	3.478	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
Grappenhall Lane east	773.18	774.00	28.65	0.00	2105.32	0.367	0.58	2.707	A
Site Access	197.25	197.44	651.16	0.00	1523.73	0.129	0.15	2.716	A
Grappenhall Lane west	798.78	799.84	167.29	0.00	2017.33	0.396	0.66	2.958	A

(Default Analysis Set) - 2029 Base with Dev+Stobbart, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	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
2029 Base with Dev+Stobbart, AM	2029 Base with Dev+Stobbart	AM		ONE HOUR	08:00	09:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Site Access	Roundabout	1,2,3			3.92	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description
Grappenhall Lane east	1	Grappenhall Lane east	Grappenhall Lane east
Site Access	2	Site Access	Site Access
Grappenhall Lane west	3	Grappenhall Lane west	Grappenhall Lane west

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
Grappenhall Lane east	0.00	99999.00
Site Access	0.00	99999.00
Grappenhall Lane west	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Grappenhall Lane east	4.00	9.00	18.00	35.00	45.00	20.00	
Site Access	4.00	8.80	15.00	35.00	45.00	30.00	
Grappenhall Lane west	4.50	8.80	15.00	35.00	45.00	22.50	

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)
Grappenhall Lane east		(calculated)	(calculated)	0.728	2126.156
Site Access		(calculated)	(calculated)	0.687	1971.036
Grappenhall Lane west		(calculated)	(calculated)	0.727	2139.024

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 (%)
Grappenhall Lane east	ONE HOUR	✓	1064.00	100.000
Site Access	ONE HOUR	✓	143.00	100.000
Grappenhall Lane west	ONE HOUR	✓	1047.00	100.000

Turning Proportions

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

		To		
From		Grappenhall Lane east	Site Access	Grappenhall Lane west
	Grappenhall Lane east	0.000	187.000	877.000
	Site Access	125.000	0.000	18.000
	Grappenhall Lane west	1009.000	38.000	0.000

Turning Proportions (PCU) - Site Access (for whole period)

		To		
From		Grappenhall Lane east	Site Access	Grappenhall Lane west
	Grappenhall Lane east	0.00	0.18	0.82
	Site Access	0.87	0.00	0.13
	Grappenhall Lane west	0.96	0.04	0.00

Vehicle Mix

Average PCU Per Vehicle - Site Access (for whole period)

		To		
From		Grappenhall Lane east	Site Access	Grappenhall Lane west
	Grappenhall Lane east	1.000	1.000	1.000
	Site Access	1.000	1.000	1.000
	Grappenhall Lane west	1.000	1.000	1.000

Heavy Vehicle Percentages - Site Access (for whole period)

		To		
From		Grappenhall Lane east	Site Access	Grappenhall Lane west
	Grappenhall Lane east	0.0	0.0	0.0
	Site Access	0.0	0.0	0.0
	Grappenhall Lane west	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
Grappenhall Lane east	0.56	3.89	1.26	A
Site Access	0.12	3.13	0.14	A
Grappenhall Lane west	0.57	4.06	1.29	A

Main Results for each time segment

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
Grappenhall Lane east	801.03	798.59	28.52	0.00	2105.41	0.380	0.61	2.750	A
Site Access	107.66	107.35	658.24	0.00	1518.87	0.071	0.08	2.550	A
Grappenhall Lane west	788.24	785.79	93.84	0.00	2070.76	0.381	0.61	2.797	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
Grappenhall Lane east	956.51	955.64	34.13	0.00	2101.33	0.455	0.83	3.141	A
Site Access	128.55	128.46	787.68	0.00	1429.95	0.090	0.10	2.765	A
Grappenhall Lane west	941.23	940.33	112.29	0.00	2057.34	0.458	0.84	3.219	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
Grappenhall Lane east	1171.49	1169.79	41.77	0.00	2095.77	0.559	1.26	3.880	A
Site Access	157.45	157.29	964.19	0.00	1308.69	0.120	0.14	3.126	A
Grappenhall Lane west	1152.77	1150.97	137.50	0.00	2039.00	0.565	1.29	4.045	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
Grappenhall Lane east	1171.49	1171.46	41.84	0.00	2095.72	0.559	1.26	3.894	A
Site Access	157.45	157.44	965.58	0.00	1307.74	0.120	0.14	3.128	A
Grappenhall Lane west	1152.77	1152.74	137.63	0.00	2038.91	0.565	1.29	4.062	A

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

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
Grappenhall Lane east	956.51	958.20	34.23	0.00	2101.26	0.455	0.84	3.153	A
Site Access	128.55	128.70	789.79	0.00	1428.50	0.090	0.10	2.771	A
Grappenhall Lane west	941.23	943.01	112.50	0.00	2057.18	0.458	0.85	3.238	A

Main results: (09:15-09:30)

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
Grappenhall Lane east	801.03	801.93	28.64	0.00	2105.32	0.380	0.62	2.763	A
Site Access	107.66	107.75	660.99	0.00	1516.98	0.071	0.08	2.554	A
Grappenhall Lane west	788.24	789.16	94.19	0.00	2070.51	0.381	0.62	2.813	A

(Default Analysis Set) - 2029 Base with Dev+Stobbart, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	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
2029 Base with Dev+Stobbart, PM	2029 Base with Dev+Stobbart	PM		ONE HOUR	16:00	17:30	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	Site Access	Roundabout	1,2,3			4.31	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Name	Arm	Name	Description
Grappenhall Lane east	1	Grappenhall Lane east	Grappenhall Lane east
Site Access	2	Site Access	Site Access
Grappenhall Lane west	3	Grappenhall Lane west	Grappenhall Lane west

Capacity Options

Name	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
Grappenhall Lane east	0.00	99999.00
Site Access	0.00	99999.00
Grappenhall Lane west	0.00	99999.00

Roundabout Geometry

Name	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
Grappenhall Lane east	4.00	9.00	18.00	35.00	45.00	20.00	
Site Access	4.00	8.80	15.00	35.00	45.00	30.00	
Grappenhall Lane west	4.50	8.80	15.00	35.00	45.00	22.50	

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)
Grappenhall Lane east		(calculated)	(calculated)	0.728	2126.156
Site Access		(calculated)	(calculated)	0.687	1971.036
Grappenhall Lane west		(calculated)	(calculated)	0.727	2139.024

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 (%)
Grappenhall Lane east	ONE HOUR	✓	1066.00	100.000
Site Access	ONE HOUR	✓	262.00	100.000
Grappenhall Lane west	ONE HOUR	✓	1110.00	100.000

Turning Proportions

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

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.000	163.000	903.000
	Site Access	222.000	0.000	40.000
	Grappenhall Lane west	1072.000	38.000	0.000

Turning Proportions (PCU) - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.00	0.15	0.85
	Site Access	0.85	0.00	0.15
	Grappenhall Lane west	0.97	0.03	0.00

Vehicle Mix

Average PCU Per Vehicle - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	1.000	1.000	1.000
	Site Access	1.000	1.000	1.000
	Grappenhall Lane west	1.000	1.000	1.000

Heavy Vehicle Percentages - Site Access (for whole period)

		To		
		Grappenhall Lane east	Site Access	Grappenhall Lane west
From	Grappenhall Lane east	0.0	0.0	0.0
	Site Access	0.0	0.0	0.0
	Grappenhall Lane west	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Name	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
Grappenhall Lane east	0.56	3.90	1.27	A
Site Access	0.22	3.60	0.29	A
Grappenhall Lane west	0.62	4.87	1.64	A

Main Results for each time segment

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

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
Grappenhall Lane east	802.54	800.09	28.51	0.00	2105.41	0.381	0.61	2.753	A
Site Access	197.25	196.65	677.75	0.00	1505.46	0.131	0.15	2.749	A
Grappenhall Lane west	835.67	832.85	166.62	0.00	2017.81	0.414	0.70	3.030	A

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

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
Grappenhall Lane east	958.31	957.43	34.12	0.00	2101.33	0.456	0.83	3.147	A
Site Access	235.53	235.34	811.03	0.00	1413.91	0.167	0.20	3.054	A
Grappenhall Lane west	997.87	996.70	199.41	0.00	1993.96	0.500	0.99	3.604	A

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
Grappenhall Lane east	1173.69	1171.98	41.75	0.00	2095.78	0.560	1.26	3.890	A
Site Access	288.47	288.12	992.77	0.00	1289.06	0.224	0.29	3.596	A
Grappenhall Lane west	1222.13	1219.59	244.13	0.00	1961.43	0.623	1.63	4.836	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
Grappenhall Lane east	1173.69	1173.66	41.84	0.00	2095.72	0.560	1.27	3.904	A
Site Access	288.47	288.46	994.20	0.00	1288.08	0.224	0.29	3.600	A
Grappenhall Lane west	1222.13	1222.09	244.42	0.00	1961.22	0.623	1.64	4.870	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
Grappenhall Lane east	958.31	960.00	34.25	0.00	2101.24	0.456	0.84	3.160	A
Site Access	235.53	235.88	813.21	0.00	1412.41	0.167	0.20	3.062	A
Grappenhall Lane west	997.87	1000.39	199.87	0.00	1993.63	0.501	1.01	3.632	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
Grappenhall Lane east	802.54	803.44	28.65	0.00	2105.31	0.381	0.62	2.768	A
Site Access	197.25	197.45	680.59	0.00	1503.51	0.131	0.15	2.756	A
Grappenhall Lane west	835.67	836.86	167.30	0.00	2017.32	0.414	0.71	3.052	A

Our Locations

Birmingham
2 The Wharf
Bridge Street
Birmingham
B1 2JS
T. 0121 643 4694
birmingham@curtins.com

Bristol
Quayside
40-58 Hotwell Road
Bristol
BS8 4UQ
T. 0117 302 7560
bristol@curtins.com

Cambridge
50 Cambridge Place
Cambridge
CB2 1NS
T. 01223 631 799
cambridge@curtins.com

Cardiff
3 Cwrt-y-Parc
Earlswood Road
Cardiff
CF14 5GH
T. 029 2068 0900
cardiff@curtins.com

Douglas
Varley House
29-31 Duke Street
Douglas
Isle of Man
IM1 2AZ
T. 01624 624 585
douglas@curtins.com

Dublin
11 Pembroke Lane
Dublin 2
D02 CX82
Ireland
T. +353 1 507 9447
dublin@curtins.com

Edinburgh
1a Belford Road
Edinburgh
EH4 3BL
T. 0131 225 2175
edinburgh@curtins.com

Glasgow
Queens House
29 St Vincent Place
Glasgow
G1 2DT
T. 0141 319 8777
glasgow@curtins.com

Kendal
Units 24 & 25 Riverside Place
K Village
Lound Road
Kendal
LA9 7FH
T. 01539 724 823
kendal@curtins.com

Leeds
Ground Floor
Rose Wharf
78-80 East Street
Leeds
LS9 8EE
T. 0113 274 8509
leeds@curtins.com

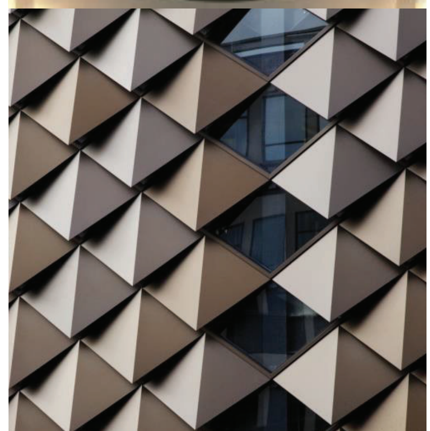
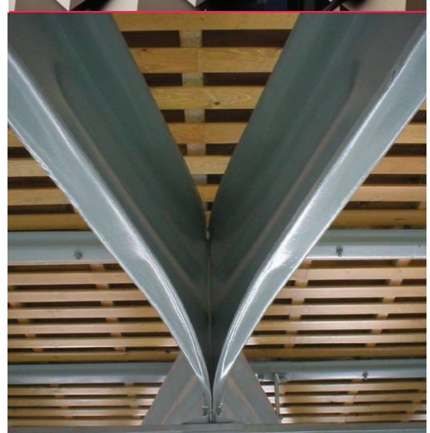
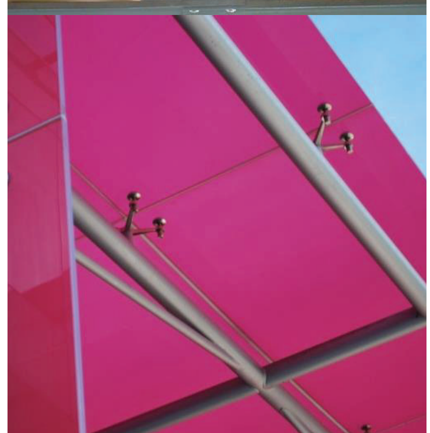
Liverpool
51-55 Tithebarn Street
Liverpool
L2 2SB
T. 0151 726 2000
liverpool@curtins.com

London
40 Compton Street
London
EC1V 0BD
T. 020 7324 2240
london@curtins.com

Manchester
Merchant Exchange
17-19 Whitworth Street West
Manchester
M1 5WG
T. 0161 236 2394
manchester@curtins.com

Nottingham
56 The Ropewalk
Nottingham
NG1 5DW
T. 0115 941 5551
nottingham@curtins.com

Appendix 2 – Travel Plan

SIX 56 WARRINGTON

Six 56 Warrington

Updated Framework Travel Plan

Curtins Ref: 64076/FTP~~01~~V04

Revision: ~~Final~~ Updated FTP to Support ES Addendum

Issue Date: ~~18 March 2019~~ 05 June 2020

Merchant Exchange
17 – 19 Whitworth Street West
Manchester. M1 5WG.
Tel: 0161 236 2394
www.curtins.com

Control Sheet

This report has been prepared for the sole benefit, use, and information for the client. The liability of Curtins with respect to the information contained in the report will not extend to any third party.

