Hodgetts Estates

Proposed Employment Land Northeast of J10 M42, North Warwickshire

Transport Assessment

May 2021 (Revision C, Nov 2021)

VOLUME 1: REPORT TEXT, TABLES,

FIGURES AND DRAWINGS ONLY

BANCROFT
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EXECUTIVE SUMMARY

This Transport Assessment has been prepared in support of an Outline Planning Application for up to 100,000 sqm of employment uses on land to the northeast of M42 Junction 10. The proposals also include the removal of existing parking laybys at the A5 and replacing them with a new facility for up to 150 vehicles within the site. The final details of the internal layout, including access junctions and parking layouts, will be addressed as part of a reserved matters planning application so this report seeks to demonstrate how the principles of the development, including access, could be satisfactorily delivered in line with current policy and design guidance.

The proposed development would be served by a new signal controlled all-movements access junction at the A5. The proposed layout has been designed in accordance with published guidance from National Highways (formerly Highways England), acting as the Highway Authority responsible for the A5 carriageway. Details of the proposed development peak hour traffic generation have however been agreed with officers at both Warwickshire County Council and National Highways (NH) and the resulting movements assigned to the surrounding highway network using the strategic traffic model that formed the basis of the Local Plan assessment. It is predicted that the proposed development would generate up to 267 peak hour movements with around 80% of these arriving and departing from the west.

The results of the traffic modelling exercise have shown how the existing highway network is already predicted to be busy during the study period (2021 through to 2031), with the M42 Junction 10 showing results that are in excess of its theoretical operating capacity throughout the assessment period. This understandably worsens following the addition of development trips. To the east the A5/Birch Coppice site access junction has also been modelled and shows that, without development trips assigned, it would operate at the limits of its theoretical capacity. However, the modelling work undertaken as part of this Transport Assessment also demonstrates how the proposed development trips would not materially change the way each of these junctions would operate. In considering these results, current planning policy clearly states how mitigating improvements should only be required where there is a material change in conditions. No improvements are proposed as part of the Local Plan process to address these baseline issues, so it is recommended that the minimal change in activity should not warrant any change to this position.

The site is currently served by a reasonable level of infrastructure to accommodate predicted journeys by walking, cycling and public transport modes. There is no evidence to suggest that the existing facilities and current users experience any specific highway safety problems that require attention, and it is important to remember that the immediate surrounding area accommodates a substantial amount of employment development, with potentially up to 10,000 people working each day. However, the proposed development would deliver a range of improvements that should ensure substantial improvements in accessibility, particularly for walking and cycling journeys, that could benefit all users.

These improvements include upgrading the existing eastbound bus stop at the A5 (albeit with a relaxation in design standards required), provision of signal controlled crossing facilities within the access as an alternative to the current priority controlled crossing nearby, upgrading of existing footpaths within the site and adjacent land to provide much improved pedestrian and cyclist links that avoid the M42 Junction 10 and A5 corridor, and finally the delivery of a continuous shared footway/cycleway link that extends throughout the scheme connecting the A5 to Birchmoor and a series of designated route options for pedestrians and cyclists. Access by public transport is also achievable through local bus routes and two rail stations at Polesworth and Wilnecote.

By providing these infrastructure improvements, the proposed development also offers substantially increased access to and from Local Plan development sites in the area (sites *H4 Land east of Polesworth & Dordon* and *H5 Land to the west of Robey's Lane adjacent to Tamworth*) that intend to deliver almost 3,000 dwellings between them. Without the link through the site, residents at each location would likely be required to travel via the M42 Junction 10 and/or the A5 corridor, which could present a significant barrier to sustainable travel options.

In summary then, in line with current Government policy this assessment has demonstrated how the proposed development traffic would not significantly change the existing operation of surrounding highway network. Access could also be delivered in accordance with current published design guidance, providing an appropriate geometric layout that accommodates predicted activity. Further improvements to the existing highway layout would be delivered that include the extension of an existing flare at the A5 westbound approach to the M42 Junction 10 to form a full traffic lane, significantly improved bus stop facilities at the A5, and the opportunity to remove a substandard uncontrolled crossing from the A5 which would be replaced by controlled facilities within the site access.

Hence, it is reasonable to conclude that there would be no severe residual cumulative impact, particularly at the M42 Junction 10. Current planning policy advises how emphasis should be placed on delivering sites that ‘are or can be made sustainable’. This Transport Assessment clearly demonstrates how the scheme, which includes the delivery of an internal pedestrian/cyclist link between the A5 and Birchmoor alongside major upgrades to existing footpaths to the east within land owned by Hodgetts Estates, would deliver benefits beyond the proposed development to the wider community, for both existing and future employment/residential sites. Accordingly, it is recommended that the proposed development should be able to proceed without objection from the relevant highway authorities.

1.0 INTRODUCTION

1.1 Bancroft Consulting were appointed by Hodgetts Estates to provide highways and transportation advice in respect of proposals for up to 100,000 sqm of employment uses, along with 150 overnight lorry parking spaces and an associated 400 sqm amenity block, on land to the northeast of Junction 10 of the M42 Motorway. The site is not currently allocated for development within the North Warwickshire Borough Council Local Plan.

1.2 This Transport Assessment has been produced to support an Outline Planning Application for the proposed scheme, which is due to be submitted during 2021. The general site location is demonstrated within **Figure 1**, whilst a more detailed location plan can be found within **Figure 2**.

1.3 This Transport Assessment follows a Scoping Study report, which examined the baseline conditions in respect of initial development proposals for up to 120,000 sqm flexible B1(E(g)(iii))/B2/B8 uses within the 32.5 hectares site area. It should be noted that planning use class B1 was replaced in 2020 by E(g) and hence the application is to be made in this regard. However, the discussions relating to trip generation largely relate to the B1 use classification due to historic survey data and so this Transport Assessment reverts to this reference for ease of understanding. The report was submitted to Warwickshire County Council (WCC), acting as the Local Highway Authority (LHA), and National Highways (NH), as the Strategic Highway Authority (SHA), as part of formal pre-application consultation in October 2019. Key extracts from the Scoping Study are included at **Appendix A** of this Transport Assessment.

1.4 Initial formal comments were received from NH by email dated 12 November 2019, a copy of which is included at **Appendix B** of this Transport Assessment. This was then followed by a meeting with representatives from NH and WCC to discuss the Scoping Study and establish a way forward for the Transport Assessment. The meeting took place on 30 March 2020 via video conferencing due to COVID-19 restrictions. A copy of the agreed minutes is included at **Appendix C** of this Transport Assessment. WCC subsequently provided its formal response to the

Scoping Study by email dated 15 May 2020, a copy of which is included at **Appendix D** of this Transport Assessment. A detailed summary of the scoping responses is provided within **Section 2** of this report. Where no comment has been provided by WCC, the remainder of this Transport Assessment has therefore been prepared on the basis that all other matters within the Scoping Study are deemed to be acceptable and agreed.

1.5 On receipt of the above comments, extensive discussions took place between representatives of Bancroft Consulting, NH and WCC to establish agreement on the outstanding points of concern. This primarily related to the following areas:

- Inclusion of Mobile Network Data (MND) for establishing the assignment of proposed development trips to the surrounding highway network.
- Amendments to the proposed site access layout, including the removal of a segregated left turn filter lane into the site.
- Need for strategic modelling using WCC's Paramics Model for this area, which includes both the Local Plan and established Reference Case scenarios.
- Further consideration of the proposed trip rates required to address WCC concerns.

1.6 This Transport Assessment seeks to provide an update on these ongoing discussions with WCC and HE that have led to agreement on the above points and then any subsequent conclusions regarding impact. It considers the off-site impact of the proposed development traffic increases in terms of both capacity and highway safety, whilst also confirming the updated proposed site access arrangement. In addition, this report also provides more detailed consideration of opportunities for access by non-car modes and whether any specific improvements are required in this respect.

1.7 To inform the Scoping Study, and subsequently this Transport Assessment, numerous site visits have taken place at various times of the week, by various members of the Bancroft Consulting team.

1.8 This Transport Assessment report is structured as follows:

- Section 2 outlines the pre-application discussions with HE and WCC, and the subsequent agreed position.
- Section 3 provides a review of relevant local and national planning policy and design guidance.
- Section 4 outlines the existing conditions in terms of the local highway network and road safety records.
- Section 5 provides a detailed review of existing pedestrian, cycle and public transport infrastructure.
- Section 6 outlines the development proposals.
- Section 7 describes the extent of traffic increases arising from the Paramics modelling exercise, confirming the study area for further detailed assessment.
- Section 8 details the proposed site access arrangement and considers internal highway points such as parking and servicing.
- Section 9 considers the off-site impact of the proposed development in terms of capacity and safety.
- Section 10 discusses opportunities for employees within the new development to travel by sustainable modes.
- Section 11 provides a summary and conclusions.

1.9 As discussed within the Scoping Study, this Transport Assessment has been prepared in accordance with the following national and local policy / guidance documents:

- National Planning Policy Framework [NPPF] (MHCLG, July 2021)
- Planning Practice Guidance [PPG]
- Manual for Streets [MfS] (DfT, 2007)
- Manual for Streets 2 [MfS2] – Wider Application of Principles (CIHT, 2010)
- Design Manual for Roads and Bridges [DMRB]
- Department for Transport [DfT] Circular 02/2013 (September 2013)
- The Warwickshire Guide (Warwickshire County Council, 2001)
- North Warwickshire Borough Council [NWBC] Local Plan Adopted September 2021

2.0 PRE-APPLICATION CONSULTATION

2.1 Following submission of the Scoping Study WCC and NH raised the following concerns in respect of the proposed development.

- Use of Mobile Network Data (MND) to establish development traffic assignment.
- Amendments to the proposed site access layout.
- Proposed trip rates queried by WCC.
- Confirmation of the study area and associated traffic flows using WCC's adopted traffic model for North Warwickshire.

The following details provide commentary on how each of these areas has been addressed during the intervening period.

Mobile Network Data and development traffic assignment

2.2 In response to concerns raised, details of the MND were formally requested from WCC. Following an initial query relating to the appropriate output area, it was agreed that the data should be based on LSOA E01031025. The results were subsequently provided by WCC via email dated 15 June 2020, a copy of which is included at **Appendix E.** The actual results of this exercise came in the form of a digitised file intended for inserting within the modelling process, so it cannot be viewed independently or presented within this report.

2.3 This information formed the basis of future modelling work and the previous concerns of WCC and NH are considered to be fully addressed in this regard.

Amendments to the proposed site access layout

2.4 As the Highway Authority responsible for the A5 (T) NH has the authority to confirm its requirements for the proposed site access arrangement (as confirmed by WCC in email of 15 May 2020 – see **Appendix D**). Within its formal pre-application comments (see **Appendix B**) NH expressed concern at the impact of a new signal-controlled junction at this location and its impact upon travel times for strategic traffic flow.

2.5 It also commented that the proposed layout should be submitted strictly in accordance with the Design Manual for Roads and Bridges, raising concerns regarding detailed aspects of the previous layout such as:

- Suitability of the segregated left-turn lane into the site.
- Uncontrolled crossing within the proposed arrangement.
- Ability to deliver satisfactory Desirable Minimum Stopping Sight Distance at the eastbound approach to the proposed site access, allowing for any queuing vehicles.
- Proximity of existing bus layby within the eastbound A5 carriageway.
- Removal of laybys at both the eastbound and westbound carriageways.
- Suitability of the proposed merge on the A5 east of the site access.
- Need to stop up an existing private access to the east of the proposed site access location.
- RSA concerns over the lack of a separation strip between the carriageway and NMU facilities.
- Crossing distance for NMU at the A5 westbound approach to the site access, which involved four lanes of traffic (circa 15 metres).
- Evidence is required to demonstrate how sufficient land exists to deliver any proposed scheme.
- Potential for Permanent Traffic Regulation Orders (PTROs) to deliver the scheme.
- Need to justify 2011 modal split data for establishing suitability of the surrounding NMU infrastructure.

2.6 The comments then emphasise the need for sufficiently detailed preliminary layout design drawings prepared in accordance with the principles of DMRB CD 123 along with DfT Circular 02/2013 Para 11. NH also stated that the application should be supported by a ‘Walking cycling and horse-riding assessment and review’ (WCHAR) and Stage 1 Road Safety Audit, although it was subsequently agreed during the meeting that the Transport Assessment could be progressed without the need for a WCHAR (see minutes at **Appendix C**). It was also subsequently agreed with officers at NH that the Stage 1 Road Safety Audit should be undertaken following submission of the Transport Assessment. A copy of the email detailing this point is provided at **Appendix F**.

2.7 Both NH and WCC expressed concern at the potential impact of development trips within Staffordshire County's highway network and suggested that officers from this authority should be involved in the consultation process. An initial conversation took place with Mr Simon Hawe at Staffordshire County Council's highways department and the subsequent email (dated 29 May 2020) confirming the points discussed is provided at **Appendix G**.

2.8 The above points will be addressed fully below in the context of the updated proposed site access layout.

Proposed trip rates queried by WCC

2.9 Following an initial agreement with NH and WCC on the Scoping Study trip generation calculations, WCC subsequently emailed to confirm that it no longer accepted the proposed trip rates. A copy of the email dated 10 July 2020 confirming this point is included at **Appendix H** of this Transport Assessment. This triggered further detailed assessment and an exchange of emails leading to agreement on the following trip rates and trip generation details that were set out in an email dated 1 October 2020 to WCC, also copied to NH. WCC subsequently confirmed its agreement by email dated 2 October 2020, whilst NH confirmed its acceptance of the updated details by email dated 5 November 2020. Copies of each email are provided at **Appendix I** of this Transport Assessment.

The current proposed scheme now comprises the following elements:

- 90,000 sqm GFA B8 use
- 10,000 sqm GFA B1(E(g)(iii))/B2 use
- Lorry Park with 150 spaces and associated amenity building

The agreed trip rates and subsequent trip generation details are as follows:

<u>B8 Warehousing (per 100 sqm gfa) – 90 000 sqm gfa</u>

Trip rates

Morning period		All Vehicles	
0700 to 0800	0.154 arrive	0.081 depart	0.235 total
0800 to 0900	0.117 arrive	0.092 depart	0.209 total
0900 to 1000	0.120 arrive	0.082 depart	0.202 total
Evening period			
1600 to 1700	0.082 arrive	0.122 depart	0.204 total
1700 to 1800	0.086 arrive	0.140 depart	0.226 total
1800 to 1900	0.048 arrive	0.089 depart	0.137 total

Trip generation

Morning period		All Vehicles	
0700 to 0800	139 arrive	73 depart	212 total
0800 to 0900	105 arrive	83 depart	188 total
0900 to 1000	108 arrive	74 depart	182 total
Evening period			
1600 to 1700	74 arrive	110 depart	184 total
1700 to 1800	77 arrive	126 depart	203 total
1800 to 1900	43 arrive	80 depart	123 total

<u>B1(c)/(E(g)(iii))/B2 (per 100 sqm gfa) – 10 000 sqm gfa</u>

Trip rates

Morning period		All Vehicles	
0700 to 0800	0.253 arrive	0.031 depart	0.284 total
0800 to 0900	0.658 arrive	0.078 depart	0.736 total
0900 to 1000	0.261 arrive	0.098 depart	0.359 total
Evening period			
1600 to 1700	0.068 arrive	0.248 depart	0.316 total
1700 to 1800	0.120 arrive	0.521 depart	0.641 total
1800 to 1900	0.063 arrive	0.290 depart	0.353 total

Trip generation

Morning period		All Vehicles	
0700 to 0800	25 arrive	3 depart	28 total

0800 to 0900	66 arrive	8 depart	74 total
0900 to 1000	26 arrive	10 depart	36 total

Evening period

1600 to 1700	7 arrive	25 depart	32 total
1700 to 1800	12 arrive	52 depart	64 total
1800 to 1900	6 arrive	29 depart	35 total

<u>Proposed 150 space truck stop (details as presented within BCL email of 7 July 2020)</u>

Trip generation

Morning period		All Vehicles	
0700 to 0800	8 arrive	31 depart	39 total
0800 to 0900	13 arrive	17 depart	30 total
0900 to 1000	12 arrive	14 depart	26 total

Evening period

1600 to 1700	22 arrive	11 depart	33 total
1700 to 1800	25 arrive	9 depart	34 total
1800 to 1900	23 arrive	9 depart	32 total

<u>Note specific assignment/modelling method as set out in email as follows:</u>

> "*As regards the potential assignment of these turning movements through the proposed site access and then through the network, it is recommended that a simple equal split of the A5 and M42 carriageways should be sufficient in this instance, or 25% arriving and departing via the north (towards M42 junction 9), 25% via the east (towards Dordon and the A5), 25% via the south (towards M42 Junction 11), and then 25% via the east (towards Tamworth and the A5). In practice this will only mean that 50% of the above flows will represent a new/reassigned turning movement at Junction 10 of the M42, where 25% (or up to 10 peak hour movements) would be associated with the south to east (and vice versa) movement and similarly 25% associated with the north to east (and vice versa) movement. Predicted peak hour movements from the A5 would simply be a transfer from a passing movement turning into the site and will*

> *have no affect beyond the site access junction itself. This should support the proposed approach to only modelling the strategic impact of the proposed B1/B2 and B8 uses."*

Total Trip Generation (for assignment within the PARAMICS model)

Morning period		All Vehicles	
• 0700 to 0800	164 arrive	76 depart	240 total
• 0800 to 0900	171 arrive	91 depart	262 total
• 0900 to 1000	134 arrive	84 depart	218 total
Evening period			
• 1600 to 1700	81 arrive	135 depart	216 total
• 1700 to 1800	89 arrive	178 depart	267 total
• 1800 to 1900	49 arrive	109 depart	158 total

Confirmation of the study area and associated traffic flows using WCC's adopted traffic model for the North Warwickshire Borough

2.10 In accordance with the agreement between NH and WCC, details of the MND and proposed development trip generation were supplied to Vectos for inclusion within the local area strategic traffic model. As part of its instructions, Vectos was provided with the MND and trip generation data set out above, along with an indicative version of the emerging site access layout plan. The required output data was agreed with WCC and NH by Vectos and took the form of the following scenarios for the weekday morning and evening peak periods.

- 2021 Reference Case (with and without development)
- 2026 Reference Case (with and without development)
- 2031 Reference Case (with and without development)
- 2031 Local Plan Scenario (with and without development)

2.11 The results of the PARAMICS modelling exercise were subsequently emailed on 25 November 2020 with a link to the following spreadsheet files:

- VM200361.Sp001 – Impact Assessment Results.xls

- VM200361.Sp004 – Modelled Flows.xls
- VM200361.Sp005 – Demand Flows.xls

2.12 The ‘Impact Assessment Results’ file set out the network performance results at key selected links for each of the 8 scenarios. This included ‘Network Stat Results’, ‘Queue Summary’, ‘Journey Time Results’, and ‘Link Flow Results’. The files labelled as ‘Modelled’ and ‘Demand’ flows set out the modelled turning movements at the proposed site access junction and the immediately adjacent A5 junctions with the M42 Motorway Junction 10 and Birch Coppice access. The details of these results are discussed later within this Transport Assessment but for robustness, all future modelling has been based on the details presented in the ‘Demand Flows’.

2.13 By adopting this process, WCC and NH should have no further concerns regarding the assignment of development trips to the surrounding highway network or baseline traffic conditions upon which the modelling will be based.

3.0 POLICY CONTEXT AND RELEVANT GUIDANCE

3.1 National Policy

National Planning Policy Framework (NPPF)

3.1.1 The NPFF is the overarching Government guidance on planning with the latest version released in July 2021. In respect of planning obligations, Paragraph 57 states how contributions must only be sought where they meet all the following tests:

> *"a) necessary to make the development acceptable in planning terms;*
> *b) directly related to the development; and*
> *c) fairly and reasonably related in scale and kind to the development."*

3.1.2 The NPPF places heavy emphasis on the importance of sustainability, where Paragraph 105 sets out that:

> *'The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making'.*

3.1.3 Paragraph 110 goes on to set out key criteria that development sites should establish. It states:

> *"In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:*
> *a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
> *b) safe and suitable access to the site can be achieved for all users;*

> *c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and*
>
> *d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree."*

3.1.4 Paragraph 111 of the NPPF states*:*

> *"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."*

3.1.5 Based on the above guidance, developments should only be refused where the residual cumulative transport impacts can be defined as 'severe', or if the traffic increases would cause an unacceptable impact on highway safety.

3.1.6 Paragraph 112 of the NPPF goes on to set out a list of preferred criteria for applications for development. It recommends that priority is given to pedestrian and cycle movements and minimising the scope for conflict with vehicles.

3.1.7 Paragraph 113 provides a summary of the above policies and outlines the level of detail that should be provided as part of any application, in relation to highways and transportation. It sets out the following requirements:

> *"All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed."*

3.1.8 The NPPF is supported by a range of associated Planning Practice Guidance (PPG) documentation. This includes advice on 'Transport evidence bases in plan making and decision taking' (updated March 2015), which provides guidance to assist local planning authorities when assessing strategic transport needs and identifying suitable mitigation within Local Plans. The PPG documentation also includes 'Travel Plans, transport assessments and statements in decision-taking' (updated March 2014). This document provides general advice on the scope of Transport Assessments and where they might be required, considering Paragraph 111 of the NPPF, although it does not include any specific prescriptive guidance for assessments (see below for further details).

DfT Circular 02/2013: The Strategic Road Network and the delivery of sustainable development (10 September 2013)

3.1.9 Whilst the NPPF sets out published Government policy guidance on how all planning applications should be determined in the UK, DfT Circular 02/2013 presents additional high level policy guidance for the Strategic Road Network as adopted by National Highways (NH). Paragraph 3 of the document states how it "*sets out the way in which the Highways Agency will engage with communities and the development industry to deliver sustainable development*".

3.1.10 In respect of the policy aims and application, Paragraph 9 states how "*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 are severe*". Paragraph 10 continues to state "*even where proposals would not result in capacity issues, the Highways Agency's prime consideration will be the continued safe operation of its network*".

3.1.11 In the context of development management Paragraph 22 of the document states that "*where proposals are not consistent with the adopted Local Plan then a full assessment of their impact will be necessary, which will be based on the performance and character of the strategic road network as determined by the presumption that the Plan proposals will be fully implemented*". Paragraph 24 then advises how "*Where appropriate, conditions may be agreed to offset any unacceptable impacts that may be identified through the assessment process*".

3.1.12 In addressing the assessment of development impact, Paragraph 25 states "*The overall forecast demand should be compared to the ability of the existing network to accommodate traffic over a period of up to ten years after the date of registration of a planning application or the end of the relevant Local Plan whichever is the greater. This is known as the review period*". Paragraph 26 then continues on to advise how the "*Highways Agency expects the promoters of development to put forward initiatives that manage down the traffic impact of proposals to support the promotion of sustainable transport and the development of accessible sites. This is particularly necessary where the potential impact is on sections of the strategic road network that could experience capacity problems in the short or medium term*". Importantly, Paragraph 27 confirms that 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*".

3.1.13 Paragraph 33 deals with capacity enhancement and confirms "*Only after travel plan and demand management measures have been fully explored and applied will capacity enhancement measures be considered. While capacity enhancements should normally be addressed at the plan making stage, such measures may be considered at the time when individual planning applications are submitted, subject to the over-riding principle that delivery of the adopted Local Plan proposals should not be compromised*".

3.1.14 Paragraph 34 then continues to state "*Where insufficient capacity exists to provide for overall forecast demand at the time of opening, the impact of the development will be mitigated to ensure that at that time, the strategic road network is able to accommodate existing and development generated traffic. Any associated mitigation works should be appropriate to the overall connectivity and capacity of any affected part of the strategic road network*".

3.1.15 Paragraphs 37 to 44 of the document refer to access to the strategic road network, with Paragraph 37 confirming "*Where appropriate, proposals for the creation of new junctions or direct means of access may only be identified and developed at* *the Plan-making stage in circumstances where it can be established that such new infrastructure is essential to the delivery of strategic planned growth*". Paragraph 44 concludes "*On a trunk road that is not a motorway or a route of near motorway standard any proposal to change the use of an existing roadside facility for road users will be considered against local conditions and the merits of the individual case*".

3.1.16 Paragraph 48 addresses the principle of environmental impact and states "*Transport assessment undertaken by the promotor of the development should be comprehensive enough to establish the likely environmental impacts, including air quality, light pollution and noise, and to identify the measures to mitigate these impacts. This will enable local authorities to fulfil their remit of considering appropriate environmental impact assessment of development*".

3.1.17 Annex B of the document addresses 'Roadside facilities for road users on Motorways and All-Purpose trunk roads in England'. Paragraph B2 confirms how "*All such proposals will be considered in the context of the National Planning Policy Framework and, in particular, the statement that it includes regarding the primary function of roadside facilities being to support the safety and welfare of the road user*".

3.1.18 In considering the location of roadside facilities Paragraph B6 advises how "*the maximum distance between motorway service areas should be no more than 28 miles. The distance can be shorter, but to protect the safety and operation of the network, the access/egress arrangements of the facilities must comply with the requirements of the Design Manual for Roads and Bridges including its provisions in respect of junction separation*".

3.1.19 Paragraph B7 extends this advice by advising how "*the maximum distance between signed services on trunk roads should be the equivalent of 30 minutes driving time*".

3.1.20 Paragraph B11 addresses the delivery of roadside facilities paragraph and the principle of trip generation. It states, "*In circumstances where there is potential for these to become destinations in their own right, the Highways Agency will only support proposals for or within service areas and other roadside facilities if it can* *be shown that there would be no overall increase in trip mileage, and always provided that there would be no significantly adverse impact on the safety and operation of the strategic road network*".

3.1.21 Paragraph B13 confirms "*On-line (between junctions) service areas are considered to be more accessible to road users and as a result are more attractive and conducive to encouraging drivers to stop and take a break. They also avoid the creation of any increase in traffic demand at existing junctions*". Paragraph B14 then states "*in circumstances where competing sites are under consideration, on the assumption that all other factors are equal, the Highways Agency has a preference for new facilities at on-line locations*".

3.1.22 Table B1 of Annex B provides the 'minimum requirements for the various types of roadside facility that may be eligible for signing from the strategic road network'. These requirements are classified as 'Mandatory' and 'Permitted' for truckstops on all-purpose trunk roads and listed as follows:

- Open 24 hrs a day 365 days a year [**N/A**]
- Open minimum 12 hours per day between 8am and 8pm every day except Christmas Day, Boxing Day and New Year's Day [**Mandatory**]
- Free parking for up to 2 hours minimum for all vehicles permitted to use the road served by the facility [**Mandatory**]
- Free toilets/hand washing facilities with no need to make a purchase [**Mandatory**]
- Shower and washing facilities for HGV drivers, including secure lockers in the shower/washing area [**Mandatory**]
- Fuel [**Permitted**]
- Hot drinks and hot food available at all opening hours for consumption on the premises [**Permitted**]
- Hot drinks and hot food available 8am to 8pm for consumption on the premises [**Mandatory**]
- Access to a cash operated telephone [**Mandatory**]
- Use as an operating centre for the purposes of the Goods Vehicles (Licensing of Operators) Act 1995 or the Public Passenger Vehicles Act 1981 [**Permitted**]

3.2 North Warwickshire Borough Council Local Plan (Adopted September 2021)

3.2.1 Chapter 5 of the North Warwickshire Borough Council Local Plan (NWBCLP) sets out the following objectives for the Local Plan.

1. To secure a sustainable pattern of development reflecting the rural character of the Borough
2. To provide for the housing needs of the Borough
3. To develop and grow the local economy for the benefit of local residents
4. To maintain and improve the vitality of the Market Towns
5. To promote rural diversification
6. To deliver high quality developments based on sustainable and inclusive designs
7. To protect and enhance the quality of the natural environment and conserve and enhance the historic environment across the Borough
8. To establish and maintain a network of accessible good quality Green Infrastructure, open spaces, sports and recreational facilities
9. To ensure the satisfactory provision of social and cultural facilities

3.2.2 It also presents the following key policies relating to new development.

LP1 Sustainable Development

Planning applications that accord with the policies in this Plan (and where relevant, with other development plan policies including those in Neighbourhood Plans) will be approved without delay, unless material considerations indicate otherwise. Where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, applications will be determined in accordance with the presumption in favour of sustainable development.

Quality of Development / Place

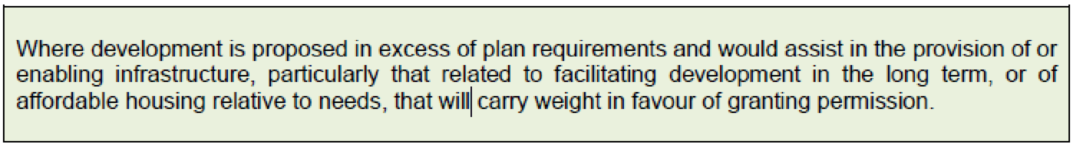
All development proposals must;

- be supported by the required infrastructure
- be consistent with the approach to place making set out through development management policies, including, where relevant
- integrate appropriately with the natural and historic environment, protecting and enhancing rights of way network where appropriate
- demonstrate a high quality of sustainable design that positively improve the individual settlement's character; appearance and environmental quality of anarea;
- deter crime;
- sustain, conserve and enhance the historic environment;
- provide, conserve and enhance biodiversity; and,
- create linkages between green spaces, wildlife sites and corridors.

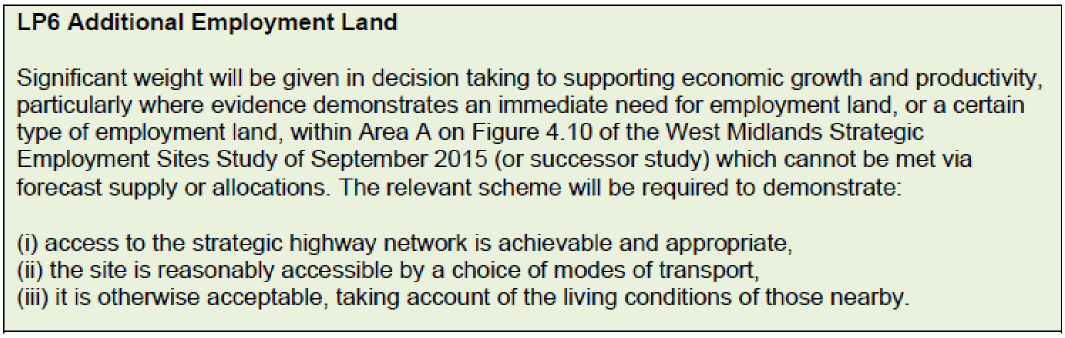
Development should protect the existing rights of way network and where possible contribute to its expansion and management.

Implementation and Infrastructure

Infrastructure will be sought where it is necessary, directly related to the development and is fairly and reasonably related in scale and kind to the development. It may be related to social, economic and/or environmental issues. Supplementary Planning Guidance and documents will be used to guide provision, Infrastructure requirements are outlined in the Infrastructure Delivery Plan (For clarity, infrastructure projects drawn from the IDP are itemised and indicated to be either critical to the Plan's strategy as a whole, or necessary in association with particular allocations or projects, along with indicative timings are itemised in NWBC26, Appendix A) and the supporting documents contained in Appendix C of the Local Plan. The list is not exhaustive as each will be taken on a site by site basis and will depend on the viability of the scheme. Other site specific measures will be considered at the time of the planning permission. These will be secured through conditions, S106's or other agreements considered appropriate to ensure its delivery. It will be necessary to ensure the ongoing maintenance, where appropriate, of any infrastructure provision.



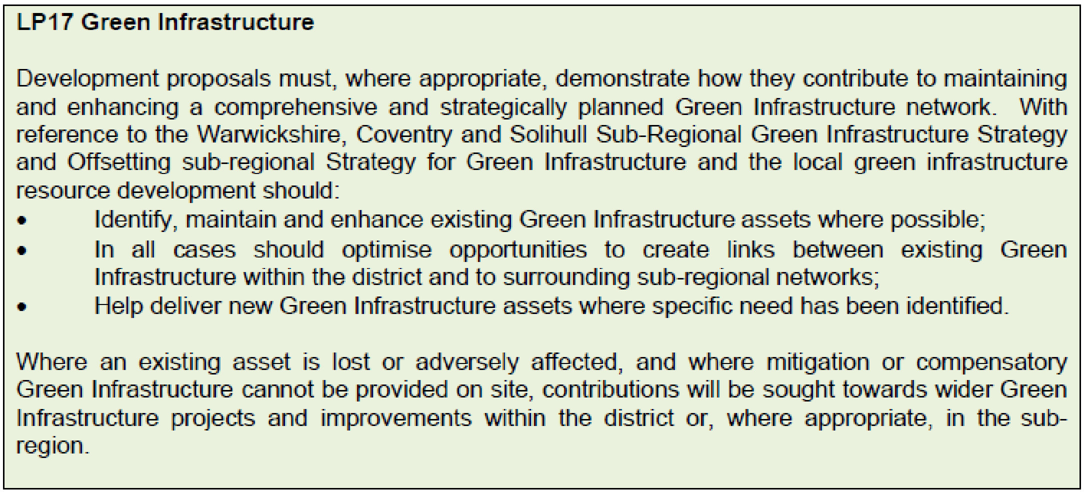
Where development is proposed in excess of plan requirements and would assist in the provision of or enabling infrastructure, particularly that related to facilitating development in the long term, or of affordable housing relative to needs, that will carry weight in favour of granting permission.



LP6 Additional Employment Land

Significant weight will be given in decision taking to supporting economic growth and productivity, particularly where evidence demonstrates an immediate need for employment land, or a certain type of employment land, within Area A on Figure 4.10 of the West Midlands Strategic Employment Sites Study of September 2015 (or successor study) which cannot be met via forecast supply or allocations. The relevant scheme will be required to demonstrate:

(i) access to the strategic highway network is achievable and appropriate,
(ii) the site is reasonably accessible by a choice of modes of transport,
(iii) it is otherwise acceptable, taking account of the living conditions of those nearby.



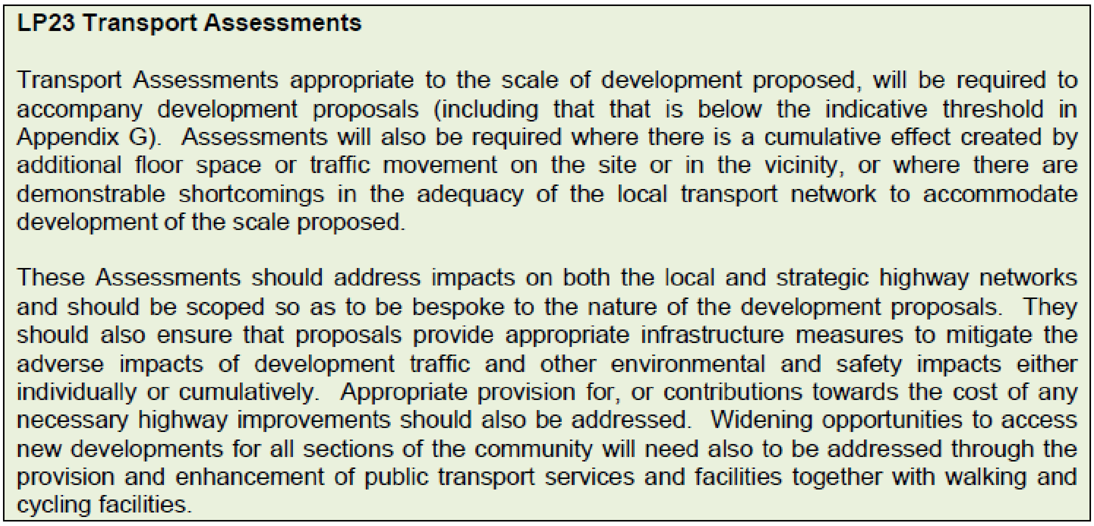
LP17 Green Infrastructure

Development proposals must, where appropriate, demonstrate how they contribute to maintaining and enhancing a comprehensive and strategically planned Green Infrastructure network. With reference to the Warwickshire, Coventry and Solihull Sub-Regional Green Infrastructure Strategy and Offsetting sub-regional Strategy for Green Infrastructure and the local green infrastructure resource development should:

- Identify, maintain and enhance existing Green Infrastructure assets where possible;
- In all cases should optimise opportunities to create links between existing Green Infrastructure within the district and to surrounding sub-regional networks;
- Help deliver new Green Infrastructure assets where specific need has been identified.

Where an existing asset is lost or adversely affected, and where mitigation or compensatory Green Infrastructure cannot be provided on site, contributions will be sought towards wider Green Infrastructure projects and improvements within the district or, where appropriate, in the sub-region.

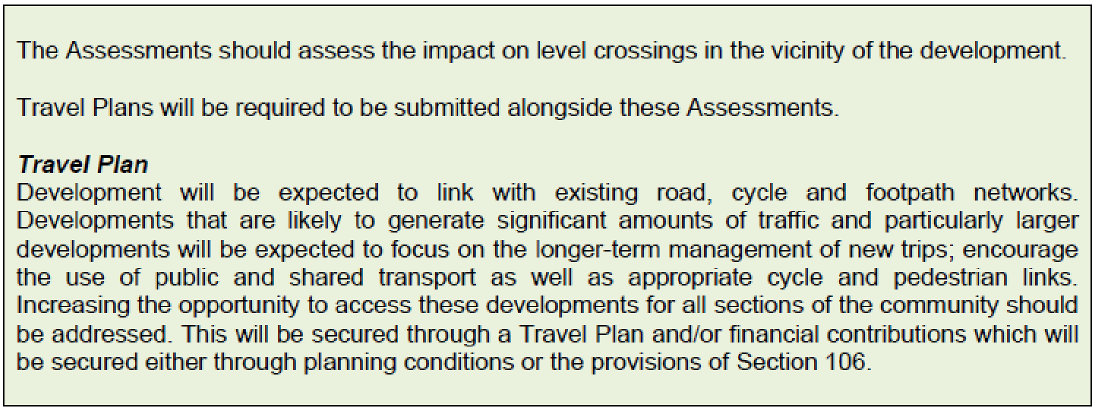
3.2.3 Chapter 12 of the Local Plan addresses transport and access plans for North Warwickshire. It identifies how the area is well served by transport links, including road, rail, and air. The following policies are presented in this regard.



LP23 Transport Assessments

Transport Assessments appropriate to the scale of development proposed, will be required to accompany development proposals (including that that is below the indicative threshold in Appendix G). Assessments will also be required where there is a cumulative effect created by additional floor space or traffic movement on the site or in the vicinity, or where there are demonstrable shortcomings in the adequacy of the local transport network to accommodate development of the scale proposed.

These Assessments should address impacts on both the local and strategic highway networks and should be scoped so as to be bespoke to the nature of the development proposals. They should also ensure that proposals provide appropriate infrastructure measures to mitigate the adverse impacts of development traffic and other environmental and safety impacts either individually or cumulatively. Appropriate provision for, or contributions towards the cost of any necessary highway improvements should also be addressed. Widening opportunities to access new developments for all sections of the community will need also to be addressed through the provision and enhancement of public transport services and facilities together with walking and cycling facilities.



The Assessments should assess the impact on level crossings in the vicinity of the development.

Travel Plans will be required to be submitted alongside these Assessments.

Travel Plan
Development will be expected to link with existing road, cycle and footpath networks. Developments that are likely to generate significant amounts of traffic and particularly larger developments will be expected to focus on the longer-term management of new trips; encourage the use of public and shared transport as well as appropriate cycle and pedestrian links. Increasing the opportunity to access these developments for all sections of the community should be addressed. This will be secured through a Travel Plan and/or financial contributions which will be secured either through planning conditions or the provisions of Section 106.

LP24 Stations

Existing Stations

Further improvements will be encouraged and sought at existing stations. Specifically, land adjoining the existing car park alongside platform 1, shown on the policies map, will be safeguarded for use as a car park extension at Atherstone station and positively pursued with the relevant, responsible parties early in the plan period. Other additional car parking opportunities will be investigated, including at other stations.

- Improved services and pedestrian access arrangements between platforms for able bodied and disabled users to meet DDA standards at Atherstone station;
- Additional car parking provision at Coleshill Parkway station;
- Investigation into improved services, provision of a new footbridge and parking facilities at the existing Polesworth station will be pursued. If this is not feasible a new Parkway station will be pursued. The area of search will be along the WCML southwards from the current station;
- The sites shown on the policies map for new stations at Kingsbury and Arley will be safeguarded and pursued in the context of the WMRE Strategy; and,
- The continuance of services and facilities at Water Orton Station will be supported.

Financial contributions towards the provision of the measures identified in this policy will be sought in accordance with policy LP1 particularly in respect of closely related or enabling development.

LP25 Railway Lines

The Borough Council supports, in principle, proposals for the replacement of lawful buildings, structures and uses, including those with permission, if their demolition or removal is required by HS2 Ltd., or their ability to continue to operate as such would be compromised. Particular regard will be had to the aim of relocation as close to an existing lawful building, structure or use, as practicable, and as otherwise compliant with the policies, in this plan to minimise disruption and assist in ensuring the continued vitality of the Borough

High Speed Rail

The line of the proposed High Speed 2 railway Phases 1 and 2b through North Warwickshire will be safeguarded and are shown on the Policies Map.

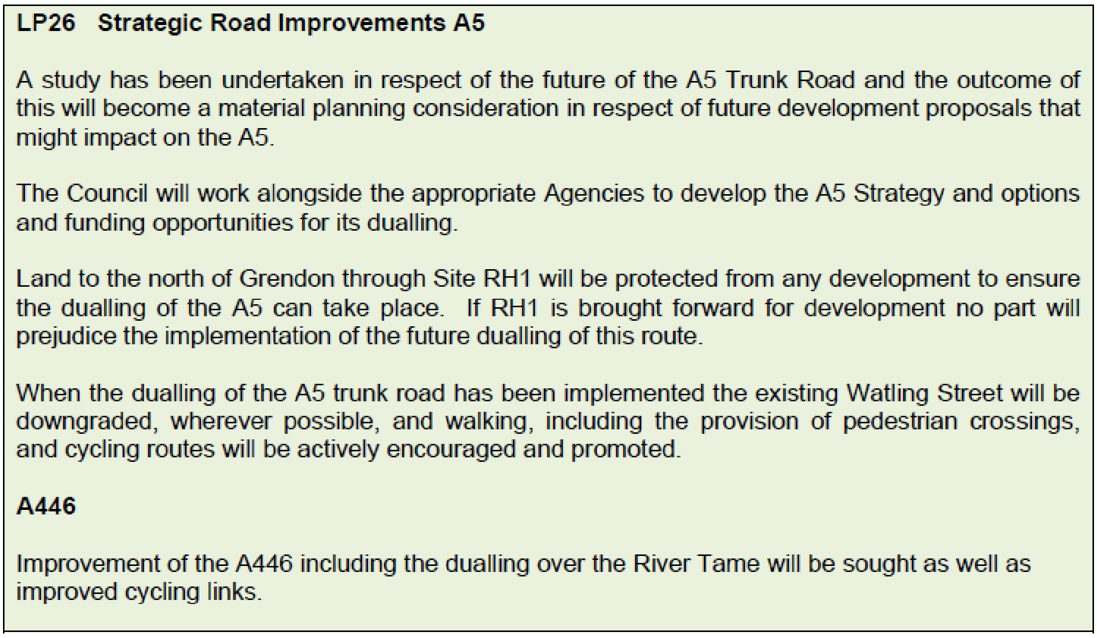
Connectivity between the line and the settlements of North Warwickshire will be improved through work with developers, the nominated undertaker, government organisations (including Highways England and the Department of Transport) and funding agencies.

The traffic implications and impact of growth in adjoining area and from development related to High Speed rail will need to be addressed and mitigated through encouraging sustainable transport solutions and measures, including traffic calming and access constraints on the rural road network.

Safeguarding of Rail Routes

The former Baddesley Mineral Railway line between Baddesley Colliery and Birch Coppice (Safeguarded Route RR1) and the route of the former Whitacre Line between Hampton in Arden to Whitacre will be safeguarded (Safeguarded Route RR2) to allow for the potential re- instatement of the route or if this is not possible then as a recreational cycle route.

No development will be permitted which would sever or prevent the potential future use of the routes as a railway or other form of transport unless a suitable diversion or alternative is provided.



LP26 Strategic Road Improvements A5

A study has been undertaken in respect of the future of the A5 Trunk Road and the outcome of this will become a material planning consideration in respect of future development proposals that might impact on the A5.

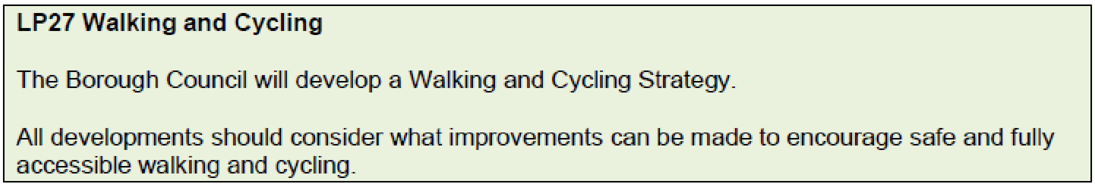
The Council will work alongside the appropriate Agencies to develop the A5 Strategy and options and funding opportunities for its dualling.

Land to the north of Grendon through Site RH1 will be protected from any development to ensure the dualling of the A5 can take place. If RH1 is brought forward for development no part will prejudice the implementation of the future dualling of this route.

When the dualling of the A5 trunk road has been implemented the existing Watling Street will be downgraded, wherever possible, and walking, including the provision of pedestrian crossings, and cycling routes will be actively encouraged and promoted.

A446

Improvement of the A446 including the dualling over the River Tame will be sought as well as improved cycling links.



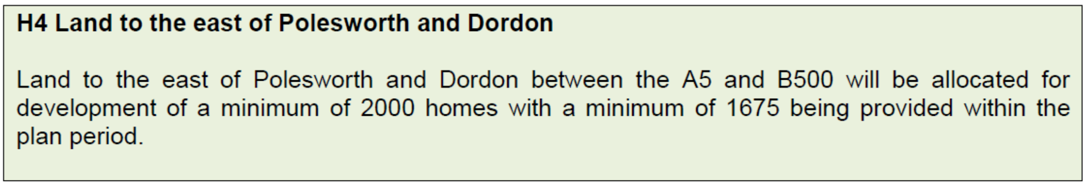
LP27 Walking and Cycling

The Borough Council will develop a Walking and Cycling Strategy.

All developments should consider what improvements can be made to encourage safe and fully accessible walking and cycling.

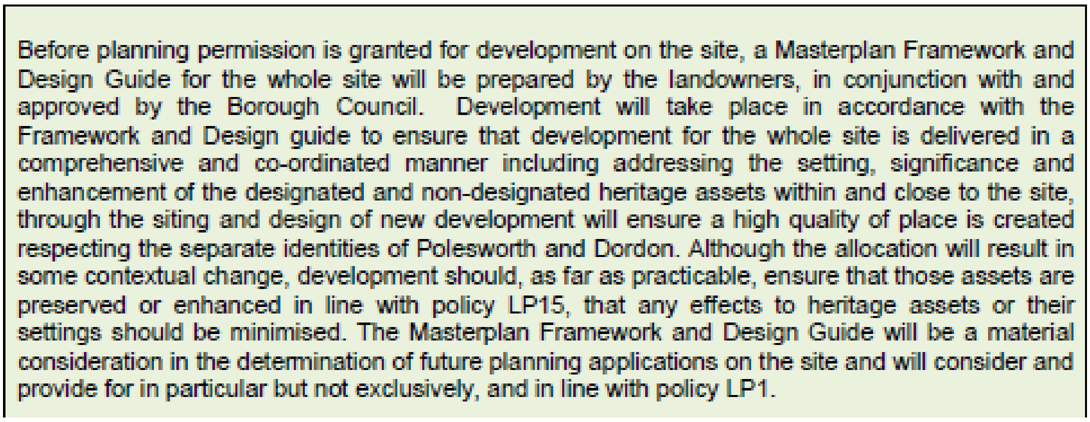
Encouragement will be given to establishing and promoting responsible access to the natural environment, for example in the Tame Valley Wetlands NIA.

3.2.4 The Local Plan identifies two major housing allocations at site H4 and H5, the details of which are as follows:

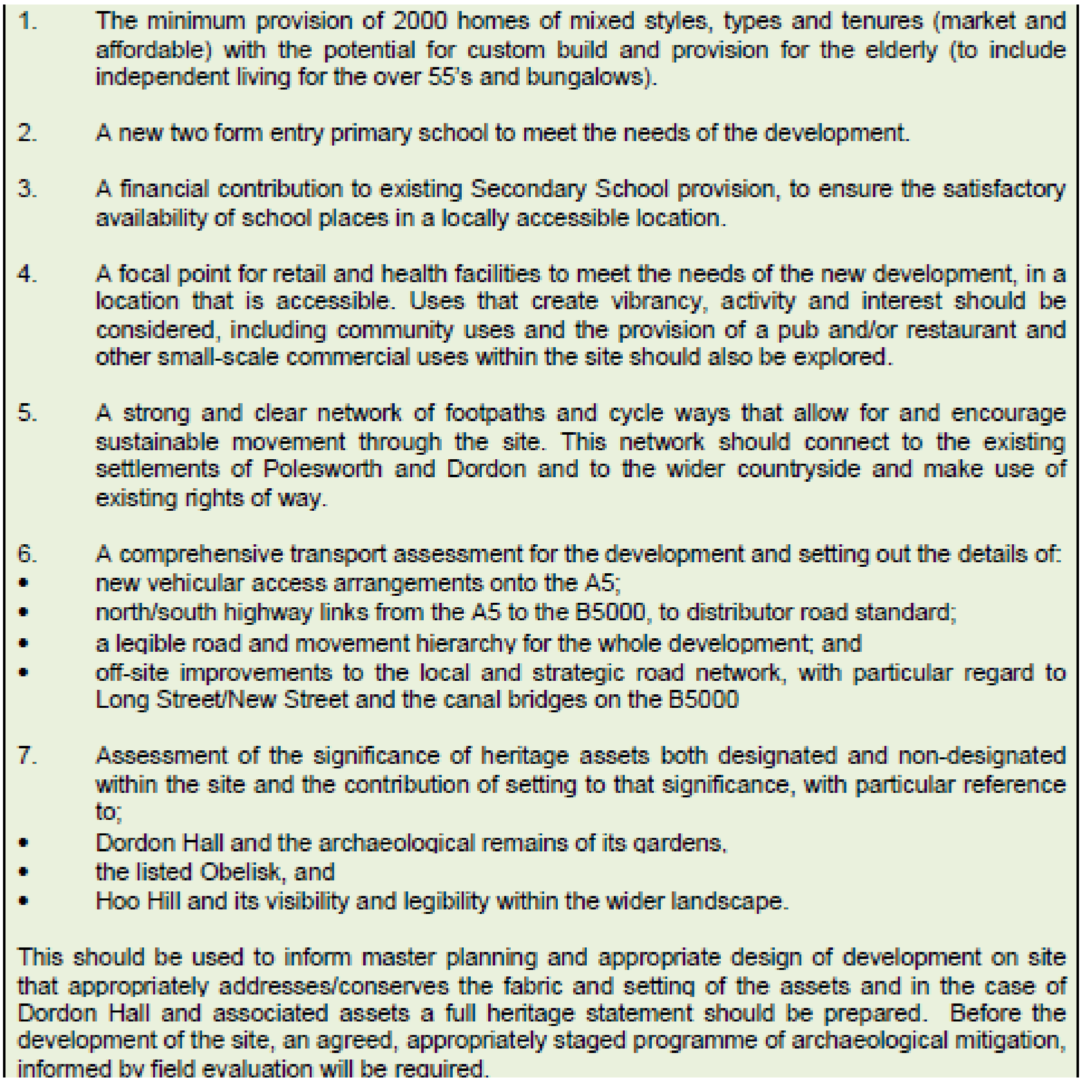


H4 Land to the east of Polesworth and Dordon

Land to the east of Polesworth and Dordon between the A5 and B500 will be allocated for development of a minimum of 2000 homes with a minimum of 1675 being provided within the plan period.



Before planning permission is granted for development on the site, a Masterplan Framework and Design Guide for the whole site will be prepared by the landowners, in conjunction with and approved by the Borough Council. Development will take place in accordance with the Framework and Design guide to ensure that development for the whole site is delivered in a comprehensive and co-ordinated manner including addressing the setting, significance and enhancement of the designated and non-designated heritage assets within and close to the site, through the siting and design of new development will ensure a high quality of place is created respecting the separate identities of Polesworth and Dordon. Although the allocation will result in some contextual change, development should, as far as practicable, ensure that those assets are preserved or enhanced in line with policy LP15, that any effects to heritage assets or their settings should be minimised. The Masterplan Framework and Design Guide will be a material consideration in the determination of future planning applications on the site and will consider and provide for in particular but not exclusively, and in line with policy LP1.



1. The minimum provision of 2000 homes of mixed styles, types and tenures (market and affordable) with the potential for custom build and provision for the elderly (to include independent living for the over 55's and bungalows).

2. A new two form entry primary school to meet the needs of the development.

3. A financial contribution to existing Secondary School provision, to ensure the satisfactory availability of school places in a locally accessible location.

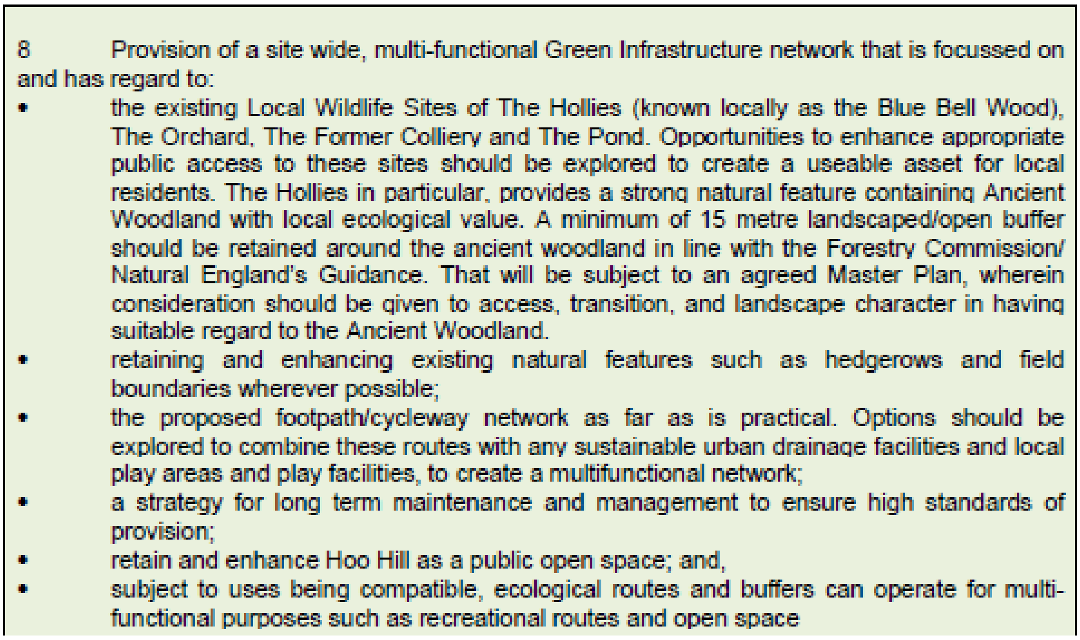
4. A focal point for retail and health facilities to meet the needs of the new development, in a location that is accessible. Uses that create vibrancy, activity and interest should be considered, including community uses and the provision of a pub and/or restaurant and other small-scale commercial uses within the site should also be explored.

5. A strong and clear network of footpaths and cycle ways that allow for and encourage sustainable movement through the site. This network should connect to the existing settlements of Polesworth and Dordon and to the wider countryside and make use of existing rights of way.

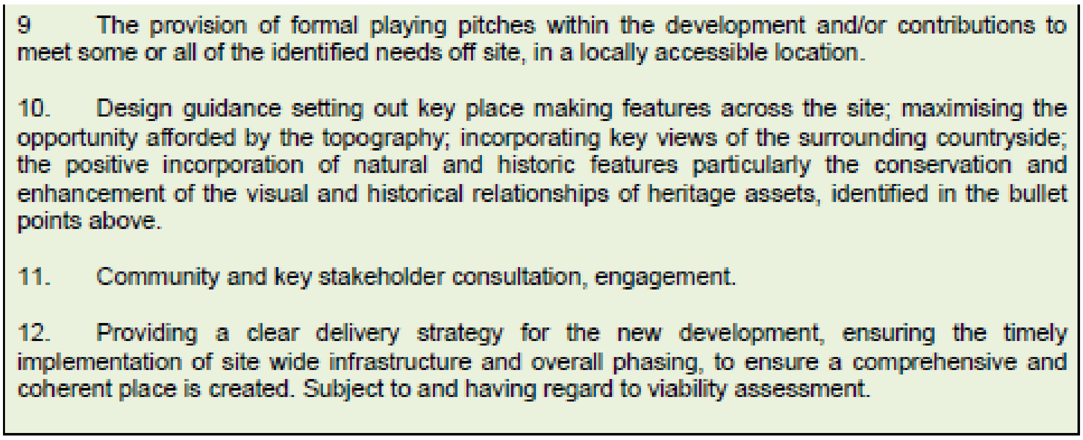
6. A comprehensive transport assessment for the development and setting out the details of:
- new vehicular access arrangements onto the A5;
- north/south highway links from the A5 to the B5000, to distributor road standard;
- a legible road and movement hierarchy for the whole development; and
- off-site improvements to the local and strategic road network, with particular regard to Long Street/New Street and the canal bridges on the B5000

7. Assessment of the significance of heritage assets both designated and non-designated within the site and the contribution of setting to that significance, with particular reference to;
- Dordon Hall and the archaeological remains of its gardens,
- the listed Obelisk, and
- Hoo Hill and its visibility and legibility within the wider landscape.

This should be used to inform master planning and appropriate design of development on site that appropriately addresses/conserves the fabric and setting of the assets and in the case of Dordon Hall and associated assets a full heritage statement should be prepared. Before the development of the site, an agreed, appropriately staged programme of archaeological mitigation, informed by field evaluation will be required.



8 Provision of a site wide, multi-functional Green Infrastructure network that is focussed on and has regard to:
- the existing Local Wildlife Sites of The Hollies (known locally as the Blue Bell Wood), The Orchard, The Former Colliery and The Pond. Opportunities to enhance appropriate public access to these sites should be explored to create a useable asset for local residents. The Hollies in particular, provides a strong natural feature containing Ancient Woodland with local ecological value. A minimum of 15 metre landscaped/open buffer should be retained around the ancient woodland in line with the Forestry Commission/ Natural England's Guidance. That will be subject to an agreed Master Plan, wherein consideration should be given to access, transition, and landscape character in having suitable regard to the Ancient Woodland.
- retaining and enhancing existing natural features such as hedgerows and field boundaries wherever possible;
- the proposed footpath/cycleway network as far as is practical. Options should be explored to combine these routes with any sustainable urban drainage facilities and local play areas and play facilities, to create a multifunctional network;
- a strategy for long term maintenance and management to ensure high standards of provision;
- retain and enhance Hoo Hill as a public open space; and,
- subject to uses being compatible, ecological routes and buffers can operate for multi-functional purposes such as recreational routes and open space

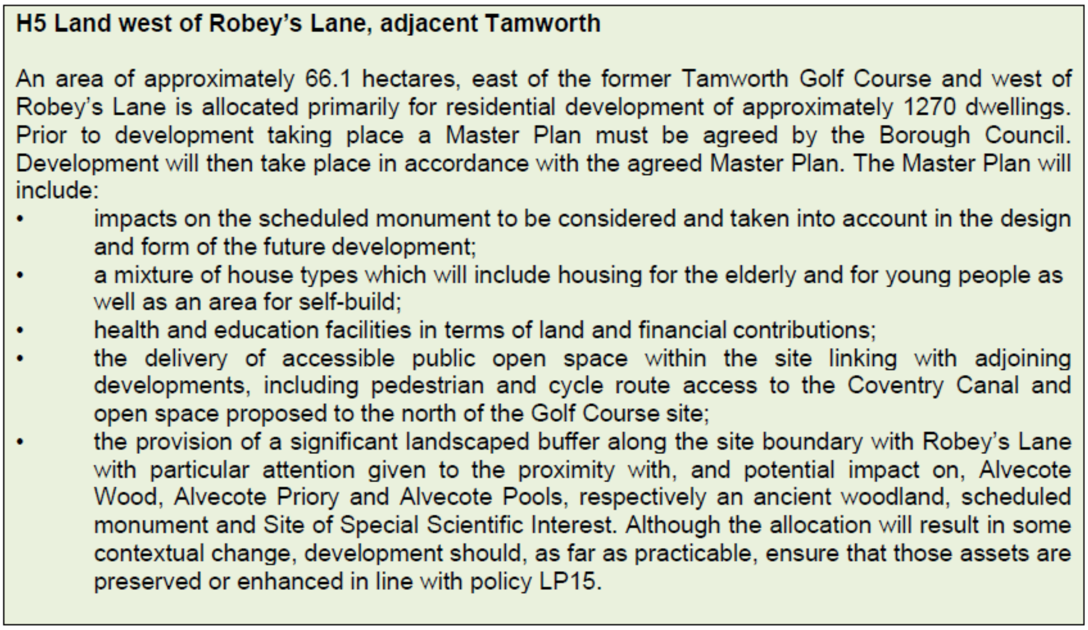


9 The provision of formal playing pitches within the development and/or contributions to meet some or all of the identified needs off site, in a locally accessible location.

10. Design guidance setting out key place making features across the site; maximising the opportunity afforded by the topography; incorporating key views of the surrounding countryside; the positive incorporation of natural and historic features particularly the conservation and enhancement of the visual and historical relationships of heritage assets, identified in the bullet points above.

11. Community and key stakeholder consultation, engagement.

12. Providing a clear delivery strategy for the new development, ensuring the timely implementation of site wide infrastructure and overall phasing, to ensure a comprehensive and coherent place is created. Subject to and having regard to viability assessment.



H5 Land west of Robey's Lane, adjacent Tamworth

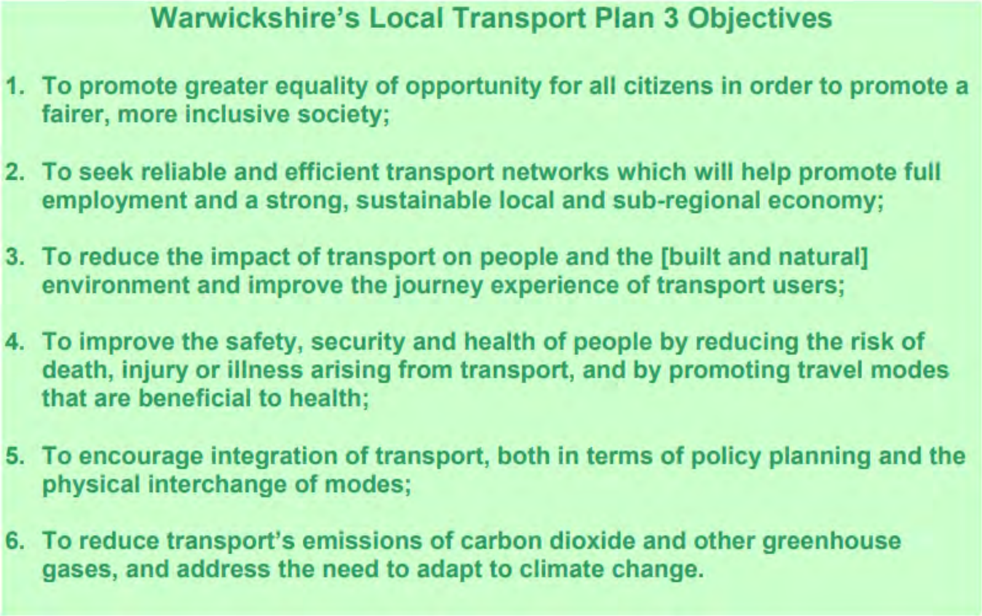
An area of approximately 66.1 hectares, east of the former Tamworth Golf Course and west of Robey's Lane is allocated primarily for residential development of approximately 1270 dwellings. Prior to development taking place a Master Plan must be agreed by the Borough Council. Development will then take place in accordance with the agreed Master Plan. The Master Plan will include:

- impacts on the scheduled monument to be considered and taken into account in the design and form of the future development;
- a mixture of house types which will include housing for the elderly and for young people as well as an area for self-build;
- health and education facilities in terms of land and financial contributions;
- the delivery of accessible public open space within the site linking with adjoining developments, including pedestrian and cycle route access to the Coventry Canal and open space proposed to the north of the Golf Course site;
- the provision of a significant landscaped buffer along the site boundary with Robey's Lane with particular attention given to the proximity with, and potential impact on, Alvecote Wood, Alvecote Priory and Alvecote Pools, respectively an ancient woodland, scheduled monument and Site of Special Scientific Interest. Although the allocation will result in some contextual change, development should, as far as practicable, ensure that those assets are preserved or enhanced in line with policy LP15.

3.2.5 In April 2019, Bancroft Consulting prepared a letter which set out the general principles relating to vehicular access in support of a potential allocation for employment development within the emerging NWBC Local Plan. This letter contained a potential access layout to serve the site and was sent to both Ms K. Trueman at NWBC and Mrs E. Wong at NH. **Appendix J** contains a copy of the letter as well as the potential access layout (Drawing Number F18015/05), which comprised a new signal-controlled junction to serve land to the north of the A5.

3.3 Warwickshire Third Local Transport Plan (2011 - 2026)

3.3.1 Section 1 of the Warwickshire LTP 2011 – 2026 (Part A) explains how it “sets out the transport strategy and policies for the County from 2011 to 2026”. Section 3 of the LTP sets out the following revised objectives:

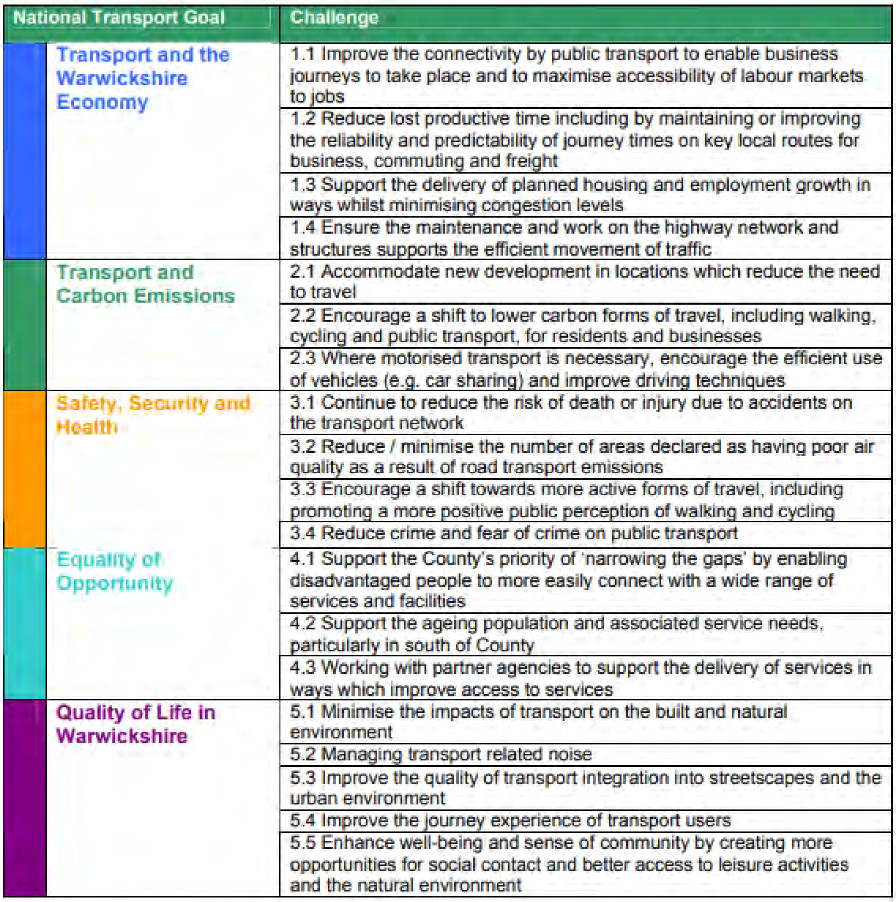


Warwickshire’s Local Transport Plan 3 Objectives

1. To promote greater equality of opportunity for all citizens in order to promote a fairer, more inclusive society;
2. To seek reliable and efficient transport networks which will help promote full employment and a strong, sustainable local and sub-regional economy;
3. To reduce the impact of transport on people and the [built and natural] environment and improve the journey experience of transport users;
4. To improve the safety, security and health of people by reducing the risk of death, injury or illness arising from transport, and by promoting travel modes that are beneficial to health;
5. To encourage integration of transport, both in terms of policy planning and the physical interchange of modes;
6. To reduce transport’s emissions of carbon dioxide and other greenhouse gases, and address the need to adapt to climate change.

3.3.2 Table 4.6 at Page 31 of the LTP3 provides the following summary of challenges in achieving the objectives.

Table 4.6 Summary of challenges



National Transport Goal	Challenge
Transport and the Warwickshire Economy	1.1 Improve the connectivity by public transport to enable business journeys to take place and to maximise accessibility of labour markets to jobs
	1.2 Reduce lost productive time including by maintaining or improving the reliability and predictability of journey times on key local routes for business, commuting and freight
	1.3 Support the delivery of planned housing and employment growth in ways whilst minimising congestion levels
	1.4 Ensure the maintenance and work on the highway network and structures supports the efficient movement of traffic
Transport and Carbon Emissions	2.1 Accommodate new development in locations which reduce the need to travel
	2.2 Encourage a shift to lower carbon forms of travel, including walking, cycling and public transport, for residents and businesses
	2.3 Where motorised transport is necessary, encourage the efficient use of vehicles (e.g. car sharing) and improve driving techniques
Safety, Security and Health	3.1 Continue to reduce the risk of death or injury due to accidents on the transport network
	3.2 Reduce / minimise the number of areas declared as having poor air quality as a result of road transport emissions
	3.3 Encourage a shift towards more active forms of travel, including promoting a more positive public perception of walking and cycling
	3.4 Reduce crime and fear of crime on public transport
Equality of Opportunity	4.1 Support the County's priority of 'narrowing the gaps' by enabling disadvantaged people to more easily connect with a wide range of services and facilities
	4.2 Support the ageing population and associated service needs, particularly in south of County
	4.3 Working with partner agencies to support the delivery of services in ways which improve access to services
Quality of Life in Warwickshire	5.1 Minimise the impacts of transport on the built and natural environment
	5.2 Managing transport related noise
	5.3 Improve the quality of transport integration into streetscapes and the urban environment
	5.4 Improve the journey experience of transport users
	5.5 Enhance well-being and sense of community by creating more opportunities for social contact and better access to leisure activities and the natural environment

3.3.3 Page 54 of the LTP3 sets out the 'Strategy for the A5', stating "*the A5 is an important strategic link which runs along the northern and eastern edge of the County boundary with Staffordshire, Leicestershire and Northamptonshire, and provides access to a number of major industrial areas such as Birch Coppice. Within Northern Warwickshire, the road also provides an important access to the M42/A42, the M69/M1 and the M6 Toll*".

3.3.4 Page 179 sets out the County Council's policies in respect of delivering the LTP3, this includes:

Policy LUT1: Partnership
The County Council will work with the five Warwickshire District/Borough Councils and adjoining local authorities, developers, and other stakeholders to implement the policies set out in the Land Use and Transportation Strategy.

Policy LUT2: Travel plans
The County Council will require Travel Plans or Travel Plan Statements to support planning applications in accordance with Table 1 of the '*Practice Note for Developers*'.

Policy LUT3: Sustainable developments
The County Council will promote sustainable development and seek developer contributions, where appropriate, to provide for public transport, community transport, pedestrian and cycling facilities, traffic management measures and travel packs to serve new developments.

Policy LUT4: Accessibility planning
Working with our partners, including the five District/Borough Councils, the County Council will seek to ensure that accessibility considerations are integrated into planning policy and seek to influence the choice of site taken. Where appropriate and the County Council deems it necessary an accessibility assessment will be required for major new development proposals.

Policy LUT5: Transport assessments
The County Council will require Transport Assessments/Statements to be submitted to support planning applications where it is deemed appropriate. The information should follow the general guidance on Transport Assessments as published by the Department for Transport. Where significant development is proposed, the County Council will require the use of Micro-Simulation modelling techniques to support the Transport Assessment process. The County Council will also work with applicants to scope the individual requirements for the sites/areas under assessment.

3.3.5 This Transport Assessment will seek to justify the above challenges and policies.

3.4 Design Guidance

3.4.1 Due to the location of the site and proposed direct access onto the trunk road network, this Transport Assessment will primarily adopt the principles of design guidance set out within the suite of documents contained within the Design Manual for Roads and Bridges. The assessment will utilise the following documents:

- CD 109: Highway link design

- CD 123: Geometric design of at-grade priority and signal-controlled junctions
- CD 143: Designing for walking, cycling and horse-riding
- CD 169: The design of lay-bys, maintenance hard standings, rest areas, service areas and observation platforms
- CD 195: Designing for cycle traffic

4.0 EXISTING CONDITIONS

4.1 Site Location and Surrounding Area

4.1.1 The site comprises undeveloped land located immediately northeast of Junction 10 of the M42 Motorway, at the northern edge of the A5 and approximately 1.5 kilometres west of Dordon in Warwickshire. It measures approximately 32.5 hectares in area and is bound by the A5 to the south, the M42 to the west, residential properties to the north and undeveloped land to the east. The site location in the context of the surrounding area is shown at **Figure 1**, whilst a detailed site location plan is shown at **Figure 2**.

4.1.2 The immediate surrounding area is 'urban fringe' in character, with open undeveloped land to the east but built-up areas to the north (Birchmoor), south (St Modwen's Park and Birch Coppice) and west (Tamworth). The villages of Dordon and Polesworth are located to the east and northeast respectively. Both of these villages mainly comprise residential development. Further afield, the eastern extent of Tamworth is located to the west of the M42 Motorway, whilst Birmingham is located approximately 20 kilometres south-west.

4.2 Local Highway Network

4.2.1 The site is currently primarily served via an access at the A5 frontage. It comprises a 16 metres wide dropped kerb arrangement with an access width of 8 metres. Given that the A5 is dualled past the site, this junction only accommodates left-in and left-out turning movements. There is a secondary point of access to the east from the A5 opposite Core 42 Business Park (Core 42) and via the existing farm track, which in part also serves as Footpath AE46.

4.2.2 The A5 is a key strategic route that extends between Junction 9 of the M1 Motorway (north of London) and Holyhead in North Wales. In the vicinity of the site, it extends between Tamworth to the north-west and Hinckley to the east. The A5 is dualled as it passes the site with two traffic lanes in each direction, measuring approximately 18 metres wide with a kerbed central reserve (approximately 5 metres wide) and footways with street lighting on both sides of the carriageway. Traffic passing the site is subject to the national speed limit, which reduces to 50mph approximately 180 metres to the east of the existing access.

4.2.3 In the vicinity of the site frontage the eastbound carriageway includes a 70 metres long layby facility approximately 235 metres from the roundabout at M42 Junction 10. On-site observations suggest this has a capacity of around three to four articulated lorries. Continuing east there is a bus layby approximately 165 metres from the parking layby. A further 15 metres east of this point is a staggered pedestrian crossing that passes through the central reserve. Except for a short section between the parking and bus laybys where a substantial 3 metres verge exists, the northern edge of the carriageway is bound by the shared footway/cycleway only.

4.2.4 At the southern edge of the A5 carriageway (westbound flow) a further parking layby exists approximately 320 metres from the roundabout at M42 Junction 10. The layby has a length of approximately 55 metres and can accommodate up to three articulated lorries. On approach to the Junction 10 roundabout the westbound carriageway widens from two lanes to four at the signal-controlled stop lines. These comprise a 120 metres long flare at the off-side lane and a nearside left turn only flared lane that extends for around 50 metres. The southern edge of the westbound carriageway is also bound only by a footway, with no verge facility.

4.2.5 The A5 carriageway includes street lighting and footways/cycleways at both edges. It is also understood that both parking laybys are well used by drivers throughout the week at all times of the day.

4.2.6 Approximately 580 metres east of the existing site access, the A5 features a large signal-controlled T-junction arrangement that serves the Birch Coppice Business Park. The layout includes three lanes on the westbound approach, two for ahead only movements and one for left turns. The eastbound approach comprises four lanes, two for ahead only movements and two for right-turns.

4.2.7 The minor arm approach includes three lanes, two for left-turns and one for right-turns. This arrangement also includes another signal-controlled access road adjacent to the minor arm, which extends from the radius of the junction and serves to maintain an existing right of access in favour of land under the control of Hodgetts Estates. Staggered signal-controlled pedestrian crossings are located at both the eastern and southern arms of this junction. Morning peak hour observations undertaken as part of the Scoping Study confirmed that there were no congestion problems at this junction, noting that all queueing traffic suitably passed through in each green signal.

4.2.8 To the west of the site, the A5 leads to a large grade-separated roundabout with Junction 10 of the M42 Motorway, which is fully signal-controlled. As well as linking the M42 with the A5, this junction also provides access to Trinity Road to the south (which leads to Freasley) and Green Lane to the north (which leads to Relay Business Park and Tamworth Moto motorway services area). The M42 extends to the M1 Motorway, Nottingham, and Derby to the north, with the M6 Motorway and Birmingham to the south. On-site observations undertaken during the weekday morning peak period as part of the Scoping Study (outside of any COVID-19 restrictions) noted sustained queueing of approximately 200 to 300 metres on the A5 (west) arm, with all vehicles on the remaining arms passing through in the corresponding green signal.

4.2.9 To assist with any detailed assessment of the off-site impact, junction layout plans and signal control data were obtained from National Highways for the M42 Junction 10 and Birch Coppice access junctions. A copy of this information is provided at **Appendix K** for information.

4.2.10 Continuing east beyond the Birch Coppice Business Park access the A5 extends through the Core 42 site access signal-controlled junction and then the roundabout junction with Long Street and Gypsy Lane (known locally as Dordon Island). The speed limit reduces to 40 mph approximately 150 metres east of the Core 42 access junction. The Core 42 development comprises a mixed-use industrial scheme, the majority of which is now completed and occupied and was developed by Hodgetts Estates. Long Street is a Local Distributor Road that extends north from Dordon Island and is subject to a 30 mph speeds limit with traffic calming and signage confirming it as being ‘unsuitable for HGVs’. To the east of the Dordon Island the A5 continues as a single carriageway road with direct frontage access to properties and footways/streetlighting.

4.3 Personal Injury Accident Data

4.3.1 Planning Practice Guidance [PPG] includes the online document 'Travel Plans, Transport Assessments and Statements in decision-taking' (updated March 2014), which provides general advice on the scope of Transport Assessments. This document states consideration should be given to *"an analysis of the injury accident records on the public highway in the vicinity of the site access for the most recent 3-year period, or 5-year period if the proposed site has been identified as within a high accident area."*

4.3.2 To address this requirement Personal Injury Accident (PIA) data has been obtained from Warwickshire County Council covering the M42 Junction and Dordon Island (including Long Street and Gypsy Lane). The information received was for the latest five-year data available, in line with the above guidance. The results are summarised in **Figures 3**, **4**, and **5**, and also within the tables below. A full copy of the data provided is included at **Appendix L**.

4.3.3 A total of 50 PIAs were recorded during the study period, where none were classified as 'fatal', 10 were classified as 'serious', and the remaining 40 accidents all classified as 'slight'. Throughout the study area a total of 6 accidents involved cyclists, two involved pedestrians, and the remaining 42 incidents involved vehicles only. The accidents can be broken down by the following years:

- 2016 - 13 accidents (26%)
- 2017 - 12 accidents (24%)
- 2018 - 9 accidents (18%)
- 2019 - 9 accidents (18%)
- 2020 - 7 accidents (14%)

4.3.4 The above details indicate that a steady rate of decline over the past five years, with almost half the number of incidents occurring in 2020 than during 2016.

4.3.5 **Figure 3** summarises the results of all incidents recorded at M42 Junction 10. It demonstrates how incidents are clustered at three separate locations, the section adjacent to the northbound on-slip (labelled as Cluster A1), the section adjacent to the southbound off-slip (labelled as Cluster A2), and then the A5 westbound approach (labelled as Cluster A3). Overall, there were 33 recorded incidents throughout the junction, including 6 Serious incidents and 27 Slight. Of these were 3 cyclist related incidents and none that involved pedestrians. The details of each incident within Cluster A1, A2 and A3 are as follows:

Cluster A1

Accident Number	Day/ Date	Time	Road Surface/Weather	Severity	Description
Point 3 (129156)	11.11.16	1455	Wet/Fine	Slight	Vehicle 1 (car) cut into the inside lane hitting the rear of vehicle 2 (car) then moved back to outside lane and drove off.
Point 4 (845291)	04.04.19	1840	Wet/Rain	Slight	Vehicle 1 (car) changed lanes quickly to avoid traffic, braking sharply. This caused vehicle 2 (motorcycle 50-125cc) to also brake sharply and collide with the rear of vehicle 1.
Point 5 (296034)	13.05.18	1827	Dry/Fine	Serious	Vehicle 2 (car) stalled at the traffic lights from A5 (Tamworth) at M42 roundabout. Vehicle 1 (car) changed lanes to go round the queue of cars behind vehicle 2 and then cut in front of vehicle 2 causing a collision.
Point 6 (127816)	28.10.16	1524	Dry/Fine	Slight	Vehicle 1 (car) drove into the side of vehicle 2 (car) which was travelling in the inside lane past the slip road of M42.
Point 8 (241282)	17.11.17	1554	Dry/Fine	Serious	Vehicle 1 (car) changed lanes from lane 3 to go down the slip road onto M42 catching the back of vehicle 2 (car)

					and causing it to spin round. Vehicle 1 left the carriageway hitting and causing damage to a lamppost This was later removed by Highways Agency due to being unsafe.
Point 9 (142979)	10.12.16	1500	Wet/Fine	Serious	Vehicle 2 (motorcycle), intending to go down the slip road onto M42N, cut across vehicle 1 (car) who was on the inside lane but continuing on A5 and collided.
Point 10 (165684)	05.03.17	1240	Dry/Fine	Slight	Vehicle 1 (car) changed lanes across the path of vehicle 2 (car) causing vehicle 2 to crash into barrier.
Point 12 (944789)	03.04.20	0735	Dry/Fine	Slight	Vehicle 1 (goods<3.5t) collided with vehicle 2 (goods>7.5t) on attempting to exit slip road junction 10NB from the roundabout.
Point 14 (98192)	02.08.16	2200	Dry/Fine	Slight	As they entered the slip road, Vehicle 2 (goods vehicle) drifted into the lane of vehicle 1 (car) hitting the rear left side and knocking it into a barrier.

Cluster A2

Accident Number	Day/ Date	Time	Road Surface/Weather	Severity	Description
Point 22 (940358)	13.03.20	1045	Dry/Fine	Slight	Vehicle 1 (car) did not notice that vehicle 2 (car) was stopped by traffic on the roundabout and collided with the rear of vehicle 2.

Point 24 (298660)	02.06.18	1655	Dry/Fine	Slight	Vehicle 1 (car) collided with the rear of vehicle 2 (car) when it was stationary at the traffic lights at the end of the slip road waiting to join the roundabout.
Point 25 (323746)	01.09.18	0930	Dry/Fine	Slight	Vehicle 2 (car), travelling onto the roundabout from M42 south, slowed to allow an ambulance on blue with sirens activated to pass and vehicle 1 (car) has bumped into the rear.
Point 28 (1004740)	24.11.20	0432	Dry/Fine	Slight	Vehicle 1 (Goods>7.5t) leaving M42 roundabout to A5S collided with vehicle 2 (car) who had suddenly changed lanes.
Point 29 (46503)	17.02.16	1012	Wet/Rain/Wind	Slight	Vehicle 1 (car) and vehicle 2 (goods vehicle) travelling round island on M42. They collided as vehicle 1 began to turn towards the slip road A5 leading to Atherstone.

Cluster A3

Accident Number	Day/ Date	Time	Road Surface/Weather	Severity	Description
Point 20 (869960)	24.07.19	1645	Dry/Fine	Serious	Vehicle 2 (motorcycle) was aware of the broken traffic lights at the junction and, whilst waiting to pull out of the junction, has been hit from behind by vehicle 1 (car).

Point 21 (900846)	19.11.19	1147	Wet/Fine	Slight	Vehicle 2 (goods<3.5t) collided with the rear of vehicle 1 (car) whilst stationary at traffic lights on A5 Dordon to Tamworth.
Point 23 (935567)	10.02.20	2125	Wet/Fine	Slight	Vehicle 1 (goods>7.5t) pulled away from traffic lights and collided with vehicle 2 (car) on the left hand side causing it to spin.
Point 26 (61679)	02.03.16	0855	Wet/Rain	Slight	Vehicle 1 (car) was hit from behind by vehicle 2 (car) while stationary at traffic lights on Watling Street A5 at the junction with M42.
Point 27 (340418)	29.10.18	1530	Wet/Fine	Slight	Vehicle 1 (goods vehicle) collided with the rear of Vehicle 2 (car) who was stationary in a traffic queue. Driver 1 refused to exchange details.

4.3.6 The remaining incidents at this location are summarised below.

Other Accidents

Accident Number	**Day/ Date**	**Time**	**Road Surface/Weather**	**Severity**	**Description**
Point 1 (400169)	28.05.19	2120	Dry/Fine	Slight	Rider of vehicle 1 (motorcycle) exiting the island from M42 onto A5WB lost control of the bike due to the low sun affecting visibility. This caused the rider to dislodge from the bike and slide down the carriageway.
Point 2 (901455)	12.10.19	1840	Wet/Fine	Slight	Vehicle 1 (car) collided with rear of vehicle 2 (car) who was stationary at traffic lights at M42 island.

Point 7 (65214)	10.03.16	0817	Dry/Fine	Slight	Vehicle 1 (car) collided into the rear of vehicle 2 (car) which was slowing due to traffic, causing vehicle 2 to then hit vehicle 3 (car)
Point 11 (831674)	06.02.19	1750	Dry	Slight	Vehicle 2 (pedal cycle), travelling on A5 towards Junction 10 M42S, has been struck before the slip road by vehicle 1 (goods<3.5t)
Point 13 (815904)	06.02.19	1800	Wet/Fine	Slight	Vehicle 2 (pedal cycle) was cycling round the roundabout when vehicle 1 (goods vehicle) cut him up.
Point 15 (75321)	25.03.16	1220	Dry/Fine	Serious	Vehicle 1 (goods>7.5t) carrying 23 tonnes of steel and travelling onto roundabout from Trinity Road, leaves carriageway and jackknives onto central barrier. Possible shift in load with momentum has toppled vehicle over.
Point 16 (201279)	15.07.17	1714	Dry/Fine	Slight	Vehicle 1 (car) and vehicle 2 (car) collided while negotiating roundabout at junction 10 M42.
Point 17 (252722)	27.12.17	1333	Wet/Fine	Slight	Vehicle 1 (car) fails to see stationary traffic ahead and collides with vehicle 2 (car). This spins vehicle 1 into vehicle 3 (car) and then vehicle 4 (car). Driver of vehicle 1 checks for damage then drives off, eventually breaking down at Junction 9 and making off on foot. Vehicle 1 was reported stolen later that day.

Point 18 (863408)	12.07.19	0329	Wet/Rain	Slight	Vehicle 1 (goods 3.5-7.5t) merged lanes without noticing vehicle 2 (car) causing a collision. Vehicle 1 only noticed it has been in a collision when stopped, suggesting the driver drove without due care and attention.
Point 19 (926270)	31.01.20	1700	Dry/Fine	Slight	Vehicle 1 (goods>7.5t) travelling around the island towards A5 crossed into the lane of vehicle 2 (car) clipping the left hand side.
Point 30 (151799)	10.01.17	0625	Wet/Fine	Serious	Vehicle 2 (pedal cycle) entering the island on junction 10, M42S was cut up by vehicle 1 (goods >7.5t) moving from the inside lane to the middle lane causing a collision and the rider to come off his bike.
Point 31 (187837)	15.05.17	1741	Dry/Fine	Slight	Vehicle 1 (car) collided with the front drivers side of vehicle 2 (car) while both were travelling around the M42 island.
Point 32 (861055)	23.07.19	2015	Dry/Fine	Slight	Vehicle 1 (motorcycle) and vehicle 2 (motorcycle) have had contact when taking the same exit off the traffic island, causing both riders to fall off their bikes.
Point 33 (297756)	18.05.18	2240	Dry/Fine	Slight	Vehicle 1 (car) has driven into the rear of vehicle 2 (car) causing minor damage and slight injury to the occupants of vehicle 2. Vehicle 1 left the scene. Collision occurred on the Warwickshire Force Area.

4.3.7 **Figure 4** then summarises the recorded incidents along the A5 between the M42 Junction 10 and the Dordon Island. It shows how 15 incidents were recorded during the study period, comprising 11 Slight incidents and 4 Serious incidents. Of these two involved pedestrians, one involved a cyclist, and the remaining involved vehicles only. The plan shows a single cluster of incidents at the Birch Coppice access, where four incidents occurred, including one cyclist related incident. This is labelled as Cluster B1 and the details of each incident are summarised below.

Cluster B1

Accident Number	Day/ Date	Time	Road Surface/Weather	Severity	Description
Point 38 (237864)	07.11.17	1715	Wet/Rain	Slight	Vehicle 1 (car) tried to overtake vehicle 2 (motorcycle) as they both entered the right hand slip road into Birch Coppice clipping the motorbike. Vehicle 1 did not stop.
Point 39 (103367)	29.08.16	2135	Dry/Fine	Slight	Vehicle 1 (car) allegedly drove through a red light and collided with vehicle 2 (car) who was turning right across vehicle 1's path.
Point 40 (56353)	15.02.16	2211	Wet/Fine	Slight	Vehicle 1 (car) had mistaken the go ahead only green light for his signal to turn right although the lights to turn right were still on red. Vehicle 1 pulled into the path of vehicle 2 (goods vehicle) coming the opposite way causing it to crash into the side of vehicle 1.
Point 41 (274607)	01.03.18	0549	Frost/Fog	Slight	Vehicle 2 (pedal cycle) has crossed the road in front of vehicle 1 (car) who was travelling along the A5

					through a green light, causing them to collide.

4.3.8 The remaining incidents at this location are summarised below.

Other Accidents

Accident Number	Day/ Date	Time	Road Surface/Weather	Severity	Description
Point 34 (203535)	06.06.17	1744	Wet/Fine	Slight	Vehicle 1 (car) hit the rear of vehicle 2 (car) who was stationary in traffic just before the island for M42 junction.
Point 35 (73643)	17.03.16	1440	Dry/Fine	Serious	Vehicle 2 (car) travelling along A5 towards M42 junction braked heavily causing vehicle 1 (car) to collide with its rear. Vehicle 3 (car) then collided with vehicle 1 causing it to mount the central crash barrier. Vehicle 4 (car) then collided with the rear of vehicle 3.
Point 36 (312805)	06.07.18	1537	Dry/Fine	Serious	Vehicle 1 (goods vehicle) tried to merge into lane 1 of a two lane stretch of A5 and hit vehicle 2 (car) which had not been seen by vehicle 1.
Point 37 (171965)	08.04.17	1740	Dry/Fine	Slight	Vehicle 1 (car) failed to observe vehicle 2 (car) braking and hit the vehicle from behind.
Point 42 (929343)	06.02.20	1730	Dry/Fine	Serious	Casualty 1 ran out into the carriageway of Watling Street (A5) and was hit by vehicle 1 (car) travelling at low speed in slow moving traffic.
Point 43 (124981)	14.10.16	1426	Dry/Fine	Slight	Vehicle 1 (motorcycle) who was overtaking, hit the offside

					of the curb on the middle carriageway. The bike swerved, came to a halt and ejected the rider over the handlebars.
Point 44 (324359)	24.07.18	1634	Dry/Fine	Slight	Vehicle 1 (car) travelling along A5 towards M42, did a U turn through a gap in the central reservation of A5, causing vehicle 2 (car) to take evasive action. No collision occurred but vehicle 2 hit the curb causing damage to the vehicle. Vehicle 1 failed to stop at the scene.
Point 45 (979503)	31.07.20	1644	Dry/Fine	Serious	Pedestrian walking across A5 while looking down at their mobile phone was hit by vehicle 1 (motorcycle).
Point 46 (96697)	09.08.16	1450	Dry/Fine	Slight	Vehicle 1 (goods vehicle) was stationary in the layby. Driver opened the rear door, door step failed and it struck vehicle 2 (goods vehicle) as it was passing.
Point 47 (196991)	27.06.17	1215	Dry/Fine	Slight	Vehicle 1 (car) parked in lane 1 on the A5, outside number 11, was hit by vehicle 2 (car) causing it to move forward and hit vehicle 3 (car) which was parked in front.
Point 50 (209305)	19.06.17	1627	Dry/Fine	Slight	Vehicle 1 (car) approached roundabout, which had been coned off not allowing access to vehicles in normal clockwise direction, so went right across the roundabout at speed continuing along A5 and narrowly missing other

					vehicles. Vehicle 2 (car) approaching roundabout had to slam on brakes resulting in injuries to the driver.

4.3.9 **Figure 5** shows the two recorded incidents on Long Street, north of the Dordon Island.

Area C - Long Street Area

Accident Number	Day/ Date	Time	Road Surface/Weather	Severity	Description
Point 48 (345459)	22.10.18	1448	Dry/Fine	Slight	Vehicle 1 (car) turned right at island into Roman Way when vehicle 2 (bicycle), who at own admittance was on his phone, cycled into path of vehicle 1 and was hit on the back wheel.
Point 49 (181855)	11.05.17	1027	Dry/Fine	Slight	Vehicle 1 (goods vehicle) travelling up Long Street and turning right into Church Road collided with vehicle 2 (bicycle) travelling down Long Street going past junction of Church Road.

4.3.10 The above assessment shows some evidence of a potential highway safety concern at the M42 Junction 10 along with some sporadic incidents along the A5 carriageway. However, it is also noted how there are no specific plans to improve the highway network in this area as part of the Local Plan and its corresponding traffic increases.

4.4 Traffic conditions

4.4.1 This Transport Assessment was prepared over the course of 2020 and the first half of 2021 when public movement was restricted by the Government due to the COVID-19 pandemic. Consequently, network traffic flows were not representative of neutral conditions and suitable for use. Nevertheless, details of all network traffic flows for the relevant locations have been extracted from the Paramics modelling exercise for each scenario.

4.4.2 The resulting 2021 morning and evening peak hour 'Reference Case – Without Development' flows throughout the defined study area (comprising M42 Junction 10, Proposed Site Access, and the Birch Coppice Access) are summarised in **Figures 6** and **7**, respectively. **Figures 8** and **9** then summarise the equivalent scenario but with development traffic included. As mentioned above, only demand flows have been used within this assessment to ensure a robust interpretation of impact has been undertaken. This scenario effectively demonstrates the 'baseline' traffic conditions for this assessment.

4.4.3 Summarised within **Figures 10** and **11** are the 2026 morning and evening peak hour 'Reference Case – Without Development' flows throughout the defined study area. **Figures 12** and **13** then summarise the equivalent scenario but with development traffic included. This scenario effectively identifies the development 'Opening Year' conditions. Further, **Figures 14** and **15** summarise the 2031 Reference Case peak hour flows for the morning and evening peak hours respectively, with **Figures 16** and **17** showing the 2031 Reference Case with development flows for the morning and evening peak hours respectively.

4.4.4 In addition to the above Reference Case scenarios **Figures 18** and **19** summarise the 2031 Local Plan flows during the weekday morning and evening peak hours respectively. As with the Reference Case, **Figures 20** and **21** then show the morning and evening peak hour Local Plan flows with development. The flows provided by Vectos represent the evidence base for the adopted Local Plan and therefore include all allocated sites, including the allocated residential land at H4 and H5 that are closest to the proposed development site. The conclusions of the assessment must therefore be viewed as robust.

4.4.5 The 2021 Reference Case traffic flows summarised in **Figure 6** confirm two-way weekday morning peak hour traffic flows of 3572 vehicles (or 4092 pcus) on the A5 at the site frontage. Similarly, **Figure 7** shows 3696 two-way vehicle movements (or 4024 pcus) for the evening peak hour.

4.4.6 Inspection of the Impact Assessment Results from the Paramics model confirm the following results for the 2021 Reference Case performance.

	Morning Peak		Evening Peak	
	Average for network	A5 Link (Section 1)	Average for network	A5 Link (Section 1)
Average Journey Time (secs)	311	96 (E/B) 191 (W/B)	330	158 (E/B) 165 (W/B)
Mean Speed	51 kph	60 mph (E/B) 50 mph (W/B)	47 kph	62 mph (E/B) 50 mph (W/B)

4.4.7 Also contained within the Impact Assessment Results provided by the Paramics model is a summary of the Average Hourly Maximum Queue Lengths (in vehicles) at each junction within the network, with the results for the existing Junction 10 of the M42 Motorway (Junction 1) and the Birch Coppice access (Junction 53) summarised as follows for the 2021 Reference Case only scenario.

M42 Motorway Junction 10

	M42 (N)	A5 (E)	M42 (S)	A5 (W)	Green Lane	Trinity Way
morning peak	8	24	18	12	7	6
evening peak	7	24	10	7	40	24

A5/Birch Coppice Access

	A5 (W)	A5 (E)	Danny Morson Way
morning peak	10	20	9
evening peak	5	10	32

4.4.8 To address concerns raised by NH regarding detailed site access layout issues a vehicle speed survey was undertaken of vehicles approaching the proposed site access location in each direction at the A5. The eastbound survey took place between 0900 and 0945 hours on Monday 26 April 2021, recording approach speeds at a point approximately 150 metres from the proposed site access location. A total of 100 readings were collected and the corresponding 85th percentile speed was calculated to be 49.68 mph (or 79.94 kph). The westbound survey took place afterwards on the same day between 1030 and 1115 hours, also recording approach speeds at a point approximately 150 metres from the proposed site access location. In total, 100 readings were taken and the corresponding 85th percentile speed was calculated to be 55.09 mph (or 88.64 kph). A full copy of the speed survey summary details is provided at **Appendix M**.

4.4.9 Following identification of the 85th percentile speeds in each direction, the corresponding splay requirements were calculated using formulae presented within Manual for Streets. This included the application of specific DMRB values for the driver perception time (2 seconds) and deceleration rate (0.25g) to ensure the results can be considered suitable for application in this location. The results confirmed splay requirements (either for Y-distance or Stopping Sight Distance) of 147 metres for eastbound traffic and 175 for westbound traffic. A full copy of the corresponding splay calculations is also included at **Appendix M**.

4.4.10 Inspection of Table 2.10 from CD109 confirms that roads with a design speed of 85 kph should provide a 'Desirable Minimum' stopping sight distance of 160 metres, or 120 metres if the 'One Step Below Desirable Minimum' value is adopted. At 100 kph this increases to 215 metres and 160 metres accordingly. It is standard practice for splays to be set using known speeds when dealing with existing highway layouts and the above results show that the eastbound 85th percentile speed of 79.94 kph sits below the 85 kph threshold. Whereas, the westbound speed of 88.64 kph breaches the 85 kph threshold. Comparing the calculated values for eastbound traffic, it is clear that the observed results sit between the two options. Hence, it should be reasonable to conclude that the calculated splay of 147 metres for eastbound traffic flow would be suitable for use in any further assessment. This is also true for the westbound traffic flow so it is considered that 175 metres should be used for any subsequent assessment.

4.5 Existing Pedestrian and Cycle Movements

4.5.1 Surveys were undertaken to record the existing pedestrian and cycle movements to gain an understanding of the existing sustainable travel activity in the vicinity of the site. The surveys were undertaken at two locations, recording pedestrian and cycle movements on the A5 shared footway at Junction 10 of the M42 Motorway, including to and from Green Lane. Together with pedestrian and cycle movements on both sides of the A5 passing the site frontage near the existing bus stop. The 12-hour surveys took place on Thursday 23 September 2021, recording the number of pedestrians and cyclists using the footways. A copy of the survey results is provided at **Appendix R**.

4.5.2 At Junction 10 of the M42 Motorway the surveys identified that existing pedestrian movements to and from the A5 Watling Street were low, with 14 pedestrian two-way movements to / from Green Lane and the A5 (west) over the 12-hour period. There were more cycle movements with 56 two-way movements to / from Green Lane and the A5 (west) over the 12-hour period, equating to approximately 5 cycle movements per hour.

4.5.3 At the site frontage the surveys identified that there were between 10 and 26 two-way pedestrian movements on the northern and southern footways of the A5 respectively over the 12-hour period. Again, there were more cycle movements with between 50 and 65 two-way movements on the northern and southern side of the A5 respectively over the 12-hour period. The surveys also monitored the bus stop activity and it was recorded that no pedestrians boarded or alighted from the bus stop during the 12-hour period.

5.0 EXISTING SUSTAINABLE TRAVEL INFRASTRUCTURE

5.1 Pedestrian Travel

5.1.1 Table 3.2 of The Institute of Highways & Transportation's publication 'Guidelines for Providing for Journeys on Foot' (2000) provides suitable walking distances and is summarised below:

	Town Centres (m)	Commuting / School / Sight-seeing (m)	Elsewhere (m)
Desirable	200	500	400
Acceptable	400	1000	800
Preferred Maximum	800	2000	1200

5.1.2 A footway extends along the southern edge of the A5 past the site, measuring approximately 1.8 metres wide. Along the northern edge of the carriageway, a 2 metres wide shared footway / cycleway exists. On-site observations confirmed that the northern facility was frequently used by pedestrians and cyclists, whilst the southern edge was used less frequently. To the west, these facilities extend to the M42/A5 roundabout where, as per the 2014 improvements to the junction, all arms include dropped kerbs and tactile paving crossings. On-site observations confirmed that there appeared to be sufficient time for pedestrians and cyclists to cross when the signals were on red. Photos showing the above are provided below.

Existing crossing facilities at M42 Junction 10

Existing footways at site frontage on A5 (left) and at northern edge of M42 Junction 10 (right)

5.1.3 **Figure 22** identifies opportunities for pedestrian travel to the site, based on a 2 kilometres isochrone. This demonstrates that the catchment area extends to the B5000 to the north, encompassing Birchmoor and the southwestern part of Polesworth which includes a significant amount of residential development alongside Polesworth Sports Centre and Polesworth School.

5.1.4 The eastern edge of the isochrone drops down from the B5000/Common Lane junction to the west of Common Lane, then cuts across to the site boundary at Birchwood Avenue. It then extends further to the east encompassing Browns Lane and the southern end of Long Street. This includes local shops and restaurants at Browns Lane along with further residential development. It is also important to note that many of the local roads within Polesworth and Dordon are traffic calmed, helping to keep speeds low and thereby improving conditions for pedestrian movement. Photos showing the above are provided below.

local shops at Browns Lane (left) and traffic calming on Whitehouse Road (right)

5.1.5 South of the site, it is evident that the majority of the Birch Coppice Business Park is within a reasonable walking distance. This also includes the Core 42 site that is immediately to the east of Birch Coppice. Access to these areas requires crossing of the A5, which can be accommodated at numerous locations, via controlled and uncontrolled crossings that exist along the desire lines. Each of these sites has comprehensive internal pedestrian and cyclist facilities to facilitate movement. Photos showing examples of these existing crossing facilities are provided below.

controlled crossing facilities on A5 at Birch Coppice access (left) and Core 42 (right)

uncontrolled crossing facility on A5 adjacent to site frontage

5.1.6 Continuing west from the site access the isochrone extends to include recently developed employment uses along Trinity Road, which are served by the existing footway at the southern edge of the carriageway. Utilising the footway at the southern edge of the roundabout and then the A5 carriageway, pedestrians can access the Centurion Business Park and its units via Centurion Way (this includes a Premier Inn Hotel, restaurant/pub, and various employment units (offices and industrial)). The isochrone then extends further west via Watling Street to include part of the adjacent residential area.

5.1.7 The area covered by the isochrone north of the A5, west of Junction 10, comprises a mixture of residential and employment uses. It is connected to the site via a route that extends north via Birchmoor and then west along Green Lane, which has a footway along the entire length of the route and some sections with a footway on both sides of the carriageway. At the western end of Green Lane the speed limit changes from 30 mph to national speed limit restrictions as the road splits to the north and south. The existing footway facilities at Green Lane are shown below.

footways on Green Lane

5.1.8 Continuing south from this junction the route is via a Permissive Footpath that extends through to the northern edge of the Motorway Service Area as a traffic free route. From this, the isochrone extends west to include additional residential development within Tamworth. Photos showing parts of the pedestrian route to the south are provided below.

pedestrian facilities on route south from Green Lane

5.1.9 Turning right and heading north from the Green Lane junction also utilises the permissive footpath which provides various opportunities to cut into the adjacent residential area that is covered by the isochrone. The first of these is a segregated footpath/cyclepath which extends through to the eastern edge of the residential estate and then offers convenient access to Pennine Way (B5080). A short walk beyond the isochrone then provides access to the Academy School at Fossdale Road.

pedestrian facilities on route north from Green Lane

5.1.10 There are a number of Public Rights of Way (PROW) within the surrounding area, as shown in **Figure 23** (as extracted from www.rowmaps.com). Bridleway AE45/1 runs along the eastern site boundary in a north / south direction. In addition, **Figure 23** also shows how an existing public footpath (AE46) extends east arching round to the south where it connects the centre of the eastern site boundary with the A5, east of the Birch Coppice access junction. Continuing further east along the northern edge of the A5 leads to another footpath (AE48) that extends northeast into Browns Lane.

5.2 Cycle Travel

5.2.1 **Figure 24** shows a 5 kilometres cyclist catchment area centred on the site. It demonstrates how a large amount of the surrounding towns and villages would be within a comfortable cycling distance. This includes the densely populated residential areas east of Tamworth, such as Kettlebrook, Glascote, Glascote Heath, Belgrave, Wilnecote, and Stoneydelph. To the northeast and east, residential areas within Polesworth, Dordon, Baddesley Ensor, Wood End would also be well within a comfortable cycling distance of the site, along with the substantial amount of existing employment uses located opposite at the southern edge of the A5 (Core 42, Birch Coppice, and St Modwen sites).

5.2.2 **Figure 25** shows an extract from ‘Cycling in Lichfield’ map published online by Staffordshire County Council. It shows how the site is surrounded by a network of cycle facilities, ranging from traffic free cyclepaths through to advisory cycle routes along quiet roads. In the immediate vicinity of the site these facilities include advisory cycle routes at Birchmoor Road and Trinity Road, shared footway/cycleway at the northern edge of the A5 (including a Toucan crossing at the Birch Coppice access), and further cyclepaths routing through the residential areas of Stoneydelph and Glascote Heath. This demonstrates how the proposed development would be well connected to the surrounding local road network, ensuring that cycling trips to and from the surrounding site area are within a comfortable distance and with suitable facilities.

cyclists using existing facilities at A5 passing the site frontage

5.3 Bus Travel

5.3.1 Details of local bus services were obtained and summarised in **Table 1**, with the routes shown in **Figure 26**. **Figure 26** demonstrates that the site is served by bus routes at the A5 and then at Birchmoor Road, which are each within 400 metres of the site boundary, providing access to a number of locations such as Atherstone, Grendon, Dordon, Polesworth, Amington, Austrey and Tamworth. **Table 1** confirms routes 766, 767, 785 and 786 operate a combined frequency of one service every hour in each direction, Monday to Saturday, with one bus every 2 hours on Sundays.

5.3.2 The closest bus stop is located at the northern edge of the A5, approximately 150 metres to the east of the existing access. This comprises a bus pull in layby with no flag and pole arrangement serving eastbound services for Routes 766 and 767. To access westbound services, the closest bus stop is located within the Birch Coppice Business Park, approximately 870 metres to the southeast of the existing site access.

existing bus stop facilities at A5

5.3.3 **Figure 26** also shows that further bus stops are located on Birchmoor Road, approximately 350 metres north of the site which comprise a flag and pole type arrangement for services in both direction for Routes 785 and 786. These services can be accessed from the north of the site via Cockspur Street and the existing bridleway.

examples of local bus stop facilities

5.3.4 Inspection of the bus timings for each route indicates that an employee living in Polesworth (or arriving by train) could catch a bus at 0802 hours and arrive at the Birchmoor Road stop for around 0816 hours, meaning a journey time of circa 15 minutes that could connect with the conventional 0900 hours start time. Similarly, employees heading to Tamworth, either to home or the Train Station, could catch a bus at 1750 hours, which should then arrive at Tamworth Rail Station for around 1827. The current journey times provided by each of the route options are such that future employees at the site should be able to travel to work from each of the key local areas set out above and in **Table 1**.

5.4 Rail Travel

5.4.1 The site is served locally by three train stations at Polesworth, Wilnecote, and Tamworth, which each operate separate lines to different destinations. Polesworth Station is located approximately 2.8 kilometres to the north and accommodates the London Northwestern and Avanti West Coast lines, which serve Lichfield Trent Valley, Tamworth, Nuneaton, Stoke on Trent and Rugby. However, there appear to be accessibility issues at this station and severely restricted services are currently being run through this point. Access to Birmingham can be achieved via connections at Tamworth and the CrossCountry line. Tamworth Station is approximately 7 kilometres northwest of the proposed site access, whilst Wilnecote Train Station is approximately 5 kilometres to the west.

5.4.2 Both Tamworth and Wilnecote Train Stations should be within a comfortable cycle ride or drop off as part of a shared journey. Each station operates regular services to key surrounding towns that could fit with conventional working times for employees at the site or visitors. A copy of current network route plans and timetable information for the CrossCountry route is provided at **Appendix N**.

5.4.3 In addition to conventional commuter routes, the site is also in close proximity to the Birmingham Intermodal Freight Terminal (BIFT) at Birch Coppice Business Park. This is operated by Maritime Transport and provides a 24-hour operation 7 days per week with capacity for holding 3,000 containers. On a typical weekday, the terminal receives three trains/day from the Port of Felixstowe and two trains/day from the Port of Southampton. This provides a clear opportunity for goods associated with the proposed development to be delivered by rail rather than road, thereby reducing highway impact and increasing accessibility by sustainable modes.

6.0 DEVELOPMENT PROPOSALS

6.1 This Transport Assessment has been prepared to support an outline planning application for the construction of up to 90,000 GFA of B8 use plus up to 10,000 sqm of flexible E(g)(iii)/B2 use and a new lorry park with capacity for up to 150 spaces with associated amenity space. A copy of the latest illustrative masterplan is provided at **Appendix O** showing the above uses along with a small ancillary hub office facility adjacent to the access.

6.2 It must be noted that the internal layout does not form part of the formal planning application and is provided in illustrative form only at this stage to help demonstrate delivery of the required design elements. The following details set out the provision that would be made for each of the detailed infrastructure elements, in accordance with relevant design guidance and best practice. The details will also be set out with a Design Code that is to be prepared and submitted as part of the planning application.

6.3 As shown within the Illustrative Masterplan the proposed development would be served by a spine road with a carriageway width of 7.3 metres (one lane in each direction) that extends north from a new signal controlled all-movements junction at the A5 providing access to each plot via individual priority-controlled T-junctions. The route would be supported by shared use footways/cycleways and street lighting at each edge of the carriageway. This report also sets out how the proposed development would further connect to the surrounding highway network and deliver on specific commitments within other areas of the development to maximise sustainable travel opportunities for future users.

6.4 At this stage the accompanying Design and Access Statement and Design Code documents are expected to confirm the following range of infrastructure improvements within the scheme:

- 3 metres wide dual use footway/cycleway to either side of the site road and access junction;
- 3 metres wide dual use footpath / cyclepath linking north from the site road to Birchmoor;

- 3 metres wide footpath / cycleway linking east from the site road to the nexus of Public Bridleway AE45 and Public Footpath AE45;
- A network and new and improved Public Footpaths, footpaths and cycleways crossing the broader area to promote sustainable modes of travel/commuting and local community health and fitness. This will include tarmac footpaths and cycleways and appropriate surfaces for bridleways, all of which would be compliant with the Equalities Act 2010 providing “access for all”;
- New enhanced bus stop to the south of the site on the east bound A5, providing bus shelter and segregated cycleway and footway;
- New enhanced fully signal controlled pedestrian crossing for the A5, compared to the existing junction staggered pedestrian crossing that passes through the central reserve;
- Electric vehicle charging points and rapid charging points installed to 10% of car parking spaces, with ducting provided to a further 15% to future proof the development – 25% in total;
- Ducting provided to 25% of lorry parking space for fully electric and hybrid electric vehicles, to future proof the development;
- Car parking provided to all units at the North Warwickshire standard;
- Cycle parking provided to all units at in excess of the North Warwickshire standard; incorporating a range of parking facilities to include indoor/outdoor parking, secure parking and covered parking, all located at or close to pedestrian entrances;
- Showers and changing facilities provided to all units;
- Communal cycle parking, showers and changing facilities for site occupiers located at ancillary hub office; and
- Site wide Travel Plan to be applicable to all future occupiers.

6.5 The proposed ancillary hub office would be used as a security office alongside general meeting rooms specifically for tenants of the various units on-site. It should therefore not attract any significant additional traffic movements and no further consideration of this element of the scheme has been undertaken within the Transport Assessment, over and above the floorspace being attributed to the use mix.

6.6 At this stage it is intended that a planning application will be submitted in 2021, leading to agreed assessment years of 2026 (opening) and 2031 (future) for the impact of development traffic impact.

7.0 EXTENT OF TRAFFIC INCREASES

7.1 Scope of Impact

7.1.1 Section 2 of this Transport Assessment explains how detailed discussions have taken place with the various highway authorities responsible for considering the application. This has established the following peak period traffic generation for the proposed development, which was then assigned to the local area strategic traffic model as per the highway officers' requirements.

Morning period		All Vehicles	
• 0700 to 0800	164 arrive	76 depart	240 total
• 0800 to 0900	171 arrive	91 depart	262 total
• 0900 to 1000	134 arrive	84 depart	218 total
Evening period			
• 1600 to 1700	81 arrive	135 depart	216 total
• 1700 to 1800	89 arrive	178 depart	267 total
• 1800 to 1900	49 arrive	109 depart	158 total

7.1.2 The resulting morning peak (0800 to 0900 hours) and evening peak (1700 to 1800 hours) turning movements (classified as Lights, HGVs, and Total vehicles) were then extracted from the 2021 modelled output data and summarised in **Figures 27** and **28**, respectively. From these results it was then possible to calculate the modelled proportional distribution of development trips passing through the immediate study area, comprising the M42/A5 junction to the west and A5/Birch Coppice Access to the east. The results of this exercise are shown in **Figures 29** and **30** for the morning and evening peak hours respectively.

7.1.3 In assessing the traffic assignment process it is evident how the majority of development traffic is expected to arrive and depart the site via the west, with a split of around 80% associated with the west and 20% the east, although this does vary slightly throughout the arrival and departure profiles at each peak hour. This translates to increases of around 202 peak hour movements to the west and 58 movements to the east (all vehicles).

7.1.4 Further inspection of the traffic model output data confirms that development traffic associated with the east is primarily focused on the A5 corridor with no significant assignment into the surrounding local road network, such as Long Street via the Dordon Island roundabout junction. As previously stated, the 2021 reference case turning movements identified in **Figure 6** show a total of 3572 predicted two-way movements using the A5. Using this figure, the proposed development traffic increases of 58 peak hour movements would only constitute a 1.6% increase in activity passing through the Birch Coppice site access junction and beyond.

7.1.5 Looking at the assignment to the west it is evident that the key draw for development traffic is associated with the west (A5) and south (M42), with around 45% of trips associated with the A5 (west) and 25% associated with the M42 (south). This pattern does change for the morning peak hour departures where virtually all departing trips head west to the A5 (west) and very little turns left towards the M42 (south). However, taking the predicted 2021 link flow at the A5 of 3572 two-way movements, the proposed 202 development trips to the west would equate to a 5.7% increase at the eastern arm of the M42/A5 junction.

7.1.6 Based on the results of the (robust) demand-based traffic model output data the proposed development would generate only minimal peak hour traffic increases to the east of the site access (circa 1.6%), when compared against the 2021 Reference Case modelled flows summarised in **Figure 6**. To the west a more significant increase would take place at the A5 (east) arm of the M42/A5 junction, but this would only marginally exceed the 5% level usually adopted in these circumstances. Nevertheless, in lieu of already established concerns raised by National Highways regarding the impact of the proposed access junction on the safe operation of the two adjacent junctions, it would be reasonable to conclude that the study area for further detailed assessment should comprise the following junctions:

- M42/A5 Junction 10 Signal Controlled Gyratory
- Proposed A5/Site Access Signal Controlled Junction
- A5/Birch Coppice Access Signal Controlled Junction

7.2 Design Year Assessments

7.2.1 In accordance with the above, detailed turning movements were extracted from the local area strategic traffic model for the following scenarios,

- 2021 Reference Case plus development – AM/PM [**Figure 8**/**Figure 9**]
- 2026 Reference Case plus development – AM/PM [**Figure 12**/**Figure 13**]
- 2031 Reference Case plus development – AM/PM [**Figure 16**/**Figure17**]
- 2031 Local Plan plus development – AM/PM [**Figure 20**/**Figure 21**]

8.0 DEVELOPMENT SITE HIGHWAY CONSIDERATIONS

8.1 Site Access

Form of Access

8.1.1 As outlined within the Scoping Study, it is proposed that the development would be served by a single signal-controlled access junction at the northern edge of the A5 carriageway. The proposed site access layout is shown in **Drawing Number F19123/07 Revision A**, which now incorporates comments raised by National Highways following submission of the previous layout submitted as part of the Scoping Study, the key difference being the removal of the left-turn filter lane into the site. The proposed layout has been prepared in accordance with the requirements of CD123 'Geometric design of at-grade priority and signal-controlled junctions' and the following design principles.

8.1.2 Paragraph 2.27 of CD123 states that where "*the 85th percentile speed on the approach roads is greater than or equal to 104kph (65mph), a signal-controlled junction shall not be provided*". The results of the speed survey confirm that the 85th percentile approach speeds in each direction did not exceed 90 kph (see **Appendix M** for details), so this should not be an issue.

8.1.3 Section 7 of CD123 sets out in detail National Highways's requirements for the geometric design of signal-controlled junctions. The proposed layout within **Drawing Number F19123/08** demonstrates how, in accordance with the measured 85th percentile speeds a visibility splay of 147 metres is achievable on approach to the A5 eastbound primary signal heads, whilst 175 metres is achievable on approach to the A5 westbound primary signal heads. Each of the A5 approaches to the junction would include nearside and off-side primary signal heads and a minimum of two signals would be visible from each stop line. Furthermore, all primary signal heads would be located a minimum of 1 metre from the adjacent stop line.

8.1.4 Details of the junction modelling are set out later within this section. However, the results have provided Mean Maximum Queue Lengths of up to 95 metres at the

A5 eastbound approach. **Drawing Number F19123/10 Revision B** shows how the required SSD of 147 metres could be achieved to the rear of this theoretical queue for approaching vehicles.

8.1.5 The proposed layout (**Drawing Number F19123/07 Revision A**) demonstrates how the required Junction Intervisibility Zone could be achieved throughout the layout, with a minimum 2.5 metres setback from each stop line. In accordance with paragraph 7.6 of CD123 the proposed layout has been designed to include 3.5 metres lane widths throughout (minimum of 3 metres required). It should be noted that cyclists are expected to be accommodated away from the carriageway so there should be no need for the maximum 4 metres width requirement.

8.1.6 All tapers within the proposed layout are provided in accordance with the minimum requirement for 1 in 5 metres, set out within paragraph 7.8 of CD123. All storage lanes for turning traffic have been designed with consideration of the potential demand for turning traffic. The proposed layout requires the A5 eastbound nearside approach lane to merge with the central lane as it passes through the junction. In accordance with the requirements of CD123 paragraph 7.10 this is shown as being 100 metres from the Junction Intervisibility Zone east of the junction.

8.1.7 To address any concerns regarding the suitability of the proposed layout to accommodate all likely turning manoeuvres, **Drawing Number F19123/04** demonstrates how a 16.5 metres articulated lorry could satisfactorily manoeuvre between each arm of the junction. As required by paragraph 7.16.2 of CD123 **Drawing Number F19123/07 Revision A** shows how the proposed right turn from the A5 (east) arm into the site would be separately controlled within the overall staging sequence.

8.1.8 In its response to the Scoping Study, National Highways raised concern at the proximity of the proposed access and existing parking laybys on both sides of the A5. Following on from these comments the proposals have been updated to include a designated lorry parking area for up to 150 vehicles within the site, to off-set the loss of parking laybys at the northern and southern edges of the A5 (maximum capacity of around 7 to 8 lorries). The proposed lorry park would satisfy the mandatory requirements of DfT Circular 02/2013 Appendix B in terms of:

- open minimum 12 hours per day between 8am and 8pm every day except Christmas Day, Boxing Day and New Year's Day
- free parking for up to 2 hours minimum for all vehicles permitted to use the road served by the facility
- free toilets/hand washing facilities with no need to make a purchase
- shower and washing facilities for HGV drivers, including secure lockers in the shower/washing area
- hot drinks and hot food available 8am to 8pm for consumption on the premises
- access to a cash operated telephone

8.1.9 Concerns were also raised in respect of the proximity of the existing bus layby at the northern edge of the A5 (east of the site frontage) and the proposed site access junction. CD169 addresses 'The design of lay-bys, maintenance hardstandings, rest areas, service areas and observation platforms', with Section 5 dealing specifically with Bus Laybys. **Drawing Number F19123/09** sets out the proposed layout of the proposed bus stop relocation, confirming how it complies with the geometric requirements set out within CD169. This includes diverting the cycleway to the rear of the bus stop and providing a 3.5 metres wide stopping area with raised kerbing at the boarding area. The layout also now includes standard merge and diverge tapers along with 2.4 x 147 metres visibility splays in each direction for emerging movements.

8.1.10 Section 3 of CD169 sets out the design requirements for the siting of laybys. Paragraph 3.6 requires that "*in both directions of travel, lay-bys shall not be provided within one kilometre of the start / end of a dual carriageway*". The proposed location would be approximately 1.1 kilometres west of the Dordon Island, which is where the A5 dualling finishes to the east. To the west, the A5 dualling extends beyond the grade separated junction with the B5440, which is more than 3 kilometres from the proposed bus layby facility. Hence, this spacing requirement should be satisfied.

8.1.11 Paragraph 3.7 of CD169 then states how the "*separation between a lay-by and an at-grade junction or access (excluding field accesses) on the same side of the road, both upstream and downstream, shall be at least 3.75V where V is the design speed in kph*". Taking the design speed as being 80 kph for eastbound movements (see eastbound speed survey results), this would equate to a distance of 300 metres spacing. To the east this distance would reduce from 240 metres to 105 metres within the proposed improvements. To the west, the spacing between the proposed site access junction and relocated bus layby would be approximately 100 metres. All measurements are taken as being the nearest points of each junction and the layby as per the design guidance.

8.1.12 In considering the above shortfall in siting requirements, it must be noted how the existing bus layby facility does not meet the standard design requirements, both in terms of siting and layout. Neither is there any evidence that this has led to any specific highway safety problem during the past five years. In addition, the proposed scheme would remove each of the existing parking laybys within the site frontage, which are also substandard in terms of compliance with the current design requirements. Consequently, whilst it is acknowledged that a departure from standard would strictly speaking be required to support the proposals, any consideration of the merits must be offset against the benefits accrued from improving the existing layout and removing the parking laybys altogether.

Capacity

8.1.13 To establish if the proposed site access would operate in a satisfactory manner the layout was tested using a LINSIG Version 3 model and the 2031 Reference Case/Local Plan traffic flow scenarios (see **Figures 16**, **17**, **20** and **21**). The standard measurement of capacity at a signalised junction is the Degree of Saturation (DofS). Typically, a value of 0.90 is seen to represent a practical capacity with results higher than this more likely to experience congestion and delay. In overall terms, the operation of a junction can also be gauged by its Practical Reserve Capacity, where a result less than 5% indicates that capacity issues would occur during the modelled period. The results of the LINSIG assessments are summarised in **Table 2**, with full copies of the output data contained at **Appendix P**.

8.1.14 The results of the modelling demonstrate that the junction would operate satisfactorily at all 2031 scenarios (i.e. Reference Case and Local Plan) during the morning and evening peak periods. The junction would operate at a 90 second cycle time with pedestrians able to cross under green signals within the staging arrangement. The lowest PRC value would be 9.1% during the 2031 Local Plan morning peak hour 'with development' scenario. Detailed inspection of the results shows a Mean Maximum Queue length of 16.5 pcus at the A5 (west) offside ahead lane approach (noting how the alternative queue length would encompass the nearside lane and corresponding flare), which corresponds with a maximum queue length of 95 metres (16.5 x 5.75 metres per pcu). This value has been used within **Drawing Number F19123/10 Revision B** for the assessment of Stopping Sight Distance in this regard.

8.1.15 In lieu of the above results it is reasonable to conclude that the proposed site access layout would provide a safe and suitable layout with adequate capacity to accommodate the proposed development trips.

8.2 Internal Layout

8.2.1 No recommendations or comments were provided on the internal layout requirements within any of the scoping responses. The site road and associated infrastructure would be built to adoptable standards, although it should be noted detailed design for these elements will be subject to reserved matters applications in due course. Hence, a 7.3 metres wide carriageway with 3 metres wide shared footway/cycleways on either side would be provided along the main spine road through the site.

8.2.2 The internal access junctions would be split between those predominantly serving staff/visitor car-based movements and the remaining that serve the respective loading and delivery areas where large articulated lorries are likely. The final site masterplan layout would demonstrate how each of the proposed internal junctions would satisfy current design standards with swept path assessments to confirm vehicle manoeuvrability. All gates being proposed should be set back in line with the longest vehicle length expected to use the unit/s. For any projected B8 unit this should be a minimum of 16.5 metres from the main spine road, whilst other industrial uses could reduce to a minimum of 12 metres. Visibility splays at each access should be set at 2.4 x 43 metres in line with the predicted 30 mph internal speed limit.

8.2.3 The proposed internal layout would include a three metres wide shared footway/cycleway along both edges of the proposed spine road. At each end, the proposed internal cycling facilities would tie into the existing facilities, providing a through link for other users to connect between Birchmoor Road and the A5.

8.3 Parking and Servicing Requirements

8.3.1 Appendix 4 of North Warwickshire Borough Council's previously adopted Local Plan (2006) confirms the required car and cycling parking standards for new development. There is no clear update within the adopted 2021 Local Plan so these standards are taken as being the current adopted position. For B2 development (equivalent to E(g)(iii)) uses under the present schedule) it requires a maximum of 1 space per 100 sqm for cars and 1 space per 500 sqm for cycles. For Warehousing B8 use it requires a maximum of 1 car parking space per 150 sqm and 1 space per 1000 sqm. Looking at the overall proposals for 90,000 sqm B8 and 10,000 sqm B2 use, this would equate to a total provision of no more than 700 car spaces throughout the site (comprising 600 for B8 use and 100 for B2 use) along with 110 cycle parking spaces (comprising 90 for B8 use and 20 for B2 use).

8.3.2 All car parking spaces should measure a minimum of 2.4 x 4.8 metres, although it is commonplace for 2.5 x 5.5 metres to be provided and this would be recommended within any final site masterplan.

8.3.3 It is evident from the Illustrative Site Masterplan provided at **Appendix O** that the required level of car parking could be accommodated.

8.3.4 High quality cycle parking facilities would be provided throughout the scheme in line with the minimum standards set out above. This shall include a range of cycle parking types at various locations to ensure the needs of future users are adequately met and demand for cycling can be further encouraged throughout the life of the development. In addition, communal cycle parking facilities, showers and changing facilities would be provided at the ancillary hub office, open to use by staff of site occupiers.

8.3.5 Section 11.2 of LTN 1/20 discusses the general principles of cycle parking advising that "*Security is the primary consideration for longer stay parking. Many users will be willing to trade some convenience for additional security such as CCTV coverage, shelter from weather and secure access (i.e. not open to the passing public). However, there is a limit to how far people will be prepared or be able to walk to the final destination, so secure parking in railway stations, education buildings and workplaces should still be close to the main entrances and easy to access from the local cycle route network*" [Paragraph 11.2.4].

8.3.6 Figure 11.1 of LTN 1/20 presents a chart showing the relationship between cycle parking duration of stay, location and ancillary facilities. It shows how 'Day Parking' (such as that to be expected from an employee, or between 3 and 12 hours) should be within 10 and 30 metres from the desired destination and as a minimum comprise covered parking supported by lockers/theft protection and stands. The following provides an extract from Figure 8.6 of Manual for Streets advising on the typical dimensions for Sheffield Stand cycle parking.

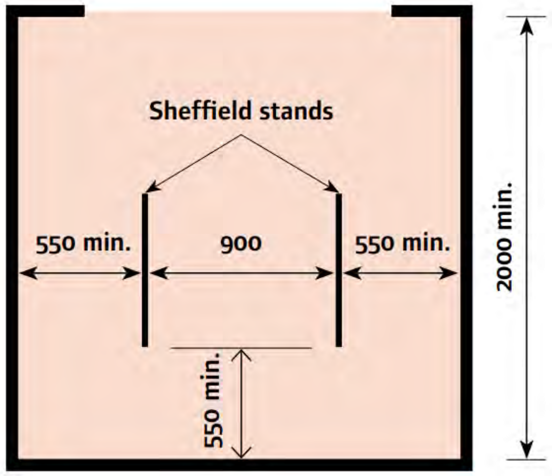
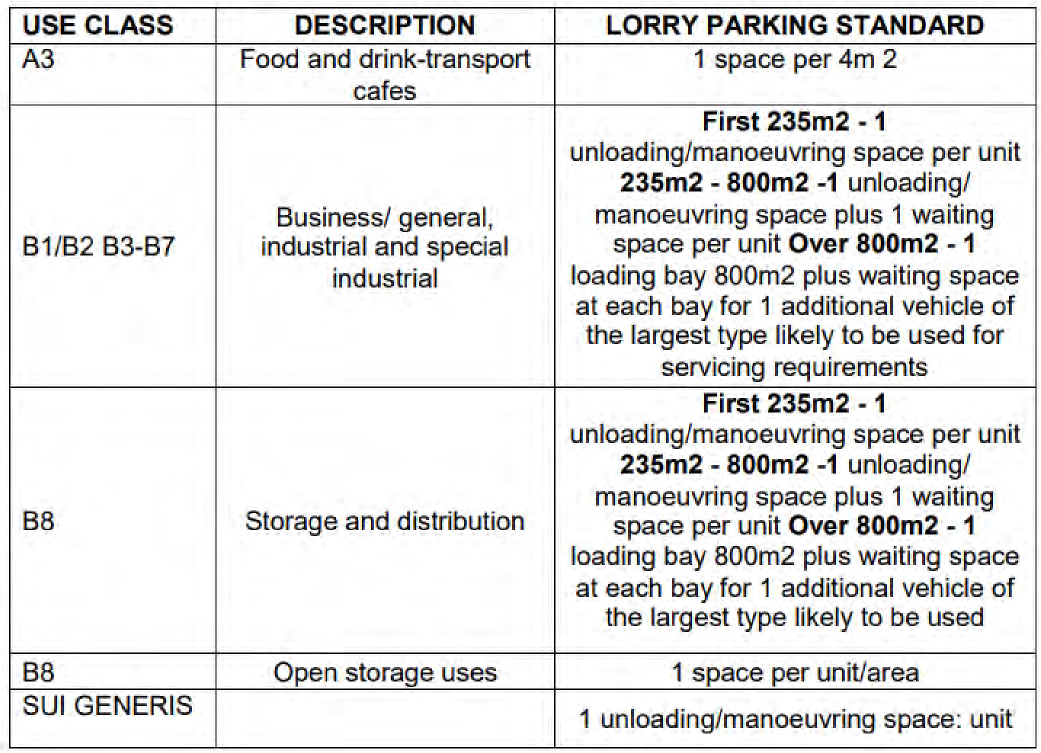


Figure 8.6 Plan of store for four cycles using Sheffield stands.

8.3.7 The adopted standards also require "*Individual bays for each disabled employee, plus 2 bays or 5% of total capacity, whichever is greater*" for "*Employees and Visitors to Business Use*" for up to 200 bay car parking areas. Beyond this it requires "*6 bays plus 2% of total capacity*". This approach would be applied to any calculations within the final scheme for development at the site.

8.3.8 In addition to the above the adopted parking standards set out minimum requirements of one motorcycle space, plus an additional space for every 10 spaces required by the maximum car parking standard. This would again be a calculation for the final scheme layout. The basic dimensions for setting out motorcycle and scooter parking should typically be based around a footprint of 1.4 metres x 2.4 metres per vehicle.

8.3.9 It is evident that the Local Planning Authority has no adopted lorry parking standards for B2 and B8 uses. In lieu of this, reference is made to Northamptonshire County Council's published guidance on this matter, where at Chapter 10 of its Parking Standards document (September 2016) it requires the following provision for lorry parking.



USE CLASS	DESCRIPTION	LORRY PARKING STANDARD
A3	Food and drink-transport cafes	1 space per 4m 2
B1/B2 B3-B7	Business/ general, industrial and special industrial	**First 235m2 - 1** unloading/manoeuvring space per unit **235m2 - 800m2 -1** unloading/ manoeuvring space plus 1 waiting space per unit **Over 800m2 - 1** loading bay 800m2 plus waiting space at each bay for 1 additional vehicle of the largest type likely to be used for servicing requirements
B8	Storage and distribution	**First 235m2 - 1** unloading/manoeuvring space per unit **235m2 - 800m2 -1** unloading/ manoeuvring space plus 1 waiting space per unit **Over 800m2 - 1** loading bay 800m2 plus waiting space at each bay for 1 additional vehicle of the largest type likely to be used
B8	Open storage uses	1 space per unit/area
SUI GENERIS		1 unloading/manoeuvring space: unit

8.3.10 The above standards effectively require two unloading/manoeuvring spaces and one waiting space per unit for the first 800 sqm of each B8 unit. The Illustrative Site Masterpan at **Appendix O** shows how a clearance of 50 metres can be provided at the larger units to accommodate both parking aisles, which would equate to two x 17 metres long parking bays plus a 16 metres clearance for turning manoeuvres. This should present sufficient space for lorries to arrive and depart without conflict although any final layout should be rigorously tested to ensure this continues to be the case.

8.3.11 It is evident from the Illustrative Site Masterplan that an appropriate level of lorry parking could be accommodated at each unit. As with all other aspects of the site layout, confirmation of suitability should be provided as part of any final detailed approval.

8.3.12 In terms of electronic vehicle (E.V.) charging spaces, these are proposed to be provided for 10% of all car and motorcycle spaces across the site with ducting installed so that a further 15% of spaces are capable of being converted to E.V. charging spaces if required in the future. Full details of the E.V. charging provision would be set out in any final scheme layout, in full compliance with these levels of provision.

9.0 OFF-SITE IMPACT

9.1 Junction Assessments

9.1.1 In line with the findings of Section 7 of this Transport Assessment, detailed junction models have been created for the existing M42 Junction 10 / A5 and A5 / Birch Coppice Site Access layouts. They have each been tested using the Future Year peak hour turning movements as provided by the network modelling exercise, both with and without development traffic flows assigned.

9.1.2 To ensure robustness the initial models for each location were submitted to JCT to undertake an independent audit of the proposed Linsig arrangements. JCT are the authors of the Linsig software and they were provided with corresponding turning movements, junction layout plans, and signal timing information for the junctions. Detailed comments were subsequently provided by JCT on each model and they were subsequently instructed to update each model accordingly. The following assessment of off-site impact is therefore based on these updated audited models, as provided by JCT.

M42 Junction 10 / A5

9.1.3 The junction operates as a fully signal controlled grade separated gyratory with northbound and southbound slip roads for the M42. Details of current layout and signal timings for the junction were obtained from National Highways and a copy of the email is provided at **Appendix K.** It is evident from onsite observations that there is occasional peak hour queuing at the junction, particularly within the morning peak hour period. This was also recognised in discussions with officers at National Highways who commented how the junction is widely predicted to operate poorly during the Future Year assessment scenarios.

9.1.4 Inspection of Transport Assessment submitted in support of the planning application for ‘Land South East of M42 Junction 10’ (PINS Appeal Reference: APP/R3705/W/15/3136495), which considered proposals for up to 80,000 sqm of B1(E(g)(iii))/B2/B8 uses, established that the junction would operate beyond theoretical limits of capacity at the “2018 Reference Case” with and without development traffic. Results presented at Tables 7-2 and 7-3 of the Transport Assessment demonstrate how PRC values as low as -8.9% were presented during the morning peak hour assessment. The application went to an appeal and the corresponding Statement of Common Ground on highways matters confirmed that there was no requirement for mitigating improvements and hence this situation was acceptable to both National Highways and Warwickshire County Council.

9.1.5 Further review of North Warwickshire Borough Council's Infrastructure Delivery Plan confirms there are no immediate plans to improve capacity at the M42 Junction 10. It is therefore reasonable to conclude that the level of operation for the 2031 Local Plan scenario represents an acceptable baseline position upon which any impact can be gauged.

9.1.6 To support this Transport Assessment and address the concerns raised by NH, the junction was modelled using Linsig and each of the modelled traffic flow scenarios described above. **Table 3** summarises the results of the exercise using 2021 Reference Case turning movements. It demonstrates how, in line with the modelling results presented as part of the above appeal, the junction continues to operate beyond its theoretical limits of capacity during both the morning and evening peak hours. The morning peak hour presents the worst-case scenario with a PRC of -48.60% and a Total Delay of 311.21 pcu/hr, which changes to -61.5% and 388.48 pcu/hr when development traffic is assigned. An important point to note here is that delays cannot be accurately predicted under saturated conditions as the software makes no allowance for other effects that will in reality take place, such as displacement to another time period, mode, or route choice.

9.1.7 **Tables 4 and 5** summarise the modelling results for the 2026 and 2031 Reference Case scenarios, respectively. The morning peak hour results at **Table 5** demonstrate how the PRC reduces at 2031 to -60.6% without development and then changes to -73.10% with the addition of development trips. **Table 6** summarises the results of the 2031 Local Plan scenario and shows how the period of greatest impact changes to the evening peak, where the PRC reduces from -117.2% to -174.90% following the addition of development trips to the junction.

9.1.8 In considering the potential impact of development traffic at this location it must be noted how both the NPPF and Circular 02/2013 clearly state that development should not be refused unless the residual cumulative impacts are severe. This is commonly interpreted as a material worsening in the operation of the highway network at any given off-site location. The results of the modelling clearly demonstrate how the junction has well established capacity issues and this extends back to previous decisions on similar employment development applications nearby. Had the Highway Authority considered that this represented an unsafe situation, or even if the capacity issues were unacceptable, then it should have addressed this within the Local Plan. In lieu of this, it is considered that there would be no severe residual cumulative impact at the M42 Junction 10 and no mitigating improvements should be required.

9.1.9 The above modelling exercise has been based upon the proposed improvement scheme at the A5(E) approach to the junction, where three full lanes would be delivered. This would offer a further 175 metres of storage capacity at the approach, or scope to accommodate an additional 30 pcus queuing (using a standard value of 5.75 metres per pcu). Accordingly, the modelled results ‘without’ development traffic would be significantly worse for each scenario.

A5 Watling Street / Birch Coppice Access

9.1.10 Signal plan information for this junction was supplied by National Highways and a full copy of the details provided is included at **Appendix K**. These details highlight how the junction is technically a 5-arm junction in signal terms with, in addition to the A5 through movements and the Danny Morson Way (site access) arm, further connections allowing access at the northern edge of the junction (serving an electricity substation) and a parallel access route to the west of Danny Morson Way serving a right of way for the benefit of land under the control of Hodgetts Estates. The level of activity associated with these additional accesses is negligible and, subject to an allowance for increased intergreen timings, should not require any inclusion within the peak hour assessment of the junction. Hence, the proposed Linsig model removes these from the assessment. Inspection of this other planning applications that have also examined this junction show this to be an approach previously agreed by National Highways.

9.1.11 The existing junction layout was tested using the modelled flows for 2021, 2026, and 2031 (both in the Reference Case and also Local Plan scenario). The results of the 2021, 2026 and 2031 Reference Case assessments are summarised in **Tables 7, 8, and 9** of this report, respectively, with **Table 10** summarising the results of the 2031 Local Plan assessment. It is clear that the junction would operate beyond the limits of its theoretical capacity in the morning peak hour with 2021 Reference Case flows showing a PRC of -3.8% without development traffic. This increases to 7.7% in the evening peak hour scenario (also without development). Projecting this assessment through to the 2031 Local Plan scenario, **Table 10** shows how the proposed development trips reduce the PRC to -4.1% in the morning peak hour, whilst in the evening peak this reduces to -1.6% (compared to -0.4% without development traffic).

9.1.12 These results demonstrate the negligible change in traffic conditions associated with the proposed development through this junction and should provide sufficient confidence that it would continue to operate satisfactorily without the need for any mitigating improvements.

9.2 Highway Safety

9.2.1 Section 4 of this Transport Assessment identifies each of the incidents that have taken place within the study area over the past five years. Whilst there have been 50 recorded incidents, these are generally focused at M42 Junction 10, with no evidence of any specific ongoing highway safety problem along the A5 or north of Dordon Island at Long Street. As stated previously, had the M42 Junction been deemed to present a material concern then this should have been addressed as part of the Local Plan process. There are no plans to improve this junction and the proposed development is predicted to increase movements by circa 5.7% at the A5 (east) arm of the junction and 1.6% towards the east on the A5. When taking into account the total turning movements at the junction, **Figure 6** shows how there are 5198 turning movements (without development) through the junction and only 202 morning peak hour development traffic movements, which equates to a 3.9% proportional increase. This scale of increase is considered to represent neither a significant or material change in the way the highway network will operate.

9.2.2 Notwithstanding the above, there are clear areas where the proposed development would deliver tangible and substantial highway safety benefits for both existing and proposed users of the highway network in this location. These can be summarised as follows:

- Signal controlled crossings within the proposed site access helping to reduce usage of the existing priority-controlled facility nearby.
- Provision of an internal link connecting the A5 to Birchmoor, thus offering a higher quality route for pedestrians and cyclists travelling between the A5 and areas to the north and west (particularly within Tamworth).
- Improved bus stop facilities at the northern edge of the A5, with a layout that segregates cyclists from pedestrians and includes standard merge and diverge tapers and a wider bus stop area.
- Reduction in overall vehicle speeds due to the proximity of an additional signal-controlled junction, thereby improving the overall environment for pedestrians and cyclists using the A5 corridor.
- Removal of existing parking laybys that do not meet current design requirements, in favour of a high-quality lorry parking facility for up to 150 vehicles, to include supporting facilities for drivers.

10.0 FUTURE OPPORTUNITIES FOR SUSTAINABLE TRAVEL

10.1 The key emphasis of the NPPF is on the need for all new developments to be sustainable. Part of this requirement for sustainability means providing good opportunities for travel to and from sites by non-car modes, as set out in Section 9 of the NPPF. This is also reflected in the DfT Circular 02/2013 and throughout the NWBC Local Plan policies presented within Section 3 of this Transport Assessment.

10.2 Details of a suitable modal split for the proposed development were presented to National Highways and Warwickshire County Council within the Scoping Study. Whilst Warwickshire County Council raised no concern with this approach, point 12 of National Highway's letter of 12 November 2019 raised concern at the use of Census 2011 data and the change in conditions that could have occurred since. Whilst the principle of this point is noted, the past year of travel restrictions has meant that there has not been any reasonable opportunity to sensibly visit this matter. However, Government advice to Local Planning Authorities in respect of the pandemic requires a pragmatic approach to dealing with submissions and it must be noted how this approach remains standard practice for considering potential travel implications. In lieu of this, it is considered reasonable to proceed on the basis of the methodology presented within the Scoping Study, which has in turn been recalculated to reflect the revised peak hour trip generation figures.

10.3 To recap, the Census 2011 'Method of Travel to Work' dataset (QS701EW) from the National Statistics website was examined to identify a suitable modal split for the site, to help calculate the potential increase in person trips by all modes. This shows the following modal split for people travelling to the North Warwickshire 002 MSOA (a copy of the output data from the website is contained at Appendix G of the Scoping Study):

• by underground, metro, light rail or tram	0.2%
• by train	0.2%
• by bus, minibus or coach	1.8%
• by taxi or minicab	0.7%

• by motorcycle / scooter / moped	1.3%
• by car / van (as driver)	77.7%
• by car / van (as passenger)	10.5%
• on bicycle	2.6%
• on foot	4.7%
• other method	0.3%

10.4 To calculate the hourly amount of person trips by each mode, the following approach should be adopted:

- 77.7% of car / van drivers is equal to 267 total movements during the busiest (evening) peak hour.
- 267 / 77.7 equals the number of person trips per percent, or 3.43.
- The evening peak hour person trips can therefore be calculated by multiplying the modal percentage for each category by 3.43.

10.5 Using the above process, it was possible to calculate that the proposed development would generate the following peak hour person trips. For simplicity, all movements associated with the ‘underground, metro, light rail or tram’ category (or 1 peak hour movement) have been reassigned to the ‘train’ category:

	peak hour
• by train	2
• by bus	6
• by taxi or minicab	2
• by motorcycle / scooter / moped	4
• by car / van (as driver)	267
• by car / van (as passenger)	36
• on bicycle	9
• on foot	16
• other method	1

It should be noted that for all non-peak hours it would be reasonable to adopt the results for non-car/van modes as a proxy throughout the day. This would be robust yet reasonable as the potential for visitors and shift working should ensure a constant flow of activity throughout the day. So, for example, 9 hourly cyclists would equate to 108 daily movements (0700 to 1900 hours).

10.6 A review of the Birch Coppice website (www.birchcoppice.co.uk) shows that the site has developed over the past 20 years to provide around 6500 jobs. Of these, it is stated how 38% of employees live within 5 miles of the business park. Considering the more recently approved schemes at Core 42 to the east and also the various units to the south and west of Junction 10 of the M42, it is likely that this part of the A5 corridor will ultimately employ in excess of 10,000 people. These new applications have been approved with only relatively minor improvements to the local infrastructure so it must be reasonable to conclude that the area is fundamentally considered sustainable in terms of current transport policy. Notwithstanding this, and in line with standard practice, the following seeks to identify how the proposed scheme would change the present conditions and provide suitable improvements for encouraging sustainable travel where reasonably possible.

Pedestrian Travel

10.7 The above calculations show that the proposed development would create up to 22 hourly movements (including 6 associated with trips to the bus stops) which would equate to around 264 two-way daily movements. Section 5 of this Transport Assessment explains how the existing infrastructure would adequately facilitate pedestrian movement between the site and residential areas to the east, north and west. This includes crossing facilities within Junction 10 of the M42 and footway links alongside other key desire lines, which could be utilised by employees at the scheme.

10.8 With all the local development that has taken place, the results of the accident study have demonstrated only one single pedestrian collision during the five-year study period (reference 45). This was a Serious incident that took place at the A5 in between the Vicarage Close and New Street junctions. Given the level of activity likely to take place it must be reasonable to conclude that there are no major issues associated with the current infrastructure and pedestrian movement.

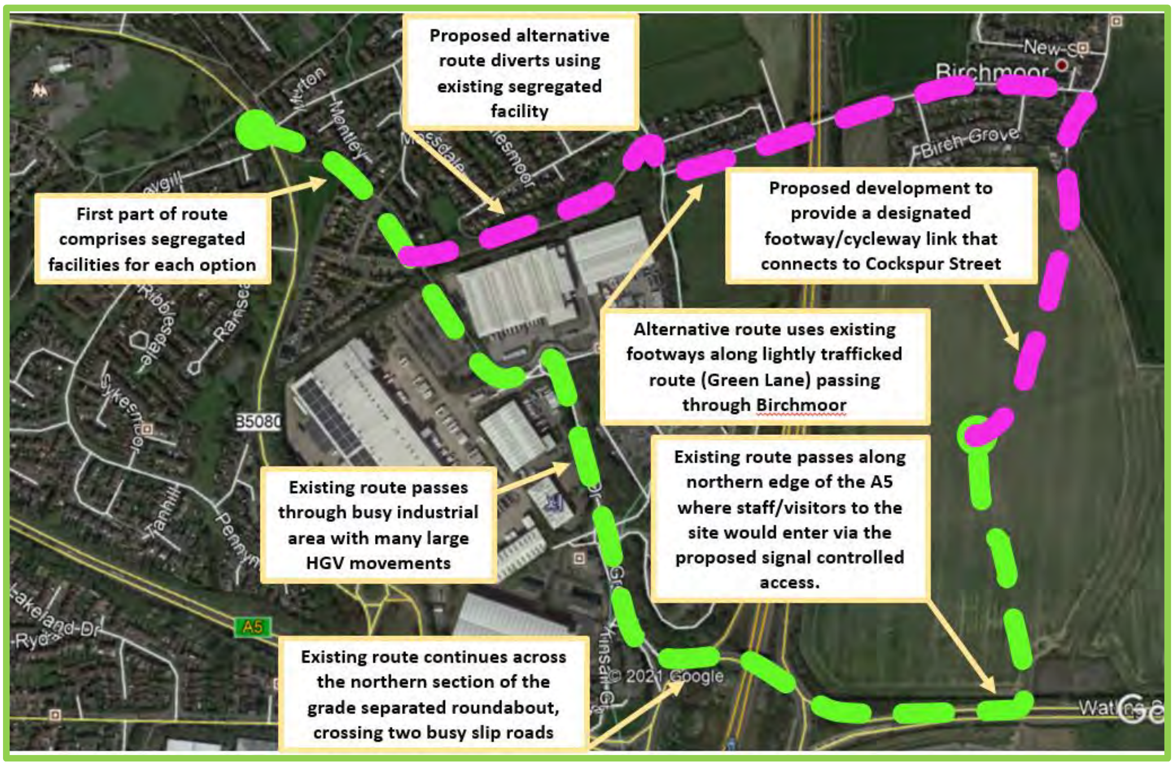
10.9 In considering the potential benefits of the proposed development, the proposed site access layout incorporates fully signal controlled pedestrian crossings at the site access and A5 (east) arms of the junction. The junction has been designed to operate at a 'pedestrian friendly' cycle time of 90 seconds and offers ample opportunity for pedestrians associated with the scheme to connect directly with the southern edge of the A5 carriageway.

10.10 Furthermore, Table 3 of the CIHT publication 'Designing for Walking' states how even at low traffic flows uncontrolled 'Dropped Kerb Crossings' are only really acceptable with traffic speeds of 40 mph or less. The table also identifies how Signal Controlled (Junction) crossings can be used on higher speed roads, albeit when designed with caution. Given that pedestrians moving between the northern and southern carriageway edges at this point are only offered a dropped kerb crossing (such as people moving to and from the bus stop at the eastbound carriageway) the provision of a controlled crossing must be viewed as a substantial improvement for both existing and proposed users.

10.11 Another key benefit of the proposed development scheme would be the opening up of pedestrian routes that pass through the site as public footpaths. The proposed scheme includes a designated footway/cycleway link that extends along both edges of the internal access road, connecting the site access to the southern end of Cockspur Street in Birchmoor. The existing bridleway would be diverted to run along the eastern edge of the site to ensure an alternative and less formal route exists for those that would prefer this. These improvements would provide a substantial improvement in the quality of journey for development related pedestrians travelling from the north, west and east. They would also extend to other users travelling to local employment sites.

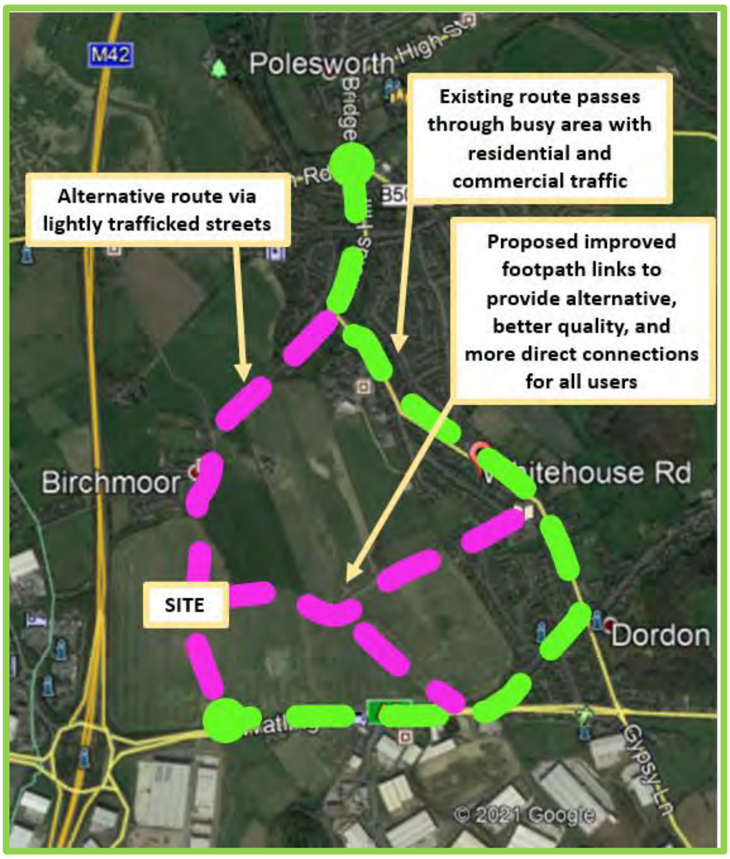
10.12 To help explain the above, people living northwest of the site travelling to Birch Coppice are currently offered a traffic free route up to the northern edge of the MOTO services adjacent to Junction 10, which then requires a journey along heavily trafficked roads leading to Junction 10 and then priority-controlled crossings at the M42 slip roads and a signal-controlled crossing of the A5 at the eastern arm of the site access junction (which may not follow the required desire line). The proposed improvements would facilitate the use of Green Lane and then

Cockspur Street (as lightly trafficked and slow speed routes), followed by the journey along the internal access road and crossing to the southern edge of the A5 at the proposed site access. Initial measurements using Google Earth indicate that each route would be broadly comparable at around 2.2 kilometres between the western point of Green Lane and the internal site roundabout at Danny Morson Way. However, the quality of the route, and therefore its accessibility to pedestrians, would be vastly improved.



improvements to pedestrian routing between site and residential areas to the northwest

10.13 Looking at pedestrian journeys from the north and areas including Polesworth and St Helena, the current route to the Birch Coppice site (particularly during winter months) would be via Fairfields Hill, Dordon Road, Long Street and then along the A5. It is recognised that public footpaths exist through the adjacent land but these are currently unmade are only reasonably usable for commuter journeys during drier summer months. This route measures approximately 3.2 kilometres between the Bridge Street/Tamworth Road junction within Polesworth and the Birch Coppice site access. Routing via Birchmoor and the proposed development site would reduce the overall distance to around 2.9 kilometres, or circa 10%, and provide a much quieter and attractive route for all users.



10.14 Although there is limited residential development within 2 kilometres of the site, it is evident that the proposed improvements to the existing public footpath routes would ensure pedestrians travelling to both the proposed development, along with other major employment sites nearby, were offered a significantly improved choice of route for their journey that should help to maximise this mode of travel.

Cycle Travel

10.15 The person trip calculations show that the proposed development would generate 9 hourly cyclist movements or up to 108 daily two-way movements. Demand for cycling would be met by the provision of on-plot cycle parking in accordance with the adopted standards, set out above. **Figure 25** shows the availability of specific cycle infrastructure within the immediate surrounding highway network, as described in Section 5 of this Transport Assessment.

10.16 Inspection of **Figures 3, 4, and 5** shows that west of the site access there has been three recorded incidents involving cyclists over the past five years. Incident References 11 and 13 were both recorded as being Slight in severity and occurred at the top of the M42 southbound onslip, whilst Incident Reference 30 took place just past the A5 Watling Street exit within the circulating carriageway and was recorded as being Serious. Further afield there was a single cyclist related incident at the Birch Coppice access junction (incident reference 41) and then two additional incidents on Long Street (incident references 48 and 49), all three were recorded as being slight.

10.17 Without knowing the specific purpose for each of these trips it is impossible to precisely address their causation. However, by providing the cycleways through the site the proposed scheme would provide a direct connection between the A5 and Birchmoor Road, which is designated as an advisory cycle route. From this, cyclists heading west would be able to utilise the network of cyclepaths that extend through Stoneydelph and Glascote Heath or the advisory cycle route that extends to the north linking up to the canal where a bridleway/byway then extends along the northern edge serving Tamworth, Polesworth and areas further afield. This would also include residential sites H4 (Dordon and Polesworth) and H5 (Land west of Robeys Lane) from the Local Plan proposals, where establishing this cycleway through the site would significantly increase accessibility between these residential areas and the proposed development, along with other major local employment sites nearby.

10.18 Looking firstly at site H5, which is expected to deliver 1270 dwellings. This would have connections to Tamworth Road at its southern end and be within 2.5 kilometres of the proposed development, meaning that future employees could walk or cycle to the scheme. Whilst there is an existing route that utilises local cyclepaths within Stoneydelph all journeys ultimately lead to the M42 Junction 10, where there is evidence of some recorded incidents. Providing the pedestrian/cyclist access at Birchmoor would ensure that the proposed scheme would be highly accessible via a convenient, simple, and reasonably traffic free route that utilises Robeys Lane (advisory cycle route) Green Lane (cycle path) and Birchmoor Road (advisory cycle route).

10.19 Turning then to site H4, which is expected to deliver up to 1675 dwellings on land immediately to the east of Polesworth and Dordon. It is likely that desire lines between this site and employment land adjacent to the A5 would filter through to the A5 using Long Street. Whilst this route would continue to be desirable for the southern part of the site, as part of the application it is proposed that two new public rights of way would be established within land to the east of the development site, which is also owned by the applicant. These routes are shown on **Figure 23** and provide appropriately surfaced shared footpath/cyclepath facilities connecting into an existing access point at the western end of Barn Close. This would bring a significant part of site H4 within a comfortable walking distance and all future residents would be within a 3 kilometres cycling distance. More importantly, the route would be clear of the A5 carriageway and therefore far more accessible for users of all ability and confidence levels.

10.20 It is clear from the above how the proposed on-site cycle link would provide an essential facility in unlocking major benefits to cycle accessibility both for the proposed development and also the established major developments locally. The proposed improvements would also extend to the delivery of a further footpath/cyclepath link connecting the eastern site boundary to Barns Close to the east. When combined, these would also serve to take any future cyclists away from sensitive locations at the M42 Junction 10 carriageway and Long Street where there is evidence of some highway safety concern.

10.21 Delivery of the above route improvements would be further supported by a commitment to include a mixture of high-quality cycle parking at various locations within each plot. Further commitments include the provision of showering and changing facilities within each of the units on-site, as well as communal cycle parking, showers and changing facilities at the ancillary hub office, open to use by employees of site occupiers. Full details of any on-plot commitment from the applicant to support sustainable travel and cycling in particular would be set out within the accompanying Framework Travel Plan.

Bus Travel

10.22 In terms of bus journeys, the above calculations demonstrate that the proposed development would result in an increase of up to 6 hourly bus passenger movements and 72 daily two-way movements.

10.23 The proposed site access improvements include the relocation of the existing bus layby at the northern edge of the A5 carriageway, as shown in **Drawing Number F19123/09**. Inspection of the existing layout shows that it does not strictly conform to current design standards set out within CD169 due to spacing details. Although a 'Departure from Standards' would technically be required to address some specific siting issues associated with the proposed layby, the overall bus stop layout would present a much safer environment for all users with segregated pedestrians and cyclists and compliant waiting facilities for buses, which also includes improved tapers to ensure safer merge and diverge manoeuvres.

10.24 The relocated bus layby would be approximately 130 metres to the east of its present location, meaning that it would be circa 300 metres from the proposed site access and approximately 800 metres from the centre of the site. To the north of the site further bus stops are located approximately 750 metres from the centre of the site on Birchmoor Lane, in the form of column and flag arrangements. **Table 1** confirms how the A5 bus stops are served by a single peak hour service in each direction connecting Atherstone and Tamworth (Route Number 766/767). It also confirms how the bus stops to the north at Birchwood Road are also served by a single peak hour service in each direction serving Tamworth, Amington, Polesworth and Dordon.

10.25 Initial discussions have taken place with officers at WCC's public transport department alongside representatives from Stagecoach (as one of the local bus operators). Through these discussions WCC has reviewed the proposed bus stop improvements and commented by email, "*From what I can see, and having read the proposals, an enhancement of the Bus Stop would be welcomed as it would encourage Bus usage to and from the employment sites*". Further discussions regarding the potential plans for improved bus services associated with the H4 and

H5 Local Plan sites are ongoing and it is expected that these would ultimately offer improved connectivity between the site and each area.

10.26 Notwithstanding the above, it is expected that this predicted level of additional demand could be accommodated by the existing bus services that operate in the vicinity of the site. It is also noted how the areas served by the local bus services would incorporate areas contained within the 5 miles catchment area identified by Birch Coppice as being a significant source of employment for its site (38% of current employees).

10.27 It is acknowledged that access to westbound services on the Route 766/767 are subject to an extended walk between the proposed site access and the stop located within Birch Coppice (circa 900 metres). This matter was addressed as part of the planning application for ‘land to the southeast of M42 Junction 10’, where highways and transportation matters did not form part of any reason for refusal of that scheme.

10.28 However, inspection of the Statement of Common Ground for the corresponding Appeal confirmed at section 5.1 that in this instance the Highway Authorities were willing to accept one of two alternative options for improving access to public transport at this site, each to be secured via a planning obligation conditioned in the formal response. The first option comprised the provision of a new bus stop on the west-bound carriageway of the A5, whilst the second option was to divert one of the existing bus services into the site, providing a suitable turning facility and bus stop within the internal layout.

10.29 The Statement of Common Ground also confirms how it was agreed that a contribution of £350,000 would be paid over a period of 5 years “after which time the service is expected to be self-funding”.

10.30 In considering the above, by implementation of the agreed contribution and bus stops, the proximity of these improvements would increase accessibility to these bus routes along the A5 for users of the proposed development, whilst also adding to the ongoing viability of any diverted services. It should also be noted that the proposed development would have access to Route 785/786 to the north, at

Birchmoor. These stops are circa 500 metres from the site boundary and services operate at a similar frequency to that of the 766/767 routes along the A5. All routes also serve Tamworth. In considering the above, it is considered that the proposed development would be reasonably well served by bus services, both now and then when future planning obligations are delivered. However, mindful of exploring all opportunities to maximise bus travel the applicant is open to further discussions with the highway authorities in respect of possible adjustments to the existing infrastructure, beyond the proposed improvements demonstrated within **Drawing Number F19123/09**.

Rail Travel

10.31 The above calculations show that the proposed development would generate a demand for two hourly journeys by train, with up to 24 daily two-way movements. Wilnecote and Tamworth Train Stations are approximately 5 and 7 kilometres west of the site respectively, and whilst this would be beyond the typical maximum walking distance, it is not an unrealistic option for more able-bodied employees. Moreover, they are each well within what would be a comfortable cycling distance and therefore present a very reasonable option for employees travelling to the site by this mode as part of a linked trip. The specific on-site cycling facilities would help to support this opportunity and ensure demand for rail travel could be met and improved wherever possible.

10.32 In addition to rail-based employee trips the sites proximity to the Birch Coppice Business Park ensures that the proposed development can also be classified as ‘rail-served’, with occupiers able to access Birch Coppice’s rail terminal facilities on the same basis as those currently located within the business park. As part of this planning application a study has been commissioned into the “Rail Terminal Connectivity Statement” (MDS Transmodal, November 2021). A full copy of this report is provided at **Appendix Q**.

10.33 Inspection of the report confirms how, based on predictions for modal shift associated with the warehousing element of the proposed development, the use of the rail terminal could reduce the distances travelled on the wider road network by HGVs from 192,776 HGV-km to 155,575 HGV-km, or almost 20%. Taking into account movements associated with the rail terminal, it is predicted that emissions per annum could reduce by almost 5,800 tonnes, which is stated as being the "*equivalent produced by around 2,750 typical mid-sized diesel powered cars during the course of a year (on the basis that a typical mid-sized diesel car generates around 130g $C0_2e$ per km and will on average cover 16,000km/c10,000 miles per annum)*".

10.34 In conclusion, the report considers that "*around 10% of loaded inbound and outbound traffic could be expected to move by freight via BIFT*". Based on the peak hour turning movements summarised in **Figures 27 and 28** this could reduce HGV activity by up to 11 peak hour turning movements. This reduction has not been applied to the peak hour junction modelling so it must be reasonable to conclude that the results represent a robust assessment of likely impact.

Framework Travel Plan

10.35 In accordance with Paragraph 111 of the NPPF, a Framework Travel Plan would be prepared to support the proposed development. The objective of this exercise is to set out the developers' commitment to promoting sustainable travel amongst potential new occupants within each of the units. It will set out a series of actions and measures that apply to each occupant individually, and then collectively. Occupants of the site will be encouraged to take advantage of the surrounding sustainable travel opportunities and shall be provided with information on schemes and initiatives, in order to minimise any demand for car travel and corresponding impact within the surrounding highway network.

Summary

10.36 At a national level policy guidance clearly requires applicants to make "*appropriate opportunities to promote sustainable transport modes*", based on the "*type of development and its location*" (Point A, Paragraph 110 of the NPPF). Paragraph 3 of the DfT Circular 02/2013 also confirms how the "*Highways Agency will engage with communities and the development industry to deliver sustainable* *development*". At a local level, Policy LP1 of the North Warwickshire Borough Council Local Plan confirms in respect of sustainable development "*Infrastructure will be sought where it is necessary, directly related to the development and is fairly and reasonably related in scale and kind to the development*". Policy LP6 discusses how significant weight can be given to future employment schemes that demonstrate "*the site is reasonably accessible by a choice of modes of transport*" (Point ii).

10.37 In considering the above it is reasonable to conclude that the proposed development would offer substantial improvements to existing pedestrian infrastructure, the majority of which will benefit existing users of the highway network. These include additional signal-controlled crossing opportunities at the A5, provision of alternative walking routes that avoid the M42 Junction 10 and other heavily trafficked roads, and the removal of a severely substandard crossing at the A5. Cyclists at the development would benefit from high quality cycle parking facilities located at convenient areas adjacent to the final destinations. The proposed site access junction would include cycle friendly infrastructure, connecting to the existing facilities at the A5. Cyclists would also be provided with alternative route choices to key local destinations via newly formed connections via the site and adjacent land. People travelling to and from the proposed development by bus would benefit from an improved bus stop at the A5 and then a high-quality link between the scheme and bus stops within Birchmoor to the north. The routes nearby offer a combined frequency of two services per hour for people wishing to travel between the surrounding areas of Atherstone and Tamworth, at the start and end of each typical working day, which includes potential connections to rail services.

10.38 All of these infrastructure improvements would be supported by a travel plan at the site, which would have specific targets and measures for achieving an overall reduction in single occupancy car travel. Because of this, it should be reasonable to conclude that, in line with both local and national policy requirements, the site is "*reasonably accessible by a choice of modes of transport*" and there is reasonable scope to "*promote sustainable modes*".

11.0 SUMMARY AND CONCLUSIONS

11.1 Bancroft Consulting were appointed by Hodgetts Estates to provide highways and transportation advice in respect of proposals for up to 100,000 sqm of employment uses, along with 150 overnight lorry parking spaces and an associated 400 sqm amenity block, on land to the northeast of Junction 10 of the M42 Motorway. The site is not currently allocated for development within the North Warwickshire Borough Council Local Plan. This Transport Assessment has been produced to support an outline planning application for the proposed scheme.

11.2 This Transport Assessment follows a Scoping Study report that was produced in respect of the proposals and submitted to National Highways and Warwickshire County Council as the affected highway authorities. This report seeks to address the comments raised from this consultation exercise and provide a detailed assessment of how the proposed development could be delivered in line with relevant policy and design guidance. In accordance with Paragraph 111 of the NPPF, a Framework Travel Plan has also been prepared to support the application and will be submitted separately.

11.3 Following the submission of the Scoping Study and subsequent discussions with the highway authorities it was decided to amend the proposed development scheme. The current proposals now comprise the following elements:

- 90,000 sqm GFA B8 use
- 10,000 sqm GFA B1(E(g)(iii))/B2 use
- Lorry Park with 150 spaces and associated amenity building

11.4 The agreed trip rates and subsequent trip generation details are as follows:

<u>B8 Warehousing (per 100 sqm gfa) – 90 000 sqm gfa</u>

Trip rates

Morning period		All Vehicles	
0700 to 0800	0.154 arrive	0.081 depart	0.235 total
0800 to 0900	0.117 arrive	0.092 depart	0.209 total
0900 to 1000	0.120 arrive	0.082 depart	0.202 total

Evening period

• 1600 to 1700	0.082 arrive	0.122 depart	0.204 total
• 1700 to 1800	0.086 arrive	0.140 depart	0.226 total
• 1800 to 1900	0.048 arrive	0.089 depart	0.137 total

Trip generation

Morning period		All Vehicles	
• 0700 to 0800	139 arrive	73 depart	212 total
• 0800 to 0900	105 arrive	83 depart	188 total
• 0900 to 1000	108 arrive	74 depart	182 total
Evening period			
• 1600 to 1700	74 arrive	110 depart	184 total
• 1700 to 1800	77 arrive	126 depart	203 total
• 1800 to 1900	43 arrive	80 depart	123 total

B1(c)/E(g)(iii))/B2 (per 100 sqm gfa) – 10 000 sqm gfa

Trip rates

Morning period		All Vehicles	
• 0700 to 0800	0.253 arrive	0.031 depart	0.284 total
• 0800 to 0900	0.658 arrive	0.078 depart	0.736 total
• 0900 to 1000	0.261 arrive	0.098 depart	0.359 total
Evening period			
• 1600 to 1700	0.068 arrive	0.248 depart	0.316 total
• 1700 to 1800	0.120 arrive	0.521 depart	0.641 total
• 1800 to 1900	0.063 arrive	0.290 depart	0.353 total

Trip generation

Morning period		All Vehicles	
• 0700 to 0800	25 arrive	3 depart	28 total
• 0800 to 0900	66 arrive	8 depart	74 total
• 0900 to 1000	26 arrive	10 depart	36 total
Evening period			
• 1600 to 1700	7 arrive	25 depart	32 total
• 1700 to 1800	12 arrive	52 depart	64 total

1800 to 1900	6 arrive	29 depart	35 total

Proposed 150 space truck stop (details as presented within BCL email of 7 July 2020)

Trip generation

Morning period		All Vehicles	
0700 to 0800	8 arrive	31 depart	39 total
0800 to 0900	13 arrive	17 depart	30 total
0900 to 1000	12 arrive	14 depart	26 total
Evening period			
1600 to 1700	22 arrive	11 depart	33 total
1700 to 1800	25 arrive	9 depart	34 total
1800 to 1900	23 arrive	9 depart	32 total

Total Trip Generation (for assignment within the PARAMICS model)

Morning period		All Vehicles	
0700 to 0800	164 arrive	76 depart	240 total
0800 to 0900	171 arrive	91 depart	262 total
0900 to 1000	134 arrive	84 depart	218 total
Evening period			
1600 to 1700	81 arrive	135 depart	216 total
1700 to 1800	89 arrive	178 depart	267 total
1800 to 1900	49 arrive	109 depart	158 total

11.5 As required, specialist consultants were appointed to undertake a detailed modelling exercise using the approved strategic local area traffic model and 2021, 2026, and 2031 Reference Case flow scenarios. This also included a 2031 Local Plan traffic flow scenario. The results of this Paramics model were subsequently provided and have formed the basis of all subsequent highway impact assessment within this Transport Assessment.

11.6 Interrogation of the modelling results shows that the proposed development would generate approximately 80% of movements to the west and 20% to the east. This would increase activity by up to 5.7% on the A5 to the west of the proposed access and 1.6% to the east. A detailed review of Personal Injury Accident records has shown how 33 of the overall recorded 50 incidents within the study area occurred at the M42 Junction 10, whilst a single cluster of four incidents were recorded at the Birch Coppice Business Park access to the east. Whilst the potential change in conditions is not considered to be material, in lieu of concerns raised by National Highways during the pre-application consultation the study area for further detailed assessment has been defined as the following junctions.

- M42/A5 Junction 10 Signal Controlled Gyratory
- Proposed A5/Site Access Signal Controlled Junction
- A5/Birch Coppice Access Signal Controlled Junction

11.7 Details of the proposed site access layout are shown in **Drawing Number F19123/07 Revision A**, which shows a signal controlled all-movements junction at the A5. The layout would satisfy the design requirements of the Design Manual for Roads and Bridges and the results of specific modelling using Linsig have shown how it would operate satisfactorily at all 2031 scenarios (i.e. Reference Case and Local Plan) during the morning and evening peak periods. The junction would operate at a 90 second cycle time with pedestrians able to cross under green signals within the staging arrangement. The lowest PRC value would be 9.1% during the 2031 Local Plan morning peak hour ‘with development’ scenario.

11.8 Detailed inspection of the results shows a Mean Maximum Queue length of 16.5 pcus at the A5 (west) offside ahead lane approach (noting how the alternative queue length would encompass the nearside lane and corresponding flare), which corresponds with a maximum queue length of 16.5 pcus or 95 metres (16.5 x 5.75 metres per pcu). **Drawing Number F19123/10 Revision B** confirms that the corresponding Stopping Sight Distance could be achieved to the rear of this queuing within publicly maintained land.

11.9 Internally, it is recommended that the proposed development is served by a single spine road that measures 7.3 metres wide with shared footway/cycleways along each edge. Access to individual plots/units would be finalised at a later stage, although it is recommended that these should incorporate 7.3 metres wide carriageways with 12 metres kerb radii. Any gates being proposed should also be set back a suitable distance from the spine road so as not to block through movements by all users.

11.10 This assessment has also reviewed adopted local parking standards and whilst the final level of provision would be subject to final agreement of the internal layout, it is recommended that the following approach is adopted:

Car Parking: For B2 development (equivalent to E(g)(iii)) uses under the present schedule) a maximum of 1 space per 100 sqm for cars. For Warehousing B8 uses a maximum of 1 car parking space per 150 sqm. Spaces should be a minimum of 2.4 x 4.8 metres although 2.5 x 5.5 would be preferred.

Cycle Parking: For B2 development (equivalent to E(g)(iii)) uses under the present schedule) a maximum of 1 space per 500 sqm for cycles. For Warehousing B8 uses a maximum of 1 cycle parking space per 1000 sqm. Spaces should be set out in accordance with the appropriate dimensions and, where feasible, be located within 30 metres of the desired destination with covering and lockable facilities to deliver an adequate long stay facility for future employees.

Disabled Parking: Each unit should provide individual bays for each disabled employee, plus 2 bays or 5% of total capacity, whichever is greater for employees and visitors to Business Use - for up to 200 bay car parking areas. Beyond this, 6 bays plus 2% of total capacity should be provided.

Motorcycle Parking: Provision of one motorcycle space, plus an additional space, for every 10 spaces required by the maximum car parking standard. The basic dimensions for setting out motorcycle and scooter parking should typically be based around a footprint of 1.4 metres x 2.4 metres per vehicle.

Lorry Parking: Provision of 2 unloading/manoeuvring spaces and 1 waiting space up to the first 800sqm of each unit, with an additional loading bay and waiting space for every 800sqm thereafter. The proposed overnight lorry park would also provide up to 2 hours free parking / waiting space, in accordance with requirements of DfT Circular 02/2013 Appendix B, which would be available to vehicles waiting for an arrival slot.

11.11 The Illustrative Site Masterplan shows how the car and cycle parking requirements should be deliverable at each of the potential plot locations. Further consideration of the specific details will be required following confirmation of the final development details and any reserved matters application. This will need to address the overall strategy for delivering appropriate levels of cycle and motorcycle parking at convenient locations. The overall strategy is set out in further detail within the Design Code and Design and Access Statement that accompanies the planning application. These matters are reserved for consideration at a latter stage and can be facilitated by an appropriately worded planning condition.

11.12 The proposed site access layout includes widening of the A5 westbound approach to M42 Junction 10, where the existing outside flared lane would effectively be extended by around 175 metres to deliver a full lane. The details of this improved layout have been tested using Linsig and the results demonstrate how the layout would operate beyond the theoretical limits of its capacity at each of the assessment scenarios. It is also evident from the results that the addition of proposed development trips to the modelling does not lead to any significant or material impact when compared to the ‘without development’ scenario.

11.13 The results of the A5/Birch Coppice site access Linsig assessment demonstrate how the existing layout would operate at the limits of its theoretical capacity, where the 2031 Local Plan assessment demonstrates a reduction in the PRC from -2.8% to -4.1% in the morning peak hour and -0.4% to -1.6% PRC for the evening peak hour (both with and without development). It is therefore considered that the proposed development would not result in a severe residual cumulative impact at this off-site location, such that mitigating improvements are required.

11.14 The proposed development would be served by a good level of existing infrastructure that should adequately accommodate access by all reasonable modes of travel. This includes a comprehensive network of pedestrian and cycle facilities, both on-street and off, along with a reasonable level of access to bus services that could facilitate longer distance journeys to the surrounding settlements such as Tamworth, Polesworth and Atherstone. The proximity of rail stations at Polesworth and Wilnecote mean that longer distance commuting trips are possible through connections with either an extended walking/cycling trip, existing local bus services, or even drop-offs/collections by colleagues. A detailed assessment of predicted travel by various modes has identified the following split and potential demand:

	peak hour
by train	2
by bus	6
by taxi or minicab	2
by motorcycle / scooter / moped	4
by car / van (as driver)	267
by car / van (as passenger)	36
on bicycle	9
on foot	16
other method	1

11.15 It is considered that this moderate increase in hourly movements could be satisfactorily accommodated within the existing highway layout and supporting facilities. Nevertheless, the proposed development would also deliver the following improvements that should serve to benefit both the proposed development and existing users alike.

- Provision of signal-controlled crossings at the proposed access on the A5 as an alternative to the dropped kerb priority arrangement that exists to the east serving the bus stop.
- Improvements to the existing bus stop facility with the segregation of cyclists and pedestrians to minimise potential conflict.
- Delivery of an internal shared footway/cycleway link that extends between the A5 and Birchmoor, ensuring that pedestrians and cyclists are able to bypass the M42 Junction 10 and gain access to the established network of facilities to the north and northwest.
- Upgrading of existing public footpaths as well as provision of new public footpaths extending to the east of the site, providing pedestrians and cyclists with a higher quality route that avoids the A5 corridor.
- Replacing the existing substandard parking laybys at the A5 with a designated lorry parking facility for up to 150 vehicles, which includes additional driver facilities.

11.16 The significance of the above benefits should not be underestimated, particularly in the context of the Local Plan, where almost 3000 new dwellings are being proposed on land at 'Dordon and Polesworth' (H4) and 'Robeys Lane' (H5) that would be within a comfortable walking and cycling distance of the site. Providing these infrastructure improvements would therefore deliver the proposed development, alongside Core 42 and Birch Coppice, as highly accessible places of employment for residents at these locations.

11.17 To summarise the above, it is evident that the proposed site access and internal layout could be delivered in line with standard design requirements and expectations for accommodating access by all reasonable modes of travel. The nature of the Outline Planning Application means that specific details regarding the final plot design and layout can be addressed in due course, although the details presented within this Transport Assessment, as well as the Design and Access Statement and Design Guide, should provide confidence that the requirements can be met. It must therefore be reasonable to conclude that the proposed development could demonstrate "*safe and suitable access to the site can be achieved for all users"* in line with the requirements of Paragraph 110 of the NPPF.

11.18 Detailed modelling of the surrounding highway network has shown how the M42 Junction 10 is predicted to experience significant delays throughout the various traffic flow scenarios, which is understandably made marginally worse by the addition of development trips. Further consideration of the existing Birch Coppice site access junction has shown how this junction would operate at the limits of its theoretical capacity at the 2031 Local Plan scenario, but similarly the assignment of development trips does not materially affect this position. The Local Plan includes no proposals to address these issues, which in the instance of M42 Junction 10 are well established, so it is considered that the proposed development traffic increases should not have a severe residual cumulative impact or warrant any mitigating improvements.

11.19 Both paragraphs 105 of the NPPF and 16 of Circular 02/13 emphasise the need for promoting sites in locations that are or can be made sustainable. This assessment has demonstrated how the proposed infrastructure improvements would deliver substantial benefits to both existing and proposed users, making the overall area far more accessible to walking and cycling trips by diverting journeys away from the heavily trafficked A5 corridor. As demand for travel increases through the Local Plan developments it is expected that this would also deliver improvements to public transport connectivity in the area. However, this Transport Assessment has demonstrated how the existing and proposed infrastructure, along with the corresponding Travel Plan commitments, should provide future employees with a reasonable choice of travel opportunities by sustainable modes, as per the requirements of Paragraph 110 of the NPPF.

11.20 In conclusion, having due regard to Paragraphs 110 and 111 of the National Planning Policy Framework (MHCLG, Revised June 2019), this assessment clearly demonstrates that the proposed residents would have opportunities to travel by sustainable modes, a safe and suitable access arrangement can be provided, and that the development will have no significant or severe off-site impact. It is therefore considered that the proposed development would comply with current planning policy and best practice design guidance. Hence, the highway authorities should be in a position to provide their support for the upcoming planning application.