Author	Signature	Date
Tom Lavin BA (Hons) Transport Planner		~~18 March 2019~~ 05 June 2020

Reviewed	Signature	Date
Alex Vogt BSc (Hons) MSc FCIHT TPP Director of Transport Planning		~~18 March 2019~~ 05 June 2020

Authorised	Signature	Date
Alex Vogt BSc (Hons) MSc FCIHT TPP Director of Transport Planning		~~18 March 2019~~ 05 June 2020

Table of Contents

Figures

Tables

Plans (included within text)

1.0 Introduction

1.1 Background

1.1.1 This Updated Framework Travel Plan (FTP) has been prepared by Curtins on behalf of Langtree PP and First Panattoni in connection with an outline planning application for a major employment development in Warrington known as Six 56 Warrington.

1.1.2 This document is an update to the existing FTP and will be submitted to support the Environmental Statement (ES). The underlined text in this document highlights where text has been updated to resolve issues raised during the application process.

1.1.3 The Site covers approximately 98.09ha in area (including the land required for the roundabout) and is situated to the immediate north-west of the M6 / M56 Lymm motorway interchange and to the south of the B5356 Grappenhall Lane.

1.1.4 The planning description ~~is~~ was as follows:

'The outline application (all matters reserved except for means of access) comprises the construction of up to 287,909m² (3,099,025ft²) (gross internal) of employment floorspace (Use Class B8 and B1(a) offices) including change of use of Bradley Hall Farmhouse to B1 (a) office use (335m² (3,600ft²)) and associated servicing and infrastructure including car parking and vehicle and pedestrian circulation, alteration of existing access road into Site including works to the M6 J20 dumbbell roundabout and realignment of the A50 junction, diversion of Public Rights of Way (route no's 23 &28), noise mitigation, earthworks to create development platforms and bunds, landscaping including buffers, creation of drainage features, electrical substation, pumping station, and ecological works.'

1.1.5 Since the submission of the planning application, consultation responses have been received from key consultees and further discussions have taken place with Warrington Borough Council (WBC) and their key consultees (namely WBC Highway Officers, Highways England (HE) and their consultants Atkins, WBC Environmental Protection Officers, Historic England and WBC Conservation Officer and Ramboll landscape designers acting on behalf of WBC.

1.1.6 The revised application description is as follows:

'The outline application (all matters reserved except for means of access) comprises the construction of up to 287,909m² (3,099,025ft2) (gross internal) of employment floorspace (Use Class B8 and B1(a) offices), demolition of existing agricultural outbuildings and associated servicing and infrastructure including car parking and vehicle and pedestrian circulation, alteration of existing access road into site including works to the M6 J20 dumbbell roundabouts and realignment of the existing A50 junction, noise

mitigation, earthworks to create development platforms and bunds, landscaping including buffers, creation of drainage features, electrical substation, pumping station, and ecological works.'

1.2 The Purpose of Travel Plans

1.2.1 A Travel Plan (TP) is a package of practical measures aimed at reducing single occupancy car use associated with a particular development. A TP is defined by the Department for Transport (DfT) and by the Department for Communities and Local Government (DCLG) as:

> *"A long-term management strategy for an organisation or site that seeks to deliver sustainable transport objectives and is regularly reviewed."*

Source: *National Planning Policy Framework,* DCLG, ~~2018~~ 2019.

1.2.2 In essence, a TP is intended to encourage people to choose alternative transport modes over single occupancy car use and, where possible, reduce the need to travel at all. Such a plan should include a range of measures designed to achieve this goal.

1.2.3 A Framework Travel Plan (FTP) is the first stage of the TP process and is usually prepared during the planning stage prior to the construction of the development. It includes a list of potential measures that could be implemented to affect modal choice and a management strategy for producing a full TP in the future. It does not include fixed targets or Travel Surveys as the development proposals it refers to has not usually been constructed.

1.2.4 A commitment to deliver the measures set out in the Travel Plan can be secured via a Section 106 Agreement.

1.3 Guidance on Travel Plans

1.3.1 This document has been written in accordance with the following core guidance documents:

- Warrington Borough Council Design Guide Note 2: Travel Plans;
- National Planning Policy Framework ~~2018~~ 2019;
- Good Practice Guidelines: Delivering Travel Plans through the Planning Process, DfT, 2009;

1.3.2 Sustainable development is a key requirement of National Planning Policy and the developer is aware that the development needs to meets these requirements. This FTP has been produced to demonstrate a firm commitment to sustainable modes of travel, as outlined in paragraph 111 from the NPPF which states that:

> *"All developments that will generate significant amounts of movement should be required to provide a Travel Plan."*

Source: *National Planning Policy Framework,* DCLG, ~~2018~~ 2019.

1.4 Purpose of Report

1.4.1 This Transport Statement has been prepared to inform Highways Officers at Warrington Borough Council (WBC) of all relevant traffic and transportation matters associated with the application.

1.5 Document Structure

1.5.1 Following this introductory section, **Section 2** explores some of the benefits that can result from a successful TP process.

1.5.2 **Section 3** of this FTP gives details of the site itself including its background, location and existing situation.

1.5.3 In **Section 4** the site is assessed in terms of its accessibility by sustainable modes of travel, including a review of pedestrian, cycle and public transport accessibility.

1.5.4 **Section 5** contains the TP initiatives to be considered for the adoption of a Full TP, including measures to encourage sustainable travel other than single occupancy car use.

1.5.5 **Section 6** provides example modal shift targets to be achieved using the initiatives discussed in **Section 5.**

1.5.6 **Section 7** discusses how the initiatives will be monitored and reviewed, with **Section 8** discussing an Action Plan and Budget.

2.0 Travel Plan Benefits

2.1 Introduction

2.1.1 WBC guidance on Travel Plans acknowledges that:

'Whilst a Travel Plan will clearly help to reduce congestion and traffic related pollution for residents in the Borough, there are also benefits to organisations, namely:

- *producing cash savings, particularly where there is a constrained or congested site, car parking costs are high, or parking areas could be put to higher value use;*
- *improving competitive advantage, they can help employee recruitment and retention, create a better image and improve public relations, reduce employee stress through healthier forms of travel, encourage flexible working practices and produce a fair approach to travel subsidy; and*
- *offer a wider choice of travel mode for all those travelling to and from the site.'*

2.1.2 In addition to the above, national guidance suggests that benefits from a TP can be loosely categorised under three main headings:

- Health Benefits;
- Environmental Benefits; and
- Financial Benefits.

2.1.3 This section explores just some of the reasons as to why future employees can benefit from a successful Travel Planning process.

2.2 Health Benefits

2.2.1 A reduction in polluting vehicles on the roads surrounding the site will mean better air quality throughout the area. There are also well documented health benefits associated with active travel, yet activity levels are generally low across the UK and could still be improved:

"66% of men and 58% of women aged 19 and over met the aerobic activity guidelines of at least 150 minutes of moderate activity or 75 minutes of vigorous activity per week or an equivalent combination of both, in bouts of 10 minutes or more.

26% of men and 27% of women were obese. The proportion of adults who were obese has been similar since 2010."

Source: Health Survey for England, DoH, 2016.

2.2.2 Regular moderate physical activity (including walking and cycling), can help prevent and reduce the risk of cardiovascular disease, cancer, obesity, diabetes, stroke, mental health problems, high blood pressure, and musculoskeletal problems.

2.3 Environmental Benefits

2.3.1 Climate change is a global issue that affects all nations. The British Government has pledged to play its part in reducing emissions which are harmful to the earth by setting carbon reduction targets:

"It is the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 80% lower than the 1990 baseline."

Source: *Climate Change Act 2008,* Chapter 27, Part 1, 2008.

2.3.2 Encouraging people to make smarter choices in the way they travel can drastically reduce the impact that future commuters make on the environment.

2.4 Financial Benefits

2.4.1 Although secondary to health and environmental benefits, there are also financial benefits to be gained from increasing active travel rates:

"The estimated direct cost of physical inactivity to the NHS across the UK is £1.06 billion. This is based upon five conditions specifically linked to inactivity, namely coronary heart disease, stroke, diabetes, colorectal cancer and breast cancer.
In England, the costs of lost productivity have been estimated at £5.5 billion per year from sickness absence and £1 billion per year from the premature death of people of working age."

Source: *Start active, stay active: report on physical inactivity in the UK*, DoH, 2011.

2.4.2 Individuals can also benefit financially from travelling to and from a site with a TP in place due to the improved range of transport options available, some of which may be more cost-effective than car travel. In some circumstances, TP measures can remove an individual's need for a car (or their household's need for a second car), removing the capital and on-going cost of car ownership.

2.4.3 An effective TP can help encourage future commuters and other site users to lessen their environmental impact by reducing emissions from transport, lead a healthier and more active lifestyle, and reduce financial wastage.

2.5 Mutual Benefits

2.5.1 As demonstrated, there are multiple reasons as to why TPs are important to modern society. The initiatives in this TP will have a positive effect on future employees and the surrounding communities in Newton and Winwick. They must be communicated correctly:

> *"It is important that the outcomes sought from the travel plan can be seen as a benefit to all parties, e.g. the developer, occupiers and site users, the community and the local authority. Such benefits can help in gaining widespread commitment."*

Source: *Good Practice Guidelines: Delivering Travel Plans through the Planning Process*, DfH, 2009.

2.5.2 This FTP aims to achieve the following benefits:

- Healthy and happy future site users;
- A reduced impact on the environment;
- A reduced financial wastage for future site users; and
- Increased accessibility to the site.

3.0 Site Details and Background

3.1 Site Location and Existing Use

3.1.1 The location of the site is shown below in **Figure 3.1** and in a more local context in **Figure 3.2**:

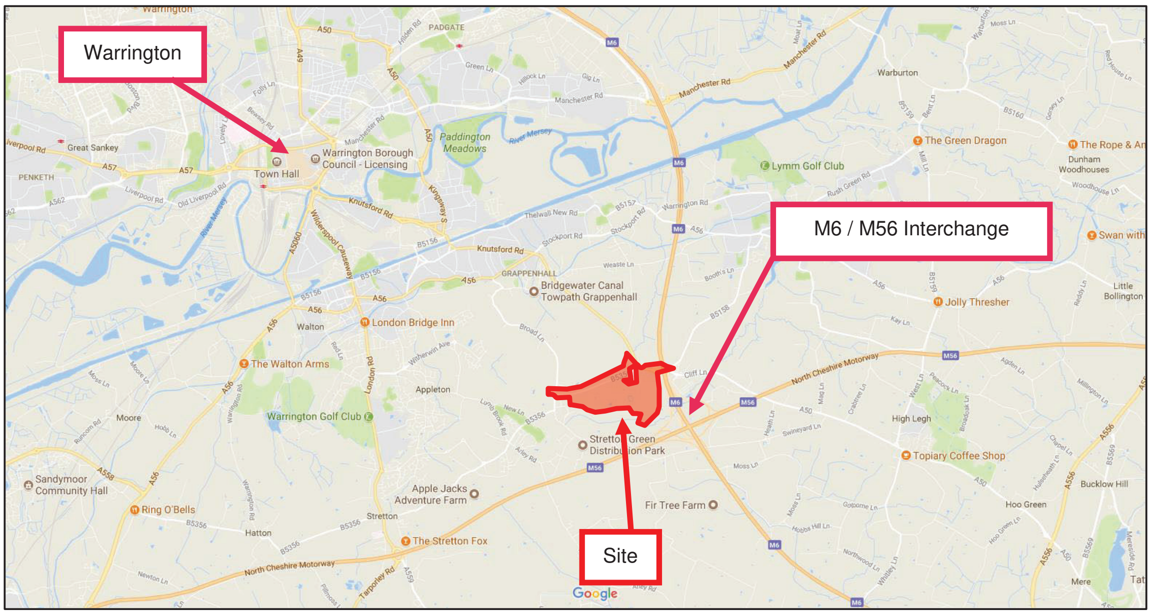


Figure 3.1 – Site Location Plan – Wider Context

Figure 3.2 – Site Location Plan – Local Context

3.1.2 The Site is located in the North West of England, predominantly within the local authority area of Warrington.

3.1.3 It is located to the southeast of the town of Warrington (approximately 6 km (3.5 miles) from the town centre) and between the cities of Liverpool and Manchester (approximately 22km (13 miles) and 31km (19 miles) respectively). It is also located approximately 16km (10 miles) from Manchester Airport.

3.1.4 The M56 Motorway and M6 Motorway interchange (Junction 20 and 20A of the M6 and Junction 9 of the M56 Motorways) is located adjacent to the south east of the Site, with the M56 Motorway running east-west to the south of the Site, providing links to Cheshire and Greater Manchester; and the M6 Motorway running north-south to the east of the Site, provide links to Lancashire, Staffordshire and Greater Manchester, as well as the M62 Motorway at Junction 22A of the M6 Motorway to the north, which provides links east-west to Liverpool, Greater Manchester and Yorkshire.

~~3.1.5 The site location is shown on **Figure 1.1** and **1.2** earlier in this report.~~

3.1.6 The Site is bound by the B5356 Grappenhall Lane and the A50 Cliff Lane to the north and motorway slip road to the east. Appleton Thorn Trading Estate, Barleycastle Trading Estate and Stretton Green Distribution Park are located to the west and Bradley Brook runs east-west to the southern boundary.

3.1.7 The Site is predominantly farm land (arable and pastoral for cattle), with a series of hedges and trees to field boundaries. Bradley Hall Farm consists of farm house and a series of farm buildings as well as a further residential property. There are a number of other neighbouring residential properties that are all within adjacent to, but outside the Application Site.

3.1.8 Bradley Hall moated site is a Scheduled Ancient Monument (SAM) located within the Site boundary, to the eastern part of the site, adjacent to the farm buildings. It comprises the buried and earthwork remains of a medieval moated site for a medieval manor house, which is to be retained. The moated island is partly occupied by the farm house associated with Bradley Hall Farm, which is excluded from the Scheduling, but which will be retained and converted to another use as part of a separate change of use application which will be submitted at a later date following the grant of outline planning permission ~~the Proposed Development~~.

3.1.9 Beyond the northern boundary of the Site (within the triangle of land outside of the Application Site to the south of Cliff Lane) is a residential property and associated outbuildings, which is accessed from the A50 Cliff Lane via the same access as Bradley Hall Farm.

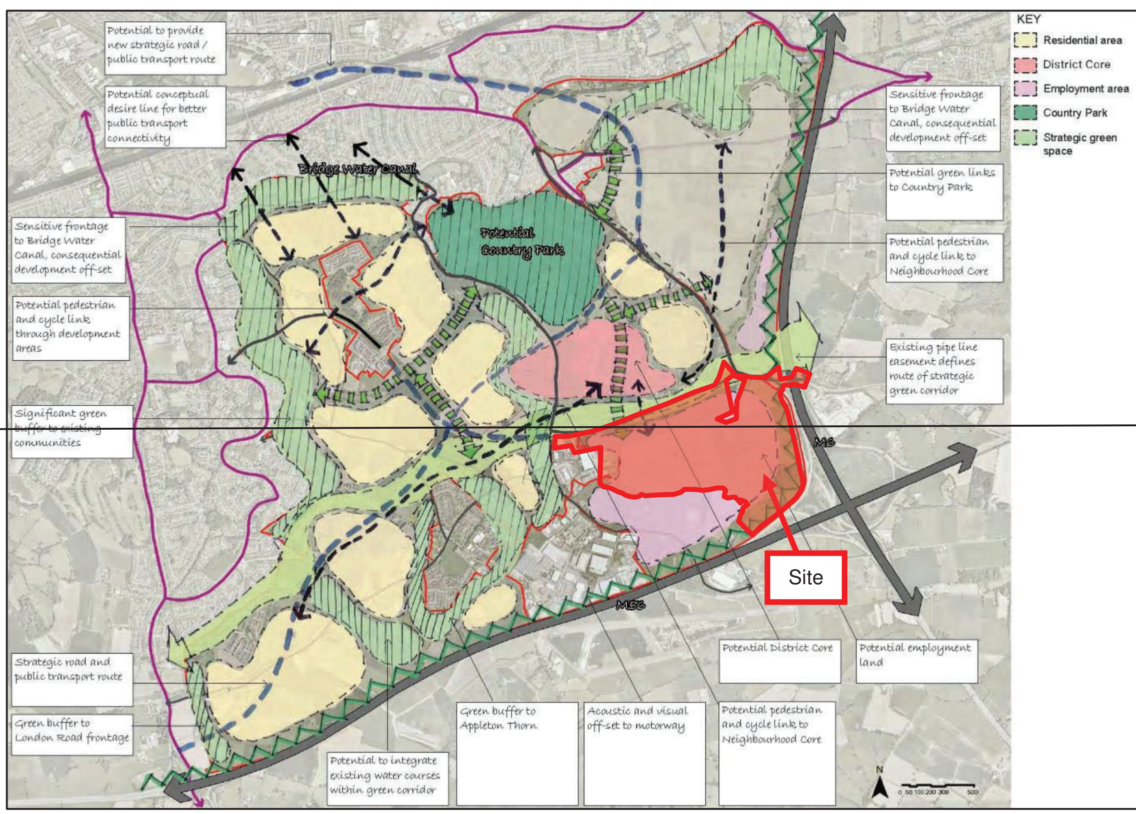
3.1.10 Vehicular access to the Site is currently via Bradley Hall Farm from the A50 Cliff Lane, which has direct access to Junction 20 of the M6 Motorway, as well as Junction 9 of the M56 Motorway. There are also four field access points available from the Site’s 1.15km long frontage to the B5356 Grappenhall Lane.

3.2 Emerging Local Plan

3.2.1 Warrington Borough Council's Preferred Development Option Regulation 18 Consultation (July 2017) and Submission Version of the Local Plan (March 2019) both ~~identifies~~ identify the Site for redevelopment for Employment Use.

3.2.2 The evidence base prepared to inform the Preferred Development Option Regulation 18 Consultation Document, includes The South Warrington Urban Extension Framework Plan Document (SWUEFP) (June 2017) and Warrington Garden Suburb Development Framework Document (March 2019) produced on behalf of Warrington Borough Council, ~~which~~ also classifies the Site for redevelopment for Employment Use.

3.2.3 The "Preferred Development Option Regulation 18 Consultation" document ~~indicates~~ indicated that the Warrington Garden Suburb will provide for the development of some 7,000 new homes and other facilities along with some 117ha of land set aside for employment uses, centred around 3 garden neighbourhoods. An extract of the sketch masterplan for this area is shown ~~overleaf~~ on **Figure 3.3**~~:~~. Policy MD2 of the Submission Version of the Local Plan (March 2019) states that the Garden Suburb will deliver around 7,400 homes, with only 5,100 of these homes to be delivered within the Plan period up to 2037.



~~**Figure 3.3** – WBC's *'Warrington Garden Suburb'* Land Allocation Proposal (Extract from Figure 7 of *"Preferred Development Option Regulation 18 Consultation"* document dated July 2017)~~

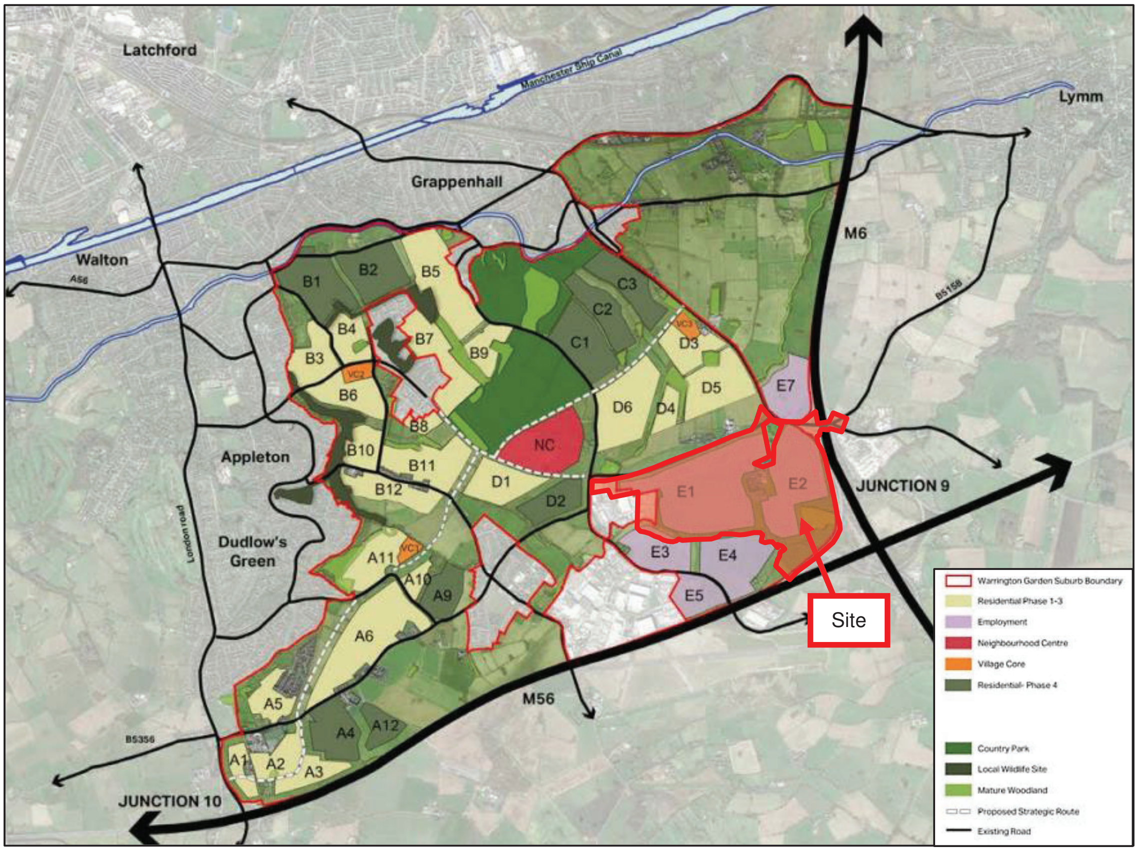


Figure 3.3 – WBC's *'Warrington Garden Suburb'* Land Allocation Proposal (Extract from Figure 5.6 of "*Warrington Garden Suburb Development Framework" document dated March 2019*)

3.2.4 ~~It is anticipated that the draft~~ The Submission Version of the Local Plan ~~will be~~ was published in March 2019~~. It will then be subject~~ and was subsequently subjected to a further period of public consultation. ~~prior to examination~~ Submission of the Local Plan for its examination in public and formal adoption ~~in late 2019~~ is envisaged to take place later in 2020.

3.2.5 Warrington's existing Local Plan Core Strategy has set out a planning framework for guiding the location and level of development in the borough up to 2027 via a series of place-specific policies to promote a positive and proactive approach to managing development within the borough. The Core Strategy comprises several transport-related policies concerning Quality and Distribution of Development, Transport, General Transport Principles, Active Travel, Public Transport, and Transport Infrastructure; all of which are discussed in further detail in the accompanying Transport Assessment (**Document Reference: 64076/TAV02**).

3.2.6 In general, the policies outline WBC's support for development proposals as long as they reduce the need for private car use, integrate with existing public transport infrastructure, and give priority to the needs and safety of pedestrians and cyclists. The Proposed Development accords with all the relevant policies.

3.2.7 In January 2016, WBC also undertook a Green Belt Assessment which suggests that the Site is part of land designated as Parcel 10 of the Green Belt. Policy CS5 within the Local Plan Core Strategy, titled “Overall Spatial Strategy – Green Belt”, states that any development within the Green Belt will be approved where they accord with relevant national policy.

3.2.8 Noting the Green Belt designation, it has been shown in the accompanying TA that there are powerful arguments in favour of the Proposed Development which outweigh any potential harm to the Green Belt. These arguments include the strategic location of the site in terms of motorway access, proximity to existing employment opportunities in Warrington, and creation of approximately 5380 full time equivalent jobs. Therefore, it can be safely concluded that there are no severe impacts of the Proposed Development on the Green Belt.

3.3 Surrounding Highway Network

B5356 Grappenhall Lane

3.3.1 As stated above, the B5356 Grappenhall Lane runs alongside the northern boundary of the site for circa. 1.6km in an east-west alignment between a three-arm roundabout with the A50 Cliff Lane to the east, continuing southbound past a three-arm roundabout with Broad Lane, before branching off at a priority junction with Barleycastle Lane towards the south and continuing as Grappenhall Lane to the south-west. Here, the B5356 Grappenhall Lane extends further towards the southwest for a length of approximately 1.2km until it reaches a priority junction with Lumb Brook Road and Green Lane, before continuing as the B5356 Stretton Road.

3.3.2 The carriageway width of the B5356 Grappenhall Lane is around 7.3m along the site frontage, with verges of varying width on both sides and no pedestrian infrastructure. The road is unlit along most of its length and is subject to a 60mph national speed limit. To the south of the three-arm roundabout, this speed limit is reduced to 40mph, and the road is subject to a 7.5 tonnes weight restriction, which continues to be enforced when the road continues towards the southwest.

3.3.3 Towards the southwest of the site, the B5356 Grappenhall Lane narrows to a width of circa. 5.5m with one lane in either direction. There is also a narrow footway of approximately 1m wide on the southern edge of the road, where some footways comprised dropped kerbs and tactile paving, although the road remains unlit throughout its length. There is also a community speed check area in the vicinity of the priority junction with New Lane.

3.3.4 Leading into Appleton Thorn, the speed limit further drops to 30mph, where this is made clear using painted red chevrons and “SLOW” road markings. The footway provision widens to approximately 1.5m, and street lighting is available at more regular intervals in the vicinity of residential dwellings.

3.3.5 In Appleton Thorn, the B5356 Grappenhall Lane serves primarily as a route for the residential dwellings bordering the road, and provides access to a school, place of worship, public house, and a correctional facility.

B5356 Stretton Road

3.3.6 The B5356 Stretton Road commences at a priority junction with Lumb Brook Road and Green Lane as a continuation of the B5356 Grappenhall Lane, before extending southwest for circa. 2km into Stretton. The road terminates at a signalised junction with the A49 London Road.

3.3.7 The road shares similar characteristics with the B5356 Grappenhall Road, however the road widens slightly and the speed limit increases to 40mph past Appleton Thorn. There is also no footway provision nor street lighting outside Appleton Thorn.

3.3.8 Approaching the three-arm roundabout with Blackcap Road, there is a segregated cycleway which allows cyclists to utilise the road in a safe manner. There are also pedestrian refuge islands outside the roundabout with dropped kerbs and tactile paving to facilitate crossing.

3.3.9 Leading into Stretton, the speed limit drops to 30mph and the road passes through several school zones and residential dwellings. Here, footway provision of an average width of 1m is present along the northern side of the road and is occasionally separated from the road by a grass verge. Street lighting is also present in more regular intervals, as the road provides access to more schools and places of worship.

3.3.10 There are several bus stops present in pairs along the B5356 Stretton Road which primarily host school bus services between Warrington, Hatton, and Appleton Thorn. There is additional infrastructure such as a cantilever shelter, pole, and timetable information.