Route No.	Operator	Details	Frequency				
			Weekdays			Saturday	Sunday
			AM peak period (0730-0930)	PM peak period (1600-1800)	off peak frequency		
766 / 767	Stagecoach Midlands	Atherstone - Grendon - Dordon - Tamworth	1 service	2 services	3 services during day	12 services	5 services
		Tamworth - Dordon - Grendon - Atherstone	1 service	1 service	3 services during day	9 services	3 services
785	Stagecoach Midlands	Tamworth - Amington - Polesworth - Dordon - Amington - Tamworth	no service	no service	no service	no service	3 services
786			no service	no service	no service	no service	2 services
785	Arriva MIdlands North	Tamworth - Amington - Polesworth - Dordon - Amington - Tamworth	1 service	no service	2 services during day	4 services	no service
786			0 services	2 services	3 services during day	6 services	no service

TABLE 1: SUMMARY OF LOCAL BUS SERVICES

Link Number	Link Description	2031 AM 'Future Year - with development' (Reference Case)			2031 PM 'Future Year - with development' (Reference Case)		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)
1/2 + 1/1	A5 (W) left/ahead	80.5 / 80.5	16.2	16.6	62.4 / 62.4	10.3	12.8
1/3	A5 (W) ahead	67.9	15.3	16.6	47.9	8.9	12.8
2/1	Site Access left/right	14.7	1.0	40.2	16.1	1.1	40.4
2/2+2/3	Site Access right	17.2 / 16.8	1.2	36.6	26.1 / 25.9	1.9	37.5
3/2 + 3/1	A5 (E) ahead	64.4 / 64.4	7.5	7.2	76.7 / 76.7	10.2	9.0
3/3 + 3/4	A5 (E) right/ahead	49.7 / 49.7	8.2	9.1	62.6 / 62.6	12.5	9.4
Ped 1	Crossing inbound site access arm	Total green time = 8 seconds			Total green time = 8 seconds		
Ped 2	Crossing outbound site access r/t lanes	Total green time = 64 seconds			Total green time = 64 seconds		
Ped 3	Crossing outbound site access l/t lane	Total green time = 65 seconds			Total green time = 65 seconds		
Ped 4	Crossing A5 (E) e/b cway	Total green time = 17 seconds			Total green time = 17 seconds		
Ped 5	Crossing A5 (E) w/b r/t lane	Total green time = 73 seconds			Total green time = 73 seconds		
Ped 6	Crossing A5 (E) w/b ahead lanes	Total green time = 9 seconds			Total green time = 9 seconds		
		PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)
		11.80%	17.52	90	17.30%	15.22	90

Link Number	Link Description	2031 AM 'Future Year - with development' (Local Plan)			2031 PM 'Future Year - with development' (Local Plan)		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)
1/2 + 1/1	A5 (W) left/ahead	82.5 / 82.5	17.0	17.3	78.6 / 78.6	15.4	16.0
1/3	A5 (W) ahead	70.5	16.5	17.3	65.5	14.5	16.0
2/1	Site Access left/right	15.4	1.0	40.3	19.5	1.3	40.9
2/2+2/3	Site Access right	16.5 / 16.8	1.2	36.5	26.1 / 26.5	2.0	37.6
3/2 + 3/1	A5 (E) ahead	77.7 / 77.7	10.6	9.2	77.7 / 77.7	10.6	9.2
3/3 + 3/4	A5 (E) right/ahead	64.3 / 64.3	12.8	10.3	64.1 / 64.1	12.8	10.0
Ped 1	Crossing inbound site access arm	Total green time = 8 seconds			Total green time = 8 seconds		
Ped 2	Crossing outbound site access r/t lanes	Total green time = 64 seconds			Total green time = 64 seconds		
Ped 3	Crossing outbound site access l/t lane	Total green time = 65 seconds			Total green time = 65 seconds		
Ped 4	Crossing A5 (E) e/b cway	Total green time = 17 seconds			Total green time = 17 seconds		
Ped 5	Crossing A5 (E) w/b r/t lane	Total green time = 73 seconds			Total green time = 73 seconds		
Ped 6	Crossing A5 (E) w/b ahead lanes	Total green time = 9 seconds			Total green time = 9 seconds		
		PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)
		9.10%	20.66	90	14.60%	19.82	90

TABLE 2: SUMMARY RESULTS OF THE PROPOSED A5 / SITE ACCESS SIGNAL-CONTROLLED JUNCTION LINSIG ASSESSMENT

Link Number	Link Description	2021 AM 'Future Year - no development' (Reference Case)			2021 AM 'Future Year - with development' (Reference Case)			2021 PM 'Future Year - no development' (Reference Case)			2021 PM 'Future Year - with development' (Reference Case)		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)
1/2 + 1/1	M42 North On-Slip Approach Left Ahead	46.5 / 70.0	5.2	44.0	59.6 / 59.6	5.6	40.7	32.5 / 40.4	3.1	37.8	37.3 / 43.6	3.4	38.3
1/3	M42 North On-Slip Approach Ahead	47.0	3.4	47.7	38.2	3.3	40.0	40.1	3.2	43.0	35.4	2.7	42.0
2/1	North Bridge Eastbound Gyratory Ahead	53.7	7.3	8.8	59.5	7.0	10.2	51.8	2.7	4.5	53.7	3.1	4.8
2/2	North Bridge Eastbound Gyratory Ahead	66.7	5.2	6.6	73.1	5.8	8.4	62.9	1.6	4.2	64.9	1.7	4.4
2/3	North Bridge Eastbound Gyratory Right	35.6	3.1	4.6	37.9	4.9	6.3	36.0	6.4	9.7	35.5	3.6	9.4
2/4	North Bridge Eastbound Gyratory Right	5.5	0.0	1.4	5.8	0.8	2.5	11.3	3.8	17.9	11.3	3.8	16.9
4/1	Eastside A5 Gyratory Ahead Left	57.7	7.8	33.2	57.5	7.9	32.3	62.7	7.3	33.1	65.2	7.4	35.7
4/2	Eastside A5 Gyratory Ahead	37.4	5.4	38.2	37.5	5.4	36.1	50.1	5.7	32.0	51.9	5.7	33.7
4/3	Eastside A5 Gyratory Ahead	33.9	2.3	25.0	31.8	2.3	27.3	48.0	5.8	47.1	53.1	6.2	50.4
4/4	Eastside A5 Gyratory Ahead	24.0	0.7	12.4	26.1	1.1	17.2	38.1	4.5	50.3	37.4	4.2	50.6
5/2 + 5/1	A5 Watling Street Ahead Left	53.9 / 53.9	7.3	13.3	55.2 / 55.2	7.7	13.5	42.1 / 42.1	5.2	9.3	47.7 / 47.7	6.1	9.4
5/3	A5 Watling Street Ahead	59.6	11.1	16.3	63.4	12.3	17.1	76.1	17.6	17.3	75.6	17.5	16.5
5/4	A5 Watling Street Ahead	57.0	10.4	15.8	60.9	11.5	16.5	71.4	15.6	15.6	75.3	17.4	16.3
6/1	Eastside Trinity Gyratory Ahead	35.0	3.3	7.0	36.1	3.4	7.3	29.2	2.9	5.3	30.7	3.0	4.8
6/2	Eastside Trinity Gyratory Ahead	27.2	5.8	15.3	29.3	5.9	15.1	24.5	6.1	12.4	26.5	6.1	10.6
6/3	Eastside Trinity Gyratory Right	64.7	6.3	7.6	69.2	6.4	8.3	82.2	10.5	11.5	81.2	11.0	10.8
6/4	Eastside Trinity Gyratory Right	58.3	4.2	5.2	64.5	4.9	6.4	74.9	6.9	8.3	76.3	6.1	7.8
8/2 + 8/1	Trinity Road Left Ahead	53.2 / 53.2	4.9	38.8	48.4 / 48.4	4.5	35.9	79.1 / 79.1	7.0	54.4	87.0 / 73.2	6.9	57.2
10/2 +10/1	M42 Northbound Offslip Left	25.2 / 25.2	2.5	26.8	26.1 / 26.1	2.6	27.7	47.4 / 47.7	4.0	38.3	53.5 / 53.5	4.2	41.5
10/3	M42 Northbound Offslip Left	9.3	1.0	27.0	8.9	0.9	27.9	20.4	1.6	38.3	25.0	1.8	41.5
10/4	M42 Northbound Offslip Ahead	73.2	10.4	40.9	83.9	12.8	50.7	93.3	12.5	91.9	112.7	31.7	299.1
10/5	M42 Northbound Offslip Ahead	81.6	12.5	46.9	88.5	14.6	57.7	93.8	12.9	94.6	112.7	31.7	299.1
11/1	South Bridge Westbound gyratory Ahead	84.0	9.6	16.8	85.5	10.4	18.1	93.8	16.1	23.4	93.9	17.2	22.5
11/2	South Bridge Westbound gyratory Ahead Right	85.3	14.6	19.1	88.0	13.7	20.9	94.7	35.7	28.4	94.6	25.1	26.1
13/2 + 13/1	A5 West U-turn Left	133.7 / 133.7	249.5	527.2	145.3 / 145.3	320.4	646.7	94.6 / 94.6	29.1	39.2	98.0 / 98.0	36.9	53.4
13/3	A5 West Left	30.9	4.6	13.8	31.6	4.7	14.4	23.8	3.4	13.0	23.3	3.2	12.4
14/2 + 14/1	Westside A5 gyratory Ahead	94.7 / 94.7	13.4	48.2	94.5 / 94.5	13.3	44.6	72.7 / 72.7	5.5	23.8	73.6 / 74.3	5.7	25.8
14/3 + 14/4	Westside A5 gyratory Ahead	87.3 / 87.3	7.3	31.9	88.0 / 88.0	7.2	30.6	64.5 / 64.5	4.1	19.2	64.8 / 62.2	4.2	20.9
16/1	Green Lane Ahead Left	61.9	5.3	49.6	66.3	5.5	53.5	62.1	6.2	45.3	65.8	6.4	48.2
16/2	Green Lane Ahead	64.4	5.7	50.7	69.0	5.9	55.2	89.5	11.8	73.2	94.7	13.9	95.7
17/1	West Side Green Lane gyratory Right Ahead	73.0	11.1	11.5	74.3	12.2	11.6	69.8	12.3	11.4	70.9	13.0	11.5
17/2	West Side Green Lane gyratory Right	66.5	18.2	14.0	67.0	18.7	13.5	65.0	14.9	11.2	66.2	15.0	11.1
17/3	West Side Green Lane gyratory Right	27.2	1.1	3.4	26.8	1.1	3.3	23.1	1.0	3.5	22.3	0.9	3.3
		PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)
		-48.60%	311.21	90	-61.50%	388.48	90	-5.30%	114.71	90	-25.20%	163.02	90

TABLE 3: SUMMARY RESULTS OF THE PROPOSED M42 JUNCTION 10 LAYOUT LINSIG ASSESSMENT (2021 REFERENCE CASE FLOWS)

Link Number	Link Description	2026 AM 'Future Year - no development' (Reference Case)			2026 AM 'Future Year - with development' (Reference Case)			2026 PM 'Future Year - no development' (Reference Case)			2026 PM 'Future Year - with development' (Reference Case)		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)
1/2 + 1/1	M42 North On-Slip Approach Left Ahead	58.0 / 58.0	5.4	40.2	64.1 / 64.1	6.2	42.3	46.3 / 63.4	4.7	43.1	56.3 / 56.3	5.0	41.0
1/3	M42 North On-Slip Approach Ahead	37.9	3.3	40.0	41.0	3.6	40.6	44.8	3.2	47.1	42.3	3.5	42.1
2/1	North Bridge Eastbound Gyratory Ahead	56.6	6.7	9.9	58.0	6.7	9.8	53.8	6.7	7.5	56.8	4.2	5.8
2/2	North Bridge Eastbound Gyratory Ahead	70.2	5.4	7.8	72.8	5.8	8.4	63.1	5.8	7.2	66.9	3.1	5.3
2/3	North Bridge Eastbound Gyratory Right	45.1	5.9	7.0	45.1	5.9	7.0	37.7	2.6	4.2	38.8	6.4	8.9
2/4	North Bridge Eastbound Gyratory Right	5.8	0.9	2.8	5.8	0.9	2.8	10.8	0.1	1.4	11.3	3.8	16.0
4/1	Eastside A5 Gyratory Ahead Left	65.6	9.6	33.2	67.2	9.6	34.9	66.1	8.1	42.3	65.5	8.0	33.3
4/2	Eastside A5 Gyratory Ahead	43.0	6.5	34.3	45.4	6.7	35.3	53.0	6.7	48.6	51.7	6.1	29.2
4/3	Eastside A5 Gyratory Ahead	31.5	2.5	27.7	30.5	2.4	28.7	49.3	3.4	33.8	46.9	5.9	43.3
4/4	Eastside A5 Gyratory Ahead	24.7	1.1	18.0	27.7	1.2	19.1	36.8	1.9	25.2	39.2	4.9	47.6
5/2 + 5/1	A5 Watling Street Ahead Left	52.7 / 52.7	7.1	13.7	53.3 / 53.3	7.2	13.3	41.7 / 41.7	5.1	9.7	48.3 / 48.3	6.4	10.3
5/3	A5 Watling Street Ahead	61.1	11.6	17.2	65.4	13.1	17.6	72.8	16.2	16.7	79.3	19.4	19.3
5/4	A5 Watling Street Ahead	59.6	11.1	16.9	60.5	11.5	16.5	74.3	16.8	17.2	74.6	16.9	17.3
6/1	Eastside Trinity Gyratory Ahead	38.5	3.4	7.1	38.5	3.3	6.6	32.8	3.3	5.9	33.9	3.5	5.7
6/2	Eastside Trinity Gyratory Ahead	28.5	6.9	18.9	28.6	7.1	18.2	23.5	6.6	15.1	27.8	6.7	12.8
6/3	Eastside Trinity Gyratory Right	67.8	6.4	8.5	70.4	6.0	8.3	80.5	22.4	11.2	85.4	11.7	13.6
6/4	Eastside Trinity Gyratory Right	63.3	4.8	6.4	64.9	5.3	6.6	77.6	7.5	8.2	78.7	9.8	9.6
8/2 + 8/1	Trinity Road Left Ahead	48.1 / 48.1	4.5	34.8	50.3 / 50.3	4.7	36.1	68.3 / 67.0	5.8	45.2	78.8 / 78.8	7.4	52.0
10/2 +10/1	M42 Northbound Offslip Left	30.1 / 30.1	3.0	28.1	30.1 / 30.1	3.0	28.1	54.9 / 55.3	4.6	40.7	62.3 / 61.9	4.8	44.8
10/3	M42 Northbound Offslip Left	11.9	1.2	28.2	11.9	1.2	28.2	28.1	2.1	40.7	35.3	2.5	44.8
10/4	M42 Northbound Offslip Ahead	73.3	10.1	42.0	79.4	11.5	46.1	101.7	18.6	156.6	123.2	44.3	434.5
10/5	M42 Northbound Offslip Ahead	81.7	12.2	48.2	84.3	12.9	51.1	101.7	18.6	156.6	123.2	44.3	434.5
11/1	South Bridge Westbound gyratory Ahead	83.5	9.5	16.3	87.5	11.4	19.9	92.9	15.5	21.7	93.1	15.0	19.9
11/2	South Bridge Westbound gyratory Ahead Right	85.8	13.0	18.9	89.0	14.6	22.0	93.8	18.2	24.0	94.2	36.7	25.6
13/2 + 13/1	A5 West U-turn Left	137.5 / 137.5	278.5	567.1	148.8 / 148.8	351.2	678.4	96.0 / 96.0	31.9	43.1	99.3 / 99.3	41.9	62.0
13/3	A5 West Left	38.3	5.9	14.1	39.1	6.2	14.7	27.3	3.9	12.8	26.7	3.8	12.2
14/2 + 14/1	Westside A5 gyratory Ahead	93.4 / 93.4	11.4	44.6	92.9 / 92.9	11.4	40.9	74.4 / 74.4	5.7	24.5	72.6 / 73.4	5.7	26.7
14/3 + 14/4	Westside A5 gyratory Ahead	86.7 / 86.7	7.0	32.1	86.2 / 86.2	6.6	29.2	67.1 / 66.7	4.3	20.6	65.2 / 60.6	4.4	24.0
16/1	Green Lane Ahead Left	65.7	5.8	51.4	65.7	5.8	51.4	75.2	7.8	54.1	79.9	8.3	60.6
16/2	Green Lane Ahead	67.6	6.0	52.4	67.6	6.0	52.4	93.6	13.3	90.4	99.5	17.0	130.5
17/1	West Side Green Lane gyratory Right Ahead	73.6	10.9	11.4	74.6	12.1	12.0	69.7	12.3	11.0	70.3	12.8	11.2
17/2	West Side Green Lane gyratory Right	64.9	17.6	13.6	67.5	18.5	14.0	65.9	15.3	11.0	65.1	14.8	10.8
17/3	West Side Green Lane gyratory Right	33.5	1.4	3.6	33.5	1.4	3.6	25.9	1.0	3.4	24.8	0.9	3.3
		PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)
		-52.70%	341.78	90	-65.40%	418.89	90	-13.00%	131.42	90	-36.80%	201.34	90

TABLE 4: SUMMARY RESULTS OF THE PROPOSED M42 JUNCTION 10 LAYOUT LINSIG ASSESSMENT
(2026 REFERENCE CASE FLOWS)

Link Number	Link Description	2031 AM 'Future Year - no development' (Reference Case)			2031 AM 'Future Year - with development' (Reference Case)			2031 PM 'Future Year - no development' (Reference Case)			2031 PM 'Future Year - with development' (Reference Case)		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)
1/2 + 1/1	M42 North On-Slip Approach Left Ahead	61.9 / 61.9	5.9	41.2	64.7 / 64.7	6.5	41.1	42.6 / 61.2	4.5	42.5	53.7 / 54.5	4.7	40.3
1/3	M42 North On-Slip Approach Ahead	43.7	3.8	41.2	40.5	3.7	39.3	49.9	3.6	48.5	42.0	3.5	42.0
2/1	North Bridge Eastbound Gyratory Ahead	57.3	7.3	10.2	61.5	6.3	9.5	50.3	6.5	7.5	52.7	3.8	5.4
2/2	North Bridge Eastbound Gyratory Ahead	73.1	6.3	8.7	75.2	5.3	8.7	60.6	5.8	7.2	64.4	3.1	5.1
2/3	North Bridge Eastbound Gyratory Right	47.8	6.3	7.2	48.6	5.8	7.7	42.6	3.3	4.6	43.5	6.6	8.6
2/4	North Bridge Eastbound Gyratory Right	6.3	0.6	2.0	6.4	1.8	6.5	11.1	0.1	1.5	11.3	3.8	15.9
4/1	Eastside A5 Gyratory Ahead Left	66.5	10.1	32.6	74.4	10.1	42.1	71.5	9.3	42.4	74.8	9.2	39.6
4/2	Eastside A5 Gyratory Ahead	43.9	6.8	32.8	59.0	8.2	41.3	58.3	7.7	47.6	63.9	7.5	34.1
4/3	Eastside A5 Gyratory Ahead	31.9	2.5	25.8	38.3	2.5	29.7	46.5	3.5	33.8	49.5	6.0	46.5
4/4	Eastside A5 Gyratory Ahead	27.9	1.3	17.2	33.9	1.4	21.1	37.5	1.9	23.7	41.7	5.0	49.9
5/2 + 5/1	A5 Watling Street Ahead Left	53.8 / 53.8	7.3	14.4	50.9 / 50.9	6.7	11.4	49.1 / 49.1	6.1	10.7	54.3 / 54.3	7.2	10.4
5/3	A5 Watling Street Ahead	67.1	13.4	19.3	65.5	13.2	15.8	79.2	19.3	19.9	80.7	20.2	19.3
5/4	A5 Watling Street Ahead	64.2	12.6	18.6	60.3	11.5	14.7	76.8	18.0	18.8	76.0	17.6	17.2
6/1	Eastside Trinity Gyratory Ahead	39.4	3.7	7.3	38.3	3.0	5.0	36.2	3.5	5.8	40.7	3.4	4.6
6/2	Eastside Trinity Gyratory Ahead	28.0	7.3	20.1	26.0	8.0	18.0	27.0	7.8	15.9	25.9	7.7	14.3
6/3	Eastside Trinity Gyratory Right	70.1	6.5	8.4	69.5	6.5	7.4	84.7	12.1	12.7	85.4	11.1	12.7
6/4	Eastside Trinity Gyratory Right	65.9	5.4	6.5	63.5	5.7	5.9	79.4	8.3	8.6	78.8	9.2	9.1
8/2 + 8/1	Trinity Road Left Ahead	50.3 / 50.3	4.6	37.0	69.4 / 69.4	6.0	47.0	79.2 / 79.2	7.4	51.9	95.5 / 87.5	10.6	77.0
10/2 +10/1	M42 Northbound Offslip Left	32.9 / 32.9	3.3	29.2	31.9 / 31.9	3.2	28.3	70.7 / 70.3	5.8	47.6	80.1 / 80.5	6.5	57.3
10/3	M42 Northbound Offslip Left	13.6	1.4	29.3	13.3	1.4	28.3	47.0	3.4	47.7	61.6	4.2	57.3
10/4	M42 Northbound Offslip Ahead	82.1	11.9	49.9	85.3	13.3	52.4	114.8	32.5	329.7	142.5	62.5	644.1
10/5	M42 Northbound Offslip Ahead	88.8	14.3	60.0	89.1	14.8	58.9	114.8	32.5	329.7	142.5	62.5	644.1
11/1	South Bridge Westbound gyratory Ahead	87.8	11.1	19.0	92.5	16.1	28.3	93.3	15.4	21.6	93.4	15.3	19.8
11/2	South Bridge Westbound gyratory Ahead Right	89.2	14.0	21.0	94.5	20.4	32.6	95.0	19.7	25.9	94.5	38.0	25.2
13/2 + 13/1	A5 West U-turn Left	144.6 / 144.6	322.7	638.1	155.8 / 155.8	391.0	737.8	97.6 / 97.6	36.0	50.9	101.4 / 101.4	51.3	82.5
13/3	A5 West Left	42.0	6.8	15.1	42.8	6.9	15.8	33.0	4.9	13.4	32.3	4.8	12.8
14/2 + 14/1	Westside A5 gyratory Ahead	94.6 / 94.6	12.7	46.7	94.1 / 94.1	12.2	42.2	64.7 / 65.1	4.6	22.5	63.1 / 64.2	4.7	25.5
14/3 + 14/4	Westside A5 gyratory Ahead	86.1 / 86.1	6.8	29.6	86.7 / 86.7	6.9	28.3	60.1 / 57.2	4.0	20.1	56.8 / 49.8	4.0	22.8
16/1	Green Lane Ahead Left	68.7	6.5	51.3	68.7	6.5	51.3	71.3	7.2	51.3	75.8	7.6	56.4
16/2	Green Lane Ahead	65.1	6.0	49.5	65.1	6.0	49.5	96.4	15.2	105.1	102.4	20.4	161.4
17/1	West Side Green Lane gyratory Right Ahead	75.0	12.1	12.3	76.8	13.4	13.1	66.0	9.5	9.8	66.2	9.6	10.0
17/2	West Side Green Lane gyratory Right	68.4	18.6	14.6	70.0	19.3	15.0	63.5	13.6	9.9	62.6	12.0	9.6
17/3	West Side Green Lane gyratory Right	36.7	1.6	3.8	36.7	1.6	3.8	30.7	1.1	3.5	29.4	1.0	3.4
		PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)
		-60.60%	693.03	90	-73.10%	471.90	90	-27.50%	172.10	90	-58.40%	255.70	90

TABLE 5: SUMMARY RESULTS OF THE PROPOSED M42 JUNCTION 10 LAYOUT LINSIG ASSESSMENT
(2031 REFERENCE CASE FLOWS)

Link Number	Link Description	2031 AM 'Future Year - no development' (Local Plan)			2031 AM 'Future Year - with development' (Local Plan)			2031 PM 'Future Year - no development' (Local Plan)			2031 PM 'Future Year - with development' (Local Plan)		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)
1/2 + 1/1	M42 North On-Slip Approach Left Ahead	61.9 / 61.9	5.9	41.2	65.8 / 65.8	6.6	41.5	43.4 / 56.8	4.1	42.1	46.8 / 67.9	4.7	45.0
1/3	M42 North On-Slip Approach Ahead	41.0	3.6	40.6	38.7	3.5	38.9	47.0	3.4	47.7	51.3	3.5	50.8
2/1	North Bridge Eastbound Gyratory Ahead	60.9	6.7	9.6	63.9	7.5	10.4	55.0	3.9	4.8	53.5	6.6	7.1
2/2	North Bridge Eastbound Gyratory Ahead	73.0	5.8	8.4	76.2	6.4	9.7	66.5	3.9	5.2	63.4	6.5	7.4
2/3	North Bridge Eastbound Gyratory Right	52.6	6.4	7.7	53.2	6.7	8.2	40.9	5.7	7.3	39.8	3.2	4.5
2/4	North Bridge Eastbound Gyratory Right	7.0	1.4	3.5	7.1	1.2	3.0	9.4	3.3	15.4	9.3	0.1	1.4
4/1	Eastside A5 Gyratory Ahead Left	76.9	10.8	40.7	78.9	11.1	44.0	69.5	8.9	35.4	75.4	9.0	47.9
4/2	Eastside A5 Gyratory Ahead	64.8	9.4	39.9	68.1	9.6	41.0	55.2	6.8	31.8	66.5	8.0	54.0
4/3	Eastside A5 Gyratory Ahead	35.6	2.5	29.5	38.5	2.8	32.3	44.2	5.8	46.6	50.4	3.3	36.4
4/4	Eastside A5 Gyratory Ahead	33.3	1.7	23.7	33.4	1.8	25.3	33.9	4.4	48.6	39.4	1.7	25.8
5/2 + 5/1	A5 Watling Street Ahead Left	78.1 / 78.1	16.4	18.0	78.0 / 78.0	16.1	17.4	48.9 / 48.9	6.5	10.9	53.1 / 53.1	7.3	10.0
5/3	A5 Watling Street Ahead	71.8	15.6	18.2	73.7	16.4	18.2	81.7	20.7	21.2	80.8	20.2	18.7
5/4	A5 Watling Street Ahead	66.0	13.3	16.5	69.1	14.5	16.8	80.4	19.7	20.5	79.5	19.5	18.1
6/1	Eastside Trinity Gyratory Ahead	53.7	3.5	5.4	53.7	3.4	4.9	37.5	3.7	5.6	41.0	3.6	4.9
6/2	Eastside Trinity Gyratory Ahead	37.7	9.8	16.4	35.9	9.8	15.9	26.7	7.3	15.1	26.8	7.7	13.3
6/3	Eastside Trinity Gyratory Right	75.6	6.9	8.5	76.6	7.1	8.4	86.0	10.7	13.7	86.2	11.3	12.5
6/4	Eastside Trinity Gyratory Right	69.8	6.5	7.0	70.8	6.0	6.6	81.2	7.0	10.0	81.7	7.6	8.8
8/2 + 8/1	Trinity Road Left Ahead	55.1 / 55.1	4.8	40.2	62.3 / 62.3	5.1	44.4	79.8 / 76.9	7.4	50.9	94.7 / 80.5	9.1	64.4
10/2 +10/1	M42 Northbound Offslip Left	34.7 / 34.7	3.5	30.2	36.8 / 36.8	3.7	32.2	80.1 / 80.1	6.4	57.1	92.6 / 93.2	9.2	89.3
10/3	M42 Northbound Offslip Left	14.2	1.4	30.2	14.4	1.3	32.2	61.1	4.1	57.1	84.7	6.3	93.1
10/4	M42 Northbound Offslip Ahead	91.0	14.9	67.1	106.5	32.7	196.5	194.6	130.8	1004.0	245.3	162.1	1212.6
10/5	M42 Northbound Offslip Ahead	93.5	16.5	75.3	106.0	31.8	190.6	195.5	131.9	1008.4	247.4	164.4	1219.3
11/1	South Bridge Westbound gyratory Ahead	92.4	15.1	26.6	93.0	15.4	26.0	92.8	13.8	18.9	93.0	15.6	19.1
11/2	South Bridge Westbound gyratory Ahead Right	94.2	19.0	30.4	94.3	19.3	29.2	94.1	19.8	22.3	94.5	19.1	22.4
13/2 + 13/1	A5 West U-turn Left	147.9 / 147.9	345.8	669.7	152.4 / 152.4	377.2	699.4	110.7 / 110.7	111.9	215.0	116.3 / 116.3	153.0	296.3
13/3	A5 West Left	48.9	8.2	16.1	47.9	8.0	15.4	33.4	5.0	11.9	33.4	5.0	11.9
14/2 + 14/1	Westside A5 gyratory Ahead	93.2 / 93.2	11.3	40.2	94.0 / 93.8	11.7	43.1	73.3 / 84.5	6.1	32.4	69.2 / 83.0	6.0	31.3
14/3 + 14/4	Westside A5 gyratory Ahead	84.7 / 84.7	5.9	25.7	86.3 / 85.1	6.2	28.6	60.0 / 49.2	4.0	24.9	54.7 / 40.7	4.0	25.8
16/1	Green Lane Ahead Left	66.9	5.9	52.1	71.7	6.2	57.1	89.6	9.7	82.1	88.6	9.7	82.1
16/2	Green Lane Ahead	69.5	6.2	53.6	74.4	6.6	59.3	113.0	32.2	303.5	113.0	32.2	303.7
17/1	West Side Green Lane gyratory Right Ahead	76.0	13.3	12.3	76.0	14.9	12.1	69.6	12.8	10.0	68.3	11.2	9.7
17/2	West Side Green Lane gyratory Right	67.3	18.2	13.3	69.2	18.7	12.8	65.1	12.6	8.7	64.1	9.5	8.3
17/3	West Side Green Lane gyratory Right	41.4	1.7	3.9	40.6	1.6	3.7	29.5	0.9	3.3	29.0	0.9	3.3
		PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)
		-64.30%	434.16	90	-69.40%	506.91	90	-117.20%	460.40	90	-174.90%	569.22	90

TABLE 6: SUMMARY RESULTS OF THE PROPOSED M42 JUNCTION 10 LAYOUT LINSIG ASSESSMENT (2031 LOCAL PLAN FLOWS)

Link Number	Link Description	2021 AM 'Future Year - No development' (Reference Case)			2021 AM 'Future Year - With development' (Reference Case)		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)
1/1	A5 Watling Street (west) ahead	45.8	8.7	7.2	47.1	8.9	7.4
1/2	A5 Watling Street (west) ahead	47.1	9.5	7.2	48.8	10.1	7.4
1/3 + 1/4	A5 Watling Street (west) right	91.6 / 91.6	17.7	65.7	93.5 / 93.5	19.1	72.4
2/2 + 2/1	A5 Watling Street (east) left ahead	93.4 / 93.4	33.3	44.7	93.8 / 93.8	34.2	45.1
2/3	A5 Watling Street (east) ahead	91.7	35.7	44.4	92.4	36.9	45.1
3/1 + 3/2	Danny Morson Way left	77.9 / 78.2	8.3	66.8	77.9 / 78.2	8.3	66.8
3/3	Danny Morson Way right	91.6	8.2	144.3	91.6	8.2	144.3
4/1	A5 South East Toucan Approach ahead	44.4	1.4	0.7	45.6	1.4	0.7
4/2	A5 South East Toucan Approach ahead	45.9	1.6	0.7	47.1	1.6	0.7
Ped 1	Crossing A5 (eastbound) exit	Total green time = 6 seconds			Total green time = 6 seconds		
Ped 2	Crossing A5 (westbound) approach	Total green time = 46 seconds			Total green time = 45 seconds		
		PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)
		-3.80%	53.93	120	-4.20%	56.14	120

Link Number	Link Description	2021 PM 'Future Year - No development' (Reference Case)			2021 PM 'Future Year - with development' (Reference Case)		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)
1/1	A5 Watling Street (west) ahead	55.6	13.7	17.3	57.5	14.4	17.7
1/2	A5 Watling Street (west) ahead	56.7	15.0	17.3	58.6	16.0	17.7
1/3 + 1/4	A5 Watling Street (west) right	81.2 / 81.4	6.4	82.7	81.2 / 81.4	6.4	82.7
2/2 + 2/1	A5 Watling Street (east) left ahead	83.6 / 83.6	25.7	32.0	84.4 / 84.4	26.3	32.8
2/3	A5 Watling Street (east) ahead	82.4	28.0	32.1	83.3	28.7	32.8
3/1 + 3/2	Danny Morson Way left	78.9 / 78.9	13.6	46.7	78.9 / 78.9	13.6	46.7
3/3	Danny Morson Way right	83.2	14.1	65.6	83.2	14.1	65.6
4/1	A5 South East Toucan Approach ahead	49.2	0.5	0.3	51.3	0.6	0.3
4/2	A5 South East Toucan Approach ahead	50.8	0.6	0.3	51.5	0.6	0.2
Ped 1	Crossing A5 (eastbound) exit	Total green time = 6 seconds			Total green time = 6 seconds		
Ped 2	Crossing A5 (westbound) approach	Total green time = 44 seconds			Total green time = 44 seconds		
		PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)
		7.70%	45.82	120	6.60%	46.76	120

TABLE 7: SUMMARY RESULTS OF THE EXISTING A5/BIRCH COPPICE SITE ACCESS LAYOUT LINSIG ASSESSMENT (2021 REFERENCE CASE FLOWS)

Link Number	Link Description	2026 AM 'Future Year - No development' (Reference Case)			2026 AM 'Future Year - With development' (Reference Case)		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)
1/1	A5 Watling Street (west) ahead	45.8	8.7	7.2	47.3	9.0	7.4
1/2	A5 Watling Street (west) ahead	47.2	9.6	7.2	48.8	10.1	7.4
1/3 + 1/4	A5 Watling Street (west) right	93.2 / 93.2	19.6	68.9	95.3 / 95.3	21.6	78.1
2/2 + 2/1	A5 Watling Street (east) left ahead	94.0 / 94.0	33.9	47.3	94.4 / 94.4	35.1	47.8
2/3	A5 Watling Street (east) ahead	92.5	36.3	47.0	93.2	37.5	47.9
3/1 + 3/2	Danny Morson Way left	80.4 / 80.5	8.7	68.7	80.4 / 80.5	8.7	68.7
3/3	Danny Morson Way right	94.2	9.0	158.2	94.2	9.0	158.2
4/1	A5 South East Toucan Approach ahead	44.6	1.5	0.7	45.9	1.4	0.7
4/2	A5 South East Toucan Approach ahead	46.0	1.8	0.8	47.4	1.9	0.7
Ped 1	Crossing A5 (eastbound) exit	Total green time = 6 seconds			Total green time = 6 seconds		
Ped 2	Crossing A5 (westbound) approach	Total green time = 47 seconds			Total green time = 46 seconds		
		PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)
		-4.70%	57.54	120	-5.90%	60.42	120

Link Number	Link Description	2026 PM 'Future Year - No development' (Reference Case)			2026 PM 'Future Year - with development' (Reference Case)		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)
1/1	A5 Watling Street (west) ahead	62.4	16.4	20.0	64.8	17.5	20.6
1/2	A5 Watling Street (west) ahead	63.5	18.0	20.0	65.7	19.2	20.6
1/3 + 1/4	A5 Watling Street (west) right	81.2 / 81.4	6.4	82.7	81.2 / 81.4	6.4	82.7
2/2 + 2/1	A5 Watling Street (east) left ahead	82.6 / 82.6	24.5	32.7	83.4 / 83.4	25.1	33.4
2/3	A5 Watling Street (east) ahead	81.4	27.0	32.8	82.3	27.4	33.4
3/1 + 3/2	Danny Morson Way left	77.1 / 77.1	13.3	44.1	77.1 / 77.1	13.3	44.1
3/3	Danny Morson Way right	82.0	14.4	61.7	82.0	14.4	61.7
4/1	A5 South East Toucan Approach ahead	54.2	0.5	0.2	55.7	0.5	0.2
4/2	A5 South East Toucan Approach ahead	54.1	0.5	0.2	55.8	0.3	0.2
Ped 1	Crossing A5 (eastbound) exit	Total green time = 6 seconds			Total green time = 6 seconds		
Ped 2	Crossing A5 (westbound) approach	Total green time = 46 seconds			Total green time = 46 seconds		
		PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)
		8.90%	46.68	120	7.90%	47.73	120

TABLE 8: SUMMARY RESULTS OF THE EXISTING A5/BIRCH COPPICE SITE ACCESS LAYOUT LINSIG ASSESSMENT (2026 REFERENCE CASE FLOWS)

Link Number	Link Description	2031 AM 'Future Year - No development' (Reference Case)			2031 AM 'Future Year - With development' (Reference Case)		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)
1/1	A5 Watling Street (west) ahead	48.8	9.4	7.2	50.4	9.9	7.4
1/2	A5 Watling Street (west) ahead	50.3	10.6	7.2	51.9	11.1	7.4
1/3 + 1/4	A5 Watling Street (west) right	95.1 / 95.1	22.4	74.8	97.1 / 97.1	24.7	86.0
2/2 + 2/1	A5 Watling Street (east) left ahead	95.5 / 95.5	36.7	52.8	96.3 / 96.3	38.9	55.8
2/3	A5 Watling Street (east) ahead	94.7	39.2	53.0	95.4	41.1	54.8
3/1 + 3/2	Danny Morson Way left	91.0 / 90.8	11.4	87.7	91.0 / 90.8	11.4	87.7
3/3	Danny Morson Way right	88.9	7.0	139.4	88.9	7.0	139.4
4/1	A5 South East Toucan Approach ahead	47.1	1.3	0.7	48.6	1.4	0.6
4/2	A5 South East Toucan Approach ahead	48.6	1.5	0.7	49.9	1.5	0.6
Ped 1	Crossing A5 (eastbound) exit	Total green time = 6 seconds			Total green time = 6 seconds		
Ped 2	Crossing A5 (westbound) approach	Total green time = 47 seconds			Total green time = 46 seconds		
		PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)
		-6.10%	64.15	120	-7.90%	68.67	120

Link Number	Link Description	2031 PM 'Future Year - No development' (Reference Case)			2031 PM 'Future Year - with development' (Reference Case)		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)
1/1	A5 Watling Street (west) ahead	57.5	14.4	17.2	58.7	14.9	16.9
1/2	A5 Watling Street (west) ahead	58.6	15.9	17.1	59.8	16.3	16.9
1/3 + 1/4	A5 Watling Street (west) right	81.0 / 80.7	6.7	79.1	81.0 / 80.7	6.7	79.1
2/2 + 2/1	A5 Watling Street (east) left ahead	87.8 / 87.8	28.9	36.2	87.3 / 87.3	28.8	34.9
2/3	A5 Watling Street (east) ahead	87.2	31.8	36.3	86.6	31.6	34.9
3/1 + 3/2	Danny Morson Way left	81.1 / 81.1	14.1	48.8	82.5 / 82.5	14.5	50.7
3/3	Danny Morson Way right	84.8	14.2	69.3	87.9	15.0	76.5
4/1	A5 South East Toucan Approach ahead	51.3	0.6	0.3	52.9	0.9	0.4
4/2	A5 South East Toucan Approach ahead	52.2	0.7	0.3	53.5	0.9	0.4
Ped 1	Crossing A5 (eastbound) exit	Total green time = 6 seconds			Total green time = 6 seconds		
Ped 2	Crossing A5 (westbound) approach	Total green time = 44 seconds			Total green time = 43 seconds		
		PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)
		2.50%	50.36	120	2.40%	51.10	120

TABLE 9: SUMMARY RESULTS OF THE EXISTING A5/BIRCH COPPICE SITE ACCESS LAYOUT LINSIG ASSESSMENT (2031 REFERENCE CASE FLOWS)

Link Number	Link Description	2031 AM 'Future Year - No development' (Local Plan)			2031 AM 'Future Year - With development' (Local Plan)		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)
1/1	A5 Watling Street (west) ahead	62.0	14.1	8.5	63.6	14.8	8.8
1/2	A5 Watling Street (west) ahead	63.2	15.6	8.5	64.8	16.4	8.8
1/3 + 1/4	A5 Watling Street (west) right	91.7 / 92.0	10.8	95.6	91.7 / 92.0	10.8	95.6
2/2 + 2/1	A5 Watling Street (east) left ahead	92.5 / 92.5	38.9	30.4	93.7 / 93.7	41.4	33.2
2/3	A5 Watling Street (east) ahead	92.0	43.2	30.5	93.4	45.8	33.3
3/1 + 3/2	Danny Morson Way left	63.1 / 62.8	5.3	62.3	63.1 / 62.8	5.3	62.3
3/3	Danny Morson Way right	80.6	5.1	120.4	80.6	5.1	120.4
4/1	A5 South East Toucan Approach ahead	58.9	1.2	0.5	60.3	1.2	0.5
4/2	A5 South East Toucan Approach ahead	59.9	1.3	0.5	61.5	1.3	0.5
Ped 1	Crossing A5 (eastbound) exit	Total green time = 6 seconds			Total green time = 6 seconds		
Ped 2	Crossing A5 (westbound) approach	Total green time = 26 seconds			Total green time = 26 seconds		
		PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)
		-2.80%	45.09	120	-4.10%	47.72	120

Link Number	Link Description	2031 PM 'Future Year - No development' (Local Plan)			2031 PM 'Future Year - with development' (Local Plan)		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)	Degree of Saturation (%)	Mean Maximum Queue (PCU)	PCU Delay (secs)
1/1	A5 Watling Street (west) ahead	75.5	23.5	18.4	77.8	25.3	19.4
1/2	A5 Watling Street (west) ahead	76.4	25.8	18.4	78.6	27.6	19.4
1/3 + 1/4	A5 Watling Street (west) right	73.7 / 74.0	4.5	81.2	73.7 + 74.0	4.5	81.2
2/2 + 2/1	A5 Watling Street (east) left ahead	90.4 / 90.4	34.7	33.2	91.5 / 91.5	36.3	35.1
2/3	A5 Watling Street (east) ahead	90.3	38.2	33.2	91.5	39.9	35.0
3/1 + 3/2	Danny Morson Way left	53.0 / 53.0	7.3	46.0	53.0 / 53.0	7.3	46.0
3/3	Danny Morson Way right	88.5	12.6	89.2	88.5	12.6	89.2
4/1	A5 South East Toucan Approach ahead	66.9	1.1	0.4	68.6	1.1	0.4
4/2	A5 South East Toucan Approach ahead	67.8	1.2	0.4	69.6	1.2	0.4
Ped 1	Crossing A5 (eastbound) exit	Total green time = 6 seconds			Total green time = 6 seconds		
Ped 2	Crossing A5 (westbound) approach	Total green time = 34 seconds			Total green time = 34 seconds		
		PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)	PRC (%)	Total Delay (pcu/hr)	Cycle Time (secs)
		-0.40%	49.10	120	-1.60%	51.45	120

TABLE 10: SUMMARY RESULTS OF THE EXISTING A5/BIRCH COPPICE SITE ACCESS LAYOUT LINSIG ASSESSMENT (2031 LOCAL PLAN FLOWS)

SCALE:	Do Not Scale	CLIENT:	JOB TITLE:
DATE:	12.01.21	**HODGETTS ESTATES**	**PROPOSED EMPLOYMENT LAND NORTHEAST OF J10 M42, NORTH WARWICKSHIRE**
DRAWN:	CAB	TITLE: **GENERAL SITE LOCATION PLAN**	JOB NUMBER: F19123 FIGURE: 1

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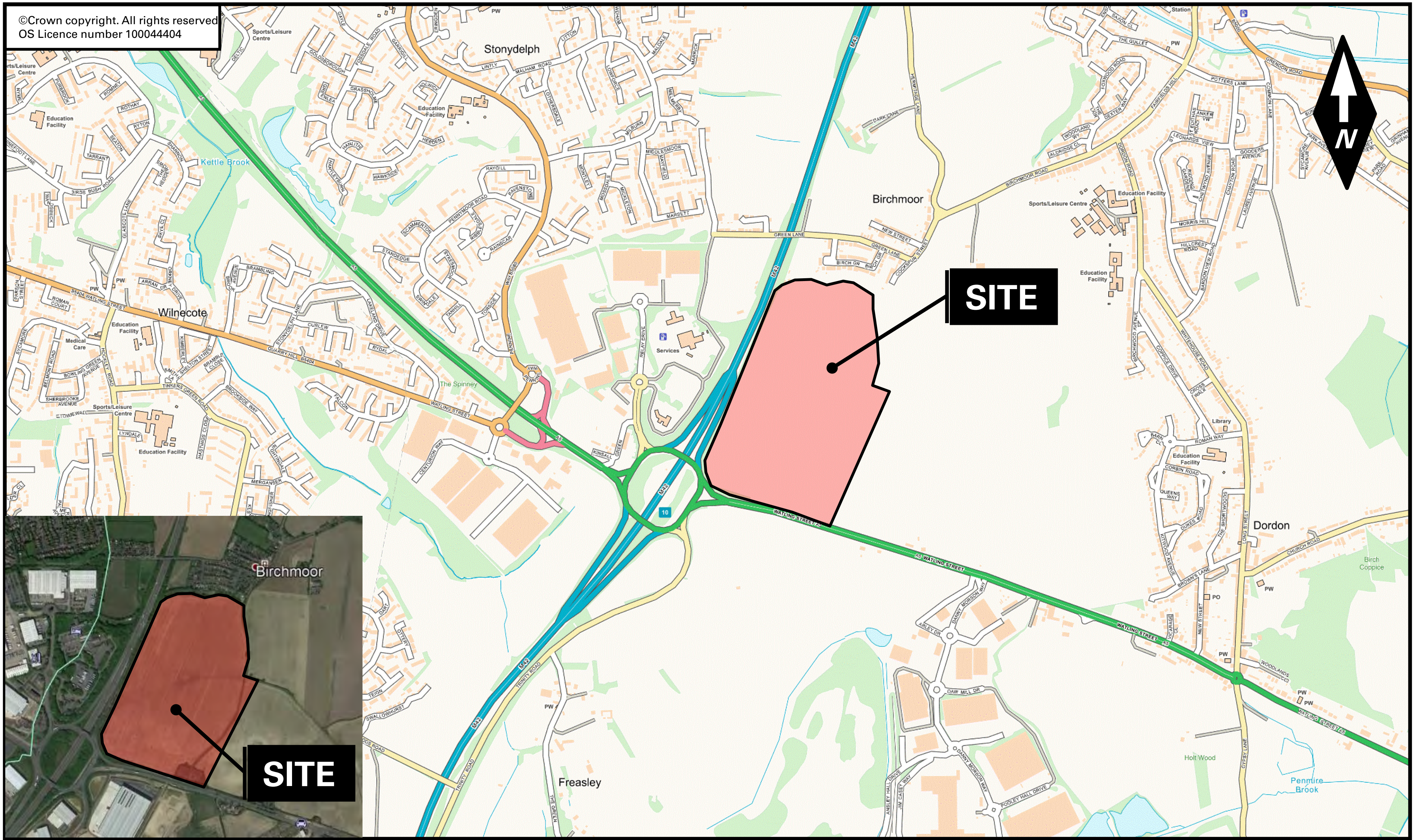

SCALE: **Do Not Scale**

DATE: **12.01.21**

DRAWN: **CAB**

CLIENT:
HODGETTS ESTATES

JOB TITLE:
PROPOSED EMPLOYMENT LAND NORTHEAST OF J10 M42, NORTH WARWICKSHIRE

TITLE:
DETAILED SITE LOCATION PLAN

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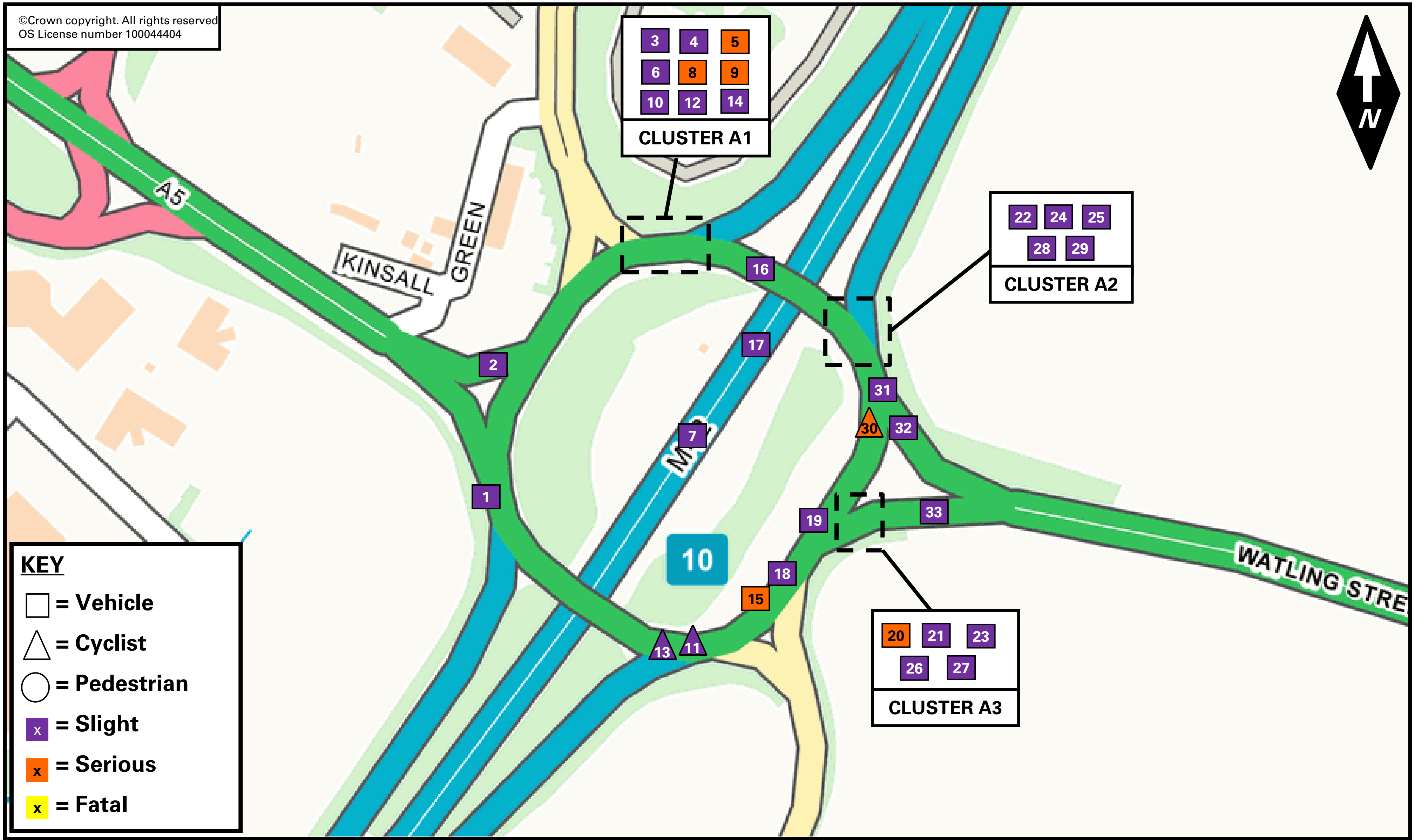
JOB NUMBER:
F19123

FIGURE:
2



SCALE:	Do Not Scale
DATE:	12.01.21
DRAWN:	CAB

CLIENT:
HODGETTS ESTATES

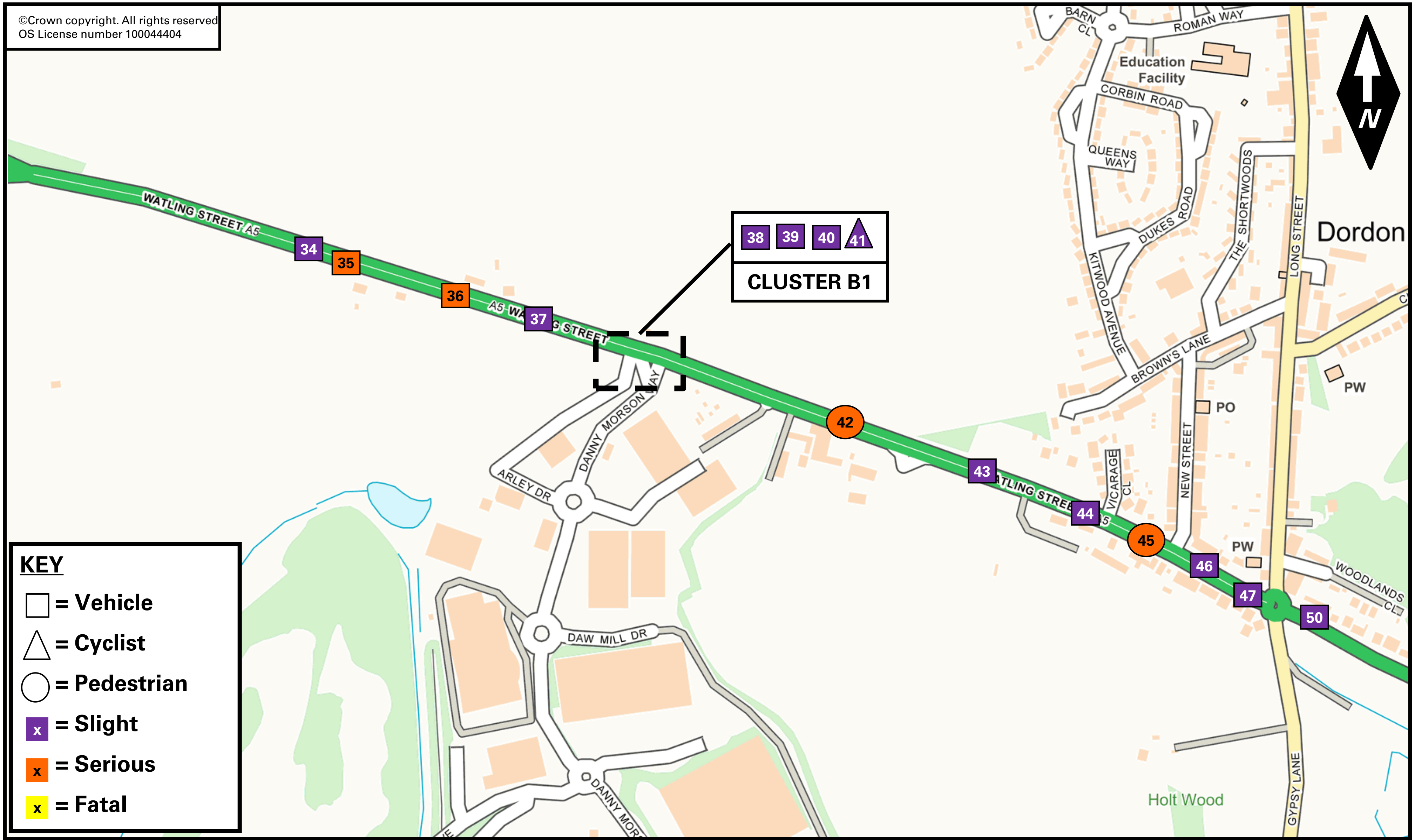
JOB TITLE:
PROPOSED EMPLOYMENT LAND NORTHEAST OF J10 M42, NORTH WARWICKSHIRE

TITLE:
ACCIDENT DATA AREA A (M42/A5 ROUNDABOUT)

BANCROFT CONSULTING

JOB NUMBER:
F19123

FIGURE:
3



KEY

☐ = Vehicle

△ = Cyclist

○ = Pedestrian

🟪 x = Slight

🟧 x = Serious

🟨 x = Fatal

SCALE:	Do Not Scale
DATE:	12.01.21
DRAWN:	CAB

CLIENT:
HODGETTS ESTATES

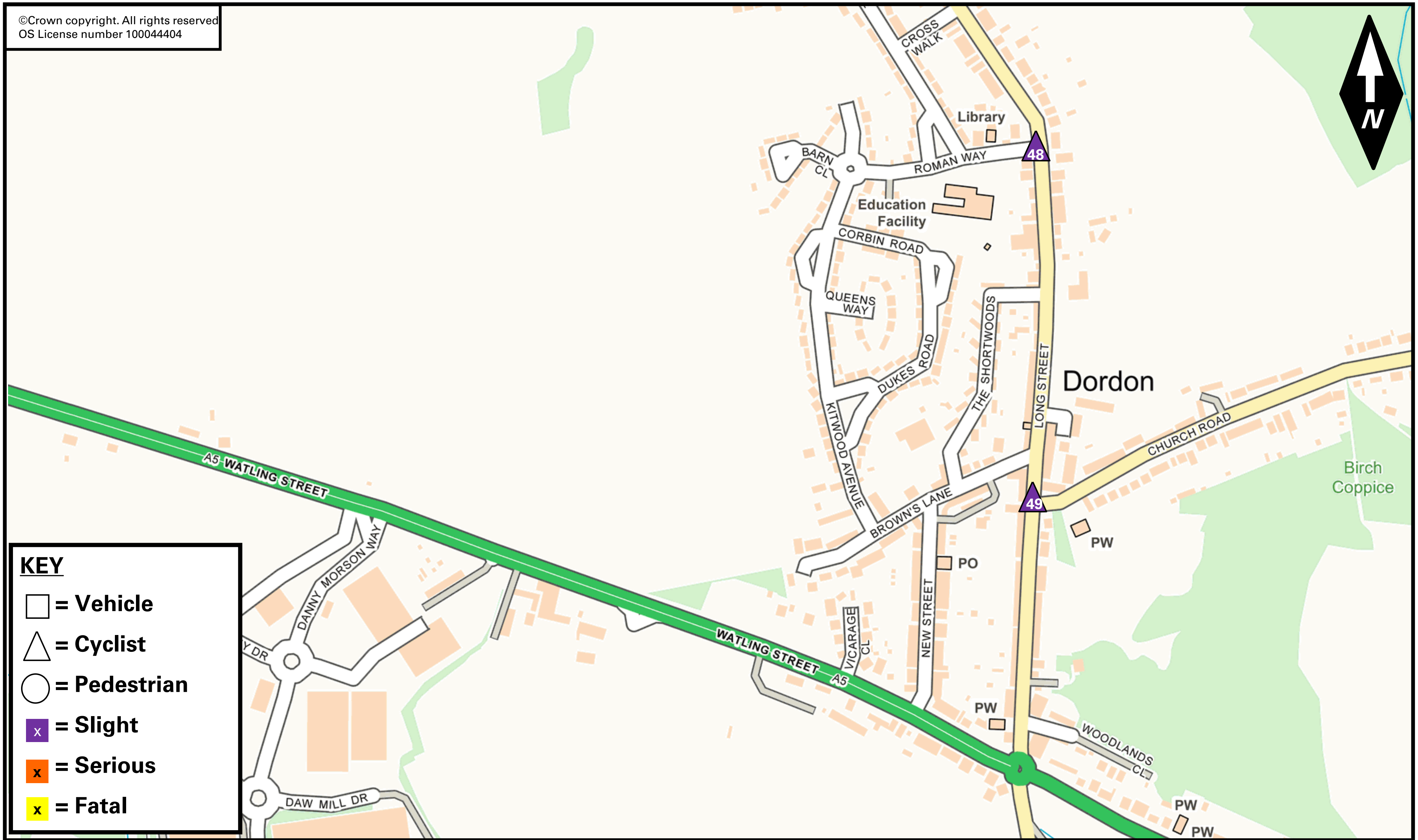
JOB TITLE:
PROPOSED EMPLOYMENT LAND NORTHEAST OF J10 M42, NORTH WARWICKSHIRE

TITLE:
ACCIDENT DATA AREA B (A5 TO DORDON ROUNDABOUT)

BANCROFT CONSULTING

JOB NUMBER:
F19123

FIGURE:
4



SCALE: **Do Not Scale**

DATE: **12.01.21**

DRAWN: **CAB**

CLIENT:
HODGETTS ESTATES

JOB TITLE:
PROPOSED EMPLOYMENT LAND NORTHEAST OF J10 M42, NORTH WARWICKSHIRE

BANCROFT CONSULTING

TITLE:
ACCIDENT DATA AREA C (LONG STREET AREA)

JOB NUMBER: **F19123**

FIGURE: **5**

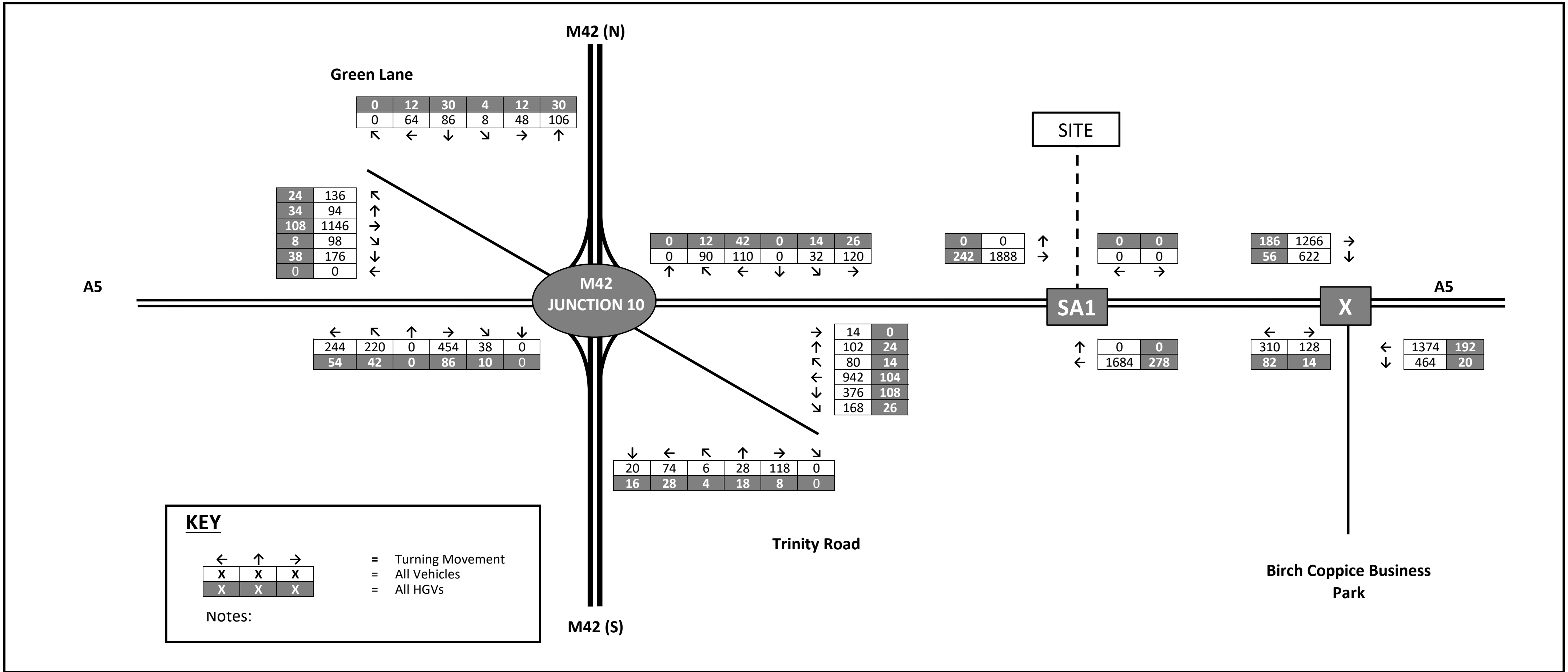


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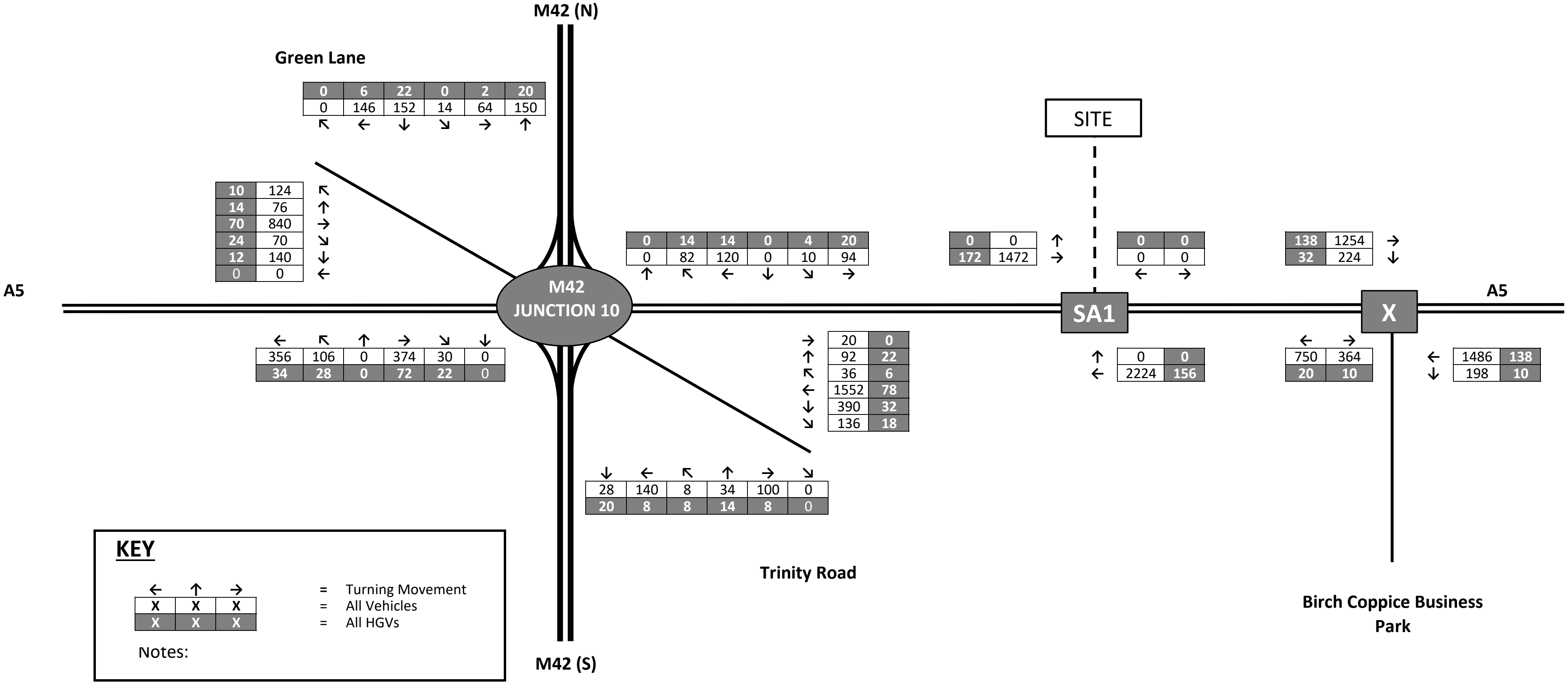
FIGURE 6

2021 REFERENCE - AM PEAK (0800 TO 0900) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB



KEY

← ↑ →	= Turning Movement
X X X	= All Vehicles
X X X	= All HGVs

Notes:

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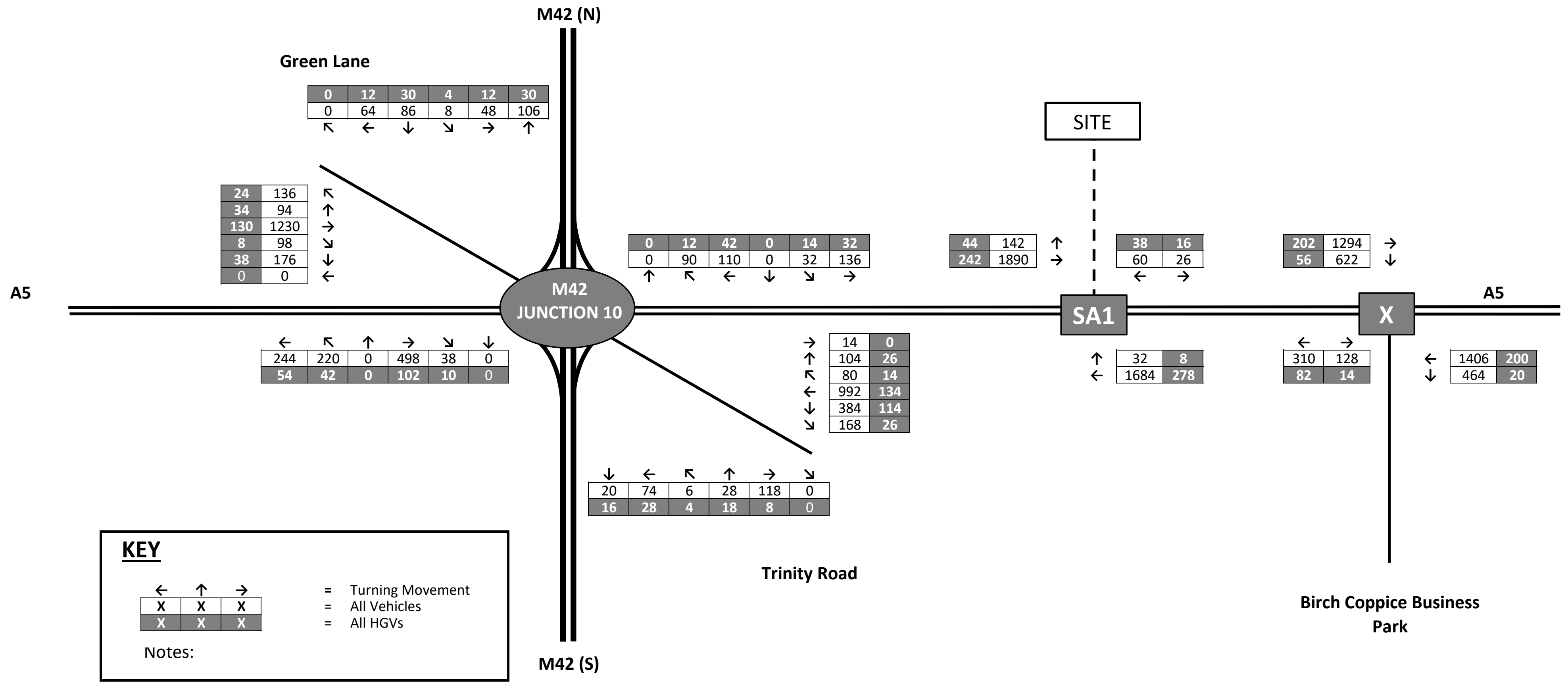
FIGURE 7

2021 REFERENCE - PM PEAK (1700 TO 1800) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB



Green Lane

↖	←	↓	↘	→	↑
0	64	86	8	48	106
0	12	30	4	12	30

24	136	↖
34	94	↑
130	1230	→
8	98	↘
38	176	↓
0	0	←

←	↖	↑	→	↘	↓
244	220	0	498	38	0
54	42	0	102	10	0

↑	↖	←	↓	↘	→
0	90	110	0	32	136
0	12	42	0	14	32

→	14	0
↑	104	26
↖	80	14
←	992	134
↓	384	114
↘	168	26

↓	←	↖	↑	→	↘
20	74	6	28	118	0
16	28	4	18	8	0

44	142	↑
242	1890	→

←	→
60	26
38	16

↑	32	8
←	1684	278

202	1294	→
56	622	↓

←	→
310	128
82	14

←	1406	200
↓	464	20

KEY

←	↑	→		
X	X	X	=	All Vehicles
X	X	X	=	All HGVs

← ↑ → = Turning Movement

Notes:

FIGURE 8

2021 REFERENCE + DEVELOPMENT - AM PEAK (0800 TO 0900) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB

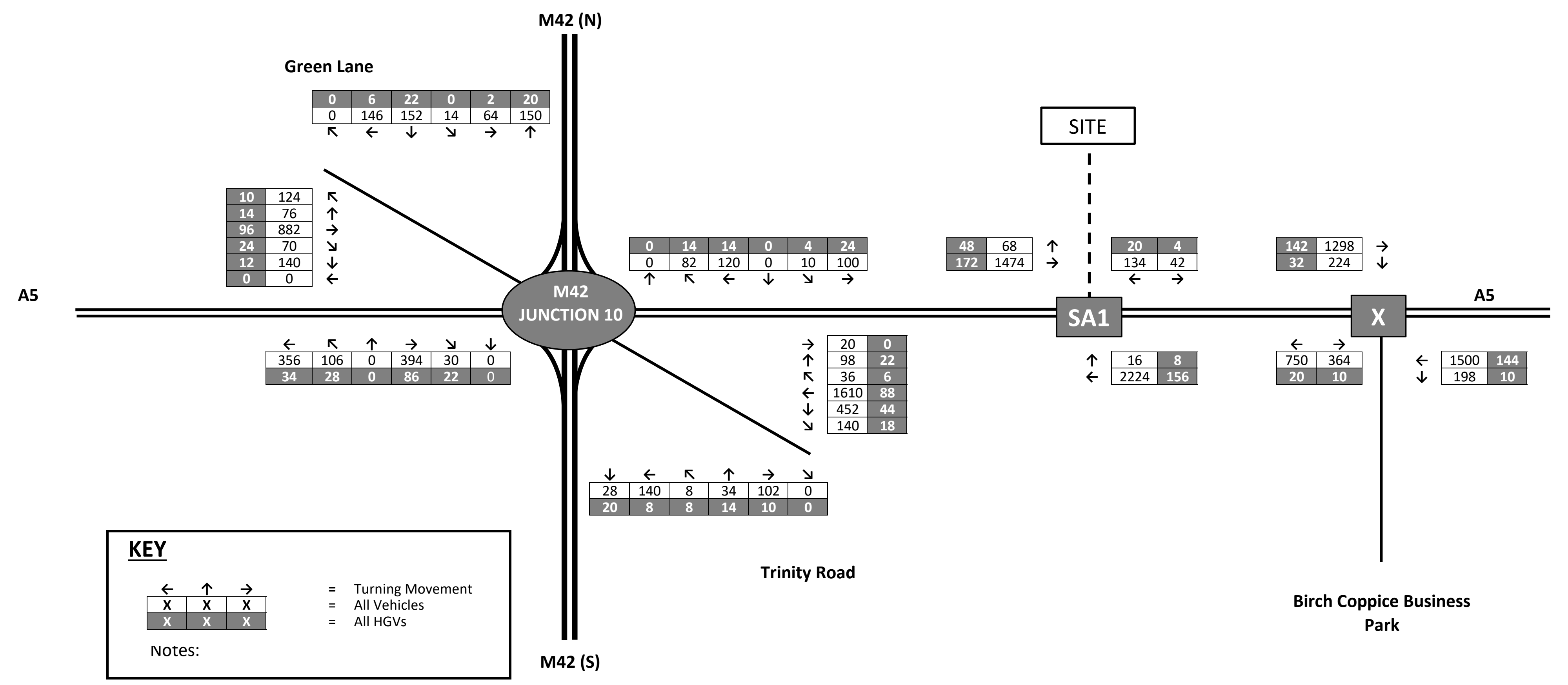


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FIGURE 9

2021 REFERENCE + DEVELOPMENT - PM PEAK (1700 TO 1800) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB

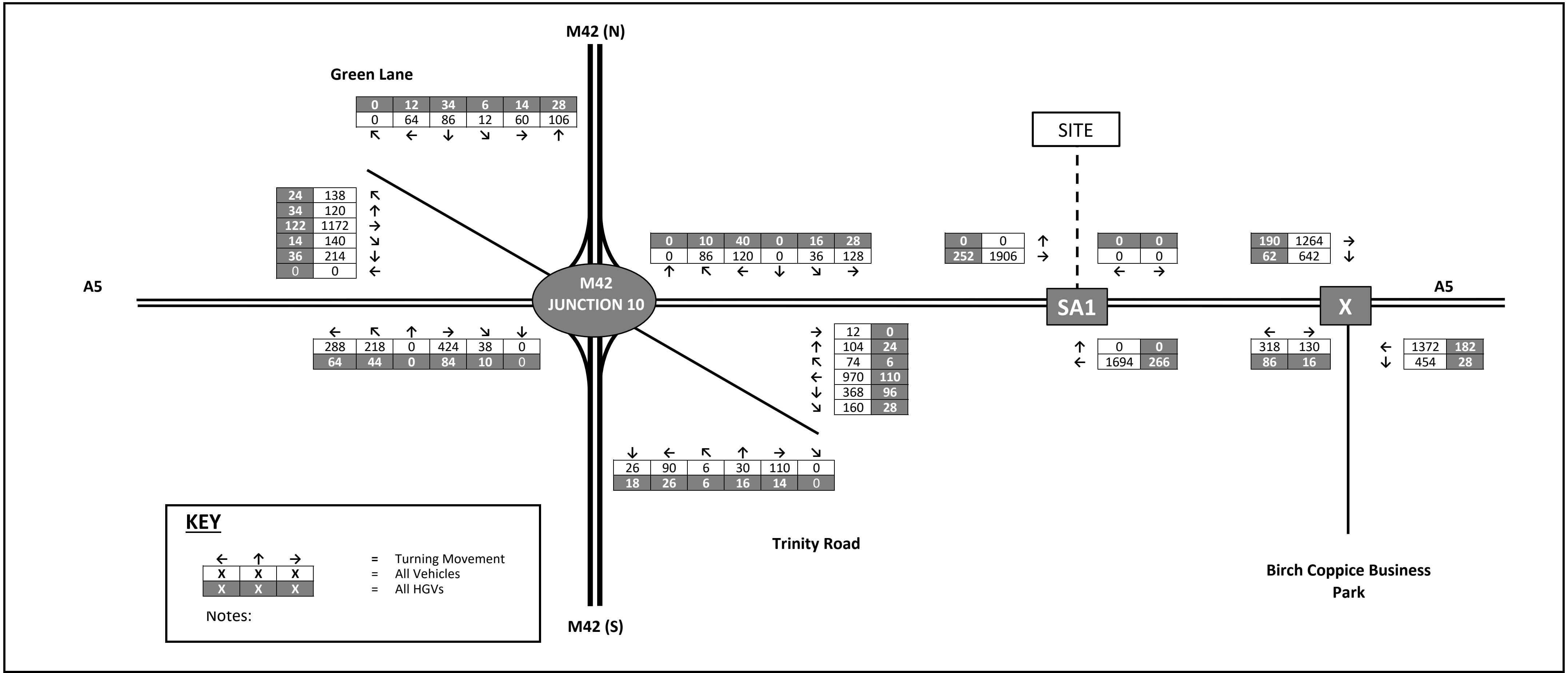

FIGURE 10

2026 REFERENCE - AM PEAK (0800 TO 0900) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB

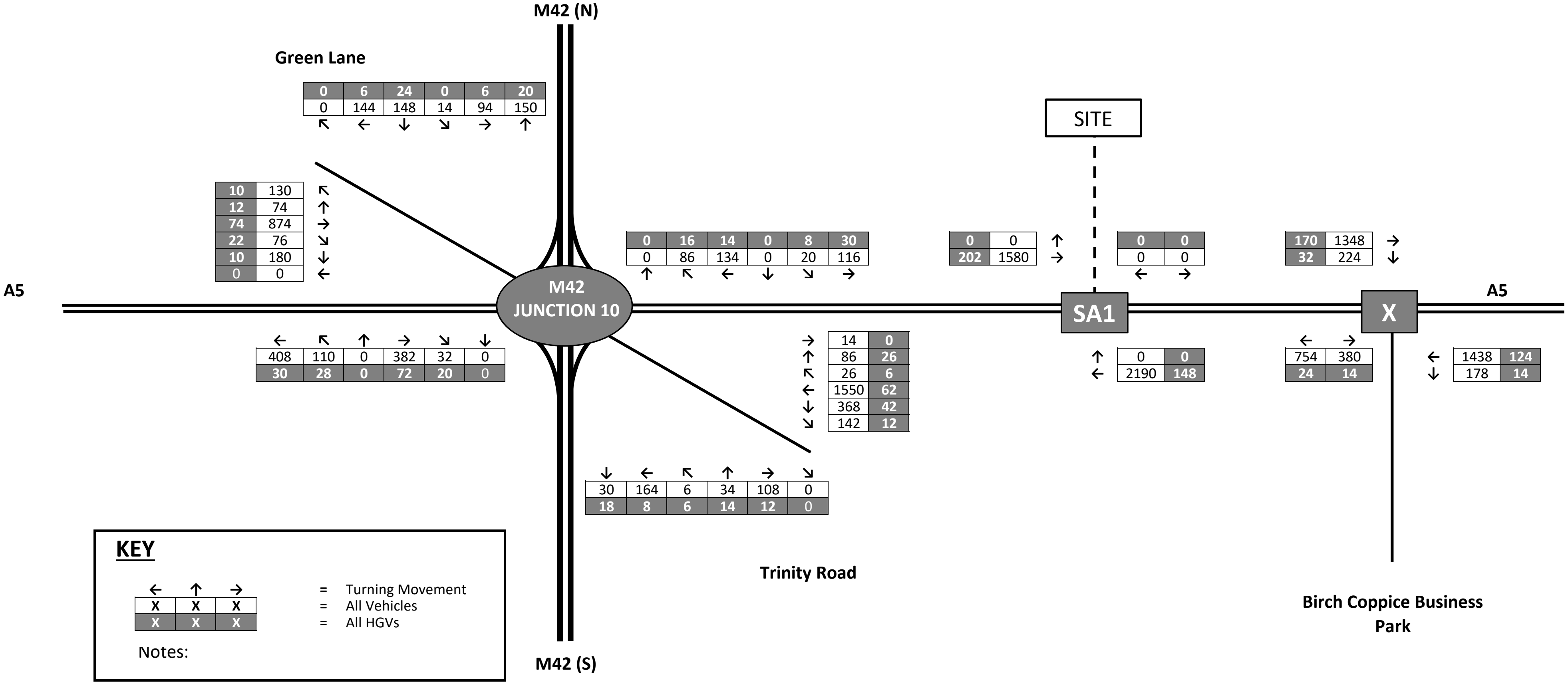

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FIGURE 11

2026 REFERENCE - PM PEAK (1700 TO 1800) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB

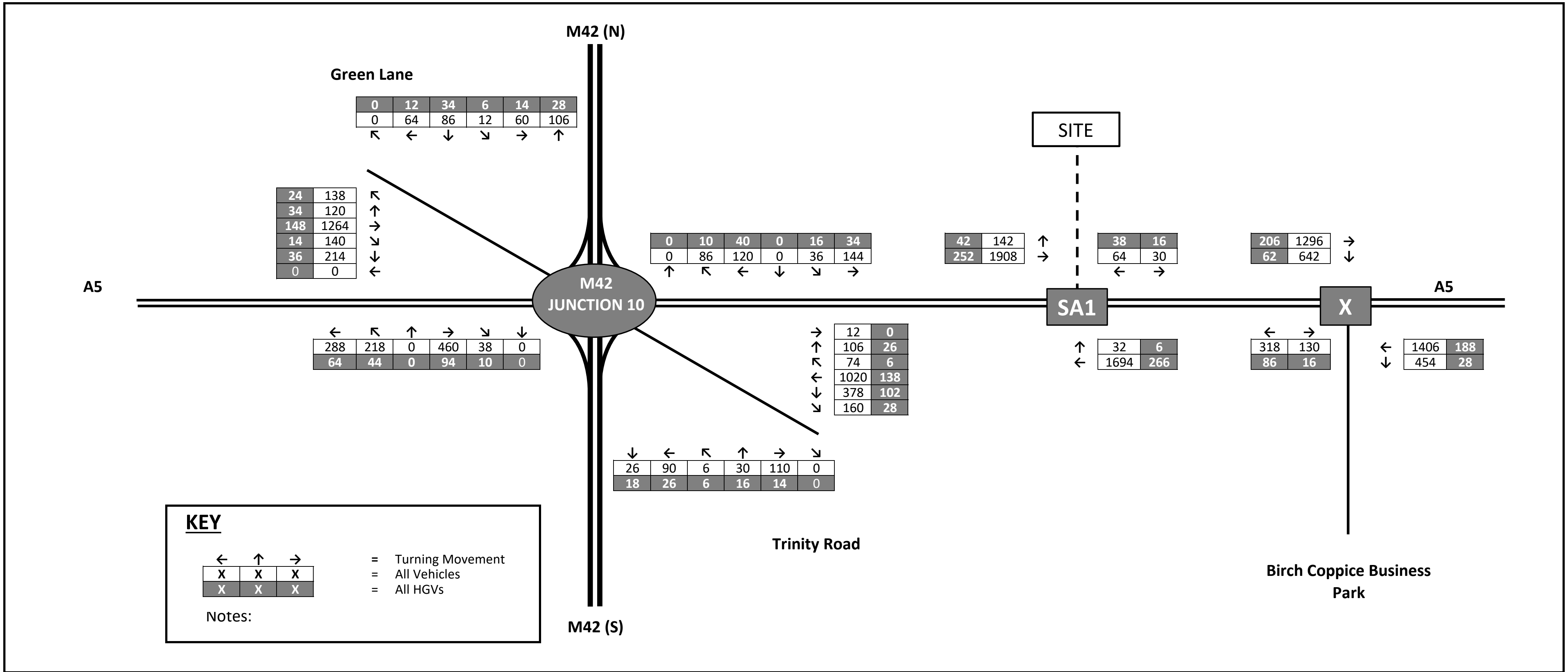

FIGURE 12

2026 REFERENCE + DEVELOPMENT - AM PEAK (0800 TO 0900) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB

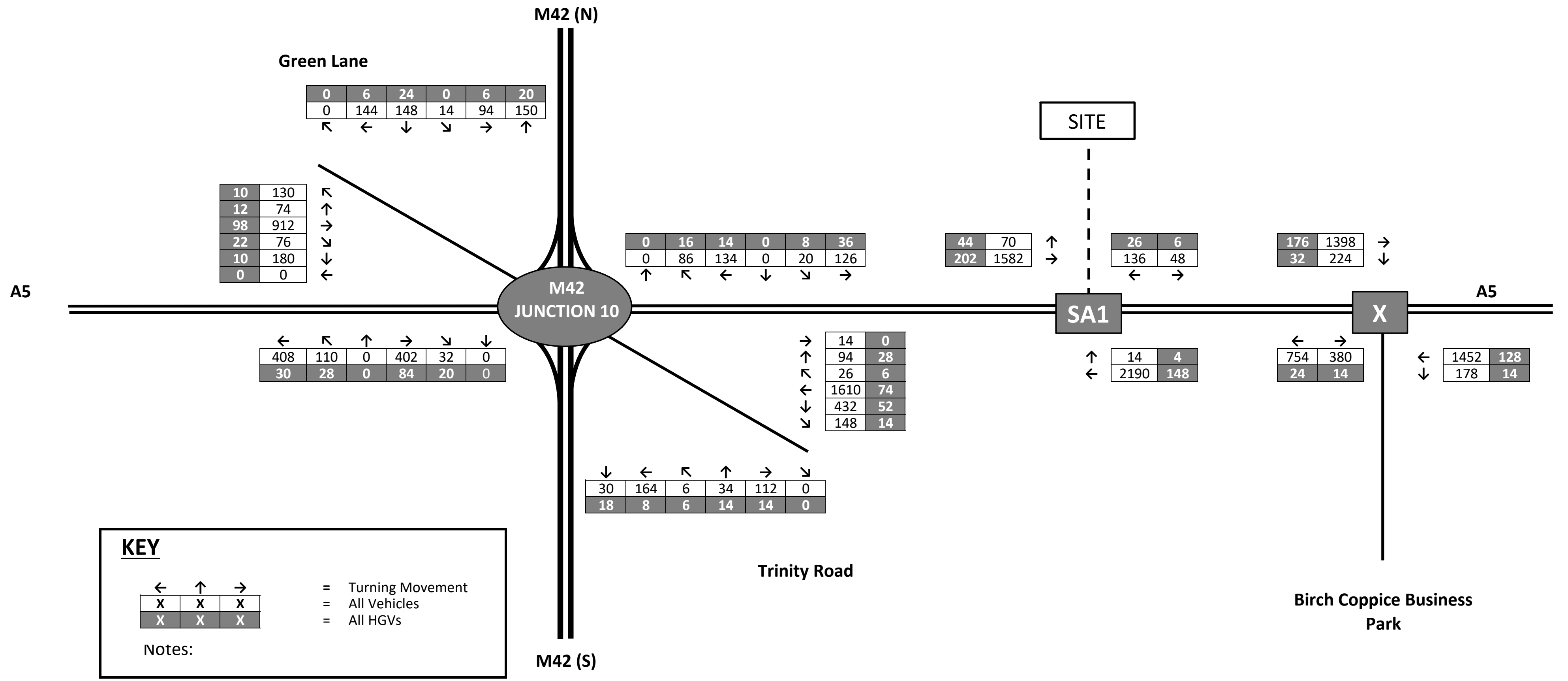

FIGURE 13

2026 REFERENCE + DEVELOPMENT - PM PEAK (1700 TO 1800) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB

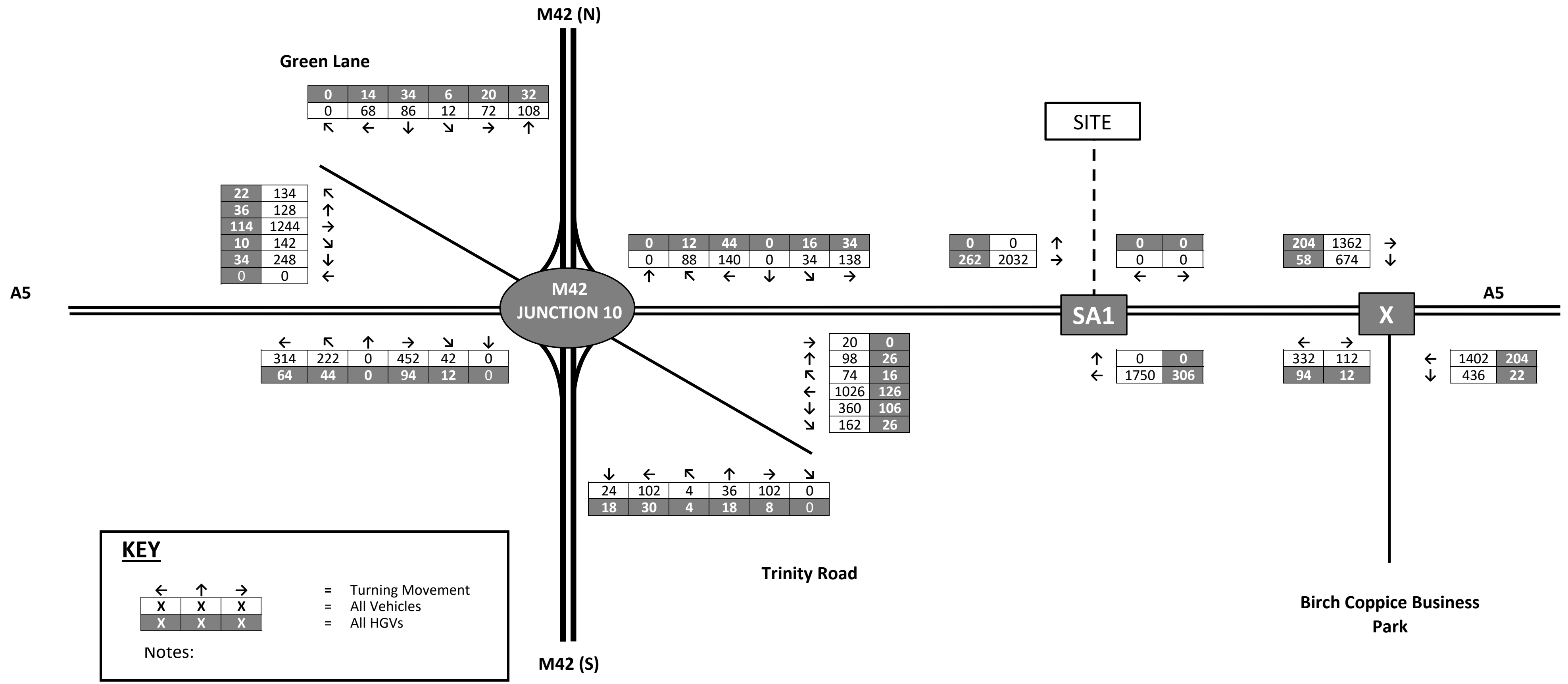

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FIGURE 14

2031 REFERENCE - AM PEAK (0800 TO 0900) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB

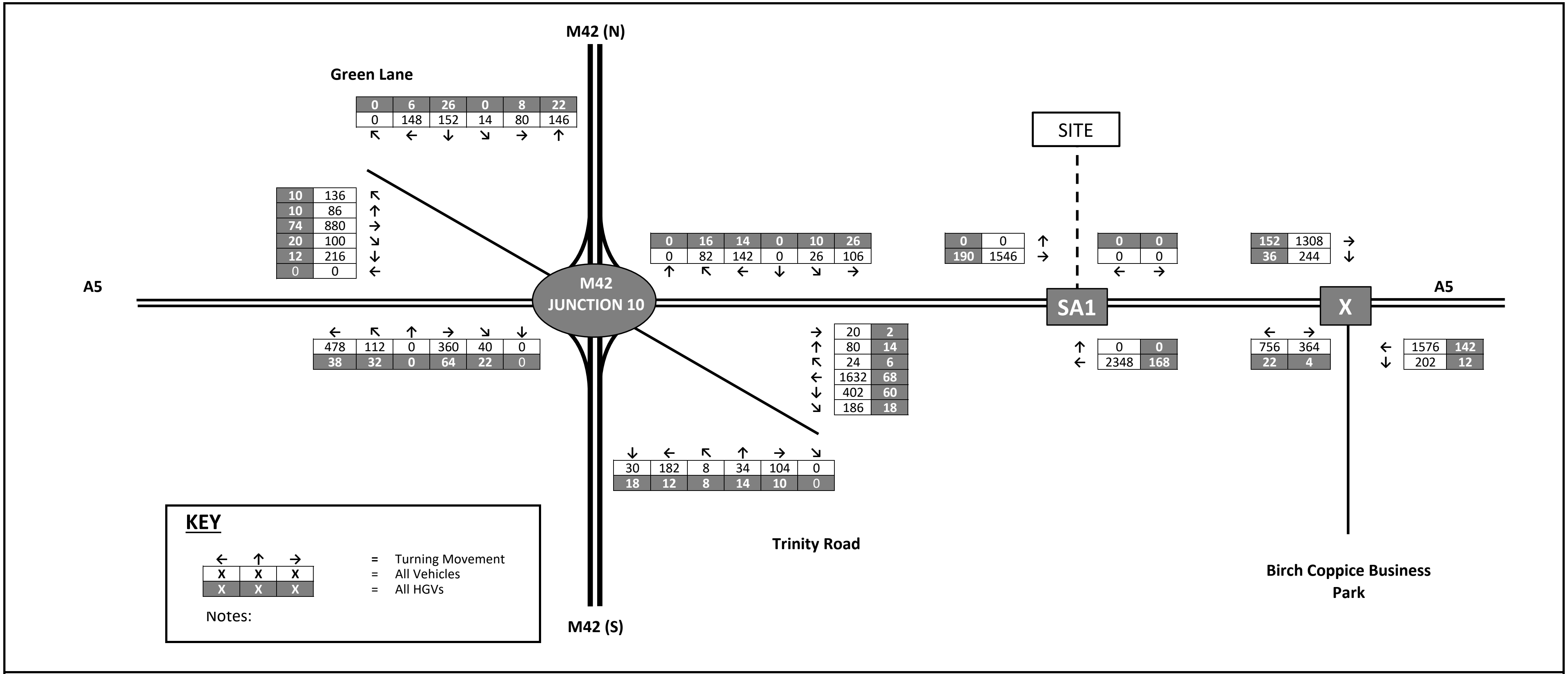

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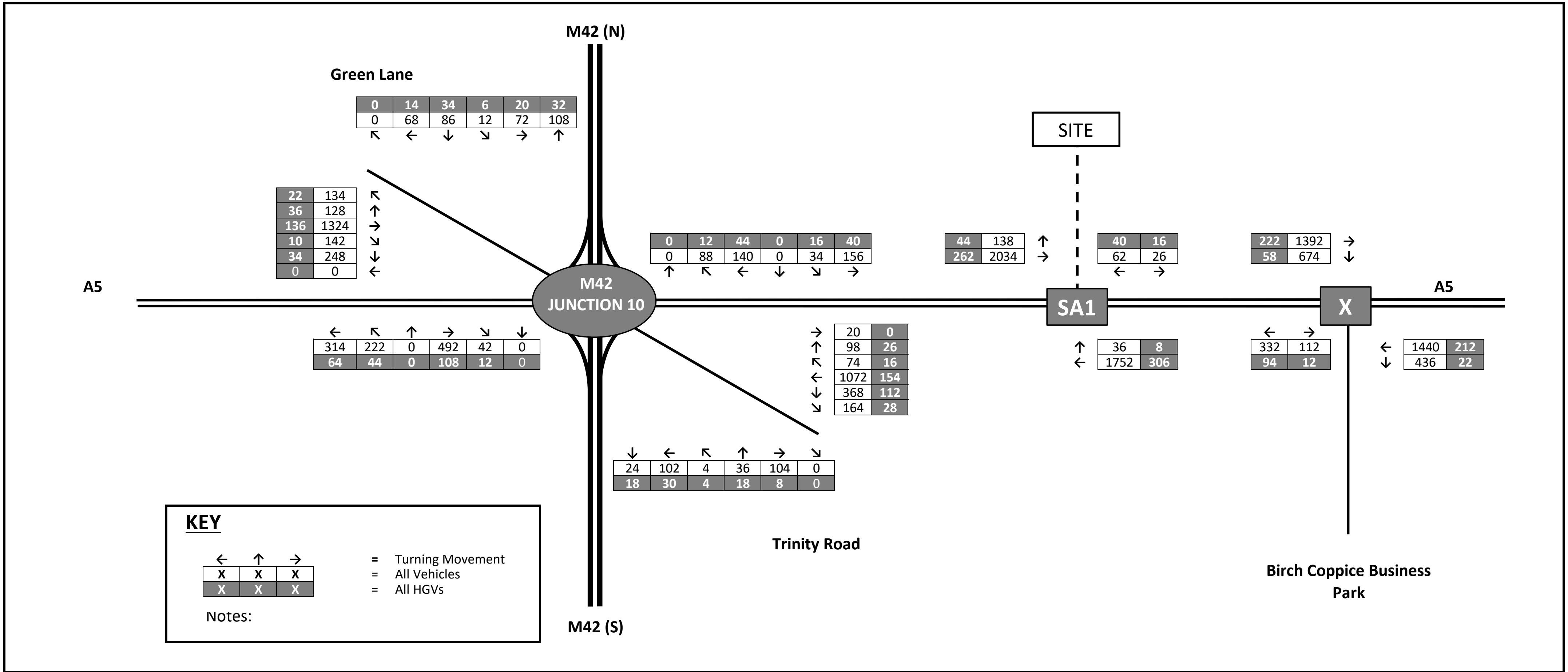
FIGURE 15

2031 REFERENCE - PM PEAK (1700 TO 1800) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB



BANCROFT CONSULTING

FIGURE 16

2031 REFERENCE + DEVELOPMENT - AM PEAK (0800 TO 0900) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB

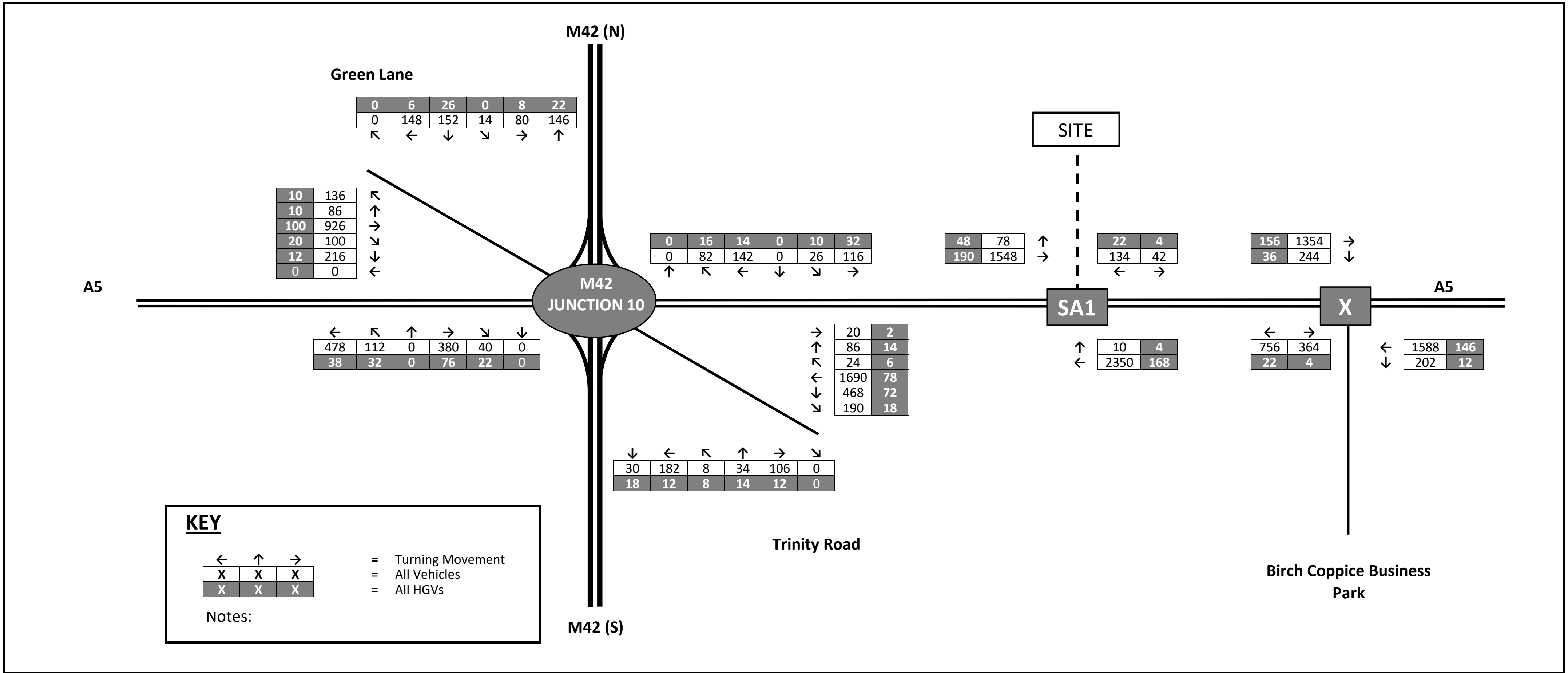


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FIGURE 17

2031 REFERENCE + DEVELOPMENT - PM PEAK (1700 TO 1800) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB

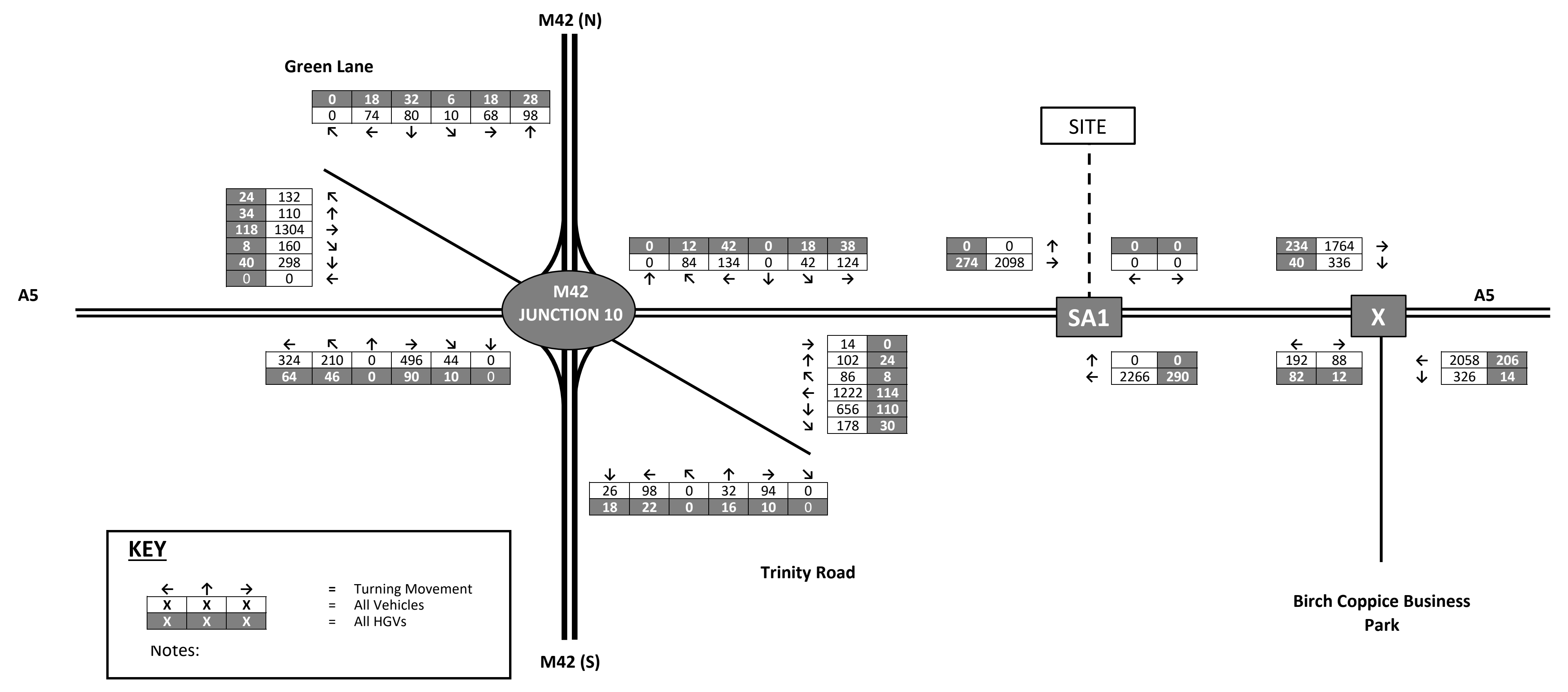

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FIGURE 18

2031 LOCAL PLAN - AM PEAK (0800 TO 0900) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB

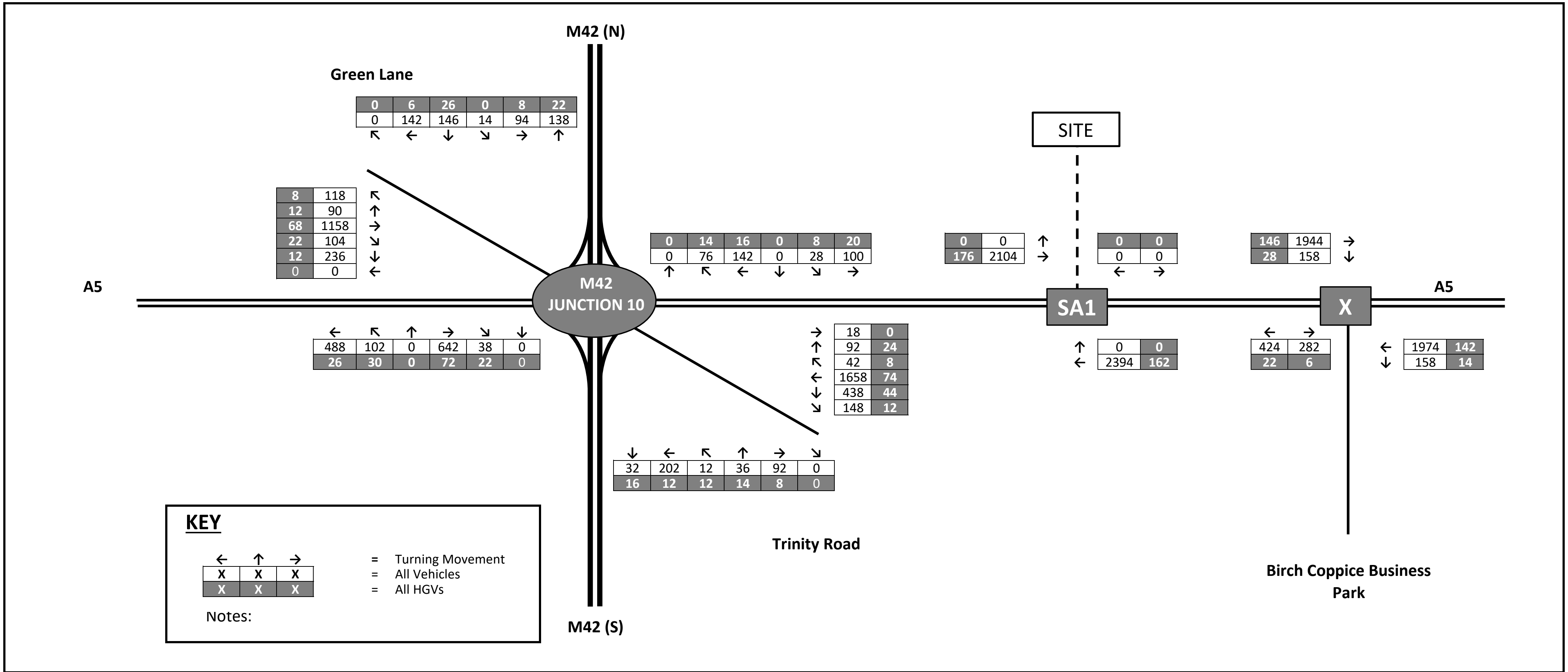


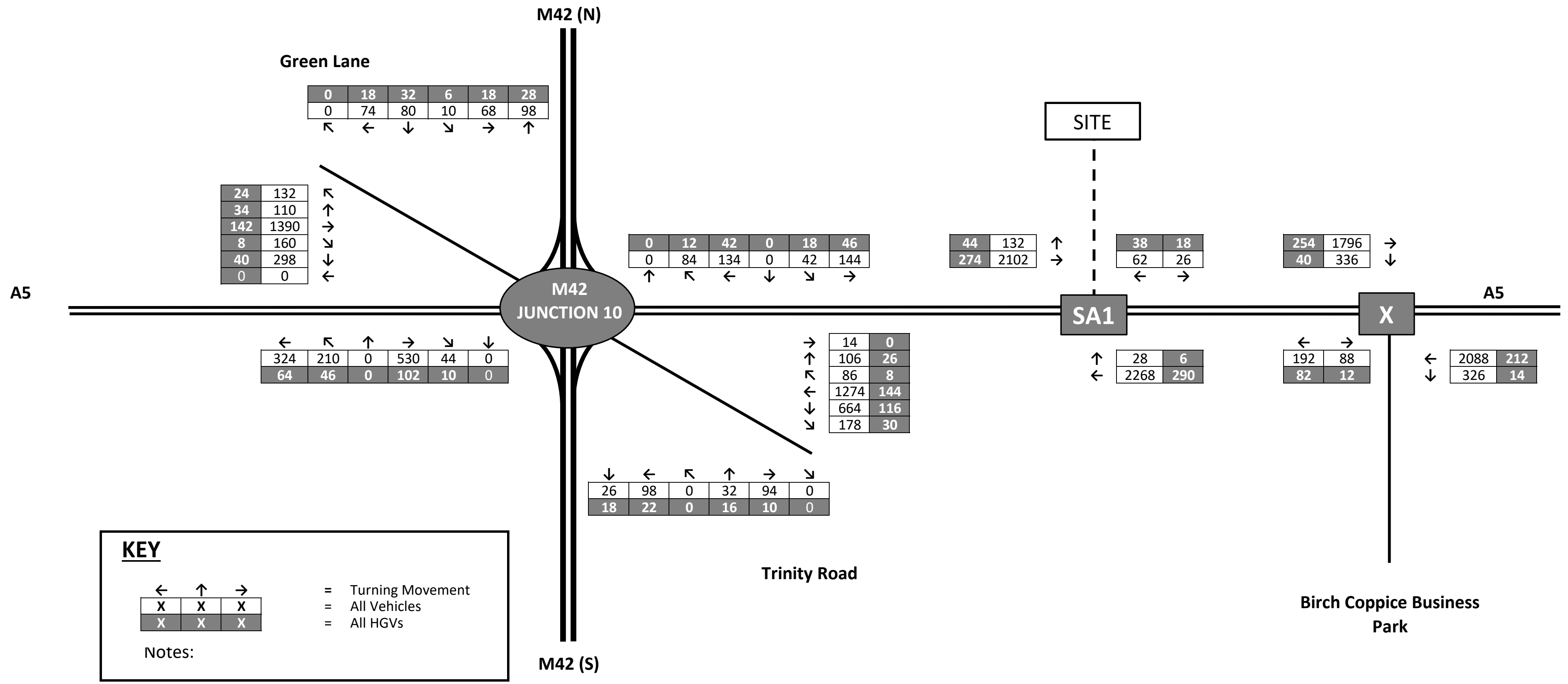
FIGURE 19

2031 LOCAL PLAN - PM PEAK (1700 TO 1800) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB



Green Lane

↖	←	↓	↘	→	↑
0	18	32	6	18	28
0	74	80	10	68	98

A5 (west of junction)

24	132	↖
34	110	↑
142	1390	→
8	160	↘
40	298	↓
0	0	←

←	↖	↑	→	↘	↓
324	210	0	530	44	0
64	46	0	102	10	0

A5 (east of junction)

↑	↖	←	↓	↘	→
0	12	42	0	18	46
0	84	134	0	42	144

Trinity Road

→	14	0
↑	106	26
↖	86	8
←	1274	144
↓	664	116
↘	178	30

M42 (S)

↓	←	↖	↑	→	↘
26	98	0	32	94	0
18	22	0	16	10	0

SA1

44	132	↑
274	2102	→

38	18
62	26
←	→

↑	28	6
←	2268	290

X

254	1796	→
40	336	↓

←	→
192	88
82	12

←	2088	212
↓	326	14

KEY

←	↑	→
X	X	X
X	X	X

BANCROFT CONSULTING

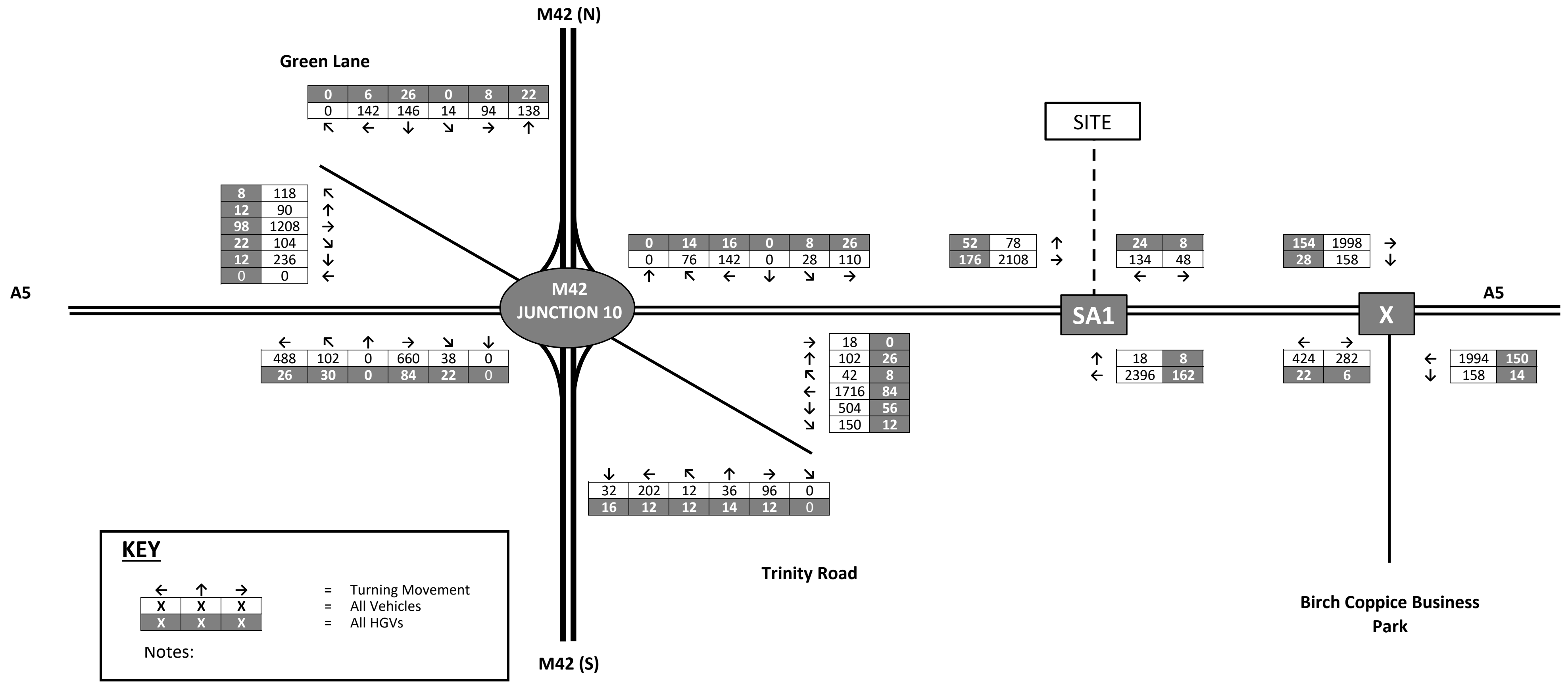
FIGURE 20

2031 LOCAL PLAN + DEVELOPMENT - AM PEAK (0800 TO 0900) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB



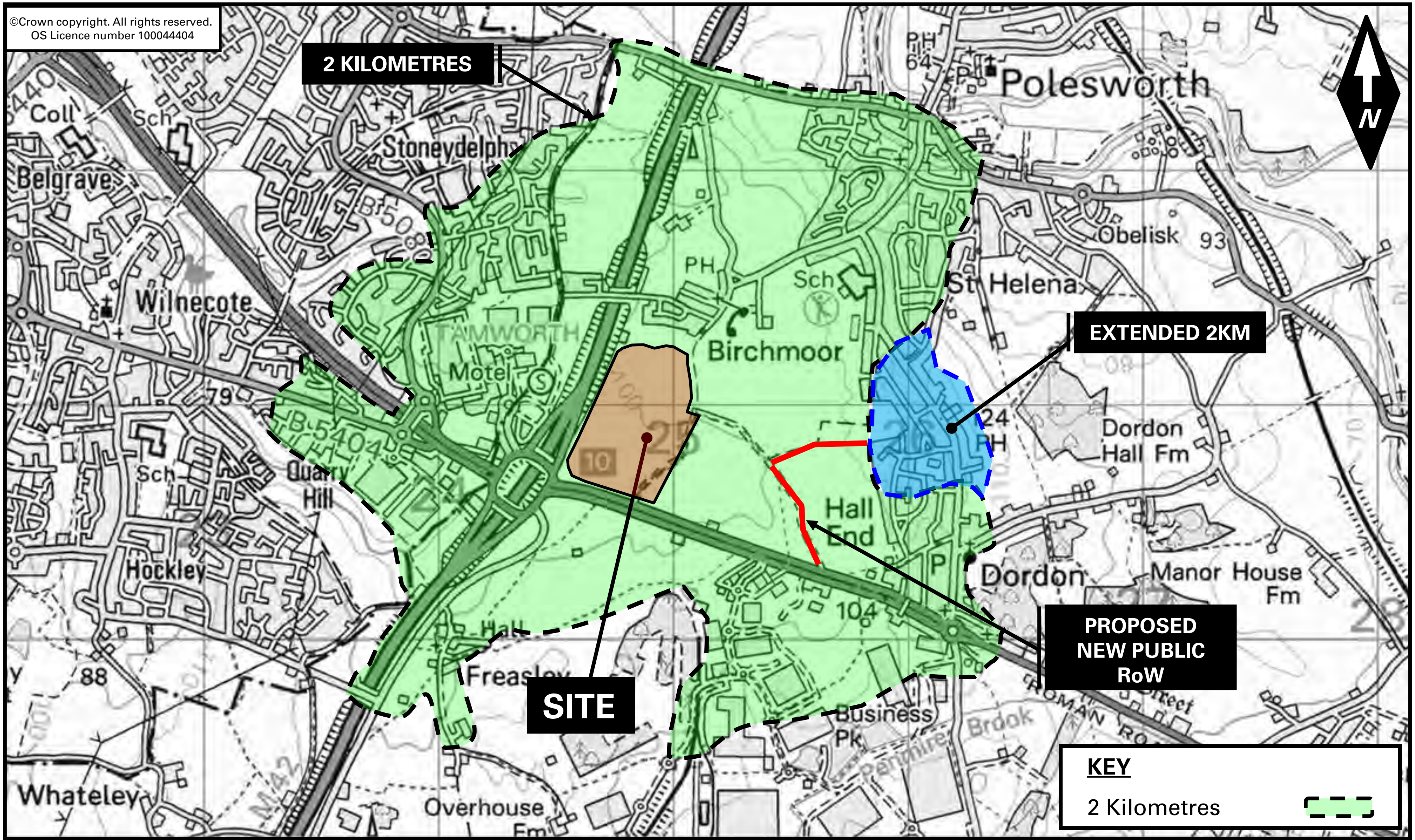
BANCROFT CONSULTING

FIGURE 21

2031 LOCAL PLAN + DEVELOPMENT - PM PEAK (1700 TO 1800) - DEMAND FLOWS

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123
DRAWN BY: CAB



SCALE:	Do Not Scale
DATE:	12.01.21
DRAWN:	CAB

CLIENT:
HODGETTS ESTATES

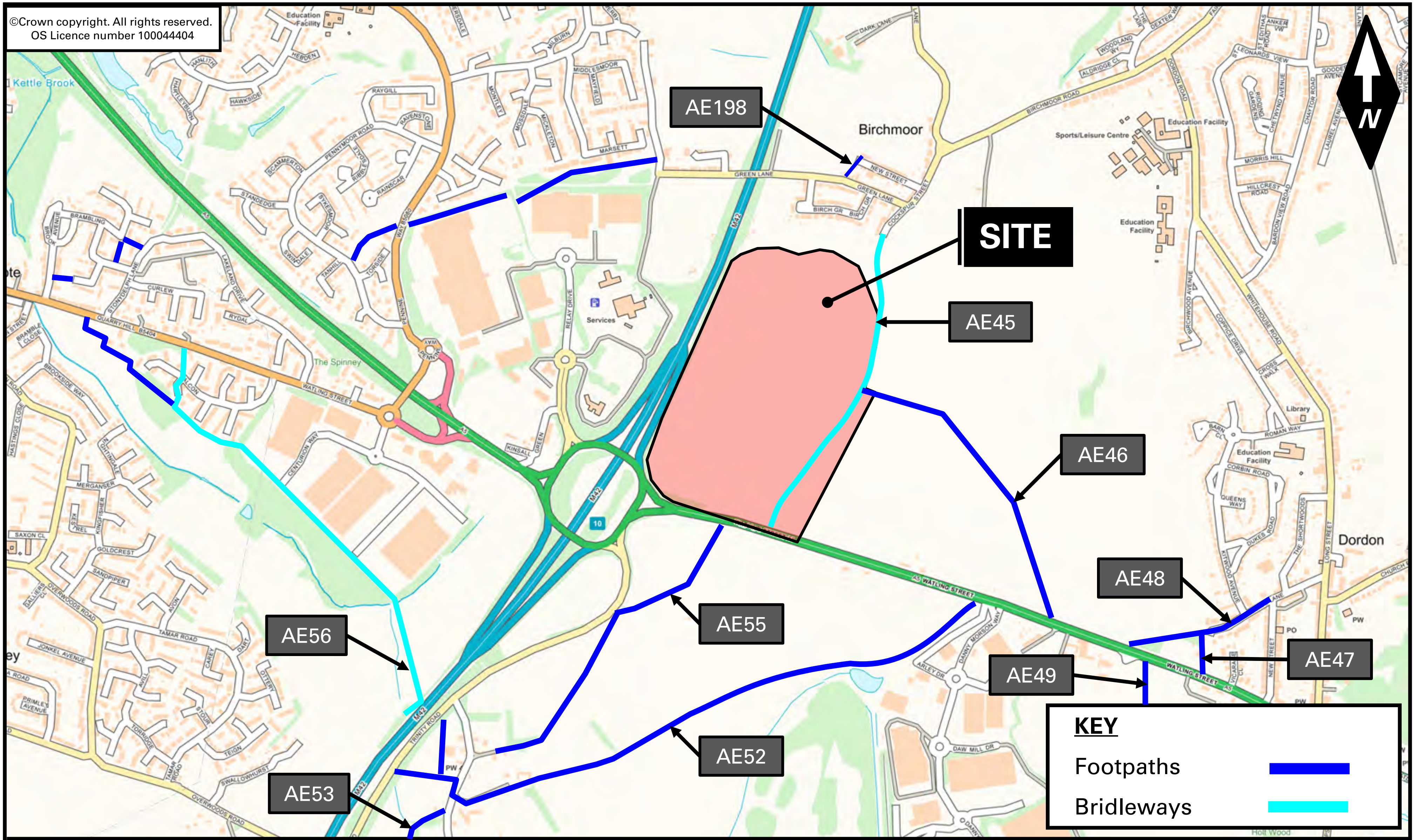
JOB TITLE:
PROPOSED EMPLOYMENT LAND NORTHEAST OF J10 M42, NORTH WARWICKSHIRE

TITLE: **PEDESTRIAN ISOCHRONES (2 KILOMETRES) INCLUDING PROPOSED NEW PUBLIC RIGHT OF WAY**

BANCROFT CONSULTING

JOB NUMBER: **F19123**

FIGURE: **22**



SCALE:	**Do Not Scale**
DATE:	**12.01.21**
DRAWN:	**CAB**

CLIENT:
HODGETTS ESTATES

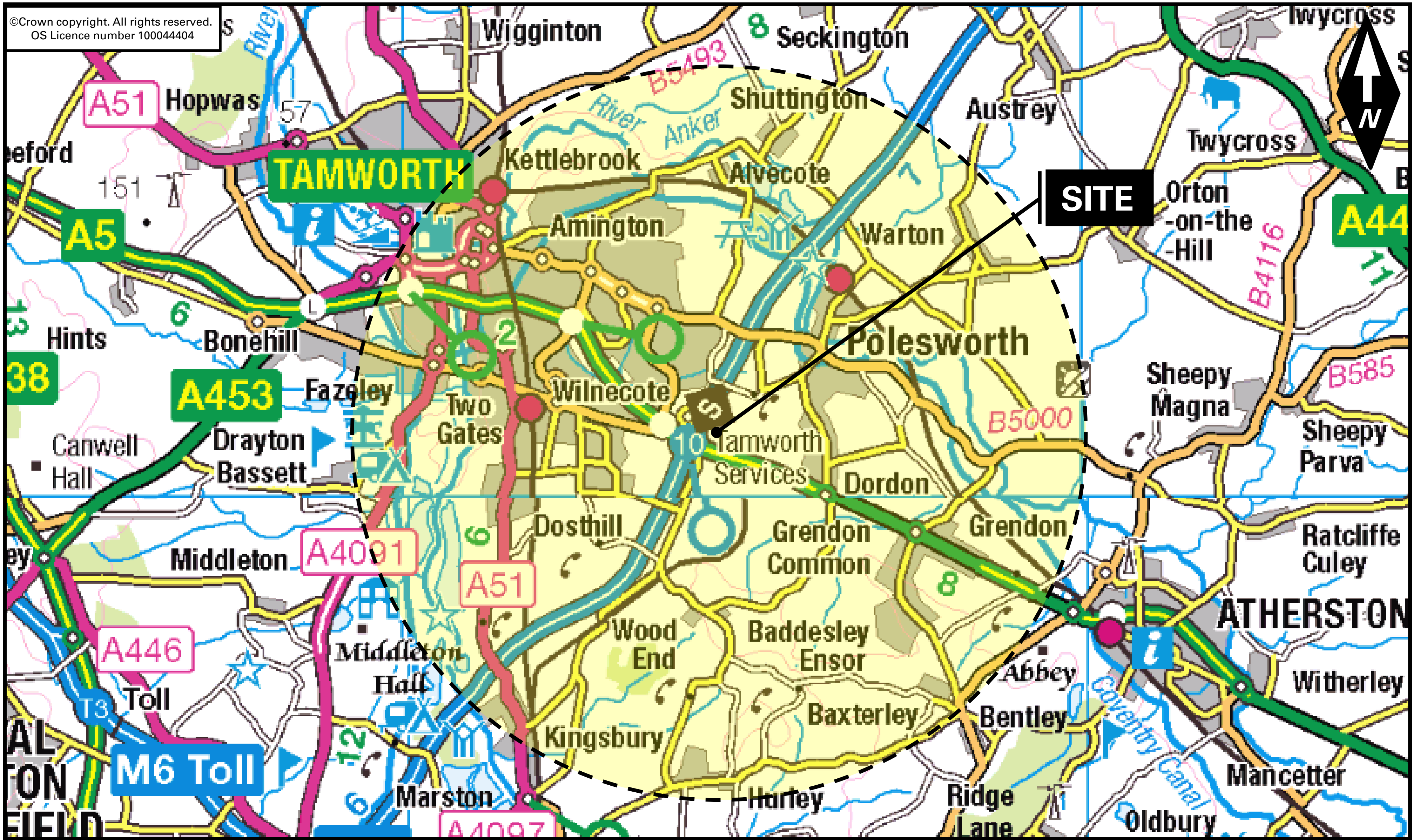
JOB TITLE:
PROPOSED EMPLOYMENT LAND NORTHEAST OF J10 M42, NORTH WARWICKSHIRE

BANCROFT CONSULTING

TITLE:
PUBLIC RIGHTS OF WAY (TAKEN FROM ROWMAPS.COM & WARWICKSHIRE PROW)

JOB NUMBER:
19123

FIGURE:
23



SCALE: **Do Not Scale**

DATE: **12.01.21**

DRAWN: **CAB**

CLIENT:
HODGETTS ESTATES

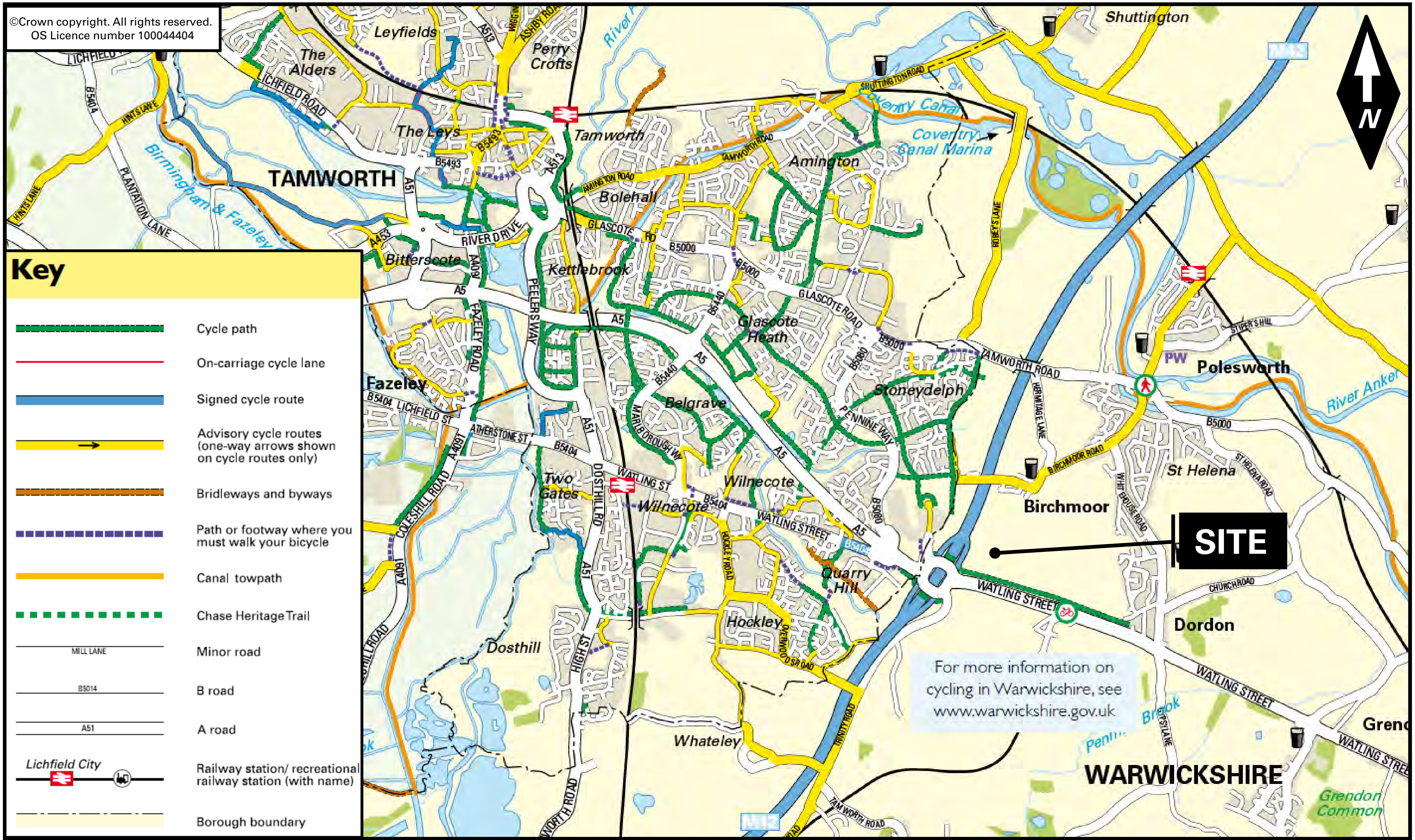
JOB TITLE:
PROPOSED EMPLOYMENT LAND NORTHEAST OF J10 M42, NORTH WARWICKSHIRE

BANCROFT CONSULTING

TITLE:
CYCLIST CATCHMENT AREA (5 KILOMETRES)

JOB NUMBER: **F19123**

FIGURE: **24**



SCALE: **Do Not Scale**

DATE: **12.01.21**

DRAWN: **CAB**

CLIENT:
HODGETTS ESTATES

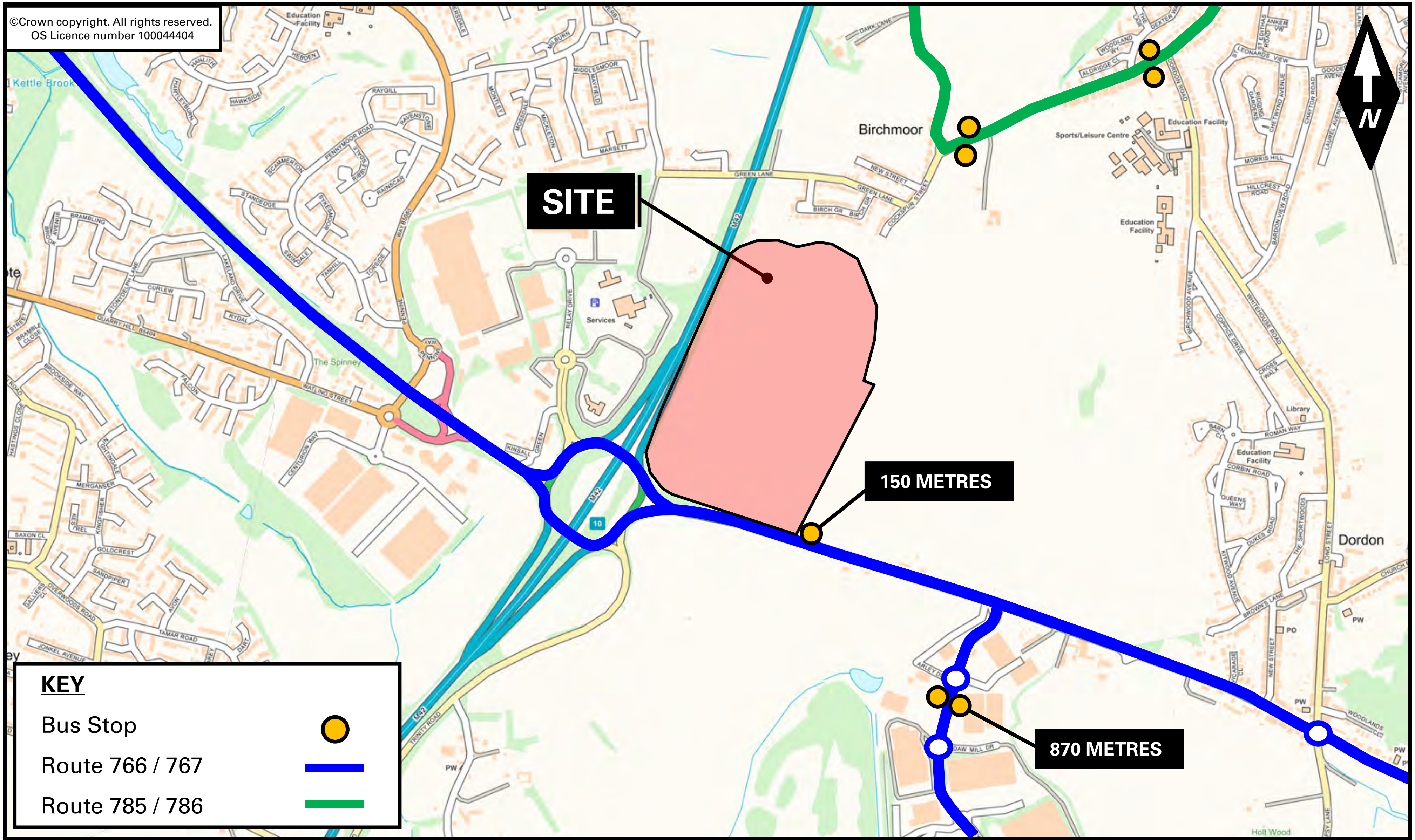
JOB TITLE:
PROPOSED EMPLOYMENT LAND NORTHEAST OF J10 M42, NORTH WARWICKSHIRE

TITLE:
LOCAL CYCLE FACILITIES (TAKEN FROM 'CYCLING IN LITCHFIELD DISTRICT' GUIDE)

BANCROFT CONSULTING

JOB NUMBER:
F19123

FIGURE:
25



SCALE:	**Do Not Scale**
DATE:	**12.01.21**
DRAWN:	**CAB**

CLIENT:
HODGETTS ESTATES

JOB TITLE:
PROPOSED EMPLOYMENT LAND NORTHEAST OF J10 M42, NORTH WARWICKSHIRE

TITLE:
LOCAL BUS STOPS

BANCROFT CONSULTING

JOB NUMBER:
F19123

FIGURE:
26

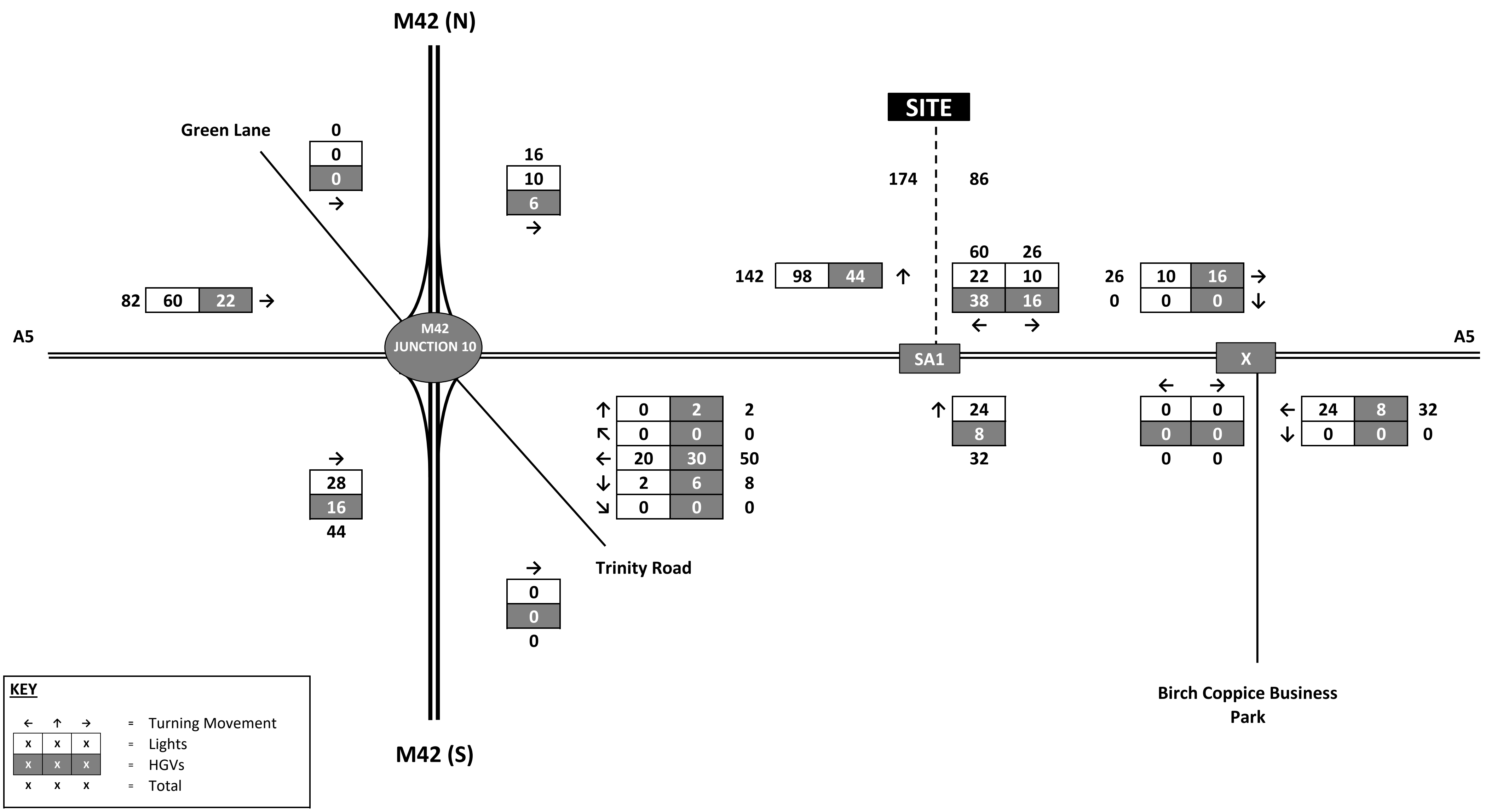


FIGURE 27

2021 DEVELOPMENT TRAFFIC ASSIGNMENT (FLOWS) - AM PEAK (0800 TO 0900)

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB

BANCROFT CONSULTING

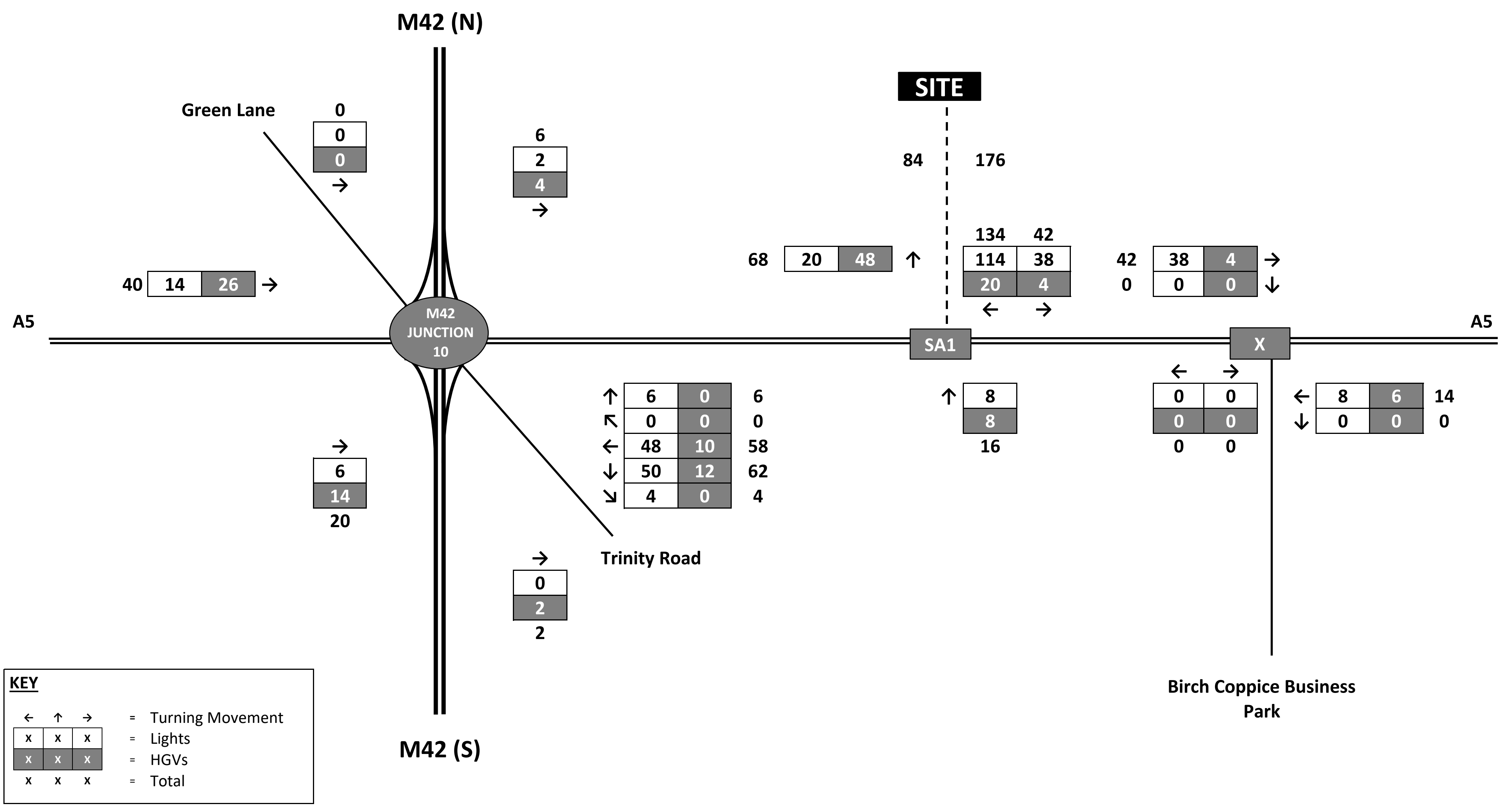


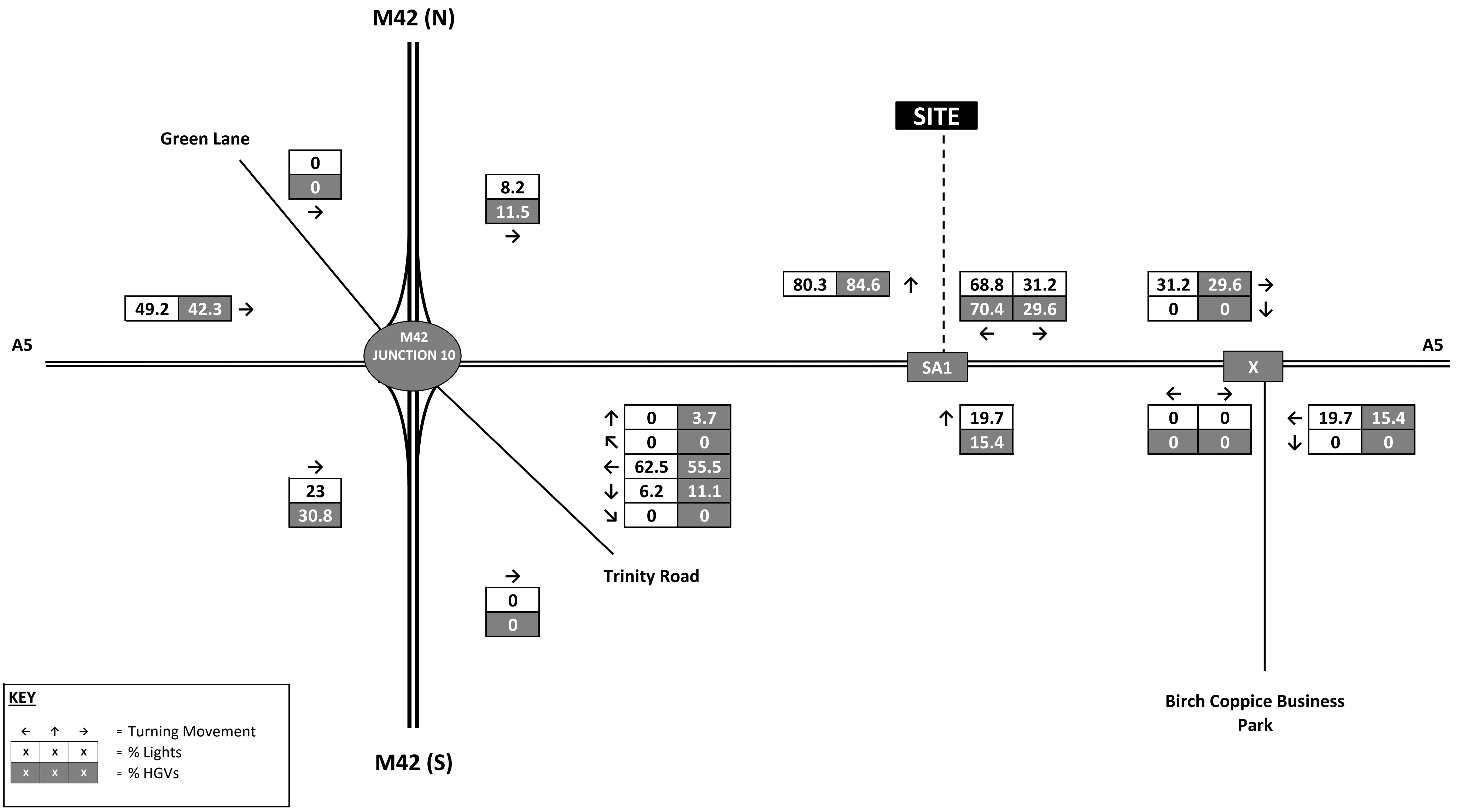
FIGURE 28

2021 DEVELOPMENT TRAFFIC ASSIGNMENT (FLOWS) - PM PEAK (1700 TO 1800)

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB



BANCROFT CONSULTING

FIGURE 29

2021 DEVELOPMENT TRAFFIC ASSIGNMENT (PERCENTAGES) - AM PEAK (0800 TO 0900)

LAND NORTH OF THE A5, DORDON

JOB NUMBER: F19123

DRAWN BY: CAB

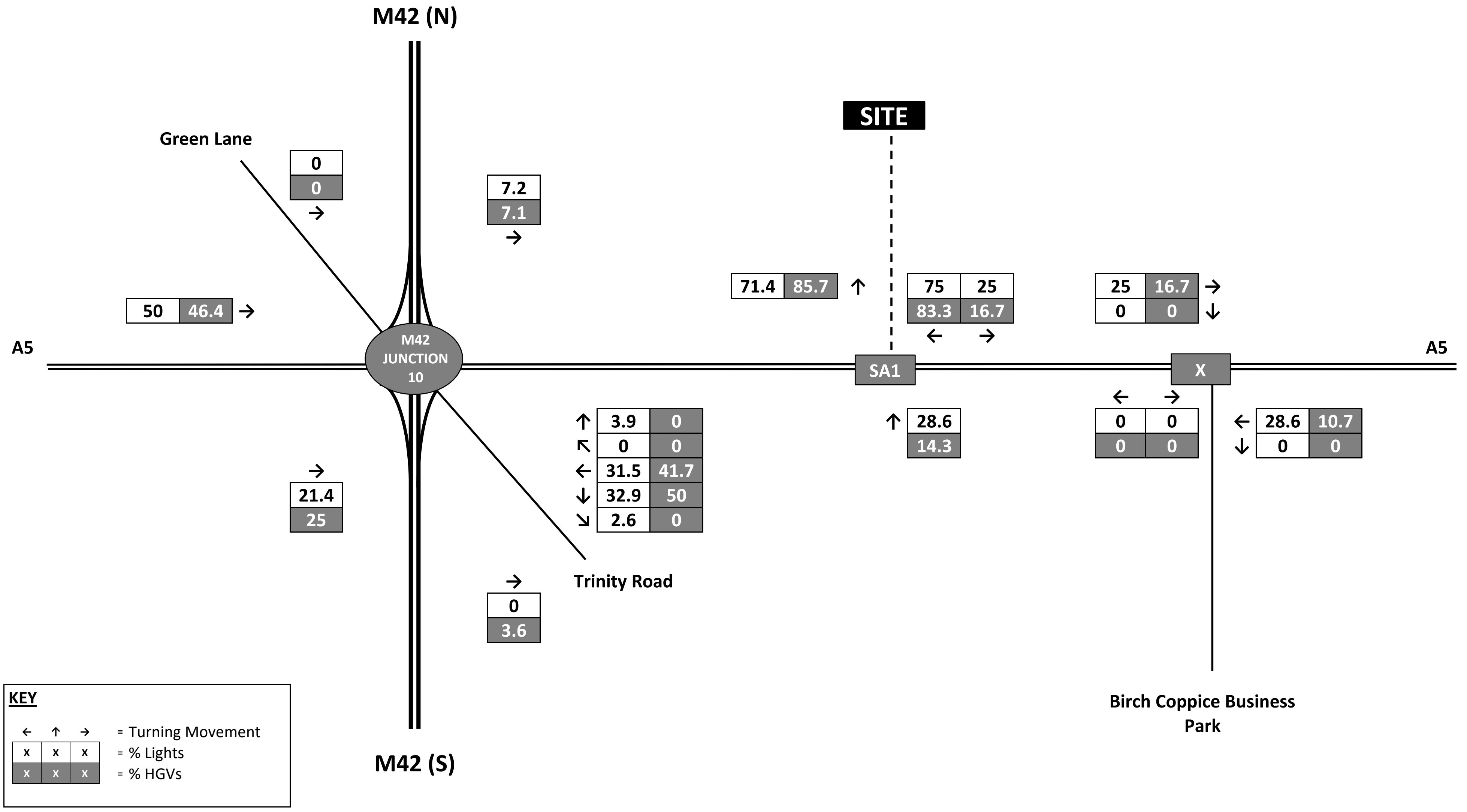


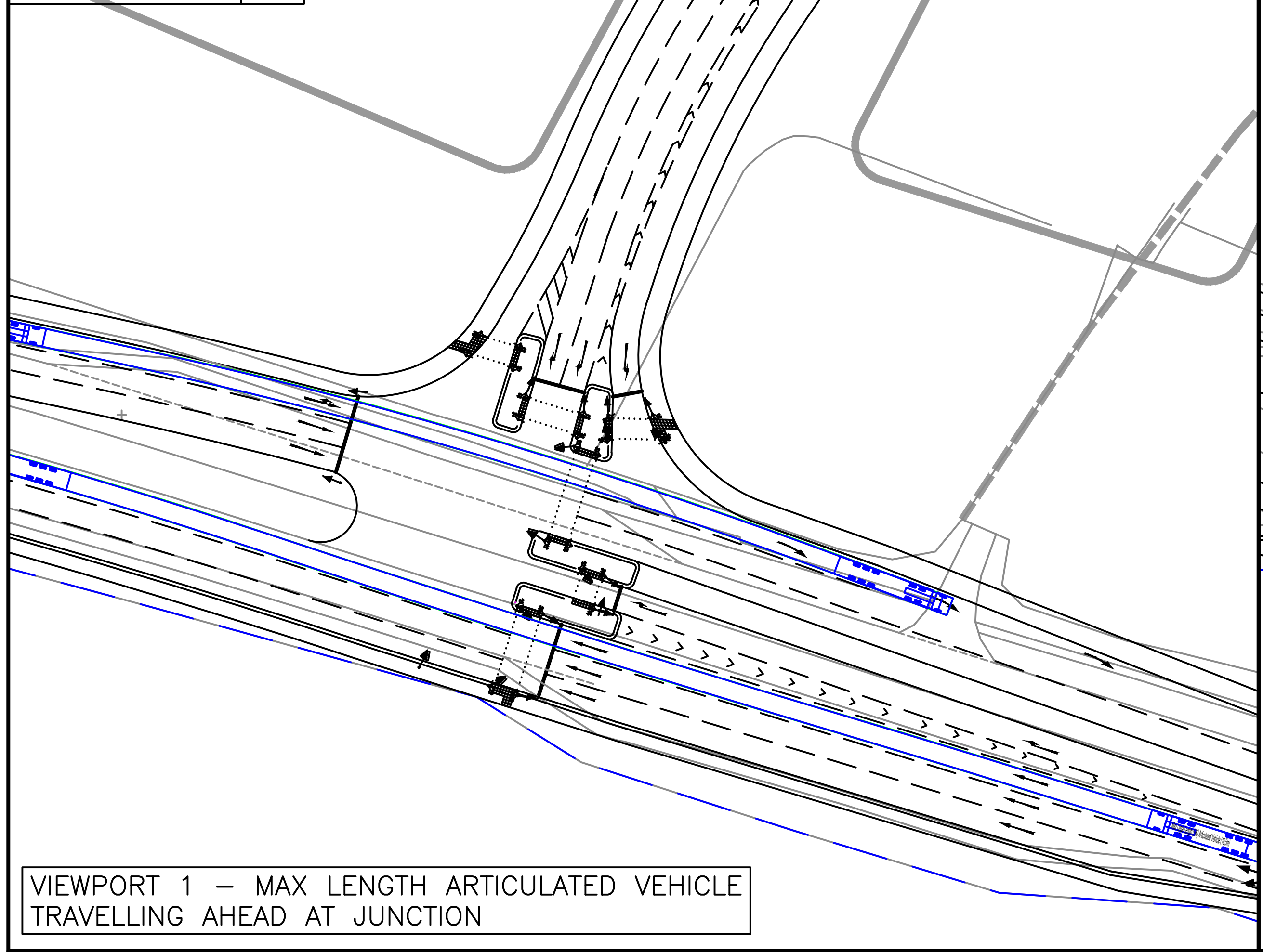
FIGURE 30

2021 DEVELOPMENT TRAFFIC ASSIGNMENT (PERCENTAGES) - PM PEAK (1700 TO 1800)

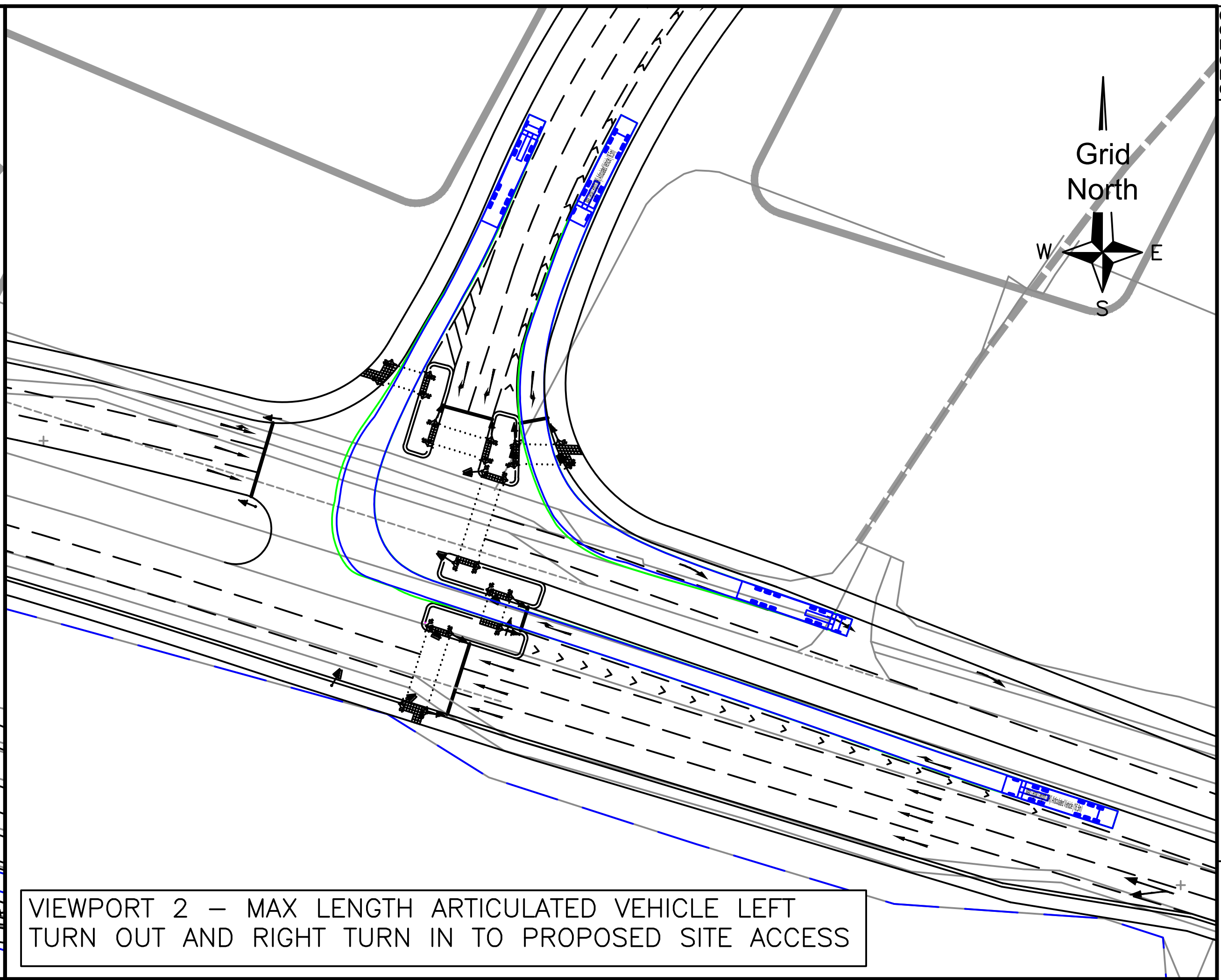
JOB NUMBER: F19123

DRAWN BY: CAB

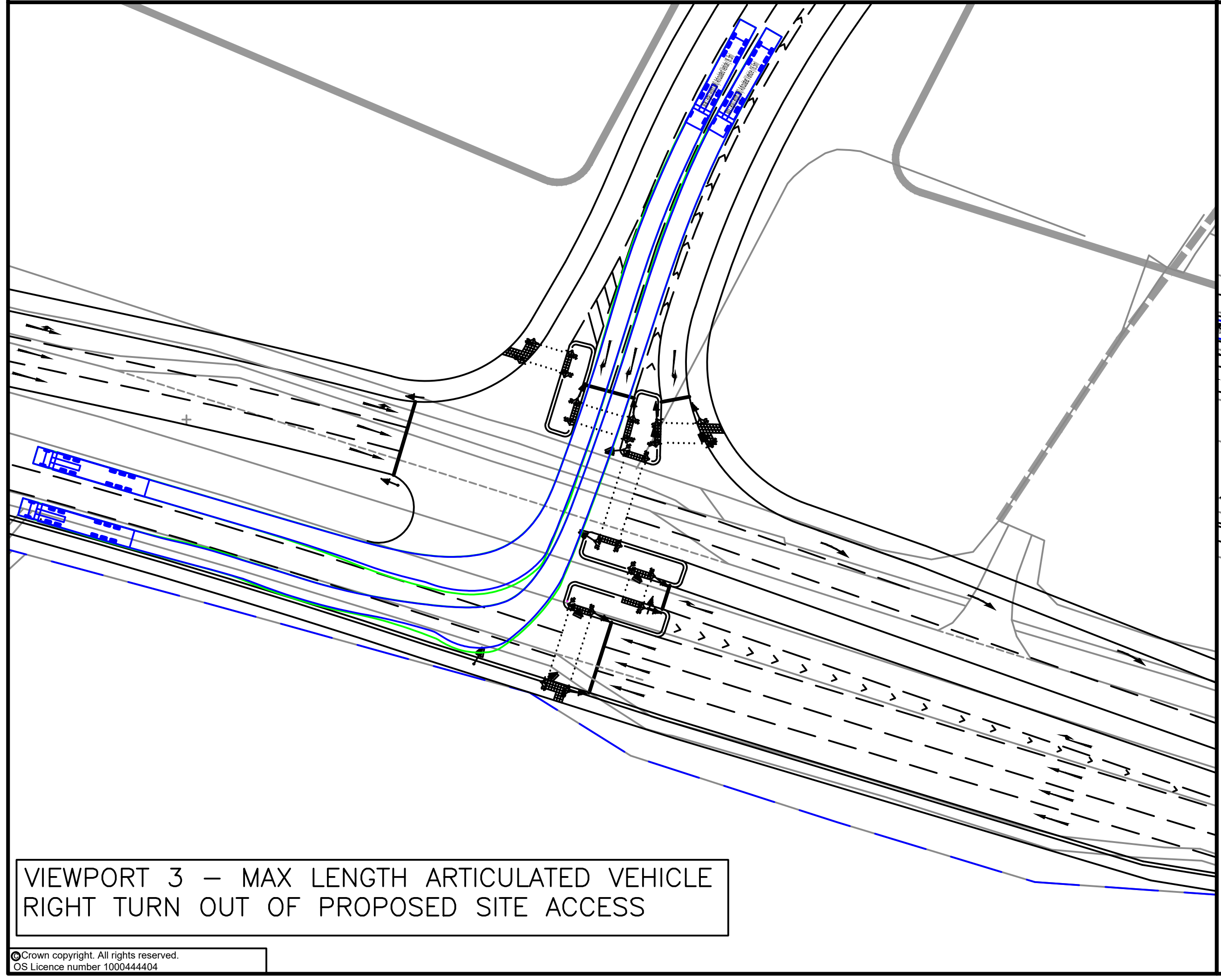
DRG. No.	REV. No.
F19123/04	A



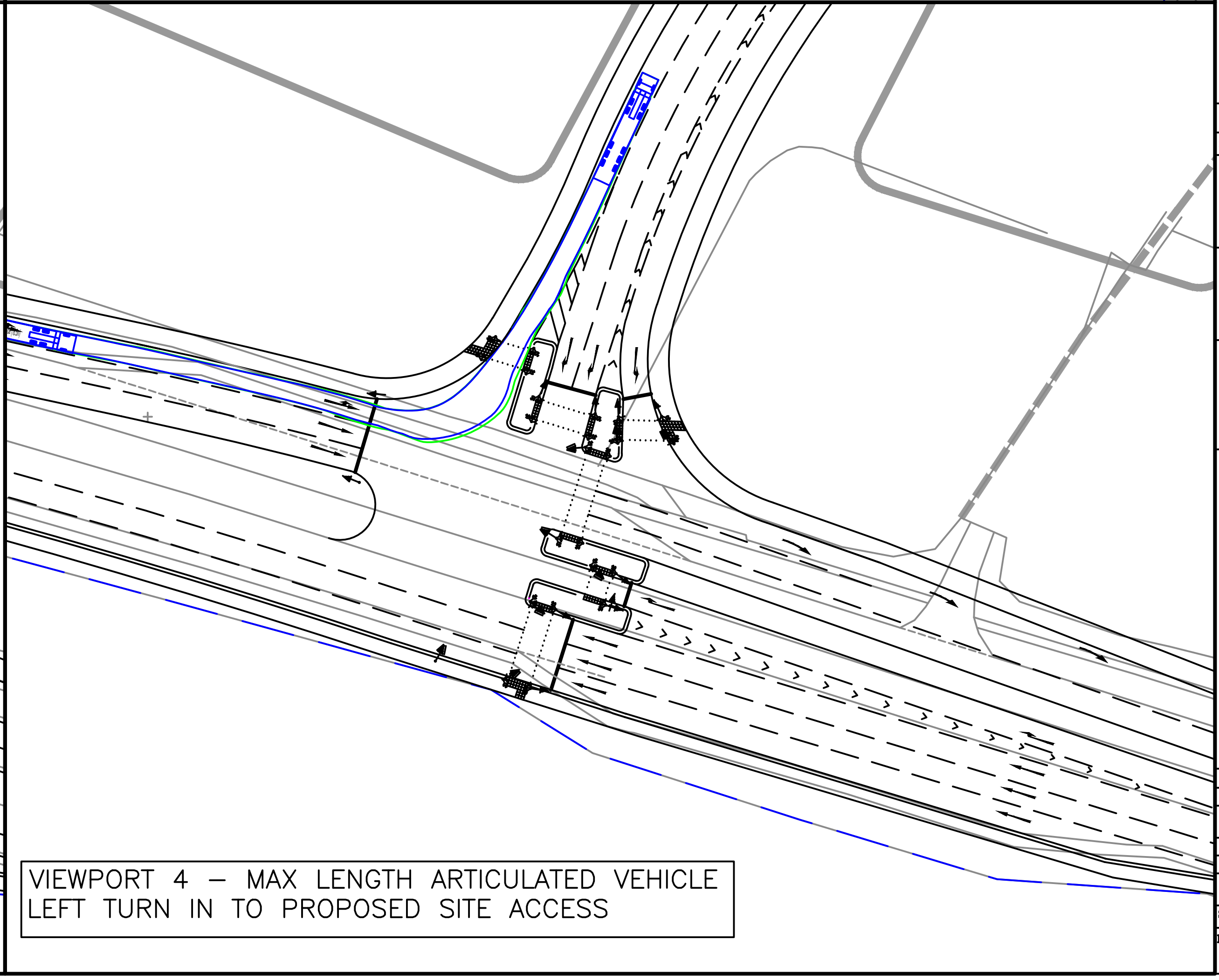
VIEWPORT 1 – MAX LENGTH ARTICULATED VEHICLE TRAVELLING AHEAD AT JUNCTION



VIEWPORT 2 – MAX LENGTH ARTICULATED VEHICLE LEFT TURN OUT AND RIGHT TURN IN TO PROPOSED SITE ACCESS

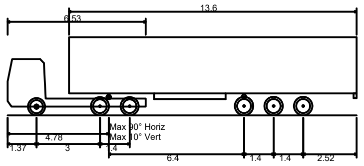


VIEWPORT 3 – MAX LENGTH ARTICULATED VEHICLE RIGHT TURN OUT OF PROPOSED SITE ACCESS



VIEWPORT 4 – MAX LENGTH ARTICULATED VEHICLE LEFT TURN IN TO PROPOSED SITE ACCESS

NOTES:



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

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

REV.	DATE	DESCRIPTION	DWN	CHK'D
A	10.05.21	REVISED WITH LATEST ACCESS LAYOUT	WM	CJB

CLIENT

HODGETTS ESTATES

CONTRACT

PROPOSED EMPLOYMENT LAND
NORTHEAST OF J10 M42,
NORTH WARWICKSHIRE

TITLE

SWEPT PATH ASSESSMENTS OF
PROPOSED SITE ACCESS LAYOUT

BANCROFT CONSULTING

Bancroft Consulting Ltd
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NG7 6LB

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e office@bancroftconsulting.co.uk

DRAWN BY

NAME (PRINT)	DATE
WM	23.02.21

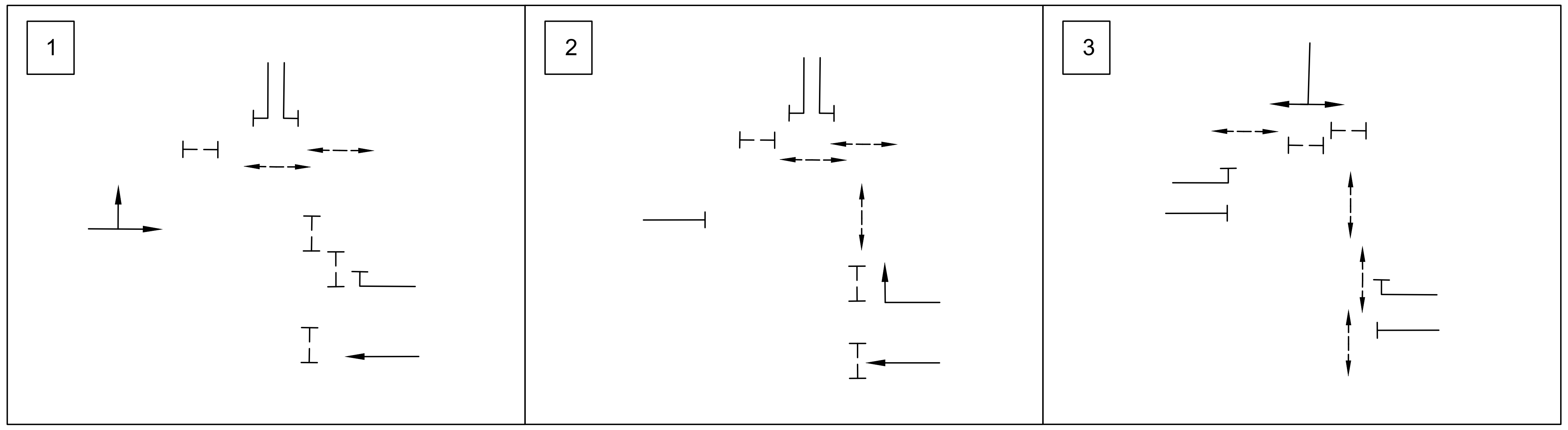
CHECKED BY

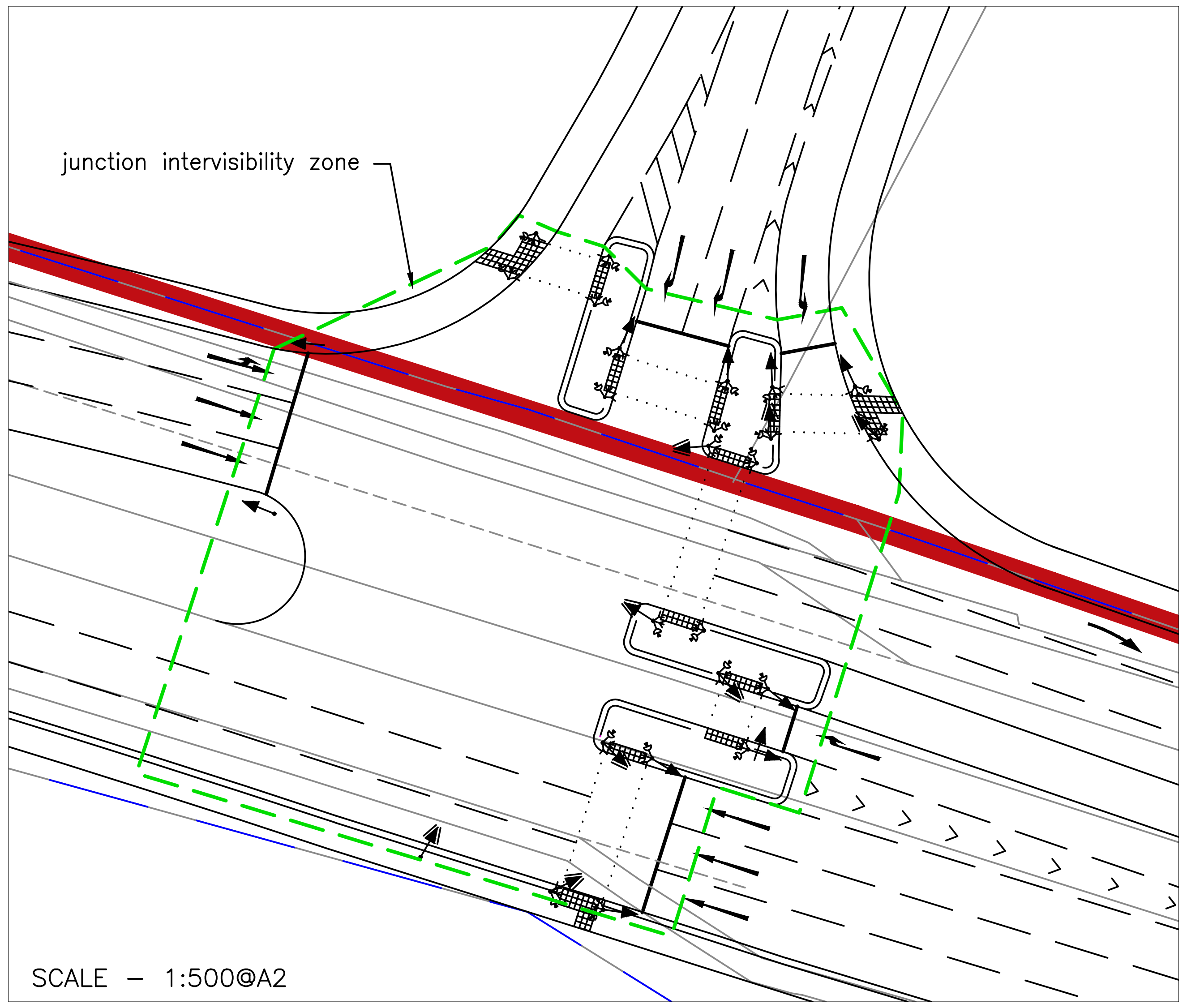
NAME (PRINT)	DATE
CJB	23.02.21

SCALE		STATUS	
SCALE	1:1000@A3	STATUS	PRELIMINARY

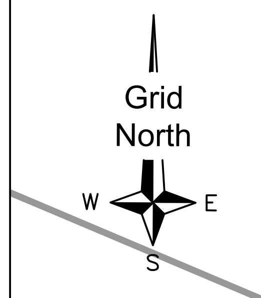
DRG. NO.	REV
F19123/04	A

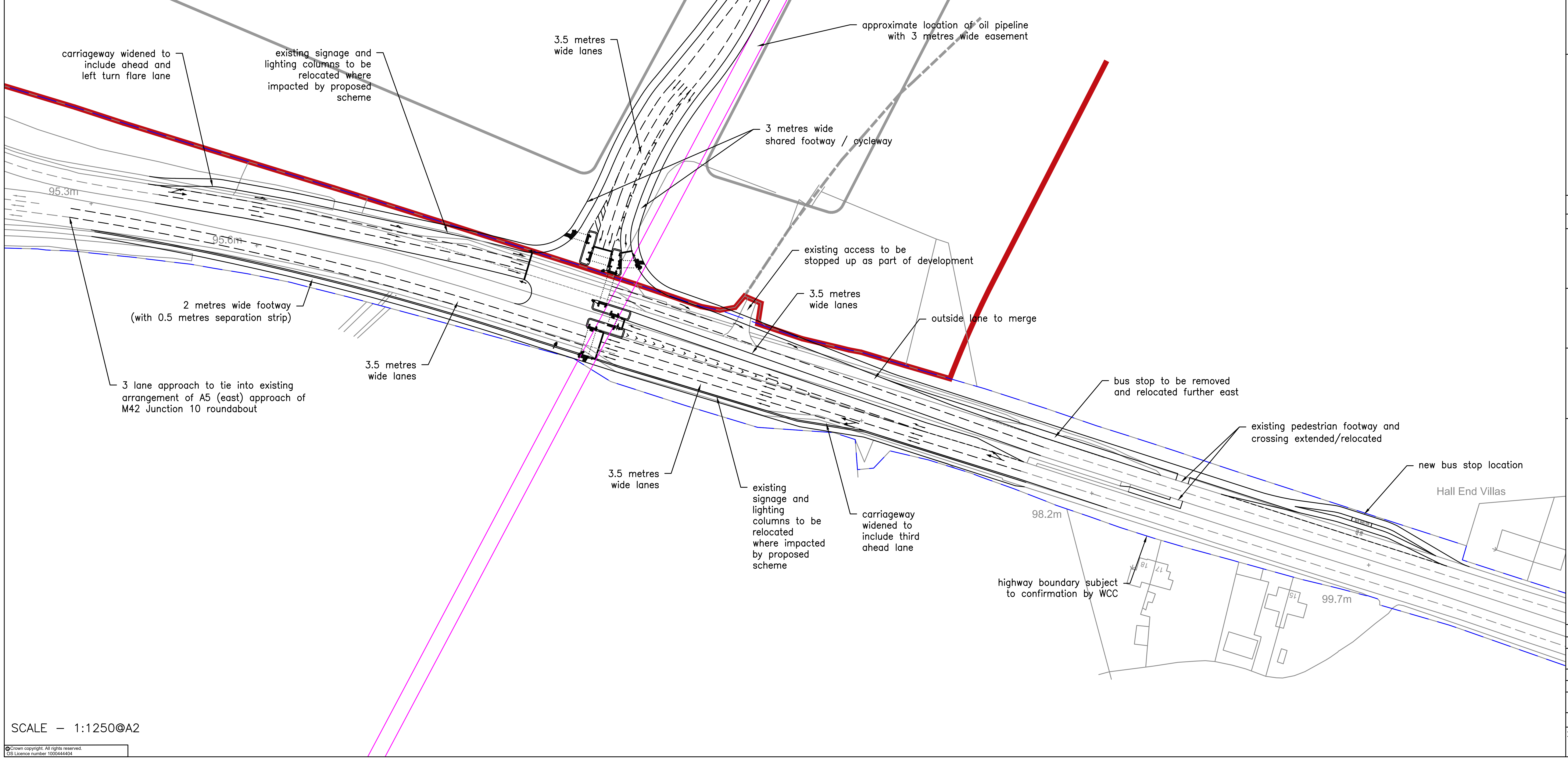
DRG. No.	REV. No.
F19123/07	A





SCALE – 1:500@A2





SCALE – 1:1250@A2

NOTES:

= above ground vehicle detector

= two aspect nearside pedestrian signals with push button

= kerbside detector

= on-crossing detector

= three aspect signal with primary visor

= three aspect signal with secondary visor

= primary signal with filter arrow

REV.	DATE	DESCRIPTION	DWN	CHK'D
A	28.04.21	UPDATED PEDESTRIAN ISLAND DIMENSIONS	WM	CJB

CLIENT

HODGETTS ESTATES

CONTRACT

PROPOSED EMPLOYMENT LAND
NORTHEAST OF J10 M42,
NORTH WARWICKSHIRE

TITLE

PROPOSED SITE ACCESS LAYOUT
(WITH EASEMENT SHOWN)

BANCROFT CONSULTING

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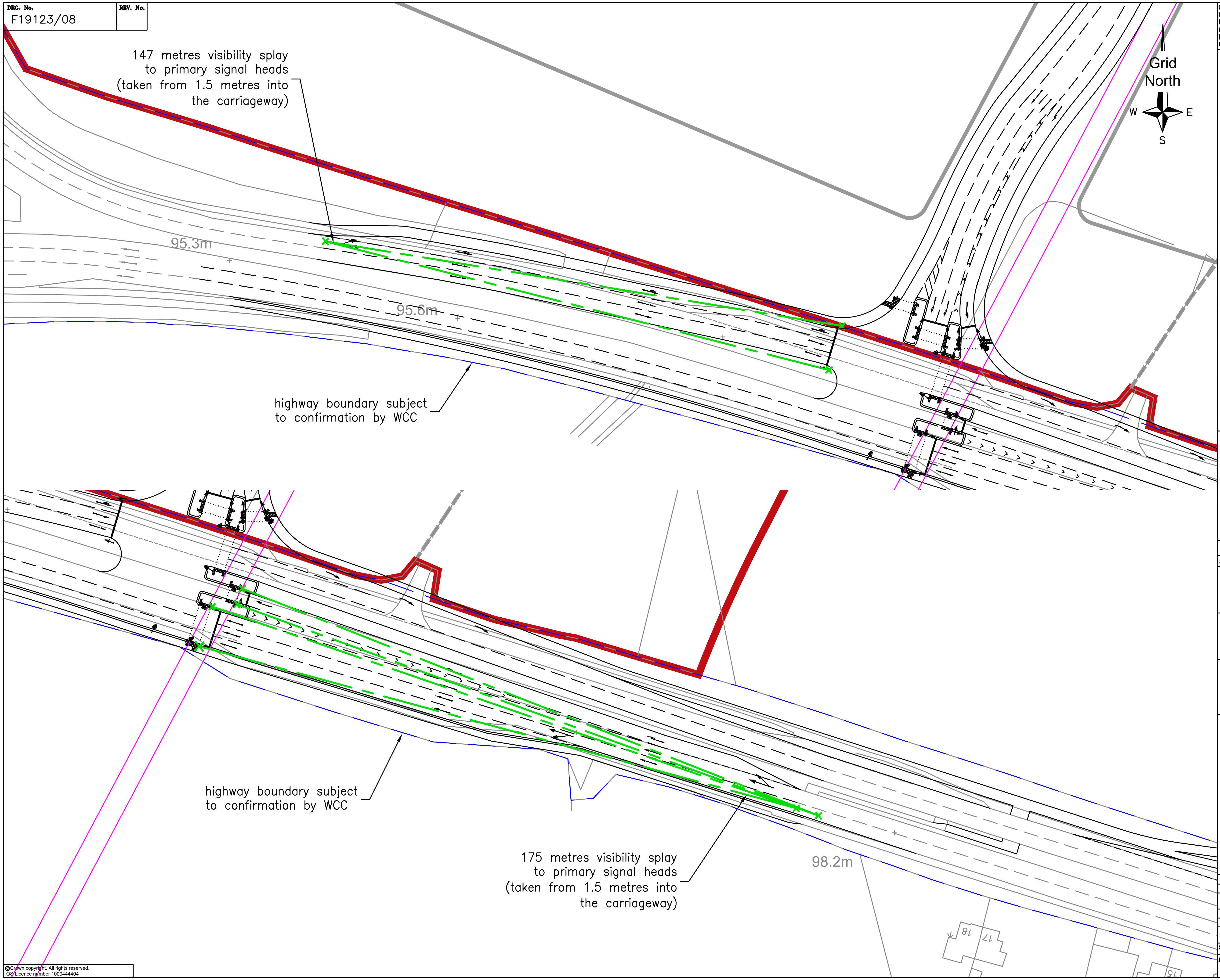
e office@bancroftconsulting.co.uk

DRAWN BY	
NAME (PRINT)	DATE
WM	16.03.21
CHECKED BY	
NAME (PRINT)	DATE
CJB	16.03.21

SCALE AS SHOWN
STATUS PRELIMINARY

DRG. NO. F19123/07
REV A

DRG. No. F19123/08 | REV. No.



NOTES:

REV.	DATE	DESCRIPTION	DWN	CHK'D

CLIENT

HODGETTS ESTATES

CONTRACT

PROPOSED EMPLOYMENT LAND
NORTHEAST OF J10 M42,
NORTH WARWICKSHIRE

TITLE

ASSESSMENT OF STOPPING SIGHT DISTANCES

BANCROFT CONSULTING

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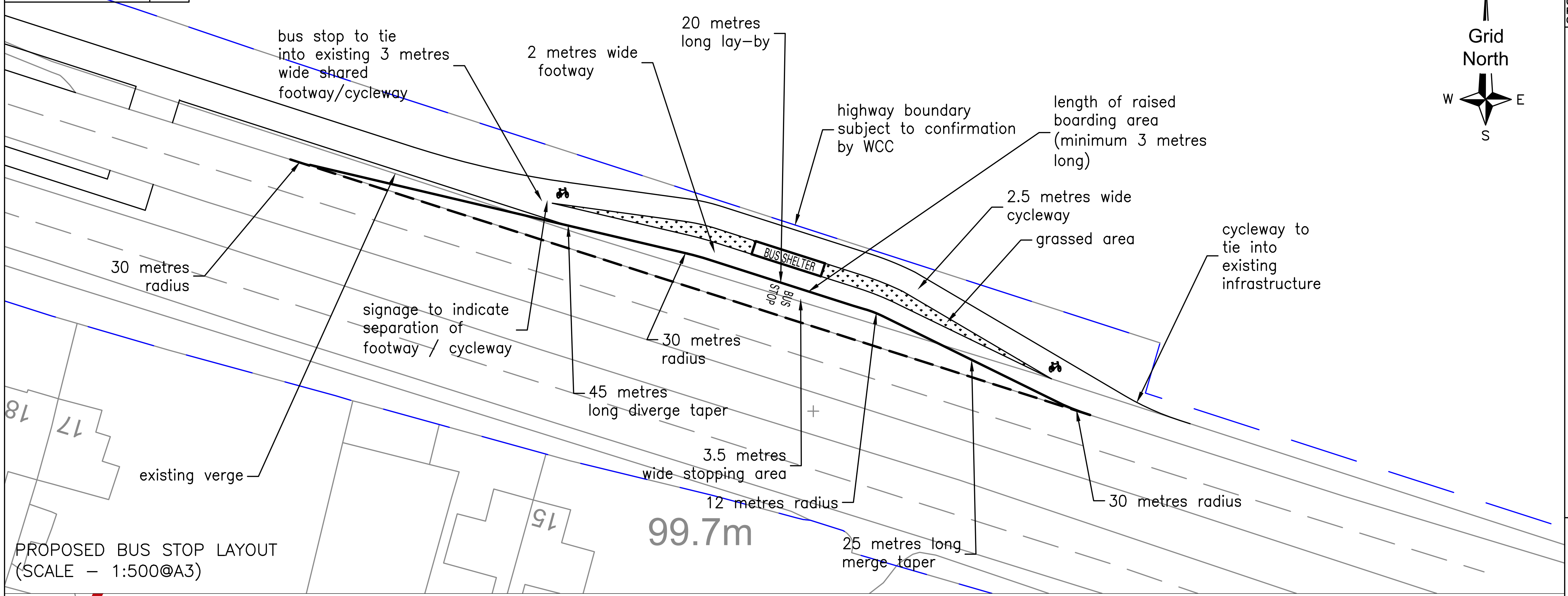
DRAWN BY	
NAME (PRINT)	DATE
WM	28.04.21
CHECKED BY	
NAME (PRINT)	DATE
CJB	28.04.21

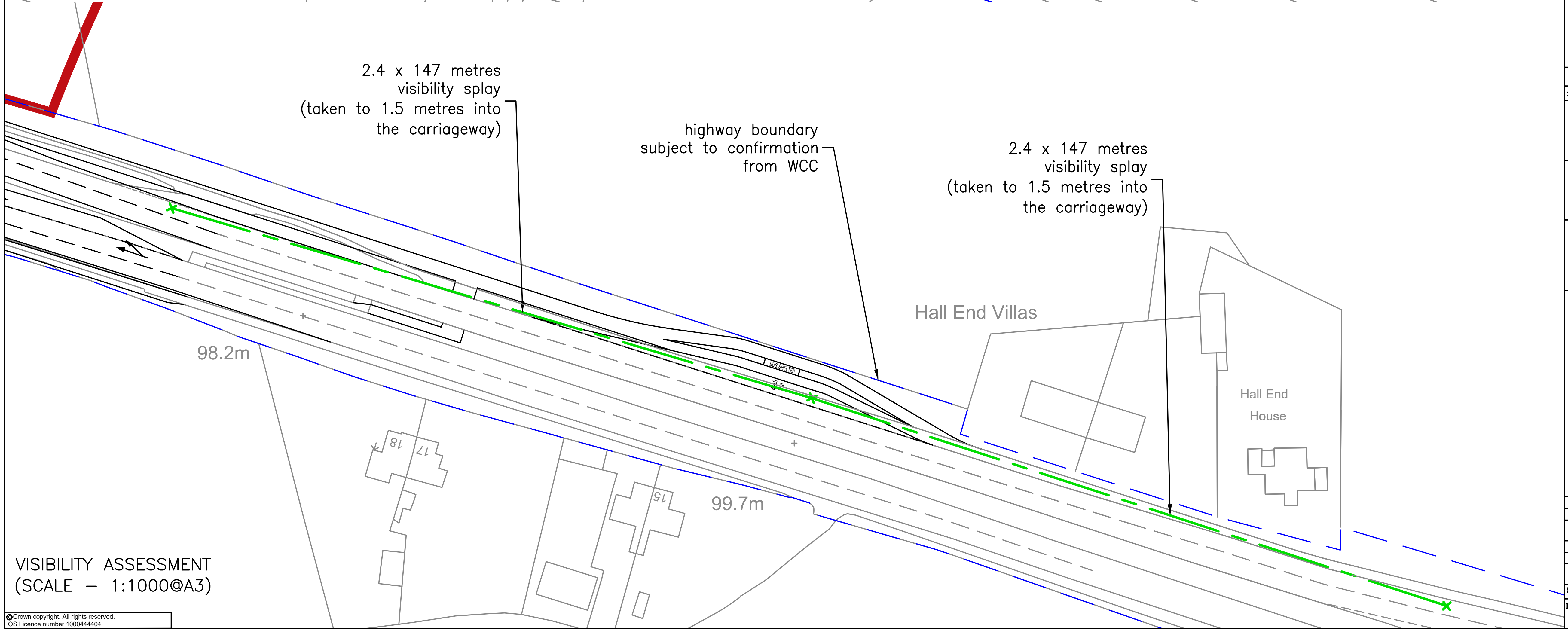
SCALE 1:1000@A3 | STATUS PRELIMINARY

DRG. No. F19123/08 | REV

DRG. No. F19123/09 | REV. No.



PROPOSED BUS STOP LAYOUT
(SCALE – 1:500@A3)



VISIBILITY ASSESSMENT
(SCALE – 1:1000@A3)

NOTES:
- LAYOUT SHOWN IN ACCORDANCE WITH PRINCIPLES OF DMRB CD–169.