A50 Cliff Lane / M6 J20

3.3.11 The road commences as a continuation of the A50 Knutsford Road approximately 250m to the north of the site, heading south until it reaches a three-arm roundabout with the B5356 Grappenhall Lane. Then, as stated above, Cliff Lane runs alongside the north-eastern boundary of the site in an east-west alignment between the M6 J20 to the east (and beyond to Knutsford) and Grappenhall Lane to the west.

3.3.12 In the vicinity of the 140m or so long section of frontage that the site benefits from, the carriageway of Cliff Lane tapers down from the roundabout entry / exit to a width of around 7.4m, with verges on both sides. There is a narrow footway of approximately 0.5m wide on the northern edge of the road, which branches along Junction 20 of the M6 and is separated from the main road with a grass verge. Where it meets the junction, there is an additional dropped kerb and tactile paving to allow pedestrian to cross along the outer circumference of the roundabout.

3.3.13 The road is lit by regularly spaced lighting columns along the extent of the site frontage and is subject to a 60mph national speed limit.

3.3.14 Junction 20 off the M6 takes the form of a dual roundabout above and on either side of the north-south M6 alignment. Vehicles headed towards the west of the site can either go directly into a slip road which merges with the M6 approximately 500m towards the north, follow both roundabouts to a slip road which merges with the southbound M6 or cross over with the M56, or follow both roundabouts along a continuation of the A50 Cliff Lane which leads to Knutsford in the southeast.

3.3.15 For this junction, the roundabouts comprise of a single carriageway with two lanes and a width of approximately 8m including the central hatching, whereas the roads connecting the roundabouts comprise a dual carriageway with a total width of approximately 19m. There is also a narrow footway on the northern edge of the road connecting the roundabouts. Flow of traffic along the roundabouts is controlled via numerous traffic lights on several arms of the roundabouts.

A50 Knutsford Road

3.3.16 The A50 Knutsford Road commences as a continuation of Cliff Lane approximately 250m towards the north of the site, where it continues in an approximate northwest alignment for a length of circa. 6km, passing through Grappenhall, Latchford, leading directly into the inner circle of Warrington. Here, the A50 Knutsford Road terminates at a signalised four-arm junction with the A49 Wilderspool Causeway.

3.3.17 In the vicinity of the site, the A50 Knutsford Road comprises a single carriageway with an approximate width of 5.5m and up to one lane in each direction. There is a narrow footway provision of 0.5m on the eastern edge of the road for its entire length, however the road is mostly unlit. This footway is also complete with dropped kerbs. The road is subject to a national speed limit of 60mph.

3.3.18 Approaching Grappenhall, the road widens to circa 7.5m including the central hatching, and footway provision is available on both sides of the road, some of which are separated from the road by a grass verge. Past the canal and towards the southeast of Grappenhall, the road narrows as the speed limit drops to 30mph. This is enforced with road markings, the addition of a cycle lane and pedestrian refuge island, along with traffic cameras.

3.3.19 The road widens after the pinch point to an average width of 8m with up to two lanes in one direction at certain junctions to accommodate turning lanes. The footway separated by the grass verge continues, with the addition of more pedestrian refuge islands along the road to facilitate crossing.

3.3.20 The A50 Knutsford Road hence runs along the eastern edge of Grappenhall and meets the A56 Stockport Road at a signalised junction at the northeast of Grappenhall, before continuing towards the west and providing access to several amenities such as a Tesco Express, Co-Op, schools, public houses, and several food/drink establishments. Throughout its entire length, the road mainly serves as a route for the residential dwellings bordering the road.

3.3.21 At the signalised junction in Grappenhall with the A56 Stockport Road, there are wide footways of approximately 2m on each arm of the junction, in addition to pedestrian refuge islands with dropped kerbs to facilitate crossing in a safe manner. The road is also very well-lit to the benefit of all road users.

Broad Lane

3.3.22 Towards the northwest corner of the site, Broad Lane commences at a three-arm roundabout with the B5356 Grappenhall Lane and extends towards the north for circa. 600m, before turning towards the north-west for a length of circa. 1.7km. The road terminates at a priority junction with Church Lane towards the southwest of Grappenhall.

3.3.23 In the vicinity of the site, Broad Lane comprises a narrow single carriageway of approximately 5.5m wide, with vergeways of varying width on both sides and no pedestrian infrastructure. The road has street lighting at regular intervals along most of its length and is subject to a 60mph national speed limit.

3.3.24 Along the frontage of lodging and residential dwellings, there is a wide footway of approximately 2m in width with dropped kerbs, however this only extends for a limited length along Broad Lane. Past the residential dwellings, the road is mostly unlit.

3.3.25 Approaching the outskirts of Grappenhall, Broad Lane narrows to approximately 4m, and the speed limit drops to 40mph. There are stretches of the road which are heavily bordered by tall trees, and the speed limit drops further to 20mph along this stretch as it approaches a residential area, which is made clear by painted “SLOW” road signs.

3.3.26 In the vicinity of residential dwellings bordering the road, there are footways of approximately 1m wide on at least one side of the road, complete with dropped kerbs and street lighting at regular intervals. Here, it can be observed that some vehicles park half on the road and half on the footway to minimise disruption to traffic. As Broad Lane approaches the priority junction with Church Lane, Traffic Regulation Orders (TROs) are also present in the form of double yellow line parking restrictions on both sides of the road.

M6 / M56 North Cheshire Motorway

3.3.27 The M6 forms the eastern boundary of the site, whereas the M56 North Cheshire Motorway forms the southern boundary of the site. The M6 provides access from the site to areas such as Wigan, Preston, Knutsford, and Crewe, whereas the M56 connects site users to Runcorn, Ellesmere Port, Altrincham, and Manchester Airport.

3.3.28 In the vicinity of the site, the M6 extends in a north-south alignment and comprises a dual carriageway with an average total width of 60m with a total of up to 5 lanes in either direction, whereas the M56 North Cheshire Motorway extends in a west-east alignment with a dual carriageway of an average with of 40m and up to 5 lanes in either direction. The roads are subject to the national speed limit of 70mph.

4.0 Accessibility by Sustainable Modes of Travel

4.1 Introduction

4.1.1 A key element of national, regional and local policy is to ensure that new developments are located in areas where alternative modes of travel are available. It is important to ensure that developments are not isolated but are located close to complementary land uses. This supports the aims of integrating planning and transport, providing more sustainable transport choices, and reducing overall travel and car use.

4.1.2 The accessibility of the site is considered in this context for the following modes of travel:

- Pedestrian Accessibility;
- Accessibility by Cycle; and,
- Accessibility by Public Transport.

4.2 TRACC Analysis

4.2.1 The accessibility of the site has been assessed through the use of TRACC Software. TRACC is the leading multi-modal transport accessibility tool which was developed in conjunction with the Department for Transport (DfT), local authorities and transport planners.

4.2.2 It is designed to calculate travel time using a multitude of public transport and road travel modes to give accurate journey times from many origins to many destinations in one calculation. The software covers a wide range of transport modes including walking, cycling, driving and public transport.

4.3 Pedestrian Accessibility

4.3.1 Research has indicated that acceptable walking distances depend on a number of factors, including the quality of the development, the type of amenity offered, the surrounding area, and other local facilities. The Chartered Institution for Highways and Transportation (CIHT) document entitled 'Providing for Journeys on Foot' suggests walking distances which are relevant to this planning application. These are reproduced in **Table 4.1**.

	Town Centres (m)	Commuting/School/ Sightseeing (m)	Elsewhere/Local Services (m)
Desirable	200	500	400
Acceptable	400	1,000	800
Preferred Maximum	800	2,000	1,200

Table 4.1 – CIHT Suggested Acceptable Walking Distances

4.3.2 To assist in summarising the accessibility of the site by foot, an indicative pedestrian catchment plan has been produced. **Plan 64076-CUR-00-XX-DR-TP-06003-P01** to the rear of this report shows distances of 500m, 1,000m and 2,000m which are termed 'Desirable', 'Acceptable' and the 'Preferred Maximum' by the CIHT for commuting trips. An extract of the plan is illustrated on **Figure 4.1** below:

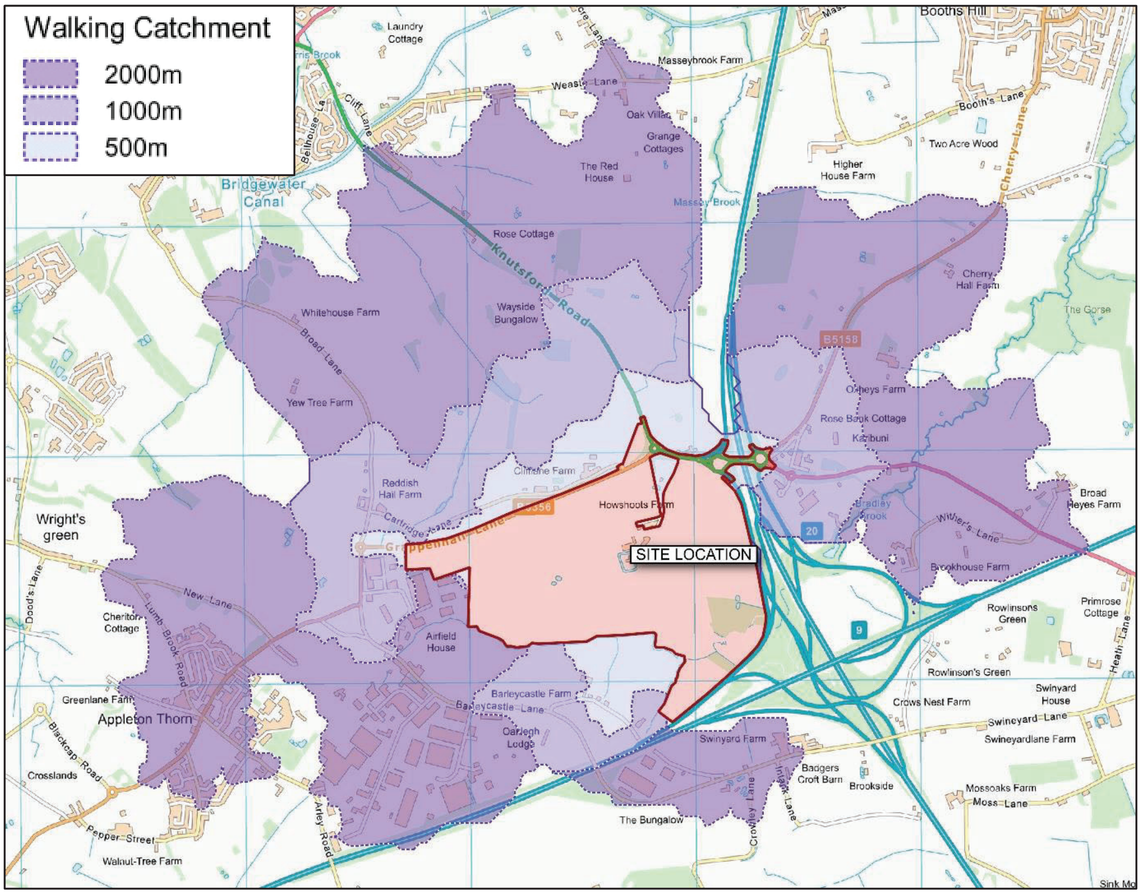


Figure 4.1 – 500m, 1,000m and 2,000m Walk Catchment Isochrones

4.3.3 The pedestrian catchment plan confirms that the site is located within walking distance of one established residential area; namely Appleton Thorn to the west of the site.

4.3.4 However, this is based on an assessment of the existing settlement boundaries. If the emerging Local Plan policy for the Warrington Garden Suburb is ultimately adopted, and the area is subsequently developed in accordance with the plan, there could be up to around ~~7,000~~ 7,400 dwellings situated within walking distance of the site.

4.3.5 In addition, it could reasonably be expected that a development of this size would transform pedestrian infrastructure in the area and bring with it a large number of associated facilities and amenities (as envisaged in WBC's *"Preferred Development Option Regulation 18 Consultation"* document and Submission Version Local Plan document (March 2019)).

4.3.6 This would therefore represent a potentially significant locally based resident workforce from which the companies occupying the proposed development could draw their employees from.

4.3.7 Internally, the development of the site presents an opportunity to enhance existing rights of way to include measures such as widening, new surfacing, drainage schemes and lighting schemes to significantly enhance their attractiveness.

4.3.8 The development proposals also include a significant enhancement of pedestrian infrastructure in the vicinity of the site via the introduction of a new 3.5m shared pedestrian/cycle link along the northern boundary of the site. ~~This route also extends into the site and provides a connection to the motorway service station on the eastern side of the M6.~~ This route would extend to the Grappenhall Lane / Broad Lane roundabout and also comprise a pedestrian / cycle crossing facility at the Broad Lane roundabout.

4.3.9 This would further enhance connectivity with Broad Lane in the north and/or the southern section of Grappenhall Lane where the Stobart scheme (WBC Planning Reference: 2019/34739) is implementing a series of pedestrian and cycle enhancements. To fully tie into the Stobart infrastructure a new pedestrian / cycle link would also be provided on the western side of the highway between the Broad Lane roundabout and Barleycastle Lane.

4.3.10 At the Cliff Lane roundabout, pedestrian crossing facilities in the form of an informal 'walk-with-traffic' crossing would be provided to tie into the existing footway to the north of Cliff Lane and subsequently the pedestrian infrastructure up to the west-most roundabout at the dumbbell roundabout junction.