REV.	DATE	DESCRIPTION	DWN	CHK'D

CLIENT
HODGETTS ESTATES

CONTRACT
PROPOSED EMPLOYMENT LAND
NORTHEAST OF J10 M42,
NORTH WARWICKSHIRE

TITLE
PROPOSED BUS STOP
IMPROVEMENTS

BANCROFT CONSULTING

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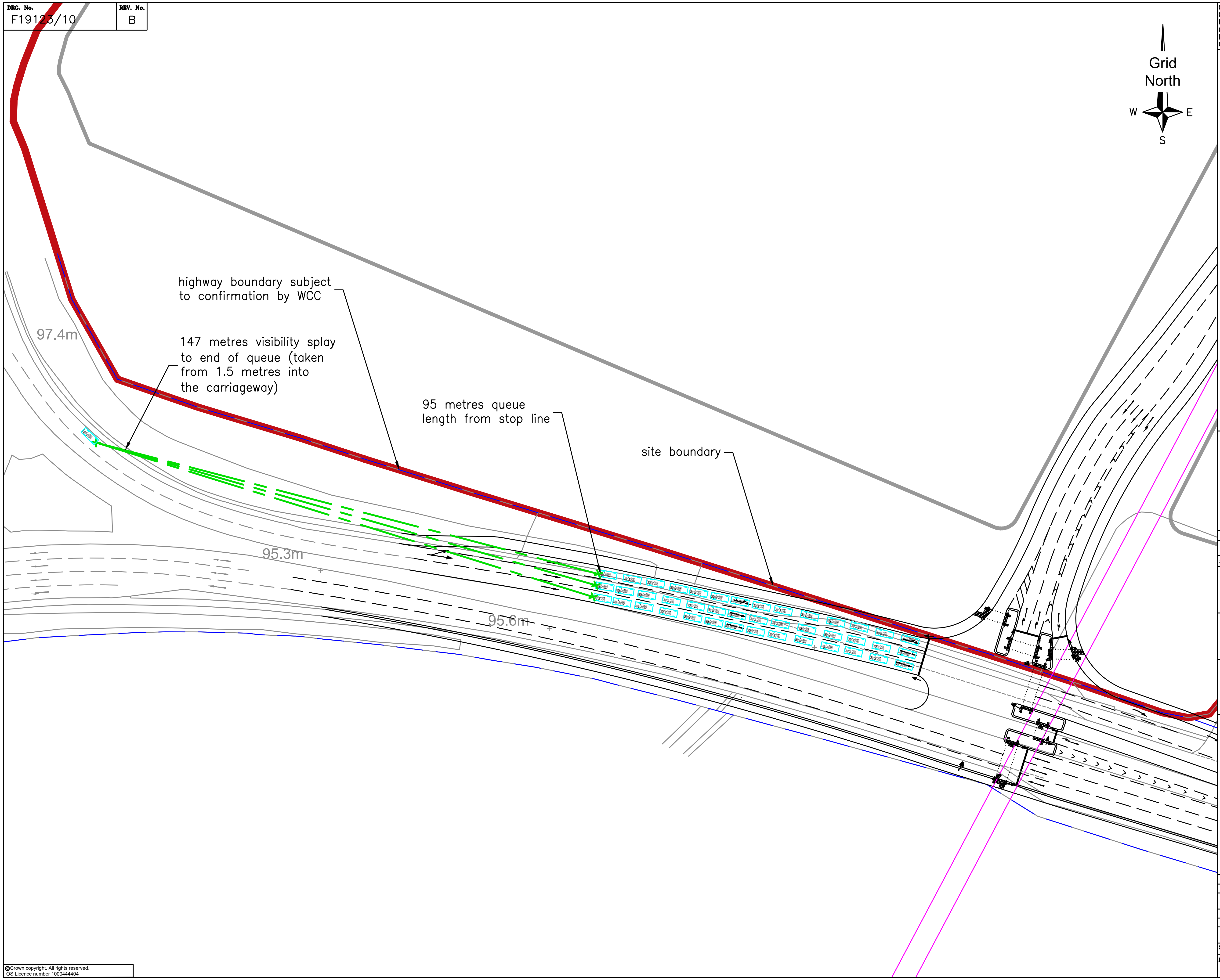
e office@bancroftconsulting.co.uk

DRAWN BY	
NAME (PRINT)	DATE
WM	28.04.21
CHECKED BY	
NAME (PRINT)	DATE
CJB	28.04.21

SCALE AS SHOWN | STATUS PRELIMINARY

DRG. NO. F19123/09 | REV

DRG. No. F19123/10 REV. No. B



NOTES:

REV.	DATE	DESCRIPTION	DWN	CHK'D
B	08.11.21	REVISED WITH UPDATED QUEUE LENGTH	WM	CJB
A	18.08.21	REVISED WITH UPDATED QUEUE LENGTH	WM	CJB

CLIENT

HODGETTS ESTATES

CONTRACT

PROPOSED EMPLOYMENT LAND
NORTHEAST OF J10 M42,
NORTH WARWICKSHIRE

TITLE

ASSESSMENT OF QUEUING
AND FORWARD VISIBILITY

BANCROFT CONSULTING

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DRAWN BY	
NAME (PRINT)	DATE
WM	07.05.21
CHECKED BY	
NAME (PRINT)	DATE
CJB	07.05.21

SCALE 1:1000@A3 STATUS PRELIMINARY

DRG. NO. F19123/10 REV B

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Hodgetts Estates

Proposed Employment Land Northeast of J10 M42, North Warwickshire

Transport Assessment

May 2021 (Revision C, November 2021)

VOLUME 2: APPENDICES A to H

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APPENDIX A - EXTRACTS FROM SCOPING STUDY

Hodgetts Estates

Proposed Employment Land Northeast of J10 M42, North Warwickshire

Scoping Study

October 2019

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Hodgetts Estates

Proposed Employment Land Northeast of J10 M42, North Warwickshire

Scoping Study

October 2019

Jarodale House, 7 Gregory Boulevard
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Tel: 0115 9602919
Email: office@bancroftconsulting.co.uk

AUTHOR:	KH	**CHECKED:**	CJB	**APPROVED:**	CJB	**STATUS:**	FINAL
REPORT REF:	F19123 Proposed Employment Land Northeast of the A5 Dordon - Scoping Study (Rev A, October 2019).doc						

DOCUMENT ISSUE RECORD

REVISION	**DATE**	**DESCRIPTION**
DRAFT	SEP 2019	Draft report issue to Project Team for comments
REV A	OCT 2019	Draft amended to reflect comments from Project Team

CONTENTS

TABLES

FIGURES

DRAWINGS

APPENDICES

Appendix A	Letter to North West Borough Council and Highways England
Appendix B	Extracts from Planning Application PAP/2014/0014
Appendix C	Extracts from Planning Application PAP/2014/0648 & Appeal APP/R3705/W/15/313
Appendix D	Extracts from Planning Application PAP/2013/026
Appendix E	TRICS details
Appendix F	Census 2011 Usual Place of Work percentage traffic distribution model
Appendix G	Census 2011 Method of Travel to Work' dataset

1.0 INTRODUCTION

1.1 Bancroft Consulting were commissioned by Hodgetts Estates to provide traffic and transportation advice regarding proposals for a development of mixed employment uses (B1(c), B2 and B8) on land to the northeast of junction 10 of the M42 motorway, North Warwickshire.

1.2 This Scoping Study (SS) details the generation, distribution and assignment of development trips and identifies the study area for further detailed assessment. This SS also considers a suitable access strategy to serve the site, as well as outlining existing conditions for travel by sustainable modes of transport.

1.3 The aim of this report is to agree the background information and scope for the remainder of the assessment with both the local highway authority, Warwickshire County Council (WCC), and Highways England (HE), who are responsible for trunk roads such as the A5 and M42 Motorway. The second stage will address the impact of development traffic and detail any opportunities for the developer to further encourage sustainable travel to and from the site, in keeping with current Government policy contained within the National Planning Policy Framework [NPPF] (MHCLG, February 2019).

1.4 The subsequent Transport Assessment (TA) will be prepared in accordance with, and provide a review of the following national and local policy / guidance documents:

- National Planning Policy Framework [NPPF] (MHCLG, February 2019)
- Planning Practice Guidance [PPG]
- Manual for Streets [MfS] (DfT, 2007)
- Manual for Streets 2 [MfS2] – Wider Application of Principles (CIHT, 2010)
- Design Manual for Roads and Bridges [DMRB]
- Department for Transport [DfT] Circular 02/2013 (September 2013)
- The Warwickshire Guide (Warwickshire County Council, 2001)
- North Warwickshire Borough Council [NWBC] Local Plan Draft Submission (November 2017)

1.5 As part of this SS, an initial site visit was undertaken on Wednesday 11 September 2019 between 0745 and 1200 hours, to assess the morning peak hour highway conditions at key off-site junctions in the vicinity of the site and identify any constraints affecting access. A vehicle speed survey was also undertaken at the site frontage on the A5 during the site visit, between 1000 and 1040 hours for the westbound direction, and between 1100 and 1130 hours for the eastbound direction, to measure speeds at the approximate location of the proposed site access. During this time, the weather conditions were mostly dry with some intermittent light rain

2.0 BACKGROUND INFORMATION

2.1 Land North-east of M42 Junction 10 Letter (April 2019)

2.1.1 In April 2019, Bancroft Consulting prepared a letter which set out the general principles relating to vehicular access in support of a potential allocation for employment development within the emerging NWBC Local Plan. This letter contained a potential access layout to access the site and was sent to both Ms K. Trueman at NWBC and Mrs E. Wong at HE. **Appendix A** contains a copy of the letter as well as the potential access layout (Drawing Number F18015/05), which comprises a new signal-controlled junction to serve land to the north of the A5.

2.2 Local Plan

2.2.1 In reviewing NWBC Local Plan Draft Submission (November 2017) nearby site allocations, there are further local plan sites that could require consideration.

2.2.2 With regard to housing sites, Policy H7 is located approximately 2 kilometres to the east of the site and relates to 'Land to east of Polesworth and Dordon'. Within the plan period, the site is proposed to be allocated for up to 2000 dwellings. It has been recommended that site will also need to provide a two form entry primary school, new vehicular access arrangements on to the A5, and to include off-site improvements to the local and strategic road network.

2.2.3 In relation to employment sites, Policy E2 is located approximately 0.5 kilometres to the southeast of the site and relates to 'Land to the west of Birch Coppice, Dordon'. The site is proposed to be allocated for a development of 5.1 hectares of employment. It is assumed that the site will be accessed via an existing entrance to an adjacent site. In addition to this site, Policy E3 is located approximately 1.2 kilometres to the east of the site and relates to 'Land including site of playing fields south of A5 Dordon, adjacent to Hall End Farm'. The site is proposed to be allocated for a development of 3.45 hectares of employment and no reference to a new access has been mentioned, hence it is assumed that the site would be accessed via an existing access to an adjacent site.

2.2.4 Given this local plan has not yet been approved, it extends to the year 2033 and the sites have not come forward in the form of planning applications, no further assessment should be required as part of the TA of these local plan sites.

2.3 Committed development

2.3.1 A review of NWBC's planning database, along with observations made during the site visit, have been used to establish if there are any current or consented developments in the surrounding area that should potentially be taken into account as part of the TA. At this stage, the SS looks to identify the committed developments which will require further assessment at the TA stage, and what level of occupation (if any) has already occurred at these sites. Details of these developments are as follows:

Land to South West of Junction 10 on M42, Watling Street, Dordon (outline planning application reference: PAP/2014/0014)

- Outline consent granted in January 2014 for mixed use development (B1(c), B2 and B8) comprising 19,562sqm, of which a maximum of 10% will be available for B1(c) / B2 use.
- Phil Jones Associates prepared a TA in December 2013 which outlined the development proposals, trip rates, distribution, assignment and off-site capacity assessments.
- Relevant extracts of the Decision Notice and TA are contained at **Appendix B**.
- On-site observations confirmed that the development is built out and occupied, hence the traffic flows proposed in the TA should be picked up as part of any traffic counts undertaken. Therefore no further assessment will be undertaken of this site.

Land to South East of Junction 10, M42, Trinity Road, Dordon (outline planning application reference: PAP/2014/0648 & appeal reference: APP/R3705/W/15/313 6495)

- The site was initially refused by NWDC on 18 December 2014, however overturned at an appeal on 28 November 2016. The development comprised up to 80,000sqm of mixed B1(c), B2 and B8 land uses, of which circa 75% comprised B8 use whilst the remaining 25% would comprise B1(c) / B2 uses.

- Phil Jones Associates initially prepared a TA in December 2014 which outlined the development proposals, trip rates, distribution, assignment and off-site capacity assessments. As part of public inquiry, Phil Jones Associates prepared a Statement of Common Ground (SoCG) which set out the key details relating to highways and transport matter. This was signed by both WCC and HE in January 2016, agreeing to all matters set out in the TA.
- Relevant extracts of the Decision Notices, TA and SoCG are contained at **Appendix C**.
- On site observations noted these units are near completion, but not yet occupied.

Business Park, Hall End Farm, Watling Street, Dordon (outline planning application reference: PAP/2013/0269) [now known as Core 42 Business Park]

- Outline consent granted in April 2014 for mixed use development (B1(c), B2 and B8) comprising 63,000sqm.
- Bancroft Consulting prepared a TA in May 2013 which outlined the development proposals, trip rates, distribution, assignment and off-site capacity assessments.
- Relevant extracts of the Decision Notice and TA are contained at **Appendix D**.
- On-site observations confirmed that the development is partially built out, with only 1 out of the 6 zones built and occupied (Core 2), with the Core 3 building due to be occupied within the coming months. Hence, a 20% reduction factor will be applied to the proposed traffic flows contained within the TA as these should be picked up as part of any traffic county surveys undertaken.

2.3.2 As part of the Scoping Response, it should be confirmed by WCC / HE whether any further committed development sites should be assessed.

3.0 EXISTING CONDITIONS

3.1 General

3.1.1 The site comprises undeveloped land located at the northern edge of the A5, approximately 1.5 kilometres west of Dordon in Warwickshire. It measures approximately 32.5 hectares in area and is bound by the A5 to the south, the M42 to the west, residential properties to the north and undeveloped land to the east. The site location in the context of the surrounding area is shown at **Figure 1**, whilst a detailed site location plan is shown at **Figure 2**.

3.1.2 The immediate surrounding area is urban fringe in character, with open undeveloped land to the east but built up areas to the north (Birchmoor), south (St Modwen's Park, Tamworth) and west (Tamworth). The villages of Dordon and Polesworth are located to the northeast. Both of these villages mainly comprise residential development. Further afield, the eastern extent of Tamworth is located to the west of the M42 motorway west of the site, whilst Birmingham is located approximately 20 kilometres south-west.

3.2 Highways

3.2.1 The site is currently primarily served via an access at the A5 frontage. It comprises a 16 metres wide dropped kerb arrangement with an access width of 8 metres. Given that the A5 is dualled past the site, this junction only accommodates left-in and left-out turning movements. There is a secondary point of access to the east from the A5 opposite Core 42 and via the existing farm track, which in part also serves as Footpath AE46.

3.2.2 The A5 is a key strategic route that extends between Junction 9 of the M1 Motorway (north of London) and Holyhead in North Wales. In the vicinity of the site, it extends between Tamworth to the north-west and Hinckley to the east. The A5 is dualled as it passes the site with two traffic lanes in each direction, measuring approximately 18 metres wide with a kerbed central reserve (approximately 5 metres wide) and footways with street lighting on both sides of the carriageway. Traffic passing the site is subject to the national speed limit, which reduces to 50mph approximately 180 metres to the east of the existing access.

3.2.3 Approximately 580 metres east of the existing site access, the A5 features a large signal-controlled T-junction arrangement that serves the Birch Coppice Business Park. The layout includes three lanes on the westbound approach, two for ahead only movements and one for left-turns. The eastbound approach comprises four lanes, two for ahead only movements and two for right-turns. The minor arm approach includes three lanes, two for left-turns and one for right-turns. This arrangement also includes another signal-controlled access road adjacent to the minor arm, which extends from the radius of the junction and to maintain an existing right of access. Staggered signal-controlled pedestrian crossings are located at both the eastern and southern arms of this junction. Morning peak hour observations confirmed that there were no congestion problems at this junction, noting that all queueing traffic suitably passed through in each green signal.

3.2.4 To the west of the site, the A5 leads to a large grade-separated roundabout with Junction 10 of the M42 Motorway, which is fully signal-controlled. As well as linking the M42 with the A5, this junction also provides access to Trinity Road to the south (which leads to Freasley) and Green Lane to the north (which leads to Relay Business Park and Tamworth Moto motorway services area). The M42 leads towards the M1 Motorway, Nottingham, and Derby to the north, with the M6 Motorway and Birmingham to the south. To the west of this roundabout the A5 leads towards Tamworth. In October 2014, a £3 million Pinch Point Funding scheme was completed at this junction to improve capacity and safety at the junction (scheme drawings are contained at Appendix B of TA within **Appendix C**). This included a full signalisation of Trinity Road and the Motorway Services arms, widening of the carriageway from the M42 southern slip to the A5 (west), widening of Trinity Road approach carriageway and installation of new pedestrian crossings including tactile paving and widening of the footway on the A5 (west) arm. On-site observations of the morning peak noted queueing of approximately circa 200 to 300 metres on the A5 (west) arm, with all queueing on the remaining arms passing through in the corresponding green signal.

3.3 Pedestrian travel

3.3.1 Table 3.2 of The Institute of Highways & Transportation’s publication ‘Guidelines for Providing for Journeys on Foot’ (2000) provides suitable walking distances and is summarised below:

	Town Centres (m)	Commuting / School / Sight-seeing (m)	Elsewhere (m)
Desirable	200	500	400
Acceptable	400	1000	800
Preferred Maximum	800	2000	1200

3.3.2 Using the above guidance, **Figure 3** identifies opportunities for pedestrian travel to the site, based on developments that are contained within a 2 kilometres isochrone. It demonstrates that parts of Dordon, Polesworth and Tamworth are within a reasonable walking distance of the site, as well as the Birch Coppice Business Park and the motorway services area. Both Dordon and Polesworth include several amenities including schools, local shops, public houses and a sports centre.

3.3.3 There are a number of Public Rights of Way (PROW) within the surrounding area, as shown in **Figure 4** (as extracted from www.rowmaps.com). Bridleway AE45/1 runs along the eastern site boundary in a north / south direction. This provides a link between the A5 and Birchmoor and would be incorporated within any future masterplan and considered fully as part of the TA.

3.3.4 A footway extends along the southern edge of the A5 past the site, measuring approximately 1.8 metres wide. Along the northern edge of the carriageway, a 2 metres wide shared footway / cycleway exists. On-site observations confirmed that the northern facility was frequently used by pedestrians and cyclists, whilst the southern edge was used less frequently. To the west, these facilities extend to the M42/A5 roundabout where, as per the 2014 improvements to the junction, all arms include dropped kerbs and tactile paving crossings. On-site observations confirmed that there appeared to be sufficient time for pedestrians and cyclists to cross when the signals were on red.

3.4 Cycle travel

3.4.1 With reference to acceptable cycling distances, Paragraph 1.5.1 of DfT's Local Transport Note 2/08 'Cycle Infrastructure Design' states that:

> *"In common with other modes, many utility cycle journeys are under three miles (ECF, 1998), although, for commuter journeys, a trip distance of over five miles is not uncommon. Novice and occasional leisure cyclists will cycle longer distances where the cycle ride is the primary purpose of their journey."*

3.4.2 **Figure 5** shows a 5 kilometres catchment area centred on the site, which demonstrates that a number of key settlements are within a reasonable cycling distance, including Polesworth, Dordon, Grendon, Kingsbury and the majority of Tamworth.

3.4.3 The Sustrans website (www.sustans.org.uk) indicates that there are no dedicated cycle route facilities in the immediate vicinity of the site. However, on-site observations confirm that a shared footway / cycleway exists along the northern edge of the A5, between Tamworth and Dordon. Furthermore, at approximately 370 metres to the east of the site access, a shared footway / cycleway facility commences at the southern edge of the A5, connecting trips to Birch Coppice.

3.4.4 A number of the other surrounding roads also have a generally flat topography and are wide enough to accommodate cyclists within the carriageway. Furthermore, the Sustrans website indicates that there are several dedicated traffic-free cycle routes slightly further afield, including a canalside path past Polesworth to the north and several cyclepaths on other roads leading towards Tamworth to the west of the M42.

3.5 Bus travel

3.5.1 For public transport facilities, Section of 5.5 of The Warwickshire Guide recommends that:

> *"the optimum position for passengers' convenience such that they will have no more than 400 metres to walk to or from their final destination."*

3.5.2 Details of local bus services within 400 metres of the site were obtained and have been summarised in **Table 1**, with the routes shown in **Figure 6**. **Figure 6** demonstrates that a total of four bus routes operate within 400 metres of the site and provide access to a number of locations such as Atherstone, Grendon, Dordon, Polesworth, Amington, Austrey and Tamworth. **Table 1** confirms route 766, 767, 785 and 786 operate a combined frequency two buses every hour in each direction, Monday to Saturday, with one bus every 2 hours on Sundays.

3.5.3 The closest bus stop is located at the northern edge of the A5, approximately 150 metres to the east of the existing access. This comprises a bus pull in lay-by with no flag and pole arrangement serving eastbound services for Routes 766 and 767. To access the westbound service, the closest bus stop is located within the Birch Coppice Business Park, approximately 870 metres to the southwest of the existing access.

3.5.4 **Figure 6** also shows that further bus stops are located on Birchmoor Street, approximately 350 metres north of the site which comprise a flag and pole type arrangement for services in both direction for Routes 785 and 786. The existing bridleway provides a suitable walking connection to these bus stops and would be assessed further within the TA.

3.6 Accident Study

3.6.1 As part of the future TA, an assessment of Personal Injury Accident records for the agreed study area will be carried out to cover the last three years. In accordance with current government guidance, this should be extended to a five-year period if the study area has been identified as being within a high accident area (defined as a cluster of more than 3 accidents for the purpose of this assessment). This would seek to identify existing highway safety issues that could be exacerbated by increases in movements associated with the proposed development. The precise extent of area for the accident study will be defined as being where material change in peak hour traffic conditions are likely to occur.

4.0 DEVELOPMENT PROPOSALS

4.1 For the purpose of this study, the proposed development will comprise up to 120,000sqm B1 / B2 / B8 land use buildings within a total site area of 32.5 hectares. It is anticipated that an outline planning application for the proposals will be submitted during early to mid 2020. Hence, it is anticipated that the scheme could be built out and occupied around 2025.

4.2 Access to the business park would be provided via a new signalised access point off the A5. The proposed access arrangement is discussed in greater detail in **Section 8** of this Scoping Study.

5.0 ASSESSMENT YEARS

5.1 With regard to the assessment of development impact, Paragraphs 25 and 27 of DfT Circular 02/13 state:

> *"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 the greater."* [Paragraph 25]
>
> *"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."* [Paragraph 27]

5.2 Footnote 9 of Paragraph 27 confirms that *"the opening year of the development shall be taken to the date at which the development first becomes available for occupation"*.

5.3 In accordance with the above, the TA will assess the following design years:

- 2019 Base Year
- 2025 Opening Year
- 2030 Future Year

5.4 Assuming that traffic surveys to determine the existing traffic flows within the surrounding highway network are carried out in 2019, it is recommended that these flows are growthed to the opening year of 2025 using a factor of 1.0581 for the AM peak and 1.0560 for the PM peak, based on information taken from the TEMPRO 7.2 dataset for the North Warwickshire 002 district. It is also recommended that a TEMPRO growth factor of 1.0915 and 1.0890 is used to convert existing 2019 traffic flows to 2030 future year flows in the AM and PM peaks respectively.

6.0 TRIP GENERATION

6.1 TRICS based Trip Generation (120,000sqm GFA business park expansion)

6.1.1 The TRICS database was examined to identify suitable trip rates to calculate the potential peak hour and daily traffic movements that could be generated by the proposed development. The 'Employment – Industrial Estate' category was searched, specifying sites between 10,000 and 974,258 sqm (maximum default) in gross floor area (GFA). All sites located within the Greater London, Ireland and Scotland regions were removed along with any sites situated within a 'Free Standing' location. All weekend data was also excluded. The above search resulted in a total of 16 surveys from 16 sites. Full details of the TRICS output data is included at **Appendix E**.

6.1.2 Following an inspection of the rank order list table and the site details, three sites were considered as suitable comparisons to the proposed development, noting that no individual site stood out as being directly comparable. The first site was a development of 12,900sqm in Kettering, Northamptonshire (TRICS reference: NR-02-D-01), which comprised a 25% B1(a) / 75% B8 split. The second was a development of 150,564sqm GFA in Rugby, Warwickshire (TRICS reference: WK-02-D-01) and featured a 10% B1(a) / 10% B1(b) / 40% B1(c) / 40% B8 split. The final site selected was a development of 84,575 sqm GFA in Evesham, Worcestershire (TRICS reference: WO-02-D-03) and consisted of a 20% B1(a) / 10% B1 (b) / 30% B1(c) / 20% B2 / 20% B8 split. All three sites have direct access onto an 'A' road and are located within 3 kilometres of a Town Centre. Furthermore, Kettering, Rugby and Evesham are all located well when connecting to strategic roads across the country, as per the site with the A5 and the M42. In addition, two of the sites comprise a mixed land use of B1 and B8, whilst the third site selected comprises B1, B2 and B8, hence the trips reflect a range of employments uses.

6.1.3 The following trip rates (per 100sqm gross floor area) were therefore considered appropriate for the proposed business park:

• morning peak (0800 to 0900 hours)	0.285 arrive	0.095 depart

evening peak (1700 to 1800 hours)	0.058 arrive	0.286 depart
daily	1.902 arrive	1.880 depart

6.1.4 In addition to the above, the following weekday and peak hourly trip rates for Ordinary Goods Vehicle (OGV) movements were also considered appropriate for the proposed business park:

morning peak	0.016 arrive	0.021 depart
evening peak	0.015 arrive	0.012 depart
daily	0.246 arrive	0.230 depart

6.2 Trip Generation Calibration Check

6.2.1 In considering the suitability of the above trip rates, details of the consented ‘Land to South East of Junction 10, M42, Trinity Road, Dordon’ site have also been reviewed (see **Appendix C**). The TA for the site comprised an approximate 25% B1(c) & B2 / 75% B8 split for the 80,000sqm mixed use development and adopted the following peak hour trip rates, noting that both WCC and HE agreed these trip rates:

morning peak	0.172 arrive	0.043 depart
evening peak	0.034 arrive	0.155 depart

6.2.2 In addition to the above, the following weekday and peak hourly trip rates for OGV movements were also considered appropriate for the consented business park:

morning peak	0.016 arrive	0.016 depart
evening peak	0.020 arrive	0.013 depart

6.2.3 The above assessment confirms that slightly lower two-way peak hour trip rates were adopted in both the morning and evening peak for the consented ‘Land to South East of Junction 10, M42, Trinity Road, Dordon’ site. Whilst the trip rates are comparable, the agreed status of the trips with the consented development hold more weight given its location and employment split are directly comparable to the site. In addition, the TRICS search provided limited B2 land uses within the search. In light of this, adopting the consented trip rates should be acceptable.

6.3 Proposed Traffic Generation

6.3.1 In light of the above validation check, the consented ‘‘Land to South East of Junction 10, M42, Trinity Road, Dordon’ trip rates have been considered appropriates. Hence, it can be considered that the proposed business parking could generate the following peak hour all vehicle movements:

• morning peak	206 arrive	52 depart	258 total
• evening peak	41 arrive	186 depart	227 total

6.3.2 In addition to the above, the consented OGV trip rates could generate the following peak hour movements for the proposed business park:

• morning peak	19 arrive	19 depart	38 total
• evening peak	23 arrive	16 depart	39 total

7.0 DISTRIBUTION MODEL AND TRAFFIC ASSIGNMENT

7.1 Distribution

7.1.1 To help provide an understanding of how the above traffic might disperse from the site access onto the surrounding road network, a distribution model has been created using the Census 2011 'Location of usual residence and place of work by method of travel to work' dataset (WU03EW). The Census distribution model takes into account the usual place of residence for people that work within the North Warwickshire 002 Middle Super Output Area (MSOA), who travel to work by car. All districts with less than 20 employees were discounted, as these areas only accounted for less than 0.5% of total journeys. **Appendix F** presents the findings of these distribution calculations. **Figure 7** shows the percentage distribution pattern for arrivals and departures at the site access as summarised below:

Route	Percentage Distribution
A5 (east)	14%
A5 (east) – Long Street (north)	6%
A5 (east) – Boot Hill (south)	6%
A5 (west)	11%
A5 (west) – M42 (north)	5%
A5 (west) – M42 (south)	18%
A5 (west) – Trinity Road (south)	1%
A5 (west) – Marlborough Way (north)	16%
A5 (west) – A51 (north)	16%
Locally distributed within Dordon (to the east)	7%

7.1.2 Overall at the site access location, **Figure 7** confirms that 67% of trips were distributed to the west and 33% to the east at the A5.

7.1.3 In considering the suitability of the above distribution pattern, details of the consented 'Land to South East of Junction 10, M42, Trinity Road, Dordon' site have also been reviewed (see **Appendix C**). The Transport Assessment for the site adopted used the distribution model for existing Birch Coppice Business Park and was agreed by both WCC and HE. This model distributed 68% of trips to the west and 32% to the east along the A5. Hence it can be considered that the distribution model assessed within this Scoping Study should be deemed acceptable.

7.2 Distribution

7.2.1 The proposed development morning and evening peak hour traffic generation was assigned to the surrounding highway network based on the values in the distribution models shown in **Figure 7**. The resulting peak hour traffic assignment within the surrounding highway network is shown in **Figure 8**.

8.0 SITE ACCESS

8.1 Chapter 5 of 'The Warwickshire Guide' provides guidance on the design of road layouts for industrial developments. It confirms that for large industrial developments, a 7.3 metres wide access road would be required to cater for a significant number of heavy goods vehicles. Hence the internal road should comprise a width of at least 7.3 metres wide.

8.2 **Drawing Number F19123/01** shows how a new signal-controlled junction could be delivered at the A5. This junction has been located approximately 55 metres west of the existing access, noting that this would be stopped up as part of the proposals. The location is deemed most appropriate as it would locate the new junction circa 300 metres east of the A5 (west) entry / exit arms to Junction 10 of the M42 and 600 metres west of the Birch Coppice Business Park signalised junction. The site access arm would have 4 lanes, comprising 3 exit lanes and one entry lane, noting that an un-opposed segregated left-turn entry would cater for eastbound arrivals from the M42 / A5 junction. The A5 eastbound ahead and site access lanes would comprise 3.65 meters wide each, whilst the A5 westbound lanes would comprise 3.5 metres wide each.

8.3 In addition to the above, the new signal-controlled junction would also include pedestrian crossing at the A5 (eastern) and Site Access arms of the junction.

8.4 The access shown at **Drawing Number F19123/01** has been designed in accordance with the recently published CD 123 'Geometric design of at-grade priority and signal-controlled junctions' of DMRB (August 2019), specifically Chapter 7 which refers to 'Geometric design of signal-controlled junctions.

9.0 PARKING AND SERVICING REQUIREMENTS

9.1 Car parking

9.1.1 Appendix 4 of NWBC's Local Plan (2006) contains maximum car parking standards for various types of development. For B1, B2, and B8 uses, it states the following maximum requirements:

- B1 Offices - 1 space per 75sqm up to 2499sqm
  - 1 space per 30sqm above 2500sqm
- B2 Industry - 1 space per 100sqm
- B8 Warehousing - 1 space per 150sqm

9.1.2 Once the precise split of B1, B2, and B8 uses at the proposed development is determined, the above thresholds should be used to calculate the maximum number of car parking spaces that could be provided at the site. The spaces would be distributed throughout the site to reflect the required provision for each individual land use.

9.1.3 Notwithstanding the above, it should be noted that the application seeks flexible B1(c) / B2 / B8 land use across the site, which is commonplace for these types of applications. However, if the final occupier operates a specific unit as either B1 or B2 land use, then additional parking spaces will be provided within the servicing yard, as these land uses typically generate a lower demand for lorry spaces when compared to B8.

9.1.4 With regard to mobility parking standards, it states that for employees and visitors to business uses, 6 disabled bays plus 2% of the total car parking capacity should be provided, where there are over 200 spaces in total. This standard should therefore be applied for the proposed development once the exact number of spaces to be provided has been determined.

9.1.5 In addition to the above, provision will be made for electric vehicle charging points (including rapid charging) throughout the site, with details of numbers and locations to be considered and presented within the Transport Assessment.

9.2 Cycles and powered two-wheeler parking

9.2.1 Appendix 4 of the NWBC Local Plan also contains minimum parking standards for cycles and powered two-wheeler vehicles. For the proposed development uses these are as follows:

Cycle Parking

- B1 Offices - 1 space per 200sqm
- B2 Industry - 1 space per 500sqm
- B8 Warehousing - 1 space per 1000sqm

Powered two-wheeler parking

- All uses - 1 space plus 1 additional space for every 10 car parking spaces required by the maximum standards

9.2.2 The above thresholds should be used to calculate the minimum number of cycle and powered two-wheeler parking spaces to be provided at the site.

9.3 Servicing requirements

9.3.1 The proposed development would also need to accommodate sufficient parking, loading, and turning facilities for large goods vehicles. The NWBC Local Plan does not contain any standards for service vehicle parking, however the document 'Transport for Roads and Developments: The Warwickshire Guide' (Warwickshire County Council, 2001) indicates that industrial / business units should provide adequate turning areas for large vehicles as well as sufficient parking/loading spaces to accommodate predicted demand.

9.3.2 Given the lack of local guidance with regard to serving provision, commonly accepted parking standards used by nearby highway authorities have been adopted:

- B1 Light Industry: one lorry space for every 500sqm.
- B2 General Industrial: one lorry space for every 500sqm.
- B8 Storage and Distribution: one lorry space for every 400sqm.

9.3.3 At this stage, the exact breakdown of B1, B2 and B8 land use is unknown, however the above parking standards should be adhered to in any detailed masterplan.

9.3.4 In terms of refuse collections, Paragraph 6.8.11 of Manual for Streets recommends that:

> *“the distance over which containers are transported by collectors should not normally exceed 15 m for two-wheeled containers, and 10 m for four-wheeled containers.”*

9.3.5 Any subsequent masterplan should ensure that suitable bin storage areas are provided at convenient locations across the site, such that refuse vehicles can travel to within the maximum carrying distances outlined above. There should also be suitable turning heads provided such that all service vehicles can enter and depart the site in a forward gear.

10.0 MODAL SPLIT AND PERSON TRIP GENERATION

10.1 The key emphasis of the NPPF is on the need for all new developments to be sustainable. Part of this requirement for sustainability means *"offering a genuine choice"* for travel to and from sites by non-car modes, as set out in paragraphs 102, 103, 108 and 110 of the NPPF in particular.

10.2 In light of the above requirements, as part of the TA the Census 2011 'Method of Travel to Work' dataset (QS701EW) from the National Statistics website will be examined to identify a suitable modal split for the site, to help calculate the potential increase in person trips by all modes. This shows the following modal split for people travelling to the North Warwickshire 002 MSOA (a copy of the output data from the website is contained at **Appendix G**):

• by underground, metro, light rail or tram	0.2%
• by train	0.2%
• by bus, minibus or coach	1.8%
• by taxi or minicab	0.7%
• by motorcycle / scooter / moped	1.3%
• by car / van (as driver)	77.7%
• by car / van (as passenger)	10.5%
• on bicycle	2.6%
• on foot	4.7%
• other method	0.3%

10.3 To calculate the hourly amount of person trips by each mode, the following approach was adopted:

- 77.7% of car / van drivers is equal to 258 total car movements during the busiest (morning) peak hour.
- 258 / 77.7 equals the number of person trips per percent, or 3.32.
- The morning peak hour person trips can therefore be calculated by multiplying the modal percentage for each category by 3.32.

10.4 The traffic generation calculations for the proposed development did not provide daily trips. Hence, the following multi modal calculations review the maximum peak hour, noting that these trips are likely to be generated throughout the day as the mixed uses of employment would result in various shift patterns of people arriving / departing.

10.5 Using the above process, it was possible to calculate that the proposed development would generate the following peak hour person trips:

	peak hour
by underground, metro, light rail or tram	1
by train	1
by bus	6
by taxi or minicab	2
by motorcycle / scooter / moped	4
by car / van (as driver)	258
by car / van (as passenger)	35
on bicycle	9
on foot	16
other method	1

10.6 The above calculations show that the proposed development would result in a maximum peak hour increase of 16 pedestrian and 9 cyclist movements. With regard to existing infrastructure, there is a footway and shared footway / cycleway located at the southern and northern edge of the A5 respectively. In addition, the implementation of the proposed signal junction to serve the development also includes dedicated signal-controlled crossings. Furthermore, any future masterplan would incorporate the existing bridleway that runs through the site to provide a direct link between the site to Polesworth.

10.7 In light of the above, it is considered that the existing pedestrian and cyclist facilities in the vicinity of the site should be sufficient to accommodate these increases without requiring any mitigating improvements, provided that suitable on-site facilities and links are identified within the Transport Assessment. This should include suitable cycle parking facilities in accordance with the local standards highlighted above.

10.8 The above calculations also demonstrate that the proposed development would result in an increase of 8 hourly public transport user trips, which would generally comprise bus passenger movements. Whilst there is only a moderate amount of bus services currently operating within a reasonable walking distance of the site, it is considered that the additional passenger trips should be comfortably accommodated by the existing services and stop facilities. Given the relatively low demand, it is considered that there should be no requirement to extend bus routes into the site itself.

10.9 Notwithstanding the above, opportunities to bring the bus facilities into the site could be explored, noting this would be through a consultation process with the local bus providers. This could be in the form of a terminal at the site access or internally as per the Birch Coppice Business Park and St Modwen's Park Tamworth.

10.10 Further to the above, the proposed development would also be supported by a Travel Plan to encourage staff and visitor trips by sustainable modes. This will include potential measures such as Personalised Journey Planners, discounted bus tickets and newsletters.

11.0 STUDY AREA AND SCOPE FOR FURTHER ASSESSMENT

11.1 Current national policy in the NPPF no longer provides a numerical value for determining where significant impact could occur and instead states in Paragraph 109 that:

> *"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."*

11.2 Furthermore, Planning Practice Guidance (PPG) documentation includes advice on 'Travel Plans, Transport Assessments and Statements', which provides guidance to assist local planning authorities assess impact of developments. Paragraph 013 of this guidance states:

> *"Local planning authorities must make a judgement as to whether a development proposal would generate significant amounts of movement on a case by case basis"*

11.3 In light of current policy guidance, the approach taken in any assessment should adopt a rounded view on impact that considers traffic increases in the context of existing conditions at particular junctions and links, such as whether there are any current capacity or highway safety issues. This all-encompassing approach to assessment helps to address the specific question of whether or not an impact could be defined as severe.

11.4 Predating the above policy, the now archived 'Guidance on Transport Assessment' (DfT, March 2007) document advised that developments may have a significant highway impact where increases of 30 or more two-way vehicle movements occur during peak hours. It goes on to state that *"whilst there is no suggestion that 30 two-way peak hour vehicle trips would, in themselves, cause a detrimental impact, it is a useful point of reference from which to commence discussions."* This figure is identified purely as a starting point for further consideration and it is common that higher hourly increases of 45 to 60 vehicles could be satisfactorily accommodated where capacity and highway safety issues do not exist.

11.5 In addition to the above, the 'Guidelines for Traffic Impact Assessment' (IHT, 1994) advised that development may have significant highway impacts where overall traffic movements increase by 5% or more during the year the development is expected to open, hence a capacity assessment should be undertaken. Although this document is now archived, this threshold is still commonly used by highway authorities in establishing impact and study areas.

11.6 In considering the above, the following details indicate the maximum number of peak hour two-way traffic movements that would occur at key junctions within the surrounding highway network, based on the proposed developments busiest (morning) peak hour traffic assignment shown in **Figure 8**:

1. Site Access / A5 signalised junction – 258 total movements
2. A5 / Birch Coppice Business signalised junction – 85 total movements
3. M42 / A5 grade separate signalised junction – 173 total movements
4. A5 eastbound off / on slips to Watling Street / Centurion Way / Pennie Way 4-arm roundabout – 89 total movements
5. A5 westbound off / on slips to Pennie Way / B5080 3-arm roundabout – 22 total movements

11.7 In order to undertake a percentage increase sensitivity test, the 2023 Design Year flows were taken from the consented 'Hall End Business Park, Dordon' TA (see extracts at **Appendix D**). **Figure 9** reviews total two-way flow to the east and west of the site access, going no further once the impact of the proposed development falls below 5% in both the morning and evening. The results are summarised below:

1. A5 (immediately east of the site access) – 2.6% in the morning peak and 2.3% in the evening peak.
2. A5 (immediately west of the site access) – 5.3% in the morning peak and 4.6% in the evening peak.
3. A5 (west of Junction 10 of M42) – 2.4% in the morning peak and 1.9% in the evening peak.

11.8 Furthermore, morning peak hour observations noted that there were no congestion problems at A5 / Birch Coppice junction and that all queueing traffic suitably got through in one cycle time. Furthermore observations at Junction 10 of the M42 raised a concern regarding queueing on the A5 (west) arm, noting that all other arms operated satisfactory with vehicles suitably getting through in one cycle time.

11.9 In considered the above evidence, it is considered that junctions 1 to 5 (at Paragraph 11.6) should form the study area for further detailed examination within the TA.

12.0 SUMMARY AND CONCLUSIONS

12.1 Bancroft Consulting were commissioned by Hodgetts Estates to provide traffic and transportation advice regarding proposals for a development of mixed employment uses (B1(c), B2 and B8) on land to the northeast of Junction 10 of the M42. The aim of this report is to agree the background information and scope for the remainder of the assessment with both WCC and HE. Following agreement of the Scoping Study, the Transport Assessment will support an outline planning application to be submitted for the scheme.

12.2 At this stage, it is recommended that the Transport Assessment should proceed on the following basis:

Proposed Access Arrangement

12.3 This report confirms how the proposed development could be served by a signalised junction at the northern edge of the A5 as shown in **Drawing Number F19123/01**. Pedestrian crossing facilities would be provided to enable future staff to access the site from the southern side of the A5 carriageway. The bridleway at the eastern edge of the site would be utilised to provide a direct link to the villages and bus facilities at Birchmoor to the north.

Trip Generation

12.4 With respect to vehicular traffic, based on previously agreed trip rates obtained from the contented ‘Land to South East of Junction 10, M42, Trinity Road, Dordon’ site, this report confirms that the development of 120,000sqm GFA would generate the following peak hour movements:

• morning peak (0800 to 0900)	206 arrive	52 depart	258 total
• evening peak (1700 to 1800)	41 arrive	186 depart	227 total

Committed Development

12.5 Based on an appraisal of recent planning applications, the Transport Assessment would take account of the following committed developments:

- ‘Land to South East of Junction 10, M42, Trinity Road, Dordon’ (St Modwens Park Tamworth)
- ‘Business Park, Hall End Farm, Watling Street, Dordon’ (Core 42 Business Park)

Study Area

12.6 Based on the calculated peak hour traffic increases and a suitable distribution model that has been identified, it is considered that the study area for further detailed analysis in the Transport Assessment should comprise the following junctions:

1. *Site Access / A5 signalised junction*
2. *A5 / Birch Coppice Business signalised junction*
3. *M42 / A5 grade separate signalised junction*
4. *A5 eastbound off / on slips to Watling Street / Centurion Way / Pennie Way 4-arm roundabout*
5. *A5 westbound off / on slips to Pennie Way / B5080 3-arm roundabout*

12.7 Details of Personal Injury Accidents recorded over the past three years within the study area will also be reviewed, to identify whether there are any existing highway safety issues that might be affected by the proposed traffic increases.

Growth Factors

12.8 Suitable growth factors have been identified to adjust 2019 observed peak hour flows to a 2025 Opening Year, to which committed development traffic for the adjacent site will be added. Furthermore, a 2030 Future Year assessment will also be undertaken as part of a modelling exercise.

12.9 Capacity assessments of the above junctions will be carried out using these baseline design year flows plus proposed development traffic, to identify whether any mitigating improvements are necessary. In light of this, the following growth factors have been established from the TEMPro 7.2 database:

- 2018 – 2025 AM Peak – 1.0581

- 2018 – 2025 PM Peak – 1.0560
- 2018 – 2030 AM Peak – 1.0915
- 2018 – 2030 PM Peak – 1.0890

Access by Non Car Modes

12.10 Based on modal split data taken from the census database, the proposed development could generate 16 pedestrian, 9 cyclist and 8 public transport trips. It is considered that the existing pedestrian, cyclist and public transport facilities in the vicinity of the site should be sufficient to accommodate these increases without any mitigating improvements, provided that suitable on-site facilities and links are identified within the TA.

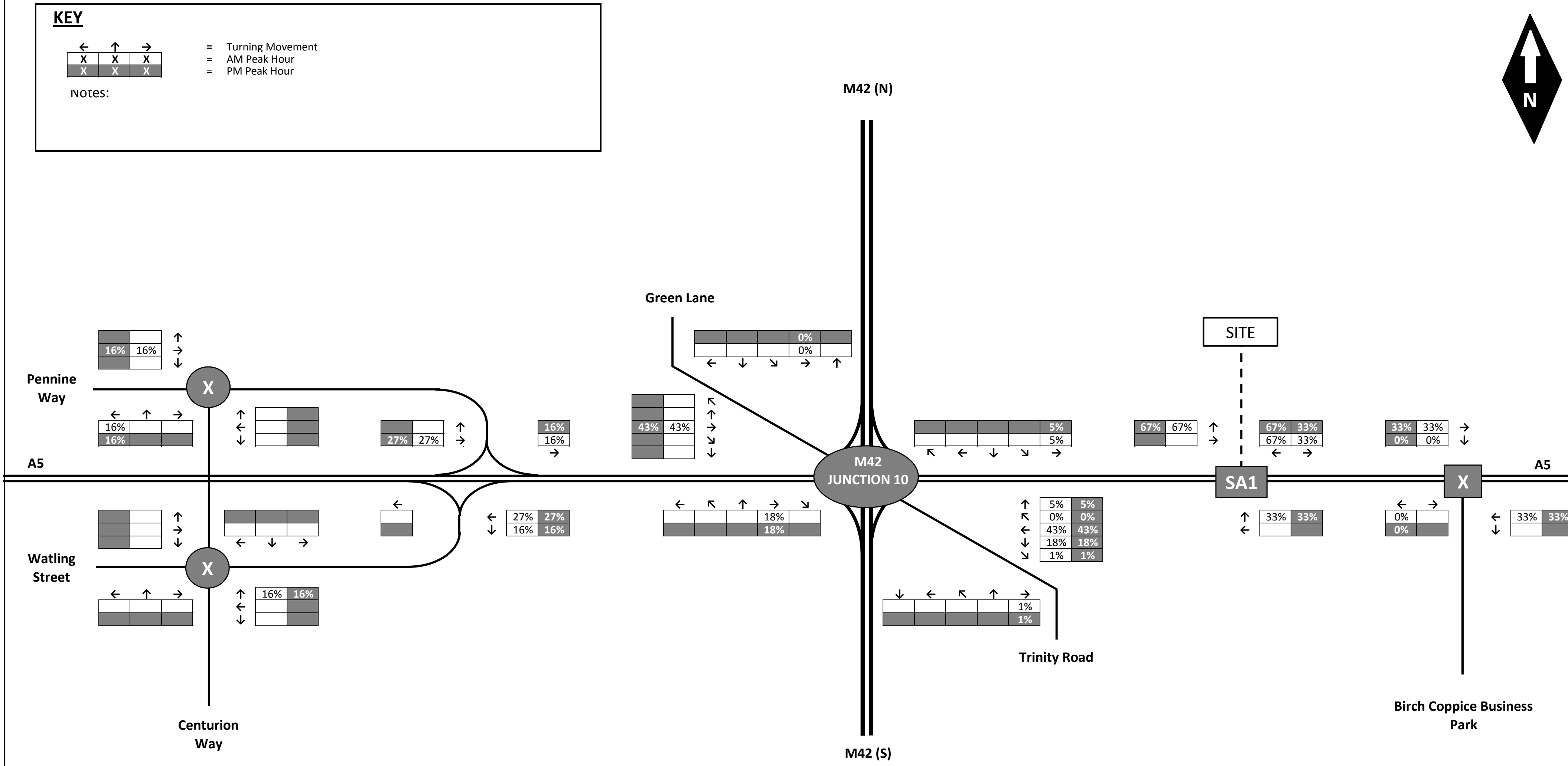


FIGURE 7

PROPOSED DEVELOPMENT TRAFFIC DISTRIBUTION

PROPOSED EMPLOYMENT LAND NORTHEAST OF J10 M42, NORTH WARWICKSHIRE

JOB NUMBER: F19123

DRAWN BY: KH

BANCROFT CONSULTING

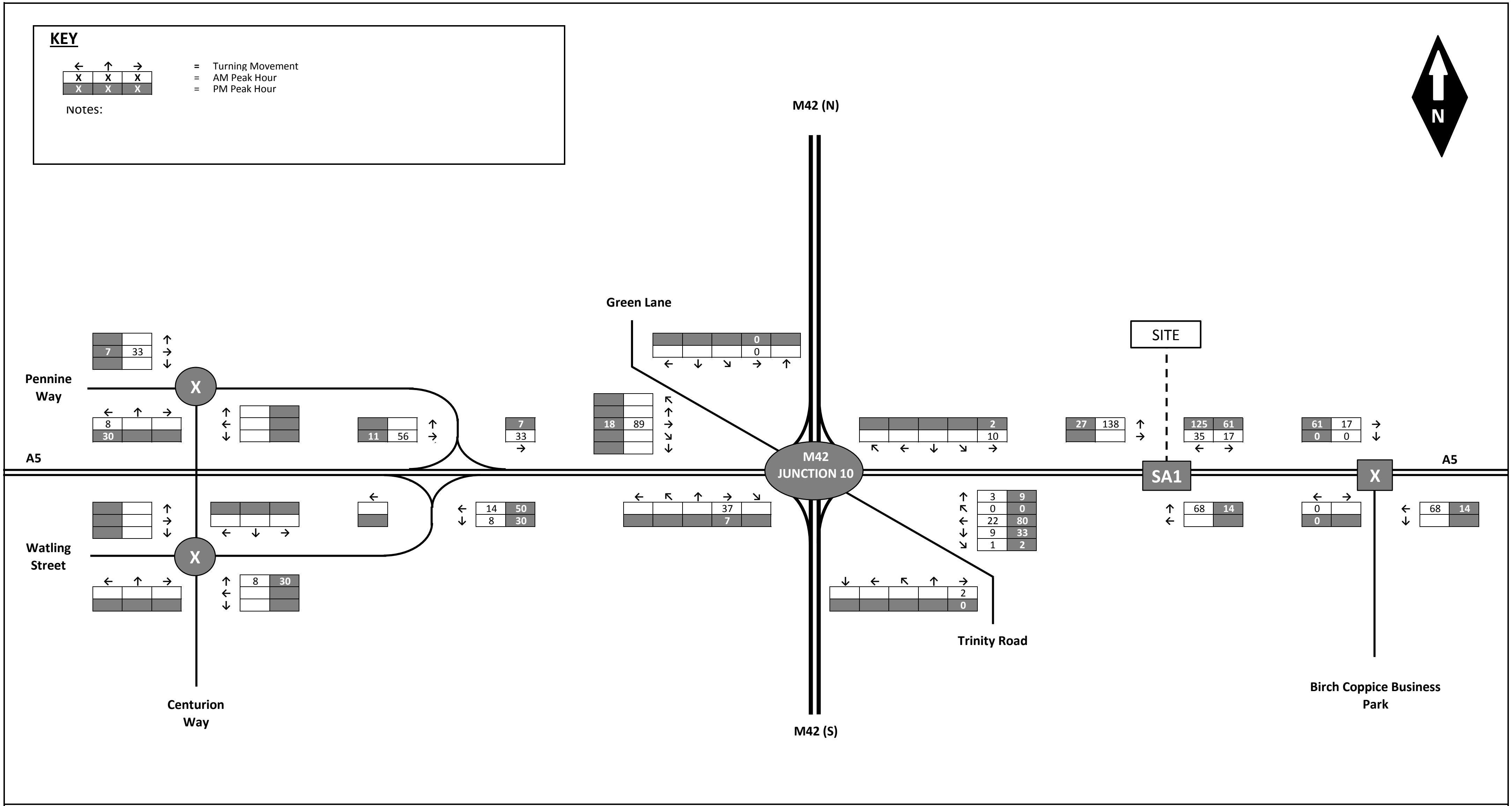


FIGURE 8

PROPOSED DEVELOPMENT TRAFFIC ASSIGNMENT

PROPOSED EMPLOYMENT LAND NORTHEAST OF J10 M42, NORTH WARWICKSHIRE

JOB NUMBER: F19123

DRAWN BY: KH

BANCROFT CONSULTING

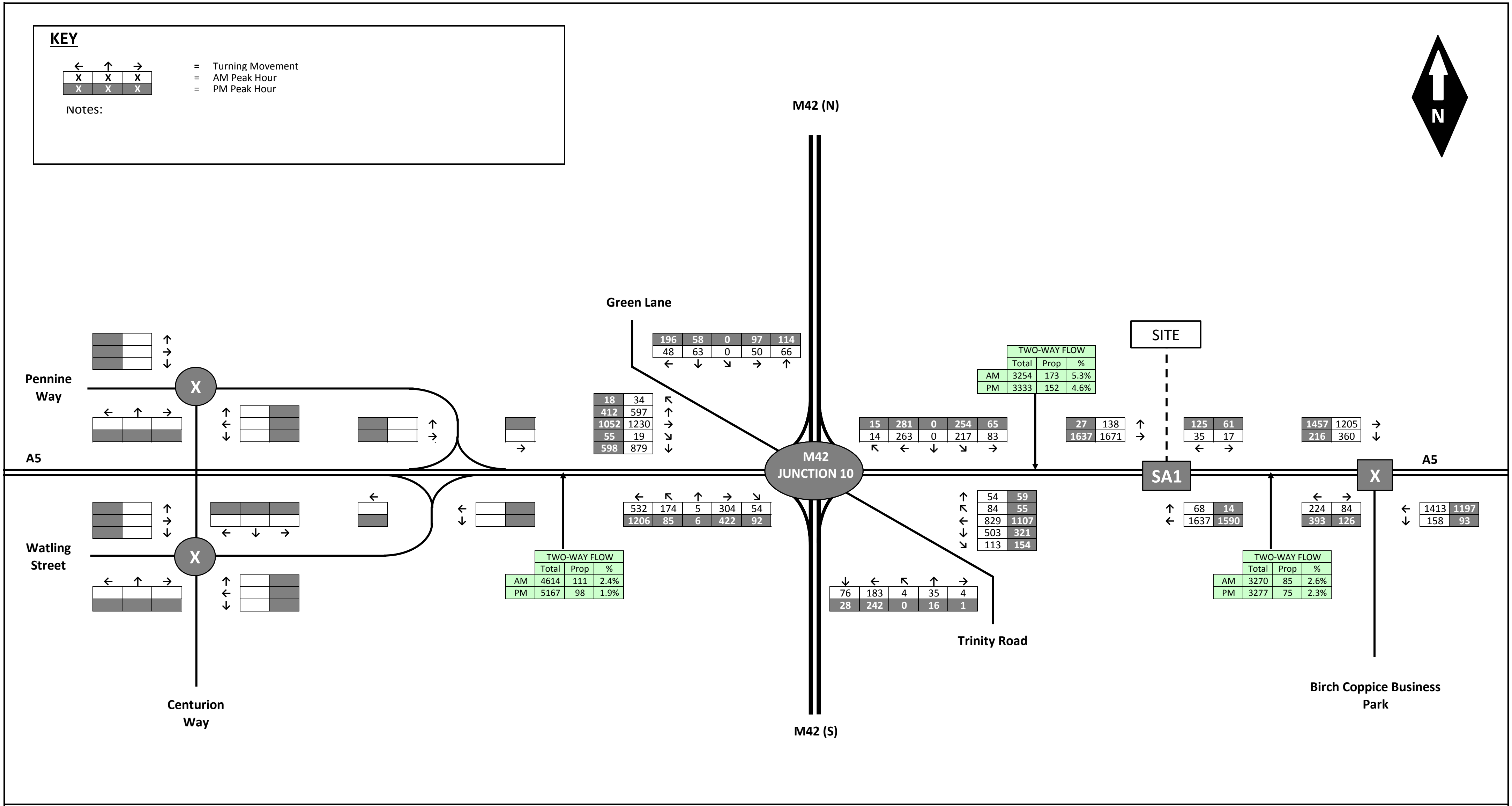


FIGURE 9

SENSITIVTY TEST - 2023 DESIGN YEAR (HALL END, DORDON FLOWS) WITH PROPOSED DEVELOPMENT

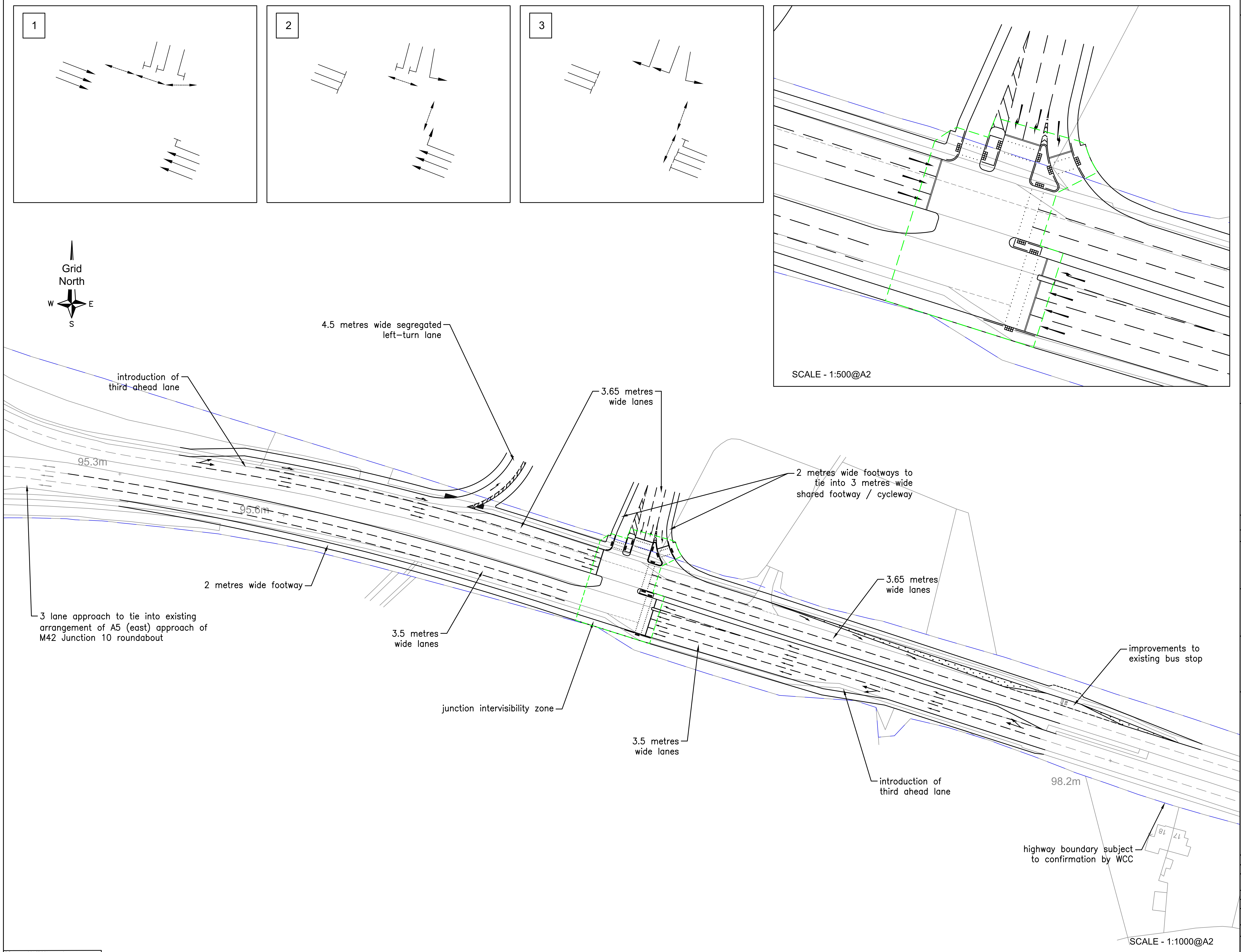
PROPOSED EMPLOYMENT LAND NORTHEAST
OF J10 M42, NORTH WARWICKSHIRE

JOB NUMBER: F19123

DRAWN BY: KH

BANCROFT CONSULTING

DRG. No. F19123/01 **REV. No.**



NOTES:

1. CONFIGURATION OF LEFT–TURN LANE ENTRANCE TO THE SITE TO BE CONFIRMED AT A LATER DATE WITH THE MASTERPLAN
2. LENGTH OF ENTERY LANES AT SITE ACCESS TO BE CONFIRMED BY MODELLING

REV.	DATE	DESCRIPTION	DWN	CHK'D

CLIENT
HODGETTS ESTATES

CONTRACT
PROPOSED EMPLOYMENT LAND
NORTHEAST OF J10 M42,
NORTH WARWICKSHIRE

TITLE
ACCESS OPTION FOR
PROPOSED EMPLOYMENT LAND

BANCROFT
CONSULTING

Bancroft Consulting Ltd
Jarodale House
7 Gregory Boulevard
Nottingham
NG7 6LB

t 0115 9602919
f 0115 9648201
e office@bancroftconsulting.co.uk

DRAWN BY

NAME (PRINT)	DATE
KH	13.09.19

CHECKED BY

NAME (PRINT)	DATE
CJB	13.09.19

SCALE AS SHOWN **STATUS** PRELIMINARY

DRG. NO. F19123/01 **REV**

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APPENDIX B - HE EMAIL DATED 12 NOVEMBER 2019

From: Timothy, Richard
To: Will Morgan
Cc: HE instructions; Area9 DEVCONTROL; White, Richard M.E; Gray, Russell; Townend, Catherine
Subject: Land northeast of J10 of the M42, North Warwickshire - Pre-Application Advice
Date: 12 November 2019 08:43:47
Attachments: image569081.png
image001.png
GB01T19C63 - 73 - L NE M42 J10 Scoping Letter DRAFT 121119.pdf

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Good Morning,

Please find attached our response to the above request for pre application advise.

Regards

Richard Timothy
Asset Manager
Coventry and Warwickshire
Highways England | The Cube | 199 Wharfside Street | Birmingham | B1 1RN
[redacted]
Web: http://www.highways.gov.uk

From: Will Morgan [redacted]
Sent: 21 October 2019 13:50
To: Planning M
Cc: Kurt Hardy; [redacted]
Subject: Land northeast of J10 of the M42, North Warwickshire - Pre-Application Advice

To whom it may concern,

We have been appointed by Hodgetts Estates, to provide highway and transportation advice in respect of a proposed employment development to the northeast of J10 of the M42, North Warwickshire.

Please find attached a copy of the Scoping Study we have prepared in support of the proposals, comprising approximately 120,000sqm of mixed B1/B2/B8 land use which would be served via a new single point of access at the A5.

At this stage we are working towards submitting a planning application before the end of the year. Before we do so it would be useful to receive a scoping response from yourselves to confirm the key elements of work and agree a way forward for the subsequent Transport Assessment.

I trust this information is satisfactory and look forward to receiving your feedback.

Please feel free to contact my colleague Kurt Hardy at [redacted], who will answer any queries in relation to this application.

Kind Regards

Will

Will Morgan
Graduate Transport Consultant
Bancroft Consulting Limited

a: Jarodale House, 7 Gregory Boulevard, Nottingham, NG7 6LB
w: www.bancroftconsulting.co.uk **e:** office@bancroftconsulting.co.uk

Your Reference: Land northeast M42 J10

Kurt Hardy
Bancroft Consulting
via Email: [redacted]

Richard Timothy
Assistant Spatial Planner

The Cube
199 Wharfside Street
Birmingham B1 1RN

Direct Line: [redacted]

Date: 12 November 2019

Dear Kurt,

Land northeast of J10 of the M42, North Warwickshire - Pre-Application Advice

We are writing in response to an email received from Will Morgan on 21st October 2019, which contained a Scoping Study for proposed employment land north east of M42 Junction 10. The Scoping Study (ref F19123 Rev A, dated October 2019) has been produced on behalf of Hodgetts Estates.

Given that the proposed site bounds the M42 Motorway and the A5 Trunk Road, we welcome early discussions with regards to this site to ensure the impact on the SRN is robustly and satisfactorily assessed. This seems particularly relevant given the proposals to create a new signalised access into the site from the A5.

Following a review of the Scoping Study (SS), please find below our comments

Transport Assessment & Modelling

In consideration of the Transport Assessment and proposed modelling assessment years of 2019, 2025 and 2030, we consider that the years 2019 and 2025 are acceptable for the purposes of the base year and opening year assessments.

The 2030 model year has seemingly been derived in anticipation that this would represent a period 10 years post registration of the planning application. We note however that the new North Warwickshire Local Plan is currently undergoing examination prior to its potential adoption, and therefore an assessment in a Future Year of 2033 is considered necessary to accord with requirements of DfT Circular 02/2013 paragraph 25. The 2033 assessment should consider the full growth associated with the plan.

Due to the interaction of the proposed development with the growth and proposals contained within the new North Warwickshire Local Plan and noting that this is not a site considered within that plan, it is necessary that the transport evidence be sufficient such that we can assess the full cumulative implications of the development upon the A5 corridor.

This should be able of identifying whether the development would give rise to additional infrastructure needs beyond those proposed by the plan at locations not limited to the point of the proposed site access or necessarily limited to immediate nearby junctions.

Consequently, we would expect that an agreed approach to the Transport Assessment would take into account the views of Warwickshire County Council (WCC) and North Warwickshire Borough Council (NWMC) as to how such an assessment can be achieved. We would anticipate that this would make use of the PARAMICS based traffic modelling evidence used in development of the Strategic Transport Assessment of the plan which has been agreed jointly between us and the two local authorities.

Traffic generation & Growth

In reviewing the proposed development trip rates we have identified discrepancies with the presented 'Phil Jones' trip rates used in the Scoping Study when compared to the rates presented in the Phil Jones TA application for *Land to South West of Junction 10 on M42*. While the principle of using of trip rates and generations previously used as part of the 2014 Trinity Road application (Phil Jones Associates) as a starting point for assessment is acceptable, the values within the Scoping Study need to be accurately represented in the pre-application scoping information.

The figures outlined in the scoping information should therefore be revised accordingly, however in reaching final determination and agreement of trip rates it will be necessary for the development mix to be finalised and for the assessment to ensure that this remains a robust comparison. We recommend that you should also ensure that Warwickshire County Council are also satisfied that these rates and assumptions are robust.

Traffic growth assumptions need to take into account committed development assumptions appropriate to the assessment. with any adjustments made to TEMPRO assumptions considered accordingly.

For the opening year assessment (2025) this would typically comprise those developments which have received planning permission or are currently in the planning system and are likely to be built out by this year. You should engage WCC and NWBC to confirm the full list of committed developments to include.

For the Review year assessment (2033) this will need to take account of the full growth contained within the current version of the submitted Local Plan. Should you be advised to make any alternative sets of assumptions by either NWBC or WCC then you should refer back to us to consider this.

Site Access proposal

The principles of the site access have potential to present issues for the strategic flow of traffic on the A5 corridor by virtue of the proposed introduction of a signalized junction at a critical location on the A5 which will affect the journey time of all users along the corridor.

Such an intervention, noting its close location to M42 Junction 9, may have wider strategic implications for the flow of traffic on the A5 that would be relevant to a wide variety of stakeholders. The site was not selected by North Warwickshire Borough Council as a preferred site within the North Warwickshire Local Plan, where opportunities to consider these strategic issues would naturally arise, as such this issue will require further consideration.

With regard to the engineering design of the proposed access, we have a number of initial concerns, questions and detailed comments to make regarding the junction design and its compliance to the requirements of the Design Manual for Roads and Bridges (DMRB). Our consideration of these matters should not be taken as an endorsement of the principle of the access. These points are set out below.

1. The scheme includes a proposed segregated left-turn lane (SLTL) on the A5 Eastbound (EB) nearside lane flare on the approach to the proposed signal-controlled junction. It is our initial concern that the SLTL may not be apparent to approaching motorists, unfamiliar with the area. If the SLTL is missed, there appears to be no formal opportunity to access the site at the downstream signal-controlled junction. This could lead to driver confusion, hesitation, or unauthorised turning movements resulting in a collision.
2. Uncontrolled crossing of SLTLs by Non-Motorised Users (NMUs) are not permitted by DMRB (see CD 116 para. 6.4).
3. Is a Desirable Minimum Stopping Sight Distance (DMSSD) on A5 EB approach to the junction and the back of the predicted queue available?
4. The proposed junction is located upstream of an existing bus lay-by on the A5 EB carriageway. The layout introduces a merge just prior to the bus lay-by. Lay-bys are to be treated as other junctions and are to be separated by at least 3.75V m, where 'V' is the Design Speed of the carriageway in kph (i.e. 120kph) (see DMRB CD 169 para. 3.7).
5. The junction requires the removal of parking laybys on the A5 EB and WB carriageways. These lay-bys are currently well used – justification of their removal will be required and the potential for alternative provision should be considered.
6. The proposed merge on the A5 EB carriageway downstream of the proposed signalised junction occurs just prior to an existing NMU crossing. There is an apparent concern that motorists may be focussing on merging (i.e. checking mirrors) rather than looking for NMUs crossing ahead of them with consequent implications for road safety.
7. The layout requires the stopping up of an existing Private Means of Access (PMA), which will necessitate an agreement under Section 127 of the Highways Act (1980). The Developer will be required to demonstrate that any

interested parties affected by the closure have been identified and agree to the closure prior to planning approval.

8. The layout appears to suggest there will be no separating strip between the carriageway and NMU facilities. This is has been identified as an issue likely to be raised as a Road Safety Audit (RSA) Problem in this location, due to the high-speed nature of the route and high proportion of HGVs.
9. The proposed NMU crossing of the A5 WB carriageway at the proposed signal-controlled junction requires the crossing of four lanes (circa 15m), which is likely to be raised as an issue in both the Walking, Cycling & Horse-Riding Assessment and Review (WCHAR) and RSA.
10. Is there sufficient existing highway land to deliver the required cross-section of the scheme and visibility splays? If not, which area(s) of land are required to be transferred to Highways England? Is this land controlled by the Developer and free of any encumbrance that would prohibit the free-hold transfer?
11. Are Permanent Traffic Regulation Orders (PTROs) required to deliver the scheme?
12. Para. 10.7 of the SS suggests that existing NMU provision is sufficient to accommodate the development; however, opportunities to improve NMU provision should be explored in the WCHAR. Given these assumptions are based on Modal split and journey to work information established by Census 2011 data these assumptions may be insufficient in the context of change that has since occurred and the context of the current Local Plan,

The comments and question above relate to the design principles of the access scheme. Any new or amended access onto a Trunk Road, or any other schemes developed in mitigation of the wider transport impact, should be based on a sufficiently detailed preliminary design standard capable of demonstrating compliance with the design requirements as set out in the DMRB (and to comply with DfT Circular 02/2013 para. 11).

The singular reference to CD 123 provided in the scoping note (as per para. 8.4 in the report) is insufficient to identify the relevant standards as the access layout requires the use of numerous Design Standards In addition, WCHA and Stage 1 Road Safety Audits are necessary requirements for any such scheme prior to the determination of the planning application.

Considering the above points, it is strongly recommended that you liaise with both the Local Highway/Planning Authority at the earliest opportunity and via further discussion with us seek to agree the scope of assessment. Given that the boundary of Tamworth Borough Council boundary also passes just to the west of M42 J10, it is recommended that they are also approached to confirm they are satisfied with the assessment, particularly in relation to the impact of the development at Stonydelph junction

(A5/Pennine Way) which experiences eastbound mainline A5 queuing in the morning peak.

Please do not hesitate to contact me if you have any further queries.

Yours sincerely,

[redacted]

Richard Timothy
Assistant Spatial Planner
Email: [redacted]

APPENDIX C - MEETING MINUTES
FROM 30 MARCH 2020

From: [redacted]
To:
Cc:
Subject: RE: Site East of M42 J10
Date: 01 April 2020 15:50:33
Attachments: 290320 Land NE of J10 Mtg Agenda & CJB Minutes.docx
image635754.png
image381737.png

Afternoon all,

Many thanks for your time on Monday afternoon. Attached is a word version of the agenda and my own minutes from the discussions. Please could you review the details and let me know if you are happy with them, so that I can formally issue the minutes as agreed.

Feel free to let me have any suggestions you feel are important (Ben – you mentioned a site we should look at in respect of potential HGV parking areas, which I noted down as Callendar Farm Phase 2 – can you confirm I was correct with this please?).

Best regards

Chris

Chris Bancroft
Director
Bancroft Consulting Limited

p: 0115 9602919
a: Jarodale House, 7 Gregory Boulevard, Nottingham, NG7 6LB
w: www.bancroftconsulting.co.uk **e:** office@bancroftconsulting.co.uk

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From: Chris Bancroft [redacted]
Sent: 29 March 2020 22:16
To: Alan Law [redacted]; Dave Pilche[redacted]>; Matthew Corner <[redacted]; dwh@[redacted] Jane Hodgetts <[redacted]>; Timothy, Richard [redacted]>; Ben Simm <b[redacted]
Cc: Yvette Cross <[redacted]bancroftconsulting.co.uk>
Subject: Re: Site East of M42 J10

Evening all,

I hope everyone is feeling fit and well? In advance of our scheduled video conference meeting tomorrow afternoon I took the liberty of preparing an agenda wth some notes and questions we have on key points. We only have a limited amount of time so hopefully this wil help the meeting to be as effective as possible.

The details are not cast in stone so please feel free to provide any addiitonal items for discussion.

I look forward to seeing you all tomorrow.

Best regards

Chris

From: Alan Law
Sent: 24 March 2020 17:53
To: Alan Law <[redacted]; Chris Bancroft <[redacted]; Dave Pilcher <[redacted]>; Matthew Corner [redacted] Yvette Cross [redacted]>; d[redacted] <[redacted]>; Jane Hodgetts <[redacted]; Timothy, Richard <[redacted]; Ben Simm <[redacted]>
Subject: Site East of M42 J10
When: 30 March 2020 14:30-15:30.
Where:

Join Microsoft Teams Meeting

+442033215213 (Toll)

Conference ID: 922 676 979#

Local numbers | Reset PIN | Learn more about Teams | Meeting options

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Proposed Employment Development
Land Northeast of M42 Junction 10
Meeting Agenda

30th March 2020
1430 to 1530 hours

Objective of Meeting: To establish a way forward for the project such that the Transport Assessment and Travel Plan documents can be completed to the satisfaction of Highways England, Warwickshire County Council, and Staffordshire County Council as the potentially affected highway authorities.

Thanks to Alan Law (Warwickshire County Council) for setting up the meeting in Microsoft Teams

Invitees:

Alan Law (AL)	-	Warwickshire County Council (WCC)
Dave Pilcher (DP)	-	Warwickshire County Council (WCC)
Richard Timothy (RT)	-	Highways England (HE)
Ben Simm (BS)	-	Highways England (HE)
David Hodgetts (DH)	-	Hodgetts Estates (HEst)
Jane Hodgetts (JH)	-	Hodgetts Estates (HEst)
Matthew Corner (MC)	-	Bancroft Consulting (BC)
Chris Bancroft (CB)	-	Bancroft Consulting (BC)

I. Introductions

All invitees listed above introduced themselves.

II. HE Comments on Scoping Study (letter dated 25 November 2019)

Transport Assessment and Modelling

HE initially content with 2019 and 2025 to be adopted as Base Year and Opening Year assessments, although this will now need to be updated to 2020 and 2026 respectively. - **Agreed**

2033 Future Year modelling is required (not 2030) to align with North Warwick's Local Plan (NWLP). Proposed development is not considered within NWLP so full cumulative assessment required. – **CB asked RT whether, in light of AL confirmation of available**

modelling data, if 2031 should be adopted as this was the basis of the Local Plan Transport Assessment case as presented to the Local Plan Inspector, not 2033 as initially requested within the HE comments. RT to liaise with HE subconsultant and confirm.

BC Transport Assessment must be based on PARAMICS model used to support transport assessment of the Local Plan. - **Agreed**

Q. What impact does Government announcement for infrastructure improvements along A5 corridor have on the Local Plan modelling base? – ***Outline of schemes provided by AL within separate email and AL confirmed at the meeting that this were still subject to clarification from the government in terms of final design and delivery. BC to liaise with WCC and subconsultants in due course to confirm final reference case for assessment.***

Q. How accessible is the necessary modelling data and in what format is it available? - ***AL confirmed how full PARAMICS models exist for 2021, 2026 and 2031 assessment years covering numerous scenarios but with all committed and Local Plan development included. AL to provide contact details of the consultant responsible for overseeing the development of the PARAMICS model and strongly recommended that they be appointed to utilise these models in providing the network modelling results. Company is Vectos and details of all outputs should be presented within the submitted Transport Assessment.***

Q. How much will the information cost and how long will it take to provide? – ***AL uncertain of total cost as this would be subject to agreement on the proposed development trip generation. A figure of 6k to 22.5k was offered as a guideline range. CB to liaise with RT at HE to agree trip rates and then liaise with Vectos for a quote.***

Traffic Generation and Growth

HE requires commitment to a specific mix of uses within the site, with a corresponding trip generation calculation to establish impact. HEst happy to commit to the same mix of development agreed within the 'Land Southwest of J10' and Transport Assessment will seek to adopt the already established principles of trip generation and other key elements. – **CB highlighted how the Scoping Study makes reference to trip generation calculations presented for applications on land to the east and land to the west of Junction 10 of the M42 Motorway, noting that the latter of these, 'Land to the Southeast of J10' went to appeal with agreed trip rates for a 25% B1(c) and B2 / 75% B8 split (set out within the Statement of Common Ground). Given the similarities of both schemes CB felt it reasonable to adopt the same principles for this assessment. RT acknowledged point and asked CB to submit explanation separately within a note that can be discussed with HE sub consultants.**

Q. Does the PARAMICS model include this and other recently consented schemes? – ***Yes, as advised by AL in earlier point.***

HE requires all trip generation calculations to be represented in line with appropriate rates and principles. – **Agreed but subject to agreement of the use of previously agreed rates for the 'Land to the Southeast of J10' scheme.**

Site Access Proposals

Detailed comments on the previously proposed layout have been provided by HE and are currently being worked through. Need to establish flow conditions before some of the key issues can be properly addressed (such as forward visibility and general layout). – **Noted**

Q. Would HE be willing to consider changing the speed limit to 50 mph within the section immediately to the east of the M42 J10? – **HE not immediately comfortable with the principle of reducing the speed limit solely for the proposed development, but ultimately subject to approval of the Police, who should only be approached following the agreement of scheme design drawings with HE. CB pointed out how this would only affect a short section of carriageway between the current limit change point and Junction 10 (initially suggested as being circa 1500 metres but subsequently measured at circa 600 metres).**

Q. How important are the lorry parking bays to HE – could the provision be incorporated within the proposed development? – **BS and RT stressed how HE considered the lorry parking of key importance but did accept that any off-line proposals that could deliver clear betterment would be considered. BS highlighted a recently consented scheme on land to the north of the A5 at Nuneaton (Callendar Farm Phase 2) for BC to review and consider.**

Scoping Study Recommendations

Study Area for further detailed assessment (based on previous traffic assignment)

- Site Access
- A5/Birch Coppice Signal Controlled Junction
- M42/A5 Grade Separated Junction
- A5 E/B on/off slips at Watling Street/Centurion Way/Pennine Way
- A5 W/B on/off slips at Pennine Way/B5080

Both WCC and HE of the view that although the gravity model presented within the Scoping Study aligned itself with the previous assessments submitted in support of adjacent schemes, it was advised that the Transport Assessment should adopt a distribution model that is based on mobile phone data. AL to provide details of the contact for this information.

The final study area will be determined by locations where material/severe impact is shown within the model output.

III. WCC Comments on Scoping Study

AL to provide contact details for modelling and mobile phone data. Otherwise WCC happy to let HE take the lead in agreeing access layout and trip generation matters within the Transport Assessment. Notwithstanding this, formal observations on the Scoping Study promised from WCC within the coming two weeks.

IV. Agreed Points for Moving Forward

1. **CB to email RT separately about trip rates and confirmation of the 2031 Future Year modelling scenario.**
2. **AL to provide contact details for the modelling and mobile phone data so that BC can liaise with representatives regarding the provision of network modelled flows.**
3. **Details of distribution model to be established using mobile phone data and presented to HE for agreement.**
4. **Following receipt of flow data, BC to provide HE with revised access layout that reflects its comments and concerns.**
5. **BC to present details of modelling to HE along with recommendations for study area based on the scale of impact at each location within the network.**
6. **Following agreement of the above BC to proceed with Transport Assessment.**

V. Any Other Business

Nothing to add.

APPENDIX D - WCC RESPONSE TO SCOPING STUDY DATED 15 MAY 2020

From: [redacted]
[redacted]
[redacted]
Subject: Re: Site East of M42 J10
Date: 15 May 2020 10:11:07
Attachments: image001.png
image003.png
image336109.png
image177683.png

Hi Chris

Thank you for your email, apologies for the delay in responding to your scoping note. You will appreciate we are not working under normal conditions and other essential tasks have had to be prioritised during this period.

I have reviewed your scoping note (much of which is superseded now by agreement to the WCC modelling protocol approach) and response from HE.

a) Site access strategy - I'm happy to leave HE to respond on the appropriateness of this proposal. I do note the proximity of the access to M42 J10, especially in light of recent announcements around the funding for the A5 HIF schemes and potential inclusion of wider improvements to the corridor in the RIS3 periods which are likely to induce additional demand on the corridor.

b) Trip generation - the trip rates are reasonable, as HE have agreed these WCC also accept their use in the assessment.

c) Trip distribution - Moises Muguerza (cc'd) will be able to supply the details required for access to the MND dataset and provision of outputs.

d) Model licencing - I can confirm that based upon the agreed trip generation the model access fee is £12,500 +VAT. Moises can also provide the model access agreement forms and licences.

e) The difference between the 2031 and 2033 scenario is basically background growth, this was a result of NWBC shifting the trajectory of the Local Plan post completion of the transport evidence. It will be acceptable to just include the additional 2 years of background growth and we can supply a scenario to reflect this.

f) This is a little more tricky and will require further negotiation with Highways England around assumptions regarding the HIF announcement and RIS. Whilst the HIF scheme is confirmed there are currently ongoing discussions (with MHCLG, Homes England, DfT and HE) regarding delivery timescales which will influence the assumptions with the scenarios tested, its likely take a bit of time to resolve this, similarly there are implications linked to the wider RIS announcements. From WCC perspective, we will require an interim year (TBC) including the HIF proposals and an end of Local Plan scenario, although again the assumptions with this scenario will have to be agreed with HE & WCC and as such will require further discussion. I will discuss with Richard Timothy and Ben Simm to determine how we will jointly respond on the required scenarios.

Kind Regards

Alan

Alan Law BSc MCIHT
County Transport Modeller and Team Leader
Transport Planning
Transport & Highways
Communities
Warwickshire County Council
Tel: [redacted]
Email [redacted]
www.warwickshire.gov.uk

From: Chris Bancroft [redacted]
Sent: 14 May 2020 14:57
To: Alan Law [redacted]
Cc: dwh@[redacted] [redacted]hodgettsestates.co.u[redacted]; Yvette Cross <[redacted]>; Timothy, Richard [redacted]
Subject: RE: Site East of M42 J10

Hi Alan,

I trust you are keeping well?

Following on from Richard Timothy's email confirming that the proposed development trip rates presented within my email 14 April 2020 (also copied to you) are acceptable we now need to progress matters regarding the network modelling. Having now read through the 'Modelling Protocol' document you kindly sent through it is clear WCC now requires confirmation of some details from our point of view.

a. ***Site Access Strategy*** – The intention is to deliver an all movements traffic signal controlled junction as indicated within Drawing Number F19123/01 that was presented for consideration within the Scoping Study. I have attached this drawing for information but would mention that this layout will change in the light of comments made by HE. As agreed with HE the proposed development being applied for will comprise circa 30,000 sqm gross floor area of B1c/B2 and 90,000 sqm gross flor area of B8 uses. I have also attached Figure 2 of the Scoping Study that shows the Detailed Site Location Plan.

   Whilst writing this submission I note that we have yet to receive WCC's formal comments on the Scoping Study. During the meeting you offered to provide these within a few weeks and, given my Client has paid a significant amount for the pre-application consultation it is important we understand WCCs formal position – unless perhaps a discount on other areas of expenditure, or even a refund, could be offered? I therefore look forward to hearing from you in this regard at the earliest opportunity.

b. ***Trip Generation*** – As requested, please see the following three-hour morning and evening peak period trip rates and corresponding vehicle generation (broken down by all vehicles and HGVs only), as agreed with HE.

	AM Peak Hour						PM Peak Hour					
	arrs		deps		totals		arrs		deps		totals	
	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	Flow	calculated rate per 100sqm
Proposed 3-hour peak period traffic generation												
B1c/B2 (30,000sqm @ 25%)	244	0.814	78	0.260	322	1.074	58	0.193	222	0.741	280	0.934
B8 (90,000sqm @ 75%)	194	0.215	84	0.093	277	0.308	94	0.104	176	0.196	270	0.300
totals	438		162		599		152		398		550	
Proposed 3-hour peak period HGV trip rates and trip generation												
B1c/B2 (30,000sqm @ 25%)	20	0.066	16	0.052	35	0.118	8	0.027	9	0.029	17	0.056
B8 (90,000sqm @ 75%)	40	0.044	41	0.045	80	0.089	48	0.053	41	0.046	89	0.099
totals	60		57		115		56		50		106	

c. ***Trip Distribution*** – As discussed and agreed during our recent VC meeting, my client is happy to work with HE and WCC in commissioning a local distribution model based on the Mobile Network Data. I understand that this will incur a charge of £400 plus VAT for the initial distribution model using 2016 data and would be grateful if you could contact me to confirm how payment can be arranged (or perhaps this could be waived in lieu of the pre-application charges?).

d. ***Model Licensing and Access Fee*** – I understand from the Modelling Protocol document that the final cost of the model licence fee will be calculated based on the above traffic generation figures, following which we will be required to sign and return a Licence Agreement before we can gain access to the modelling results. I should therefore be grateful if you could respond confirming how much this fee will be so that we can proceed with instructing the modelling and fully assessing the development impact.

e. ***Model Validity*** – In Richard's most recent email HE continues to seek clarification on the "*methodical approach taken to determine how the full plan period growth is considered using the 2031 year model, when the plan runs to 2033*". Helpfully, Richard has confirmed that if this is just "*the additional two years of background growth which includes all planned development*", then this is likely to be acceptable to HE. I should therefore be grateful if you could confirm whether or not this is the case?

f. ***Model Scenarios*** – Please could you confirm the development scenarios that would be examined within the modelling?

g. ***Model Outputs*** – Points noted.

h. ***Interpretation of Results*** – Points noted.

i. ***New Transport Infrastructure*** – Points noted.

j. ***Summary of Model Protocol and Model Licence Documents*** – Points noted.

I trust that the above details are as you would expect us to be providing at this early stage and look forward to receiving your response on the following points.

- Pre-application consultation comments on Scoping Study – or alternative strategy.
- Confirmation of the costs to undertake the modelling exercise based on the now agreed 3-hour peak period trip generation details provided.
- Confirmation of how payment can be made for the MND based distribution model and details on how the information can be obtained.
- Confirmation of the details of the 2031 modelling strategy so that we can agree this with HE.

Should you have any questions regarding the above then please do not hesitate to contact me on 07786966615.

Kind regards

Chris

Chris Bancroft
Director
Bancroft Consulting Limited

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w: www.bancroftconsulting.co.uk **e:** office@bancroftconsulting.co.uk

APPENDIX E - WCC MOBILE NETWORK DATA

From: Moises Muguerza
To: [redacted]
Cc:
Subject:
Date: 15 June 2020 15:57:29
Attachments: image002.png
image007.png
image009.png
image010.png
image011.png
LSOA E01031025.7z

Hi Chris,

I am sorry I was in a meeting at that time, I just tried to call you but apparently now you are not available.

I checked the trip distribution for the LSOA E01031025, and is not much different from the one I sent you. We usually select LSOAs covering smaller areas than this, but in this case we can accept to use that as it would probably have slightly more isolated trips for the employment area. I am attaching the results as requested. Please share this with VM so they can start scoping your project.

If there is anything else you would like to discuss, please let me know.

Kind Regards,

Moises Muguerza MSc MCIHT
Senior Transport Planner and Modeller
Transport & Highways
Communities
Warwickshire County Council
Tel: 01926 412254
Email[redacted]
www.warwickshire.gov.uk

From: Chris Bancroft [redacted]
Sent: 15 June 2020 09:55
To: Moises Muguerza <[redacted]k>; Alan Law [redacted]
Cc[redacted].co.uk; [redacted]hodgettsestates.co.uk; Yvette Cross [redacted]>; 'Ed' <[redacted]hodgettsestates.co.uk>
Subject: RE: Site East of M42 J10

Hi Moises,

I just tried to call the number on your email which doesn't seem to be connecting properly. I should therefore be grateful if you could call me back when convenient on [redacted].

In advance of our conversation I would just like to raise a few points in respect of the area selection. This exercise is to establish a suitable distribution pattern associated with the proposed commercial/employment development on land northeast of M42 Junction 10. The area you have identified is to the northwest of the junction and comprises only a small part of employment land, with the majority being residential. Surely this would create a bias towards the residential use which in this case is likely to have a different pattern of movement through the surrounding roads?

My initial view was that the LSOA E01031025 accommodates a much smaller proportion of residential land use (albeit in a larger area) but by including the Birch Coppice site (and being to the east of the junction) it would give us a far better picture of AM and PM distribution patterns?

You clearly have the benefit of local knowledge and experience with the modelling process and I am genuinely very grateful for the suggestion here, but please could we discuss the above points further so I can be sure the correct area is to be selected.

Thanks

Chris

Chris Bancroft
Director
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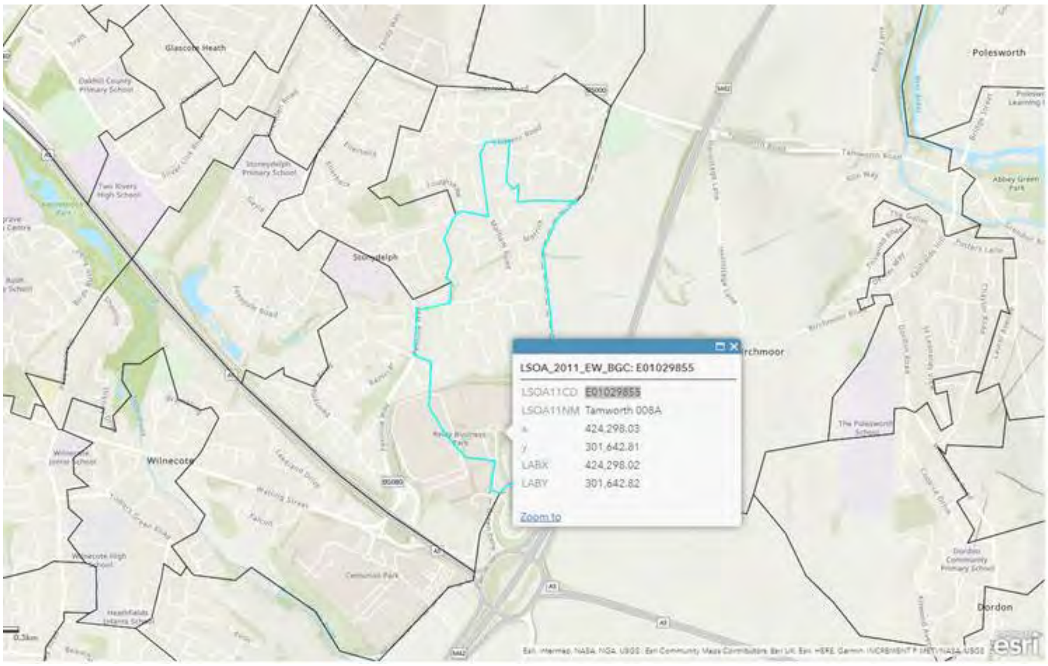
From: Moises Muguerza [redacted]>
Sent: 12 June 2020 19:26
To: Alan Law <[redacted]k>; Chris Bancroft <[redacted]>
Cc[redacted] Yvette Cross [redacted]>; 'Ed' <[redacted]hodgettsestates.co.uk>
Subject: RE: Site East of M42 J10

Hi Chris,

From your MND request I could notice you selected LSOA E01031025. Nevertheless, we would suggest you using LSOA E01029855 as a proxy location which is a smaller area and would provide more similar trip distributions for an employment site.



LSOA_2011_EW_BGC: E01029855

LSOA11CD E01029855
LSOA11NM Tamworth 008A
x 424,298.03
y 301,642.81
LABX 424,298.02
LABY 301,642.82

Zoom to

Kind Regards,

Kind Regards,

Moises Muguerza MSc MCIHT
Senior Transport Planner and Modeller
Transport & Highways
Communities
Warwickshire County Council
Tel: [redacted]
[redacted]
www.warwickshire.gov.uk

From: Alan Law <[redacted]
Sent: 05 June 2020 11:03
To: Chris Bancroft [redacted]>; Moises Muguerza <[redacted]
Cc: [redacted]hodgettsestates.co.uk[redacted]hodgettsestates.co.uk; Yvette Cross [redacted] 'Ed' [redacted]@hodgettsestates.co.uk>
Subject: Re: Site East of M42 J10

Chris

Contact [redacted] I'm sure they will be of assistance.

APPENDIX F – HE EMAIL CONFIRMING REQUIREMENTS FOR RSA

From: [redacted]
To:
Cc:
Subject: RE: Land north-east of J10 M42, North Warwickshire
Date: 14 April 2021 10:06:58
Attachments: image001.png
image002.png

Hi again Will,

Further to my conversation with Chris Bancroft this morning, I now understand that the scheme design hasn't been approved by Ben and that the TA has also not been completed. As such, it is premature to instruct the RSA Stage 1 audit at this time.

We would recommend the following steps:

1. Completion of the Transport Assessment including any modelling work.
2. Assessing whether the proposed scheme is DRMB compliant
3. Identifying any existing or new departures from standard
4. Preparing the RSA brief and CVs for Highways England's approval
5. Highways England to instruct the RSA Stage 1

Also, as discussed with Chris, Highways England as the Overseeing Organisation would instruct the RSA (not the design team). There should not be any direct communication between the design and audit teams so as to avoid collusion. (If we became aware of contact between the design and audit teams, the RSA audit would have to be repeated by a new audit team). On completion of the RSA, Highways England would then instruct the design team to prepare their response report.

I hope this helps.

Kind regards

Catherine Townend, Assistant Spatial Planner
Midlands Operations Directorate, Highways England
Mob[redacted]
Email: [redacted]

Please note, my working days are Monday-Thursday.

From: Townend, Catherine
Sent: 14 April 2021 08:52
To: Will Morgan [redacted]
Cc: Chris Bancroft [redacted]; Yvette Cross [redacted]; Simm, Ben <[redacted]>; Gray, Russell <[redacted]
Subject: RE: Land north-east of J10 M42, North Warwickshire

Good morning Will,

I have picked this up as my colleague Russ is also on leave this week.

I have instructed our engineering team to review the RSA brief. Please allow a minimum of 7 days for a response.

Kind regards

Catherine Townend, Assistant Spatial Planner
Midlands Operations Directorate, Highways England
[redacted]

Email: [redacted]

Please note, my working days are Monday-Thursday.

From: Will Morgan [redacted]
Sent: 13 April 2021 14:04
To: Townend, Catherine <[redacted]>; Gray, Russell
[redacted]
Cc: Chris Bancroft [redacted]>; Yvette Cross [redacted]
Subject: FW: Land north-east of J10 M42, North Warwickshire

Hello Catherine / Russell,

We have just received notification that Ben is currently out of the office until Monday 19 April 2021.

Please see the email below and attached files regarding a completed Road Safety Audit Brief for a project at Land north-east of Junction 10 M42.

Please could you review this brief whilst Ben is away, as once this has been approved we can instruct TMS to complete the Road Safety Audit.

Kind regards,
Will

Will Morgan
Engineer
Bancroft Consulting Limited

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w: www.bancroftconsulting.co.uk **e:** office@bancroftconsulting.co.uk

---

From: Will Morgan
Sent: 13 April 2021 13:55
To: Simm, Ben [redacted]>
Cc: Chris Bancroft <[redacted]>; Yvette Cross [redacted]
Subject: Land north-east of J10 M42, North Warwickshire

Hello Ben,

Following on from your discussions with my Director Chris on the project at Land north-east of Junction 10 M42, we are now in a position to instruct a Road Safety Audit to be completed of the proposed site access layout at the A5.

In line with requirements of Document GG 119 (Revision 2), please find attached a completed Road Safety Audit Brief for you to review. I have also attached the relevant supporting document as outlined within the brief.

Once you have approved this brief we will then instruct TMS to complete the Road Safety Audit.

I trust this information is satisfactory for you, however please let us know if you need anything else.

Kind regards,
Will

Highways England Company Limited | General enquiries: 0300 123 5000 |National Traffic Operations Centre, 3 Ridgeway, Quinton Business Park, Birmingham B32 1AF | https://www.gov.uk/government/organisations/highways-england | info@highwaysengland.co.uk

Registered in England and Wales no 9346363 | Registered Office: Bridge House, 1 Walnut Tree Close, Guildford, Surrey GU1 4LZ

APPENDIX G - CORRESPONDENCE WITH SCC

From: [redacted]

[redacted]

Subject: RE: Land northeast of J10 M11
Date: 29 May 2020 10:03:27
Attachments: image001.png
image003.png

Hello Simon

Firstly, many thanks for taking the time to talk through things with me on Wednesday morning. As discussed, my client is keen to have Staffordshire County Council's highways officers involved in this application to ensure the full extent of any impact their development might have within the county roads.

I have now reviewed the 'Information for Developers Pre-Application Highways Advice' document you kindly sent a link to, which confirms that our application for 120,000 gfa of B1/B2/B8 units would be classified as 'Category F' with a minimum fee of £3000. However, In light of the previous applications for development in the vicinity of the M42 Junction 10, where it was agreed that no material impact would occur within Staffordshire's county roads, I do not anticipate a significant amount of input actually being required, and certainly not the list of actions given within the advice document. Furthermore, whilst I agree that Staffordshire County Council officers should be consulted here, the responsibility for agreeing key details within the Transport Assessment (such as trip generation and distribution) should sit with the authorities covering the site itself, which in this instance happens to be Highways England and Warwickshire County Council.

During the conversation you expressed concern at potential increases at the Pennine Way junction with the A5, along with the 'Upper Gungate Corridor'. We shall therefore seek to address these concerns within any subsequent transport assessment process.

Moving forward, I note that the Pre-Application advice document does make some allowance for bespoke charges to be made where they are "necessary to the current proposal" and, as mentioned in our conversation I have worked on other schemes around the country where the council has adopted a timecharge approach to pre-application advice. So in lieu of the above, I should be grateful if you could seek confirmation that this approach would be adopted in this instance, without the generic upfront payment being sought. I suggest that this could comprise a prior agreement on costs and output for each specific task, for example reviewing the submitted application documents and commenting on impact issues relevant to Staffordshire county roads, or review the impacts of any proposed highway improvement scheme for M42 Junction 10 on Staffordshire county roads?

You advised that any suggestions would need to be approved internally before we proceed so I should be extremely grateful if you could consider the above and confirm whether SCC would be willing to adopt this reasonable alternative strategy for commissioning the services of its officers, or indeed if the approach set out with the Pre-Application Highways Advice could be adjusted to suit this situation.

Thanks again for your time and I look forward to hearing from you in due course.

Best regards

Chris

From: Hawe, Simon (E,I&S) [redacted]
Sent: 06 April 2020 10:08
To: Chris Bancroft [redacted]
Cc: Evans, Mark (E,I&S) [redacted]
Subject: RE: Land northeast of J10 M11

Good morning Chris,

Apologies for the late response on this but things have been hectic.

I have not seen these proposals before, have you had any dealings with anybody at Staffordshire County on this to date?

For information Staffordshire County Council now charge for pre-application discussions, as per the following link, although not sure what category it would fall into as we are a neighbouring authority.

https://www.staffordshire.gov.uk/Highways/highwayscontrol/HighwaysPre-ApplicationAdvice.aspx

I have to carry out a staff induction this morning but could call you later to discuss if that would benefit you?

Kind regards Simon.

Simon Hawe | Senior Engineer
Development and Improvements
Staffordshire County Council
Office Location: 3rd Floor, Staffordshire Place 1, Stafford ST16 2LP
Postal Address: Staffordshire County Council, 2 Staffordshire Place, Tipping Street, Stafford. ST16 2DH
[redacted]

[redacted]
www.staffordshire.gov.uk

From: Chris Bancroft <[redacted]>
Sent: 13 March 2020 14:17
To: Hawe, Simon (E,I&S) [redacted]>; Spencer, Will (E,I&S)
<[redacted]
Cc: Timothy, Richard [redacted]>; Hotspur <[redacted]>;
[redacted]; Yvette Cross <[redacted]>; Dave Pilcher
<[redacted]>; Alan Law <[redacted]>; Matthew Corner
<[redacted]>
Subject: Land northeast of J10 M11

Dear Simon and Will,

Please excuse the contact out of the blue but your reception staff will not hand out phone numbers. I have been given your names as someone that might be responsible for the eastern part of the county, adjacent to the A5 corridor.

Back at the end of 2019 (circa November 2019) we submitted a Scoping Study to Warwickshire County Council and Highways England in respect of proposals to develop a B1/B2/B8 scheme at the above site. Formal comments were provided by Highways England and a copy of these are attached, along with a pdf copy of the report itself, which advised that further input from the local highway authority should be sought in respect of the final study area and use of the local area traffic model (PARAMICS) to establish baseline conditions.

In lieu of the above Officers at Warwickshire County Council have offered to meet us on either 25th or 30th March 2020, at their offices in County Hall. My Client is understandably extremely anxious for us to make some progress with the Transport Assessment and so I should be extremely grateful if you could confirm your availability/preference to meet on one of these days.

Richard, by copy of this email please could you also confirm Highways England’s availability to attend the meeting please?

Dave Pilcher at Warwickshire County Council has kindly booked meeting rooms for both days so I would really like to confirm one particular day as soon as possible next week so that the other can be released.

I trust that the above details are clear and in order and look forward to hearing from you in respect of the meeting.

Best regards

Chris

Chris Bancroft
Director
Bancroft Consulting Limited

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APPENDIX H - WCC EMAIL DATED 10 JULY 2020

From: [redacted]
To:
Cc:
Subject: Re: Land to the northeast of M42 Junction 10
Date: 10 July 2020 13:27:23
Attachments: Outlook-0hq2vtu5.png
Outlook-slwkqhdq.png
Outlook-n2ydc11t.png
Outlook-eqieauul.png
Outlook-didqoz25.png
Outlook-klijqcfl.png
Outlook-meovf3us.png
Outlook-zkmt5l0f.png

Chris

I have tried calling but received no answer.

The reason why we have looked into this further is that I passed the project to a colleague who has highlighted the 1 hour/3 hour trip generation on the table provided, and this error has triggered further review.

On closer investigation the trip generation details offered in the scoping note only selected 3 sites with no details provided on those 13 deselected sites, this will need further justification. This results in only 3 sites being used to corroborate 7 year old data used for SOCG 4 years ago. The data provided appears to combine the B2 and B8 trip generation as a single trip rate. Please can you provide the B2 and B8 trip rates separately for review.

To be clear, I am only interested in ensuring we have a robust assessment of the highway network and ensure we have sufficient evidence to justify acceptance of these development proposals to members, bearing in mind this site does not form part of the the Local Plan allocations. If as a result of this exercise trip generation is higher there would be no implication on the licence fee for model access because this has already been agreed.

I hope this clarifies matters and loo forward to receiving the trip generation details. Can I also ask whether you have entered into pre-app with my colleagues in Development Group?

Kind Regards

Alan Law BSc MCIHT
County Transport Modeller and Team Leader
Transport Planning
Transport & Highways
Communities
Warwickshire County Council
[redacted]
[redacted]
www.warwickshire.gov.uk

From: Chris Bancroft [redacted]>
Sent: 10 July 2020 11:26
To: Alan Law [redacted]>; Moises Muguerza [redacted]>
Cc: Ben Simm <[redacted]; [redacted]; Yvette Cross [redacted]; Matthew Corner [redacted]; '[redacted]; Timothy, Richard [redacted]>
Subject: RE: Land to the northeast of M42 Junction 10

Alan,

Just tried to call your number but the line doesn't appear to be connecting.

We have been clear on our strategy here from day one in that the Scoping Study presented a case for utilising the previously agreed rates that were used for both the applications west and east of the M42. The rates were specifically agreed by WCC and HE in 2016 and compared well with the hourly rates presented within our Scoping Study (which included our own TRICS assessment). The three hour rates shown in my tables (both emails) are exactly the same as those previously agreed in 2016 and we have simply applied these to the different floor areas. Whilst a few years have indeed passed I do not believe this should warrant us revisiting this exercise again and surely members will be content to know that we have applied a consistent approach with that adopted for the two applications nearby. Surely this is a sufficient evidence base for us to proceed?

Are you now saying that WCC disputes the use of these trip rates?

I would be grateful if we could discuss this further over the phone [redacted]

Kind regards

Chris

Chris Bancroft
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---

From: Alan Law [redacted]
Sent: 10 July 2020 10:11
To: Chris Bancroft [redacted]>; Moises Muguerza <[redacted]
Cc: Ben Simm <[redacted] [redacted]; Jane Hodgetts [redacted] Yvette Cross [redacted] Matthew Corner [redacted]; 'Ed' [redacted]

Timothy, Richard [redacted]
Subject: Re: Land to the northeast of M42 Junction 10

Chris

Its a 3hr to 1 hr trip generation confusion caused by table you presented in your email which has caused this issue to arise. Please send the evidence, if members query trip generation at planning, without this evidence and of because of this confusion, we would all like pretty silly. Please can you just the Trics outputs so we we can confirm they are reasonable, this a reasonable request.

Many Thanks

Alan Law BSc MCIHT
County Transport Modeller and Team Leader
Transport Planning
Transport & Highways
Communities
Warwickshire County Council
[redacted]
www.warwickshire.gov.uk

From: Chris Bancroft [redacted]
Sent: 10 July 2020 10:06
To: Alan Law <[redacted]; Moises Muguerza <[redacted]
Cc: Ben Simm <[redacted] [redacted]; Jane Hodgetts <[redacted]>; Yvette Cross <[redacted]>; Matthew Corner <[redacted]
'Ed' [redacted]; Timothy, Richard [redacted]
Subject: RE: Land to the northeast of M42 Junction 10

Alan,

Please could you explain what issue has arisen with the details as HE was clearly happy to accept the continued use of the data? That might help in moving this matter forward.

Thanks

Chris

Chris Bancroft
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---

From: Alan Law [redacted]>
Sent: 10 July 2020 09:46
To: Chris Bancroft [redacted] Moises Muguerza [redacted]>
Cc: Ben Simm [redacted]; [redacted] Jane Hodgetts [redacted] Yvette Cross <[redacted]; Matthew Corner [redacted]>; 'Ed' <[redacted];
Timothy, Richard [redacted]
Subject: Re: Land to the northeast of M42 Junction 10

Chris

I acknowledge that we have previous agreed these rates in emails, however we have identified an issue and as no substantive modelling has been undertaken, it is only right to review due to this issue. If you could please send the Trics outputs to support the trip rates we can then review. As Moises has highlighted your table indicates both 3hr and 1hr trip generation in the same fields. Please send any supporting evidence other than the email trail, happy to review previous supporting evidence but its not our responsibility to identify and defend the trip rates presented. Trip rates agreed in 2015 are clearly based upon data older than 5 years, if you can provide current supporting Trics outputs to demonstrate that your trip generation is sound than we have no issue.

Many Thanks

Alan Law BSc MCIHT
County Transport Modeller and Team Leader
Transport Planning
Transport & Highways
Communities
Warwickshire County Council
[redacted]
www.warwickshire.gov.uk

From: Chris Bancroft <[redacted]
Sent: 10 July 2020 09:34
To: Moises Muguerza [redacted]
Cc: Ben Simm [redacted]
Subject: RE: Land to the northeast of M42 Junction 10

Good morning Moises.

I'm concerned about WCC disputing the trip generation details at this stage, particularly as it was agreed during our initial post-scoping study meeting on 30 March 2020 that we would liaise with Highways England in this regard. HE subsequently confirmed that the trip generation calculations presented to them in my email of 14 April 2020 were acceptable. I have also attached Alan's email of 15 May 2020 confirming the trip rates as being reasonable and acceptable for further use. Please also bear in mind that these rates were presented within the SoCG on highways matters for the Public Inquiry associated with the 'land to the southeast' of M42 Junction 10 in 2016 (as presented within the Scoping Study previously issued to WCC and reviewed within Alan's email of 15 May 2020). My recent email of 3 July 2020 merely seeks to agree the revised calculations using the previously agreed rates so I really do not understand why we need to revisit this piece of work.

I have attached the emails referenced above for ease of reference. Hopefully this will provide sufficient information for WCC continue its previous support for the trip rates. It is vital that we establish this point urgently so that progress can be made on this upcoming application.

I trust that the above and attached details allay your concerns regarding the trip rates and allow you to confirm urgently that the modelling process can continue accordingly. If not, then please get in touch at the earliest opportunity to discuss how we can take this matter forward.

Kind regards

Chris

Chris Bancroft
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From: Moises Muguerza <[redacted]>
Sent: 10 July 2020 09:06
To: Chris Bancroft [redacted]
Cc: Ben Simm [redacted];
Alan Law [redacted]>; Timothy, Richard [redacted]
Subject: RE: Land to the northeast of M42 Junction 10

Good morning Chris,

Thanks for your email. Apparently there has been some confusion from as in your trip rates you indicate peaks and included another table summarising the 3-hour peak periods. I have reviewed the previous shared tables (attached), and those were only including the 3-hour peak periods (where I think is the source of the confusion). We need to review the trip rates and double check the TRICS data before starting any modelling. We need this to support this application in the future, as we require to provide proof for the trip rates. Therefore, I would like to request if you could please share the TRICS outputs used for the calculations. I am not sure if you have previously shared this, but I hope this does not present any inconvenience.

Thank you very much in advance.

Kind Regards,

Moises Muguerza MSc MCIHT
Senior Transport Planner and Modeller
Transport & Highways
Communities
Warwickshire County Council
[redacted]
www.warwickshire.gov.uk

From: Chris Bancroft [redacted]
Sent: 03 July 2020 15:00
To: Timothy, Richard [redacted]; Alan Law [redacted]>
Cc: Ben Simm <[redacted]>; [redacted]; Jane Hodgetts [redacted]; Yvette Cross <[redacted]>; Matthew Corner <[redacted]; 'Ed' [redacted]; Moises Muguerza [redacted]k>
Subject: RE: Land to the northeast of M42 Junction 10

Hello Richard and Alan.

Further to our recent exchanges of emails in respect of the above, and in light of local demand from potential future tenants, my client has now decided that they wish to pursue an application for 120,000 sqm of mixed B1/B2/B8 use but now with a 10% (12,000 sqm gross floor area) B1/B2 element and a 90% (108,000 sqm gross floor area) B8 element. This differs slightly from the previous split of uses (as presented below in my email of 14 April) and using the previously agreed trip rates would now equate to the following trip generation:

	AM Peak Hour						PM Peak Hour					
	arrs		deps		totals		arrs		deps		Totals	
	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	Flow	calculated rate per 100sqm
Proposed peak hour traffic generation												
B1c/B2 (12,000sqm @ 10%%)	56	0.47	11	0.095	67	0.565	0	0.004	43	0.36	43	0.40
B8 (108,000sqm @ 90%)	77	0.071	29	0.027	106	0.098	35	0.032	94	0.087	129	0.118
Totals	133	0.171	40	0.043	173	0.215	35	0.034	137	0.155	172	0.189

	AM Peak Hour						PM Peak Hour					
	arrs		deps		totals		arrs		deps		totals	
	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	Flow	calculated rate per 100sqm
Proposed 3-hour peak period traffic generation												
B1c/B2 (12,000sqm @ 10%)	98	0.814	31	0.260	129	1.074	23	0.193	89	0.741	112	0.934
B8 (108,000sqm @ 90%)	232	0.215	100	0.093	332	0.308	112	0.104	212	0.196	324	0.300
Totals	330		131		461		135		301		436	
Proposed 3-hour peak period HGV trip rates and trip generation												
B1c/B2 (12,000sqm @ 10%)	8	0.066	6	0.052	14	0.118	3	0.027	3	0.029	6	0.056
B8 (108,000sqm @ 90%)	48	0.044	49	0.045	97	0.089	57	0.053	50	0.046	107	0.099
Totals	56		55		111		60		53		113	

Following on from my email of 14 April 2020, I should be grateful if you could each confirm that this change in traffic generation would be acceptable for any corresponding transport assessment and, more importantly, the associated modelling work.

In addition to the above, we have been provided with a quote to undertake the required network modelling by Vectos and I attach a copy of their scoping document for your consideration. As suggested by Vectos, I should be extremely grateful if Richard could review the document and confirm that Highways England would support the approach presented, which I understand has already been agreed by Alan. Once we have this confirmation then my client should be in a position to instruct Vectos to carry out their stated tasks.

MOISES/ALAN – Please could you confirm whether the above change in traffic generation has any material effect on the already completed MND work or licence fees?

I trust that the above details are in order and I look forward to receiving your confirmation that we are ok to proceed on the above basis in due course. Please feel free to call me on [redacted] should you have any questions or require further clarification on anything.

Have a good weekend.

Kind regards

Chris

Chris Bancroft
Director
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From: Chris Bancroft
Sent: 14 April 2020 12:55
To: Timothy, Richard [redacted]
Cc: Ben Simm [redacted] Alan Law [redacted] [redacted]; Jane Hodgetts [redacted]; Yvette Cross <[redacted] Matthew Corner <[redacted]>
Subject: Land to the northeast of M42 Junction 10

Hello Richard,

I hope you are keeping well?

During our recent MT Meeting I raised a query regarding comments within the HE letter of 12 November 2019 under the section titled 'Traffic Generation & Growth'. The comments highlight a potential discrepancy between trip rates presented within the 'Land to the South West of Junction 10 on M42' and those identified within the Scoping Study. At the meeting you requested that I set out my response to this point in writing so that you can liaise with your sub-consultant.

To start, Section 2.3 of the Scoping Study presented details of both the 'Land to the South West' and 'Land to the South East' applications, noting how the 'Land to the South East' application was the latter of the two schemes to receive planning permission by way of Appeal in November 2016. It therefore seems appropriate to adopt the findings of this application and not the earlier consented scheme.

Appendix C of the Scoping Study included extracts from the TA and SoCG from the 'Land to the South East of Junction 10' application and appeal process. Page 17 of the Transport Assessment set out within Table 5-3 the '6 hour modelled peak – Vehicle Trip Rates and Trip Generation'. I have attached a copy of this table for ease of reference, which confirms the three hour total traffic generation for use within the PARAMICS modelling process based on a 75% B8 and 25% B1c/B2 split.

Section 6 of the Scoping Study sought to undertake a 'peak hour assessment' of the potential trip rates by undertaking a calibration check between current TRICS data and the previously agreed hourly rates that were set out within the agreed Statement of Common Ground that accompanied the appeal process. Section 6.2 demonstrated how the two sets of peak hour results were comparable but concluded that in lieu of the specific B1c/B2 vs B8 assessment that had been carried out within the TA and SoCG then it would be prudent to adopt these rates alongside the same development split. The detailed calculations are set out below to further explain how the total traffic generation figures of 258 (morning peak hour) and 227 (evening peak hour) correlate with the SoCG rates/figures.

	AM Peak Hour						PM Peak Hour					
	arrs		deps		totals		arrs		deps		Totals	
	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	Flow	calculated rate per 100sqm
SoCG details												
B1c/B2 (20,000sqm @ 25%)	94	0.47	19	0.095	113	0.565	8	0.004	72	0.36	80	0.40

B8 (60,000sqm @ 75%)	43	0.071	16	0.027	59	0.098	19	0.032	52	0.087	71	0.118
totals	137	0.171	35	0.043	172	0.215	27	0.034	124	0.155	151	0.189
Proposed peak hour traffic generation												
B1c/B2 (30,000sqm @ 25%)	141	0.47	29	0.095	170	0.565	12	0.004	108	0.36	120	0.40
B8 (90,000sqm @ 75%)	64	0.071	24	0.027	88	0.098	29	0.032	78	0.087	107	0.118
Totals	205	0.171	53	0.043	258	0.215	41	0.034	186	0.155	227	0.189

In lieu of the above, it is proposed that the above peak hour traffic generation calculations should be adopted, alongside the three-hour morning and evening peak results which have been calculated using the agreed details from Table 5-3 of the TA. These details will be presented for inclusion within the agreed PARAMICS model as per our discussions at the meeting.

	AM Peak Hour						PM Peak Hour					
	arrs		deps		totals		arrs		deps		totals	
	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	flow	calculated rate per 100sqm	Flow	calculated rate per 100sqm
Proposed 3-hour peak period traffic generation												
B1c/B2 (30,000sqm @ 25%)	244	0.814	78	0.260	322	1.074	58	0.193	222	0.741	280	0.934
B8 (90,000sqm @ 75%)	194	0.215	84	0.093	277	0.308	94	0.104	176	0.196	270	0.300
totals	438		162		599		152		398		550	
Proposed 3-hour peak period HGV trip rates and trip generation												
B1c/B2 (30,000sqm @ 25%)	20	0.066	16	0.052	35	0.118	8	0.027	9	0.029	17	0.056
B8 (90,000sqm @ 75%)	40	0.044	41	0.045	80	0.089	48	0.053	41	0.046	89	0.099
totals	60		57		115		56		50		106	

Summary

Following consideration of the above, I should be grateful if you could confirm the proposed traffic generation calculations are acceptable to Highways England so that we may proceed and liaise with WCC and develop the PARAMICS model. Also, as presented within the minutes of the meeting, I should also be grateful if HE could confirm it would accept a Future Year modelling scenario of 2031, to accord with the Local Plan supporting data as initially required.

I trust that the above details are clear and in order and look forward to receiving your confirmation on the way forward for the traffic generation calculations. Please do not hesitate to contact me if you need to discuss any aspect of the above in further detail.

Best regards

Chris

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Hodgetts Estates

Proposed Employment Land Northeast of J10 M42, North Warwickshire

Transport Assessment

May 2021 (Revision C, November 2021)

VOLUME 3: APPENDICES I to K

BANCROFT
CONSULTING

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APPENDIX I - EMAILS CONFIRMING AGREEMENT ON TRIP RATES

From: [redacted]

[redacted]

Subject: RE: Employment land northeast of M42 Junction 10
Date: 02 October 2020 08:52:15
Attachments: image015.png
image017.png
image018.png
image019.png
image020.jpg
image021.jpg
image022.jpg
image023.png
image024.jpg
image025.png
image026.png
image027.png
image028.png
image029.png
image030.png

Hi Chris,

Thanks for clarifying it.

I can confirm that WCC agrees with the proposed approach.

Kind Regards,

Moises Muguerza MSc MCIHT
Senior Transport Planner and Modeller
Transport & Highways
Communities
Warwickshire County Council
[redacted]
www.warwickshire.gov.uk

From: Chris Bancroft [redacted]
Sent: 01 October 2020 17:47
To: Moises Muguerza [redacted]
Cc: Dave Pilcher [redacted] Yvette Cross [redacted]; Alan Law [redacted]>[redacted]; Edward Hodgetts [redacted]>; Ben Simm [redacted]
Subject: RE: Employment land northeast of M42 Junction 10

HI Moises,

Thanks for coming back to me so promptly on this. I agree completely that the B1/B2/B8 uses should be assigned using the MND process but surely the lorry park is only attracting traffic already on the Strategic Road Network and therefore merely needs to be represented as a turning movement at the access junction? I believe this is a well established point of principle for this type of development activity.

If you could confirm WCC agrees to the above approach then I shall liaise with Vectos to commence their work. Ben, could you please confirm on behalf of Highways England that you are content with the trip generation and assignment principles being discussed and agreed below with WCC?

Many thanks

Chris

Chris Bancroft
Director
Bancroft Consulting Limited

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---

From: Moises Muguerza <[redacted]>
Sent: 01 October 2020 14:01
To: Chris Bancroft <[redacted]
Cc: Dave Pilcher <[redacted]
Subject: RE: Employment land northeast of M42 Junction 10

Hi Chris,

Thanks for your email. I am glad this project is moving forward now.

The trip generation looks correct.

Regarding the assignment, this should be done using the distribution from the MND as suggested in May by Alan. Could you please review this?

Could you please also confirm if you have agreed a distribution approach with Highways England?

Attached:
- Email from May suggesting using the MND for trip distribution.
- Email from June containing the MND files.

Kind Regards,

Moises Muguerza MSc MCIHT
Senior Transport Planner and Modeller
Transport & Highways
Communities
Warwickshire County Council
[redacted]

From: Chris Bancroft <[redacted]
Sent: 01 October 2020 11:11
To: Moises Muguerza <[redacted]
[redacted]
Subject: RE: Employment land northeast of M42 Junction 10

Morning Moises,

Many thanks for your email of 23 September 2020 setting out WCC's revised assessment of the suitable trip rates for this proposed scheme. Reading through the details it is evident that WCC is now in a position to accept the following rates for each element (please note that I have extracted the adjacent hours data from the identified morning and evening peak results you provided).

B8 Warehousing (per 100 sqm gfa) – 90 000 sqm gfa

Trip rates

Morning period		All Vehicles	
0700 to 0800	0.154 arrive	0.081 depart	0.235 total
0800 to 0900	0.117 arrive	0.092 depart	0.209 total
0900 to 1000	0.120 arrive	0.082 depart	0.202 total
Evening period			
1600 to 1700	0.082 arrive	0.122 depart	0.204 total
1700 to 1800	0.086 arrive	0.140 depart	0.226 total
1800 to 1900	0.048 arrive	0.089 depart	0.137 total

Trip generation

Morning period		All Vehicles	
0700 to 0800	139 arrive	73 depart	212 total
0800 to 0900	105 arrive	83 depart	188 total
0900 to 1000	108 arrive	74 depart	182 total
Evening period			
1600 to 1700	74 arrive	110 depart	184 total
1700 to 1800	77 arrive	126 depart	203 total
1800 to 1900	43 arrive	80 depart	123 total

B1(c)/B2 (per 100 sqm gfa) – 10 000 sqm gfa

Trip rates

Morning period		All Vehicles	
0700 to 0800	0.253 arrive	0.031 depart	0.284 total
0800 to 0900	0.658 arrive	0.078 depart	0.736 total
0900 to 1000	0.261 arrive	0.098 depart	0.359 total
Evening period			
1600 to 1700	0.068 arrive	0.248 depart	0.316 total
1700 to 1800	0.120 arrive	0.521 depart	0.641 total
1800 to 1900	0.063 arrive	0.290 depart	0.353 total

Trip generation

Morning period		All Vehicles	
0700 to 0800	25 arrive	3 depart	28 total
0800 to 0900	66 arrive	8 depart	74 total
0900 to 1000	26 arrive	10 depart	36 total
Evening period			
1600 to 1700	7 arrive	25 depart	32 total
1700 to 1800	12 arrive	52 depart	64 total
1800 to 1900	6 arrive	29 depart	35 total

Proposed 150 space truck stop (details as presented within BCL email of 7 July 2020)

Trip generation

Morning period		All Vehicles	
0700 to 0800	8 arrive	31 depart	39 total
0800 to 0900	13 arrive	17 depart	30 total
0900 to 1000	12 arrive	14 depart	26 total
Evening period			
1600 to 1700	22 arrive	11 depart	33 total
1700 to 1800	25 arrive	9 depart	34 total
1800 to 1900	23 arrive	9 depart	32 total

Note specific assignment/modelling method as set out in email as follows:

"As regards the potential assignment of these turning movements through the proposed site access and then through the network, it is recommended that a simple equal split of the A5 and M42 carriageways should be sufficient in this instance, or 25% arriving and departing via the north (towards M42 junction 9), 25% via the east (towards Dordon and the A5), 25% via the south (towards M42 Junction 11), and then 25% via the east (towards Tamworth and the A5). In practice this will only mean that 50% of the above flows will represent a new/reassigned turning movement at Junction 10 of the M42, where 25% (or up to 10 peak hour movements) would be associated with the south to east (and vice versa) movement and similarly 25% associated with the north to east (and vice versa) movement. Predicted peak hour movements from the A5 would simply be a transfer from a passing movement turning into the site and will have no affect beyond the site access junction itself. ***This should support the proposed approach to only modelling the strategic impact of the proposed B1/B2 and B8 uses***." [my emphasis]

Total Trip Generation

Morning period		All Vehicles	
0700 to 0800	164 arrive	76 depart	240 total
0800 to 0900	171 arrive	91 depart	262 total
0900 to 1000	134 arrive	84 depart	218 total
Evening period			
1600 to 1700	81 arrive	135 depart	216 total
1700 to 1800	89 arrive	178 depart	267 total
1800 to 1900	49 arrive	109 depart	158 total

For clarity, I should be extremely grateful if you could reply confirming that the above details are now agreed with WCC and therefore suitable for progression with the network modelling. I have also copied Ben Simm in on this email and should be grateful if he could confirm this point to from HE's perspective.

Thank you for your assistance so far on this matter.

Kind regards

Chris

Chris Bancroft
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---

From: Moises Muguerza [redacted]
Sent: 23 September 2020 18:20
To: Chris Bancroft <[redacted]
[redacted]
Subject: RE: Employment land northeast of M42 Junction 10

Hi Chris,

As accorded in our phone calls, I have gone back to review the trip rates you were originally proposing for B8 and B1(c) land use which have been extracted from PJA's planning application for Land West of the M42 J10 (PAP/2014/0014 attached). Nevertheless, the trip rates used in that TA, which are detailed on their TRICS outputs in their Appendix D where the parameter summary indicates a date range between 2001 and 2013 shown in the extract below (p106 for B8 and p48 for B1(c)), were calculated using date filtering from 2001 to 2013 as indicated in their trip rate calculation on p105 and p47 respectively. Unfortunately, we consider this data outdated as all the surveys used in the samples were from 2002 to 2010, having more than 10 years old. We certainly cannot either accept trip rates that would try to assimilate them by over filtering.

Table 1. Extract from Land South West M42 Junction 10 TA, PJA 2013

Figure 1. Extract from Land West of the M42 J10 TA (p106), PJA 2013

The trip rates we are proposing to use for B8 are more similar to recently approved planning applications in Warwickshire such as Connect's Proposed Mixed Use Development Rowlands Way, Atherstone TA from 2018 (attached) as shown in table 2, and to the accepted trip rates from a development with similar characteristics B8 and B1 (c) as showed in table 3. The first one for a site with 37,616 sqm and the second for a site with 140,000 sqm (50% B8 and 50% B1(c)), and both with updated trip rate calculations.

Table 2. Extract from Proposed Mixed Use Development Rowlands Way, Atherstone TA, Connect 2018

Table 3. Extract from B8 and B1 (c) approved trip rates in Warwickshire 2020

I would also like to take this opportunity to state that we can assure you that our protocol is line with current TRICS guidance, and we have run the TRICS Trip Rate tool including Scotland and Wales, having no differences for B8 trips. As mentioned before, we would like to help you progressing this application. Therefore, we would suggest you to use the proposed or to update yours following our protocol and TRICS Good Practice. We would accept considering your site as "Edge of Town" for the main land use, and therefore including "Suburban Area" and "Free Standing" as discussed and as suggested by TRICS Good Practice Guide (table 4). Meaning that we would be able to accept the trip rate from your previous email shown in Table 5 which follows our protocol.

Table 4. TRICS Good Practice Guide, 2016

Table 5. B8 Trips from Protocol

	Identified Rates from WCC Filter Criteria					
	AM peak			PM Peak		
	Arrive	Depart	Total	Arrive	Depart	Total
Trip Rates	0.117	0.092	0.209	0.086	0.140	0.226

Nevertheless, to keep consistency with your site's characteristics and B8 Trip Rates, for B1 (c) land use we would require you to remove "Edge of Town Centre" and "Neighbourhood Centre" from the main selection filtering, and then selecting only B1 land use in the secondary filtering. Therefore we suggest the following trip rates for B1 (c) land use (TRICS Output attached):

Table 6: B1 (c) Trip Rates following protocol

			ARRIVALS			DEPARTURES			TOTALS
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
06:00-07:00	1	11375	0.149	1	11375	0.044	1	11375	0.193
07:00-08:00	11	4173	0.253	11	4173	0.031	11	4173	0.284
08:00-09:00	11	4173	0.658	11	4173	0.078	11	4173	0.736
09:00-10:00	11	4173	0.261	11	4173	0.098	11	4173	0.359
10:00-11:00	11	4173	0.209	11	4173	0.161	11	4173	0.37
11:00-12:00	11	4173	0.096	11	4173	0.129	11	4173	0.225
12:00-13:00	11	4173	0.133	11	4173	0.172	11	4173	0.305
13:00-14:00	11	4173	0.157	11	4173	0.161	11	4173	0.318
14:00-15:00	11	4173	0.113	11	4173	0.139	11	4173	0.252
15:00-16:00	11	4173	0.065	11	4173	0.124	11	4173	0.189
16:00-17:00	11	4173	0.068	11	4173	0.248	11	4173	0.316
17:00-18:00	11	4173	0.12	11	4173	0.521	11	4173	0.641
18:00-19:00	11	4173	0.063	11	4173	0.29	11	4173	0.353
19:00-20:00	1	11375	0.044	1	11375	0.132	1	11375	0.176
Daily Trip Rates:			2.389			2.328			4.717

Please note that only a maximum of 10% should be destinated to B1 (c) land use, so this should not have any major impacts on trip generation, but mind that it is highly important for us to agree with the correct trip rates, as the application is for a specific land use, and we are not fully aware on how the internal operations of this development would work or how any future users of the site would, it if they decide to keep the same land use (and therefore the agreed trip rates). If you have a different filtering proposal, we would be able to review it as long as it is consistent and properly justified as mentioned before in our protocol and aligned with TRICS Good Practice Guide.

I hope we are able to agree with the proposed trip rates unless there is any other requirement by HE.

Please address any further correspondence through Development Management so we can progress with this project.

Kind Regards,

Moises Muguerza MSc MCIHT
Senior Transport Planner and Modeller
Transport & Highways
Communities
Warwickshire County Council
[redacted]
www.warwickshire.gov.uk

From: Moises Muguerza
Sent: 18 September 2020 09:59
To: Chris Bancroft [redacted]
Subject: RE: Employment land northeast of M42 Junction 10

Hi Chris,

Thank you very much for your email and for expressing your concerns about our modelling protocol.

As I have previously mentioned we are here to get an agreement and we need consistency on the trip rates and the selection criteria to be able to support your application. TRICS provides a guidance on how to use the surveys they offer, while our modelling protocol establishes WCC minimum requirements for modelling a site that would be in or impact the network in Warwickshire regardless other requirements for other Local Authorities, and we cannot make any exceptions. Mind that additionally to the requirements established in our protocol, we consider other filtering criteria as TRICS Good Practice suggests "the most important data fields in terms of site selection compatibility are the main category and sub-category location types", without incurring in over selection of parameters that would lead to an unreasonable sample size. Therefore additionally to our protocol's minimum requirements we suggest the following filtering for the main category and sub-category location types:

For the B8 trip rates calculation, additionally to the criteria selections suggested in our protocol, we would suggest taking out "Free Standing" and "Commercial Zone" from your selection criteria. This should leave you with "Suburban Area" and "Edge of Town" for the main categories, and "Industrial Zone" for the Sub-categories locations which would match your site's characteristics, and you should get the following trip rates (similar to our first suggestion):

			ARRIVALS			DEPARTURES			TOTALS
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
05:00-06:00	3	11889	0.123	3	11889	0.076	3	11889	0.199
06:00-07:00	3	11889	0.213	3	11889	0.115	3	11889	0.328
07:00-08:00	3	11889	0.227	3	11889	0.151	3	11889	0.378
08:00-09:00	3	11889	0.129	3	11889	0.16	3	11889	0.289
09:00-10:00	3	11889	0.126	3	11889	0.104	3	11889	0.23
10:00-11:00	3	11889	0.101	3	11889	0.123	3	11889	0.224
11:00-12:00	3	11889	0.087	3	11889	0.084	3	11889	0.171
12:00-13:00	3	11889	0.101	3	11889	0.084	3	11889	0.185
13:00-14:00	3	11889	0.093	3	11889	0.09	3	11889	0.183
14:00-15:00	3	11889	0.09	3	11889	0.098	3	11889	0.188
15:00-16:00	3	11889	0.146	3	11889	0.107	3	11889	0.253
16:00-17:00	3	11889	0.14	3	11889	0.216	3	11889	0.356
17:00-18:00	3	11889	0.182	3	11889	0.264	3	11889	0.446
18:00-19:00	3	11889	0.087	3	11889	0.137	3	11889	0.224
19:00-20:00	3	11889	0.067	3	11889	0.109	3	11889	0.176
20:00-21:00	3	11889	0.048	3	11889	0.056	3	11889	0.104
21:00-22:00	1	22270	0.031	1	22270	0.018	1	22270	0.049
Daily Trip Rates:			1.991			1.992			3.983

As previously mentioned on the email from 12/08/2020, we had no established a preferred option for the B1(c) land use area trips rates. The trip rates we shared before were for an Industrial Estate, and your development would be classified as Industrial Units due to the size. Considering 1ha of your site would be B1(c), I would suggest keep using Industrial Units in the selection criteria and after following the selection criteria from our protocol, I would also suggest selecting only "Suburban Area" and "Edge of Town" for the main categories, and "Industrial Zone" for the Sub-categories locations, to be consistent with the B8 land use selection and to match your site's characteristics. This means unselecting "Edge of Town Centre", "Neighbourhood Centre" and "Free Standing" for the main location types, and "Commercial Zone" for the Sub-categories. Finally, we would also suggest keeping only B1 sites in the final selection filter. This should give you the following trip rates:

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
07:00-08:00	9	2267	0.284	9	2267	0.044	9	2267	0.328
08:00-09:00	9	2267	0.505	9	2267	0.123	9	2267	0.628
09:00-10:00	9	2267	0.358	9	2267	0.137	9	2267	0.495
10:00-11:00	9	2267	0.23	9	2267	0.191	9	2267	0.421
11:00-12:00	9	2267	0.137	9	2267	0.147	9	2267	0.284
12:00-13:00	9	2267	0.167	9	2267	0.176	9	2267	0.343
13:00-14:00	9	2267	0.235	9	2267	0.279	9	2267	0.514
14:00-15:00	9	2267	0.147	9	2267	0.191	9	2267	0.338
15:00-16:00	9	2267	0.093	9	2267	0.118	9	2267	0.211
16:00-17:00	9	2267	0.074	9	2267	0.333	9	2267	0.407
17:00-18:00	9	2267	0.059	9	2267	0.377	9	2267	0.436
18:00-19:00	9	2267	0.025	9	2267	0.275	9	2267	0.3
Daily Trip Rates:			2.314			2.391			4.705

I am attaching to this email TRICS outputs for your review. I believe this is a sensible filtering and which would give you a reasonable sample size, but please let me know if you would agree or have any comments on the Trip Rates we are suggesting.

Regarding the licence period, we will extend it as required until we agree a trip rate.

I have copied [redacted] from HE to this email, so he can be aware of your concerns and if you would like to discuss your previously agreed trip rate with them or our requirements.

If you have any other questions, please let me know.

Kind Regards,

Moises Muguerza MSc MCIHT
Senior Transport Planner and Modeller
Transport & Highways
Communities
Warwickshire County Council
[redacted]
www.warwickshire.gov.uk

From: Chris Bancroft <[redacted]
Sent: 11 September 2020 12:38
To: Moises Muguerza <[redacted]
[redacted]
Subject: RE: Employment land northeast of M42 Junction 10

Hello Moises,

Following on from your recent email below, I write to summarise our position regarding the traffic generation issues following extensive further work to address your concerns.

As previously stated, the trip rates were previously agreed with both HE and WCC and this change of stance from WCC has placed significant delay on the project and eaten into the 12 month license agreement my client has paid a considerable amount for. I trust that this will be taken into account should timescales become an issue further down the line.

My biggest concern with WCC's position is that we are being asked to dismiss established practice that has been applied throughout the region in support of many other independent planning applications for similar developments. The previously agreed approach followed that adopted within many other planning applications for similar local development and the only justification we are really being given here is that the selection process must follow the generic protocol document. I am regularly reminded by planning colleagues of PPG which states that grounds for costs can include: *"vague, generalised or inaccurate assertions about a proposal's impact, which are unsupported by any objective analysis"*. I therefore hope we can agree a way forward on this matter urgently and to further investigate this position have prepared the attached Table TG1.

Table TG1 sets out the agreed trip rates from a range of sites nearby, including the recently approved schemes at Junction 11 of the M42 and also within Relay Park that have yet to be discussed. The results compare the three sets of trip rates presented within my email of 13 August (see below) against those previously approved. The results are shown whereby a positive value in the comparison reflects where the approved rate was higher than the comparison point. This demonstrates how revised TRICS assessment presented within my email of 3 July remain comparable with those recently approved at nearby similar developments. It also shows how the B8 trip rates presented by WCC in the email of 12 August are consistently significantly higher than the precedents already established. On this basis it should be reasonable for the application to continue with the rates already agreed with Highways England.

<u>WCC PROTOCOL</u>

Notwithstanding the above please see below the TRICS summary, which follows the advice within your email of 24 August 2020 and WCC's 'Modelling Protocol for Developments' document. We have completed separate TRICS searches for the B8 and B1(c) elements of the development and compared the trip rates against BCL's previously identified rates and WCC's preferred rates, as outlined in your email of 13 August 2020.

B8 Commercial Warehousing TRICS Search

-

To obtain trip rates for the B8 commercial warehousing element of the proposed development, the category ‘Employment – Warehousing (02/F)’ was searched and filtered to exclude any sites located outside of mainland England and within cities. The search only included surveys that were undertaken on a neutral weekday (Tuesday, Wednesday, Thursday) and the default survey dates were retained to ensure no old sites were included (i.e. pre 2012). The search generated 5 surveys from 5 sites, all of which adopted B8 use (no unclassified uses) and therefore were retained in the search. Of the 5 sites generated by the search filter, the smallest comprised a 2950sqm unit (Domino’s Pizza storage warehouse), whilst the largest comprised a 50,000sqm unit (Lidl Distribution Centre). The trip rates calculated from an average of the 5 surveys are shown in Table 1 below alongside BCL’s previously identified rates and WCC’s preferred rates for comparison.

Table 1 – Trip rates for the B8 element of the proposed development

	Identified Rates from WCC Filter Criteria						BCL Identified Rates						WCC Preferred Rates					
	AM peak			PM Peak			AM peak			PM Peak			AM peak			PM Peak		
	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total
Trip Rates	0.117	0.092	0.209	0.086	0.140	0.226	0.072	0.026	0.098	0.032	0.087	0.119	0.116	0.162	0.278	0.196	0.272	0.468

The results at Table 1 show how the trip rates from WCC’s filter criteria sit in between BCL’s identified rates and WCC’s preferred rates.

<u>B1(c) Light Industrial TRICS Search</u>

To obtain trip rates for the B1(c) light industrial element of the proposed development, the category ‘Employment – Industrial Unit (02/C)’ was search and the filtering process retained the same criteria as above to ensure consistency. This included the removal of any sites located outside of mainland England and within cities, along with any surveys undertaken outside of a neutral weekday (Tuesday, Wednesday, Thursday). Again, the default survey dates were retained. The search generated 11 surveys from 10 different sites (one re-survey) and these 10 surveys were all retained, as none were labelled as an ‘unclassified’ site. The smallest site comprised a 2600sqm unit occupied by an engineering products company in Derby, whilst the largest unit comprised a 80,000sqm unit operating as a gin distillery in Laverstoke. The trip rates calculated from an average of the 10 surveys are shown in Table 2 below alongside BCL’s previously identified rates and WCC’s preferred rates for comparison.

Table 2 – Trip rates for the B1(c) element of the proposed development

	Identified Rates from WCC Filter Criteria						BCL Identified Rates						WCC Preferred Rates					
	AM peak			PM Peak			AM peak			PM Peak			AM peak			PM Peak		
	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total
Trip Rates	0.229	0.030	0.259	0.030	0.219	0.249	0.471	0.094	0.565	0.041	0.358	0.399	0.547	0.151	0.698	0.101	0.491	0.592

The results at Table 2 show how the trip rates from WCC’s filter criteria are lower than the rates identified by BCL and WCC’s preferred rates.

<u>TRICS Good Practice Guide</u>

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The above filtering process has followed the advice within WCC’s ‘Modelling Protocol for Developments’ document. However, the TRICS ‘Good Practice Guide’ (2016) provides guidance to people using the system and is fully endorsed by TRICS Consortium Limited. Whilst WCC recommends that only regions within mainland England are included, Paragraph 4.1 of the Good Practice Guide states *“The issue of data being included/excluded by region has often been raised by users. This has led to TRICS® undertaking research into trip rates and regional variation. This research was inconclusive in its results. In some areas where compatibility was expected, the reverse was true. The converse was also true”*. The report goes on to state that trip rates for sites in similar regions i.e. Glasgow to Greater Manchester could realistically be applied and therefore sites should not be removed by region alone and instead engineering judgement should be applied that compares the characteristics of one site against another to establish whether they are comparable. However, WCC’s filter criteria does not specify what individual locations on TRICS should be retained when calculating trip rates for particular sites. Paragraph 4.5 of the ‘Good Practice Guide’ *states “the most important data fields in terms of site selection compatibility are the main category and sub-category location types”,* with Table 1 of the document setting out a ‘general guide to site compatibility by main location type’. This clearly recommends that the filtering process includes/removes sites by location (for example free standing sites should not be included in a search for a suburban site). Therefore, it is debateable whether WCC’s filtering process is accurate as it only requests for sites located within cities to be removed.

Furthermore, the Good Practice Guide provides advice on the search criteria at Section 11. Paragraph 11.2 states *“TRICS® suggests that a more “inclusive” than “exclusive” approach to site filtering is applied, as long as search criteria are not compromised. This is the important part. Be flexible with your criteria, but not so much that the results could be deemed meaningless”*. The above statement suggests that search filters should not be rigid, but instead be inclusive so that the search criteria generates a higher number of surveys. The TRICS Good Practice Guide is there to help users make a more informed choice on the sites included in any search, rather than provide users with a particular list of site(s) to use. This is outlined within Paragraph 14.6 of the Good Practice Guide which states *“The thing to remember is that TRICS® is designed to provide guidance on a range of potential trip generations, rather than an absolute prediction for any specific scenario. This is because there are many factors that can affect trip rates, both internal and external to the selection parameters available within TRICS®”*. This is further reiterated within the summary at Paragraph 20.20, which states *“The careful use of TRICS®, in line with this guidance, will help practitioners make better informed judgements”*. As such, it is still down to the user to review the data and pick the most appropriate site(s) based on a set of specific characteristics including location, opportunities for sustainable travel and the type of activities/operations that take place.

<u>Summary</u>

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In summary, WCC’s ‘Modelling Protocol for Developments’ document and associated filtering protocol does not appear to follow the guidance recommended in the TRICS Good Practice Guide and is highly exclusive meaning that the criteria often limits the number of sites generated by any individual search. This goes against the recommendations within the Good Practice Guide which recommends an ‘inclusive’ approach and for each user to then manually select specific site(s) based on an engineering judgement of a site’s characteristics when calculating suitable trip rates. Hence, we would continue to adopt the position that the ‘BCL Identified Rates’ provided in the above tables are suitable and reflect local characteristics that are comparable to the site and the development proposals.

I should therefore be grateful if you would further consider the above details and respond confirming that WCC would now be in a position to support the initially agreed rates for the proposed development scheme. This is now becoming an urgent matter and progress must be made with the strategic modelling, but only using flows that are appropriate and representative of the true impact this development could have within what is already a sensitive area. As ever, please feel free to come back to me by email or telephone if you would like to discuss any points from the above.

Kind regards

Chris

Chris Bancroft
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From: Moises Muguerza <[redacted]
Sent: 24 August 2020 22:28
To: Chris Bancroft <[redacted]
[redacted]
Subject: RE: Employment land northeast of M42 Junction 10

Hi Chris,

Thanks for your email. Unfortunately, I am quite busy at the moment and I do not have any availability for any meetings until the second week of September. In the meanwhile, I hope I can respond some of your queries.

Regarding the trip rates. First of all, we need some consistency on the filtering parameters. From the proposed trip rates, we have 2 different sets of selection criteria for each land use. We review trip rates considering each development specific characteristics, as we are aware that each development is unique. Nevertheless, we cannot change or select the parameters to adapt the trip rates for each land use in a single development (when it contains more than one land use), as we require consistency in the parameters. So in the case that the project would be audited, we would be able to justify the selected parameters. Our modelling protocol is quite clear on what parameters the developers should use for filtering TRICS trip generation as detailed below (WCC Modelling Protocol, page 1):

“Please make sure that your TRICS data is with the following requirements:

1. On TRICS you must select the land use according to each classification (http://www.trics.org/websystem/doc/TRLAND761.PDF).
2. On the land use and trip rate selection you must exclude trips outside of mainland England and the cities due to the provision of public transport.
3. Your primary filter should be considering only surveys done on neutral weekdays (excluding Monday and Friday).
4. Finally, your secondary filtering should exclude any unclassified land use class.

..”

Any further filtering should be agreed before applying it, and as also mentioned in the protocol “A common sense approach should be adopted, where a reasonable sample size cannot be achieved, selection parameters may need to be relaxed.” (Advice Note 000 – Model Licensing, Page 4)

We cannot consider selecting 1 of 16 sites for B1/ B2 and 1 of 6 site for B8 as “a reasonable sample size”. Therefore, before agreeing a trip rate, I suggest we should agree the additional filtering you could use for extracting TRICS data, which, as mentioned before, must also be consistent for both land uses. In the meanwhile, we can only accept the use of the trip rates with the selection parameters we suggested before, which have a reasonable sample size. Please mind that pre and post peak trips are also important due to the impacts of the accumulated traffic as a result of peak spreading which is also considered in the modelling.

Regarding the assignment you proposed, I would need to confirm with Vectos that this follows the MND outputs provided for the trip distribution. Please let me know if you have had any previous discussion with Alan that I might not be aware of.

I hope this clarifies our concerns, and that eventually we reach an agreement. Please let me know if there is anything else you would like to clarify.

Kind Regards,

Moises Muguerza MSc MCIHT
Senior Transport Planner and Modeller
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From: Chris Bancroft <[redacted]
Sent: 24 August 2020 09:01
To: Moises Muguerza <[redacted]
[redacted]
Subject: RE: Employment land northeast of M42 Junction 10

Morning Moises,

I noticed from your out of office reply that you were also on leave until this morning. Please could we speak about this situation urgently today so that my Client can understand where we can plan the important next stages of the Transport Assessment.

Kind regards

Chris

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From: Chris Bancroft
Sent: 18 August 2020 11:40
To: Moises Muguerza <[redacted]
[redacted]
Subject: FW: Employment land northeast of M42 Junction 10

Hi Moises,

Just wanted to follow up my email from last week. I understand that Alan is now on leave until 7th September but that you will be able to discuss and agree the trip generation issues in his absence. I would be really grateful if we could speak directly about any queries you might have following my email below as this mater really needs to be resolved urgently. My mobile number is 07786966615 so please feel free to call me whenever convenient.

Kind regards

Chris

From: Chris Bancroft
Sent: 13 August 2020 12:10
To: Moises Muguerza [redacted]
[redacted]
Subject: RE: Employment land northeast of M42 Junction 10

Hello Moises,

Many thanks for coming back to me on this matter, although I would appreciate an opportunity to come back to you on some of the points before we agree on what is the correct approach here.

In preparing our assessment we were acutely aware of the site location and proximity to the Strategic Road Network, where the A5 and M42 (and then the nearby M6, M1, M40 and M5 Motorways) form a key hub for the country. This is after all why this is a much sought after location. However, we cannot overlook the fact that the local road network already experiences high traffic levels throughout the morning and evening peak periods, which is going to have a major influence in the way in which traffic arrives and departs this scheme. The trip rates we had initially agreed with you and Highways England were extracted from the previously transport submissions for the similar sized developments to the southeast and southwest of Junction 10 of the M42 (see Table 5-1 of the Land South East of M42 Junction 10 Transport Assessment). For ease of reference these were as follows:

B1/B2 use			
morning peak hour	0.471 arrive	0.094 depart	0.565 total
evening peak hour	0.041 arrive	0.358 depart	0.399 total
B8 use			
morning peak hour	0.072 arrive	0.026 depart	0.098 total
evening peak hour	0.032 arrive	0.087 depart	0.119 total

The rates we have identified as part of our latest TRICS assessment were as follows:

B1/B2 use			
morning peak hour	0.178 arrive	0.099 depart	0.277 total
evening peak hour	0.039 arrive	0.158 depart	0.197 total
B8 use			
morning peak hour	0.112 arrive	0.044 depart	0.156 total
evening peak hour	0.016 arrive	0.070 depart	0.086 total

For comparison, the rates you would appear to be suggesting we adopt in your email are as follows:

B1/B2 use			
morning peak hour	0.547 arrive	0.151 depart	0.698 total
evening peak hour	0.101 arrive	0.491 depart	0.592 total
B8 use			
morning peak hour	0.116 arrive	0.162 depart	0.278 total
evening peak hour	0.196 arrive	0.272 depart	0.468 total

The objective of this exercise was to revisit the current TRICS data to establish where the evidence could support the previously agreed rates. Whilst I take on board your alternative approach, I maintain the view that the B1/B2 site selection process has identified a very reasonable comparator site which, when set against the six other sites you highlighted, offers a similar Midlands based location that is immediately adjacent to the Strategic Road Network. The remaining sites are all in more remote locations that are unlikely to experience the same level of peak period network capacity restrictions. Furthermore, when reviewing the peak hour trip generation of all seven of these sites there is a clear pattern of the larger developments producing lower hourly rates. I would also point out that the Industrial Unit selection process follows the previously agreed methodology for the similar sized developments adjacent to Junction 10 of the M42.

While I am open to considering the use of the alternative rates you have suggested, I do not believe it is fair to expect us to accept these without seeing any detailed supporting evidence. Neither can I account for the level of detail undertaken in the search that produced these results, which are clearly significantly higher than the already established rates. Inspection of the B1/B2 rates shows that your preferred rates will comprise a 24% and 48% increase in the morning and evening peak hour traffic generation respectively when comparing the SoCG rates and your suggested rates. Similarly, Inspection of the B8 rates for the same sources shows that your preferred rates will comprise a 184% and 293% increase in the previously agreed morning and evening peak hour traffic generation. I accept that time may have had some influence on the trip generation from these uses but it is clearly not reasonable to suggest that this proposed development, which will be delivered within a few years of the already consented schemes, will result in such a vastly different level of peak hour traffic generation. Again, I am open to any specific evidence you may have to support your concerns, justifying how local developments are generating increased flows – otherwise, it must be reasonable to follow already established and agreed methodology.

In looking at the evidence from our updated selection process, it would suggest that a minor reduction in peak hour traffic generation is likely and our findings were far more aligned with the substantial amount of work previously undertaken for the adjacent sites. Perhaps in light of the above, we could agree that retaining the previously agreed rates from the adjacent sites remains a suitable and robust way forward here. Alternatively, a hybrid of the higher values from these two assessments could be adopted, i.e. SoCG based B1/B2 rates with BCL B8 rates?

On another point, please could you also confirm that the details of the proposed Truck Stop trip generation calculations and assignment principles are also acceptable?

Please understand that I am very happy to talk this through further if clarification is needed. Hopefully you will understand our position here and agree that we can proceed on the basis of one of the options outlined above.

Kind regards

Chris

From: Moises Mugueerza <[redacted]
Sent: 12 August 2020 10:32
To: Chris Bancroft [redacted]
[redacted]
Subject: RE: Employment land northeast of M42 Junction 10

Hi Chris,

We have reviewed your revised trip rates following discussion with Alan Law. We have noticed that the approach to trip calculations has not been applied as discussed and that the filtering criteria has been over used for the sites used for each trip rate, which is not acceptable. As you mentioned for B1/B2 sites, TRICs originally outputs a summary for 16 sites, however only one site (WM-02-C-03) with 0.62 ha has been selected, which is based upon surveys which were conducted in 2012. The justification was that the data "was viewed as a closer representation of the proposed site. Located in an 'Edge of Town – Industrial Zone' with close links to the M5, the chosen TRICS site shares a similar location to the proposed development…". If we apply this criteria to the rest of the 15 sites that were not selected, we would end up with 6 more sites and at least one of those six next to a motorway, and all of them next to other major network links as shown below:

- Site 1: BR-02-C-02 (Site Area: 0.35 ha; GFA: 1,475 sqm; Date: 22/09/15) – Next to the A370
- Site 2: CH-02-C-02 (Site Area: 1.63 ha; GFA: 8,100 sqm; Date: 19/11/14) – Next to the A548
- Site 5: DV-02-C-01 (Site Area: 6.13 ha; GFA: 20,000 sqm; Date: 17/07/12) – 1 mile from the A386
- Site 7: HC-02-C-01 (Site Area: 1.12 ha; GFA: 3,000 sqm; Date: 16/06/16) – Next to the M3
- Site 10: LC-02-C-04 (Site Area: 0.18 ha; GFA:1,010 sqm; Date: 20/06/19) – 0.5 mile from the A587
- Site 11: SF-02-C-01 (Site Area: 0.15 ha; GFA: 1,100 sqm; Date: 12/07/13) – 0.5 mile from the A12

Referring to B8 trip rates, another selection of 1 of the 6 sites (DV-02-F-02) from TRICS is being proposed. In this case the selection criteria indicated "The chosen site was the largest in terms of GFA (50,000sqm) and operated as a Lidl Regional Distribution Centre. Therefore the expected traffic that would be associated with a site of this nature makes it a robust assessment for the proposed development. Furthermore, the site comprises 95% B8 use and is situated "1 kilometre north of the A30".", WCC consider this an oversimplified approach but with different parameters adopted to the B1/B2 selection process, this not acceptable for a land use in the same location..

Last month we received and accepted the following trip rates from another developer for a B1/B2 and B8 of 140,000 sqm:

Time Period		Total Vehicle Trip Rates					
		Industrial Estate (per 100sqm)			Warehousing (per 100sqm)		
		Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
AM Peak	07:00 - 08:00	0.352	0.075	0.427	0.223	0.156	0.379
	08:00 - 09:00	0.547	0.151	0.698	0.116	0.162	0.278
	09:00 - 10:00	0.314	0.223	0.537	0.113	0.089	0.202
PM Peak	16:00 - 17:00	0.13	0.328	0.458	0.147	0.214	0.361
	17:00 - 18:00	0.101	0.491	0.592	0.196	0.272	0.468
	18:00 - 19:00	0.063	0.152	0.215	0.079	0.128	0.207

We would suggest using their trip rate provided in the table above for the B8 trips, where the sites selected use were part of your original output (SF-02-F-02 which GFA is 22,270 sqm and WY-02-F-02 which GFA was 10,446 sqm). If you choose not to accept these please can you revisit the trip generation assumptions as they currently cannot be accepted.

Regarding your B1/B2 area, we recognise you are using Industrial Unit as parameter of selection. Considering your B1/B2 would be 1 ha, we would accept a new TRICS output adding the 6 sites listed above to your selection.

Please mind that our AM period is from 7:00 to 10:00 and PM period is from 16:00 to 19:00, as shown in the table, the email and attachment appear to not reflect the PM period accurately.

Please can you include Development Management in every email correspondence in the future. I can see Dave Pilcher was copied in March, but apparently he has been dropped from the email circulation.

Kind Regards,

Moises Muguerza MSc MCIHT
Senior Transport Planner and Modeller
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From: Chris Bancroft <[redacted]
Sent: 06 August 2020 15:06
To: Alan Law <[redacted]
[redacted] M42 Junction 10

Thanks Alan.

Richard – are you happy to accept WCC's approval of the results as final confirmation for us to proceed?

Kind regards

Chris

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From: Alan Law <[redacted]
Sent: 06 August 2020 14:49
To: Chris Bancroft <[redacted]
Subject: Re: Employment land northeast of M42 Junction 10

Hi Chris

Apologies, the colleague dealing with this is currently on leave. We'll try and get a response to you next week.

Thanks

Alan Law BSc MCIHT
County Transport Modeller and Team Leader
Transport Planning
Transport & Highways
Communities
Warwickshire County Council
[redacted]
www.warwickshire.gov.uk

From: Chris Bancroft <[redacted]
Sent: 06 August 2020 14:43
To: Alan Law <[redacted]
Subject: RE: Employment land northeast of M42 Junction 10

Afternoon gents,

Understandably my Client is chasing for an update on whether I have received a response to my email that was sent last week. Could you please let me know when you will be able to confirm the details so that I can report back to them and prepare to instruct Vectos. As mentioned previously, we are working towards an end of November planning submission so this exercise really needs to be addressed urgently.

I look forward to hearing from you.

Kind regards

Chris

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From: Chris Bancroft
Sent: 29 July 2020 14:58
To: Alan Law <[redacted]
[redacted]
Subject: Employment land northeast of M42 Junction 10

Dear Alan and Richard,

I write further to my email of 3 July 2020, which set out revised trip generation calculations for my clients proposed employment development on land adjacent to Junction 10 of the M42 Motorway, north of the A5. Following receipt of WCC's subsequent email querying the trip rates my client has instructed me to further amend the proposals to consider the following mix of uses:

- 100,000 sqm employment floorspace (up to 10% B1(c)/B2 and 90% B8);
- 150 overnight lorry parking spaces; and
- 400 sqm amenity block for overnight lorry parking facility (toilets, changing facilities, showers, shop, food, etc).

The above change, which is now fully intended to form the basis of the upcoming application, has largely come about from Highways England's concerns regarding the loss of lorry parking adjacent to the A5 as part of the latest access layout proposals. As research was undertaken to establish how we should accommodate this element it became clear that there is a substantial need for additional lorry parking in this immediate area, with surveys at the MOTO Services showing a shortfall in provision and strategic studies reflecting this further afield throughout the Midlands. Hence there is sufficient need to justify the above change in uses being proposed for this site. The objective of this email submission is therefore to present the both highway authorities with a revised (and hopefully final) assessment of the proposed trip generation such that an agreement on the details can be reached and urgent progress made with the PARAMICS modelling.

Proposed 150 space Truck Store and 400 sqm amenity block.

It is important to note that this element of the proposals will be exclusively for use by HGV drivers and not the general public. It will only include basic facilities for rest and refreshment with no Petrol Filling Station or overnight hotel accommodation. Details of the final layout will be presented for consideration within the Transport Assessment.

In considering the potential trip generation associated with this element, I have researched planning applications for other similar sites including the recently submitted application to North Warwickshire Borough Council (application reference PAP/2020/0295) for an "overnight truck stop comprising 200 HGV spaces and associated facilities" on land near to Junction 9 of the M42 (known as the 'Hams Hall Truckstop"), which was accompanied by a Transport Assessment prepared in June 2020 by ADC Engineering. Taking the Hams Hall Truckstop application as the starting point, the submitted Transport Assessment provides a detailed review of different sites and their corresponding trip generation. It ultimately concludes that survey results from the Lilbourne Truck Stop should be used to determine the overall peak hour and daily trip generation for the proposed Hams Hall Truckstop facility, which includes a substantial number of car and light goods vehicle movements and no adjustment to account for the major difference in parking provision between both sites. The table shown at Paragraph 7.22 of the TA confirms the following proposed trip generation calculations which are based on observed arrivals and departures from March 2020 surveys (I have attached relevant extracts of the TA for ease of reference):

Morning period	Light Vehicles		Heavy Vehicles		All Vehicles		
0700 to 0800	31 arrive	11 depart	27 arrive	103 depart	58 arrive	114 depart	172 total
0800 to 0900	19 arrive	15 depart	42 arrive	57 depart	61 arrive	72 depart	133 total
0900 to 1000	22 arrive	18 depart	40 arrive	45 depart	62 arrive	63 depart	125 total
Evening period							
1600 to 1700	20 arrive	34 depart	72 arrive	36 depart	92 arrive	70 depart	162 total
1700 to 1800	23 arrive	35 depart	83 arrive	29 depart	106 arrive	64 depart	170 total
1800 to 1900	25 arrive	34 depart	76 arrive	29 depart	101 arrive	63 depart	164 total

The report justifies this approach as being robust but in my view significantly overestimates the potential traffic generation by not adjusting the trip generation to reflect the significant reduction in the number of spaces. Looking at the site using Google Earth imagery, it would appear that the overall site area includes circa 500 lorry parking spaces throughout each of the three areas (one to the east and two to the west of the access). Looking specifically at the Heavy Vehicles survey results, this would generate the following trip rates per parking space:

Morning period	Heavy Vehicles		
0700 to 0800	0.054 arrive	0.206 depart	0.260 total
0800 to 0900	0.084 arrive	0.114 depart	0.198 total
0900 to 1000	0.080 arrive	0.090 depart	0.170 total
Evening period			
1600 to 1700	0.144 arrive	0.072 depart	0.216 total
1700 to 1800	0.166 arrive	0.058 depart	0.224 total
1800 to 1900	0.152 arrive	0.058 depart	0.210 total

Inspection of the above rates calculated from the TA surveys for the Lilbourne site shows that they are directly comparable with the HGV rates identified for the Waterbrook Park Truckstop, where the Transport Assessment prepared in support of that particular application (CANNON Consulting, January 2018) confirmed the following trip rates (extracts from TA attached for ease of reference):

	Heavy Vehicles		
0800 to 0900	0.083 arrive	0.143 depart	0.226 total
1700 to 1800	0.154 arrive	0.031 depart	0.185 total
0700 to 1900	1.174 arrive	0.860 depart	2.034 total

In lieu of the fact that there should be negligible staff and visitor car based movements associated with the proposed truck stop facility at the A5 site, it is recommended that the above three-hour morning and evening period profile (i.e. HGV only) is adopted for the purposes of this planning application. Moreover, given that it is widely recognised how traffic associated with these facilities already exists on the network in the form of passby or diverted trips, it is also recommended that the following trip generation calculations should only be applied to any subsequent peak hour modelling of the proposed site access and not form part of any strategic modelling exercise. The proposed peak period trip generation for the proposed truckstop facility is therefore as follows:

Morning period	Heavy Vehicles		
0700 to 0800	8 arrive	31 depart	39 total
0800 to 0900	13 arrive	17 depart	30 total
0900 to 1000	12 arrive	14 depart	26 total
Evening period			
1600 to 1700	22 arrive	11 depart	33 total
1700 to 1800	25 arrive	9 depart	34 total
1800 to 1900	23 arrive	9 depart	32 total

As regards the potential assignment of these turning movements through the proposed site access and then through the network, it is recommended that a simple equal split of the A5 and M42 carriageways should be sufficient in this instance, or 25% arriving and departing via the north (towards M42 junction 9), 25% via the east (towards Dordon and the A5), 25% via the south (towards M42 Junction 11), and then 25% via the east (towards Tamworth and the A5). In practice this will only mean that 50% of the above flows will represent a new/reassigned turning movement at Junction 10 of the M42, where 25% (or up to 10 peak hour movements) would be associated with the south to east (and vice versa) movement and similarly 25% associated with the north to east (and vice versa) movement. Predicted peak hour movements from the A5 would simply be a transfer from a passing movement turning into the site and will have no affect beyond the site access junction itself. This should support the proposed approach to only modelling the strategic impact of the proposed B1/B2 and B8 uses.

Response to WCC concerns regarding previously agreed B1/B2 and B8 trip rates

Following receipt of WCC's email further discussions have taken place to establish the precise extent of concerns regarding the proposed trip rates for the scheme. The previous proposals, as sent on the 3 July 2020, were for 120,000sqm of mixed B1/B2 and B8 use comprising 10% B1/B2 use (12,000sqm gross floor area) and 90% B8 use (108,000sqm gross floor area). In way of background information, **Table 1** (attached) contains the previously agreed trip rates and proposed traffic generation for the proposed site. As outlined above, due to the impact of the truckstop facility on the overall developable site area this has now reduced to an overall gross floor area of 100,000 sqm comprising 10% B1(c)/B2 use (10,000sqm gross floor area) and 90% B8 use (90,000sqm gross floor area)

To address WCC concerns the TRICS database has been revisited to obtain current trip generation data for the proposed uses. A 'cross testing' methodology has been adopted in line with recommendations contained within the 'TRICS Good Practice Guide 2016' document in which an analysis of both average and specific site trip generation has been undertaken. Paragraph 19.13 outlines how *"weighting factors can influence trip rates, as the main trip rate calculations consists of an average of all site surveys in the final selected set. Users can use cross testing to identify any weighting that takes place, but there is also the need for closer scrutiny of the data set to identify any sites with unusual trip rates and/or development data which may be disproportionately influencing the data set"*.

As requested by WCC, this email will focus on each section of the development (B1/B2 and B8 use) as separate entities before concluding with a summary on the potential traffic generated by the site as a whole.

B1/B2 Use (associated TRICS output data attached to this email)

To calculate trip rates for the B1/B2 section of the development the TRICS database was interrogated using the same parameters as initially used during the previous reports. In line with the previously agreed methodology, the category 'Employment/Industrial Unit' was searched with sites located within Greater London, Scotland, Wales and Ireland disregarded. The search specified sites that were classified as B1 or B2 use that were surveyed on a weekday during the period 01.01.12 to 20.06.19. To maximise the number of potential sites the parameters on unit size was left at the minimum and maximum range available (1010 – 2000 sqm GFA).

The search resulted in 16 potential sites, located in a variety of locations with differing GFA sizes. Using these sites an average trip generation profile was generated, this offered a baseline understanding of the likely traffic generated by typical B1/B2 uses.

A summary of the average peak hour and three hour peak period trip rates from the 16 sites is as follows:

Peak Hours -

- **Morning Peak (0800 to 0900) 0.453 Arrive 0.064 Depart 0.517 Total**
- **Evening Peak (1700 to 1800) 0.057 Arrive 0.370 Depart 0.427 Total**

Three Hour Peak Periods -

- **AM Peak Period (0700 to 1000) 0.928 Arrive 0.210 Depart 1.138 Total**
- **PM Peak Period (1500 to 1800) 0.216 Arrive 0.875 Depart 1.091 Total**

This data offers a solid baseline understanding of the likely traffic that could be generated by the proposed B1/B2 section of the development. However, in line with the "cross testing" methodology the 16 TRICS sites were scrutinised in more detail to identify a site which closer resembles the proposed development. After a thorough analysis of the 16 potential sites, a site located in Smethwick, West Midlands (**TRICS ref: WM-02-C-03**) was viewed as a closer representation of the proposed site. Located in an 'Edge of Town – Industrial Zone' with close links to the M5, the chosen TRICS site shares a similar location to the proposed development, with both sites being in close proximity to a major strategic road (e.g. the proposed sites location to the A5).

A summary of the selected sites peak hour and three hour peak period trip rates is as follows:

Peak Hours -

- **Morning Peak (0800 to 0900) 0.178 Arrive 0.099 Depart 0.277 Total**
- **Evening Peak (1700 to 1800) 0.039 Arrive 0.158 Depart 0.197 Total**

Three Hour Peak Periods **–**

- **AM Peak Period (0700 to 1000) 0.891 Arrive 0.158 Depart 1.049 Total**
- **PM Peak Period (1500 to 1800) 0.117 Arrive 0.611 Depart 0.728 Total**

This site was viewed as a suitable comparator of the proposed development due to its location, offering a more characteristic representation of the proposed development. The trip rates presented are therefore deemed more typical of the likely traffic generated by the proposed development than the averages taken from the full 16 sites. This is due to the initial search containing a variety of different sizes and locations which was deemed to adversely influence the trip rates. **Table 2** (attached) contains a peak hour and three hour peak period trip generation summary for the proposed B1c/B2 use, suggesting a potential of **28 two-way movements during the morning peak hour** and **20 two-way movements during the evening peak hour.** Whilst also showing a potential **of 105 two-way movements during the**

AM three hour peak period and **73 two-way movements during the PM three hour peak period**.

When comparing the new trip rates to the previously agreed ones there is an significant reduction in potential traffic generation during both the morning and evening peak hours. However the 3 hour peak periods (both AM and PM) remain similar in terms of potential traffic generated, the previously agreed trip rates suggested a combined total of **200 two-way movements** during both the AM and PM peak periods whilst the new trip rates as shown in **Table 2** suggest a small reduction to **178 two-way movements**. This shows that although the new TRICs site has a reduced traffic generation during the peak hours, it remains similar in terms of the potential traffic generated during the 3 hour peak period to that which was previously accepted.

B8 Use (associated TRICS output data attached to this email)

The "cross testing" methodology was continued for the B8 use, with the TRICS database interrogated using the same parameters as initially used during the previous reports. The category 'Employment/ Warehousing (Commercial)' was searched with sites located within Greater London, Scotland, Wales and Ireland disregarded. The search only included sites that were classified as B8 use that were surveyed on a weekday during the period 01.01.12 to 03.04.19. To maximise the number of potential sites and the large scale nature of the proposed development, the parameters on unit size were left at the minimum and maximum range available (10000 – 80066 sqm GFA).

The search resulted in 6 potential sites, ranging in GFA from 10446sqm to 50000sqm. Using these sites an average trip generation profile was generated, offering a baseline understanding of the likely traffic generated by a typical B8 use unit.

A summary of the average peak hour and three hour peak period trip rates from the 16 sites is as follows:

Peak Hours –

- **Morning Peak (0800 to 0900) 0.104 Arrive 0.082 Depart 0.186 Total**
- **Evening Peak (1700 to 1800) 0.067 Arrive 0.112 Depart 0.179 Total**

Three Hour Peak Periods –

- **AM Peak Period (0700 to 1000) 0.359 Arrive 0.228 Depart 0.587 Total**
- **PM Peak Period (1500 to 1800) 0.206 Arrive 0.308 Depart 0.514 Total**

Once again, this data offers a solid baseline understanding of the likely traffic that could be generated by the proposed B8 section of the development. However, continuing the "cross testing" methodology it was deemed appropriate to scrutinise the potential TRICS sites further to find a more closely matched site to the proposals. After a thorough review of the potential sites, a site Near Exeter, South West/Devon (**TRICS ref: DV-02-F-02**) was viewed as a closer representation of the proposed site. The chosen site was the largest in terms of GFA (50000sqm) and operated as a Lidl Regional Distribution Centre. Therefore the expected traffic that would be associated with a site of this nature makes it a robust assessment for the proposed development. Furthermore, the site comprises 95% B8 use and is situated "1 kilometre north of the A30". This site was therefore deemed representative of the proposals.

A summary of the selected sites peak hour and three hour peak period trip rates as follows:

Peak Hours -

- **Morning Peak (0800 to 0900) 0.112 Arrive 0.044 Depart 0.156 Total**
- **Evening Peak (1700 to 1800) 0.016 Arrive 0.070 Depart 0.086 Total**

Three Hour Peak Periods –

- **AM Peak Period (0700 to 1000) 0.318 Arrive 0.136 Depart 0.454 Total**
- **PM Peak Period (1500 to 1800) 0.092 Arrive 0.188 Depart 0.280 Total**

Table 3 (attached) contains a peak hour and three hour period trip generation summary for the proposed B8 use, suggesting a potential of **141 two-way movements during the morning peak hour** and **77 two-way movement during the evening peak hour**.

When comparing the new trip rates to the previously agreed ones there is a slight increase in potential traffic generation during both the morning and evening peak hours. However the 3 hour peak periods (both AM and PM) for the updated TRICS site shows an increase in potential traffic generated, the previously agreed trip rates suggested a combined total of **547 two-way movements during both the AM and PM peak periods** whilst the new trip rates as shown in **Table 3** suggest up to **660 two-way movements**. This shows that the new TRICs site should be seen as a robust assessment of the potential traffic generated by the B8 use section of the proposed development.

Summary

In summary, this email has demonstrated to WCC that a considered and robust TRICS search has been completed in order to address any concerns they may have regarding the potential traffic generated from the proposed scheme. In line with paragraph 19.13 of the "TRICS Good Practice Guide 2016" document, a "cross testing" approach has been taken to provide a rounded review of the data available. Whilst using this methodology it has been concluded that although average traffic generation data is effective at providing a baseline understanding of the potential traffic that could be generated by the scheme, it has been concluded that a more focused approach on two individual TRICS sites is a more comparable example of the proposed development.

Using the selected TRICS sites, **Table 2 and Table 3** demonstrates the potential traffic generation from the site. The tables suggests that a combined total peak hour vehicle movements of **169 during the morning peak hour** and **97 during the evening peak hour** could be generated by the proposed B1c/B2 and B8 use of the site. By way of comparison, **Table 1** contains the previously agreed trip rates for the scheme which suggest up to 145 vehicle movements during the morning peak and 146 during the evening peak could be generated by the current site proposals (note these are the updated values rather than those floor areas set out in my email of 3 July). This demonstrates how the updated data closely resembles the previous trip generation and therefore WCC should be able to accept this new data and view it as a sufficient response to the latest queries.

Furthermore, as discussed earlier the proposed 150 space Truck Store and 400sqm amenity block has the potential to generate a total of **30 two-way vehicle movements during the morning peak hour** and **34 two-way movements during the evening peak hour**. As mentioned above, these values would only be applied to any detailed modelling of the proposed site access layout and not to the strategic PARAMICS modelling exercise.

This would result in the following total peak hour trip generation for the site as a whole:

- **Morning Peak (0800 to 0900) 132 Arrive 67 Depart 199 Total**

Evening Peak (1700 to 1800) 43 Arrive 88 Depart 131 Total

I trust this email addresses your concerns and look forward to receiving both WCC and HE's confirmation that we can instruct Vectos to proceed with the modelling on the basis of the above details. However please let us know if you have any other queries or require further information.

Kind regards

Chris

This transmission is intended for the named addressee(s) only and may contain confidential, sensitive or personal information and should be handled accordingly. Unless you are the named addressee (or authorised to receive it for the addressee) you may not copy or use it, or disclose it to anyone else. If you have received this transmission in error please notify the sender immediately. All email traffic sent to or from us may be subject to recording and/or monitoring in accordance with relevant legislation.

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APPENDIX J – LETTER TO HE SETTING OUT POTENTIAL ACCESS LAYOUT (DATED APRIL 2019)

BANCROFT
CONSULTING

North Warwickshire Borough Council
Council House
South Street,
Atherstone,
CV9 1DE
FAO: Kerry Trueman

Our Ref: CJB/F18015/250419
Date: 25 April 2019

BY EMAIL ONLY

Dear Kerry

NORTH WARWICKSHIRE BOROUGH COUNCIL LOCAL PLAN: MAIN MODIFICATION (MSA)

I write following receipt and consideration of Highways England's letter to you of 26 March 2019 in respect of the above. In the letter, Highways England raise a number of general concerns about the validity of whether the MSA would be needed or deliverable in this location, largely due to the lack of any detailed supporting information submitted to date. The aim of this letter is to seek to provide confidence that sufficient land exists within my Clients ownership or publicly maintained highway to deliver a reasonable access solution.

Within the second page of the letter Highways England accepts that "access to each site proposed will be considered on its own merits". It then discusses concerns regarding the potential to extend the roundabout to deliver a further arm as access to the MSA, along with a direct access from the A5. Whilst I fully appreciate the concerns raised regarding taking access from the roundabout, I have prepared an indicative junction layout drawing showing how a signal-controlled junction layout could be located approximately 300 metres east of the roundabout, with a layout that should offer comparable capacity to that of the adjacent Birch Coppice and Core 42 access junctions.

The final layout would clearly be subject to formal consultation with Highways England, where detailed junction modelling and road safety audits would be undertaken to help satisfy any concerns. However, this layout should adequately serve the anticipated MSA traffic movements and, in lieu of the all movements nature of the junction, would not represent any significant diversion from the Trunk Road network routes, particularly when considering other examples elsewhere within the network where more substantial detours are required.

I have also copied Eri Wong at Highways England in on this letter so that she is aware of our suggestions. We have had a number failed attempts to discuss the situation over the phone during the past few weeks, with messages left, so she will not be entirely surprised by the submission and hopefully will be able to offer a more supportive stance particularly in regard of the A5 opportunities. My Client would be more than happy to provide Highways England with further detailed justification of the location and form of junction in due course but timescales for the submission of information have limited us to simply seeking to confirm that there is clear scope to provide a geometrically compliant layout with capacity comparable to that of other nearby junctions.

I therefore trust that the above information is sufficient for North Warwickshire Borough Council to be content that a new MSA could in principle be served from the A5, albeit subject to clarification of further detailed information and final agreement with the Highway Authority.

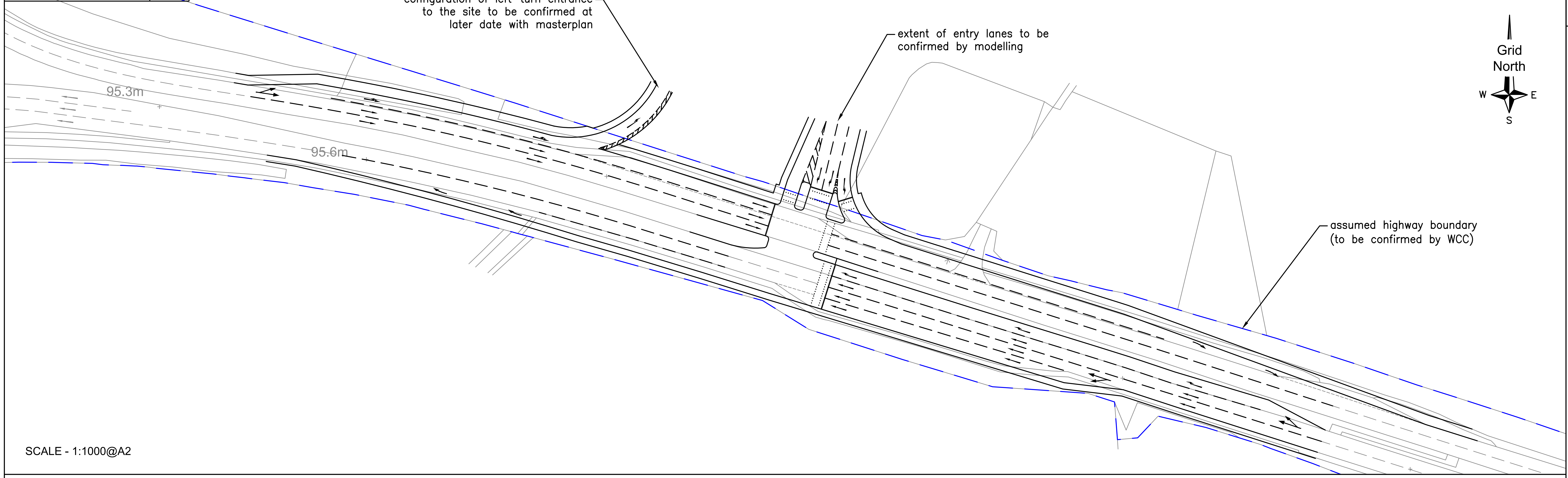
Yours sincerely,

Chris Bancroft
Director
For and on behalf of **Bancroft Consulting**
t: 0115 9602919
e: [redacted]

enc.

cc. Mr David Hodgetts - Hodgetts Estates
Mrs Eri Wong - Highways England

DRG. No.	REV. No.
F18015/05	



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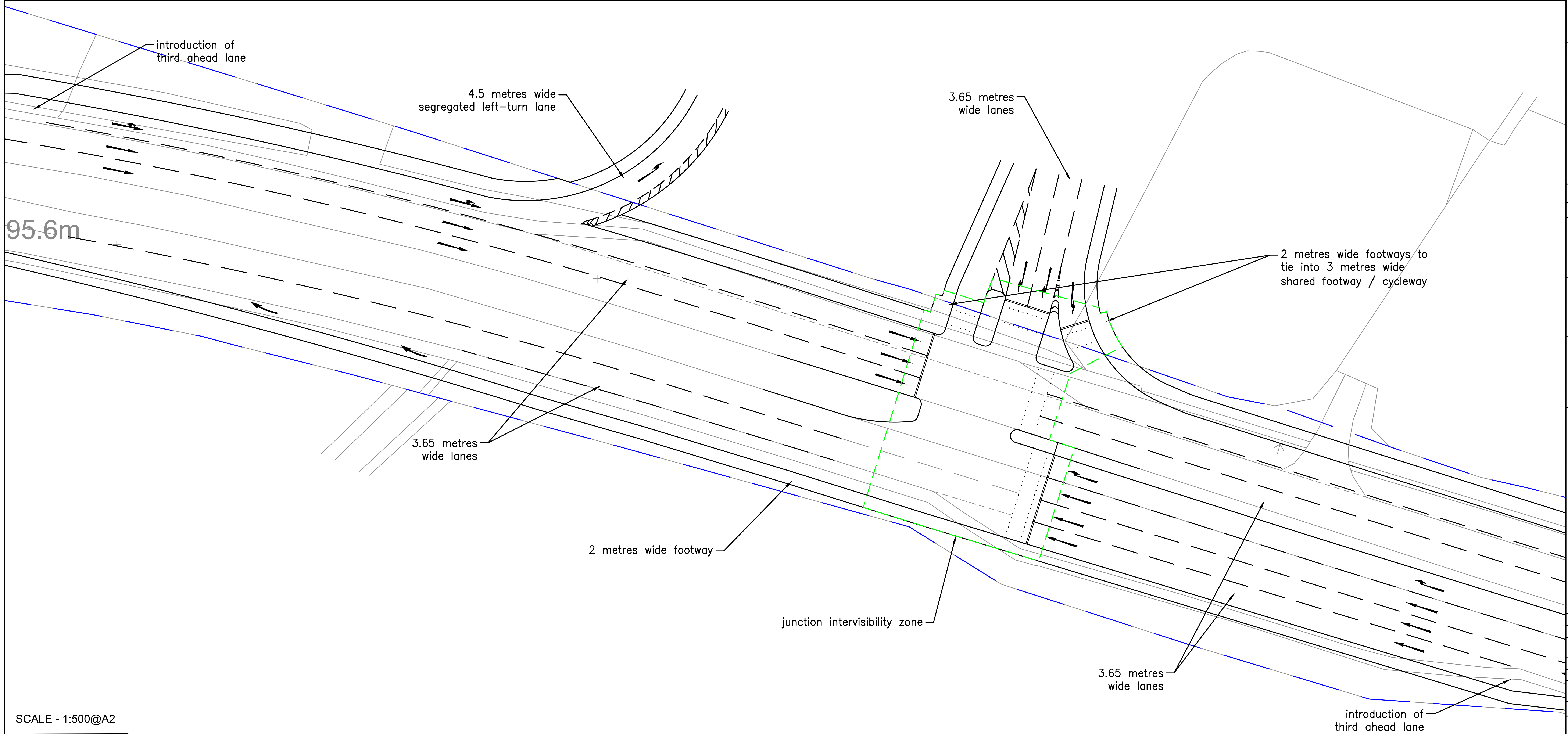

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NOTES:

REV.	DATE	DESCRIPTION	DWN	CHK'D

CLIENT
HODGETTS ESTATES

CONTRACT
MAIN MODIFICATION (MSA)

TITLE
ACCESS OPTION FOR
MOTORWAY SERVICE AREA

BANCROFT
CONSULTING

Bancroft Consulting Ltd
Jarodale House
7 Gregory Boulevard
Nottingham
NG7 6LB

t 0115 9602919
f 0115 9648201
e office@bancroftconsulting.co.uk

DRAWN BY	
NAME (PRINT)	DATE
KH	15.04.19
CHECKED BY	
NAME (PRINT)	DATE
CJB	25.04.19

SCALE AS SHOWN
STATUS PRELIMINARY

DRG. NO. F18015/05
REV

APPENDIX K – JUNCTION LAYOUT AND SIGNAL OPERATION PLANS

From: [redacted]
To:
Subject: RE: Signal Timings - M42 Junction 10 and A5 Watling Street/Birch Coppice Business Park Access
Date: 03 February 2021 09:00:19
Attachments: image001.png
image002.png
signal existing a-TS0-F001 A5 Birch Coppice 9209.pdf
A5 Birch.pdf
9-1266273-DR-1210 Traffic Signal Layout A-1210.pdf
M42J10NE.MDS
M42J10NW.MDS
M42J10SE.MDS
M42J10SW.MDS
M42J10W.mova
MOVA Validation Report - M42 Junction 10.pdf
M0188_P203.pdf
M0187_P202.pdf

Good morning,

Please find attached the information requested for A5 Birch Coppice and M42 J10

Regards

Julian Smith
Traffic Signal Team Leader

Kier Services I **Highways** I Motorway Maintenance Compound, Pershore Lane, Warndon, Worcester, Worcestershire. WR4 0AA
[redacted] I [redacted] www.kier.co.uk

Kier Group I Registered in England No. 2708030
Registered Office: **81 Fountain Street, Manchester M2 2EE**

From: Timothy Jordan <[redacted]
Sent: 02 February 2021 19:10
To: Simm, Ben [redacted]
Cc: Julian Smith [redacted]
Subject: Re: Signal Timings - M42 Junction 10 and A5 Watling Street/Birch Coppice Business Park Access

Hi Ben,

Julian may be able to help you with these two sites.

Please bear in mind that the M42 J10 is WELL OVER capacity. So i would be extremely interested to know what is being proposed.

I would also like to say there are bridleways and / or footways on the north side of the A5 which we would really appreciate upgrading to allow access to Green Lane Birchmoor, providing alternative active mode routes to north east Tamworth across the M42.

From: Simm, Ben [redacted]

Sent: 02 February 2021 17:18
To: Timothy Jordan <[redacted]
Cc: White, Richard M.E <[redacted] Townend, Catherine <[redacted]>; Gray, Russell [redacted]
Subject: FW: Signal Timings - M42 Junction 10 and A5 Watling Street/Birch Coppice Business Park Access

[This email was sent from an external sender outside of the Kier Group, please treat this email, links and attachments with caution.]

Good afternoon Tim

Would you be able to provide me with the signal data for the locations identified in the attachment to share with the applicants and their transport consultants. Further information can be found below.

Any questions please let me know.

Thanks

Ben

Ben Simm MPlan MRTPI
Spatial Planner
Operations Directorate
Highways England | The Cube | 199 Wharfside Street | Birmingham | B1 1RN
[redacted]
Web: www.highwaysengland.co.uk

From: John O'Neill [redacted]]
Sent: 02 February 2021 16:49
To: Simm, Ben [redacted]
Cc: Chris Bancroft [redacted] Yvette Cross [redacted]
Subject: Signal Timings - M42 Junction 10 and A5 Watling Street/Birch Coppice Business Park Access

Hello Ben

Bancroft Consulting has been commissioned to provide transport planning services for a proposed employment development on land north of the A5 Watling Street, Dordon. As part of this work, we are required to assess the capacity of two signalised junctions close to the site, these being:

1. Junction 10 M42
2. A5 Watling Street/Birch Coppice Business Park access.

The locations of these junctions are illustrated on the attached plan.

Could you please provide a quote for obtaining the signal timing sheets for these junctions.

Thank you very much for your help with this.

Best Regards

John

John O'Neill
Principal Transport Consultant

Bancroft Consulting Limited

p: 0115 9602919
a: Jarodale House, 7 Gregory Boulevard, Nottingham, NG7 6LB
w: www.bancroftconsulting.co.uk **e:** office@bancroftconsulting.co.uk

From: [redacted]
To:
Cc:
Subject: RE: Signal Timings - M42 Junction 10 and A5 Watling Street/Birch Coppice Business Park Access
Date: 03 February 2021 10:08:04
Attachments: image001.png
image002.png
RE Signal Timings - M42 Junction 10 and A5 Watling StreetBirch Coppice Business Park Access.msg

---

Dear John

Thank you for your email in regards to the signal timings for the identified junctions. Please find the data you have requested in the email attached.