4.4 Accessibility by Cycle

4.4.1 In order to assist in assessing the accessibility of the site by cycle, **Plan 64076-CUR-00-XX-DR-TP-06004-P01** to the rear of this report presents an 8km cycle catchment for the site. The 8km cycling distance refers to a recommendation by Cycling England in the document 'Integrating Cycling into Development Proposals' (2009). An extract of the plan is illustrated on **Figure 4.2** below:

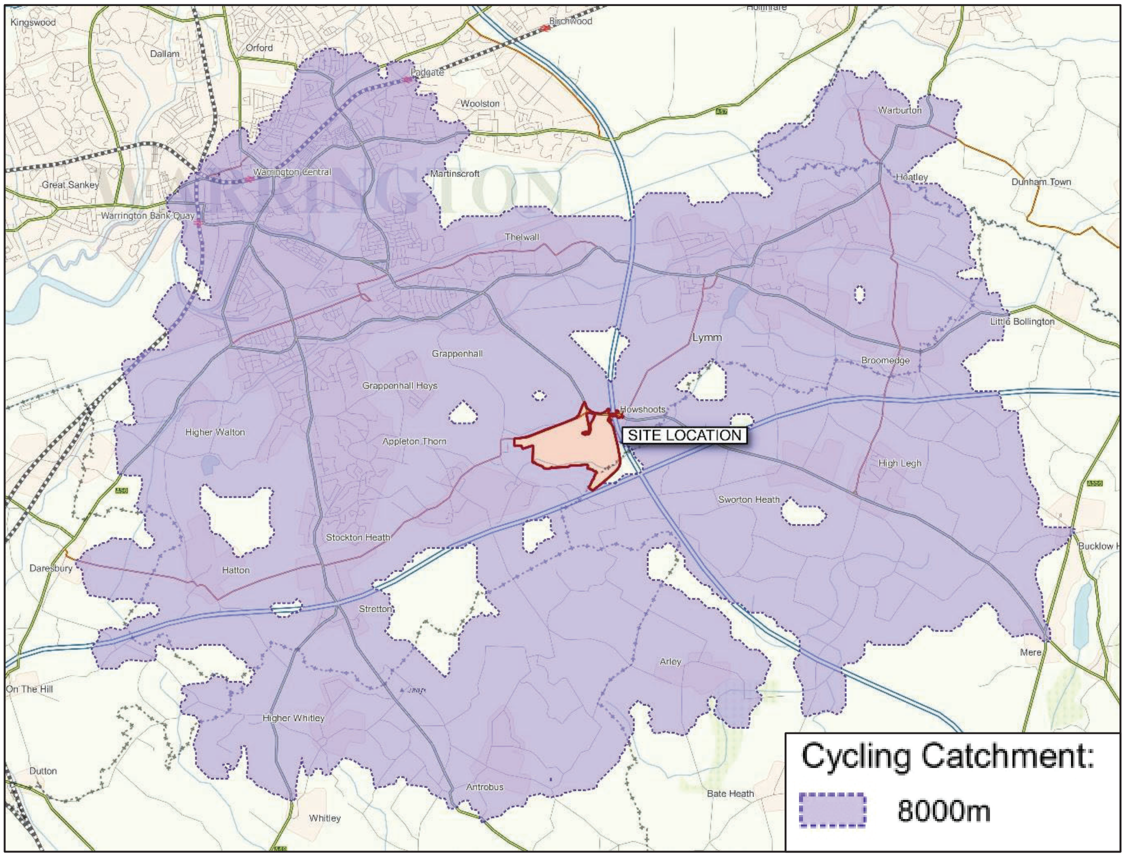


Figure 4.2 – 8,000m Cycle Catchment Isochrone

4.4.2 The catchment extends as far as Daresbury to the west, central Warrington to the north-west, Warburton to the north-east, and Arley to the south.

4.4.3 The road network in WBC's administrative area has been graded by the Council from 1 to 5, where grade 1 represents the best type of route in terms of cyclability and grade 5 represents the worst. The network around the site is shown on **Figure 4.3** below:

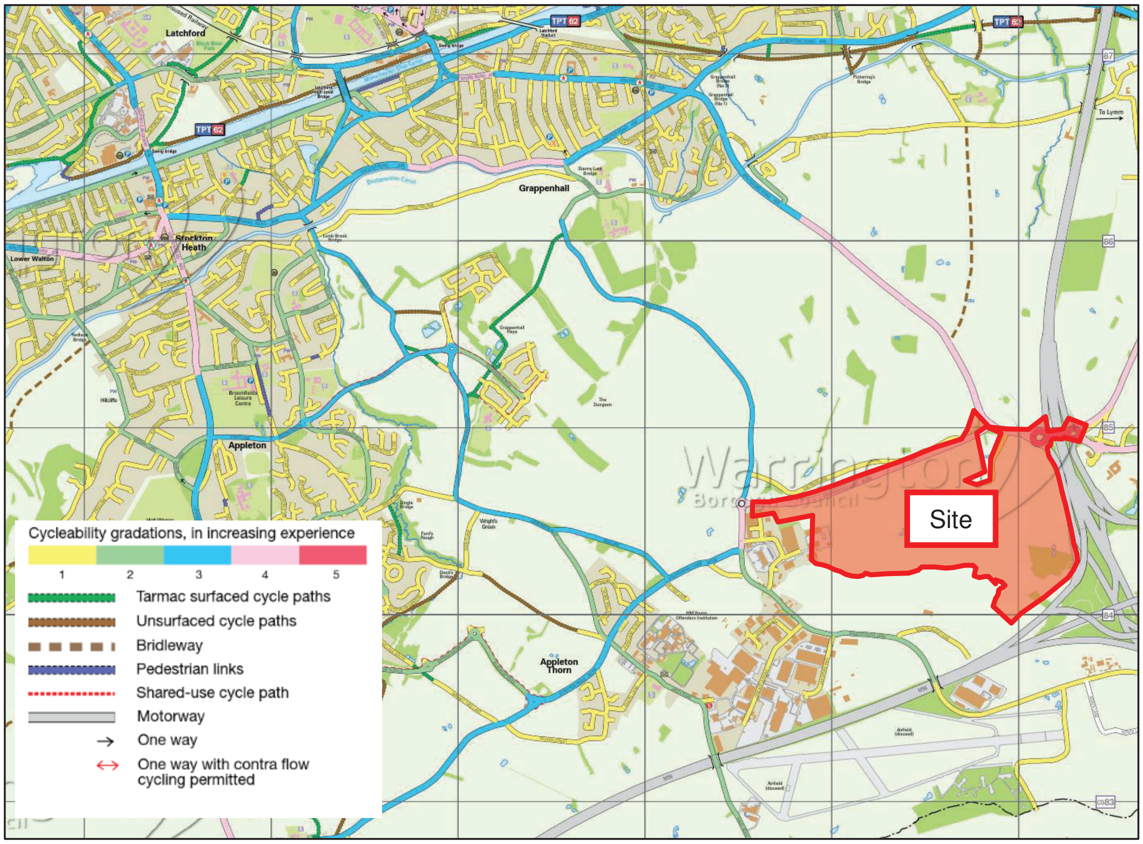


Figure 4.3 – Cycle Route Network Around Site

4.4.4 Clearly, **Figure 4.3** above demonstrates that the road network around the site is currently not ideal for cyclists, indicating that Grappenhall Lane and the two dumbbell roundabouts at the M6 J20 are rated as a grade 4 or 5. This is likely to be a reflection of the speed limit of the roads and the type of traffic that they carry in this specific area.

4.4.5 However, the site's redevelopment presents an opportunity to improve local cycling infrastructure and thereby increase the attractiveness of cycling to work at the site. As mentioned previously a new off-road cycle route along the northern boundary of the site will greatly enhance connectivity.

4.4.6 Further away from the site, the existing cycling infrastructure improves, with the majority of existing road links to the north and west graded as 2 or 3 by WBC. Situated around 2.5km (crow fly) distance to the north of the site centre, the National Cycle Route (NCR) 62 provides an excellent off-road facility between south Manchester to the east and south Warrington to the west.

4.4.7 Elsewhere, local cycle route no. 5 is situated around 1.8km crow-fly distance to the west of the site, providing a connection between Appleton Thorn, Stockton Heath, NCR 62 and local cycle route no. 2 around the east of Warrington and beyond.

4.4.8 Furthermore, and as discussed earlier, the potential allocation of the Warrington Garden Suburb around the north and west of the site brings with it a potentially transformative effect on cycle-related infrastructure in the local area.

4.4.9 With regard to cycle parking, WBC's adopted parking standards specify that a minimum of 1 secure cycle parking space should be provided per 850m² of B8 use floorspace. Based on circa 287,000m2 of B8 use, this equates to a requirement for at least 337 cycle parking spaces spread across the development. This level of provision will be provided as a minimum.

4.4.10 WBC's adopted parking standards for B1 use floorspace also specify a minimum provision of 1 secure cycle parking space per 200m².

4.5 Accessibility by Public Transport

4.5.1 **Plan 64076-CUR-00-XX-DR-TP-06005-P01** to the rear of this report demonstrates those areas accessible within a 20, 40 and 60-minute public transport journey from the site. An extract of the plan is illustrated on **Figure 4.4** overleaf:

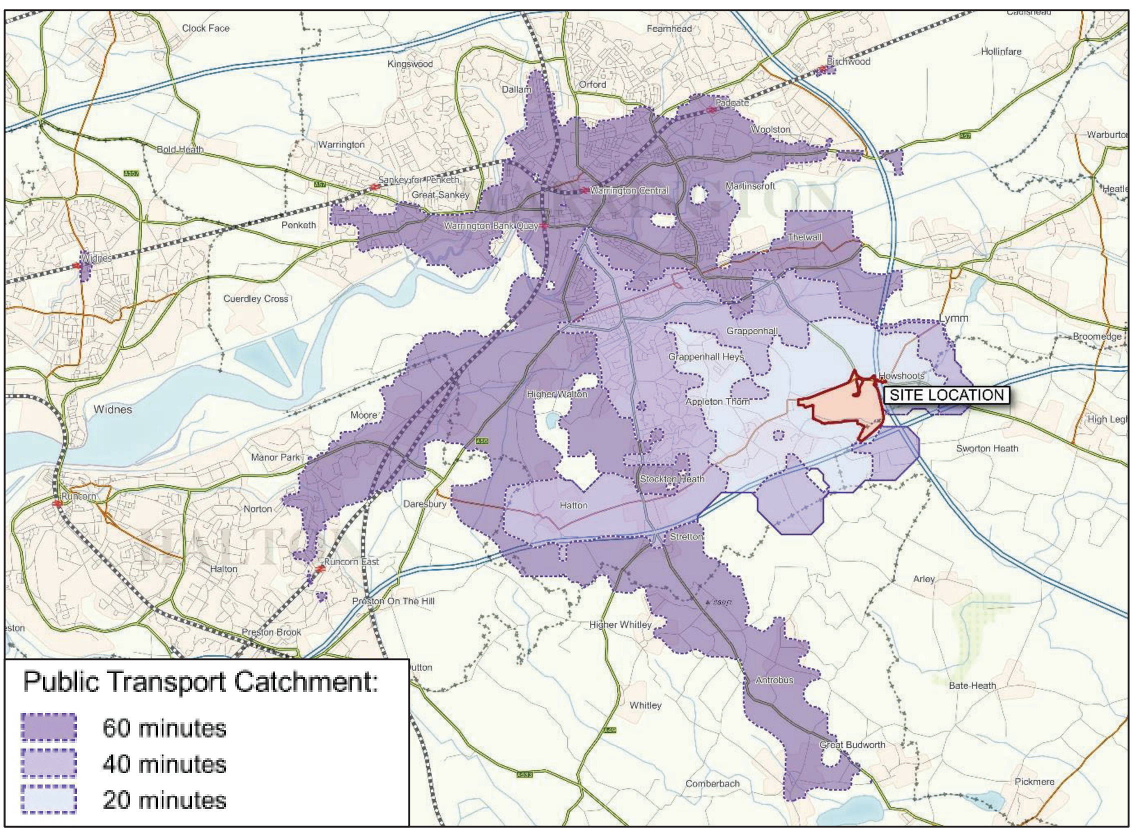


Figure 4.4 – 20 / 40 / 60 Minute Public Transport Accessibility Isochrone

4.5.2 Accessibility by bus and rail are considered in further detail within the subsections below.

Bus Accessibility

4.5.3 The nearest bus stops to the site are situated in Appleton Thorn Village some 2.3km walk distance from the centre of the site. Clearly this is less than ideal from a sustainability perspective, with the stops lying well outside the Chartered Institution of Highways and Transportation's (CIHT's) recommended 400m walk distance threshold to a bus stop from any new development.

4.5.4 On the above basis it is envisaged that the development will provide new bus infrastructure and funding of a new or enhanced service.

4.5.5 Currently, the bus stops in Appleton Thorn are served by the following bus services:

Bus Service	Route	Peak Hourly Frequency		
		Mon – Fri	Sat	Sun/Hols
8/8A/8E	Appleton Thorn - Cobbs Estate - Stockton Heath - Warrington	~60mins	~60mins	-
7	Appleton Thorn/Hatton - Dudlows Green - Stockton Heath - Warrington	3 to 4 services each way	5 to 6 services each way	-

Table 4.2 – Summary of Bus Service Frequencies from Chester Road

4.5.6 As shown in **Table 4.2**, bus services are relatively limited in the area which reflects the semi-rural location of Appleton Thorn in the Borough.

4.5.7 Nonetheless, and setting aside the potential significant improvements to public transport that could be brought about by the Warrington Garden Suburb allocation, there is already a commitment to improve bus services to the west of the site.

4.5.8 It is understood that WBC have secured circa £500,000 via a S106 financial obligation from the HCA in connection with their 3 recently-approved residential schemes near Appleton, and that the obligation relates to the improvement of the no.8 bus service provision along Stretton Road (which becomes Grappenhall Lane further towards the site).

4.5.9 It is understood that a similar arrangement will be necessary to enhance bus services in the vicinity of the site and on this basis the proposals have been designed to accommodate bus movements. ~~Further discussions with WBC will be undertaken to determine the extents of the new bus route.~~ At a meeting with WBC Highways on the 28th August 2019, it was suggested that £600,000 would be a suitable sum for a public transport contribution. This level of funding is comparable to the Stobart contribution and as part of that scheme it was agreed that the money could fund 3 shuttle buses from different directions (Warrington, Runcorn and Cadishead).