Many thanks

Ben

Ben Simm MPlan MRTPI
Spatial Planner
Operations Directorate
Highways England | The Cube | 199 Wharfside Street | Birmingham | B1 1RN
[redacted]
Web: www.highwaysengland.co.uk

From: John O'Neill [redacted]
Sent: 02 February 2021 16:49
To: Simm, Ben [redacted]
[redacted]
Subject: Signal Timings - M42 Junction 10 and A5 Watling Street/Birch Coppice Business Park Access

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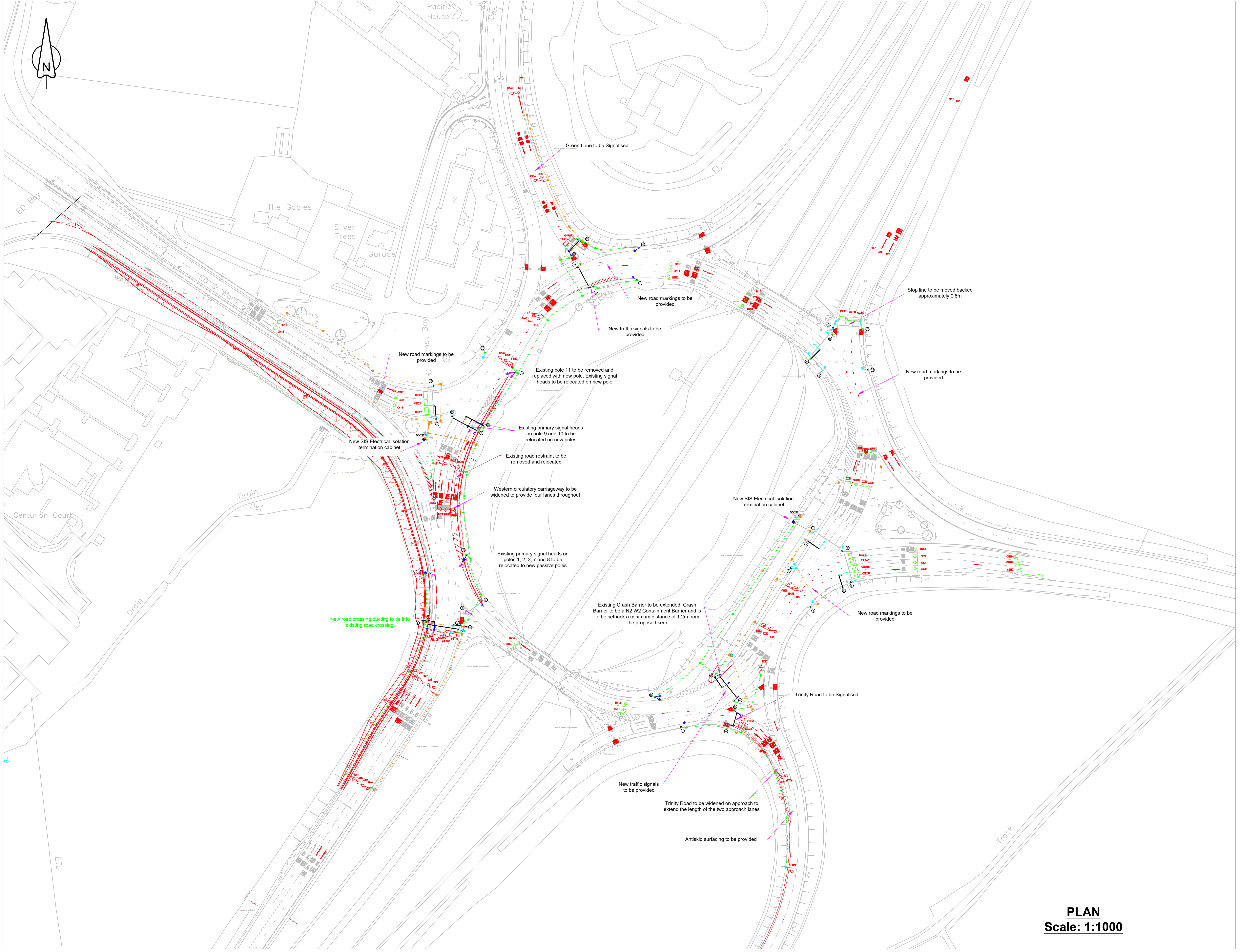
Best Regards

John

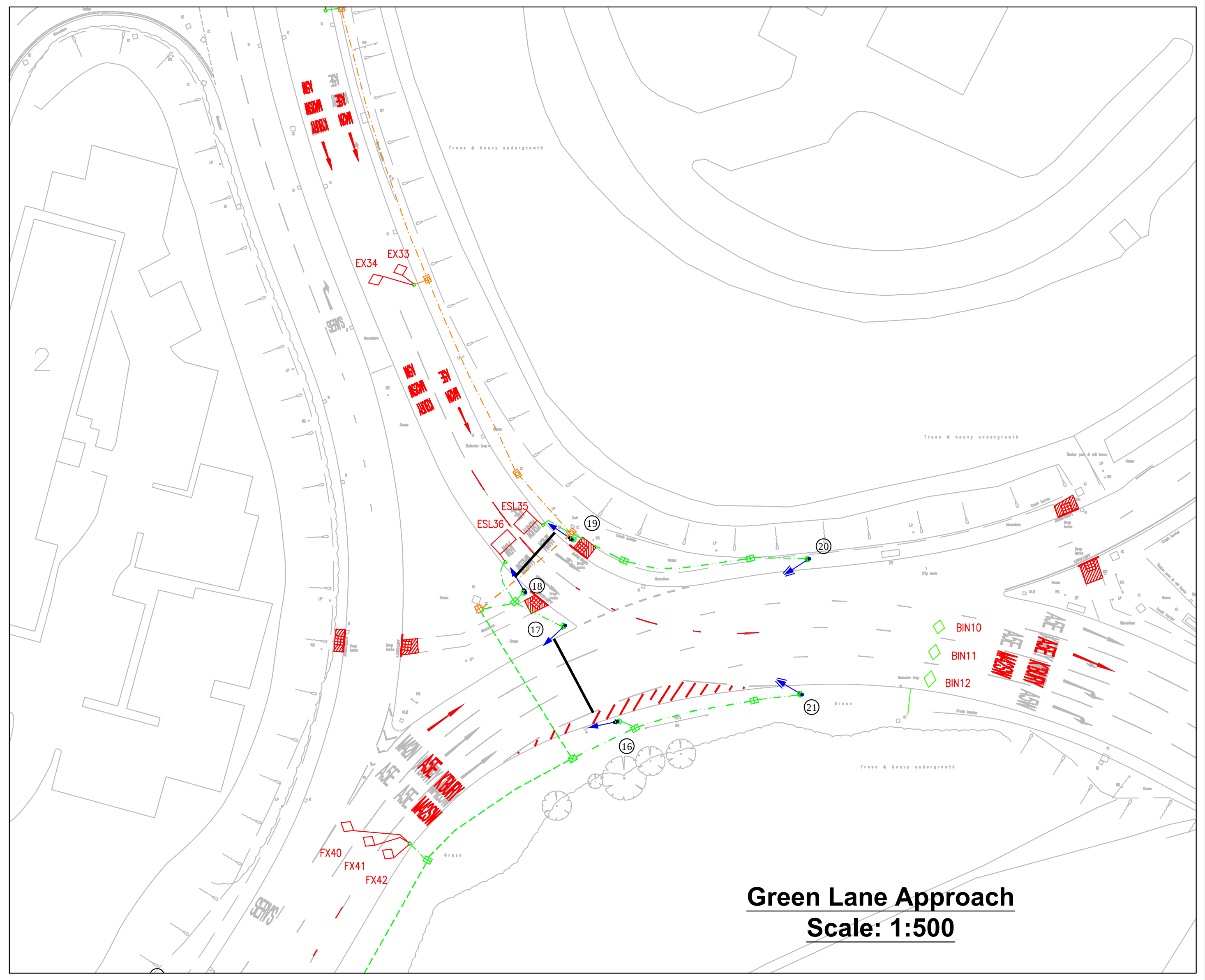
John O'Neill
Principal Transport Consultant
Bancroft Consulting Limited

p: 0115 9602919
a: Jarodale House, 7 Gregory Boulevard, Nottingham, NG7 6LB
w: www.bancroftconsulting.co.uk **e:** office@bancroftconsulting.co.uk

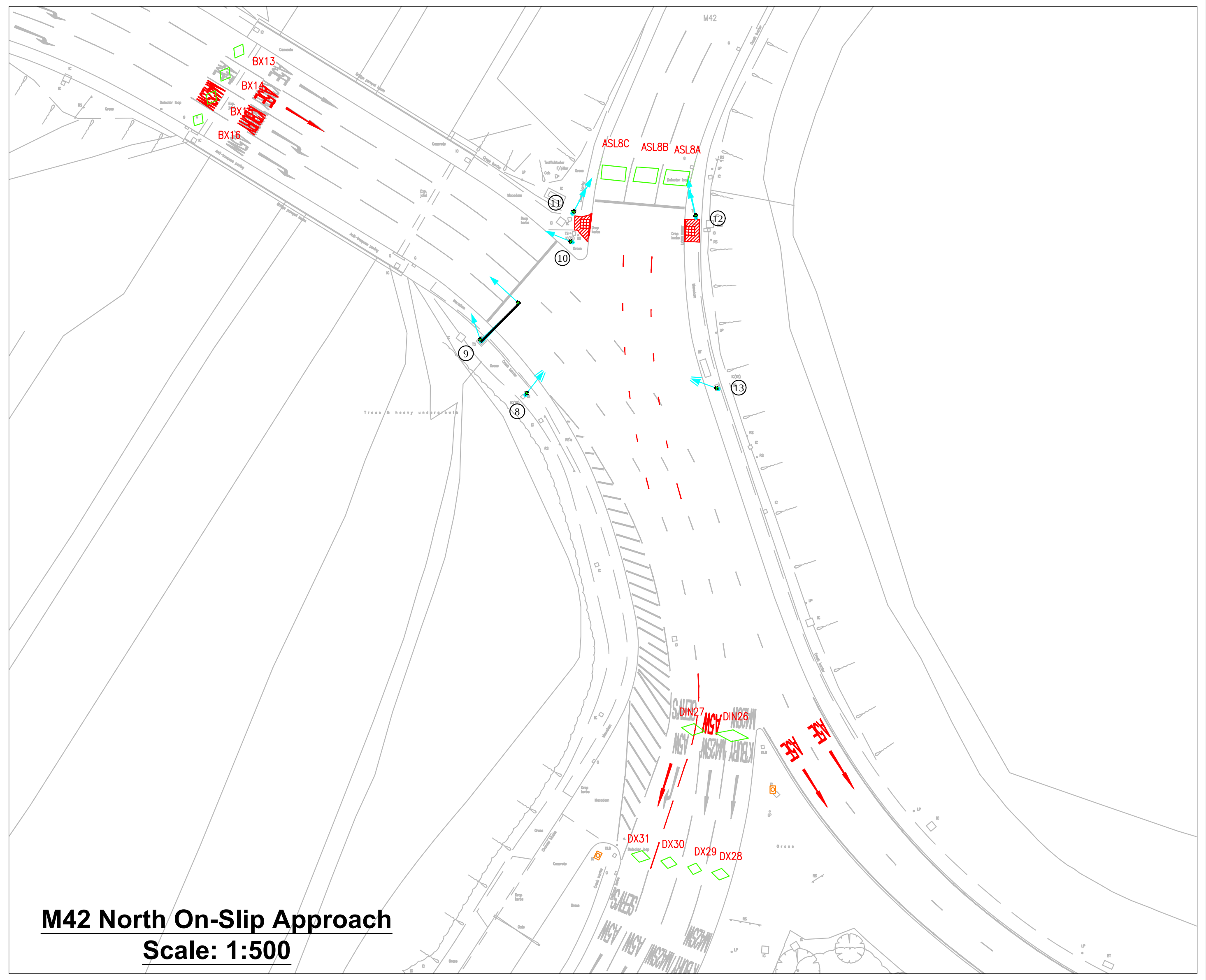
File ref - d:\00projects\ppp\1291857 - m42 j10 ppp\9-1266273-dr-1210 6.4 traffic signal layout a - standard\9-1266273-dr-1210 traffic signal layout a.dwg



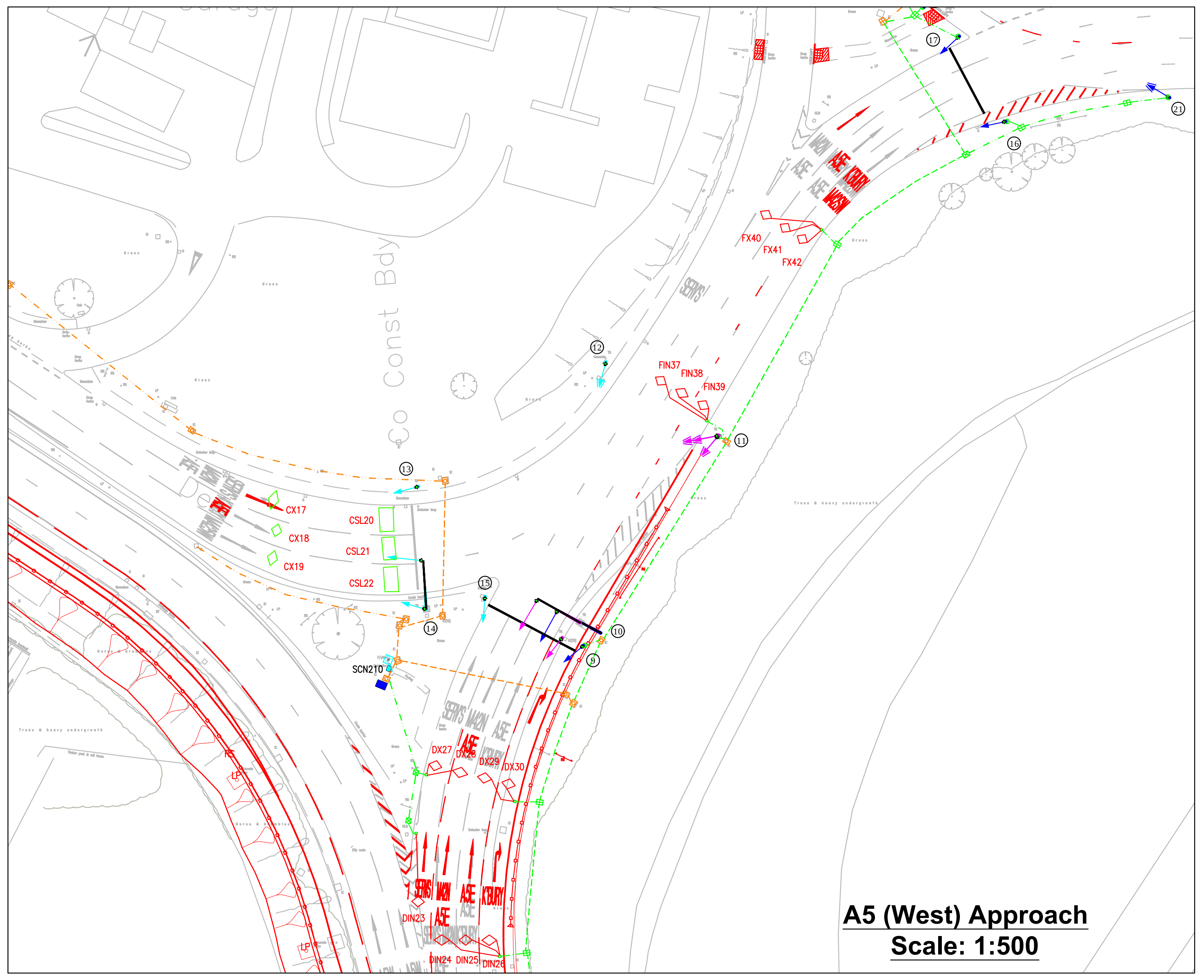
PLAN
Scale: 1:1000



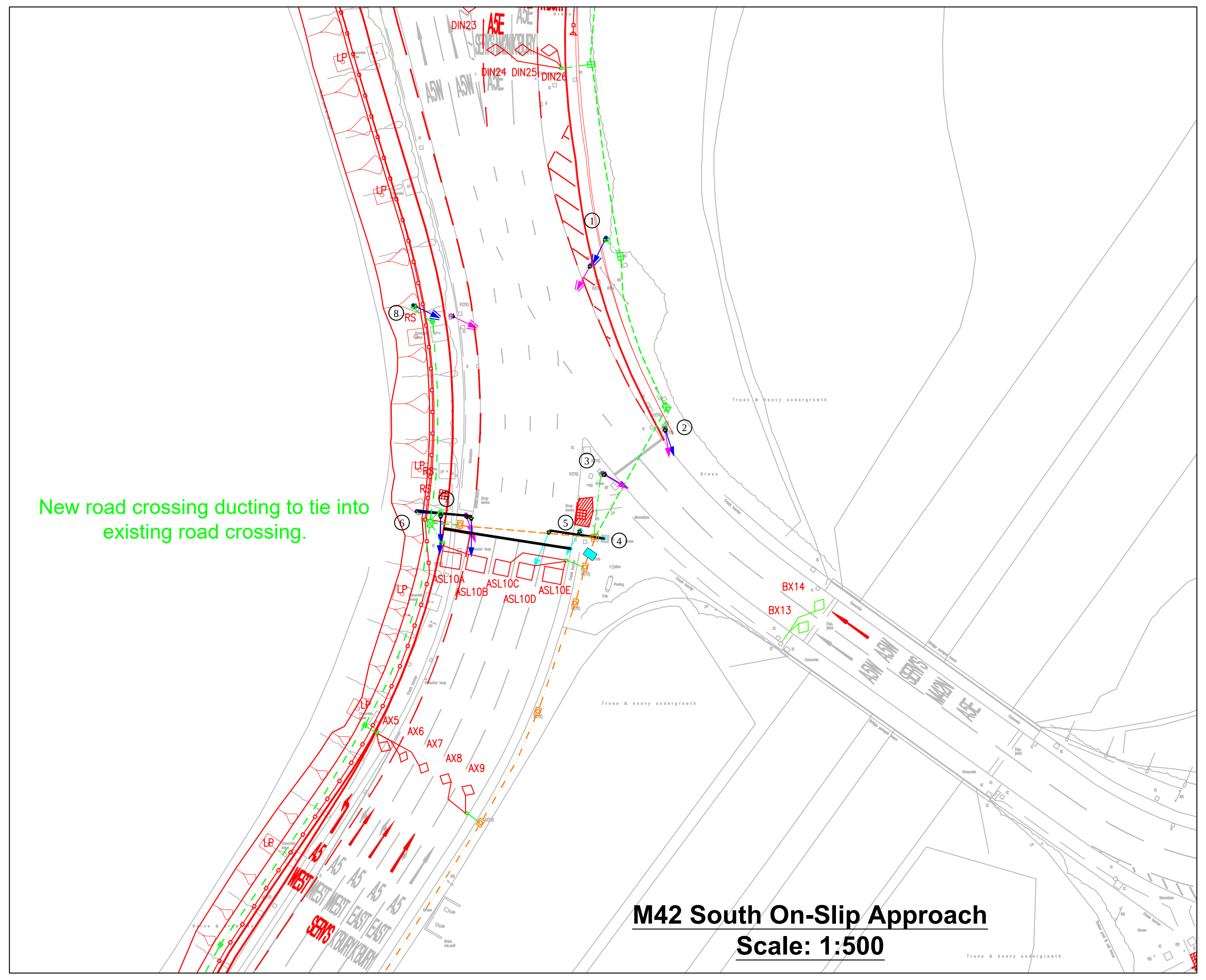
Green Lane Approach
Scale: 1:500



M42 North On-Slip Approach
Scale: 1:500

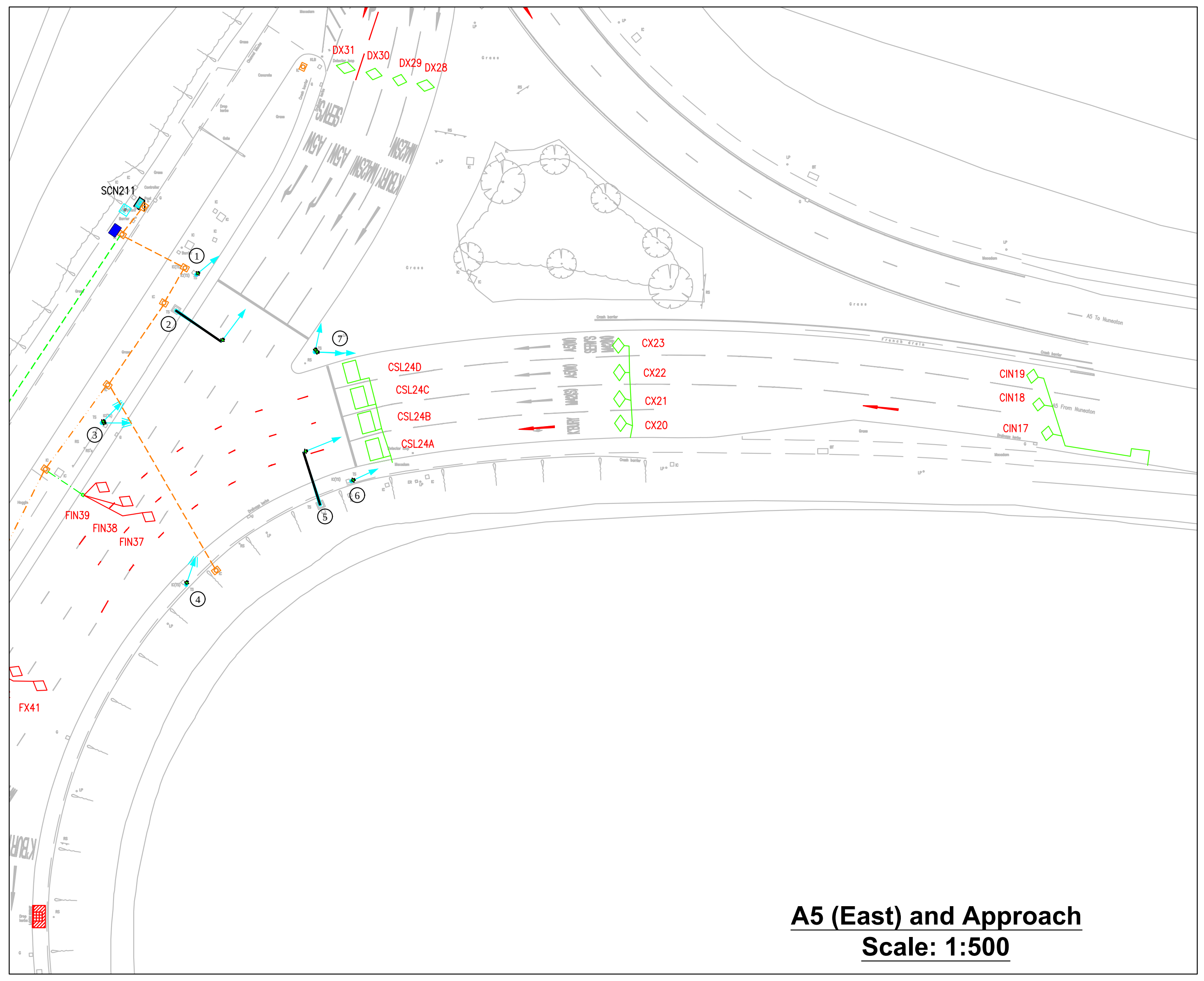


A5 (West) Approach
Scale: 1:500



New road crossing ducting to tie into existing road crossing.

M42 South On-Slip Approach
Scale: 1:500



A5 (East) and Approach
Scale: 1:500

⚠ RESIDUAL DESIGN HAZARDS

(The following information has been collected from Preconstruction Information and Amey Process PLC-H&S-201 – Hazard Management for Designers.)

1. Working adjacent to live traffic.
2. Access to working area through site
3. Underground and overhead services
4. Motorway and communication cross carriageway ducts and cables

NOTES

1. Chamber lids to incorporate the words "traffic signals".

2. The accuracy of this drawing cannot be guaranteed for setting out of civil works.

3. Existing traffic signal controllers to be modified to incorporate new signal nodes. Existing Gemini MOVA units to be modified or replaced to provide 3 seperate MOVA stream operation.

4. Mast arm to be NAL rotating Mast Arm with suitable foundation.

5. All proposed traffic signals to have LED signal heads. Existing signal heads to be retained and refitted to new poles.

6. All traffic signal poles to incorporate NAL traffic signal termination enclosures and NAL retention sockets.

7. Position of inductive loops and associated ducting is to be confirmed upon completion of MOVA design .

8. Ducting size and colour to be confirmed with services provider prior to construction.

9. This drawing is to be read in conjunction with road markings drawing (drawing no. M9-1213596R-H-D-104) and construction details drawing (drawing no. M9-1213596-H-D-105).

10. All dimensions are in metres unless otherwise stated.

11. A duct survey is required prior to any construction works commencing to ensure that no ducts have collapsed or become blocked.

12. The exact alignment of the traffic signal heads is to be agreed on site with the Site Engineer, to ensure there is no see through / cross visibility issues.

KEY

🟥	Proposed layout
▭	Existing layout
—1—	1 No. Polyethelene 100mm duct
—2—	2 No. Polyethelene 100mm duct
—3—	3 No. Polyethelene 100mm duct
🟩	EXISTING duct (Location approximate)
□	Existing Access Chamber
☒	Proposed large access Chamber 600mm x 600mm
☒	Proposed medium access chamber 450mm x 450mm
□	Proposed small access chamber 300mm x 300mm
1	Number of 100mm ducts required
△1	Number of 50mm ducts required
▦	400mm x 400mm Blister Tactile Paving, Buff in Colour (for uncontrolled pedestrian crossing points)
	SIGNAL EQUIPMENT
▬	Traffic Signal Controller
◇	Existing MOVA Detector Loops
◇	Proposed MOVA Detector Loops
●	Straight Signal Pole
	HELIOS SIGNAL HEADS
►	Primary Signal
►	Primary Signal on a Cantilevered Signal Pole
►►	Two three aspect signal heads- one mounted at standard clearance and one with 4m clearance
►	Secondary Signal
↑►	Signal Head with Right Turn Indicative Arrow
▨	Primary Signal with Louvered Green
▨	Secondary Signal with Louvered Green

DRAWING TO BE PRINTED IN COLOUR

Rev	Revision details	Chkd	Appd	Date

Drawn:	NM	Preliminary	
Design:	AMC	For comment	
Chkd:	AMC	For tender	
Appd:	SB	For construction	
Date:	Apr 2013	As constructed	
		Other	

amey

Client
HIGHWAYS AGENCY

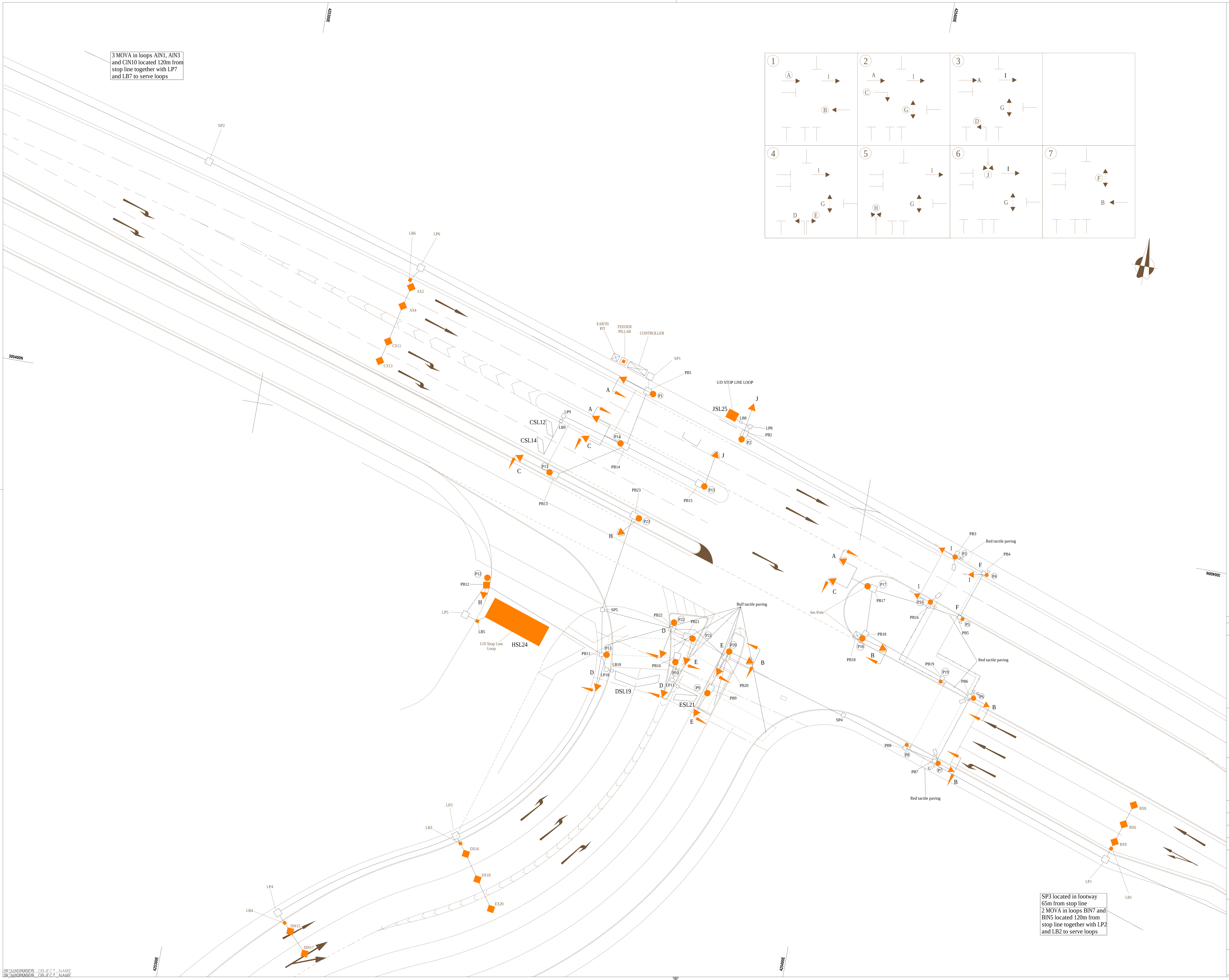
Project Name
M42 Junction 10 Improvement Scheme

Drawing Title
HIGHWAYS
Proposed Traffic Signal Layout

Original Drawing Size : A0
Scale : As Shown
Dimensions : m

Drawing No
9/1266273/DR/1210

Rev
P0


3 MOVA in loops AIN1, AIN3 and CIN10 located 120m from stop line together with LP7 and LB7 to serve loops

SP3 located in footway 65m from stop line

2 MOVA in loops BIN7 and BIN5 located 120m from stop line together with LP2 and LB2 to serve loops

KEY

▣	Mains feeder pillar
⊠	Controller Cabinet
⊠	Earth Spike Inspection Pit
●→	Primary Signal Head Position
●→	Secondary Signal Head Position
●→	Louvered hoods
▭	Pedestrian on Crossing Detector
☐ SP1	Inspection Pit Only
●☐ PB1	Pole Box
☐ LP1	Loop Pit
☐ LB1	Loop Box
◆	MOVA Loop
▬	Stop Line Loop
▷▷	Nearside toucan indicator unit and push button
▷	Toucan pushbutton

NOTES

1. Signalised junction to be under MOVA control.
2. Final/additional positions of loops to be established by a MOVA specialist.
3. P3, P4 + P16 will have louvers fitted on the green and amber aspects only.
4. P17 + P18 are to be 6m poles.
5. P5, P8 and P19 are to be 2m poles.
6. Lower secondary signal for phase C P17 is to be fitted with tunnel hoods.
7. Lower secondary signal for phase A P17 is to be fitted with 180º lefthand cutaway hoods.
8. Feeder cables for MOVA loops BIN5, BIN7, BX8, BX6 and BX9 are to return to the controller via pits SP4 and SP5.
9. All existing signal poles are to be removed from site and disposed of in the appropriate way.
10. The existing controller, Feeder Pillar and signal heads are to be re-used. Poles to be disposed of.
11. All poles over 4m require an LED repeater signal fitted at the top.
12. All PBU'sare to have tactile units fitted.
13. STOPLINE loops for phase H and J are to be unidirectional.
14. The secondary signal on P4 is to be fitted with primary hoods.

Rev	Drawn	Approved	Date	Description
E	JF			As Build
D	M.C.J.			Loop relabelling and stage change
C	M.M.D.	F.J.H.	May 04	Eastbound carriageway realigned
B	JDB	J.H.	Mar 04	Issued for construction
A	JDB	J.H.	Mar 04	References for loops at extent of scheme added

As Build

Contractor

OSBORNE

HOMES BUILDING CIVILS MAINTENANCE

Geoffrey Osborne Ltd
Mercers Manor Barns, Manor Farm,
Sherington, Newport Pagnell.
Buckinghamshire. MK16 9PU
t:01908 614461 f:01908 614472

Client

IM Properties (Dordon) Ltd.

CONSULTING ENGINEERS

URS

200 Harpur Centre, Horne Lane, Bedford MK40 1TS. Tel: 44 (0) 1234 349641

Office of Origin
Bedford

Designed	Date	Checked	Date
M.S.	Dec 03	J.H.	Jan 04
Drawn	**Date**	**Approved**	**Date**
MCJ	Jan 04	P.F.	Jan 04

Scales 1:200
Orig Size A0

Contract
A5 BIRCH COPPICE
DEVELOPMENT
PERMANENT ACCESS WORKS

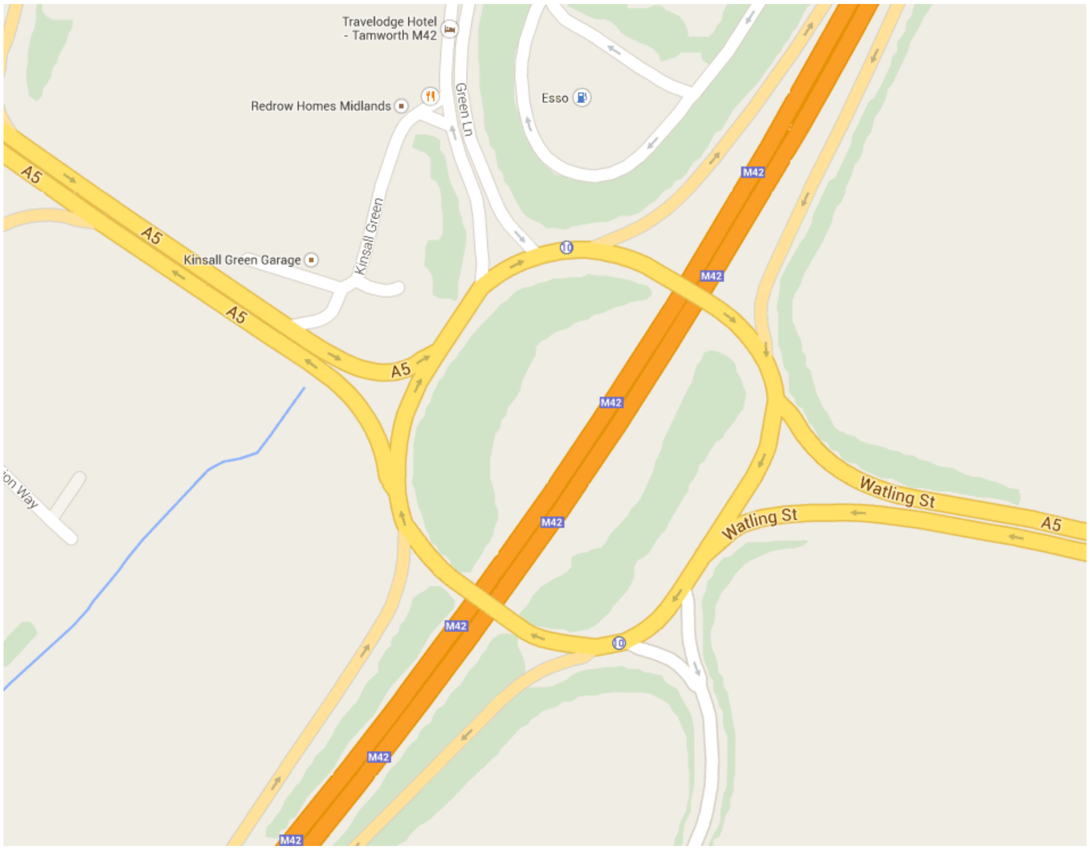
Drg. Title
Traffic Signals

Drg. No. 47439-003 5002/C/RO/0109
Rev. E
Sheet No.

URS31820

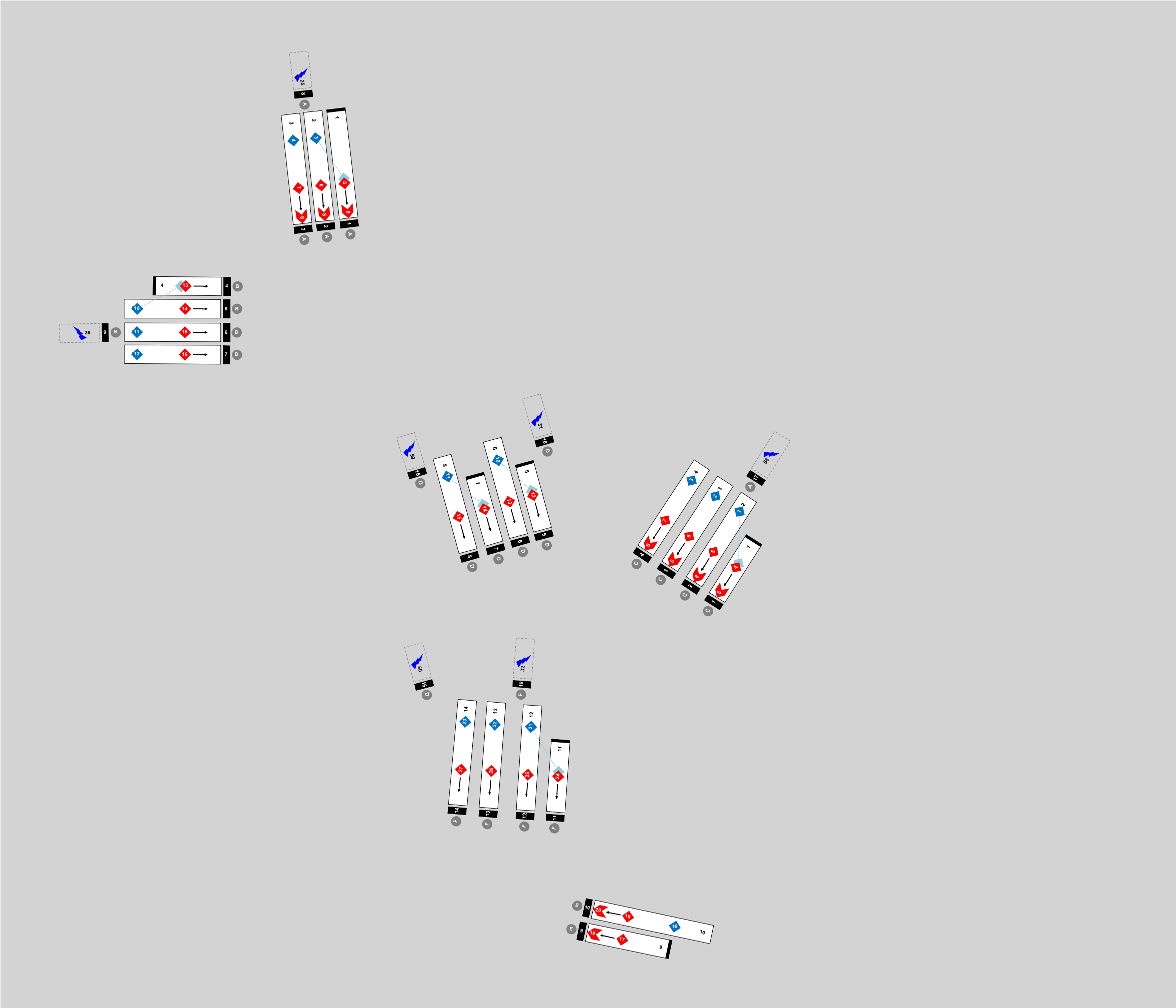
MOVA Validation Report

M42 Junction 10, Wilnecote

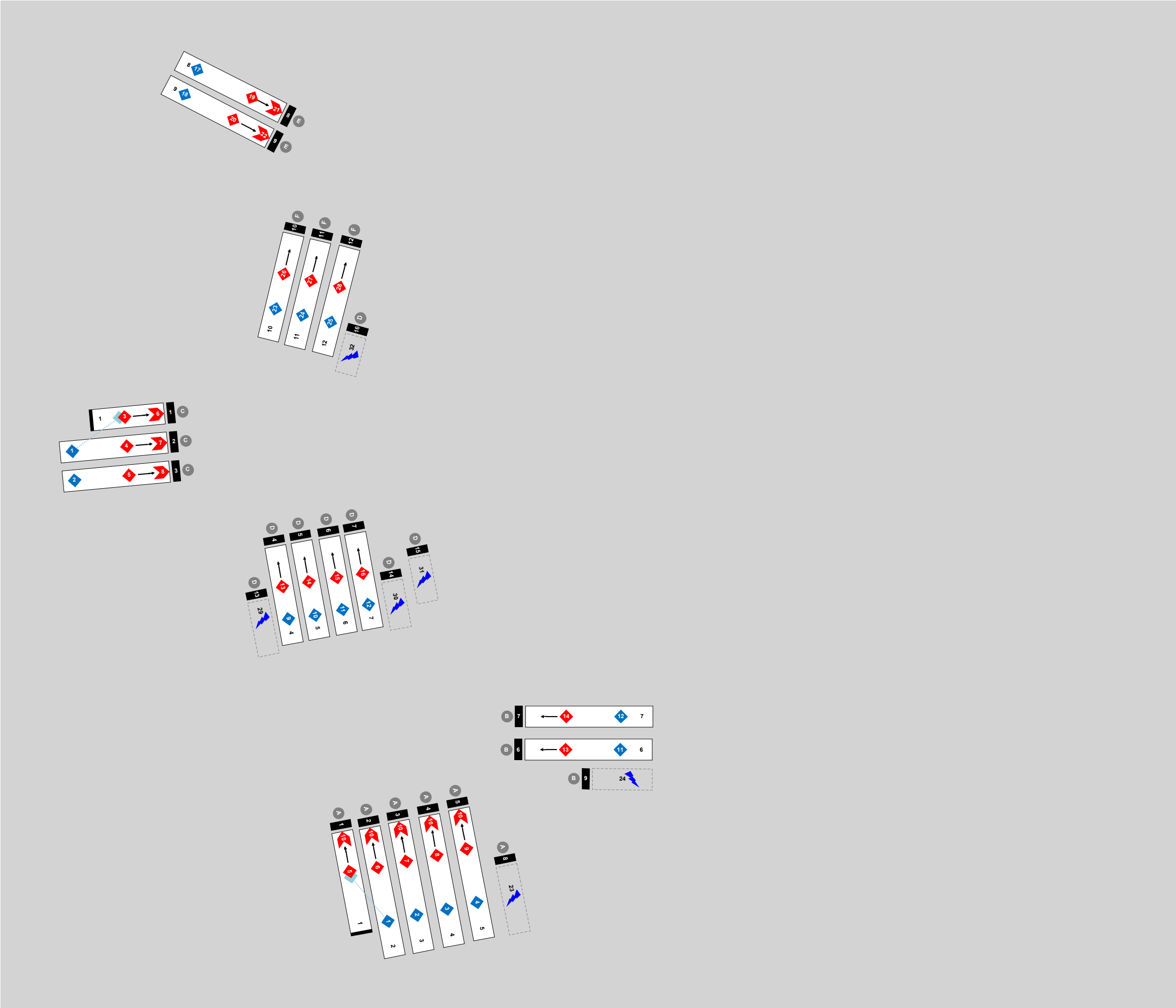


Authority	Name
Author -	Dave Richards
Reviewed -	Phill Scoffham
Approved -	

MOVA Link Diagram (East Controller)



MOVA Link Diagram (West Controller)



Initial Setup

MOVA Validation was completed on the East and West Controllers during a series of visits covering the AM Peak, Off Peak and PM Peak between Monday 29th September and Wednesday 15th October 2014. Weather conditions varied between visits from sunny and dry to overcast with rain.

On the initial site visit, both controllers were found to be operating Cableless Linking Facility (CLF) mode with the CRB/TO bits enabled. Datasets ‘M42J10NE.MDS’ and ‘M42J10SE.MDS’ were downloaded in to the Siemens MOVA OMU for the Eastside controller streams 0 and 1 respectively, saved in repository 1 and selected as active. The process was repeated on the Westside Controller with datasets ‘M42J10SW.MDS’ and ‘M42J10NW.MDS’ being downloaded in to the Siemens MOVA OMU for streams 0 and 1 respectively, saved in repository 1 and selected as active.

The operation of all MOVA detectors, CRB/TO and Stage/Phase Confirms were checked. All stages were forced manually via the MOVA commissioning screen and verified within the controllers using the handset.

Following all checks MOVA was enabled and MOVA messages and traffic conditions monitored.

In addition, all loop positions were measured and altered accordingly within the dataset:

Eastside Controller

Lane	**1**	**2**	**3**	**4**	**5**	**6**	**7**
X Detector ID [X]	5	6	7	13	14	15	16
X Detector distance [DX] (m)	37.0	37.0	37.0	51.5	51.5	51.5	51.5
IN Detector ID [IN]		3	4		10	11	12
IN Detector distance [DIN] (m)		97.5	97.5		94.0	94.0	94.0

Westside Controller

Lane	**1**	**2**	**3**	**4**	**5**	**6**	**7**
X Detector ID [X]	5	6	7	8	9	13	14
X Detector distance [DX] (m)	34.0	34.0	34.0	34.0	34.0	33.5	33.5
IN Detector ID [IN]		1	2	3	4	11	12
IN Detector distance [DIN] (m)		92.0	92.0	92.0	92.0	104.5	104.5

Validation – Eastside Controller

Validation began with observation of Stream 0, which consists of Links 1 to 3 (M42 Southbound Exit Slip) and Links 4 to 7 (Gyratory Eastbound). Traffic flows on Links 1 to 3 were observed to be low regardless of the time of day so MOVA was able to comfortably manage queues and clearances, giving priority to Links 4 to 7. Whilst observing the traffic flows on all approaches during an off peak period, it was noted that the red closures on Links 4 to 7 (Gyratory Eastbound) were a little slow with the closing amber appearing after vehicles had crossed the stopline. This was resolved by increasing the cruise speeds on lanes 4 to 7 from 10 to 12 metres per second. During a PM peak period, Links 1 to 3 (M42 Southbound Exit Slip) were observed to receive short green signal times (Stage 1) on a number of occasions as a direct result of large gaps left by HGVs. This was addressed by increasing the percentage of Heavy Vehicles (any vehicle with more than 4 wheels) from 11 to 20 on Links 1 to 3, which automatically increased the Stop Penalty (STOPEN) value to 12 for both links.

With reference to Stream 1, which consists of Links 1 to 4 (A5 Westbound), Links 5 to 8 (Gyratory Southbound A5), Links 9 to 10 (Trinity Road) and Links 11 to 14 (Gyratory Southbound Trinity), changes to the dataset were also made. Firstly, following off peak observations, the cruise speeds on Lanes 1 to 4 (A5 Westbound) were increased to 13 metres per second to address the issue of slow red closures. In addition, it was noted that on occasion, the green signal for Links 1 to 4 (Stage 3) would continue for a period of time once they were visibly clear of traffic. In response, the Saturation Flow Headway Time (SATINC) was reduced to 1.9 to help MOVA see End of Saturation more easily. Lane Weighting Factor (LANEWF) values were increased on Lanes 5 to 8 (Gyratory Southbound A5) and Lanes 11 to 14 (Gyratory Southbound Trinity) to ensure priority to traffic on the roundabout gyratory.

In order to avoid traffic from the A5 Westbound being caught with a red signal at the Gyratory Southbound Trinity stopline at the end of stage 3, a losing phase delay of 5 seconds was introduced via the handset from Stage 3 to 1.

Finally, the Hurry Calls on Links 5 to 8 (Gyratory Southbound A5) and Links 11 to 14 (Gyratory Southbound Trinity) were observed to be working correctly, both on street and in the MOVA Comms Output Messages.

Validation – Westside Controller

As with the Eastside controller, the first stage of validation was to observe Stream 0, which consists of Links 1 to 5 (M42 Northbound Exit Slip) and Links 6 and 7 (Gyratory Westbound). The dataset was adjusted slightly by reducing the Saturation Flow Headway Time (SATINC) from 2.0 to 1.8 on lanes 1 to 5 (M42 Northbound Exit Slip) to allow MOVA to detect End of Saturation more readily on this higher speed approach. In addition, the SATINC was reduced from 2.0 to 1.9 on lanes 6 and 7 (Gyratory Westbound) for the same purpose. Continued observation of Stream 0 during peak periods highlighted efficient operation with MOVA managing and clearing queues effectively. During off peak observations, all links were noted to be experiencing slightly slow red closures with the closing amber appearing after vehicles had crossed the stopline. This was successfully addressed by increasing the cruise speeds on Lanes 1 to 7 (both approaches) to 12 metres per second.

Validation of Stream 1, which consists of Links 1 to 3 (A5 Eastbound), Links 4 to 7 (Gyratory Northbound A5), Links 8 and 9 (Green Lane) and Links 10 to 12 (Gyratory Northbound Green Lane) began with adjustment of the Lane Weighting Factors (LANEWF). These were increased on all lanes with the exception of Lanes 8 and 9 (Green Lane), which retained the default value of 1 to give it a lower priority when MOVA makes oversaturation decisions because it is has the lowest traffic flows. The highest values were given to Lanes 4 to 7 (Gyratory Northbound A5) and Lanes 10 to 12 (Gyratory Northbound Green Lane) to ensure priority to traffic on the roundabout gyratory. Following off peak observations, the cruise speeds on Lanes 1 to 3 (A5 Eastbound) were increased to 13 metres per second to address the issue of slow red closures. In addition, SATINC was reduced to 1.9 on these lanes to help MOVA see End of Saturation more easily.

Finally, the Hurry Call on Links 4 to 7 (Gyratory Northbound A5) was observed to be working, both on street and in the MOVA Comms Output Messages. However, it was appearing more often than necessary, given the relative short distance of the associated IN loops (D Phase) from the stopline, meaning that the call time would easily be reached whilst a short queue formed during green on the opposing A5 Eastbound approach (Stage 1). The net result was to short cycle the A5 approach, which in turn caused congestion issues. This was addressed by increasing the D phase IN detector call times from 15 to 30 seconds via the handset and adjusting the Priority Facility Code (PFACIL) for Stream 1 Stage 2 (both Northbound Gyratory). The MOVA Linking from Stream 0 Stage 1 (M42 Northbound Exit Slip) to Stream 1 Stage 2 was also observed to be working correctly, both on street and in the MOVA Comms Output Messages.

Conclusion

MOVA validation was completed without any remedial work required and the junction was left running on MOVA control with datasets ‘M42J10NE.MDS’, ‘M42J10SE.MDS’ (Eastside Controller), ‘M42J10SW.MDS’ and ‘M42J10NW.MDS’ (Westside Controller) saved in repository 1 and active. Following observations of the site in CLF mode, Telent recommend that the stage sequencing be adjusted in the configuration from one, three, two to one, two, three for all modes. In the event that MOVA control fails and the junction reverts to CLF as a fall-back, this would mean that the stage sequencing would match the cyclic format adopted and required by MOVA.

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Administration

General Specifications

Customer Name	URS CORPORATION (IM PROP)	Customer Order No.	
Intersection/ General Description	A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH	Controller/ Serial Number	
		S.T.S. /EM Number	E63476 Issue 6
Controller	● New ○ Modification	Equipment Installation by	SIEMENS TRAFFIC CONTROLS
Area Specifications/ Customer Drawings	47439-003/5002/T/RO/0109	Slot Cutting by	
Specification Section		Civil Works by	
Contract/Tender Ref:		Customer's Engineer	Mark Stapley
Quotation No.		Telephone Number	01234 373641
Works Order No.	199069		

Signal Company Use Only

Signal Engineer: E DUFFY / S DEAKIN

(IF Prom Label as >) Prom Number: 16260 Prom Variant: 476

Configuration Check Value: 16 F3 A0 34

Controller Options

Hardware: T800 Firmware Type and Issue: PB800 ISS 19 Other Options: KTD LO

ST900/ST750 Series Cabinet Options

Cabinet/Rack Kit Type Options ○ ○ ○ ○

Cabinet/Rack Variant Cuckoo Options ☐

Mains Supply	240 Volts	50 Hz					
Peak Lamp Current	11 Amps	Dimming Voltage	160	Answer Issue	1	Date Created	25/09/02
Average Lamp Power	2048 Watts	Low Inrush Tra	☐	Edit Issue	12		
Total Average Power	2124 Watts						

Power feed fuse rating: requires 30 Amp minimum for controller, 15 Amp minimum for pelican/lightly loaded controller

Works Order : 199069
EM Number : E63476
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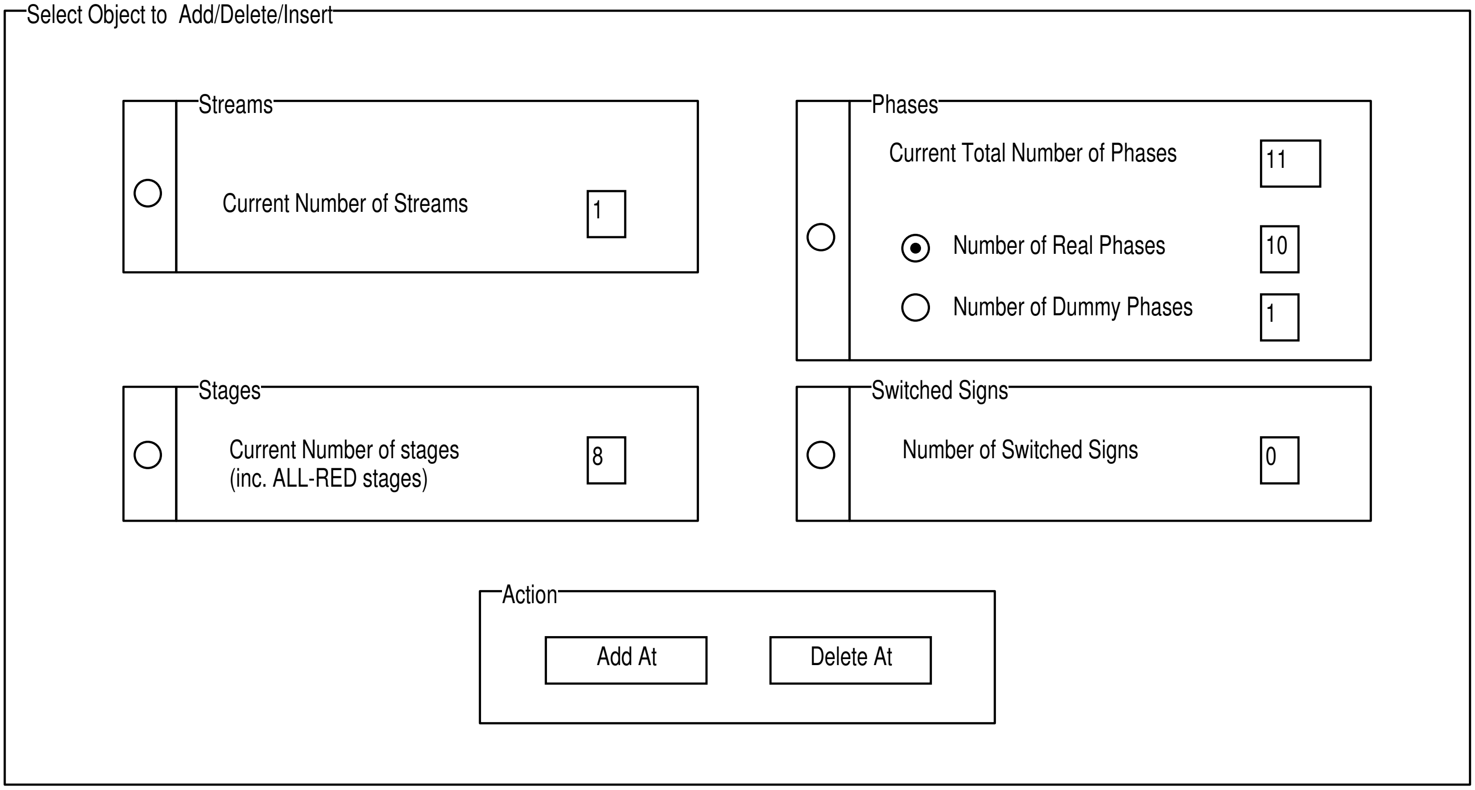
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Streams, Stages, Phases Control



Select Object to Add/Delete/Insert

Streams
○ Current Number of Streams: 1

Phases
○ Current Total Number of Phases: 11
● Number of Real Phases: 10
○ Number of Dummy Phases: 1

Stages
○ Current Number of stages (inc. ALL-RED stages): 8

Switched Signs
○ Number of Switched Signs: 0

Works Order : 199069
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Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Facilities/Modes Enabled and Mode Priority Levels

Facilities

- ☑ Manual Control
- ☐ Manual Step On Mode
- ☑ CLF (Base Time)
- ☐ CLF (non-Base Time)
- ☑ UTC Facility
- ☑ Hurry Call Mode
- ☐ Priority
- ☐ Emergency Vehicles

15 Starting Intergreen

- ☐ Part Time
- ☑ Master Time Clock
- ☑ RED Lamp Monitoring
- ☑ Lamp Monitoring
- ☐ Linked Fixed Time
- ☑ FT To Current MAX
- ☐ Speed Measurement
- ☐ Download To Level 3

- ☐ London IMU
- ☐ Extend All Red
- ☐ Fail To Hardware Flashing
- ☐ Ripple Change
- ☐ Non-UK

- ☑ Pelican/Puffin/Toucan Facilities
- ☐ Standalone Manual
- ☐ Holiday Clock
- ☐ Fail to Part Time
- ☑ Serial MOVA
- ☑
- ☐ Free-Standing OTU
- ☐ Integral OTU

Mode Priority

PRIORITY	1	2	3	4	5	6	7	8	9	10	11
Part Time	○	○	○	○	○	○	○	○	○	○	○
Emergency Vehicle	○	○	○	○	○	○	○	○	○	○	○
Hurry Call	○	○	○	●	○	○	○	○	○	○	○
Selected Man Cntrl	●	○	○	○	○	○	○	○	○	○	○
UTC	○	○	●	○	○	○	○	○	○	○	○
Manual Step On	○	○	○	○	○	○	○	○	○	○	○
Selected FT or VA or CLF	○	●	○	○	○	○	○	○	○	○	○
Cableless Link (CLF)	○	○	○	○	●	○	○	○	○	○	○
Priority Vehicle	○	○	○	○	○	○	○	○	○	○	○
Vehicle Actuated	○	○	○	○	○	●	○	○	○	○	○
Fixed Time	○	○	○	○	○	○	●	○	○	○	○

Configuration Complexity

○ Low ○ Medium ○ High ● Maximum

standard.8DF
Default PROM data file

Correspondence Monitoring to inc.

- ☐ Reds
- ☐ Switched Signs
- ☐ Ambers
- ☐ Ignore Reds and Ambers during Fail to Part Time

Flash Rate (ms)

400 Off 400 On

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Phases in Stages

Phases

In Stages	A	B	C	D	E	F	G	H	I	J	K
0											🟥
1	🟥	🟥							🟥		
2	🟥		🟥				🟥		🟥		
3	🟥			🟥			🟥		🟥		
4				🟥	🟥		🟥		🟥		
5							🟥	🟥	🟥		
6							🟥		🟥	🟥	
7		🟥				🟥					

Works Order : 199069
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Stages in Streams

Stream Data

	0	1	2	3	4	5	6	7
Phase or Stage to revert to in absence of demands/extensions	1							
Startup Stage	1							
Part-Time switch off stage								
Standalone Pedestrian	☐	☐	☐	☐	☐	☐	☐	☐

NB : For a Stand-Alone Stream, the reversion must be to All Red stage or Traffic stage/phase to meet the relevant standard or specification.

Stages

In Stream	0	1	2	3	4	5	6	7
0	🟥	🟥	🟥	🟥	🟥	🟥	🟥	🟥

Works Order : 199069
EM Number : E63476
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Phase Type and Conditions

Phase Type and Conditions

● Phases A to P ○

Phase	Title	Type	App. Type	Term. Type	Assoc. Phase
A	A5 NORTHWEST	0 - UK Traffic	0	0 - I	
B	A5 SOUTHEAST	0 - UK Traffic	0	0 - I	
C	A5 RIGHT TURN	0 - UK Traffic	0	0 - I	
D	BIRCH COPPICE LEFT TURN	0 - UK Traffic	0	0 - I	
E	BIRCH COPPICE RIGHTURN	0 - UK Traffic	0	0 - I	
F	TOUCAN CROSSING SOUTHEAST BOUND	3 - UK Near Side Pedestrian	0	0 - I	
G	TOUCAN CROSSING NORTHWEST BOUND	3 - UK Near Side Pedestrian	0	0 - I	
H	FARMERS ACCESS	0 - UK Traffic	0	0 - I	
I	A5 SOUTHEAST TOUCAN APPROACH	0 - UK Traffic	0	0 - I	
J	DEPOT ACCESS	0 - UK Traffic	0	0 - I	
K	DUMMY ALL RED	2 - UK GreenArrow	0	0 - I	

1) App Types: 0 = Always Appears, 1 = Appears if dem'd prior to interstage, 2 = If dem'd, 3 = If dem'd before end of window time
2) Term Types: 0 = Term's at end of stage, 1 = Term's when Assoc phase gains R.O.W, 2 = Term's when Assoc phase loses R.O.W.
3) The H/W Fail Flash fields are for information only on all but ST900ELV Controllers. For other controllers, physical switches or links (etc.) select which aspects flash and these need to be set up manually.

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Opposing and Conflicting Phases

Select Stream(s) To Configure

○ All ○ 0 ○ ○ ○ ○ ○ ○ ○

Initialise

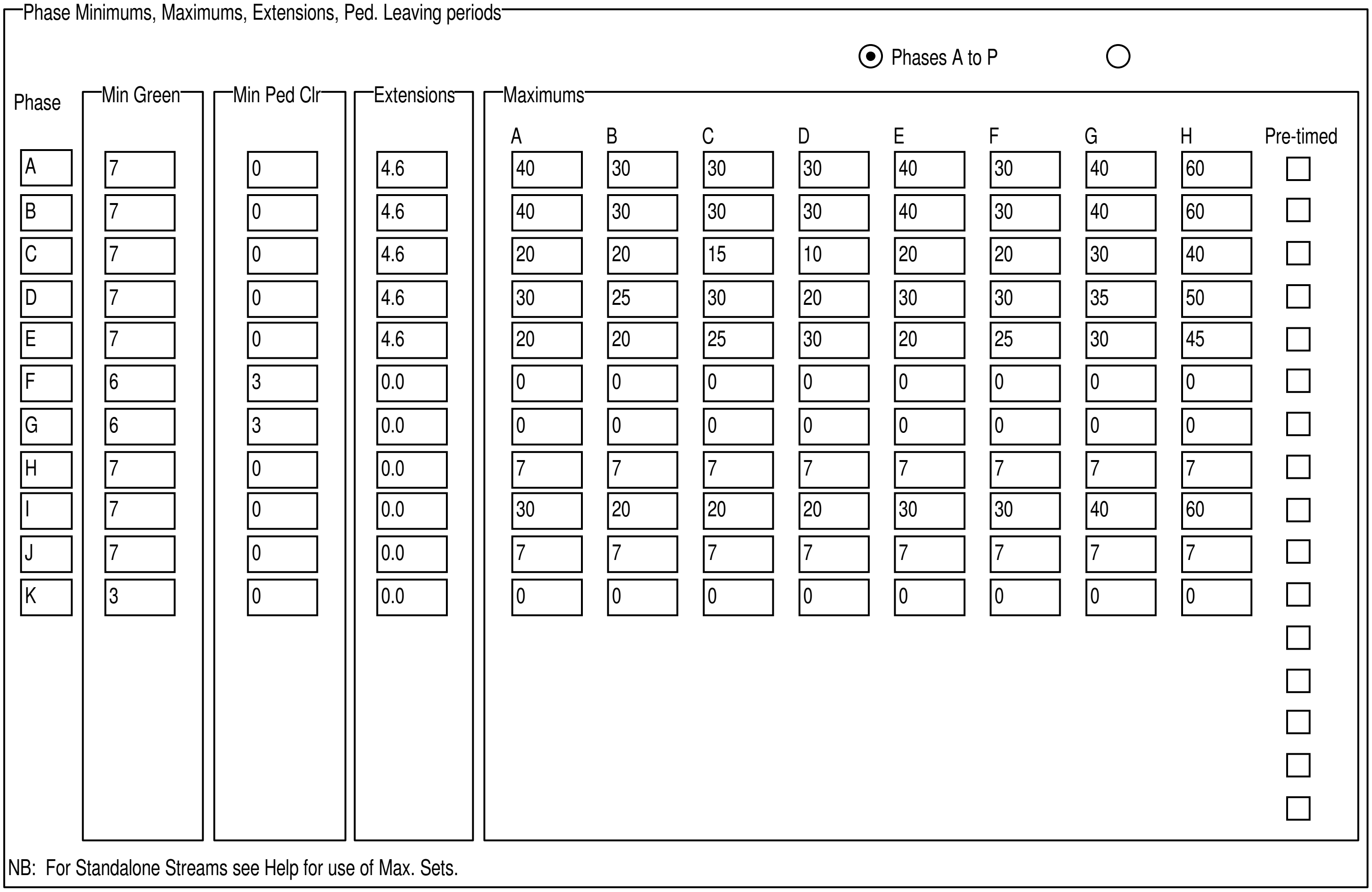
To Phase

From Phase

	A	B	C	D	E	F	G	H	I	J	K
A	■	o	o	o	Co	o	o	Co	o	Co	o
B	o	■	Co	Co	Co	o	Co	Co	o	Co	o
C	o	Co	■	o	Co	o	o	Co	o	Co	o
D	o	Co	o	■	o	o	o	Co	o	Co	o
E	Co	Co	Co	o	■	o	o	Co	o	Co	o
F	o	o	o	o	o	■	o	o	Co	o	o
G	o	Co	o	o	o	o	■	o	o	o	o
H	Co	Co	Co	Co	Co	o	o	■	o	Co	o
I	o	o	o	o	o	Co	o	o	■	o	o
J	Co	Co	Co	Co	Co	o	o	Co	o	■	o
K	o	o	o	o	o	o	o	o	o	o	■

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Phase Minimums, Maximums, Extensions, Ped. Leaving periods



Phase Minimums, Maximums, Extensions, Ped. Leaving periods

● Phases A to P ○

Phase	Min Green	Min Ped Clr	Extensions	Maximums								
				A	B	C	D	E	F	G	H	Pre-timed
A	7	0	4.6	40	30	30	30	40	30	40	60	☐
B	7	0	4.6	40	30	30	30	40	30	40	60	☐
C	7	0	4.6	20	20	15	10	20	20	30	40	☐
D	7	0	4.6	30	25	30	20	30	30	35	50	☐
E	7	0	4.6	20	20	25	30	20	25	30	45	☐
F	6	3	0.0	0	0	0	0	0	0	0	0	☐
G	6	3	0.0	0	0	0	0	0	0	0	0	☐
H	7	0	0.0	7	7	7	7	7	7	7	7	☐
I	7	0	0.0	30	20	20	20	30	30	40	60	☐
J	7	0	0.0	7	7	7	7	7	7	7	7	☐
K	3	0	0.0	0	0	0	0	0	0	0	0	☐
												☐
												☐
												☐
												☐
												☐

NB: For Standalone Streams see Help for use of Max. Sets.

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Phase Intergreen Times

Select Stream(s) To Configure

○ All ○ 0 ○ ○ ○ ○ ○ ○ ○

NB: On a Stand Alone Pelican/Toucan/Puffin Stream the Intergreens between Pedestrian and Traffic Phases are controlled by the timings (PBT, PIT, CMX, CDY, CRD and PAR), therefore 0 should be entered for the appropriate intergreen times in grid below

To Phase

From Phase

	A	B	C	D	E	F	G	H	I	J	K
A	■				7			7		8	3
B		■	7	11	9		7	13		11	3
C		8	■		7			7		7	3
D		6		■				8		6	3
E	6	6	6		■			6		6	3
F						■			0		3
G		0					■				3
H	7	5	6	5	7			■		9	3
I						5			■		3
J	5	5	6	5	5			7		■	3
K	2	2	2	2	2	2	2	2	2	2	■

Works Order : 199069
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Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Handset Intergreen Limits

HIGH 17

Copy Intergreen Values

To Phase

From Phase

	A	B	C	D	E	F	G	H	I	J	K
A	■				5			5		5	3
B		■	5	7	5		5	7		7	3
C		5	■		5			5		5	3
D		5		■				5		5	3
E	5	5	5		■			5		5	3
F						■					3
G							■				3
H	5	5	5	5	5			■		7	3
I						5			■		3
J	5	5	5	5	5			5		■	3
K	2	2	2	2	2	2	2	2	2	2	■

Works Order : 199069
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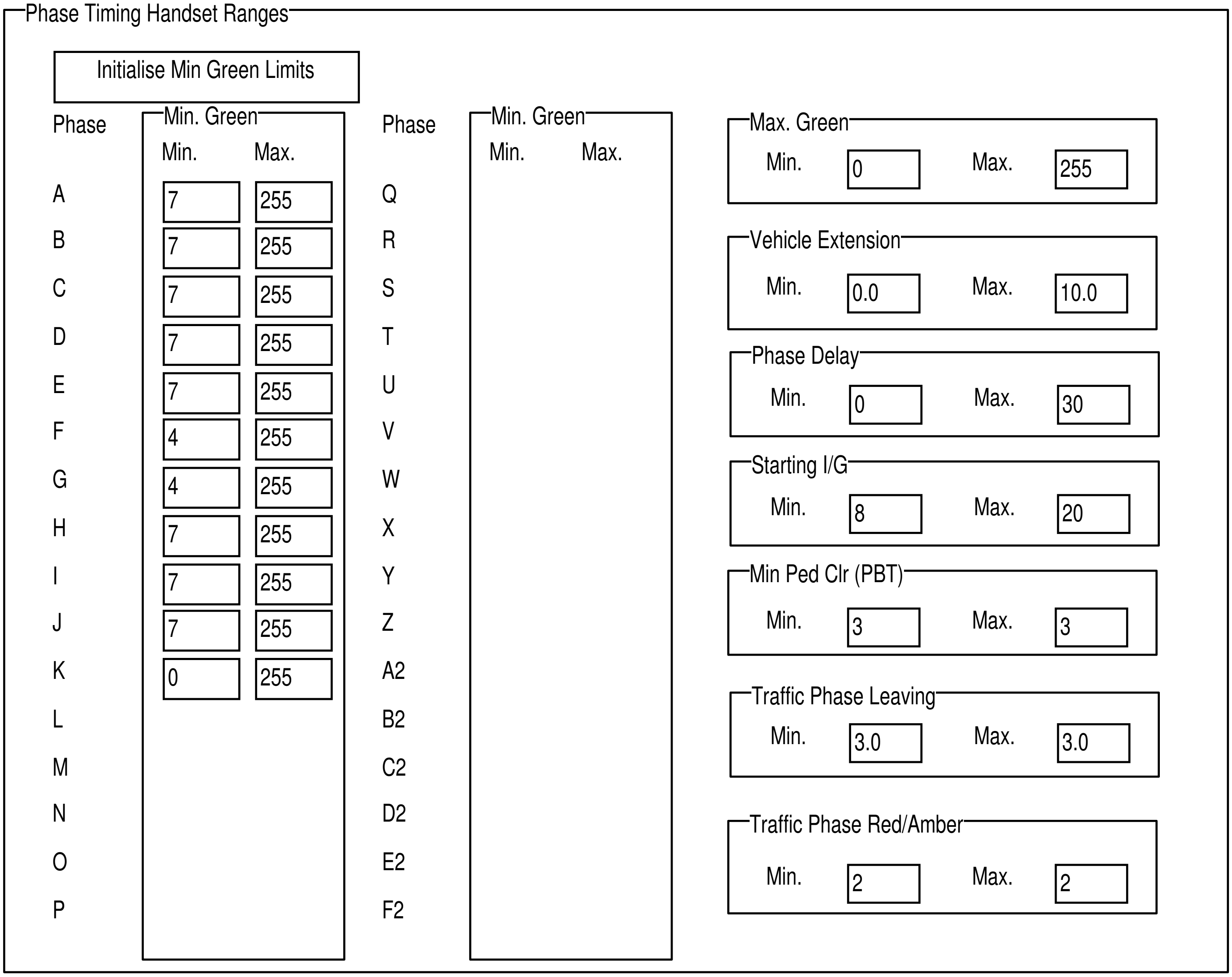
Phase Timing Handset Ranges



Phase Timing Handset Ranges

Initialise Min Green Limits

Phase	Min. Green Min.	Min. Green Max.	Phase	Min. Green Min.	Min. Green Max.
A	7	255	Q		
B	7	255	R		
C	7	255	S		
D	7	255	T		
E	7	255	U		
F	4	255	V		
G	4	255	W		
H	7	255	X		
I	7	255	Y		
J	7	255	Z		
K	0	255	A2		
L			B2		
M			C2		
N			D2		
O			E2		
P			F2		

	Min.	Max.
Max. Green	0	255
Vehicle Extension	0.0	10.0
Phase Delay	0	30
Starting I/G	8	20
Min Ped Clr (PBT)	3	3
Traffic Phase Leaving	3.0	3.0
Traffic Phase Red/Amber	2	2

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Phase - VA Demand and Extend Definitions

VA Demand and Extend Definitions

● Phases A to P ○

Demands

For Unlatched demands preceed the name with a #.
Conditioning MUST be used to specify unlatched demands.

Phase				
A	AX2	AX4		
B	BX6	BX8	BX9	
C	CX11	CSL12	CX13	CSL14
D	DX16	DX18	DSL19	
E	EX20	ESL21		
F	PBUF			
G	PBUG			
H	HSL24			
I				
J	JSL25			
K				

Extensions

AX2	AX4		
BX6	BX8	BX9	
CX11	CX13		
DX16	DX18		
EX20			

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Phase Internal/Revertive Demands

Phase Internal/Revertive Demands

Start-up Vehicle Responsive Demands

A ☑	B ☑	C ☑	D ☑	E ☑	F ☐	G ☐	H ☑	I ☐	J ☑	K ☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

A ☑	B ☑	C ☑	D ☑	E ☑	F ☐	G ☐	H ☑	I ☐	J ☑	K ☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Max Timers

A ☑	B ☑	C ☑	D ☑	E ☑	F ☑	G ☑	H ☑	I ☑	J ☑	K ☑	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Revertive Phase Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A	B	C	D	E											
Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2

Works Order : 199069
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Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Phase - OnCrossing and Kerbside Detector Definitions

On Crossing and Kerbside Input Definitions

● Phases A to P ○

Phase	On Crossing				Kerbside			
A								
B								
C								
D								
E								
F	ONC3F	ONC16F						
G	ONC6G	ONC7G						
H								
I								
J								
K								

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Stream - Pelican/Puffin/Toucan Times

Stream - Pelican/Puffin/Toucan Times

Pedestrian Enable VA Mode (PEV)

Streams							
0	1	2	3	4	5	6	7

Pedestrian All Red Times (Vehicle to Pedestrian)

Streams	0	1	2	3	4	5	6	7
(PARn 0) VA Gap Change								
(PAR n 1) VA Max Change								
(PAR n 2) FVP Change								
(PAR n 3) UTC Change								
(PAR n 4) Local Link Change								

Pelican Intergreen times

(PIT n 0) Veh Red/Ped Flash Green
(PIT n 1) Veh Flash Amber/Ped Flash Green
(PIT n 2) Veh Flash Amber/Ped red
(PIT n 3) Veh Flash Amber/Ped Red Quiescent

Handset Range Limits

	Min	Max
Pedestrian All Red Times	0	0
(PIT n 0)	0	0
(PIT n 1)	0	0
(PIT n 2)	0	0
(PIT n 3)	0	0

Works Order : 199069
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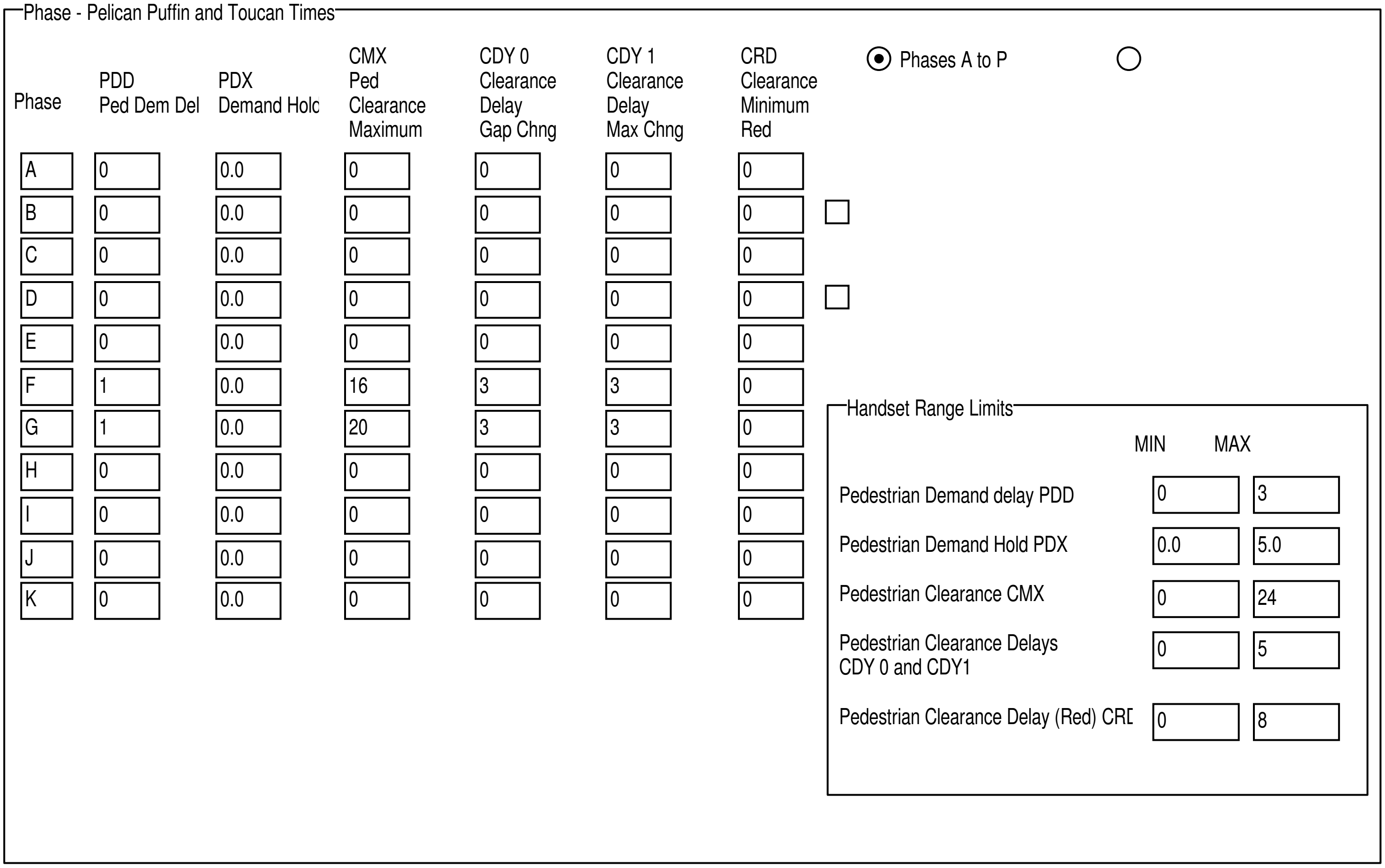
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Phase - Pelican Puffin and Toucan Times



Phase - Pelican Puffin and Toucan Times

● Phases A to P ○

Phase	PDD Ped Dem Del	PDX Demand Holc	CMX Ped Clearance Maximum	CDY 0 Clearance Delay Gap Chng	CDY 1 Clearance Delay Max Chng	CRD Clearance Minimum Red	
A	0	0.0	0	0	0	0	
B	0	0.0	0	0	0	0	☐
C	0	0.0	0	0	0	0	
D	0	0.0	0	0	0	0	☐
E	0	0.0	0	0	0	0	
F	1	0.0	16	3	3	0	
G	1	0.0	20	3	3	0	
H	0	0.0	0	0	0	0	
I	0	0.0	0	0	0	0	
J	0	0.0	0	0	0	0	
K	0	0.0	0	0	0	0	

Handset Range Limits

	MIN	MAX
Pedestrian Demand delay PDD	0	3
Pedestrian Demand Hold PDX	0.0	5.0
Pedestrian Clearance CMX	0	24
Pedestrian Clearance Delays CDY 0 and CDY1	0	5
Pedestrian Clearance Delay (Red) CRD	0	8

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

IO and Link - Pelican/Puffin/Toucan Times

I/O and Link - Pelican/Puffin/Toucan Times

Streams	0	1	2	3	4	5	6	7

Computer Control

PV								
Window Time UIE								

Local Link

PV1								
Link Delay Time LKD								
Link Window Time LKW								
Link Override Time LKO								

Kerbside Mat Test Output ☐

Works Order : 199069
EM Number : E63476
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Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Stage Internal Demands / Ped. Window Times

Stage Internal Demands / Ped. Window Times

Start-up Vehicle Responsive Demands

0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Demands Inserted When Leaving Manual and Fixed Time Modes

0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Unlatched Demands that Start Maximum Timers

0 ☑ 1 ☑ 2 ☑ 3 ☑ 4 ☑ 5 ☑ 6 ☑ 7 ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

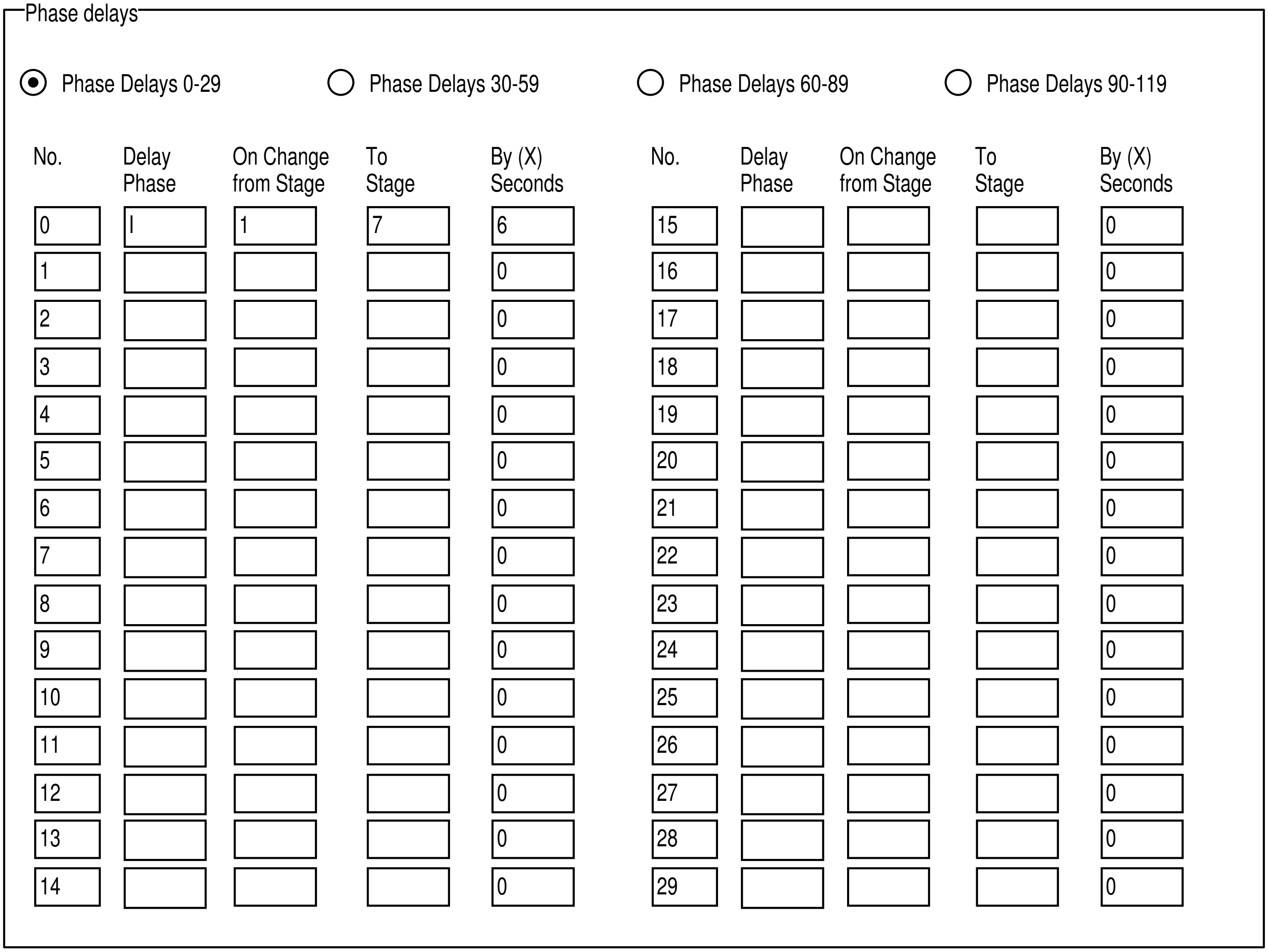
Window Times

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0	0	0	0	0	0								

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Phase delays



Phase delays

● Phase Delays 0-29 ○ Phase Delays 30-59 ○ Phase Delays 60-89 ○ Phase Delays 90-119

No.	Delay Phase	On Change from Stage	To Stage	By (X) Seconds	No.	Delay Phase	On Change from Stage	To Stage	By (X) Seconds
0	I	1	7	6	15				0
1				0	16				0
2				0	17				0
3				0	18				0
4				0	19				0
5				0	20				0
6				0	21				0
7				0	22				0
8				0	23				0
9				0	24				0
10				0	25				0
11				0	26				0
12				0	27				0
13				0	28				0
14				0	29				0

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Fixed Time

Fixed Time

Stage Moves & Times (Not Fixed Time to Current Max)

Current Stage	0	1	2	3	4	5	6	7
Next Stage								
Time								
Current Stage	8	9	10	11	12	13	14	15
Next Stage								
Time								
Current Stage	16	17	18	19	20	21	22	23
Next Stage								
Time								
Current Stage	24	25	26	27	28	29	30	31
Next Stage								
Time								

Phases Demanded and Extended under Fixed Time to Current Max.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Demand	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2
Demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

CLF - Base Time

CLF - Base Time

Controller Base Date: XX/XX/XX

Controller Base Time: 02:00:00

Plan Offset

	Minutes	Seconds		Minutes	Seconds
Plan 0	0	0	Plan 8	0	0
Plan 1	0	0	Plan 9	0	0
Plan 2	0	0	Plan 10	0	0
Plan 3	0	0	Plan 11	0	0
Plan 4	0	0	Plan 12	0	0
Plan 5	0	0	Plan 13	0	0
Plan 6	0	0	Plan 14	0	0
Plan 7	0	0	Plan 15	0	0

Handset Range Limits

	Minutes	Seconds
Min	0	0
Max	255	59

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

CLF - Demand Dependent Moves

☐ Clear Grid Data

Notes:
If no data is entered for a stage then a demand for any phases in that stage will be considered.
The data specified on this screen will also change the screen
CLF - Demands to Consider with Demand Dependent Stage Moves.

Phases

Stages	A	B	C	D	E	F	G	H	I	J	K
0											
1	🟥	🟥									
2			🟥				🟥				
3				🟥							
4					🟥						
5								🟥			
6										🟥	
7						🟥					

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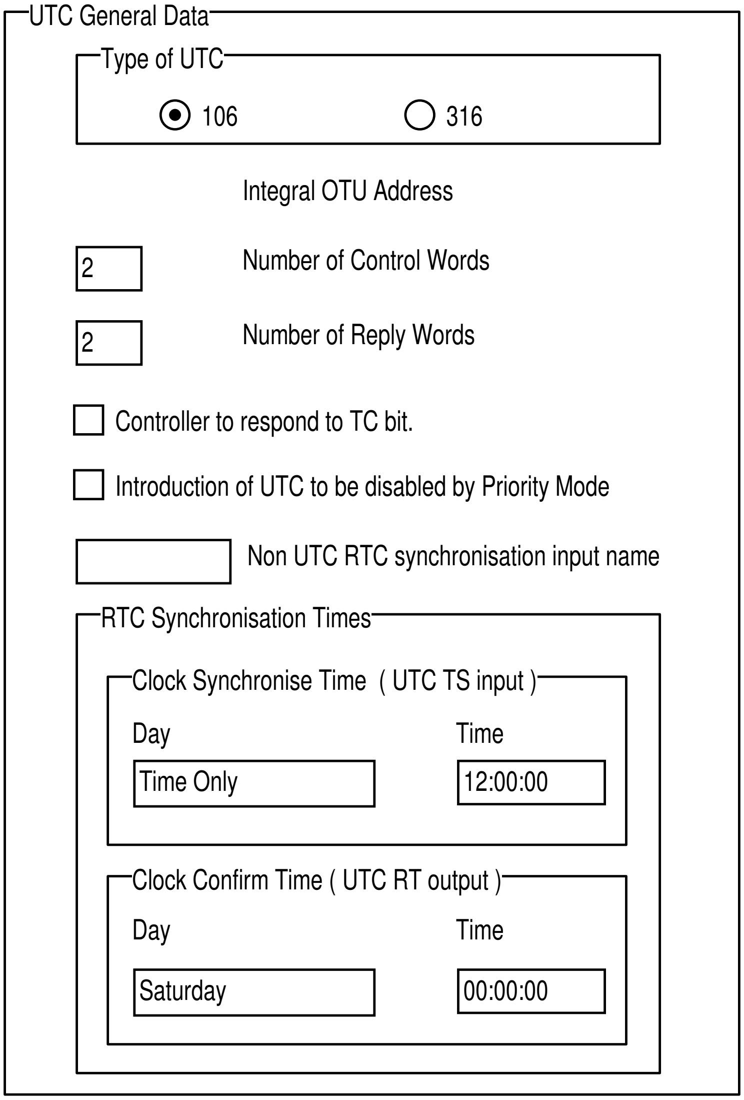
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

UTC General Data



UTC General Data

Type of UTC

● 106 ○ 316

Integral OTU Address

2 Number of Control Words

2 Number of Reply Words

☐ Controller to respond to TC bit.

☐ Introduction of UTC to be disabled by Priority Mode

Non UTC RTC synchronisation input name:

RTC Synchronisation Times

Clock Synchronise Time (UTC TS input)

Day	Time
Time Only	12:00:00

Clock Confirm Time (UTC RT output)

Day	Time
Saturday	00:00:00

Works Order : 199069
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Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

UTC Control and Reply Data Format

UTC Control and Reply Data Format

Control Words

	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Word 1	F1	F2	F3	F4	F5	F6	F7	F8
Word 2								
Word 3								
Word 4								

Reply Words

	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Word 1	G1	G2	G3	G4	G5	G6	G7	G8
Word 2	PA	PB	PD					
Word 3								
Word 4								
Word 5								
Word 6								
Word 7								
Word 8								
Word 9								
Word 10								
Word 11								
Word 12								
Word 13								
Word 14								

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

UTC Stage and Modes Data Definitions

UTC Stage and Modes Data Definitions

Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit	Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit
0	F8	G8		16			
1	F1	G1		17			
2	F2	G2		18			
3	F3	G3		19			
4	F4	G4		20			
5	F5	G5		21			
6	F6	G6		22			
7	F7	G7		23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

Mode Data Definitions

Manual Mode Operative:
☐ G1/G2 ☐ RR ☐

Manual Mode Selected:
☐ G1/G2 ☐ RR ☐

No Lamp Power, or Lamps Off due to RLM

☐ G1/G2 ☐ ☐

Detector Fault:
☐ ☐ ☐ DF

Normal NOT selected on the Manual Panel:
☐ G1/G2 ☐ RR ☐

RR Button Selected:
☐ G1/G2 ☐ RR ☐

If UTC Reply Confirms are required for a Controller Fault (CF) OR for separate MC and RR replies, Conditioning must be used.

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

UTC Demand Dependent Forces

Clear Grid Data

Notes:
If no data is entered for a stage then a demand for any phases in that stage will be considered.
The data specified on this screen will also change the screen
CLF - Demands to Consider with Demand Dependent Stage Moves.

Phases

Stages	A	B	C	D	E	F	G	H	I	J	K
0											
1	🟥	🟥									
2			🟥				🟥				
3				🟥							
4					🟥						
5								🟥			
6										🟥	
7						🟥					

Works Order : 199069
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Serial MOVA

Serial MOVA

1	AIN1	2	AX2	3	AIN3	4	AX4	5	BIN5	6	BX6	7	BIN7	8	BX8
9	BX9	10	CIN10	11	CX11	12	CSL12	13	CX13	14	CSL14	15	DIN15	16	DX16
17	DIN17	18	DX18	19	DSL19	20	EX20	21	ESL21	22		23		24	HSL24
25	JSL25	26		27		28		29		30		31		32	AMB32
33		34		35		36		37		38		39		40	
41		42		43		44		45		46		47		48	
49		50		51		52		53		54		55		56	
57		58		59		60		61		62		63		64	

Note - only 32 detectors available on MOVA 4.0

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

MTC - Time Switch Parameters

MTC - Time Switch Parameters

	Type	Event		Type	Event
0	Alternate Max	MAXSETB	16	No Action	
1	Alternate Max	MAXSETC	17	No Action	
2	Alternate Max	MAXSETD	18	No Action	
3	Alternate Max	MAXSETE	19	No Action	
4	Alternate Max	MAXSETF	20	No Action	
5	Alternate Max	MAXSETG	21	No Action	
6	Alternate Max	MAXSETH	22	No Action	
7	Alternate DFM	ALTDFMB	23	No Action	
8	Alternate DFM	ALTDFMC	24	No Action	
9	Alternate DFM	ALTDFMD	25	No Action	
10	No Action		26	No Action	
11	No Action		27	No Action	
12	No Action		28	No Action	
13	No Action		29	No Action	
14	No Action		30	No Action	
15	No Action		31	No Action	

Works Order : 199069
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Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

MTC - Time Switch Parameters Array

Parameters

Events	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
MAXSETB		🟥																														
MAXSETC			🟥																													
MAXSETD				🟥																												
MAXSETE					🟥																											
MAXSETF						🟥																										
MAXSETG							🟥																									
MAXSETH								🟥																								
ALTDFMB																																
ALTDFMC																																
ALTDFMD																																
UnUsed																																
UnUsed																																
UnUsed																																
UnUsed																																
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Works Order : 199069
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Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Master Time Clock - Day Type

Master Time Clock - Day Type

No.	Mon	Tue	Wed	Thu	Fri	Sat	Sun
0	☐	☐	☐	☐	☐	☑	☐
1	☐	☐	☐	☐	☐	☐	☑
2	☑	☐	☐	☐	☐	☐	☐
3	☐	☑	☐	☐	☐	☐	☐
4	☐	☐	☑	☐	☐	☐	☐
5	☐	☐	☐	☑	☐	☐	☐
6	☐	☐	☐	☐	☑	☐	☐
7	☑	☑	☑	☑	☑	☑	☑
8	☑	☑	☑	☑	☑	☑	☐
9	☑	☑	☑	☑	☑	☐	☐
10	☐	☐	☐	☐	☐	☑	☑
11	☐	☐	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐	☐	☐

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Master Time Clock - Time Table

Master Time Clock - Time Table

View Time Table settings

● 0-15 ○ 16-31 ○ 32-47 ○ 48-63

Number	Day Type	Time	Introduce Function Required	Function Number	Plan/ Parameter
0	9	07:00:00	INTRODUCE MAX SET A	2	0
1	9	09:30:00	INTRODUCE MAX SET B	2	1
2	9	12:00:00	INTRODUCE MAX SET C	2	2
3	9	14:00:00	INTRODUCE MAX SET D	2	3
4	9	16:00:00	INTRODUCE MAX SET E	2	4
5	9	19:00:00	INTRODUCE MAX SET F	2	5
6	1	10:00:00	INTRODUCE MAX SET G	2	6
7	1	18:00:00	INTRODUCE MAX SET H	2	7
8	0			0	0
9	0			0	0
10	0			0	0
11	0			0	0
12	0			0	0
13	0			0	0
14	0			0	0
15	0			0	0

Function Numbers:

0 = Isolate From CLF

1 = Introduce a CLF Plan

2 = Introduce a Parameter
(Combination of event switches

3 = Selects an Individual
event switch to be set

4 = Selects an Individual
event switch to be
cleared.

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

LMU - General

LMU - General

Lamp Monitoring - LMU Voltage

● 200-240 ○
○ 50-0-50, 100-120 ○ 230 CLS

Red Lamp Monitoring

Max Red Bulb Wattage: 50

First Red Lamp Fault Speed

☐ RLF2 Cancels RLM additional Intergreens

☐ RLF2 Only Cleared by RFL = 1

☐ RLF1 Only Cleared by RFL = 1

RLM Additional Intergreen Handset Limits

Minimum	Maximum
0	10

Streams with Phase BlackOut on RLF2

☐ 0 ☐ ☐ ☐ ☐ ☐ ☐ ☐

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

LMU - Sensors

LMU - Sensors

On-Board Sensors

Sensor\ Phase	Sensor Type	Bulb Watts	NLM CLS
1 \ A	As Seq.	40	☐
2 \ B	As Seq.	40	☐
3 \ C	As Seq.	40	☐
4 \ D	As Seq.	40	☐
5 \ E	As Seq.	40	☐
6 \ F	None	40	☐
7 \ G	None	40	☐
8 \ H	As Seq.	40	☐
9 \ I	As Seq.	40	☐
10 \ J	As Seq.	40	☐
11 \ K	As Seq.	40	☐
12 \ L	As Seq.	40	☐
13 \ M	As Seq.	40	☐
14 \ N	As Seq.	40	☐
15 \ O	As Seq.	40	☐
16 \ P	As Seq.	40	☐

On-Board Sensors

Sensor\ Phase	Sensor Type	Bulb Watts	NLM CLS
17 \ Q			☐
18 \ R			☐
19 \ S			☐
20 \ T			☐
21 \ U			☐
22 \ V			☐
23 \ W			☐
24 \ X			☐
25 \ Y			☐
26 \ Z			☐
27 \ A2			☐
28 \ B2			☐
29 \ C2			☐
30 \ D2			☐
31 \ E2			☐
32 \ F2			☐

External Sensors

Sensor\ Pin	Drive	Sensor Type	Bulb Watts
33 \ b14		Reg. Sign	7
34 \ z16		Reg. Sign	7
35 \ z14		Reg. Sign	7
36 \ z12		Reg. Sign	7
37 \ b14		Reg. Sign	7
38 \ z16		Reg. Sign	7
39 \ z14		Reg. Sign	7
40 \ z12		Reg. Sign	7
41 \ b14			
42 \ z16			
43 \ z14			
44 \ z12			
45 \ b14			
46 \ z16			
47 \ z14			
48 \ z12			

Works Order : 199069
EM Number : E63476
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Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

RLM Additional Intergreens

Phases Delayed

Phases with RLF1

	A	B	C	D	E	F	G	H	I	J	K
A	■										
B		■					2				
C			■								
D				■							
E					■						
F						■					
G							■				
H								■			
I						2			■		
J										■	
K											■

Works Order : 199069
EM Number : E63476
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RLM Phase Inhibits

Phases Inhibited/Blacked-out

Phases with RLF2

	A	B	C	D	E	F	G	H	I	J	K
A											
B							🟥				
C											
D											
E											
F											
G											
H											
I						🟥					
J											
K											

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Hurry Call

Hurry Call

Hurry Call	Stage Called	Call Input Name	Cancel Input Name	Confirm Output Name	Delay Time	Hold Time	Prevent Time
0	1	*SCRT1			6	30	120
1					0	0	0
2					0	0	0
3					0	0	0
4					0	0	0
5					0	0	0
6					0	0	0
7					0	0	0

Hurry Call Limit Values

	Min.	Max.
Call Delay	0	255
Call Hold	0	255
Call Prevent	0	255

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Manual Panel

Manual Panel

Stage Buttons and LEDs

Button No.	Title	Called Stage for Stream 0	1	2	3	4	5	6	7
0	ALL RED	0							
1	A5 MAIN ROAD	1							
2	A5 NORTHWEST _RIGHT TURN	2							
3	BIRCH COPPICE LEFT TURN	3							
4	BIRCH COPPICE LEFT TURN _RIGHT TURN	4							
5	FARMERS ACCESS	5							
6	DEPOT ACCESS	6							
7	PEDESTRIAN PHASE F	7							

General LEDs

	AUX 1	AUX 2	AUX 3	AUX 4 (Hurry Call)	AUX 5 (Higher Priority)
Conditioned	☑	☐	☐	☑	☑

Manual Mode Enable

● Always
○ When Handset Plugged in (Note 1)
○ When 'MND' Command Entered

Note 1:
For this to operate Special Conditioning is required.

General Buttons

	None	SW1	SW2	SW3
Momentary		☑	☐	☐
Dim Override	●	○	○	○
RR	●	○	○	○

Manual Signals On

○ Immediate Signals On
● As Start-Up

Mode Select Switches Disabled

☐ VA ☐ Fixed Time ☐ CLF

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Special Conditioning

```
; MANUAL PANEL
;==============
;
(MODE0 EQL<6>)=MIL17           ; WHEN MOVA IS ACTIVE LIGHT HIGHER PRIORITY LED.
(MODE0 EQL<5>)=MIL07           ; HURRY CALL ACTIVE LIGHT HURRY CALL LED.
AMB32+MAUXSW1=MIL22            ; ILLUMINATE AUX 1 WHEN AMBULANCE P/B IS ACTIVE.
MAUXSW1=+MOVADET32            ; SET MOVA DET 32 WHEN AUX SWITCH 1 IS PRESSED.

;
;
; MOVA
;======
;
NOT(PHASEA)=PA                                  ; PHASE A ACTIVE REPLY PA
NOT(PHASEB)=PB                                  ; PHASE B ACTIVE REPLY PB
NOT(PHASED)=PD                                  ; PHASE D ACTIVE REPLY PD
PRSLMPAF=+MOVADET22                             ; WAIT LAMP CONFIRMS FOR PHASE F
PRSLMPAG=+MOVADET23                             ; WAIT LAMP CONFIRMS FOR PHASE G
;
; VA HURRY CALL
;===============
;
(MODE0 EQL<2>).(AMB32+MAUXSW1)=SCRT1            ; DEMAND HURRY CALL ONLY IN VA FROM P/B OR MANUAL PANNEL
;
;
; MOVA CRB
;==========
;
IFT NOT(MODE0 EQL<6>).NOT(CNDTMA0).SSNRM THN            ; NOT IN MOVA MODE AND IN NORMAL RUN TIMER
    RUN<0>
END
IFT CNDTER0+((PRVMOD0 EQL<6>).NOT(MODE0 EQL<6>)) THN    ; START TIMER WHEN MOVA DROPS OFF OR TIMER TERMINATES
    LOD<10> 1SCRTCH0
    TRUE=2SCRT1
END                                                     ; START A 2 SEC INTERNAL TIMER FOR CRB TOGGLE
NOT(1SCRTST0 EQL<0>)=.2SCRT1                            ; RESET SCRT BIT WHEN COUNT REACHES ZERO
IFT (1SCRTST0 GRT<0>) THN                               ; DECREMENT COUNT EVERY 200MS UNTIL ZERO
    DEC 1SCRTCH0
END
SSNRM.(NOT(2SCRT1)+(MODE0 EQL<6>))=MOVACRB              ; WHEN TIMER TERMINATES TOGGLE CRB
;
;
;
; VA STAGE MOVEMENTS
;====================
;
(MODE0 EQL<2>).NOT(LCPHD+UCPHD+LCST3+UCST3)=PRVST3
(MODE0 EQL<2>).NOT(LCPHE+UCPHE+LCST4+UCST4)=PRVST4
(MODE0 EQL<2>).NOT(LCPHH+UCPHH+LCST5+UCST5)=PRVST5
(MODE0 EQL<2>).NOT(LCPHJ+UCPHJ+LCST6+UCST6)=PRVST6
(MODE0 EQL<2>).NOT(LCPHF+UCPHF+PEDBUTF+LCST7+UCST7)=PRVST7
```

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Special Conditioning Timers

Special Conditioning Timers

Timers

● 0-31 ○ 32-63 ○ 64-95

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
0	120	0	255	☐	CRB TOGGLE	16		0	255	☐	
1		0	255	☐		17		0	255	☐	
2		0	255	☐		18		0	255	☐	
3		0	255	☐		19		0	255	☐	
4		0	255	☐		20		0	255	☐	
5		0	255	☐		21		0	255	☐	
6		0	255	☐		22		0	255	☐	
7		0	255	☐		23		0	255	☐	
8		0	255	☐		24		0	255	☐	
9		0	255	☐		25		0	255	☐	
10		0	255	☐		26		0	255	☐	
11		0	255	☐		27		0	255	☐	
12		0	255	☐		28		0	255	☐	
13		0	255	☐		29		0	255	☐	
14		0	255	☐		30		0	255	☐	
15		0	255	☐		31		0	255	☐	

Works Order : 199069
EM Number : E63476
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Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Special Instructions

E63476

Board	Position	Skt	Port	Type I or O	Line	Cable	Block
CPU	A	X3I	0	I	00 - 07	101	1TBG
CPU	A	X3I	1	I	08 - 15		1TBH
CPU	A	X3O	11	O	88 - 91	105	1TBX
IO1	B	B	2	I	16 - 23	103	1TBJ
IO1	B	E	4	O	32 - 39		1TBK
IO1	B	C	3	I	24 - 31	103	1TBL
IO1	B	D	5	O	40 - 47		1TBM
IO2	C	B	6	I	48 - 55	103	1TBN
IO2	C	E	8	O	64 - 71		1TBP
IO2	C	C	7	I	56 - 63	103	1TBR
IO2	C	D	9	O	72 - 79		1TBS

The socket X3 on the CPU pcb is the double stacked one
X3I = Inner (nearest the board)
X3O = Outer

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Special Instructions

```
ST800 CONTROLLER ITEMS LIST SHEET 1  (*I*L*)
 ____________________________________________________________________________________________
|ITEM|DRAWING NUMBER  |              DESCRIPTION              |QTY |TOT |      REMARKS      |  Note 1:
|____|____________ ___|_______________________________________|____|____|___________________|  Please refer to special
|  1 |                |                                       |    |    |                   |  instruction pages for
|  2 |667/1/27000/001 |Cabinet 8  Phase wired 16 Phase        |   1|    |                   |  additional information on
|  3 |667/1/27000/002 |Cabinet 24 Phase wired 32 Phase        |    |    |                   |  items marked with an '*'.
|  4 |667/1/27001/001 |Rack 8  Phase wired 16 Phase           |    |    |                   |
|  5 |667/1/27001/002 |Rack 24 Phase wired 32 Phase           |    |    |                   |
|  6 |                |                                       |    |    |                   |
|  7 |                |                                       |    |    |                   |
|  8 |                |                                       |    |    |                   |
|  9 |                |                                       |    |    |                   |
| 10 |                |                                       |    |    |                   |
| 11 |                |                                       |    |    |                   |
| 12 |                |                                       |    |    |                   |
| 13 |                |                                       |    |    |                   |
| 14 |                |                                       |    |    |                   |
| 15 |                |                                       |    |    |                   |
| 16 |                |                                       |    |    |                   |
| 17 |                |                                       |    |    |                   |
| 18 |                |                                       |    |    |                   |
| 19 |                |                                       |    |    |                   |
| 20 |                |                                       |    |    |                   |
| 21 |                |                                       |    |    |                   |
| 22 |                |                                       |    |    |                   |
| 23 |                                                        |    |    |                   |
| 24 |667/1/27002/000 |Lamp Switch Kit 8 Phase                |   1|    |                   |
| 25 |667/1/27003/000 |I/O Kit                                |   2|    |                   |
| 26 |667/1/27005/000 |SDE Facility Kit                       |    |    |                   |
| 27 |667/1/27004/000 |Integral OTU Kit                       |    |    |                   |
| 28 |                |                                       |    |    |                   |
| 29 |                |                                       |    |    |                   |
| 30 |                |                                       |    |    |                   |
| 31 |                |                                       |    |    |                   |
| 32 |                |                                       |    |    |                   |
| 33 |                |                                       |    |    |                   |
| 34 |                |                                       |    |    |                   |
| 35 |                |                                       |    |    |                   |
| 36 |                |                                       |    |    |                   |
| 37 |                |                                       |    |    |                   |
| 38 |                |                                       |    |    |                   |
| 39 |667/1/16260/476 |Configuration Eprom (Issue   6.  0)    |   1|    |                   |
| 40 |                |                                       |    |    |                   |
|____|________________|_______________________________________|____|____|___________________|
|                                                                                            |
|                                                                                            |
|____________________________________________________________________________________________|
```

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Special Instructions

```
ST800 CONTROLLER ITEMS LIST SHEET 2  (*I*L*)
 ________________________________________________________________________________________
|ITEM|DRAWING NUMBER  |               DESCRIPTION                |QTY |TOT |     REMARKS      |
|____|_____________ ___|__________________________________________|____|____|__________________|
| 41 |                 |                                          |    |    |                  |
| 42 |667/1/27056/001 |Manual Panel Assy (Intersection Cont)      |    |    |                  |
| 43 |667/1/27056/010 |Manual Panel Assy (Sigs on/off)            |    |    |                  |
| 44 |667/1/27056/000 |Manual Panel Blanking Kit                  |    |    |                  |
| 45 |                 |                                          |    |    |                  |
| 46 |                 |                                          |    |    |                  |Note 2:
| 47 |                 |                                          |    |    |                  |Ancillary Processor PLD
| 48 |                 |                                          |    |    |                  |Variants
| 49 |                 |                                          |    |    |                  |101 OTU & LMU
| 50 |                 |                                          |    |    |                  |102 OTU Only
| 51 |                 |                                          |    |    |                  |103 LMU Only
| 52 |667/7/25171/000 |Current Transformer                        |    |    |                  |104 OTU & LMU + Up/Download
| 53 |                 |                                          |    |    |                  |105 OUT Only + Up/DownLoad
| 54 |                 |                                          |    |    |                  |NB Controller Has built in LMU
| 55 |                 |                                          |    |    |                  |So LMU on Ancillary Processor
| 56 |                 |                                          |    |    |                  |Not required included for info
| 57 |                 |                                          |    |    |                  |only.
| 58 |                 |                                          |    |    |                  |
| 59 |                 |                                          |    |    |                  |
| 60 |                 |                                          |    |    |                  |Note 3:
| 61 |667/1/27000/101 |Cabinet Export 8  Phase wired 16 Phase     |    |    |                  |Fit Current Transformer
| 62 |667/1/27000/102 |Cabinet Export 24 Phase wired 32 Phase     |    |    |                  |starting from position
| 63 |667/1/27001/101 |Rack Export 8  Phase wired 16 Phase        |    |    |                  |TLB/z/16 on the first phase
| 64 |667/1/27001/102 |Rack Export 24 Phase wired 32 Phase        |    |    |                  |driver PCB. if more than 3
| 65 |667/1/27002/100 |Export Lamp Switch Kit                     |    |    |                  |sensors are called up fit the
| 66 |667/1/27084/001 |Dimming Assembly (1.5KVA)(Fit Std UK)      |    |    |                  |4th sensor to the second
| 67 |667/1/27084/002 |Dimming Assembly (2.0KVA)                  |    |    |                  |Phases driver PCB, and so on
| 68 |667/1/27084/003 |Dimming Assembly (3.0KVA)                  |    |    |                  |until all sensors have been
| 69 |667/1/27130/000 |30A Controller Kit                         |    |    |                  |used up.
| 70 |                 |                                          |    |    |                  |TLB/b/14 - 1st sensor terminal
| 71 |667/1/27001/310 |ST800 SE Export Rack up to 8 Phase         |    |    |                  |TLB/z/16 - 2nd sensor terminal
| 72 |667/1/27223/003 |ST800 SE 8 Phase Driver No LMU             |    |    |                  |TLB/z/14 - 3rd sensor terminal
| 73 |667/1/27223/403 |ST800 SE 4 Phase Driver No LMU             |    |    |                  |TLB/z/12 - 4th sensor terminal
| 74 |                 |                                          |    |    |                  |TLB/z/12 - 4th sensor terminal
| 75 |                 |                                          |    |    |                  |
| 76 |                 |                                          |    |    |                  |
| 77 |667/1/27000/301 |ST800 P In a Cabinet 4Ph 1 Stream PED      |    |    |                  |TLB/z/12 - 4th sensor terminal
| 78 |667/1/27012/000 |PED 2nd Stream Kit for ST800 P             |    |    |                  |
| 79 |667/1/27001/300 |ST800 P Rack Only 4Ph 1 Stream PED         |    |    |                  |
|____|_________________|__________________________________________|____|____|__________________|
```

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Special Instructions

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Special Instructions

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Special Instructions

DETECTOR EQUIPMENT SHEET (*I*L*)

Item	Drawing Number	DESCRIPTION	QTY	TOT	REMARKS
1	667/1/20690/000	Detector 11 inch detector rack kit			
2	667/1/20690/001	Detector 19 inch detector rack kit	1		
3	667/1/17705/011	Detector Beehive kit (excl Pedestal)			
4	667/2/01999/000	Pedestal (Metric) D Detr. Housing			
5	667/1/17212/000	Detector L bracket kit			
6	667/1/22447/000	Detector Mounting Kit E.F.U. (T500)			
7	667/1/22470/000	Detector Frame Assy (T500)			
8	667/1/15990/002	Detector double backplane kit			
9	667/1/15990/003	Detector single backplane kit	7		
10	667/1/15990/004	Detector logic backplane kit			
11					
12	667/1/27663/000	Siemens STR4 (4 Channel) loop detector	7		
13	667/1/21029/001	48V WAIT SUPPLY KIT	6		
14	667/1/20292/008	24V AGD SUPPLY KIT	3		
15	667/1/03887/000	Detector Cableform (1 per 2 B/Planes)			
16	667/1/15854/000	Detector Cable termination kit	5		
17					
18	667/1/15991/000	Mod Kit Regulator PSU 1.5A 21-38V			
19	667/1/15991/001	Mod Kit Regulator PSU 0.5A 21-48V			
20					
21					
22	667/7/20360/002	Microsense Detr. Board 2 Channel			Eng. to supply
23	667/7/20360/004	Microsense Detr. Board 4 Channel			Eng. to supply
24	667/7/20368/000	Microsense Rack 3Ux19"			Eng. to supply
25	667/7/20365/000	Microsense 20-Way Backplane (Std)			Eng. to supply
26	667/7/20366/000	Microsense 20-Way Logic Backplane			
27	667/7/20369/000	Microsense Card Frame Guides (Pr.)			Eng. to supply
28					
29	667/7/20361/002	Microsense 2 Channel U/D Logic			
30	667/7/20361/004	Microsense 4 Channel U/D Logic			
31	667/7/20362/000	Microsense Count Logic N,N+1,U/D & DFM			
32	667/7/20363/000	Microsense Queue Logic with DFM			Eng. to supply
33	667/7/20364/000	Microsense Bus Detector 2-Channel			Eng. to supply
34					
35					
36	667/7/20377/000	Microsense MIX 3-1-R-24 I/R detector			Nearside mounting
37	667/7/20377/001	Microsense MIX 3-2-R-24 I/R detector			Offside mounting
38	667/7/20378/000	Short fixing bracket			
39	667/7/20379/000	Sighting Hood for MIX detectors			Eng. to supply
40	667/7/20380/000	Handbook for MIX detectors			Eng. to supply

[Template - Detector items.txt issue 1.0]

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Special Instructions

```
SIEMENS SINGLE INTERNAL DETECTOR BACKPLANE INSTRUCTIONS SHEET     (BACKPLANE 1)
 _____________________________________________________________________________
|            CONNECTIONS MADE USING CABLEFORM 667/1/03887/002                 | Note 1  If more than one backplane
|            UNUSED WIRE ENDS MUST BE TIED BACK AND INSULATED                 |         power Linking between B/Planes
|          _______________________________________________________           |         to be made using the Red, Black
|          |            DETECTOR RACK POWER CONNECTIONS              |         |         Pink and White from 667/1/03887/002
|          |_________________________________________________________|         |
|          |  SIGNAL    |    WIRE    |SUPPLY TERMINALS|BACKPLANE No.1|         |
|          |            |   COLOUR   |   FROM ST800   |  TERMINALS   |         |
|          |____________|____________|________________|______________|         | Note 2  Use the detector termination
|          |  24 VOLTS  |   RED      |  1TBE 1 to 6   |     19       |         |         kit (667/1/15854/000) to do the
|          |   0 VOLTS  |   BLACK    |  1TBE 7 to 12  |     20       |         |         intermediate wiring.
|          |   SCREEN   |   PINK     |  1TBE 7 to 12  |     22       |         |
|          |   COMMON   |   WHITE    |  1TBE 7 to 12  |     18       |         | Note 3  Ensure that the correct colour
|          |____________|____________|________________|______________|         |         wires are used for the inter-
|  _________________________________________________________________________  |         mediate wiring.
| |         |     LOOP      |  INTERMEDIATE   |   WIRE    |     BACKPLANE     | |
| |LOOP No. | DESIGNATION   |    TERMINALS    |  COLOUR   |     TERMINALS     | |
| |_________|_______________|_________________|___________|___________________| |
| |    1    |  AIN1         |2TBR 1 & 2TBR 2  |  GREEN    |       1 & 2       | |
| |    2    |  AX2          |2TBR 3 & 2TBR 4  |  BLUE     |       3 & 4       | |
| |    3    |  AIN3         |2TBR 5 & 2TBR 6  |  ORANGE   |       5 & 6       | |
| |    4    |  AX4          |2TBR 7 & 2TBR 8  |  BROWN    |       7 & 8       | |
| |_________|_______________|_________________|___________|___________________| |
|                                                                             |
|                                                                             |
|                                                                             |
|                                                                             |
|                                                                             |
|          _________________________________________________________          |
|         |                     DETECTOR OUTPUTS                     |         |
|         | DETECTOR No.  BACKPLANE     COLOUR     CONTR TERMINALS  |         |
|         |               TERMINALS                                 |         |
|         |_________________________________________________________|         |
|         |      1       |   10    |  BLUE         |     1TBG 1      |         |
|         |      2       |   12    |  GREEN        |     1TBG 2      |         |
|         |      3       |   14    |  ORANGE       |     1TBG 3      |         |
|         |      4       |   16    |  YELLOW       |     1TBG 4      |         |
|         |______________|_________|_______________|_________________|         |
|                                                                             |
|_____________________________________________________________________________|
[Template - Internal intermediate Detectors.txt iss 1.0]
```

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Special Instructions

SIEMENS SINGLE INTERNAL DETECTOR BACKPLANE INSTRUCTIONS SHEET (BACKPLANE 2)

CONNECTIONS MADE USING CABLEFORM 667/1/03887/002
UNUSED WIRE ENDS MUST BE TIED BACK AND INSULATED

DETECTOR RACK POWER CONNECTIONS

SIGNAL	WIRE COLOUR	BACKPLANE NO.1 TERMINALS	BACKPLANE No.2 TERMINALS
24 VOLTS	RED	19	19
0 VOLTS	BLACK	20	20
SCREEN	PINK	22	22
COMMON	WHITE	18	18

LOOP No.	LOOP DESIGNATION	INTERMEDIATE TERMINALS	WIRE COLOUR	BACKPLANE TERMINALS
1	CSL12	2TBR 9 & 2TBR 10	SLATE	1 & 2
2	CSL14	2TBR 11& 2TBR 12	BLUE/WHITE	3 & 4
3	CX11	2TBS 1 & 2TBS 2	GREEN	5 & 6
4	CX13	2TBS 3 & 2TBS 4	BLUE	7 & 8

DETECTOR OUTPUTS

DETECTOR No.	BACKPLANE TERMINALS	COLOUR	CONTR TERMINALS
1	10	BLUE	1TBG 5
2	12	GREEN	1TBG 6
3	14	ORANGE	1TBG 7
4	16	YELLOW	1TBG 8

Note 1 If more than one backplane power Linking between B/Planes to be made using the Red, Black Pink and White from 667/1/03887/002

Note 2 Use the detector termination kit (667/1/15854/000) to do the intermediate wiring.

Note 3 Ensure that the correct colour wires are used for the intermediate wiring.

[Template - Internal intermediate Detectors.txt iss 1.0]

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Special Instructions

SIEMENS SINGLE INTERNAL DETECTOR BACKPLANE INSTRUCTIONS SHEET (BACKPLANE 3)

CONNECTIONS MADE USING CABLEFORM 667/1/03887/002
UNUSED WIRE ENDS MUST BE TIED BACK AND INSULATED

DETECTOR RACK POWER CONNECTIONS

SIGNAL	WIRE COLOUR	BACKPLANE NO.2 TERMINALS	BACKPLANE No.3 TERMINALS
24 VOLTS	RED	19	19
0 VOLTS	BLACK	20	20
SCREEN	PINK	22	22
COMMON	WHITE	18	18

LOOP No.	LOOP DESIGNATION	INTERMEDIATE TERMINALS	WIRE COLOUR	BACKPLANE TERMINALS
1	CIN10	2TBS 5 & 2TBS 6	ORANGE	1 & 2
2		2TBS 7 & 2TBS 8	BROWN	3 & 4
3		2TBS 9 & 2TBS 10	SLATE	5 & 6
4	DSL19	2TBS 11& 2TBS 12	BLUE/WHITE	7 & 8

DETECTOR OUTPUTS

DETECTOR No.	BACKPLANE TERMINALS	COLOUR	CONTR TERMINALS
1	10	BLUE	1TBH 1
2	12	GREEN	1TBH 2
3	14	ORANGE	1TBH 3
4	16	YELLOW	1TBH 4

[Template - Internal intermediate Detectors.txt iss 1.0]

Note 1 If more than one backplane power Linking between B/Planes to be made using the Red, Black Pink and White from 667/1/03887/002

Note 2 Use the detector termination kit (667/1/15854/000) to do the intermediate wiring.

Note 3 Ensure that the correct colour wires are used for the inter-mediate wiring.

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Special Instructions

SIEMENS SINGLE INTERNAL DETECTOR BACKPLANE INSTRUCTIONS SHEET (BACKPLANE 4)

CONNECTIONS MADE USING CABLEFORM 667/1/03887/002
UNUSED WIRE ENDS MUST BE TIED BACK AND INSULATED

DETECTOR RACK POWER CONNECTIONS

SIGNAL	WIRE COLOUR	BACKPLANE No.3 TERMINALS	BACKPLANE No.4 TERMINALS
24 VOLTS	RED	19	19
0 VOLTS	BLACK	20	20
SCREEN	PINK	22	22
COMMON	WHITE	18	18

LOOP No.	LOOP DESIGNATION	INTERMEDIATE TERMINALS	WIRE COLOUR	BACKPLANE TERMINALS
1	DX16	2TBY 1 & 2TBY 2	GREEN	1 & 2
2	DX18	2TBY 3 & 2TBY 4	BLUE	3 & 4
3	DIN15	2TBY 5 & 2TBY 6	ORANGE	5 & 6
4	DIN17	2TBY 7 & 2TBY 8	BROWN	7 & 8

DETECTOR OUTPUTS

DETECTOR No.	BACKPLANE TERMINALS	COLOUR	CONTR TERMINALS
1	10	BLUE	1TBH 5
2	12	GREEN	1TBH 6
3	14	ORANGE	1TBH 7
4	16	YELLOW	1TBH 8

[Template - Internal intermediate Detectors.txt iss 1.0]

Note 1 If more than one backplane power Linking between B/Planes to be made using the Red, Black Pink and White from 667/1/03887/002

Note 2 Use the detector termination kit (667/1/15854/000) to do the intermediate wiring.

Note 3 Ensure that the correct colour wires are used for the intermediate wiring.

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Special Instructions

```
SIEMENS SINGLE INTERNAL DETECTOR BACKPLANE INSTRUCTIONS SHEET     (BACKPLANE 5)
 ____________________________________________________________________________
|             CONNECTIONS MADE USING CABLEFORM 667/1/03887/002               | Note 1  If more than one backplane
|             UNUSED WIRE ENDS MUST BE TIED BACK AND INSULATED               |         power Linking between B/Planes
|           _______________________________________________________          |         to be made using the Red, Black
|          |             DETECTOR RACK POWER CONNECTIONS               |         |         Pink and White from 667/1/03887/002
|          |___________________________________________________________|         |
|          |  SIGNAL   |    WIRE    | BACKPLANE NO.4  |BACKPLANE No.5|         |
|          |           |   COLOUR   |   TERMINALS     |  TERMINALS   |         |
|          |___________|____________|_________________|______________|         | Note 2  Use the detector termination
|          |  24 VOLTS |   RED      |       19        |      19      |         |         kit (667/1/15854/000) to do the
|          |   0 VOLTS |   BLACK    |       20        |      20      |         |         intermediate wiring.
|          |   SCREEN  |   PINK     |       22        |      22      |         |
|          |   COMMON  |   WHITE    |       18        |      18      |         | Note 3  Ensure that the correct colour
|          |___________|____________|_________________|______________|         |         wires are used for the inter-
|  _________________________________________________________________________   |         mediate wiring.
| |          |     LOOP      |  INTERMEDIATE   |   WIRE    |      BACKPLANE       | |
| |LOOP No.  | DESIGNATION   |    TERMINALS    |  COLOUR   |      TERMINALS       | |
| |__________|_______________|_________________|___________|______________________| |
| |    1     |  ESL21        |2TBY 9 & 2TBY 10|  SLATE    |        1 & 2         | |
| |    2     |  EX20         |2TBY 11& 2TBY 12|BLUE/WHITE|        3 & 4         | |
| |    3     |  BX6          |2TBN 1 & 2TBN 2 |  GREEN    |        5 & 6         | |
| |    4     |  BX8          |2TBN 3 & 2TBN 4 |  BLUE     |        7 & 8         | |
| |__________|_______________|_________________|___________|______________________| |
|                                                                              |
|                                                                              |
|                                                                              |
|         _________________________________________________________           |
|        |                      DETECTOR OUTPUTS                     |          |
|        | DETECTOR No.  BACKPLANE     COLOUR     CONTR TERMINALS   |          |
|        |               TERMINALS                                   |          |
|        |___________________________________________________________|          |
|        |      1       |   10     |  BLUE          |      1TBJ 1       |          |
|        |      2       |   12     |  GREEN         |      1TBJ 2       |          |
|        |      3       |   14     |  ORANGE        |      1TBJ 3       |          |
|        |      4       |   16     |  YELLOW        |      1TBJ 4       |          |
|        |______________|__________|________________|___________________|          |
|                                                                              |
|______________________________________________________________________________|
[Template - Internal intermediate Detectors.txt iss 1.0]
```

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Special Instructions

SIEMENS SINGLE INTERNAL DETECTOR BACKPLANE INSTRUCTIONS SHEET (BACKPLANE 6)

CONNECTIONS MADE USING CABLEFORM 667/1/03887/002
UNUSED WIRE ENDS MUST BE TIED BACK AND INSULATED

DETECTOR RACK POWER CONNECTIONS

SIGNAL	WIRE COLOUR	BACKPLANE NO.5 TERMINALS	BACKPLANE No.6 TERMINALS
24 VOLTS	RED	19	19
0 VOLTS	BLACK	20	20
SCREEN	PINK	22	22
COMMON	WHITE	18	18

LOOP No.	LOOP DESIGNATION	INTERMEDIATE TERMINALS	WIRE COLOUR	BACKPLANE TERMINALS
1	BX9	2TBN 5 & 2TBN 6	ORANGE	1 & 2
2	BIN5	2TBN 7 & 2TBN 8	BROWN	3 & 4
3	BIN7	2TBN 9 & 2TBN 10	SLATE	5 & 6
4		2TBN 11& 2TBN 12	BLUE/WHITE	7 & 8

DETECTOR OUTPUTS

DETECTOR No.	BACKPLANE TERMINALS	COLOUR	CONTR TERMINALS
1	10	BLUE	1TBJ 5
2	12	GREEN	1TBJ 6
3	14	ORANGE	1TBJ 7
4	16	YELLOW	1TBJ 8

[Template - Internal intermediate Detectors.txt iss 1.0]

Note 1 If more than one backplane power Linking between B/Planes to be made using the Red, Black Pink and White from 667/1/03887/002

Note 2 Use the detector termination kit (667/1/15854/000) to do the intermediate wiring.

Note 3 Ensure that the correct colour wires are used for the intermediate wiring.

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Special Instructions

```
SIEMENS SINGLE INTERNAL DETECTOR BACKPLANE INSTRUCTIONS SHEET     (BACKPLANE 7)
 _____________________________________________________________________________
|             CONNECTIONS MADE USING CABLEFORM 667/1/03887/002                | Note 1  If more than one backplane
|             UNUSED WIRE ENDS MUST BE TIED BACK AND INSULATED                |         power Linking between B/Planes
|          _____________________________________________________              |         to be made using the Red, Black
|         |            DETECTOR RACK POWER CONNECTIONS          |             |         Pink and White from 667/1/03887/002
|         |_____________________________________________________|             |
|         |  SIGNAL    |    WIRE    |BACKPLANE No.6|BACKPLANE No.7|           |
|         |            |   COLOUR   |  TERMINALS   |  TERMINALS   |           |
|         |____________|____________|______________|______________|           | Note 2  Use the detector termination
|         |  24 VOLTS  |   RED      |      19      |      19      |           |         kit (667/1/15854/000) to do the
|         |   0 VOLTS  |   BLACK    |      20      |      20      |           |         intermediate wiring.
|         |   SCREEN   |   PINK     |      22      |      22      |           |
|         |   COMMON   |   WHITE    |      18      |      18      |           | Note 3  Ensure that the correct colour
|         |____________|____________|______________|______________|           |         wires are used for the inter-
|  __________________________________________________________________________ |         mediate wiring.
| |          |    LOOP      |  INTERMEDIATE   |   WIRE    |      BACKPLANE     | |
| |LOOP No.  | DESIGNATION  |    TERMINALS    |  COLOUR   |      TERMINALS     | |
| |__________|______________|_________________|___________|____________________| |
| |     1    |  HSL24       |2TBP 1 & 2TBP 2  |  GREEN    |        1 & 2       | |
| |     2    |  HSL24a      |2TBP 3 & 2TBP 4  |  BLUE     |        3 & 4       | |
| |     3    |  JSL25       |2TBP 5 & 2TBP 6  |  ORANGE   |        5 & 6       | |
| |     4    |  JSL25a      |2TBP 7 & 2TBP 8  |  BROWN    |        7 & 8       | |
| |__________|______________|_________________|___________|____________________| |
|                                                                             |
|                                                                             |
|                                                                             |
|                                                                             |
|                                                                             |
|         _________________________________________________________           |
|        |                      DETECTOR OUTPUTS                    |          |
|        | DETECTOR No.  BACKPLANE     COLOUR     CONTR TERMINALS  |          |
|        |               TERMINALS                                  |          |
|        |__________________________________________________________|          |
|        |       1       |   10    |  BLUE         |     1TBL 1     |          |
|        |       2       |   12    |  GREEN        |     1TBL 2     |          |
|        |       3       |   14    |  ORANGE       |     1TBL 3     |          |
|        |       4       |   16    |  YELLOW       |     1TBL 4     |          |
|        |_______________|_________|_______________|________________|          |
|                                                                             |
|_____________________________________________________________________________|
[Template - Internal intermediate Detectors.txt iss 1.0]
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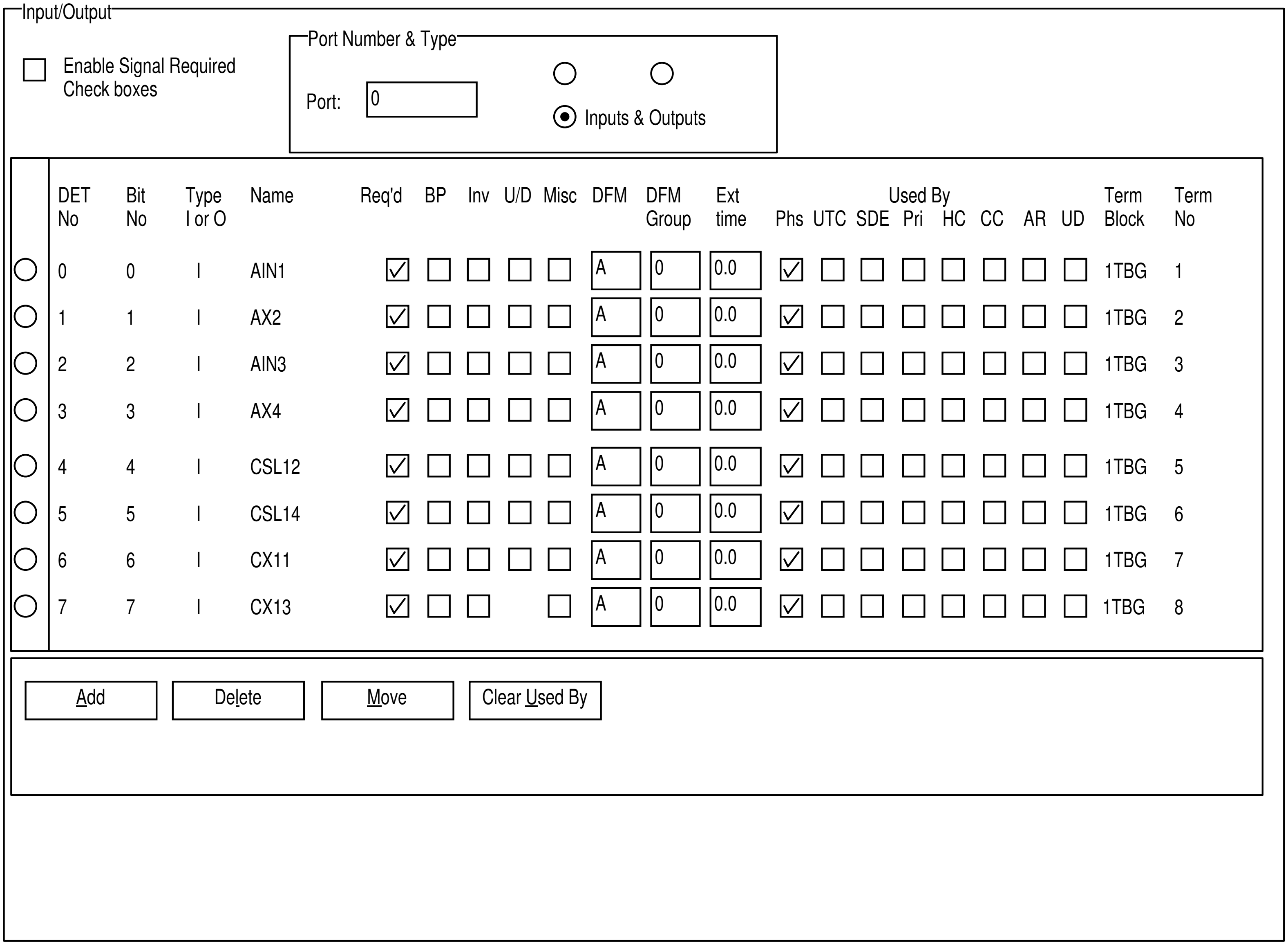
Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Special Instructions

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Input/Output



Input/Output

☐ Enable Signal Required Check boxes

Port Number & Type

Port: 0

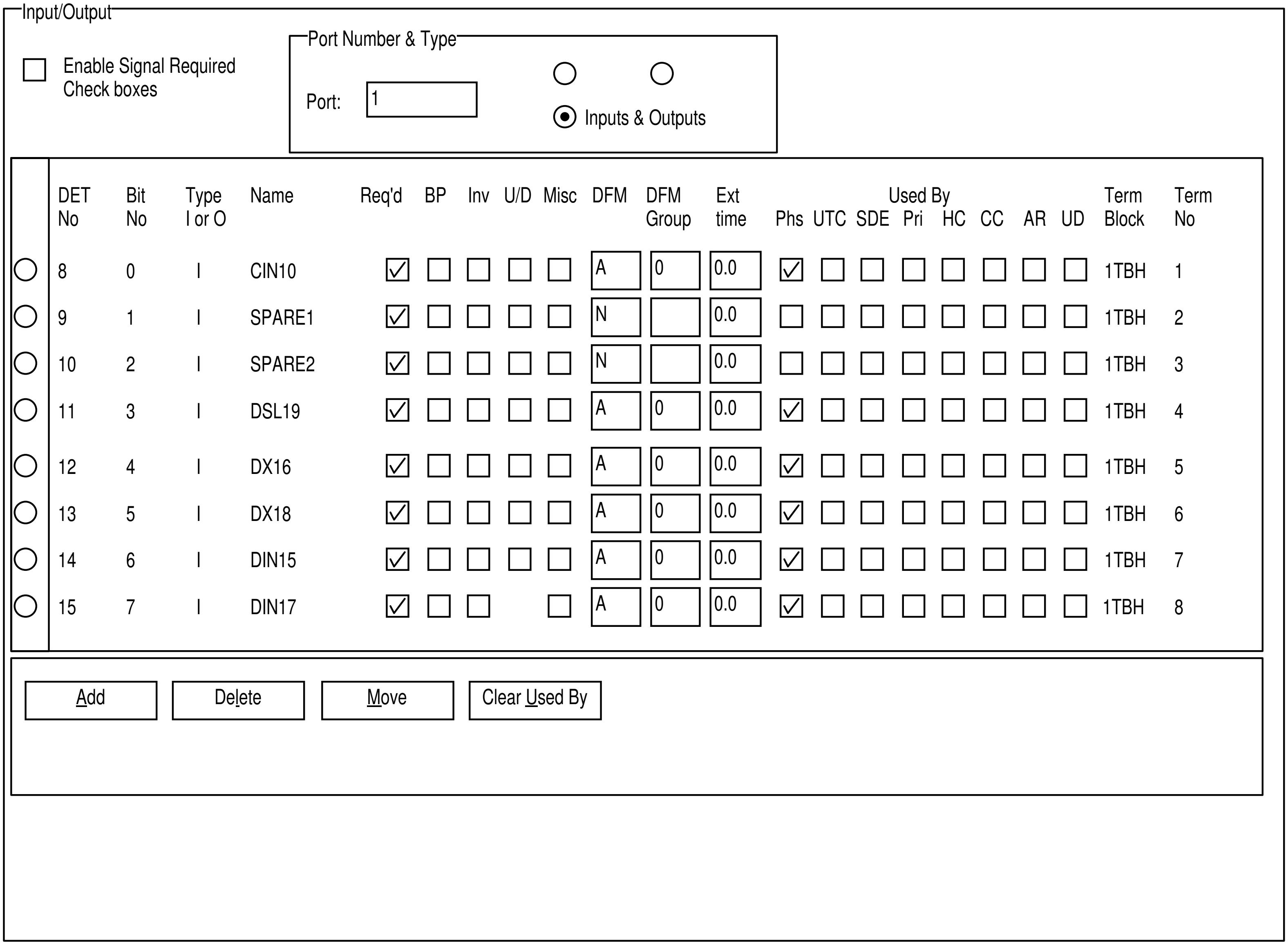
○ ○

● Inputs & Outputs

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By								Term Block	Term No
													Phs	UTC	SDE	Pri	HC	CC	AR	UD		
○	0	0	I	AIN1	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBG	1
○	1	1	I	AX2	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBG	2
○	2	2	I	AIN3	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBG	3
○	3	3	I	AX4	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBG	4
○	4	4	I	CSL12	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBG	5
○	5	5	I	CSL14	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBG	6
○	6	6	I	CX11	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBG	7
○	7	7	I	CX13	☑	☐	☐		☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBG	8

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Input/Output



Input/Output

☐ Enable Signal Required Check boxes

Port Number & Type

Port: 1

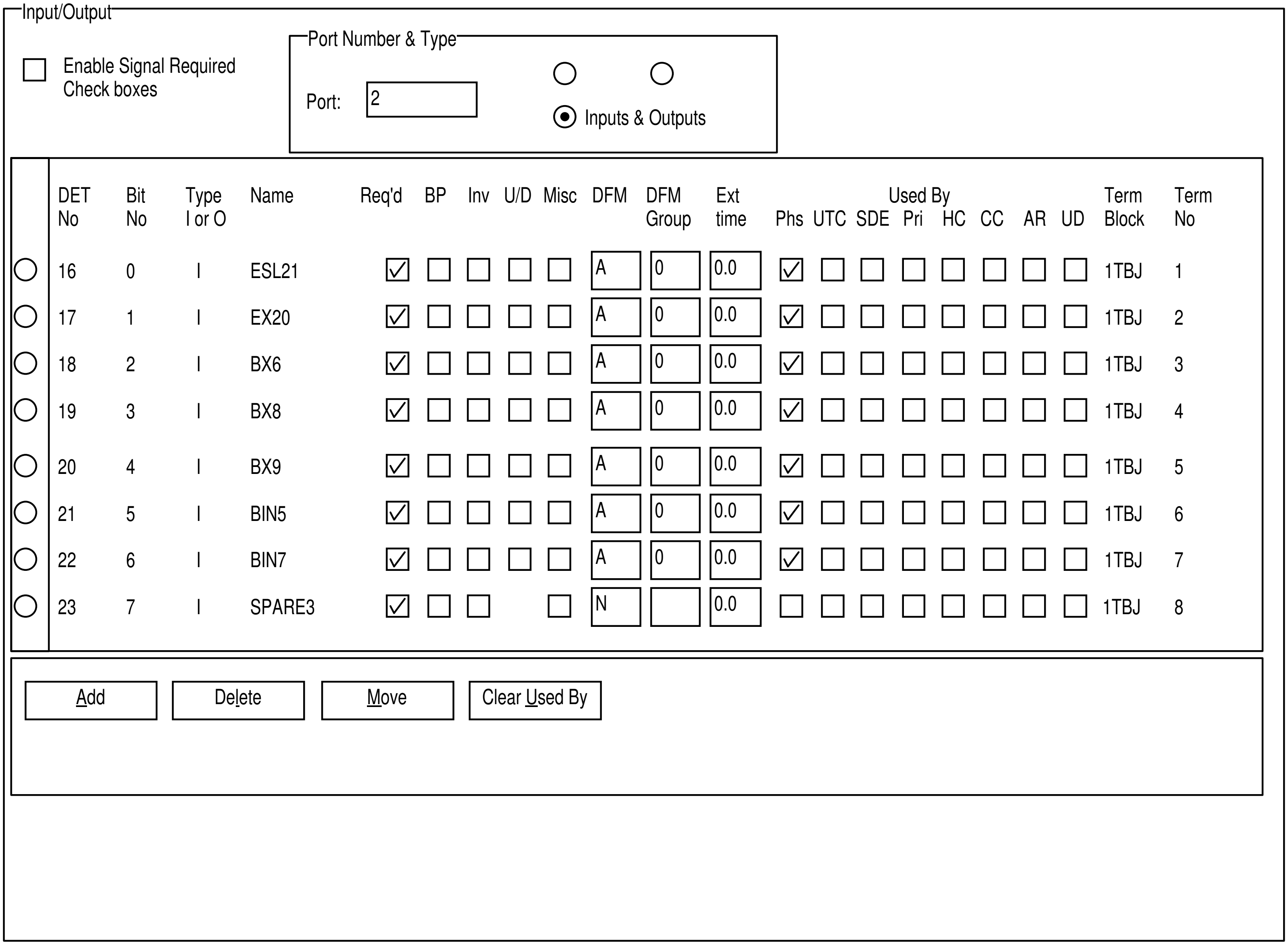
○ ○

● Inputs & Outputs

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	AR	UD	Term Block	Term No
○	8	0	I	CIN10	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBH	1
○	9	1	I	SPARE1	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	1TBH	2
○	10	2	I	SPARE2	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	1TBH	3
○	11	3	I	DSL19	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBH	4
○	12	4	I	DX16	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBH	5
○	13	5	I	DX18	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBH	6
○	14	6	I	DIN15	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBH	7
○	15	7	I	DIN17	☑	☐	☐		☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBH	8

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Input/Output



Input/Output

☐ Enable Signal Required Check boxes

Port Number & Type

Port: 2

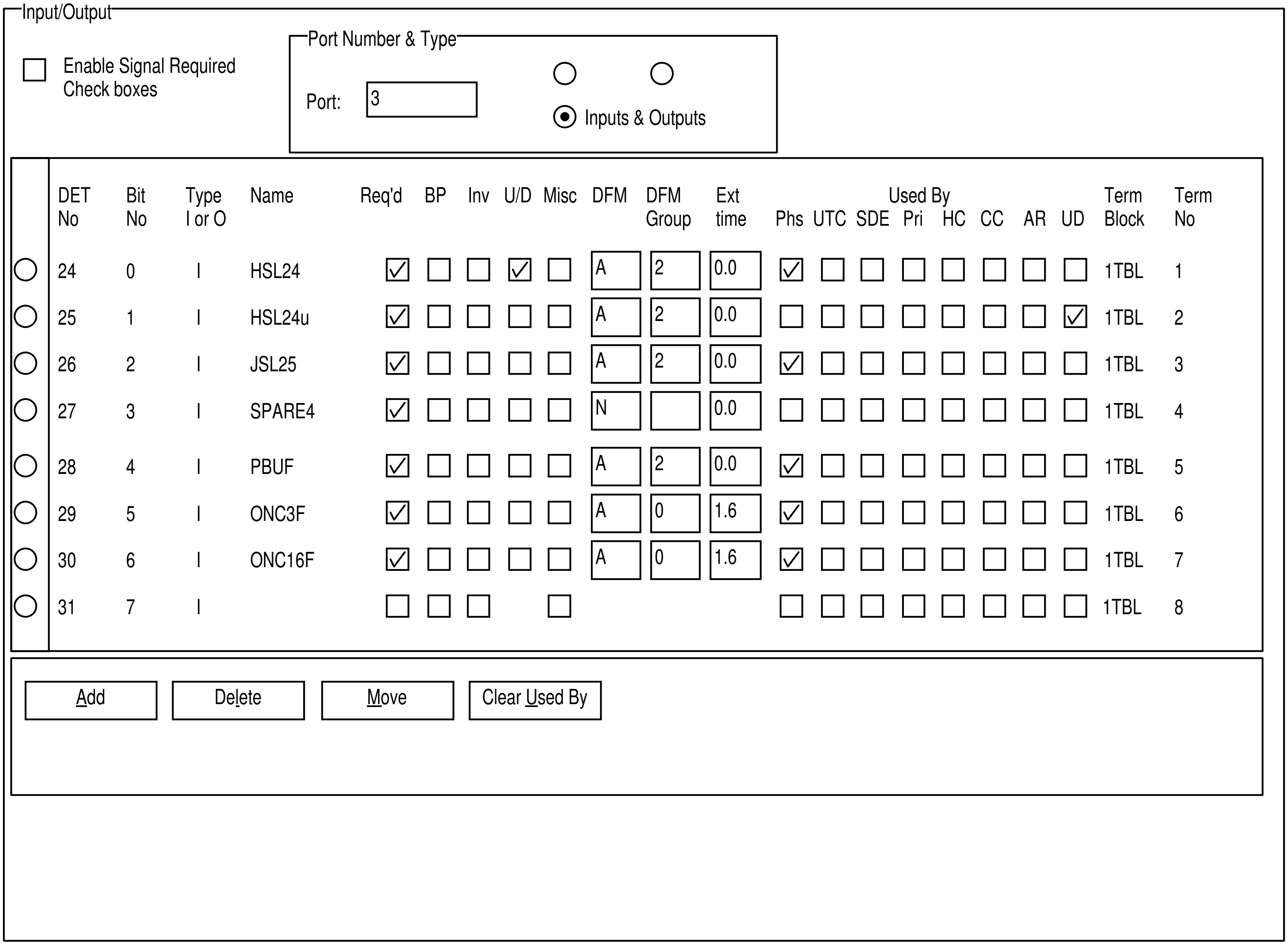
○ ○

● Inputs & Outputs

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	AR	UD	Term Block	Term No
○	16	0	I	ESL21	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBJ	1
○	17	1	I	EX20	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBJ	2
○	18	2	I	BX6	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBJ	3
○	19	3	I	BX8	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBJ	4
○	20	4	I	BX9	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBJ	5
○	21	5	I	BIN5	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBJ	6
○	22	6	I	BIN7	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBJ	7
○	23	7	I	SPARE3	☑	☐	☐		☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	1TBJ	8

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Input/Output



Input/Output

☐ Enable Signal Required Check boxes

Port Number & Type

Port: 3

○ ○
● Inputs & Outputs

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	AR	UD	Term Block	Term No
○	24	0	I	HSL24	☑	☐	☐	☑	☐	A	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBL	1
○	25	1	I	HSL24u	☑	☐	☐	☐	☐	A	2	0.0	☐	☐	☐	☐	☐	☐	☐	☑	1TBL	2
○	26	2	I	JSL25	☑	☐	☐	☐	☐	A	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBL	3
○	27	3	I	SPARE4	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	1TBL	4
○	28	4	I	PBUF	☑	☐	☐	☐	☐	A	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBL	5
○	29	5	I	ONC3F	☑	☐	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	1TBL	6
○	30	6	I	ONC16F	☑	☐	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	1TBL	7
○	31	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBL	8

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Input/Output

Input/Output

☐ Enable Signal Required Check boxes

Port Number & Type

Port: 6

○ ○

● Inputs & Outputs

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By								Term Block	Term No
													Phs	UTC	SDE	Pri	HC	CC	AR	UD		
○	48	0	I	PBUG	☑	☐	☐	☐	☐	A	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBN	1
○	49	1	I	ONC6G	☑	☐	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	1TBN	2
○	50	2	I	ONC7G	☑	☐	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	1TBN	3
○	51	3	I	AMB32	☑	☐	☐	☐	☐	I	3	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBN	4
○	52	4	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBN	5
○	53	5	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBN	6
○	54	6	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBN	7
○	55	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBN	8

Add Delete Move Clear Used By

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

Aspect Drives

Aspect Drives

● A-L ○ M-X ○ Y-F2

Phase Driver Card 1

	Used For	Term Block	Term No
A - Red	Phase	1TBA	1
A - Amber	Phase	1TBA	2
A - Green	Phase	1TBA	3
B - Red	Phase	1TBA	4
B - Amber	Phase	1TBA	5
B - Green	Phase	1TBA	6
C - Red	Phase	1TBA	7
C - Amber	Phase	1TBA	8
C - Green	Phase	1TBA	9
D - Red	Phase	1TBA	10
D - Amber	Phase	1TBA	11
D - Green	Phase	1TBA	12

Phase Driver Card 1

	Used For	Term Block	Term No
E - Red	Phase	1TBB	1
E - Amber	Phase	1TBB	2
E - Green	Phase	1TBB	3
F - Red	Phase	1TBB	4
F - Amber	Phase	1TBB	5
F - Green	Phase	1TBB	6
G - Red	Phase	1TBB	7
G - Amber	Phase	1TBB	8
G - Green	Phase	1TBB	9
H - Red	Phase	1TBB	10
H - Amber	Phase	1TBB	11
H - Green	Phase	1TBB	12

Phase Driver Card 2

	Used For	Term Block	Term No
I - Red	Phase	1TBC	1
I - Amber	Phase	1TBC	2
I - Green	Phase	1TBC	3
J - Red	Phase	1TBC	4
J - Amber	Phase	1TBC	5
J - Green	Phase	1TBC	6
K - Red			
K - Amber			
K - Green			
L - Red			
L - Amber			
L - Green			

Works Order : 199069
EM Number : E63476
Engineer : E DUFFY / S DEAKIN
Intersection : A5 / BIRCH COPPICE DEVELOPMENT TAMWORTH

I/O - Group DFM Timings

I/O - Group DFM Timings

Input Group	State	SET A	SET B	SET C	SET D
Group 0	Active (Mins)	120	120	120	120
	InActive (Hrs)	18	18	18	18
Group 1	Active (Mins)	30	30	30	30
	InActive (Hrs)	72	72	72	72
Group 2	Active (Mins)	15	15	15	15
	InActive (Hrs)				
Group 3	Active (Mins)	5	5	5	5
	InActive (Hrs)				
Group 4	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 5	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 6	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 7	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18

Note - 255 or blank disables DFM monitoring of that state (active or inactive) during that timeset (

Handset Limiting Values

State	Min	Max
Active (Mins)	0	254
InActive (Hrs)	0	254

Index

Telent traffic controller configuration forms

Customer: AMEY AREA 9 MAC

Intersection description: M42 JUNCTION 10 A5 DORDON ISLAND TAMWORTH WEST SIDE - SCN 210

Telent tender no.: **Telent works order no.:**

Customers order no.: 157078 **Dated:**

Customers engineer: JULIAN SMITH / PAULO MALARA / ROGER HACKER

Customers telephone no.: 07718511436 **Ext:**

Equipment installation by: TELENT

Slot cutting by:

Civil works by:

Configuration no.: CFGM0187 **Issue:** **Configuration engineer:** SIMON WINTER

General Data

Power supply data	
Mains voltage	48 Volts
Mains frequency	50 Hz
Peak current	0.0 Amps
Dimming voltage	160

Solar switch data

Detector timing set data	Set 1	Set 2	Set 3	Set 4
Call delay period (Seconds)	10.0	10.0	10.0	10.0
Cancel delay period (Seconds)	10.0	10.0	10.0	10.0
DFM active times (Hours or minutes)	24H	24H	24H	24H
DFM inactive times (Hours or minutes)	24H	24H	24H	24H

British summertime change data

BST start week	13	BST end week	43

Options

Is manual disable via handset option required?	No
Inhibit pedestrian demand delay in FVP mode?	No
Inhibit pedestrian demand delay in PTM mode?	No
Limit handset warnings to UTC enabled warnings?	No

Configuration notes

ELV OPTIMA
===========

SEE SEPERATE SHEET FOR CONFIGURATION DETAILS

Configuration history

Issue	Date	Description
1.00	23/10/12	INITIAL CONFIGURATION
1.01	23/10/12	INTERMEDIATE EDIT
1.02	23/10/2012	Intermediate edit
1.03	25/10/2012	Intermediate edit
1.04	05/11/2012	Intermediate edit
1.05	10/11/2012	Intermediate edit
1.06	19/11/2012	Intermediate edit
2.00	03/09/2014	Changes as per updated spec 30-5-13 Additional Phases Added
2.01	19/09/2014	Intermediate edit
2.02	07/02/2015	Intermediate edit

Phase data 1

Phase Id	Road Name(s)	Phs. type	Appearance assoc'ted		Termination assoc'ted		Restart allowed	App. in man
			type	phase(s)	type	phase(s)		
A	M42 NORTHBOUND OFF SLIP	T	0		0		No	0
B	SOUTH BRIDGE WESTBOUND GYRATORY	T	0		0		No	0
C	A5 EASTBOUND	T	0		0		No	0
D	WESTSIDE A5 GYRATORY	T	0		0		No	0
E	GREEN LANE	T	0		0		No	0
F	WEST SIDE GREEN LANE GYRATORY	T	0		0		No	0
DA	ALL RED STREAM 1	G	0		0		No	0
DB	ALL RED STREAM 2	G	0		0		No	0

Phase data 2

Phase Id	Min green Time	Min green limit	Window time	Speed measurement facilities		Assoc to ped. phases	Cond demand type	Conditioning phases
				Exist	Ped. phases			
A	7.0	7.0	-	No		No	NONE	
B	7.0	7.0	-	No		No	NONE	
C	7.0	7.0	-	No		No	NONE	
D	7.0	7.0	-	No		No	NONE	
E	7	7		No		No	None	
F	7	7		No		No	None	
DA	3.0	3.0	-	No		No	NONE	
DB	3.0	3.0	-	No		No	NONE	

Phase data 2_1

Phase Id	Maximum greens (VA)								Maximum greens (PTM)								Maximum greens (FVP)							
	Set 1	Set 2	Set 3	Set 4	Set 5	Set 6	Set 7	Set 8	Set 1	Set 2	Set 3	Set 4	Set 5	Set 6	Set 7	Set 8	Set 1	Set 2	Set 3	Set 4	Set 5	Set 6	Set 7	Set 8
A	30	20	30	20	30	30	40	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	40	30	40	30	40	30	40	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	20	20	20	20	30	30	40	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	40	30	40	30	40	30	40	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E	15	20	20	20	20	30	40	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	45	30	45	30	40	30	40	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Phase data 2_2

Phs Id	Fixed seq.	Ped type	Demand extn.	Dithering		Pedestrian intergreen sequence times						PV info		PV associated to			PV delay	PV Window	Local override
				Quiescent	Normal	Gap	Frc	Min	Max	Clr	Xtr	UTC	Local	Phase	Str/Stg	Input			
A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Phase data 2_3

Phase compensation				
	Compensation sets			
Phase Id	Set 1	Set 2	Set 3	Set 4
A	0.0	0.0	0.0	0.0
B	0.0	0.0	0.0	0.0
C	0.0	0.0	0.0	0.0
D	0.0	0.0	0.0	0.0
E	0	0	0	0
F	0	0	0	0
DA	0.0	0.0	0.0	0.0
DB	0.0	0.0	0.0	0.0

Phase data 2_4

Pedestrain supplementary signals

Phase Id	Illuminate wait lamps on phase	Tactile	Confirmation input	State	Audible	Confirmation input	Active state	Drive phase	Duration
A		False	False	OC	False	False	OC	A	
B		False	False	OC	False	False	OC	B	
C		False	False	OC	False	False	OC	C	
D		False	False	OC	False	False	OC	D	
E		False	False	OC	False	False	OC	E	
F		False	False	OC	False	False	OC	F	
DA		False	False	OC	False	False	OC	DA	
DB		False	False	OC	False	False	OC	DB	

Phase data 4

Phase Id	Conflicting greens	Opposed by phase demands	Opposed by stage demands	Revertive phase demands
A	B	B,DA		A
B	A	A,DA		B
C	D	D,E,F,DB		C
D	C	C,E,F,DB		D
E	F	C,D,F,DB		E
F	E	C,D,E,DB		F
DA		A,B		
DB		C,D,E,F		

Lamp sequence data

Phs.		Start-up starting			Start-up stoping			Normal starting			Normal stopping			Running		Stopped		Shutdown	
type	Sequence description	State 1	State 2	Duration	State 1	State 2	Duration	State 1	State 2	Duration	State 1	State 2	Duration	State 1	State 2	State 1	State 2	State 1	State 2
FP	FAR/SIDE PEDESTRIAN	G	G	0	R	R	0	G	G	0	B	B	3	G	G	R	R	B	B
G	IND/FILTER	G	G	0	B	B	0	G	G	0	B	B	0	G	G	B	B	B	B
L	LRT	G	G	0	A	A	5	G	G	0	A	A	5	G	G	R	R	B	B
NP	NEAR/SIDE PEDESTRIAN	G	G	0	R	R	0	G	G	0	R	R	3	G	G	R	R	B	B
P	PEDESTRIAN	G	G	0	R	R	0	G	G	0	B	B	PBT	G	G	R	R	B	B
PP	PELICAN PEDESTRIAN	R	R	0	B	G	3	G	G	0	B	G	0.1	G	G	R	R	B	B
PT	PELICAN TRAFFIC	B	A	5	A	A	3	B	A	6	A	A	3	G	G	R	R	B	B
T	TRAFFIC	G	G	0	A	A	3	R,A	R,A	2	A	A	3	G	G	R	R	B	B
W	WIG-WAG	A	A	5	B	B	0	A	A	5	B	B	0	R	G	B	B	B	B

Stage data

Stream 1		Start-up stage no.	2
Stage	Active phases		
0	DA		
1	A		
2	B		
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Stream 2		Start-up stage no.	2
Stage	Active phases		
0	DB		
1	C,F		
2	D,F		
3	D,E		
4	C,E		
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Mode data

Stream 1		Starting intergreen duration	9.0
Mode	Priority no.	All red extension auto to max	
C.L.F.	6	No	
PSV emergency			
Hurry Call 1	4	No	
Hurry Call 2	5	No	
Hurry Call 3			
Hurry Call 4			
LRT			
Manual	1	No	
Manual FT	2	Yes	
MOVA			
Normal - VA	7	No	
PSV priority			
Part time			
UTC	3	No	
Phase demands to be inserteted on start-up and when leaving manual or fixed time modes			
A,B			

Stream 2		Starting intergreen duration	9.0
Mode	Priority no.	All red extension auto to max	
C.L.F.	6	No	
PSV emergency			
Hurry Call 1	4	No	
Hurry Call 2	5	No	
Hurry Call 3			
Hurry Call 4			
LRT			
Manual	1	No	
Manual FT	2	Yes	
MOVA			
Normal - VA	7	No	
PSV priority			
Part time			
UTC	3	No	
Phase demands to be inserteted on start-up and when leaving manual or fixed time modes			
C,D,E,F			

Part time and hurry call mode data

Stream 1

Part time mode data

Switch-off stage		Part-time hold duration	0H	Part-time prevent duration	0H	Part-time queue detector(s)	

Hurry call mode data

Hurry call no.	Call stage	Request detector(s)	Cancel detector(s)	Output name	Delay period	Hold period	Prevent period
1	1	AINHC		N/A	0.0	10.0	0.0
2	2	BINHC		N/A	0.0	10.0	0.0
3				N/A	0.0	0.0	0.0
4				N/A	0.0	0.0	0.0

Stream 2

Part time mode data

Switch-off stage		Part-time hold duration	0H	Part-time prevent duration	0H	Part-time queue detector(s)	

Hurry call mode data

Hurry call no.	Call stage	Request detector(s)	Cancel detector(s)	Output name	Delay period	Hold period	Prevent period
1	2	DINHC		N/A	0.0	10.0	0.0
2	2	FINHC		N/A	0.0	10.0	0.0
3				N/A	0.0	0.0	0.0
4				N/A	0.0	0.0	0.0

Manual mode data

Manual button no.	Stage number for each stream								Street name(s)
	1	2	3	4	5	6	7	8	
All red	0	0							ALL RED
1	2	2							GYRATORIES
2	1	2							M42 OFF / GYRATORIES
3	2	1							M42 GYRATORY / A5 EASTBOUND / GREEN LANE GYRATORY
4	2	3							M42 GYRATORY / A5 EASTBOUND / GREEN LANE
5	0	4							STREAM 1 ALL RED / A5 EASTBOUND / GREEN LANE
6	0	2							STREAM 1 ALL RED / STREAM 2 GYRATORY
7									
8									
9									
10									

Button no. for inital manual stage set	1	Streams that must be in manual mode together	

UTC general data, confirm bit data & SF/LO qualification periods

UTC General data

UTC option	1 (MCE 0105/0106)
TF Reset time	00:00:00
Use serial interface for UTC	False
UTC active state	Short circuit

Stream linking options							
1	2	3	4	5	6	7	8
U	U	U	U	U	U	U	U

Sync confirm times	
RT reply bit	3
SR reply bit	3

Time sync data	
Day type	ANY
Reference time	12:00:00
Repeat rate	24H
Window time	24H

UTC confirm data

Stream	Confirm bit(s) to be used for manual mode running on stream	Confirm bit(s) to be used for fixed time running on stream
1		
2		
3		
4		
5		
6		
7		
8		

Controller state	Confirm bit(s) to be used for controller state
Manual mode selected	
Signals off failed	
Signals off manually	
Detectors fault	
Controller fault	
Controller warning	
Manual fixed time selected	

SF/LO qualification periods

L01	10.0	L02	10.0	L03	10.0	L04	10.0	L05	10.0	L06	10.0	L07	10.0	L08	10.0
SF01	7.0	SF02	7.0	SF03	7.0	SF04	7.0	SF05	7.0	SF06	7.0	SF07	7.0	SF08	7.0
SF09	7.0	SF10	7.0	SF11	7.0	SF12	7.0	SF13	7.0	SF14	7.0	SF15	7.0	SF16	7.0

UTC force bits

Force bit	Phase demands to be considered for demand depended stages	Required phase extensions	Stage to force in each stream							
			1	2	3	4	5	6	7	8
F01			1							
F02			2							
F03			2							
F04				1						
F05				2						
F06				3						
F07				4						
F08				2						

UTC (stream/stage) confirm data

Stage no.	Stream							
	1	2	3	4	5	6	7	8
00								
01	G1	G4						
02	G2	G5						
03		G6						
04		G7						
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								

UTC control/reply bit - stage stream associations

Control/ reply bit	Associated bit id per stream							
	1	2	3	4	5	6	7	8
FC								
FGR								
FM								
GO								
HC								
LL								
LO								
LRTI								
LRTR								
TOR								

UTC demand bits (DX Bits)

DX Bit	Latched stage demands	Unlatched stage demands	Latched phase demands	Unlatched phase demands	Phase extension demands
DX1					
DX2					
DX3					
DX4					
DX5					
DX6					
DX7					
DX8					

UTC demand bits (D Bits)

D Bit	Latched stage demands	Unlatched stage demands	Latched phase demands	Unlatched phase demands	Phase extensiob demands
D1					
D2					
D3					
D4					
D5					
D6					
D7					
D8					
D9					
D10					
D11					
D12					
D13					
D14					
D15					
D16					
D17					
D18					
D19					
D20					
D21					
D22					
D23					
D24					
D25					
D26					
D27					
D28					
D29					
D30					
D31					
D32					

UTC demand reply bits (SD Bits)

SD Bit name	Stage demands to reply	Phase demands to reply
SD1		
SD2		
SD3		
SD4		
SD5		
SD6		
SD7		
SD8		
SD9		
SD10		
SD11		
SD12		
SD13		
SD14		
SD15		
SD16		
SD17		
SD18		
SD19		
SD20		
SD21		
SD22		
SD23		
SD24		
SD25		
SD26		
SD27		
SD28		
SD29		
SD30		
SD31		
SD32		

UTC timeout data and local link inhibit data

UTC Timeout data

	UTC bits									
	F	D	DX	SF	FM	LO	GO	LL	LRTI	PV
Timeout duration	300	0	0	0	0	0	0	0	0	500
No timeouts allowed	False	True	True	True	True	True	True	True	True	True

UTC local link inhibit data

LL Bits	Phases
LL01	
LL02	
LL03	
LL04	
LL05	
LL06	
LL07	
LL08	

FT and VA mode

Stream 1																
FT mode data													Normal FT or VA to max			VA
From stage	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Stage time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
To stage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demad dependant phases during VA to max				DA												
VA mode data																
Arterial reversion to stage/phase				2	VA stage selection option required					Near						

Stream 2																
FT mode data													Normal FT or VA to max			VA
From stage	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Stage time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
To stage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demad dependant phases during VA to max				DB												
VA mode data																
Arterial reversion to stage/phase				2	VA stage selection option required					Near						

CLF mode data

Plan 1																					Delay time	0	Cycle time	90
Group no.	Stream 1			Stream 2			Stream 3			Stream 4			Stream 5			Stream 6			Stream 7			Stream 8		
	Offset time		0	Offset time		0	Offset time		0.0	Offset time		0.0	Offset time		0.0	Offset time		0.0	Offset time		0.0	Offset time		0.0
	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage
1	0	IM	1	0	PX	2	0.0			0.0			0.0			0.0			0.0			0.0		
2	20	PX	2	6	IM	2	0.0			0.0			0.0			0.0			0.0			0.0		
3	25	IM	2	22	IM	1	0.0			0.0			0.0			0.0			0.0			0.0		
4	80	PX	1	70	PX	3	0.0			0.0			0.0			0.0			0.0			0.0		
4				73	DM	3																		
0				76	HS																			
0				84	PX	2																		

Plan 2																					Delay time	0	Cycle time	90
Group no.	Stream 1			Stream 2			Stream 3			Stream 4			Stream 5			Stream 6			Stream 7			Stream 8		
	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0
	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage
1	0	IM	2	0	IM	1																		
2	34	PX	1	24	PX	3																		
3	44	IM	1	28	DM	3																		
4	65	PX	2	35	PX	2																		
5	73	IM	2	55	IM	2																		
5				72	PX	1																		
0				75	IM	1																		

Plan 3																					Delay time	0	Cycle time	80
Group no.	Stream 1			Stream 2			Stream 3			Stream 4			Stream 5			Stream 6			Stream 7			Stream 8		
	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0
	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage
1	0	PX	2	0	PX	1																		
2	4	IM	2	7	IM	1																		
3	45	PX	1	35	PX	3																		
4	57	DM	1	40	DM	3																		
5	68	HS		50	HS																			
6	70	PX	2	59	PX	2																		
6				63	IM	2																		

CLF mode data

Plan 4																Delay time			0		Cycle time		60	
Group no.	Stream 1			Stream 2			Stream 3			Stream 4			Stream 5			Stream 6			Stream 7			Stream 8		
	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0
	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage
1	0	PX	2	0	IM	2																		
2	4	IM	2	5	DM	1																		
3	40	PX	1	20	HS																			
4	47	DM	1	33	PX	3																		
5	50	HS		39	DM	3																		
5				40	PX	2																		
0				53	IM	2																		

Plan 5																Delay time			0		Cycle time		80	
Group no.	Stream 1			Stream 2			Stream 3			Stream 4			Stream 5			Stream 6			Stream 7			Stream 8		
	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0
	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage
1	0	IM	1	0	PX	2																		
2	18	PX	2	4	IM	2																		
3	22	IM	2	15	PX	1																		
4	75	PX	1	21	IM	1																		
4				70	DM	3																		
0				72	PX	2																		

Plan 6																Delay time			0		Cycle time		80	
Group no.	Stream 1			Stream 2			Stream 3			Stream 4			Stream 5			Stream 6			Stream 7			Stream 8		
	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0
	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage
1	0	IM	2	0	IM	1																		
2	30	PX	1	25	DM	3																		
3	37	IM	1	27	PX	2																		
4	52	PX	2	42	IM	2																		
5	63	IM	2	58	IM	1																		

Minimum intergreen durations

From phs.	To phase							
	A	B	C	D	E	F	DA	DB
A		7					3	
B	6						3	
C				7				3
D			6					3
E						7		3
F					6			3
DA	2	2						
DB			2	2	2	2		

Intergreen Minimum limit values

From phs.	To phase							
	A	B	C	D	E	F	DA	DB
A		5					3	
B	5						3	
C				5				3
D			5					3
E						5		3
F					5			3
DA	2	2						
DB			2	2	2	2		

Phase delay data

Delay No.	Losing stage	Gaining stage	Delay phase	Delay period
1	1	3	F	6

Detector data 1

							Detector set					Green extension(s)		
Det. name	Det. type	Dummy	Vis. unit no.	Active state	Count det.	Self reset	Gap period	Gap count	Self confirm	Latched phase demand(s)	Unlatched phase demand(s)	Phase	Taper %	Varimax phases
TO1	NM	No		SC	No	No	0.5	15	No				100	
TO2	NM	No		SC	No	No	0.5	15	No				100	
AIN1	NM	No		SC	No	No	0.5	15	No				100	
AIN2	NM	No		SC	No	No	0.5	15	No				100	
AIN3	NM	No		SC	No	No	0.5	15	No				100	
AIN4	NM	No		SC	No	No	0.5	15	No				100	
AX5	NM	No		SC	No	No	0.5	15	No	A		A(4.0)	100	
AX6	NM	No		SC	No	No	0.5	15	No	A		A(4.0)	100	
AX7	NM	No		SC	No	No	0.5	15	No	A		A(4.0)	100	
AX8	NM	No		SC	No	No	0.5	15	No	A		A(4.0)	100	
ASL10A	NM	No		SC	No	No	0.5	15	No	A		A(0.6)	100	
ASL10B	NM	No		SC	No	No	0.5	15	No	A		A(0.6)	100	
ASL10C	NM	No		SC	No	No	0.5	15	No	A		A(0.6)	100	
ASL10D	NM	No		SC	No	No	0.5	15	No	A		A(0.6)	100	
BIN11	NM	No		SC	No	No	0.5	15	No				100	
BIN12	NM	No		SC	No	No	0.5	15	No				100	
BX13	NM	No		SC	No	No	0.5	15	No	B		B(3.0)	100	
BX14	NM	No		SC	No	No	0.5	15	No	B		B(3.0)	100	
CIN15	NM	No		SC	No	No	0.5	15	No				100	
CIN16	NM	No		SC	No	No	0.5	15	No				100	
CX17	NM	No		SC	No	No	0.5	15	No	C		C(4.0)	100	
CX18	NM	No		SC	No	No	0.5	15	No	C		C(4.0)	100	
CX19	NM	No		SC	No	No	0.5	15	No	C		C(4.0)	100	
CSL20	NM	No		SC	No	No	0.5	15	No	C		C(0.6)	100	
CSL21	NM	No		SC	No	No	0.5	15	No	C		C(0.6)	100	
CSL22	NM	No		SC	No	No	0.5	15	No	C		C(0.6)	100	
DIN23	NM	No		SC	No	No	0.5	15	No				100	
DIN24	NM	No		SC	No	No	0.5	15	No				100	
DX27	NM	No		SC	No	No	0.5	15	No	D		D(3.0)	100	
DX28	NM	No		SC	No	No	0.5	15	No	D		D(3.0)	100	
DX29	NM	No		SC	No	No	0.5	15	No	D		D(3.0)	100	
SISPWR	NM	No		SC	No	No	0.5	15	No				100	
SISFLT	NM	No		SC	No	No	0.5	15	No				100	
E10MIN	NM	No		SC	No	No	0.5	15	No				100	
ERST	NM	No		SC	No	No	0.5	15	No				100	
MOVEST	NM	No		SC	No	No	0.5	15	No				100	
AX9	NM	No		SC	No	No	0.5	15	No	A		A(4.0)	100	

Detector data 1

Det. name	Det. type	Dummy	Vis. unit no.	Active state	Count det.	Self reset	Detector set			Latched phase demand(s)	Unlatched phase demand(s)	Green extension(s)		Varimax phases
							Gap period	Gap count	Self confirm			Phase	Taper %	
ASL10E	NM	No		SC	No	No	0.5	15	No	A		A(0.6)	100	
DIN25	NM	No		SC	No	No	0.5	15	No				100	
DIN26	NM	No		SC	No	No	0.5	15	No				100	
DX30	NM	No		SC	No	No	0.5	15	No	D		D(3.0)	100	
EIN31	NM	No		SC	No	No	0.5	15	No				100	
EIN32	NM	No		SC	No	No	0.5	15	No				100	
EX33	NM	No		SC	No	No	0.5	15	No	E		E(4.0)	100	
EX34	NM	No		SC	No	No	0.5	15	No	E		E(4.0)	100	
ESL35	NM	No		SC	No	No	0.5	15	No	E		E(1.0)	100	
ESL36	NM	No		SC	No	No	0.5	15	No	E		E(1.0)	100	
FIN37	NM	No		SC	No	No	0.5	15	No				100	
FIN38	NM	No		SC	No	No	0.5	15	No				100	
FIN39	NM	No		SC	No	No	0.5	15	No				100	
FX40	NM	No		SC	No	No	0.5	15	No	F		F(4.0)	100	
FX41	NM	No		SC	No	No	0.5	15	No	F		F(4.0)	100	
FX42	NM	No		SC	No	No	0.5	15	No	F		F(4.0)	100	
AINHC	NM	Yes		SC	No	No	0.5	15	No				100	
DINHC	NM	Yes		SC	No	No	0.5	15	No				100	
BINHC	NM	Yes		SC	No	No	0.5	15	No				100	
FINHC	NM	Yes		SC	No	No	0.5	15	No				100	
CINHC	NM	Yes		SC	No	No	0.5	15	No				100	
EINHC	NM	Yes		SC	No	No	0.5	15	No				100	

Detector data 2

	DFM Timings								DFM foce states		Call/cancel timings								Associated to ped.		
	DFA				DFI						DCL				DCN						
Det. name	Set 1	Set 2	Set 3	Set 4	Set 1	Set 2	Set 3	Set 4	Active	Inactive	Set 1	Set 2	Set 3	Set 4	Set 1	Set 2	Set 3	Set 4	Phase	Extn.	Push Buttons
TO1									N	N									-	-	-
TO2									N	N									-	-	-
AIN1	5M	5M	5M	5M					I	N	15.0	15.0	15.0	15.0					-	-	-
AIN2	5M	5M	5M	5M					I	N	15.0	15.0	15.0	15.0					-	-	-
AIN3	5M	5M	5M	5M					I	N	15.0	15.0	15.0	15.0					-	-	-
AIN4	5M	5M	5M	5M					I	N	15.0	15.0	15.0	15.0					-	-	-
AX5	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
AX6	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
AX7	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
AX8	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
ASL10A	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
ASL10B	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
ASL10C	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
ASL10D	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
BIN11	5M	5M	5M	5M					I	N	15.0	15.0	15.0	15.0					-	-	-
BIN12	5M	5M	5M	5M					I	N	15.0	15.0	15.0	15.0					-	-	-
BX13	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
BX14	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
CIN15	30M	30M	30M	30M	18H	18H	18H	18H	N	N	15.0	15.0	15.0	15.0					-	-	-
CIN16	30M	30M	30M	30M	18H	18H	18H	18H	N	N	15.0	15.0	15.0	15.0					-	-	-
CX17	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
CX18	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
CX19	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
CSL20	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
CSL21	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
CSL22	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
DIN23	5M	5M	5M	5M					I	N	30.0	30.0	30.0	30.0					-	-	-
DIN24	5M	5M	5M	5M					I	N	30.0	30.0	30.0	30.0					-	-	-
DX27	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
DX28	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
DX29	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
SISPWR									N	N	0	0	0	0	0	0	0	0	-	-	-
SISFLT									N	N	0	0	0	0	0	0	0	0	-	-	-
E10MIN									N	N									-	-	-
ERST									N	N									-	-	-
MOVEST									N	N									-	-	-
AX9	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-

Detector data 2

	DFM Timings								DFM foce states		Call/cancel timings								Associated to ped.		
	DFA				DFI						DCL				DCN						
Det. name	Set 1	Set 2	Set 3	Set 4	Set 1	Set 2	Set 3	Set 4	Active	Inactive	Set 1	Set 2	Set 3	Set 4	Set 1	Set 2	Set 3	Set 4	Phase	Extn.	Push Buttons
ASL10E	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
DIN25	5M	5M	5M	5M					I	I	15	15	15	15	0	0	0	0	-	-	-
DIN26	5M	5M	5M	5M					I	I	15	15	15	15	0	0	0	0	-	-	-
DX30	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
EIN31	30M	30M	30M	30M	18H	18H	18H	18H	A	A	15	15	15	15	0	0	0	0	-	-	-
EIN32	30M	30M	30M	30M	18H	18H	18H	18H	A	A	15	15	15	15	0	0	0	0	-	-	-
EX33	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
EX34	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
ESL35	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
ESL36	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
FIN37	5M	5M	5M	5M					I	I	15	15	15	15	0	0	0	0	-	-	-
FIN38	5M	5M	5M	5M					I	I	15	15	15	15	0	0	0	0	-	-	-
FIN39	5M	5M	5M	5M					I	I	15	15	15	15	0	0	0	0	-	-	-
FX40	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
FX41	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
FX42	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
AINHC									N	N									-	-	-
DINHC									N	N									-	-	-
BINHC									N	N									-	-	-
FINHC									N	N	0	0	0	0	0	0	0	0	-	-	-
CINHC									N	N	0	0	0	0	0	0	0	0	-	-	-
EINHC									N	N	0	0	0	0	0	0	0	0	-	-	-

Timetable entry data

No.	Day type	Time	Event list	Priorities
1	WKD	07:00:00	11	1
2	WKD	09:30:00	12	1
3	WKD	16:00:00	13	1
4	WKD	18:30:00	14	1
5	SAT	09:00:00	12	1
6	SAT	17:00:00	14	1
7	SUN	10:00:00	12	1
8	SUN	19:00:00	14	1
9	XSU	07:00:00	1	1
10	XSU	09:30:00	3	1
11	XSU	15:30:00	2	1
12	XSU	18:30:00	3	1

Timetable event list data

List no.	Event Action 1		Event Action 2		Event Action 3		Event Action 4		Event Action 5		Event Action 6		Event Action 7		Event Action 8	
	Type	Params	Type	Params	Type	Params	Type	Params	Type	Params	Type	Params	Type	Params	Type	Params
1	TCF	1														
2	TCF	2														
3	TCF	3														
4	TCF	4														
5	TCF	5														
6	TCF	6														
7	TCF	7														
8	TCF	8														
9	TCF	9														
10	TCF	OFF														
11	TTS	1														
12	TTS	2														
13	TTS	3														
14	TTS	4														
15	TTS	5														
16	TTS	6														
17	TTS	7														
18	TTS	8														

Timetable priorities data

Priority level 1. All year round					
Start			End		
Month	Day	Hour	Month	Day	Hour
Jan	1	0	Dec	31	24

Special conditioning timer data

Timer no.	Timer name	Duration	Fixed	Comment
1	CR1TOG	2.0	No	CRB1 TOGGLE TIME
2	CR1DLY	180.0	No	CRB1 TOGGLE DELAY TIME
3	CR1DUR	600.0	No	CRB1 TOGGLE DURATION TIME
4	CR2TOG	2.0	No	CRB2 TOGGLE TIME
5	CR2DLY	180.0	No	CRB2 TOGGLE DELAY TIME
6	CR2DUR	600.0	No	CRB2 TOGGLE DURATION TIME
7	WRST	2.0	No	WEST SIDE RESET PULSE
8	ADLYC	5.0	No	DELAY AFTER PHASE A HAS ROW BEFORE CALL PULSE TO STREAM 2
9	APULC	2.0	No	PULSE TIMER FOLLWOING ADLYC TIMER
10	ADLYH	7.0	No	DELAY AFTER PHASE A HAS ROW BEFORE HOLD TO STREAM 2
11	AHLDH	5.0	No	MINIMUM HOLD TIMER FOLLOWING ADLYH TIMER
12	ATRMH	8.0	No	DELAY FOLLOWING TERMINATION OF HOLD
13	AOVRH	60.0	No	HOLD OUTPUT OVERIDE
14	BDLYC	5.0	No	DELAY AFTER PHASE B HAS ROW BEFORE CALL PULSE TO STREAM 2
15	BPULC	2.0	No	PULSE TIMER FOLLOWING BDLYC TIMER
16	BDLYH	7.0	No	DELAY AFTER PHASE B HAS ROW BEFORE HOLD TO STREAM 2
17	BHLDH	5.0	No	MINIMUM HOLD TIMER FOLLOWING BDLYH TIMER
18	BTRMH	8.0	No	DELAY FOLLOWING TERMINATION OF HOLD
19	BOVRH	60.0	No	HOLD OUTPUT OVERIDE
20	CDLYC	5.0	No	DELAY AFTER PHASE C HAS ROW BEFORE CALL PULSE TO STREAM 1
21	CPULC	2.0	No	PULSE TIMER FOLLOWING CDLYC TIMER
22	CDLYH	7.0	No	DELAY AFTER PHASE C HAS ROW BEFORE HOLD TO STREAM 1
23	CHLDH	5.0	No	MINIMUM HOLD TIMER FOLLOWING CDLYH TIMER
24	CTRMH	8.0	No	DELAY FOLLOWING TERMINATION OF HOLD
25	COVRH	60.0	No	HOLD OUTPUT OVERIDE
26	DDLYC	5.0	No	DELAY AFTER PHASE D HAS ROW BEFORE CALL PULSE TO STREAM 1
27	DPULC	2.0	No	PULSE TIMER FOLLOWING DDLYC TIMER
28	DDLYH	7.0	No	DELAY AFTER PHASE D HAS ROW BEFORE HOLD TO STREAM 1
29	DHLDH	5.0	No	MINIMUM HOLD TIMER FOLLOWING DDLYH TIMER
30	DTRMH	8.0	No	DELAY FOLLOWING TERMINATION OF HOLD
31	DOVRH	60.0	No	HOLD OUTPUT OVERIDE
32	WFDLYC	5.0	No	DELAY AFTER PHASE F HAS ROW BEFORE CALL PULSE TO EAST CONTR.
33	WFPULC	2.0	No	PULSE TIMER FOLLOWING WCDLYC TIMER
34	WFDLYH	7.0	No	DELAY AFTER PHASE F HAS ROW BEFORE HOLD TO EAST CONTR.
35	WFHLDH	5.0	No	MINIMUM HOLD TIMER FOLLOWING WCDLYH TIMER
36	WFTRMH	12.0	No	DELAY FOLLOWING TERMINATION OF HOLD
37	WFOVRH	60.0	No	HOLD OUTPUT OVERIDE
38	WEDLYC	5.0	No	DELAY AFTER PHASE E HAS ROW BEFORE CALL PULSE TO EAST CONTR.
39	WEPULC	2.0	No	PULSE TIMER FOLLOWING WEDLYC TIMER

Special conditioning timer data

Timer no.	Timer name	Duration	Fixed	Comment
40	WEDLYH	7.0	No	DELAY AFTER PHASE E HAS ROW BEFORE HOLD TO EAST CONTR.
41	WEHLDH	5.0	No	MINIMUM HOLD TIMER FOLLOWING WDDLYH TIMER
42	WETRMH	8.0	No	DELAY FOLLOWING TERMINATION OF HOLD
43	WEOVRH	60.0	No	HOLD OUTPUT OVERIDE
44	SPARE	0.0	No	SPARE
45	WSTSHT	15.0	No	QIN HURRYCALL SHORT
46	WSTLNG	20.0	No	QIN HURRYCALL LONG
47	SW3PUL	1.0	No	AUX SWITCH 3 PULSE TIMER - USED BY CONDITIONING
48	F2OVR	180.0	No	UTC F2 OVERIDE TIMER
49	F5OVR	180.0	No	UTC F5 OVERIDE TIMER
50	F2PUL	0.5	No	UTC F2 INHIBIT PULSE TIMER
51	F5PUL	0.5	No	UTC F5 INHIBIT PULSE TIMER
52	AHCPUL	2.0	No	AIN MOVA HURRY CALL PULSE TIMER
53	BHCPUL	2.0	No	BIN MOVA HURRY CALL PULSE TIMER
54	CHCPUL	2.0	No	CIN MOVA HURRY CALL PULSE TIMER
55	DHCPUL	2.0	No	DIN MOVA HURRY CALL PULSE TIMER
56	EHCPUL	2.0	No	EIN MOVA HURRY CALL PULSE TIMER
57	FHCPUL	2.0	No	FIN MOVA HURRY CALL PULSE TIMER
58	AHCINHB	180.0	No	AIN HURRYCALL INHIBIT
59	BHCINHB	180.0	No	BIN HURRYCALL INHIBIT
60	CHCINHB	180.0	No	CIN HURRYCALL INHIBIT
61	DHCINHB	180.0	No	DIN HURRYCALL INHIBIT
62	EHCINHB	180.0	No	EIN HURRYCALL INHIBIT
63	FHCINHB	180.0	No	FIN HURRYCALL INHIBIT

Special conditioning statements

Statement 1

Comments	MOVA PHASE CONFIRM C: PHASE C GREEN SETS OUTPUT GC

If PHASE-C
Then OUTPUTA-GC
Else OUTPUTN-GC

Statement 2

Comments	MOVA PHASE CONFIRM D: PHASE D GREEN SETS OUTPUT GD

If PHASE-D
Then OUTPUTA-GD
Else OUTPUTN-GD

Statement 3

Comments	MOVA PHASE CONFIRM E: PHASE E GREEN SETS OUTPUT GE

If PHASE-E
Then OUTPUTA-GE
Else OUTPUTN-GE

Statement 4

Comments	MOVA PHASE CONFIRM F: PHASE F GREEN SETS OUTPUT GF

If PHASE-F
Then OUTPUTA-GF
Else OUTPUTN-GF

Statement 5

Comments	UTC mode inactive starts CR1TOG and CR1DLY timers, else stops CRB1DLY timer.

If UTCMODE-1 **Not**
Then SCTSTART-CR1TOG SCTSTART-CR1DLY
Else SCTSTOP-CR1DLY

Statement 6

Comments	STATEMENT 5 TRUE AND NOT IN FT, MANUAL MODES, CLF (SW5), VA(SW4) OR SW3PUL TIMER ACTIVE OR DET ERST ACTIVE START CR1DUR TIMER

If MFTMODE-1 **Or** MANMODE-1 **Or** MANIP-SW4 **Or** MANIP-SW5 **Not and** STMNT-5
And not SCTRUNNG-SW3PUL **And not** FDET-ERST
Then SCTSTART-CR1DUR
Else SCTSTOP-CR1DUR

Special conditioning statements

Statement 7

Comments	CR1DLY timer expired and UTC mode still inactive starts CR1TOG and CR1DLY timers.

If	SCTEXPRD-CR1DLY	**And not**	UTCMODE-1
Then	SCTSTART-CR1TOG	SCTSTART-CR1DLY	

Statement 8

Comments	MOVA INHIBIT/CLF INHIBIT SWITCH: VA BUTTON (SW4) SEE LATER STATEMENT FOR MOVA INHIBIT

If	MANIP-SW4	
Then	CLFINHIB-1	CLFINHIB-2
Else	CLFALLOW-1	CLFALLOW-2

Statement 9

Comments	CRB1 OUTPUT

If	MSDMODE-1	**Or**	SHDMODE-1	**Or**	MFTMODE-1	**Or**	MANMODE-1	**Or**	STUMODE-1
Or	SCTRUNNG-CR1TOG	**Or**	MANIP-SW4	**Or**	MANIP-SW5	**Or**	SCFLAG-10	**Or**	FDET-E10MIN
Then	OUTPUTA-CRB1								
Else	OUTPUTN-CRB1								

Statement 10

Comments	TIMER CR1DUR OR CR2DUR EXPIRED SETS FLAG 10 ACTIVE

If	SCTEXPRD-CR1DUR	**Or**	SCTEXPRD-CR2DUR
Then	SCFLGON-10		

Statement 11

Comments	MANUAL PANEL PB7 ACTIVE OR DET ERST ACTIVE CLEARS FLAG

If	MANIP-SW3	**Or**	FDET-ERST
Then	SCFLGOFF-10		

Statement 12

Comments	UTC ACTIVE STREAM 2 STARTS CR2TOG AND CR2DLY TIMERS

If	UTCMODE-2	**Not**
Then	SCTSTART-CR2TOG	SCTSTART-CR2DLY
Else	SCTSTOP-CR2DLY	

Special conditioning statements

Statement 13

Comments STATEMENT 5 TRUE AND NOT IN FT OR MANUAL MODES OR SW3PUL TIMER ACTIVE OR DET ERST ACTIVE START CR2DUR TIMER

If	MANMODE-2	**Or**	MFTMODE-2	**Or**	MANIP-SW4	**Or**	MANIP-SW5	**Not and**	STMNT-12
And not	SCTRUNNG-SW3PUL	**And not**	FDET-ERST						
Then	SCTSTART-CR2DUR								
Else	SCTSTOP-CR2DUR								

Statement 14

Comments CR2DLY TIMER EXPIRED AND NOT IN UTCMODE STREAM 2 STARTS CR2TOG AND CR2DLY TIMERS

If	SCTEXPRD-CR2DLY	**And not**	UTCMODE-2
Then	SCTSTART-CR2TOG	SCTSTART-CR2DLY	

Statement 15

Comments CRB2 OUTPUT

If	MANMODE-2	**Or**	MFTMODE-2	**Or**	SHDMODE-2	**Or**	MSDMODE-2	**Or**	STUMODE-2
Or	SCTRUNNG-CR2TOG	**Or**	MANIP-SW4	**Or**	SCFLAG-10	**Or**	FDET-E10MIN	**Or**	MANIP-SW5
Then	OUTPUTA-CRB2								
Else	OUTPUTN-CRB2								

Statement 16

Comments FLAG 10 ACTIVE LIGHTS AUX 3 LED AND SETS W10MIN OUTPUT

If	SCFLAG-10	
Then	MPLEDON-AUX3	OUTPUTA-W10MIN

Statement 17

Comments DET E10MIN ACTIVE AND NOT FLAG 10 SET FLASES AUX3 LED.

If	FDET-E10MIN	**And not**	SCFLAG-10
Then	MPLEDFLS-AUX3		

Statement 18

Comments STATEMENT 16 OR 17 NOT TRUE CLEARS AUX3 LED AND CLEARS W10MIN OUTPUT

If	STMNT-16	**Or**	STMNT-17	**Not**
Then	MPLEDOFF-AUX3	OUTPUTN-W10MIN		

Statement 19

Comments UTC STREAM 1 AND DET MOVEST NOT ACTIVE FLASHES AUX 1 LED

If	UTCMODE-1	**And not**	FDET-MOVEST
Then	MPLEDFLS-AUX1		

Special conditioning statements

Statement 20

Comments UTC STREAM 1 AND DET MOVEST ACTIVE LIGHTS AUX 1 LED

If UTCMODE-1 **And** FDET-MOVEST
Then MPLEDON-AUX1

Statement 21

Comments STATEMENT 19 OR 20 NOT TRUE CLEARS AUX 1 LED

If STMNT-19 **Or** STMNT-20 **Not**
Then MPLEDOFF-AUX1

Statement 22

Comments UTC MODE STREAMS 1 AND 2 SETS MOVWST OUTPUT ACTIVE

If UTCMODE-1 **And** UTCMODE-2
Then OUTPUTA-MOVWST
Else OUTPUTN-MOVWST

Statement 23

Comments PB7 ACTIVE STARTS WRST TIMER

If SCTRUNNG-SW3PUL
Then SCTSTART-WRST

Statement 24

Comments WRST TIMER ACTIVE SETS WRST OUTPUT ACTIVE

If SCTRUNNG-WRST
Then OUTPUTA-WRST
Else OUTPUTN-WRST

Statement 25

Comments TOD 11:59:58 SETS OUTPUT TSYNC

If CURTOD-11:59:58 **Or** SCBITS-254
Then OUTPUTA-TSYNC
Else OUTPUTN-TSYNC

Statement 26

Comments UTC MODE STREAM 1 SETS MOVA1 OUTPUT

If UTCMODE-1
Then OUTPUTA-MOVA1
Else OUTPUTN-MOVA1

Special conditioning statements

Statement 27

Comments UTC MODE STREAM 2 SETS MOVA2 OUTPUT

If UTCMODE-2
Then OUTPUTA-MOVA2
Else OUTPUTN-MOVA2

Statement 28

Comments TOD=12:00:00 SETS TSYNC OUTPUT

If CURTOD-12:00:00
Then OUTPUTA-TSYNC
Else OUTPUTN-TSYNC

Statement 29

Comments MOVA STREAM 1 TO BIT

If MANIP-SW4 **Or** MANIP-SW5 **Not and** FDET-TO1
Then UTCN-1
Else UTCI-1

Statement 30

Comments MOVA STREAM 2 TO BIT

If MANIP-SW4 **Or** MANIP-SW5 **Not and** FDET-TO2
Then UTCN-2
Else UTCI-2

Statement 31

Comments PHASE A ACTIVE STARTS TIMERS ADLYC AND ADLYH

If PHASE-A
Then SCTSTART-ADLYC SCTSTART-ADLYH

Statement 32

Comments TIMER ADLYC EXPIRED STARTS APULC TIMER

If SCTEXPRD-ADLYC
Then SCTSTART-APULC

Special conditioning statements

Statement 33

Comments	APULC TIMER ACTIVE SETS OUTPUT ST2D43C

If SCTRUNNG-APULC
Then OUTPUTA-ST2D43C
Else OUTPUTN-ST2D43C

Statement 34

Comments	TIMER ADLYH EXPIRED AND PHASE A ACTIVE SETS OUTPUT AND STARTS TIMERS AHLDH AND AOVRH

If SCTEXPRD-ADLYH **And** PHASE-A
Then OUTPUTA-ST2D44H SCTSTART-AHLDH SCTSTART-AOVRH

Statement 35

Comments	AHLDH TIMER EXPIRED SETS FLAG 1

If SCTEXPRD-AHLDH
Then SCFLGON-1

Statement 36

Comments	FLAG 1 SET AND NO EXTENSIONS ON PHASE A OR SCBIT 1 SET STARTS ATRMH TIMER

If SCFLAG-1 **And not** PHSEXT-A **And not** SCBITS-1
Then SCTSTART-ATRMH

Statement 37

Comments	ATRMH TIMER NOT ACTIVE AND NOT PHASE A AND FLAG 1 ACTIVE STARTS ATRMH TIMER

If Not SCTRUNNG-ATRMH **And not** PHASE-A **And** SCFLAG-1
Then SCTSTART-ATRMH

Statement 38

Comments	ATRMH TIMER ACTIVE OR AOVRH TIMER ACTIVE CLEARS OUTPUT AND CLEARS FLAG 1

If SCTEXPRD-ATRMH **Or** SCTEXPRD-AOVRH
Then OUTPUTN-ST2D44H SCFLGOFF-1

Statement 39

Comments	PHASE A ACTIVE STARTS TIMERS BDLYC AND BDLYH

If PHASE-B
Then SCTSTART-BDLYC SCTSTART-BDLYH

Special conditioning statements

Statement 40

Comments TIMER BDLYC EXPIRED STARTS BPULC TIMER

If SCTEXPRD-BDLYC
Then SCTSTART-BPULC

Statement 41

Comments BPULC TIMER ACTIVE SETS OUTPUT

If SCTRUNNG-BPULC
Then OUTPUTA-ST2D45C
Else OUTPUTN-ST2D45C

Statement 42

Comments TIMER BDLYH EXPIRED AND PHASE B ACTIVE SETS OUTPUT AND STARTS TIMERS BHLDH AND BOVRH

If SCTEXPRD-BDLYH **And** PHASE-B
Then OUTPUTA-ST2D46H SCTSTART-BHLDH SCTSTART-BOVRH

Statement 43

Comments BHLDH TIMER EXPIRED SETS FLAG 1

If SCTEXPRD-BHLDH
Then SCFLGON-2

Statement 44

Comments FLAG 2 SET AND NO EXTENSIONS ON PHASE B OR SCBIT 1 SET STARTS BTRMH TIMER

If SCFLAG-2 **And not** PHSEXT-B **And not** SCBITS-2
Then SCTSTART-BTRMH

Statement 45

Comments BTRMH TIMER NOT ACTIVE AND NOT PHASE B AND FLAG 2 ACTIVE STARTS BTRMH TIMER

If Not SCTRUNNG-BTRMH **And not** PHASE-B **And** SCFLAG-2
Then SCTSTART-BTRMH

Statement 46

Comments BTRMH TIMER ACTIVE OR BOVRH TIMER ACTIVE CLEARS OUTPUT AND CLEARS FLAG 2

If SCTEXPRD-BTRMH **Or** SCTEXPRD-BOVRH
Then OUTPUTN-ST2D46H SCFLGOFF-2

Special conditioning statements

Statement 47

Comments	PHASE C ACTIVE STARTS TIMERS CDLYC AND CDLYH				
If	PHASE-C				
Then	SCTSTART-CDLYC	SCTSTART-CDLYH			

Statement 48

Comments	TIMER CDLYC EXPIRED STARTS CPULC TIMER				
If	SCTEXPRD-CDLYC				
Then	SCTSTART-CPULC				

Statement 49

Comments	CPULC TIMER ACTIVE SETS OUTPUT				
If	SCTRUNNG-CPULC				
Then	OUTPUTA-ST1A47C				
Else	OUTPUTN-ST1A47C				

Statement 50

Comments	TIMER CDLYH EXPIRED AND PHASE C ACTIVE SETS OUTPUT AND STARTS TIMERS CHLDH AND COVRH				
If	SCTEXPRD-CDLYH	**And**	PHASE-C		
Then	OUTPUTA-ST1A48H	SCTSTART-CHLDH	SCTSTART-COVRH		

Statement 51

Comments	CHLDH TIMER EXPIRED SETS FLAG 1				
If	SCTEXPRD-CHLDH				
Then	SCFLGON-3				

Statement 52

Comments	FLAG 3 SET AND NO EXTENSIONS ON PHASE C OR SCBIT 3 SET STARTS CTRMH TIMER				
If	SCFLAG-3	**And not**	PHSEXT-C	**And not**	SCBITS-3
Then	SCTSTART-CTRMH				

Statement 53

Comments	CTRMH TIMER NOT ACTIVE AND NOT PHASE C AND FLAG 3 ACTIVE STARTS CTRMH TIMER				
If Not	SCTRUNNG-CTRMH	**And not**	PHASE-C	**And**	SCFLAG-3
Then	SCTSTART-CTRMH				

Special conditioning statements

Statement 54	
Comments	CTRMH TIMER ACTIVE OR COVRH TIMER ACTIVE CLEARS OUTPUT AND CLEARS FLAG 3

If SCTEXPRD-CTRMH **Or** SCTEXPRD-COVRH
Then OUTPUTN-ST1A48H SCFLGOFF-3

Statement 55	
Comments	PHASE D ACTIVE STARTS TIMERS DDLYC AND DDLYH

If PHASE-D
Then SCTSTART-DDLYC SCTSTART-DDLYH

Statement 56	
Comments	TIMER DDLYC EXPIRED STARTS DPULC TIMER

If SCTEXPRD-DDLYC
Then SCTSTART-DPULC

Statement 57	
Comments	DPULC TIMER ACTIVE SETS OUTPUT

If SCTRUNNG-DPULC
Then OUTPUTA-ST1B49C
Else OUTPUTN-ST1B49C

Statement 58	
Comments	TIMER DDLYH EXPIRED AND PHASE D ACTIVE SETS OUTPUT AND STARTS TIMERS DHLDH AND DOVRH

If SCTEXPRD-DDLYH **And** PHASE-D
Then OUTPUTA-ST1B50H SCTSTART-DHLDH SCTSTART-DOVRH

Statement 59	
Comments	DHLDH TIMER EXPIRED SETS FLAG 1

If SCTEXPRD-DHLDH
Then SCFLGON-4

Statement 60	
Comments	FLAG 4 SET AND NO EXTENSIONS ON PHASE D OR SCBIT D SET STARTS DTRMH TIMER

If SCFLAG-4 **And not** PHSEXT-D **And not** SCBITS-4
Then SCTSTART-DTRMH

Special conditioning statements

Statement 61

Comments DTRMH TIMER NOT ACTIVE AND NOT PHASE D AND FLAG 4 ACTIVE STARTS DTRMH TIMER

If Not SCTRUNNG-DTRMH **And not** PHASE-D **And** SCFLAG-4

Then SCTSTART-DTRMH

Statement 62

Comments DTRMH TIMER ACTIVE OR DOVRH TIMER ACTIVE CLEARS OUTPUT AND CLEARS FLAG 4

If SCTEXPRD-DTRMH **Or** SCTEXPRD-DOVRH

Then OUTPUTN-ST1B50H SCFLGOFF-4

Statement 63

Comments PHASE F GREEN STARTS TIMERS WFDLYC AND WFDDLYH

If PHASE-F

Then SCTSTART-WFDLYC SCTSTART-WFDLYH

Statement 64

Comments TIMER WCDLYC EXPIRED STARTS WFPULC TIMER

If SCTEXPRD-WFDLYC

Then SCTSTART-WFPULC

Statement 65

Comments TIMER WFPULC RUNNING SETS OUTPUT WSBCALF

If SCTRUNNG-WFPULC

Then OUTPUTA-WSBCALF

Else OUTPUTN-WSBCALF

Statement 66

Comments TIMER WFDLYH EXPIRED AND PHASE F GREEN SETS OUTPUT WSBHLDF

If SCTEXPRD-WFDLYH **And** PHASE-F

Then OUTPUTA-WSBHLDF SCTSTART-WFHLDH SCTSTART-WFOVRH

Statement 67

Comments WFHLDH TIMER EXPIRED SETS FLAG 5

If SCTEXPRD-WFHLDH

Then SCFLGON-5

Special conditioning statements

Statement 68

Comments FLAG 5 SET, NO EXTENSIONS PHASE F AND SCBITS-5 NOT SET

If SCFLAG-5 **And not** PHSEXT-F **And not** SCBITS-5

Then SCTSTART-WFTRMH

Statement 69

Comments WFTRMH TIMER RUNNING AND NOT PHASE F GREEN AND FLAG 5 SET

If Not SCTRUNNG-WFTRMH **And not** PHASE-F **And** SCFLAG-5

Then SCTSTART-WFTRMH

Statement 70

Comments TIMER WFTRMH OR WFOVRH EXPIRED CLEAR WSBHLDF OUTPUT AND FLAG

If SCTEXPRD-WFTRMH **Or** SCTEXPRD-WFOVRH

Then OUTPUTN-WSBHLDF SCFLGOFF-5

Statement 71

Comments PHASE E GREEN STARTS WEDLYC TIMER AND WEDLYH TIMER

If PHASE-E

Then SCTSTART-WEDLYC SCTSTART-WEDLYH

Statement 72

Comments WEDLYC TIMER EXPIRED STARTS WEPULC TIMER

If SCTEXPRD-WEDLYC

Then SCTSTART-WEPULC

Statement 73

Comments WEPULC TIMER RUNNING SETS WSBCAEL OUTPUT

If SCTRUNNG-WEPULC

Then OUTPUTA-WSBCALE

Else OUTPUTN-WSBCALE

Statement 74

Comments WEDLYH TIMER EXPIRED AND PHASE E ACTIVE SETS WSEHLD OUTPUT, STARTS TIMER WEHLDH AND TIMER WEOVRH

If SCTEXPRD-WEDLYH **And** PHASE-E

Then OUTPUTA-WSBHLDE SCTSTART-WEHLDH SCTSTART-WEOVRH

Special conditioning statements

Statement 75	
Comments	WEHLDH TIMER EXPIRED SETS FLAG 6

If SCTEXPRD-WEHLDH

Then SCFLGON-6

Statement 76	
Comments	FLAG 6 SET NO PHASE EXTENSIONS PHASE E AND SCBIT NOT SET STARTS WETRMH TIMER

If SCFLAG-6 **And not** PHSEXT-E **And not** SCBITS-6

Then SCTSTART-WETRMH

Statement 77	
Comments	WETRMH TIMER NOT RUNNING AND NOT PHASE E GREEN AND FLAG 6 ACTIVE STARTS TIMER WETRMH

If Not SCTRUNNG-WETRMH **And not** PHASE-E **And** SCFLAG-6

Then SCTSTART-WETRMH

Statement 78	
Comments	WETRMH TIMER EXPIRED OR WEOVRH TIMER EXPIRED CLEARS WSBHLDE OUTPUT AND CLEARS FLAG 6

If SCTEXPRD-WETRMH **Or** SCTEXPRD-WEOVRH

Then OUTPUTN-WSBHLDE SCFLGOFF-6

Statement 79	
Comments	DETS BIN11 OR BIN12 ACTIVE, TIMER HCINHB NOT RUNNING AND SCBIT 7 NOT SET STARTS BHCPUL TIMER

If FDET-BIN11 **Or** FDET-BIN12 **And not** SCTRUNNG-BHCINHB **And not** SCBITS-7

Then SCTSTART-BHCPUL

Statement 80	
Comments	DETS DIN23, DIN24, DIN25 OR DIN26 ACTIVE, TIMER HCINHB NOT RUNNING AND SCBIT 9 NOT SET STARTS DHCPUL TIMER

If FDET-DIN23 **Or** FDET-DIN24 **Or** FDET-DIN25 **Or** FDET-DIN26 **And not** SCTRUNNG-DHCINHB

And not SCBITS-9

Then SCTSTART-DHCPUL

Statement 81	
Comments	DETS AIN1, AIN2, AIN3 OR AIN4 ACTIVE, TIMER HCINHB NOT RUNNING AND SCBIT 6 NOT SET STARTS AHCPUL TIMER

If FDET-AIN1 **Or** FDET-AIN2 **Or** FDET-AIN3 **Or** FDET-AIN4 **And not** SCTRUNNG-AHCINHB

And not SCBITS-6

Then SCTSTART-AHCPUL

Special conditioning statements

Statement 82

Comments	NOT USED

If

Statement 83

Comments	TIMER BHCPUL RUNNING SETS OUTPUT BHCAL56 AND DETECTOR BINHC ACTIVE

If	SCTRUNNG-BHCPUL		
Then	OUTPUTA-BHCAL56	DETA-BINHC	SCTSTART-BHCINHB
Else	OUTPUTN-BHCAL56	DETN-BINHC	

Statement 84

Comments	TIMER DHCPUL RUNNING SETS OUTPUT DHCAL57 AND DETECTOR DINHC ACTIVE

If	SCTRUNNG-DHCPUL		
Then	OUTPUTA-DHCAL57	DETA-DINHC	SCTSTART-DHCINHB
Else	OUTPUTN-DHCAL57	DETN-DINHC	

Statement 85

Comments	TIMER AHCPUL RUNNING SETS OUTPUT AHCAL55 AND DETECTOR AINHC ACTIVE

If	SCTRUNNG-AHCPUL		
Then	OUTPUTA-AHCAL55	DETA-AINHC	SCTSTART-AHCINHB
Else	OUTPUTN-AHCAL55	DETN-AINHC	

Statement 86

Comments	NOT USED

If

Statement 87

Comments	DETS CIN15 OR CIN16, TIMER HCINHB NOT RUNNING AND SCBIT 8 NOT SET STARTS CHCPUL TIMER

If	FDET-CIN15	**Or**	FDET-CIN16	**And not**	SCTRUNNG-CHCINHB	**And not**	SCBITS-8
Then	SCTSTART-CHCPUL						

Statement 88

Comments	DETS EIN31 OR EIN32, TIMER HCINHB NOT RUNNING AND SCBIT 10 NOT SET STARTS EHCPUL TIMER

If	FDET-EIN31	**Or**	FDET-EIN32	**And not**	SCTRUNNG-EHCINHB	**And not**	SCBITS-10
Then	SCTSTART-EHCPUL						

Special conditioning statements

Statement 89

Comments DETS FIN37, FIN38 OR FIN39, TIMER HCINHB NOT RUNNING AND SCBIT 11 NOT SET STARTS FHCPUL TIMER

If FDET-FIN37 **Or** FDET-FIN38 **Or** FDET-FIN39 **And not** SCTRUNNG-FHCINHB **And not** SCBITS-11
Then SCTSTART-FHCPUL

Statement 90

Comments TIMER CHCPUL RUNNING SETS OUTPUT CHCAL59 AND DETECTOR CINHC ACTIVE

If SCTRUNNG-CHCPUL
Then OUTPUTA-CHCAL59 DETA-CINHC SCTSTART-CHCINHB
Else OUTPUTN-CHCAL59 DETN-CINHC

Statement 91

Comments TIMER EHCPUL RUNNING SETS OUTPUT EHCAL60 AND DETECTOR EINHC ACTIVE

If SCTRUNNG-EHCPUL
Then OUTPUTA-EHCAL60 DETA-EINHC SCTSTART-EHCINHB
Else OUTPUTN-EHCAL60 DETN-EINHC

Statement 92

Comments TIMER FHCPUL RUNNING SETS OUTPUT FHCAL58 AND DETECTOR FINHC ACTIVE

If SCTRUNNG-FHCPUL
Then OUTPUTA-FHCAL58 DETA-FINHC SCTSTART-FHCINHB
Else OUTPUTN-FHCAL58 DETN-FINHC

Statement 93

Comments NOT USED

If

Statement 94

Comments NOT USED

If

Statement 95

Comments SHUTDOWN MODE SETS LE OUTPUT ACTIVE

If SHDMODE-1 **Or** SHDMODE-2 **Or** MSDMODE-1 **Or** MSDMODE-2
Then OUTPUTA-LE
Else OUTPUTN-LE

Special conditioning statements

Statement 96

Comments	AUX 3 SWITCH PULSE CONDITIONING: IF SW3 ACTIVE START TIMER SW3PUL

If MANIP-SW3
Then SCTSTART-SW3PUL

Statement 97

Comments	AUX 3 SWITCH PULSE CONDITIONING: IF SW3 NOT ACTIVE START TIMER SW3PUL

If MANIP-SW3 **Not**
Then SCTSTART-SW3PUL

Statement 98

Comments	PREVENT FORCE BITS OVERIDES: UTC-F2 ACTIVE START TIMER F2OVR.

If UTCBIT-F2
Then SCTSTART-F2OVR
Else SCTSTOP-F2OVR

Statement 99

Comments	PREVENT FORCE BITS OVERIDES: UTC-F4 ACTIVE START TIMER F4OVR.

If UTCBIT-F5
Then SCTSTART-F5OVR
Else SCTSTOP-F5OVR

Statement 100

Comments	PREVENT FORCE BITS OVERIDES: F2OVR TIMER EXPIRED START F2PUL

If SCTEXPRD-F2OVR **And** UTCBIT-F2
Then SCTSTART-F2PUL

Statement 101

Comments	PREVENT FORCE BITS OVERIDES: F5OVR TIMER EXPIRED START F5PUL

If SCTEXPRD-F5OVR **And** UTCBIT-F5
Then SCTSTART-F5PUL

Statement 102

Comments	PREVENT FORCE BITS OVERIDES:F2PUL TIMER ACTIVE SET UTC-F2 INACTIVE AND UTC-F3 ACTIVE

If SCTRUNNG-F2PUL
Then UTCBITA-F3 UTCBITI-F2
Else UTCBITN-F3 UTCBITN-F2

Special conditioning statements

Statement 103

Comments PREVENT FORCE BITS OVERIDES:F2PUL TIMER ACTIVE SET UTC-F5 INACTIVE AND UTC-F6 ACTIVE

If	SCTRUNNG-F5PUL	
Then	UTCBITA-F8	UTCBITI-F5
Else	UTCBITN-F8	UTCBITN-F5

Statement 104

Comments DETECTOR ASL10 A,B,C,D OR E ACTIVE SETS ASL10 OUTPUT

If	RDET-ASL10A	**Or**	RDET-ASL10B	**Or**	RDET-ASL10C	**Or**	RDET-ASL10D	**Or**	RDET-ASL10E
Then	OUTPUTA-ASL10								
Else	OUTPUTN-ASL10								

Statement 105

Comments SIS POWER

If	FDET-SISPWR
Then	OUTPUTA-SISPWR
Else	OUTPUTN-SISPWR

Statement 106

Comments SIS FAULT

If	FDET-SISFLT
Then	OUTPUTA-SISFLT
Else	OUTPUTN-SISFLT

Statement 107

Comments UTCMODE STREAM 2 AND NOT MOVEST ACTIVE FLASHES AUX2

If	UTCMODE-2	**And not**	FDET-MOVEST
Then	MPLEDFLS-AUX2		

Statement 108

Comments UTCMODE STREAM 2 AND MOVEST ACTIVE FLASHES AUX2

If	UTCMODE-2	**And**	FDET-MOVEST
Then	MPLEDON-AUX2		

Statement 109

Comments NOT STATEMENT 107 OR 108 SETS MANUAL PANEL AUX2 OFF

If	STMNT-107	**Or**	STMNT-108	**Not**
Then	MPLEDOFF-AUX2			

Red lamp monitoring data 1

Auto clear red lamp warnings	Yes		Red lamp monitor type	Other

Red lamp monitoring data 2

Stream based data					
Stream no.	Shutdown required	Red flt. extension	Single red lamp fault input name	Multiple red lamp fault input name	Inhibit stages
1	Yes	2.0			
2	Yes	2.0			

Red lamp monitoring data 3

Second red failure phase data	
Phase Id	Inhibited phases
A	
B	
C	
D	
E	
F	
DA	
DB	

ILM data

Fault indications		Mains unstable indications output(s)	
Auto clear red lamp warnings	Yes		
Flash DFM for lamp conflict	No		
Flash DFM for lamp failure	No		
Unstable toroid indication (as lamp failure)	No		

Phase	Lamp Types			Single fault	Multi faults	Failure indication output	Conflict indication output(s)
	Green	Amber	Red				
A	ELV LED (3R)	ELV LED (3R)	ELV LED (3R)	1	3	LF	
B	ELV LED (3R)	ELV LED (3R)	ELV LED (3R)	1	3	LF	
C	ELV LED (3R)	ELV LED (3R)	ELV LED (3R)	1	3	LF	
D	ELV LED (3R)	ELV LED (3R)	ELV LED (3R)	1	3	LF	
E	ELV LED (3R)	ELV LED (3R)	ELV LED (3R)	1	3	LF	
F	ELV LED (3R)	ELV LED (3R)	ELV LED (3R)	1	3	LF	

Input data

Input No.	Input name	Source	Comment
0	F03	Virtual	NOT USED
1	F08	Virtual	NOT USED
0	F01	Parallel	MOVA STREAM 1 STAGE 1 FORCE
1	F02	Parallel	MOVA STREAM 1 STAGE 2 FORCE
2	F04	Parallel	MOVA STREAM 2 STAGE 1 FORCE
3	F05	Parallel	MOVA STREAM 2 STAGE 2 FORCE
4	F06	Parallel	MOVA STREAM 2 STAGE 3 FORCE
5	F07	Parallel	MOVA STREAM 2 STAGE 4 FORCE
6	*TO1	Parallel	MOVA TO BIT STREAM 1
7	*TO2	Parallel	MOVA TO BIT STREAM 2
8	*AIN1	Parallel	
9	*AIN2	Parallel	
10	*AIN3	Parallel	
11	*AIN4	Parallel	
12	*AX5	Parallel	
13	*AX6	Parallel	
14	*AX7	Parallel	
15	*AX8	Parallel	
16	*ASL10A	Parallel	
17	*ASL10B	Parallel	
18	*ASL10C	Parallel	
19	*ASL10D	Parallel	
20	*BIN11	Parallel	
21	*BIN12	Parallel	
22	*BX13	Parallel	
23	*BX14	Parallel	
24	*CIN15	Parallel	
25	*CIN16	Parallel	
26	*CX17	Parallel	
27	*CX18	Parallel	
28	*CX19	Parallel	
29	*CSL20	Parallel	
30	*CSL21	Parallel	
31	*CSL22	Parallel	
32	*DIN23	Parallel	
33	*DIN24	Parallel	
34	*DX27	Parallel	
35	*DX28	Parallel	
36	*DX29	Parallel	

Input data

Input No.	Input name	Source	Comment
37	*SISPWR	Parallel	SIS POWER
38	*SISFLT	Parallel	SIS FAULT
39	*E10MIN	Parallel	LINKING FROM EAST CONTROLLER CRB TIMER EXPIRED
40	*ERST	Parallel	LINKING FROM EAST CONTROLLER CRB TIMER RESET
41	*MOVEST	Parallel	LINKKING FROM EAST CONTROLLER MOVA RUNNING
42	*AX9	Parallel	
43	*ASL10E	Parallel	NEW
44	*DIN25	Parallel	NEW
45	*DIN26	Parallel	NEW
46	*DX30	Parallel	NEW
47	IP47	Parallel	
48	*EIN31	Parallel	NEW
49	*EIN32	Parallel	NEW
50	*EX33	Parallel	NEW
51	*EX34	Parallel	NEW
52	*ESL35	Parallel	NEW
53	*ESL36	Parallel	NEW
54	*FIN37	Parallel	NEW
55	*FIN38	Parallel	NEW
56	*FIN39	Parallel	NEW
57	*FX40	Parallel	NEW
58	*FX41	Parallel	NEW
59	*FX42	Parallel	NEW

Output data

Output Number	Destination	Output name	Invert state	Comment
0	Parallel	G1	Yes	MOVA STREAM 1 STAGE 1 CONFIRM
1	Parallel	G2	Yes	MOVA STREAM 1 STAGE 2 CONFIRM
2	Parallel	G4	Yes	MOVA STREAM 2 STAGE 1 CONFIRM
3	Parallel	G5	Yes	MOVA STREAM 2 STAGE 2 CONFIRM
4	Parallel	G6	Yes	MOVA STREAM 2 STAGE 3 CONFIRM
5	Parallel	G7	Yes	MOVA STREAM 2 STAGE 4 CONFIRM
6	Parallel	GC	Yes	MOVA PHASE C CONFIRM
7	Parallel	GD	Yes	MOVA PHASE D CONFIRM
8	Parallel	GE	Yes	MOVA PHASE E CONFIRM
9	Parallel	GF	Yes	MOVA PHASE F CONFIRM
10	Parallel	CRB1	Yes	MOVA CRB BIT STREAM 1
11	Parallel	CRB2	Yes	MOVA CRB BIT STREAM 2
12	Parallel	MOVA1	No	MOVA MODE ACTIVE STREAM 1
13	Parallel	MOVA2	No	MOVA MODE ACTIVE STREAM 2
14	Parallel	OP14	No	
15	Parallel	OP15	No	
16	Parallel	ASL10	No	BUFFERED COMBINED ASL10 LOOPS - MOVA DET 10
17	Parallel	OP17	No	
18	Parallel	ST2D43C	No	STREAM 1 TO 2 LINKING - MOVA DET 43
19	Parallel	ST2D44H	No	STREAM 1 TO 2 LINKING - MOVA DET 44
20	Parallel	ST2D45C	No	STREAM 1 TO 2 LINKING - MOVA DET 45
21	Parallel	ST2D46H	No	STREAM 1 TO 2 LINKING - MOVA DET 46
22	Parallel	ST1A47C	No	STREAM 2 TO 1 LINKING - MOVA DET 47
23	Parallel	ST1A48H	No	STREAM 2 TO 1 LINKING - MOVA DET 48
24	Parallel	ST1B49C	No	STREAM 2 TO 1 LINKING - MOVA DET 49
25	Parallel	ST1B50H	No	STREAM 2 TO 1 LINKING - MOVA DET 50
26	Parallel	WSBHLDF	No	LINKING TO EAST CONTROLLER
27	Parallel	WSBCALF	No	LINKING TO EAST CONTROLLER
28	Parallel	WSBHLDE	No	LINKING TO EAST CONTROLLER
29	Parallel	WSBCALE	No	LINKING TO EAST CONTROLLER
30	Parallel	TSYNC	No	LINKING TO EAST CONTROLLER - TIME SYNC FOR EAST CONTROLLER
31	Parallel	W10MIN	No	LINKING TO EAST CONTROLLER - WEST CONTROLLER CRB TIMER EXPIRED
32	Parallel	WRST	No	LINKING TO EAST CONTROLLER - WEST CONTROLLER CRB RESET
33	Parallel	MOVWST	No	LINKING TO EAST CONTROLLER - MOVA CONTROL ACTIVE BOTH STREAMS WEST
34	Parallel	LE	Yes	LAMPS EXTINGUISHED TO OMU
35	Parallel	LF	Yes	LAMP FAULT TO OMU
36	Parallel	SISPWR	No	SIS POWER TO OMU
37	Parallel	SISFLT	No	SIS FAULT TO OMU
38	Parallel	AHCAL55	No	AIN MOVA HURRY CALL - MOVA DET 55

Output data

Output Number	Destination	Output name	Invert state	Comment
39	Parallel	BHCAL56	No	BIN MOVA HURRY CALL - MOVA DET 56
40	Parallel	DHCAL57	No	DIN MOVA HURRY CALL - MOVA DET 57
41	Parallel	FHCAL58	No	FIN MOVA HURRY CALL - MOVA DET 58
42	Parallel	CHCAL59	No	CIN MOVA HURRY CALL - MOVA DET 59
43	Parallel	EHCAL60	No	EIN MOVA HURRY CALL - MOVA DET 60

Hardware data

Safety cards	
Number	Fitted
1	Yes
2	No

Loop Detector Cards		
Number	Fitted	Detectors
2	Yes	16
3	No	-
4	No	-

Safety card 1

Phase Drive cards	
Number	Fitted
1	Yes
2	Yes
3	Yes
4	No
5	No
6	No
7	No
8	No
9	No
10	No
11	No
12	No
13	No
14	No
15	No
16	No

IO Cards	
Number	Card Type
1	Handset
2	IO 16/16
3	IO 16/16
4	IO 16/16
5	IO 16/16
6	Not Fitted
7	Not Fitted
8	Not Fitted

Loop Detector Cards		
Number	Fitted	Detectors
1	Yes	16

Virtual IO data

Bit No.	Bit name	Invert	Active	Comment
0	F03	False	False	
1	F08	False	False	

Telent traffic controller configuration forms

Customer: AMEY AREA9 MAC

Intersection description: M42 JUNCTION 10 A5 DORDON ISLAND TAMWORTH EAST SIDE - SCN 211

Telent tender no.:　　**Telent works order no.:**

Customers order no.:　　**Dated:**

Customers engineer: JULIAN SMITH / PAOLO MALARA / ROGER HACKER

Customers telephone no.: 01905 750255　　**Ext:**

Equipment installation by: TELENT

Slot cutting by:

Civil works by:

Configuration no.: CFGM0188　　**Issue:**　　**Configuration engineer:** SIMON WINTER

General Data

Power supply data

Mains voltage	48 Volts
Mains frequency	50 Hz
Peak current	0.0 Amps
Dimming voltage	160

Solar switch data

Detector timing set data	Set 1	Set 2	Set 3	Set 4
Call delay period (Seconds)	10.0	10.0	10.0	10.0
Cancel delay period (Seconds)	10.0	10.0	10.0	10.0
DFM active times (Hours or minutes)	24H	24H	24H	24H
DFM inactive times (Hours or minutes)	24H	24H	24H	24H

British summertime change data

BST start week	13	BST end week	43

Options

Is manual disable via handset option required?	No
Inhibit pedestrian demand delay in FVP mode?	No
Inhibit pedestrian demand delay in PTM mode?	No
Limit handset warnings to UTC enabled warnings?	No

Configuration notes

ELV OPTIMA

SEE CONFIGURATION NOTES

Configuration history

Issue	Date	Description
1.00	23/10/12	INITIAL CONFIGURATION
1.01	23/10/12	INTERMEDIATE EDIT
1.02	23/10/2012	Intermediate edit
1.03	23/10/2012	Intermediate edit
1.04	23/10/2012	Intermediate edit
1.05	10/11/2012	Intermediate edit
1.06	21/11/2012	Intermediate edit
1.07	04/12/2012	Intermediate edit
1.08	04/12/2012	Intermediate edit
2.00	11/09/2014	PHASES ADDED AND MOVA AMMENDED
2.01	19/09/2014	Intermediate edit
2.02	30/09/2014	Intermediate edit
2.03	07/02/2015	Intermediate edit
2.04	09/02/2015	Intermediate edit

Phase data 1

Phase Id	Road Name(s)	Phs. type	Appearance assoc'ted		Termination assoc'ted		Restart allowed	App. in man
			type	phase(s)	type	phase(s)		
A	M42 SOUTHBOUND OFF SLIP	T	0		0		No	0
B	NORTH BRIDGE EASTBOUND GYRATORY	T	0		0		No	0
C	A5 WESTBOUND	T	0		0		No	0
D	EASTSIDE A5 GYRATORY	T	0		0		No	0
E	TRINITY ROAD	T	0		0		No	0
F	EAST SIDE TRINITY GYRATORY	T	0		0		No	0
DA	ALL RED STREAM 1	G	0		0		No	0
DB	ALL RED STREAM 2	G	0		0		No	0

Phase data 2

Phase Id	Min green Time	Min green limit	Window time	Speed measurement facilities		Assoc to ped. phases	Cond demand type	Conditioning phases
				Exist	Ped. phases			
A	7.0	7.0	-	No		No	NONE	
B	7.0	7.0	-	No		No	NONE	
C	7.0	7.0	-	No		No	NONE	
D	7.0	7.0	-	No		No	NONE	
E	7	7		No		No	None	
F	7	7		No		No	None	
DA	3.0	3.0	-	No		No	NONE	
DB	3.0	3.0	-	No		No	NONE	

Phase data 2_1

Phase Id	Maximum greens (VA)								Maximum greens (PTM)								Maximum greens (FVP)							
	Set 1	Set 2	Set 3	Set 4	Set 5	Set 6	Set 7	Set 8	Set 1	Set 2	Set 3	Set 4	Set 5	Set 6	Set 7	Set 8	Set 1	Set 2	Set 3	Set 4	Set 5	Set 6	Set 7	Set 8
A	30.0	20.0	30.0	20.0	30.0	30.0	40.0	60.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	40.0	30.0	40.0	30.0	40.0	30.0	40.0	60.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	20.0	20.0	20.0	20.0	30.0	30.0	40.0	60.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	40.0	30.0	40.0	30.0	40.0	30.0	40.0	60.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E	20	20	20	20	30	30	40	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	40	30	40	30	40	30	40	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DB	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Phase data 2_2

Phs Id	Fixed seq.	Ped type	Demand extn.	Dithering		Pedestrian intergreen sequence times						PV info		PV associated to			PV delay	PV Window	Local override
				Quiescent	Normal	Gap	Frc	Min	Max	Clr	Xtr	UTC	Local	Phase	Str/Stg	Input			
A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Phase data 2_3

Phase compensation				
	Compensation sets			
Phase Id	Set 1	Set 2	Set 3	Set 4
A	0.0	0.0	0.0	0.0
B	0.0	0.0	0.0	0.0
C	0.0	0.0	0.0	0.0
D	0.0	0.0	0.0	0.0
E	0	0	0	0
F	0	0	0	0
DA	0.0	0.0	0.0	0.0
DB	0.0	0.0	0.0	0.0

Phase data 2_4

Pedestrain supplementary signals

Phase Id	Illuminate wait lamps on phase	Tactile	Confirmation input	State	Audible	Confirmation input	Active state	Drive phase	Duration
A		False	False	OC	False	False	OC	A	
B		False	False	OC	False	False	OC	B	
C		False	False	OC	False	False	OC	C	
D		False	False	OC	False	False	OC	D	
E		False	False	OC	False	False	OC	E	
F		False	False	OC	False	False	OC	F	
DA		False	False	OC	False	False	OC	DA	
DB		False	False	OC	False	False	OC	DB	

Phase data 4

Phase Id	Conflicting greens	Opposed by phase demands	Opposed by stage demands	Revertive phase demands
A	B	B,DA		A
B	A	A,DA		B
C	D	D,DB		C
D	C	C,DB		D
E	F	C,D,F		E
F	E	C,D,E		F
DA		A,B		
DB		C,D		

Lamp sequence data

Phs. type	Sequence description	Start-up starting			Start-up stoping			Normal starting			Normal stopping			Running		Stopped		Shutdown	
		State 1	State 2	Duration	State 1	State 2	Duration	State 1	State 2	Duration	State 1	State 2	Duration	State 1	State 2	State 1	State 2	State 1	State 2
FP	FAR/SIDE PEDESTRIAN	G	G	0	R	R	0	G	G	0	B	B	3	G	G	R	R	B	B
G	IND/FILTER	G	G	0	B	B	0	G	G	0	B	B	0	G	G	B	B	B	B
L	LRT	G	G	0	A	A	5	G	G	0	A	A	5	G	G	R	R	B	B
NP	NEAR/SIDE PEDESTRIAN	G	G	0	R	R	0	G	G	0	R	R	3	G	G	R	R	B	B
P	PEDESTRIAN	G	G	0	R	R	0	G	G	0	B	B	PBT	G	G	R	R	B	B
PP	PELICAN PEDESTRIAN	R	R	0	B	G	3	G	G	0	B	G	0.1	G	G	R	R	B	B
PT	PELICAN TRAFFIC	B	A	5	A	A	3	B	A	6	A	A	3	G	G	R	R	B	B
T	TRAFFIC	G	G	0	A	A	3	R,A	R,A	2	A	A	3	G	G	R	R	B	B
W	WIG-WAG	A	A	5	B	B	0	A	A	5	B	B	0	R	G	B	B	B	B

Stage data

Stream 1		Start-up stage no.	2
Stage	Active phases		
0	DA		
1	A		
2	B		
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Stream 2		Start-up stage no.	2
Stage	Active phases		
0	DB		
1	D,E		
2	D,F		
3	C,F		
4	C,E		
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Mode data

Stream 1		Starting intergreen duration	9.0
Mode	Priority no.	All red extension auto to max	
C.L.F.	6	No	
PSV emergency			
Hurry Call 1	4	No	
Hurry Call 2	5	No	
Hurry Call 3			
Hurry Call 4			
LRT			
Manual	1	No	
Manual FT	2	Yes	
MOVA			
Normal - VA	7	No	
PSV priority			
Part time			
UTC	3	No	
Phase demands to be inserteted on start-up and when leaving manual or fixed time modes			
A,B			

Stream 2		Starting intergreen duration	9.0
Mode	Priority no.	All red extension auto to max	
C.L.F.	6	No	
PSV emergency			
Hurry Call 1	4	No	
Hurry Call 2	5	No	
Hurry Call 3			
Hurry Call 4			
LRT			
Manual	1	No	
Manual FT	2	Yes	
MOVA			
Normal - VA	7	No	
PSV priority			
Part time			
UTC	3	No	
Phase demands to be inserteted on start-up and when leaving manual or fixed time modes			
C,D,E,F			

Part time and hurry call mode data

Stream 1							
Part time mode data							
Switch-off stage		Part-time hold duration	0H	Part-time prevent duration	0H	Part-time queue detector(s)	

Hurry call mode data

Hurry call no.	Call stage	Request detector(s)	Cancel detector(s)	Output name	Delay period	Hold period	Prevent period
1	1	AQHC		N/A	0.0	10.0	0.0
2	2	BINHC		N/A	0.0	10.0	0.0
3				N/A	0.0	0.0	0.0
4				N/A	0.0	0.0	0.0

Stream 2							
Part time mode data							
Switch-off stage		Part-time hold duration	0H	Part-time prevent duration	0H	Part-time queue detector(s)	

Hurry call mode data

Hurry call no.	Call stage	Request detector(s)	Cancel detector(s)	Output name	Delay period	Hold period	Prevent period
1	2	DINHC		N/A	0.0	10.0	0.0
2	2	FINHC		N/A	0.0	10.0	0.0
3				N/A	0.0	0.0	0.0
4				N/A	0.0	0.0	0.0

Manual mode data

Manual button no.	Stage number for each stream								Street name(s)
	1	2	3	4	5	6	7	8	
All red	0	0							ALL RED
1	2	2							GYRATORIES
2	1	2							M42 OFF / GYRATORY
3	2	3							M42 OFF GYRATORY / A5 WB / TRINITY RD GYRATORY
4	1	1							M42 OFF / A5 GYRATORY / TRINITY ROAD
5	0	4							STREAM 1 ALL RED / A5 WB / TRINITY ROAD
6	0	2							STREAM 1 ALL RED / STREAM 2 GYRATORIES
7									
8									
9									
10									

Button no. for inital manual stage set	1	Streams that must be in manual mode together	

UTC general data, confirm bit data & SF/LO qualification periods

UTC General data

UTC option	1 (MCE 0105/0106)
TF Reset time	00:00:00
Use serial interface for UTC	False
UTC active state	Short circuit

Stream linking options

1	2	3	4	5	6	7	8
U	U	U	U	U	U	U	U

Sync confirm times	
RT reply bit	3
SR reply bit	3

Time sync data	
Day type	ANY
Reference time	12:00:00
Repeat rate	24H
Window time	24H

UTC confirm data

Stream	Confirm bit(s) to be used for manual mode running on stream	Confirm bit(s) to be used for fixed time running on stream
1		
2		
3		
4		
5		
6		
7		
8		

Controller state	Confirm bit(s) to be used for controller state
Manual mode selected	
Signals off failed	
Signals off manually	
Detectors fault	
Controller fault	
Controller warning	
Manual fixed time selected	

SF/LO qualification periods

L01	10.0	L02	10.0	L03	10.0	L04	10.0	L05	10.0	L06	10.0	L07	10.0	L08	10.0
SF01	7.0	SF02	7.0	SF03	7.0	SF04	7.0	SF05	7.0	SF06	7.0	SF07	7.0	SF08	7.0
SF09	7.0	SF10	7.0	SF11	7.0	SF12	7.0	SF13	7.0	SF14	7.0	SF15	7.0	SF16	7.0

UTC force bits

Force bit	Phase demands to be considered for demand depended stages	Required phase extensions	Stage to force in each stream							
			1	2	3	4	5	6	7	8
F01			1							
F02			2							
F03			2							
F04				1						
F05				2						
F06				3						
F07				4						
F08				2						

UTC (stream/stage) confirm data

Stage no.	Stream							
	1	2	3	4	5	6	7	8
00								
01	G1	G4						
02	G2	G5						
03		G6						
04		G7						
05								
06								
07								
08								
09								
10								
11								
12								
13								
14								
15								

UTC control/reply bit - stage stream associations

Control/ reply bit	Associated bit id per stream							
	1	2	3	4	5	6	7	8
FC								
FGR								
FM								
GO								
HC								
LL								
LO								
LRTI								
LRTR								
TOR								

UTC demand bits (DX Bits)

DX Bit	Latched stage demands	Unlatched stage demands	Latched phase demands	Unlatched phase demands	Phase extension demands
DX1					
DX2					
DX3					
DX4					
DX5					
DX6					
DX7					
DX8					

UTC demand bits (D Bits)

D Bit	Latched stage demands	Unlatched stage demands	Latched phase demands	Unlatched phase demands	Phase extensiob demands
D1					
D2					
D3					
D4					
D5					
D6					
D7					
D8					
D9					
D10					
D11					
D12					
D13					
D14					
D15					
D16					
D17					
D18					
D19					
D20					
D21					
D22					
D23					
D24					
D25					
D26					
D27					
D28					
D29					
D30					
D31					
D32					

UTC demand reply bits (SD Bits)

SD Bit name	Stage demands to reply	Phase demands to reply
SD1		
SD2		
SD3		
SD4		
SD5		
SD6		
SD7		
SD8		
SD9		
SD10		
SD11		
SD12		
SD13		
SD14		
SD15		
SD16		
SD17		
SD18		
SD19		
SD20		
SD21		
SD22		
SD23		
SD24		
SD25		
SD26		
SD27		
SD28		
SD29		
SD30		
SD31		
SD32		

UTC timeout data and local link inhibit data

UTC Timeout data

	UTC bits									
	F	D	DX	SF	FM	LO	GO	LL	LRTI	PV
Timeout duration	300	0	0	0	0	0	0	0	0	500
No timeouts allowed	False	True	True	True	True	True	True	True	True	True

UTC local link inhibit data

LL Bits	Phases
LL01	
LL02	
LL03	
LL04	
LL05	
LL06	
LL07	
LL08	

FT and VA mode

Stream 1																
FT mode data													Normal FT or VA to max			VA
From stage	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Stage time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
To stage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demad dependant phases during VA to max				DA												
VA mode data																
Arterial reversion to stage/phase				2	VA stage selection option required					Near						

Stream 2																
FT mode data													Normal FT or VA to max			VA
From stage	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Stage time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
To stage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demad dependant phases during VA to max				DB												
VA mode data																
Arterial reversion to stage/phase				2	VA stage selection option required					Near						

CLF mode data

Plan 1																					Delay time	0	Cycle time	90
Group no.	Stream 1			Stream 2			Stream 3			Stream 4			Stream 5			Stream 6			Stream 7			Stream 8		
	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0
	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage
1	0	IM	2	0	IM	3																		
2	6	PX	1	4	PX	2																		
3	12	IM	1	15	IM	2																		
4	30	PX	2	48	PX	1																		
5	35	IM	2	57	DM	1																		
5				58	HS																			
0				71	PX	3																		
0				76	IM	3																		

Plan 2																					Delay time	0	Cycle time	90
Group no.	Stream 1			Stream 2			Stream 3			Stream 4			Stream 5			Stream 6			Stream 7			Stream 8		
	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0
	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage
1	0	IM	2	0	IM	3																		
2	10	PX	1	26	PX	2																		
3	19	IM	1	36	IM	2																		
4	38	PX	2	63	PX	1																		
5	42	IM	2	67	DM	1																		
5				73	HS																			
0				77	PX	3																		
0				86	IM	3																		

Plan 3																					Delay time	0	Cycle time	80
Group no.	Stream 1			Stream 2			Stream 3			Stream 4			Stream 5			Stream 6			Stream 7			Stream 8		
	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0
	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage
1	0	PX	2	0	PX	3																		
2	2	IM	2	1	IM	3																		
3	45	PX	1	25	PX	2																		
4	49	IM	1	30	IM	2																		
5	70	PX	2	52	PX	1																		
5				66	DM	1																		
0				68	HS																			
0				72	PX	3																		

CLF mode data

Plan 4																	Delay time		0		Cycle time		60	
Group no.	Stream 1			Stream 2			Stream 3			Stream 4			Stream 5			Stream 6			Stream 7			Stream 8		
	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0
	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage
1	0	IM	1	0	IM	3																		
2	2	PX	2	10	PX	2																		
3	6	IM	2	15	IM	2																		
4	45	PX	1	35	PX	1																		
5	50	IM	1	38	DM	1																		
5				39	HS																			
0				48	PX	3																		
0				52	IM	3																		

Plan 5																	Delay time		0		Cycle time		80	
Group no.	Stream 1			Stream 2			Stream 3			Stream 4			Stream 5			Stream 6			Stream 7			Stream 8		
	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0
	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage
1	0	IM	1	0	IM	3																		
2	4	PX	2	20	PX	2																		
3	8	IM	2	29	IM	2																		
4	60	PX	1	52	PX	1																		
5	67	IM	1	56	DM	1																		
5				60	HS																			
0				65	PX	3																		
0				74	IM	3																		

Plan 6																	Delay time		0		Cycle time		80	
Group no.	Stream 1			Stream 2			Stream 3			Stream 4			Stream 5			Stream 6			Stream 7			Stream 8		
	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0	Offset time		0
	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage	Start time	Inf	Stage
1	0	IM	2	0	IM	3																		
2	8	PX	1	18	PX	2																		
3	15	IM	1	27	IM	2																		
4	32	PX	2	50	PX	1																		
5	36	IM	2	54	DM	1																		
5				58	HS																			
0				63	PX	3																		
0				71	IM	3																		

Minimum intergreen durations

From phs.	To phase							
	A	B	C	D	E	F	DA	DB
A		7					3	
B	6						3	
C				7				3
D			6					3
E						7		3
F					6			3
DA	2	2						
DB			2	2	2	2		

Intergreen Minimum limit values

From phs.	To phase							
	A	B	C	D	E	F	DA	DB
A		5					3	
B	5						3	
C				5				3
D			5					3
E						5		3
F					5			3
DA	2	2						
DB			2	2	2	2		

Phase delay data

Delay No.	Losing stage	Gaining stage	Delay phase	Delay period
1	3	1	F	5

Detector data 1

							Detector set					Green extension(s)		
Det. name	Det. type	Dummy	Vis. unit no.	Active state	Count det.	Self reset	Gap period	Gap count	Self confirm	Latched phase demand(s)	Unlatched phase demand(s)	Phase	Taper %	Varimax phases
TO1	NM	No		SC	No	No	0.5	15	No				100	
TO2	NM	No		SC	No	No	0.5	15	No				100	
LSL1	NM	No		SC	No	No	0.5	15	No	DB		DB(1.6)	100	
AQ2	NM	No		SC	No	No	0.5	15	No				100	
AIN3	NM	No		SC	No	No	0.5	15	No				100	
AIN4	NM	No		SC	No	No	0.5	15	No				100	
AX5	NM	No		SC	No	No	0.5	15	No	A		A(4.0)	100	
AX6	NM	No		SC	No	No	0.5	15	No	A		A(4.0)	100	
AX7	NM	No		SC	No	No	0.5	15	No	A		A(4.0)	100	
ASL8A	NM	No		SC	No	No	0.5	15	No	A		A(0.6)	100	
ASL8B	NM	No		SC	No	No	0.5	15	No	A		A(0.6)	100	
ASL8C	NM	No		SC	No	No	0.5	15	No	A		A(0.6)	100	
BIN10	NM	No		SC	No	No	0.5	15	No				100	
BIN11	NM	No		SC	No	No	0.5	15	No				100	
BIN12	NM	No		SC	No	No	0.5	15	No				100	
BX13	NM	No		SC	No	No	0.5	15	No	B		B(4.0)	100	
BX14	NM	No		SC	No	No	0.5	15	No	B		B(4.0)	100	
BX15	NM	No		SC	No	No	0.5	15	No	B		B(4.0)	100	
BX16	NM	No		SC	No	No	0.5	15	No	B		B(4.0)	100	
CIN17	NM	No		SC	No	No	0.5	15	No				100	
CIN18	NM	No		SC	No	No	0.5	15	No				100	
CIN19	NM	No		SC	No	No	0.5	15	No				100	
CX20	NM	No		SC	No	No	0.5	15	No	C		C(3.5)	100	
CX21	NM	No		SC	No	No	0.5	15	No	C		C(3.5)	100	
CX22	NM	No		SC	No	No	0.5	15	No	C		C(3.5)	100	
CX23	NM	No		SC	No	No	0.5	15	No	C		C(3.5)	100	
CSL24A	NM	No		SC	No	No	0.5	15	No	C		C(0.6)	100	
CSL24B	NM	No		SC	No	No	0.5	15	No	C		C(0.6)	100	
CSL24C	NM	No		SC	No	No	0.5	15	No	C		C(0.6)	100	
CSL24D	NM	No		SC	No	No	0.5	15	No	C		C(0.6)	100	
DIN26	NM	No		SC	No	No	0.5	15	No				100	
DIN27	NM	No		SC	No	No	0.5	15	No				100	
DX28	NM	No		SC	No	No	0.5	15	No	D		D(3.5)	100	
DX29	NM	No		SC	No	No	0.5	15	No	D		D(3.5)	100	
DX30	NM	No		SC	No	No	0.5	15	No	D		D(3.5)	100	
DX31	NM	No		SC	No	No	0.5	15	No	D		D(3.5)	100	
SISPWR	NM	No		SC	No	No	0.5	15	No				100	

Detector data 1

							Detector set					Green extension(s)		
Det. name	Det. type	Dummy	Vis. unit no.	Active state	Count det.	Self reset	Gap period	Gap count	Self confirm	Latched phase demand(s)	Unlatched phase demand(s)	Phase	Taper %	Varimax phases
SISFLT	NM	No		SC	No	No	0.5	15	No				100	
W10MIN	NM	No		SC	No	No	0.5	15	No				100	
WRST	NM	No		SC	No	No	0.5	15	No				100	
MOVWST	NM	No		SC	No	No	0.5	15	No				100	
EIN32	NM	No		SC	No	No	0.5	15	No				100	
EX33	NM	No		SC	No	No	0.5	15	No	E		E(4.0)	100	
EX34	NM	No		SC	No	No	0.5	15	No	E		E(4.0)	100	
ESL35	NM	No		SC	No	No	0.5	15	No	E		E(0.6)	100	
ESL36	NM	No		SC	No	No	0.5	15	No	E		E(0.6)	100	
FIN37	NM	No		SC	No	No	0.5	15	No				100	
FIN38	NM	No		SC	No	No	0.5	15	No				100	
FIN39	NM	No		SC	No	No	0.5	15	No				100	
FX40	NM	No		SC	No	No	0.5	15	No	F		F(3.5)	100	
FX41	NM	No		SC	No	No	0.5	15	No	F		F(3.5)	100	
FX42	NM	No		SC	No	No	0.5	15	No	F		F(3.5)	100	
FX43	NM	No		SC	No	No	0.5	15	No	F		F(3.5)	100	
CINHC	NM	Yes		SC	No	No	0.5	15	No				100	
AQHC	NM	Yes		SC	No	No	0.5	15	No				100	
DINHC	NM	Yes		SC	No	No	0.5	15	No				100	
BINHC	NM	Yes		SC	No	No	0.5	15	No				100	
FINHC	NM	Yes		SC	No	No	0.5	15	No				100	

Detector data 2

	DFM Timings								DFM foce states		Call/cancel timings								Associated to ped.		
	DFA				DFI						DCL				DCN						
Det. name	Set 1	Set 2	Set 3	Set 4	Set 1	Set 2	Set 3	Set 4	Active	Inactive	Set 1	Set 2	Set 3	Set 4	Set 1	Set 2	Set 3	Set 4	Phase	Extn.	Push Buttons
TO1									N	N									-	-	-
TO2	5M	5M	5M	5M					N	N									-	-	-
LSL1	5M	5M	5M	5M					I	N									-	-	-
AQ2	5M	5M	5M	5M					I	N	15.0	15.0	15.0	15.0					-	-	-
AIN3	30M	30M	30M	30M	18H	18H	18H	18H	N	N									-	-	-
AIN4	30M	30M	30M	30M	18H	18H	18H	18H	N	N									-	-	-
AX5	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
AX6	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
AX7	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
ASL8A	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
ASL8B	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
ASL8C	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
BIN10	5M	5M	5M	5M					I	N	15.0	15.0	15.0	15.0					-	-	-
BIN11	5M	5M	5M	5M					I	N	15.0	15.0	15.0	15.0					-	-	-
BIN12	5M	5M	5M	5M					I	N	15.0	15.0	15.0	15.0					-	-	-
BX13	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
BX14	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
BX15	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
BX16	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
CIN17	30M	30M	30M	30M	18H	18H	18H	18H	N	N	15.0	15.0	15.0	15.0					-	-	-
CIN18	30M	30M	30M	30M	18H	18H	18H	18H	N	N	15.0	15.0	15.0	15.0					-	-	-
CIN19	30M	30M	30M	30M	18H	18H	18H	18H	N	N	15.0	15.0	15.0	15.0					-	-	-
CX20	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
CX21	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
CX22	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
CX23	30M	30M	30M	30M	18H	18H	18H	18H	N	N									-	-	-
CSL24A	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
CSL24B	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
CSL24C	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
CSL24D	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
DIN26	5M	5M	5M	5M					I	N	15.0	15.0	15.0	15.0					-	-	-
DIN27	5M	5M	5M	5M					I	N	15.0	15.0	15.0	15.0					-	-	-
DX28	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
DX29	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
DX30	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
DX31	30M	30M	30M	30M	18H	18H	18H	18H	A	A									-	-	-
SISPWR									N	N	0	0	0	0	0	0	0	0	-	-	-

Detector data 2

	DFM Timings								DFM foce states		Call/cancel timings								Associated to ped.		
	DFA				DFI						DCL				DCN						
Det. name	Set 1	Set 2	Set 3	Set 4	Set 1	Set 2	Set 3	Set 4	Active	Inactive	Set 1	Set 2	Set 3	Set 4	Set 1	Set 2	Set 3	Set 4	Phase	Extn.	Push Buttons
SISFLT									N	N	0	0	0	0	0	0	0	0	-	-	-
W10MIN									N	N									-	-	-
WRST									N	N									-	-	-
MOVWST									A	A									-	-	-
EIN32	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
EX33	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
EX34	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
ESL35	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
ESL36	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
FIN37	5M	5M	5M	5M					I	N	15	15	15	15	0	0	0	0	-	-	-
FIN38	5M	5M	5M	5M					I	N	15	15	15	15	0	0	0	0	-	-	-
FIN39	5M	5M	5M	5M					I	N	15	15	15	15	0	0	0	0	-	-	-
FX40	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
FX41	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
FX42	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
FX43	30M	30M	30M	30M	18H	18H	18H	18H	A	A	0	0	0	0	0	0	0	0	-	-	-
CINHC									N	N	0	0	0	0	0	0	0	0	-	-	-
AQHC									N	N									-	-	-
DINHC									N	N									-	-	-
BINHC									N	N									-	-	-
FINHC									N	N	0	0	0	0	0	0	0	0	-	-	-

Timetable entry data

No.	Day type	Time	Event list	Priorities
1	WKD	07:00:00	11	1
2	WKD	09:30:00	12	1
3	WKD	16:00:00	13	1
4	WKD	18:30:00	14	1
5	SAT	09:00:00	12	1
6	SAT	17:00:00	14	1
7	SUN	10:00:00	12	1
8	SUN	19:00:00	14	1
9	XSU	07:00:00	1	1
10	XSU	09:30:00	3	1
11	XSU	15:30:00	2	1
12	XSU	18:30:00	3	1

Timetable event list data

List no.	Event Action 1		Event Action 2		Event Action 3		Event Action 4		Event Action 5		Event Action 6		Event Action 7		Event Action 8	
	Type	Params	Type	Params	Type	Params	Type	Params	Type	Params	Type	Params	Type	Params	Type	Params
1	TCF	1														
2	TCF	2														
3	TCF	3														
4	TCF	4														
5	TCF	5														
6	TCF	6														
7	TCF	7														
8	TCF	8														
9	TCF	9														
10	TCF	OFF														
11	TTS	1														
12	TTS	2														
13	TTS	3														
14	TTS	4														
15	TTS	5														
16	TTS	6														
17	TTS	7														
18	TTS	8														

Timetable priorities data

Priority level 1. All year round					
Start			End		
Month	Day	Hour	Month	Day	Hour
Jan	1	0	Dec	31	24

Special conditioning timer data

Timer no.	Timer name	Duration	Fixed	Comment
1	CR1TOG	2.0	No	CRB1 TOGGLE TIME
2	CR1DLY	180.0	No	CRB1 TOGGLE DELAY TIME
3	CR1DUR	600.0	No	CRB1 TOGGLE DURATION TIME
4	CR2TOG	2.0	No	CRB2 TOGGLE TIME
5	CR2DLY	180.0	No	CRB2 TOGGLE DELAY TIME
6	CR2DUR	600.0	No	CRB2 TOGGLE DURATION TIME
7	ERST	2.0	No	EAST SIDE RESET PULSE
8	ADLYC	5.0	No	DELAY AFTER PHASE A HAS ROW BEFORE CALL PULSE TO STREAM 2
9	APULC	2.0	No	PULSE TIMER FOLLWOING ADLYC TIMER
10	ADLYH	7.0	No	DELAY AFTER PHASE A HAS ROW BEFORE HOLD TO STREAM 2
11	AHLDH	5.0	No	MINIMUM HOLD TIMER FOLLOWING ADLYH TIMER
12	ATRMH	8.0	No	DELAY FOLLOWING TERMINATION OF HOLD
13	AOVRH	60.0	No	HOLD OUTPUT OVERIDE
14	BDLYC	5.0	No	DELAY AFTER PHASE B HAS ROW BEFORE CALL PULSE TO STREAM 2
15	BPULC	2.0	No	PULSE TIMER FOLLOWING BDLYC TIMER
16	BDLYH	7.0	No	DELAY AFTER PHASE B HAS ROW BEFORE HOLD TO STREAM 2
17	BHLDH	5.0	No	MINIMUM HOLD TIMER FOLLOWING BDLYH TIMER
18	BTRMH	8.0	No	DELAY FOLLOWING TERMINATION OF HOLD
19	BOVRH	60.0	No	HOLD OUTPUT OVERIDE
20	CDLYC	5.0	No	DELAY AFTER PHASE C HAS ROW BEFORE CALL PULSE TO STREAM 1
21	CPULC	2.0	No	PULSE TIMER FOLLOWING CDLYC TIMER
22	CDLYH	7.0	No	DELAY AFTER PHASE C HAS ROW BEFORE HOLD TO STREAM 1
23	CHLDH	5.0	No	MINIMUM HOLD TIMER FOLLOWING CDLYH TIMER
24	CTRMH	8.0	No	DELAY FOLLOWING TERMINATION OF HOLD
25	COVRH	60.0	No	HOLD OUTPUT OVERIDE
26	DDLYC	5.0	No	DELAY AFTER PHASE D HAS ROW BEFORE CALL PULSE TO STREAM 1
27	DPULC	2.0	No	PULSE TIMER FOLLOWING DDLYC TIMER
28	DDLYH	7.0	No	DELAY AFTER PHASE D HAS ROW BEFORE HOLD TO STREAM 1
29	DHLDH	5.0	No	MINIMUM HOLD TIMER FOLLOWING DDLYH TIMER
30	DTRMH	8.0	No	DELAY FOLLOWING TERMINATION OF HOLD
31	DOVRH	60.0	No	HOLD OUTPUT OVERIDE
32	EFDLYC	5.0	No	DELAY AFTER PHASE F HAS ROW BEFORE CALL PULSE TO EAST CONTR.
33	EFPULC	2.0	No	PULSE TIMER FOLLOWING EFDLYC TIMER
34	EFDLYH	7.0	No	DELAY AFTER PHASE F HAS ROW BEFORE HOLD TO EAST CONTR.
35	EFHLDH	5.0	No	MINIMUM HOLD TIMER FOLLOWING EFDLYH TIMER
36	EFTRMH	12.0	No	DELAY FOLLOWING TERMINATION OF HOLD
37	EFOVRH	60.0	No	HOLD OUTPUT OVERIDE
38	EEDLYC	5.0	No	DELAY AFTER PHASE E HAS ROW BEFORE CALL PULSE TOWEST CONTR.
39	EEPULC	2.0	No	PULSE TIMER FOLLOWING EEDLYC TIMER

Special conditioning timer data

Timer no.	Timer name	Duration	Fixed	Comment
40	EEDLYH	7.0	No	DELAY AFTER PHASE E HAS ROW BEFORE HOLD TO WEST CONTR.
41	EEHLDH	5.0	No	MINIMUM HOLD TIMER FOLLOWING EDDLYH TIMER
42	EETRMH	8.0	No	DELAY FOLLOWING TERMINATION OF HOLD
43	EEOVRH	60.0	No	HOLD OUTPUT OVERIDE
44	SPARE	0.0	No	NOT USED
45	SW3PUL	1.0	No	AUX 3 SWITCH PULSE TIMER - USED BY CONDITIONING
46	F2OVR	280.0	No	UTC F2 OVERIDE TIMER
47	F5OVR	280.0	No	UTC F5 OVERIDE TIMER
48	F2PUL	0.5	No	UTC F2 INHIBIT PULSE TIMER
49	F5PUL	0.5	No	UTC F2 INHIBIT PULSE TIMER
50	AHCPUL	2.0	No	AIN MOVA HURRY CALL PULSE TIMER
51	BHCPUL	2.0	No	BIN MOVA HURRY CALL PULSE TIMER
52	CHCPUL	2.0	No	CIN MOVA HURRY CALL PULSE TIMER
53	DHCPUL	2.0	No	DIN MOVA HURRY CALL PULSE TIMER
54	FHCPUL	2.0	No	FIN MOVA HURRY CALL PULSE TIMER
55	AHCINHB	180	No	AIN HURRYCALL INHIBIT TIMER
56	BHCINHB	180	No	BIN HURRYCALL INHIBIT TIMER
57	CHCINHB	180	No	CIN HURRYCALL INHIBIT TIMER
58	DHCINHB	180	No	DIN HURRYCALL INHIBIT TIMER
59	FHCINHB	180	No	FIN HURRYCALL INHIBIT TIMER

Special conditioning statements

Statement 1

Comments	PHASE C ACTIVE SETS OUTPUT GC
If	PHASE-C
Then	OUTPUTA-GC
Else	OUTPUTN-GC

Statement 2

Comments	PHASE D ACTIVE SETS OUTPUT GD
If	PHASE-D
Then	OUTPUTA-GD
Else	OUTPUTN-GD

Statement 3

Comments	PHASE E ACTIVE SETS OUTPUT GE
If	PHASE-E
Then	OUTPUTA-GE
Else	OUTPUTN-GE

Statement 4

Comments	PHASE F ACTIVE SETS OUTPUT GF
If	PHASE-F
Then	OUTPUTA-GF
Else	OUTPUTN-GF

Statement 5

Comments	UTC mode inactive starts CR1TOG and CR1DLY timers, else stops CRB1DLY timer.		
If	UTCMODE-1	**Not**	
Then	SCTSTART-CR1TOG	SCTSTART-CR1DLY	
Else	SCTSTOP-CR1DLY		

Statement 6

Comments STATEMENT 5 TRUE AND NOT IN FT, MANUAL MODES, CLF (SW5), VA(SW4) OR SW3PUL TIMER ACTIVE OR DET ERST ACTIVE START CR1DUR TIMER

If	MFTMODE-1	**Or**	MANMODE-1	**Or**	MANIP-SW4	**Or**	MANIP-SW5	**Not and**	STMNT-5
And not	SCTRUNNG-SW3PUL	**And not**	FDET-WRST						
Then	SCTSTART-CR1DUR								
Else	SCTSTOP-CR1DUR								

Special conditioning statements

Statement 7

Comments CR1DLY timer expired and UTC mode still inactive starts CR1TOG and CR1DLY timers.

If	SCTEXPRD-CR1DLY	**And not**	UTCMODE-1
Then	SCTSTART-CR1TOG	SCTSTART-CR1DLY	

Statement 8

Comments MOVA INHIBIT/CLF INHIBIT SWITCH: VA BUTTON (SW4) SEE LATER STATEMENT FOR MOVA INHIBIT

If	MANIP-SW4	
Then	CLFINHIB-1	CLFINHIB-2
Else	CLFALLOW-1	CLFALLOW-2

Statement 9

Comments CRB1 OUTPUT

If	MSDMODE-1	**Or**	SHDMODE-1	**Or**	MFTMODE-1	**Or**	MANMODE-1	**Or**	STUMODE-1
Or	SCTRUNNG-CR1TOG	**Or**	MANIP-SW4	**Or**	SCFLAG-10	**Or**	FDET-W10MIN	**Or**	MANIP-SW5
Then	OUTPUTA-CRB1								
Else	OUTPUTN-CRB1								

Statement 10

Comments TIMER CR1DUR OR CR2DUR EXPIRED SETS FLAG 10 ACTIVE

If	SCTEXPRD-CR1DUR	**Or**	SCTEXPRD-CR2DUR
Then	SCFLGON-10		

Statement 11

Comments MANUAL PANEL SW3 ACTIVE OR DET WRST ACTIVE CLEARS FLAG

If	MANIP-SW3	**Or**	FDET-WRST
Then	SCFLGOFF-10		

Statement 12

Comments UTC ACTIVE STREAM 2 STARTS CR2TOG AND CR2DLY TIMERS

If	UTCMODE-2	**Not**
Then	SCTSTART-CR2TOG	SCTSTART-CR2DLY
Else	SCTSTOP-CR2DLY	

Special conditioning statements

Statement 13

Comments STATEMENT 5 TRUE AND NOT IN FT OR MANUAL MODES OR SW3PUL TIMER ACTIVE OR DET ERST ACTIVE START CR2DUR TIMER

If	MANMODE-2	**Or**	MFTMODE-2	**Or**	MANIP-SW4	**Or**	MANIP-SW5	**Not and**	STMNT-12
And not	SCTRUNNG-SW3PUL	**And not**	FDET-WRST						
Then	SCTSTART-CR2DUR								
Else	SCTSTOP-CR2DUR								

Statement 14

Comments CR2DLY TIMER EXPIRED AND NOT IN UTCMODE STREAM 2 STARTS CR2TOG AND CR2DLY TIMERS

If	SCTEXPRD-CR2DLY	**And not**	UTCMODE-2
Then	SCTSTART-CR2TOG	SCTSTART-CR2DLY	

Statement 15

Comments CRB2 OUTPUT

If	MANMODE-2	**Or**	MFTMODE-2	**Or**	SHDMODE-2	**Or**	MSDMODE-2	**Or**	STUMODE-2
Or	SCTRUNNG-CR2TOG	**Or**	MANIP-SW4	**Or**	SCFLAG-10	**Or**	FDET-W10MIN	**Or**	MANIP-SW5
Then	OUTPUTA-CRB2								
Else	OUTPUTN-CRB2								

Statement 16

Comments FLAG 10 ACTIVE LIGHTS AUX3 LED

If	SCFLAG-10	
Then	MPLEDON-AUX3	OUTPUTA-E10MIN

Statement 17

Comments DET W10MIN ACTIVE AND NOT FLAG 10 SET FLASES AUX3 LED.

If	FDET-W10MIN	**And not**	SCFLAG-10
Then	MPLEDFLS-AUX3		

Statement 18

Comments STATEMENT 16 OR 17 NOT TRUE CLEARS AUX3 LED

If	STMNT-16	**Or**	STMNT-17	**Not**
Then	MPLEDOFF-AUX3	OUTPUTN-E10MIN		

Statement 19

Comments UTC STREAM 1 AND DET MOVEST NOT ACTIVE FLASHES AUX 1 LED

If	UTCMODE-1	**And not**	FDET-MOVWST
Then	MPLEDFLS-AUX1		

Special conditioning statements

Statement 20

Comments	UTC STREAM 1 AND DET MOVEST ACTIVE LIGHTS AUX 1 LED

If UTCMODE-1 **And** FDET-MOVWST
Then MPLEDON-AUX1

Statement 21

Comments	STATEMENT 19 OR 20 NOT TRUE CLEARS AUX 1 LED

If STMNT-19 **Or** STMNT-20 **Not**
Then MPLEDOFF-AUX1

Statement 22

Comments	UTC MODE STREAMS 1 AND 2 SETS MOVEST OUTPUT ACTIVE

If UTCMODE-1 **And** UTCMODE-2
Then OUTPUTA-MOVEST
Else OUTPUTN-MOVEST

Statement 23

Comments	SW3PUL ACTIVE STARTS ERST TIMER

If SCTRUNNG-SW3PUL
Then SCTSTART-ERST

Statement 24

Comments	ERST TIMER ACTIVE SETS WRST OUTPUT ACTIVE

If SCTRUNNG-ERST
Then OUTPUTA-ERST
Else OUTPUTN-ERST

Statement 25

Comments	NOT USED

If

Statement 26

Comments	UTC MODE STREAM 1 SETS MOVA1 OUTPUT

If UTCMODE-1
Then OUTPUTA-MOVA1
Else OUTPUTN-MOVA1

Special conditioning statements

Statement 27

Comments	UTC MODE STREAM 2 SETS MOVA2 OUTPUT

If UTCMODE-2

Then OUTPUTA-MOVA2

Else OUTPUTN-MOVA2

Statement 28

Comments	NOT USED

If

Statement 29

Comments	MOVA STREAM 1 TO BIT

If MANIP-SW4 **Or** MANIP-SW5 **Not and** FDET-TO1

Then UTCN-1

Else UTCI-1

Statement 30

Comments	MOVA STREAM 2 TO BIT

If MANIP-SW4 **Or** MANIP-SW5 **Not and** FDET-TO2

Then UTCN-2

Else UTCI-2

Statement 31

Comments	PHASE A ACTIVE STARTS TIMERS ADLYC AND ADLYH

If PHASE-A

Then SCTSTART-ADLYC SCTSTART-ADLYH

Statement 32

Comments	TIMER ADLYC EXPIRED STARTS APULC TIMER

If SCTEXPRD-ADLYC

Then SCTSTART-APULC

Statement 33

Comments	APULC TIMER ACTIVE SETS OUTPUT

If SCTRUNNG-APULC

Then OUTPUTA-ST2D44C

Else OUTPUTN-ST2D44C

Special conditioning statements

Statement 34

Comments	TIMER ADLYH EXPIRED AND PHASE A ACTIVE SETS OUTPUT AND STARTS TIMERS AHLDH AND AOVRH

If SCTEXPRD-ADLYH **And** PHASE-A

Then OUTPUTA-ST2D45H SCTSTART-AHLDH SCTSTART-AOVRH

Statement 35

Comments	AHLDH TIMER EXPIRED SETS FLAG 1

If SCTEXPRD-AHLDH

Then SCFLGON-1

Statement 36

Comments	FLAG 1 SET AND NO EXTENSIONS ON PHASE A OR SCBIT 1 SET STARTS ATRMH TIMER

If SCFLAG-1 **And not** PHSEXT-A **And not** SCBITS-1

Then SCTSTART-ATRMH

Statement 37

Comments	ATRMH TIMER NOT ACTIVE AND NOT PHASE A AND FLAG 1 ACTIVE STARTS ATRMH TIMER

If Not SCTRUNNG-ATRMH **And not** PHASE-A **And** SCFLAG-1

Then SCTSTART-ATRMH

Statement 38

Comments	ATRMH TIMER ACTIVE OR AOVRH TIMER ACTIVE CLEARS OUTPUT AND CLEARS FLAG 1

If SCTEXPRD-ATRMH **Or** SCTEXPRD-AOVRH

Then OUTPUTN-ST2D45H SCFLGOFF-1

Statement 39

Comments	PHASE B ACTIVE STARTS TIMERS BDLYC AND BDLYH

If PHASE-B

Then SCTSTART-BDLYC SCTSTART-BDLYH

Statement 40

Comments	TIMER BDLYC EXPIRED STARTS BPULC TIMER

If SCTEXPRD-BDLYC

Then SCTSTART-BPULC

Special conditioning statements

Statement 41	
Comments	BPULC TIMER ACTIVE SETS OUTPUT

If SCTRUNNG-BPULC
Then OUTPUTA-ST2D46C
Else OUTPUTN-ST2D46C

Statement 42	
Comments	TIMER BDLYH EXPIRED AND PHASE B ACTIVE SETS OUTPUT AND STARTS TIMERS BHLDH AND BOVRH

If SCTEXPRD-BDLYH **And** PHASE-B
Then OUTPUTA-ST2D47H SCTSTART-BHLDH SCTSTART-BOVRH

Statement 43	
Comments	BHLDH TIMER EXPIRED SETS FLAG 1

If SCTEXPRD-BHLDH
Then SCFLGON-2

Statement 44	
Comments	FLAG 2 SET AND NO EXTENSIONS ON PHASE B OR SCBIT 1 SET STARTS BTRMH TIMER

If SCFLAG-2 **And not** PHSEXT-B **And not** SCBITS-2
Then SCTSTART-BTRMH

Statement 45	
Comments	BTRMH TIMER NOT ACTIVE AND NOT PHASE B AND FLAG 2 ACTIVE STARTS BTRMH TIMER

If Not SCTRUNNG-BTRMH **And not** PHASE-B **And** SCFLAG-2
Then SCTSTART-BTRMH

Statement 46	
Comments	BTRMH TIMER ACTIVE OR BOVRH TIMER ACTIVE CLEARS OUTPUT AND CLEARS FLAG 2

If SCTEXPRD-BTRMH **Or** SCTEXPRD-BOVRH
Then OUTPUTN-ST2D47H SCFLGOFF-2

Statement 47	
Comments	PHASE C ACTIVE STARTS TIMERS CDLYC AND CDLYH

If PHASE-C
Then SCTSTART-CDLYC SCTSTART-CDLYH

Special conditioning statements

Statement 48	
Comments	TIMER CDLYC EXPIRED STARTS CPULC TIMER

If SCTEXPRD-CDLYC
Then SCTSTART-CPULC

Statement 49	
Comments	CPULC TIMER ACTIVE SETS OUTPUT

If SCTRUNNG-CPULC
Then OUTPUTA-ST1A48C
Else OUTPUTN-ST1A48C

Statement 50	
Comments	TIMER CDLYH EXPIRED AND PHASE C ACTIVE SETS OUTPUT AND STARTS TIMERS CHLDH AND COVRH

If SCTEXPRD-CDLYH **And** PHASE-C
Then OUTPUTA-ST1A49H SCTSTART-CHLDH SCTSTART-COVRH

Statement 51	
Comments	CHLDH TIMER EXPIRED SETS FLAG 1

If SCTEXPRD-CHLDH
Then SCFLGON-3

Statement 52	
Comments	FLAG 3 SET AND NO EXTENSIONS ON PHASE C OR SCBIT 3 SET STARTS CTRMH TIMER

If SCFLAG-3 **And not** PHSEXT-C **And not** SCBITS-3
Then SCTSTART-CTRMH

Statement 53	
Comments	CTRMH TIMER NOT ACTIVE AND NOT PHASE C AND FLAG 3 ACTIVE STARTS CTRMH TIMER

If Not SCTRUNNG-CTRMH **And not** PHASE-C **And** SCFLAG-3
Then SCTSTART-CTRMH

Statement 54	
Comments	CTRMH TIMER ACTIVE OR COVRH TIMER ACTIVE CLEARS OUTPUT AND CLEARS FLAG 3

If SCTEXPRD-CTRMH **Or** SCTEXPRD-COVRH
Then OUTPUTN-ST1A49H SCFLGOFF-3

Special conditioning statements

Statement 55

Comments	PHASE D ACTIVE STARTS TIMERS DDLYC AND DDLYH

If PHASE-D
Then SCTSTART-DDLYC SCTSTART-DDLYH

Statement 56

Comments	TIMER DDLYC EXPIRED STARTS DPULC TIMER

If SCTEXPRD-DDLYC
Then SCTSTART-DPULC

Statement 57

Comments	DPULC TIMER ACTIVE SETS OUTPUT

If SCTRUNNG-DPULC
Then OUTPUTA-ST1B50C
Else OUTPUTN-ST1B50C

Statement 58

Comments	TIMER DDLYH EXPIRED AND PHASE D ACTIVE SETS OUTPUT AND STARTS TIMERS DHLDH AND DOVRH

If SCTEXPRD-DDLYH **And** PHASE-D
Then OUTPUTA-ST1B51H SCTSTART-DHLDH SCTSTART-DOVRH

Statement 59

Comments	DHLDH TIMER EXPIRED SETS FLAG 1

If SCTEXPRD-DHLDH
Then SCFLGON-4

Statement 60

Comments	FLAG 4 SET AND NO EXTENSIONS ON PHASE D OR SCBIT D SET STARTS DTRMH TIMER

If SCFLAG-4 **And not** PHSEXT-D **And not** SCBITS-4
Then SCTSTART-DTRMH

Statement 61

Comments	DTRMH TIMER NOT ACTIVE AND NOT PHASE D AND FLAG 4 ACTIVE STARTS DTRMH TIMER

If Not SCTRUNNG-DTRMH **And not** PHASE-D **And** SCFLAG-4
Then SCTSTART-DTRMH

Special conditioning statements

Statement 62

Comments	DTRMH TIMER ACTIVE OR DOVRH TIMER ACTIVE CLEARS OUTPUT AND CLEARS FLAG 4

If SCTEXPRD-DTRMH **Or** SCTEXPRD-DOVRH

Then OUTPUTN-ST1B51H SCFLGOFF-4

Statement 63

Comments	PHASE F GREEN STARTS TIMERS EFDLYC AND EFDLYH

If PHASE-F

Then SCTSTART-EFDLYC SCTSTART-EFDLYH

Statement 64

Comments	TIMER EFDLYC EXPIRED STARTS EFPULC TIMER

If SCTEXPRD-EFDLYC

Then SCTSTART-EFPULC

Statement 65

Comments	TIMER EFPULC RUNNING SETS OUTPUT ESBCALF

If SCTRUNNG-EFPULC

Then OUTPUTA-ESBCALF

Else OUTPUTN-ESBCALF

Statement 66

Comments	TIMER EFDLYH EXPIRED AND PHASE C GREEN SETS OUTPUT ESCHLD

If SCTEXPRD-EFDLYH **And** PHASE-F

Then OUTPUTA-ESBHLDF SCTSTART-EFHLDH SCTSTART-EFOVRH

Statement 67

Comments	EFHLDH TIMER EXPIRED SETS FLAG 5

If SCTEXPRD-EFHLDH

Then SCFLGON-5

Statement 68

Comments	FLAG 5 SET, NO EXTENSIONS PHASE F AND SCBITS-5 NOT SET

If SCFLAG-5 **And not** PHSEXT-F **And not** SCBITS-5

Then SCTSTART-EFTRMH

Special conditioning statements

Statement 69	
Comments	EFTRMH TIMER RUNNING AND NOT PHASE F GREEN AND FLAG 5 SET

If Not SCTRUNNG-EFTRMH **And not** PHASE-F **And** SCFLAG-5
Then SCTSTART-EFTRMH

Statement 70	
Comments	TIMER EFTRMH OR EFOVRH EXPIRED CLEAR ESBHLDF OUTPUT AND FLAG 5

If SCTEXPRD-EFTRMH **Or** SCTEXPRD-EFOVRH
Then OUTPUTN-ESBHLDF SCFLGOFF-5

Statement 71	
Comments	PHASE E GREEN STARTS EEDLYC TIMER AND EEDLYH TIMER

If PHASE-E
Then SCTSTART-EEDLYC SCTSTART-EEDLYH

Statement 72	
Comments	EEDLYC TIMER EXPIRED STARTS EEPULC TIMER

If SCTEXPRD-EEDLYC
Then SCTSTART-EEPULC

Statement 73	
Comments	EEPULC TIMER RUNNING SETS ESBCALE OUTPUT

If SCTRUNNG-EEPULC
Then OUTPUTA-ESBCALE
Else OUTPUTN-ESBCALE

Statement 74	
Comments	EEDLYH TIMER EXPIRED AND PHASE E ACTIVE SETS ESDHLD OUTPUT, STARTS TIMER EEHLDH AND TIMER EEOVRH

If SCTEXPRD-EEDLYH **And** PHASE-E
Then OUTPUTA-ESBHLDE SCTSTART-EEHLDH SCTSTART-EEOVRH

Statement 75	
Comments	EEHLDH TIMER EXPIRED SETS FLAG 6

If SCTEXPRD-EEHLDH
Then SCFLGON-6

Special conditioning statements

Statement 76

Comments	FLAG 6 SET NO PHASE EXTENSIONS PHASE E AND SCBIT 6 NOT SET STARTS EETRMH TIMER

If SCFLAG-6 **And not** PHSEXT-E **And not** SCBITS-6

Then SCTSTART-EETRMH

Statement 77

Comments	EETRMH TIMER NOT RUNNING AND NOT PHASE E GREEN AND FLAG 6 ACTIVE STARTS TIMER EETRMH

If Not SCTRUNNG-EETRMH **And not** PHASE-E **And** SCFLAG-6

Then SCTSTART-EETRMH

Statement 78

Comments	EDTRMH TIMER EXPIRED OR EDOVRH TIMER EXPIRED CLEARS ESDHLD OUTPUT AND CLEARS FLAG 6

If SCTEXPRD-EETRMH **Or** SCTEXPRD-EEOVRH

Then OUTPUTN-ESBHLDE SCFLGOFF-6

Statement 79

Comments	DETS BIN10, BIN11 OR BIN12 ACTIVE, TIMER HCINHB NOT RUNNING AND SCBIT 8 NOT SET STARTS BHCPUL TIMER

If FDET-BIN10 **Or** FDET-BIN11 **Or** FDET-BIN12 **And not** SCTRUNNG-BHCINHB **And not** SCBITS-8

Then SCTSTART-BHCPUL

Statement 80

Comments	DETS DIN23 OR DIN24 ACTIVE, TIMER HCINHB NOT RUNNING AND SCBITS-10 NOT SET STARTS DHCPUL TIMER

If FDET-DIN26 **Or** FDET-DIN27 **And not** SCTRUNNG-DHCINHB **And not** SCBITS-10

Then SCTSTART-DHCPUL

Statement 81

Comments	DETS AQ2, TIMER HCINHB NOT RUNNING AND SCBIT 7 NOT SET STARTS AHCPUL TIMER

If FDET-AQ2 **And not** SCTRUNNG-AHCINHB **And not** SCBITS-7

Then SCTSTART-AHCPUL

Statement 82

Comments	NOT USED

If

Special conditioning statements

Statement 83

Comments TIMER BHCPUL RUNNING SETS OUTPUT BHCAL AND DETECTOR BINHC ACTIVE

If	SCTRUNNG-BHCPUL		
Then	OUTPUTA-BHCAL57	DETA-BINHC	SCTSTART-BHCINHB
Else	OUTPUTN-BHCAL57	DETN-BINHC	

Statement 84

Comments TIMER DHCPUL RUNNING SETS OUTPUT DHCAL AND SETS DETECTOR DINHC ACTIVE

If	SCTRUNNG-DHCPUL		
Then	OUTPUTA-DHCAL59	DETA-DINHC	SCTSTART-DHCINHB
Else	OUTPUTN-DHCAL59	DETN-DINHC	

Statement 85

Comments TIMER AHCPUL RUNNING SETS OUTPUT AHCAL AND DETECTOR AQHC ACTIVE

If	SCTRUNNG-AHCPUL		
Then	OUTPUTA-AHCAL56	DETA-AQHC	SCTSTART-AHCINHB
Else	OUTPUTN-AHCAL56	DETN-AQHC	

Statement 86

Comments NOT USED

If

Statement 87

Comments DETS CIN17, CIN18 OR BIN19 ACTIVE, TIMER HCINHB NOT RUNNING AND SCBIT 9 NOT SET STARTS CHCPUL TIMER

If	FDET-CIN17	**Or**	FDET-CIN18	**Or**	FDET-CIN19	**And not**	SCTRUNNG-CHCINHB	**And not**	SCBITS-9
Then	SCTSTART-CHCPUL								

Statement 88

Comments DETS FIN37, BIN38 OR BIN39 ACTIVE, TIMER HCINHB NOT RUNNING AND SCBIT 11 NOT SET STARTS FHCPUL TIMER

If	FDET-FIN37	**Or**	FDET-FIN38	**Or**	FDET-FIN39	**And not**	SCTRUNNG-FHCINHB	**And not**	SCBITS-11
Then	SCTSTART-FHCPUL								

Statement 89

Comments TIMER CHCPUL RUNNING SETS OUTPUT CHCAL AND DETECTOR CINHC ACTIVE

If	SCTRUNNG-CHCPUL		
Then	OUTPUTA-CHCAL58	DETA-CINHC	SCTSTART-CHCINHB
Else	OUTPUTN-CHCAL58	DETN-CINHC	

Special conditioning statements

Statement 90

Comments	TIMER FHCPUL RUNNING SETS OUTPUT FHCAL AND DETECTOR FINHC ACTIVE

If	SCTRUNNG-FHCPUL		
Then	OUTPUTA-FHCAL60	DETA-FINHC	SCTSTART-FHCINHB
Else	OUTPUTN-FHCAL60	DETN-FINHC	

Statement 91

Comments	NOT USED

If

Statement 92

Comments	NOT USED

If

Statement 93

Comments	NOT USED

If

Statement 94

Comments	NOT USED

If

Statement 95

Comments	SHUTDOWN MODE SETS LE OUTPUT

If	SHDMODE-1	**Or**	SHDMODE-2	**Or**	MSDMODE-1	**Or**	MSDMODE-2
Then	OUTPUTA-LE						
Else	OUTPUTN-LE						

Statement 96

Comments	AUX 3 SWITCH PULSE CONDITIONING: IF SW3 ACTIVE START TIMER SW3PUL

If	MANIP-SW3
Then	SCTSTART-SW3PUL

Statement 97

Comments	AUX 3 SWITCH PULSE CONDITIONING: IF SW3 NOT ACTIVE START TIMER SW3PUL

If	MANIP-SW3	**Not**
Then	SCTSTART-SW3PUL	

Special conditioning statements

Statement 98	
Comments	PREVENT FORCE BITS OVERIDES: UTC-F2 ACTIVE START TIMER F2OVR.

If UTCBIT-F2
Then SCTSTART-F2OVR
Else SCTSTOP-F2OVR

Statement 99	
Comments	PREVENT FORCE BITS OVERIDES: UTC-F5 ACTIVE START TIMER F5OVR.

If UTCBIT-F5
Then SCTSTART-F5OVR
Else SCTSTOP-F5OVR

Statement 100	
Comments	PREVENT FORCE BITS OVERIDES: F2OVR TIMER EXPIRED START F2PUL

If SCTEXPRD-F2OVR **And** UTCBIT-F2
Then SCTSTART-F2PUL

Statement 101	
Comments	PREVENT FORCE BITS OVERIDES: F5OVR TIMER EXPIRED START F5PUL

If SCTEXPRD-F5OVR **And** UTCBIT-F5
Then SCTSTART-F5PUL

Statement 102	
Comments	PREVENT FORCE BITS OVERIDES:F2PUL TIMER ACTIVE SET UTC-F2 INACTIVE AND UTC-F3 ACTIVE

If SCTRUNNG-F2PUL
Then UTCBITA-F3 UTCBITI-F2
Else UTCBITN-F3 UTCBITN-F2

Statement 103	
Comments	PREVENT FORCE BITS OVERIDES:F2PUL TIMER ACTIVE SET UTC-F5 INACTIVE AND UTC-F8 ACTIVE

If SCTRUNNG-F5PUL
Then UTCBITA-F8 UTCBITI-F5
Else UTCBITN-F8 UTCBITN-F5

Special conditioning statements

Statement 104

Comments	DETECTOR ASL8 A,B OR C ACTIVE SETS ASL8 OUTPUT

If RDET-ASL8A **Or** RDET-ASL8B **Or** RDET-ASL8C
Then OUTPUTA-ASL8
Else OUTPUTN-ASL8

Statement 105

Comments	DETECTOR CSL24 A,B,C OR D ACTIVE SETS CSL24 OUTPUT

If RDET-CSL24A **Or** RDET-CSL24B **Or** RDET-CSL24C **Or** RDET-CSL24D
Then OUTPUTA-CSL24
Else OUTPUTN-CSL24

Statement 106

Comments	SIS POWER

If FDET-SISPWR
Then OUTPUTA-SISPWR
Else OUTPUTN-SISPWR

Statement 107

Comments	SIS FAULT

If FDET-SISFLT
Then OUTPUTA-SISFLT
Else OUTPUTN-SISFLT

Statement 108

Comments	UTC STREAM 2 AND DET MOVEST NOT ACTIVE FLASHES AUX 2 LED

If UTCMODE-2 **And not** FDET-MOVWST
Then MPLEDFLS-AUX2

Statement 109

Comments	UTC STREAM 2 AND DET MOVEST ACTIVE FLASHES AUX 2 LED

If UTCMODE-2 **And** FDET-MOVWST
Then MPLEDON-AUX2

Statement 110

Comments	STATEMENT 108 OR 109 NOT TRUE CLEARS AUX 2 LED

If STMNT-108 **Or** STMNT-109 **Not**
Then MPLEDOFF-AUX2

Red lamp monitoring data 1

Auto clear red lamp warnings	Yes		Red lamp monitor type	Other

Red lamp monitoring data 2

Stream based data					
Stream no.	Shutdown required	Red flt. extension	Single red lamp fault input name	Multiple red lamp fault input name	Inhibit stages
1	Yes	0			
2	Yes	0			

Red lamp monitoring data 3

Second red failure phase data	
Phase Id	Inhibited phases
A	
B	
C	
D	
E	
F	
DA	
DB	

ILM data

Fault indications		Mains unstable indications output(s)	
Auto clear red lamp warnings	Yes		
Flash DFM for lamp conflict	No		
Flash DFM for lamp failure	No		
Unstable toroid indication (as lamp failure)	No		

	Lamp Types						
Phase	Green	Amber	Red	Single fault	Multi faults	Failure indication output	Conflict indication output(s)
A	ELV LED (3R)	ELV LED (3R)	ELV LED (3R)	1	3	LF	
B	ELV LED (3R)	ELV LED (3R)	ELV LED (3R)	1	3	LF	
C	ELV LED (3R)	ELV LED (3R)	ELV LED (3R)	1	3	LF	
D	ELV LED (3R)	ELV LED (3R)	ELV LED (3R)	1	3	LF	
E	ELV LED (3R)	ELV LED (3R)	ELV LED (3R)	1	3	LF	
F	ELV LED (3R)	ELV LED (3R)	ELV LED (3R)	1	3	LF	

Input data

Input No.	Input name	Source	Comment
0	F03	Virtual	NOT USED
1	F08	Virtual	NOT USED
0	F01	Parallel	MOVA STREAM 1 STAGE 1 FORCE
1	F02	Parallel	MOVA STREAM 1 STAGE 2 FORCE
2	F04	Parallel	MOVA STREAM 2 STAGE 1 FORCE
3	F05	Parallel	MOVA STREAM 2 STAGE 2 FORCE
4	F06	Parallel	MOVA STREAM 2 STAGE 3 FORCE
5	F07	Parallel	MOVA STREAM 2 STAGE 4 FORCE
6	*TO1	Parallel	MOVA TO BIT STREAM 1
7	*TO2	Parallel	MOVA TO BIT STREAM 2
8	*LSL1	Parallel	
9	*AQ2	Parallel	
10	*AIN3	Parallel	
11	*AIN4	Parallel	
12	*AX5	Parallel	
13	*AX6	Parallel	
14	*AX7	Parallel	
15	*ASL8A	Parallel	
16	*ASL8B	Parallel	
17	*ASL8C	Parallel	
18	*BIN10	Parallel	
19	*BIN11	Parallel	
20	*BIN12	Parallel	
21	*BX13	Parallel	
22	*BX14	Parallel	
23	*BX15	Parallel	
24	*BX16	Parallel	
25	*CIN17	Parallel	
26	*CIN18	Parallel	
27	*CIN19	Parallel	
28	*CX20	Parallel	
29	*CX21	Parallel	
30	*CX22	Parallel	
31	*CX23	Parallel	
32	*CSL24A	Parallel	
33	*CSL24B	Parallel	
34	*CSL24C	Parallel	
35	*CSL24D	Parallel	
36	*DIN26	Parallel	

Input data

Input No.	Input name	Source	Comment
37	*DIN27	Parallel	
38	*DX28	Parallel	
39	*DX29	Parallel	
40	*DX30	Parallel	
41	*DX31	Parallel	
42	*SISPWR	Parallel	SIS POWER INPUT
43	*SISFLT	Parallel	SIS FAULT INPUT
44	*W10MIN	Parallel	LINKING FROM WEST CONTROLLER - WEST CONTROLLER CRB TIMED OUT
45	*WRST	Parallel	LINKING FROM WEST CONTROLLER - CRB RESET OPERATED AT WEST CONTROLLER
46	*MOVWST	Parallel	LINKING FROM WEST CONTROLLER - MOVA OPERATING ON BOTH STREAMS AT WEST CONTROLLER
47	TS	Parallel	TIME SYNCH INPUT FROM WEST SIDE CONTROLLER
48	*EIN32	Parallel	NEW
49	*EX33	Parallel	NEW
50	*EX34	Parallel	NEW
51	*ESL35	Parallel	NEW
52	*ESL36	Parallel	NEW
53	*FIN37	Parallel	NEW
54	*FIN38	Parallel	NEW
55	*FIN39	Parallel	NEW
56	*FX40	Parallel	NEW
57	*FX41	Parallel	NEW
58	*FX42	Parallel	NEW
59	*FX43	Parallel	NEW

Output data

Output Number	Destination	Output name	Invert state	Comment
0	Parallel	G1	Yes	MOVA STREAM 1 STAGE 1 CONFIRM
1	Parallel	G2	Yes	MOVA STREAM 1 STAGE 2 CONFIRM
2	Parallel	G4	Yes	MOVA STREAM 2 STAGE 1 CONFIRM
3	Parallel	G5	Yes	MOVA STREAM 2 STAGE 2 CONFIRM
4	Parallel	G6	Yes	MOVA STREAM 2 STAGE 3 CONFIRM
5	Parallel	G7	Yes	MOVA STREAM 2 STAGE 4 CONFIRM
6	Parallel	GC	Yes	
7	Parallel	GD	Yes	
8	Parallel	GE	Yes	
9	Parallel	GF	Yes	
10	Parallel	CRB1	Yes	MOVA CRB BIT STREAM 1
11	Parallel	CRB2	Yes	MOVA CRB BIT STREAM 2
12	Parallel	MOVA1	No	MOVA MODE ACTIVE STREAM 1
13	Parallel	MOVA2	No	MOVA MODE ACTIVE STREAM 2
16	Parallel	ASL8	No	BUFFERED COMBINED ASL8 LOOPS OUTPUT- CONNECT TO STREAM 1 MOVA DET 8
17	Parallel	CSL24	No	BUFFERED COMBINED CSL24 LOOPS OUTPUT - CONNECT TO STREAM 2 MOVA DET 24
18	Parallel	ST2D44C	No	STREAM 1 TO 2 LINKING
19	Parallel	ST2D45H	No	STREAM 1 TO 2 LINKING
20	Parallel	ST2D46C	No	STREAM 1 TO 2 LINKING
21	Parallel	ST2D47H	No	STREAM 1 TO 2 LINKING
22	Parallel	ST1A48C	No	STREAM 2 TO 1 LINKING
23	Parallel	ST1A49H	No	STREAM 2 TO 1 LINKING
24	Parallel	ST1B50C	No	STREAM 2 TO 1 LINKING
25	Parallel	ST1B51H	No	STREAM 2 TO 1 LINKING
26	Parallel	OP26	No	
27	Parallel	ESBHLDF	No	LINKING - TO WEST CONTROLLER
28	Parallel	ESBCALF	No	LINKING - TO WEST CONTROLLER
29	Parallel	ESBHLDE	No	LINKING - TO WEST CONTROLLER
30	Parallel	ESBCALE	No	LINKING - TO WEST CONTROLLER
31	Parallel	E10MIN	No	LINKING - TO WEST CONTROLLER CRB TIMER EXPIRED
32	Parallel	ERST	No	LINKING - TO WEST CONTROLLER CRB RESET
33	Parallel	MOVEST	No	LINKING - TO WEST CONTROLLER MOVA CONTROL ACTIVE BOTH STREAMS EAST
34	Parallel	LE	Yes	LAMPS EXTINGUISHED TO OMU
35	Parallel	LF	Yes	LAMP FAULT TO OMU
36	Parallel	SISPWR	No	SIS POWER TO OMU
37	Parallel	SISFLT	No	SIS FAULT TO OMU
38	Parallel	AHCAL56	No	AIN MOVA HURRYCALL MOVA DET 56
39	Parallel	BHCAL57	No	BIN MOVA HURRYCALL MOVA DET 57
40	Parallel	CHCAL58	No	CIN MOVA HURRYCALL MOVA DET 58

Output data

Output Number	Destination	Output name	Invert state	Comment
41	Parallel	DHCAL59	No	DIN MOVA HURRYCALL MOVA DET 59
42	Parallel	FHCAL60	No	FIN MOVA HURRYCALL MOVA DET 60

Hardware data

Safety cards	
Number	Fitted
1	Yes
2	No

Loop Detector Cards		
Number	Fitted	Detectors
2	No	-
3	No	-
4	No	-

Safety card 1

Phase Drive cards	
Number	Fitted
1	Yes
2	Yes
3	Yes
4	No
5	No
6	No
7	No
8	No
9	No
10	No
11	No
12	No
13	No
14	No
15	No
16	No

IO Cards	
Number	Card Type
1	Handset
2	IO 16/16
3	IO 16/16
4	IO 16/16
5	IO 16/16
6	Not Fitted
7	Not Fitted
8	Not Fitted

Loop Detector Cards		
Number	Fitted	Detectors
1	No	-

Virtual IO data

Bit No.	Bit name	Invert	Active	Comment
0	F03	False	False	
1	F08	False	False	

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Hodgetts Estates

Proposed Employment Land Northeast of J10 M42, North Warwickshire

Transport Assessment

May 2021 (Revision C, November 2021)

VOLUME 4: APPENDICES L to O

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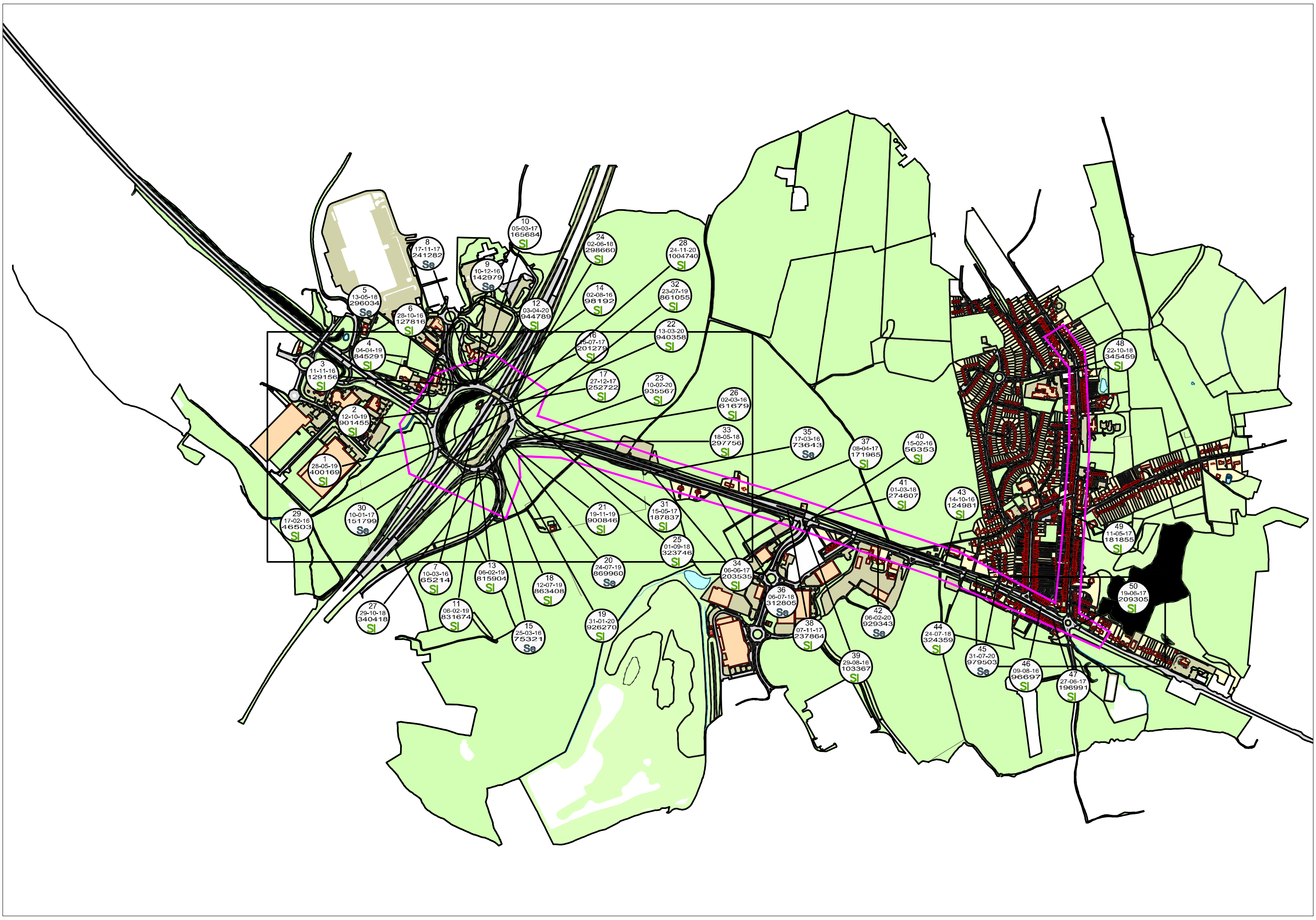
APPENDIX L – PIA DATA - 01.02.16 TO 15.02.21

Warwickshire
County Council

Dordon 01/02/2016 - 15/02/2021
15 Feb 2016 to 24 Nov 2020

Report produced: 01/03/2021

Road Safety Intelligence Team
Tel: 01926 412740
Email: rsinfo@warwickshire.gov.uk


1 28-05-19 400169 Sl
2 12-10-19 901455 Sl
3 11-11-16 129156 Sl
4 04-04-19 845291 Sl
5 13-05-18 296034 Se
6 28-10-16 127816 Sl
7 10-03-16 65214 Sl
8 17-11-17 241282 Se
9 10-12-16 142979 Se
10 05-03-17 165684 Sl
11 06-02-19 831674 Sl
12 03-04-20 944789 Sl
13 06-02-19 815904 Sl
14 02-08-16 98192 Sl
15 25-03-16 75321 Se
16 15-07-17 201279 Sl
17 27-12-17 252722 Sl
18 12-07-19 863408 Sl
19 31-01-20 926270 Sl
20 24-07-19 869960 Se
21 19-11-19 900846 Sl
22 13-03-20 940358 Sl
23 10-02-20 935567 Sl
24 02-06-18 298660 Sl
25 01-09-18 323746 Sl
26 02-03-16 61679 Sl
27 29-10-18 340418 Sl
28 24-11-20 1004740 Sl
29 17-02-16 46503 Sl
30 10-01-17 151799 Se
31 15-05-17 187837 Sl
32 23-07-19 861055 Sl
33 18-05-18 297756 Sl
34 06-06-17 203535 Sl
35 17-03-16 73643 Se
36 06-07-18 312805 Se
37 08-04-17 171965 Sl
38 07-11-17 237864 Sl
39 29-08-16 103367 Sl
40 15-02-16 56353 Sl
41 01-03-18 274607 Sl
42 06-02-20 929343 Se
43 14-10-16 124981 Sl
44 24-07-18 324359 Sl
45 31-07-20 979503 Se
46 09-08-16 96697 Sl
47 27-06-17 196991 Sl
48 22-10-18 345459 Sl
49 11-05-17 181855 Sl
50 19-06-17 209305 Sl

ALL ROAD USERS - ACCIDENTS

Year	Fatal	Serious	Slight	Total
2016	0	3	10	13
2017	0	2	10	12
2018	0	2	7	9
2019	0	1	8	9
2020	0	2	5	7

Month	Fatal	Serious	Slight	Total
January	0	1	1	2
February	0	1	5	6
March	0	2	5	7
April	0	0	3	3
May	0	1	4	5
June	0	0	4	4
July	0	3	4	7
August	0	0	3	3
September	0	0	1	1
October	0	0	5	5
November	0	1	4	5
December	0	1	1	2

Day	Fatal	Serious	Slight	Total
Sunday	0	1	1	2
Monday	0	0	7	7
Tuesday	0	1	10	11
Wednesday	0	1	5	6
Thursday	0	2	4	6
Friday	0	4	8	12
Saturday	0	1	5	6

Ped Crossing	Fatal	Serious	Slight	Total
Not at crossing	0	10	39	49
Zebra	0	0	0	0
Pelican	0	0	0	0
Ped Phase	0	0	1	1
Footbridge	0	0	0	0
Refuge	0	0	0	0
Unknown	0	0	0	0

Bends (Veh Totals)	Fatal	Serious	Slight	Total
Left Hand Bend	0	0	3	3
Right Hand Bend	0	0	0	0

Time	Fatal	Serious	Slight	Total
0000-0059	0	0	0	0
0100-0159	0	0	0	0
0200-0259	0	0	0	0
0300-0359	0	0	1	1
0400-0459	0	0	1	1
0500-0559	0	0	1	1
0600-0659	0	1	0	1
0700-0759	0	0	1	1
0800-0859	0	0	2	2
0900-0959	0	0	1	1
1000-1059	0	0	3	3
1100-1159	0	0	1	1
1200-1259	0	1	2	3
1300-1359	0	0	1	1
1400-1459	0	1	4	5
1500-1559	0	3	2	5
1600-1659	0	2	3	5
1700-1759	0	1	7	8
1800-1859	0	1	3	4
1900-1959	0	0	0	0
2000-2059	0	0	1	1
2100-2159	0	0	3	3
2200-2259	0	0	3	3
2300-2359	0	0	0	0

Lighting	Fatal	Serious	Slight	Total
Daylight	0	7	28	35
Darkness	0	3	12	15

Weather	Fatal	Serious	Slight	Total
Fine without high winds	0	10	33	43
Raining without high winds	0	0	4	4
Snowing without high winds	0	0	0	0
Fine with high winds	0	0	0	0
Raining with high winds	0	0	1	1
Snowing with high winds	0	0	0	0
Fog or mist - if hazard	0	0	1	1
Other	0	0	1	1
Unknown	0	0	0	0

Road Surface	Fatal	Serious	Slight	Total
Dry	0	8	25	33
Wet/Damp	0	2	14	16
Snow	0	0	0	0
Frost/Ice	0	0	1	1
Flood	0	0	0	0
Unknown	0	0	0	0

District	Fatal	Serious	Slight	Total
North Warwickshire	0	10	38	48
Tamworth	0	0	2	2

Road Class	Fatal	Serious	Slight	Total
M	0	0	7	7
A(M)	0	0	0	0
A	0	10	31	41
B	0	0	0	0
Other	0	0	2	2

Speed Limit	Fatal	Serious	Slight	Total
20	0	0	0	0
30	0	0	11	11
40	0	1	1	2
50	0	2	14	16
60	0	3	3	6
70	0	4	11	15

Obstruction (Veh Totals)	Fatal	Serious	Slight	Total
Sign/Signal	0	0	0	0
Lamp Post	0	0	0	0
Pole	0	1	0	1
Tree	0	0	0	0
Bus Stop	0	0	0	0
Barrier	0	1	0	1
Other	0	0	0	0

Junction Type	Fatal	Serious	Slight	Total
Not at Junction	0	3	11	14
Roundabout	0	6	23	29
Mini R'about	0	0	1	1
T or Staggered	0	1	3	4
Slip Road	0	0	0	0
Crossroads	0	0	0	0
Multiple Junct	0	0	1	1
Private Drive	0	0	0	0
Other Junction	0	0	1	1
Unknown	0	0	0	0

ALL ROAD USERS - CASUALTIES

Year	Fatal	Serious	Slight	Total
2016	0	3	12	15
2017	0	2	15	17
2018	0	2	12	14
2019	0	1	13	14
2020	0	2	7	9

Month	Fatal	Serious	Slight	Total
January	0	1	1	2
February	0	1	7	8
March	0	2	6	8
April	0	0	4	4
May	0	1	6	7
June	0	0	5	5
July	0	3	9	12
August	0	0	3	3
September	0	0	2	2
October	0	0	8	8
November	0	1	5	6
December	0	1	3	4

Day	Fatal	Serious	Slight	Total
Sunday	0	1	2	3
Monday	0	0	9	9
Tuesday	0	1	11	12
Wednesday	0	1	7	8
Thursday	0	2	5	7
Friday	0	4	13	17
Saturday	0	1	12	13

Ped Crossing	Fatal	Serious	Slight	Total
Not at crossing	0	10	58	68
Zebra	0	0	0	0
Pelican	0	0	0	0
Ped Phase	0	0	1	1
Footbridge	0	0	0	0
Refuge	0	0	0	0
Unknown	0	0	0	0

Bends	Fatal	Serious	Slight	Total
Left Hand Bend	0	0	3	3
Right Hand Bend	0	0	0	0

Casualty Age	Fatal	Serious	Slight	Total
0 - 5	0	0	3	3
6 - 10	0	0	1	1
11 - 16	0	1	0	1
17 - 25	0	1	18	19
26 - 35	0	1	9	10
36 - 45	0	2	10	12
46 - 55	0	3	6	9
56 - 64	0	1	9	10
65+	0	1	3	4
Unknown	0	0	0	0

Time	Fatal	Serious	Slight	Total
0000-0059	0	0	0	0
0100-0159	0	0	0	0
0200-0259	0	0	0	0
0300-0359	0	0	2	2
0400-0459	0	0	1	1
0500-0559	0	0	1	1
0600-0659	0	1	0	1
0700-0759	0	0	1	1
0800-0859	0	0	2	2
0900-0959	0	0	2	2
1000-1059	0	0	3	3
1100-1159	0	0	1	1
1200-1259	0	1	2	3
1300-1359	0	0	3	3
1400-1459	0	1	5	6
1500-1559	0	3	4	7
1600-1659	0	2	5	7
1700-1759	0	1	9	10
1800-1859	0	1	7	8
1900-1959	0	0	0	0
2000-2059	0	0	2	2
2100-2159	0	0	4	4
2200-2259	0	0	5	5
2300-2359	0	0	0	0

Lighting	Fatal	Serious	Slight	Total
Daylight	0	7	43	50
Darkness	0	3	16	19

Weather	Fatal	Serious	Slight	Total
Fine without high winds	0	10	51	61
Raining without high winds	0	0	5	5
Snowing without high winds	0	0	0	0
Fine with high winds	0	0	0	0
Raining with high winds	0	0	1	1
Snowing with high winds	0	0	0	0
Fog or mist - if hazard	0	0	1	1
Other	0	0	1	1
Unknown	0	0	0	0

Road Surface	Fatal	Serious	Slight	Total
Dry	0	8	36	44
Wet/Damp	0	2	22	24
Snow	0	0	0	0
Frost/Ice	0	0	1	1
Flood	0	0	0	0
Unknown	0	0	0	0

District	Fatal	Serious	Slight	Total
North Warwickshire	0	10	57	67
Tamworth	0	0	2	2

Road Class	Fatal	Serious	Slight	Total
M	0	0	10	10
A(M)	0	0	0	0
A	0	10	47	57
B	0	0	0	0
Other	0	0	2	2

Speed Limit	Fatal	Serious	Slight	Total
20	0	0	0	0
30	0	0	16	16
40	0	1	2	3
50	0	2	18	20
60	0	3	6	9
70	0	4	17	21

Obstruction	Fatal	Serious	Slight	Total
Sign/Signal	0	0	0	0
Lamp Post	0	0	0	0
Pole	0	1	1	2
Tree	0	0	0	0
Bus Stop	0	0	0	0
Barrier	0	1	0	1
Other	0	0	0	0

ALL ROAD USERS - CASUALTIES

Junction Type	Fatal	Serious	Slight	Total
Not at Junction	0	3	20	23
Roundabout	0	6	31	37
Mini R'about	0	0	1	1
T or Staggered	0	1	5	6
Slip Road	0	0	0	0
Crossroads	0	0	0	0
Multiple Junct	0	0	1	1
Private Drive	0	0	0	0
Other Junction	0	0	1	1
Unknown	0	0	0	0

D-PRINT CRASH REPORT

1-Mar-2021
13:31:32

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
1	**Road No A5 Grid 424245E** **Section Ref 300619N**	SLIGHT	28/05/2019	3	21:20	L	Dry	Fine		S.VEH	M/C
	A5 NEAR JUNCTION WITH M42								Tamworth		
	Rider of V1 has exited the island from the M42 onto the A5 West bound and the low sun has taken his visibility and has caused him to lose control of the bike, hitting a junction maker sign and this has dislodged him from the bike causing him to slide down the carriageway.						Veh1, m/cycle > 500cc, S -> NW				Casualties 1 Vehicles 1
2	**Road No A5 Grid 424247E** **Section Ref 300714N**	SLIGHT	12/10/2019	7	18:40	L	Wet/Damp	Fine			
	A5 - 27 METRES FROM JUNCTION WITH WATLING STREET (A5)								North Warwickshire		
	Vehicle 2 was stationary at traffic lights at the M42 island when Vehicle 1 has collided with the rear of Vehicle 2.						Veh1, car, E -> W Veh2, car, E -> W				Casualties 4 Vehicles 2
3	**Road No A5 Grid 424346E** **Section Ref 300792N**	SLIGHT	11/11/2016	6	14:55	L	Wet/Damp	Fine			
	M42 JCT 10 ROUNDABOUT A5 AT JN WITH NB SLIP ON RD M42								North Warwickshire		
	VEH 2 IN INSIDE LANE. VEH 1 IN OUTSIDE LANE. VEH 1 CUT ACROSS REAR OF VEH 2 HITTING SAME, THEN WENT BACK INTO OUTSIDE LANE AND DROVE OFF.						Veh1, car, W -> E Veh2, car, W -> E				Casualties 1 Vehicles 2
4	**Road No A5 Grid 424349E** **Section Ref 300791N**	SLIGHT	04/04/2019	5	18:40	L	Wet/Damp	Rain			M/C
	WATLING STREET (A5) NEAR JUNCTION WITH RELAY DRIVE								Tamworth		
	A car changed lanes quickly to avoid traffic which in turned caused the Ford Mondeo VRM FL09MPZ to brake sharply. This subsequently caused a Honda moped VRM BL67EWX to brake sharply and collide with the rear of the mondeo. Direction of travel was towards the M42 Southbound junction. 3rd vehicle is unknown.						Veh1, car, S -> NE Veh2, m/cycle 50 - 125cc, S -> NE				Casualties 1 Vehicles 2

Key

Involved

PED	*Pedestrian*
HGV	*Heavy Goods Vehicle*
GV	*Goods Vehicle*
M/C	*Motor Cycle*
P/C	*Pedal Cycle*
PSV	*Bus/Coach*

Street Lighting

L	*Daylight*
STL	*Street Lights*
USL	*Street LIghts Unlit*
NSL	*No Street Lights*
STU	*Street Lights Unknown*

FACTORS

+VE	*Positive Breath Test*
R.TURN	*Right Turn Manoeuvre*
O/TAKE	*Overtaking Manoeuvre*
S.VEH	*Single Vehicle*

Special Conditions

ATS OUT	*Traffic Lights Not Working*
ATS DEF	*Traffic Lights Defective*
SIGNS	*Road Signs Defective or Obscurred*
RD WRKS	*Road Works*
Surface	*Road Surface Defective*

D-PRINT CRASH REPORT

1-Mar-2021
13:31:32

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
5	**Road No A5 Grid 424353E** **Section Ref 300791N**	SERIOUS	13/05/2018	1	18:27	L	Dry	Fine			
	WILNECOTE BYPASS ISLAND A5 AT JN WITH GREEN LANE								North Warwickshire		
	VEHICLE 1 AND 2 HAVE TRAVELLED ALONG THE A5 FROM TAMWORTH AND APPROACHED THE M42 ROUNDABOUT. VEHICLE 2 WAS STATIONARY AT THE TRAFFIC LIGHTS WITH SEVERAL CARS BEHIND THEM HOWEVER STALLED WHEN THE LIGHTS TURNED GREEN. VEHICLE 1 HAS CHANGED LANES MOVING TO THE RIGHT HAND SIDE ATTEMPTNG TO GO AROUND THE QUE OF CARS, HOWEVER CUT IN FRONT OF VEHICLE 2 TO TRAVEL DOWN M42 SLIP ROAD CAUSING A COLLISION. VEHICLE 2 WAS TRAVELLING STRAIGHT AHEAD INTENDING TO TAKE THE A5 EXIT.						Veh1, car, NW -> NE Veh2, car, NW -> SE				Casualties 2 Vehicles 2
6	**Road No A5 Grid 424368E** **Section Ref 300796N**	SLIGHT	28/10/2016	6	15:24	L	Dry	Fine			
	JUNCTION 10 ISLAND A5 AT JN WITH M42								North Warwickshire		
	VEH02 WAS TRAVELLING IN THE INSIDE LANE HEADING TOWARDS ATHERSTONE AND AS SHE WAS DRIVING PAST THE JUNCTION/SLIP ROAD OF THE M42 VEH01 HAS DROVE INTO THE SIDE OF VEH02						Veh1, car, SW -> NE Veh2, car, SW -> E				Casualties 1 Vehicles 2
7	**Road No M42 Grid 424370E** **Section Ref 300657N**	SLIGHT	10/03/2016	5	08:17	L	Dry	Fine			
	AT JCT 10 SB M42								North Warwickshire		
	THREE VEHICLE ROAD TRAFFIC COLLISION. VEHICLE 001 HAS COLLIDED INTO THE REAR OF VEHICLE 002 WHICH HAD BEEN SLOWING DUE TO TRAFFIC. VEHICLE 001 HAS PUSHED VEHICLE 002 INTO VEHICLE 003.						Veh1, car, NE -> SW Veh2, car, NE -> SW Veh3, car, NE -> SW				Casualties 1 Vehicles 3

Key

Involved	
PED	*Pedestrian*
HGV	*Heavy Goods Vehicle*
GV	*Goods Vehicle*
M/C	*Motor Cycle*
P/C	*Pedal Cycle*
PSV	*Bus/Coach*

Street Lighting	
L	*Daylight*
STL	*Street Lights*
USL	*Street LIghts Unlit*
NSL	*No Street Lights*
STU	*Street Lights Unknown*

FACTORS	
+VE	*Positive Breath Test*
R.TURN	*Right Turn Manoeuvre*
O/TAKE	*Overtaking Manoeuvre*
S.VEH	*Single Vehicle*

Special Conditions	
ATS OUT	*Traffic Lights Not Working*
ATS DEF	*Traffic Lights Defective*
SIGNS	*Road Signs Defective or Obscurred*
RD WRKS	*Road Works*
Surface	*Road Surface Defective*

D-PRINT CRASH REPORT

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
8	**Road No A5** **Grid 424370E** **Section** **Ref 300796N**	SERIOUS	17/11/2017	6	15:54	L	Dry	Fine			
	A5 AT JN WITH JUNCTION 10 M42								North Warwickshire		
	FROM INFORMATION AT THE SCENE IT APPEARS VEHICLE 1 HAS BEEN IN LANE 3 AND VEHICLE 2 IN LANE 1 ON TOP OF JUNCTION 10 M42. VEHICLE 1 HAS THEN TRIED TO GO DOWN THE SLIP ROAD ONTO THE M42 AT WHICH POINT IT HAS CAUGHT THE BACK OF VEHICLE 2 CAUSING VEHICLE 2 TO SPINT AND END UP FACING THE WRONG WAY ON THE CARRIAGEWAY. VEHICLE 1 HAS LEFT THE CARRIAGEWAY AND HAS ENDED UP HITTING A LAMP POST CAUSING DAMAGE, THE LAMP POST WAS LATER REMOVED BY HIGHWAYS AGENCY DUE TO BEING UNSAFE DUE TO IT'S LOCATION.						Veh1, car, SW -> NE Veh2, car, N -> S				Casualties 2 Vehicles 2
9	**Road No A5** **Grid 424373E** **Section** **Ref 300796N**	SERIOUS	10/12/2016	7	15:00	DRK STL	Wet/Damp	Fine			M/C
	WATLING STREET A5 AT JN WITH NB SLIP ON RD M42								North Warwickshire		
	VEH001 AND VEH002 TRAVELLING FROM TAMWORTH HS. VEH001'S ROUTE WAS TOWARDS NOTTINGHAM GOING DOWN SLIP ROAD ONTO M42 NORTH. HE WAS POSITIONED IN 2ND LANE FROM INSIDE. VEH002'S ROUTE WAS TO CONTINUE ON A5 TOWARDS ATHERSTONE, HOWEVER, WAS ON THE INSIDE LANE FROM TAMWORTH. VEH001 CAME ACROSS ONTO 2ND LANE ONTO M42, VEH002 INTENTIONS TO CONTINUE MAKING CONTACT WITH VEH001 HAVING CUT ACROSS HIM.						Veh1, car, W -> E Veh2, m/cycle > 500cc, W -> E				Casualties 1 Vehicles 2

Key

Involved		*Street Lighting*		*FACTORS*		*Special Conditions*	
PED	*Pedestrian*	*L*	*Daylight*	*+VE*	*Positive Breath Test*	*ATS OUT*	*Traffic Lights Not Working*
HGV	*Heavy Goods Vehicle*			*R.TURN*	*Right Turn Manoeuvre*	*ATS DEF*	*Traffic Lights Defective*
GV	*Goods Vehicle*	*STL*	*Street Lights*	*O/TAKE*	*Overtaking Manoeuvre*	*SIGNS*	*Road Signs Defective or Obscurred*
M/C	*Motor Cycle*	*USL*	*Street LIghts Unlit*	*S.VEH*	*Single Vehicle*	*RD WRKS*	*Road Works*
P/C	*Pedal Cycle*	*NSL*	*No Street Lights*			*Surface*	*Road Surface Defective*
PSV	*Bus/Coach*	*STU*	*Street Lights Unknown*				

D-PRINT CRASH REPORT

1-Mar-2021
13:31:32

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
10	**Road No A5** **Grid 424373E** **Section** **Ref 300796N**	SLIGHT	05/03/2017	1	12:40	L	Dry	Fine		R.TURN	
	TAMWORTH A5 AT JN WITH MOTORWAY SLIP JUNCTION 10 M42								North Warwickshire		
	VEH001 LANE 2 (OF 4 LANES) AROUND AS ISLAND. (M42 J10) VEH001 IS TRAVELLING LANE1. VEH001 CHANGES TO LANE 1 FROM 2 ACROSS THE PATH OF VEH002.VEH001'S F/N/S WING COLLIDES WITH VEH002 CAUSING VEH002 TO CRASH INTO N/S BARRIER.						Veh1, car, W -> NE Veh2, car, W -> SE				Casualties 1 Vehicles 2
11	**Road No A5** **Grid 424380E** **Section** **Ref 300539N**	SLIGHT	06/02/2019	4	17:50	DRK STU	Dry	Other			GV P/C
	WATLING STREET (A5) NEAR JUNCTION WITH TRINITY ROAD								North Warwickshire		
	IP ON PUSH BIKE TRAVELLING ON A5 WATLING STREET TOWARES JUNCTION 10 M42 SOUTH. IP HAS GONE ACROSS JUCNTION AND HAS BEEN STRUCK BEFORE SLIP ROAD TO M42 BY A WHITE RECOVERY VEHICLE. INJURY TO RIGHT ARM AND LEG, DRIVER STOPPED BY IP DID NOT TAKE ANY DETAIL AS WAS IN SHOCK. NO VRM OR MAKE OR MODEL OR DRIVER DETAILS AVAILABLE.						Veh1, goods < 3.5t, NE -> W Veh2, pedal cycle, NE -> W				Casualties 1 Vehicles 2
12	**Road No M42** **Grid 424381E** **Section** **Ref 300800N**	SLIGHT	03/04/2020	6	07:35	L	Dry	Fine			HGV GV
	M42 NB JCT 10 SLIP ROAD JUNCTION WITH A5 ISLAND								North Warwickshire		
	V001 HAS BEEN DRIVING ON THE INSIDE LANE OF THE M42 JUNCTION 10 ROUNDABOUT. V001 HAS COLLIDED WITH V002 ON ATTEMPTING TO EXIT THE SLIP ROAD JUNCTION 10 N/B.						Veh1, goods < 3.5t, SW -> NE Veh2, goods > 7.5t, SW -> NE				Casualties 1 Vehicles 2

Key

Involved	
PED	*Pedestrian*
HGV	*Heavy Goods Vehicle*
GV	*Goods Vehicle*
M/C	*Motor Cycle*
P/C	*Pedal Cycle*
PSV	*Bus/Coach*

Street Lighting	
L	*Daylight*
STL	*Street Lights*
USL	*Street LIghts Unlit*
NSL	*No Street Lights*
STU	*Street Lights Unknown*

FACTORS	
+VE	*Positive Breath Test*
R.TURN	*Right Turn Manoeuvre*
O/TAKE	*Overtaking Manoeuvre*
S.VEH	*Single Vehicle*

Special Conditions	
ATS OUT	*Traffic Lights Not Working*
ATS DEF	*Traffic Lights Defective*
SIGNS	*Road Signs Defective or Obscurred*
RD WRKS	*Road Works*
Surface	*Road Surface Defective*

D-PRINT CRASH REPORT

1-Mar-2021
13:31:32

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
13	**Road No A5 Grid 424382E** **Section Ref 300539N**	SLIGHT	06/02/2019	4	18:00	DRK STL	Wet/Damp	Fine			P/C
	WATLING STREET (A5) AT JUNCTION WITH TRINITY ROAD								North Warwickshire		
	VEHICLE 2 WAS CYCLING AROUND THE ROUNDABOUT WHEN VEHICLE 1 HAS CUT HIM UP AND BUMPED HIS ARM.						Veh1, goods unknown weight, SE -> SW Veh2, pedal cycle, E -> W				Casualties 1 Vehicles 2
14	**Road No M42 Grid 424392E** **Section Ref 300802N**	SLIGHT	02/08/2016	3	22:00	DRK STL	Dry	Fine			
	SLIP ROAD JCT 10 TAMWORTH M42 A5								North Warwickshire		
	THE CALLER WAS DRIVING HER VEHICLE A FOCUS WP12LCY ON TO THE M42 AT JUNCTION 10. THERE ARE TWO LEFT LANES. THE 1P IN THE RIGHT LANE AND THE OFFENDING VEHICLE A TNT ARTICULATED LORRY WAS IN THE LEFT AS THE VEHICLES HAVE ENTERED THE SLIP ROAD THE LORRY HAS DRIFTED ACROSS INTO THE 1P'S LANE HITTING THE REAR LEFT SIDE OF THE VEHICLE KNOCKING IT SIDEWAYS INTO A BARRIER.						Veh1, car, SW -> NE Veh2, goods unknown weight, SW -> NE				Casualties 1 Vehicles 2
15	**Road No A5 Grid 424417E** **Section Ref 300571N**	SERIOUS	25/03/2016	6	12:20	L	Dry	Fine		S.VEH	HGV
	TRAFFIC ISLAND M42 JUNC 10 A5 AT JN WITH TRINITY RD KINGSBURY								North Warwickshire		
	VEH01 TRAVELLING ONTO ROUNDABOUT FROM TRINITY ROAD ACCESSES ROUNDABOUT FROM LANE 3 INTO LANE 3. VEH01 CARRYING 23 TONNES STEEL LEAVES CARRIAGEWAY OFFSIDE AND JACKKNIVES ONTO CENTRAL BARRIER. POSSIBLE SHIFT IN LOAD WITH MOMENTUM HAS TOPPLED VEHICLE OVER						Veh1, goods > 7.5t, N -> SW				Casualties 1 Vehicles 1

Key

Involved	
PED	*Pedestrian*
HGV	*Heavy Goods Vehicle*
GV	*Goods Vehicle*
M/C	*Motor Cycle*
P/C	*Pedal Cycle*
PSV	*Bus/Coach*

Street Lighting	
L	*Daylight*
STL	*Street Lights*
USL	*Street LIghts Unlit*
NSL	*No Street Lights*
STU	*Street Lights Unknown*

FACTORS	
+VE	*Positive Breath Test*
R.TURN	*Right Turn Manoeuvre*
O/TAKE	*Overtaking Manoeuvre*
S.VEH	*Single Vehicle*

Special Conditions	
ATS OUT	*Traffic Lights Not Working*
ATS DEF	*Traffic Lights Defective*
SIGNS	*Road Signs Defective or Obscurred*
RD WRKS	*Road Works*
Surface	*Road Surface Defective*

D-PRINT CRASH REPORT

1-Mar-2021
13:31:32

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
16	**Road No A5** **Grid 424421E** **Section** **Ref 300773N**	SLIGHT	15/07/2017	7	17:14	L	Dry	Fine			
	WATLING STREET A5 AT JN WITH M42								North Warwickshire		
	VEHICLE 1 AND VEHICLE 2 TRAVELLING ON A5 TOWARDS DORDON. WHILST NEGOTIATING ROUNDABOUT AT JUNCTION 10 M42, VEHICLE 1 HAS DRIVEN FROM 3RD LANE INTO OFFSIDE OF VEHICLE 2 TRAVELLING IN 2ND LANE CAUSING VEHICLE 2 TO MOVE INTO LANE 3. VEHICLES HAVE STOPPED IN LAYBY JUST OFF ROUNDABOUT.						Veh1, car, NW -> SE Veh2, car, NW -> SE				Casualties 2 Vehicles 2
17	**Road No M42** **Grid 424425E** **Section** **Ref 300733N**	SLIGHT	27/12/2017	4	13:33	L	Wet/Damp	Fine			
	SB JCTS 10-9 M42 NEAR JN WITH JNCT 10 EXIT A5								North Warwickshire		
	V1 FAILS TO SEE STATIONARY TRAFFIC AHEAD AND COLLIDES WITH V2.THIS SPINS V1 INTO V3 AND THEN V4. DRIVER THEN GETS OUT OF V1 TO CHECK DAMAGE THEN MAKES OFF FROM SCENE.V1 EVENTUALLY BREAKS DOWN AT JCT 9 AND MAKES OFF ON FOOT.V1 WAS REPORTED STOLEN LATER THAT DAY						Veh1, car, NE -> SW Veh2, car, NE -> SW Veh3, car, NE -> SW Veh4, car, NE -> SW				Casualties 3 Vehicles 4
18	**Road No A5** **Grid 424426E** **Section** **Ref 300577N**	SLIGHT	12/07/2019	6	03:29	DRK STL	Wet/Damp	Rain			HGV
	A5 WATLING ST ISLAND DORDON J/W M42 JCT 10								North Warwickshire		
	It appears that vehicle02 has been driving in lane 1 of the M42 Junction 10 Island towards M42 (SW) slip when Vehicle01 has merged into lane 1 from lane 2 without noticing Vehicle02 and has collided into the o/s of Vehicle02 with its n/s. Vehicle01 has then only noticed it has been in a collision when stopped, suggesting the drive drove without due care and attention.						Veh1, goods 3.5 - 7.5t, NE -> SW Veh2, car, NE -> SW				Casualties 2 Vehicles 2

Key

Involved	
PED	*Pedestrian*
HGV	*Heavy Goods Vehicle*
GV	*Goods Vehicle*
M/C	*Motor Cycle*
P/C	*Pedal Cycle*
PSV	*Bus/Coach*

Street Lighting	
L	*Daylight*
STL	*Street Lights*
USL	*Street LIghts Unlit*
NSL	*No Street Lights*
STU	*Street Lights Unknown*

FACTORS	
+VE	*Positive Breath Test*
R.TURN	*Right Turn Manoeuvre*
O/TAKE	*Overtaking Manoeuvre*
S.VEH	*Single Vehicle*

Special Conditions	
ATS OUT	*Traffic Lights Not Working*
ATS DEF	*Traffic Lights Defective*
SIGNS	*Road Signs Defective or Obscurred*
RD WRKS	*Road Works*
Surface	*Road Surface Defective*

D-PRINT CRASH REPORT

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
19	**Road No A5** **Grid 424447E** **Section** **Ref 300611N**	SLIGHT	31/01/2020	6	17:00	DRK STL	Dry	Fine			HGV
	A5 DORDON ISLAND J/W M42 JCT 10								North Warwickshire		
	V001 WAS TRAVELLING AROUND THE ISLAND IN LANE TO GO TOWARDS THE A5. V002 WAS IN THE MIDDLE LANE TRAVELLING TOWARDS KINGSBURY. V001 HAS COME ACROSS INTO THE LANE OF V002, CLIPPING THE LEFT HAND SIDE OF V002.						Veh1, goods > 7.5t, NE -> SW Veh2, car, NE -> SW				Casualties 1 Vehicles 2
20	**Road No A5** **Grid 424473E** **Section** **Ref 300616N**	SERIOUS	24/07/2019	4	16:45	L	Dry	Fine			M/C
	WATLING STREET (A5) J/W M42 JCT 10 ISLAND								North Warwickshire		
	AT APPROXIMATELY 16:45 HRS ON 24.07.2019 RIDER OF VEH 002 HAS BEEN TRAVELLING ON THE A5, M42 ISLAND HEADING WEST, COMING FROM THE DIRECTION OF HINCKLEY, GOING TOWARDS TAMWORTH. RIDER OF VEH 002 HAS BEEN FILTERING BETWEEN LANES 3 AND 4 AT THE ISLAND ON THE APPROACH TO THE JUNCTION. THE RAFFIC LIGHTS WERE NOT WORKING WITH SIGNS DISPLAYING THIS - RIDER OF VEH 002 WAS AWARE OF THE BORKEN LIGHTS. WHILST WAITING TO PULL OUT OF THE JUNCTION, VEH 002 HAS BEEN HIT FROM BEHIND, CAUSING HIM TO FALL OFF HIS BIKE ON TO THIS LEFT SHOULDER CAUSING INJURY - HUMERAL FRACTURE.						Veh1, car, E -> W Veh2, m/cycle > 500cc, E -> W				Casualties 1 Vehicles 2
21	**Road No A5** **Grid 424475E** **Section** **Ref 300615N**	SLIGHT	19/11/2019	3	11:47	L	Wet/Damp	Fine			GV
	WATLING STREET (A5) JW A5 M42 JCT 10 TRAFFIC ISLAND								North Warwickshire		
	Veh 2 struck veh 1 from behind whilst stationary at traffic lights on A5 dordon tamworth.						Veh1, car, E -> W Veh2, goods < 3.5t, E -> W				Casualties 1 Vehicles 2

Key	*Involved*		*Street Lighting*		*FACTORS*		*Special Conditions*	
	PED	*Pedestrian*	*L*	*Daylight*	*+VE*	*Positive Breath Test*	*ATS OUT*	*Traffic Lights Not Working*