4.5.10 No specific details were agreed beyond this and it seems logical that a similar approach be adopted for the Site, as there is no requirement to identify any specifics until more information is known on the work force origins/destinations and the operational times. The principle of this contribution is acceptable to the applicant.

Rail Accessibility

4.5.11 The nearest railway stations are in Warrington (Warrington Bank Quay and Warrington Central), both situated some 6.5km crow-fly distance from the site. The stations lie within 8km cycle distance from the site, as shown on **Figure 4.3** earlier, making a longer journey by rail / cycle a possibility.

4.5.12 Both stations are collectively served by a large number of train services that route to a wide variety of destinations across the entire country at a high frequency. Whilst it is not intended to exhaustively list each destination within this report, selected destinations include Manchester, Liverpool, Blackpool, London, Glasgow, Edinburgh and Llandudno.

4.5.13 Enhanced cycling and public transport infrastructure in the vicinity of the site may enhance the attractiveness of these modes of travel as part of a multi modal trip that is linked with rail.

4.6 Summary

4.6.1 It is acknowledged that, with current infrastructure, the site is not ideally located to attract trips by non-car modes of transport.

4.6.2 However, there are several proposals to enhance the situation, both as part of the future development itself and by benefitting from other infrastructure that is likely to come forward from nearby committed developments and / or the potential future development of the Warrington Garden Suburb Local Plan allocation.

~~4.6.3 Infrastructure to be implemented or funded by the development includes a new 1.2km shared pedestrian/cycle route along the northern boundary of the site and funding towards a new public transport service.~~

4.6.4 The delivery of circa 1.5km of new pedestrian and cycle infrastructure and upgrades to the existing PROW network would offer significant benefits over the existing situation. This infrastructure would enhance connectivity between the site and existing/proposed residential areas to the west, connectivity to Broad Lane, connectivity to the M6 Junction 20 and beyond in the east and finally connectivity to the A50 Knutsford Road.

4.6.5 Additionally, funding for bus services would enhance public transport connectivity to and from the site, most notably from the surrounding residential areas which could benefit from the employment opportunities offered by the proposed development.

4.6.6 In summary, it is considered that the site can become highly accessible by sustainable modes of travel.

5.0 Travel Plan Initiatives

5.1 Introduction

5.1.1 This section of the TP outlines suggested measures which could be implemented to reduce employers' and other site users' dependency on the private car and encourage sustainable modes of transport. The final initiatives chosen for the full Travel Plan will be developed using the results from a Travel Survey to be distributed to all staff to assess current travel habits as well as predicted for the new development.

5.2 Establishing a Steering Group

5.2.1 During scoping discussions, the developer was made aware of the Omega Transportation Steering Group. This is a collection of public and private sector bodies that come together:

'To act as a conduit between all relevant parties to discuss and address transportation matters to maximise sustainable travel behaviours.'

5.2.2 It is anticipated that a similar group would be established in relation to the proposed development and this is fully supported by the developer.

5.3 Production of Employee Induction Packs

5.3.1 All workers at the proposed development should receive a copy of an induction pack when they are first at the new site. Such packs can be critical in influencing travel patterns early on following occupation. The contents of the packs could include:

- Introduction to the TP concept detailing objectives and aspirations;
- Literature on the health benefits of walking, cycling and environmental benefits of sustainable modes of transport;
- Personal travel initiatives;
- Maps showing local walking / cycling routes and places of interest, as well as nearby locations accessible within a short walk.
- Details of public transport services, including timetables and routes; and
- Details of the TP Co-ordinator (TPC).

5.4 Measures to Encourage Walking

5.4.1 In order to encourage walking as a primary mode of travel to and from the site, a number of measures will be considered, including:

- A new 1.2km shared pedestrian/cycle route along the northern boundary of the site;
- Diverted Public Right of Way (PRoW) (route no's 23 & 28);
- Promotion of a 'walking buddy' scheme for employees;
- Provision of personal safety alarms to enhance safety;
- Information on the local pedestrian routes, including public footpaths;
- Raise awareness of the health benefits of walking;
- Emergency Ride Home
- Potentially provide a pool of 'rental umbrellas'
- Clear signing of pedestrian and cycle routes within and adjacent to the site; and

5.5 Measures to Encourage Cycling

5.5.1 To encourage access to the site by bicycle, the following measures will be considered:

- A new 1.2km shared pedestrian/cycle route along the northern boundary of the site;
- Provide information on the local cycle network routes and/or provide the web address to the Warrington cycling section where downloadable maps can be found or via the previously discussed Induction Packs;
- Adoption of the 'Cycle2Work' tax initiative;
- Setting up of a Bicycle User Group (BUG);
- Provide employee shower and changing facilities, where appropriate;
- The provision of staff lockers, where appropriate;
- The provision of a free on-site puncture repair kit;
- Provide a lift home in the event of an emergency;
- Provide a puncture repair kit on site;
- Provide reflective clothing for those wanting to cycle to/from work; and

5.6 Measures to Encourage Public Transport

5.6.1 To encourage access to the site by public transport, the following measures will also be considered:

- Funding of new bus services in the vicinity of the site;
- Distribute details of the Traveline Journey Planning tool for the north-west of England. Employees can contact Traveline by phoning 0871 200 2233 (charges may apply). Employees can also explore the Traveline website at www.traveline-northwest.co.uk;
- New bus link through the Site with new bus infrastructure;
- Provide up-to-date bus and rail information including timetables and contact information in the Induction Packs, and on staff notice boards;
- Provide a limited period introductory discount on tickets for employees using public transport;

- Provide a lift home in the event of an emergency for employees;
- Distribute public transport information showing links to local bus stops and routes of buses; and
- Arrange for season ticket loans to be made available for employees where a monthly deduction is made from their salary.

5.7 Measures to Encourage Car Sharing

5.7.1 Car sharing is an effective way of reducing single occupant car trips if a number of employees travel from the same location each day. Possible methods of encouraging this are:

- Asking staff to sign up if they would be open to car sharing and pairing them. Sign up via notice board or TPC;
- Promote Websites such as www.liftshare.com that are online databases for people travelling to and from destinations looking to car share, predominantly commuters;
- Promotional events could be used to encourage staff to leave their cars at home on nominated days through the year including incentives to car share e.g. priority parking, fuel vouchers; and
- There could also be advertisement to raise awareness of car ownership costs.

6.0 Targets

6.1 Introduction

6.1.1 Target setting is an important part of any TP, providing a focus for the overall TP process and a measure against which TP initiatives can be judged. This section sets out some example targets and provides an overview of the data that should be collected as part of the future target monitoring.

6.2 Mode Shift Targets

6.2.1 Although the development is not constructed yet, the below are some indicative potential targets for modal shift:

Example of Potential Targets					
Travel Mode	**Existing Modal Split Percentage**	**Short Term Target Modal Shift Change**	**Medium Term Target Modal Shift Change**	**Long Term Target Modal Shift Change**	**Total Target Modal Shift Change**
Car Driver	TBC following surveys	-2%	-4%	-4%	**-10%**
Car Share		+1%	+1%	+1%	**+3%**
Public Transport		+1%	+1%	+1%	**+3%**
Cycle		-	+1%	+1%	**+2%**
Foot		-	+1%	+1%	**+2%**

Table 6.1 – Example of Potential Targets

6.2.2 The example modal split targets above aim for a 10% reduction in single occupancy car trips, whilst aiming for a 10% increase in trips by more sustainable modes such as public transport, walking and cycling.

6.2.3 The above targets are indicative only, and final targets will be decided following the receipt of the travel surveys. Surveys will be commissioned within six months of Phase 1 being operational at the site, to be agreed with WBC.

6.3 SMART Targets

6.3.1 The above example modal split targets and potential Travel Plan performance indicators are considered to be suitable interim measure before travel surveys are undertaken six months of Phase 1 being operational.

6.3.2 At this point official targets will be set through consultation with WBC. The official targets will be **SMART** (**S**ite-specific – **M**easurable – **A**chievable – **R**ealistic – **T**imed).

7.0 Monitoring and Review

7.1 Introduction

7.1.1 This section of the report sets out the proposed management arrangements associated with the Framework Travel Plan (FTP). It also sets out the next steps with regards to converting this FTP into a Full Travel Plan.

7.2 Responsibility and Management

7.2.1 Following full occupation of the site, the FTP will need to be updated to a Full Travel Plan. This will involve the completion of travel surveys, which are usually completed within 6 months of Phase 1 being operational.

7.2.2 The travel surveys will be completed by all site users and the survey will be influenced by national travel planning guidance and approved by WBC. It will be possible to extract key travel characteristics from the Travel Surveys, such as:

- Post code;
- Purpose of trip;
- Mode of travel;
- Reason for mode of travel; and
- Barriers to other mode choices.

7.2.3 This information will enable analysis to be undertaken to establish final targets associated with each element of the proposals. It will also provide information on the reasons for that modal split and identify any measures that may encourage a modal shift.

7.2.4 The results of these initial surveys will be incorporated into a Full TP which will be provided to the Local Authority for consideration.

7.2.5 When the Full TP is produced, the day to day responsibility will shift from the developer to the appropriately appointed Travel Plan Coordinator (TPC). The TPC will take responsibility for ensuring that the various elements of the plan are monitored and operate effectively to offer a genuine choice of travel modes. Typical duties include:

- Leading on the delivery of the TP;
- Representing the human face of the TP and explaining its purpose and opportunities on offer;
- Promoting individual measures in the TP;
- Liaising with public transport operators;

- Monitoring the TP; and
- Taking a key role in reviewing the TP.

7.2.6 A TPC will be nominated for each element of the proposals in due course.

7.3 Monitoring and Evaluation

7.3.1 The monitoring of travel behaviour is vital to measure progress towards the targets. Annual monitoring reports will be provided to officers at WBC, following the receipt of the first travel questionnaires. Monitoring will then be carried out for a period of five years from the date of the baseline travel survey.

7.3.2 The next full survey will be carried out once the site is operational for 6 months, whichever is sooner. The results shall be compared to the results discussed within this report to show whether the targets are being met, the targets should be assessed and altered accordingly biannually.

8.0 Action Plan and Budget

8.1 Action Plan Table

8.1.1 Table 8.1 below summarises the key actions from the document by providing an Action Plan for the TP process:

Action	Target Date	Responsibility
Commence TP Process	Upon planning consent	Developer
Implement Steering Group	Upon planning consent	Developer
Design and Implement Hard TP Measures such as Shared Ped/Cycle Route	Prior to occupation	Developer
Appoint TPCs	One month before occupation	Developer
Produce Welcome Pack	Beginning of operation at the development	TPCs
Undertake Initial Travel Surveys	Within six months of Phase 1 opening	TPCs
Decide Modal Split Targets	Within one month of undertaking the initial surveys	TPCs in conjunction with WBC
Update FTP to a full Travel Plan	Within two months of agreeing modal splits with WBC	TPCs
Present Annual Monitoring Report	Annually for five years following the agreement of targets with WBC	TPCs

Table 8.1 – Action Plan

8.1.2 A more detailed action plan including predicted costs for specific initiatives will be provided following the occupation of the development.

Plans

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Merchant Exchange, 17-19 Whitworth St. W Manchester M1 5WG
0161 236 2394
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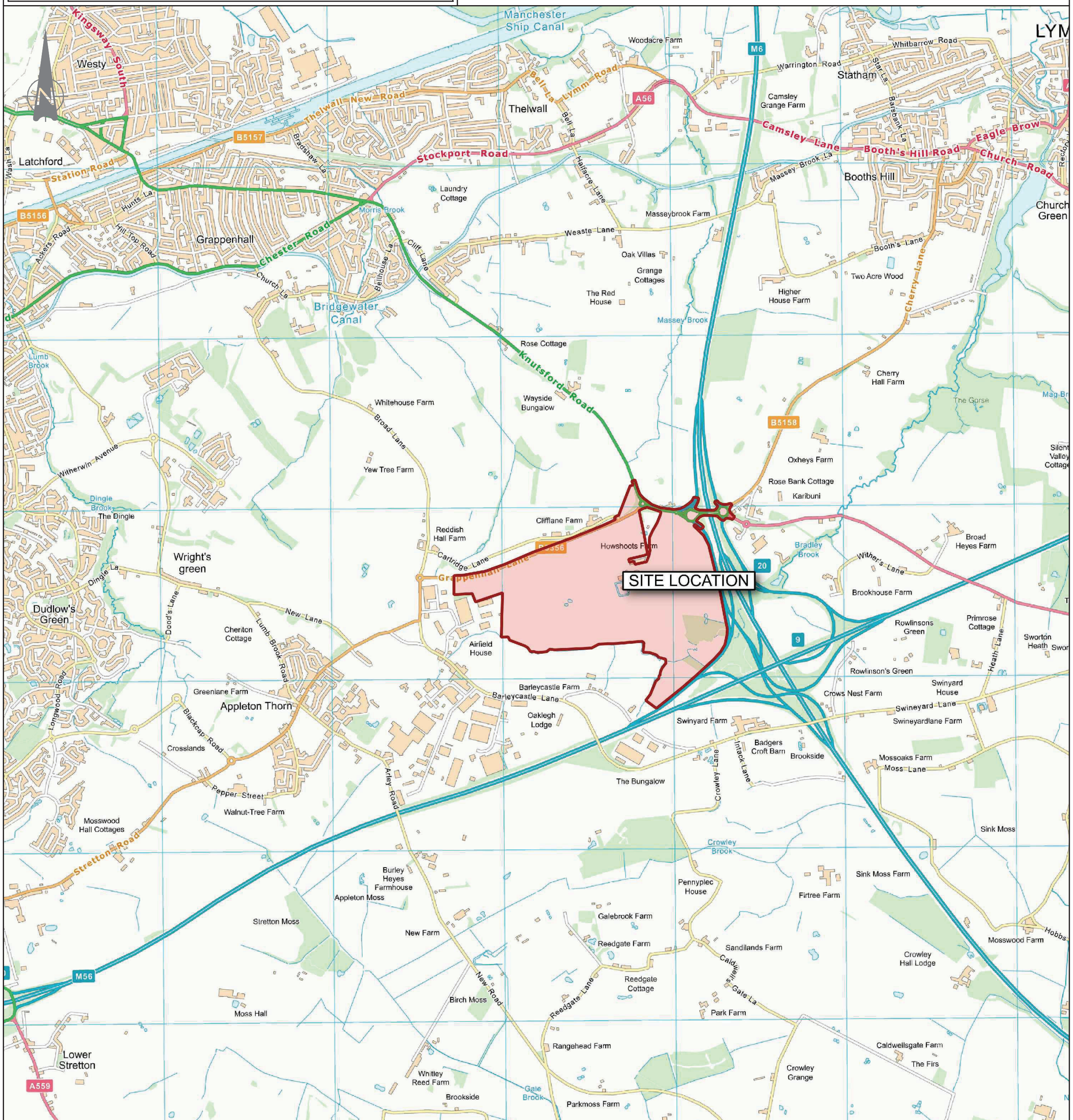
Project: WARRINGTON INTERCHANGE