	HGV	*Heavy Goods Vehicle*			*R.TURN*	*Right Turn Manoeuvre*	*ATS DEF*	*Traffic Lights Defective*
	GV	*Goods Vehicle*	*STL*	*Street Lights*	*O/TAKE*	*Overtaking Manoeuvre*	*SIGNS*	*Road Signs Defective or Obscurred*
	M/C	*Motor Cycle*	*USL*	*Street LIghts Unlit*	*S.VEH*	*Single Vehicle*	*RD WRKS*	*Road Works*
	P/C	*Pedal Cycle*	*NSL*	*No Street Lights*			*Surface*	*Road Surface Defective*
	PSV	*Bus/Coach*	*STU*	*Street Lights Unknown*				

D-PRINT CRASH REPORT

1-Mar-2021
13:31:32

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
22	**Road No A5 Grid 424476E** **Section Ref 300728N**	SLIGHT	13/03/2020	6	10:45	L	Dry	Fine			
	A5 NEAR JUNCTION WITH M42								North Warwickshire		
	VEH 002 WAS DRIVING AROUND THE ROUNDABOUT BUT TRAFFIC HAD BUILT UP SO HAD TO MAKE A FEW STOPS JUST BEFORE GETTING OFF THE ROUNDABOUT, VEH 002 WAS STOPPED BY TRAFFIC AND VEH 001 BEHIND DID NOT NOTICE THAT VEH 002 HAD STOPPED AND WENT INTO THE BACK OF VEH 002.						Veh1, car, NW -> S Veh2, car, NW -> S				Casualties 1 Vehicles 2
23	**Road No A5 Grid 424477E** **Section Ref 300619N**	SLIGHT	10/02/2020	2	21:25	DRK STL	Wet/Damp	Fine			HGV
	WATLING STREET (A5) J/W M42 JCT 10 DORDON								North Warwickshire		
	VEH 001 APPROACHED THE LIGHTS FROM THE A5 TOWARDS KINGSBURY ISLE. THIS VEHICLE HAS THEN PULLED OFF AND HAS COLLIDED WITH VEH 002 ON THE LEFT HAND SIDE CAUSING IT TO SPIN. THIS HAS DAMAGED BOTH VEHICLES 1 AND 2.						Veh1, goods > 7.5t, E -> W Veh2, car, E -> W				Casualties 2 Vehicles 2
24	**Road No M42 Grid 424477E** **Section Ref 300754N**	SLIGHT	02/06/2018	7	16:55	L	Dry	Fine			
	JUNCTION 10 OFFSLIP M42 AT JN WITH A5								North Warwickshire		
	V2 WAS STATIONARY AT RED ATS AT END OF OFF SLIP WAITING TO JOIN ROUNDABOUT. V1 HAS FAILED TO SEE V2 STATIONARY AND HAS REACTED TOO LATE COLLIDING WITH REAR OF V2.						Veh1, car, NE -> SW Veh2, car, NE -> SW				Casualties 2 Vehicles 2

Key

Involved	
PED	*Pedestrian*
HGV	*Heavy Goods Vehicle*
GV	*Goods Vehicle*
M/C	*Motor Cycle*
P/C	*Pedal Cycle*
PSV	*Bus/Coach*

Street Lighting	
L	*Daylight*
STL	*Street Lights*
USL	*Street LIghts Unlit*
NSL	*No Street Lights*
STU	*Street Lights Unknown*

FACTORS	
+VE	*Positive Breath Test*
R.TURN	*Right Turn Manoeuvre*
O/TAKE	*Overtaking Manoeuvre*
S.VEH	*Single Vehicle*

Special Conditions	
ATS OUT	*Traffic Lights Not Working*
ATS DEF	*Traffic Lights Defective*
SIGNS	*Road Signs Defective or Obscurred*
RD WRKS	*Road Works*
Surface	*Road Surface Defective*

D-PRINT CRASH REPORT

1-Mar-2021
13:31:32

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
25	**Road No A5** **Grid 424478E** **Section** **Ref 300735N**	SLIGHT	01/09/2018	7	09:30	L	Dry	Fine			
	TAMWORTH ISLAND A5 AT JN WITH JCT 10 SLIP OFF M42								North Warwickshire		
	Ambo are travelling around the roundabout on blue with sirens activated. V1 & V2 travelling onto the roundabout from M42 south, V2 has slowed to allow ambo to pass and V1 has bumped into the rear						Veh1, car, NE -> NW Veh2, car, NE -> NW Veh3, , NW -> SE				Casualties 2 Vehicles 3
26	**Road No A5** **Grid 424480E** **Section** **Ref 300618N**	SLIGHT	02/03/2016	4	08:55	L	Wet/Damp	Rain			
	WATLING STREET A5 AT JN WITH M42								North Warwickshire		
	PERSON REPORTING WAS STATIONARY AT TRAFFIC LIGHTS OF J10. M42 WHILST STATIONARY HAS FELT IMPACT FROM VEHICLE BEHIND. PERSON REPORTING HAS ALIGHTED FROM VEHICLE AS HAS VEHICLE NO 2 DRIVER.						Veh1, car, SE -> W Veh2, car, SE -> NW				Casualties 1 Vehicles 2
27	**Road No A5** **Grid 424482E** **Section** **Ref 300620N**	SLIGHT	29/10/2018	2	15:30	L	Wet/Damp	Fine			
									North Warwickshire		
	VEHICLE 2 STATIONARY IN TRAFFIC QUEUE. VEHICLE 1 APPROACHED FROM BEHIND AND HIT VEHICLE 2. DRIVER OF VEHICLE 1 REFUSED TO EXCHANGE DETAILS.						Veh1, goods unknown weight, E -> W Veh2, car, E -> W				Casualties 1 Vehicles 2

Key

Involved	
PED	*Pedestrian*
HGV	*Heavy Goods Vehicle*
GV	*Goods Vehicle*
M/C	*Motor Cycle*
P/C	*Pedal Cycle*
PSV	*Bus/Coach*

Street Lighting	
L	*Daylight*
STL	*Street Lights*
USL	*Street LIghts Unlit*
NSL	*No Street Lights*
STU	*Street Lights Unknown*

FACTORS	
+VE	*Positive Breath Test*
R.TURN	*Right Turn Manoeuvre*
O/TAKE	*Overtaking Manoeuvre*
S.VEH	*Single Vehicle*

Special Conditions	
ATS OUT	*Traffic Lights Not Working*
ATS DEF	*Traffic Lights Defective*
SIGNS	*Road Signs Defective or Obscurred*
RD WRKS	*Road Works*
Surface	*Road Surface Defective*

D-PRINT CRASH REPORT

1-Mar-2021
13:31:32

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
28	**Road No M42** **Grid 424482E** **Section** **Ref 300744N**	SLIGHT	24/11/2020	3	04:32	DRK STL	Dry	Fine			HGV
	M42 J10 EXIT SLIP AT JUNCTION WITH A5, DORDON TAMWORTH								North Warwickshire		
	IN THE MORNING 24/11/2020 I WAS DRIVING TO WORK. ON MENTIONED LOCATION I WAS IN LEFT FILE LEAVING M42 ROUNDABOUT TOA5 SOUTH WHEN OTHER DRIVER (MERCEDES) DRIVING IN RIGHT FILE SUDDENLY CHANGED HIS FILE FROM RIGHT TO LEFT WITH VERY SHORT NOTICE OF SIGNALS AS I WAS AT THE SAME LEVEL. I'VE TRIED TO STOP AS SOON AS POSSIBLE BUT I COULDN'T AVOID COLLISION AND OTHER DRIVER HIT ME TO RIGHT DRIVER'S SIDE AND KEPT DRIVING FOR NEXT CCA50 METERS.						Veh1, goods > 7.5t, NE -> SE Veh2, car, NE -> SE				Casualties 1 Vehicles 2
29	**Road No M42** **Grid 424485E** **Section** **Ref 300728N**	SLIGHT	17/02/2016	4	10:12	L	Wet/Damp	Rain Wind			
	ISLAND AT JUNCTION 10 M42 AT JN WITH SLIP ROAD LEADING TO A5 A5								North Warwickshire		
	V1 and V2 travelling around the island on the M42. V1 & V2 collided as V1 began to turn towards the slip road A5 leading to Atherstone. Both parties stopped & exchanged details. Passenger of V1 complained of pains in his neck.						Veh1, car, NE -> S Veh2, goods unknown weight, NE -> S				Casualties 1 Vehicles 2
30	**Road No A5** **Grid 424486E** **Section** **Ref 300690N**	SERIOUS	10/01/2017	3	06:25	DRK STL	Wet/Damp	Fine			P/C
	JUNCTION 10 M42, ISLAND A5 AT JN WITH A5								North Warwickshire		
	AS CALLER HAS ENTERED THE ISLAND ON J10, M42S ON PEDAL CYCLE A LORRY HAS MOVED INTO THE INSIDE LANE OF THE ISLAND AND THEN CUT BACK INTO THE MIDDLE LANE COLLIDING WITH CALLER CAUSING HIM TO COME OFF HIS PEDAL CYCLE WHERE HAS SUSTAINED AN OPEN WOUND TO HIS LEFT ELBOW AND DEEP GRAZES TO BOTH KNEES AND LEFT HIP. CYCLE IS DAMAGED AND CLOTHING TORN.						Veh1, goods unknown weight, N -> S Veh2, pedal cycle, N -> S				Casualties 1 Vehicles 2

Key

Involved	
PED	*Pedestrian*
HGV	*Heavy Goods Vehicle*
GV	*Goods Vehicle*
M/C	*Motor Cycle*
P/C	*Pedal Cycle*
PSV	*Bus/Coach*

Street Lighting	
L	*Daylight*
STL	*Street Lights*
USL	*Street LIghts Unlit*
NSL	*No Street Lights*
STU	*Street Lights Unknown*

FACTORS	
+VE	*Positive Breath Test*
R.TURN	*Right Turn Manoeuvre*
O/TAKE	*Overtaking Manoeuvre*
S.VEH	*Single Vehicle*

Special Conditions	
ATS OUT	*Traffic Lights Not Working*
ATS DEF	*Traffic Lights Defective*
SIGNS	*Road Signs Defective or Obscurred*
RD WRKS	*Road Works*
Surface	*Road Surface Defective*

D-PRINT CRASH REPORT

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
31	**Road No A5 Grid 424493E** **Section Ref 300707N**	SLIGHT	15/05/2017	2	17:41	L	Dry	Fine			
	A5 AT JN WITH M42								North Warwickshire		
	VEHICLE 1 AND VEHICLE 2 WERE TRAVELLING AROUND THE M42 ISLAND. VEHICLE 1 HAS COLLIDED WITH THE FRONT DRIVERS SIDE OF VEHICLE 2. VEHICLE 2 WAS IN THE FAR LEFT LANE.						Veh1, car, NW -> SE Veh2, car, NW -> SE				Casualties 1 Vehicles 2
32	**Road No A5 Grid 424495E** **Section Ref 300685N**	SLIGHT	23/07/2019	3	20:15	L	Dry	Fine			M/C
	A5 NEAR JUNCTION WITH UNCLASSIFIED ROAD								North Warwickshire		
	THIS IS A 2 VEHICLE SLIGHT INJURY RTC WHERE BOTH VEHICLES ARE MOTORCYCLES. TRAVELLING IN THE SAME LANE, TAKING THE SAME EXIT. AS THEY HAVE TAKEN THE EXIT OFF OF THE TRAFFIC ISLAND, THEY HAVE HAD CONTACT CAUSING BOTH RIDERS TO FALL FROM THEIR MACHINES.						Veh1, m/cycle > 500cc, NW -> E Veh2, m/cycle > 500cc, NW -> E				Casualties 2 Vehicles 2
33	**Road No A5 Grid 424561E** **Section Ref 300622N**	SLIGHT	18/05/2018	6	22:40	DRK STL	Dry	Fine			
	A5 NEAR JN WITH JCT 10 ISLAND M42								North Warwickshire		
	VEHICLE 1 AND VEHICLE 2 WERE TRAVELLING ALONG A5 FROM ATHERSTONE TOWARDS TAMWORTH WHEN VEHICLE 1 HAS DRIVEN INTO THE REAR OF VEHICLE 2 CAUSING MINOR DAMAGE AND SLIGHT INJURY TO THE OCCUPANTS OF VEHICLE 2. VEHICLE 1 LEFT THE SCENE.COLLISION OCCURED ON THE WARWICKSHIRE FORCE AREA. PLEASE SEN TO THEM FOR RECORDING. THERE ARE NO WITNESSES AND NO CCTV. INFORMANT ADVISED THAT THIS MATTER WILL BE FILED.						Veh1, car, E -> W Veh2, car, E -> W				Casualties 2 Vehicles 2

Key

Involved	
PED	*Pedestrian*
HGV	*Heavy Goods Vehicle*
GV	*Goods Vehicle*
M/C	*Motor Cycle*
P/C	*Pedal Cycle*
PSV	*Bus/Coach*

Street Lighting	
L	*Daylight*
STL	*Street Lights*
USL	*Street LIghts Unlit*
NSL	*No Street Lights*
STU	*Street Lights Unknown*

FACTORS	
+VE	*Positive Breath Test*
R.TURN	*Right Turn Manoeuvre*
O/TAKE	*Overtaking Manoeuvre*
S.VEH	*Single Vehicle*

Special Conditions	
ATS OUT	*Traffic Lights Not Working*
ATS DEF	*Traffic Lights Defective*
SIGNS	*Road Signs Defective or Obscurred*
RD WRKS	*Road Works*
Surface	*Road Surface Defective*

D-PRINT CRASH REPORT

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
34	**Road No A5** **Grid 424905E** **Section** **Ref 300532N**	SLIGHT	06/06/2017	3	17:44	L	Wet/Damp	Fine			
	WATLING STREET A5 NEAR JN WITH M42 ISLAND								North Warwickshire		
	V01 HAS HIT THE REAR OF V02. V02 WAS STATIONARY IN TRAFFIC JUST BEFORE THE ISLAND FOR THE M42 JUNCTION.						Veh1, car, E -> W Veh2, car, E -> W				Casualties 1 Vehicles 2
35	**Road No A5** **Grid 424921E** **Section** **Ref 300526N**	SERIOUS	17/03/2016	5	14:40	L	Dry	Fine			
	DORDON A5 NEAR JN WITH NR BIRCH COPPICE INDUSTRIAL ESTATE								North Warwickshire		
	VEH01 HAD BEEN TRAVELLING ALONG THE A5 FROM BIRCH COPPICE INDUSTRIAL ESTATE TOWARDS JUNCTION OF THE M42. VEH02 HAS BRAKED HEAVILY IN FRONT OF VEH01 CAUSING VEH01 TO COLLIDE WITH THE REAR OF VEH02. VEH03 HAS THEN COLLIDED WITH THE REAR OF VEH01 CAUSING VEH01 TO MOUNT THE CENTRAL CRASH BARRIER. VEH04 HAS THEN COLLIDED WITH THE REAR OF VEH03 EXTENSIVE DAMAGE CAUSED TO VEH01 & VEH03						Veh1, car, E -> W Veh2, car, E -> W Veh3, car, E -> W Veh4, car, E -> W				Casualties 2 Vehicles 4
36	**Road No A5** **Grid 425105E** **Section** **Ref 300467N**	SERIOUS	06/07/2018	6	15:37	L	Dry	Fine			
	DORDON A5 NEAR JN WITH JUNCTION 10 M42								North Warwickshire		
	V1 has been in the outside lane of a two lane stretch of the A5. V2 has been in lane 1. V1 has then tried to merge into lane 1 and has not seen V2 and has hit V2 causing extensive damage.						Veh1, goods unknown weight, E -> W Veh2, car, E -> W				Casualties 2 Vehicles 2

Key

Involved	
PED	*Pedestrian*
HGV	*Heavy Goods Vehicle*
GV	*Goods Vehicle*
M/C	*Motor Cycle*
P/C	*Pedal Cycle*
PSV	*Bus/Coach*

Street Lighting	
L	*Daylight*
STL	*Street Lights*
USL	*Street LIghts Unlit*
NSL	*No Street Lights*
STU	*Street Lights Unknown*

FACTORS	
+VE	*Positive Breath Test*
R.TURN	*Right Turn Manoeuvre*
O/TAKE	*Overtaking Manoeuvre*
S.VEH	*Single Vehicle*

Special Conditions	
ATS OUT	*Traffic Lights Not Working*
ATS DEF	*Traffic Lights Defective*
SIGNS	*Road Signs Defective or Obscurred*
RD WRKS	*Road Works*
Surface	*Road Surface Defective*

D-PRINT CRASH REPORT

1-Mar-2021
13:31:32

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
37	**Road No A5 Grid 425216E** **Section Ref 300447N**	SLIGHT	08/04/2017	7	17:40	L	Dry	Fine			
	O/S HALL END HOUSE DORDON A5								North Warwickshire		
	VEHICLE 1 FAILED TO OBSERVE VEHICLE 2 BRAKING AND HIT VEHICLE FROM BEHIND. MINOR INJURIES CAUSED TO CASUALTIES. EXTENSIVE DAMAGE TO VEHICLE.						Veh1, car, W -> E Veh2, car, W -> E				Casualties 2 Vehicles 2
38	**Road No A5 Grid 425325E** **Section Ref 300410N**	SLIGHT	07/11/2017	3	17:15	DRK STL	Wet/Damp	Rain		O/TAKE	M/C
	A5 AT JN WITH BIRCH COPPICE INDUSTRIAL ESTATE								North Warwickshire		
	VEHICLE 2 WAS TRAVELLING FROM TAMWORTH TO DORDON INDUSTRIAL ESTATE TO WORK. AT THE PREVIOUS ISLAND A CAR THAT HE RECOGNISED AS HIS FRIEND'S MUM'S (WITH FRIEND IN PASSENGER SEAT) BEGAN TO HONK THE HORN. WHILST THEY BOTH ENTERED THE RIGHT HAND SLIP ROAD INTO BIRCH COPPICS THE CAR (VEHICLE 1) TRIED TO OVERTAKE CLIPPING THE IP CAUSING DAMAGE TO THE MOTORBIKE AND HIS RIGHT KNEE. VEHICLE 1 DIDN'T STOP.						Veh1, car, W -> E Veh2, m/cycle 50 - 125cc, W -> E				Casualties 1 Vehicles 2
39	**Road No A5 Grid 425370E** **Section Ref 300383N**	SLIGHT	29/08/2016	2	21:35	DRK STL	Dry	Fine		R.TURN	
	WATLING STREET DORDON A5 AT JN WITH BIRCH COPPICE BUSINESS PARK								North Warwickshire		
	VEH01 HAS ALLEDGEDLY DRIVEN THROUGH A RED LIGHT AND COLLIDED WITH VEH02 WHO WAS TURNING RIGHT ACROSS VEHICLE 1'S PATH						Veh1, car, SE -> NW Veh2, car, SW -> SE				Casualties 1 Vehicles 2

Key

Involved	
PED	*Pedestrian*
HGV	*Heavy Goods Vehicle*
GV	*Goods Vehicle*
M/C	*Motor Cycle*
P/C	*Pedal Cycle*
PSV	*Bus/Coach*

Street Lighting	
L	*Daylight*
STL	*Street Lights*
USL	*Street LIghts Unlit*
NSL	*No Street Lights*
STU	*Street Lights Unknown*

FACTORS	
+VE	*Positive Breath Test*
R.TURN	*Right Turn Manoeuvre*
O/TAKE	*Overtaking Manoeuvre*
S.VEH	*Single Vehicle*

Special Conditions	
ATS OUT	*Traffic Lights Not Working*
ATS DEF	*Traffic Lights Defective*
SIGNS	*Road Signs Defective or Obscurred*
RD WRKS	*Road Works*
Surface	*Road Surface Defective*

D-PRINT CRASH REPORT

1-Mar-2021
13:31:32

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
40	**Road No A5** **Grid 425388E** **Section** **Ref 300379N**	SLIGHT	15/02/2016	2	22:11	DRK STL	Wet/Damp	Fine		R.TURN	
	DORDON A5 AT JN WITH DANNY MORSON WAY								North Warwickshire		
	DRIVER OF V001 WAS TURNING RIGHT ONTO DANNY MORSON WAY INTO THE INDUSTRIAL ESTATE WHEN HE HAS MISTAKEN THE GREEN LIGHT FOR GO AHEAD ONLY, FOR HIS SIGNAL TO GO. ALTHOUGH THE LIGHTS TO TURN RIGHT WERE STILL ON RED. WHILST TURNING HE HAS THEN PULLED INTO THE PATH OF V002 WHO WAS COMING THE OPPOSITE WAY CAUSING V002 TO CRASH INTO V001'S LEFT SIDE.						Veh1, car, NW -> S Veh2, goods unknown weight, SE -> NW				Casualties 2 Vehicles 2
41	**Road No A5** **Grid 425412E** **Section** **Ref 300392N**	SLIGHT	01/03/2018	5	05:49	DRK STL	Frost/Ice	Fog Mist			P/C
	A5 AT JN WITH BIRCH COPPICE BUSINESS PARK								North Warwickshire		
	VEHICLE 1 WAS TRAVELLING ALONG THE A5, DORDON AND AS HE WAS APPROACHING TRAFFIC LIGHTS WHICH WERE ON GREEN HE CONTINUED TO TRAVEL. IP HAS THEN CROSSED THE ROAD ON HIS PEDAL CYCLE IN FRONT OF VEHICLE 1 CAUSING THEM BOTH TO COLLIDE.						Veh1, car, W -> E Veh2, pedal cycle, N -> S				Casualties 1 Vehicles 2
42	**Road No A5** **Grid 425601E** **Section** **Ref 300304N**	SERIOUS	06/02/2020	5	17:30	DRK STL	Dry	Fine	NE	S.VEH	PED
	WATLING STREET (A5) DORDON								North Warwickshire		
	CASUALTY 001 HAS RAN OUT INTO THE CARRIAGEWAY AND HAS BEEN HIT BY V001 AT LOW SPEED AS VEHICLE WAS IN SLOW MOVING TRAFFIC.						Veh1, car, SE -> NW				Casualties 1 Vehicles 1

Key

Involved	
PED	*Pedestrian*
HGV	*Heavy Goods Vehicle*
GV	*Goods Vehicle*
M/C	*Motor Cycle*
P/C	*Pedal Cycle*
PSV	*Bus/Coach*

Street Lighting	
L	*Daylight*
STL	*Street Lights*
USL	*Street LIghts Unlit*
NSL	*No Street Lights*
STU	*Street Lights Unknown*

FACTORS	
+VE	*Positive Breath Test*
R.TURN	*Right Turn Manoeuvre*
O/TAKE	*Overtaking Manoeuvre*
S.VEH	*Single Vehicle*

Special Conditions	
ATS OUT	*Traffic Lights Not Working*
ATS DEF	*Traffic Lights Defective*
SIGNS	*Road Signs Defective or Obscurred*
RD WRKS	*Road Works*
Surface	*Road Surface Defective*

D-PRINT CRASH REPORT

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
43	**Road No A5** **Grid 425803E** **Section** **Ref 300243N**	SLIGHT	14/10/2016	6	14:26	L	Dry	Fine		O/TAKE S.VEH	M/C
	AMBO STATION DORDON A5								North Warwickshire		
	VEH 01 HEADING SOUTH EAST OF THE A5 TOWARDS DORDON ISLAND. VEH 01 HAS HIT THE OFFSIDE OF THE CURB ON THE MIDDLE CARRIAGEWAY DURING AN OVERTAKING MANOUVRE. THIS HAS CAUSED VEH 01 TO SWERVE ACROSS THE CARRIAGEWAY. VEH 01 HAS COME TO A HALT AND THE RIDER HAS BEEN EJECTED OVER THE HANDLEBARS CAUSING INJURY.						Veh1, m/cycle > 500cc, NW -> SE				Casualties 1 Vehicles 1
44	**Road No A5** **Grid 425871E** **Section** **Ref 300225N**	SLIGHT	24/07/2018	3	16:34	L	Dry	Fine			
	NEAR TO VICARAGE CLOSE A5								North Warwickshire		
	VEHICLE 2 WAS TRAVELLING ALONG THE A5 TOWARDS NUNEATON WHILST VEHICLE 1 WAS TRAVELLING ALONG THE A5 IN THE OPPOSITE DIRECTION ON THE OPPOSITE CARRIAGEWAY. VEHICLE 1 HAS THEN DONE A U TURN THROUGH A GAP IN THE CENTRAL RESERVATION CAUSING VEHICLE 2 TO TAKE EVASIVE ACTION. THE VEHICLES HAVEN'T COLLIDED BUT VEHICLE 2 HAS BUMPED INTO THE KERB ON THE LEFT SIDE CAUSING DAMAGE TO HER NEARSIDE FRONT TYRE AND HER EXHAUST. VEHICLE 1 HAS FAILED TO STOP AT THE SCENE						Veh1, car, SE -> SE Veh2, car, NW -> SE				Casualties 1 Vehicles 2

Key

Involved	
PED	*Pedestrian*
HGV	*Heavy Goods Vehicle*
GV	*Goods Vehicle*
M/C	*Motor Cycle*
P/C	*Pedal Cycle*
PSV	*Bus/Coach*

Street Lighting	
L	*Daylight*
STL	*Street Lights*
USL	*Street LIghts Unlit*
NSL	*No Street Lights*
STU	*Street Lights Unknown*

FACTORS	
+VE	*Positive Breath Test*
R.TURN	*Right Turn Manoeuvre*
O/TAKE	*Overtaking Manoeuvre*
S.VEH	*Single Vehicle*

Special Conditions	
ATS OUT	*Traffic Lights Not Working*
ATS DEF	*Traffic Lights Defective*
SIGNS	*Road Signs Defective or Obscurred*
RD WRKS	*Road Works*
Surface	*Road Surface Defective*

D-PRINT CRASH REPORT

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
45	**Road No A5** **Grid 425964E** **Section** **Ref 300186N**	SERIOUS	31/07/2020	6	16:44	L	Dry	Fine	SW	S.VEH	M/C
	WATLING STREET (A5) NEAR JUNCTION WITH VICARAGE CLOSE, DORDON								North Warwickshire		PED
	VEH 001 HAS BEEN TRAVELLING A5 FROM TAMWORTH TOWARDS DORDON, PEDESTRAIN HAS WALKED ACROSS THE A5 FROM VICARAGE CLOSE DORDON. AS THE PEDESTRAIN WHO WAS LOOKING DOWN AT MOBILE PHONE WAS APPROXIMATELY HALFWAY ACROSS LANE 2 WHEN HIT BY A MOTORCYCLE.						Veh1, m/cycle 50 - 125cc, NW -> SE				Casualties 2 Vehicles 1
46	**Road No A5** **Grid 426098E** **Section** **Ref 300117N**	SLIGHT	09/08/2016	3	14:50	L	Dry	Fine			
	AT LAYBY WATLING ST DORDON A5 NEAR JN WITH GYPSY LANE								North Warwickshire		
	VEH01 WAS STATIONARY IB LAY BY AND THE DRIVER OPENED THE REAR DOOR, THE DOOR STEP FAILED AND STRUCK THE SIDE OF VEH02 CAUSING THE NEARSIDE WING MIRROR TO HIT THE NEARSIDE PASSENGER DOOR WINDOW SMASHING THE GLASS AS VEH02 WAS PASSING IN THE RUNNING LANE 1.						Veh1, goods unknown weight, P -> P Veh2, goods unknown weight, NW -> SE				Casualties 1 Vehicles 2
47	**Road No A5** **Grid 426134E** **Section** **Ref 300079N**	SLIGHT	27/06/2017	3	12:15	L	Dry	Fine			
	O/S NO. 11 WATLING STREET A5								North Warwickshire		
	VEHICLE 1 - BJ17 YJU PARKED IN LANE 1 ON THE A5 OUTSIDE #11, VEHICLE 1 WAS HIT BY VEHICLE 2 - T7EDY, REAR OFFISDE DAMAGE TO VEHICLE 1, FRONT NEARSIDE DAMAGE TO VEHICLE 2. AS VEHICLE 2 HAS HIT VEHICLE 1, VEHICLE 1 HAS MOVED FORWARD INTO A PARKED CAR VEHICLE 3 - DU15 UPT, THIS CAUSING DAMAGE OT OFFSIDE DRIVERS DOOR. VEHICLE 1 AND VEHICLE 2 UNDRIVEABLE.CORRECT ORDER OF VEHICLES T7 - VEHICLE 1 BJ17 - VEHICLE 2 DU15 - VEHICLE 3						Veh1, car, SE -> NW Veh2, car, P -> P Veh3, car, P -> P				Casualties 1 Vehicles 3

Key

Involved	
PED	*Pedestrian*
HGV	*Heavy Goods Vehicle*
GV	*Goods Vehicle*
M/C	*Motor Cycle*
P/C	*Pedal Cycle*
PSV	*Bus/Coach*

Street Lighting	
L	*Daylight*
STL	*Street Lights*
USL	*Street LIghts Unlit*
NSL	*No Street Lights*
STU	*Street Lights Unknown*

FACTORS	
+VE	*Positive Breath Test*
R.TURN	*Right Turn Manoeuvre*
O/TAKE	*Overtaking Manoeuvre*
S.VEH	*Single Vehicle*

Special Conditions	
ATS OUT	*Traffic Lights Not Working*
ATS DEF	*Traffic Lights Defective*
SIGNS	*Road Signs Defective or Obscurred*
RD WRKS	*Road Works*
Surface	*Road Surface Defective*

D-PRINT CRASH REPORT

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
48	**Road No U** **Grid** **426191E** **Section** **Ref** **300840N**	SLIGHT	22/10/2018	2	14:48	L	Dry	Fine		R.TURN	P/C
	ROMAN WAY AT JN WITH LONG STREET								North Warwickshire		
	VEHICLE 1 TURNED RIGHT AT ISLAND INTO ROMAN WAY, CYCLIST, WHO AT OWN ADMITANCE WAS ON HIS PHONE CYCLED INTO PATH OF VEHICLE 1 AND WAS HIT TO THE RIGHT SIDE, ON THE BACK WHEEL.						Veh1, car, N -> W Veh2, pedal cycle, S -> N				Casualties 1 Vehicles 2
49	**Road No U** **Grid** **426197E** **Section** **Ref** **300396N**	SLIGHT	11/05/2017	5	10:27	L	Dry	Fine		R.TURN	P/C
	LONG STREET DORDON AT JN WITH CHURCH ROAD								North Warwickshire		
	BICYCLE HAS BEEN TRAVELLING DOWN LONG STREET, WHEN GOING PAST JUNCTION OF CHURCH ROAD, V1 - A VAN HAS BEEN TRAVELLING UP LONG STREET AND TURNED INTO JUNCTION OF CHURCH ROAD. WHEN VAN HAS TURNED RIGHT INTO CHURCH ROAD IT HAS COLLIDED WITH THE BICYCLE. CYCLIST HAS SUFFERED BRUISING AND HIS IKE HAS BEEN SCRATCHED AND SCUFFED. VAN DRIVER DID STOP.						Veh1, goods unknown weight, S -> NE Veh2, pedal cycle, N -> S				Casualties 1 Vehicles 2

Key

Involved		*Street Lighting*		*FACTORS*		*Special Conditions*	
PED	*Pedestrian*	*L*	*Daylight*	*+VE*	*Positive Breath Test*	*ATS OUT*	*Traffic Lights Not Working*
HGV	*Heavy Goods Vehicle*			*R.TURN*	*Right Turn Manoeuvre*	*ATS DEF*	*Traffic Lights Defective*
GV	*Goods Vehicle*	*STL*	*Street Lights*	*O/TAKE*	*Overtaking Manoeuvre*	*SIGNS*	*Road Signs Defective or Obscurred*
M/C	*Motor Cycle*	*USL*	*Street LIghts Unlit*	*S.VEH*	*Single Vehicle*	*RD WRKS*	*Road Works*
P/C	*Pedal Cycle*	*NSL*	*No Street Lights*			*Surface*	*Road Surface Defective*
PSV	*Bus/Coach*	*STU*	*Street Lights Unknown*				

D-PRINT CRASH REPORT

1-Mar-2021
13:31:32

No	Location	Severity	Date	Day	Time	Street Lighting	Road Surface	Weather	Pedestrian Direction	Factors	Involved
50	**Road No A5 Grid 426202E** **Section Ref 300056N**	SLIGHT	19/06/2017	2	16:27	L	Dry	Fine			
	WATLING ST A5 AT JN WITH GYPSY LANE								North Warwickshire		
	VEHICLE 1 APPROACHED ROUNDABOUT WHICH HAD BEEN CONED OFF NOT ALLOWING ACCESS TO VEHICLE IN NORMAL CLOCKWISE DIRECTION SO AT SPEED WENT RIGHT ACROSS ROUNDABOUT OVER THE OTHERSIDE AND CONTINUED ALONG THE A5 ON THE RIGHT SIDE OF THE CARRIAGEWAY TOWARDS NUNEATON NARROWLY MISSING VEHICLES COMING TOWARDS THE ROUNDABOUT IN BOTH DIRECTIONS.VEHICLE 2 APPROACHING ROUNDABOUT HAD TO SLAM ON BRAKES RESULTING IN DRIVER TO STRIKE HER HEAD ON THE STEERING WHEEL CAUSING INJURIES NAMELY REDDENING TO HER HEAD/FACE AND SEATBELT MARK.					Veh1, car, NW -> SE Veh2, car, SE -> NW					Casualties 1 Vehicles 2

Key	*Involved*		*Street Lighting*		*FACTORS*		*Special Conditions*	
	PED	*Pedestrian*	*L*	*Daylight*	*+VE*	*Positive Breath Test*	*ATS OUT*	*Traffic Lights Not Working*
	HGV	*Heavy Goods Vehicle*			*R.TURN*	*Right Turn Manoeuvre*	*ATS DEF*	*Traffic Lights Defective*
	GV	*Goods Vehicle*	*STL*	*Street Lights*	*O/TAKE*	*Overtaking Manoeuvre*	*SIGNS*	*Road Signs Defective or Obscurred*
	M/C	*Motor Cycle*	*USL*	*Street LIghts Unlit*	*S.VEH*	*Single Vehicle*	*RD WRKS*	*Road Works*
	P/C	*Pedal Cycle*	*NSL*	*No Street Lights*			*Surface*	*Road Surface Defective*
	PSV	*Bus/Coach*	*STU*	*Street Lights Unknown*				

APPENDIX M – SPEED SURVEY RESULTS

SPEED READINGS FOR DUAL CARRIAGEWAYS

location:	**A5 Watling Street, Dordon**
direction:	**Eastbound**
day:	**Monday**
date	**26.04.21**
time:	**0900 to 0946**

SUMMARY

mean	43.04	mph	69.3	kph
85%ile	49.68	mph	79.9	kph

Step 1:
Mean speed

$$m = \frac{\sum v}{n}$$

$m=$ 43.04 **mph**

Step 2:
Finding Value ∑

$$\sum(v-m)^2 = \sum v^2 - \frac{(\sum v^2)}{n}$$

$\sum(v-m)^2=$ 9013.68

Step 3:
Standard deviation

$$s = \sqrt{\frac{\sum(v-m)^2}{n-1}}$$

$s=$ 6.64 **mph**

Step 4:
85 percentile dry weather spot speed

$$p85 = m + s$$

$p=$ 49.68

checks: 85%ile/mean = 1.15
should be 1.1 to 1.25

S.D./mean = 0.15
should be approx 1/6 (0.17)

observed speed mph	no. of readings n	n×x	n×x²
10	0	0	0
11	0	0	0
12	0	0	0
13	0	0	0
14	0	0	0
15	0	0	0
16	0	0	0
17	0	0	0
18	0	0	0
19	0	0	0
20	0	0	0
21	0	0	0
22	0	0	0
23	0	0	0
24	1	24	576
25	0	0	0
26	0	0	0
27	0	0	0
28	0	0	0
29	2	58	1682
30	1	30	900
31	0	0	0
32	3	96	3072
33	4	132	4356
34	5	170	5780
35	6	210	7350
36	14	504	18144
37	10	370	13690
38	6	228	8664
39	12	468	18252
40	12	480	19200
41	8	328	13448
42	9	378	15876
43	11	473	20339
44	18	792	34848
45	13	585	26325
46	11	506	23276
47	8	376	17672
48	5	240	11520
49	11	539	26411
50	6	300	15000
51	4	204	10404
52	5	260	13520
53	3	159	8427
54	2	108	5832
55	1	55	3025
56	3	168	9408
57	2	114	6498
58	0	0	0
59	0	0	0
60	0	0	0
61	0	0	0
62	1	62	3844
63	2	126	7938
64	0	0	0
65	1	65	4225
66	0	0	0
67	0	0	0
68	0	0	0
69	0	0	0
70	0	0	0
71	0	0	0
72	0	0	0
73	0	0	0
74	0	0	0
75	0	0	0
76	0	0	0
77	0	0	0
78	0	0	0
79	0	0	0
80	0	0	0
	n=	Σv=	Σv²=
Total Σ	200	8608	379502

A5 WATLING ROAD, DORDON - EASTBOUND SPEED SURVEY RESULTS
(09:00 to 09:46)

observed speed mph	no. of readings n	n×x	n×x²
10	0	0	0
11	0	0	0
12	0	0	0
13	0	0	0
14	0	0	0
15	0	0	0
16	0	0	0
17	0	0	0
18	0	0	0
19	0	0	0
20	0	0	0
21	0	0	0
22	0	0	0
23	0	0	0
24	0	0	0
25	0	0	0
26	0	0	0
27	0	0	0
28	0	0	0
29	0	0	0
30	0	0	0
31	1	31	961
32	2	64	2048
33	0	0	0
34	0	0	0
35	2	70	2450
36	5	180	6480
37	5	185	6845
38	8	304	11552
39	7	273	10647
40	10	400	16000
41	5	205	8405
42	17	714	29988
43	9	387	16641
44	5	220	9680
45	7	315	14175
46	11	506	23276
47	8	376	17672
48	12	576	27648
49	8	392	19208
50	5	250	12500
51	11	561	28611
52	7	364	18928
53	9	477	25281
54	9	486	26244
55	6	330	18150
56	5	280	15680
57	1	57	3249
58	5	290	16820
59	2	118	6962
60	7	420	25200
61	3	183	11163
62	2	124	7688
63	3	189	11907
64	1	64	4096
65	1	65	4225
66	1	66	4356
67	0	0	0
68	0	0	0
69	0	0	0
70	0	0	0
71	0	0	0
72	0	0	0
73	0	0	0
74	0	0	0
75	0	0	0
76	0	0	0
77	0	0	0
78	0	0	0
79	0	0	0
80	0	0	0
	n=	Σv=	Σv²=
Total Σ	200	9522	464736

SPEED READINGS FOR DUAL CARRIAGEWAYS

location:	**A5 Watling Street, Dordon**
direction:	**Westbound**
day:	**Monday**
date	**26.04.21**
time:	**1028 to 1113**

SUMMARY

mean	47.61	mph	76.6	kph
85%ile	55.09	mph	88.6	kph

Step 1:
Mean speed

$$m = \frac{\sum v}{n}$$

m= 47.61 **mph**

Step 2:
Finding Value ∑

$$\sum(v-m)^2 = \sum v^2 - \frac{(\sum v^2)}{n}$$

∑ (v - m)²= 11393.58

Step 3:
Standard deviation

$$s = \sqrt{\frac{\sum(v-m)^2}{n-1}}$$

s= 7.48 **mph**

Step 4:
85 percentile dry weather spot speed

$$p85 = m + s$$

p= 55.09

checks: 85%ile/mean = 1.16
should be 1.1 to 1.25

S.D./mean = 0.16
should be approx 1/6 (0.17)

A5 WATLING ROAD, DORDON - WESTBOUND SPEED SURVEY RESULTS
(10:28 to 11:13)

Vehicle speeds	**49.68**	mph
	79.94	kph
	22.20	v (m/s)
	493.03	v^2
Driver Perception-Reaction time	**2**	t (s)
	44.41	v x t
Deceleration Rate	**0.25**	g
	2.45	d (m/s)
	4.91	2d
Gradient	**0.00**	a*
	2.45	d+0.1a
	4.905	2(d+0.1a)

Formula: $SSD = vt + v^2/2(d+0.1a)$

	Manual for Streets 2		DMRB	
	Light Vehicles (less than 5% HGVs)	HGVs/Buses (over 5% of total vehicles)	All traffic (Maximum decel.)	All traffic (Desirable decel.)
Perception-Reaction Time (t)	**1.5s**	**1.5s**	**2s**	**2s**
Deceleration Rate (g = 9.81m/s^2)	**0.45g**	**0.375g**	**0.375g**	**0.25g**

Enter gradient as positive for uphill towards junction and negative for downhill towards junction

	v t	+	v^2 / 2(d+0.1a)	=	SSD
Stopping Sight Distance (SSD) =	**44.41**	+	**100.52**	=	**144.92**
SSD Bonnet Adjusted (SSD+2.4)**	**147.32**				

* for simplicity, gradient will be given as zero where details of levels are unavailable and observed gradients are deemed to be insignificant in terms of the effect on vehicle braking

** 2.4 metres added to splay to allow for bonnet length of approaching vehicles

VISIBILITY SPLAY CALCULATOR: A5 WATLING STREET, DORDON - EASTBOUND (09:00 TO 09:46)

Vehicle speeds	**55.09**	mph
	88.64	kph
	24.62	v (m/s)
	606.25	v^2
Driver Perception-Reaction time	**2**	t (s)
	49.24	v x t
Deceleration Rate	**0.25**	g
	2.45	d (m/s)
	4.91	2d
Gradient	**0.00**	a*
	2.45	d+0.1a
	4.905	2(d+0.1a)

Formula: $SSD = vt + v^2/2(d+0.1a)$

	Manual for Streets 2		**DMRB**	
	Light Vehicles (less than 5% HGVs)	HGVs/Buses (over 5% of total vehicles)	All traffic (Maximum decel.)	All traffic (Desirable decel.)
Perception-Reaction Time (t)	**1.5s**	**1.5s**	**2s**	**2s**
Deceleration Rate (g = 9.81m/s^2)	**0.45g**	**0.375g**	**0.375g**	**0.25g**

Enter gradient as positive for uphill towards junction and negative for downhill towards junction

	v t	+	v^2 / 2(d+0.1a)	=	SSD
Stopping Sight Distance (SSD) =	**49.24**	+	**123.60**	=	**172.84**
SSD Bonnet Adjusted (SSD+2.4)**	**175.24**				

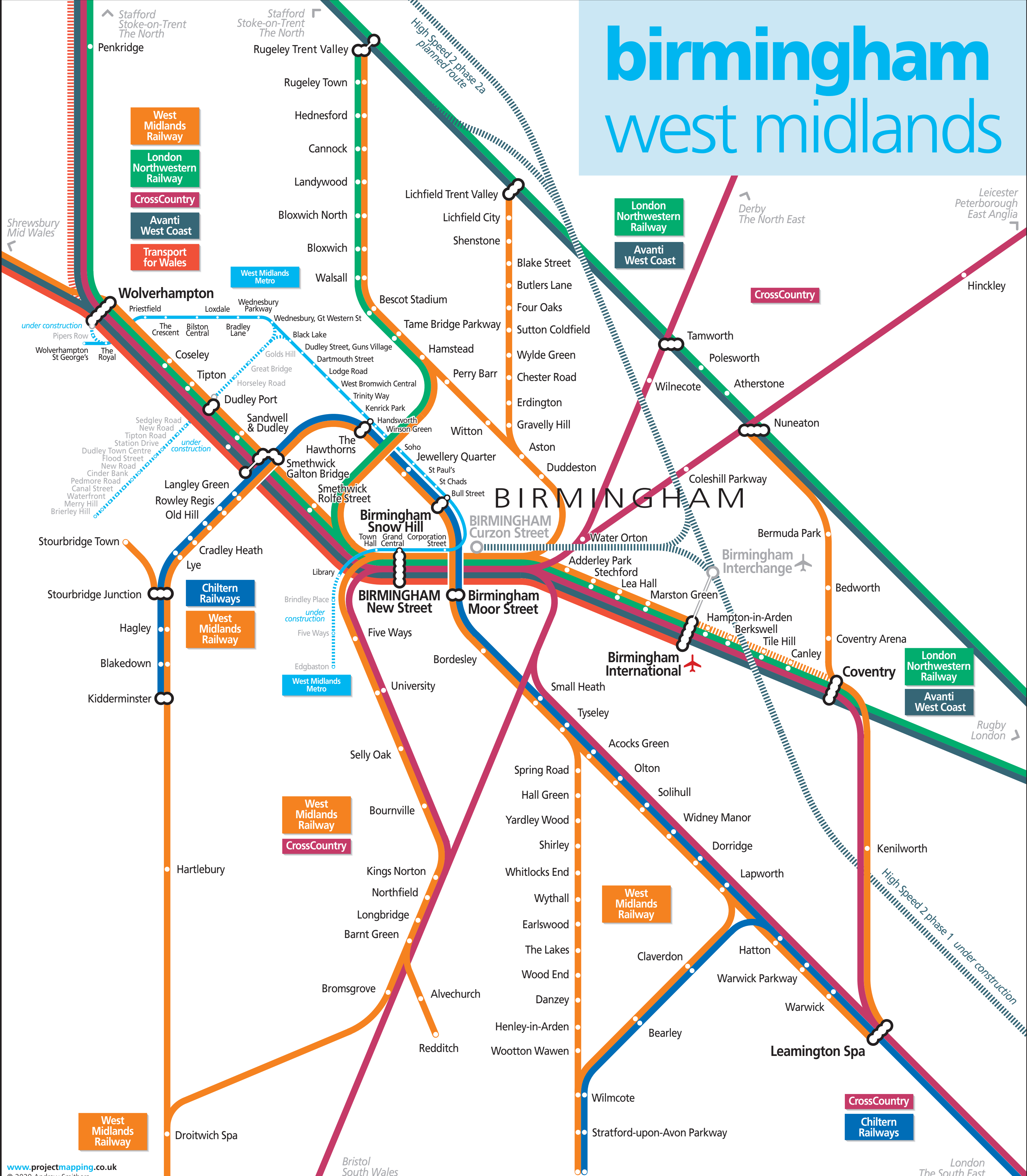
* for simplicity, gradient will be given as zero where details of levels are unavailable and observed gradients are deemed to be insignificant in terms of the effect on vehicle braking

** 2.4 metres added to splay to allow for bonnet length of approaching vehicles

VISIBILITY SPLAY CALCULATOR: A5 WATLING STREET, DORDON - WESTBOUND (10:28 TO 11:13)

APPENDIX N - LOCAL TRAIN INFORMATION

birmingham
west midlands



www.projectmapping.co.uk

WM v11b 7/8/2020

Avanti West Coast Network

How are we doing?

Tell us what you think, we're all ears:
Post: FREEPOST Avanti West Coast,
Victoria Square House, 81 New Street,
Birmingham, B2 4BA
Telephone: 0345 528 0253
customer.resolutions@avantiwestcoast.co.uk
avantiwestcoast.co.uk/contact

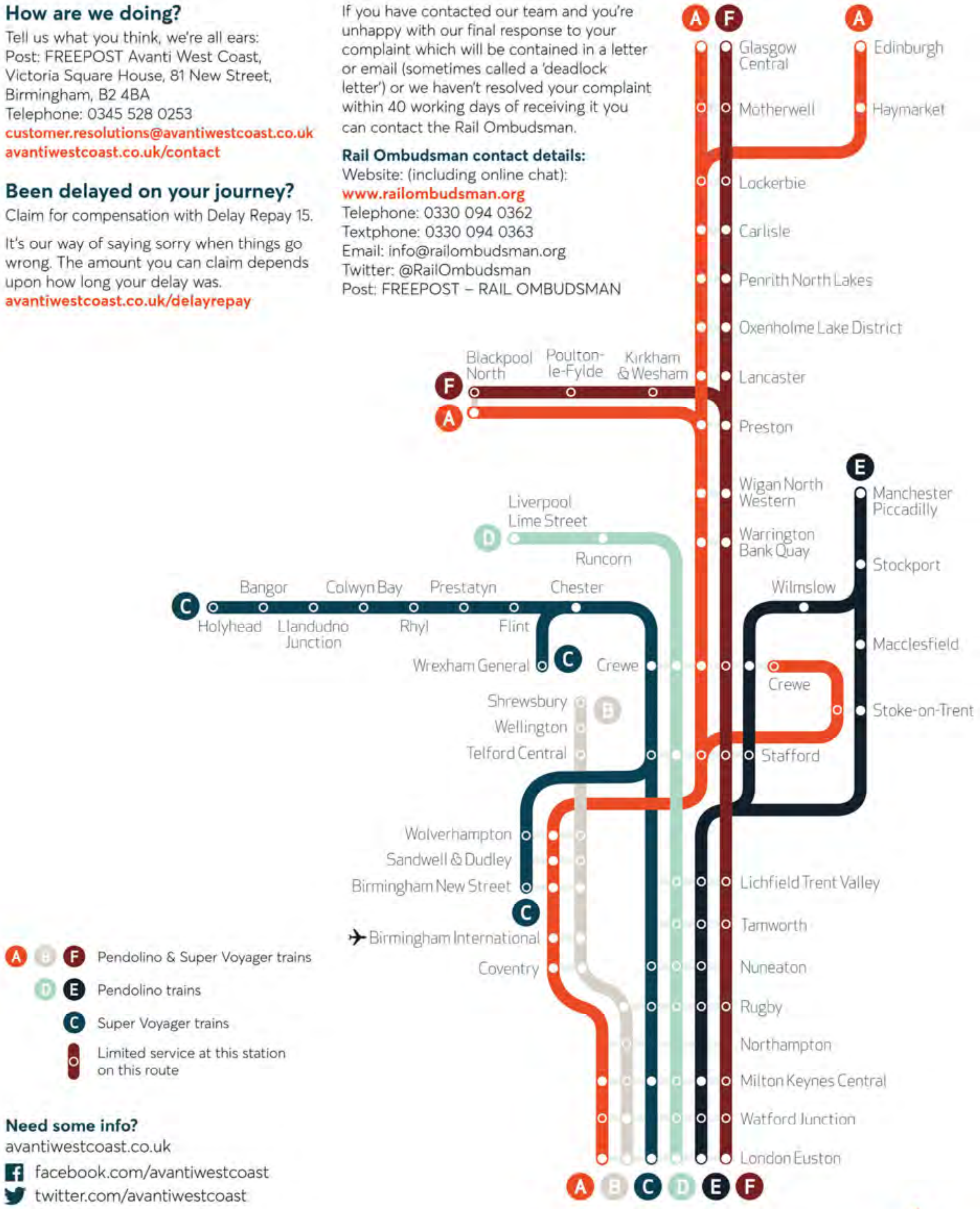
Been delayed on your journey?

Claim for compensation with Delay Repay 15.

It's our way of saying sorry when things go wrong. The amount you can claim depends upon how long your delay was.
avantiwestcoast.co.uk/delayrepay

If you have contacted our team and you're unhappy with our final response to your complaint which will be contained in a letter or email (sometimes called a 'deadlock letter') or we haven't resolved your complaint within 40 working days of receiving it you can contact the Rail Ombudsman.

Rail Ombudsman contact details:
Website: (including online chat):
www.railombudsman.org
Telephone: 0330 094 0362
Textphone: 0330 094 0363
Email: info@railombudsman.org
Twitter: @RailOmbudsman
Post: FREEPOST – RAIL OMBUDSMAN



A B F Pendolino & Super Voyager trains

D E Pendolino trains

C Super Voyager trains

o Limited service at this station on this route

Need some info?
avantiwestcoast.co.uk
facebook.com/avantiwestcoast
twitter.com/avantiwestcoast
or speak to our onboard crew

Typical weekday routes shown, weekend services may differ. Not all trains call at all stations shown, some only run once or twice.

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Correct as at December 2019

AVANTI
WEST COAST

SCOTLAND, THE NORTH EAST & MANCHESTER TO THE SOUTH WEST & SOUTH COAST.

Sunday 16 May - Saturday 11 December 2021

Live train times online and on our Train Tickets app.

crosscountry

WELCOME TO CROSSCOUNTRY.

Special Timetable

We are continuing to run a special timetable to keep train services running throughout the coronavirus pandemic.

Your safety is our number one priority, therefore we ask that you follow our travel guidelines that adhere to both government and industry rulings. Following the below travel guidelines will allow for you to travel with confidence if you are planning to travel by train.

- Travel at quieter times if possible
- Reserve a seat before you travel
- Wear a face covering when passing through stations and on-board
- Wash your hands before and after travelling

For more information on these please visit:
crosscountrytrains.co.uk/coronavirus

For our customer's and colleague's safety, we have strengthened our services, which means we are operating many longer trains with additional carriages where possible. This means that we can provide up to twice the capacity on-board.

We are allowing more dwell time where possible at stations, for customers to board and alight the train safely, maintaining social distancing. In order to support the National Railway timetable, a small number of stations have seen our services reduced or withdrawn to allow additional time at the more heavily used stations.

Our trains continue to run throughout the day on most routes at a reduced frequency and in some cases with a revised calling pattern.

Don't forget, you can get live train times on our website and via our Train Tickets app.

Why not travel on Britain's largest rail network? We call at over 100 stations that stretch from as far as Aberdeen to Penzance – enough to satisfy anyone's sense of adventure.

What are you waiting for? Start your journey today and travel across Britain directly or with one simple change. The map on the back of this timetable will show you where we can take you. We want you to have an easy, safe and enjoyable journey, wherever you are going. That's what we're all about.

Use our website or Train Tickets app to find and buy train tickets quickly and easily, without having to queue at the station.

Easier and cheaper travel

Extra Flexibility

You can now book with us with greater confidence.
With CrossCountry you can change your train if you change your mind. We've removed the £10 fee for changing the date and time of your Advance ticket.
So, not only can you get great value Advance tickets for any train operator via our website, but you have a little extra flexibility if your plans change.

Delay Repay

CrossCountry aims to provide the most punctual service possible. However, if your journey with us has been delayed by 30 minutes or more to the destination printed on your ticket, we will provide you with compensation.

For more information and for Terms & Conditions for all of the above, please visit our website **crosscountrytrains.co.uk**

Social Media

Follow us on Twitter or like us on Facebook to get the latest journey information. We have enhanced our commitment to customer service by launching a 24 hour, 7 days a week online customer contact service. We are now contactable 24/7 on our Twitter and Facebook channels to help with your travel queries, excluding Christmas Day and Boxing Day when we are closed.

@CrossCountryUK

Facebook.com/Crosscountrytrains

Instagram.com/Crosscountrytrains

FOR THE JOURNEY AHEAD.

WiFi

Ever thought of surfing when travelling through the countryside? There's free WiFi access on all services shown in this timetable. Please note that on-board WiFi is subject to availability.

First Class

You can indulge in a range of complimentary food and drink items from our First Class menu, served to you at your seat 7 days a week. Breakfast is served until 1100 with our Rest of the Day offer available from 1100 onwards. For those making shorter journeys of 50 minutes or less (90 minutes at weekends and bank holidays), hot and cold drinks and light snacks are available.

Food and Drink

Want something sweet? Or are you a savoury sort of person? Choose from a refreshingly wide range of hot drinks, soft drinks, chilled beer and wine, sandwiches, a tasty selection of sweet and savoury snacks and hot food. Whatever your appetite, we've got something to satisfy it. Our services with catering are shaded darker on your timetable, so take a quick look. Please note catering is provided on selected routes and is subject to availability.

'We have made some changes to our catering on-board during the coronavirus pandemic. Please check our website before your journey.'

crosscountrytrains.co.uk

Bikes

You're welcome to bring your bike! Most CrossCountry trains have two reservable bike spaces and one further space for unreserved bikes. Bikes without a reservation will be accepted on a first come first serve basis. Look out for the bike symbol and store your bike in the designated area to avoid blocking the aisle and vestibule.

Bike reservations are free and can be made via our website **crosscountrytrains.co.uk/bike-reservations**, Twitter **@CrossCountryUK** or by calling **0844 811 0124** (calls to this number are charged at 7p per minute, phone networks may charge an additional fee).

Luggage

Don't bring more than you can handle! We recommend that you bring one item of luggage, which measures a maximum of 90cm x 70cm x 30cm. Smaller bags can be stored under your seat, on your lap or in overhead racks. Larger bags have designated luggage areas near the entrance to each coach and in coach D of our Voyager trains. Look out for our exterior train labels to point you in the right direction!

Please do not store your luggage on the seat next to you or in doorways. If you have not been able to locate a suitable area for your luggage, please ask a member of staff for help. Any luggage in excess of this recommendation may be subject to an additional charge on-board our services, in line with the National Rail Conditions of travel.

☎ Telesales

If you can't get your ticket in advance from **crosscountrytrains.co.uk**, pick up the phone and call our Telesales Team on **0844 811 0124** (calls to this number are charged at 7p per minute, some phone networks may be charged an additional fee).

Group Travel

Friends stick together. So why should they be apart when travelling by train? Use our group booking service at **crosscountrytrains.co.uk** for 10 or more passengers travelling together and we'll help you plan your journey and get you the best deal. Or you can call our dedicated group booking line on **0371 244 2388.**

Passenger Assist

Sometimes, we all need a little help. That's why we offer a Passenger Assist service for those who need it when travelling with us.

You can request journey assistance online when buying your tickets at **crosscountrytrains.co.uk**. Just give us 48 hours' notice before you want to travel and we'll also help plan your journey and get the best deal. Or give us a call for extra assistance, journey options and buying tickets 24 hours before you intend to travel. Our lines are open 08:00-20:00 Monday to Saturday (except Christmas Day and Boxing Day).

Telephone **0800 030 9224** Textphone **0800 030 9230**

Connections

Other transport connections

Details of connecting public transport services can be found through:

National Rail	**nationalrail.co.uk** or **03457 48 49 50** (24 hours, calls may be recorded)
Traveline	**traveline.info** or **0871 200 22 33** (calls charged 10p per minute from BT landlines, calls from other operators may vary)
TrainTaxiTM	**traintaxi.co.uk**

PlusBus tickets – available to buy online with your train tickets at **crosscountrytrains.co.uk** – give you one day's unlimited travel on most bus or tram services connecting with major stations. Visit **plusbus.info** for further information.

International connections

We run direct services to Birmingham International, Southampton and Stansted airports, so take the train and start your holiday or business trip without the worry of parking. Connections to other airports – and ports – are also available from many stations on our network – see **crosscountrytrains.co.uk** for details.

Whether you're making a flight, ferry or cruise connection, we recommend that you aim to get to the relevant terminal two hours before the latest check-in time.

Changes to train times

If you're travelling with CrossCountry, we may need to make changes to our timetables to allow track improvement work to take place. Major track improvement work will be taking place at Bristol Temple Meads (10 July - 3 September). You're advised to check your train times before travelling by visiting **crosscountrytrains.co.uk**

Using your timetable

Ⓐ Mondays to Fridays

Ⓑ Features		Ⓩ	Ⓩ			R
Ⓒ Period of operation and Notes		MO A	MX D		B	D
Aberdeen	d					
Stonehaven	d					
Montrose	d					
Arbroath	d					
Ⓓ Dundee	d		Ⓔ	**0420**		
Leuchars	d			**0456**		
Cupar Ⓖ	d			-		
Ladybank	d			-		
Markinch **10** Ⓗ	d			**0540**	Ⓕ	*0640g*

Note: Stations and times shown are examples only

Ⓐ This timetable is divided by direction of travel and days of the week.

Ⓑ The ‘Features’ line will contain any specific details relating to each service, for example if seat reservations are recommended. See Notes pages for an explanation of the symbols used in this timetable.

Ⓒ Notes in the ‘Period of operation and Notes’ line indicate, if applicable, the dates/days on which the service operates and any additional stations the trains stop at.

Ⓓ Stations along the route are listed on the left side of the timetable.

Ⓔ The train stops here at the time shown. An at-seat service of drinks and light refreshments is provided on those services shown with dark shading (subject to availability).

Ⓕ Times shown in italics are connections. You will need to change trains to arrive or depart here at the time shown. A note alongside the time will indicate where you need to change.

Ⓖ The letters ‘a’ and ‘d’ show whether the time shown is an arrival time (‘a’) or a departure time (‘d’).

Ⓗ Indicates the minimum connection time (in minutes) that should be allowed when changing trains. When no figure is shown, allow a minimum of five minutes.

Did you know you can get live departure and arrival times on the go with our Train Tickets app?

Scotland, The North East & Manchester to The South West and South Coast

Mondays to Fridays

Notes: see Page 49

Features		Ⓩ	Ⓩ	Ⓩ			
Period of operation and Notes		MO A	MX B				
Aberdeen	d						
Dundee	d						
Glasgow Central 15	d						
Motherwell	d						
Haymarket	d						
Edinburgh 10	d						
Dunbar	d						
Berwick-upon-Tweed	d						
Alnmouth	d						
Morpeth	d						
Newcastle 8	d						
Durham	d						
Darlington	d						
York 8	d						
Leeds 10	d						
Wakefield Westgate	d						
Doncaster 7	d						
Sheffield 7	d						
Chesterfield	d						
Derby 6	d						0610
Burton-on-Trent	d						0620
Tamworth	d						0631
Manchester Piccadilly	d						-
Stockport	d						-
Crewe 10	d						-
Macclesfield	d						-
Stoke-on-Trent	d						-
Stafford	d						-
Wolverhampton 7	d						-
Birmingham New Street 12	a						0652
Birmingham New Street	d					0604	0712
Cheltenham Spa	d					-	0752
Gloucester 7	a					-	-
Bristol Parkway 7	d					-	0827
Bristol Temple Meads 10	d			0640	0812	-	0845
Taunton	d			0711	0843	-	0918
Tiverton Parkway	d			0723	0855	-	0931
Exeter St. Davids 6	d			0743	0912	-	0948
Dawlish	a			-	-	-	-
Teignmouth	a			-	-	-	-
Newton Abbot	a			0801	0930	-	1006
Torquay	a			-	0946	-	-
Paignton	a			-	0954	-	-
Totnes	a			0813		-	1018
Plymouth	a	0555d	0620d	0840		-	1045
Penzance	a	0749	0814			-	
Birmingham International ✈	d					0614	
Coventry	d					0625	
Leamington Spa	d					0637	
Banbury	d					0654	
Oxford	d					0717	
Reading 7	d					0752	
Basingstoke	d					0812	
Winchester	a					0826	
Southampton Airport Parkway ✈	a					0835	
Southampton Central	a					0842	
Bournemouth	a					0916	

Please note : All direct CrossCountry services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

		H						
Aberdeen								
Dundee								
Glasgow Ctl 15								
Motherwell								
Haymarket								
Edinburgh 10								
Dunbar								
Berwick								
Alnmouth								
Morpeth								
Newcastle 8							0640	
Durham							0653	
Darlington							0711	
York 8					0645		0744	
Leeds 10			0611		0711		0811	
Wakefield			0623		0723		0823	
Doncaster 7			-		-		-	
Sheffield 7			0653		0753		0856	
Chesterfield			0706		0806		0908	
Derby 6		0713	0727		0827		0931	
Burton		0723	0738		0838		0941	
Tamworth		0734	0750		0850		-	
Manchester P	0511	-	-	0727	-	0827	-	0927
Stockport	-	-	-	0736	-	0836	-	0936
Crewe 10	0546	-	-	-	-	-	-	-
Macclesfield	-	-	-	0749	-	0849	-	0949
Stoke	0608	-	-	0808	-	0908	-	1007
Stafford	0625	-	-	0826	-	0926	-	1024
Wolverhmptn 7	0639	-	-	0842	-	0940	-	1042
Bham New St 12	0655	0752	0808	0858	0908	0957	1004	1059
Bham New St	0704	0804	0812	0904	0912	1004	1012	1104
Cheltenham	-	-	0852	-	0952	-	1052	-
Gloucester 7	-	-	-	-	-	-	-	-
Bristol Pkwy 7	-	-	0931	-	1022	-	1121	-
Bristol TM 10	-	-	0945	-	1045	-	1131a	-
Taunton	-	-	1017	-	1130	-		-
Tiverton Pkwy	-	-	1030	-	1142	-		-
Exeter St D 6	-	-	1049	-	1158	-		-
Dawlish	-	-	-	-	-	-		-
Teignmouth	-	-	-	-	-	-		-
Newton A	-	-	1108	-	1217	-		-
Torquay	-	-	-	-	-	-		-
Paignton	-	-	-	-	-	-		-
Totnes	-	-	1120	-	1230	-		-
Plymouth	-	-	1148	-	1257	-		-
Penzance	-	-		-		-		-
Bham Intl ✈	0714	0814		0914		1014		1114
Coventry	0728	0826		0926		1026		1126
Leamington	0740	0838		0941		1038		1138
Banbury	0757	0855		0958		1055		1155
Oxford	0817	0916		1018		1116		1215
Reading 7	0852	0940a		1052		1141a		1252
Basingstoke	0912			1112				1312
Winchester	0926			-				-
Southptn Apt ✈	0935			1135				1335
Southptn Ctl	0943			1143				1342
Bournemouth	1013			1213				1413

Scotland, The North East & Manchester to The South West and South Coast

Mondays to Fridays

Notes: see Page 49

Features							
Period of operation and Notes							
Aberdeen	d						
Dundee	d						
Glasgow Central 15	d						
Motherwell	d						
Haymarket	d						
Edinburgh 10	d	0606			0701		0808
Dunbar	d	-			0723		-
Berwick-upon-Tweed	d	0649			0746		0851
Alnmouth	d	0710			0807		-
Morpeth	d	-			0821		0924
Newcastle 8	d	0740			0840		0941
Durham	d	0753			0854		0955
Darlington	d	0811			0912		1012
York 8	d	0844			0944		1044
Leeds 10	d	0911			1011		1111
Wakefield Westgate	d	0923			1023		1123
Doncaster 7	d	-			-		-
Sheffield 7	d	0956			1056		1155
Chesterfield	d	-			1108		-
Derby 6	d	1031			1131		1231
Burton-on-Trent	d	-			-		-
Tamworth	d	1050			-		1250
Manchester Piccadilly	d	-		1027	-	1127	-
Stockport	d	-		1036	-	1136	-
Crewe 10	d	-		-	-	-	-
Macclesfield	d	-		1049	-	1149	-
Stoke-on-Trent	d	-		1108	-	1208	-
Stafford	d	-		1128	-	1228	-
Wolverhampton 7	d	-		1142	-	1242	-
Birmingham New Street 12	a	1108		1159	1204	1259	1308
Birmingham New Street	d	1112	1133	1204	1212	1304	1312
Cheltenham Spa	d	1152	-	-	1252	-	1352
Gloucester 7	a	-	-	-	-	-	-
Bristol Parkway 7	d	1222	-	-	1321	-	1423
Bristol Temple Meads 10	d	1245	-	-	1345	-	1432a
Taunton	d	1317	-	-	1417	-	
Tiverton Parkway	d	1330	-	-	1430	-	
Exeter St. Davids 6	d	1349	-	-	1448	-	
Dawlish	a	-	-	-	-	-	
Teignmouth	a	-	-	-	-	-	
Newton Abbot	a	1408	-	-	1507	-	
Torquay	a	-	-	-	-	-	
Paignton	a	-	-	-	-	-	
Totnes	a	1420	-	-	1519	-	
Plymouth	a	1448	-	-	1547	-	
Penzance	a		-	-		-	
Birmingham International ✈	d		-	1214		1314	
Coventry	d		-	1226		1326	
Leamington Spa	d		1202	1238		1338	
Banbury	d		1218a	1255		1355	
Oxford	d			1316		1416	
Reading 7	d			1340a		1449	
Basingstoke	d					1512	
Winchester	a					1526	
Southampton Airport Parkway ✈	a					1535	
Southampton Central	a					1542	
Bournemouth	a					1612	

Please note : All direct CrossCountry services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see 'Using Your Timetable' on page 8

					C			D
Aberdeen								0820
Dundee								0933
Glasgow Ctl 15			0748					-
Motherwell			0807					-
Haymarket			0850					1050
Edinburgh 10			0904					1106
Dunbar			0926					1128
Berwick			0950					1151
Alnmouth			1010					1212
Morpeth			-					-
Newcastle 8	1035		1041		1139			1240
Durham	1048		1053		1153			1253
Darlington	1106		1111		1212			1311
York 8	1136		1144		1244			1344
Leeds 10	-		1211		1311			1411
Wakefield	-		1223		1323			1423
Doncaster 7	1159		-		-			-
Sheffield 7	1224		1256		1355			1456
Chesterfield	-		-		-			-
Derby 6	1253		1331		1431			1528
Burton	-		1341		-			1539
Tamworth	-		-		1450			-
Manchester P	-	1227	-	1327	-		1427	-
Stockport	-	1236	-	1336	-		1436	-
Crewe 10	-	-	-	-	-		-	-
Macclesfield	-	1249	-	1349	-		1449	-
Stoke	-	1308	-	1408	-		1508	-
Stafford	-	1327	-	1428	-		1528	-
Wolverhmptn 7	-	1342	-	1442	-		1542	-
Bham New St 12	1327	1359	1404	1458	1508		1559	1604
Bham New St	1333	1404	1412	1504	1512		1604	1612
Cheltenham	-	-	1452	-	1552		-	1652
Gloucester 7	-	-	-	-	-		-	-
Bristol Pkwy 7	-	-	1521	-	1622		-	1722
Bristol TM 10	-	-	1545	-	1645	1712	-	1745
Taunton	-	-	1617	-	1718	1743	-	1817
Tiverton Pkwy	-	-	1630	-	1730	1755	-	1829
Exeter St D 6	-	-	1647	-	1746	1811	-	1847
Dawlish	-	-	-	-	-	1822	-	-
Teignmouth	-	-	-	-	-	1827	-	-
Newton A	-	-	1705	-	1805	1834	-	1905
Torquay	-	-	-	-	-	1845	-	-
Paignton	-	-	-	-	-	1852	-	-
Totnes	-	-	1718	-	1818		-	1918
Plymouth	-	-	1745	-	1845		-	1945
Penzance	-	-		-	2047		-	
Bham Intl ✈	-	1414		1514			1614	
Coventry	-	1427		1526			1627	
Leamington	1403	1439		1538			1639	
Banbury	1419a	1455		1555			1656	
Oxford		1516		1616			1716	
Reading 7		1540a		1652			1752	
Basingstoke				1712			1811	
Winchester				1726			-	
Southptn Apt ✈				1735			1834	
Southptn Ctl				1742			1843	
Bournemouth				1818			1913	

Scotland, The North East & Manchester to The South West and South Coast

Mondays to Fridays

Notes: see Page 49

Features							
Period of operation and Notes							
Aberdeen	d						
Dundee	d						
Glasgow Central 15	d						
Motherwell	d						
Haymarket	d						
Edinburgh 10	d					1305	
Dunbar	d					1330	
Berwick-upon-Tweed	d					-	
Alnmouth	d					1413	
Morpeth	d					-	
Newcastle 8	d			1339		1442	
Durham	d			1353		1455	
Darlington	d			1411		1513	
York 8	d			1444		1544	
Leeds 10	d			1511		1611	
Wakefield Westgate	d			1523		1623	
Doncaster 7	d			-		-	
Sheffield 7	d			1556		1656	
Chesterfield	d			1608		1708	
Derby 6	d			1631		1731	
Burton-on-Trent	d			-		1742	
Tamworth	d			1649		-	
Manchester Piccadilly	d		1527	-	1627	-	1727
Stockport	d		1536	-	1636	-	1736
Crewe 10	d		-	-	-	-	-
Macclesfield	d		1549	-	1649	-	-
Stoke-on-Trent	d		1608	-	1708	-	-
Stafford	d		1625	-	1726	-	1827
Wolverhampton 7	d		1640	-	1740	-	1841
Birmingham New Street 12	a		1657	1706	1757	1806	1857
Birmingham New Street	d	1642	1704	1712	1804	1812	1904
Cheltenham Spa	d	1730	-	1752	-	1852	-
Gloucester 7	a	-	-	-	-	1902	-
Bristol Parkway 7	d	1759	-	1824	-	1937	-
Bristol Temple Meads 10	d	1847	-	1833a	-	1949	-
Taunton	d	1920	-		-	2021	-
Tiverton Parkway	d	1932	-		-	2033	-
Exeter St. Davids 6	d	1948	-		-	2050	-
Dawlish	a	-	-		-	-	-
Teignmouth	a	-	-		-	-	-
Newton Abbot	a	2007	-		-	2109	-
Torquay	a	-	-		-	-	-
Paignton	a	-	-		-	-	-
Totnes	a	2019	-		-	2121	-
Plymouth	a	2046	-		-	2151	-
Penzance	a		-		-		-
Birmingham International ✈	d		1714		1814		1914
Coventry	d		1727		1827		1926
Leamington Spa	d		1739		1839		1938
Banbury	d		1756		1856		1955
Oxford	d		1816		1916		2016
Reading 7	d		1843a		1949		2043a
Basingstoke	d				2011		
Winchester	a				-		
Southampton Airport Parkway ✈	a				2035		
Southampton Central	a				2043		
Bournemouth	a				2115		

Please note : All direct CrossCountry services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

								Ⓩ
Aberdeen								
Dundee								
Glasgow Ctl 15								
Motherwell								
Haymarket								
Edinburgh 10			**1508**			**1607**		
Dunbar			**1529**			-		
Berwick			**1553**			-		
Alnmouth			-			**1706**		
Morpeth			-			**1720**		
Newcastle 8	**1539**		**1639**		**1731**	**1739**	**1835**	
Durham	**1552**		**1653**		**1747**	**1753**	**1849**	
Darlington	**1610**		**1711**		**1805**	**1811**	**1907**	
York 8	**1644**		**1744**		**1837**	**1844**	**1936**	
Leeds 10	**1711**		**1811**		-	**1911**	-	
Wakefield	**1723**		**1823**		-	**1923**	-	
Doncaster 7	-		-		**1900**	-	**1959**	
Sheffield 7	**1756**		**1856**		**1924**	**1956**	**2024**	
Chesterfield	**1808**		-		-	-	-	
Derby 6	**1831**		**1931**		**1951a**	**2031**	**2053**	
Burton	-		**1941**			-	-	
Tamworth	**1849**		-			**2049**	-	
Manchester P	-	**1827**	-	**1927**		-	-	**2027**
Stockport	-	**1836**	-	**1936**		-	-	**2036**
Crewe 10	-	-	-	-		-	-	-
Macclesfield	-	**1849**	-	**1949**		-	-	**2049**
Stoke	-	**1908**	-	**2008**		-	-	**2108**
Stafford	-	**1928**	-	**2027**		-	-	**2128**
Wolverhmptn 7	-	**1942**	-	**2042**		-	-	**2142**
Bham New St 12	**1906**	**1958**	**2005**	**2058**		**2106**	**2129**	**2200**
Bham New St	**1912**	**2004**	**2012**	**2104**		**2112**		**2204**
Cheltenham	**1952**	-	**2053**	-		**2152**		-
Gloucester 7	-	-	-	-		**2200**		-
Bristol Pkwy 7	**2022**	-	**2127**	-		**2234**		-
Bristol TM 10	**2032a**	-	**2144**	-		**2244a**		-
Taunton		-	**2215**	-				-
Tiverton Pkwy		-	**2228**	-				-
Exeter St D 6		-	**2243**	-				-
Dawlish		-	-	-				-
Teignmouth		-	-	-				-
Newton A		-	**2302**	-				-
Torquay		-	-	-				-
Paignton		-	-	-				-
Totnes		-	**2314**	-				-
Plymouth		-	**2343**	-				-
Penzance		-		-				-
Bham Intl ✈		**2014**		**2114**				**2214**
Coventry		**2026**		**2126**				**2225**
Leamington		**2038**		**2138**				**2237**
Banbury		**2055**		**2155**				**2254**
Oxford		**2116**		**2216**				**2316**
Reading 7		**2152**		**2249**				**2350a**
Basingstoke		**2210**		**2309**				
Winchester		-		-				
Southptn Apt ✈		**2233**		**2336**				
Southptn Ctl		**2241**		**2344**				
Bournemouth		**2317**						

Scotland, The North East & Manchester to The South West and South Coast

Mondays to Fridays

Notes: see Page 49

Features			Ⓩ			Ⓩ	Ⓩ
Period of operation and Notes							E
Aberdeen	d						2135
Dundee	d						2248
Glasgow Central 15	d				1900	2105	-
Motherwell	d				1916	2123	-
Haymarket	d				1955	-	0009
Edinburgh 10	d	1707		1808	2003	2222a	0013a
Dunbar	d	1729		1830	2024		
Berwick-upon-Tweed	d	1752		1854	2048		
Alnmouth	d	-		1914	2109		
Morpeth	d	1824		-	-		
Newcastle 8	d	1840		1942	2138		
Durham	d	1854		1955	2150		
Darlington	d	1912		2013	2209		
York 8	d	1944		2044	2235a		
Leeds 10	d	2011		2111			
Wakefield Westgate	d	2023		2123			
Doncaster 7	d	-		-			
Sheffield 7	d	2056		2202			
Chesterfield	d	-		-			
Derby 6	d	2131		2250			
Burton-on-Trent	d	2141		2300			
Tamworth	d	2151		2310			
Manchester Piccadilly	d	-	2127	-			
Stockport	d	-	2136	-			
Crewe 10	d	-	-	-			
Macclesfield	d	-	2149	-			
Stoke-on-Trent	d	-	2208	-			
Stafford	d	-	2228	-			
Wolverhampton 7	d	-	2242	-			
Birmingham New Street 12	a	2208	2300	2327			
Birmingham New Street	d	2212					
Cheltenham Spa	d	2252					
Gloucester 7	a	-					
Bristol Parkway 7	d	2321					
Bristol Temple Meads 10	d	2330a					
Taunton	d						
Tiverton Parkway	d						
Exeter St. Davids 6	d						
Dawlish	a						
Teignmouth	a						
Newton Abbot	a						
Torquay	a						
Paignton	a						
Totnes	a						
Plymouth	a						
Penzance	a						
Birmingham International ✈	d						
Coventry	d						
Leamington Spa	d						
Banbury	d						
Oxford	d						
Reading 7	d						
Basingstoke	d						
Winchester	a						
Southampton Airport Parkway ✈	a						
Southampton Central	a						
Bournemouth	a						

Please note : All direct CrossCountry services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

	Ⓩ							
Aberdeen								
Dundee								
Glasgow Ctl 15								
Motherwell								
Haymarket								
Edinburgh 10								
Dunbar								
Berwick								
Alnmouth								
Morpeth								
Newcastle 8								
Durham								
Darlington								
York 8								
Leeds 10								
Wakefield								
Doncaster 7								
Sheffield 7								
Chesterfield								
Derby 6								
Burton								
Tamworth								
Manchester P	**2207**							
Stockport	**2217**							
Crewe 10	-							
Macclesfield	**2230**							
Stoke	**2249**							
Stafford	**2306**							
Wolverhmptn 7	**2320**							
Bham New St 12	**2337**							
Bham New St								
Cheltenham								
Gloucester 7								
Bristol Pkwy 7								
Bristol TM 10								
Taunton								
Tiverton Pkwy								
Exeter St D 6								
Dawlish								
Teignmouth								
Newton A								
Torquay								
Paignton								
Totnes								
Plymouth								
Penzance								
Bham Intl ✈								
Coventry								
Leamington								
Banbury								
Oxford								
Reading 7								
Basingstoke								
Winchester								
Southptn Apt ✈								
Southptn Ctl								
Bournemouth								

Scotland, The North East & Manchester to The South West and South Coast

Saturdays

Notes: see Page 49

Features		Ⓩ					
Period of operation and Notes							H
Aberdeen	d						
Dundee	d						
Glasgow Central 15	d						
Motherwell	d						
Haymarket	d						
Edinburgh 10	d						
Dunbar	d						
Berwick-upon-Tweed	d						
Alnmouth	d						
Morpeth	d						
Newcastle 8	d						
Durham	d						
Darlington	d						
York 8	d						
Leeds 10	d						
Wakefield Westgate	d						
Doncaster 7	d						
Sheffield 7	d						
Chesterfield	d						
Derby 6	d				0610		0713
Burton-on-Trent	d				0620		0723
Tamworth	d				0631		0734
Manchester Piccadilly	d				-	0511	-
Stockport	d				-	-	-
Crewe 10	d				-	0546	-
Macclesfield	d				-	-	-
Stoke-on-Trent	d				-	0608	-
Stafford	d				-	0628	-
Wolverhampton 7	d				-	0642	-
Birmingham New Street 12	a				0648	0658	0754
Birmingham New Street	d		0604		0712	0704	0804
Cheltenham Spa	d		-		0752	-	-
Gloucester 7	a		-		-	-	-
Bristol Parkway 7	d		-		0825	-	-
Bristol Temple Meads 10	d	0607	-	0810	0845	-	-
Taunton	d	0714	-	0842	0917	-	-
Tiverton Parkway	d	0726	-	0854	0932	-	-
Exeter St. Davids 6	d	0743	-	0910	0949	-	-
Dawlish	a	-	-	-	-	-	-
Teignmouth	a	-	-	-	-	-	-
Newton Abbot	a	0801	-	0932	1007	-	-
Torquay	a	-	-	0945	-	-	-
Paignton	a	-	-	0954	-	-	-
Totnes	a	0813	-		1020	-	-
Plymouth	a	0840	-		1047	-	-
Penzance	a		-			-	-
Birmingham International ✈	d		0614			0714	0814
Coventry	d		0625			0726	0827
Leamington Spa	d		0637			0738	0839
Banbury	d		0656			0755	0856
Oxford	d		0716			0816	0917
Reading 7	d		0740a			0852	0940a
Basingstoke	d					0912	
Winchester	a					-	
Southampton Airport Parkway ✈	a					0935	
Southampton Central	a					0942	
Bournemouth	a					1013	

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Please note : All direct CrossCountry services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

Aberdeen								
Dundee								
Glasgow Ctl 15								
Motherwell								
Haymarket								
Edinburgh 10							0606	
Dunbar							-	
Berwick							0649	
Alnmouth							0710	
Morpeth							-	
Newcastle 8							0739	
Durham							0752	
Darlington							0811	
York 8			0611		0744		0844	
Leeds 10	0611		0711		0811		0911	
Wakefield	0623		0723		0823		0923	
Doncaster 7	-		-		-		-	
Sheffield 7	0653		0755		0856		0956	
Chesterfield	0706		0808		0908		-	
Derby 6	0727		0828		0931		1031	
Burton	0738		0838		0941		-	
Tamworth	0750		0851		-		1050	
Manchester P	-	0727	-	0827	-	0927	-	1027
Stockport	-	0736	-	0836	-	0936	-	1036
Crewe 10	-	-	-	-	-	-	-	-
Macclesfield	-	0749	-	0849	-	0949	-	1049
Stoke	-	0808	-	0908	-	1008	-	1108
Stafford	-	0828	-	0928	-	1028	-	1128
Wolverhmptn 7	-	0842	-	0942	-	1042	-	1142
Bham New St 12	0808	0858	0908	0958	1004	1058	1108	1158
Bham New St	0812	0904	0912	1004	1012	1104	1112	1204
Cheltenham	0852	-	0952	-	1052	-	1152	-
Gloucester 7	-	-	-	-	-	-	-	-
Bristol Pkwy 7	0925	-	1025	-	1125	-	1227	-
Bristol TM 10	0945	-	1045	-	1135a	-	1245	-
Taunton	1017	-	1117	-		-	1317	-
Tiverton Pkwy	1030	-	1130	-		-	1330	-
Exeter St D 6	1049	-	1149	-		-	1347	-
Dawlish	-	-	-	-		-	-	-
Teignmouth	-	-	-	-		-	-	-
Newton A	1108	-	1207	-		-	1408	-
Torquay	-	-	-	-		-	-	-
Paignton	-	-	-	-		-	-	-
Totnes	1120	-	1220	-		-	1420	-
Plymouth	1148	-	1247	-		-	1448	-
Penzance		-		-		-		-
Bham Intl ✈		0914		1014		1114		1214
Coventry		0926		1026		1126		1226
Leamington		0938		1038		1138		1238
Banbury		0955		1055		1155		1255
Oxford		1015		1116		1216		1316
Reading 7		1051		1139a		1252		1339a
Basingstoke		1111				1311		
Winchester		1128				-		
Southptn Apt ✈		1136				1333		
Southptn Ctl		1144				1341		
Bournemouth		1214				1412		

Scotland, The North East & Manchester to The South West and South Coast

Saturdays

Notes: see Page 49

Features							
Period of operation and Notes							
Aberdeen	d						
Dundee	d						
Glasgow Central 15	d						0748
Motherwell	d						0807
Haymarket	d						0852
Edinburgh 10	d	0707					0908
Dunbar	d	0729					0929
Berwick-upon-Tweed	d	-					0953
Alnmouth	d	-					-
Morpeth	d	-					-
Newcastle 8	d	0839		0940	1035		1041
Durham	d	0853		0954	1048		1054
Darlington	d	0911		1012	1106		1111
York 8	d	0944		1044	1137		1144
Leeds 10	d	1011		1111	-		1211
Wakefield Westgate	d	1023		1123	-		1223
Doncaster 7	d	-		-	1159		-
Sheffield 7	d	1055		1155	1224		1256
Chesterfield	d	1108		-	-		1308
Derby 6	d	1131		1231	1253		1331
Burton-on-Trent	d	1142		-	-		1341
Tamworth	d	-		1250	-		-
Manchester Piccadilly	d	-	1127	-	-	1227	-
Stockport	d	-	1136	-	-	1236	-
Crewe 10	d	-	-	-	-	-	-
Macclesfield	d	-	1149	-	-	1249	-
Stoke-on-Trent	d	-	1208	-	-	1308	-
Stafford	d	-	1228	-	-	1328	-
Wolverhampton 7	d	-	1242	-	-	1342	-
Birmingham New Street 12	a	1206	1258	1308	1328	1358	1404
Birmingham New Street	d	1212	1304	1312		1404	1412
Cheltenham Spa	d	1252	-	1352		-	1452
Gloucester 7	a	-	-	-		-	-
Bristol Parkway 7	d	1325	-	1425		-	1525
Bristol Temple Meads 10	d	1345	-	1436a		-	1545
Taunton	d	1417	-			-	1617
Tiverton Parkway	d	1430	-			-	1630
Exeter St. Davids 6	d	1449	-			-	1649
Dawlish	a	-	-			-	-
Teignmouth	a	-	-			-	-
Newton Abbot	a	1509	-			-	1707
Torquay	a	-	-			-	-
Paignton	a	-	-			-	-
Totnes	a	1521	-			-	1720
Plymouth	a	1549	-			-	1747
Penzance	a		-			-	
Birmingham International ✈	d		1314			1414	
Coventry	d		1326			1426	
Leamington Spa	d		1338			1438	
Banbury	d		1355			1456	
Oxford	d		1416			1516	
Reading 7	d		1452			1539a	
Basingstoke	d		1512				
Winchester	a		-				
Southampton Airport Parkway ✈	a		1535				
Southampton Central	a		1542				
Bournemouth	a		1613				

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Please note : All direct CrossCountry services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

		I		Ⓩ	J			
Aberdeen					0820			
Dundee					0933			
Glasgow Ctl 15					-			
Motherwell					-			
Haymarket					1050			
Edinburgh 10					1108			
Dunbar					1129			
Berwick					1153			
Alnmouth					1213			
Morpeth					-			
Newcastle 8		1139			1242		1340	
Durham		1154			1255		1353	
Darlington		1212			1312		1412	
York 8		1244			1344		1444	
Leeds 10		1311			1411		1511	
Wakefield		1323			1423		1523	
Doncaster 7		-			-		-	
Sheffield 7		1356			1456		1556	
Chesterfield		-			1508		1608	
Derby 6		1431			1528		1631	
Burton		-			1539		-	
Tamworth		1450			-		1649	
Manchester P	1327	-	1427		-	1527	-	1627
Stockport	1336	-	1436		-	1536	-	1636
Crewe 10	-	-	-		-	-	-	-
Macclesfield	1349	-	1449		-	1549	-	1649
Stoke	1408	-	1508		-	1608	-	1708
Stafford	1428	-	1528		-	1628	-	1725
Wolverhmptn 7	1442	-	1542		-	1642	-	1742
Bham New St 12	1458	1508	1558		1603	1658	1706	1758
Bham New St	1504	1512	1604		1612	1704	1712	1804
Cheltenham	-	1552	-		1652	-	1752	-
Gloucester 7	-	-	-		-	-	-	-
Bristol Pkwy 7	-	1625	-		1725	-	1825	-
Bristol TM 10	-	1645	-	1710	1745	-	1834a	-
Taunton	-	1717	-	1741	1817	-		-
Tiverton Pkwy	-	1730	-	1753	1830	-		-
Exeter St D 6	-	1749	-	1810	1847	-		-
Dawlish	-	-	-	1823	-	-		-
Teignmouth	-	-	-	1828	-	-		-
Newton A	-	1808	-	1835	1905	-		-
Torquay	-	-	-	1847	-	-		-
Paignton	-	-	-	1854	-	-		-
Totnes	-	1820	-		1917	-		-
Plymouth	-	1848	-		1944	-		-
Penzance	-	2053	-		2139	-		-
Bham Intl ✈	1514		1614			1714		1814
Coventry	1526		1626			1726		1826
Leamington	1538		1638			1738		1838
Banbury	1555		1655			1755		1855
Oxford	1616		1716			1816		1916
Reading 7	1652		1739a			1852		1939a
Basingstoke	1712					1912		
Winchester	1726					-		
Southptn Apt ✈	1735					1935		
Southptn Ctl	1742					1942		
Bournemouth	1813					2012		

Scotland, The North East & Manchester to The South West and South Coast

Saturdays

Notes: see Page 49

Features							
Period of operation and Notes							
Aberdeen	d						
Dundee	d						
Glasgow Central 15	d						
Motherwell	d						
Haymarket	d						
Edinburgh 10	d	1309				1508	
Dunbar	d	1330				1529	
Berwick-upon-Tweed	d	-				-	
Alnmouth	d	1412				-	
Morpeth	d	-				-	
Newcastle 8	d	1443		1539		1639	
Durham	d	1455		1552		1653	
Darlington	d	1513		1610		1711	
York 8	d	1544		1644		1744	
Leeds 10	d	1611		1711		1811	
Wakefield Westgate	d	1623		1723		1823	
Doncaster 7	d	-		-		-	
Sheffield 7	d	1656		1756		1856	
Chesterfield	d	1708		1808		-	
Derby 6	d	1731		1828		1931	
Burton-on-Trent	d	1741		-		1941	
Tamworth	d	-		1847		-	
Manchester Piccadilly	d	-	1727	-	1827	-	1927
Stockport	d	-	1736	-	1836	-	1936
Crewe 10	d	-	-	-	-	-	-
Macclesfield	d	-	1749	-	1849	-	1949
Stoke-on-Trent	d	-	1808	-	1908	-	2008
Stafford	d	-	1828	-	1928	-	2028
Wolverhampton 7	d	-	1842	-	1942	-	2042
Birmingham New Street 12	a	1804	1858	1904	1958	2004	2059
Birmingham New Street	d	1812	1904	1912	2004	2012	2104
Cheltenham Spa	d	1852	-	1952	-	2052	-
Gloucester 7	a	-	-	-	-	-	-
Bristol Parkway 7	d	1925	-	2025	-	2125	-
Bristol Temple Meads 10	d	1945	-	2036a	-	2145	-
Taunton	d	2017	-		-	2217	-
Tiverton Parkway	d	2030	-		-	2230	-
Exeter St. Davids 6	d	2046	-		-	2249	-
Dawlish	a	-	-		-	-	-
Teignmouth	a	-	-		-	-	-
Newton Abbot	a	2104	-		-	2307	-
Torquay	a	-	-		-	-	-
Paignton	a	-	-		-	-	-
Totnes	a	2116	-		-	2320	-
Plymouth	a	2143	-		-	2347	-
Penzance	a		-		-		-
Birmingham International ✈	d		1914		2014		2114
Coventry	d		1925		2025		2125
Leamington Spa	d		1937		2037		2137
Banbury	d		1954		2055		2154
Oxford	d		2016		2116		2216
Reading 7	d		2052		2152		2252
Basingstoke	d		2112		2212		2312
Winchester	a		-		-		-
Southampton Airport Parkway ✈	a		2135		2235		2335
Southampton Central	a		2144		2242		2343
Bournemouth	a		2215		2318		

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Please note : All direct CrossCountry services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see 'Using Your Timetable' on page 8

			Ⓩ		Ⓩ		Ⓩ	Ⓩ
Aberdeen								
Dundee								
Glasgow Ctl 15							**1900**	**2105**
Motherwell							**1915**	-
Haymarket							**1954**	**2156**
Edinburgh 10	**1606**			**1709**		**1807**	**2000a**	**2201a**
Dunbar	-			**1731**		**1830**		
Berwick	-			**1754**		**1853**		
Alnmouth	**1705**			-		**1914**		
Morpeth	**1720**			-		-		
Newcastle 8	**1739**	**1835**		**1840**		**1943**		
Durham	**1753**	**1848**		**1854**		**1955**		
Darlington	**1811**	**1906**		**1912**		**2013**		
York 8	**1844**	**1936**		**1944**		**2044**		
Leeds 10	**1911**	-		**2011**		**2111**		
Wakefield	**1923**	-		**2023**		**2123**		
Doncaster 7	-	**1959**		-		-		
Sheffield 7	**1956**	**2024**		**2056**		**2157**		
Chesterfield	**2008**	-		**2108**		**2209**		
Derby 6	**2031**	**2053**		**2131**		**2229**		
Burton	-	-		**2141**		**2239**		
Tamworth	**2049**	-		**2151**		**2249**		
Manchester P	-	-	**2027**	-	**2127**	-		
Stockport	-	-	**2036**	-	**2137**	-		
Crewe 10	-	-	-	-	-	-		
Macclesfield	-	-	**2049**	-	**2150**	-		
Stoke	-	-	**2108**	-	**2210**	-		
Stafford	-	-	**2128**	-	**2230**	-		
Wolverhmptn 7	-	-	**2146**	-	**2245**	-		
Bham New St 12	**2107**	**2124**	**2203**	**2208**	**2302**	**2308**		
Bham New St	**2112**							
Cheltenham	**2152**							
Gloucester 7	**2200**							
Bristol Pkwy 7	**2231**							
Bristol TM 10	**2240a**							
Taunton								
Tiverton Pkwy								
Exeter St D 6								
Dawlish								
Teignmouth								
Newton A								
Torquay								
Paignton								
Totnes								
Plymouth								
Penzance								
Bham Intl ✈								
Coventry								
Leamington								
Banbury								
Oxford								
Reading 7								
Basingstoke								
Winchester								
Southptn Apt ✈								
Southptn Ctl								
Bournemouth								

Scotland, The North East & Manchester to The South West and South Coast

Saturdays

Notes: see Page 49

Features		Ⓩ					
Period of operation and Notes		E					
Aberdeen	d	**2135**					
Dundee	d	**2248**					
Glasgow Central 15	d	-					
Motherwell	d	-					
Haymarket	d	**0009**					
Edinburgh 10	d	**0013a**					
Dunbar	d						
Berwick-upon-Tweed	d						
Alnmouth	d						
Morpeth	d						
Newcastle 8	d						
Durham	d						
Darlington	d						
York 8	d						
Leeds 10	d						
Wakefield Westgate	d						
Doncaster 7	d						
Sheffield 7	d						
Chesterfield	d						
Derby 6	d						
Burton-on-Trent	d						
Tamworth	d						
Manchester Piccadilly	d						
Stockport	d						
Crewe 10	d						
Macclesfield	d						
Stoke-on-Trent	d						
Stafford	d						
Wolverhampton 7	d						
Birmingham New Street 12	a						
Birmingham New Street	d						
Cheltenham Spa	d						
Gloucester 7	a						
Bristol Parkway 7	d						
Bristol Temple Meads 10	d						
Taunton	d						
Tiverton Parkway	d						
Exeter St. Davids 6	d						
Dawlish	a						
Teignmouth	a						
Newton Abbot	a						
Torquay	a						
Paignton	a						
Totnes	a						
Plymouth	a						
Penzance	a						
Birmingham International ✈	d						
Coventry	d						
Leamington Spa	d						
Banbury	d						
Oxford	d						
Reading 7	d						
Basingstoke	d						
Winchester	a						
Southampton Airport Parkway ✈	a						
Southampton Central	a						
Bournemouth	a						

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Scotland, The North East & Manchester to The South West and South Coast

Sundays

Notes: see Page 49

Features							
Period of operation and Notes							
Aberdeen	d						
Dundee	d						
Glasgow Central 15	d						
Motherwell	d						
Haymarket	d						
Edinburgh 10	d						
Dunbar	d						
Berwick-upon-Tweed	d						
Alnmouth	d						
Morpeth	d						
Newcastle 8	d						
Durham	d						
Darlington	d						
York 8	d						
Leeds 10	d						0811
Wakefield Westgate	d						0823
Doncaster 7	d						-
Sheffield 7	d						0856
Chesterfield	d						0908
Derby 6	d						0931
Burton-on-Trent	d						-
Tamworth	d						-
Manchester Piccadilly	d					0827	-
Stockport	d					0835	-
Crewe 10	d					0905	-
Macclesfield	d					-	-
Stoke-on-Trent	d					-	-
Stafford	d					0927	-
Wolverhampton 7	d					0941	-
Birmingham New Street 12	a					0957	1020
Birmingham New Street	d			0904	0930	1004	1030
Cheltenham Spa	d			-	1010	-	1110
Gloucester 7	a			-	-	-	-
Bristol Parkway 7	d			-	1040	-	1142
Bristol Temple Meads 10	d		0844	-	1055	-	1159
Taunton	d		0915	-	1126	-	1231
Tiverton Parkway	d		0927	-	1138	-	1243
Exeter St. Davids 6	d		0942	-	1153	-	1259
Dawlish	a		-	-	-	-	-
Teignmouth	a		-	-	-	-	-
Newton Abbot	a		1001	-	1212	-	1318
Torquay	a		-	-	-	-	-
Paignton	a		-	-	-	-	-
Totnes	a		1013	-	1224	-	1331
Plymouth	a		1040	-	1251	-	1358
Penzance	a			-		-	
Birmingham International ✈	d			0914		1014	
Coventry	d			0925		1025	
Leamington Spa	d			0937		1037	
Banbury	d			0954		1054	
Oxford	d			1016		1116	
Reading 7	d	0952		1039a		1152	
Basingstoke	d	1012				1212	
Winchester	a	-				1226	
Southampton Airport Parkway ✈	a	1035				1234	
Southampton Central	a	1042				1242	
Bournemouth	a	1126				1326	

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Scotland, The North East & Manchester to The South West and South Coast

Sundays

Notes: see Page 49

Features							
Period of operation and Notes							
Aberdeen	d						
Dundee	d						
Glasgow Central 15	d						
Motherwell	d						
Haymarket	d						
Edinburgh 10	d						
Dunbar	d						
Berwick-upon-Tweed	d						
Alnmouth	d						
Morpeth	d						
Newcastle 8	d						0935
Durham	d						0948
Darlington	d						1006
York 8	d				0935		1034
Leeds 10	d		0900		1000		1100
Wakefield Westgate	d		0912		1012		1112
Doncaster 7	d		0931		1031		1131
Sheffield 7	d		0958		1056		1156
Chesterfield	d		1011		1108		-
Derby 6	d		1031		1131		1231
Burton-on-Trent	d		-		1142		-
Tamworth	d		1052		-		1249
Manchester Piccadilly	d	0927	-	1027	-	1127	-
Stockport	d	0936	-	1036	-	1136	-
Crewe 10	d	-	-	-	-	-	-
Macclesfield	d	0949	-	1049	-	1149	-
Stoke-on-Trent	d	1008	-	1108	-	1208	-
Stafford	d	1026	-	1128	-	1228	-
Wolverhampton 7	d	1042	-	1142	-	1242	-
Birmingham New Street 12	a	1059	1119	1158	1206	1258	1306
Birmingham New Street	d	1104	1130	1204	1212	1304	1312
Cheltenham Spa	d	-	1210	-	1252	-	1352
Gloucester 7	a	-	-	-	-	-	-
Bristol Parkway 7	d	-	1243	-	1325	-	1425
Bristol Temple Meads 10	d	-	1252a	-	1345	-	1436a
Taunton	d	-		-	1418	-	
Tiverton Parkway	d	-		-	1431	-	
Exeter St. Davids 6	d	-		-	1447	-	
Dawlish	a	-		-	-	-	
Teignmouth	a	-		-	-	-	
Newton Abbot	a	-		-	1506	-	
Torquay	a	-		-	-	-	
Paignton	a	-		-	-	-	
Totnes	a	-		-	1518	-	
Plymouth	a	-		-	1546	-	
Penzance	a	-		-		-	
Birmingham International ✈	d	1114		1214		1314	
Coventry	d	1125		1225		1325	
Leamington Spa	d	1137		1237		1337	
Banbury	d	1154		1254		1354	
Oxford	d	1216		1316		1416	
Reading 7	d	1239a		1352		1441a	
Basingstoke	d			1412			
Winchester	a			-			
Southampton Airport Parkway ✈	a			1434			
Southampton Central	a			1442			
Bournemouth	a			1525			

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For help: see 'Using Your Timetable' on page 8

Aberdeen								
Dundee								
Glasgow Ctl 15								
Motherwell								
Haymarket								
Edinburgh 10		0908					1105	
Dunbar		-					1126	
Berwick		0951					1150	
Alnmouth		-					1210	
Morpeth		-					-	
Newcastle 8		1039			1140		1240	
Durham		1052			1153		1252	
Darlington		1110			1211		1310	
York 8		1144			1244		1344	
Leeds 10		1211			1311		1411	
Wakefield		1223			1323		1423	
Doncaster 7		-			-		-	
Sheffield 7		1256			1356		1456	
Chesterfield		1308			-		1508	
Derby 6		1331			1431		1531	
Burton		1342			-		1541	
Tamworth		-			1449		-	
Manchester P	1227	-		1327	-	1427	-	1527
Stockport	1236	-		1336	-	1436	-	1536
Crewe 10	-	-		-	-	-	-	-
Macclesfield	1249	-		1349	-	1449	-	1549
Stoke	1308	-		1408	-	1508	-	1608
Stafford	1328	-		1428	-	1528	-	1628
Wolverhmptn 7	1342	-		1442	-	1542	-	1642
Bham New St 12	1358	1406		1458	1506	1558	1604	1658
Bham New St	1404	1412	1442	1504	1512	1604	1612	1704
Cheltenham	-	1452	1526	-	1552	-	1652	-
Gloucester 7	-	-	-	-	-	-	-	-
Bristol Pkwy 7	-	1524	1557	-	1625	-	1725	-
Bristol TM 10	-	1545	1614	-	1636a	-	1745	-
Taunton	-	1617	1648	-		-	1819	-
Tiverton Pkwy	-	1629	1702	-		-	1831	-
Exeter St D 6	-	1645	1719	-		-	1848	-
Dawlish	-	-	1730	-		-	-	-
Teignmouth	-	-	1735	-		-	-	-
Newton A	-	1704	1742	-		-	1906	-
Torquay	-	-	1753	-		-	-	-
Paignton	-	-	1800	-		-	-	-
Totnes	-	1717		-		-	1919	-
Plymouth	-	1744		-		-	1946	-
Penzance	-			-		-		-
Bham Intl ✈	1414			1514		1614		1714
Coventry	1425			1525		1625		1725
Leamington	1437			1537		1637		1737
Banbury	1454			1554		1654		1754
Oxford	1516			1616		1716		1816
Reading 7	1552			1639a		1752		1839a
Basingstoke	1612					1812		
Winchester	-					1826		
Southptn Apt ✈	1634					1834		
Southptn Ctl	1642					1842		
Bournemouth	1725					1927		

Scotland, The North East & Manchester to The South West and South Coast

Sundays

Notes: see Page 49

Features							
Period of operation and Notes						L	
Aberdeen	d					1110	
Dundee	d					1222	
Glasgow Central 15	d					-	
Motherwell	d					-	
Haymarket	d					1339	
Edinburgh 10	d			1308		1408	
Dunbar	d			1329		-	
Berwick-upon-Tweed	d			-		1449	
Alnmouth	d			1411		-	
Morpeth	d			-		1520	
Newcastle 8	d	1339		1441		1540	
Durham	d	1353		1454		1553	
Darlington	d	1411		1512		1611	
York 8	d	1444		1544		1644	
Leeds 10	d	1511		1611		1711	
Wakefield Westgate	d	1523		1623		1723	
Doncaster 7	d	-		-		-	
Sheffield 7	d	1556		1656		1756	
Chesterfield	d	1608		1708		1808	
Derby 6	d	1631		1731		1831	
Burton-on-Trent	d	-		1741		-	
Tamworth	d	1649		-		1849	
Manchester Piccadilly	d	-	1627	-	1727	-	1827
Stockport	d	-	1636	-	1736	-	1836
Crewe 10	d	-	-	-	-	-	-
Macclesfield	d	-	1649	-	1749	-	1849
Stoke-on-Trent	d	-	1708	-	1808	-	1908
Stafford	d	-	1728	-	1828	-	1928
Wolverhampton 7	d	-	1742	-	1842	-	1942
Birmingham New Street 12	a	1706	1759	1804	1859	1906	1958
Birmingham New Street	d	1712	1804	1812	1904	1912	2004
Cheltenham Spa	d	1752	-	1852	-	1952	-
Gloucester 7	a	-	-	-	-	-	-
Bristol Parkway 7	d	1825	-	1925	-	2025	-
Bristol Temple Meads 10	d	1836a	-	1945	-	2035a	-
Taunton	d		-	2017	-		-
Tiverton Parkway	d		-	2030	-		-
Exeter St. Davids 6	d		-	2046	-		-
Dawlish	a		-	-	-		-
Teignmouth	a		-	-	-		-
Newton Abbot	a		-	2108	-		-
Torquay	a		-	-	-		-
Paignton	a		-	-	-		-
Totnes	a		-	2120	-		-
Plymouth	a		-	2148	-		-
Penzance	a		-		-		-
Birmingham International ✈	d		1814		1914		2014
Coventry	d		1825		1925		2025
Leamington Spa	d		1837		1937		2037
Banbury	d		1854		1954		2054
Oxford	d		1916		2016		2116
Reading 7	d		1952		2052		2152
Basingstoke	d		2010		2112		2211
Winchester	a		-		-		-
Southampton Airport Parkway ✈	a		2033		2134		2233
Southampton Central	a		2042		2142		2243
Bournemouth	a		2126		2227		

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For help: see ‘Using Your Timetable’ on page 8

					Ⓩ		Ⓩ	Ⓩ
Aberdeen								
Dundee								
Glasgow Ctl 15							**1900**	**2058**
Motherwell							**1915**	**2118**
Haymarket							**1959**	**2204**
Edinburgh 10	**1508**		**1608**	**1708**		**1806**	**2018**	**2208a**
Dunbar	**1529**		-	**1729**		**1828**	**2040**	
Berwick	-		-	**1753**		**1852**	**2104**	
Alnmouth	-		**1708**	-		-	-	
Morpeth	**1622**		**1722**	-		**1923**	-	
Newcastle 8	**1640**		**1739**	**1839**		**1941**	**2148a**	
Durham	**1653**		**1753**	**1851**		**1953**		
Darlington	**1711**		**1811**	**1908**		**2011**		
York 8	**1744**		**1844**	**1944**		**2044**		
Leeds 10	**1811**		**1911**	**2011**		**2111**		
Wakefield	**1823**		**1923**	**2023**		**2123**		
Doncaster 7	-		-	-		-		
Sheffield 7	**1856**		**1956**	**2056**		**2156**		
Chesterfield	-		-	-		**2208**		
Derby 6	**1931**		**2031**	**2130**		**2231**		
Burton	**1941**		-	**2140**		**2241**		
Tamworth	-		**2049**	**2150**		**2251**		
Manchester P	-	**1927**	-	-	**2105**	-		
Stockport	-	**1936**	-	-	**2113**	-		
Crewe 10	-	-	-	-	-	-		
Macclesfield	-	**1949**	-	-	**2126**	-		
Stoke	-	**2008**	-	-	**2149**	-		
Stafford	-	**2028**	-	-	**2205**	-		
Wolverhmptn 7	-	**2043**	-	-	**2220**	-		
Bham New St 12	**2004**	**2059**	**2105**	**2207**	**2236**	**2309**		
Bham New St	**2012**	**2104**	**2112**	**2212**				
Cheltenham	**2052**	-	**2152**	**2252**				
Gloucester 7	-	-	**2200**	-				
Bristol Pkwy 7	**2125**	-	**2231**	**2321**				
Bristol TM 10	**2145**	-	**2240a**	**2330a**				
Taunton	**2217**	-						
Tiverton Pkwy	**2230**	-						
Exeter St D 6	**2246**	-						
Dawlish	-	-						
Teignmouth	-	-						
Newton A	**2304**	-						
Torquay	-	-						
Paignton	-	-						
Totnes	**2317**	-						
Plymouth	**2344**	-						
Penzance		-						
Bham Intl ✈		**2114**						
Coventry		**2125**						
Leamington		**2137**						
Banbury		**2154**						
Oxford		**2216**						
Reading 7		**2239a**						
Basingstoke								
Winchester								
Southptn Apt ✈								
Southptn Ctl								
Bournemouth								

Scotland, The North East & Manchester to The South West and South Coast

Sundays

Notes: see Page 49

Features		Ⓩ	Ⓩ				
Period of operation and Notes		M					
Aberdeen	d	**2130**					
Dundee	d	**2241**					
Glasgow Central 15	d	-					
Motherwell	d	-					
Haymarket	d	**2357**					
Edinburgh 10	d	**0001a**					
Dunbar	d						
Berwick-upon-Tweed	d						
Alnmouth	d						
Morpeth	d						
Newcastle 8	d						
Durham	d						
Darlington	d						
York 8	d						
Leeds 10	d						
Wakefield Westgate	d						
Doncaster 7	d						
Sheffield 7	d						
Chesterfield	d						
Derby 6	d						
Burton-on-Trent	d						
Tamworth	d						
Manchester Piccadilly	d		**2205**				
Stockport	d		**2213**				
Crewe 10	d		-				
Macclesfield	d		**2226**				
Stoke-on-Trent	d		**2249**				
Stafford	d		**2305**				
Wolverhampton 7	d		**2320**				
Birmingham New Street 12	a		**2336**				
Birmingham New Street	d						
Cheltenham Spa	d						
Gloucester 7	a						
Bristol Parkway 7	d						
Bristol Temple Meads 10	d						
Taunton	d						
Tiverton Parkway	d						
Exeter St. Davids 6	d						
Dawlish	a						
Teignmouth	a						
Newton Abbot	a						
Torquay	a						
Paignton	a						
Totnes	a						
Plymouth	a						
Penzance	a						
Birmingham International ✈	d						
Coventry	d						
Leamington Spa	d						
Banbury	d						
Oxford	d						
Reading 7	d						
Basingstoke	d						
Winchester	a						
Southampton Airport Parkway ✈	a						
Southampton Central	a						
Bournemouth	a						

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

South Coast & The South West to Manchester, The North East & Scotland

Mondays to Fridays

Notes: see Page 49

Features		Ⓩ			Ⓩ		
Period of operation and Notes							
Bournemouth	d						
Southampton Central	d						
Southampton Airport Parkway ✈	d						
Winchester	d						
Basingstoke	d						
Reading 7	d						
Oxford	d						
Banbury	d						
Leamington Spa	d						
Coventry	d						
Birmingham International ✈	d						
Penzance	d						
Plymouth	d						
Totnes	d						
Paignton	d						
Torquay	d						
Newton Abbot	d						
Teignmouth	d						
Dawlish	d						
Exeter St. Davids 6	d						
Tiverton Parkway	d						
Taunton	d						
Bristol Temple Meads 10	d						
Bristol Parkway 7	d						
Gloucester 7	d						
Cheltenham Spa	d						
Birmingham New Street 12	a						
Birmingham New Street	d	**0557**				**0603**	**0630**
Wolverhampton 7	d	**0614**				-	-
Stafford	d	**0628**				-	-
Stoke-on-Trent	a	**0643**				-	-
Macclesfield	a	**0704**				-	-
Crewe 10	a	-				-	-
Stockport	a	**0719**				-	-
Manchester Piccadilly	a	**0729**				-	-
Tamworth	d					-	-
Burton-on-Trent	d					-	-
Derby 6	d					**0645**	**0716**
Chesterfield	d					**0703**	-
Sheffield 7	d					**0721**	**0750**
Doncaster 7	d					-	**0819**
Wakefield Westgate	d					**0747**	-
Leeds 10	d			**0543**		**0808**	-
York 8	d			**0627**		**0832**	**0844**
Darlington	d			**0655**		**0900**	**0915**
Durham	d			**0713**		**0917**	**0932**
Newcastle 8	d			**0735**		**0933**	**0945a**
Morpeth	a			**0747**		-	
Alnmouth	a			-		**0957**	
Berwick-upon-Tweed	a			**0820**		**1019**	
Dunbar	a			-		-	
Edinburgh 10	a			**0903**	**0627d**	**1106**	
Haymarket	a				-		
Motherwell	a				**0706**		
Glasgow Central 15	a				**0725**		
Dundee	a		**0642d**				
Aberdeen	a		**0755**				

South Coast & The South West to Manchester, The North East & Scotland

Mondays to Fridays

Notes: see Page 49

Features

Period of operation and Notes

Bournemouth	d						
Southampton Central	d			0515			
Southampton Airport Parkway ✈	d			0522			
Winchester	d			-			
Basingstoke	d			0549			
Reading 7	d			0615		0714	
Oxford	d			0639		0739	
Banbury	d			0657		0757	
Leamington Spa	d			0715		0815	
Coventry	d			0727		0827	
Birmingham International ✈	d			0738		0838	
Penzance	d			-		-	
Plymouth	d			-		-	0525
Totnes	d			-		-	0551
Paignton	d			-		-	-
Torquay	d			-		-	-
Newton Abbot	d			-		-	0603
Teignmouth	d			-		-	-
Dawlish	d			-		-	-
Exeter St. Davids 6	d			-		-	0625
Tiverton Parkway	d			-		-	0638
Taunton	d			-		-	0651
Bristol Temple Meads 10	d			-	0634	-	0735
Bristol Parkway 7	d			-	0643	-	0744
Gloucester 7	d			-	-	-	-
Cheltenham Spa	d			-	0713	-	0815
Birmingham New Street 12	a			0748	0756	0849	0856
Birmingham New Street	d	0653	0703	0757	0803	0857	0903
Wolverhampton 7	d	0710	-	0814	-	0914	-
Stafford	d	0724	-	0828	-	0928	-
Stoke-on-Trent	a	-	-	0843	-	0943	-
Macclesfield	a	-	-	0900	-	1000	-
Crewe 10	a	0744	-	-	-	-	-
Stockport	a	0809	-	0913	-	1013	-
Manchester Piccadilly	a	0823	-	0923	-	1023	-
Tamworth	d		0719		0819		-
Burton-on-Trent	d		0730		0830		0926
Derby 6	d		0750		0845		0945
Chesterfield	d		0808		0905		-
Sheffield 7	d		0822		0921		1021
Doncaster 7	d		-		-		-
Wakefield Westgate	d		0848		0947		1047
Leeds 10	d		0908		1008		1108
York 8	d		0932		1032		1132
Darlington	d		1000		1100		1200
Durham	d		1017		1117		1217
Newcastle 8	d		1029a		1132		1229a
Morpeth	a				1144		
Alnmouth	a				1159		
Berwick-upon-Tweed	a				1220		
Dunbar	a				-		
Edinburgh 10	a				1302		
Haymarket	a						
Motherwell	a						
Glasgow Central 15	a						
Dundee	a						
Aberdeen	a						

Please note : All direct CrossCountry services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see 'Using Your Timetable' on page 8

Bournemouth	0630		0730				0945	
Southptn Ctl	0714		0812				1017	
Southptn Apt ✈	0722		0819				1024	
Winchester	0731		0831				1033	
Basingstoke	0751		0847				1049	
Reading 7	0815		0913		1015		1115	
Oxford	0839		0939		1039		1139	
Banbury	0857		0957		1057		1157	
Leamington	0915		1015		1117		1215	
Coventry	0927		1027		1128		1227	
Bham Intl ✈	0938		1038		1138		1238	
Penzance	-		-		-		-	
Plymouth	-	0627	-	0725	-		-	0927
Totnes	-	0653	-	0751	-		-	0953
Paignton	-	-	-	-	-		-	-
Torquay	-	-	-	-	-		-	-
Newton A	-	0706	-	0804	-		-	1006
Teignmouth	-	-	-	-	-		-	-
Dawlish	-	-	-	-	-		-	-
Exeter St D 6	-	0727	-	0827	-		-	1027
Tiverton Pkwy	-	0741	-	0841	-		-	1041
Taunton	-	0753	-	0853	-		-	1053
Bristol TM 10	-	0835	-	0932	-	1033	-	1135
Bristol Pkwy 7	-	0844	-	0944	-	1044	-	1144
Gloucester 7	-	-	-	-	-	-	-	-
Cheltenham	-	0915	-	1015	-	1115	-	1215
Bham New St 12	0949	0958	1048	1055	1149	1158	1248	1256
Bham New St	0957	1003	1057	1103	1157	1203	1257	1303
Wolverhmptn 7	1014	-	1114	-	1214	-	1314	-
Stafford	1028	-	1128	-	1228	-	1328	-
Stoke	1043	-	1143	-	1243	-	1343	-
Macclesfield	1100	-	1200	-	1300	-	1400	-
Crewe 10	-	-	-	-	-	-	-	-
Stockport	1113	-	1213	-	1313	-	1414	-
Manchester P	1123	-	1223	-	1323	-	1423	-
Tamworth		1019		-		1219		-
Burton		-		1126		-		1326
Derby 6		1045		1145		1245		1345
Chesterfield		1105		-		-		-
Sheffield 7		1121		1221		1321		1421
Doncaster 7		-		-		-		-
Wakefield		1147		1247		1347		1447
Leeds 10		1208		1308		1408		1508
York 8		1232		1332		1432		1532
Darlington		1300		1403		1500		1600
Durham		1317		1420		1517		1617
Newcastle 8		1335		1432a		1537		1635
Morpeth		-				-		1647
Alnmouth		1359				1601		1702
Berwick		1421				1623		-
Dunbar		1443				-		1744
Edinburgh 10		1509				1705		1808
Haymarket						1715		1816
Motherwell						1756		-
Glasgow Ctl 15						1812		-
Dundee								1933
Aberdeen								2044

South Coast & The South West to Manchester, The North East & Scotland

Mondays to Fridays

Notes: see Page 49

Features							
Period of operation and Notes							
Bournemouth	d						1145
Southampton Central	d						1217
Southampton Airport Parkway ✈	d						1224
Winchester	d						-
Basingstoke	d						1249
Reading 7	d			1213			1315
Oxford	d			1239			1339
Banbury	d	1228		1257			1357
Leamington Spa	d	1250		1315			1415
Coventry	d	-		1327			1430
Birmingham International ✈	d	-		1338			1440
Penzance	d	-		-			-
Plymouth	d	-		-			-
Totnes	d	-		-			-
Paignton	d	-	1014	-			-
Torquay	d	-	1020	-			-
Newton Abbot	d	-	1029	-			-
Teignmouth	d	-	1036	-			-
Dawlish	d	-	1041	-			-
Exeter St. Davids 6	d	-	1054	-			-
Tiverton Parkway	d	-	1108	-			-
Taunton	d	-	1121	-			-
Bristol Temple Meads 10	d	-	1155a	-	1235		-
Bristol Parkway 7	d	-		-	1244		-
Gloucester 7	d	-		-	-		-
Cheltenham Spa	d	-		-	1315		-
Birmingham New Street 12	a	1318		1349	1356		1450
Birmingham New Street	d	1330		1357	1403	1430	1457
Wolverhampton 7	d	-		1414	-	-	1514
Stafford	d	-		1428	-	-	1528
Stoke-on-Trent	a	-		1443	-	-	1543
Macclesfield	a	-		1500	-	-	1600
Crewe 10	a	-		-	-	-	-
Stockport	a	-		1513	-	-	1613
Manchester Piccadilly	a	-		1523	-	-	1623
Tamworth	d	-			1419	-	
Burton-on-Trent	d	-			-	-	
Derby 6	d	1416			1445	1521	
Chesterfield	d	-			-	-	
Sheffield 7	d	1451			1521	1551	
Doncaster 7	d	1519			-	1617	
Wakefield Westgate	d	-			1547	-	
Leeds 10	d	-			1608	-	
York 8	d	1546			1632	1645	
Darlington	d	1614			1700	1713	
Durham	d	1631			1717	1730	
Newcastle 8	d	1644a			1734	1743a	
Morpeth	a				-		
Alnmouth	a				1758		
Berwick-upon-Tweed	a				1820		
Dunbar	a				1843		
Edinburgh 10	a				1906		
Haymarket	a				1916		
Motherwell	a				1954		
Glasgow Central 15	a				2016		
Dundee	a						
Aberdeen	a						

Please note : All direct CrossCountry services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

	F							
Bournemouth						1345		
Southptn Ctl						1415		
Southptn Apt ✈						1422		
Winchester						-		
Basingstoke						1449		
Reading 7				1415		1515		1616
Oxford				1439		1539		1639
Banbury		1431		1457		1557		1658
Leamington		1450		1515		1615		1715
Coventry		-		1527		1627		1728
Bham Intl ✈		-		1538		1638		1738
Penzance	0925	-		-		-		-
Plymouth	1127	-	1153	-	1227	-		-
Totnes	1153	-	1219	-	1253	-		-
Paignton	-	-	-	-	-	-		-
Torquay	-	-	-	-	-	-		-
Newton A	1206	-	1231	-	1306	-		-
Teignmouth	-	-	-	-	-	-		-
Dawlish	-	-	-	-	-	-		-
Exeter St D 6	1227	-	1252	-	1327	-		-
Tiverton Pkwy	1241	-	1306	-	1341	-		-
Taunton	1253	-	1321	-	1353	-		-
Bristol TM 10	1335	-	1400	-	1435	-	1535	-
Bristol Pkwy 7	1344	-	1409	-	1444	-	1544	-
Gloucester 7	-	-	-	-	-	-	-	-
Cheltenham	1415	-	1440	-	1515	-	1615	-
Bham New St 12	1456	1518	1527	1548	1556	1648	1656	1748
Bham New St	1503			1557	1603	1657	1703	1757
Wolverhmptn 7	-			1614	-	1714	-	1814
Stafford	-			1628	-	1728	-	1828
Stoke	-			1643	-	1743	-	1843
Macclesfield	-			1700	-	1800	-	1900
Crewe 10	-			-	-	-	-	-
Stockport	-			1713	-	1813	-	1913
Manchester P	-			1723	-	1823	-	1923
Tamworth	-				1620		-	
Burton	1526				-		1727	
Derby 6	1545				1645		1745	
Chesterfield	1605				1705		1805	
Sheffield 7	1621				1721		1821	
Doncaster 7	-				-		-	
Wakefield	1647				1747		1850	
Leeds 10	1708				1808		1908	
York 8	1732				1832		1934	
Darlington	1801				1901		2005	
Durham	1819				1919		2023	
Newcastle 8	1832a				1935		2038	
Morpeth					-		2052	
Alnmouth					2000		-	
Berwick					2023		2125	
Dunbar					-		2149	
Edinburgh 10					2109		2213	
Haymarket								
Motherwell								
Glasgow Ctl 15								
Dundee								
Aberdeen								

South Coast & The South West to Manchester, The North East & Scotland

Mondays to Fridays

Notes: see Page 49

Features							
Period of operation and Notes							
Bournemouth	d		**1545**		**1645**		
Southampton Central	d		**1617**		**1717**		
Southampton Airport Parkway ✈	d		**1624**		**1724**		
Winchester	d		**1633**		**1733**		
Basingstoke	d		**1649**		**1749**		
Reading 7	d		**1715**		**1815**		**1915**
Oxford	d		**1739**		**1840**		**1939**
Banbury	d		**1757**		**1858**		**1957**
Leamington Spa	d		**1815**		**1916**		**2015**
Coventry	d		**1827**		**1928**		**2027**
Birmingham International ✈	d		**1838**		**1938**		**2038**
Penzance	d		-		-		-
Plymouth	d	**1427**	-	**1527**	-	**1627**	-
Totnes	d	**1453**	-	**1553**	-	**1653**	-
Paignton	d	-	-	-	-	-	-
Torquay	d	-	-	-	-	-	-
Newton Abbot	d	**1506**	-	**1606**	-	**1706**	-
Teignmouth	d	-	-	-	-	-	-
Dawlish	d	-	-	-	-	-	-
Exeter St. Davids 6	d	**1527**	-	**1627**	-	**1727**	-
Tiverton Parkway	d	**1541**	-	**1641**	-	**1741**	-
Taunton	d	**1553**	-	**1653**	-	**1753**	-
Bristol Temple Meads 10	d	**1635**	-	**1735**	-	**1835**	-
Bristol Parkway 7	d	**1644**	-	**1744**	-	**1844**	-
Gloucester 7	d	-	-	-	-	-	-
Cheltenham Spa	d	**1715**	-	**1815**	-	**1915**	-
Birmingham New Street 12	a	**1756**	**1848**	**1856**	**1949**	**1956**	**2048**
Birmingham New Street	d	**1803**	**1857**	**1903**	**1957**	**2003**	**2057**
Wolverhampton 7	d	-	**1914**	-	**2014**	-	**2114**
Stafford	d	-	**1928**	-	**2028**	-	**2128**
Stoke-on-Trent	a	-	**1943**	-	**2043**	-	**2143**
Macclesfield	a	-	**2000**	-	**2100**	-	**2200**
Crewe 10	a	-	-	-	-	-	-
Stockport	a	-	**2013**	-	**2113**	-	**2213**
Manchester Piccadilly	a	-	**2023**	-	**2123**	-	**2223**
Tamworth	d	**1819**		-		**2019**	
Burton-on-Trent	d	-		**1926**		-	
Derby 6	d	**1845**		**1945**		**2048**	
Chesterfield	d	-		-		-	
Sheffield 7	d	**1921**		**2021**		**2123**	
Doncaster 7	d	-		-		-	
Wakefield Westgate	d	**1947**		**2047**		**2147**	
Leeds 10	d	**2008**		**2102a**		**2202a**	
York 8	d	**2032**					
Darlington	d	**2059**					
Durham	d	**2116**					
Newcastle 8	d	**2135**					
Morpeth	a	-					
Alnmouth	a	**2200**					
Berwick-upon-Tweed	a	-					
Dunbar	a	-					
Edinburgh 10	a	**2303**					
Haymarket	a						
Motherwell	a						
Glasgow Central 15	a						
Dundee	a						
Aberdeen	a						

Please note : All direct CrossCountry services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see 'Using Your Timetable' on page 8

				Ⓩ	Ⓩ	Ⓩ G		
Bournemouth		1845		1945				
Southptn Ctl		1917		2017				
Southptn Apt ✈		1924		2024				
Winchester		-		-				
Basingstoke		1949		2049				
Reading 7		2015		2113				
Oxford		2039		2137				
Banbury		2057		2157				
Leamington		2115		2215				
Coventry		2127		2227				
Bham Intl ✈		2139		2238				
Penzance		-		-		2208		
Plymouth		-	1827	-		0002a		
Totnes		-	1853	-				
Paignton		-	-	-	2020			
Torquay		-	-	-	2026			
Newton A		-	1906	-	2035			
Teignmouth		-	-	-	-			
Dawlish		-	-	-	-			
Exeter St D 6		-	1927	-	2056			
Tiverton Pkwy		-	1941	-	2109			
Taunton		-	1953	-	2122			
Bristol TM 10	1935	-	2035	-	2200			
Bristol Pkwy 7	1944	-	2044	-	2209			
Gloucester 7	-	-	-	-	-			
Cheltenham	2015	-	2115	-	2243			
Bham New St 12	2056	2150	2201	2248	2341			
Bham New St	2103	2157						
Wolverhmptn 7	-	2214						
Stafford	-	2228						
Stoke	-	2243						
Macclesfield	-	2300						
Crewe 10	-	-						
Stockport	-	2313						
Manchester P	-	2323						
Tamworth	2129							
Burton	2140							
Derby 6	2152							
Chesterfield	-							
Sheffield 7	2226							
Doncaster 7	2301							
Wakefield	2321							
Leeds 10	2334a							
York 8								
Darlington								
Durham								
Newcastle 8								
Morpeth								
Alnmouth								
Berwick								
Dunbar								
Edinburgh 10								
Haymarket								
Motherwell								
Glasgow Ctl 15								
Dundee								
Aberdeen								

South Coast & The South West to Manchester, The North East & Scotland

Saturdays

Notes: see Page 49

Features			Ⓩ		Ⓩ		
Period of operation and Notes							
Bournemouth	d						
Southampton Central	d						
Southampton Airport Parkway ✈	d						
Winchester	d						
Basingstoke	d						
Reading 7	d						
Oxford	d						
Banbury	d						
Leamington Spa	d						
Coventry	d						
Birmingham International ✈	d						
Penzance	d						
Plymouth	d						
Totnes	d						
Paignton	d						
Torquay	d						
Newton Abbot	d						
Teignmouth	d						
Dawlish	d						
Exeter St. Davids 6	d						
Tiverton Parkway	d						
Taunton	d						
Bristol Temple Meads 10	d						
Bristol Parkway 7	d						
Gloucester 7	d						
Cheltenham Spa	d						
Birmingham New Street 12	a						
Birmingham New Street	d				0557	0603	0630
Wolverhampton 7	d				0614	-	-
Stafford	d				0628	-	-
Stoke-on-Trent	a				0643	-	-
Macclesfield	a				0704	-	-
Crewe 10	a				-	-	-
Stockport	a				0719	-	-
Manchester Piccadilly	a				0730	-	-
Tamworth	d					0619	0646
Burton-on-Trent	d					0630	0657
Derby 6	d					0645	0717
Chesterfield	d					0703	-
Sheffield 7	d					0721	0750
Doncaster 7	d					-	0819
Wakefield Westgate	d					0747	-
Leeds 10	d					0808	-
York 8	d					0832	0844
Darlington	d					0900	0916
Durham	d					0917	0933
Newcastle 8	d			0738		0933	0946a
Morpeth	a			0751		-	
Alnmouth	a			-		0957	
Berwick-upon-Tweed	a			0823		1019	
Dunbar	a			-		-	
Edinburgh 10	a		0623d	0907		1103	
Haymarket	a		0627				
Motherwell	a		0705				
Glasgow Central 15	a		0723				
Dundee	a	0642d					
Aberdeen	a	0756					

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

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Bournemouth								
Southptn Ctl					0617			
Southptn Apt ✈					0624			
Winchester					-			
Basingstoke					0649			
Reading 7			0615		0715		0815	
Oxford			0639		0739		0839	
Banbury			0657		0757		0857	
Leamington			0715		0815		0915	
Coventry			0727		0827		0927	
Bham Intl ✈			0738		0838		0938	
Penzance			-		-		-	
Plymouth			-		-	0527	-	0625
Totnes			-		-	0553	-	0651
Paignton			-		-	-	-	-
Torquay			-		-	-	-	-
Newton A			-		-	0606	-	0703
Teignmouth			-		-	-	-	-
Dawlish			-		-	-	-	-
Exeter St D 6			-		-	0627	-	0727
Tiverton Pkwy			-		-	0641	-	0741
Taunton			-		-	0653	-	0753
Bristol TM 10			-	0615	-	0735	-	0835
Bristol Pkwy 7			-	0624	-	0744	-	0844
Gloucester 7			-	0659	-	-	-	-
Cheltenham			-	0710	-	0815	-	0915
Bham New St 12			0748	0756	0849	0856	0948	0956
Bham New St	0657	0703	0757	0803	0857	0903	0957	1003
Wolverhamptn 7	0714	-	0814	-	0914	-	1014	-
Stafford	0728	-	0828	-	0928	-	1028	-
Stoke	-	-	0843	-	0943	-	1043	-
Macclesfield	-	-	0900	-	1000	-	1100	-
Crewe 10	-	-	-	-	-	-	-	-
Stockport	0815	-	0913	-	1013	-	1113	-
Manchester P	0829	-	0923	-	1023	-	1123	-
Tamworth		0719		0819		-		1019
Burton		0730		0830		0926		-
Derby 6		0750		0845		0945		1045
Chesterfield		0808		0905		-		1105
Sheffield 7		0822		0921		1021		1121
Doncaster 7		-		-		-		-
Wakefield		0848		0947		1047		1147
Leeds 10		0908		1008		1108		1208
York 8		0932		1032		1132		1232
Darlington		1000		1100		1201		1300
Durham		1017		1117		1217		1317
Newcastle 8		1030a		1133		1230a		1335
Morpeth				1145				-
Alnmouth				-				1359
Berwick				1218				1421
Dunbar				-				-
Edinburgh 10				1305				1505
Haymarket								
Motherwell								
Glasgow Ctl 15								
Dundee								
Aberdeen								

South Coast & The South West to Manchester, The North East & Scotland

Saturdays

Notes: see Page 49

Features							
Period of operation and Notes							
Bournemouth	d	0747				0947	
Southampton Central	d	0817				1017	
Southampton Airport Parkway ✈	d	0825				1025	
Winchester	d	-				1033	
Basingstoke	d	0849				1049	
Reading 7	d	0915		1015		1115	
Oxford	d	0939		1039		1139	
Banbury	d	0957		1057		1157	
Leamington Spa	d	1015		1115		1215	
Coventry	d	1027		1127		1227	
Birmingham International ✈	d	1038		1138		1238	
Penzance	d	-		-		-	
Plymouth	d	-	0725	-		-	0927
Totnes	d	-	0751	-		-	0953
Paignton	d	-	-	-		-	-
Torquay	d	-	-	-		-	-
Newton Abbot	d	-	0803	-		-	1006
Teignmouth	d	-	-	-		-	-
Dawlish	d	-	-	-		-	-
Exeter St. Davids 6	d	-	0827	-		-	1027
Tiverton Parkway	d	-	0841	-		-	1041
Taunton	d	-	0853	-		-	1053
Bristol Temple Meads 10	d	-	0935	-	1035	-	1135
Bristol Parkway 7	d	-	0944	-	1044	-	1144
Gloucester 7	d	-	-	-	-	-	-
Cheltenham Spa	d	-	1015	-	1115	-	1215
Birmingham New Street 12	a	1048	1056	1148	1156	1248	1256
Birmingham New Street	d	1057	1103	1157	1203	1257	1303
Wolverhampton 7	d	1114	-	1214	-	1314	-
Stafford	d	1128	-	1228	-	1328	-
Stoke-on-Trent	a	1143	-	1243	-	1343	-
Macclesfield	a	1200	-	1300	-	1400	-
Crewe 10	a	-	-	-	-	-	-
Stockport	a	1213	-	1313	-	1413	-
Manchester Piccadilly	a	1223	-	1323	-	1423	-
Tamworth	d		-		1219		-
Burton-on-Trent	d		1126		-		1326
Derby 6	d		1145		1245		1345
Chesterfield	d		1205		-		1405
Sheffield 7	d		1221		1321		1421
Doncaster 7	d		-		-		-
Wakefield Westgate	d		1247		1347		1447
Leeds 10	d		1308		1408		1508
York 8	d		1332		1432		1532
Darlington	d		1403		1500		1600
Durham	d		1420		1517		1617
Newcastle 8	d		1432a		1535		1633
Morpeth	a				-		1645
Alnmouth	a				1559		1700
Berwick-upon-Tweed	a				1621		-
Dunbar	a				-		1741
Edinburgh 10	a				1703		1806
Haymarket	a				1715		1817
Motherwell	a				1756		-
Glasgow Central 15	a				1813		-
Dundee	a						1929
Aberdeen	a						2041

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Please note : All direct CrossCountry services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see 'Using Your Timetable' on page 8

Bournemouth					1147			
Southptn Ctl					1217			
Southptn Apt ✈					1225			
Winchester					-			
Basingstoke					1249			
Reading 7		1215			1315		1415	
Oxford		1239			1339		1439	
Banbury		1257			1357		1457	
Leamington		1315			1415		1515	
Coventry		1327			1427		1527	
Bham Intl ✈		1338			1438		1538	
Penzance		-			-		-	
Plymouth		-			-	1127	-	1227
Totnes		-			-	1153	-	1253
Paignton	1010	-			-	-	-	-
Torquay	1016	-			-	-	-	-
Newton A	1026	-			-	1206	-	1306
Teignmouth	1033	-			-	-	-	-
Dawlish	1039	-			-	-	-	-
Exeter St D 6	1053	-			-	1227	-	1327
Tiverton Pkwy	1106	-			-	1241	-	1341
Taunton	1119	-			-	1253	-	1353
Bristol TM 10	1151a	-	1235		-	1335	-	1435
Bristol Pkwy 7		-	1244		-	1344	-	1444
Gloucester 7		-	-		-	-	-	-
Cheltenham		-	1315		-	1415	-	1515
Bham New St 12		1348	1356		1448	1456	1548	1556
Bham New St		1357	1403	1428	1457	1503	1557	1603
Wolverhmptn 7		1414	-	-	1514	-	1614	-
Stafford		1428	-	-	1528	-	1628	-
Stoke		1443	-	-	1543	-	1643	-
Macclesfield		1500	-	-	1600	-	1700	-
Crewe 10		-	-	-	-	-	-	-
Stockport		1513	-	-	1613	-	1713	-
Manchester P		1523	-	-	1623	-	1723	-
Tamworth			1419	-		-		1620
Burton			-	-		1526		-
Derby 6			1445	1500		1545		1645
Chesterfield			-	-		1605		1705
Sheffield 7			1521	1529		1621		1721
Doncaster 7			-	1558		-		-
Wakefield			1547	-		1647		1747
Leeds 10			1608	-		1708		1808
York 8			1632	1620		1732		1832
Darlington			1700	1647		1800		1901
Durham			1717	1704		1817		1919
Newcastle 8			1734	1717a		1833a		1936
Morpeth			-					-
Alnmouth			1759					2001
Berwick			1821					2024
Dunbar			-					-
Edinburgh 10			1903					2108
Haymarket			1915					
Motherwell			1955					
Glasgow Ctl 15			2016					
Dundee								
Aberdeen								

South Coast & The South West to Manchester, The North East & Scotland

Saturdays

Notes: see Page 49

Features							
Period of operation and Notes							
Bournemouth	d	1347				1547	
Southampton Central	d	1417				1617	
Southampton Airport Parkway ✈	d	1425				1625	
Winchester	d	-				-	
Basingstoke	d	1449				1649	
Reading 7	d	1515		1615		1715	
Oxford	d	1539		1639		1739	
Banbury	d	1557		1657		1757	
Leamington Spa	d	1615		1715		1815	
Coventry	d	1627		1727		1827	
Birmingham International ✈	d	1638		1738		1838	
Penzance	d	-		-		-	
Plymouth	d	-		-	1427	-	1526
Totnes	d	-		-	1453	-	1552
Paignton	d	-		-	-	-	-
Torquay	d	-		-	-	-	-
Newton Abbot	d	-		-	1506	-	1606
Teignmouth	d	-		-	-	-	-
Dawlish	d	-		-	-	-	-
Exeter St. Davids 6	d	-		-	1527	-	1627
Tiverton Parkway	d	-		-	1541	-	1641
Taunton	d	-		-	1553	-	1653
Bristol Temple Meads 10	d	-	1535	-	1635	-	1735
Bristol Parkway 7	d	-	1544	-	1644	-	1744
Gloucester 7	d	-	-	-	-	-	-
Cheltenham Spa	d	-	1615	-	1715	-	1815
Birmingham New Street 12	a	1649	1656	1748	1756	1848	1856
Birmingham New Street	d	1657	1703	1757	1803	1857	1903
Wolverhampton 7	d	1714	-	1814	-	1914	-
Stafford	d	1728	-	1828	-	1928	-
Stoke-on-Trent	a	1743	-	1843	-	1943	-
Macclesfield	a	1800	-	1900	-	2000	-
Crewe 10	a	-	-	-	-	-	-
Stockport	a	1813	-	1913	-	2013	-
Manchester Piccadilly	a	1823	-	1923	-	2023	-
Tamworth	d		-		1819		-
Burton-on-Trent	d		1726		-		1926
Derby 6	d		1745		1845		1945
Chesterfield	d		1805		-		2005
Sheffield 7	d		1821		1921		2021
Doncaster 7	d		-		-		-
Wakefield Westgate	d		1847		1948		2047
Leeds 10	d		1908		2008		2109
York 8	d		1935		2032		2146a
Darlington	d		2005		2100		
Durham	d		2023		2117		
Newcastle 8	d		2038		2134		
Morpeth	a		2050		-		
Alnmouth	a		-		2158		
Berwick-upon-Tweed	a		2123		-		
Dunbar	a		2145		-		
Edinburgh 10	a		2208		2259		
Haymarket	a						
Motherwell	a						
Glasgow Central 15	a						
Dundee	a						
Aberdeen	a						

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Please note : All direct CrossCountry services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see 'Using Your Timetable' on page 8

							Ⓩ	Ⓩ K
Bournemouth			1747				1947	
Southptn Ctl			1817				2017	
Southptn Apt ✈			1825				2025	
Winchester			1833				-	
Basingstoke			1849				2049	
Reading 7	1815		1915		2015		2115	
Oxford	1839		1939		2039		2139	
Banbury	1857		1957		2057		2157	
Leamington	1915		2015		2115		2215	
Coventry	1927		2027		2127		2228	
Bham Intl ✈	1938		2038		2139		2239	
Penzance	-		-		-		-	2130
Plymouth	-	1627	-		-	1827	-	2318a
Totnes	-	1653	-		-	1853	-	
Paignton	-	-	-		-	-	-	
Torquay	-	-	-		-	-	-	
Newton A	-	1706	-		-	1906	-	
Teignmouth	-	-	-		-	-	-	
Dawlish	-	-	-		-	-	-	
Exeter St D 6	-	1727	-		-	1927	-	
Tiverton Pkwy	-	1741	-		-	1941	-	
Taunton	-	1753	-		-	1953	-	
Bristol TM 10	-	1835	-	1931	-	2031	-	
Bristol Pkwy 7	-	1844	-	1940	-	2040	-	
Gloucester 7	-	-	-	-	-	-	-	
Cheltenham	-	1915	-	2011	-	2111	-	
Bham New St 12	1948	1956	2048	2052	2149	2151	2249	
Bham New St	1957	2003	2057	2103	2157	2203		
Wolverhmptn 7	2014	-	2116	-	2214	-		
Stafford	2028	-	2130	-	2228	-		
Stoke	2043	-	2145	-	2243	-		
Macclesfield	2100	-	2203	-	2300	-		
Crewe 10	-	-	-	-	-	-		
Stockport	2113	-	2217	-	2313	-		
Manchester P	2123	-	2233	-	2328	-		
Tamworth		2020		2120		2220		
Burton		-		2131		2231		
Derby 6		2045		2145		2242a		
Chesterfield		-		2208				
Sheffield 7		2121		2225				
Doncaster 7		-		2255				
Wakefield		2147		2313				
Leeds 10		2202a		2327a				
York 8								
Darlington								
Durham								
Newcastle 8								
Morpeth								
Alnmouth								
Berwick								
Dunbar								
Edinburgh 10								
Haymarket								
Motherwell								
Glasgow Ctl 15								
Dundee								
Aberdeen								

South Coast & The South West to Manchester, The North East & Scotland

Sundays

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Features		Ⓩ					
Period of operation and Notes							
Bournemouth	d						
Southampton Central	d						
Southampton Airport Parkway ✈	d						
Winchester	d						
Basingstoke	d						
Reading 7	d						
Oxford	d						
Banbury	d						
Leamington Spa	d						
Coventry	d						
Birmingham International ✈	d						
Penzance	d						
Plymouth	d						
Totnes	d						
Paignton	d						
Torquay	d						
Newton Abbot	d						
Teignmouth	d						
Dawlish	d						
Exeter St. Davids 6	d						
Tiverton Parkway	d						
Taunton	d						
Bristol Temple Meads 10	d						
Bristol Parkway 7	d						
Gloucester 7	d						
Cheltenham Spa	d						
Birmingham New Street 12	a						
Birmingham New Street	d		0901			0903	1001
Wolverhampton 7	d		0918			-	1018
Stafford	d		0932			-	1032
Stoke-on-Trent	a		0951			-	1047
Macclesfield	a		1008			-	1108
Crewe 10	a		-			-	-
Stockport	a		1022			-	1122
Manchester Piccadilly	a		1038			-	1133
Tamworth	d					0919	
Burton-on-Trent	d					0930	
Derby 6	d					0945	
Chesterfield	d					1005	
Sheffield 7	d				0921	1021	
Doncaster 7	d				-	-	
Wakefield Westgate	d				0947	1047	
Leeds 10	d			0918	1007	1107	
York 8	d			0944	1031	1131	
Darlington	d			1011	1059	1159	
Durham	d			1028	1116	1216	
Newcastle 8	d			1042	1131	1230a	
Morpeth	a			-	1143		
Alnmouth	a			-	-		
Berwick-upon-Tweed	a			1124	1216		
Dunbar	a			-	-		
Edinburgh 10	a	0804d		1208	1259		
Haymarket	a	0807					
Motherwell	a	-					
Glasgow Central 15	a	-					
Dundee	a	0918					
Aberdeen	a	1028					

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For help: see 'Using Your Timetable' on page 8

		P						
Bournemouth						0940		
Southptn Ctl				0920		1020		
Southptn Apt✈				0927		1027		
Winchester				-		1036		
Basingstoke				0951		1051		
Reading 7		0915		1015		1115		1215
Oxford		0939		1039		1139		1239
Banbury		0957		1057		1157		1257
Leamington		1015		1115		1215		1315
Coventry		1027		1127		1227		1327
Bham Intl✈		1038		1138		1238		1338
Penzance		-		-		-		-
Plymouth		-		-		-	0927	-
Totnes		-		-		-	0953	-
Paignton		-		-		-	-	-
Torquay		-		-		-	-	-
Newton A		-		-		-	1005	-
Teignmouth		-		-		-	-	-
Dawlish		-		-		-	-	-
Exeter St D 6		-		-		-	1027	-
Tiverton Pkwy		-		-		-	1041	-
Taunton		-		-		-	1053	-
Bristol TM 10		-	0915	-	1031	-	1131	-
Bristol Pkwy 7		-	0924	-	1040	-	1140	-
Gloucester 7		-	1002	-	-	-	-	-
Cheltenham		-	1011	-	1111	-	1211	-
Bham New St 12		1049	1049	1149	1149	1249	1249	1348
Bham New St	1003	1101	1103	1157	1203	1257	1303	1357
Wolverhmptn 7	-	1118	-	1214	-	1314	-	1414
Stafford	-	1132	-	1228	-	1328	-	1428
Stoke	-	1148	-	1243	-	1343	-	1443
Macclesfield	-	1207	-	1300	-	1400	-	1500
Crewe 10	-	-	-	-	-	-	-	-
Stockport	-	1221	-	1315	-	1414	-	1514
Manchester P	-	1239	-	1325	-	1424	-	1523
Tamworth	1019		-		1219		-	
Burton	1030		1126		-		1326	
Derby 6	1045		1145		1245		1345	
Chesterfield	1105		1205		-		1405	
Sheffield 7	1121		1221		1321		1421	
Doncaster 7	-		-		-		-	
Wakefield	1147		1247		1347		1447	
Leeds 10	1207		1307		1407		1507	
York 8	1231		1331		1431		1531	
Darlington	1259		1358		1459		1559	
Durham	1316		1415		1516		1616	
Newcastle 8	1331		1431		1530		1631	
Morpeth	-		1443		-		-	
Alnmouth	1355		-		1554		1655	
Berwick	1416		-		1615		-	
Dunbar	-		1536		-		1736	
Edinburgh 10	1458		1559		1658		1759	
Haymarket					1714		1816	
Motherwell					1753		-	
Glasgow Ctl 15					1813		-	
Dundee							1930	
Aberdeen							2043	

South Coast & The South West to Manchester, The North East & Scotland

Sundays

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Features							
Period of operation and Notes					N		
Bournemouth	d			**1140**			
Southampton Central	d			**1217**			
Southampton Airport Parkway ✈	d			**1225**			
Winchester	d			-			
Basingstoke	d			**1249**			
Reading 7	d			**1315**		**1415**	
Oxford	d			**1339**		**1439**	
Banbury	d			**1357**		**1457**	
Leamington Spa	d			**1415**		**1515**	
Coventry	d			**1427**		**1527**	
Birmingham International ✈	d			**1438**		**1538**	
Penzance	d			-	**0930**	-	
Plymouth	d	**1027**		-	**1127**	-	**1227**
Totnes	d	**1053**		-	**1153**	-	**1253**
Paignton	d	-	**1049**	-	-	-	-
Torquay	d	-	**1055**	-	-	-	-
Newton Abbot	d	**1106**	**1109**	-	**1206**	-	**1306**
Teignmouth	d	-	**1116**	-	-	-	-
Dawlish	d	-	**1121**	-	-	-	-
Exeter St. Davids 6	d	**1127**	**1135**	-	**1227**	-	**1327**
Tiverton Parkway	d	**1141**	**1148**	-	**1241**	-	**1341**
Taunton	d	**1153**	**1201**	-	**1253**	-	**1353**
Bristol Temple Meads 10	d	**1231**	**1300**	-	**1331**	-	**1431**
Bristol Parkway 7	d	**1240**	**1309**	-	**1340**	-	**1440**
Gloucester 7	d	-	-	-	-	-	-
Cheltenham Spa	d	**1311**	**1341**	-	**1411**	-	**1511**
Birmingham New Street 12	a	**1349**	**1419**	**1448**	**1449**	**1548**	**1550**
Birmingham New Street	d	**1403**		**1457**	**1503**	**1557**	**1603**
Wolverhampton 7	d	-		**1514**	-	**1614**	-
Stafford	d	-		**1528**	-	**1628**	-
Stoke-on-Trent	a	-		**1545**	-	**1646**	-
Macclesfield	a	-		**1603**	-	**1703**	-
Crewe 10	a	-		-	-	-	-
Stockport	a	-		**1616**	-	**1717**	-
Manchester Piccadilly	a	-		**1626**	-	**1726**	-
Tamworth	d	**1419**			-		**1620**
Burton-on-Trent	d	-			**1526**		-
Derby 6	d	**1445**			**1545**		**1645**
Chesterfield	d	-			**1605**		**1705**
Sheffield 7	d	**1521**			**1621**		**1721**
Doncaster 7	d	-			-		-
Wakefield Westgate	d	**1547**			**1647**		**1747**
Leeds 10	d	**1607**			**1707**		**1807**
York 8	d	**1631**			**1731**		**1831**
Darlington	d	**1659**			**1758**		**1900**
Durham	d	**1716**			**1815**		**1918**
Newcastle 8	d	**1730**			**1827a**		**1932**
Morpeth	a	**1742**					-
Alnmouth	a	**1757**					**1958**
Berwick-upon-Tweed	a	**1818**					**2020**
Dunbar	a	-					-
Edinburgh 10	a	**1901**					**2103**
Haymarket	a	**1922**					
Motherwell	a	**2002**					
Glasgow Central 15	a	**2020**					
Dundee	a						
Aberdeen	a						

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Please note : All direct CrossCountry services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

Bournemouth	1340				1540			
Southptn Ctl	1420				1620			
Southptn Apt ✈	1427				1627			
Winchester	-				1636			
Basingstoke	1451				1651			
Reading 7	1515		1615		1715		1815	
Oxford	1539		1639		1739		1839	
Banbury	1557		1657		1757		1857	
Leamington	1615		1715		1815		1915	
Coventry	1627		1727		1827		1927	
Bham Intl ✈	1638		1738		1838		1938	
Penzance	-		-		-		-	
Plymouth	-		-	1427	-		-	1627
Totnes	-		-	1453	-		-	1653
Paignton	-		-	-	-		-	-
Torquay	-		-	-	-		-	-
Newton A	-		-	1506	-		-	1706
Teignmouth	-		-	-	-		-	-
Dawlish	-		-	-	-		-	-
Exeter St D 6	-		-	1527	-		-	1727
Tiverton Pkwy	-		-	1541	-		-	1741
Taunton	-		-	1553	-		-	1753
Bristol TM 10	-	1531	-	1631	-	1731	-	1831
Bristol Pkwy 7	-	1540	-	1640	-	1740	-	1840
Gloucester 7	-	-	-	-	-	-	-	-
Cheltenham	-	1611	-	1711	-	1811	-	1911
Bham New St 12	1648	1649	1748	1750	1848	1850	1949	1950
Bham New St	1657	1703	1757	1803	1857	1903	1957	2003
Wolverhmptn 7	1714	-	1814	-	1915	-	2014	-
Stafford	1728	-	1828	-	1929	-	2028	-
Stoke	1746	-	1843	-	1945	-	2044	-
Macclesfield	1803	-	1901	-	2002	-	2102	-
Crewe 10	-	-	-	-	-	-	-	-
Stockport	1817	-	1915	-	2016	-	2115	-
Manchester P	1826	-	1924	-	2025	-	2125	-
Tamworth		-		1820		-		2020
Burton		1726		-		1926		-
Derby 6		1745		1845		1945		2045
Chesterfield		1805		1905		-		-
Sheffield 7		1821		1921		2023		2121
Doncaster 7		-		-		-		-
Wakefield		1847		1947		2049		2147
Leeds 10		1907		2007		2107		2202a
York 8		1931		2031		2130a		
Darlington		1959		2100				
Durham		2016		2118				
Newcastle 8		2036		2134				
Morpeth		2048		-				
Alnmouth		-		2159				
Berwick		2123		-				
Dunbar		2145		-				
Edinburgh 10		2208		2301				
Haymarket								
Motherwell								
Glasgow Ctl 15								
Dundee								
Aberdeen								

South Coast & The South West to Manchester, The North East & Scotland

Sundays

Notes: see Page 49

Features							Ⓩ
Period of operation and Notes							
Bournemouth	d	1740					1940
Southampton Central	d	1820					2020
Southampton Airport Parkway ✈	d	1827					2027
Winchester	d	-					-
Basingstoke	d	1851					2051
Reading 7	d	1915			2015		2112
Oxford	d	1939			2039		2136
Banbury	d	1957			2057		2154
Leamington Spa	d	2015			2115		2212
Coventry	d	2027			2127		2224
Birmingham International ✈	d	2038			2138		2234
Penzance	d	-			-		-
Plymouth	d	-			-	1827	-
Totnes	d	-			-	1853	-
Paignton	d	-		1820	-	-	-
Torquay	d	-		1826	-	-	-
Newton Abbot	d	-		1835	-	1906	-
Teignmouth	d	-		-	-	-	-
Dawlish	d	-		-	-	-	-
Exeter St. Davids 6	d	-		1857	-	1927	-
Tiverton Parkway	d	-		1910	-	1941	-
Taunton	d	-		1923	-	1953	-
Bristol Temple Meads 10	d	-	1931	1957a	-	2031	-
Bristol Parkway 7	d	-	1940		-	2040	-
Gloucester 7	d	-	-		-	-	-
Cheltenham Spa	d	-	2011		-	2111	-
Birmingham New Street 12	a	2048	2055		2148	2150	2244
Birmingham New Street	d	2057	2103		2157	2203	
Wolverhampton 7	d	2114	-		2214	-	
Stafford	d	2128	-		2228	-	
Stoke-on-Trent	a	2144	-		2243	-	
Macclesfield	a	2201	-		2300	-	
Crewe 10	a	-	-		-	-	
Stockport	a	2215	-		2313	-	
Manchester Piccadilly	a	2224	-		2323	-	
Tamworth	d		2119			2220	
Burton-on-Trent	d		2130			-	
Derby 6	d		2145			2245	
Chesterfield	d		-			2305	
Sheffield 7	d		2221			2321	
Doncaster 7	d		-			-	
Wakefield Westgate	d		2249			-	
Leeds 10	d		2303a			0012a	
York 8	d						
Darlington	d						
Durham	d						
Newcastle 8	d						
Morpeth	a						
Alnmouth	a						
Berwick-upon-Tweed	a						
Dunbar	a						
Edinburgh 10	a						
Haymarket	a						
Motherwell	a						
Glasgow Central 15	a						
Dundee	a						
Aberdeen	a						

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Please note : All direct CrossCountry services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

	Ⓩ							
Bournemouth								
Southptn Ctl								
Southptn Apt✈								
Winchester								
Basingstoke								
Reading 7								
Oxford								
Banbury								
Leamington								
Coventry								
Bham Intl✈								
Penzance								
Plymouth								
Totnes								
Paignton								
Torquay								
Newton A								
Teignmouth								
Dawlish								
Exeter St D 6								
Tiverton Pkwy								
Taunton								
Bristol TM 10	**2210**							
Bristol Pkwy 7	**2219**							
Gloucester 7	-							
Cheltenham	**2250**							
Bham New St 12	**2341**							
Bham New St								
Wolverhmptn 7								
Stafford								
Stoke								
Macclesfield								
Crewe 10								
Stockport								
Manchester P								
Tamworth								
Burton								
Derby 6								
Chesterfield								
Sheffield 7								
Doncaster 7								
Wakefield								
Leeds 10								
York 8								
Darlington								
Durham								
Newcastle 8								
Morpeth								
Alnmouth								
Berwick								
Dunbar								
Edinburgh 10								
Haymarket								
Motherwell								
Glasgow Ctl 15								
Dundee								
Aberdeen								

Notes

Additional services are provided by other train companies, contact National Rail Enquiries for full service information.

a	Arrival time
d	Departure time

Period of operations and notes

A	Also calls at Liskeard 0618, Bodmin Parkway 0631, St Austell 0651, Truro 0708, Redruth 0720, St Erth 0740
B	Also calls at Liskeard 0643, Bodmin Parkway 0656, St Austell 0716, Truro 0733, Redruth 0745, St Erth 0805
C	Also calls at Liskeard 1917, Bodmin Parkway 1930, St Austell 1949, Truro 2009, Redruth 2021, St Erth 2037
D	Also calls at Stonehaven 0837, Montrose 0859, Arbroath 0914
E	Also calls at Stonehaven 2152, Montrose 2213, Arbroath 2228
F	Also calls at St Erth 0934, Redruth 0954, Truro 1007, St Austell 1023, Bodmin Parkway 1041, Liskeard 1053
G	Also calls at St Erth 2217, Camborne 2231, Redruth 2237, Truro 2250, St Austell 2306, Par 2313, Bodmin Parkway 2326, Liskeard 2338
H	Starts from Nottingham 0641, also calls at Beeston 0647
I	Also calls at Liskeard 1925, Bodmin Parkway 1938, St Austell 1956, Truro 2015, Redruth 2027, St Erth 2043
J	Also calls at Stonehaven 0837, Montrose 0859, Arbroath 0914, Also calls at Liskeard 2014, Bodmin Parkway 2026, St Austell 2044, Truro 2100, Redruth 2111, St Erth 2130
K	Also calls at St Erth 2139, Redruth 2156, Truro 2208, St Austell 2225, Bodmin Parkway 2242, Liskeard 2254
L	Also calls at Stonehaven 1127, Montrose 1149, Arbroath 1204
M	Also calls at Stonehaven 2147, Montrose 2208, Arbroath 2223
MO	Mondays only
MX	Mondays excepted
N	Also calls at St Erth 0938, Redruth 0955, Truro 1008, St Austell 1024, Bodmin Parkway 1041, Liskeard 1055
P	From 19 September arrives into Manchester Piccadilly 1241

R	A seat reservation is strongly advised as these services are usually very busy.
Ⓩ	Refreshments are not available on these services.
🚌	Service operated by rail replacement road transport.

After your journey

We hope you enjoyed travelling with us.

Lost property

We'll do all we can to help reunite you with any lost property. If you've left something on board it will be taken off at the station where the train ends its journey and handed to their lost property office. If you e-mail or call our Customer Relations Team we'll provide you with contact details of the train company responsible for that station. If you've left something at a station we will provide the contact details for the train company responsible for that station.

Email	lost.property@crosscountrytrains.co.uk
Telephone	03447 369 123

Your feedback

We always welcome your feedback. If you have any comments, complaints or suggestions regarding your journey with CrossCountry, there are a number of ways to get in touch:

Email	customer.relations@crosscountrytrains.co.uk
Telephone	03447 369 123
Fax	0121 200 6005
Textphone	0121 200 6420
Post	Customer Relations Manager CrossCountry, Cannon House 18 The Priory Queensway Birmingham B4 6BS
Twitter	@CrossCountryUK
Facebook	Facebook.com/Crosscountrytrains

If you have a complaint and are not satisfied with the response you receive, you can ask to hear directly from one of our Managers. If the issue is subsequently not resolved to your satisfaction, you can contact the Rail Ombudsman by:

Email	info@railombudsman.org
Telephone	0330 094 0362
Post	FREEPOST – RAIL OMBUDSMAN

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Book 1 16 May - 11 December 2021 XC2107

CrossCountry routes

Where can we take you?

Our services

The South West to Birmingham, Manchester, the North East and Scotland

The South Coast and Reading to Birmingham and the North East

The South Coast and Reading to Birmingham and Manchester

Birmingham to Leicester, Cambridge and Stansted Airport

Cardiff to Birmingham and Nottingham

Please note: not all stations are shown

STANSTED, CAMBRIDGE & NOTTINGHAM TO BIRMINGHAM & CARDIFF.

Includes all services between Derby and Cheltenham Spa

Sunday 16 May - Saturday 11 December 2021
Live train times online and on our Train Tickets app.

crosscountry

WELCOME TO CROSSCOUNTRY.

Special Timetable

We are continuing to run a special timetable to keep train services running throughout the coronavirus pandemic.

Your safety is our number one priority, therefore we ask that you follow our travel guidelines that adhere to both government and industry rulings. Following the below travel guidelines will allow for you to travel with confidence if you are planning to travel by train.

- Travel at quieter times if possible
- Reserve a seat before you travel
- Wear a face covering when passing through stations and on-board
- Wash your hands before and after travelling

For more information on these please visit:
crosscountrytrains.co.uk/coronavirus

For our customer’s and colleague’s safety, we have strengthened our services, which means we are operating many longer trains with additional carriages where possible. This means that we can provide up to twice the capacity on-board.

We are allowing more dwell time where possible at stations, for customers to board and alight the train safely, maintaining social distancing. In order to support the National Railway timetable, a small number of stations have seen our services reduced or withdrawn to allow additional time at the more heavily used stations.

Our trains continue to run throughout the day on most routes at a reduced frequency and in some cases with a revised calling pattern.

Don’t forget, you can get live train times on our website and via our Train Tickets app.

Why not travel on Britain's largest rail network? We call at over 100 stations that stretch from as far as Aberdeen to Penzance – enough to satisfy anyone's sense of adventure.

What are you waiting for? Start your journey today and travel across Britain directly or with one simple change. The map on the back of this timetable will show you where we can take you. We want you to have an easy, safe and enjoyable journey, wherever you are going. That's what we're all about.

Use our website or Train Tickets app to find and buy train tickets quickly and easily, without having to queue at the station.

Easier and cheaper travel

Extra Flexibility

You can now book with us with greater confidence. With CrossCountry you can change your train if you change your mind. We've removed the £10 fee for changing the date and time of your Advance ticket. So, not only can you get great value Advance tickets for any train operator via our website, but you have a little extra flexibility if your plans change.

Delay Repay

CrossCountry aims to provide the most punctual service possible. However, if your journey with us has been delayed by 30 minutes or more to the destination printed on your ticket, we will provide you with compensation.

For more information and for Terms & Conditions for all of the above, please visit our website **crosscountrytrains.co.uk**

Social Media

Follow us on Twitter or like us on Facebook to get the latest journey information. We have enhanced our commitment to customer service by launching a 24 hour, 7 days a week online customer contact service. We are now contactable 24/7 on our Twitter and Facebook channels to help with your travel queries, excluding Christmas Day and Boxing Day when we are closed.

@CrossCountryUK

Facebook.com/Crosscountrytrains

Instagram.com/Crosscountrytrains

FOR THE JOURNEY AHEAD.

WiFi

Ever thought of surfing when travelling through the countryside? There's free WiFi access on all services shown in this timetable. Please note that on-board WiFi is subject to availability.

First Class

You can indulge in a range of complimentary food and drink items from our First Class menu, served to you at your seat 7 days a week. Breakfast is served until 1100 with our Rest of the Day offer available from 1100 onwards. For those making shorter journeys of 50 minutes or less (90 minutes at weekends and bank holidays), hot and cold drinks and light snacks are available.

Food and Drink

Want something sweet? Or are you a savoury sort of person? Choose from a refreshingly wide range of hot drinks, soft drinks, chilled beer and wine, sandwiches, a tasty selection of sweet and savoury snacks and hot food. Whatever your appetite, we've got something to satisfy it. Our services with catering are shaded darker on your timetable, so take a quick look. Please note catering is provided on selected routes and is subject to availability.

'We have made some changes to our catering on-board during the coronavirus pandemic. Please check our website before your journey.'

crosscountrytrains.co.uk

Bikes

You're welcome to bring your bike! Most CrossCountry trains have two reservable bike spaces and one further space for unreserved bikes. Bikes without a reservation will be accepted on a first come first serve basis. Look out for the bike symbol and store your bike in the designated area to avoid blocking the aisle and vestibule.

Bike reservations are free and can be made via our website **crosscountrytrains.co.uk/bike-reservations**, Twitter **@CrossCountryUK** or by calling **0844 811 0124** (calls to this number are charged at 7p per minute, phone networks may charge an additional fee).

Luggage

Don't bring more than you can handle! We recommend that you bring one item of luggage, which measures a maximum of 90cm x 70cm x 30cm. Smaller bags can be stored under your seat, on your lap or in overhead racks. Larger bags have designated luggage areas near the entrance to each coach and in coach D of our Voyager trains. Look out for our exterior train labels to point you in the right direction!

Please do not store your luggage on the seat next to you or in doorways. If you have not been able to locate a suitable area for your luggage, please ask a member of staff for help. Any luggage in excess of this recommendation may be subject to an additional charge on-board our services, in line with the National Rail Conditions of travel.

☎ Telesales

If you can't get your ticket in advance from **crosscountrytrains.co.uk**, pick up the phone and call our Telesales Team on **0844 811 0124** (calls to this number are charged at 7p per minute, some phone networks may be charged an additional fee).

Group Travel

Friends stick together. So why should they be apart when travelling by train? Use our group booking service at **crosscountrytrains.co.uk** for 10 or more passengers travelling together and we'll help you plan your journey and get you the best deal. Or you can call our dedicated group booking line on **0371 244 2388.**

Passenger Assist

Sometimes, we all need a little help. That's why we offer a Passenger Assist service for those who need it when travelling with us.

You can request journey assistance online when buying your tickets at **crosscountrytrains.co.uk**. Just give us 48 hours' notice before you want to travel and we'll also help plan your journey and get the best deal. Or give us a call for extra assistance, journey options and buying tickets 24 hours before you intend to travel. Our lines are open 08:00-20:00 Monday to Saturday (except Christmas Day and Boxing Day).

Telephone **0800 030 9224**

Textphone **0800 030 9230**

Connections

Other transport connections

Details of connecting public transport services can be found through:

National Rail	**nationalrail.co.uk** or **03457 48 49 50** (24 hours, calls may be recorded)
Traveline	**traveline.info** or **0871 200 22 33** (calls charged 10p per minute from BT landlines, calls from other operators may vary)
TrainTaxiTM	**traintaxi.co.uk**

PlusBus tickets – available to buy online with your train tickets at **crosscountrytrains.co.uk** – give you one day's unlimited travel on most bus or tram services connecting with major stations. Visit **plusbus.info** for further information.

International connections

We run direct services to Birmingham International, Southampton and Stansted airports, so take the train and start your holiday or business trip without the worry of parking. Connections to other airports – and ports – are also available from many stations on our network – see **crosscountrytrains.co.uk** for details.

Whether you're making a flight, ferry or cruise connection, we recommend that you aim to get to the relevant terminal two hours before the latest check-in time.

Changes to train times

If you're travelling with CrossCountry, we may need to make changes to our timetables to allow track improvement work to take place. Major track improvement work will be taking place at Bristol Temple Meads (10 July - 3 September). You're advised to check your train times before travelling by visiting **crosscountrytrains.co.uk**

Using your timetable

Ⓐ **Mondays to Fridays**

Ⓑ Features		Ⓩ	Ⓩ			R
Ⓒ Period of operation and Notes		MO A	MX D		B	D
March	d					
Peterborough	d					
Stamford	d					
Oakham	d					
Ⓓ University	d		Ⓔ	**0420**		
Worcester Pkwy	d			**0456**		
Chepstow Ⓖ	d			-		
Caldicot	d			-		
Bristol Temple Meds 10 Ⓗ	d			**0540**	Ⓕ	*0640g*

Note: Stations and times shown are examples only

Ⓐ This timetable is divided by direction of travel and days of the week.

Ⓑ The ‘Features’ line will contain any specific details relating to each service, for example if seat reservations are recommended. See Notes pages for an explanation of the symbols used in this timetable.

Ⓒ Notes in the ‘Period of operation and Notes’ line indicate, if applicable, the dates/days on which the service operates and any additional stations the trains stop at.

Ⓓ Stations along the route are listed on the left side of the timetable.

Ⓔ The train stops here at the time shown. An at-seat service of drinks and light refreshments is provided on those services shown with dark shading (subject to availability).

Ⓕ Times shown in italics are connections. You will need to change trains to arrive or depart here at the time shown. A note alongside the time will indicate where you need to change.

Ⓖ The letters ‘a’ and ‘d’ show whether the time shown is an arrival time (‘a’) or a departure time (‘d’).

Ⓗ Indicates the minimum connection time (in minutes) that should be allowed when changing trains. When no figure is shown, allow a minimum of five minutes.

Did you know you can get live departure and arrival times on the go with our Train Tickets app?

Stansted, Cambridge & Leicester to Birmingham. Nottingham to Birmingham & Cardiff

(Includes all services between Derby & Bristol)

Mondays to Saturdays

Notes: see page 67

Features		Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ
Period of operation and Notes		SX	SX	SO	SX	SO	SO
Stansted Airport ✈	d						
Audley End	d						
Cambridge	d						
Ely 6	d						
Manea	d						
March	d						
Whittlesea	d						
Peterborough 8	a						
Peterborough	d						
Stamford	d						
Oakham	d						
Melton Mowbray	d						
Nottingham 8	d						
Beeston	d						
Attenborough	d						
Long Eaton	d						
Spondon	d						
Derby 6	a						
Derby	d						
Willington	d						
Burton-on-Trent	d						
Tamworth	d						
Wilnecote	d						
Leicester	a						
Leicester	d						**0548**
South Wigston	d						**0554**
Narborough	d						**0559**
Hinckley	d						**0608**
Nuneaton	d						**0615**
Coleshill Parkway	d						**0630**
Water Orton	d						-
Birmingham New Street 12	a						**0645**
Birmingham New Street	d		**0500**	**0500**	**0537**	**0542**	
University	a		-	-	-	-	
Worcestershire Parkway	d		-	-	-	-	
Ashchurch for Tewkesbury	d		-	-	**0630**	**0634**	
Cheltenham Spa	d		**0606**	**0603**	**0640**	**0644**	
Gloucester 7	d		**0616**	**0615**	**0651**	**0657**	
Bristol Parkway 7	a	**0538d**	-	-	-	-	
Bristol Temple Meads 10	a	**0520d**	-	-	-	-	
Lydney	a	-	**0635**	**0634**	**0710**	**0716**	
Chepstow	a	-	**0644**	**0644**	**0719**	**0725**	
Caldicot	a	-	**0653**	-	**0728**	**0734**	
Severn Tunnel Junction	a	-	**0656**	-	**0731**	**0737**	
Newport (South Wales)	a	**0606**	**0709**	**0707**	**0742**	**0750**	
Cardiff Central 7	a	**0621**	**0722**	**0720**	**0800**	**0805**	

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

	SX A	SO A	Ⓩ SX	SX	SO	Ⓩ	Ⓩ C	Ⓩ
Stansted Apt ✈								
Audley End								
Cambridge								**0515**
Ely 6								**0530**
Manea								-
March								**0546**
Whittlesea								**0558**
Peterboro 8								**0608**
Peterboro								**0610**
Stamford								**0623**
Oakham								**0637**
Melton Mwbray								**0648**
Nottingham 8				**0600**	**0600**		**0641**	-
Beeston				**0606**	**0606**		**0647**	-
Attenborough				**0609**	**0609**		-	-
Long Eaton				**0620**	**0617**		-	-
Spondon				**0627**	**0624**		-	-
Derby 6				**0633**	**0631**		**0704**	-
Derby	**0610**	**0610**		**0638**	**0638**		**0713**	-
Willington	-	-		-	-		-	-
Burton	**0620**	**0620**		**0650**	**0650**		**0723**	-
Tamworth	**0631**	**0631**		**0703**	**0703**		**0734**	-
Wilnecote	-	-		**0707**	**0707**		-	-
Leicester	-	-		-	-		-	**0705**
Leicester	-	-	**0618**	-	-	**0648**	-	**0706**
South Wigston	-	-	**0624**	-	-	**0654**	-	-
Narborough	-	-	**0629**	-	-	**0659**	-	-
Hinckley	-	-	**0638**	-	-	**0708**	-	-
Nuneaton	-	-	**0645**	-	-	**0715**	-	**0729**
Coleshill	-	-	**0700**	-	-	**0730**	-	**0745**
Water Orton	-	-	-	-	-	**0734**	-	-
Bham New St 12	**0652**	**0648**	**0714**	**0724**	**0724**	**0747**	**0754**	**0803**
Bham New St	**0712**	**0712**		**0730**	**0730**			
University	-	-		**0736**	**0736**			
Worcester Pkwy	-	-		**0758**	**0758**			
Ashchurch	-	-		-	-			
Cheltenham	**0752**	**0752**		**0815**	**0815**			
Gloucester 7	-	-		**0827**	**0827**			
Bristol Pkwy 7	**0826**	**0820**		-	-			
Bristol TM 10	**0838**	**0836**		-	-			
Lydney				-	-			
Chepstow				-	-			
Caldicot				-	-			
Severn Tnl Jn				-	-			
Newport				**0911**	**0911**			
Cardiff Ctl 7				**0925**	**0925**			

Stansted, Cambridge & Leicester to Birmingham. Nottingham to Birmingham & Cardiff

(Includes all services between Derby & Bristol)

Mondays to Saturdays

Notes: see page 67

Features			Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ
Period of operation and Notes		A	SX	SX	SO	SX	SO
Stansted Airport ✈	d					0527	0527
Audley End	d					-	-
Cambridge	d					0557	0557
Ely 6	d					0612	0612
Manea	d					0623	0623
March	d					0630	0630
Whittlesea	d					0642	0642
Peterborough 8	a					0652	0652
Peterborough	d					0654	0654
Stamford	d					0707	0707
Oakham	d					0721	0721
Melton Mowbray	d					0732	0732
Nottingham 8	d			0704	0703	-	-
Beeston	d			0710	0709	-	-
Attenborough	d			0714	-	-	-
Long Eaton	d			0724	0721	-	-
Spondon	d			-	-	-	-
Derby 6	a			0734	0731	-	-
Derby	d	0727		0738	0736	-	-
Willington	d	-		0745	0743	-	-
Burton-on-Trent	d	0738		0752	0750	-	-
Tamworth	d	0750		0803	0803	-	-
Wilnecote	d	-		0807	0807	-	-
Leicester	a	-		-	-	0749	0749
Leicester	d	-	0722	-	-	0750	0750
South Wigston	d	-	0728	-	-	0756	-
Narborough	d	-	0733	-	-	0801	-
Hinckley	d	-	0742	-	-	0809	-
Nuneaton	d	-	0748	-	-	0816	0809
Coleshill Parkway	d	-	0803	-	-	0831	0825
Water Orton	d	-	0807	-	-	-	-
Birmingham New Street 12	a	0808	0818	0825	0824	0845	0838
Birmingham New Street	d	0812		0830	0830		
University	a	-		0836	0836		
Worcestershire Parkway	d	-		0858	0858		
Ashchurch for Tewkesbury	d	-		-	-		
Cheltenham Spa	d	0852		0915	0915		
Gloucester 7	d	-		0927	0927		
Bristol Parkway 7	a	0921		-	-		
Bristol Temple Meads 10	a	0940		-	-		
Lydney	a			-	-		
Chepstow	a			0953	-		
Caldicot	a			-	-		
Severn Tunnel Junction	a			-	-		
Newport (South Wales)	a			1011	1012		
Cardiff Central 7	a			1025	1027		

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

	Ⓩ			Ⓩ	Ⓩ			Ⓩ
		SX A	SO A	SX	SO	SX	SO	SX
Stansted Apt ✈								0612
Audley End								-
Cambridge								0657
Ely 6								0712
Manea								-
March								0728
Whittlesea								0740
Peterboro 8								0750
Peterboro								0754
Stamford								0807
Oakham								0821
Melton Mwbray								0832
Nottingham 8	0737					0807	0807	-
Beeston	0743					0814	0813	-
Attenborough	-					-	-	-
Long Eaton	0752					0827	0826	-
Spondon	-					-	-	-
Derby 6	0802					0838	0837	-
Derby	0806	0827	0828			0841	0841	-
Willington	-	-	-			-	-	-
Burton	0818	0838	0838			0852	0852	-
Tamworth	0830	0850	0851			0903	0904	-
Wilnecote	0834	-	-			-	-	-
Leicester	-	-	-			-	-	0849
Leicester	-	-	-	0818	0817	-	-	0850
South Wigston	-	-	-	-	0823	-	-	-
Narborough	-	-	-	0828	0828	-	-	-
Hinckley	-	-	-	0837	0837	-	-	-
Nuneaton	-	-	-	0844	0845	-	-	0909
Coleshill	-	-	-	0900	0900	-	-	0925
Water Orton	0844	-	-	-	-	-	-	-
Bham New St 12	0855	0908	0908	0915	0914	0924	0924	0938
Bham New St		0912	0912			0930	0930	
University		-	-			0936	0936	
Worcester Pkwy		-	-			0958	0958	
Ashchurch		-	-			-	-	
Cheltenham		0952	0952			1015	1015	
Gloucester 7		-	-			1027	1027	
Bristol Pkwy 7		1020	1020			-	-	
Bristol TM 10		1032	1036			-	-	
Lydney						-	1046	
Chepstow						-	-	
Caldicot						-	-	
Severn Tnl Jn						-	-	
Newport						1111	1111	
Cardiff Ctl 7						1125	1125	

Stansted, Cambridge & Leicester to Birmingham. Nottingham to Birmingham & Cardiff

(Includes all services between Derby & Bristol)

Mondays to Saturdays

Notes: see page 67

Features		Ⓩ	Ⓩ	Ⓩ		Ⓩ	Ⓩ
Period of operation and Notes		SO	SX	SO		SX	SO
Stansted Airport ✈	d	0627					
Audley End	d	-					
Cambridge	d	0658					
Ely 6	d	0713					
Manea	d	-					
March	d	0729					
Whittlesea	d	0741					
Peterborough 8	a	0751					
Peterborough	d	0754					
Stamford	d	0807					
Oakham	d	0821					
Melton Mowbray	d	0832					
Nottingham 8	d	-	0839	0841			
Beeston	d	-	0845	-			
Attenborough	d	-	-	-			
Long Eaton	d	-	0854	-			
Spondon	d	-	0901	0858			
Derby 6	a	-	0907	0904			
Derby	d	-	0910	0910	0931		
Willington	d	-	-	-	-		
Burton-on-Trent	d	-	0921	0921	0941		
Tamworth	d	-	0933	0933	-		
Wilnecote	d	-	0937	0937	-		
Leicester	a	0849	-	-	-		
Leicester	d	0850	-	-	-	0915	0918
South Wigston	d	-	-	-	-	-	-
Narborough	d	-	-	-	-	0925	0928
Hinckley	d	-	-	-	-	0933	0936
Nuneaton	d	0909	-	-	-	0943	0943
Coleshill Parkway	d	0925	-	-	-	0958	0958
Water Orton	d	-	-	-	-	1002	1002
Birmingham New Street 12	a	0938	0955	0955	1004	1015	1015
Birmingham New Street	d				1012		
University	a				-		
Worcestershire Parkway	d				-		
Ashchurch for Tewkesbury	d				-		
Cheltenham Spa	d				1052		
Gloucester 7	d				-		
Bristol Parkway 7	a				1121		
Bristol Temple Meads 10	a				1135		
Lydney	a						
Chepstow	a						
Caldicot	a						
Severn Tunnel Junction	a						
Newport (South Wales)	a						
Cardiff Central 7	a						

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Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

			Ⓩ	Ⓩ	Ⓩ		Ⓩ	
	SX	SO	SX	SO		A		SX
Stansted Apt ✈			**0721**	**0727**				
Audley End			-	-				
Cambridge			**0800**	**0800**				
Ely 6			**0815**	**0815**				
Manea			**0826**	-				
March			**0833**	**0831**				
Whittlesea			-	-				
Peterboro 8			**0851**	**0849**				
Peterboro			**0854**	**0854**				
Stamford			**0907**	**0907**				
Oakham			**0921**	**0921**				
Melton Mwbray			**0932**	**0932**				
Nottingham 8	**0907**	**0907**	-	-	**0941**			**1007**
Beeston	**0913**	**0913**	-	-	-			**1013**
Attenborough	-	-	-	-	-			-
Long Eaton	**0926**	**0924**	-	-	-			**1027**
Spondon	-	-	-	-	-			-
Derby 6	**0937**	**0935**	-	-	**1001**			**1038**
Derby	**0940**	**0938**	-	-	**1010**	**1031**		**1041**
Willington	**0948**	**0946**	-	-	-	-		-
Burton	**0954**	**0952**	-	-	**1021**	-		**1052**
Tamworth	**1006**	**1003**	-	-	**1033**	**1050**		**1103**
Wilnecote	-	-	-	-	**1037**	-		-
Leicester	-	-	**0949**	**0949**	-	-		-
Leicester	-	-	**0950**	**0950**	-	-	**1018**	-
South Wigston	-	-	-	-	-	-	**1024**	-
Narborough	-	-	-	-	-	-	**1029**	-
Hinckley	-	-	-	-	-	-	**1038**	-
Nuneaton	-	-	**1009**	**1009**	-	-	**1045**	-
Coleshill	-	-	**1025**	**1025**	-	-	**1100**	-
Water Orton	-	-	-	-	-	-	-	-
Bham New St 12	**1024**	**1024**	**1038**	**1038**	**1055**	**1108**	**1115**	**1124**
Bham New St	**1030**	**1030**				**1112**		**1130**
University	**1036**	**1036**				-		**1136**
Worcester Pkwy	**1058**	**1058**				-		**1158**
Ashchurch	-	**1109**				-		-
Cheltenham	**1115**	**1118**				**1152**		**1215**
Gloucester 7	**1127**	**1128**				-		**1227**
Bristol Pkwy 7	-	-				**1224**		-
Bristol TM 10	-	-				**1238**		-
Lydney	-	-						-
Chepstow	-	-						-
Caldicot	-	-						-
Severn Tnl Jn	-	-						-
Newport	**1211**	**1212**						**1311**
Cardiff Ctl 7	**1225**	**1226**						**1325**

Stansted, Cambridge & Leicester to Birmingham. Nottingham to Birmingham & Cardiff

(Includes all services between Derby & Bristol)

Mondays to Saturdays

Notes: see page 67

Features			Ⓩ	Ⓩ	Ⓩ		
Period of operation and Notes		SO	SX	SO		SX A	SO A
Stansted Airport ✈	d		0821	0827			
Audley End	d		-	-			
Cambridge	d		0900	0900			
Ely 6	d		0915	0915			
Manea	d		-	-			
March	d		0931	0931			
Whittlesea	d		-	-			
Peterborough 8	a		0949	0949			
Peterborough	d		0954	0954			
Stamford	d		1007	1007			
Oakham	d		1021	1021			
Melton Mowbray	d		1032	1032			
Nottingham 8	d	1007	-	-	1041		
Beeston	d	1013	-	-	-		
Attenborough	d	-	-	-	-		
Long Eaton	d	1024	-	-	-		
Spondon	d	-	-	-	-		
Derby 6	a	1034	-	-	1101		
Derby	d	1038	-	-	1110	1131	1131
Willington	d	-	-	-	-	-	-
Burton-on-Trent	d	1050	-	-	1121	-	1142
Tamworth	d	1103	-	-	1133	-	-
Wilnecote	d	-	-	-	1137	-	-
Leicester	a	-	1049	1049	-	-	-
Leicester	d	-	1050	1050	-	-	-
South Wigston	d	-	-	-	-	-	-
Narborough	d	-	-	-	-	-	-
Hinckley	d	-	-	-	-	-	-
Nuneaton	d	-	1109	1109	-	-	-
Coleshill Parkway	d	-	1125	1125	-	-	-
Water Orton	d	-	-	-	-	-	-
Birmingham New Street 12	a	1124	1138	1138	1155	1204	1206
Birmingham New Street	d	1130				1212	1212
University	a	1136				-	-
Worcestershire Parkway	d	1158				-	-
Ashchurch for Tewkesbury	d	-				-	-
Cheltenham Spa	d	1215				1252	1252
Gloucester 7	d	1227				-	-
Bristol Parkway 7	a	-				1320	1321
Bristol Temple Meads 10	a	-				1332	1336
Lydney	a	-					
Chepstow	a	1253					
Caldicot	a	-					
Severn Tunnel Junction	a	-					
Newport (South Wales)	a	1312					
Cardiff Central 7	a	1325					

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Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

	Ⓩ			Ⓩ	Ⓩ	Ⓩ		Ⓩ
		SX	SO	SX	SO			
Stansted Apt ✈				0921	0927			
Audley End				-	-			
Cambridge				1000	1000			
Ely 6				1015	1015			
Manea				-	-			
March				1032	1031			
Whittlesea				-	-			
Peterboro 8				1050	1049			
Peterboro				1054	1054			
Stamford				1107	1107			
Oakham				1121	1121			
Melton Mwbray				1132	1132			
Nottingham 8		1107	1107	-	-	1141		
Beeston		1113	1113	-	-	-		
Attenborough		-	-	-	-	-		
Long Eaton		1126	1124	-	-	-		
Spondon		-	-	-	-	-		
Derby 6		1136	1135	-	-	1201		
Derby		1140	1138	-	-	1210	1231	
Willington		-	-	-	-	-	-	
Burton		1151	1150	-	-	1221	-	
Tamworth		1203	1203	-	-	1233	1250	
Wilnecote		-	-	-	-	1237	-	
Leicester		-	-	1149	1149	-	-	
Leicester	1118	-	-	1150	1150	-	-	1218
South Wigston	-	-	-	-	-	-	-	1224
Narborough	1128	-	-	-	-	-	-	1229
Hinckley	1136	-	-	-	-	-	-	1238
Nuneaton	1143	-	-	1209	1209	-	-	1245
Coleshill	1158	-	-	1225	1225	-	-	1300
Water Orton	1202	-	-	-	-	-	-	-
Bham New St 12	1215	1224	1224	1238	1238	1255	1308	1315
Bham New St		1230	1230				1312	
University		1236	1236				-	
Worcester Pkwy		1258	1258				-	
Ashchurch		-	-				-	
Cheltenham		1315	1315				1352	
Gloucester 7		1327	1329				-	
Bristol Pkwy 7		-	-				1422	
Bristol TM 10		-	-				1436	
Lydney		-	-					
Chepstow		-	-					
Caldicot		-	-					
Severn Tnl Jn		-	-					
Newport		1412	1415					
Cardiff Ctl 7		1425	1429					

Stansted, Cambridge & Leicester to Birmingham. Nottingham to Birmingham & Cardiff

(Includes all services between Derby & Bristol)

Mondays to Saturdays

Notes: see page 67

Features						Ⓩ	
Period of operation and Notes			J	SX Q			A
Stansted Airport ✈	d				1027		
Audley End	d				-		
Cambridge	d				1100		
Ely 6	d				1115		
Manea	d				-		
March	d				1131		
Whittlesea	d				-		
Peterborough 8	a				1149		
Peterborough	d				1154		
Stamford	d				1207		
Oakham	d			1214	1221		
Melton Mowbray	d			1225a	1232		
Nottingham 8	d	1207			-	1241	
Beeston	d	1213			-	-	
Attenborough	d	-			-	-	
Long Eaton	d	1224			-	-	
Spondon	d	-			-	-	
Derby 6	a	1235			-	1301	
Derby	d	1238	1253		-	1310	1331
Willington	d	-	-		-	1317	-
Burton-on-Trent	d	1250	-		-	1324	1341
Tamworth	d	1303	-		-	1336	-
Wilnecote	d	-	-		-	-	-
Leicester	a	-	-		1249	-	-
Leicester	d	-	-		1250	-	-
South Wigston	d	-	-		-	-	-
Narborough	d	-	-		-	-	-
Hinckley	d	-	-		-	-	-
Nuneaton	d	-	-		1309	-	-
Coleshill Parkway	d	-	-		1325	-	-
Water Orton	d	-	-		-	-	-
Birmingham New Street 12	a	1324	1328		1338	1355	1404
Birmingham New Street	d	1330					1412
University	a	1336					-
Worcestershire Parkway	d	1358					-
Ashchurch for Tewkesbury	d	-					-
Cheltenham Spa	d	1415					1452
Gloucester 7	d	1427					-
Bristol Parkway 7	a	-					1521
Bristol Temple Meads 10	a	-					1536
Lydney	a	-					
Chepstow	a	-					
Caldicot	a	-					
Severn Tunnel Junction	a	-					
Newport (South Wales)	a	1511					
Cardiff Central 7	a	1525					

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For help: see 'Using Your Timetable' on page 8

	Ⓩ				B	Ⓩ	SX	SO
Stansted Apt ✈			**1127**					
Audley End			-					
Cambridge			**1200**					
Ely 6			**1215**					
Manea			-					
March			**1231**					
Whittlesea			-					
Peterboro 8			**1249**					
Peterboro			**1254**					
Stamford			**1307**					
Oakham			**1321**					
Melton Mwbray			**1332**					
Nottingham 8		**1307**	-	**1341**			**1407**	**1407**
Beeston		**1313**	-	-			**1413**	**1413**
Attenborough		-	-	-			-	-
Long Eaton		**1324**	-	-			**1424**	**1424**
Spondon		-	-	-			-	-
Derby 6		**1335**	-	**1401**			**1435**	**1435**
Derby		**1338**	-	**1410**	**1431**		**1438**	**1438**
Willington		-	-	-	-		-	-
Burton		**1350**	-	**1421**	-		**1450**	**1450**
Tamworth		**1403**	-	**1433**	**1450**		**1503**	**1503**
Wilnecote		-	-	**1437**	-		-	-
Leicester		-	**1349**	-	-		-	-
Leicester	1318	-	**1350**	-	-	1418	-	-
South Wigston	-	-	-	-	-	1424	-	-
Narborough	1328	-	-	-	-	1429	-	-
Hinckley	1336	-	-	-	-	1438	-	-
Nuneaton	1343	-	**1409**	-	-	1445	-	-
Coleshill	1358	-	**1425**	-	-	1500	-	-
Water Orton	1402	-	-	-	-	-	-	-
Bham New St 12	1415	**1424**	**1438**	**1456**	**1508**	1515	**1524**	**1524**
Bham New St		**1430**			**1512**		**1530**	**1530**
University		**1436**			-		**1536**	**1536**
Worcester Pkwy		**1458**			-		**1558**	**1558**
Ashchurch		-			-		-	-
Cheltenham		**1515**			**1552**		**1615**	**1615**
Gloucester 7		**1527**			-		**1626**	**1627**
Bristol Pkwy 7		-			**1621**		-	-
Bristol TM 10		-			**1634**		-	-
Lydney		-					**1646**	-
Chepstow		**1553**					**1655**	-
Caldicot		-					-	-
Severn Tnl Jn		-					-	-
Newport		**1611**					**1713**	**1713**
Cardiff Ctl 7		**1625**					**1727**	**1727**

Stansted, Cambridge & Leicester to Birmingham. Nottingham to Birmingham & Cardiff

(Includes all services between Derby & Bristol)

Mondays to Saturdays

Notes: see page 67

Features		Ⓩ	Ⓩ		Ⓩ	Ⓩ	Ⓩ
Period of operation and Notes				T		SX	SO
Stansted Airport ✈	d	1227					
Audley End	d	-					
Cambridge	d	1300					
Ely 6	d	1315					
Manea	d	-					
March	d	1331					
Whittlesea	d	-					
Peterborough 8	a	1349					
Peterborough	d	1354					
Stamford	d	1407					
Oakham	d	1421					
Melton Mowbray	d	1432					
Nottingham 8	d	-	1441			1507	1507
Beeston	d	-	-			1513	1513
Attenborough	d	-	-			-	-
Long Eaton	d	-	-			1524	1524
Spondon	d	-	-			-	-
Derby 6	a	-	1501			1535	1535
Derby	d	-	1510	1528		1538	1539
Willington	d	-	1517	-		-	-
Burton-on-Trent	d	-	1524	1539		1550	1550
Tamworth	d	-	1536	-		1603	1603
Wilnecote	d	-	-	-		-	-
Leicester	a	1449	-	-		-	-
Leicester	d	1450	-	-	1518	-	-
South Wigston	d	-	-	-	-	-	-
Narborough	d	-	-	-	1528	-	-
Hinckley	d	-	-	-	1536	-	-
Nuneaton	d	1509	-	-	1543	-	-
Coleshill Parkway	d	1525	-	-	1558	-	-
Water Orton	d	-	-	-	1602	-	-
Birmingham New Street 12	a	1538	1555	1604	1615	1624	1624
Birmingham New Street	d			1612		1630	1630
University	a			-		1636	1636
Worcestershire Parkway	d			-		1658	1658
Ashchurch for Tewkesbury	d			-		1709	1709
Cheltenham Spa	d			1652		1719	1718
Gloucester 7	d			-		1730	1728
Bristol Parkway 7	a			1721		-	-
Bristol Temple Meads 10	a			1735		-	-
Lydney	a					1749	-
Chepstow	a					-	-
Caldicot	a					-	-
Severn Tunnel Junction	a					-	-
Newport (South Wales)	a					1815	1813
Cardiff Central 7	a					1828	1827

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Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

	Ⓩ	SX A	Ⓩ		Ⓩ	Ⓩ	Ⓩ	Ⓩ
Stansted Apt ✈	**1327**						**1427**	
Audley End	-						-	
Cambridge	**1400**						**1500**	
Ely 6	**1415**						**1515**	
Manea	-						-	
March	**1431**						**1531**	
Whittlesea	-						-	
Peterboro 8	**1449**						**1549**	
Peterboro	**1454**						**1554**	
Stamford	**1507**						**1607**	
Oakham	**1521**						**1621**	
Melton Mwbray	**1532**						**1632**	
Nottingham 8	-		**1541**			**1607**	-	**1641**
Beeston	-		-			**1613**	-	-
Attenborough	-		-			-	-	-
Long Eaton	-		-			**1624**	-	-
Spondon	-		-			-	-	-
Derby 6	-		**1601**			**1635**	-	**1701**
Derby	-		**1610**	**1631**		**1638**	-	**1710**
Willington	-		-	-		-	-	**1717**
Burton	-		**1621**	-		**1650**	-	**1724**
Tamworth	-		**1633**	**1649**		**1703**	-	**1736**
Wilnecote	-		**1637**	-		-	-	-
Leicester	**1549**		-	-		-	**1649**	-
Leicester	**1550**		-	-	**1618**	-	**1650**	-
South Wigston	-		-	-	**1624**	-	-	-
Narborough	-		-	-	**1629**	-	-	-
Hinckley	-		-	-	**1638**	-	-	-
Nuneaton	**1609**		-	-	**1645**	-	**1709**	-
Coleshill	**1625**		-	-	**1700**	-	**1725**	-
Water Orton	-		-	-	-	-	-	-
Bham New St 12	**1638**		**1655**	**1706**	**1715**	**1724**	**1738**	**1755**
Bham New St		**1642**		**1712**		**1730**		
University		-		-		**1736**		
Worcester Pkwy		-		-		**1758**		
Ashchurch		-		-		**1809**		
Cheltenham		**1730**		**1752**		**1819**		
Gloucester 7		-		-		**1830**		
Bristol Pkwy 7		**1758**		**1821**		-		
Bristol TM 10		**1808**		**1834**		-		
Lydney						-		
Chepstow						-		
Caldicot						-		
Severn Tnl Jn						-		
Newport						**1915**		
Cardiff Ctl 7						**1928**		

Stansted, Cambridge & Leicester to Birmingham. Nottingham to Birmingham & Cardiff

(Includes all services between Derby & Bristol)

Mondays to Saturdays

Notes: see page 67

Features				Ⓩ	Ⓩ		
Period of operation and Notes		SX A	SO A			SX	SO
Stansted Airport ✈	d					**1527**	**1527**
Audley End	d					-	-
Cambridge	d					**1600**	**1600**
Ely 6	d					**1615**	**1615**
Manea	d					**1626**	-
March	d					**1633**	**1631**
Whittlesea	d					-	-
Peterborough 8	a					**1651**	**1649**
Peterborough	d					**1654**	**1654**
Stamford	d					**1707**	**1707**
Oakham	d					**1721**	**1721**
Melton Mowbray	d					**1732**	**1732**
Nottingham 8	d				**1707**	-	-
Beeston	d				**1713**	-	-
Attenborough	d				-	-	-
Long Eaton	d				**1724**	-	-
Spondon	d				-	-	-
Derby 6	a				**1735**	-	-
Derby	d	**1731**	**1731**		**1738**	-	-
Willington	d	-	-		-	-	-
Burton-on-Trent	d	**1742**	**1741**		**1750**	-	-
Tamworth	d	-	-		**1803**	-	-
Wilnecote	d	-	-		**1807**	-	-
Leicester	a	-	-		-	**1749**	**1749**
Leicester	d	-	-	**1718**	-	**1750**	**1750**
South Wigston	d	-	-	**1724**	-	**1756**	-
Narborough	d	-	-	**1729**	-	**1801**	-
Hinckley	d	-	-	**1738**	-	**1809**	-
Nuneaton	d	-	-	**1745**	-	**1816**	**1809**
Coleshill Parkway	d	-	-	**1800**	-	**1831**	**1825**
Water Orton	d	-	-	-	-	-	-
Birmingham New Street 12	a	**1806**	**1804**	**1815**	**1824**	**1845**	**1838**
Birmingham New Street	d	**1812**	**1812**		**1830**		
University	a	-	-		**1836**		
Worcestershire Parkway	d	-	-		**1858**		
Ashchurch for Tewkesbury	d	-	-		-		
Cheltenham Spa	d	**1852**	**1852**		**1915**		
Gloucester 7	d	**1908**	-		**1927**		
Bristol Parkway 7	a	**1936**	**1921**		-		
Bristol Temple Meads 10	a	**1946**	**1936**		-		
Lydney	a				-		
Chepstow	a				-		
Caldicot	a				-		
Severn Tunnel Junction	a				-		
Newport (South Wales)	a				**2012**		
Cardiff Central 7	a				**2026**		

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Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

	SX	SO	SX	SO	Ⓩ	Ⓩ SX	Ⓩ SO	Ⓩ
Stansted Apt ✈								**1627**
Audley End								-
Cambridge								**1700**
Ely 6								**1715**
Manea								-
March								**1731**
Whittlesea								-
Peterboro 8								**1749**
Peterboro								**1754**
Stamford								**1807**
Oakham								**1821**
Melton Mwbray								**1832**
Nottingham 8	**1741**	**1741**				**1805**	**1807**	-
Beeston	-	-				**1811**	**1813**	-
Attenborough	-	-				-	-	-
Long Eaton	**1753**	-				**1821**	**1824**	-
Spondon	**1800**	-				-	-	-
Derby 6	**1806**	**1801**				**1831**	**1834**	-
Derby	**1810**	**1810**	**1831**	**1828**		**1838**	**1838**	-
Willington	**1817**	**1817**	-	-		-	-	-
Burton	**1824**	**1824**	-	-		**1850**	**1850**	-
Tamworth	**1836**	**1836**	**1849**	**1847**		**1903**	**1903**	-
Wilnecote	-	-	-	-		-	-	-
Leicester	-	-	-	-		-	-	**1849**
Leicester	-	-	-	-	**1818**	-	-	**1850**
South Wigston	-	-	-	-	**1824**	-	-	-
Narborough	-	-	-	-	**1829**	-	-	-
Hinckley	-	-	-	-	**1838**	-	-	-
Nuneaton	-	-	-	-	**1845**	-	-	**1909**
Coleshill	-	-	-	-	**1900**	-	-	**1925**
Water Orton	-	-	-	-	-	-	-	-
Bham New St 12	**1855**	**1855**	**1906**	**1904**	**1915**	**1924**	**1924**	**1938**
Bham New St			**1912**	**1912**		**1930**	**1930**	
University			-	-		**1936**	**1936**	
Worcester Pkwy			-	-		**1958**	**1958**	
Ashchurch			-	-		-	-	
Cheltenham			**1952**	**1952**		**2015**	**2015**	
Gloucester 7			-	-		**2027**	**2027**	
Bristol Pkwy 7			**2022**	**2022**		-	-	
Bristol TM 10			**2036**	**2036**		-	-	
Lydney						-	-	
Chepstow						-	-	
Caldicot						-	-	
Severn Tnl Jn						-	-	
Newport						**2109**	**2109**	
Cardiff Ctl 7						**2124**	**2122**	

Stansted, Cambridge & Leicester to Birmingham. Nottingham to Birmingham & Cardiff

(Includes all services between Derby & Bristol)

Mondays to Saturdays

Notes: see page 67

Features		Ⓩ	Ⓩ		Ⓩ	Ⓩ	Ⓩ
Period of operation and Notes		SX	SO	A		FX	FO
Stansted Airport ✈	d						
Audley End	d						
Cambridge	d						
Ely 6	d						
Manea	d						
March	d						
Whittlesea	d						
Peterborough 8	a						
Peterborough	d						
Stamford	d						
Oakham	d						
Melton Mowbray	d						
Nottingham 8	d	1845	1845			1908	1908
Beeston	d	-	-			1914	1914
Attenborough	d	-	-			-	-
Long Eaton	d	-	-			1928	1928
Spondon	d	-	-			-	-
Derby 6	a	1907	1905			1938	1938
Derby	d	1912	1910	1931		1941	1941
Willington	d	-	-	-		-	-
Burton-on-Trent	d	1923	1921	1941		1953	1953
Tamworth	d	1935	1933	-		2005	2005
Wilnecote	d	1939	1937	-		-	-
Leicester	a	-	-	-		-	-
Leicester	d	-	-	-	1918	-	-
South Wigston	d	-	-	-	1924	-	-
Narborough	d	-	-	-	1929	-	-
Hinckley	d	-	-	-	1938	-	-
Nuneaton	d	-	-	-	1945	-	-
Coleshill Parkway	d	-	-	-	2000	-	-
Water Orton	d	-	-	-	-	-	-
Birmingham New Street 12	a	1956	1955	2005	2014	2024	2024
Birmingham New Street	d			2012		2030	2030
University	a			-		2036	2036
Worcestershire Parkway	d			-		2058	2058
Ashchurch for Tewkesbury	d			-		-	-
Cheltenham Spa	d			2052		2115	2115
Gloucester 7	d			-		2125	2125
Bristol Parkway 7	a			2121		-	-
Bristol Temple Meads 10	a			2136		-	-
Lydney	a					2144	2144
Chepstow	a					2153	2153
Caldicot	a					2202	2202
Severn Tunnel Junction	a					2205	2205
Newport (South Wales)	a					2217	2216
Cardiff Central 7	a					2236	2230

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For help: see 'Using Your Timetable' on page 8

	Ⓩ SO	Ⓩ	Ⓩ SX	Ⓩ SO		Ⓩ SX	Ⓩ SO	SX Q
Stansted Apt ✈		**1727**						
Audley End		-						
Cambridge		**1800**						
Ely 6		**1815**						
Manea		**1826**						
March		**1833**						
Whittlesea		-						
Peterboro 8		**1851**						
Peterboro		**1854**						
Stamford		**1907**						
Oakham		**1921**						**2006**
Melton Mwbray		**1932**						**2017a**
Nottingham 8	**1907**	-	**1934**	**1932**				
Beeston	**1913**	-	**1941**	**1938**				
Attenborough	-	-	-	-				
Long Eaton	**1924**	-	**1953**	**1949**				
Spondon	-	-	-	**1956**				
Derby 6	**1935**	-	**2004**	**2003**				
Derby	**1938**	-	**2010**	**2010**	**2031**			
Willington	-	-	-	-	-			
Burton	**1950**	-	**2021**	**2021**	-			
Tamworth	**2003**	-	**2033**	**2033**	**2049**			
Wilnecote	-	-	**2037**	**2037**	-			
Leicester	-	**1949**	-	-	-			
Leicester	-	**1950**	-	-	-	**2018**	**2018**	
South Wigston	-	-	-	-	-	**2024**	**2024**	
Narborough	-	-	-	-	-	**2029**	**2029**	
Hinckley	-	-	-	-	-	**2038**	**2038**	
Nuneaton	-	**2009**	-	-	-	**2045**	**2045**	
Coleshill	-	**2025**	-	-	-	**2100**	**2100**	
Water Orton	-	-	-	-	-	-	-	
Bham New St 12	**2024**	**2038**	**2055**	**2055**	**2106**	**2115**	**2114**	
Bham New St	**2030**				**2112**	**2130**		
University	**2036**				-	**2136**		
Worcester Pkwy	**2058**				-	**2158**		
Ashchurch	-				-	**2209**		
Cheltenham	**2115**				**2152**	**2221**		
Gloucester 7	**2127**				**2205**	**2230a**		
Bristol Pkwy 7	-				**2230**			
Bristol TM 10	-				**2244**			
Lydney	**2146**							
Chepstow	**2155**							
Caldicot	**2204**							
Severn Tnl Jn	**2207**							
Newport	**2224**							
Cardiff Ctl 7	**2245**							

Stansted, Cambridge & Leicester to Birmingham. Nottingham to Birmingham & Cardiff

(Includes all services between Derby & Bristol)

Mondays to Saturdays

Notes: see page 67

Features			Ⓩ	Ⓩ	Ⓩ	Ⓩ	
Period of operation and Notes			SX	SO	SX	SO	SX Q
Stansted Airport ✈	d		**1821**	**1827**			
Audley End	d		-	-			
Cambridge	d		**1900**	**1900**			
Ely 6	d		**1915**	**1915**			
Manea	d		-	-			
March	d		**1931**	**1931**			
Whittlesea	d		-	-			
Peterborough 8	a		**1949**	**1949**			
Peterborough	d		**1954**	**1954**			**2012**
Stamford	d		**2007**	**2007**			**2028**
Oakham	d		**2021**	**2021**			**2043**
Melton Mowbray	d		**2032**	**2032**			**2056**
Nottingham 8	d		-	-	**2041**	**2039**	**2226a**
Beeston	d		-	-	**2047**	**2045**	**2219a**
Attenborough	d		-	-	-	-	**2216a**
Long Eaton	d		-	-	**2056**	**2054**	-
Spondon	d		-	-	-	-	-
Derby 6	a		-	-	**2106**	**2104**	-
Derby	d	**2053**	-	-	**2110**	**2110**	-
Willington	d	-	-	-	**2117**	**2117**	-
Burton-on-Trent	d	-	-	-	**2124**	**2124**	-
Tamworth	d	-	-	-	**2136**	**2136**	-
Wilnecote	d	-	-	-	**2140**	**2140**	-
Leicester	a	-	**2049**	**2049**	-	-	**2117**
Leicester	d	-	**2050**	**2050**	-	-	**2130**
South Wigston	d	-	-	-	-	-	
Narborough	d	-	-	-	-	-	
Hinckley	d	-	-	-	-	-	
Nuneaton	d	-	**2109**	**2109**	-	-	
Coleshill Parkway	d	-	**2125**	**2125**	-	-	
Water Orton	d	-	-	-	-	-	
Birmingham New Street 12	a	**2129**	**2138**	**2138**	**2158**	**2158**	
Birmingham New Street	d						
University	a						
Worcestershire Parkway	d						
Ashchurch for Tewkesbury	d						
Cheltenham Spa	d						
Gloucester 7	d						
Bristol Parkway 7	a						
Bristol Temple Meads 10	a						
Lydney	a						
Chepstow	a						
Caldicot	a						
Severn Tunnel Junction	a						
Newport (South Wales)	a						
Cardiff Central 7	a						

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For help: see ‘Using Your Timetable’ on page 8

	Ⓩ SX	Ⓩ SO	Ⓩ	Ⓩ SX	Ⓩ SO	Ⓩ SX	Ⓩ SO	Ⓩ SO
Stansted Apt ✈				**1921**	**1927**			
Audley End				-	-			
Cambridge				**2000**	**2000**			
Ely 6				**2015**	**2015**			
Manea				-	-			
March				**2031**	**2031**			
Whittlesea				-	-			
Peterboro 8				**2049**	**2049**			
Peterboro				**2054**	**2054**			
Stamford				**2107**	**2107**			
Oakham				**2121**	**2121**			
Melton Mwbray				**2132**	**2132**			
Nottingham 8				-	-	**2136**	**2137**	
Beeston				-	-	**2142**	**2143**	
Attenborough				-	-	**2145**	**2146**	
Long Eaton				-	-	**2153**	**2154**	
Spondon				-	-	**2200**	**2201**	
Derby 6				-	-	**2206**	**2207**	
Derby	**2131**	**2131**		-	-	**2210**	**2213**	**2229**
Willington	-	-		-	-	-	-	-
Burton	**2141**	**2141**		-	-	**2221**	**2224**	**2239**
Tamworth	**2151**	**2151**		-	-	**2232**	**2235**	**2249**
Wilnecote	-	-		-	-	**2236**	**2239**	-
Leicester	-	-		**2149**	**2149**	-	-	-
Leicester	-	-	**2118**	**2150**	**2150**	-	-	-
South Wigston	-	-	**2124**	-	-	-	-	-
Narborough	-	-	**2129**	-	-	-	-	-
Hinckley	-	-	**2138**	-	-	-	-	-
Nuneaton	-	-	**2145**	**2209**	**2209**	-	-	-
Coleshill	-	-	**2200**	**2225**	**2225**	-	-	-
Water Orton	-	-	-	-	-	-	-	-
Bham New St 12	**2208**	**2208**	**2214**	**2238**	**2238**	**2301**	**2304**	**2308**
Bham New St	**2212**							
University	-							
Worcester Pkwy	-							
Ashchurch	-							
Cheltenham	**2252**							
Gloucester 7	-							
Bristol Pkwy 7	**2320**							
Bristol TM 10	**2330**							
Lydney								
Chepstow								
Caldicot								
Severn Tnl Jn								
Newport								
Cardiff Ctl 7								

Stansted, Cambridge & Leicester to Birmingham. Nottingham to Birmingham & Cardiff

(Includes all services between Derby & Bristol)

Mondays to Saturdays

Notes: see page 67

Features		Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ
Period of operation and Notes		SO	SX	SX		SO	
Stansted Airport ✈	d				2021	2027	2127
Audley End	d				-	2041	2141
Cambridge	d				2102	2056a	2156a
Ely 6	d				2117		
Manea	d				-		
March	d				2134		
Whittlesea	d				-		
Peterborough 8	a				2151		
Peterborough	d				2200		
Stamford	d				2213		
Oakham	d				2227		
Melton Mowbray	d				2238		
Nottingham 8	d				-		
Beeston	d				-		
Attenborough	d				-		
Long Eaton	d				-		
Spondon	d				-		
Derby 6	a				-		
Derby	d			2250	-		
Willington	d			-	-		
Burton-on-Trent	d			2300	-		
Tamworth	d			2310	-		
Wilnecote	d			-	-		
Leicester	a			-	2255		
Leicester	d	2220	2227	-	2256		
South Wigston	d	2226	2233	-	-		
Narborough	d	2231	2238	-	-		
Hinckley	d	2240	2247	-	-		
Nuneaton	d	2246	2253	-	2315		
Coleshill Parkway	d	2302	2309	-	2331		
Water Orton	d	-	-	-	-		
Birmingham New Street 12	a	2315	2322	2327	2344		
Birmingham New Street	d						
University	a						
Worcestershire Parkway	d						
Ashchurch for Tewkesbury	d						
Cheltenham Spa	d						
Gloucester 7	d						
Bristol Parkway 7	a						
Bristol Temple Meads 10	a						
Lydney	a						
Chepstow	a						
Caldicot	a						
Severn Tunnel Junction	a						
Newport (South Wales)	a						
Cardiff Central 7	a						

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For help: see ‘Using Your Timetable’ on page 8

	Ⓩ	Ⓩ SX	Ⓩ SO					
Stansted Apt ✈	**2227**	**2257**	**2327**					
Audley End	**2241**	**2310**	**2341**					
Cambridge	**2258a**	**2326a**	**2358a**					
Ely 6								
Manea								
March								
Whittlesea								
Peterboro 8								
Peterboro								
Stamford								
Oakham								
Melton Mwbray								
Nottingham 8								
Beeston								
Attenborough								
Long Eaton								
Spondon								
Derby 6								
Derby								
Willington								
Burton								
Tamworth								
Wilnecote								
Leicester								
Leicester								
South Wigston								
Narborough								
Hinckley								
Nuneaton								
Coleshill								
Water Orton								
Bham New St 12								
Bham New St								
University								
Worcester Pkwy								
Ashchurch								
Cheltenham								
Gloucester 7								
Bristol Pkwy 7								
Bristol TM 10								
Lydney								
Chepstow								
Caldicot								
Severn Tnl Jn								
Newport								
Cardiff Ctl 7								

Stansted, Cambridge & Leicester to Birmingham. Nottingham to Birmingham & Cardiff

(Includes all services between Derby & Bristol)

Sundays

Notes: see page 67

Features					Ⓩ	Ⓩ	
Period of operation and Notes		A		A			
Stansted Airport ✈	d						
Audley End	d						
Cambridge	d						
Ely 6	d						
Manea	d						
March	d						
Whittlesea	d						
Peterborough 8	a						
Peterborough	d						
Stamford	d						
Oakham	d						
Melton Mowbray	d						
Nottingham 8	d				**0955**		
Beeston	d				-		
Attenborough	d				-		
Long Eaton	d				-		
Spondon	d				-		
Derby 6	a				**1015**		
Derby	d			**0931**	**1020**		**1031**
Willington	d			-	-		-
Burton-on-Trent	d			-	**1031**		-
Tamworth	d			-	**1043**		**1052**
Wilnecote	d			-	-		-
Leicester	a			-	-		-
Leicester	d			-	-	**1020**	-
South Wigston	d			-	-	-	-
Narborough	d			-	-	**1030**	-
Hinckley	d			-	-	**1038**	-
Nuneaton	d			-	-	**1046**	-
Coleshill Parkway	d			-	-	**1102**	-
Water Orton	d			-	-	-	-
Birmingham New Street 12	a			**1020**	**1101**	**1115**	**1119**
Birmingham New Street	d	**0930**	**1012**	**1030**	**1112**		**1130**
University	a	-	**1018**	-	**1118**		-
Worcestershire Parkway	d	-	**1040**	-	**1140**		-
Ashchurch for Tewkesbury	d	-	-	-	-		-
Cheltenham Spa	d	**1010**	**1100**	**1110**	**1200**		**1210**
Gloucester 7	d	-	**1111**	-	**1211**		-
Bristol Parkway 7	a	**1038**	-	**1141**	-		**1242**
Bristol Temple Meads 10	a	**1049**	-	**1151**	-		**1252**
Lydney	a		-		-		
Chepstow	a		-		-		
Caldicot	a		-		-		
Severn Tunnel Junction	a		-		-		
Newport (South Wales)	a		**1153**		**1253**		
Cardiff Central 7	a		**1206**		**1306**		

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

	A	Ⓩ			Ⓩ		Ⓩ	A
Stansted Apt ✈							1027	
Audley End							-	
Cambridge							1100	
Ely 6							1115	
Manea							-	
March							1131	
Whittlesea							-	
Peterboro 8							1149	
Peterboro							1154	
Stamford							1207	
Oakham							1221	
Melton Mwbray							1232	
Nottingham 8			1116			1216	-	
Beeston			-			-	-	
Attenborough			-			-	-	
Long Eaton			-			-	-	
Spondon			-			-	-	
Derby 6			1136			1236	-	
Derby	1131		1140	1231		1240	-	1331
Willington	-		-	-		-	-	-
Burton	1142		1151	-		1251	-	1342
Tamworth	-		1203	1249		1303	-	-
Wilnecote	-		-	-		-	-	-
Leicester	-		-	-		-	1249	-
Leicester	-	1120	-	-	1220	-	1250	-
South Wigston	-	-	-	-	1226	-	-	-
Narborough	-	1130	-	-	1231	-	-	-
Hinckley	-	1138	-	-	1240	-	-	-
Nuneaton	-	1146	-	-	1246	-	1309	-
Coleshill	-	1202	-	-	1302	-	1325	-
Water Orton	-	-	-	-	-	-	-	-
Bham New St 12	1206	1215	1221	1306	1315	1321	1339	1406
Bham New St	1212		1230	1312		1330		1412
University	-		1236	-		1336		-
Worcester Pkwy	-		1258	-		1358		-
Ashchurch	-		-	-		-		-
Cheltenham	1252		1315	1352		1415		1452
Gloucester 7	-		1330	-		1425		-
Bristol Pkwy 7	1320		-	1420		-		1522
Bristol TM 10	1334		-	1436		-		1536
Lydney			-			-		
Chepstow			-			-		
Caldicot			-			-		
Severn Tnl Jn			-			-		
Newport			1412			1507		
Cardiff Ctl 7			1425			1524		

Stansted, Cambridge & Leicester to Birmingham. Nottingham to Birmingham & Cardiff

(Includes all services between Derby & Bristol)

Sundays

Notes: see page 67

Features		Ⓩ		Ⓩ			Ⓩ
Period of operation and Notes					K		
Stansted Airport ✈	d			1127			
Audley End	d			-			
Cambridge	d			1200			
Ely 6	d			1215			
Manea	d			-			
March	d			1231			
Whittlesea	d			-			
Peterborough 8	a			1249			
Peterborough	d			1254			
Stamford	d			1307			
Oakham	d			1321			
Melton Mowbray	d			1332			
Nottingham 8	d		1316	-			
Beeston	d		-	-			
Attenborough	d		-	-			
Long Eaton	d		-	-			
Spondon	d		-	-			
Derby 6	a		1337	-			
Derby	d		1340	-		1431	
Willington	d		-	-		-	
Burton-on-Trent	d		1351	-		-	
Tamworth	d		1403	-		1449	
Wilnecote	d		-	-		-	
Leicester	a		-	1349		-	
Leicester	d	1320	-	1350		-	1420
South Wigston	d	-	-	-		-	1426
Narborough	d	1330	-	-		-	1431
Hinckley	d	1338	-	-		-	1440
Nuneaton	d	1346	-	1409		-	1446
Coleshill Parkway	d	1402	-	1425		-	1502
Water Orton	d	-	-	-		-	-
Birmingham New Street 12	a	1415	1421	1439		1506	1515
Birmingham New Street	d		1430		1442	1512	
University	a		1436		-	-	
Worcestershire Parkway	d		1458		-	-	
Ashchurch for Tewkesbury	d		-		-	-	
Cheltenham Spa	d		1515		1526	1552	
Gloucester 7	d		1530		-	-	
Bristol Parkway 7	a		-		1555	1620	
Bristol Temple Meads 10	a		-		1608	1636	
Lydney	a		-				
Chepstow	a		-				
Caldicot	a		-				
Severn Tunnel Junction	a		-				
Newport (South Wales)	a		1612				
Cardiff Central 7	a		1625				

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see 'Using Your Timetable' on page 8

		Ⓩ	A	Ⓩ		Ⓩ		
Stansted Apt ✈		**1227**				**1327**		
Audley End		-				-		
Cambridge		**1300**				**1400**		
Ely 6		**1315**				**1415**		
Manea		-				-		
March		**1331**				**1431**		
Whittlesea		-				-		
Peterboro 8		**1349**				**1449**		
Peterboro		**1354**				**1454**		
Stamford		**1407**				**1507**		
Oakham		**1421**				**1521**		
Melton Mwbray		**1432**				**1532**		
Nottingham 8	**1416**	-			**1512**	-		
Beeston	-	-			-	-		
Attenborough	-	-			-	-		
Long Eaton	-	-			-	-		
Spondon	-	-			-	-		
Derby 6	**1436**	-			**1533**	-		
Derby	**1440**	-	**1531**		**1537**	-	**1631**	
Willington	-	-	-		-	-	-	
Burton	**1451**	-	**1541**		**1548**	-	-	
Tamworth	**1503**	-	-		**1600**	-	**1649**	
Wilnecote	-	-	-		**1604**	-	-	
Leicester	-	**1449**	-		-	**1549**	-	
Leicester	-	**1450**	-	**1520**	-	**1550**	-	**1620**
South Wigston	-	-	-	-	-	-	-	**1626**
Narborough	-	-	-	**1530**	-	-	-	**1631**
Hinckley	-	-	-	**1538**	-	-	-	**1640**
Nuneaton	-	**1509**	-	**1546**	-	**1609**	-	**1646**
Coleshill	-	**1525**	-	**1602**	-	**1625**	-	**1702**
Water Orton	-	-	-	-	-	-	-	-
Bham New St 12	**1521**	**1539**	**1604**	**1615**	**1621**	**1639**	**1706**	**1715**
Bham New St	**1530**		**1612**		**1630**		**1712**	
University	**1536**		-		**1636**		-	
Worcester Pkwy	**1558**		-		**1658**		-	
Ashchurch	-		-		-		-	
Cheltenham	**1615**		**1652**		**1715**		**1752**	
Gloucester 7	**1625**		-		**1725**		-	
Bristol Pkwy 7	-		**1720**		-		**1820**	
Bristol TM 10	-		**1734**		-		**1836**	
Lydney	-				-			
Chepstow	-				-			
Caldicot	-				-			
Severn Tnl Jn	-				-			
Newport	**1707**				**1807**			
Cardiff Ctl 7	**1720**				**1820**			

Stansted, Cambridge & Leicester to Birmingham. Nottingham to Birmingham & Cardiff

(Includes all services between Derby & Bristol)

Sundays

Notes: see page 67

Features		Ⓩ	Ⓩ		Ⓩ	Ⓩ	
Period of operation and Notes				A			
Stansted Airport ✈	d		**1427**				**1527**
Audley End	d		-				-
Cambridge	d		**1500**				**1600**
Ely 6	d		**1515**				**1615**
Manea	d		-				-
March	d		**1531**				**1631**
Whittlesea	d		-				-
Peterborough 8	a		**1549**				**1649**
Peterborough	d		**1554**				**1654**
Stamford	d		**1607**				**1707**
Oakham	d		**1621**				**1721**
Melton Mowbray	d		**1632**				**1732**
Nottingham 8	d	**1616**	-			**1716**	-
Beeston	d	-	-			-	-
Attenborough	d	-	-			-	-
Long Eaton	d	-	-			-	-
Spondon	d	-	-			-	-
Derby 6	a	**1636**	-			**1738**	-
Derby	d	**1640**	-	**1731**		**1742**	-
Willington	d	-	-	-		-	-
Burton-on-Trent	d	**1651**	-	**1741**		**1753**	-
Tamworth	d	**1703**	-	-		**1804**	-
Wilnecote	d	-	-	-		-	-
Leicester	a	-	**1649**	-		-	**1749**
Leicester	d	-	**1650**	-	**1720**	-	**1750**
South Wigston	d	-	-	-	**1726**	-	-
Narborough	d	-	-	-	**1731**	-	-
Hinckley	d	-	-	-	**1740**	-	-
Nuneaton	d	-	**1709**	-	**1746**	-	**1809**
Coleshill Parkway	d	-	**1725**	-	**1802**	-	**1825**
Water Orton	d	-	-	-	-	-	-
Birmingham New Street 12	a	**1721**	**1739**	**1804**	**1815**	**1823**	**1839**
Birmingham New Street	d	**1730**		**1812**		**1830**	
University	a	**1736**		-		**1836**	
Worcestershire Parkway	d	**1758**		-		**1858**	
Ashchurch for Tewkesbury	d	-		-		-	
Cheltenham Spa	d	**1815**		**1852**		**1915**	
Gloucester 7	d	**1828**		-		**1925**	
Bristol Parkway 7	a	-		**1922**		-	
Bristol Temple Meads 10	a	-		**1936**		-	
Lydney	a	-				-	
Chepstow	a	-				-	
Caldicot	a	-				-	
Severn Tunnel Junction	a	-				-	
Newport (South Wales)	a	**1911**				**2007**	
Cardiff Central 7	a	**1925**				**2020**	

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For help: see ‘Using Your Timetable’ on page 8

		Ⓩ			A	Ⓩ	Ⓩ	
Stansted Apt ✈				1627				1727
Audley End				-				-
Cambridge				1700				1800
Ely 6				1715				1815
Manea				-				-
March				1731				1831
Whittlesea				-				-
Peterboro 8				1749				1849
Peterboro				1754				1854
Stamford				1807				1907
Oakham				1821				1921
Melton Mwbray				1832				1932
Nottingham 8			1816	-			1915	-
Beeston			-	-			-	-
Attenborough			-	-			-	-
Long Eaton			-	-			-	-
Spondon			-	-			-	-
Derby 6			1836	-			1937	-
Derby	1831		1840	-	1931		1941	-
Willington	-		-	-	-		-	-
Burton	-		1851	-	1941		1952	-
Tamworth	1849		1903	-	-		2003	-
Wilnecote	-		-	-	-		2007	-
Leicester	-		-	1849	-		-	1949
Leicester	-	1820	-	1850	-	1920	-	1950
South Wigston	-	-	-	-	-	1926	-	-
Narborough	-	1830	-	-	-	1931	-	-
Hinckley	-	1838	-	-	-	1940	-	-
Nuneaton	-	1846	-	1909	-	1946	-	2009
Coleshill	-	1902	-	1925	-	2002	-	2025
Water Orton	-	-	-	-	-	-	-	-
Bham New St 12	1906	1915	1921	1939	2004	2015	2025	2039
Bham New St	1912		1930		2012			
University	-		1936		-			
Worcester Pkwy	-		1958		-			
Ashchurch	-		-		-			
Cheltenham	1952		2015		2052			
Gloucester 7	-		2025		-			
Bristol Pkwy 7	2020		-		2120			
Bristol TM 10	2035		-		2135			
Lydney			-					
Chepstow			-					
Caldicot			-					
Severn Tnl Jn			-					
Newport			2107					
Cardiff Ctl 7			2120					

Stansted, Cambridge & Leicester to Birmingham. Nottingham to Birmingham & Cardiff

(Includes all services between Derby & Bristol)

Sundays

Notes: see page 67

Features			Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ
Period of operation and Notes							
Stansted Airport ✈	d				1827		
Audley End	d				-		
Cambridge	d				1900		
Ely 6	d				1915		
Manea	d				-		
March	d				1931		
Whittlesea	d				-		
Peterborough 8	a				1949		
Peterborough	d				1954		
Stamford	d				2007		
Oakham	d				2021		
Melton Mowbray	d				2032		
Nottingham 8	d			2016	-		2117
Beeston	d			-	-		-
Attenborough	d			-	-		-
Long Eaton	d			-	-		-
Spondon	d			-	-		-
Derby 6	a			2036	-		2139
Derby	d	2031		2040	-	2131	2142
Willington	d	-		-	-	-	-
Burton-on-Trent	d	-		2051	-	2141	2153
Tamworth	d	2049		2103	-	2151	2205
Wilnecote	d	-		-	-	-	2209
Leicester	a	-		-	2049	-	-
Leicester	d	-	2020	-	2050	-	-
South Wigston	d	-	2026	-	-	-	-
Narborough	d	-	2031	-	-	-	-
Hinckley	d	-	2040	-	-	-	-
Nuneaton	d	-	2046	-	2109	-	-
Coleshill Parkway	d	-	2102	-	2125	-	-
Water Orton	d	-	-	-	-	-	-
Birmingham New Street 12	a	2105	2115	2121	2138	2208	2226
Birmingham New Street	d	2112				2212	
University	a	-				-	
Worcestershire Parkway	d	-				-	
Ashchurch for Tewkesbury	d	-				-	
Cheltenham Spa	d	2152				2252	
Gloucester 7	d	2205				-	
Bristol Parkway 7	a	2230				2320	
Bristol Temple Meads 10	a	2240				2330	
Lydney	a						
Chepstow	a						
Caldicot	a						
Severn Tunnel Junction	a						
Newport (South Wales)	a						
Cardiff Central 7	a						

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For help: see 'Using Your Timetable' on page 8

	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	
Stansted Apt ✈	**1927**	**2027**	**2104**			**2227**	**2304**	
Audley End	-	**2041**	**2118**			**2241**	**2320**	
Cambridge	**2000**	**2055a**	**2133a**			**2255a**	**2335a**	
Ely 6	**2015**							
Manea	-							
March	**2031**							
Whittlesea	-							
Peterboro 8	**2049**							
Peterboro	**2054**							
Stamford	**2107**							
Oakham	**2121**							
Melton Mwbray	**2132**							
Nottingham 8	-							
Beeston	-							
Attenborough	-							
Long Eaton	-							
Spondon	-							
Derby 6	-							
Derby	-			**2231**				
Willington	-			-				
Burton	-			**2241**				
Tamworth	-			**2251**				
Wilnecote	-			-				
Leicester	**2149**			-				
Leicester	**2150**			-	**2220**			
South Wigston	-			-	**2226**			
Narborough	-			-	**2231**			
Hinckley	-			-	**2240**			
Nuneaton	**2209**			-	**2246**			
Coleshill	**2225**			-	**2302**			
Water Orton	-			-	-			
Bham New St 12	**2238**			**2309**	**2315**			
Bham New St								
University								
Worcester Pkwy								
Ashchurch								
Cheltenham								
Gloucester 7								
Bristol Pkwy 7								
Bristol TM 10								
Lydney								
Chepstow								
Caldicot								
Severn Tnl Jn								
Newport								
Cardiff Ctl 7								

Cardiff & Birmingham to Nottingham. Birmingham to Leicester, Cambridge & Stansted

(Includes all services between Bristol & Derby)

Mondays to Saturdays

Notes: see page 67

Features		Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ
Period of operation and Notes		SX	SO	SX	SO	SX	SO
Cardiff Central 7	d						
Newport (South Wales)	d						
Severn Tunnel Junction	d						
Caldicot	d						
Chepstow	d						
Lydney	d						
Bristol Temple Meads 10	d						
Bristol Parkway 7	d						
Gloucester 7	d						
Cheltenham Spa	d						
Ashchurch for Tewkesbury	d						
Worcestershire Parkway	d						
University	d						
Birmingham New Street 12	a						
Birmingham New Street	d						
Water Orton	d						
Coleshill Parkway	d						
Nuneaton	d						
Hinckley	d						
Narborough	d						
South Wigston	d						
Leicester	a						
Leicester	d						
Wilnecote	d						
Tamworth	d						
Burton-on-Trent	d						
Willington	d						
Derby	a						
Derby 6	d						
Spondon	a						
Long Eaton	a						
Attenborough	a						
Beeston	a						
Nottingham 8	a						
Melton Mowbray	d						
Oakham	d						
Stamford	d						
Peterborough 8	a						
Peterborough	d						
Whittlesea	d						
March	d						
Manea	d						
Ely 6	d						
Cambridge	d	**0444**	**0451**	**0517**	**0540**	**0635**	**0640**
Audley End	a	**0459**	-	**0534**	**0555**	**0650**	**0655**
Stansted Airport ✈	a	**0514**	**0517**	**0549**	**0610**	**0709**	**0710**

Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see 'Using Your Timetable' on page 8

			Ⓩ	Ⓩ	Ⓩ	Ⓩ		
	SX M	SO M		SX	SO		SX M	SO M
Cardiff Ctl 7								
Newport								
Severn Tnl Jn								
Caldicot								
Chepstow								
Lydney								
Bristol TM 10								
Bristol Pkwy 7								
Gloucester 7								
Cheltenham								
Ashchurch								
Worcester Pkwy								
University								
Bham New St 12								
Bham New St				**0519**	**0522**	**0552**		
Water Orton				-	-	-		
Coleshill				**0533**	**0536**	**0606**		
Nuneaton				**0549**	**0551**	**0621**		
Hinckley				**0555**	-	**0628**		
Narborough				**0604**	-	**0636**		
South Wigston				-	-	**0641**		
Leicester				**0614**	**0610**	**0650**		
Leicester				**0615**	**0615**			
Wilnecote				-	-			
Tamworth				-	-			
Burton				-	-			
Willington				-	-			
Derby				-	-			
Derby 6				-	-			
Spondon				-	-			
Long Eaton				-	-			
Attenborough				-	-			
Beeston				-	-			
Nottingham 8	**0456d**	**0500d**		-	-		**0607d**	**0608d**
Melton Mwbray	**0536**	**0542**		**0631**	**0631**		**0655**	**0653**
Oakham	**0549**	**0554**		**0643**	**0643**		**0707**	**0705**
Stamford	**0605**	**0607**		**0657**	**0657**		**0721**	**0718**
Peterboro 8	**0621**	**0625**		**0710**	**0710**		**0736**	**0734**
Peterboro	**0627**	**0628**		**0713**	**0713**		**0739**	**0736**
Whittlesea	-	-		**0721**	**0721**		-	-
March	**0643**	**0644**		**0732**	**0732**		**0754**	**0754**
Manea	-	-		**0739**	**0739**		-	-
Ely 6	**0701a**	**0704a**		**0753**	**0753**		**0812a**	**0813a**
Cambridge			**0735**	**0811**	**0811**			
Audley End			**0752**	-	-			
Stansted Apt ✈			**0810**	**0841**	**0841**			

Cardiff & Birmingham to Nottingham. Birmingham to Leicester, Cambridge & Stansted

(Includes all services between Bristol & Derby)

Mondays to Saturdays

Notes: see page 67

Features		Ⓩ			Ⓩ		
Period of operation and Notes		SX	SX D	SO D		SX	SO
Cardiff Central 7	d						
Newport (South Wales)	d						
Severn Tunnel Junction	d						
Caldicot	d						
Chepstow	d						
Lydney	d						
Bristol Temple Meads 10	d						
Bristol Parkway 7	d						
Gloucester 7	d						
Cheltenham Spa	d						
Ashchurch for Tewkesbury	d						
Worcestershire Parkway	d						
University	d						
Birmingham New Street 12	a						
Birmingham New Street	d		0603	0603	0619	0622	0622
Water Orton	d		-	-	-	-	-
Coleshill Parkway	d		-	-	-	0636	0636
Nuneaton	d		-	-	-	0651	0651
Hinckley	d		-	-	-	-	-
Narborough	d		-	-	-	-	-
South Wigston	d		-	-	-	-	-
Leicester	a		-	-	-	0710	0710
Leicester	d		-	-	-	0714	0714
Wilnecote	d		-	-	0634	-	-
Tamworth	d		-	0619	0638	-	-
Burton-on-Trent	d		-	0630	0650	-	-
Willington	d		-	-	-	-	-
Derby	a		0633	0640	0701	-	-
Derby 6	d	0558			0708	-	-
Spondon	a	-			0712	-	-
Long Eaton	a	-			0721	-	-
Attenborough	a	-			-	-	-
Beeston	a	0612			0731	-	-
Nottingham 8	a	0619			0738	-	-
Melton Mowbray	d					0730	0730
Oakham	d					0742	0742
Stamford	d					0756	0756
Peterborough 8	a					0809	0809
Peterborough	d					0819	0816
Whittlesea	d					-	-
March	d					0834	0831
Manea	d					-	-
Ely 6	d					0854	0850
Cambridge	d					0914	0911
Audley End	a					-	-
Stansted Airport ✈	a					0944	0941

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

	SX G	SO G	Ⓩ	Ⓩ SX	Ⓩ SO	G	SX N	
Cardiff Ctl 7								
Newport								
Severn Tnl Jn								
Caldicot								
Chepstow								
Lydney								
Bristol TM 10								
Bristol Pkwy 7								
Gloucester 7								
Cheltenham								
Ashchurch								
Worcester Pkwy								
University								
Bham New St 12								
Bham New St	**0630**	**0630**	**0649**	**0652**	**0652**	**0703**		**0719**
Water Orton	-	-	-	-	**0703**	-		-
Coleshill	-	-	-	**0706**	**0707**	-		-
Nuneaton	-	-	-	**0724**	**0724**	-		-
Hinckley	-	-	-	**0730**	**0730**	-		-
Narborough	-	-	-	**0739**	**0739**	-		-
South Wigston	-	-	-	**0744**	**0744**	-		-
Leicester	-	-	-	**0753**	**0750**	-		-
Leicester	-	-	-			-		-
Wilnecote	-	-	-			-		**0734**
Tamworth	-	**0646**	**0706**			**0719**		**0738**
Burton	-	**0657**	**0718**			**0730**		**0750**
Willington	-	-	**0724**			-		-
Derby	**0705**	**0707**	**0733**			**0740**		**0804**
Derby 6			**0742**					**0808**
Spondon			**0746***					-
Long Eaton			**0753**					**0817**
Attenborough			-					-
Beeston			**0801**					**0827**
Nottingham 8			**0808**					**0834**
Melton Mwbray							**0815**	
Oakham							**0826a**	
Stamford								
Peterboro 8								
Peterboro								
Whittlesea								
March								
Manea								
Ely 6								
Cambridge								
Audley End								
Stansted Apt✈								

Cardiff & Birmingham to Nottingham. Birmingham to Leicester, Cambridge & Stansted

(Includes all services between Bristol & Derby)

Mondays to Saturdays

Notes: see page 67

Features				Ⓩ	Ⓩ		
Period of operation and Notes		SX	SO			SX D	SO D
Cardiff Central 7	d						
Newport (South Wales)	d						
Severn Tunnel Junction	d						
Caldicot	d						
Chepstow	d						
Lydney	d						
Bristol Temple Meads 10	d					0634	0615
Bristol Parkway 7	d					0643	0624
Gloucester 7	d					-	0659
Cheltenham Spa	d					0713	0710
Ashchurch for Tewkesbury	d					-	-
Worcestershire Parkway	d					-	-
University	d					-	-
Birmingham New Street 12	a					0756	0756
Birmingham New Street	d	0722	0722	0749	0752	0803	0803
Water Orton	d	-	-	-	-	-	-
Coleshill Parkway	d	0735	0736	-	0806	-	-
Nuneaton	d	0750	0751	-	0824	-	-
Hinckley	d	0757	-	-	0830	-	-
Narborough	d	0805	-	-	0839	-	-
South Wigston	d	0810	-	-	0844	-	-
Leicester	a	0817	0811	-	0851	-	-
Leicester	d	0818	0813	-		-	-
Wilnecote	d	-	-	-		-	-
Tamworth	d	-	-	0806		0819	0819
Burton-on-Trent	d	-	-	0818		0830	0830
Willington	d	-	-	0824		-	-
Derby	a	-	-	0836		0840	0840
Derby 6	d	-	-	0840			
Spondon	a	-	-	-			
Long Eaton	a	-	-	0848			
Attenborough	a	-	-	-			
Beeston	a	-	-	0859			
Nottingham 8	a	-	-	0906			
Melton Mowbray	d	0837	0829				
Oakham	d	0849	0841				
Stamford	d	0903	0855				
Peterborough 8	a	0916	0909				
Peterborough	d	0919	0916				
Whittlesea	d	-	-				
March	d	0934	0931				
Manea	d	-	-				
Ely 6	d	0954	0950				
Cambridge	d	1011	1011				
Audley End	a	-	-				
Stansted Airport ✈	a	1041	1041				

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Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

					Ⓩ	Ⓩ		Ⓩ
	SX	SO	SX	SO			G	SX R
Cardiff Ctl 7					0640			0658
Newport					0654			0711
Severn Tnl Jn					-			0722
Caldicot					-			-
Chepstow					0715			-
Lydney					0724			-
Bristol TM 10			0623		-		0735	0746a
Bristol Pkwy 7			0634		-		0744	
Gloucester 7			0708	0705	0745		-	
Cheltenham			0718	0714	0755		0815	
Ashchurch			0725	0722	0803		-	
Worcester Pkwy			0736	0733	0814		-	
University			0809	0800	0839		-	
Bham New St 12			0816	0806	0845		0856	
Bham New St	0819	0812	0822	0822	0849	0852	0903	
Water Orton	-	-	-	-	-	0903	-	
Coleshill	-	-	0836	0836	-	0907	-	
Nuneaton	-	-	0853	0851	-	0924	-	
Hinckley	-	-	-	-	-	0930	-	
Narborough	-	-	-	-	-	0939	-	
South Wigston	-	-	-	-	-	-	-	
Leicester	-	-	0913	0910	-	0950	-	
Leicester	-	-	0914	0912	-		-	
Wilnecote	-	-	-	-	0904		-	
Tamworth	0836	0829	-	-	0908		-	
Burton	0847	0841	-	-	0920		0926	
Willington	-	-	-	-	-		-	
Derby	0859	0852	-	-	0932		0936	
Derby 6	0912	0859	-	-	0940			
Spondon	-	-	-	-	-			
Long Eaton	-	-	-	-	0948			
Attenborough	-	-	-	-	-			
Beeston	-	-	-	-	0956			
Nottingham 8	0933	0921	-	-	1003			
Melton Mwbray			0931	0928				
Oakham			0942	0940				
Stamford			0956	0954				
Peterboro 8			1010	1007				
Peterboro			1012	1015				
Whittlesea			-	-				
March			1028	1030				
Manea			1036	-				
Ely 6			1050	1049				
Cambridge			1111	1111				
Audley End			-	-				
Stansted Apt ✈			1141	1141				

Cardiff & Birmingham to Nottingham. Birmingham to Leicester, Cambridge & Stansted

(Includes all services between Bristol & Derby)

Mondays to Saturdays

Notes: see page 67

Features						Ⓩ	Ⓩ
Period of operation and Notes		SX	SO	SX	SO		
Cardiff Central 7	d					0745	
Newport (South Wales)	d					0800	
Severn Tunnel Junction	d					-	
Caldicot	d					-	
Chepstow	d					-	
Lydney	d					0825	
Bristol Temple Meads 10	d					-	
Bristol Parkway 7	d					-	
Gloucester 7	d					0849	
Cheltenham Spa	d					0859	
Ashchurch for Tewkesbury	d					-	
Worcestershire Parkway	d					0914	
University	d					0939	
Birmingham New Street 12	a					0945	
Birmingham New Street	d	0912	0919	0922	0922	0949	0952
Water Orton	d	-	-	-	-	-	-
Coleshill Parkway	d	-	-	0936	0936	-	1009
Nuneaton	d	-	-	0951	0951	-	1024
Hinckley	d	-	-	-	-	-	1030
Narborough	d	-	-	-	-	-	1039
South Wigston	d	-	-	-	-	-	1044
Leicester	a	-	-	1013	1010	-	1051
Leicester	d	-	-	1015	1012	-	
Wilnecote	d	-	-	-	-	-	
Tamworth	d	0929	0936	-	-	1006	
Burton-on-Trent	d	0941	0947	-	-	1018	
Willington	d	-	-	-	-	1024	
Derby	a	0952	0959	-	-	1032	
Derby 6	d	0959	1008	-	-	1039	
Spondon	a	-	-	-	-	-	
Long Eaton	a	-	-	-	-	1048	
Attenborough	a	-	-	-	-	-	
Beeston	a	-	-	-	-	1056	
Nottingham 8	a	1023	1029	-	-	1103	
Melton Mowbray	d			1032	1028		
Oakham	d			1043	1040		
Stamford	d			1057	1054		
Peterborough 8	a			1111	1107		
Peterborough	d			1116	1116		
Whittlesea	d			-	-		
March	d			1131	1131		
Manea	d			-	-		
Ely 6	d			1150	1150		
Cambridge	d			1211	1211		
Audley End	a			-	-		
Stansted Airport ✈	a			1241	1241		

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For help: see 'Using Your Timetable' on page 8

					Ⓩ	Ⓩ	Ⓩ	
	D		SX	SO	SX	SO		G
Cardiff Ctl 7					0845	0845		
Newport					0900	0859		
Severn Tnl Jn					-	-		
Caldicot					-	-		
Chepstow					0919	-		
Lydney					-	-		
Bristol TM 10	0835				-	-		0932
Bristol Pkwy 7	0844				-	-		0944
Gloucester 7	-				0949	0945		-
Cheltenham	0915				0959	0955		1014
Ashchurch	-				-	1003		-
Worcester Pkwy	-				1014	1014		-
University	-				1039	1039		-
Bham New St 12	0958				1045	1045		1056
Bham New St	1003	1012	1022	1022	1049	1049	1052	1103
Water Orton	-	-	-	-	-	-	1103	-
Coleshill	-	-	1036	1036	-	-	1107	-
Nuneaton	-	-	1051	1051	-	-	1124	-
Hinckley	-	-	-	-	-	-	1130	-
Narborough	-	-	-	-	-	-	1139	-
South Wigston	-	-	-	-	-	-	1144	-
Leicester	-	-	1112	1110	-	-	1151	-
Leicester	-	-	1113	1112	-	-		-
Wilnecote	-	-	-	-	1104	1104		-
Tamworth	1019	1029	-	-	1108	1108		-
Burton	-	1041	-	-	1120	1120		1126
Willington	-	-	-	-	-	-		-
Derby	1038	1052	-	-	1131	1131		1136
Derby 6		1059	-	-	1140	1140		
Spondon		-	-	-	-	-		
Long Eaton		-	-	-	1148	1148		
Attenborough		-	-	-	-	-		
Beeston		-	-	-	1157	1157		
Nottingham 8		1122	-	-	1204	1204		
Melton Mwbray			1130	1128				
Oakham			1141	1140				
Stamford			1155	1154				
Peterboro 8			1209	1207				
Peterboro			1215	1216				
Whittlesea			-	-				
March			1230	1232				
Manea			-	-				
Ely 6			1250	1251				
Cambridge			1311	1311				
Audley End			-	-				
Stansted Apt ✈			1341	1341				

Cardiff & Birmingham to Nottingham. Birmingham to Leicester, Cambridge & Stansted

(Includes all services between Bristol & Derby)

Mondays to Saturdays

Notes: see page 67

Features					Ⓩ	Ⓩ	
Period of operation and Notes		SX	SO				E
Cardiff Central 7	d				0945		
Newport (South Wales)	d				0959		
Severn Tunnel Junction	d				-		
Caldicot	d				-		
Chepstow	d				-		
Lydney	d				-		
Bristol Temple Meads 10	d				-		1033
Bristol Parkway 7	d				-		1044
Gloucester 7	d				1049		-
Cheltenham Spa	d				1059		1115
Ashchurch for Tewkesbury	d				-		-
Worcestershire Parkway	d				1114		-
University	d				1139		-
Birmingham New Street 12	a				1145		1158
Birmingham New Street	d	1119	1112	1122	1149	1152	1203
Water Orton	d	-	-	-	-	-	-
Coleshill Parkway	d	-	-	1136	-	1209	-
Nuneaton	d	-	-	1151	-	1224	-
Hinckley	d	-	-	-	-	1230	-
Narborough	d	-	-	-	-	1239	-
South Wigston	d	-	-	-	-	1244	-
Leicester	a	-	-	1210	-	1250	-
Leicester	d	-	-	1212	-		-
Wilnecote	d	-	-	-	-		-
Tamworth	d	1136	1129	-	1206		1219
Burton-on-Trent	d	1147	1141	-	1218		-
Willington	d	-	-	-	1224		-
Derby	a	1159	1154	-	1232		1237
Derby 6	d	1213	1201	-	1240		
Spondon	a	-	-	-	-		
Long Eaton	a	-	-	-	1248		
Attenborough	a	-	-	-	-		
Beeston	a	-	-	-	1256		
Nottingham 8	a	1235	1223	-	1303		
Melton Mowbray	d			1228			
Oakham	d			1240			
Stamford	d			1254			
Peterborough 8	a			1307			
Peterborough	d			1316			
Whittlesea	d			-			
March	d			1331			
Manea	d			-			
Ely 6	d			1350			
Cambridge	d			1411			
Audley End	a			-			
Stansted Airport ✈	a			1441			

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For help: see ‘Using Your Timetable’ on page 8

				Ⓩ	Ⓩ	Ⓩ	Ⓩ	
	SX	SX P	SO		SX	SO		F
Cardiff Ctl 7					1045	1045		
Newport					1059	1101		
Severn Tnl Jn					-	-		
Caldicot					-	-		
Chepstow					-	-		
Lydney					1125	-		
Bristol TM 10					-	-		1135
Bristol Pkwy 7					-	-		1144
Gloucester 7					1149	1149		-
Cheltenham					1159	1159		1215
Ashchurch					-	-		-
Worcester Pkwy					1214	1214		-
University					1239	1239		-
Bham New St 12					1245	1245		1256
Bham New St	1219		1212	1222	1249	1249	1252	1303
Water Orton	-		-	-	-	-	1303	-
Coleshill	-		-	1236	-	-	1307	-
Nuneaton	-		-	1251	-	-	1324	-
Hinckley	-		-	-	-	-	1330	-
Narborough	-		-	-	-	-	1339	-
South Wigston	-		-	-	-	-	-	-
Leicester	-		-	1310	-	-	1351	-
Leicester	-		-	1312	-	-		-
Wilnecote	-		-	-	1304	1304		-
Tamworth	1236		1229	-	1308	1308		-
Burton	1248		1241	-	1320	1320		1326
Willington	-		-	-	-	-		-
Derby	1300		1252	-	1331	1331		1336
Derby 6	1313		1301	-	1340	1340		
Spondon	-		-	-	-	-		
Long Eaton	-		-	-	1348	1348		
Attenborough	-		-	-	-	-		
Beeston	-		-	-	1356	1356		
Nottingham 8	1336		1324	-	1403	1403		
Melton Mwbray		1315		1328				
Oakham		1328a		1340				
Stamford				1354				
Peterboro 8				1407				
Peterboro				1416				
Whittlesea				-				
March				1431				
Manea				-				
Ely 6				1450				
Cambridge				1511				
Audley End				-				
Stansted Apt ✈				1541				

Cardiff & Birmingham to Nottingham. Birmingham to Leicester, Cambridge & Stansted

(Includes all services between Bristol & Derby)

Mondays to Saturdays

Notes: see page 67

Features		Ⓩ	Ⓩ	Ⓩ			
Period of operation and Notes		SX	SO		SX G	SX	SO
Cardiff Central 7	d					1145	1145
Newport (South Wales)	d					1159	1158
Severn Tunnel Junction	d					-	-
Caldicot	d					-	-
Chepstow	d					1216	-
Lydney	d					-	-
Bristol Temple Meads 10	d					-	-
Bristol Parkway 7	d					-	-
Gloucester 7	d					1245	1245
Cheltenham Spa	d					1255	1255
Ashchurch for Tewkesbury	d					1303	1303
Worcestershire Parkway	d					1314	1314
University	d					1339	1339
Birmingham New Street 12	a					1345	1345
Birmingham New Street	d	1319	1312	1322	1330	1349	1349
Water Orton	d	-	-	-	-	-	-
Coleshill Parkway	d	-	-	1336	-	-	-
Nuneaton	d	-	-	1351	-	-	-
Hinckley	d	-	-	-	-	-	-
Narborough	d	-	-	-	-	-	-
South Wigston	d	-	-	-	-	-	-
Leicester	a	-	-	1410	-	-	-
Leicester	d	-	-	1412	-	-	-
Wilnecote	d	-	-	-	-	1404	1404
Tamworth	d	1336	1329	-	-	1408	1408
Burton-on-Trent	d	1347	1341	-	-	1420	1420
Willington	d	-	-	-	-	-	-
Derby	a	1359	1352	-	1405	1431	1431
Derby 6	d	1413	1401	-		1440	1440
Spondon	a	-	-	-		-	-
Long Eaton	a	-	-	-		1448	1448
Attenborough	a	-	-	-		-	-
Beeston	a	-	-	-		1456	1456
Nottingham 8	a	1436	1424	-		1503	1503
Melton Mowbray	d			1428			
Oakham	d			1440			
Stamford	d			1454			
Peterborough 8	a			1507			
Peterborough	d			1516			
Whittlesea	d			-			
March	d			1531			
Manea	d			-			
Ely 6	d			1550			
Cambridge	d			1611			
Audley End	a			-			
Stansted Airport ✈	a			1641			

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For help: see 'Using Your Timetable' on page 8

	Ⓩ		Ⓩ	Ⓩ				
		E	SO	SX	SO	SX	SX G	SO G
Cardiff Ctl 7								
Newport								
Severn Tnl Jn								
Caldicot								
Chepstow								
Lydney								
Bristol TM 10		**1235**						
Bristol Pkwy 7		**1244**						
Gloucester 7		-						
Cheltenham		**1315**						
Ashchurch		-						
Worcester Pkwy		-						
University		-						
Bham New St 12		**1356**						
Bham New St	**1352**	**1403**	**1412**	**1419**	**1422**	**1422**	**1430**	**1428**
Water Orton	-	-	-	-	-	-	-	-
Coleshill	**1409**	-	-	-	**1436**	**1436**	-	-
Nuneaton	**1424**	-	-	-	**1451**	**1451**	-	-
Hinckley	**1430**	-	-	-	-	-	-	-
Narborough	**1439**	-	-	-	-	-	-	-
South Wigston	**1444**	-	-	-	-	-	-	-
Leicester	**1451**	-	-	-	**1510**	**1510**	-	-
Leicester		-	-	-	**1512**	**1512**	-	-
Wilnecote		-	-	-	-	-	-	-
Tamworth		**1419**	**1429**	**1436**	-	-	-	-
Burton		-	**1441**	**1447**	-	-	-	-
Willington		-	-	-	-	-	-	-
Derby		**1437**	**1452**	**1459**	-	-	**1505**	**1458**
Derby 6			**1501**	**1513**	-	-		
Spondon			-	-	-	-		
Long Eaton			-	-	-	-		
Attenborough			-	-	-	-		
Beeston			-	-	-	-		
Nottingham 8			**1523**	**1535**	-	-		
Melton Mwbray					**1528**	**1528**		
Oakham					**1540**	**1540**		
Stamford					**1554**	**1554**		
Peterboro 8					**1607**	**1607**		
Peterboro					**1616**	**1619**		
Whittlesea					-	-		
March					**1631**	**1634**		
Manea					-	-		
Ely 6					**1650**	**1654**		
Cambridge					**1711**	**1711**		
Audley End					-	-		
Stansted Apt✈					**1741**	**1741**		

Cardiff & Birmingham to Nottingham. Birmingham to Leicester, Cambridge & Stansted

(Includes all services between Bristol & Derby)

Mondays to Saturdays

Notes: see page 67

Features			Ⓩ		Ⓩ	Ⓩ	
Period of operation and Notes				G			SX
Cardiff Central 7	d	1245					
Newport (South Wales)	d	1259					
Severn Tunnel Junction	d	-					
Caldicot	d	-					
Chepstow	d	-					
Lydney	d	-					
Bristol Temple Meads 10	d	-		1335			1400
Bristol Parkway 7	d	-		1344			1409
Gloucester 7	d	1349		-			-
Cheltenham Spa	d	1359		1415			1440
Ashchurch for Tewkesbury	d	-		-			-
Worcestershire Parkway	d	1414		-			-
University	d	1439		-			-
Birmingham New Street 12	a	1445		1456			1527
Birmingham New Street	d	1449	1452	1503	1512	1522	
Water Orton	d	-	1503	-	-	-	
Coleshill Parkway	d	-	1507	-	-	1536	
Nuneaton	d	-	1524	-	-	1551	
Hinckley	d	-	1530	-	-	-	
Narborough	d	-	1539	-	-	-	
South Wigston	d	-	1544	-	-	-	
Leicester	a	-	1551	-	-	1610	
Leicester	d	-		-	-	1612	
Wilnecote	d	1504		-	-	-	
Tamworth	d	1508		-	1529	-	
Burton-on-Trent	d	1520		1526	1541	-	
Willington	d	1526		-	-	-	
Derby	a	1536		1538	1553	-	
Derby 6	d	1540			1600	-	
Spondon	a	-			-	-	
Long Eaton	a	1548			-	-	
Attenborough	a	-			-	-	
Beeston	a	1556			-	-	
Nottingham 8	a	1603			1624	-	
Melton Mowbray	d					1628	
Oakham	d					1640	
Stamford	d					1654	
Peterborough 8	a					1707	
Peterborough	d					1716	
Whittlesea	d					1724	
March	d					1735	
Manea	d					1742	
Ely 6	d					1757	
Cambridge	d					1817	
Audley End	a					-	
Stansted Airport ✈	a					1854	

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

	Ⓩ	Ⓩ	D	Ⓩ SX	Ⓩ SX	Ⓩ SO	Ⓩ SX	Ⓩ SO
Cardiff Ctl 7	1345							
Newport	1359							
Severn Tnl Jn	-							
Caldicot	-							
Chepstow	-							
Lydney	1423							
Bristol TM 10	-		1435					
Bristol Pkwy 7	-		1444					
Gloucester 7	1449		-					
Cheltenham	1459		1515					
Ashchurch	-		-					
Worcester Pkwy	1514		-					
University	1539		-					
Bham New St 12	1545		1556					
Bham New St	1549	1552	1603	1609	1619	1612	1622	1622
Water Orton	-	-	-	1620	-	-	-	-
Coleshill	-	1609	-	1624	-	-	1636	1636
Nuneaton	-	1624	-	1640	-	-	1651	1651
Hinckley	-	1630	-	1647	-	-	-	-
Narborough	-	1639	-	1655	-	-	-	-
South Wigston	-	1644	-	-	-	-	-	-
Leicester	-	1651	-	1708	-	-	1712	1710
Leicester	-		-		-	-	1713	1712
Wilnecote	1604		-		-	-	-	-
Tamworth	1608		1620		1636	1629	-	-
Burton	1620		-		1647	1641	-	-
Willington	-		-		-	-	-	-
Derby	1631		1640		1659	1652	-	-
Derby 6	1640				1712	1701	-	-
Spondon	-				-	-	-	-
Long Eaton	1648				1721	1711	-	-
Attenborough	-				-	-	-	-
Beeston	1656				1729	1719	-	-
Nottingham 8	1703				1736	1726	-	-
Melton Mwbray							1730	1728
Oakham							1741	1740
Stamford							1755	1754
Peterboro 8							1809	1807
Peterboro							1813	1816
Whittlesea							-	-
March							1828	1831
Manea							1836	-
Ely 6							1850	1850
Cambridge							1911	1911
Audley End							-	-
Stansted Apt ✈							1941	1941

Cardiff & Birmingham to Nottingham. Birmingham to Leicester, Cambridge & Stansted

(Includes all services between Bristol & Derby)

Mondays to Saturdays

Notes: see page 67

Features				Ⓩ	Ⓩ		Ⓩ
Period of operation and Notes		SX	SO	SX	SO	D	SX
Cardiff Central 7	d	1445	1445				
Newport (South Wales)	d	1459	1459				
Severn Tunnel Junction	d	-	-				
Caldicot	d	-	-				
Chepstow	d	-	-				
Lydney	d	-	-				
Bristol Temple Meads 10	d	-	-			1535	
Bristol Parkway 7	d	-	-			1544	
Gloucester 7	d	1549	1545			-	
Cheltenham Spa	d	1559	1555			1615	
Ashchurch for Tewkesbury	d	-	1603			-	
Worcestershire Parkway	d	1614	1614			-	
University	d	1639	1639			-	
Birmingham New Street 12	a	1645	1645			1656	
Birmingham New Street	d	1649	1649	1652	1652	1703	1709
Water Orton	d	-	-	-	1703	-	1720
Coleshill Parkway	d	-	-	1706	1707	-	1724
Nuneaton	d	-	-	1725	1724	-	1740
Hinckley	d	-	-	1732	1730	-	1747
Narborough	d	-	-	1743	1739	-	-
South Wigston	d	-	-	-	-	-	1759
Leicester	a	-	-	1754	1749	-	1806
Leicester	d	-	-	1756		-	
Wilnecote	d	1704	1704	-		-	
Tamworth	d	1708	1708	-		-	
Burton-on-Trent	d	1720	1720	-		1726	
Willington	d	-	-	-		-	
Derby	a	1731	1731	-		1737	
Derby 6	d	1740	1740	-			
Spondon	a	-	-	-			
Long Eaton	a	1748	1748	-			
Attenborough	a	-	-	-			
Beeston	a	1756	1756	-			
Nottingham 8	a	1803	1803	-			
Melton Mowbray	d			1816			
Oakham	d			1827			
Stamford	d			1841			
Peterborough 8	a			1855			
Peterborough	d			1900			
Whittlesea	d			-			
March	d			1915			
Manea	d			-			
Ely 6	d			1935			
Cambridge	d			1951a			
Audley End	a						
Stansted Airport ✈	a						

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Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

	Ⓩ	Ⓩ SX	Ⓩ SO	SX	SO	Ⓩ SX	Ⓩ SO	D
Cardiff Ctl 7				1545	1545			
Newport				1559	1559			
Severn Tnl Jn				-	-			
Caldicot				-	-			
Chepstow				-	-			
Lydney				-	-			
Bristol TM 10				-	-			1635
Bristol Pkwy 7				-	-			1644
Gloucester 7				1645	1645			-
Cheltenham				1655	1655			1715
Ashchurch				1703	1703			-
Worcester Pkwy				1714	1714			-
University				1739	1739			-
Bham New St 12				1745	1745			1756
Bham New St	1712	1722	1722	1749	1749	1752	1752	1803
Water Orton	-	-	-	1759	-	1803	-	-
Coleshill	-	1736	1736	-	-	1807	1806	-
Nuneaton	-	1751	1751	-	-	1824	1824	-
Hinckley	-	1757	-	-	-	1830	1830	-
Narborough	-	1806	-	-	-	1839	1839	-
South Wigston	-	-	-	-	-	1844	1844	-
Leicester	-	1816	1810	-	-	1852	1850	-
Leicester	-	1818	1812	-	-			-
Wilnecote	-	-	-	1808	1804			-
Tamworth	1730	-	-	1812	1808			1819
Burton	1742	-	-	1823	1820			-
Willington	-	-	-	1829	1826			-
Derby	1755	-	-	1838	1836			1842
Derby 6	1759	-	-	1843	1840			
Spondon	-	-	-	-	-			
Long Eaton	1807	-	-	1851	1848			
Attenborough	-	-	-	-	-			
Beeston	1816	-	-	1859	1856			
Nottingham 8	1824	-	-	1906	1903			
Melton Mwbray		1834	1828					
Oakham		1846	1840					
Stamford		1900	1854					
Peterboro 8		1913	1907					
Peterboro		1916	1916					
Whittlesea		-	-					
March		1931	1931					
Manea		-	-					
Ely 6		1954	1950					
Cambridge		2011	2011					
Audley End		-	-					
Stansted Apt ✈		2041	2041					

Cardiff & Birmingham to Nottingham. Birmingham to Leicester, Cambridge & Stansted

(Includes all services between Bristol & Derby)

Mondays to Saturdays

Notes: see page 67

Features		Ⓩ	Ⓩ	Ⓩ	Ⓩ		Ⓩ
Period of operation and Notes		SX	SO	SX	SO		
Cardiff Central 7	d					1645	
Newport (South Wales)	d					1659	
Severn Tunnel Junction	d					–	
Caldicot	d					–	
Chepstow	d					–	
Lydney	d					1725*	
Bristol Temple Meads 10	d					–	
Bristol Parkway 7	d					–	
Gloucester 7	d					1749	
Cheltenham Spa	d					1759	
Ashchurch for Tewkesbury	d					–	
Worcestershire Parkway	d					1814	
University	d					1839	
Birmingham New Street 12	a					1845	
Birmingham New Street	d	1819	1812	1822	1822	1849	1852
Water Orton	d	–	–	–	–	–	–
Coleshill Parkway	d	–	–	1836	1836	–	1906
Nuneaton	d	–	–	1851	1851	–	1921
Hinckley	d	–	–	–	–	–	1928
Narborough	d	–	–	–	–	–	1936
South Wigston	d	–	–	–	–	–	1942
Leicester	a	–	–	1914	1910	–	1950
Leicester	d	–	–	1915	1912	–	
Wilnecote	d	–	–	–	–	1904	
Tamworth	d	1836	1829	–	–	1908	
Burton-on-Trent	d	1848	1841	–	–	1920	
Willington	d	–	–	–	–	–	
Derby	a	1900	1852	–	–	1931	
Derby 6	d	1913	1856	–	–	1940	
Spondon	a	–	–	–	–	–	
Long Eaton	a	1921	1904	–	–	1948	
Attenborough	a	–	–	–	–	–	
Beeston	a	1929	1915	–	–	1957	
Nottingham 8	a	1936	1924	–	–	2004	
Melton Mowbray	d			1932	1928		
Oakham	d			1943	1940		
Stamford	d			1957	1954		
Peterborough 8	a			2011	2007		
Peterborough	d			2016	2016		
Whittlesea	d			–	–		
March	d			2031	2031		
Manea	d			–	–		
Ely 6	d			2050	2050		
Cambridge	d			2111	2111		
Audley End	a			–	–		
Stansted Airport ✈	a			2141	2141		

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

		Ⓩ	Ⓩ	Ⓩ		Ⓩ		Ⓩ
	I		SX	SO			L	SX
Cardiff Ctl 7					1745			
Newport					1759			
Severn Tnl Jn					-			
Caldicot					-			
Chepstow					-			
Lydney					-			
Bristol TM 10	1735				-		1835	
Bristol Pkwy 7	1744				-		1844	
Gloucester 7	-				1845		-	
Cheltenham	1815				1855		1915	
Ashchurch	-				1903		-	
Worcester Pkwy	-				1914		-	
University	-				1939		-	
Bham New St 12	1856				1945		1956	
Bham New St	1903	1912	1922	1922	1949	1952	2003	2022
Water Orton	-	-	-	-	-	2003	-	-
Coleshill	-	-	1936	1936	-	2007	-	2036
Nuneaton	-	-	1951	1951	-	2024	-	2051
Hinckley	-	-	-	-	-	2030	-	-
Narborough	-	-	-	-	-	2039	-	-
South Wigston	-	-	-	-	-	2044	-	-
Leicester	-	-	2014	2010	-	2051	-	2115
Leicester	-	-	2015	2012	-		-	2116
Wilnecote	-	-	-	-	2004		-	-
Tamworth	-	1929	-	-	2008		2019	-
Burton	1926	1941	-	-	2020		-	-
Willington	-	-	-	-	-		-	-
Derby	1937	1952	-	-	2031		2039	-
Derby 6		1956	-	-	2040			-
Spondon		-	-	-	-			-
Long Eaton		-	-	-	2048			-
Attenborough		-	-	-	-			-
Beeston		-	-	-	2057			-
Nottingham 8		2019	-	-	2105			-
Melton Mwbray			2032	2028				2132
Oakham			2043	2040				2144
Stamford			2057	2054				2158
Peterboro 8			2111	2107				2212
Peterboro			2116	2116				2219
Whittlesea			-	-				-
March			2131	2131				2234
Manea			-	-				-
Ely 6			2150	2150				2253
Cambridge			2211	2211				2309a
Audley End			-	-				
Stansted Apt ✈			2241	2241				

Cardiff & Birmingham to Nottingham. Birmingham to Leicester, Cambridge & Stansted

(Includes all services between Bristol & Derby)

Mondays to Saturdays

Notes: see page 67

Features		Ⓩ	Ⓩ	Ⓩ	Ⓩ		
Period of operation and Notes		SO	SX	SO		SX L	SO L
Cardiff Central 7	d		1845	1845			
Newport (South Wales)	d		1859	1859			
Severn Tunnel Junction	d		-	-			
Caldicot	d		-	-			
Chepstow	d		1918	1916			
Lydney	d		-	-			
Bristol Temple Meads 10	d		-	-		1935	1931
Bristol Parkway 7	d		-	-		1944	1940
Gloucester 7	d		1949	1949		-	-
Cheltenham Spa	d		1959	1959		2015	2011
Ashchurch for Tewkesbury	d		-	-		-	-
Worcestershire Parkway	d		2014	2014		-	-
University	d		2039	2039		-	-
Birmingham New Street 12	a		2045	2045		2056	2052
Birmingham New Street	d	2022	2049	2049	2052	2103	2103
Water Orton	d	-	-	-	-	-	-
Coleshill Parkway	d	2036	-	-	2106	-	-
Nuneaton	d	2051	-	-	2124	-	-
Hinckley	d	-	-	-	2130	-	-
Narborough	d	-	-	-	2139	-	-
South Wigston	d	-	-	-	2144	-	-
Leicester	a	2110	-	-	2151	-	-
Leicester	d	2112	-	-		-	-
Wilnecote	d	-	2104	2104		-	-
Tamworth	d	-	2108	2108		2129	2120
Burton-on-Trent	d	-	2120	2120		2140	2131
Willington	d	-	2126	-		-	-
Derby	a	-	2137	2131		2150	2141
Derby 6	d	-	2146	2146			
Spondon	a	-	2150	2150			
Long Eaton	a	-	2157	2157			
Attenborough	a	-	-	-			
Beeston	a	-	2210	2210			
Nottingham 8	a	-	2217	2215			
Melton Mowbray	d	2128					
Oakham	d	2140					
Stamford	d	2154					
Peterborough 8	a	2207					
Peterborough	d	2214					
Whittlesea	d	-					
March	d	2230					
Manea	d	-					
Ely 6	d	2248					
Cambridge	d	2304a					
Audley End	a						
Stansted Airport ✈	a						

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Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

	Ⓩ SO	Ⓩ SX	Ⓩ SX	Ⓩ SO	Ⓩ	Ⓩ SO	Ⓩ SX	Ⓩ SX
Cardiff Ctl 7		1950		2000		2048		2105
Newport		2004		2014		2102		2119
Severn Tnl Jn		2014		-		-		-
Caldicot		2017		-		-		-
Chepstow		2025		2036		-		-
Lydney		2034		2044		-		-
Bristol TM 10	2031	-	2035	-		-		-
Bristol Pkwy 7	2040	-	2044	-		-		-
Gloucester 7	-	2056	-	2107		2149		2203
Cheltenham	2111	2106	2115	2118		2159		2213
Ashchurch	-	-	-	2125		-		2221
Worcester Pkwy	-	2120	-	-		2214		2232
University	-	2146	-	2200		2239		-
Bham New St 12	2151	2154	2201	2207		2245		2305
Bham New St	2203	2203		2210	2222	2249	2309	
Water Orton	-	-		-	-	-	-	
Coleshill	-	-		-	2236	-	-	
Nuneaton	-	-		-	2251	-	-	
Hinckley	-	-		-	2258	-	-	
Narborough	-	-		-	2306	-	-	
South Wigston	-	-		-	2311	-	-	
Leicester	-	-		-	2318	-	-	
Leicester	-	-		-		-	-	
Wilnecote	-	-		-		2304	2324	
Tamworth	2220	2227		2228		2308	2328	
Burton	2231	2239		2240		2320	2340	
Willington	-	-		2246		-	2346	
Derby	2242	2250		2255		2331	2354	
Derby 6		2258		2259			2358	
Spondon		2302		-			-	
Long Eaton		2309		2310			-	
Attenborough		2316		-			-	
Beeston		2319		2320			-	
Nottingham 8		2326		2327			0018	
Melton Mwbray								
Oakham								
Stamford								
Peterboro 8								
Peterboro								
Whittlesea								
March								
Manea								
Ely 6								
Cambridge								
Audley End								
Stansted Apt ✈								

Cardiff & Birmingham to Nottingham. Birmingham to Leicester, Cambridge & Stansted

(Includes all services between Bristol & Derby)

Mondays to Saturdays

Notes: see page 67

Features		Ⓩ	Ⓩ				
Period of operation and Notes		SX	SX				
Cardiff Central 7	d		**2145**				
Newport (South Wales)	d		**2159**				
Severn Tunnel Junction	d		-				
Caldicot	d		-				
Chepstow	d		-				
Lydney	d		-				
Bristol Temple Meads 10	d	**2200**	-				
Bristol Parkway 7	d	**2209**	-				
Gloucester 7	d	-	**2249**				
Cheltenham Spa	d	**2243**	**2259**				
Ashchurch for Tewkesbury	d	-	-				
Worcestershire Parkway	d	-	-				
University	d	-	-				
Birmingham New Street 12	a	**2341**	**2358**				
Birmingham New Street	d						
Water Orton	d						
Coleshill Parkway	d						
Nuneaton	d						
Hinckley	d						
Narborough	d						
South Wigston	d						
Leicester	a						
Leicester	d						
Wilnecote	d						
Tamworth	d						
Burton-on-Trent	d						
Willington	d						
Derby	a						
Derby 6	d						
Spondon	a						
Long Eaton	a						
Attenborough	a						
Beeston	a						
Nottingham 8	a						
Melton Mowbray	d						
Oakham	d						
Stamford	d						
Peterborough 8	a						
Peterborough	d						
Whittlesea	d						
March	d						
Manea	d						
Ely 6	d						
Cambridge	d						
Audley End	a						
Stansted Airport ✈	a						

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Cardiff & Birmingham to Nottingham. Birmingham to Leicester, Cambridge & Stansted

(Includes all services between Bristol & Derby)

Sundays

Notes: see page 67

Features			Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ
Period of operation and Notes		G					
Cardiff Central 7	d						
Newport (South Wales)	d						
Severn Tunnel Junction	d						
Caldicot	d						
Chepstow	d						
Lydney	d						
Bristol Temple Meads 10	d						
Bristol Parkway 7	d						
Gloucester 7	d						
Cheltenham Spa	d						
Ashchurch for Tewkesbury	d						
Worcestershire Parkway	d						
University	d						
Birmingham New Street 12	a						
Birmingham New Street	d	**0903**	**0952**				
Water Orton	d	-	-				
Coleshill Parkway	d	-	**1006**				
Nuneaton	d	-	**1021**				
Hinckley	d	-	**1028**				
Narborough	d	-	**1036**				
South Wigston	d	-	**1041**				
Leicester	a	-	**1048**				
Leicester	d	-					
Wilnecote	d	-					
Tamworth	d	**0919**					
Burton-on-Trent	d	**0930**					
Willington	d	-					
Derby	a	**0940**					
Derby 6	d						
Spondon	a						
Long Eaton	a						
Attenborough	a						
Beeston	a						
Nottingham 8	a						
Melton Mowbray	d						
Oakham	d						
Stamford	d						
Peterborough 8	a						
Peterborough	d						
Whittlesea	d						
March	d						
Manea	d						
Ely 6	d						
Cambridge	d			**0915**	**1015**	**1115**	**1215**
Audley End	a			**0930**	**1030**	**1130**	**1230**
Stansted Airport ✈	a			**0945**	**1045**	**1145**	**1245**

Cardiff & Birmingham to Nottingham. Birmingham to Leicester, Cambridge & Stansted

(Includes all services between Bristol & Derby)

Sundays

Notes: see page 67

Features		Ⓩ		Ⓩ			
Period of operation and Notes			D		D		
Cardiff Central 7	d						
Newport (South Wales)	d						
Severn Tunnel Junction	d						
Caldicot	d						
Chepstow	d						
Lydney	d						
Bristol Temple Meads 10	d				**0915**		
Bristol Parkway 7	d				**0924**		
Gloucester 7	d				**1002**		
Cheltenham Spa	d				**1011**		
Ashchurch for Tewkesbury	d				-		
Worcestershire Parkway	d				-		
University	d				-		
Birmingham New Street 12	a				**1049**		
Birmingham New Street	d		**1003**	**1052**	**1103**	**1122**	**1149**
Water Orton	d		-	-	-	-	-
Coleshill Parkway	d		-	**1106**	-	**1136**	-
Nuneaton	d		-	**1121**	-	**1151**	-
Hinckley	d		-	**1128**	-	-	-
Narborough	d		-	**1136**	-	-	-
South Wigston	d		-	**1141**	-	-	-
Leicester	a		-	**1148**	-	**1210**	-
Leicester	d		-		-	**1212**	-
Wilnecote	d		-		-	-	-
Tamworth	d		**1019**		-	-	**1206**
Burton-on-Trent	d		**1030**		**1126**	-	**1218**
Willington	d		-		-	-	-
Derby	a		**1040**		**1136**	-	**1229**
Derby 6	d					-	**1233**
Spondon	a					-	-
Long Eaton	a					-	-
Attenborough	a					-	-
Beeston	a					-	-
Nottingham 8	a					-	**1253**
Melton Mowbray	d					**1228**	
Oakham	d					**1240**	
Stamford	d					**1254**	
Peterborough 8	a					**1307**	
Peterborough	d					**1319**	
Whittlesea	d					-	
March	d					**1334**	
Manea	d					-	
Ely 6	d					**1353**	
Cambridge	d	**1315**				**1415**	
Audley End	a	**1330**				-	
Stansted Airport ✈	a	**1345**				**1445**	

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see 'Using Your Timetable' on page 8

	Ⓩ				Ⓩ			
		E				F		
Cardiff Ctl 7				1045				1145
Newport				1059				1159
Severn Tnl Jn				-				-
Caldicot				-				-
Chepstow				-				-
Lydney				-				-
Bristol TM 10		1031		-		1131		-
Bristol Pkwy 7		1040		-		1140		-
Gloucester 7		-		1149		-		1249
Cheltenham		1111		1159		1211		1259
Ashchurch		-		-		-		-
Worcester Pkwy		-		1214		-		1314
University		-		1239		-		1339
Bham New St 12		1149		1245		1249		1345
Bham New St	1152	1203	1222	1249	1252	1303	1322	1349
Water Orton	-	-	-	-	-	-	-	-
Coleshill	1206	-	1236	-	1306	-	1336	-
Nuneaton	1221	-	1251	-	1321	-	1351	-
Hinckley	1228	-	-	-	1328	-	-	-
Narborough	1236	-	-	-	1336	-	-	-
South Wigston	1241	-	-	-	-	-	-	-
Leicester	1248	-	1316	-	1346	-	1415	-
Leicester		-	1318	-		-	1416	-
Wilnecote		-	-	-		-	-	-
Tamworth		1219	-	1306		-	-	1406
Burton		-	-	1318		1326	-	1418
Willington		-	-	-		-	-	-
Derby		1237	-	1329		1336	-	1429
Derby 6			-	1333			-	1433
Spondon			-	-			-	-
Long Eaton			-	-			-	-
Attenborough			-	-			-	-
Beeston			-	-			-	-
Nottingham 8			-	1353			-	1453
Melton Mwbray			1334				1433	
Oakham			1346				1444	
Stamford			1400				1458	
Peterboro 8			1413				1512	
Peterboro			1419				1519	
Whittlesea			-				-	
March			1434				1534	
Manea			-				-	
Ely 6			1453				1553	
Cambridge			1515				1615	
Audley End			-				-	
Stansted Apt ✈			1545				1645	

Cardiff & Birmingham to Nottingham. Birmingham to Leicester, Cambridge & Stansted

(Includes all services between Bristol & Derby)

Sundays

Notes: see page 67

Features		Ⓩ			Ⓩ		Ⓩ
Period of operation and Notes			E				
Cardiff Central 7	d					**1245**	
Newport (South Wales)	d					**1258**	
Severn Tunnel Junction	d					-	
Caldicot	d					-	
Chepstow	d					-	
Lydney	d					-	
Bristol Temple Meads 10	d		**1231**	**1300**		-	
Bristol Parkway 7	d		**1240**	**1309**		-	
Gloucester 7	d		-	-		**1349**	
Cheltenham Spa	d		**1311**	**1341**		**1359**	
Ashchurch for Tewkesbury	d		-	-		-	
Worcestershire Parkway	d		-	-		**1414**	
University	d		-	-		**1439**	
Birmingham New Street 12	a		**1349**	**1419**		**1445**	
Birmingham New Street	d	**1352**	**1403**		**1422**	**1449**	**1452**
Water Orton	d	-	-		-	-	-
Coleshill Parkway	d	**1406**	-		**1436**	-	**1506**
Nuneaton	d	**1421**	-		**1451**	-	**1521**
Hinckley	d	**1428**	-		-	-	**1528**
Narborough	d	**1436**	-		-	-	**1536**
South Wigston	d	**1441**	-		-	-	**1541**
Leicester	a	**1448**	-		**1515**	-	**1550**
Leicester	d		-		**1516**	-	
Wilnecote	d		-		-	**1504**	
Tamworth	d		**1419**		-	**1508**	
Burton-on-Trent	d		-		-	**1520**	
Willington	d		-		-	-	
Derby	a		**1437**		-	**1531**	
Derby 6	d				-	**1535**	
Spondon	a				-	-	
Long Eaton	a				-	-	
Attenborough	a				-	-	
Beeston	a				-	-	
Nottingham 8	a				-	**1555**	
Melton Mowbray	d				**1533**		
Oakham	d				**1544**		
Stamford	d				**1558**		
Peterborough 8	a				**1613**		
Peterborough	d				**1619**		
Whittlesea	d				-		
March	d				**1634**		
Manea	d				-		
Ely 6	d				**1653**		
Cambridge	d				**1715**		
Audley End	a				-		
Stansted Airport ✈	a				**1745**		

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

Please note : All direct services are shown in **bold.** Food and drink is available on services shown with dark shading.

For help: see ‘Using Your Timetable’ on page 8

		Ⓩ		Ⓩ		Ⓩ		Ⓩ
	G				D			
Cardiff Ctl 7			1345				1445	
Newport			1401				1459	
Severn Tnl Jn			-				-	
Caldicot			-				-	
Chepstow			-				-	
Lydney			-				-	
Bristol TM 10	1331		-		1431		-	
Bristol Pkwy 7	1340		-		1440		-	
Gloucester 7	-		1449		-		1549	
Cheltenham	1411		1459		1511		1559	
Ashchurch	-		-		-		-	
Worcester Pkwy	-		1514		-		1614	
University	-		1539		-		1639	
Bham New St 12	1449		1545		1550		1645	
Bham New St	1503	1522	1549	1552	1603	1622	1649	1652
Water Orton	-	-	-	-	-	-	-	-
Coleshill	-	1536	-	1606	-	1636	-	1706
Nuneaton	-	1551	-	1621	-	1651	-	1721
Hinckley	-	-	-	1628	-	-	-	1728
Narborough	-	-	-	1636	-	-	-	1736
South Wigston	-	-	-	1641	-	-	-	1741
Leicester	-	1615	-	1648	-	1713	-	1750
Leicester	-	1616	-		-	1714	-	
Wilnecote	-	-	-		-	-	-	
Tamworth	-	-	1606		1620	-	1706	
Burton	1526	-	1618		-	-	1718	
Willington	-	-	-		-	-	-	
Derby	1536	-	1629		1639	-	1729	
Derby 6		-	1633			-	1733	
Spondon		-	-			-	-	
Long Eaton		-	-			-	-	
Attenborough		-	-			-	-	
Beeston		-	-			-	-	
Nottingham 8		-	1653			-	1754	
Melton Mwbray		1633				1730		
Oakham		1644				1742		
Stamford		1658				1756		
Peterboro 8		1712				1809		
Peterboro		1719				1819		
Whittlesea		-				-		
March		1734				1834		
Manea		-				-		
Ely 6		1753				1853		
Cambridge		1815				1915		
Audley End		-				-		
Stansted Apt ✈		1845				1945		

Cardiff & Birmingham to Nottingham. Birmingham to Leicester, Cambridge & Stansted

(Includes all services between Bristol & Derby)

Sundays

Notes: see page 67

Features			Ⓩ		Ⓩ		Ⓩ
Period of operation and Notes		D				D	
Cardiff Central 7	d			**1545**			
Newport (South Wales)	d			**1559**			
Severn Tunnel Junction	d			-			
Caldicot	d			-			
Chepstow	d			-			
Lydney	d			-			
Bristol Temple Meads 10	d	**1531**		-		**1631**	
Bristol Parkway 7	d	**1540**		-		**1640**	
Gloucester 7	d	-		**1649**		-	
Cheltenham Spa	d	**1611**		**1659**		**1711**	
Ashchurch for Tewkesbury	d	-		-		-	
Worcestershire Parkway	d	-		**1714**		-	
University	d	-		**1739**		-	
Birmingham New Street 12	a	**1649**		**1745**		**1750**	
Birmingham New Street	d	**1703**	**1722**	**1749**	**1752**	**1803**	**1822**
Water Orton	d	-	-	-	-	-	-
Coleshill Parkway	d	-	**1736**	-	**1806**	-	**1836**
Nuneaton	d	-	**1751**	-	**1821**	-	**1851**
Hinckley	d	-	-	-	**1828**	-	-
Narborough	d	-	-	-	**1836**	-	-
South Wigston	d	-	-	-	**1841**	-	-
Leicester	a	-	**1810**	-	**1851**	-	**1910**
Leicester	d	-	**1812**	-		-	**1912**
Wilnecote	d	-	-	-		-	-
Tamworth	d	-	-	**1806**		**1820**	-
Burton-on-Trent	d	**1726**	-	**1818**		-	-
Willington	d	-	-	-		-	-
Derby	a	**1736**	-	**1829**		**1839**	-
Derby 6	d		-	**1833**			-
Spondon	a		-	-			-
Long Eaton	a		-	-			-
Attenborough	a		-	-			-
Beeston	a		-	-			-
Nottingham 8	a		-	**1854**			-
Melton Mowbray	d		**1828**				**1928**
Oakham	d		**1840**				**1940**
Stamford	d		**1854**				**1954**
Peterborough 8	a		**1907**				**2007**
Peterborough	d		**1919**				**2019**
Whittlesea	d		-				-
March	d		**1934**				**2034**
Manea	d		-				-
Ely 6	d		**1953**				**2053**
Cambridge	d		**2015**				**2115**
Audley End	a		-				-
Stansted Airport ✈	a		**2045**				**2145**

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For help: see ‘Using Your Timetable’ on page 8

		Ⓩ		Ⓩ		Ⓩ		Ⓩ
			H				L	
Cardiff Ctl 7	1645				1745			
Newport	1659				1759			
Severn Tnl Jn	-				-			
Caldicot	-				-			
Chepstow	-				-			
Lydney	-				-			
Bristol TM 10	-		1731		-		1831	
Bristol Pkwy 7	-		1740		-		1840	
Gloucester 7	1749		-		1849		-	
Cheltenham	1759		1811		1859		1911	
Ashchurch	-		-		-		-	
Worcester Pkwy	1814		-		1914		-	
University	1839		-		1939		-	
Bham New St 12	1845		1850		1945		1950	
Bham New St	1849	1852	1903	1922	1949	1952	2003	2022
Water Orton	-	-	-	-	-	-	-	-
Coleshill	-	1906	-	1936	-	2006	-	2036
Nuneaton	-	1921	-	1951	-	2021	-	2051
Hinckley	-	1928	-	-	-	2028	-	-
Narborough	-	1936	-	-	-	2036	-	-
South Wigston	-	1941	-	-	-	2041	-	-
Leicester	-	1951	-	2011	-	2051	-	2110
Leicester	-		-	2012	-		-	2112
Wilnecote	1904		-	-	-		-	-
Tamworth	1908		-	-	2006		2020	-
Burton	1920		1926	-	2017		-	-
Willington	-		-	-	-		-	-
Derby	1931		1937	-	2029		2039	-
Derby 6	1937			-	2034			-
Spondon	-			-	-			-
Long Eaton	-			-	-			-
Attenborough	-			-	-			-
Beeston	-			-	-			-
Nottingham 8	1957			-	2054			-
Melton Mwbray				2028				2128
Oakham				2040				2140
Stamford				2054				2154
Peterboro 8				2108				2207
Peterboro				2119				2217
Whittlesea				-				-
March				2134				2232
Manea				-				-
Ely 6				2153				2251
Cambridge				2215				2306a
Audley End				-				
Stansted Apt ✈				2245				

Cardiff & Birmingham to Nottingham. Birmingham to Leicester, Cambridge & Stansted

(Includes all services between Bristol & Derby)

Sundays

Notes: see page 67

Features			Ⓩ		Ⓩ	Ⓩ	Ⓩ
Period of operation and Notes				L		L	
Cardiff Central 7	d	1845			1945		2045
Newport (South Wales)	d	1859			2002		2059
Severn Tunnel Junction	d	-			-		-
Caldicot	d	-			-		-
Chepstow	d	-			-		-
Lydney	d	-			-		-
Bristol Temple Meads 10	d	-		1931	-	2031	-
Bristol Parkway 7	d	-		1940	-	2040	-
Gloucester 7	d	1949		-	2049	-	2149
Cheltenham Spa	d	1959		2011	2059	2111	2159
Ashchurch for Tewkesbury	d	-		-	-	-	-
Worcestershire Parkway	d	2014		-	2114	-	2214
University	d	2039		-	2139	-	2239
Birmingham New Street 12	a	2045		2055	2145	2150	2245
Birmingham New Street	d	2049	2052	2103	2152	2203	
Water Orton	d	-	-	-	-	-	
Coleshill Parkway	d	-	2106	-	2206	-	
Nuneaton	d	-	2121	-	2221	-	
Hinckley	d	-	2128	-	2228	-	
Narborough	d	-	2136	-	2236	-	
South Wigston	d	-	2141	-	2241	-	
Leicester	a	-	2150	-	2248	-	
Leicester	d	-		-		-	
Wilnecote	d	-		-		-	
Tamworth	d	2106		2119		2220	
Burton-on-Trent	d	2117		2130		-	
Willington	d	-		-		-	
Derby	a	2129		2140		2239	
Derby 6	d	2134					
Spondon	a	-					
Long Eaton	a	-					
Attenborough	a	-					
Beeston	a	-					
Nottingham 8	a	2154					
Melton Mowbray	d						
Oakham	d						
Stamford	d						
Peterborough 8	a						
Peterborough	d						
Whittlesea	d						
March	d						
Manea	d						
Ely 6	d						
Cambridge	d						
Audley End	a						
Stansted Airport ✈	a						

Times may vary at weekends to allow track improvement work to take place. Please check before travelling by visiting crosscountrytrains.co.uk or calling National Rail Enquiries on 03457 48 49 50

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For help: see ‘Using Your Timetable’ on page 8

	Ⓩ							
Cardiff Ctl 7								
Newport								
Severn Tnl Jn								
Caldicot								
Chepstow								
Lydney								
Bristol TM 10	**2210**							
Bristol Pkwy 7	**2219**							
Gloucester 7	-							
Cheltenham	**2250**							
Ashchurch	-							
Worcester Pkwy	-							
University	-							
Bham New St 12	**2341**							
Bham New St								
Water Orton								
Coleshill								
Nuneaton								
Hinckley								
Narborough								
South Wigston								
Leicester								
Leicester								
Wilnecote								
Tamworth								
Burton								
Willington								
Derby								
Derby 6								
Spondon								
Long Eaton								
Attenborough								
Beeston								
Nottingham 8								
Melton Mwbray								
Oakham								
Stamford								
Peterboro 8								
Peterboro								
Whittlesea								
March								
Manea								
Ely 6								
Cambridge								
Audley End								
Stansted Apt ✈								

Notes

Additional services are provided by other train companies, contact National Rail Enquiries for full service information.

a	Arrival time
d	Departure time

Period of operations and notes

*	Mondays to Fridays only
A	Continues to Plymouth
B	Continues to Penzance
C	Continues to Reading
D	Continues to Edinburgh Waverley
E	Continues to Glasgow Central
F	Continues to Aberdeen
FO	Fridays only
FX	Fridays excepted
G	Continues to Newcastle
H	Continues to York
I	Monday to Friday continues to Leeds. Saturday continues to York
J	Monday to Friday continues to Banbury
K	Continues to Paignton
L	Continues to Leeds
M	Service operated by East Midlands Railway and terminates at Norwich
N	Service operated by East Midlands Railway and terminates at Kettering
P	Service operated by East Midlands Railway and terminates at London St Pancras International
Q	Service operated by East Midlands Railway
R	Also calls at Patchway 0733, Filton Abbey Wood 0739
SO	Saturdays Only
SX	Not Saturdays
T	Mondays to Fridays continues to Plymouth. Saturdays continues to Penzance

R	A seat reservation is strongly advised as these services are usually very busy.
Ⓩ	Refreshments are not available on these services.
🚌	Service operated by rail replacement road transport.

After your journey

We hope you enjoyed travelling with us.

Lost property

We'll do all we can to help reunite you with any lost property. If you've left something on board it will be taken off at the station where the train ends its journey and handed to their lost property office. If you e-mail or call our Customer Relations Team we'll provide you with contact details of the train company responsible for that station. If you've left something at a station we will provide the contact details for the train company responsible for that station.

Email	lost.property@crosscountrytrains.co.uk
Telephone	03447 369 123

Your feedback

We always welcome your feedback. If you have any comments, complaints or suggestions regarding your journey with CrossCountry, there are a number of ways to get in touch:

Email	customer.relations@crosscountrytrains.co.uk
Telephone	03447 369 123
Fax	0121 200 6005
Textphone	0121 200 6420
Post	Customer Relations Manager CrossCountry, Cannon House 18 The Priory Queensway Birmingham B4 6BS
Twitter	@CrossCountryUK
Facebook	Facebook.com/Crosscountrytrains

If you have a complaint and are not satisfied with the response you receive, you can ask to hear directly from one of our Managers. If the issue is subsequently not resolved to your satisfaction, you can contact the Rail Ombudsman by:

Email	info@railombudsman.org
Telephone	0330 094 0362
Post	FREEPOST – RAIL OMBUDSMAN

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CrossCountry routes

Where can we take you?

Our services

The South West to Birmingham, Manchester, the North East and Scotland

The South Coast and Reading to Birmingham and the North East

The South Coast and Reading to Birmingham and Manchester

Birmingham to Leicester, Cambridge and Stansted Airport

Cardiff to Birmingham and Nottingham

Please note: not all stations are shown

APPENDIX O – ILLUSTRATIVE SITE MASTERPLAN


North
Development Site Boundary (80.3 acres / 32.36 Ha)
Parameter Boundary
Unit Demise Boundary
Public bridleway (to be diverted where necessary)
UNIT A2.1
UNIT A2.2
UNIT A2.3
UNIT A2.4
UNIT A2.5
HGV TURN
2 No. LEVEL ACCESS
5 No. DOCKS
10 No. DOCKS
2 STOREY GOODS IN
2 STOREY MAIN OFFICE
HE 635 SQFT
2 No. LEVEL ACCESS
5 No. DOCKS
10 No. DOCKS
2 STOREY GOODS IN
10 No. DOCKS
5 No. DOCKS
2 No. LEVEL ACCESS
10 No. DOCKS
5 No. DOCKS
2 No. LEVEL ACCESS
SPRINKLER TANKS
HGV TURN
HGV TURN
Administration & Welfare
2 No. LEVEL ACCESS
12 No. DOCKS
2 STOREY GOODS IN/OUT
12 No. DOCKS
2 No. LEVEL ACCESS
2 STOREY MAIN OFFICE
SPRINKLER TANKS
HE 330 SQFT
ATTENUATION POND
EXIT ONLY
HGV TURN
Proposed diverted public bridleway AE45
M42
JUNCTION 10
A5

Jarodale House
7 Gregory Boulevard
Nottingham NG7 6LB

0115 960 2919
office@bancroftconsulting.co.uk

bancroftconsulting.co.uk

Hodgetts Estates

Proposed Employment Land Northeast of J10 M42, North Warwickshire

Transport Assessment

May 2021 (Revision C, November 2021)

VOLUME 5: APPENDICES P to R

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APPENDIX P – LINSIG OUTPUT DATA

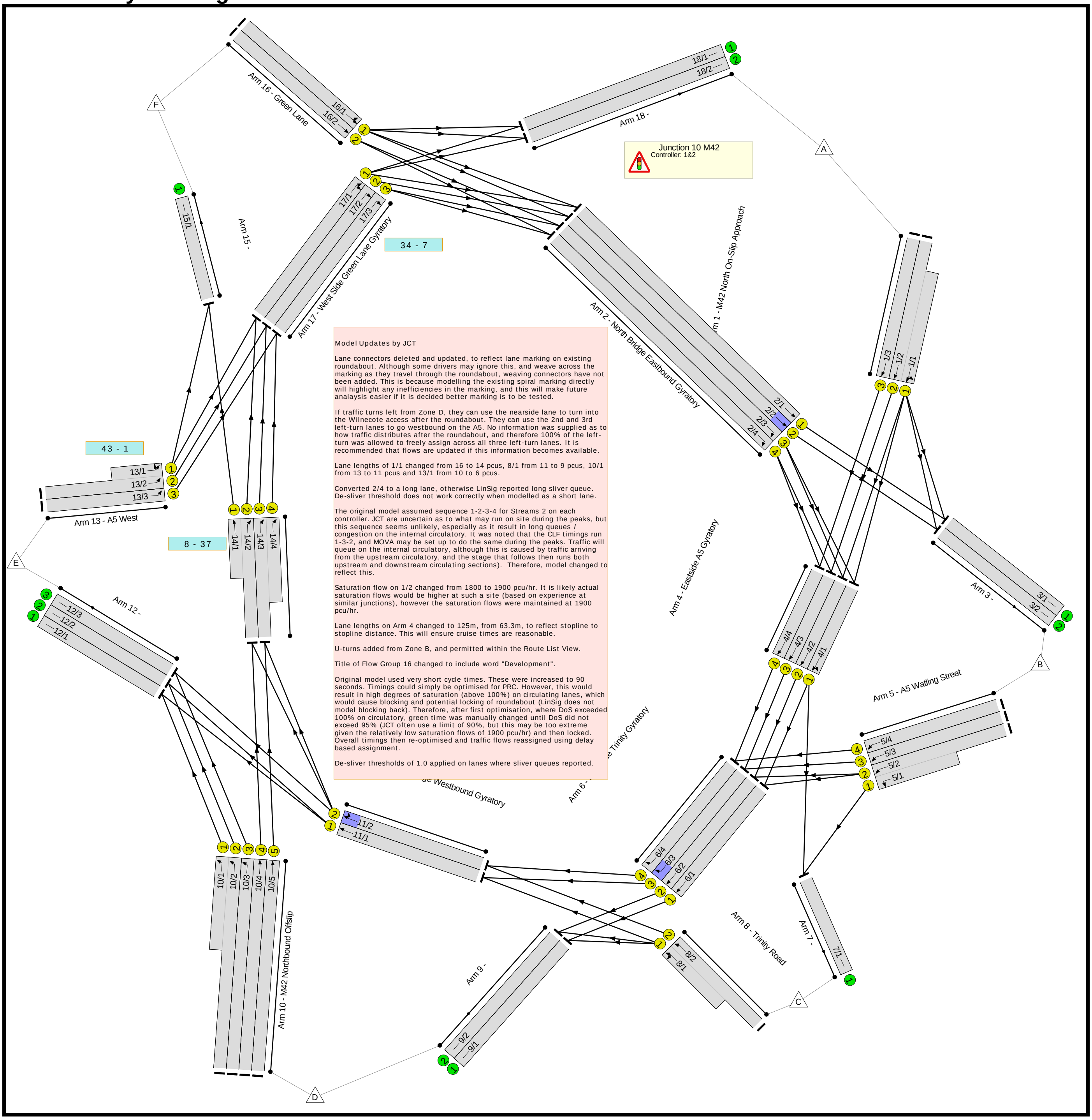
Full Input Data And Results

User and Project Details

Project:	
Title:	
Location:	
Date Completed:	01/11/2021
Checked By:	Simon Swanston (JCT)
Checked By Date:	22/10/2021
Additional detail:	
File name:	Junction 10 Proposed Layout Assessment Aug 21 update - JCT.lsg3x
Author:	Model updated by JCT following comments in MOT21042B
Company:	
Address:	

Full Input Data And Results

Network Layout Diagram



Model Updates by JCT

Lane connectors deleted and updated, to reflect lane marking on existing roundabout. Although some drivers may ignore this, and weave across the marking as they travel through the roundabout, weaving connectors have not been added. This is because modelling the existing spiral marking directly will highlight any inefficiencies in the marking, and this will make future analaysis easier if it is decided better marking is to be tested.

If traffic turns left from Zone D, they can use the nearside lane to turn into the Wilnecote access after the roundabout. They can use the 2nd and 3rd left-turn lanes to go westbound on the A5. No information was supplied as to how traffic distributes after the roundabout, and therefore 100% of the left-turn was allowed to freely assign across all three left-turn lanes. It is recommended that flows are updated if this information becomes available.

Lane lengths of 1/1 changed from 16 to 14 pcus, 8/1 from 11 to 9 pcus, 10/1 from 13 to 11 pcus and 13/1 from 10 to 6 pcus.

Converted 2/4 to a long lane, otherwise LinSig reported long sliver queue. De-sliver threshold does not work correctly when modelled as a short lane.

The original model assumed sequence 1-2-3-4 for Streams 2 on each controller. JCT are uncertain as to what may run on site during the peaks, but this sequence seems unlikely, especially as it result in long queues / congestion on the internal circulatory. It was noted that the CLF timings run 1-3-2, and MOVA may be set up to do the same during the peaks. Traffic will queue on the internal circulatory, although this is caused by traffic arriving from the upstream circulatory, and the stage that follows then runs both upstream and downstream circulating sections). Therefore, model changed to reflect this.

Saturation flow on 1/2 changed from 1800 to 1900 pcu/hr. It is likely actual saturation flows would be higher at such a site (based on experience at similar junctions), however the saturation flows were maintained at 1900 pcu/hr.

Lane lengths on Arm 4 changed to 125m, from 63.3m, to reflect stopline to stopline distance. This will ensure cruise times are reasonable.

U-turns added from Zone B, and permitted within the Route List View.

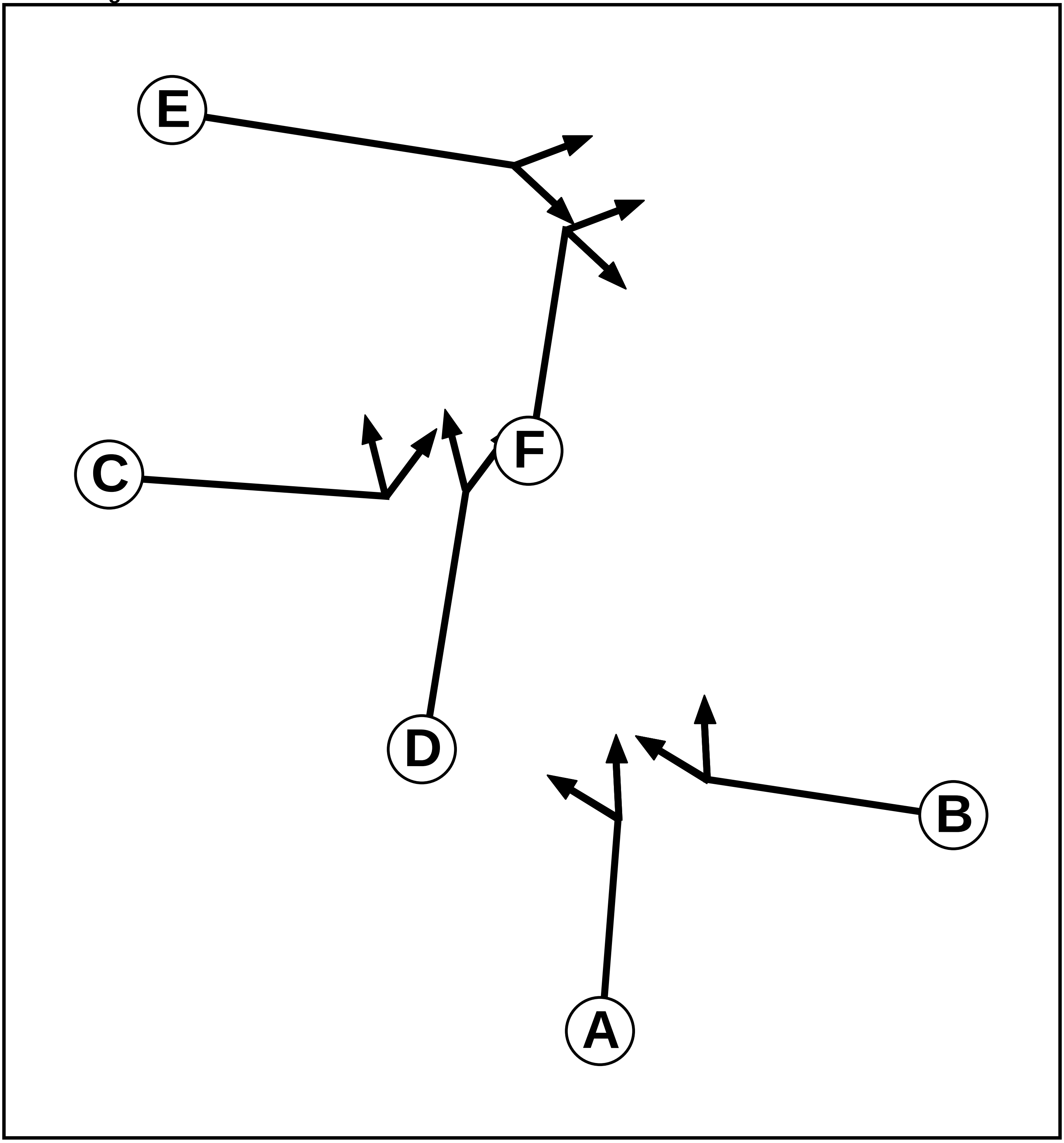
Title of Flow Group 16 changed to include word "Development".

Original model used very short cycle times. These were increased to 90 seconds. Timings could simply be optimised for PRC. However, this would result in high degrees of saturation (above 100%) on circulating lanes, which would cause blocking and potential locking of roundabout (LinSig does not model blocking back). Therefore, after first optimisation, where DoS exceeded 100% on circulatory, green time was manually changed until DoS did not exceed 95% (JCT often use a limit of 90%, but this may be too extreme given the relatively low saturation flows of 1900 pcu/hr) and then locked. Overall timings then re-optimised and traffic flows reassigned using delay based assignment.

De-sliver thresholds of 1.0 applied on lanes where sliver queues reported.

Full Input Data And Results

C1
Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	2		7	7
F	Traffic	2		7	7

Phase Intergreens Matrix

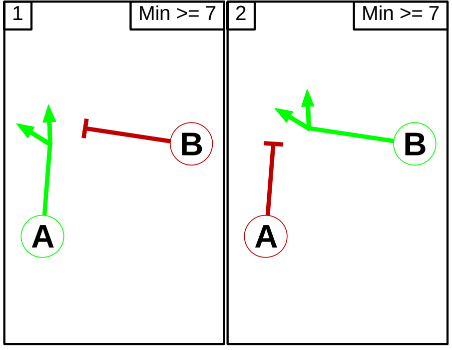
	Starting Phase						
Terminating Phase	■	A	B	C	D	E	F
	A	■	7	-	-	-	-
	B	6	■	-	-	-	-
	C	-	-	■	7	-	-
	D	-	-	6	■	-	-
	E	-	-	-	-	■	7
	F	-	-	-	-	6	■

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C F
2	2	D F
2	3	D E
2	4	C E

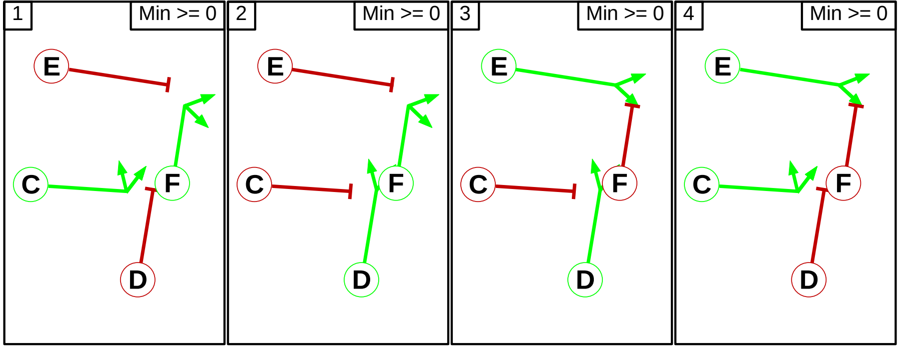
Stage Diagram

Stage Stream: 1



Full Input Data And Results

Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	3	F	Losing	6	6

Prohibited Stage Change

Stage Stream: 1

		To Stage	
From Stage		1	2
	1	■	7
	2	6	■

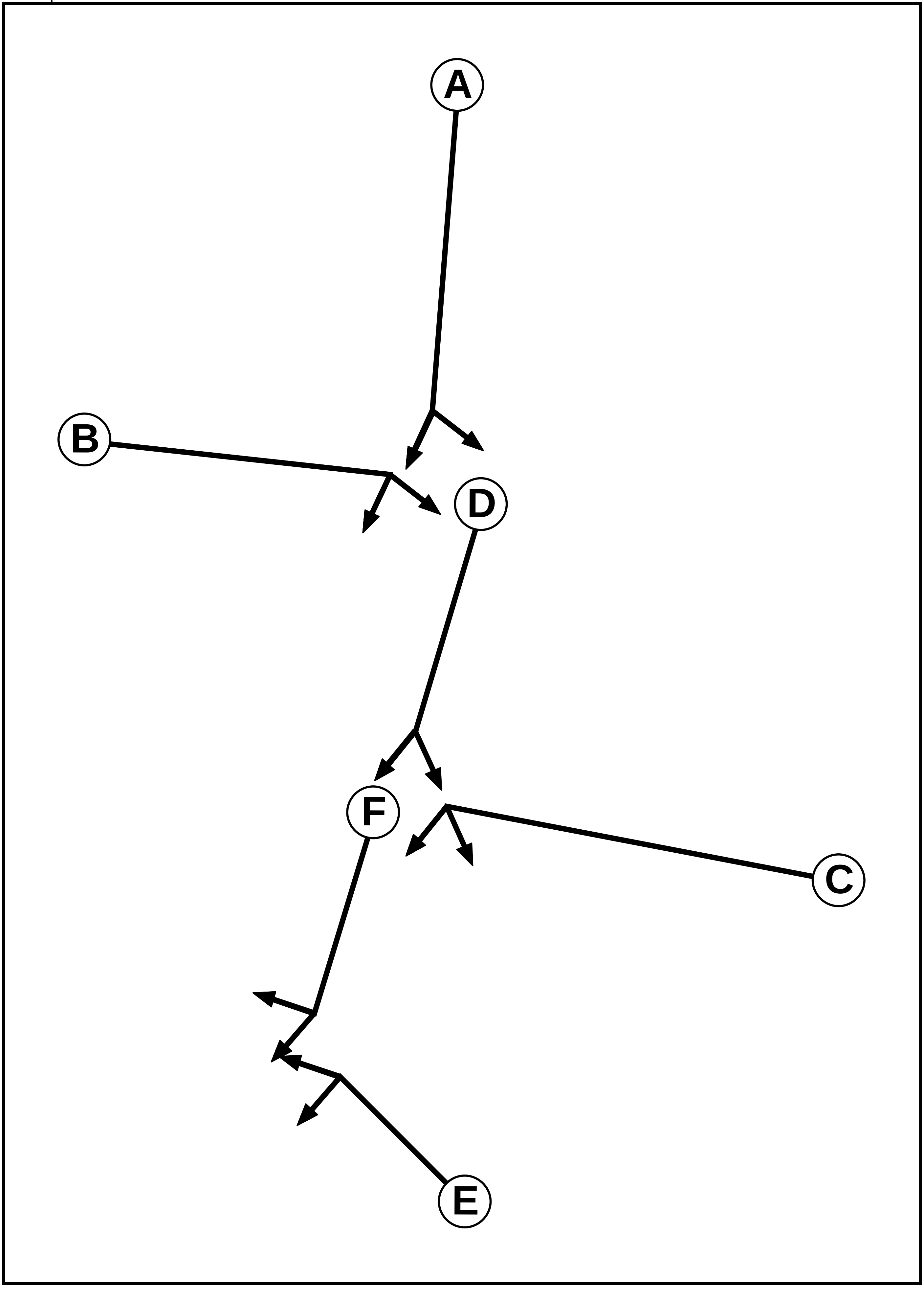
Stage Stream: 2

		To Stage			
From Stage		1	2	3	4
	1	■	7	12	6
	2	6	■	6	6
	3	7	7	■	6
	4	7	7	7	■

C2

Phase Diagram

Full Input Data And Results



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	2		7	7
F	Traffic	2		7	7

Phase Intergreens Matrix

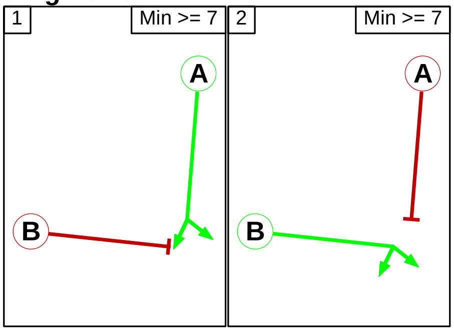
	Starting Phase						
	■	A	B	C	D	E	F
Terminating Phase	A	■	7	-	-	-	-
	B	6	■	-	-	-	-
	C	-	-	■	7	-	-
	D	-	-	6	■	-	-
	E	-	-	-	-	■	7
	F	-	-	-	-	6	■

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	D E
2	2	D F
2	3	C F
2	4	C E

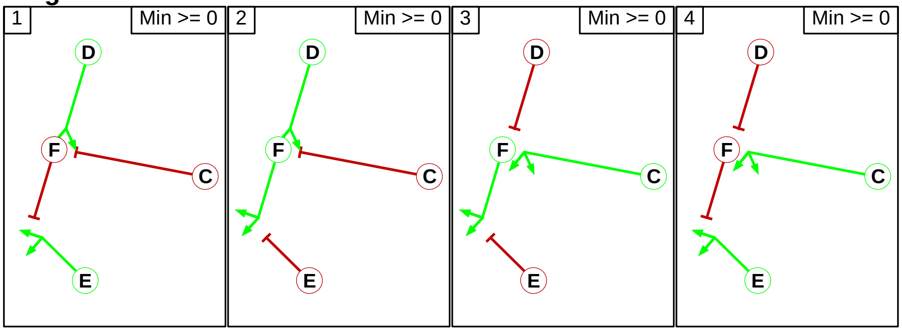
Stage Diagram

Stage Stream: 1



Full Input Data And Results

Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
3	1	F	Losing	5	5

Prohibited Stage Change

Stage Stream: 1

		To Stage	
		1	2
From Stage	1	■	7
	2	6	■

Stage Stream: 2

		To Stage			
		1	2	3	4
From Stage	1	■	7	7	6
	2	6	■	6	6
	3	11	7	■	6
	4	7	7	7	■

Full Input Data And Results

Give-Way Lane Input Data

Junction: Junction 10 M42
There are no Opposed Lanes in this Junction

Lane Input Data

Junction: Junction 10 M42

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (M42 North On-Slip Approach)	U	A	2	3	14.0	User	1900	-	-	-	-	-
1/2 (M42 North On-Slip Approach)	U	A	2	3	60.0	User	1900	-	-	-	-	-
1/3 (M42 North On-Slip Approach)	U	A	2	3	60.0	User	1900	-	-	-	-	-
2/1 (North Bridge Eastbound Gyratory)	U	B	2	3	26.0	User	1900	-	-	-	-	-
2/2 (North Bridge Eastbound Gyratory)	U	B	2	3	26.0	User	1900	-	-	-	-	-
2/3 (North Bridge Eastbound Gyratory)	U	B	2	3	26.0	User	1900	-	-	-	-	-
2/4 (North Bridge Eastbound Gyratory)	U	B	2	3	26.0	User	1900	-	-	-	-	-
3/1	U		2	3	60.0	Inf	-	-	-	-	-	-
3/2	U		2	3	60.0	Inf	-	-	-	-	-	-
4/1 (Eastside A5 Gyratory)	U	D	2	3	21.7	User	1900	-	-	-	-	-
4/2 (Eastside A5 Gyratory)	U	D	2	3	21.7	User	1900	-	-	-	-	-
4/3 (Eastside A5 Gyratory)	U	D	2	3	21.7	User	1900	-	-	-	-	-
4/4 (Eastside A5 Gyratory)	U	D	2	3	21.7	User	1900	-	-	-	-	-
5/1 (A5 Watling Street)	U	C	2	3	10.0	User	1900	-	-	-	-	-
5/2 (A5 Watling Street)	U	C	2	3	60.0	User	1900	-	-	-	-	-
5/3 (A5 Watling Street)	U	C	2	3	60.0	User	1900	-	-	-	-	-

Full Input Data And Results

5/4 (A5 Watling Street)	U	C	2	3	60.0	User	1900	-	-	-	-	-
6/1 (East Side Trinity Gyratory)	U	F	2	3	17.0	User	1900	-	-	-	-	-
6/2 (East Side Trinity Gyratory)	U	F	2	3	17.0	User	1900	-	-	-	-	-
6/3 (East Side Trinity Gyratory)	U	F	2	3	17.0	User	1900	-	-	-	-	-
6/4 (East Side Trinity Gyratory)	U	F	2	3	17.0	User	1900	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Trinity Road)	U	E	2	3	9.0	User	1900	-	-	-	-	-
8/2 (Trinity Road)	U	E	2	3	60.0	User	1900	-	-	-	-	-
9/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1 (M42 Northbound Offslip)	U	A	2	3	11.0	User	1900	-	-	-	-	-
10/2 (M42 Northbound Offslip)	U	A	2	3	60.0	User	1900	-	-	-	-	-
10/3 (M42 Northbound Offslip)	U	A	2	3	60.0	User	1900	-	-	-	-	-
10/4 (M42 Northbound Offslip)	U	A	2	3	60.0	User	1900	-	-	-	-	-
10/5 (M42 Northbound Offslip)	U	A	2	3	60.0	User	1900	-	-	-	-	-
11/1 (South Bridge Westbound Gyratory)	U	B	2	3	28.0	User	1900	-	-	-	-	-
11/2 (South Bridge Westbound Gyratory)	U	B	2	3	29.0	User	1900	-	-	-	-	-
12/1	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2	U		2	3	60.0	Inf	-	-	-	-	-	-
12/3	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1 (A5 West)	U	C	2	3	6.0	User	1900	-	-	-	-	-

13/2 (A5 West)	U	C	2	3	60.0	User	1900	-	-	-	-	-
13/3 (A5 West)	U	C	2	3	60.0	User	1900	-	-	-	-	-
14/1 (Westside A5 Gyratory)	U	D	2	3	7.0	User	1900	-	-	-	-	-
14/2 (Westside A5 Gyratory)	U	D	2	3	19.0	User	1900	-	-	-	-	-
14/3 (Westside A5 Gyratory)	U	D	2	3	19.0	User	1900	-	-	-	-	-
14/4 (Westside A5 Gyratory)	U	D	2	3	10.0	User	1900	-	-	-	-	-
15/1	U		2	3	60.0	Inf	-	-	-	-	-	-
16/1 (Green Lane)	U	E	2	3	60.0	User	1900	-	-	-	-	-
16/2 (Green Lane)	U	E	2	3	60.0	User	1900	-	-	-	-	-
17/1 (West Side Green Lane Gyratory)	U	F	2	3	19.0	User	1900	-	-	-	-	-
17/2 (West Side Green Lane Gyratory)	U	F	2	3	19.0	User	1900	-	-	-	-	-
17/3 (West Side Green Lane Gyratory)	U	F	2	3	19.0	User	1900	-	-	-	-	-
18/1	U		2	3	60.0	Inf	-	-	-	-	-	-
18/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 Reference AM Peak'	08:00	09:00	01:00	
2: '2021 Reference + Development AM Peak'	08:00	09:00	01:00	
3: '2021 Reference PM Peak'	17:00	18:00	01:00	
4: '2021 Reference + Development PM Peak'	17:00	18:00	01:00	
5: '2026 Reference AM Peak'	08:00	09:00	01:00	
6: '2026 Reference + Development AM Peak'	08:00	09:00	01:00	
7: '2026 Reference PM Peak'	17:00	18:00	01:00	
8: '2026 Reference + Development PM Peak'	17:00	18:00	01:00	
9: '2031 Reference AM Peak'	08:00	09:00	01:00	
10: '2031 Reference + Development AM Peak'	08:00	09:00	01:00	
11: '2031 Reference PM Peak'	17:00	18:00	01:00	
12: '2031 Reference + Development PM Peak'	17:00	18:00	01:00	
13: '2031 Local Plan AM Peak'	08:00	09:00	01:00	
14: '2031 Local Plan + Development AM Peak'	08:00	09:00	01:00	
15: '2031 Local Plan PM Peak'	17:00	18:00	01:00	
16: '2031 Local Plan + Development PM Peak'	17:00	18:00	01:00	

Scenario 1: '2021 R AM' (FG1: '2021 Reference AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
		A	B	C	D	E	F	Tot.
Origin	A	0	146	46	0	152	102	446
	B	126	14	194	484	1046	94	1958
	C	46	126	0	36	102	10	320
	D	0	540	48	0	298	262	1148
	E	128	1254	106	214	0	160	1862
	F	136	60	12	116	76	0	400
	Tot.	436	2140	406	850	1674	628	6134

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2021 R AM
Junction: Junction 10 M42	
1/1 (short)	192
1/2 (with short)	317(In) 125(Out)
1/3	129
2/1	942
2/2	1052
2/3	496
2/4	76
3/1	1015
3/2	1125
4/1	329
4/2	213
4/3	193
4/4	137
5/1 (short)	194
5/2 (with short)	678(In) 484(Out)
5/3	654
5/4	626
6/1	458
6/2	356
6/3	847
6/4	763
7/1	406
8/1 (short)	129
8/2 (with short)	320(In) 191(Out)
9/1	476
9/2	374
10/1 (short)	123
10/2 (with short)	247(In) 124(Out)
10/3	51
10/4	402
10/5	448
11/1	940
11/2	954
12/1	593
12/2	594
12/3	487

Full Input Data And Results

13/1 (short)	1055
13/2 (with short)	1542(In) 487(Out)
13/3	320
14/1 (short)	468
14/2 (with short)	785(In) 317(Out)
14/3 (with short)	583(In) 535(Out)
14/4 (short)	48
15/1	628
16/1	196
16/2	204
17/1	1212
17/2	1022
17/3	368
18/1	218
18/2	218

Lane Saturation Flows

Junction: Junction 10 M42								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (M42 North On-Slip Approach Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (M42 North On-Slip Approach Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (M42 North On-Slip Approach Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (North Bridge Eastbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (North Bridge Eastbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (North Bridge Eastbound Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/4 (North Bridge Eastbound Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Eastside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Eastside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Eastside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/4 (Eastside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A5 Watling Street Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (A5 Watling Street Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A5 Watling Street Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A5 Watling Street Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (East Side Trinity Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (East Side Trinity Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (East Side Trinity Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (East Side Trinity Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Trinity Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

8/2 (Trinity Road Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/1	Infinite Saturation Flow	Inf	Inf
9/2	Infinite Saturation Flow	Inf	Inf
10/1 (M42 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (M42 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (M42 Northbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/4 (M42 Northbound Offslip Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
10/5 (M42 Northbound Offslip Lane 5)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (South Bridge Westbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (South Bridge Westbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf
13/1 (A5 West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (A5 West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
13/3 (A5 West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (Westside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (Westside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (Westside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (Westside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1	Infinite Saturation Flow	Inf	Inf
16/1 (Green Lane Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
16/2 (Green Lane Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/1 (West Side Green Lane Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
17/2 (West Side Green Lane Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/3 (West Side Green Lane Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
18/1	Infinite Saturation Flow	Inf	Inf

18/2	Infinite Saturation Flow	Inf	Inf

Scenario 2: '2021 R + D AM' (FG2: '2021 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
Origin		A	B	C	D	E	F	Tot.
	A	0	168	46	0	152	102	468
	B	130	14	194	498	1126	94	2056
	C	46	126	0	36	102	10	320
	D	0	600	48	0	298	262	1208
	E	128	1360	106	214	0	160	1968
	F	136	60	12	116	76	0	400
	Tot.	440	2328	406	864	1754	628	6420

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2021 R + D AM
Junction: Junction 10 M42	
1/1 (short)	214
1/2 (with short)	331(In) 117(Out)
1/3	137
2/1	1039
2/2	1121
2/3	496
2/4	76
3/1	1123
3/2	1205
4/1	328
4/2	214
4/3	181
4/4	149
5/1 (short)	194
5/2 (with short)	692(In) 498(Out)
5/3	696
5/4	668
6/1	457
6/2	371
6/3	877
6/4	817
7/1	406
8/1 (short)	134
8/2 (with short)	320(In) 186(Out)
9/1	475
9/2	389
10/1 (short)	126
10/2 (with short)	251(In) 125(Out)
10/3	47
10/4	443
10/5	467
11/1	975
11/2	1003
12/1	613
12/2	613

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12/3	528
13/1 (short)	1121
13/2 (with short)	1648(In) 527(Out)
13/3	320
14/1 (short)	468
14/2 (with short)	827(In) 359(Out)
14/3 (with short)	605(In) 557(Out)
14/4 (short)	48
15/1	628
16/1	196
16/2	204
17/1	1320
17/2	1084
17/3	368
18/1	220
18/2	220

Lane Saturation Flows

Junction: Junction 10 M42								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (M42 North On-Slip Approach Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (M42 North On-Slip Approach Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (M42 North On-Slip Approach Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (North Bridge Eastbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (North Bridge Eastbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (North Bridge Eastbound Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/4 (North Bridge Eastbound Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Eastside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Eastside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Eastside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/4 (Eastside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A5 Watling Street Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (A5 Watling Street Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A5 Watling Street Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A5 Watling Street Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (East Side Trinity Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (East Side Trinity Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (East Side Trinity Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (East Side Trinity Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Trinity Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

8/2 (Trinity Road Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/1	Infinite Saturation Flow	Inf	Inf
9/2	Infinite Saturation Flow	Inf	Inf
10/1 (M42 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (M42 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (M42 Northbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/4 (M42 Northbound Offslip Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
10/5 (M42 Northbound Offslip Lane 5)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (South Bridge Westbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (South Bridge Westbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf
13/1 (A5 West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (A5 West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
13/3 (A5 West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (Westside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (Westside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (Westside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (Westside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1	Infinite Saturation Flow	Inf	Inf
16/1 (Green Lane Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
16/2 (Green Lane Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/1 (West Side Green Lane Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
17/2 (West Side Green Lane Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/3 (West Side Green Lane Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
18/1	Infinite Saturation Flow	Inf	Inf

18/2	Infinite Saturation Flow	Inf	Inf

Scenario 3: '2021 R PM' (FG3: '2021 Reference PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
		A	B	C	D	E	F	Tot.
Origin	A	0	114	14	0	134	96	358
	B	114	20	154	422	1630	42	2382
	C	48	108	0	48	148	16	368
	D	0	446	52	0	390	134	1022
	E	90	910	94	152	0	134	1380
	F	170	66	14	174	152	0	576
	Tot.	422	1664	328	796	2454	422	6086

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 R PM
Junction: Junction 10 M42	
1/1 (short)	128
1/2 (with short)	231(In) 103(Out)
1/3	127
2/1	700
2/2	850
2/3	486
2/4	152
3/1	757
3/2	907
4/1	278
4/2	222
4/3	213
4/4	169
5/1 (short)	154
5/2 (with short)	576(In) 422(Out)
5/3	932
5/4	874
6/1	407
6/2	341
6/3	1145
6/4	1043
7/1	328
8/1 (short)	151
8/2 (with short)	368(In) 217(Out)
9/1	431
9/2	365
10/1 (short)	161
10/2 (with short)	321(In) 160(Out)
10/3	69
10/4	315
10/5	317
11/1	1248
11/2	1260
12/1	786
12/2	783
12/3	885

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13/1 (short)	687
13/2 (with short)	1134(In) 447(Out)
13/3	246
14/1 (short)	288
14/2 (with short)	634(In) 346(Out)
14/3 (with short)	442(In) 390(Out)
14/4 (short)	52
15/1	422
16/1	236
16/2	340
17/1	899
17/2	837
17/3	298
18/1	211
18/2	211

Lane Saturation Flows

Junction: Junction 10 M42

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (M42 North On-Slip Approach Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (M42 North On-Slip Approach Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (M42 North On-Slip Approach Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (North Bridge Eastbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (North Bridge Eastbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (North Bridge Eastbound Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/4 (North Bridge Eastbound Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Eastside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Eastside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Eastside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/4 (Eastside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A5 Watling Street Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (A5 Watling Street Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A5 Watling Street Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A5 Watling Street Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (East Side Trinity Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (East Side Trinity Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (East Side Trinity Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (East Side Trinity Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Trinity Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

8/2 (Trinity Road Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/1	Infinite Saturation Flow	Inf	Inf
9/2	Infinite Saturation Flow	Inf	Inf
10/1 (M42 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (M42 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (M42 Northbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/4 (M42 Northbound Offslip Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
10/5 (M42 Northbound Offslip Lane 5)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (South Bridge Westbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (South Bridge Westbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf
13/1 (A5 West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (A5 West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
13/3 (A5 West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (Westside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (Westside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (Westside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (Westside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1	Infinite Saturation Flow	Inf	Inf
16/1 (Green Lane Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
16/2 (Green Lane Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/1 (West Side Green Lane Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
17/2 (West Side Green Lane Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/3 (West Side Green Lane Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
18/1	Infinite Saturation Flow	Inf	Inf

18/2	Infinite Saturation Flow	Inf	Inf

Scenario 4: '2021 R + D PM' (FG4: '2021 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination							
		A	B	C	D	E	F	Tot.
Origin	A	0	124	14	0	134	96	368
	B	120	20	158	496	1698	42	2534
	C	48	112	0	48	148	16	372
	D	0	480	52	0	390	134	1056
	E	90	978	94	152	0	134	1448
	F	170	66	14	174	152	0	576
	Tot.	428	1780	332	870	2522	422	6354

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 R + D PM
Junction: Junction 10 M42	
1/1 (short)	138
1/2 (with short)	256(In) 118(Out)
1/3	112
2/1	748
2/2	908
2/3	486
2/4	152
3/1	810
3/2	970
4/1	281
4/2	219
4/3	224
4/4	158
5/1 (short)	158
5/2 (with short)	654(In) 496(Out)
5/3	942
5/4	938
6/1	441
6/2	381
6/3	1166
6/4	1096
7/1	332
8/1 (short)	170
8/2 (with short)	372(In) 202(Out)
9/1	465
9/2	405
10/1 (short)	158
10/2 (with short)	316(In) 158(Out)
10/3	74
10/4	333
10/5	333
11/1	1288
11/2	1298
12/1	802
12/2	802

Full Input Data And Results

12/3	918
13/1 (short)	716
13/2 (with short)	1202(In) 486(Out)
13/3	246
14/1 (short)	288
14/2 (with short)	656(In) 368(Out)
14/3 (with short)	464(In) 412(Out)
14/4 (short)	52
15/1	422
16/1	236
16/2	340
17/1	950
17/2	898
17/3	298
18/1	214
18/2	214

Lane Saturation Flows

Junction: Junction 10 M42

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (M42 North On-Slip Approach Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (M42 North On-Slip Approach Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (M42 North On-Slip Approach Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (North Bridge Eastbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (North Bridge Eastbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (North Bridge Eastbound Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/4 (North Bridge Eastbound Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Eastside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Eastside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Eastside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/4 (Eastside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A5 Watling Street Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (A5 Watling Street Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A5 Watling Street Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A5 Watling Street Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (East Side Trinity Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (East Side Trinity Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (East Side Trinity Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (East Side Trinity Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Trinity Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

8/2 (Trinity Road Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/1	Infinite Saturation Flow	Inf	Inf
9/2	Infinite Saturation Flow	Inf	Inf
10/1 (M42 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (M42 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (M42 Northbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/4 (M42 Northbound Offslip Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
10/5 (M42 Northbound Offslip Lane 5)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (South Bridge Westbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (South Bridge Westbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf
13/1 (A5 West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (A5 West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
13/3 (A5 West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (Westside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (Westside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (Westside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (Westside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1	Infinite Saturation Flow	Inf	Inf
16/1 (Green Lane Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
16/2 (Green Lane Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/1 (West Side Green Lane Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
17/2 (West Side Green Lane Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/3 (West Side Green Lane Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
18/1	Infinite Saturation Flow	Inf	Inf

18/2	Infinite Saturation Flow	Inf	Inf

Scenario 5: '2026 R AM' (FG5: '2026 Reference AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
Origin		A	B	C	D	E	F	Tot.
	A	0	156	52	0	160	96	464
	B	128	12	188	464	1080	80	1952
	C	46	124	0	44	116	12	342
	D	0	508	48	0	352	262	1170
	E	154	1294	154	250	0	162	2014
	F	134	74	18	120	76	0	422
	Tot.	462	2168	460	878	1784	612	6364

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2026 R AM
Junction: Junction 10 M42	
1/1 (short)	208
1/2 (with short)	328(In) 120(Out)
1/3	136
2/1	957
2/2	1055
2/3	590
2/4	76
3/1	1035
3/2	1133
4/1	388
4/2	254
4/3	186
4/4	146
5/1 (short)	188
5/2 (with short)	652(In) 464(Out)
5/3	658
5/4	642
6/1	479
6/2	355
6/3	844
6/4	788
7/1	460
8/1 (short)	152
8/2 (with short)	342(In) 190(Out)
9/1	501
9/2	377
10/1 (short)	144
10/2 (with short)	289(In) 145(Out)
10/3	63
10/4	387
10/5	431
11/1	952
11/2	978
12/1	620
12/2	621
12/3	543

Full Input Data And Results

13/1 (short)	1111
13/2 (with short)	1610(In) 499(Out)
13/3	404
14/1 (short)	450
14/2 (with short)	754(In) 304(Out)
14/3 (with short)	562(In) 514(Out)
14/4 (short)	48
15/1	612
16/1	208
16/2	214
17/1	1253
17/2	1013
17/3	452
18/1	231
18/2	231

Lane Saturation Flows

Junction: Junction 10 M42								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (M42 North On-Slip Approach Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (M42 North On-Slip Approach Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (M42 North On-Slip Approach Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (North Bridge Eastbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (North Bridge Eastbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (North Bridge Eastbound Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/4 (North Bridge Eastbound Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Eastside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Eastside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Eastside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/4 (Eastside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A5 Watling Street Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (A5 Watling Street Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A5 Watling Street Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A5 Watling Street Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (East Side Trinity Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (East Side Trinity Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (East Side Trinity Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (East Side Trinity Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Trinity Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

8/2 (Trinity Road Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/1	Infinite Saturation Flow	Inf	Inf
9/2	Infinite Saturation Flow	Inf	Inf
10/1 (M42 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (M42 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (M42 Northbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/4 (M42 Northbound Offslip Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
10/5 (M42 Northbound Offslip Lane 5)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (South Bridge Westbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (South Bridge Westbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf
13/1 (A5 West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (A5 West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
13/3 (A5 West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (Westside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (Westside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (Westside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (Westside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1	Infinite Saturation Flow	Inf	Inf
16/1 (Green Lane Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
16/2 (Green Lane Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/1 (West Side Green Lane Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
17/2 (West Side Green Lane Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/3 (West Side Green Lane Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
18/1	Infinite Saturation Flow	Inf	Inf

18/2	Infinite Saturation Flow	Inf	Inf

Scenario 6: '2026 R + D AM' (FG6: '2026 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination							
Origin		A	B	C	D	E	F	Tot.
	A	0	178	52	0	160	96	486
	B	132	12	188	480	1158	80	2050
	C	46	124	0	44	116	12	342
	D	0	554	48	0	352	262	1216
	E	154	1412	154	250	0	162	2132
	F	134	74	18	120	76	0	422
	Tot.	466	2354	460	894	1862	612	6648

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2026 R + D AM
Junction: Junction 10 M42	
1/1 (short)	230
1/2 (with short)	339(In) 109(Out)
1/3	147
2/1	1035
2/2	1141
2/3	590
2/4	76
3/1	1124
3/2	1230
4/1	383
4/2	259
4/3	174
4/4	158
5/1 (short)	188
5/2 (with short)	668(In) 480(Out)
5/3	718
5/4	664
6/1	488
6/2	362
6/3	892
6/4	822
7/1	460
8/1 (short)	149
8/2 (with short)	342(In) 193(Out)
9/1	510
9/2	384
10/1 (short)	144
10/2 (with short)	289(In) 145(Out)
10/3	63
10/4	419
10/5	445
11/1	997
11/2	1015
12/1	642
12/2	644

Full Input Data And Results

12/3	576
13/1 (short)	1156
13/2 (with short)	1728(In) 572(Out)
13/3	404
14/1 (short)	450
14/2 (with short)	790(In) 340(Out)
14/3 (with short)	576(In) 528(Out)
14/4 (short)	48
15/1	612
16/1	208
16/2	214
17/1	1334
17/2	1100
17/3	452
18/1	233
18/2	233

Lane Saturation Flows

Junction: Junction 10 M42								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (M42 North On-Slip Approach Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (M42 North On-Slip Approach Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (M42 North On-Slip Approach Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (North Bridge Eastbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (North Bridge Eastbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (North Bridge Eastbound Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/4 (North Bridge Eastbound Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Eastside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Eastside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Eastside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/4 (Eastside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A5 Watling Street Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (A5 Watling Street Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A5 Watling Street Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A5 Watling Street Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (East Side Trinity Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (East Side Trinity Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (East Side Trinity Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (East Side Trinity Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Trinity Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

8/2 (Trinity Road Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/1	Infinite Saturation Flow	Inf	Inf
9/2	Infinite Saturation Flow	Inf	Inf
10/1 (M42 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (M42 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (M42 Northbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/4 (M42 Northbound Offslip Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
10/5 (M42 Northbound Offslip Lane 5)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (South Bridge Westbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (South Bridge Westbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf
13/1 (A5 West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (A5 West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
13/3 (A5 West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (Westside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (Westside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (Westside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (Westside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1	Infinite Saturation Flow	Inf	Inf
16/1 (Green Lane Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
16/2 (Green Lane Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/1 (West Side Green Lane Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
17/2 (West Side Green Lane Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/3 (West Side Green Lane Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
18/1	Infinite Saturation Flow	Inf	Inf

18/2	Infinite Saturation Flow	Inf	Inf

Scenario 7: '2026 R PM' (FG7: '2026 Reference PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination							
Origin		A	B	C	D	E	F	Tot.
	A	0	146	28	0	148	102	424
	B	112	14	154	410	1612	32	2334
	C	48	120	0	48	172	12	400
	D	0	454	52	0	438	138	1082
	E	86	948	98	190	0	140	1462
	F	170	100	14	172	150	0	606
	Tot.	416	1782	346	820	2520	424	6308

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2026 R PM
Junction: Junction 10 M42	
1/1 (short)	174
1/2 (with short)	301(In) 127(Out)
1/3	123
2/1	753
2/2	883
2/3	526
2/4	150
3/1	826
3/2	956
4/1	308
4/2	246
4/3	229
4/4	171
5/1 (short)	154
5/2 (with short)	564(In) 410(Out)
5/3	876
5/4	894
6/1	450
6/2	322
6/3	1105
6/4	1065
7/1	346
8/1 (short)	198
8/2 (with short)	400(In) 202(Out)
9/1	474
9/2	346
10/1 (short)	175
10/2 (with short)	349(In) 174(Out)
10/3	89
10/4	322
10/5	322
11/1	1255
11/2	1267
12/1	802
12/2	802
12/3	916

Full Input Data And Results

13/1 (short)	705
13/2 (with short)	1174(In) 469(Out)
13/3	288
14/1 (short)	284
14/2 (with short)	634(In) 350(Out)
14/3 (with short)	450(In) 398(Out)
14/4 (short)	52
15/1	424
16/1	270
16/2	336
17/1	915
17/2	867
17/3	340
18/1	208
18/2	208

Lane Saturation Flows

Junction: Junction 10 M42

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (M42 North On-Slip Approach Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (M42 North On-Slip Approach Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (M42 North On-Slip Approach Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (North Bridge Eastbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (North Bridge Eastbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (North Bridge Eastbound Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/4 (North Bridge Eastbound Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Eastside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Eastside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Eastside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/4 (Eastside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A5 Watling Street Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (A5 Watling Street Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A5 Watling Street Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A5 Watling Street Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (East Side Trinity Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (East Side Trinity Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (East Side Trinity Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (East Side Trinity Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Trinity Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

8/2 (Trinity Road Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/1	Infinite Saturation Flow	Inf	Inf
9/2	Infinite Saturation Flow	Inf	Inf
10/1 (M42 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (M42 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (M42 Northbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/4 (M42 Northbound Offslip Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
10/5 (M42 Northbound Offslip Lane 5)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (South Bridge Westbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (South Bridge Westbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf
13/1 (A5 West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (A5 West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
13/3 (A5 West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (Westside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (Westside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (Westside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (Westside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1	Infinite Saturation Flow	Inf	Inf
16/1 (Green Lane Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
16/2 (Green Lane Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/1 (West Side Green Lane Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
17/2 (West Side Green Lane Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/3 (West Side Green Lane Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
18/1	Infinite Saturation Flow	Inf	Inf

18/2	Infinite Saturation Flow	Inf	Inf

Scenario 8: '2026 R + D PM' (FG8: '2026 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination							
Origin		A	B	C	D	E	F	Tot.
	A	0	162	28	0	148	102	440
	B	122	14	162	484	1684	32	2498
	C	48	126	0	48	172	12	406
	D	0	486	52	0	438	138	1114
	E	86	1010	98	190	0	140	1524
	F	170	100	14	172	150	0	606
	Tot.	426	1898	354	894	2592	424	6588

Traffic Lane Flows

Lane	Scenario 8: 2026 R + D PM
Junction: Junction 10 M42	
1/1 (short)	190
1/2 (with short)	297(In) 107(Out)
1/3	143
2/1	793
2/2	943
2/3	526
2/4	150
3/1	874
3/2	1024
4/1	314
4/2	240
4/3	218
4/4	182
5/1 (short)	162
5/2 (with short)	646(In) 484(Out)
5/3	954
5/4	898
6/1	465
6/2	381
6/3	1172
6/4	1080
7/1	354
8/1 (short)	173
8/2 (with short)	406(In) 233(Out)
9/1	489
9/2	405
10/1 (short)	170
10/2 (with short)	341(In) 171(Out)
10/3	97
10/4	338
10/5	338
11/1	1297
11/2	1313
12/1	819
12/2	819

Full Input Data And Results

12/3	954
13/1 (short)	742
13/2 (with short)	1236(In) 494(Out)
13/3	288
14/1 (short)	284
14/2 (with short)	655(In) 371(Out)
14/3 (with short)	477(In) 425(Out)
14/4 (short)	52
15/1	424
16/1	270
16/2	336
17/1	973
17/2	919
17/3	340
18/1	213
18/2	213

Lane Saturation Flows