Drg Title: LOCATION PLAN REGIONAL LEVEL

Status: PRELIMINARY

Drawn By: JM	Checked By: MT
Designed By: JM	Date: 24/08/17
Scale: NTS	

Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
64076 -	CUR -	00 -	XX -	DR -	TP -	06001 -	P01



KEY: Site

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Project: WARRINGTON INTERCHANGE

Drg Title: LOCATION PLAN LOCAL LEVEL

Status: PRELIMINARY

Drawn By: JM | Checked By: MT

Designed By: JM | Date: 24/08/17

Scale: NTS

Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
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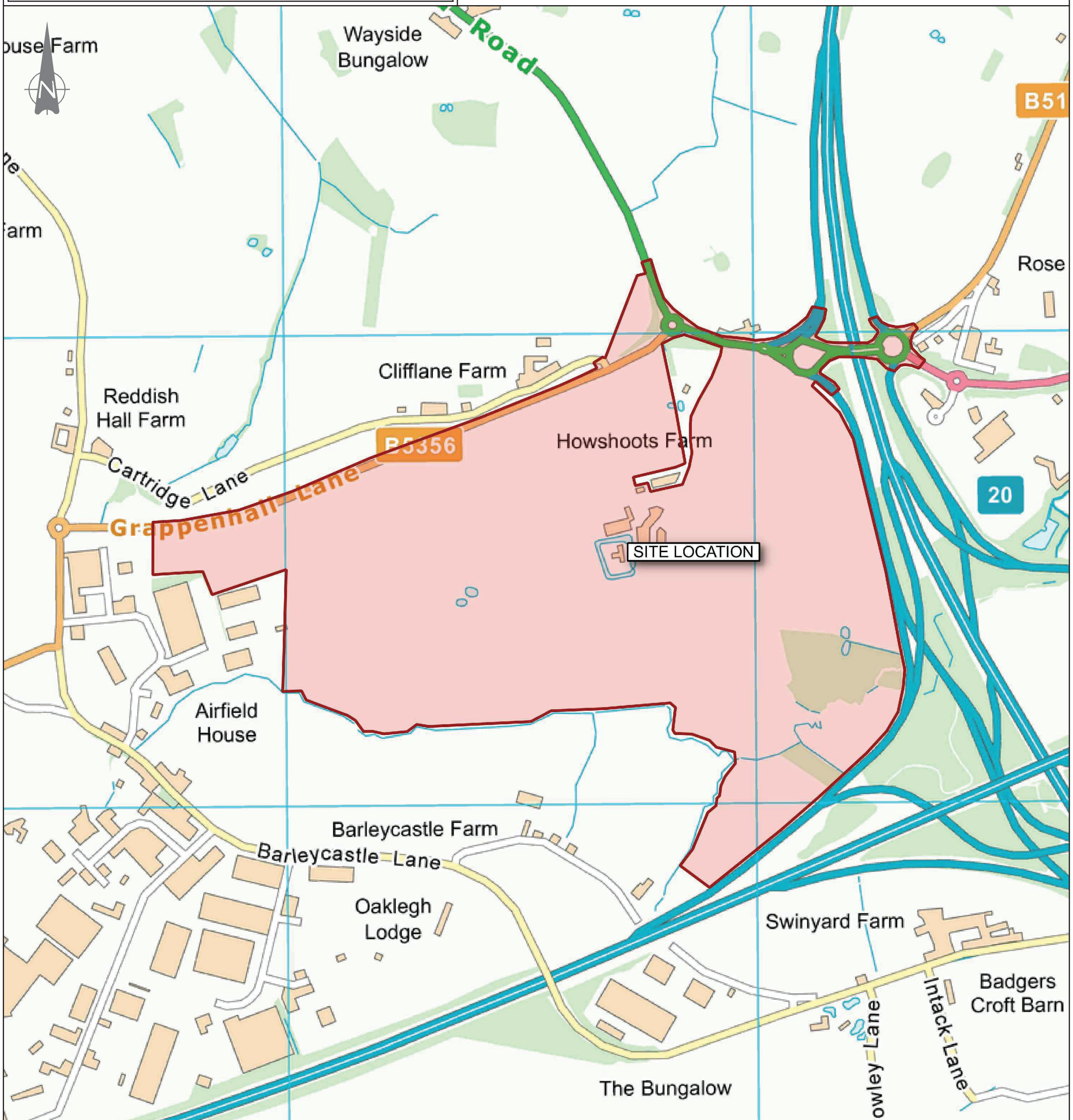

KEY: Site

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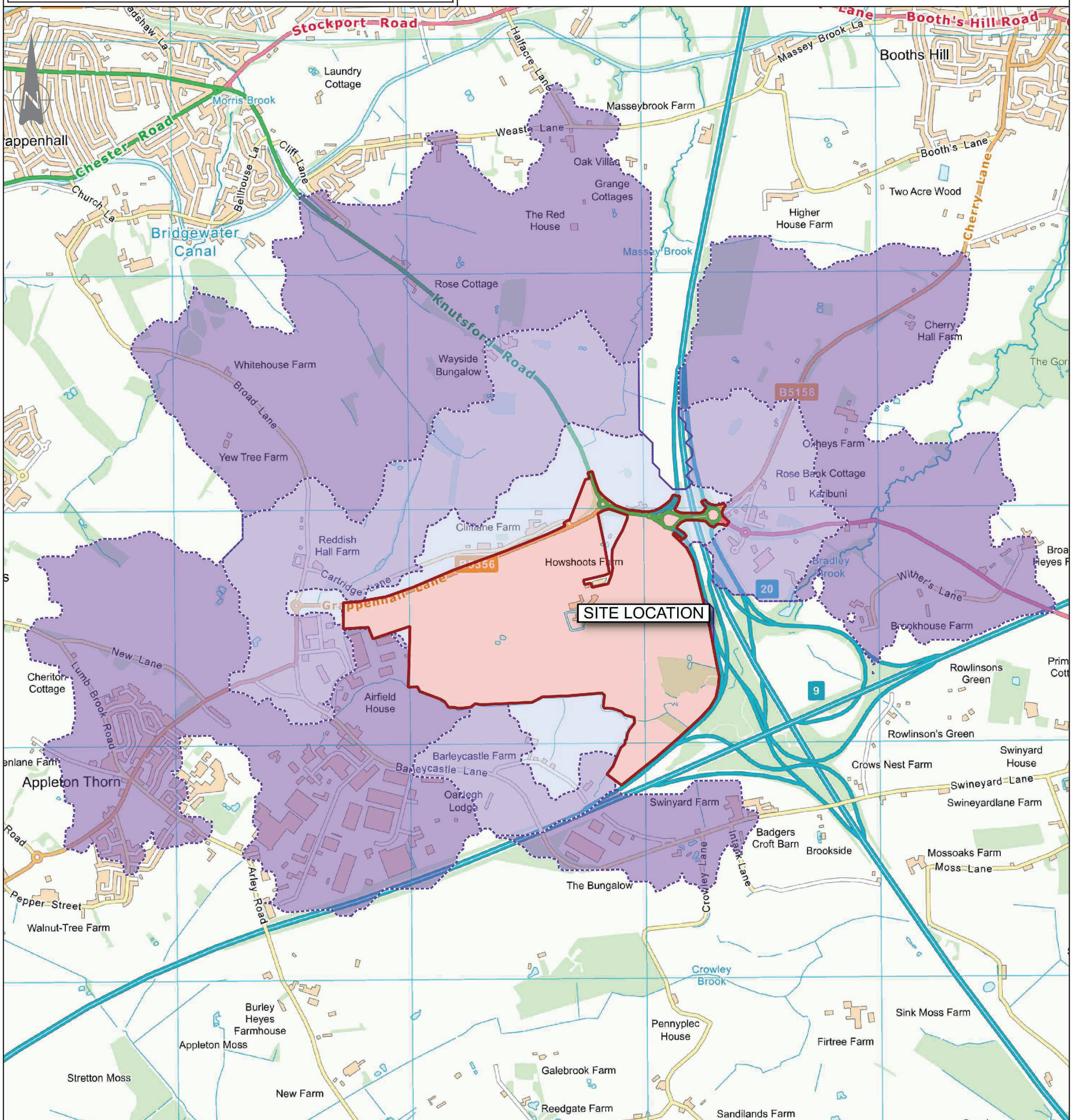
Project:	WARRINGTON INTERCHANGE
Drg Title:	ACCESSIBILITY INDICATIVE WALKING CATCHMENT
Status:	PRELIMINARY
Drawn By: JM	Checked By: MT
Designed By: JM	Date: 24/08/17
Scale: NTS	

Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
64076 -	CUR -	00 -	XX -	DR -	TP -	06003 -	P01



KEY: Site

Walking Catchment
- 2000m
- 1000m
- 500m

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manchester@curtins.com
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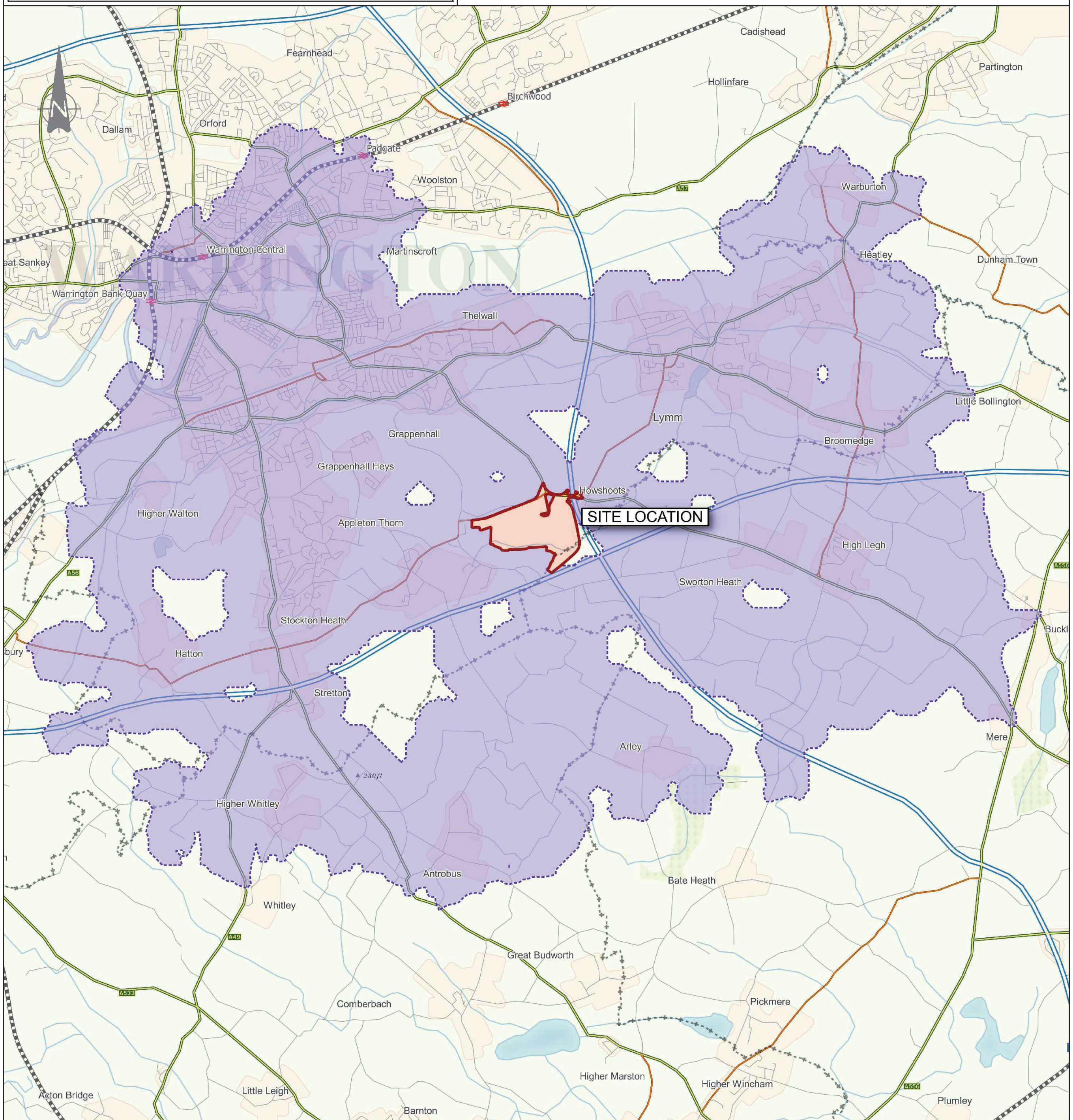
Project: WARRINGTON INTERCHANGE	Status: PRELIMINARY	
Drg Title: ACCESSIBILITY INDICATIVE CYCLING CATCHMENT	Drawn By: JM	Checked By: MT
	Designed By: JM	Date: 24/08/17
	Scale: NTS	

Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
64076 -	CUR -	00 -	XX -	DR -	TP -	06004 -	P01



KEY: Site

Cycling Catchment:

8000m

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manchester@curtins.com
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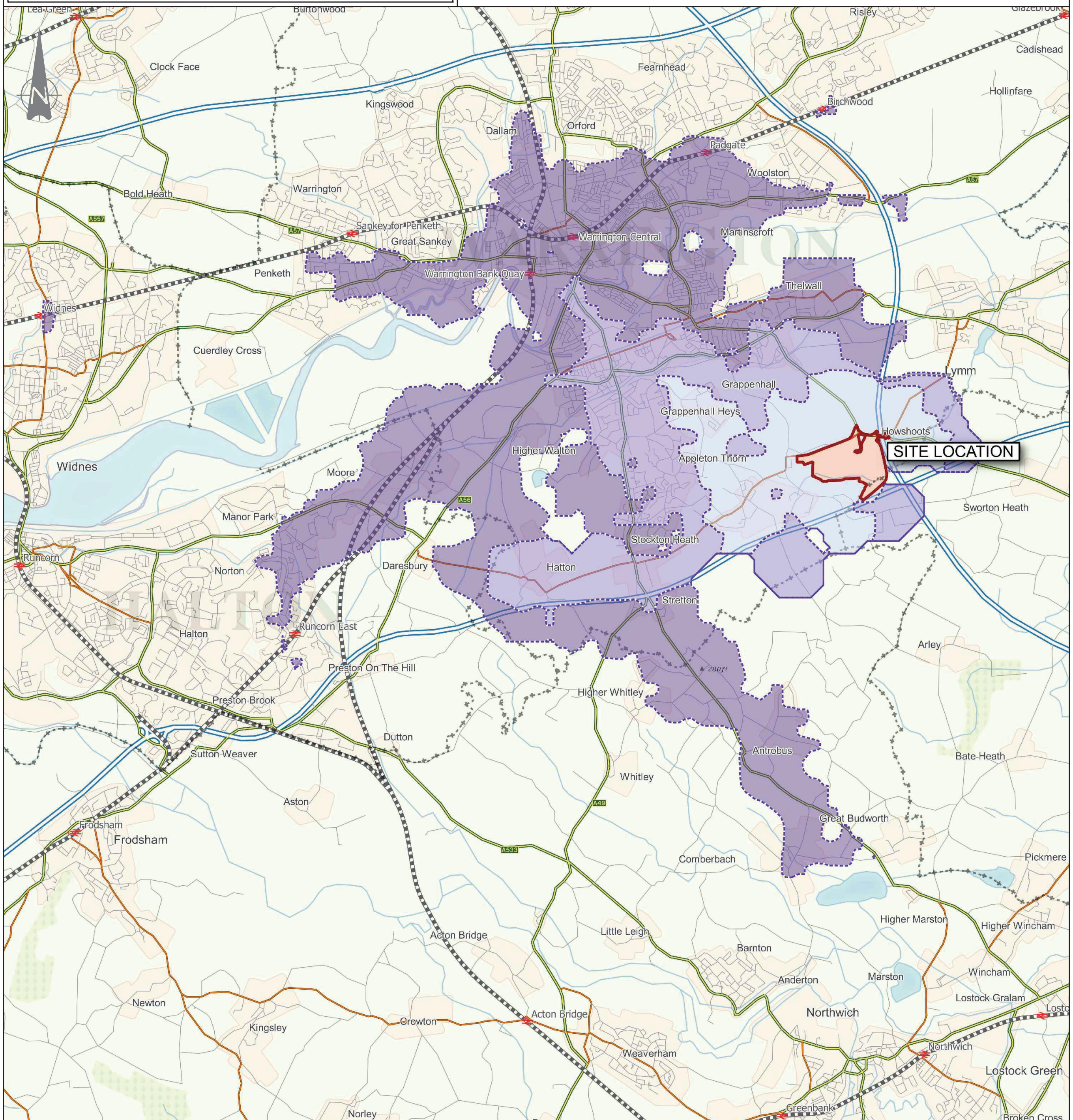
Project: WARRINGTON INTERCHANGE

Drg Title: ACCESSIBILITY INDICATIVE PUBLIC TRANSPORT CATCHMENT

Status: PRELIMINARY

Drawn By: JM	Checked By: MT
Designed By: JM	Date: 24/08/17
Scale: NTS	

Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
64076	CUR	00	XX	DR	TP	06005	P01



KEY: Site

Public Transport Catchment:
- 60 minutes
- 40 minutes
- 20 minutes

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Our Locations

Birmingham
2 The Wharf
Bridge Street
Birmingham
B1 2JS
T. 0121 643 4694
birmingham@curtins.com

Bristol
Quayside
40-58 Hotwell Road
Bristol
BS8 4UQ
T. 0117 302 7560
bristol@curtins.com

Cambridge
50 Cambridge Place
Cambridge
CB2 1NS
T. 01223 631 799
cambridge@curtins.com

Cardiff
3 Cwrt-y-Parc
Earlswood Road
Cardiff
CF14 5GH
T. 029 2068 0900
cardiff@curtins.com

Douglas
Varley House
29-31 Duke Street
Douglas
Isle of Man
IM1 2AZ
T. 01624 624 585
douglas@curtins.com

Dublin
11 Pembroke Lane
Dublin 2
D02 CX82
Ireland
T. +353 1 507 9447
dublin@curtins.com

Edinburgh
1a Belford Road
Edinburgh
EH4 3BL
T. 0131 225 2175
edinburgh@curtins.com

Glasgow
Queens House
29 St Vincent Place
Glasgow
G1 2DT
T. 0141 319 8777
glasgow@curtins.com

Kendal
Units 24 & 25 Riverside Place
K Village
Lound Road
Kendal
LA9 7FH
T. 01539 724 823
kendal@curtins.com

Leeds
Ground Floor
Rose Wharf
78-80 East Street
Leeds
LS9 8EE
T. 0113 274 8509
leeds@curtins.com

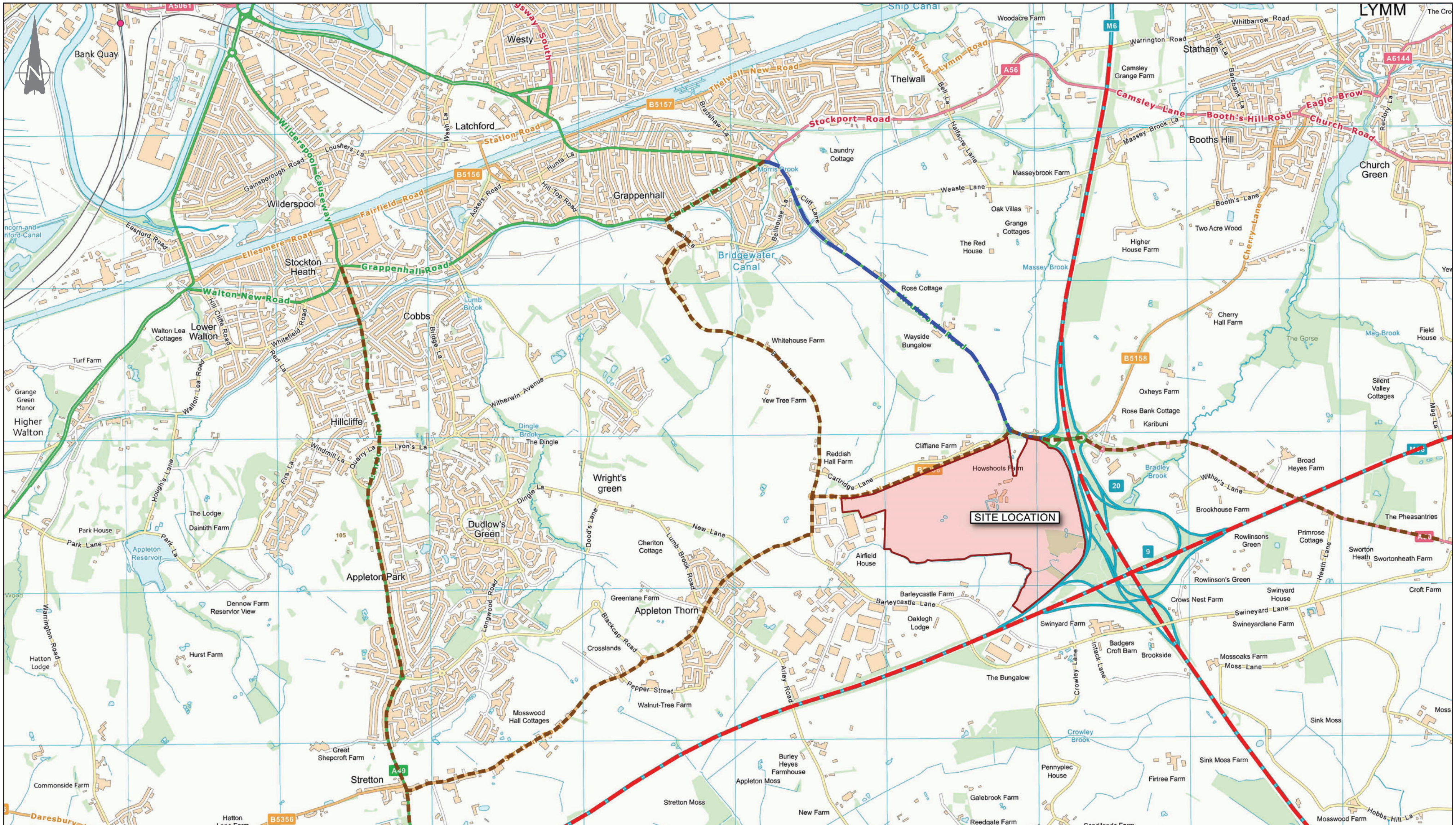
Liverpool
51-55 Tithebarn Street
Liverpool
L2 2SB
T. 0151 726 2000
liverpool@curtins.com

London
40 Compton Street
London
EC1V 0BD
T. 020 7324 2240
london@curtins.com

Manchester
Merchant Exchange
17-19 Whitworth Street West
Manchester
M1 5WG
T. 0161 236 2394
manchester@curtins.com

Nottingham
56 The Ropewalk
Nottingham
NG1 5DW
T. 0115 941 5551
nottingham@curtins.com

Appendix 3 - Receptor Plan



KEY:

- Site
- County Road
- National Road
- Borough / District / Local Neighborhood

Rev:	Description:	Date:	By:
P02	Road classification updated	16/01/19	DD

GENERAL NOTES:

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Project: 6 56 WARRINGTON

Drg Title: ES RECEPTOR PLAN

Status: PRELIMINARY

Drawn By: JM	Checked By: AV
Designed By: JM	Date: 16/11/17
Scale: NTS	

Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
64076	CUR	XX	00	DR	TP	04001	P02

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Appendix 4 - Text Deleted from Original ES Technical Paper

Six 56 Warrington

ES Addendum – Text Deleted from Original ES Technical Paper Part 2 Traffic and Transport

Section Number / Paragraph Number / Table number / Figure Number in Original Paper	Text Deleted from Original ES	Reason
Front cover, Revision Date.	18th March 2019	New revision date
Revision Record, Report Date	18th March 2019	New report date
Page 3, National Planning Policy Framework	July 2018	Replaced with Feb 2019 reflecting updated NPPF.
Page 3, Para 2.3	2018	Replaced with 2019 reflecting updated NPPF.
Page 3, Para 2.5	decision making	Replaced with 'decision taking' as per new text in updated NPPF.
Page 7, Para 2.24	It is anticipated that the draft Local Plan will be published for public consultation in March 2019. It will then be subject to a further period of public consultation prior to examination in public and formal adoption in late 2020.	Sentence and dates updated as the draft Local Plan has since been published.
Page 30, Para 5.51	This is despite the fact that the recently submitted planning application was refused by WBC and the scheme currently has no committed status.	Liberty application has since been resubmitted and is now subject of a SoS Call in
Page 35, Para 5.72	7,000	Updated to 7,400 homes to reflect new plans.

Section Number / Paragraph Number / Table number / Figure Number in Original Paper	Text Deleted from Original ES	Reason
Page 54, Para 8.7	and realignment	Updated to reflect items raised and resolved through recent dialogue and discussions with WBC Highways and HE.
Page 54, Para 8.7	• More than 1.2km of new pedestrian/cycle infrastructure will be provided on Grappenhall Road to the north of the development; • Significant upgrades are proposed to the existing Public Right of Way network that exists within the Site; and • Funding for new Public Transport services will be provided, including the provision of new infrastructure within the site itself.	Updated to show more detail to reflect items raised and resolved through recent dialogue and discussions with WBC Highways and HE and updated to reflect the Applicant's commitments.
Page 66, Row 4, Table 10.1	Whilst the planning application has been refused it is still to form part of a sensitivity test for traffic and therefore included within the assessment of the Proposed Development. It does not therefore need reconsidering in the cumulative assessment for traffic and transport; and in terms of traffic generation in respect of noise and vibration; and air quality.	Stobart application has since been resubmitted and is now subject of a SoS Call in
Page 69, Row 2, Table 10.2	2027/2028	Not relevant.