Junction: Junction 10 M42								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (M42 North On-Slip Approach Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (M42 North On-Slip Approach Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (M42 North On-Slip Approach Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (North Bridge Eastbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (North Bridge Eastbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (North Bridge Eastbound Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/4 (North Bridge Eastbound Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Eastside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Eastside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Eastside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/4 (Eastside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A5 Watling Street Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (A5 Watling Street Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A5 Watling Street Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A5 Watling Street Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (East Side Trinity Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (East Side Trinity Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (East Side Trinity Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (East Side Trinity Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Trinity Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

8/2 (Trinity Road Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/1	Infinite Saturation Flow	Inf	Inf
9/2	Infinite Saturation Flow	Inf	Inf
10/1 (M42 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (M42 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (M42 Northbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/4 (M42 Northbound Offslip Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
10/5 (M42 Northbound Offslip Lane 5)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (South Bridge Westbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (South Bridge Westbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf
13/1 (A5 West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (A5 West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
13/3 (A5 West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (Westside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (Westside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (Westside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (Westside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1	Infinite Saturation Flow	Inf	Inf
16/1 (Green Lane Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
16/2 (Green Lane Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/1 (West Side Green Lane Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
17/2 (West Side Green Lane Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/3 (West Side Green Lane Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
18/1	Infinite Saturation Flow	Inf	Inf

18/2	Infinite Saturation Flow	Inf	Inf

Scenario 9: '2031 R AM' (FG9: '2031 Reference AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination							
Origin		A	B	C	D	E	F	Tot.
	A	0	172	50	0	184	100	506
	B	124	20	188	466	1152	90	2040
	C	54	110	0	42	132	8	346
	D	0	546	54	0	378	266	1244
	E	164	1358	152	282	0	156	2112
	F	140	92	18	120	82	0	452
	Tot.	482	2298	462	910	1928	620	6700

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 9: 2031 R AM
Junction: Junction 10 M42	
1/1 (short)	222
1/2 (with short)	349(In) 127(Out)
1/3	157
2/1	998
2/2	1128
2/3	626
2/4	82
3/1	1084
3/2	1214
4/1	407
4/2	269
4/3	195
4/4	171
5/1 (short)	188
5/2 (with short)	654(In) 466(Out)
5/3	708
5/4	678
6/1	508
6/2	360
6/3	903
6/4	849
7/1	462
8/1 (short)	159
8/2 (with short)	346(In) 187(Out)
9/1	529
9/2	381
10/1 (short)	155
10/2 (with short)	309(In) 154(Out)
10/3	69
10/4	416
10/5	450
11/1	1020
11/2	1036
12/1	665
12/2	664
12/3	599

Full Input Data And Results

13/1 (short)	1123
13/2 (with short)	1678(In) 555(Out)
13/3	434
14/1 (short)	464
14/2 (with short)	792(In) 328(Out)
14/3 (with short)	580(In) 526(Out)
14/4 (short)	54
15/1	620
16/1	232
16/2	220
17/1	1295
17/2	1081
17/3	488
18/1	241
18/2	241

Lane Saturation Flows

Junction: Junction 10 M42								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (M42 North On-Slip Approach Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (M42 North On-Slip Approach Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (M42 North On-Slip Approach Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (North Bridge Eastbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (North Bridge Eastbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (North Bridge Eastbound Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/4 (North Bridge Eastbound Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Eastside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Eastside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Eastside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/4 (Eastside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A5 Watling Street Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (A5 Watling Street Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A5 Watling Street Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A5 Watling Street Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (East Side Trinity Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (East Side Trinity Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (East Side Trinity Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (East Side Trinity Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Trinity Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

8/2 (Trinity Road Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/1	Infinite Saturation Flow	Inf	Inf
9/2	Infinite Saturation Flow	Inf	Inf
10/1 (M42 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (M42 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (M42 Northbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/4 (M42 Northbound Offslip Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
10/5 (M42 Northbound Offslip Lane 5)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (South Bridge Westbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (South Bridge Westbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf
13/1 (A5 West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (A5 West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
13/3 (A5 West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (Westside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (Westside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (Westside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (Westside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1	Infinite Saturation Flow	Inf	Inf
16/1 (Green Lane Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
16/2 (Green Lane Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/1 (West Side Green Lane Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
17/2 (West Side Green Lane Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/3 (West Side Green Lane Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
18/1	Infinite Saturation Flow	Inf	Inf

18/2	Infinite Saturation Flow	Inf	Inf

Scenario 10: '2031 R + D AM' (FG10: '2031 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
Origin		A	B	C	D	E	F	Tot.
	A	0	196	50	0	184	100	530
	B	124	20	192	480	1226	90	2132
	C	54	112	0	42	132	8	348
	D	0	600	54	0	378	266	1298
	E	164	1460	152	282	0	156	2214
	F	140	92	18	120	82	0	452
	Tot.	482	2480	466	924	2002	620	6974

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 10: 2031 R + D AM
Junction: Junction 10 M42	
1/1 (short)	246
1/2 (with short)	376(In) 130(Out)
1/3	154
2/1	1101
2/2	1183
2/3	626
2/4	82
3/1	1199
3/2	1281
4/1	377
4/2	299
4/3	194
4/4	172
5/1 (short)	192
5/2 (with short)	672(In) 480(Out)
5/3	760
5/4	700
6/1	525
6/2	357
6/3	954
6/4	872
7/1	466
8/1 (short)	143
8/2 (with short)	348(In) 205(Out)
9/1	546
9/2	378
10/1 (short)	154
10/2 (with short)	308(In) 154(Out)
10/3	70
10/4	450
10/5	470
11/1	1055
11/2	1077
12/1	682
12/2	681

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12/3	639
13/1 (short)	1182
13/2 (with short)	1780(In) 598(Out)
13/3	434
14/1 (short)	464
14/2 (with short)	827(In) 363(Out)
14/3 (with short)	601(In) 547(Out)
14/4 (short)	54
15/1	620
16/1	232
16/2	220
17/1	1389
17/2	1145
17/3	488
18/1	241
18/2	241

Lane Saturation Flows

Junction: Junction 10 M42

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (M42 North On-Slip Approach Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (M42 North On-Slip Approach Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (M42 North On-Slip Approach Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (North Bridge Eastbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (North Bridge Eastbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (North Bridge Eastbound Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/4 (North Bridge Eastbound Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Eastside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Eastside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Eastside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/4 (Eastside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A5 Watling Street Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (A5 Watling Street Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A5 Watling Street Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A5 Watling Street Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (East Side Trinity Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (East Side Trinity Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (East Side Trinity Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (East Side Trinity Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Trinity Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

8/2 (Trinity Road Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/1	Infinite Saturation Flow	Inf	Inf
9/2	Infinite Saturation Flow	Inf	Inf
10/1 (M42 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (M42 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (M42 Northbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/4 (M42 Northbound Offslip Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
10/5 (M42 Northbound Offslip Lane 5)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (South Bridge Westbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (South Bridge Westbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf
13/1 (A5 West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (A5 West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
13/3 (A5 West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (Westside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (Westside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (Westside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (Westside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1	Infinite Saturation Flow	Inf	Inf
16/1 (Green Lane Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
16/2 (Green Lane Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/1 (West Side Green Lane Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
17/2 (West Side Green Lane Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/3 (West Side Green Lane Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
18/1	Infinite Saturation Flow	Inf	Inf

18/2	Infinite Saturation Flow	Inf	Inf

Scenario 11: '2031 R PM' (FG11: '2031 Reference PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
Origin		A	B	C	D	E	F	Tot.
	A	0	132	36	0	156	98	422
	B	94	20	204	462	1700	30	2510
	C	48	114	0	48	194	16	420
	D	0	424	62	0	516	144	1146
	E	96	954	120	228	0	146	1544
	F	168	88	14	178	154	0	602
	Tot.	406	1732	436	916	2720	434	6644

Traffic Lane Flows

Lane	Scenario 11: 2031 R PM
Junction: Junction 10 M42	
1/1 (short)	168
1/2 (with short)	285(In) 117(Out)
1/3	137
2/1	723
2/2	877
2/3	602
2/4	154
3/1	789
3/2	943
4/1	355
4/2	283
4/3	226
4/4	182
5/1 (short)	204
5/2 (with short)	666(In) 462(Out)
5/3	936
5/4	908
6/1	497
6/2	371
6/3	1162
6/4	1090
7/1	436
8/1 (short)	186
8/2 (with short)	420(In) 234(Out)
9/1	521
9/2	395
10/1 (short)	193
10/2 (with short)	387(In) 194(Out)
10/3	129
10/4	315
10/5	315
11/1	1300
11/2	1324
12/1	842
12/2	845
12/3	1033

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13/1 (short)	714
13/2 (with short)	1196(In) 482(Out)
13/3	348
14/1 (short)	288
14/2 (with short)	606(In) 318(Out)
14/3 (with short)	444(In) 382(Out)
14/4 (short)	62
15/1	434
16/1	256
16/2	346
17/1	886
17/2	864
17/3	410
18/1	203
18/2	203

Lane Saturation Flows

Junction: Junction 10 M42								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (M42 North On-Slip Approach Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (M42 North On-Slip Approach Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (M42 North On-Slip Approach Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (North Bridge Eastbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (North Bridge Eastbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (North Bridge Eastbound Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/4 (North Bridge Eastbound Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Eastside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Eastside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Eastside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/4 (Eastside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A5 Watling Street Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (A5 Watling Street Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A5 Watling Street Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A5 Watling Street Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (East Side Trinity Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (East Side Trinity Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (East Side Trinity Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (East Side Trinity Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Trinity Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

8/2 (Trinity Road Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/1	Infinite Saturation Flow	Inf	Inf
9/2	Infinite Saturation Flow	Inf	Inf
10/1 (M42 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (M42 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (M42 Northbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/4 (M42 Northbound Offslip Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
10/5 (M42 Northbound Offslip Lane 5)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (South Bridge Westbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (South Bridge Westbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf
13/1 (A5 West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (A5 West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
13/3 (A5 West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (Westside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (Westside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (Westside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (Westside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1	Infinite Saturation Flow	Inf	Inf
16/1 (Green Lane Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
16/2 (Green Lane Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/1 (West Side Green Lane Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
17/2 (West Side Green Lane Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/3 (West Side Green Lane Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
18/1	Infinite Saturation Flow	Inf	Inf

18/2	Infinite Saturation Flow	Inf	Inf

Scenario 12: '2031 R + D PM' (FG12: '2031 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination							
Origin		A	B	C	D	E	F	Tot.
	A	0	148	36	0	156	98	438
	B	100	20	208	540	1768	30	2666
	C	48	118	0	48	194	16	424
	D	0	456	62	0	516	144	1178
	E	96	1026	120	228	0	146	1616
	F	168	88	14	178	154	0	602
	Tot.	412	1856	440	994	2788	434	6924

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 12: 2031 R + D PM
Junction: Junction 10 M42	
1/1 (short)	184
1/2 (with short)	296(In) 112(Out)
1/3	142
2/1	764
2/2	944
2/3	602
2/4	154
3/1	838
3/2	1018
4/1	351
4/2	287
4/3	222
4/4	186
5/1 (short)	208
5/2 (with short)	748(In) 540(Out)
5/3	988
5/4	930
6/1	576
6/2	370
6/3	1210
6/4	1116
7/1	440
8/1 (short)	182
8/2 (with short)	424(In) 242(Out)
9/1	600
9/2	394
10/1 (short)	187
10/2 (with short)	373(In) 186(Out)
10/3	143
10/4	331
10/5	331
11/1	1344
11/2	1358
12/1	859
12/2	858

Full Input Data And Results

12/3	1071
13/1 (short)	749
13/2 (with short)	1268(In) 519(Out)
13/3	348
14/1 (short)	288
14/2 (with short)	629(In) 341(Out)
14/3 (with short)	463(In) 401(Out)
14/4 (short)	62
15/1	434
16/1	256
16/2	346
17/1	944
17/2	920
17/3	410
18/1	206
18/2	206

Lane Saturation Flows

Junction: Junction 10 M42								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (M42 North On-Slip Approach Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (M42 North On-Slip Approach Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (M42 North On-Slip Approach Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (North Bridge Eastbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (North Bridge Eastbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (North Bridge Eastbound Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/4 (North Bridge Eastbound Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Eastside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Eastside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Eastside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/4 (Eastside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A5 Watling Street Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (A5 Watling Street Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A5 Watling Street Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A5 Watling Street Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (East Side Trinity Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (East Side Trinity Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (East Side Trinity Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (East Side Trinity Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Trinity Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

8/2 (Trinity Road Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/1	Infinite Saturation Flow	Inf	Inf
9/2	Infinite Saturation Flow	Inf	Inf
10/1 (M42 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (M42 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (M42 Northbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/4 (M42 Northbound Offslip Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
10/5 (M42 Northbound Offslip Lane 5)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (South Bridge Westbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (South Bridge Westbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf
13/1 (A5 West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (A5 West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
13/3 (A5 West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (Westside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (Westside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (Westside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (Westside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1	Infinite Saturation Flow	Inf	Inf
16/1 (Green Lane Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
16/2 (Green Lane Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/1 (West Side Green Lane Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
17/2 (West Side Green Lane Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/3 (West Side Green Lane Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
18/1	Infinite Saturation Flow	Inf	Inf

18/2	Infinite Saturation Flow	Inf	Inf

Scenario 13: '2031 L AM' (FG13: '2031 Local Plan AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination							
Origin		A	B	C	D	E	F	Tot.
	A	0	162	60	0	176	96	494
	B	126	14	208	766	1336	94	2544
	C	48	104	0	44	120	0	316
	D	0	586	54	0	388	256	1284
	E	144	1422	168	338	0	156	2228
	F	126	86	16	112	92	0	432
	Tot.	444	2374	506	1260	2112	602	7298

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 13: 2031 L AM
Junction: Junction 10 M42	
1/1 (short)	222
1/2 (with short)	347(In) 125(Out)
1/3	147
2/1	1069
2/2	1143
2/3	688
2/4	92
3/1	1150
3/2	1224
4/1	406
4/2	342
4/3	188
4/4	176
5/1 (short)	208
5/2 (with short)	974(In) 766(Out)
5/3	818
5/4	752
6/1	714
6/2	502
6/3	1006
6/4	928
7/1	506
8/1 (short)	130
8/2 (with short)	316(In) 186(Out)
9/1	736
9/2	524
10/1 (short)	159
10/2 (with short)	319(In) 160(Out)
10/3	69
10/4	442
10/5	454
11/1	1092
11/2	1114
12/1	705
12/2	706
12/3	701

Full Input Data And Results

13/1 (short)	1141
13/2 (with short)	1722(In) 581(Out)
13/3	506
14/1 (short)	446
14/2 (with short)	807(In) 361(Out)
14/3 (with short)	571(In) 517(Out)
14/4 (short)	54
15/1	602
16/1	212
16/2	220
17/1	1346
17/2	1098
17/3	560
18/1	222
18/2	222

Lane Saturation Flows

Junction: Junction 10 M42								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (M42 North On-Slip Approach Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (M42 North On-Slip Approach Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (M42 North On-Slip Approach Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (North Bridge Eastbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (North Bridge Eastbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (North Bridge Eastbound Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/4 (North Bridge Eastbound Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Eastside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Eastside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Eastside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/4 (Eastside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A5 Watling Street Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (A5 Watling Street Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A5 Watling Street Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A5 Watling Street Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (East Side Trinity Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (East Side Trinity Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (East Side Trinity Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (East Side Trinity Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Trinity Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

8/2 (Trinity Road Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/1	Infinite Saturation Flow	Inf	Inf
9/2	Infinite Saturation Flow	Inf	Inf
10/1 (M42 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (M42 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (M42 Northbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/4 (M42 Northbound Offslip Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
10/5 (M42 Northbound Offslip Lane 5)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (South Bridge Westbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (South Bridge Westbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf
13/1 (A5 West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (A5 West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
13/3 (A5 West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (Westside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (Westside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (Westside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (Westside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1	Infinite Saturation Flow	Inf	Inf
16/1 (Green Lane Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
16/2 (Green Lane Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/1 (West Side Green Lane Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
17/2 (West Side Green Lane Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/3 (West Side Green Lane Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
18/1	Infinite Saturation Flow	Inf	Inf

18/2	Infinite Saturation Flow	Inf	Inf

Scenario 14: '2031 L + D AM' (FG14: '2031 Local Plan + Development AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination							
Origin		A	B	C	D	E	F	Tot.
	A	0	190	60	0	176	96	522
	B	132	14	208	780	1418	94	2646
	C	48	104	0	44	120	0	316
	D	0	632	54	0	388	256	1330
	E	144	1532	168	338	0	156	2338
	F	126	86	16	112	92	0	432
	Tot.	450	2558	506	1274	2194	602	7584

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 14: 2031 L + D AM
Junction: Junction 10 M42	
1/1 (short)	250
1/2 (with short)	375(In) 125(Out)
1/3	147
2/1	1133
2/2	1235
2/3	688
2/4	92
3/1	1228
3/2	1330
4/1	403
4/2	345
4/3	195
4/4	169
5/1 (short)	208
5/2 (with short)	988(In) 780(Out)
5/3	856
5/4	802
6/1	737
6/2	493
6/3	1051
6/4	971
7/1	506
8/1 (short)	132
8/2 (with short)	316(In) 184(Out)
9/1	759
9/2	515
10/1 (short)	162
10/2 (with short)	324(In) 162(Out)
10/3	64
10/4	472
10/5	470
11/1	1139
11/2	1155
12/1	732
12/2	731

Full Input Data And Results

12/3	731
13/1 (short)	1162
13/2 (with short)	1832(In) 670(Out)
13/3	506
14/1 (short)	446
14/2 (with short)	842(In) 396(Out)
14/3 (with short)	588(In) 534(Out)
14/4 (short)	54
15/1	602
16/1	212
16/2	220
17/1	1402
17/2	1204
17/3	560
18/1	225
18/2	225

Lane Saturation Flows

Junction: Junction 10 M42

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (M42 North On-Slip Approach Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (M42 North On-Slip Approach Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (M42 North On-Slip Approach Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (North Bridge Eastbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (North Bridge Eastbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (North Bridge Eastbound Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/4 (North Bridge Eastbound Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Eastside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Eastside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Eastside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/4 (Eastside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A5 Watling Street Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (A5 Watling Street Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A5 Watling Street Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A5 Watling Street Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (East Side Trinity Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (East Side Trinity Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (East Side Trinity Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (East Side Trinity Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Trinity Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

8/2 (Trinity Road Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/1	Infinite Saturation Flow	Inf	Inf
9/2	Infinite Saturation Flow	Inf	Inf
10/1 (M42 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (M42 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (M42 Northbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/4 (M42 Northbound Offslip Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
10/5 (M42 Northbound Offslip Lane 5)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (South Bridge Westbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (South Bridge Westbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf
13/1 (A5 West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (A5 West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
13/3 (A5 West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (Westside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (Westside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (Westside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (Westside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1	Infinite Saturation Flow	Inf	Inf
16/1 (Green Lane Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
16/2 (Green Lane Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/1 (West Side Green Lane Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
17/2 (West Side Green Lane Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/3 (West Side Green Lane Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
18/1	Infinite Saturation Flow	Inf	Inf

18/2	Infinite Saturation Flow	Inf	Inf

Scenario 15: '2031 L PM' (FG15: '2031 Local Plan PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination							
		A	B	C	D	E	F	Tot.
Origin	A	0	120	36	0	158	90	404
	B	116	18	160	482	1732	50	2558
	C	50	100	0	48	214	24	436
	D	0	714	60	0	514	132	1420
	E	102	1226	126	248	0	126	1828
	F	160	102	14	172	148	0	596
	Tot.	428	2280	396	950	2766	422	7242

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 15: 2031 L PM
Junction: Junction 10 M42	
1/1 (short)	156
1/2 (with short)	275(In) 119(Out)
1/3	129
2/1	979
2/2	1181
2/3	620
2/4	148
3/1	1039
3/2	1241
4/1	370
4/2	286
4/3	227
4/4	169
5/1 (short)	160
5/2 (with short)	642(In) 482(Out)
5/3	966
5/4	950
6/1	517
6/2	385
6/3	1193
6/4	1119
7/1	396
8/1 (short)	200
8/2 (with short)	436(In) 236(Out)
9/1	541
9/2	409
10/1 (short)	186
10/2 (with short)	372(In) 186(Out)
10/3	142
10/4	452
10/5	454
11/1	1345
11/2	1355
12/1	859
12/2	858
12/3	1049

Full Input Data And Results

13/1 (short)	818
13/2 (with short)	1454(In) 636(Out)
13/3	374
14/1 (short)	296
14/2 (with short)	782(In) 486(Out)
14/3 (with short)	572(In) 512(Out)
14/4 (short)	60
15/1	422
16/1	262
16/2	334
17/1	1178
17/2	1148
17/3	434
18/1	214
18/2	214

Lane Saturation Flows

Junction: Junction 10 M42

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (M42 North On-Slip Approach Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (M42 North On-Slip Approach Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (M42 North On-Slip Approach Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (North Bridge Eastbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (North Bridge Eastbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (North Bridge Eastbound Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/4 (North Bridge Eastbound Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Eastside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Eastside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Eastside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/4 (Eastside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A5 Watling Street Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (A5 Watling Street Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A5 Watling Street Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A5 Watling Street Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (East Side Trinity Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (East Side Trinity Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (East Side Trinity Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (East Side Trinity Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Trinity Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

8/2 (Trinity Road Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/1	Infinite Saturation Flow	Inf	Inf
9/2	Infinite Saturation Flow	Inf	Inf
10/1 (M42 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (M42 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (M42 Northbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/4 (M42 Northbound Offslip Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
10/5 (M42 Northbound Offslip Lane 5)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (South Bridge Westbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (South Bridge Westbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf
13/1 (A5 West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (A5 West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
13/3 (A5 West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (Westside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (Westside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (Westside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (Westside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1	Infinite Saturation Flow	Inf	Inf
16/1 (Green Lane Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
16/2 (Green Lane Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/1 (West Side Green Lane Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
17/2 (West Side Green Lane Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/3 (West Side Green Lane Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
18/1	Infinite Saturation Flow	Inf	Inf

18/2	Infinite Saturation Flow	Inf	Inf

Scenario 16: '2031 L + D PM' (FG16: '2031 Local Plan + Development PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination							
Origin		A	B	C	D	E	F	Tot.
	A	0	136	36	0	158	90	420
	B	128	18	162	560	1800	50	2718
	C	50	108	0	48	214	24	444
	D	0	744	60	0	514	132	1450
	E	102	1306	126	248	0	126	1908
	F	160	102	14	172	148	0	596
	Tot.	440	2414	398	1028	2834	422	7536

Traffic Lane Flows

Lane	Scenario 16: 2031 L + D PM
Junction: Junction 10 M42	
1/1 (short)	172
1/2 (with short)	290(In) 118(Out)
1/3	130
2/1	1042
2/2	1236
2/3	620
2/4	148
3/1	1110
3/2	1304
4/1	358
4/2	298
4/3	225
4/4	171
5/1 (short)	162
5/2 (with short)	722(In) 560(Out)
5/3	1006
5/4	990
6/1	583
6/2	397
6/3	1231
6/4	1161
7/1	398
8/1 (short)	204
8/2 (with short)	444(In) 240(Out)
9/1	607
9/2	421
10/1 (short)	177
10/2 (with short)	353(In) 176(Out)
10/3	161
10/4	466
10/5	470
11/1	1387
11/2	1401
12/1	870
12/2	870

Full Input Data And Results

12/3	1094
13/1 (short)	851
13/2 (with short)	1534(In) 683(Out)
13/3	374
14/1 (short)	296
14/2 (with short)	808(In) 512(Out)
14/3 (with short)	596(In) 536(Out)
14/4 (short)	60
15/1	422
16/1	262
16/2	334
17/1	1237
17/2	1219
17/3	434
18/1	220
18/2	220

Lane Saturation Flows

Junction: Junction 10 M42								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (M42 North On-Slip Approach Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
1/2 (M42 North On-Slip Approach Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
1/3 (M42 North On-Slip Approach Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/1 (North Bridge Eastbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
2/2 (North Bridge Eastbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
2/3 (North Bridge Eastbound Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
2/4 (North Bridge Eastbound Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Eastside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Eastside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Eastside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/4 (Eastside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (A5 Watling Street Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (A5 Watling Street Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (A5 Watling Street Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/4 (A5 Watling Street Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (East Side Trinity Gyratory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (East Side Trinity Gyratory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (East Side Trinity Gyratory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (East Side Trinity Gyratory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1	Infinite Saturation Flow						Inf	Inf
8/1 (Trinity Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

8/2 (Trinity Road Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/1	Infinite Saturation Flow	Inf	Inf
9/2	Infinite Saturation Flow	Inf	Inf
10/1 (M42 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (M42 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (M42 Northbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/4 (M42 Northbound Offslip Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
10/5 (M42 Northbound Offslip Lane 5)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (South Bridge Westbound Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (South Bridge Westbound Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf
13/1 (A5 West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (A5 West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
13/3 (A5 West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (Westside A5 Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (Westside A5 Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (Westside A5 Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (Westside A5 Gyratory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1	Infinite Saturation Flow	Inf	Inf
16/1 (Green Lane Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
16/2 (Green Lane Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/1 (West Side Green Lane Gyratory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
17/2 (West Side Green Lane Gyratory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
17/3 (West Side Green Lane Gyratory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
18/1	Infinite Saturation Flow	Inf	Inf

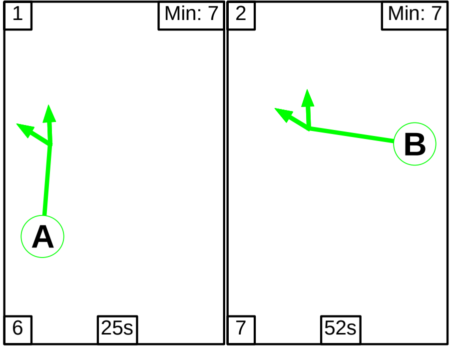
18/2	Infinite Saturation Flow	Inf	Inf

Scenario 1: '2021 R AM' (FG1: '2021 Reference AM Peak', Plan 1: 'Network Control Plan 1')

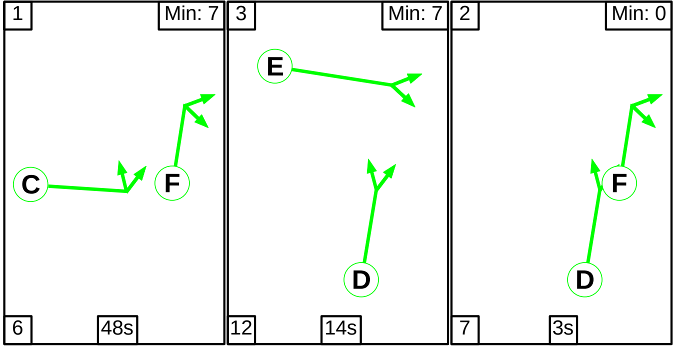
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

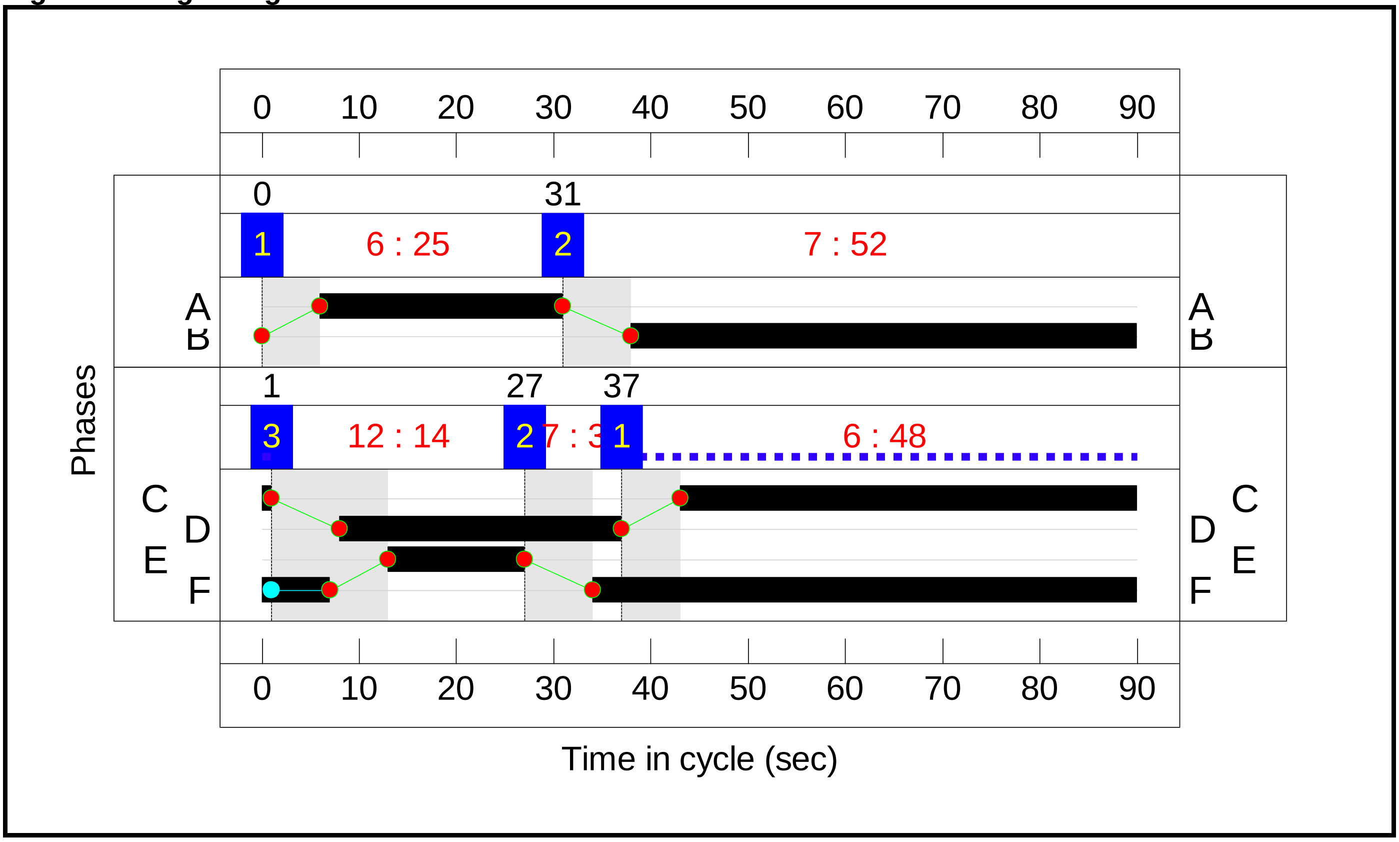
Stage Stream: 1

Stage	1	2
Duration	25	52
Change Point	0	31

Stage Stream: 2

Stage	1	3	2
Duration	48	14	3
Change Point	37	1	27

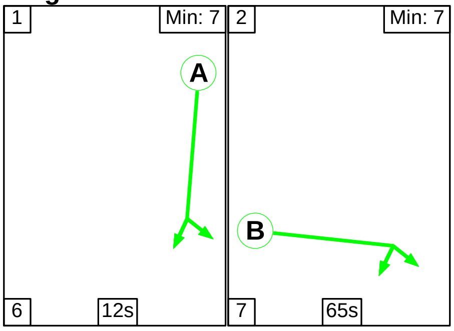
Signal Timings Diagram



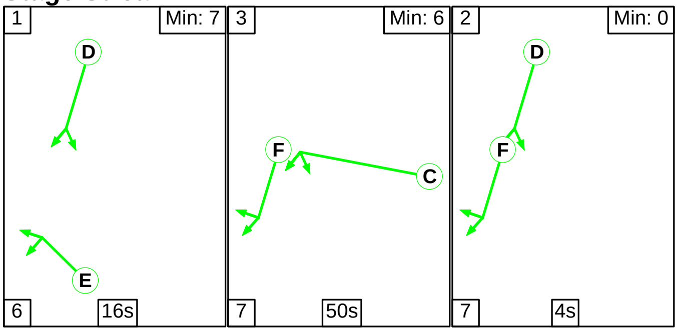
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

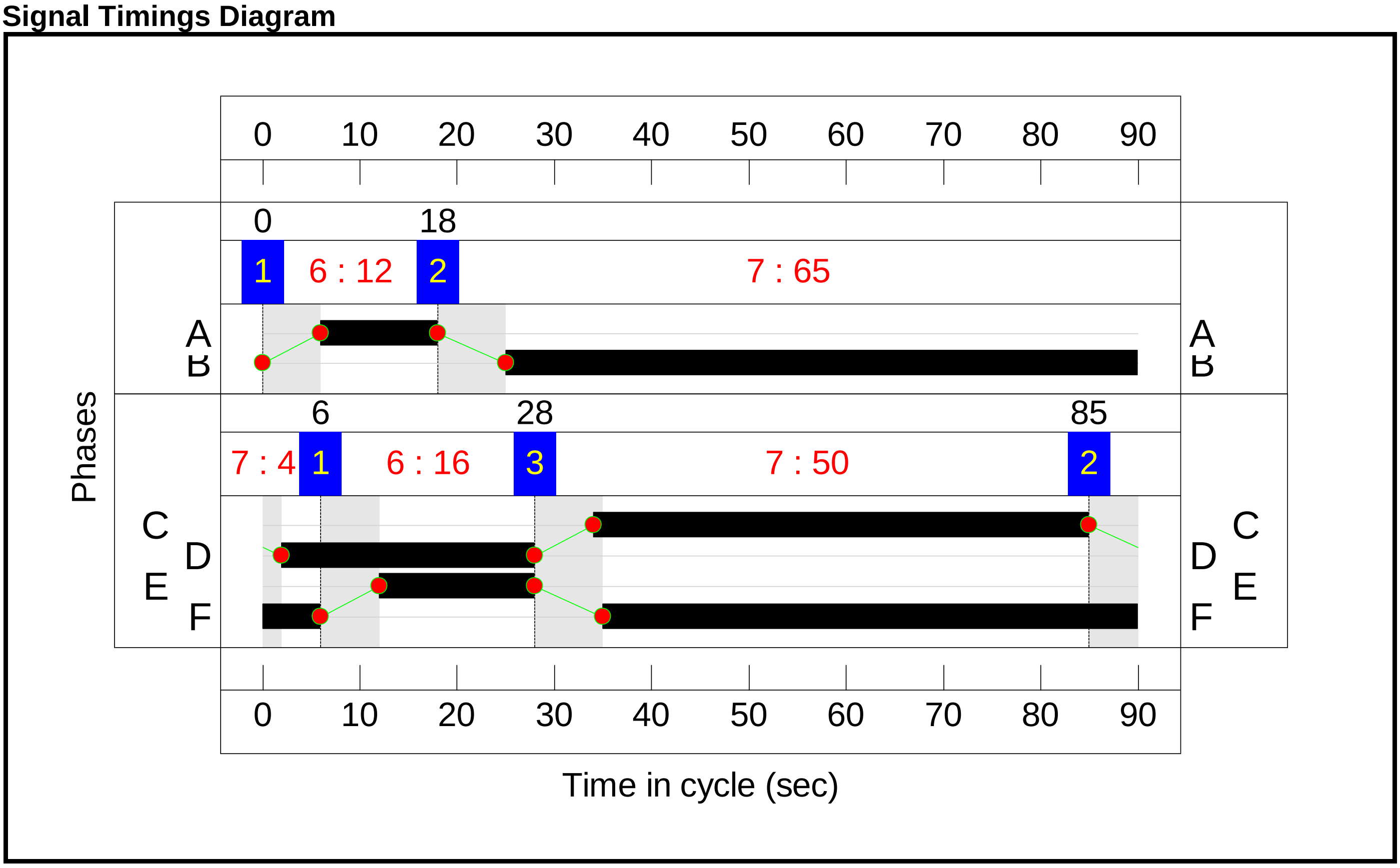
Stage Stream: 1

Stage	**1**	**2**
Duration	12	65
Change Point	0	18

Stage Stream: 2

Stage	**1**	**3**	**2**
Duration	16	50	4
Change Point	6	28	85

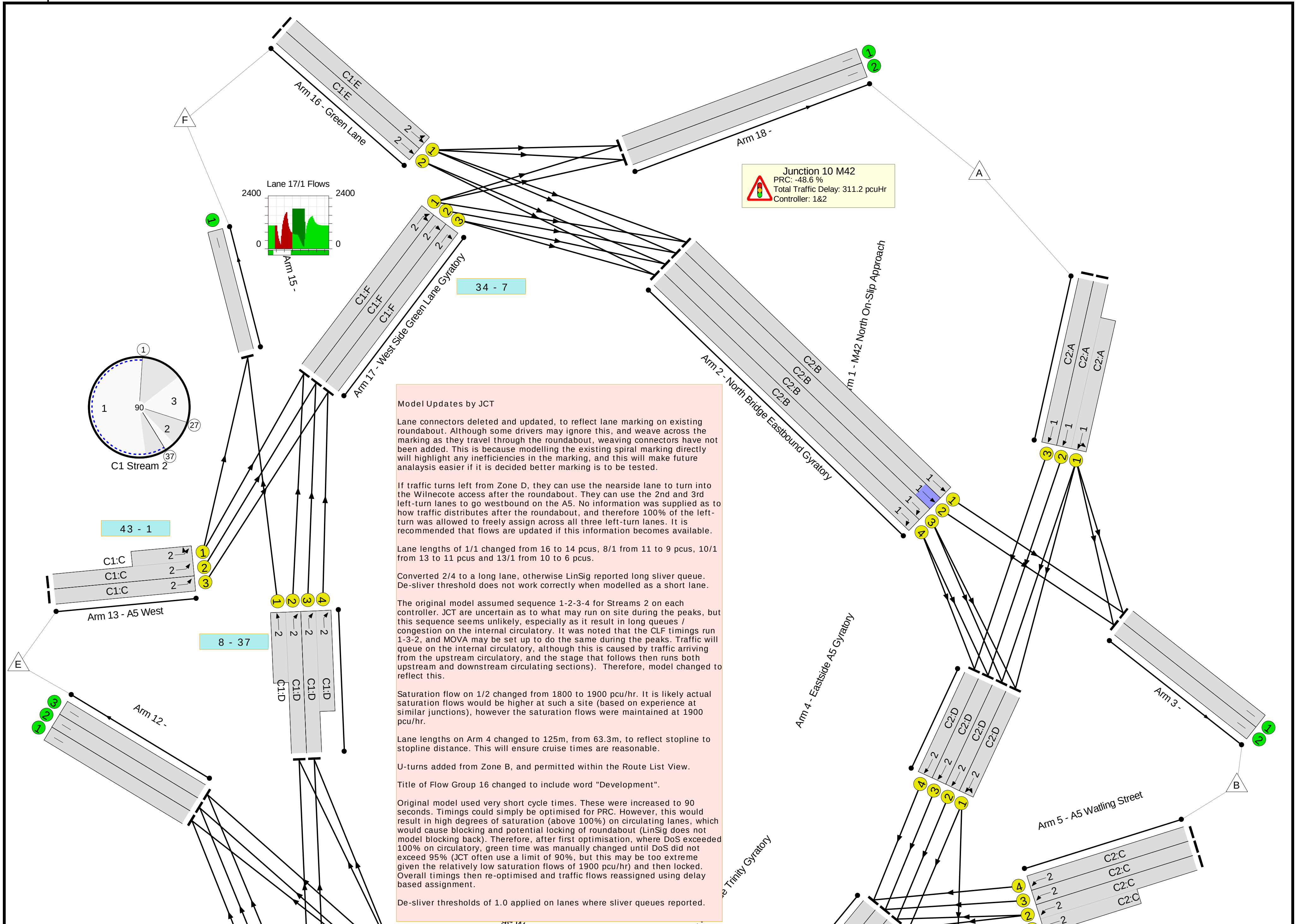
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



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Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**133.7%**
Junction 10 M42	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**133.7%**
1/2+1/1	M42 North On-Slip Approach Left Ahead	U	2:1	N/A	C2:A		1	12	-	317	1900:1900	269+274	46.5 : 70.0%
1/3	M42 North On-Slip Approach Ahead	U	2:1	N/A	C2:A		1	12	-	129	1900	274	47.0%
2/1	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	65	-	942	1900	1393	53.7%
2/2	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	65	-	1052	1900	1393	66.7%
2/3	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	65	-	496	1900	1393	35.6%
2/4	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	65	-	76	1900	1393	5.5%
3/1		U	N/A	N/A	-		-	-	-	1015	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	1125	Inf	Inf	0.0%
4/1	Eastside A5 Gyratory Ahead Left	U	2:2	N/A	C2:D		1	26	-	329	1900	570	57.7%
4/2	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	26	-	213	1900	570	37.4%
4/3	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	26	-	193	1900	570	33.9%
4/4	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	26	-	137	1900	570	24.0%
5/2+5/1	A5 Watling Street Ahead Left	U	2:2	N/A	C2:C		1	51	-	678	1900:1900	897+360	53.9 : 53.9%
5/3	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	51	-	654	1900	1098	59.6%

Full Input Data And Results

5/4	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	51	-	626	1900	1098	57.0%
6/1	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	61	-	458	1900	1309	35.0%
6/2	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	61	-	356	1900	1309	27.2%
6/3	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	61	-	847	1900	1309	64.7%
6/4	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	61	-	763	1900	1309	58.3%
7/1		U	N/A	N/A	-		-	-	-	406	Inf	Inf	0.0%
8/2+8/1	Trinity Road Left Ahead	U	2:2	N/A	C2:E		1	16	-	320	1900:1900	359+242	53.2 : 53.2%
9/1		U	N/A	N/A	-		-	-	-	476	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	374	Inf	Inf	0.0%
10/2+10/1	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	25	-	247	1900:1900	493+489	25.2 : 25.2%
10/3	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	25	-	51	1900	549	9.3%
10/4	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	25	-	402	1900	549	73.2%
10/5	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	25	-	448	1900	549	81.6%
11/1	South Bridge Westbound Gyratory Ahead	U	1:1	N/A	C1:B		1	52	-	940	1900	1119	84.0%
11/2	South Bridge Westbound Gyratory Ahead Right	U	1:1	N/A	C1:B		1	52	-	954	1900	1119	85.3%
12/1		U	N/A	N/A	-		-	-	-	593	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	594	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	487	Inf	Inf	0.0%
13/2+13/1	A5 West Left Left2	U	1:2	N/A	C1:C		1	48	-	1542	1900:1900	364+789	133.7 : 133.7%
13/3	A5 West Left	U	1:2	N/A	C1:C		1	48	-	320	1900	1034	30.9%

Full Input Data And Results

14/2+14/1	Westside A5 Gyratory Ahead Ahead2	U	1:2	N/A	C1:D		1	29	-	785	1900:1900	335+494	94.7 : 94.7%
14/3+14/4	Westside A5 Gyratory Ahead	U	1:2	N/A	C1:D		1	29	-	583	1900:1900	613+55	87.3 : 87.3%
15/1		U	N/A	N/A	-		-	-	-	628	Inf	Inf	0.0%
16/1	Green Lane Ahead Left	U	1:2	N/A	C1:E		1	14	-	196	1900	317	61.9%
16/2	Green Lane Ahead	U	1:2	N/A	C1:E		1	14	-	204	1900	317	64.4%
17/1	West Side Green Lane Gyratory Right Ahead	U	1:2	N/A	C1:F		1	63	-	1212	1900	1351	73.0%
17/2	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	63	-	1022	1900	1351	66.5%
17/3	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	63	-	368	1900	1351	27.2%
18/1		U	N/A	N/A	-		-	-	-	218	Inf	Inf	0.0%
18/2		U	N/A	N/A	-		-	-	-	218	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**82.2**	**229.0**	**0.0**	**311.2**	**-**	**-**	**-**	**-**
Junction 10 M42	**-**	**-**	**0**	**0**	**0**	**82.2**	**229.0**	**0.0**	**311.2**	**-**	**-**	**-**	**-**
1/2+1/1	317	317	-	-	-	3.2	0.7	-	3.9	44.0	4.5	0.7	5.2
1/3	129	129	-	-	-	1.3	0.4	-	1.7	47.7	2.9	0.4	3.4
2/1	749	749	-	-	-	1.3	0.6	-	1.8	8.8	6.7	0.6	7.3
2/2	929	929	-	-	-	0.7	1.0	-	1.7	6.6	4.2	1.0	5.2
2/3	496	496	-	-	-	0.4	0.3	-	0.6	4.6	2.8	0.3	3.1
2/4	76	76	-	-	-	0.0	0.0	-	0.0	1.4	0.0	0.0	0.0
3/1	822	822	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	1002	1002	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	329	329	-	-	-	2.4	0.7	-	3.0	33.2	7.1	0.7	7.8
4/2	213	213	-	-	-	2.0	0.3	-	2.3	38.2	5.1	0.3	5.4
4/3	193	193	-	-	-	1.1	0.3	-	1.3	25.0	2.0	0.3	2.3
4/4	137	137	-	-	-	0.3	0.2	-	0.5	12.4	0.5	0.2	0.7
5/2+5/1	678	678	-	-	-	1.9	0.6	-	2.5	13.3	6.7	0.6	7.3
5/3	654	654	-	-	-	2.2	0.7	-	3.0	16.3	10.4	0.7	11.1
5/4	626	626	-	-	-	2.1	0.7	-	2.7	15.8	9.7	0.7	10.4
6/1	458	458	-	-	-	0.6	0.3	-	0.9	7.0	3.0	0.3	3.3
6/2	356	356	-	-	-	1.3	0.2	-	1.5	15.3	5.6	0.2	5.8
6/3	847	847	-	-	-	0.9	0.9	-	1.8	7.6	5.4	0.9	6.3
6/4	763	763	-	-	-	0.4	0.7	-	1.1	5.2	3.5	0.7	4.2
7/1	406	406	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2+8/1	320	320	-	-	-	2.9	0.6	-	3.5	38.8	4.3	0.6	4.9
9/1	476	476	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	374	374	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	247	247	-	-	-	1.7	0.2	-	1.8	26.8	2.3	0.2	2.5

Full Input Data And Results

10/3	51	51	-	-	-	0.3	0.1	-	0.4	27.0	0.9	0.1	1.0
10/4	402	402	-	-	-	3.2	1.3	-	4.6	40.9	9.0	1.3	10.4
10/5	448	448	-	-	-	3.7	2.1	-	5.8	46.9	10.3	2.1	12.5
11/1	940	940	-	-	-	1.8	2.6	-	4.4	16.8	7.0	2.6	9.6
11/2	954	954	-	-	-	2.3	2.8	-	5.1	19.1	11.8	2.8	14.6
12/1	593	593	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	594	594	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	487	487	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2+13/1	1542	1153	-	-	-	29.4	196.5	-	225.8	527.2	53.1	196.5	249.5
13/3	320	320	-	-	-	1.0	0.2	-	1.2	13.8	4.4	0.2	4.6
14/2+14/1	785	785	-	-	-	3.6	6.9	-	10.5	48.2	6.5	6.9	13.4
14/3+14/4	583	583	-	-	-	2.0	3.2	-	5.2	31.9	4.1	3.2	7.3
15/1	588	588	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	196	196	-	-	-	1.9	0.8	-	2.7	49.6	4.5	0.8	5.3
16/2	204	204	-	-	-	2.0	0.9	-	2.9	50.7	4.8	0.9	5.7
17/1	986	986	-	-	-	1.8	1.3	-	3.1	11.5	9.7	1.3	11.1
17/2	899	899	-	-	-	2.5	1.0	-	3.5	14.0	17.3	1.0	18.2
17/3	368	368	-	-	-	0.2	0.2	-	0.4	3.4	0.9	0.2	1.1
18/1	202	202	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/2	202	202	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 5.6 Total Delay for Signalled Lanes (pcuHr): 22.07 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -48.6 Total Delay for Signalled Lanes (pcuHr): 255.27 Cycle Time (s): 90
C2 Stream: 1 PRC for Signalled Lanes (%): 28.6 Total Delay for Signalled Lanes (pcuHr): 9.79 Cycle Time (s): 90
C2 Stream: 2 PRC for Signalled Lanes (%): 39.1 Total Delay for Signalled Lanes (pcuHr): 24.07 Cycle Time (s): 90
PRC Over All Lanes (%): -48.6 Total Delay Over All Lanes(pcuHr): 311.21

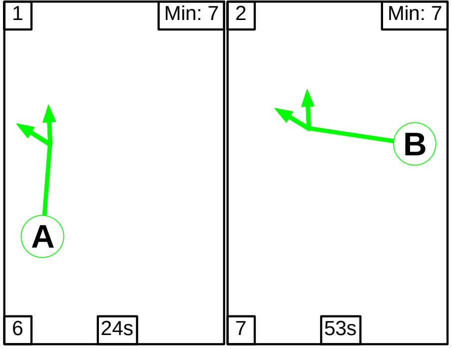
Full Input Data And Results

Scenario 2: '2021 R + D AM' (FG2: '2021 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

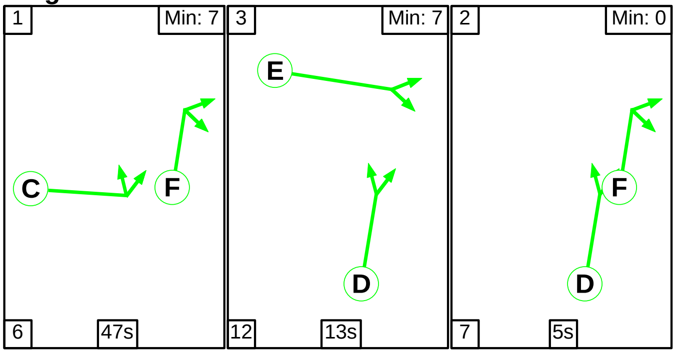
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

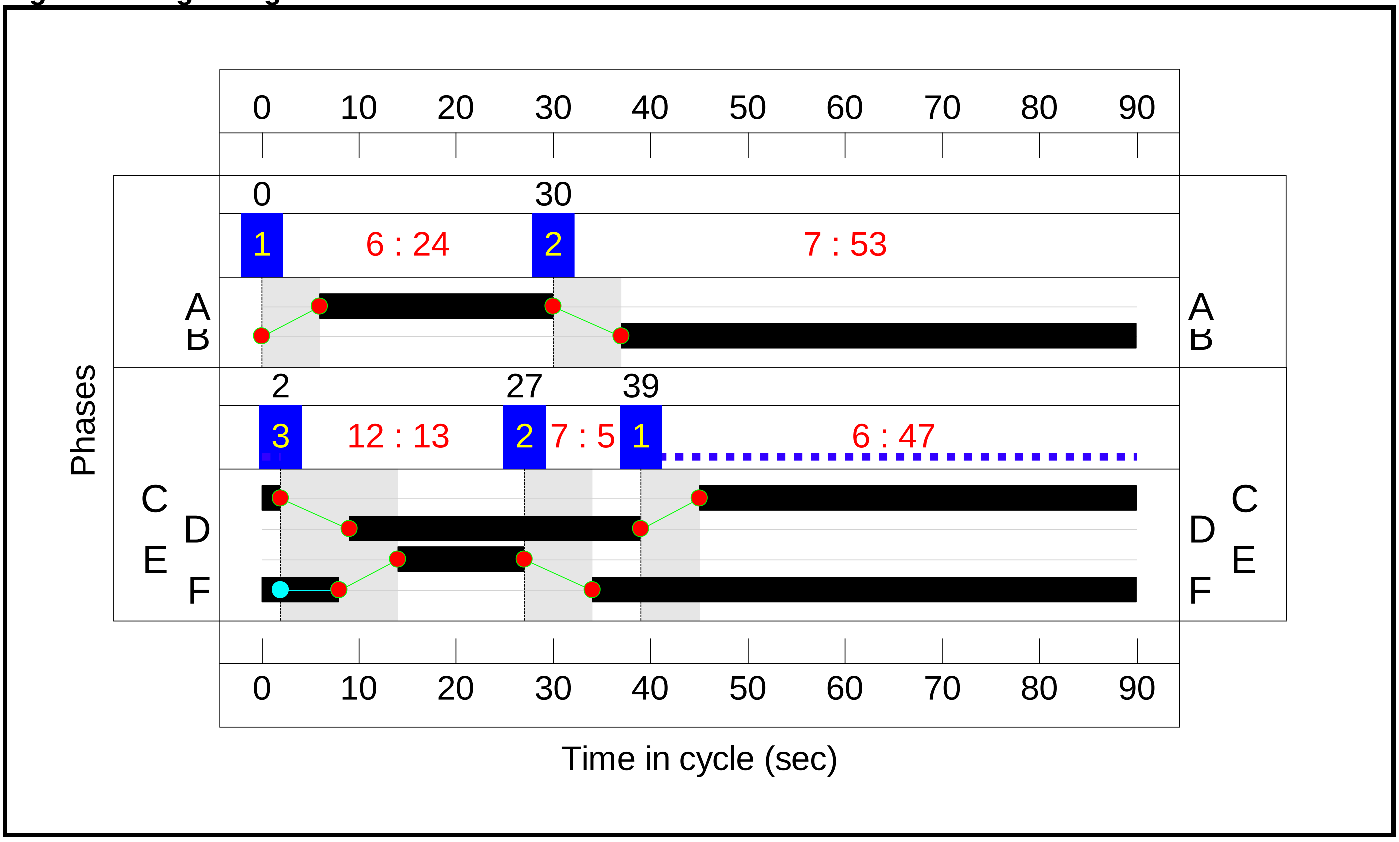
Stage Stream: 1

Stage	1	2
Duration	24	53
Change Point	0	30

Stage Stream: 2

Stage	1	3	2
Duration	47	13	5
Change Point	39	2	27

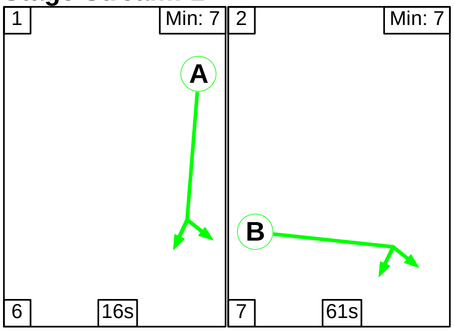
Signal Timings Diagram



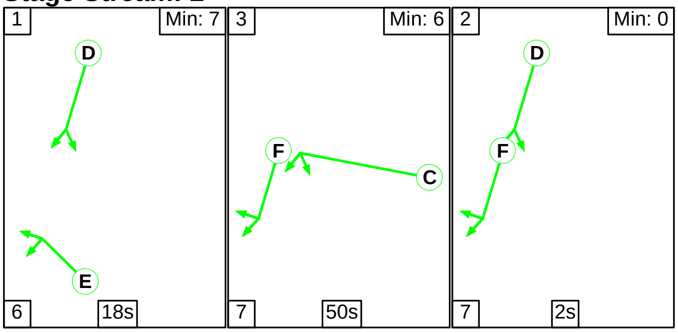
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

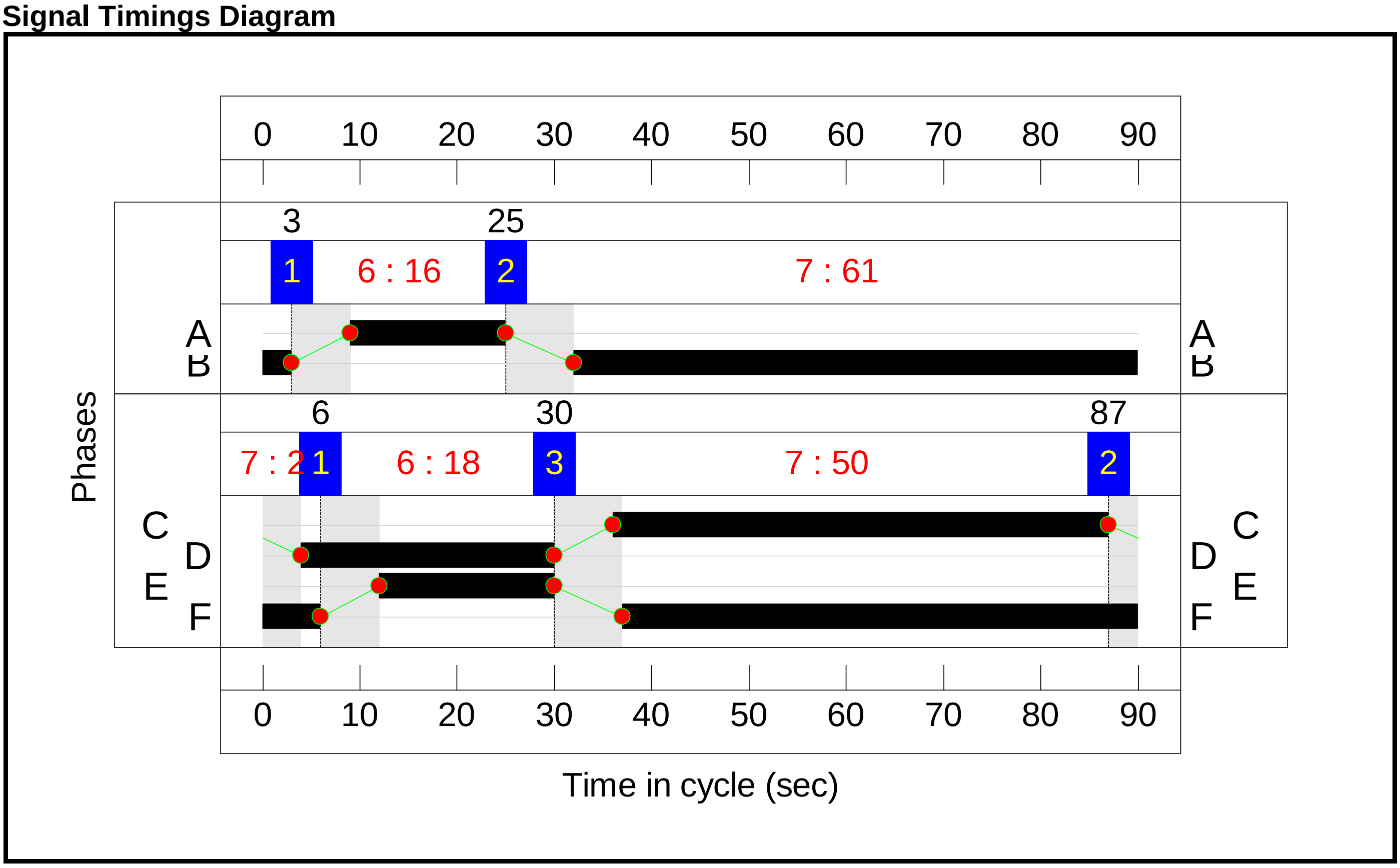
Stage Stream: 1

Stage	1	2
Duration	16	61
Change Point	3	25

Stage Stream: 2

Stage	1	3	2
Duration	18	50	2
Change Point	6	30	87

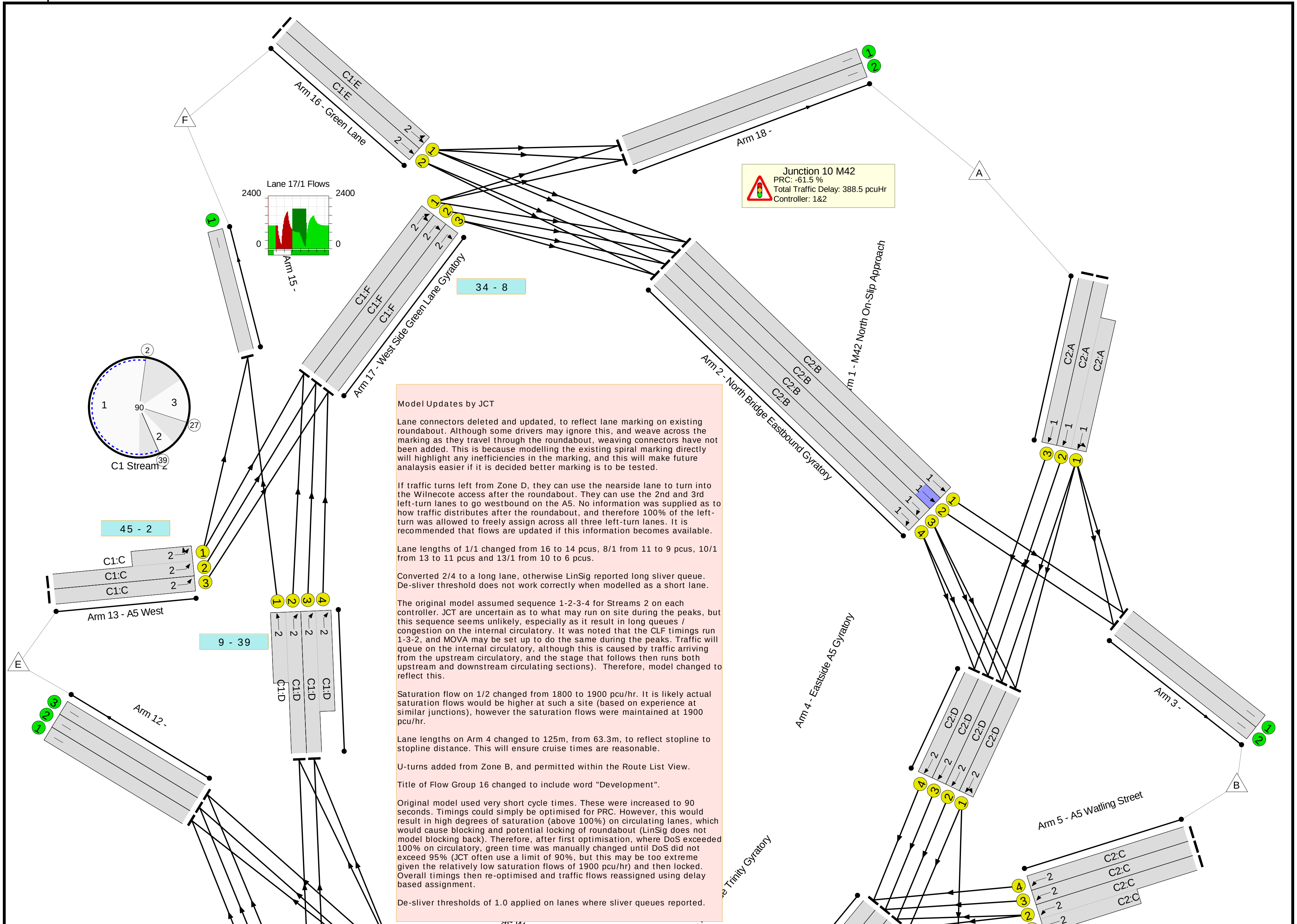
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



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De-sliver thresholds of 1.0 applied on lanes where sliver queues reported.

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**145.3%**
Junction 10 M42	-	-	**N/A**	-	-		-	-	-	-	-	-	**145.3%**
1/2+1/1	M42 North On-Slip Approach Left Ahead	U	2:1	N/A	C2:A		1	16	-	331	1900:1900	196+359	59.6 : 59.6%
1/3	M42 North On-Slip Approach Ahead	U	2:1	N/A	C2:A		1	16	-	137	1900	359	38.2%
2/1	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	61	-	1039	1900	1309	59.5%
2/2	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	61	-	1121	1900	1309	73.1%
2/3	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	61	-	496	1900	1309	37.9%
2/4	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	61	-	76	1900	1309	5.8%
3/1		U	N/A	N/A	-		-	-	-	1123	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	1205	Inf	Inf	0.0%
4/1	Eastside A5 Gyratory Ahead Left	U	2:2	N/A	C2:D		1	26	-	328	1900	570	57.5%
4/2	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	26	-	214	1900	570	37.5%
4/3	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	26	-	181	1900	570	31.8%
4/4	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	26	-	149	1900	570	26.1%
5/2+5/1	A5 Watling Street Ahead Left	U	2:2	N/A	C2:C		1	51	-	692	1900:1900	901+351	55.2 : 55.2%
5/3	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	51	-	696	1900	1098	63.4%

Full Input Data And Results

5/4	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	51	-	668	1900	1098	60.9%
6/1	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	59	-	457	1900	1267	36.1%
6/2	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	59	-	371	1900	1267	29.3%
6/3	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	59	-	877	1900	1267	69.2%
6/4	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	59	-	817	1900	1267	64.5%
7/1		U	N/A	N/A	-		-	-	-	406	Inf	Inf	0.0%
8/2+8/1	Trinity Road Left Ahead	U	2:2	N/A	C2:E		1	18	-	320	1900:1900	385+277	48.4 : 48.4%
9/1		U	N/A	N/A	-		-	-	-	475	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	389	Inf	Inf	0.0%
10/2+10/1	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	24	-	251	1900:1900	479+482	26.1 : 26.1%
10/3	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	24	-	47	1900	528	8.9%
10/4	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	24	-	443	1900	528	83.9%
10/5	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	24	-	467	1900	528	88.5%
11/1	South Bridge Westbound Gyratory Ahead	U	1:1	N/A	C1:B		1	53	-	975	1900	1140	85.5%
11/2	South Bridge Westbound Gyratory Ahead Right	U	1:1	N/A	C1:B		1	53	-	1003	1900	1140	88.0%
12/1		U	N/A	N/A	-		-	-	-	613	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	613	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	528	Inf	Inf	0.0%
13/2+13/1	A5 West Left Left2	U	1:2	N/A	C1:C		1	47	-	1648	1900:1900	363+771	145.3 : 145.3%
13/3	A5 West Left	U	1:2	N/A	C1:C		1	47	-	320	1900	1013	31.6%

Full Input Data And Results

14/2+14/1	Westside A5 Gyratory Ahead Ahead2	U	1:2	N/A	C1:D		1	30	-	827	1900:1900	380+495	94.5 : 94.5%
14/3+14/4	Westside A5 Gyratory Ahead	U	1:2	N/A	C1:D		1	30	-	605	1900:1900	633+55	88.0 : 88.0%
15/1		U	N/A	N/A	-		-	-	-	628	Inf	Inf	0.0%
16/1	Green Lane Ahead Left	U	1:2	N/A	C1:E		1	13	-	196	1900	296	66.3%
16/2	Green Lane Ahead	U	1:2	N/A	C1:E		1	13	-	204	1900	296	69.0%
17/1	West Side Green Lane Gyratory Right Ahead	U	1:2	N/A	C1:F		1	64	-	1320	1900	1372	74.3%
17/2	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	64	-	1084	1900	1372	67.0%
17/3	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	64	-	368	1900	1372	26.8%
18/1		U	N/A	N/A	-		-	-	-	220	Inf	Inf	0.0%
18/2		U	N/A	N/A	-		-	-	-	220	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**92.3**	**296.2**	**0.0**	**388.5**	**-**	**-**	**-**	**-**
Junction 10 M42	**-**	**-**	**0**	**0**	**0**	**92.3**	**296.2**	**0.0**	**388.5**	**-**	**-**	**-**	**-**
1/2+1/1	331	331	-	-	-	3.0	0.7	-	3.7	40.7	4.9	0.7	5.6
1/3	137	137	-	-	-	1.2	0.3	-	1.5	40.0	3.0	0.3	3.3
2/1	779	779	-	-	-	1.5	0.7	-	2.2	10.2	6.2	0.7	7.0
2/2	957	957	-	-	-	0.9	1.3	-	2.2	8.4	4.4	1.3	5.8
2/3	496	496	-	-	-	0.6	0.3	-	0.9	6.3	4.6	0.3	4.9
2/4	76	76	-	-	-	0.0	0.0	-	0.1	2.5	0.7	0.0	0.8
3/1	863	863	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	1041	1041	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	328	328	-	-	-	2.3	0.7	-	2.9	32.3	7.2	0.7	7.9
4/2	214	214	-	-	-	1.8	0.3	-	2.1	36.1	5.1	0.3	5.4
4/3	181	181	-	-	-	1.1	0.2	-	1.4	27.3	2.1	0.2	2.3
4/4	149	149	-	-	-	0.5	0.2	-	0.7	17.2	0.9	0.2	1.1
5/2+5/1	692	692	-	-	-	2.0	0.6	-	2.6	13.5	7.1	0.6	7.7
5/3	696	696	-	-	-	2.4	0.9	-	3.3	17.1	11.4	0.9	12.3
5/4	668	668	-	-	-	2.3	0.8	-	3.1	16.5	10.8	0.8	11.5
6/1	457	457	-	-	-	0.6	0.3	-	0.9	7.3	3.1	0.3	3.4
6/2	371	371	-	-	-	1.4	0.2	-	1.6	15.1	5.7	0.2	5.9
6/3	877	877	-	-	-	0.9	1.1	-	2.0	8.3	5.3	1.1	6.4
6/4	817	817	-	-	-	0.6	0.9	-	1.5	6.4	4.0	0.9	4.9
7/1	406	406	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2+8/1	320	320	-	-	-	2.7	0.5	-	3.2	35.9	4.0	0.5	4.5
9/1	475	475	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	389	389	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	251	251	-	-	-	1.8	0.2	-	1.9	27.7	2.4	0.2	2.6

Full Input Data And Results

10/3	47	47	-	-	-	0.3	0.0	-	0.4	27.9	0.9	0.0	0.9
10/4	443	443	-	-	-	3.8	2.5	-	6.2	50.7	10.3	2.5	12.8
10/5	467	467	-	-	-	4.0	3.5	-	7.5	57.7	11.2	3.5	14.6
11/1	975	975	-	-	-	2.0	2.9	-	4.9	18.1	7.6	2.9	10.4
11/2	1003	1003	-	-	-	2.3	3.5	-	5.8	20.9	10.3	3.5	13.7
12/1	613	613	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	613	613	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	528	528	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2+13/1	1648	1134	-	-	-	37.4	258.6	-	296.0	646.7	61.8	258.6	320.4
13/3	320	320	-	-	-	1.0	0.2	-	1.3	14.4	4.4	0.2	4.7
14/2+14/1	827	827	-	-	-	3.5	6.7	-	10.2	44.6	6.5	6.7	13.3
14/3+14/4	605	605	-	-	-	1.8	3.4	-	5.1	30.6	3.8	3.4	7.2
15/1	578	578	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	196	196	-	-	-	1.9	1.0	-	2.9	53.5	4.6	1.0	5.5
16/2	204	204	-	-	-	2.0	1.1	-	3.1	55.2	4.8	1.1	5.9
17/1	1020	1020	-	-	-	1.8	1.4	-	3.3	11.6	10.8	1.4	12.2
17/2	920	920	-	-	-	2.4	1.0	-	3.4	13.5	17.7	1.0	18.7
17/3	368	368	-	-	-	0.1	0.2	-	0.3	3.3	0.9	0.2	1.1
18/1	200	200	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/2	200	200	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 1.7 Total Delay for Signalled Lanes (pcuHr): 26.75 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -61.5 Total Delay for Signalled Lanes (pcuHr): 325.78 Cycle Time (s): 90
C2 Stream: 1 PRC for Signalled Lanes (%): 23.1 Total Delay for Signalled Lanes (pcuHr): 10.62 Cycle Time (s): 90
C2 Stream: 2 PRC for Signalled Lanes (%): 30.0 Total Delay for Signalled Lanes (pcuHr): 25.32 Cycle Time (s): 90
PRC Over All Lanes (%): -61.5 Total Delay Over All Lanes(pcuHr): 388.48

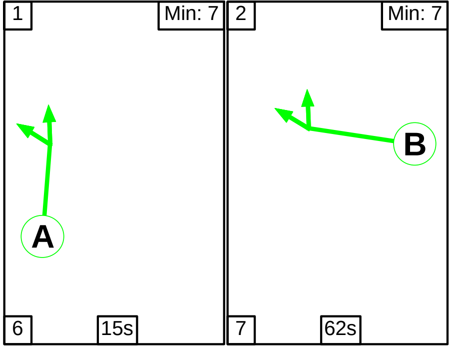
Full Input Data And Results

Scenario 3: '2021 R PM' (FG3: '2021 Reference PM Peak', Plan 1: 'Network Control Plan 1')

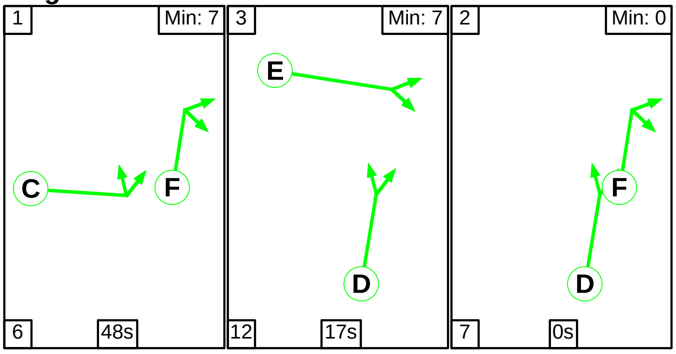
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

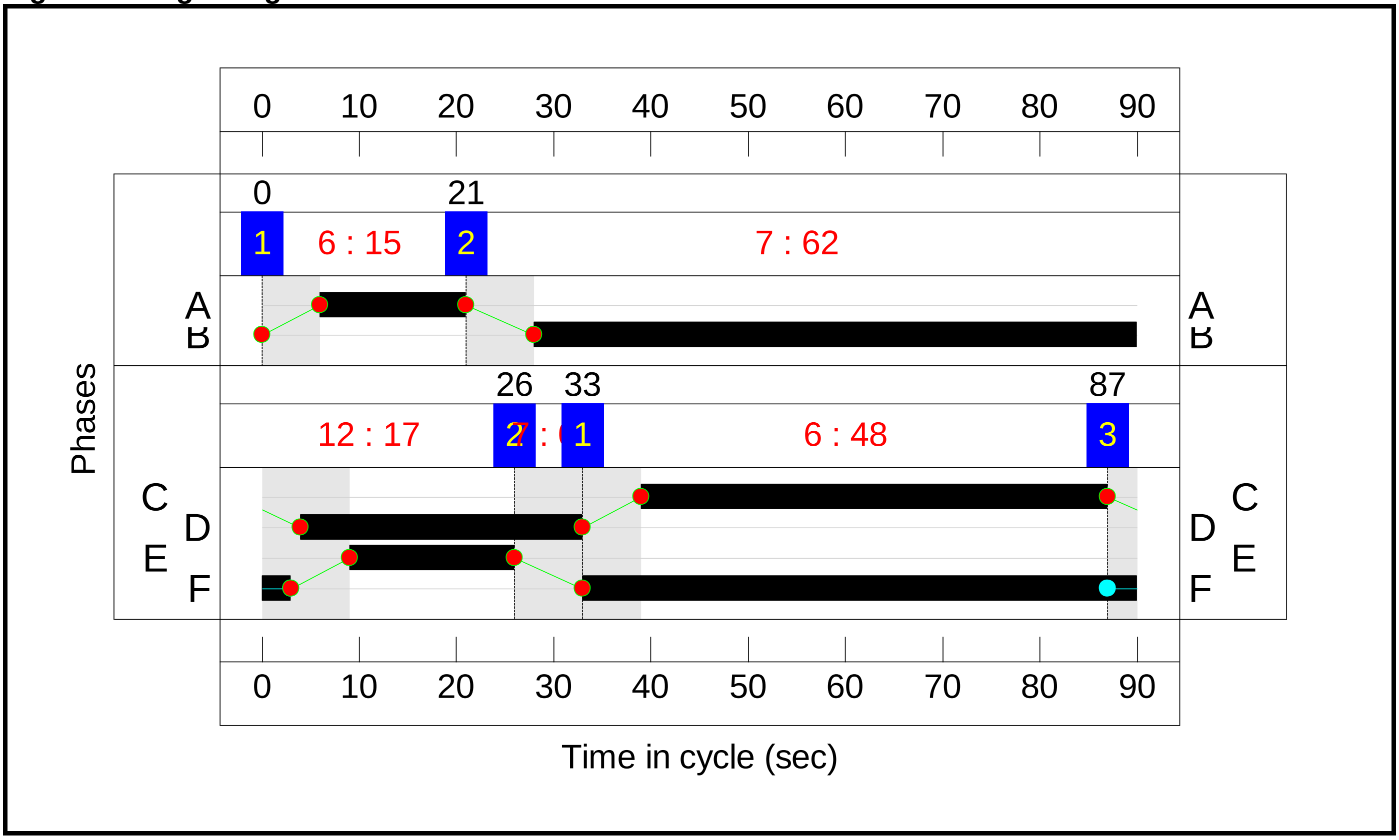
Stage Stream: 1

Stage	1	2
Duration	15	62
Change Point	0	21

Stage Stream: 2

Stage	1	3	2
Duration	48	17	0
Change Point	33	87	26

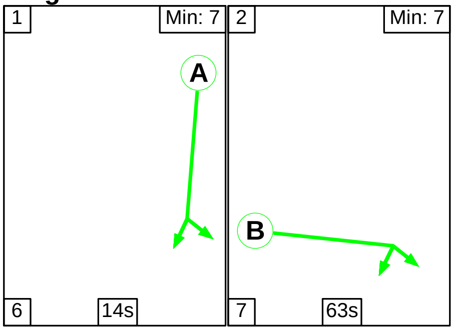
Signal Timings Diagram



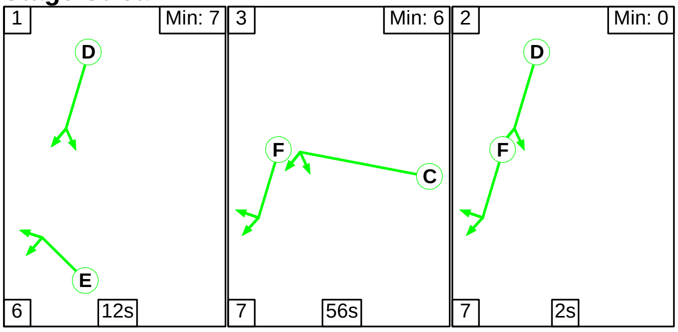
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

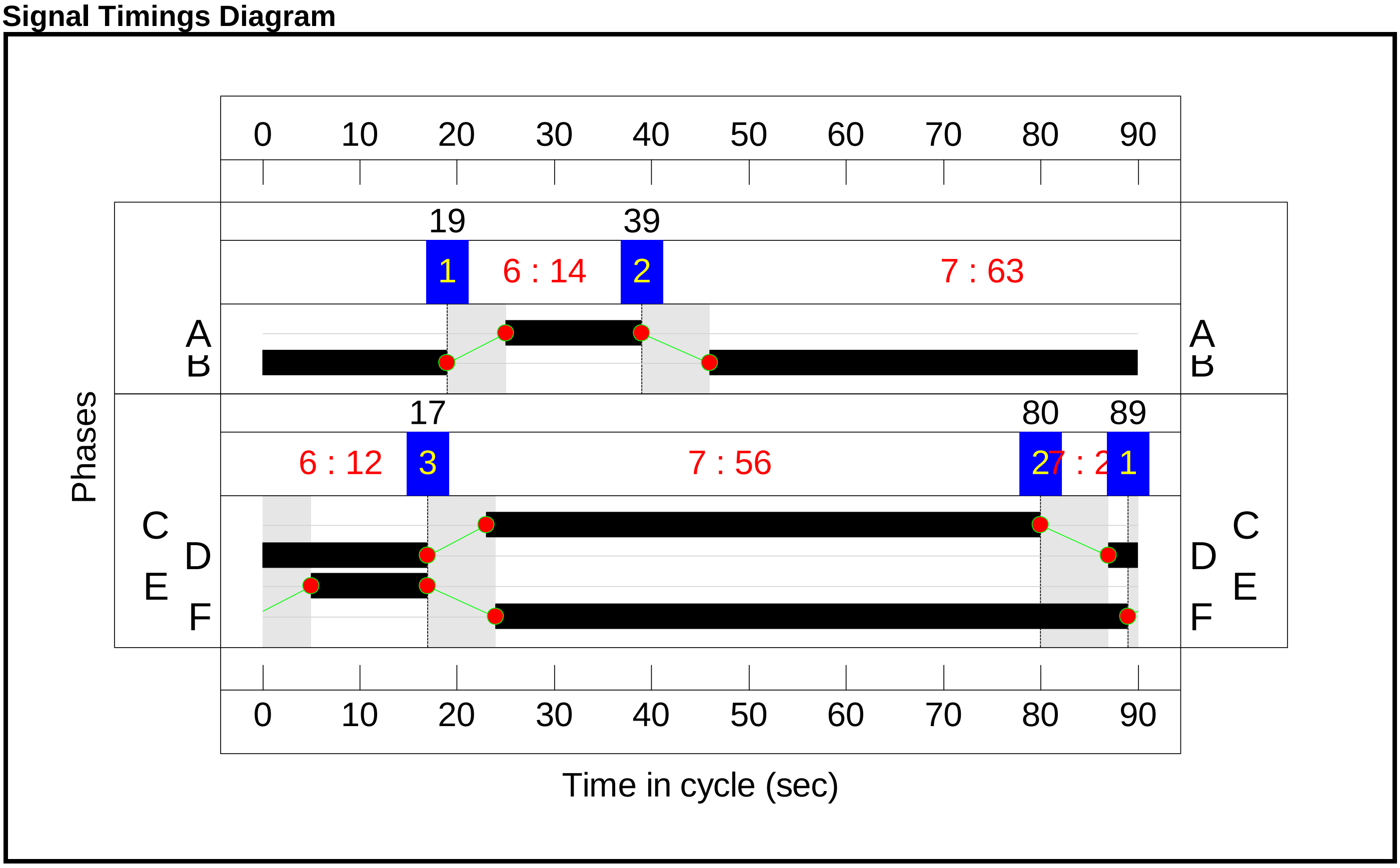
Stage Stream: 1

Stage	1	2
Duration	14	63
Change Point	19	39

Stage Stream: 2

Stage	1	3	2
Duration	12	56	2
Change Point	89	17	80

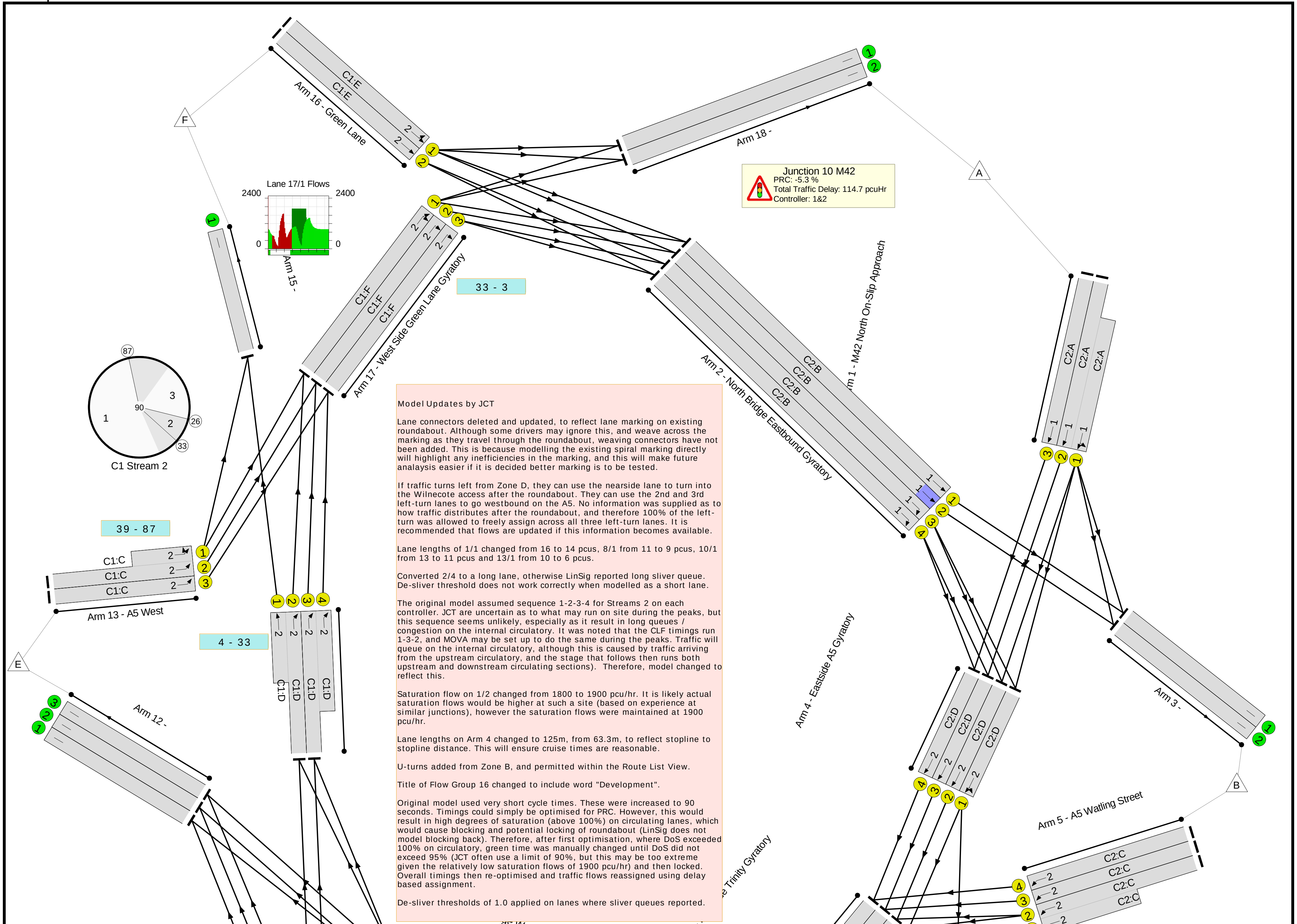
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Model Updates by JCT

Lane connectors deleted and updated, to reflect lane marking on existing roundabout. Although some drivers may ignore this, and weave across the marking as they travel through the roundabout, weaving connectors have not been added. This is because modelling the existing spiral marking directly will highlight any inefficiencies in the marking, and this will make future analaysis easier if it is decided better marking is to be tested.

If traffic turns left from Zone D, they can use the nearside lane to turn into the Wilnecote access after the roundabout. They can use the 2nd and 3rd left-turn lanes to go westbound on the A5. No information was supplied as to how traffic distributes after the roundabout, and therefore 100% of the left-turn was allowed to freely assign across all three left-turn lanes. It is recommended that flows are updated if this information becomes available.

Lane lengths of 1/1 changed from 16 to 14 pcus, 8/1 from 11 to 9 pcus, 10/1 from 13 to 11 pcus and 13/1 from 10 to 6 pcus.

Converted 2/4 to a long lane, otherwise LinSig reported long sliver queue. De-sliver threshold does not work correctly when modelled as a short lane.

The original model assumed sequence 1-2-3-4 for Streams 2 on each controller. JCT are uncertain as to what may run on site during the peaks, but this sequence seems unlikely, especially as it result in long queues / congestion on the internal circulatory. It was noted that the CLF timings run 1-3-2, and MOVA may be set up to do the same during the peaks. Traffic will queue on the internal circulatory, although this is caused by traffic arriving from the upstream circulatory, and the stage that follows then runs both upstream and downstream circulating sections). Therefore, model changed to reflect this.

Saturation flow on 1/2 changed from 1800 to 1900 pcu/hr. It is likely actual saturation flows would be higher at such a site (based on experience at similar junctions), however the saturation flows were maintained at 1900 pcu/hr.

Lane lengths on Arm 4 changed to 125m, from 63.3m, to reflect stopline to stopline distance. This will ensure cruise times are reasonable.

U-turns added from Zone B, and permitted within the Route List View.

Title of Flow Group 16 changed to include word "Development".

Original model used very short cycle times. These were increased to 90 seconds. Timings could simply be optimised for PRC. However, this would result in high degrees of saturation (above 100%) on circulating lanes, which would cause blocking and potential locking of roundabout (LinSig does not model blocking back). Therefore, after first optimisation, where DoS exceeded 100% on circulatory, green time was manually changed until DoS did not exceed 95% (JCT often use a limit of 90%, but this may be too extreme given the relatively low saturation flows of 1900 pcu/hr) and then locked. Overall timings then re-optimised and traffic flows reassigned using delay based assignment.

De-sliver thresholds of 1.0 applied on lanes where sliver queues reported.

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**94.7%**
Junction 10 M42	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**94.7%**
1/2+1/1	M42 North On-Slip Approach Left Ahead	U	2:1	N/A	C2:A		1	14	-	231	1900:1900	317+317	32.5 : 40.4%
1/3	M42 North On-Slip Approach Ahead	U	2:1	N/A	C2:A		1	14	-	127	1900	317	40.1%
2/1	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	63	-	700	1900	1351	51.8%
2/2	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	63	-	850	1900	1351	62.9%
2/3	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	63	-	486	1900	1351	36.0%
2/4	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	63	-	152	1900	1351	11.3%
3/1		U	N/A	N/A	-		-	-	-	757	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	907	Inf	Inf	0.0%
4/1	Eastside A5 Gyratory Ahead Left	U	2:2	N/A	C2:D		1	20	-	278	1900	443	62.7%
4/2	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	20	-	222	1900	443	50.1%
4/3	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	20	-	213	1900	443	48.0%
4/4	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	20	-	169	1900	443	38.1%
5/2+5/1	A5 Watling Street Ahead Left	U	2:2	N/A	C2:C		1	57	-	576	1900:1900	1003+366	42.1 : 42.1%
5/3	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	57	-	932	1900	1224	76.1%

Full Input Data And Results

5/4	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	57	-	874	1900	1224	71.4%
6/1	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	65	-	407	1900	1393	29.2%
6/2	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	65	-	341	1900	1393	24.5%
6/3	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	65	-	1145	1900	1393	82.2%
6/4	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	65	-	1043	1900	1393	74.9%
7/1		U	N/A	N/A	-		-	-	-	328	Inf	Inf	0.0%
8/2+8/1	Trinity Road Left Ahead	U	2:2	N/A	C2:E		1	12	-	368	1900:1900	274+191	79.1 : 79.1%
9/1		U	N/A	N/A	-		-	-	-	431	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	365	Inf	Inf	0.0%
10/2+10/1	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	15	-	321	1900:1900	338+338	47.4 : 47.7%
10/3	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	15	-	69	1900	338	20.4%
10/4	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	15	-	315	1900	338	93.3%
10/5	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	15	-	317	1900	338	93.8%
11/1	South Bridge Westbound Gyratory Ahead	U	1:1	N/A	C1:B		1	62	-	1248	1900	1330	93.8%
11/2	South Bridge Westbound Gyratory Ahead Right	U	1:1	N/A	C1:B		1	62	-	1260	1900	1330	94.7%
12/1		U	N/A	N/A	-		-	-	-	786	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	783	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	885	Inf	Inf	0.0%
13/2+13/1	A5 West Left Left2	U	1:2	N/A	C1:C		1	48	-	1134	1900:1900	472+726	94.6 : 94.6%
13/3	A5 West Left	U	1:2	N/A	C1:C		1	48	-	246	1900	1034	23.8%

Full Input Data And Results

14/2+14/1	Westside A5 Gyratory Ahead Ahead2	U	1:2	N/A	C1:D		1	29	-	634	1900:1900	476+396	72.7 : 72.7%
14/3+14/4	Westside A5 Gyratory Ahead	U	1:2	N/A	C1:D		1	29	-	442	1900:1900	605+81	64.5 : 64.5%
15/1		U	N/A	N/A	-		-	-	-	422	Inf	Inf	0.0%
16/1	Green Lane Ahead Left	U	1:2	N/A	C1:E		1	17	-	236	1900	380	62.1%
16/2	Green Lane Ahead	U	1:2	N/A	C1:E		1	17	-	340	1900	380	89.5%
17/1	West Side Green Lane Gyratory Right Ahead	U	1:2	N/A	C1:F		1	60	-	899	1900	1288	69.8%
17/2	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	60	-	837	1900	1288	65.0%
17/3	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	60	-	298	1900	1288	23.1%
18/1		U	N/A	N/A	-		-	-	-	211	Inf	Inf	0.0%
18/2		U	N/A	N/A	-		-	-	-	211	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**60.4**	**54.3**	**0.0**	**114.7**	**-**	**-**	**-**	**-**
Junction 10 M42	**-**	**-**	**0**	**0**	**0**	**60.4**	**54.3**	**0.0**	**114.7**	**-**	**-**	**-**	**-**
1/2+1/1	231	231	-	-	-	2.1	0.3	-	2.4	37.8	2.8	0.3	3.1
1/3	127	127	-	-	-	1.2	0.3	-	1.5	43.0	2.8	0.3	3.2
2/1	700	700	-	-	-	0.3	0.5	-	0.9	4.5	2.2	0.5	2.7
2/2	850	850	-	-	-	0.1	0.8	-	1.0	4.2	0.7	0.8	1.6
2/3	486	486	-	-	-	1.0	0.3	-	1.3	9.7	6.1	0.3	6.4
2/4	152	152	-	-	-	0.7	0.1	-	0.8	17.9	3.8	0.1	3.8
3/1	757	757	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	907	907	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	278	278	-	-	-	1.7	0.8	-	2.6	33.1	6.5	0.8	7.3
4/2	222	222	-	-	-	1.5	0.5	-	2.0	32.0	5.2	0.5	5.7
4/3	213	213	-	-	-	2.3	0.5	-	2.8	47.1	5.3	0.5	5.8
4/4	169	169	-	-	-	2.1	0.3	-	2.4	50.3	4.2	0.3	4.5
5/2+5/1	576	576	-	-	-	1.1	0.4	-	1.5	9.3	4.8	0.4	5.2
5/3	932	932	-	-	-	2.9	1.6	-	4.5	17.3	16.1	1.6	17.6
5/4	874	874	-	-	-	2.6	1.2	-	3.8	15.6	14.3	1.2	15.6
6/1	407	407	-	-	-	0.4	0.2	-	0.6	5.3	2.7	0.2	2.9
6/2	341	341	-	-	-	1.0	0.2	-	1.2	12.4	5.9	0.2	6.1
6/3	1145	1145	-	-	-	1.4	2.3	-	3.7	11.5	8.2	2.3	10.5
6/4	1043	1043	-	-	-	0.9	1.5	-	2.4	8.3	5.4	1.5	6.9
7/1	328	328	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2+8/1	368	368	-	-	-	3.7	1.8	-	5.6	54.4	5.2	1.8	7.0
9/1	431	431	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	365	365	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	321	321	-	-	-	3.0	0.5	-	3.4	38.3	3.6	0.5	4.0

Full Input Data And Results

10/3	69	69	-	-	-	0.6	0.1	-	0.7	38.3	1.5	0.1	1.6
10/4	315	315	-	-	-	3.2	4.8	-	8.0	91.9	7.7	4.8	12.5
10/5	317	317	-	-	-	3.2	5.1	-	8.3	94.6	7.7	5.1	12.9
11/1	1248	1248	-	-	-	1.6	6.6	-	8.1	23.4	9.6	6.6	16.1
11/2	1260	1260	-	-	-	2.5	7.4	-	9.9	28.4	28.3	7.4	35.7
12/1	786	786	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	783	783	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	885	885	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2+13/1	1134	1134	-	-	-	5.2	7.2	-	12.4	39.2	21.9	7.2	29.1
13/3	246	246	-	-	-	0.7	0.2	-	0.9	13.0	3.2	0.2	3.4
14/2+14/1	634	634	-	-	-	2.9	1.3	-	4.2	23.8	4.2	1.3	5.5
14/3+14/4	442	442	-	-	-	1.5	0.9	-	2.4	19.2	3.2	0.9	4.1
15/1	422	422	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	236	236	-	-	-	2.2	0.8	-	3.0	45.3	5.4	0.8	6.2
16/2	340	340	-	-	-	3.3	3.6	-	6.9	73.2	8.2	3.6	11.8
17/1	899	899	-	-	-	1.7	1.1	-	2.9	11.4	11.1	1.1	12.3
17/2	837	837	-	-	-	1.7	0.9	-	2.6	11.2	13.9	0.9	14.9
17/3	298	298	-	-	-	0.1	0.2	-	0.3	3.5	0.8	0.2	1.0
18/1	211	211	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/2	211	211	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -5.3 Total Delay for Signalled Lanes (pcuHr): 38.58 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -5.1 Total Delay for Signalled Lanes (pcuHr): 35.42 Cycle Time (s): 90
C2 Stream: 1 PRC for Signalled Lanes (%): 43.1 Total Delay for Signalled Lanes (pcuHr): 7.87 Cycle Time (s): 90
C2 Stream: 2 PRC for Signalled Lanes (%): 9.5 Total Delay for Signalled Lanes (pcuHr): 32.84 Cycle Time (s): 90
PRC Over All Lanes (%): -5.3 Total Delay Over All Lanes(pcuHr): 114.71

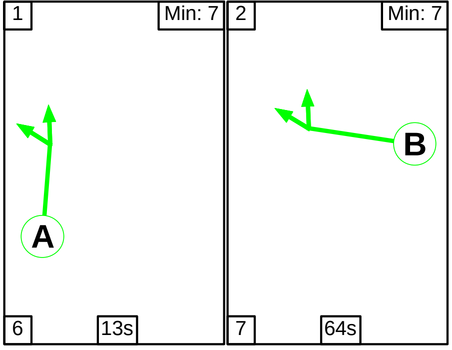
Full Input Data And Results

Scenario 4: '2021 R + D PM' (FG4: '2021 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

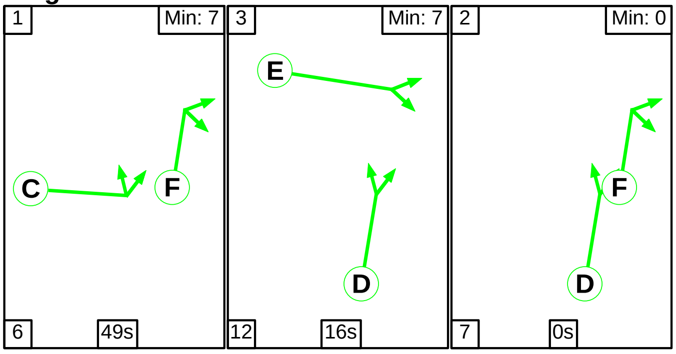
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

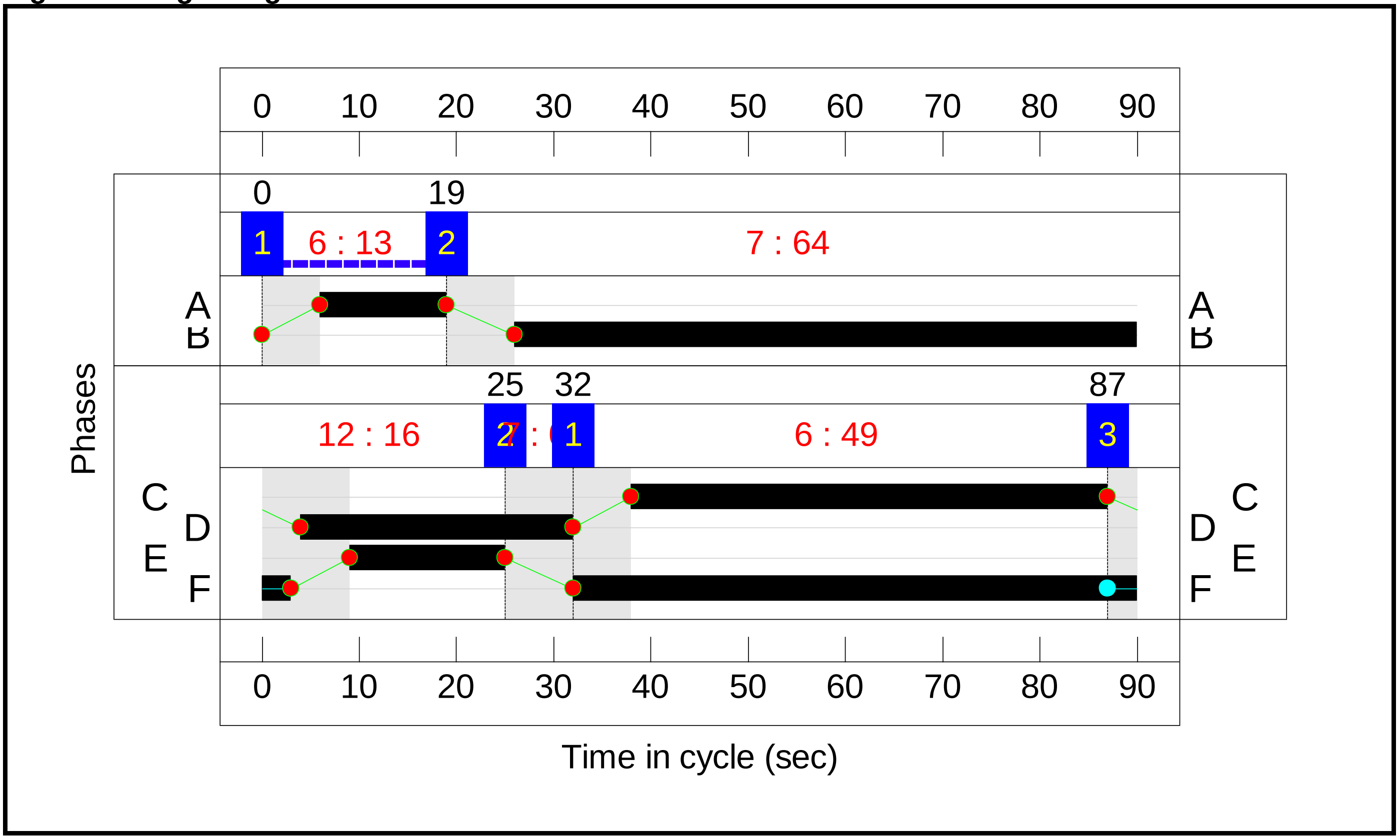
Stage	**1**	**2**
Duration	13	64
Change Point	0	19

Stage Stream: 2

Stage	**1**	**3**	**2**
Duration	49	16	0
Change Point	32	87	25

Full Input Data And Results

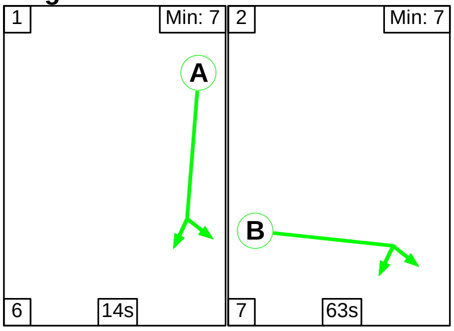
Signal Timings Diagram



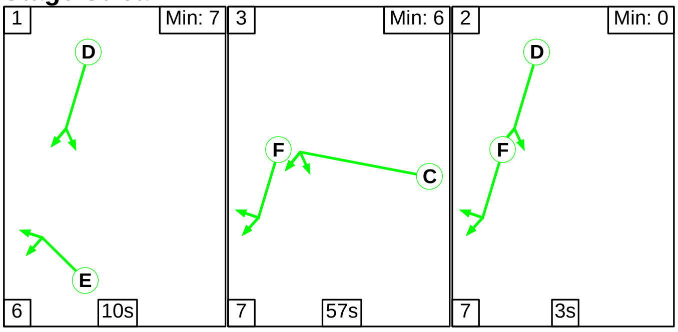
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

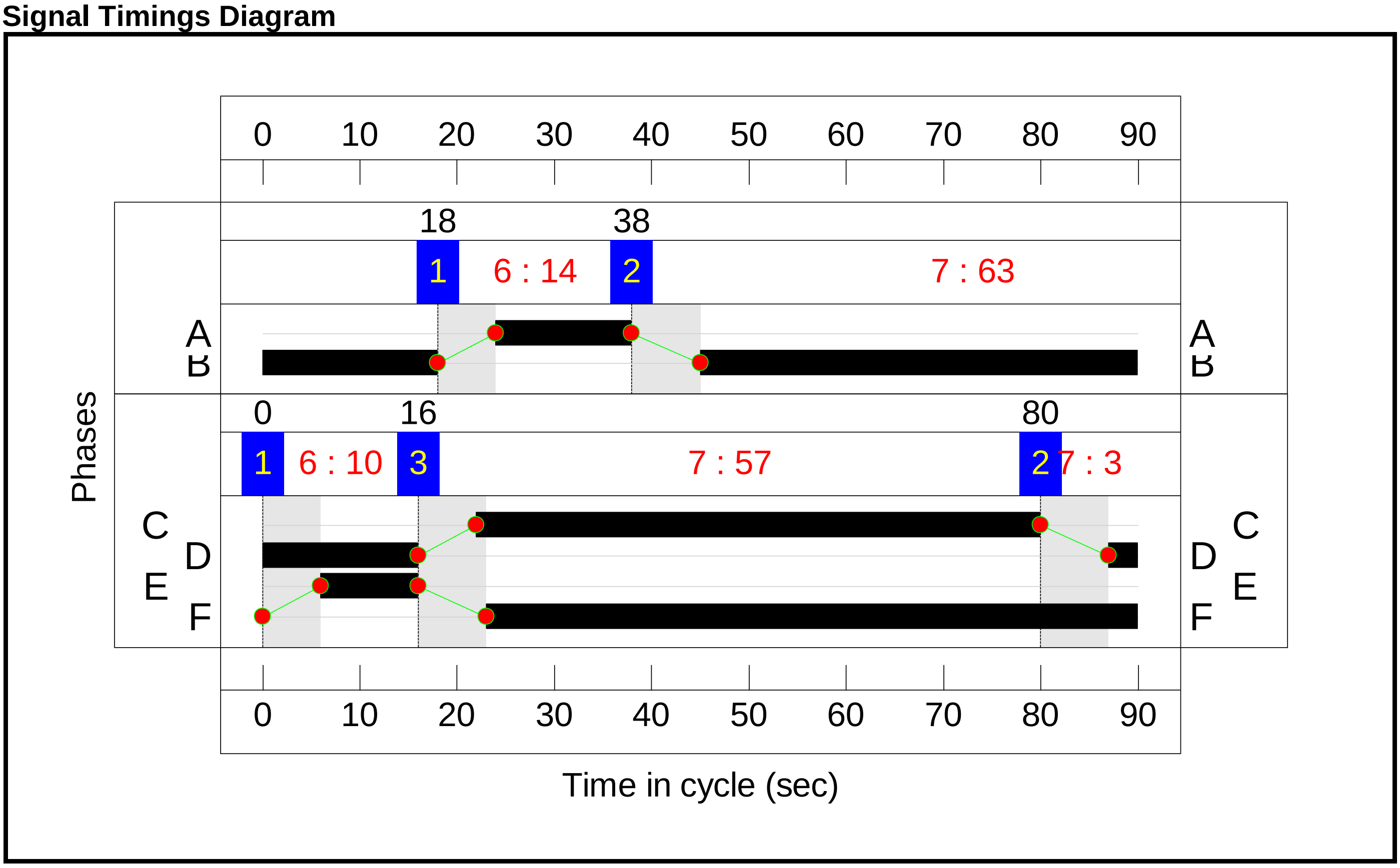
Stage Stream: 1

Stage	1	2
Duration	14	63
Change Point	18	38

Stage Stream: 2

Stage	1	3	2
Duration	10	57	3
Change Point	0	16	80

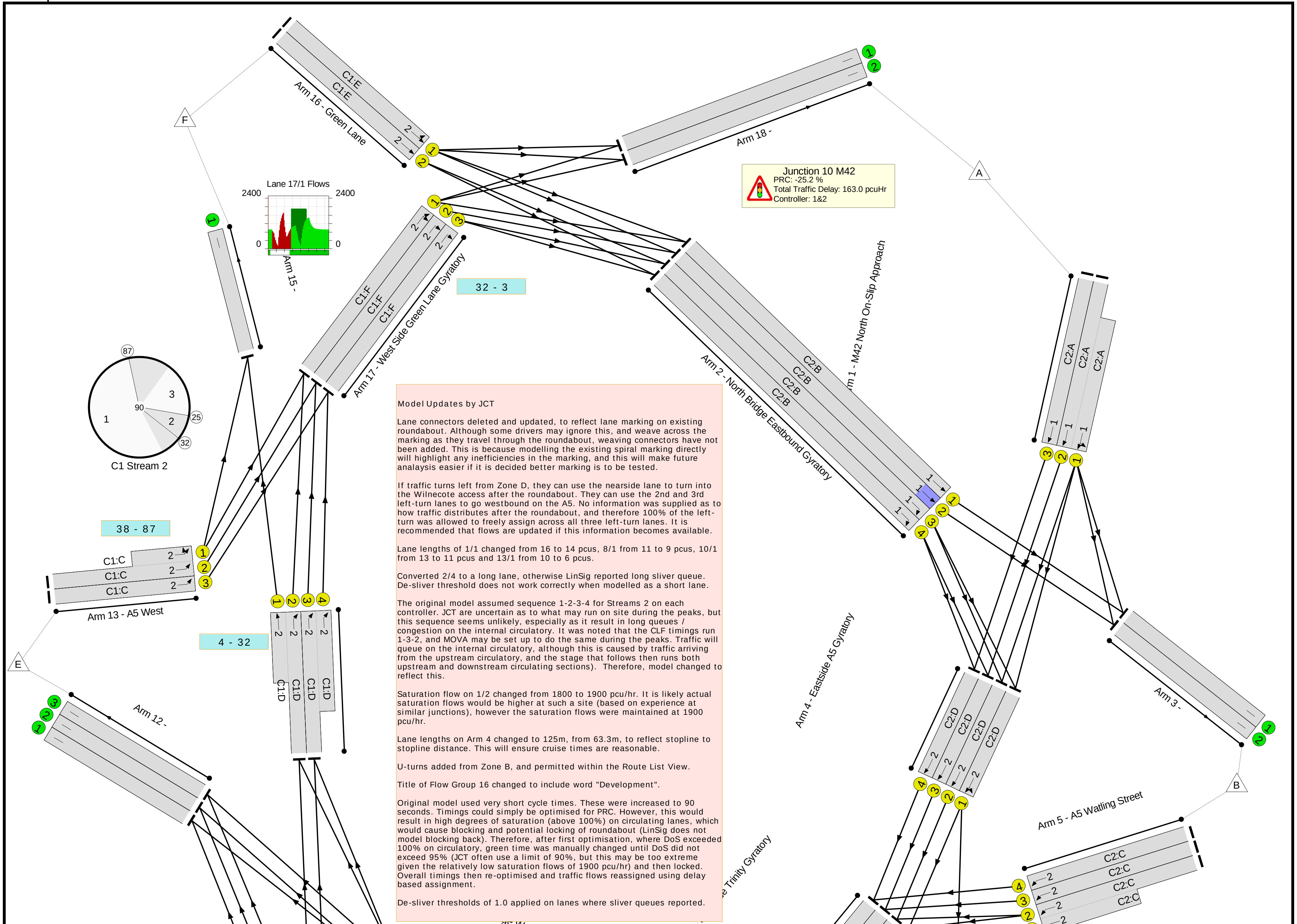
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Model Updates by JCT

Lane connectors deleted and updated, to reflect lane marking on existing roundabout. Although some drivers may ignore this, and weave across the marking as they travel through the roundabout, weaving connectors have not been added. This is because modelling the existing spiral marking directly will highlight any inefficiencies in the marking, and this will make future analaysis easier if it is decided better marking is to be tested.

If traffic turns left from Zone D, they can use the nearside lane to turn into the Wilnecote access after the roundabout. They can use the 2nd and 3rd left-turn lanes to go westbound on the A5. No information was supplied as to how traffic distributes after the roundabout, and therefore 100% of the left-turn was allowed to freely assign across all three left-turn lanes. It is recommended that flows are updated if this information becomes available.

Lane lengths of 1/1 changed from 16 to 14 pcus, 8/1 from 11 to 9 pcus, 10/1 from 13 to 11 pcus and 13/1 from 10 to 6 pcus.

Converted 2/4 to a long lane, otherwise LinSig reported long sliver queue. De-sliver threshold does not work correctly when modelled as a short lane.

The original model assumed sequence 1-2-3-4 for Streams 2 on each controller. JCT are uncertain as to what may run on site during the peaks, but this sequence seems unlikely, especially as it result in long queues / congestion on the internal circulatory. It was noted that the CLF timings run 1-3-2, and MOVA may be set up to do the same during the peaks. Traffic will queue on the internal circulatory, although this is caused by traffic arriving from the upstream circulatory, and the stage that follows then runs both upstream and downstream circulating sections). Therefore, model changed to reflect this.

Saturation flow on 1/2 changed from 1800 to 1900 pcu/hr. It is likely actual saturation flows would be higher at such a site (based on experience at similar junctions), however the saturation flows were maintained at 1900 pcu/hr.

Lane lengths on Arm 4 changed to 125m, from 63.3m, to reflect stopline to stopline distance. This will ensure cruise times are reasonable.

U-turns added from Zone B, and permitted within the Route List View.

Title of Flow Group 16 changed to include word "Development".

Original model used very short cycle times. These were increased to 90 seconds. Timings could simply be optimised for PRC. However, this would result in high degrees of saturation (above 100%) on circulating lanes, which would cause blocking and potential locking of roundabout (LinSig does not model blocking back). Therefore, after first optimisation, where DoS exceeded 100% on circulatory, green time was manually changed until DoS did not exceed 95% (JCT often use a limit of 90%, but this may be too extreme given the relatively low saturation flows of 1900 pcu/hr) and then locked. Overall timings then re-optimised and traffic flows reassigned using delay based assignment.

De-sliver thresholds of 1.0 applied on lanes where sliver queues reported.

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.7%**
Junction 10 M42	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.7%**
1/2+1/1	M42 North On-Slip Approach Left Ahead	U	2:1	N/A	C2:A		1	14	-	256	1900:1900	317+317	37.3 : 43.6%
1/3	M42 North On-Slip Approach Ahead	U	2:1	N/A	C2:A		1	14	-	112	1900	317	35.4%
2/1	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	63	-	748	1900	1351	53.7%
2/2	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	63	-	908	1900	1351	64.9%
2/3	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	63	-	486	1900	1351	35.5%
2/4	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	63	-	152	1900	1351	11.3%
3/1		U	N/A	N/A	-		-	-	-	810	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	970	Inf	Inf	0.0%
4/1	Eastside A5 Gyratory Ahead Left	U	2:2	N/A	C2:D		1	19	-	281	1900	422	65.2%
4/2	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	19	-	219	1900	422	51.9%
4/3	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	19	-	224	1900	422	53.1%
4/4	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	19	-	158	1900	422	37.4%
5/2+5/1	A5 Watling Street Ahead Left	U	2:2	N/A	C2:C		1	58	-	654	1900:1900	1040+331	47.7 : 47.7%
5/3	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	58	-	942	1900	1246	75.6%

5/4	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	58	-	938	1900	1246	75.3%
6/1	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	67	-	441	1900	1436	30.7%
6/2	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	67	-	381	1900	1436	26.5%
6/3	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	67	-	1166	1900	1436	81.2%
6/4	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	67	-	1096	1900	1436	76.3%
7/1		U	N/A	N/A	-		-	-	-	332	Inf	Inf	0.0%
8/2+8/1	Trinity Road Left Ahead	U	2:2	N/A	C2:E		1	10	-	372	1900:1900	232+232	87.0 : 73.2%
9/1		U	N/A	N/A	-		-	-	-	465	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	405	Inf	Inf	0.0%
10/2+10/1	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	13	-	316	1900:1900	296+296	53.5 : 53.5%
10/3	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	13	-	74	1900	296	25.0%
10/4	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	13	-	333	1900	296	112.7%
10/5	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	13	-	333	1900	296	112.7%
11/1	South Bridge Westbound Gyratory Ahead	U	1:1	N/A	C1:B		1	64	-	1288	1900	1372	93.9%
11/2	South Bridge Westbound Gyratory Ahead Right	U	1:1	N/A	C1:B		1	64	-	1298	1900	1372	94.6%
12/1		U	N/A	N/A	-		-	-	-	802	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	802	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	918	Inf	Inf	0.0%
13/2+13/1	A5 West Left Left2	U	1:2	N/A	C1:C		1	49	-	1202	1900:1900	496+730	98.0 : 98.0%
13/3	A5 West Left	U	1:2	N/A	C1:C		1	49	-	246	1900	1056	23.3%

14/2+14/1	Westside A5 Gyratory Ahead Ahead2	U	1:2	N/A	C1:D		1	28	-	656	1900:1900	469+367	73.6 : 74.3%
14/3+14/4	Westside A5 Gyratory Ahead	U	1:2	N/A	C1:D		1	28	-	464	1900:1900	587+74	64.8 : 62.2%
15/1		U	N/A	N/A	-		-	-	-	422	Inf	Inf	0.0%
16/1	Green Lane Ahead Left	U	1:2	N/A	C1:E		1	16	-	236	1900	359	65.8%
16/2	Green Lane Ahead	U	1:2	N/A	C1:E		1	16	-	340	1900	359	94.7%
17/1	West Side Green Lane Gyratory Right Ahead	U	1:2	N/A	C1:F		1	61	-	950	1900	1309	70.9%
17/2	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	61	-	898	1900	1309	66.2%
17/3	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	61	-	298	1900	1309	22.3%
18/1		U	N/A	N/A	-		-	-	-	214	Inf	Inf	0.0%
18/2		U	N/A	N/A	-		-	-	-	214	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**65.5**	**97.5**	**0.0**	**163.0**	**-**	**-**	**-**	**-**
Junction 10 M42	**-**	**-**	**0**	**0**	**0**	**65.5**	**97.5**	**0.0**	**163.0**	**-**	**-**	**-**	**-**
1/2+1/1	256	256	-	-	-	2.4	0.3	-	2.7	38.3	3.1	0.3	3.4
1/3	112	112	-	-	-	1.0	0.3	-	1.3	42.0	2.5	0.3	2.7
2/1	726	726	-	-	-	0.4	0.6	-	1.0	4.8	2.5	0.6	3.1
2/2	876	876	-	-	-	0.2	0.9	-	1.1	4.4	0.8	0.9	1.7
2/3	480	480	-	-	-	1.0	0.3	-	1.3	9.4	6.0	0.3	6.3
2/4	152	152	-	-	-	0.7	0.1	-	0.7	16.9	3.8	0.1	3.8
3/1	788	788	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	938	938	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	275	275	-	-	-	1.8	0.9	-	2.7	35.7	6.5	0.9	7.4
4/2	219	219	-	-	-	1.5	0.5	-	2.0	33.7	5.2	0.5	5.7
4/3	224	224	-	-	-	2.6	0.6	-	3.1	50.4	5.6	0.6	6.2
4/4	158	158	-	-	-	1.9	0.3	-	2.2	50.6	3.9	0.3	4.2
5/2+5/1	654	654	-	-	-	1.3	0.5	-	1.7	9.4	5.6	0.5	6.1
5/3	942	942	-	-	-	2.8	1.5	-	4.3	16.5	16.0	1.5	17.5
5/4	938	938	-	-	-	2.7	1.5	-	4.3	16.3	15.9	1.5	17.4
6/1	441	441	-	-	-	0.4	0.2	-	0.6	4.8	2.8	0.2	3.0
6/2	381	381	-	-	-	0.9	0.2	-	1.1	10.6	5.9	0.2	6.1
6/3	1166	1166	-	-	-	1.4	2.1	-	3.5	10.8	8.9	2.1	11.0
6/4	1096	1096	-	-	-	0.8	1.6	-	2.4	7.8	4.5	1.6	6.1
7/1	326	326	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2+8/1	372	372	-	-	-	4.0	1.9	-	5.9	57.2	4.9	1.9	6.9
9/1	465	465	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	405	405	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	316	316	-	-	-	3.1	0.6	-	3.6	41.5	3.6	0.6	4.2

Full Input Data And Results

10/3	74	74	-	-	-	0.7	0.2	-	0.9	41.5	1.6	0.2	1.8
10/4	333	296	-	-	-	5.2	22.4	-	27.7	299.1	9.3	22.4	31.7
10/5	333	296	-	-	-	5.2	22.4	-	27.7	299.1	9.3	22.4	31.7
11/1	1288	1288	-	-	-	1.5	6.6	-	8.1	22.5	10.6	6.6	17.2
11/2	1298	1298	-	-	-	2.1	7.3	-	9.4	26.1	17.8	7.3	25.1
12/1	802	802	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	802	802	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	918	918	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2+13/1	1202	1202	-	-	-	5.5	12.3	-	17.8	53.4	24.6	12.3	36.9
13/3	246	246	-	-	-	0.7	0.2	-	0.8	12.4	3.1	0.2	3.2
14/2+14/1	619	619	-	-	-	3.0	1.4	-	4.4	25.8	4.3	1.4	5.7
14/3+14/4	427	427	-	-	-	1.6	0.9	-	2.5	20.9	3.3	0.9	4.2
15/1	407	407	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	236	236	-	-	-	2.2	0.9	-	3.2	48.2	5.4	0.9	6.4
16/2	340	340	-	-	-	3.4	5.6	-	9.0	95.7	8.3	5.6	13.9
17/1	928	928	-	-	-	1.8	1.2	-	3.0	11.5	11.7	1.2	13.0
17/2	866	866	-	-	-	1.7	1.0	-	2.7	11.1	14.0	1.0	15.0
17/3	292	292	-	-	-	0.1	0.1	-	0.3	3.3	0.7	0.1	0.9
18/1	214	214	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/2	214	214	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -25.2 Total Delay for Signalled Lanes (pcuHr): 77.32 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -8.9 Total Delay for Signalled Lanes (pcuHr): 43.73 Cycle Time (s): 90
C2 Stream: 1 PRC for Signalled Lanes (%): 38.7 Total Delay for Signalled Lanes (pcuHr): 8.04 Cycle Time (s): 90
C2 Stream: 2 PRC for Signalled Lanes (%): 3.5 Total Delay for Signalled Lanes (pcuHr): 33.92 Cycle Time (s): 90
PRC Over All Lanes (%): -25.2 Total Delay Over All Lanes(pcuHr): 163.02

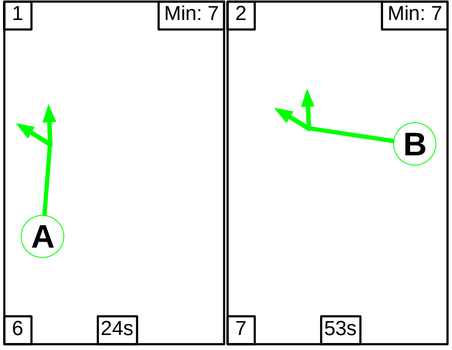
Full Input Data And Results

Scenario 5: '2026 R AM' (FG5: '2026 Reference AM Peak', Plan 1: 'Network Control Plan 1')

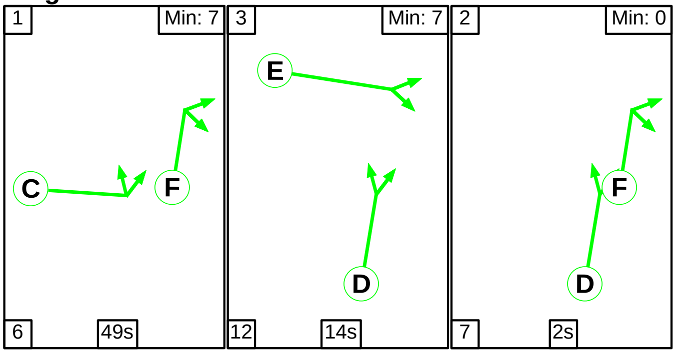
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

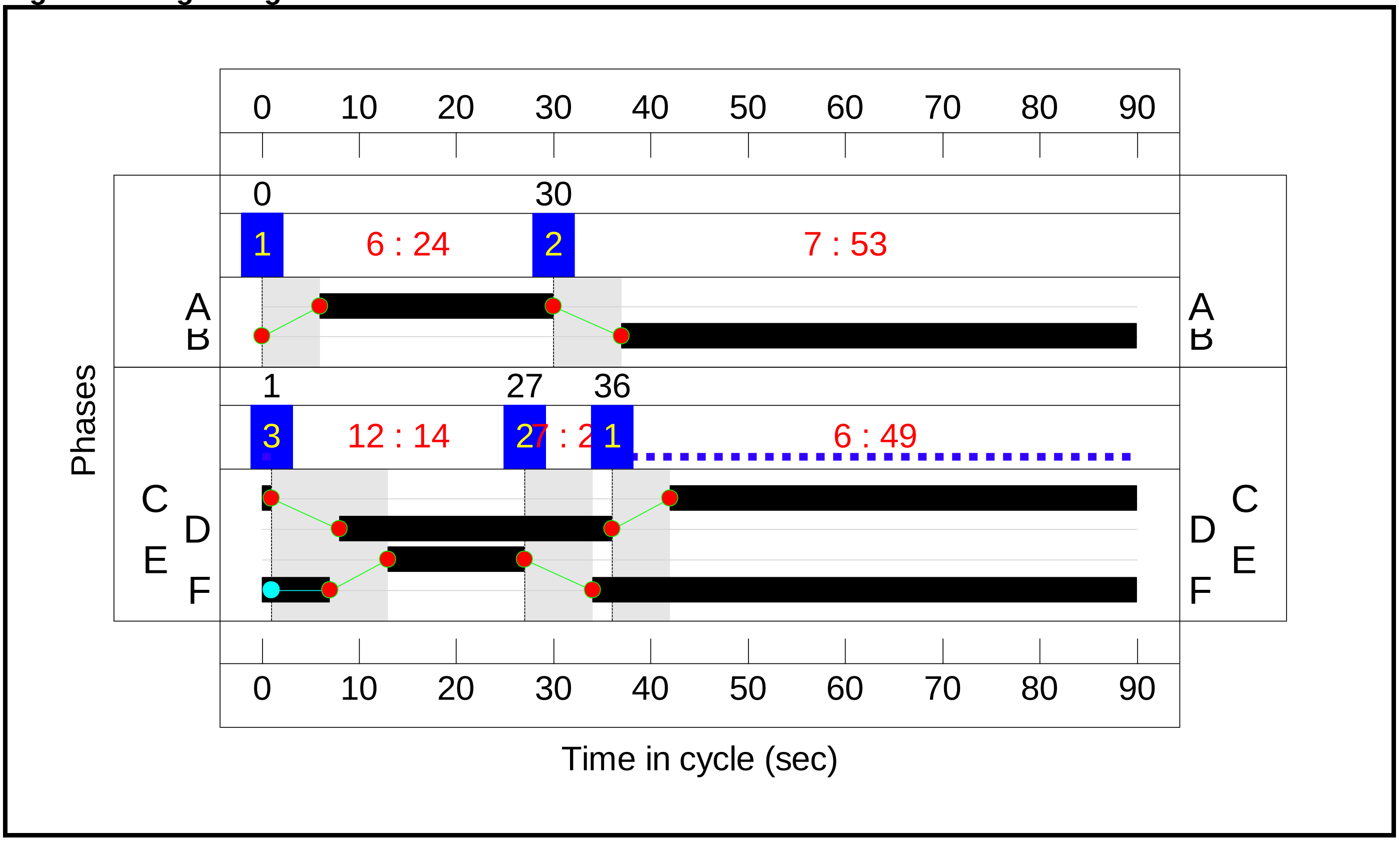
Stage Stream: 1

Stage	1	2
Duration	24	53
Change Point	0	30

Stage Stream: 2

Stage	1	3	2
Duration	49	14	2
Change Point	36	1	27

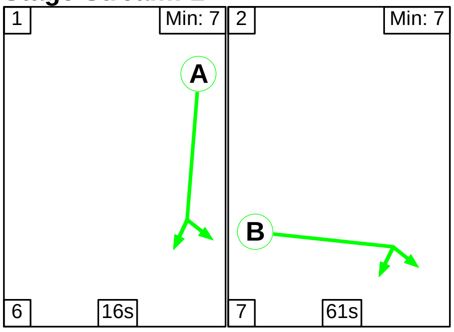
Signal Timings Diagram



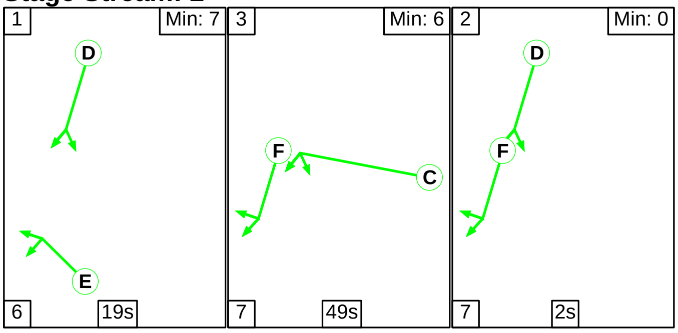
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

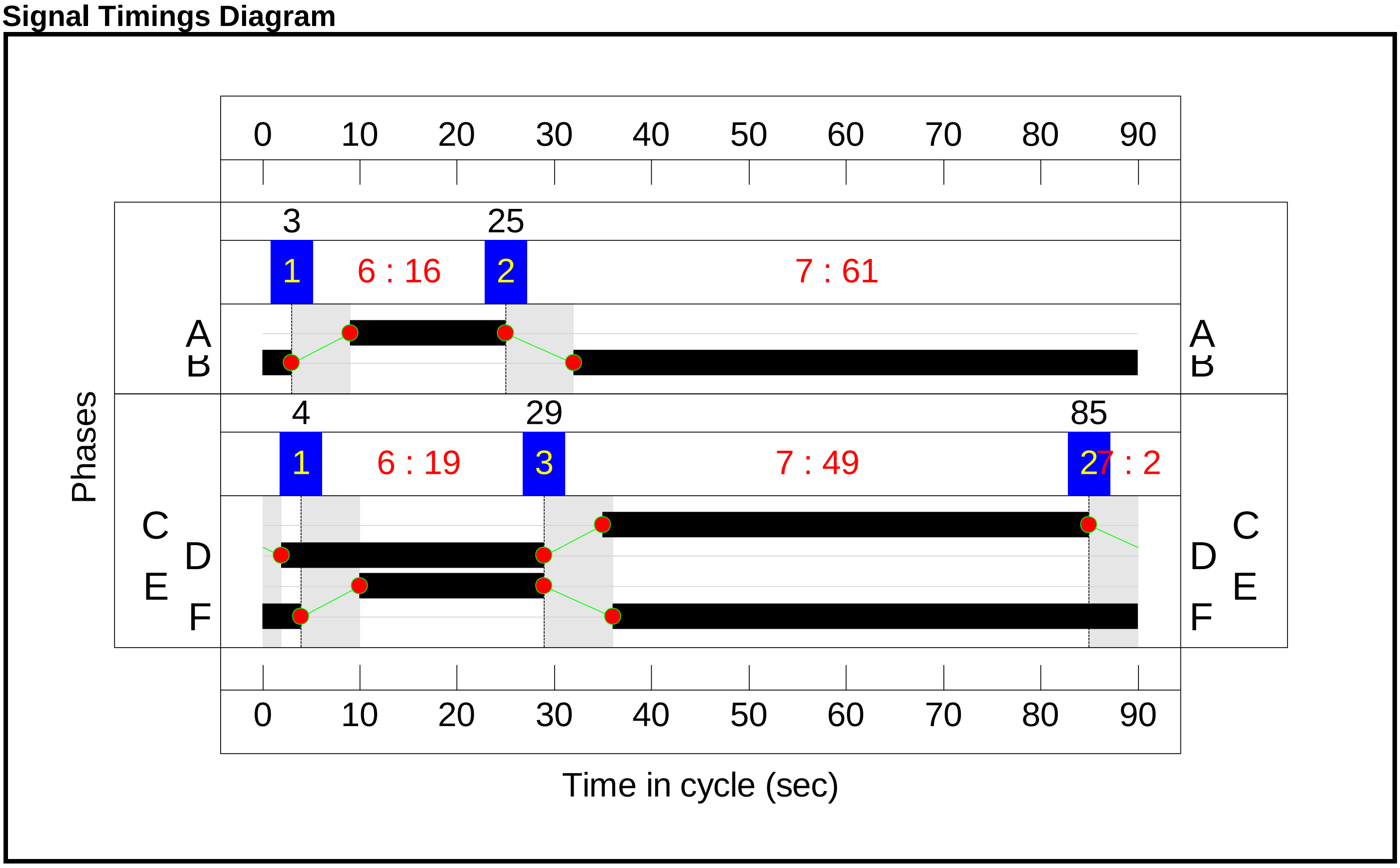
Stage Stream: 1

Stage	**1**	**2**
Duration	16	61
Change Point	3	25

Stage Stream: 2

Stage	**1**	**3**	**2**
Duration	19	49	2
Change Point	4	29	85

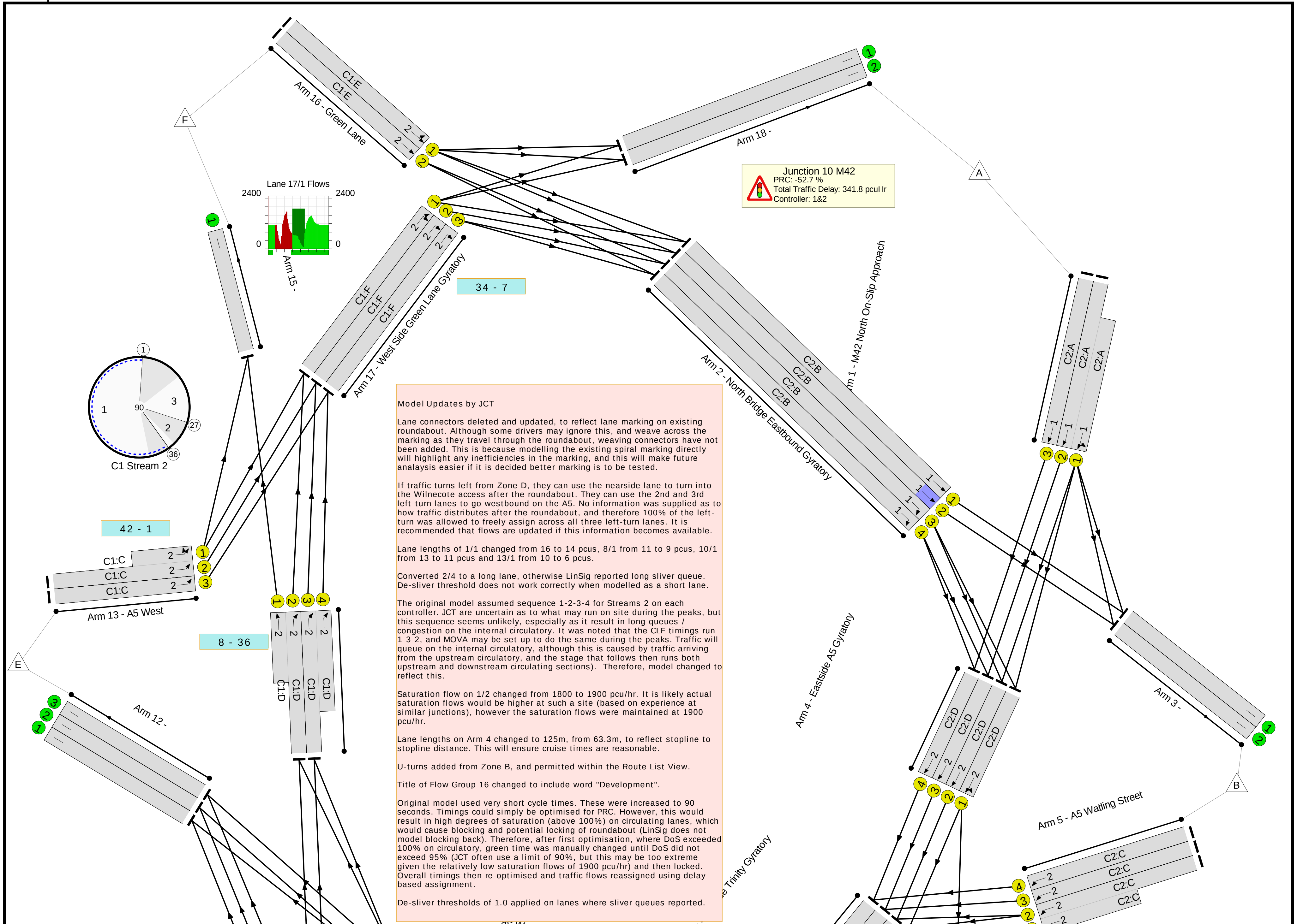
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Model Updates by JCT

Lane connectors deleted and updated, to reflect lane marking on existing roundabout. Although some drivers may ignore this, and weave across the marking as they travel through the roundabout, weaving connectors have not been added. This is because modelling the existing spiral marking directly will highlight any inefficiencies in the marking, and this will make future analaysis easier if it is decided better marking is to be tested.

If traffic turns left from Zone D, they can use the nearside lane to turn into the Wilnecote access after the roundabout. They can use the 2nd and 3rd left-turn lanes to go westbound on the A5. No information was supplied as to how traffic distributes after the roundabout, and therefore 100% of the left-turn was allowed to freely assign across all three left-turn lanes. It is recommended that flows are updated if this information becomes available.

Lane lengths of 1/1 changed from 16 to 14 pcus, 8/1 from 11 to 9 pcus, 10/1 from 13 to 11 pcus and 13/1 from 10 to 6 pcus.

Converted 2/4 to a long lane, otherwise LinSig reported long sliver queue. De-sliver threshold does not work correctly when modelled as a short lane.

The original model assumed sequence 1-2-3-4 for Streams 2 on each controller. JCT are uncertain as to what may run on site during the peaks, but this sequence seems unlikely, especially as it result in long queues / congestion on the internal circulatory. It was noted that the CLF timings run 1-3-2, and MOVA may be set up to do the same during the peaks. Traffic will queue on the internal circulatory, although this is caused by traffic arriving from the upstream circulatory, and the stage that follows then runs both upstream and downstream circulating sections). Therefore, model changed to reflect this.

Saturation flow on 1/2 changed from 1800 to 1900 pcu/hr. It is likely actual saturation flows would be higher at such a site (based on experience at similar junctions), however the saturation flows were maintained at 1900 pcu/hr.

Lane lengths on Arm 4 changed to 125m, from 63.3m, to reflect stopline to stopline distance. This will ensure cruise times are reasonable.

U-turns added from Zone B, and permitted within the Route List View.

Title of Flow Group 16 changed to include word "Development".

Original model used very short cycle times. These were increased to 90 seconds. Timings could simply be optimised for PRC. However, this would result in high degrees of saturation (above 100%) on circulating lanes, which would cause blocking and potential locking of roundabout (LinSig does not model blocking back). Therefore, after first optimisation, where DoS exceeded 100% on circulatory, green time was manually changed until DoS did not exceed 95% (JCT often use a limit of 90%, but this may be too extreme given the relatively low saturation flows of 1900 pcu/hr) and then locked. Overall timings then re-optimised and traffic flows reassigned using delay based assignment.

De-sliver thresholds of 1.0 applied on lanes where sliver queues reported.

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**137.5%**
Junction 10 M42	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**137.5%**
1/2+1/1	M42 North On-Slip Approach Left Ahead	U	2:1	N/A	C2:A		1	16	-	328	1900:1900	207+359	58.0 : 58.0%
1/3	M42 North On-Slip Approach Ahead	U	2:1	N/A	C2:A		1	16	-	136	1900	359	37.9%
2/1	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	61	-	957	1900	1309	56.6%
2/2	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	61	-	1055	1900	1309	70.2%
2/3	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	61	-	590	1900	1309	45.1%
2/4	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	61	-	76	1900	1309	5.8%
3/1		U	N/A	N/A	-		-	-	-	1035	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	1133	Inf	Inf	0.0%
4/1	Eastside A5 Gyratory Ahead Left	U	2:2	N/A	C2:D		1	27	-	388	1900	591	65.6%
4/2	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	27	-	254	1900	591	43.0%
4/3	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	27	-	186	1900	591	31.5%
4/4	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	27	-	146	1900	591	24.7%
5/2+5/1	A5 Watling Street Ahead Left	U	2:2	N/A	C2:C		1	50	-	652	1900:1900	881+357	52.7 : 52.7%
5/3	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	50	-	658	1900	1077	61.1%

Full Input Data And Results

5/4	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	50	-	642	1900	1077	59.6%
6/1	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	58	-	479	1900	1246	38.5%
6/2	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	58	-	355	1900	1246	28.5%
6/3	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	58	-	844	1900	1246	67.8%
6/4	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	58	-	788	1900	1246	63.3%
7/1		U	N/A	N/A	-		-	-	-	460	Inf	Inf	0.0%
8/2+8/1	Trinity Road Left Ahead	U	2:2	N/A	C2:E		1	19	-	342	1900:1900	395+316	48.1 : 48.1%
9/1		U	N/A	N/A	-		-	-	-	501	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	377	Inf	Inf	0.0%
10/2+10/1	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	24	-	289	1900:1900	482+479	30.1 : 30.1%
10/3	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	24	-	63	1900	528	11.9%
10/4	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	24	-	387	1900	528	73.3%
10/5	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	24	-	431	1900	528	81.7%
11/1	South Bridge Westbound Gyratory Ahead	U	1:1	N/A	C1:B		1	53	-	952	1900	1140	83.5%
11/2	South Bridge Westbound Gyratory Ahead Right	U	1:1	N/A	C1:B		1	53	-	978	1900	1140	85.8%
12/1		U	N/A	N/A	-		-	-	-	620	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	621	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	543	Inf	Inf	0.0%
13/2+13/1	A5 West Left2	U	1:2	N/A	C1:C		1	49	-	1610	1900:1900	363+808	137.5 : 137.5%
13/3	A5 West Left	U	1:2	N/A	C1:C		1	49	-	404	1900	1056	38.3%

Full Input Data And Results

14/2+14/1	Westside A5 Gyratory Ahead Ahead2	U	1:2	N/A	C1:D		1	28	-	754	1900:1900	325+482	93.4 : 93.4%
14/3+14/4	Westside A5 Gyratory Ahead	U	1:2	N/A	C1:D		1	28	-	562	1900:1900	593+55	86.7 : 86.7%
15/1		U	N/A	N/A	-		-	-	-	612	Inf	Inf	0.0%
16/1	Green Lane Ahead Left	U	1:2	N/A	C1:E		1	14	-	208	1900	317	65.7%
16/2	Green Lane Ahead	U	1:2	N/A	C1:E		1	14	-	214	1900	317	67.6%
17/1	West Side Green Lane Gyratory Right Ahead	U	1:2	N/A	C1:F		1	63	-	1253	1900	1351	73.6%
17/2	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	63	-	1013	1900	1351	64.9%
17/3	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	63	-	452	1900	1351	33.5%
18/1		U	N/A	N/A	-		-	-	-	231	Inf	Inf	0.0%
18/2		U	N/A	N/A	-		-	-	-	231	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**87.8**	**254.0**	**0.0**	**341.8**	**-**	**-**	**-**	**-**
Junction 10 M42	**-**	**-**	**0**	**0**	**0**	**87.8**	**254.0**	**0.0**	**341.8**	**-**	**-**	**-**	**-**
1/2+1/1	328	328	-	-	-	3.0	0.7	-	3.7	40.2	4.7	0.7	5.4
1/3	136	136	-	-	-	1.2	0.3	-	1.5	40.0	2.9	0.3	3.3
2/1	740	740	-	-	-	1.4	0.6	-	2.0	9.9	6.0	0.6	6.7
2/2	919	919	-	-	-	0.8	1.2	-	2.0	7.8	4.2	1.2	5.4
2/3	590	590	-	-	-	0.7	0.4	-	1.1	7.0	5.5	0.4	5.9
2/4	76	76	-	-	-	0.0	0.0	-	0.1	2.8	0.9	0.0	0.9
3/1	818	818	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	997	997	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	388	388	-	-	-	2.6	0.9	-	3.6	33.2	8.6	0.9	9.6
4/2	254	254	-	-	-	2.0	0.4	-	2.4	34.3	6.1	0.4	6.5
4/3	186	186	-	-	-	1.2	0.2	-	1.4	27.7	2.2	0.2	2.5
4/4	146	146	-	-	-	0.6	0.2	-	0.7	18.0	0.9	0.2	1.1
5/2+5/1	652	652	-	-	-	1.9	0.6	-	2.5	13.7	6.6	0.6	7.1
5/3	658	658	-	-	-	2.4	0.8	-	3.1	17.2	10.8	0.8	11.6
5/4	642	642	-	-	-	2.3	0.7	-	3.0	16.9	10.3	0.7	11.1
6/1	479	479	-	-	-	0.6	0.3	-	0.9	7.1	3.1	0.3	3.4
6/2	355	355	-	-	-	1.7	0.2	-	1.9	18.9	6.7	0.2	6.9
6/3	844	844	-	-	-	1.0	1.0	-	2.0	8.5	5.4	1.0	6.4
6/4	788	788	-	-	-	0.5	0.9	-	1.4	6.4	3.9	0.9	4.8
7/1	460	460	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2+8/1	342	342	-	-	-	2.8	0.5	-	3.3	34.8	4.1	0.5	4.5
9/1	501	501	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	377	377	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	289	289	-	-	-	2.0	0.2	-	2.3	28.1	2.8	0.2	3.0

Full Input Data And Results

10/3	63	63	-	-	-	0.4	0.1	-	0.5	28.2	1.2	0.1	1.2
10/4	387	387	-	-	-	3.2	1.3	-	4.5	42.0	8.7	1.3	10.1
10/5	431	431	-	-	-	3.6	2.1	-	5.8	48.2	10.1	2.1	12.2
11/1	952	952	-	-	-	1.9	2.5	-	4.3	16.3	7.1	2.5	9.5
11/2	978	978	-	-	-	2.2	2.9	-	5.1	18.9	10.1	2.9	13.0
12/1	620	620	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	621	621	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	543	543	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2+13/1	1610	1171	-	-	-	32.4	221.3	-	253.6	567.1	57.3	221.3	278.5
13/3	404	404	-	-	-	1.3	0.3	-	1.6	14.1	5.6	0.3	5.9
14/2+14/1	754	754	-	-	-	3.5	5.8	-	9.3	44.6	5.5	5.8	11.4
14/3+14/4	562	562	-	-	-	2.0	3.0	-	5.0	32.1	4.0	3.0	7.0
15/1	568	568	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	208	208	-	-	-	2.0	0.9	-	3.0	51.4	4.9	0.9	5.8
16/2	214	214	-	-	-	2.1	1.0	-	3.1	52.4	5.0	1.0	6.0
17/1	994	994	-	-	-	1.8	1.4	-	3.2	11.4	9.6	1.4	10.9
17/2	877	877	-	-	-	2.4	0.9	-	3.3	13.6	16.6	0.9	17.6
17/3	452	452	-	-	-	0.2	0.3	-	0.5	3.6	1.2	0.3	1.4
18/1	210	210	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/2	210	210	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 4.9 Total Delay for Signalled Lanes (pcuHr): 22.49 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -52.7 Total Delay for Signalled Lanes (pcuHr): 282.55 Cycle Time (s): 90
C2 Stream: 1 PRC for Signalled Lanes (%): 28.2 Total Delay for Signalled Lanes (pcuHr): 10.42 Cycle Time (s): 90
C2 Stream: 2 PRC for Signalled Lanes (%): 32.8 Total Delay for Signalled Lanes (pcuHr): 26.33 Cycle Time (s): 90
PRC Over All Lanes (%): -52.7 Total Delay Over All Lanes(pcuHr): 341.78

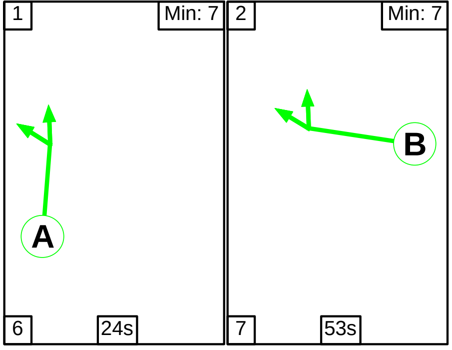
Full Input Data And Results

Scenario 6: '2026 R + D AM' (FG6: '2026 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

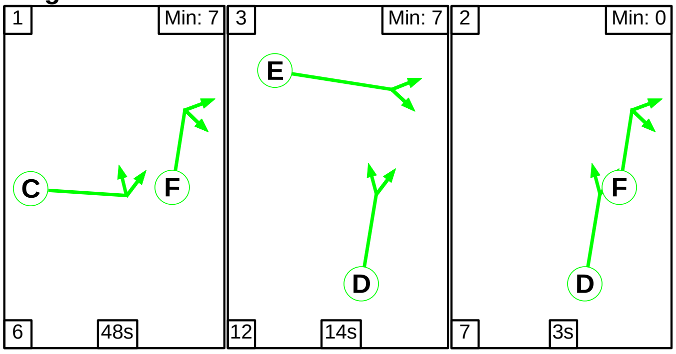
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

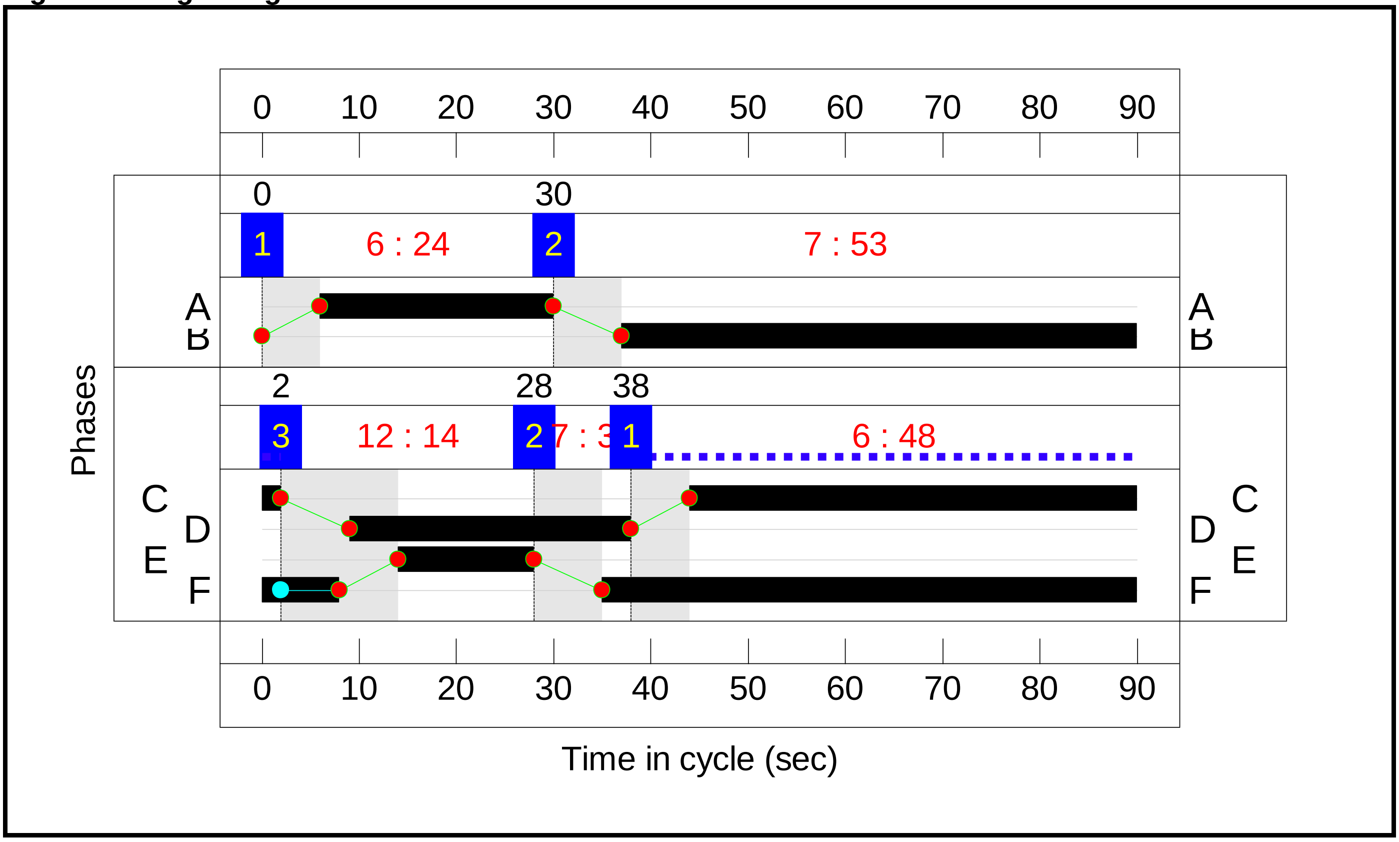
Stage Stream: 1

Stage	1	2
Duration	24	53
Change Point	0	30

Stage Stream: 2

Stage	1	3	2
Duration	48	14	3
Change Point	38	2	28

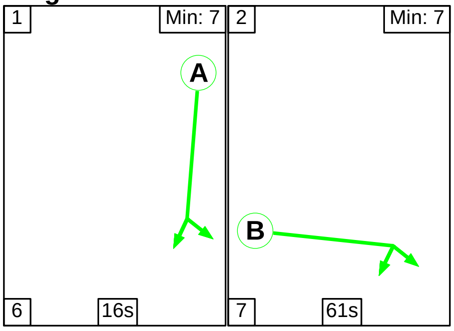
Signal Timings Diagram



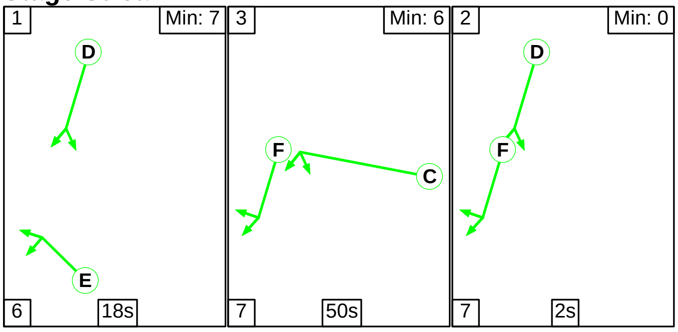
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

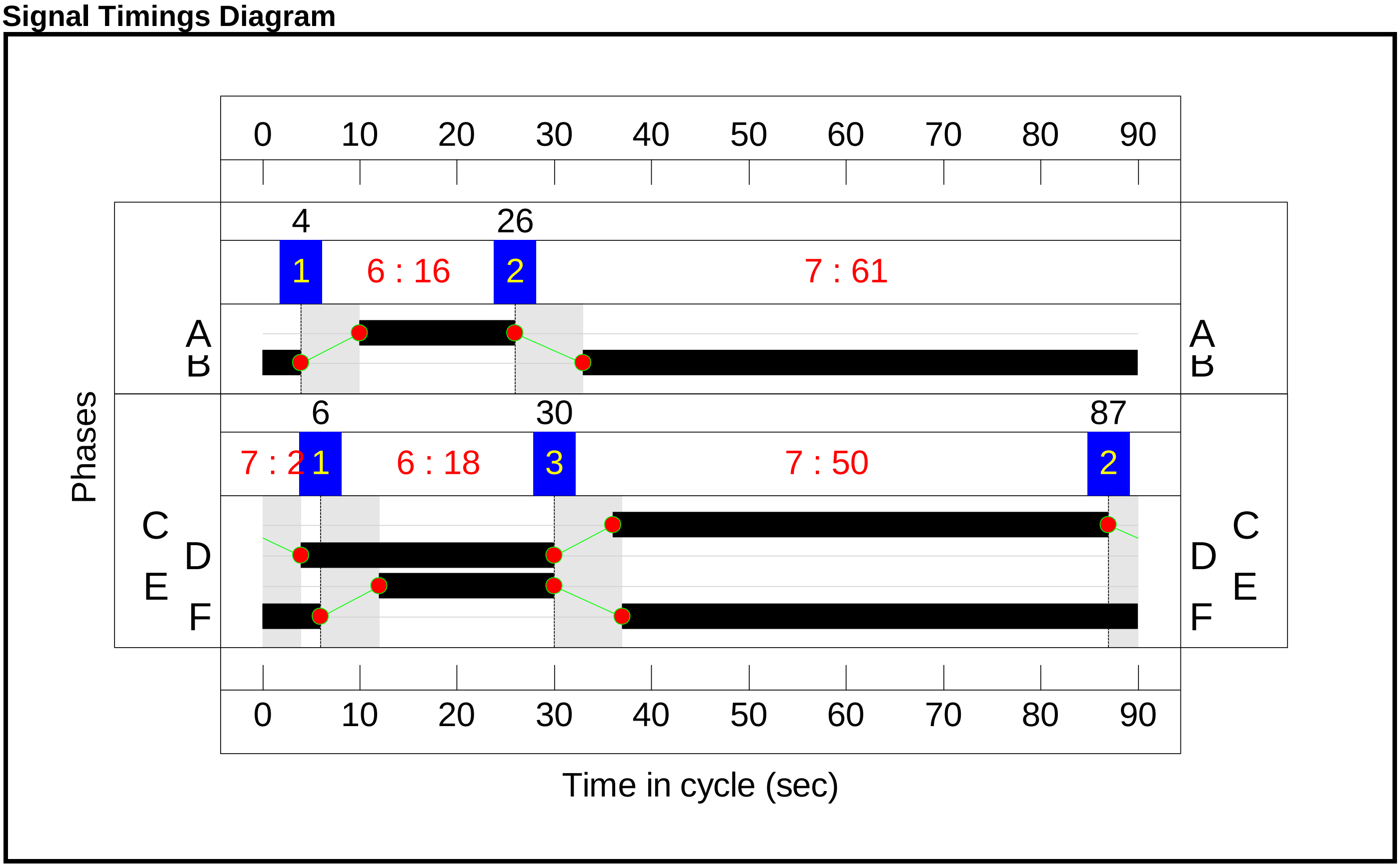
Stage Stream: 1

Stage	1	2
Duration	16	61
Change Point	4	26

Stage Stream: 2

Stage	1	3	2
Duration	18	50	2
Change Point	6	30	87

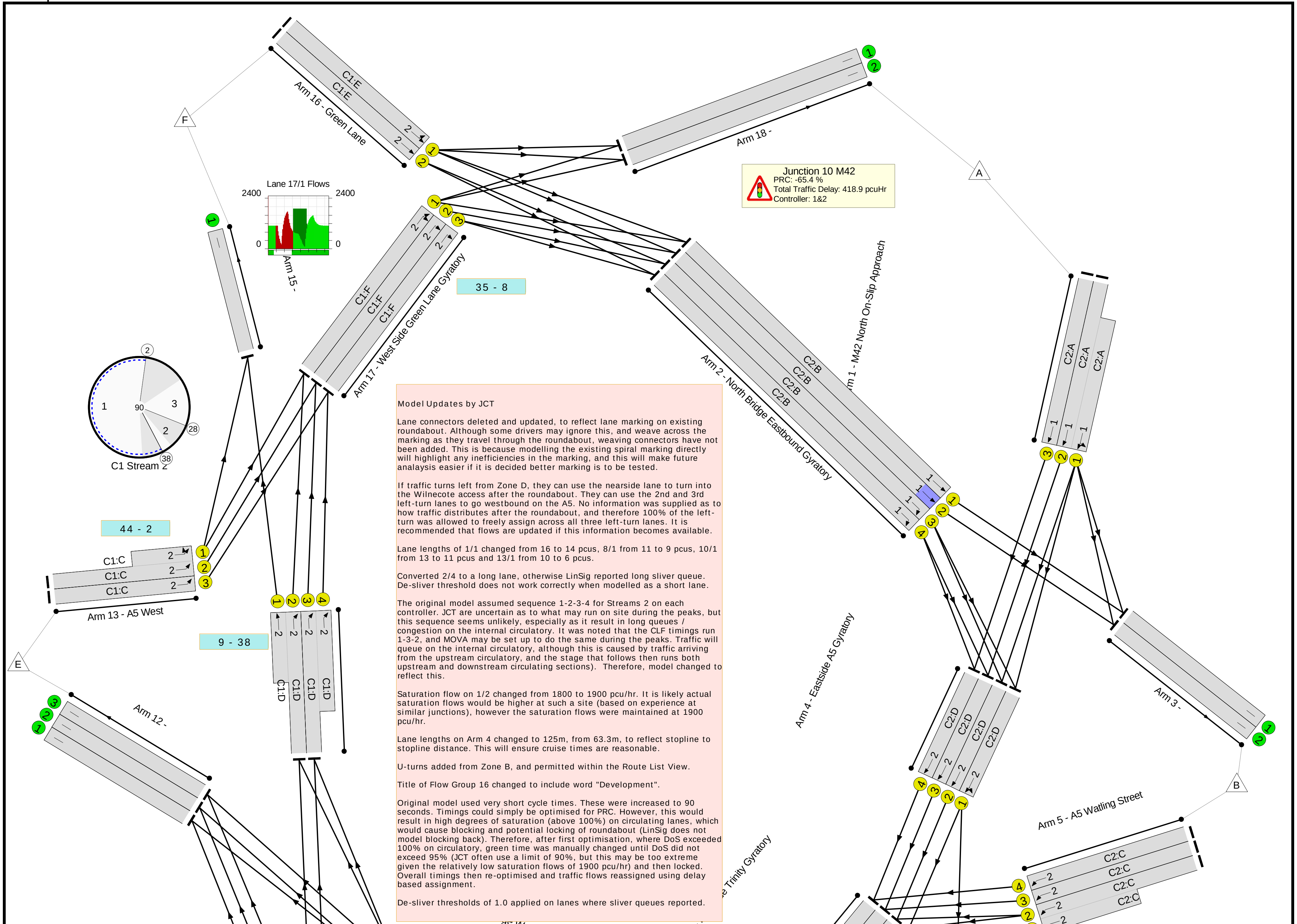
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



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De-sliver thresholds of 1.0 applied on lanes where sliver queues reported.

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**148.8%**
Junction 10 M42	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**148.8%**
1/2+1/1	M42 North On-Slip Approach Left Ahead	U	2:1	N/A	C2:A		1	16	-	339	1900:1900	170+359	64.1 : 64.1%
1/3	M42 North On-Slip Approach Ahead	U	2:1	N/A	C2:A		1	16	-	147	1900	359	41.0%
2/1	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	61	-	1035	1900	1309	58.0%
2/2	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	61	-	1141	1900	1309	72.8%
2/3	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	61	-	590	1900	1309	45.1%
2/4	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	61	-	76	1900	1309	5.8%
3/1		U	N/A	N/A	-		-	-	-	1124	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	1230	Inf	Inf	0.0%
4/1	Eastside A5 Gyratory Ahead Left	U	2:2	N/A	C2:D		1	26	-	383	1900	570	67.2%
4/2	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	26	-	259	1900	570	45.4%
4/3	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	26	-	174	1900	570	30.5%
4/4	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	26	-	158	1900	570	27.7%
5/2+5/1	A5 Watling Street Ahead Left	U	2:2	N/A	C2:C		1	51	-	668	1900:1900	901+353	53.3 : 53.3%
5/3	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	51	-	718	1900	1098	65.4%

5/4	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	51	-	664	1900	1098	60.5%
6/1	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	59	-	488	1900	1267	38.5%
6/2	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	59	-	362	1900	1267	28.6%
6/3	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	59	-	892	1900	1267	70.4%
6/4	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	59	-	822	1900	1267	64.9%
7/1		U	N/A	N/A	-		-	-	-	460	Inf	Inf	0.0%
8/2+8/1	Trinity Road Left Ahead	U	2:2	N/A	C2:E		1	18	-	342	1900:1900	384+296	50.3 : 50.3%
9/1		U	N/A	N/A	-		-	-	-	510	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	384	Inf	Inf	0.0%
10/2+10/1	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	24	-	289	1900:1900	482+479	30.1 : 30.1%
10/3	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	24	-	63	1900	528	11.9%
10/4	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	24	-	419	1900	528	79.4%
10/5	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	24	-	445	1900	528	84.3%
11/1	South Bridge Westbound Gyratory Ahead	U	1:1	N/A	C1:B		1	53	-	997	1900	1140	87.5%
11/2	South Bridge Westbound Gyratory Ahead Right	U	1:1	N/A	C1:B		1	53	-	1015	1900	1140	89.0%
12/1		U	N/A	N/A	-		-	-	-	642	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	644	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	576	Inf	Inf	0.0%
13/2+13/1	A5 West Left Left2	U	1:2	N/A	C1:C		1	48	-	1728	1900:1900	384+777	148.8 : 148.8%
13/3	A5 West Left	U	1:2	N/A	C1:C		1	48	-	404	1900	1034	39.1%

Full Input Data And Results

14/2+14/1	Westside A5 Gyratory Ahead Ahead2	U	1:2	N/A	C1:D		1	29	-	790	1900:1900	366+484	92.9 : 92.9%
14/3+14/4	Westside A5 Gyratory Ahead	U	1:2	N/A	C1:D		1	29	-	576	1900:1900	613+56	86.2 : 86.2%
15/1		U	N/A	N/A	-		-	-	-	612	Inf	Inf	0.0%
16/1	Green Lane Ahead Left	U	1:2	N/A	C1:E		1	14	-	208	1900	317	65.7%
16/2	Green Lane Ahead	U	1:2	N/A	C1:E		1	14	-	214	1900	317	67.6%
17/1	West Side Green Lane Gyratory Right Ahead	U	1:2	N/A	C1:F		1	63	-	1334	1900	1351	74.6%
17/2	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	63	-	1100	1900	1351	67.5%
17/3	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	63	-	452	1900	1351	33.5%
18/1		U	N/A	N/A	-		-	-	-	233	Inf	Inf	0.0%
18/2		U	N/A	N/A	-		-	-	-	233	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**97.6**	**321.3**	**0.0**	**418.9**	**-**	**-**	**-**	**-**
Junction 10 M42	**-**	**-**	**0**	**0**	**0**	**97.6**	**321.3**	**0.0**	**418.9**	**-**	**-**	**-**	**-**
1/2+1/1	339	339	-	-	-	3.1	0.9	-	4.0	42.3	5.3	0.9	6.2
1/3	147	147	-	-	-	1.3	0.3	-	1.7	40.6	3.2	0.3	3.6
2/1	759	759	-	-	-	1.4	0.7	-	2.1	9.8	6.0	0.7	6.7
2/2	953	953	-	-	-	0.9	1.3	-	2.2	8.4	4.5	1.3	5.8
2/3	590	590	-	-	-	0.7	0.4	-	1.1	7.0	5.5	0.4	5.9
2/4	76	76	-	-	-	0.0	0.0	-	0.1	2.8	0.9	0.0	0.9
3/1	848	848	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	1042	1042	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	383	383	-	-	-	2.7	1.0	-	3.7	34.9	8.6	1.0	9.6
4/2	259	259	-	-	-	2.1	0.4	-	2.5	35.3	6.3	0.4	6.7
4/3	174	174	-	-	-	1.2	0.2	-	1.4	28.7	2.1	0.2	2.4
4/4	158	158	-	-	-	0.6	0.2	-	0.8	19.1	1.0	0.2	1.2
5/2+5/1	668	668	-	-	-	1.9	0.6	-	2.5	13.3	6.7	0.6	7.2
5/3	718	718	-	-	-	2.6	0.9	-	3.5	17.6	12.2	0.9	13.1
5/4	664	664	-	-	-	2.3	0.8	-	3.0	16.5	10.7	0.8	11.5
6/1	488	488	-	-	-	0.6	0.3	-	0.9	6.6	3.0	0.3	3.3
6/2	362	362	-	-	-	1.6	0.2	-	1.8	18.2	6.9	0.2	7.1
6/3	892	892	-	-	-	0.9	1.2	-	2.1	8.3	4.8	1.2	6.0
6/4	822	822	-	-	-	0.6	0.9	-	1.5	6.6	4.4	0.9	5.3
7/1	460	460	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2+8/1	342	342	-	-	-	2.9	0.5	-	3.4	36.1	4.2	0.5	4.7
9/1	510	510	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	384	384	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	289	289	-	-	-	2.0	0.2	-	2.3	28.1	2.8	0.2	3.0

Full Input Data And Results

10/3	63	63	-	-	-	0.4	0.1	-	0.5	28.2	1.2	0.1	1.2
10/4	419	419	-	-	-	3.5	1.9	-	5.4	46.1	9.7	1.9	11.5
10/5	445	445	-	-	-	3.8	2.5	-	6.3	51.1	10.4	2.5	12.9
11/1	997	997	-	-	-	2.2	3.3	-	5.5	19.9	8.1	3.3	11.4
11/2	1015	1015	-	-	-	2.4	3.8	-	6.2	22.0	10.7	3.8	14.6
12/1	642	642	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	644	644	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	576	576	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2+13/1	1728	1161	-	-	-	40.6	285.0	-	325.6	678.4	66.2	285.0	351.2
13/3	404	404	-	-	-	1.3	0.3	-	1.7	14.7	5.8	0.3	6.2
14/2+14/1	790	790	-	-	-	3.4	5.5	-	9.0	40.9	5.9	5.5	11.4
14/3+14/4	576	576	-	-	-	1.8	2.9	-	4.7	29.2	3.7	2.9	6.6
15/1	559	559	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	208	208	-	-	-	2.0	0.9	-	3.0	51.4	4.9	0.9	5.8
16/2	214	214	-	-	-	2.1	1.0	-	3.1	52.4	5.0	1.0	6.0
17/1	1008	1008	-	-	-	1.9	1.5	-	3.4	12.0	10.6	1.5	12.1
17/2	912	912	-	-	-	2.5	1.0	-	3.6	14.0	17.5	1.0	18.5
17/3	452	452	-	-	-	0.2	0.3	-	0.5	3.6	1.2	0.3	1.4
18/1	208	208	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/2	208	208	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 1.1 Total Delay for Signalled Lanes (pcuHr): 26.15 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -65.4 Total Delay for Signalled Lanes (pcuHr): 354.38 Cycle Time (s): 90
C2 Stream: 1 PRC for Signalled Lanes (%): 23.6 Total Delay for Signalled Lanes (pcuHr): 11.15 Cycle Time (s): 90
C2 Stream: 2 PRC for Signalled Lanes (%): 27.8 Total Delay for Signalled Lanes (pcuHr): 27.21 Cycle Time (s): 90
PRC Over All Lanes (%): -65.4 Total Delay Over All Lanes(pcuHr): 418.89

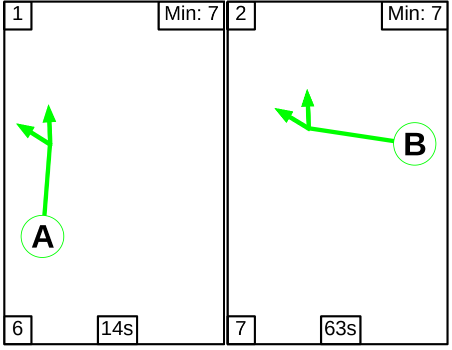
Full Input Data And Results

Scenario 7: '2026 R PM' (FG7: '2026 Reference PM Peak', Plan 1: 'Network Control Plan 1')

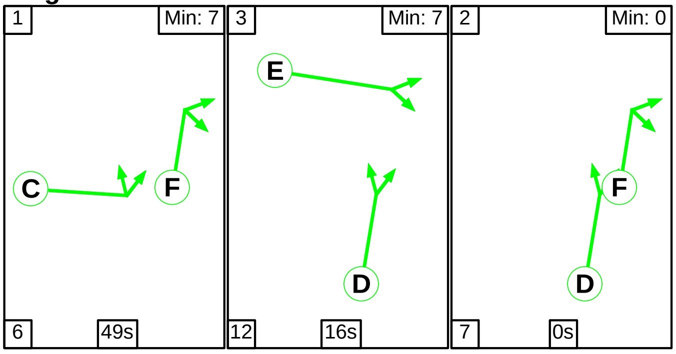
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

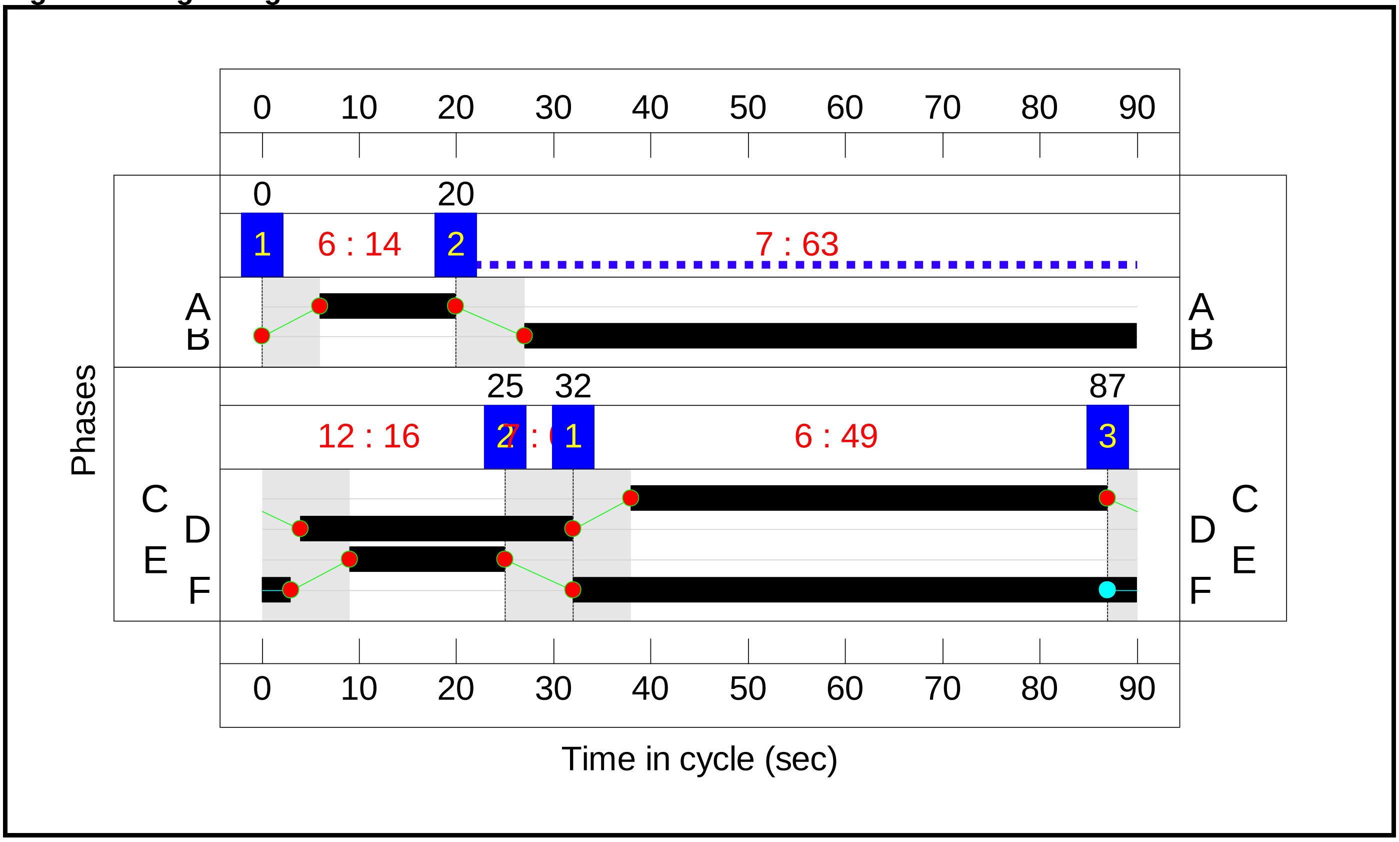
Stage	1	2
Duration	14	63
Change Point	0	20

Stage Stream: 2

Stage	1	3	2
Duration	49	16	0
Change Point	32	87	25

Full Input Data And Results

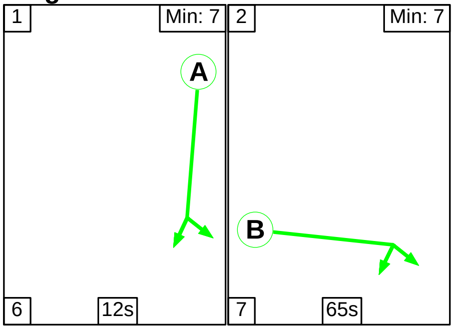
Signal Timings Diagram



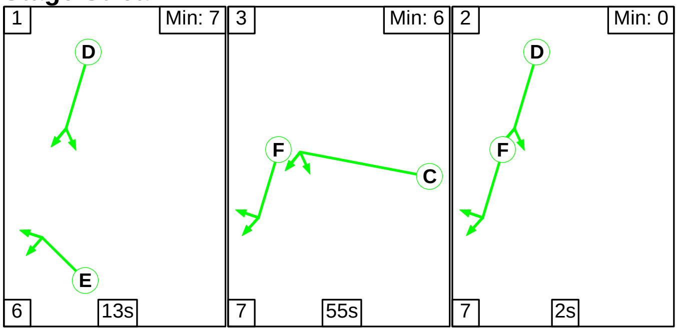
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

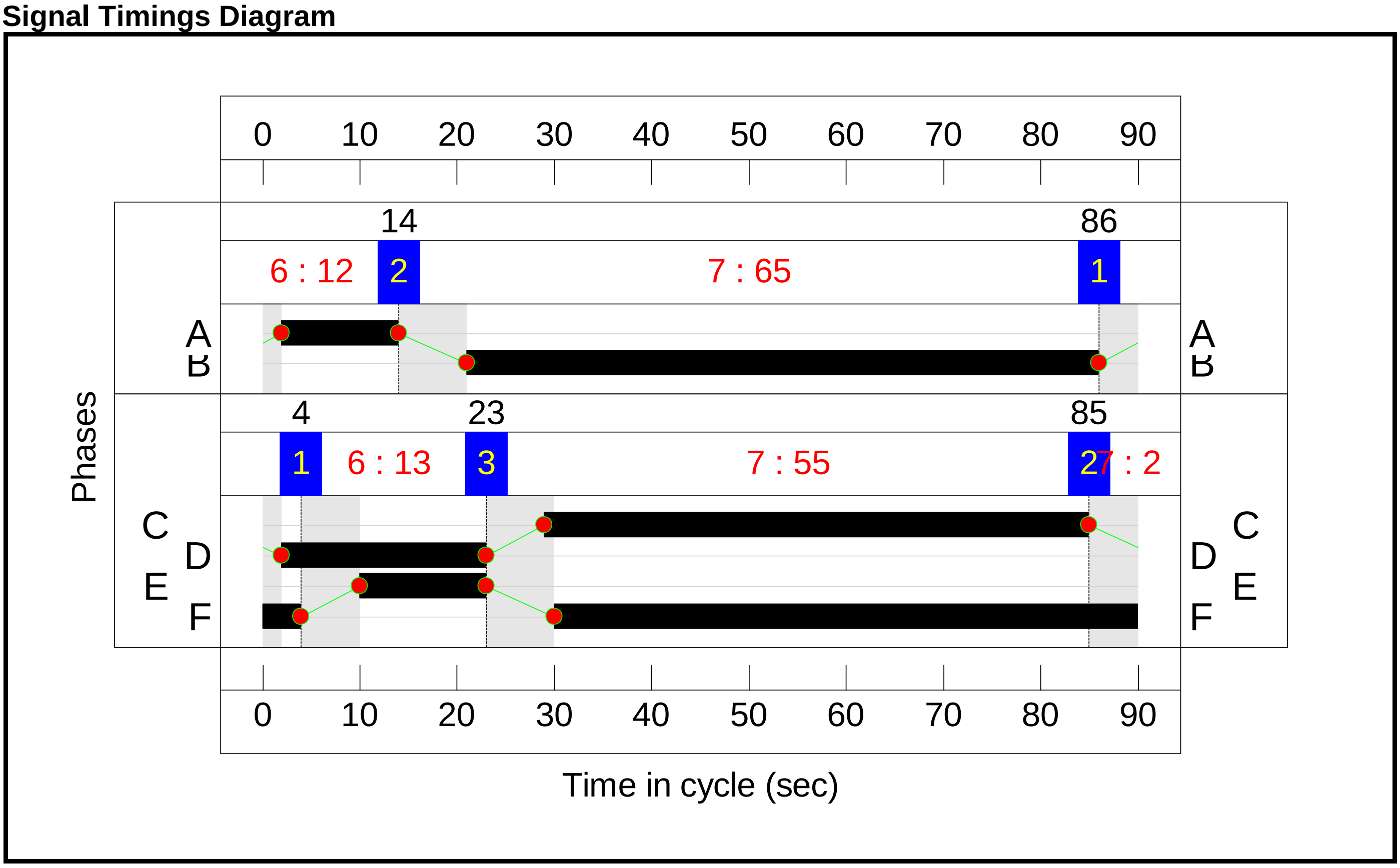
Stage Stream: 1

Stage	1	2
Duration	12	65
Change Point	86	14

Stage Stream: 2

Stage	1	3	2
Duration	13	55	2
Change Point	4	23	85

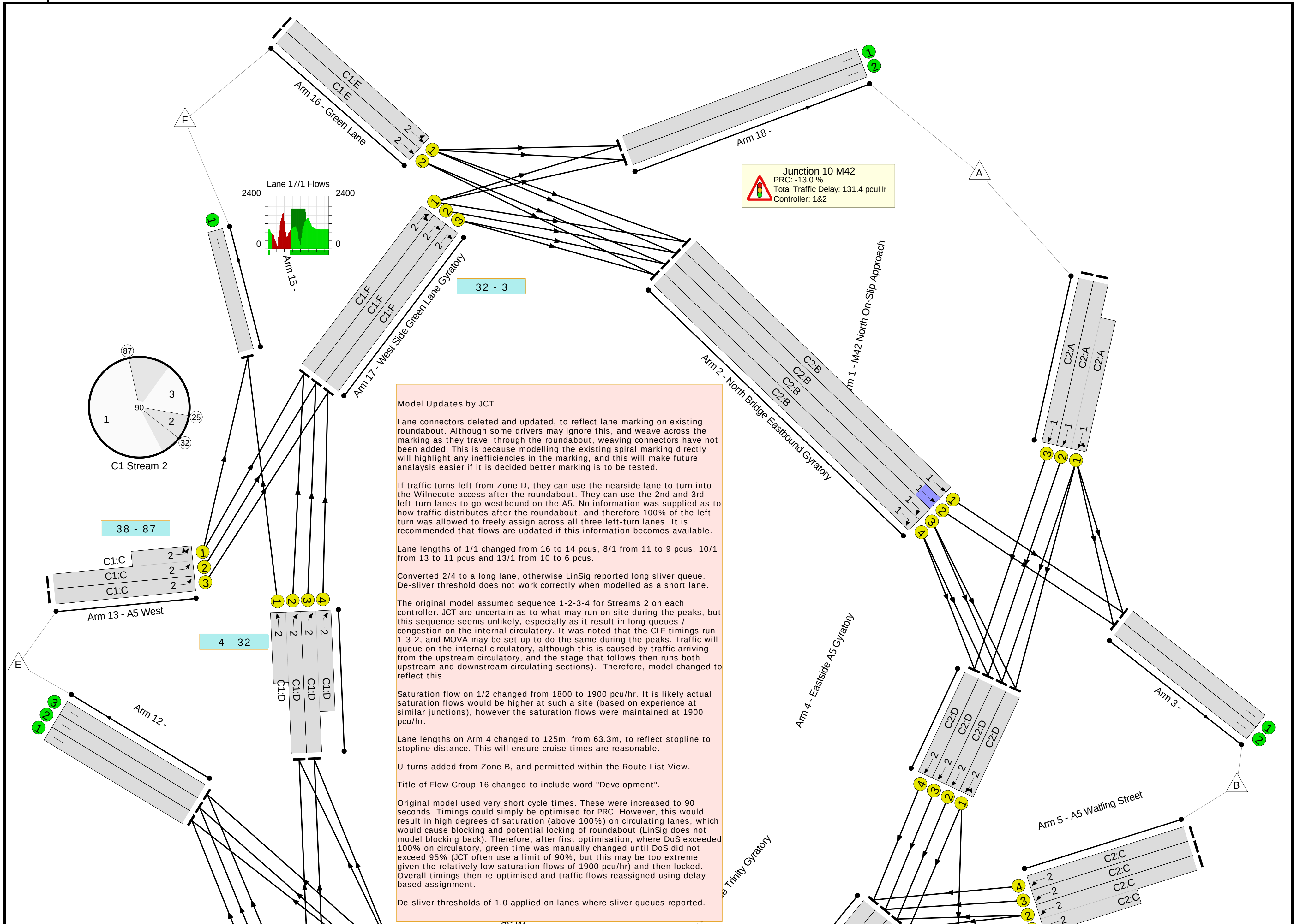
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



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De-sliver thresholds of 1.0 applied on lanes where sliver queues reported.

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**101.7%**
Junction 10 M42	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**101.7%**
1/2+1/1	M42 North On-Slip Approach Left Ahead	U	2:1	N/A	C2:A		1	12	-	301	1900:1900	274+274	46.3 : 63.4%
1/3	M42 North On-Slip Approach Ahead	U	2:1	N/A	C2:A		1	12	-	123	1900	274	44.8%
2/1	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	65	-	753	1900	1393	53.8%
2/2	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	65	-	883	1900	1393	63.1%
2/3	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	65	-	526	1900	1393	37.7%
2/4	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	65	-	150	1900	1393	10.8%
3/1		U	N/A	N/A	-		-	-	-	826	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	956	Inf	Inf	0.0%
4/1	Eastside A5 Gyratory Ahead Left	U	2:2	N/A	C2:D		1	21	-	308	1900	464	66.1%
4/2	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	21	-	246	1900	464	53.0%
4/3	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	21	-	229	1900	464	49.3%
4/4	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	21	-	171	1900	464	36.8%
5/2+5/1	A5 Watling Street Ahead Left	U	2:2	N/A	C2:C		1	56	-	564	1900:1900	983+369	41.7 : 41.7%
5/3	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	56	-	876	1900	1203	72.8%

Full Input Data And Results

5/4	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	56	-	894	1900	1203	74.3%
6/1	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	64	-	450	1900	1372	32.8%
6/2	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	64	-	322	1900	1372	23.5%
6/3	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	64	-	1105	1900	1372	80.5%
6/4	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	64	-	1065	1900	1372	77.6%
7/1		U	N/A	N/A	-		-	-	-	346	Inf	Inf	0.0%
8/2+8/1	Trinity Road Left Ahead	U	2:2	N/A	C2:E		1	13	-	400	1900:1900	296+296	68.3 : 67.0%
9/1		U	N/A	N/A	-		-	-	-	474	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	346	Inf	Inf	0.0%
10/2+10/1	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	14	-	349	1900:1900	317+317	54.9 : 55.3%
10/3	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	14	-	89	1900	317	28.1%
10/4	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	14	-	322	1900	317	101.7%
10/5	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	14	-	322	1900	317	101.7%
11/1	South Bridge Westbound Gyratory Ahead	U	1:1	N/A	C1:B		1	63	-	1255	1900	1351	92.9%
11/2	South Bridge Westbound Gyratory Ahead Right	U	1:1	N/A	C1:B		1	63	-	1267	1900	1351	93.8%
12/1		U	N/A	N/A	-		-	-	-	802	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	802	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	916	Inf	Inf	0.0%
13/2+13/1	A5 West Left2	U	1:2	N/A	C1:C		1	49	-	1174	1900:1900	489+734	96.0 : 96.0%
13/3	A5 West Left	U	1:2	N/A	C1:C		1	49	-	288	1900	1056	27.3%

Full Input Data And Results

14/2+14/1	Westside A5 Gyratory Ahead Ahead2	U	1:2	N/A	C1:D		1	28	-	634	1900:1900	466+379	74.4 : 74.4%
14/3+14/4	Westside A5 Gyratory Ahead	U	1:2	N/A	C1:D		1	28	-	450	1900:1900	587+77	67.1 : 66.7%
15/1		U	N/A	N/A	-		-	-	-	424	Inf	Inf	0.0%
16/1	Green Lane Ahead Left	U	1:2	N/A	C1:E		1	16	-	270	1900	359	75.2%
16/2	Green Lane Ahead	U	1:2	N/A	C1:E		1	16	-	336	1900	359	93.6%
17/1	West Side Green Lane Gyratory Right Ahead	U	1:2	N/A	C1:F		1	61	-	915	1900	1309	69.7%
17/2	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	61	-	867	1900	1309	65.9%
17/3	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	61	-	340	1900	1309	25.9%
18/1		U	N/A	N/A	-		-	-	-	208	Inf	Inf	0.0%
18/2		U	N/A	N/A	-		-	-	-	208	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**63.8**	**67.6**	**0.0**	**131.4**	**-**	**-**	**-**	**-**
Junction 10 M42	**-**	**-**	**0**	**0**	**0**	**63.8**	**67.6**	**0.0**	**131.4**	**-**	**-**	**-**	**-**
1/2+1/1	301	301	-	-	-	3.0	0.6	-	3.6	43.1	4.1	0.6	4.7
1/3	123	123	-	-	-	1.2	0.4	-	1.6	47.1	2.8	0.4	3.2
2/1	750	750	-	-	-	1.0	0.6	-	1.6	7.5	6.1	0.6	6.7
2/2	879	879	-	-	-	0.9	0.9	-	1.8	7.2	5.0	0.9	5.8
2/3	525	525	-	-	-	0.3	0.3	-	0.6	4.2	2.3	0.3	2.6
2/4	150	150	-	-	-	0.0	0.1	-	0.1	1.4	0.0	0.1	0.1
3/1	823	823	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	952	952	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	307	307	-	-	-	2.6	1.0	-	3.6	42.3	7.2	1.0	8.1
4/2	246	246	-	-	-	2.8	0.6	-	3.3	48.6	6.1	0.6	6.7
4/3	229	229	-	-	-	1.7	0.5	-	2.2	33.8	3.0	0.5	3.4
4/4	171	171	-	-	-	0.9	0.3	-	1.2	25.2	1.6	0.3	1.9
5/2+5/1	564	564	-	-	-	1.2	0.4	-	1.5	9.7	4.8	0.4	5.1
5/3	876	876	-	-	-	2.7	1.3	-	4.1	16.7	14.8	1.3	16.2
5/4	894	894	-	-	-	2.8	1.4	-	4.3	17.2	15.4	1.4	16.8
6/1	450	450	-	-	-	0.5	0.2	-	0.7	5.9	3.1	0.2	3.3
6/2	322	322	-	-	-	1.2	0.2	-	1.4	15.1	6.5	0.2	6.6
6/3	1105	1105	-	-	-	1.4	2.0	-	3.5	11.2	20.4	2.0	22.4
6/4	1065	1065	-	-	-	0.7	1.7	-	2.4	8.2	5.8	1.7	7.5
7/1	345	345	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2+8/1	400	400	-	-	-	4.0	1.0	-	5.0	45.2	4.8	1.0	5.8
9/1	474	474	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	346	346	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	349	349	-	-	-	3.3	0.6	-	3.9	40.7	4.0	0.6	4.6

Full Input Data And Results

10/3	89	89	-	-	-	0.8	0.2	-	1.0	40.7	1.9	0.2	2.1
10/4	322	317	-	-	-	3.6	10.4	-	14.0	156.6	8.2	10.4	18.6
10/5	322	317	-	-	-	3.6	10.4	-	14.0	156.6	8.2	10.4	18.6
11/1	1255	1255	-	-	-	1.7	5.8	-	7.6	21.7	9.7	5.8	15.5
11/2	1267	1267	-	-	-	1.9	6.5	-	8.4	24.0	11.7	6.5	18.2
12/1	802	802	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	802	802	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	916	916	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2+13/1	1174	1174	-	-	-	5.3	8.8	-	14.1	43.1	23.1	8.8	31.9
13/3	288	288	-	-	-	0.8	0.2	-	1.0	12.8	3.8	0.2	3.9
14/2+14/1	629	629	-	-	-	2.8	1.4	-	4.3	24.5	4.3	1.4	5.7
14/3+14/4	445	445	-	-	-	1.5	1.0	-	2.5	20.6	3.3	1.0	4.3
15/1	422	422	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	270	270	-	-	-	2.6	1.5	-	4.1	54.1	6.4	1.5	7.8
16/2	336	336	-	-	-	3.4	5.1	-	8.4	90.4	8.2	5.1	13.3
17/1	912	912	-	-	-	1.7	1.1	-	2.8	11.0	11.2	1.1	12.3
17/2	863	863	-	-	-	1.7	1.0	-	2.6	11.0	14.3	1.0	15.3
17/3	339	339	-	-	-	0.1	0.2	-	0.3	3.4	0.8	0.2	1.0
18/1	208	208	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/2	208	208	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -13.0 Total Delay for Signalled Lanes (pcuHr): 48.95 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -6.7 Total Delay for Signalled Lanes (pcuHr): 40.16 Cycle Time (s): 90
C2 Stream: 1 PRC for Signalled Lanes (%): 42.0 Total Delay for Signalled Lanes (pcuHr): 9.21 Cycle Time (s): 90
C2 Stream: 2 PRC for Signalled Lanes (%): 11.8 Total Delay for Signalled Lanes (pcuHr): 33.10 Cycle Time (s): 90
PRC Over All Lanes (%): -13.0 Total Delay Over All Lanes(pcuHr): 131.42

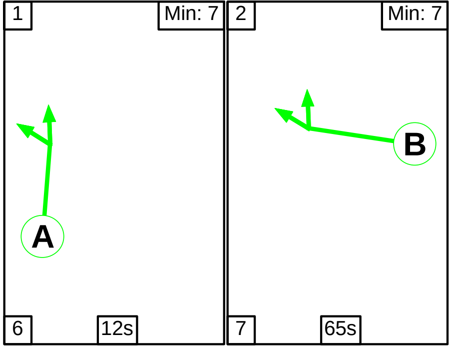
Full Input Data And Results

Scenario 8: '2026 R + D PM' (FG8: '2026 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

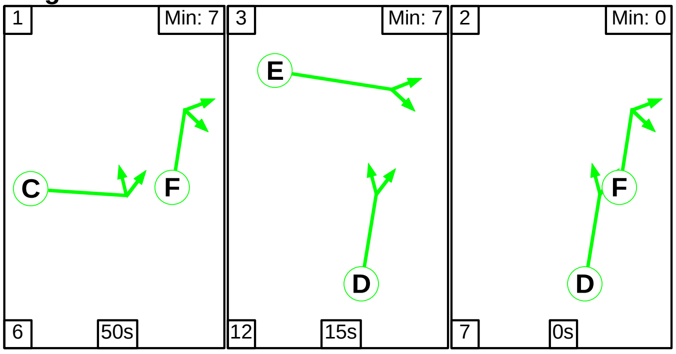
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

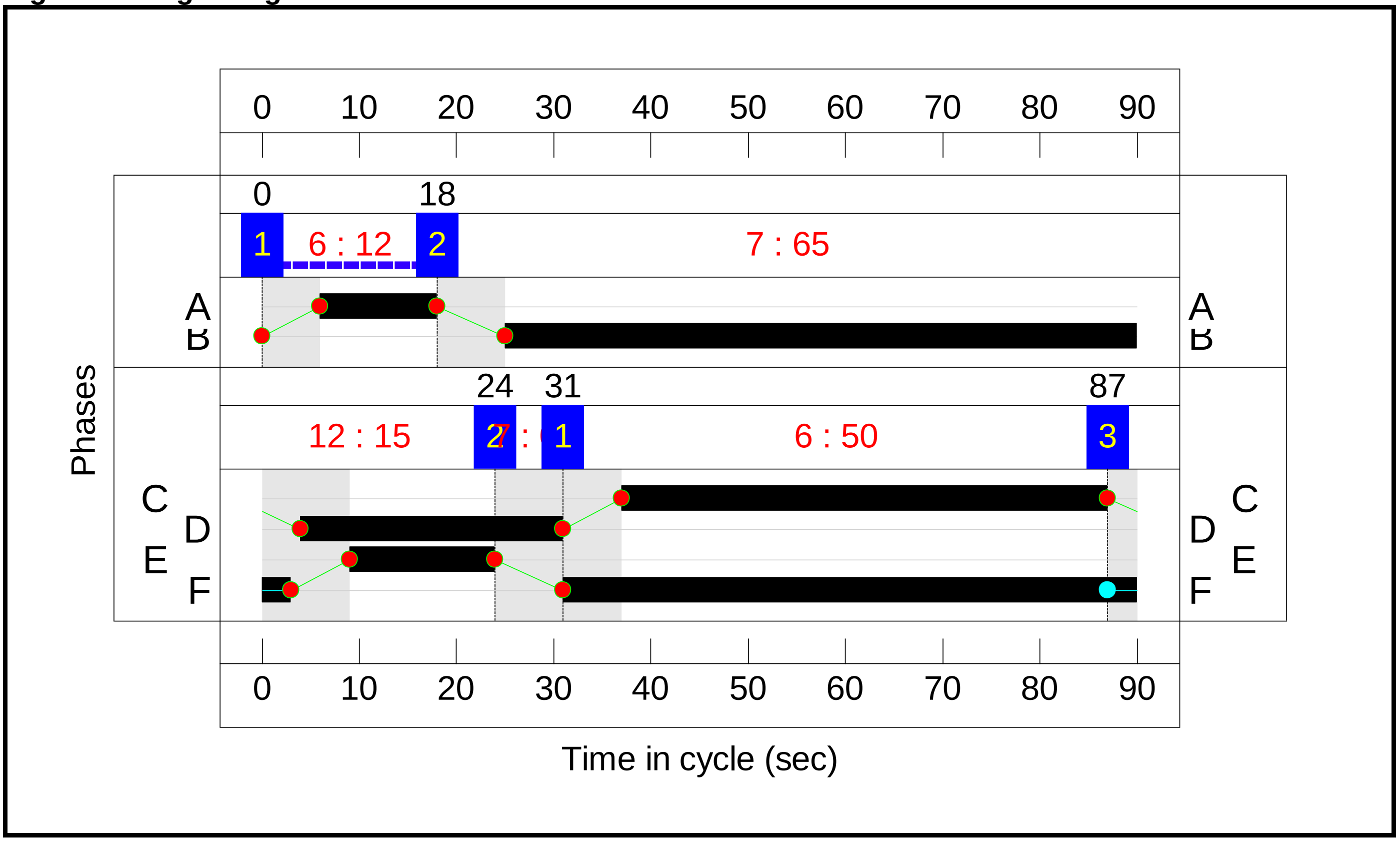
Stage Stream: 1

Stage	1	2
Duration	12	65
Change Point	0	18

Stage Stream: 2

Stage	1	3	2
Duration	50	15	0
Change Point	31	87	24

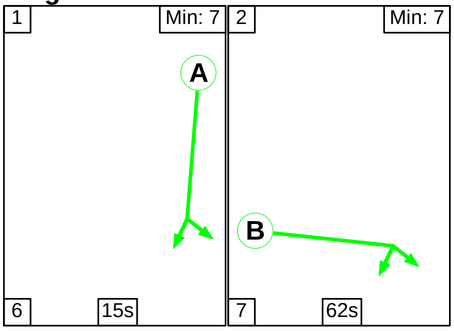
Signal Timings Diagram



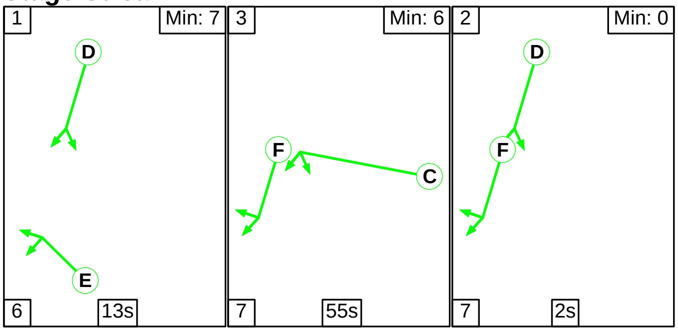
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

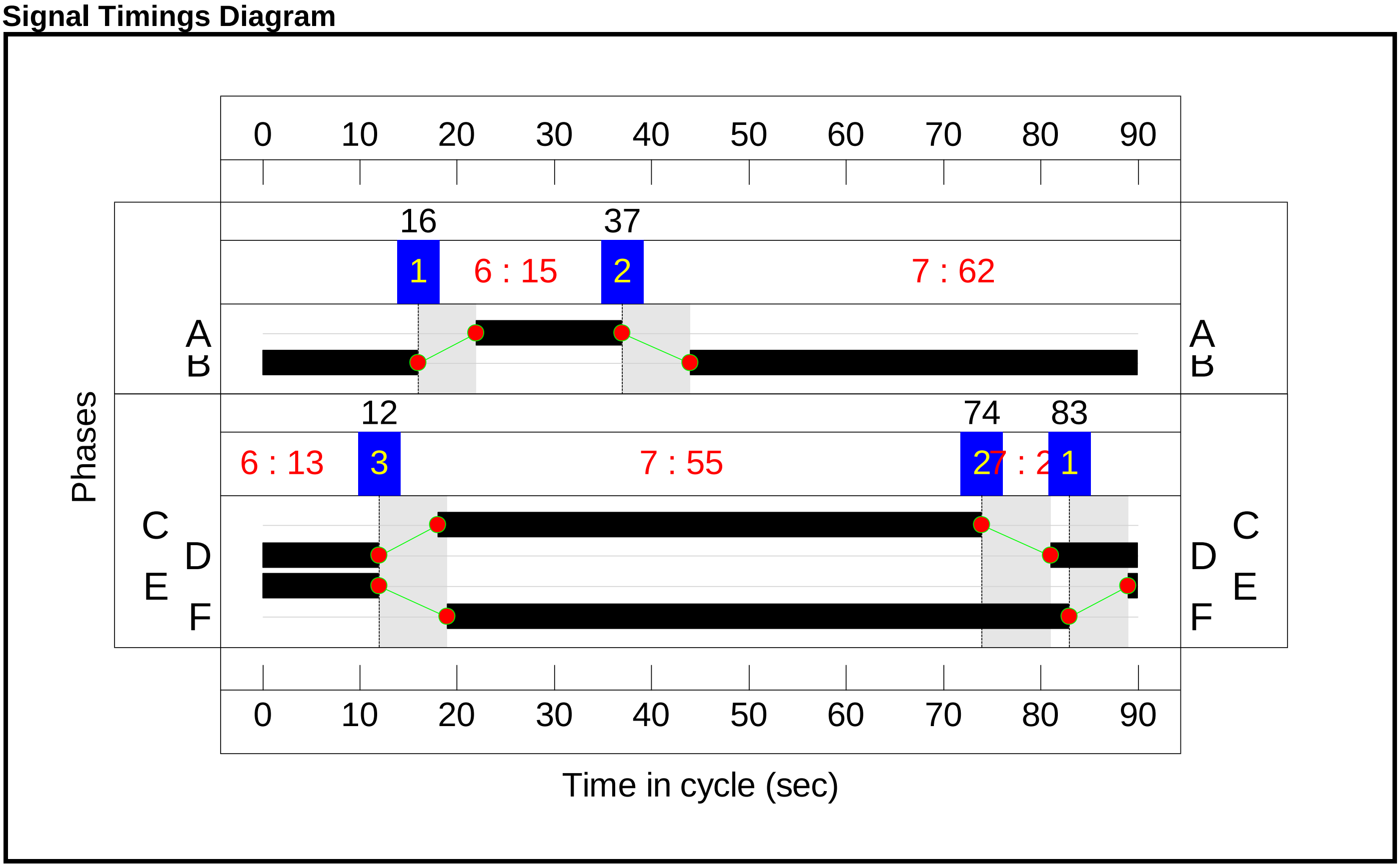
Stage Stream: 1

Stage	**1**	**2**
Duration	15	62
Change Point	16	37

Stage Stream: 2

Stage	**1**	**3**	**2**
Duration	13	55	2
Change Point	83	12	74

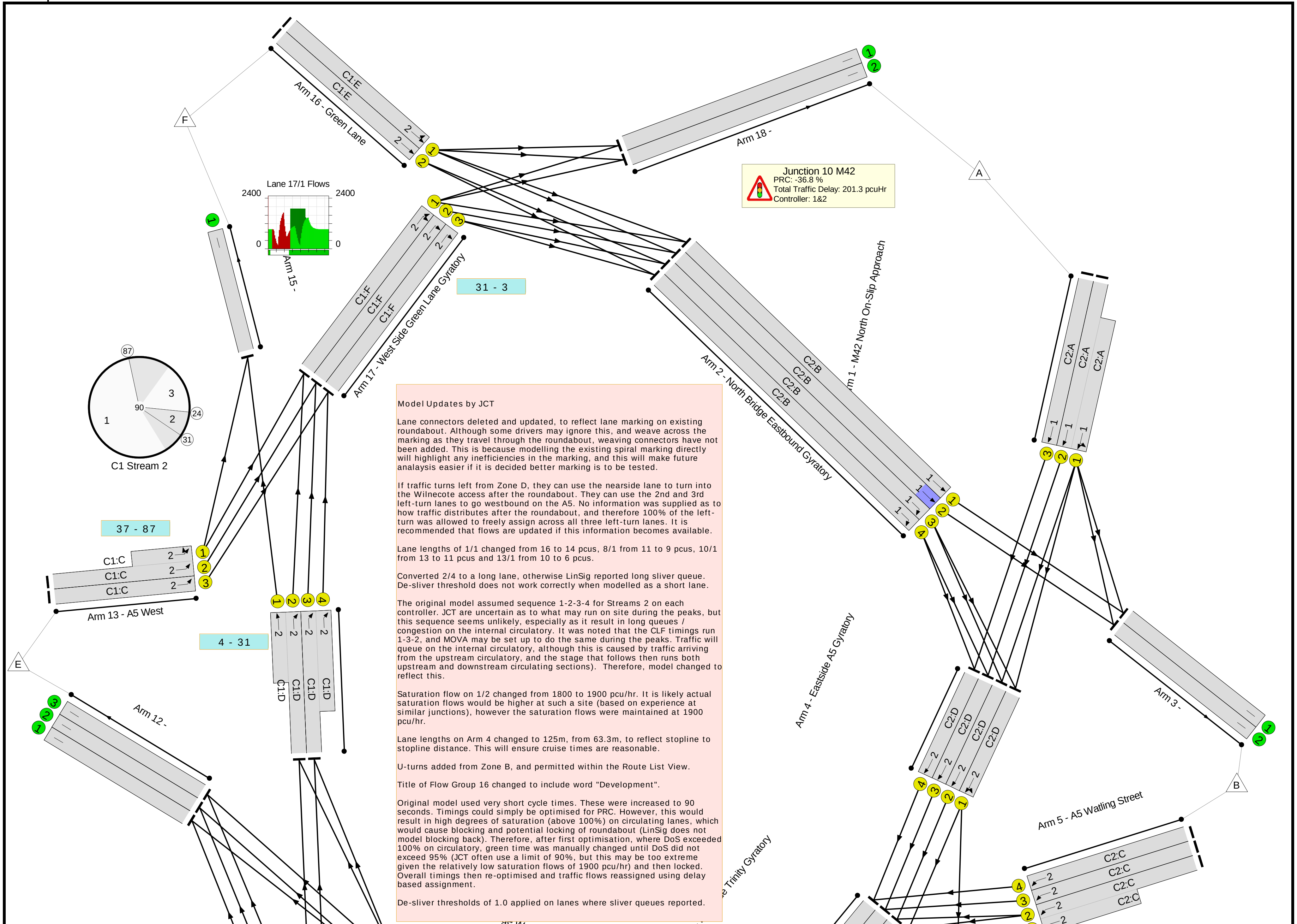
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Model Updates by JCT

Lane connectors deleted and updated, to reflect lane marking on existing roundabout. Although some drivers may ignore this, and weave across the marking as they travel through the roundabout, weaving connectors have not been added. This is because modelling the existing spiral marking directly will highlight any inefficiencies in the marking, and this will make future analaysis easier if it is decided better marking is to be tested.

If traffic turns left from Zone D, they can use the nearside lane to turn into the Wilnecote access after the roundabout. They can use the 2nd and 3rd left-turn lanes to go westbound on the A5. No information was supplied as to how traffic distributes after the roundabout, and therefore 100% of the left-turn was allowed to freely assign across all three left-turn lanes. It is recommended that flows are updated if this information becomes available.

Lane lengths of 1/1 changed from 16 to 14 pcus, 8/1 from 11 to 9 pcus, 10/1 from 13 to 11 pcus and 13/1 from 10 to 6 pcus.

Converted 2/4 to a long lane, otherwise LinSig reported long sliver queue. De-sliver threshold does not work correctly when modelled as a short lane.

The original model assumed sequence 1-2-3-4 for Streams 2 on each controller. JCT are uncertain as to what may run on site during the peaks, but this sequence seems unlikely, especially as it result in long queues / congestion on the internal circulatory. It was noted that the CLF timings run 1-3-2, and MOVA may be set up to do the same during the peaks. Traffic will queue on the internal circulatory, although this is caused by traffic arriving from the upstream circulatory, and the stage that follows then runs both upstream and downstream circulating sections). Therefore, model changed to reflect this.

Saturation flow on 1/2 changed from 1800 to 1900 pcu/hr. It is likely actual saturation flows would be higher at such a site (based on experience at similar junctions), however the saturation flows were maintained at 1900 pcu/hr.

Lane lengths on Arm 4 changed to 125m, from 63.3m, to reflect stopline to stopline distance. This will ensure cruise times are reasonable.

U-turns added from Zone B, and permitted within the Route List View.

Title of Flow Group 16 changed to include word "Development".

Original model used very short cycle times. These were increased to 90 seconds. Timings could simply be optimised for PRC. However, this would result in high degrees of saturation (above 100%) on circulating lanes, which would cause blocking and potential locking of roundabout (LinSig does not model blocking back). Therefore, after first optimisation, where DoS exceeded 100% on circulatory, green time was manually changed until DoS did not exceed 95% (JCT often use a limit of 90%, but this may be too extreme given the relatively low saturation flows of 1900 pcu/hr) and then locked. Overall timings then re-optimised and traffic flows reassigned using delay based assignment.

De-sliver thresholds of 1.0 applied on lanes where sliver queues reported.

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**123.2%**
Junction 10 M42	-	-	**N/A**	-	-		-	-	-	-	-	-	**123.2%**
1/2+1/1	M42 North On-Slip Approach Left Ahead	U	2:1	N/A	C2:A		1	15	-	297	1900:1900	190+338	56.3 : 56.3%
1/3	M42 North On-Slip Approach Ahead	U	2:1	N/A	C2:A		1	15	-	143	1900	338	42.3%
2/1	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	62	-	793	1900	1330	56.8%
2/2	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	62	-	943	1900	1330	66.9%
2/3	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	62	-	526	1900	1330	38.8%
2/4	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	62	-	150	1900	1330	11.3%
3/1		U	N/A	N/A	-		-	-	-	874	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	1024	Inf	Inf	0.0%
4/1	Eastside A5 Gyratory Ahead Left	U	2:2	N/A	C2:D		1	21	-	314	1900	464	65.5%
4/2	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	21	-	240	1900	464	51.7%
4/3	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	21	-	218	1900	464	46.9%
4/4	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	21	-	182	1900	464	39.2%
5/2+5/1	A5 Watling Street Ahead Left	U	2:2	N/A	C2:C		1	56	-	646	1900:1900	1001+335	48.3 : 48.3%
5/3	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	56	-	954	1900	1203	79.3%

Full Input Data And Results

5/4	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	56	-	898	1900	1203	74.6%
6/1	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	64	-	465	1900	1372	33.9%
6/2	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	64	-	381	1900	1372	27.8%
6/3	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	64	-	1172	1900	1372	85.4%
6/4	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	64	-	1080	1900	1372	78.7%
7/1		U	N/A	N/A	-		-	-	-	354	Inf	Inf	0.0%
8/2+8/1	Trinity Road Left Ahead	U	2:2	N/A	C2:E		1	13	-	406	1900:1900	296+219	78.8 : 78.8%
9/1		U	N/A	N/A	-		-	-	-	489	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	405	Inf	Inf	0.0%
10/2+10/1	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	12	-	341	1900:1900	274+274	62.3 : 61.9%
10/3	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	12	-	97	1900	274	35.3%
10/4	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	12	-	338	1900	274	123.2%
10/5	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	12	-	338	1900	274	123.2%
11/1	South Bridge Westbound Gyratory Ahead	U	1:1	N/A	C1:B		1	65	-	1297	1900	1393	93.1%
11/2	South Bridge Westbound Gyratory Ahead Right	U	1:1	N/A	C1:B		1	65	-	1313	1900	1393	94.2%
12/1		U	N/A	N/A	-		-	-	-	819	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	819	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	954	Inf	Inf	0.0%
13/2+13/1	A5 West Left Left2	U	1:2	N/A	C1:C		1	50	-	1236	1900:1900	497+747	99.3 : 99.3%
13/3	A5 West Left	U	1:2	N/A	C1:C		1	50	-	288	1900	1077	26.7%

14/2+14/1	Westside A5 Gyratory Ahead Ahead2	U	1:2	N/A	C1:D		1	27	-	655	1900:1900	459+352	72.6 : 73.4%
14/3+14/4	Westside A5 Gyratory Ahead	U	1:2	N/A	C1:D		1	27	-	477	1900:1900	569+70	65.2 : 60.6%
15/1		U	N/A	N/A	-		-	-	-	424	Inf	Inf	0.0%
16/1	Green Lane Ahead Left	U	1:2	N/A	C1:E		1	15	-	270	1900	338	79.9%
16/2	Green Lane Ahead	U	1:2	N/A	C1:E		1	15	-	336	1900	338	99.5%
17/1	West Side Green Lane Gyratory Right Ahead	U	1:2	N/A	C1:F		1	62	-	973	1900	1330	70.3%
17/2	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	62	-	919	1900	1330	65.1%
17/3	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	62	-	340	1900	1330	24.8%
18/1		U	N/A	N/A	-		-	-	-	213	Inf	Inf	0.0%
18/2		U	N/A	N/A	-		-	-	-	213	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**71.8**	**129.5**	**0.0**	**201.3**	**-**	**-**	**-**	**-**
Junction 10 M42	**-**	**-**	**0**	**0**	**0**	**71.8**	**129.5**	**0.0**	**201.3**	**-**	**-**	**-**	**-**
1/2+1/1	297	297	-	-	-	2.7	0.6	-	3.4	41.0	4.3	0.6	5.0
1/3	143	143	-	-	-	1.3	0.4	-	1.7	42.1	3.2	0.4	3.5
2/1	755	755	-	-	-	0.6	0.7	-	1.2	5.8	3.6	0.7	4.2
2/2	889	889	-	-	-	0.3	1.0	-	1.3	5.3	2.1	1.0	3.1
2/3	516	516	-	-	-	1.0	0.3	-	1.3	8.9	6.1	0.3	6.4
2/4	150	150	-	-	-	0.6	0.1	-	0.7	16.0	3.7	0.1	3.8
3/1	836	836	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	970	970	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	304	304	-	-	-	1.9	0.9	-	2.8	33.3	7.0	0.9	8.0
4/2	240	240	-	-	-	1.4	0.5	-	1.9	29.2	5.5	0.5	6.1
4/3	218	218	-	-	-	2.2	0.4	-	2.6	43.3	5.4	0.4	5.9
4/4	182	182	-	-	-	2.1	0.3	-	2.4	47.6	4.5	0.3	4.9
5/2+5/1	646	646	-	-	-	1.4	0.5	-	1.9	10.3	5.9	0.5	6.4
5/3	954	954	-	-	-	3.2	1.9	-	5.1	19.3	17.5	1.9	19.4
5/4	898	898	-	-	-	2.9	1.5	-	4.3	17.3	15.5	1.5	16.9
6/1	465	465	-	-	-	0.5	0.3	-	0.7	5.7	3.2	0.3	3.5
6/2	381	381	-	-	-	1.2	0.2	-	1.4	12.8	6.5	0.2	6.7
6/3	1172	1172	-	-	-	1.6	2.8	-	4.4	13.6	8.9	2.8	11.7
6/4	1080	1080	-	-	-	1.1	1.8	-	2.9	9.6	7.9	1.8	9.8
7/1	344	344	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2+8/1	406	406	-	-	-	4.1	1.8	-	5.9	52.0	5.6	1.8	7.4
9/1	489	489	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	405	405	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	341	341	-	-	-	3.4	0.8	-	4.2	44.8	4.0	0.8	4.8

Full Input Data And Results

10/3	97	97	-	-	-	0.9	0.3	-	1.2	44.8	2.2	0.3	2.5
10/4	338	274	-	-	-	6.5	34.2	-	40.8	434.5	10.0	34.2	44.3
10/5	338	274	-	-	-	6.5	34.2	-	40.8	434.5	10.0	34.2	44.3
11/1	1297	1297	-	-	-	1.2	6.0	-	7.2	19.9	9.0	6.0	15.0
11/2	1313	1313	-	-	-	2.4	7.0	-	9.3	25.6	29.7	7.0	36.7
12/1	819	819	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	819	819	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	954	954	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2+13/1	1236	1236	-	-	-	5.6	15.6	-	21.3	62.0	26.2	15.6	41.9
13/3	288	288	-	-	-	0.8	0.2	-	1.0	12.2	3.6	0.2	3.8
14/2+14/1	591	591	-	-	-	3.1	1.3	-	4.4	26.7	4.3	1.3	5.7
14/3+14/4	413	413	-	-	-	1.9	0.9	-	2.8	24.0	3.5	0.9	4.4
15/1	398	398	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	270	270	-	-	-	2.7	1.9	-	4.5	60.6	6.5	1.9	8.3
16/2	336	336	-	-	-	3.4	8.7	-	12.2	130.5	8.3	8.7	17.0
17/1	935	935	-	-	-	1.7	1.2	-	2.9	11.2	11.6	1.2	12.8
17/2	865	865	-	-	-	1.7	0.9	-	2.6	10.8	13.9	0.9	14.8
17/3	330	330	-	-	-	0.1	0.2	-	0.3	3.3	0.7	0.2	0.9
18/1	213	213	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/2	213	213	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -36.8 Total Delay for Signalled Lanes (pcuHr): 103.53 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -10.5 Total Delay for Signalled Lanes (pcuHr): 51.95 Cycle Time (s): 90
C2 Stream: 1 PRC for Signalled Lanes (%): 34.6 Total Delay for Signalled Lanes (pcuHr): 9.52 Cycle Time (s): 90
C2 Stream: 2 PRC for Signalled Lanes (%): 5.4 Total Delay for Signalled Lanes (pcuHr): 36.34 Cycle Time (s): 90
PRC Over All Lanes (%): -36.8 Total Delay Over All Lanes(pcuHr): 201.34

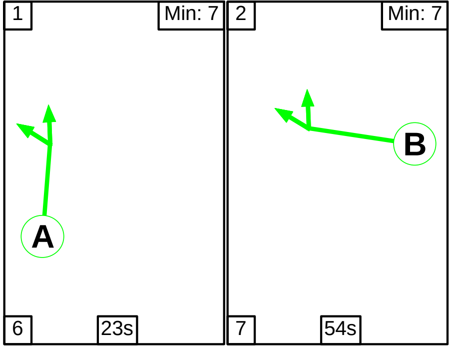
Full Input Data And Results

Scenario 9: '2031 R AM' (FG9: '2031 Reference AM Peak', Plan 1: 'Network Control Plan 1')

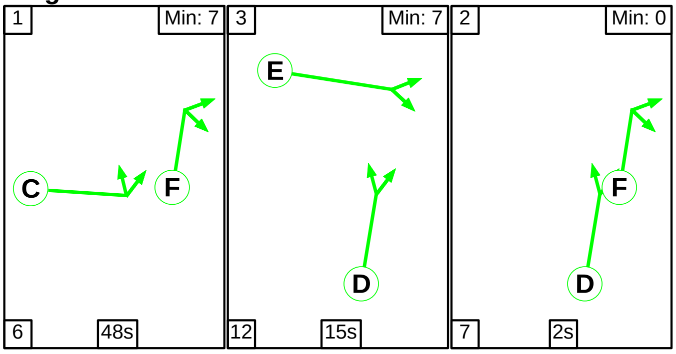
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

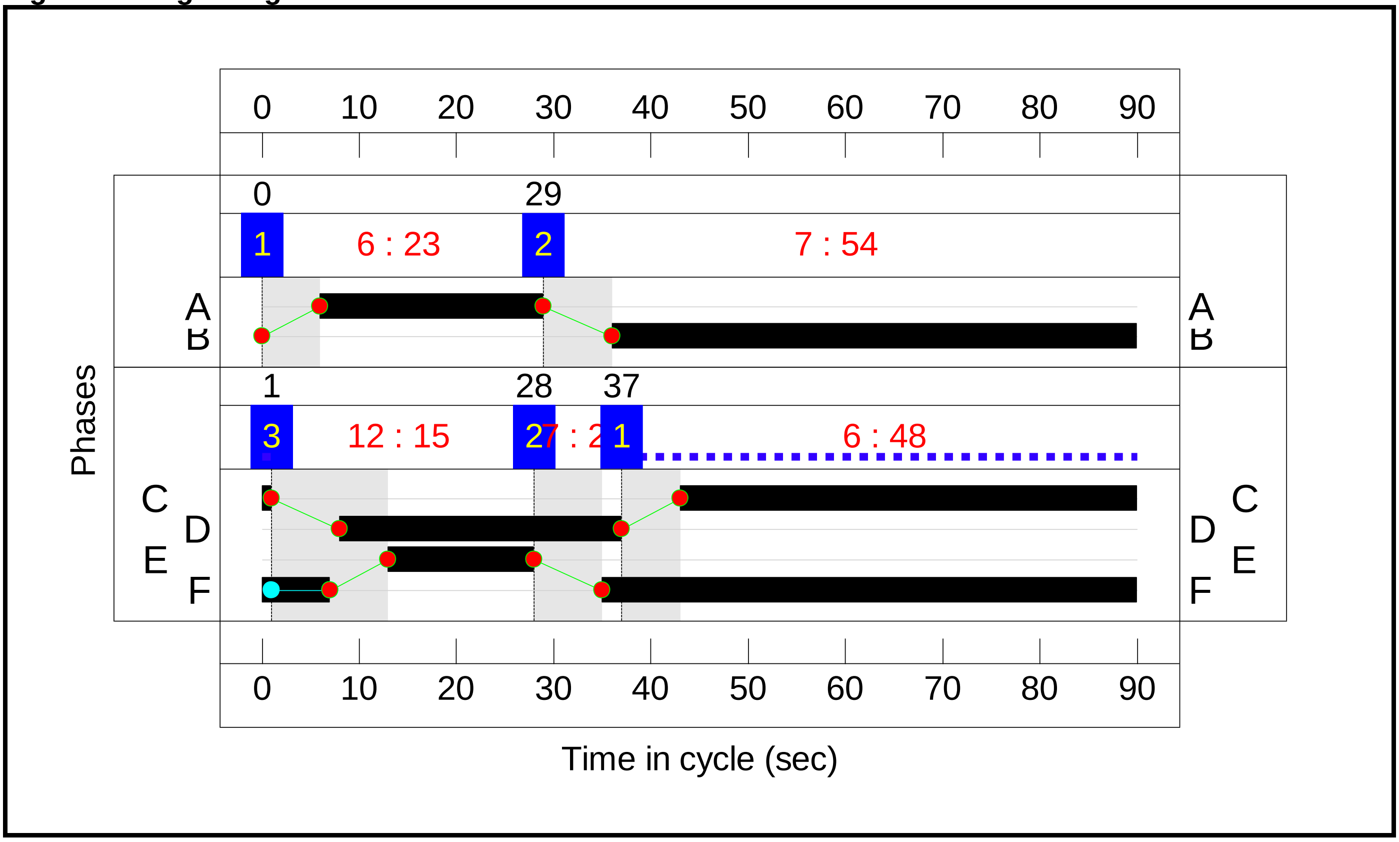
Stage Stream: 1

Stage	1	2
Duration	23	54
Change Point	0	29

Stage Stream: 2

Stage	1	3	2
Duration	48	15	2
Change Point	37	1	28

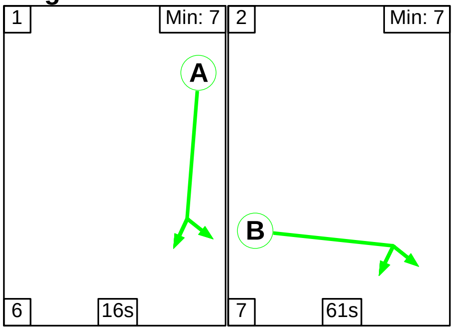
Signal Timings Diagram



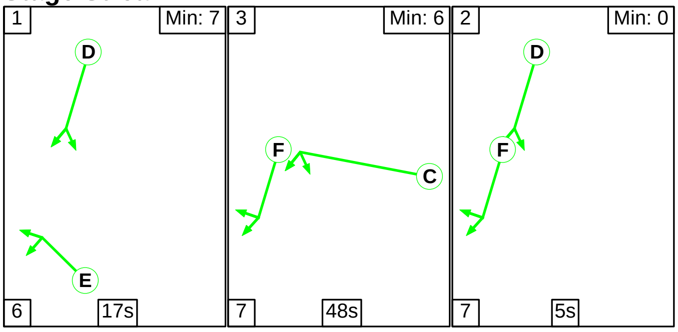
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

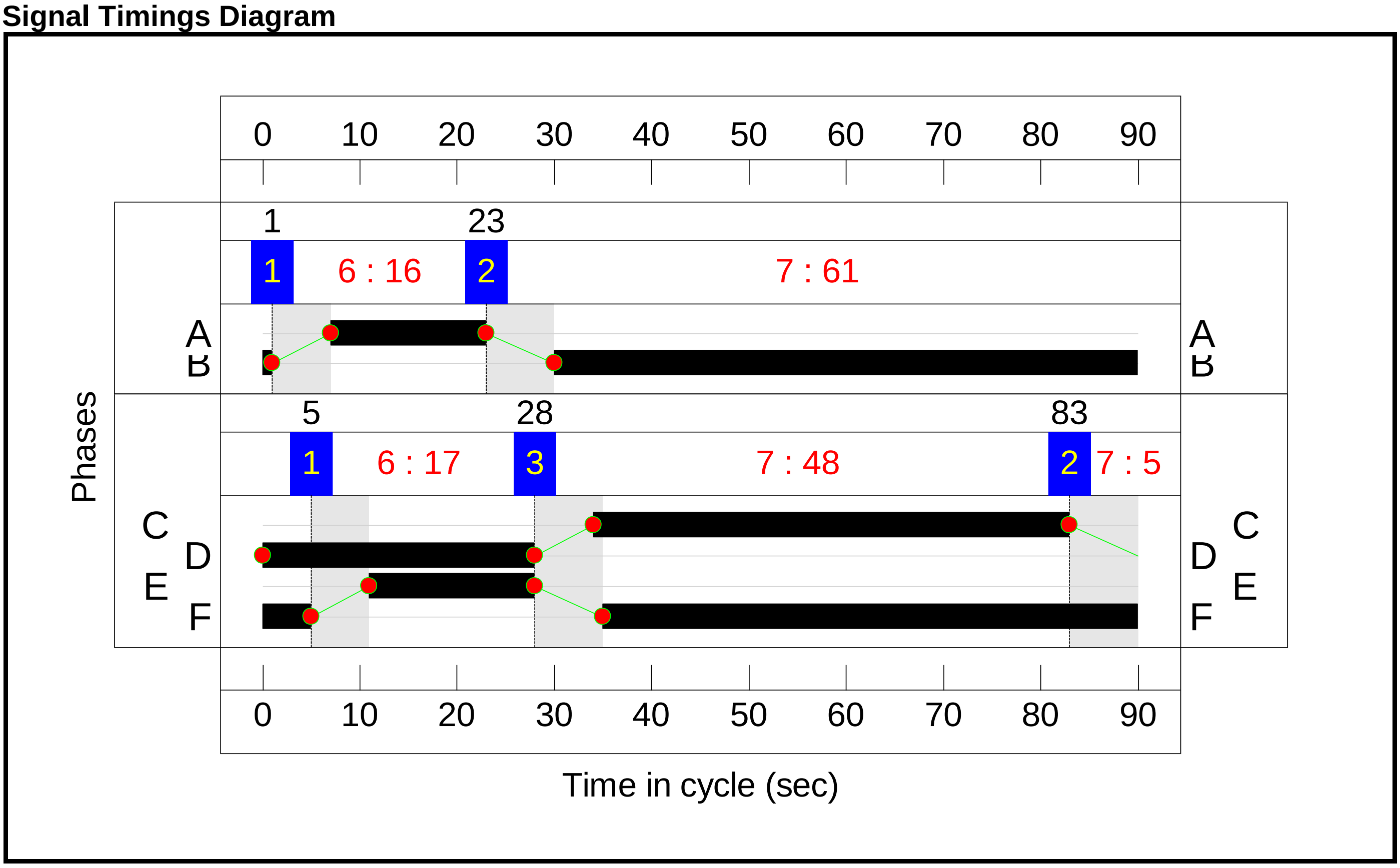
Stage Stream: 1

Stage	**1**	**2**
Duration	16	61
Change Point	1	23

Stage Stream: 2

Stage	**1**	**3**	**2**
Duration	17	48	5
Change Point	5	28	83

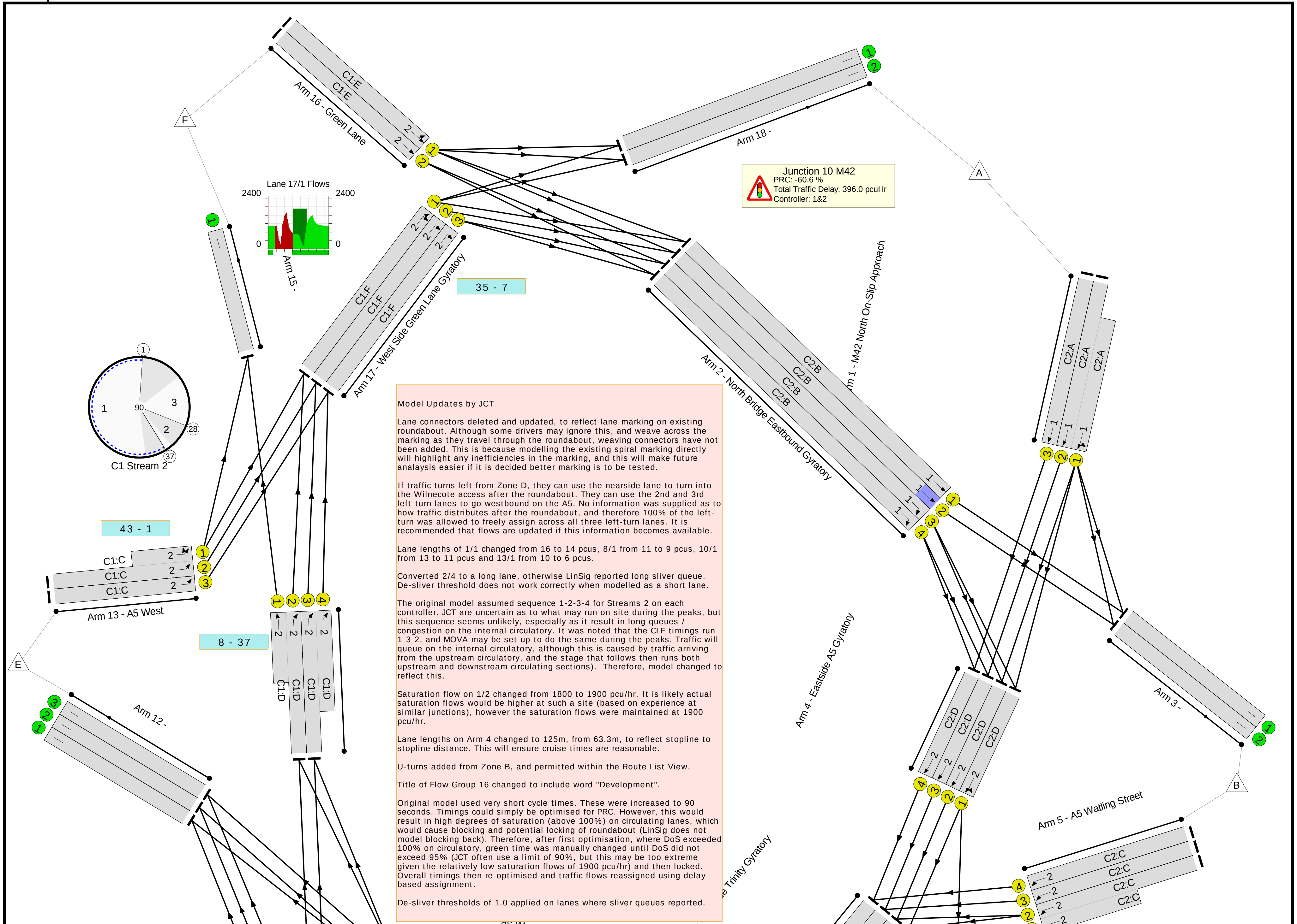
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Model Updates by JCT

Lane connectors deleted and updated, to reflect lane marking on existing roundabout. Although some drivers may ignore this, and weave across the marking as they travel through the roundabout, weaving connectors have not been added. This is because modelling the existing spiral marking directly will highlight any inefficiencies in the marking, and this will make future analaysis easier if it is decided better marking is to be tested.

If traffic turns left from Zone D, they can use the nearside lane to turn into the Wilnecote access after the roundabout. They can use the 2nd and 3rd left-turn lanes to go westbound on the A5. No information was supplied as to how traffic distributes after the roundabout, and therefore 100% of the left-turn was allowed to freely assign across all three left-turn lanes. It is recommended that flows are updated if this information becomes available.

Lane lengths of 1/1 changed from 16 to 14 pcus, 8/1 from 11 to 9 pcus, 10/1 from 13 to 11 pcus and 13/1 from 10 to 6 pcus.

Converted 2/4 to a long lane, otherwise LinSig reported long sliver queue. De-sliver threshold does not work correctly when modelled as a short lane.

The original model assumed sequence 1-2-3-4 for Streams 2 on each controller. JCT are uncertain as to what may run on site during the peaks, but this sequence seems unlikely, especially as it result in long queues / congestion on the internal circulatory. It was noted that the CLF timings run 1-3-2, and MOVA may be set up to do the same during the peaks. Traffic will queue on the internal circulatory, although this is caused by traffic arriving from the upstream circulatory, and the stage that follows then runs both upstream and downstream circulating sections). Therefore, model changed to reflect this.

Saturation flow on 1/2 changed from 1800 to 1900 pcu/hr. It is likely actual saturation flows would be higher at such a site (based on experience at similar junctions), however the saturation flows were maintained at 1900 pcu/hr.

Lane lengths on Arm 4 changed to 125m, from 63.3m, to reflect stopline to stopline distance. This will ensure cruise times are reasonable.

U-turns added from Zone B, and permitted within the Route List View.

Title of Flow Group 16 changed to include word "Development".

Original model used very short cycle times. These were increased to 90 seconds. Timings could simply be optimised for PRC. However, this would result in high degrees of saturation (above 100%) on circulating lanes, which would cause blocking and potential locking of roundabout (LinSig does not model blocking back). Therefore, after first optimisation, where DoS exceeded 100% on circulatory, green time was manually changed until DoS did not exceed 95% (JCT often use a limit of 90%, but this may be too extreme given the relatively low saturation flows of 1900 pcu/hr) and then locked. Overall timings then re-optimised and traffic flows reassigned using delay based assignment.

De-sliver thresholds of 1.0 applied on lanes where sliver queues reported.

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**144.6%**
Junction 10 M42	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**144.6%**
1/2+1/1	M42 North On-Slip Approach Left Ahead	U	2:1	N/A	C2:A		1	16	-	349	1900:1900	205+359	61.9 : 61.9%
1/3	M42 North On-Slip Approach Ahead	U	2:1	N/A	C2:A		1	16	-	157	1900	359	43.7%
2/1	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	61	-	998	1900	1309	57.3%
2/2	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	61	-	1128	1900	1309	73.1%
2/3	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	61	-	626	1900	1309	47.8%
2/4	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	61	-	82	1900	1309	6.3%
3/1		U	N/A	N/A	-		-	-	-	1084	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	1214	Inf	Inf	0.0%
4/1	Eastside A5 Gyratory Ahead Left	U	2:2	N/A	C2:D		1	28	-	407	1900	612	66.5%
4/2	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	28	-	269	1900	612	43.9%
4/3	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	28	-	195	1900	612	31.9%
4/4	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	28	-	171	1900	612	27.9%
5/2+5/1	A5 Watling Street Ahead Left	U	2:2	N/A	C2:C		1	49	-	654	1900:1900	866+350	53.8 : 53.8%
5/3	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	49	-	708	1900	1056	67.1%

Full Input Data And Results

5/4	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	49	-	678	1900	1056	64.2%
6/1	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	60	-	508	1900	1288	39.4%
6/2	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	60	-	360	1900	1288	28.0%
6/3	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	60	-	903	1900	1288	70.1%
6/4	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	60	-	849	1900	1288	65.9%
7/1		U	N/A	N/A	-		-	-	-	462	Inf	Inf	0.0%
8/2+8/1	Trinity Road Left Ahead	U	2:2	N/A	C2:E		1	17	-	346	1900:1900	371+316	50.3 : 50.3%
9/1		U	N/A	N/A	-		-	-	-	529	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	381	Inf	Inf	0.0%
10/2+10/1	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	23	-	309	1900:1900	469+472	32.9 : 32.9%
10/3	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	23	-	69	1900	507	13.6%
10/4	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	23	-	416	1900	507	82.1%
10/5	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	23	-	450	1900	507	88.8%
11/1	South Bridge Westbound Gyratory Ahead	U	1:1	N/A	C1:B		1	54	-	1020	1900	1161	87.8%
11/2	South Bridge Westbound Gyratory Ahead Right	U	1:1	N/A	C1:B		1	54	-	1036	1900	1161	89.2%
12/1		U	N/A	N/A	-		-	-	-	665	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	664	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	599	Inf	Inf	0.0%
13/2+13/1	A5 West Left2	U	1:2	N/A	C1:C		1	48	-	1678	1900:1900	384+777	144.6 : 144.6%
13/3	A5 West Left	U	1:2	N/A	C1:C		1	48	-	434	1900	1034	42.0%

Full Input Data And Results

14/2+14/1	Westside A5 Gyratory Ahead Ahead2	U	1:2	N/A	C1:D		1	29	-	792	1900:1900	347+490	94.6 : 94.6%
14/3+14/4	Westside A5 Gyratory Ahead	U	1:2	N/A	C1:D		1	29	-	580	1900:1900	611+63	86.1 : 86.1%
15/1		U	N/A	N/A	-		-	-	-	620	Inf	Inf	0.0%
16/1	Green Lane Ahead Left	U	1:2	N/A	C1:E		1	15	-	232	1900	338	68.7%
16/2	Green Lane Ahead	U	1:2	N/A	C1:E		1	15	-	220	1900	338	65.1%
17/1	West Side Green Lane Gyratory Right Ahead	U	1:2	N/A	C1:F		1	62	-	1295	1900	1330	75.0%
17/2	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	62	-	1081	1900	1330	68.4%
17/3	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	62	-	488	1900	1330	36.7%
18/1		U	N/A	N/A	-		-	-	-	241	Inf	Inf	0.0%
18/2		U	N/A	N/A	-		-	-	-	241	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**96.4**	**299.6**	**0.0**	**396.0**	**-**	**-**	**-**	**-**
Junction 10 M42	**-**	**-**	**0**	**0**	**0**	**96.4**	**299.6**	**0.0**	**396.0**	**-**	**-**	**-**	**-**
1/2+1/1	349	349	-	-	-	3.2	0.8	-	4.0	41.2	5.1	0.8	5.9
1/3	157	157	-	-	-	1.4	0.4	-	1.8	41.2	3.4	0.4	3.8
2/1	751	751	-	-	-	1.5	0.7	-	2.1	10.2	6.6	0.7	7.3
2/2	957	957	-	-	-	1.0	1.3	-	2.3	8.7	4.9	1.3	6.3
2/3	626	626	-	-	-	0.8	0.5	-	1.2	7.2	5.8	0.5	6.3
2/4	82	82	-	-	-	0.0	0.0	-	0.0	2.0	0.6	0.0	0.6
3/1	837	837	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	1043	1043	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	407	407	-	-	-	2.7	1.0	-	3.7	32.6	9.1	1.0	10.1
4/2	269	269	-	-	-	2.1	0.4	-	2.4	32.8	6.5	0.4	6.8
4/3	195	195	-	-	-	1.2	0.2	-	1.4	25.8	2.2	0.2	2.5
4/4	171	171	-	-	-	0.6	0.2	-	0.8	17.2	1.1	0.2	1.3
5/2+5/1	654	654	-	-	-	2.0	0.6	-	2.6	14.4	6.7	0.6	7.3
5/3	708	708	-	-	-	2.8	1.0	-	3.8	19.3	12.4	1.0	13.4
5/4	678	678	-	-	-	2.6	0.9	-	3.5	18.6	11.7	0.9	12.6
6/1	508	508	-	-	-	0.7	0.3	-	1.0	7.3	3.4	0.3	3.7
6/2	360	360	-	-	-	1.8	0.2	-	2.0	20.1	7.1	0.2	7.3
6/3	903	903	-	-	-	0.9	1.2	-	2.1	8.4	5.4	1.2	6.5
6/4	849	849	-	-	-	0.6	1.0	-	1.5	6.5	4.5	1.0	5.4
7/1	462	462	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2+8/1	346	346	-	-	-	3.0	0.5	-	3.6	37.0	4.1	0.5	4.6
9/1	529	529	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	381	381	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	309	309	-	-	-	2.3	0.2	-	2.5	29.2	3.1	0.2	3.3

Full Input Data And Results

10/3	69	69	-	-	-	0.5	0.1	-	0.6	29.3	1.3	0.1	1.4
10/4	416	416	-	-	-	3.6	2.2	-	5.8	49.9	9.7	2.2	11.9
10/5	450	450	-	-	-	4.0	3.5	-	7.5	60.0	10.8	3.5	14.3
11/1	1020	1020	-	-	-	1.9	3.4	-	5.4	19.0	7.7	3.4	11.1
11/2	1036	1036	-	-	-	2.2	3.9	-	6.1	21.0	10.1	3.9	14.0
12/1	665	665	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	664	664	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	599	599	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2+13/1	1678	1161	-	-	-	37.2	260.2	-	297.4	638.1	62.5	260.2	322.7
13/3	434	434	-	-	-	1.5	0.4	-	1.8	15.1	6.4	0.4	6.8
14/2+14/1	792	792	-	-	-	3.5	6.8	-	10.3	46.7	5.9	6.8	12.7
14/3+14/4	580	580	-	-	-	1.8	2.9	-	4.8	29.6	3.8	2.9	6.8
15/1	572	572	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	232	232	-	-	-	2.2	1.1	-	3.3	51.3	5.4	1.1	6.5
16/2	220	220	-	-	-	2.1	0.9	-	3.0	49.5	5.1	0.9	6.0
17/1	997	997	-	-	-	1.9	1.5	-	3.4	12.3	10.6	1.5	12.1
17/2	910	910	-	-	-	2.6	1.1	-	3.7	14.6	17.6	1.1	18.6
17/3	488	488	-	-	-	0.2	0.3	-	0.5	3.8	1.3	0.3	1.6
18/1	216	216	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/2	216	216	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 0.9 Total Delay for Signalled Lanes (pcuHr): 27.76 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -60.6 Total Delay for Signalled Lanes (pcuHr): 328.23 Cycle Time (s): 90
C2 Stream: 1 PRC for Signalled Lanes (%): 23.1 Total Delay for Signalled Lanes (pcuHr): 11.53 Cycle Time (s): 90
C2 Stream: 2 PRC for Signalled Lanes (%): 28.3 Total Delay for Signalled Lanes (pcuHr): 28.50 Cycle Time (s): 90
PRC Over All Lanes (%): -60.6 Total Delay Over All Lanes(pcuHr): 396.03

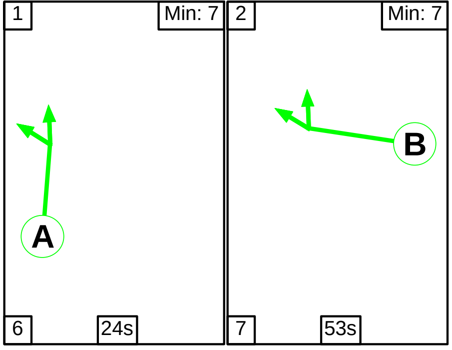
Full Input Data And Results

Scenario 10: '2031 R + D AM' (FG10: '2031 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

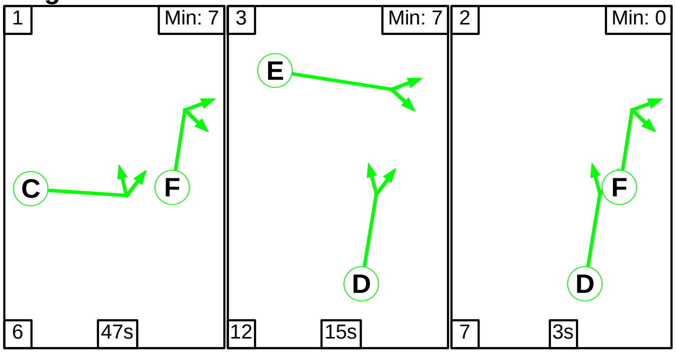
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

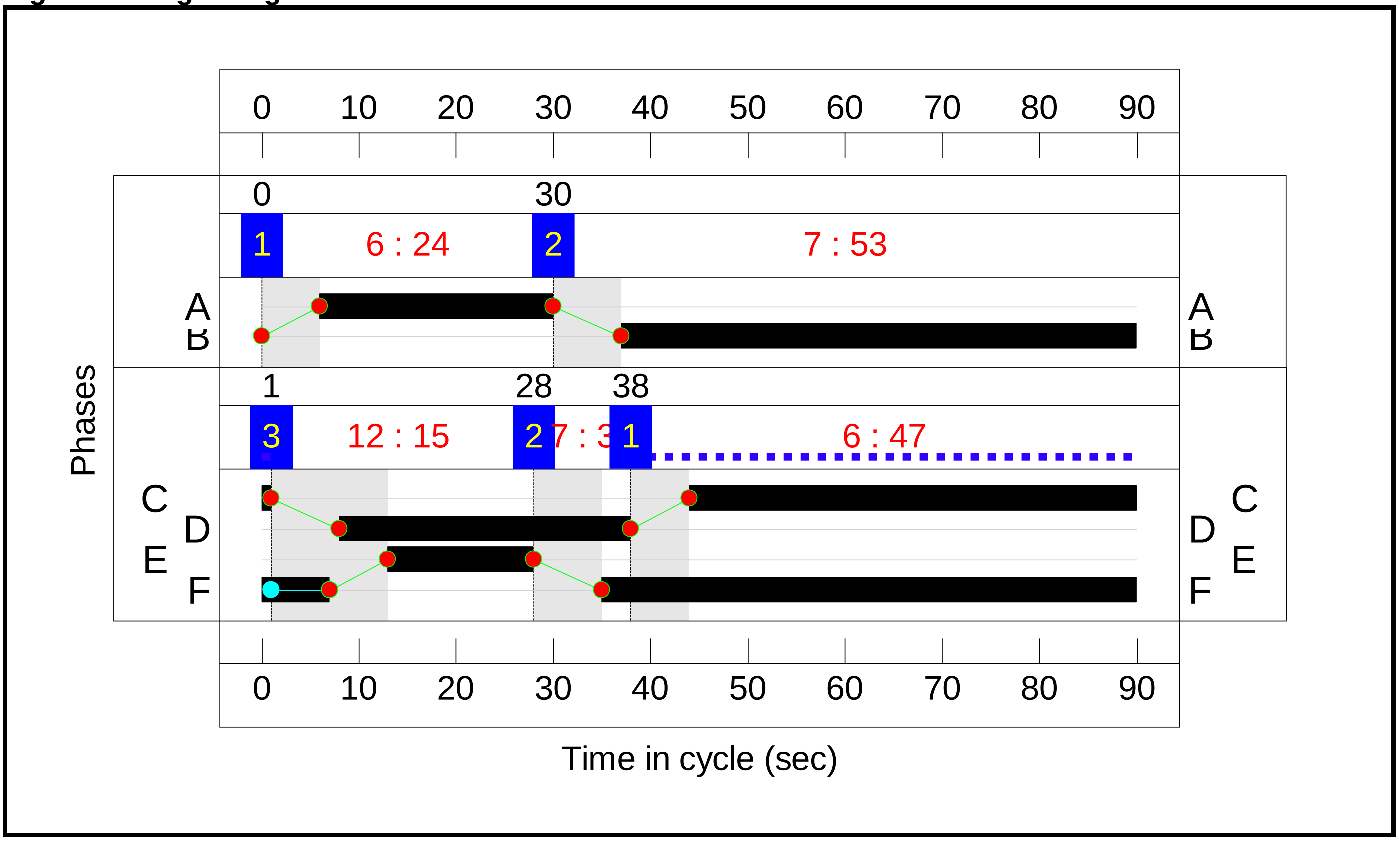
Stage Stream: 1

Stage	1	2
Duration	24	53
Change Point	0	30

Stage Stream: 2

Stage	1	3	2
Duration	47	15	3
Change Point	38	1	28

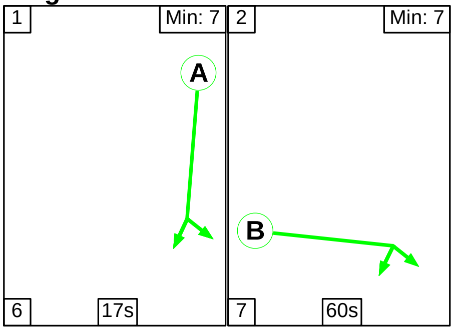
Signal Timings Diagram



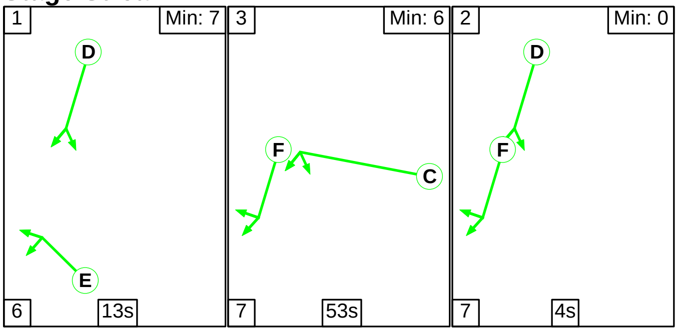
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

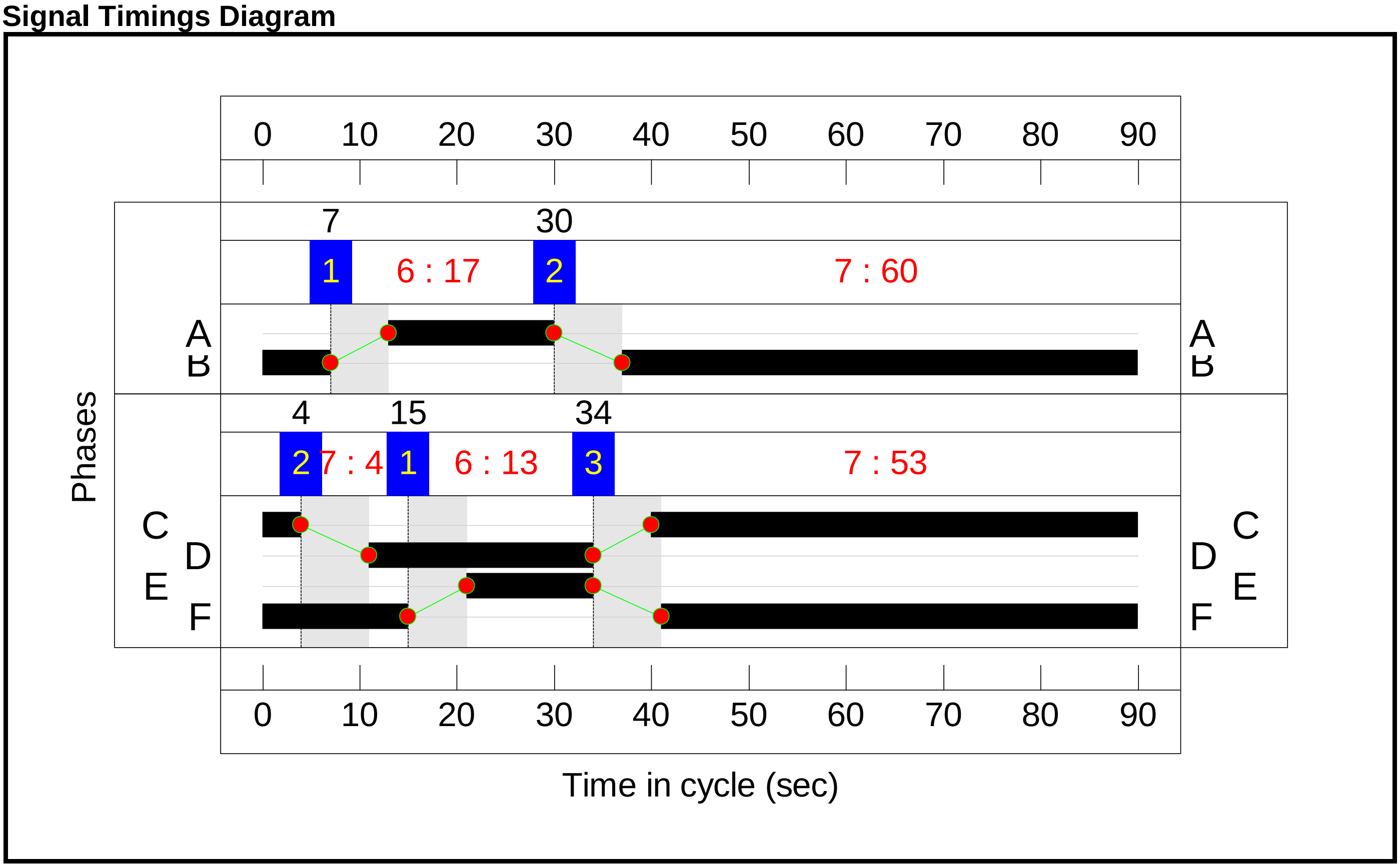
Stage Stream: 1

Stage	1	2
Duration	17	60
Change Point	7	30

Stage Stream: 2

Stage	1	3	2
Duration	13	53	4
Change Point	15	34	4

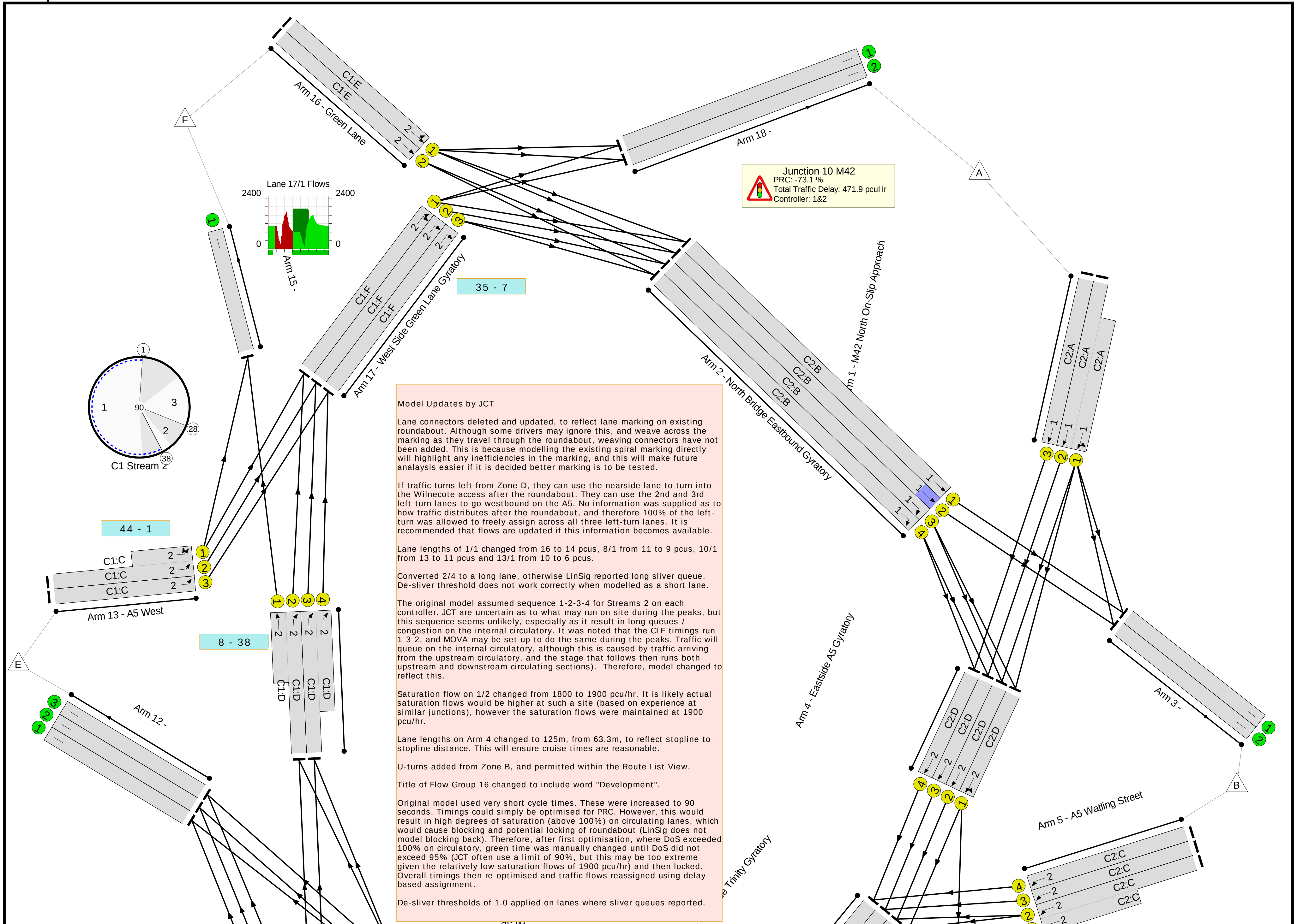
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Model Updates by JCT

Lane connectors deleted and updated, to reflect lane marking on existing roundabout. Although some drivers may ignore this, and weave across the marking as they travel through the roundabout, weaving connectors have not been added. This is because modelling the existing spiral marking directly will highlight any inefficiencies in the marking, and this will make future analaysis easier if it is decided better marking is to be tested.

If traffic turns left from Zone D, they can use the nearside lane to turn into the Wilnecote access after the roundabout. They can use the 2nd and 3rd left-turn lanes to go westbound on the A5. No information was supplied as to how traffic distributes after the roundabout, and therefore 100% of the left-turn was allowed to freely assign across all three left-turn lanes. It is recommended that flows are updated if this information becomes available.

Lane lengths of 1/1 changed from 16 to 14 pcus, 8/1 from 11 to 9 pcus, 10/1 from 13 to 11 pcus and 13/1 from 10 to 6 pcus.

Converted 2/4 to a long lane, otherwise LinSig reported long sliver queue. De-sliver threshold does not work correctly when modelled as a short lane.

The original model assumed sequence 1-2-3-4 for Streams 2 on each controller. JCT are uncertain as to what may run on site during the peaks, but this sequence seems unlikely, especially as it result in long queues / congestion on the internal circulatory. It was noted that the CLF timings run 1-3-2, and MOVA may be set up to do the same during the peaks. Traffic will queue on the internal circulatory, although this is caused by traffic arriving from the upstream circulatory, and the stage that follows then runs both upstream and downstream circulating sections). Therefore, model changed to reflect this.

Saturation flow on 1/2 changed from 1800 to 1900 pcu/hr. It is likely actual saturation flows would be higher at such a site (based on experience at similar junctions), however the saturation flows were maintained at 1900 pcu/hr.

Lane lengths on Arm 4 changed to 125m, from 63.3m, to reflect stopline to stopline distance. This will ensure cruise times are reasonable.

U-turns added from Zone B, and permitted within the Route List View.

Title of Flow Group 16 changed to include word "Development".

Original model used very short cycle times. These were increased to 90 seconds. Timings could simply be optimised for PRC. However, this would result in high degrees of saturation (above 100%) on circulating lanes, which would cause blocking and potential locking of roundabout (LinSig does not model blocking back). Therefore, after first optimisation, where DoS exceeded 100% on circulatory, green time was manually changed until DoS did not exceed 95% (JCT often use a limit of 90%, but this may be too extreme given the relatively low saturation flows of 1900 pcu/hr) and then locked. Overall timings then re-optimised and traffic flows reassigned using delay based assignment.

De-sliver thresholds of 1.0 applied on lanes where sliver queues reported.

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**155.8%**
Junction 10 M42	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**155.8%**
1/2+1/1	M42 North On-Slip Approach Left Ahead	U	2:1	N/A	C2:A		1	17	-	376	1900:1900	201+380	64.7 : 64.7%
1/3	M42 North On-Slip Approach Ahead	U	2:1	N/A	C2:A		1	17	-	154	1900	380	40.5%
2/1	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	60	-	1101	1900	1288	61.5%
2/2	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	60	-	1183	1900	1288	75.2%
2/3	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	60	-	626	1900	1288	48.6%
2/4	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	60	-	82	1900	1288	6.4%
3/1		U	N/A	N/A	-		-	-	-	1199	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	1281	Inf	Inf	0.0%
4/1	Eastside A5 Gyratory Ahead Left	U	2:2	N/A	C2:D		1	23	-	377	1900	507	74.4%
4/2	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	23	-	299	1900	507	59.0%
4/3	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	23	-	194	1900	507	38.3%
4/4	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	23	-	172	1900	507	33.9%
5/2+5/1	A5 Watling Street Ahead Left	U	2:2	N/A	C2:C		1	54	-	672	1900:1900	943+377	50.9 : 50.9%
5/3	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	54	-	760	1900	1161	65.5%

Full Input Data And Results

5/4	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	54	-	700	1900	1161	60.3%
6/1	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	64	-	525	1900	1372	38.3%
6/2	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	64	-	357	1900	1372	26.0%
6/3	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	64	-	954	1900	1372	69.5%
6/4	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	64	-	872	1900	1372	63.5%
7/1		U	N/A	N/A	-		-	-	-	466	Inf	Inf	0.0%
8/2+8/1	Trinity Road Left Ahead	U	2:2	N/A	C2:E		1	13	-	348	1900:1900	296+206	69.4 : 69.4%
9/1		U	N/A	N/A	-		-	-	-	546	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	378	Inf	Inf	0.0%
10/2+10/1	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	24	-	308	1900:1900	482+482	31.9 : 31.9%
10/3	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	24	-	70	1900	528	13.3%
10/4	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	24	-	450	1900	528	85.3%
10/5	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	24	-	470	1900	528	89.1%
11/1	South Bridge Westbound Gyratory Ahead	U	1:1	N/A	C1:B		1	53	-	1055	1900	1140	92.5%
11/2	South Bridge Westbound Gyratory Ahead Right	U	1:1	N/A	C1:B		1	53	-	1077	1900	1140	94.5%
12/1		U	N/A	N/A	-		-	-	-	682	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	681	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	639	Inf	Inf	0.0%
13/2+13/1	A5 West Left Left2	U	1:2	N/A	C1:C		1	47	-	1780	1900:1900	384+759	155.8 : 155.8%
13/3	A5 West Left	U	1:2	N/A	C1:C		1	47	-	434	1900	1013	42.8%

Full Input Data And Results

14/2+14/1	Westside A5 Gyratory Ahead Ahead2	U	1:2	N/A	C1:D		1	30	-	827	1900:1900	386+493	94.1 : 94.1%
14/3+14/4	Westside A5 Gyratory Ahead	U	1:2	N/A	C1:D		1	30	-	601	1900:1900	631+62	86.7 : 86.7%
15/1		U	N/A	N/A	-		-	-	-	620	Inf	Inf	0.0%
16/1	Green Lane Ahead Left	U	1:2	N/A	C1:E		1	15	-	232	1900	338	68.7%
16/2	Green Lane Ahead	U	1:2	N/A	C1:E		1	15	-	220	1900	338	65.1%
17/1	West Side Green Lane Gyratory Right Ahead	U	1:2	N/A	C1:F		1	62	-	1389	1900	1330	76.8%
17/2	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	62	-	1145	1900	1330	70.0%
17/3	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	62	-	488	1900	1330	36.7%
18/1		U	N/A	N/A	-		-	-	-	241	Inf	Inf	0.0%
18/2		U	N/A	N/A	-		-	-	-	241	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**105.2**	**366.7**	**0.0**	**471.9**	**-**	**-**	**-**	**-**
Junction 10 M42	**-**	**-**	**0**	**0**	**0**	**105.2**	**366.7**	**0.0**	**471.9**	**-**	**-**	**-**	**-**
1/2+1/1	376	376	-	-	-	3.4	0.9	-	4.3	41.1	5.6	0.9	6.5
1/3	154	154	-	-	-	1.3	0.3	-	1.7	39.3	3.3	0.3	3.7
2/1	792	792	-	-	-	1.3	0.8	-	2.1	9.5	5.5	0.8	6.3
2/2	969	969	-	-	-	0.8	1.5	-	2.3	8.7	3.8	1.5	5.3
2/3	626	626	-	-	-	0.9	0.5	-	1.3	7.7	5.3	0.5	5.8
2/4	82	82	-	-	-	0.1	0.0	-	0.1	6.5	1.7	0.0	1.8
3/1	890	890	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	1067	1067	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	377	377	-	-	-	3.0	1.4	-	4.4	42.1	8.7	1.4	10.1
4/2	299	299	-	-	-	2.7	0.7	-	3.4	41.3	7.4	0.7	8.2
4/3	194	194	-	-	-	1.3	0.3	-	1.6	29.7	2.2	0.3	2.5
4/4	172	172	-	-	-	0.7	0.3	-	1.0	21.1	1.2	0.3	1.4
5/2+5/1	672	672	-	-	-	1.6	0.5	-	2.1	11.4	6.1	0.5	6.7
5/3	760	760	-	-	-	2.4	0.9	-	3.3	15.8	12.2	0.9	13.2
5/4	700	700	-	-	-	2.1	0.8	-	2.9	14.7	10.7	0.8	11.5
6/1	525	525	-	-	-	0.4	0.3	-	0.7	5.0	2.7	0.3	3.0
6/2	357	357	-	-	-	1.6	0.2	-	1.8	18.0	7.8	0.2	8.0
6/3	954	954	-	-	-	0.8	1.1	-	2.0	7.4	5.4	1.1	6.5
6/4	872	872	-	-	-	0.6	0.9	-	1.4	5.9	4.8	0.9	5.7
7/1	466	466	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2+8/1	348	348	-	-	-	3.4	1.1	-	4.5	47.0	4.8	1.1	6.0
9/1	546	546	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	378	378	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	308	308	-	-	-	2.2	0.2	-	2.4	28.3	3.0	0.2	3.2

Full Input Data And Results

10/3	70	70	-	-	-	0.5	0.1	-	0.6	28.3	1.3	0.1	1.4
10/4	450	450	-	-	-	3.8	2.7	-	6.5	52.4	10.6	2.7	13.3
10/5	470	470	-	-	-	4.1	3.6	-	7.7	58.9	11.2	3.6	14.8
11/1	1055	1055	-	-	-	2.8	5.5	-	8.3	28.3	10.6	5.5	16.1
11/2	1077	1077	-	-	-	2.8	7.0	-	9.8	32.6	13.4	7.0	20.4
12/1	682	682	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	681	681	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	639	639	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2+13/1	1780	1143	-	-	-	44.7	320.1	-	364.8	737.8	70.9	320.1	391.0
13/3	434	434	-	-	-	1.5	0.4	-	1.9	15.8	6.5	0.4	6.9
14/2+14/1	827	827	-	-	-	3.3	6.4	-	9.7	42.2	5.9	6.4	12.2
14/3+14/4	601	601	-	-	-	1.7	3.1	-	4.7	28.3	3.9	3.1	6.9
15/1	564	564	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	232	232	-	-	-	2.2	1.1	-	3.3	51.3	5.4	1.1	6.5
16/2	220	220	-	-	-	2.1	0.9	-	3.0	49.5	5.1	0.9	6.0
17/1	1022	1022	-	-	-	2.1	1.6	-	3.7	13.1	11.8	1.6	13.4
17/2	931	931	-	-	-	2.7	1.2	-	3.9	15.0	18.2	1.2	19.3
17/3	488	488	-	-	-	0.2	0.3	-	0.5	3.8	1.3	0.3	1.6
18/1	212	212	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/2	212	212	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -5.0 Total Delay for Signalled Lanes (pcuHr): 35.25 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -73.1 Total Delay for Signalled Lanes (pcuHr): 395.54 Cycle Time (s): 90
C2 Stream: 1 PRC for Signalled Lanes (%): 19.6 Total Delay for Signalled Lanes (pcuHr): 11.89 Cycle Time (s): 90
C2 Stream: 2 PRC for Signalled Lanes (%): 21.0 Total Delay for Signalled Lanes (pcuHr): 29.22 Cycle Time (s): 90
PRC Over All Lanes (%): -73.1 Total Delay Over All Lanes(pcuHr): 471.90

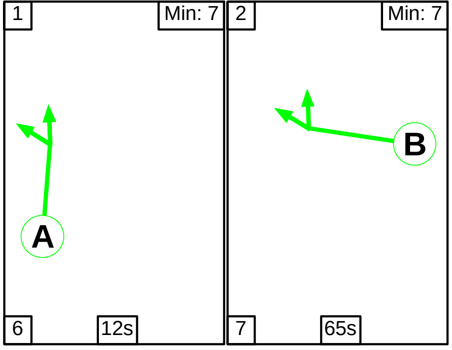
Full Input Data And Results

Scenario 11: '2031 R PM' (FG11: '2031 Reference PM Peak', Plan 1: 'Network Control Plan 1')

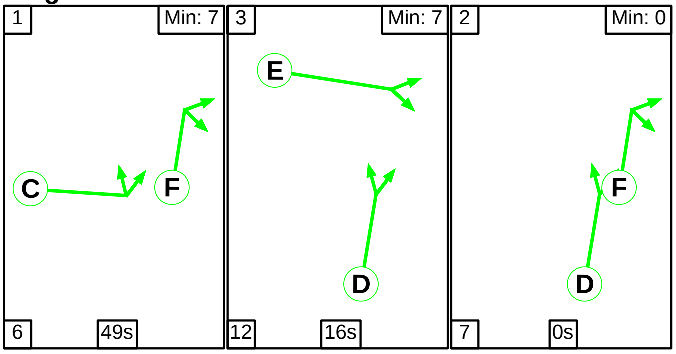
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

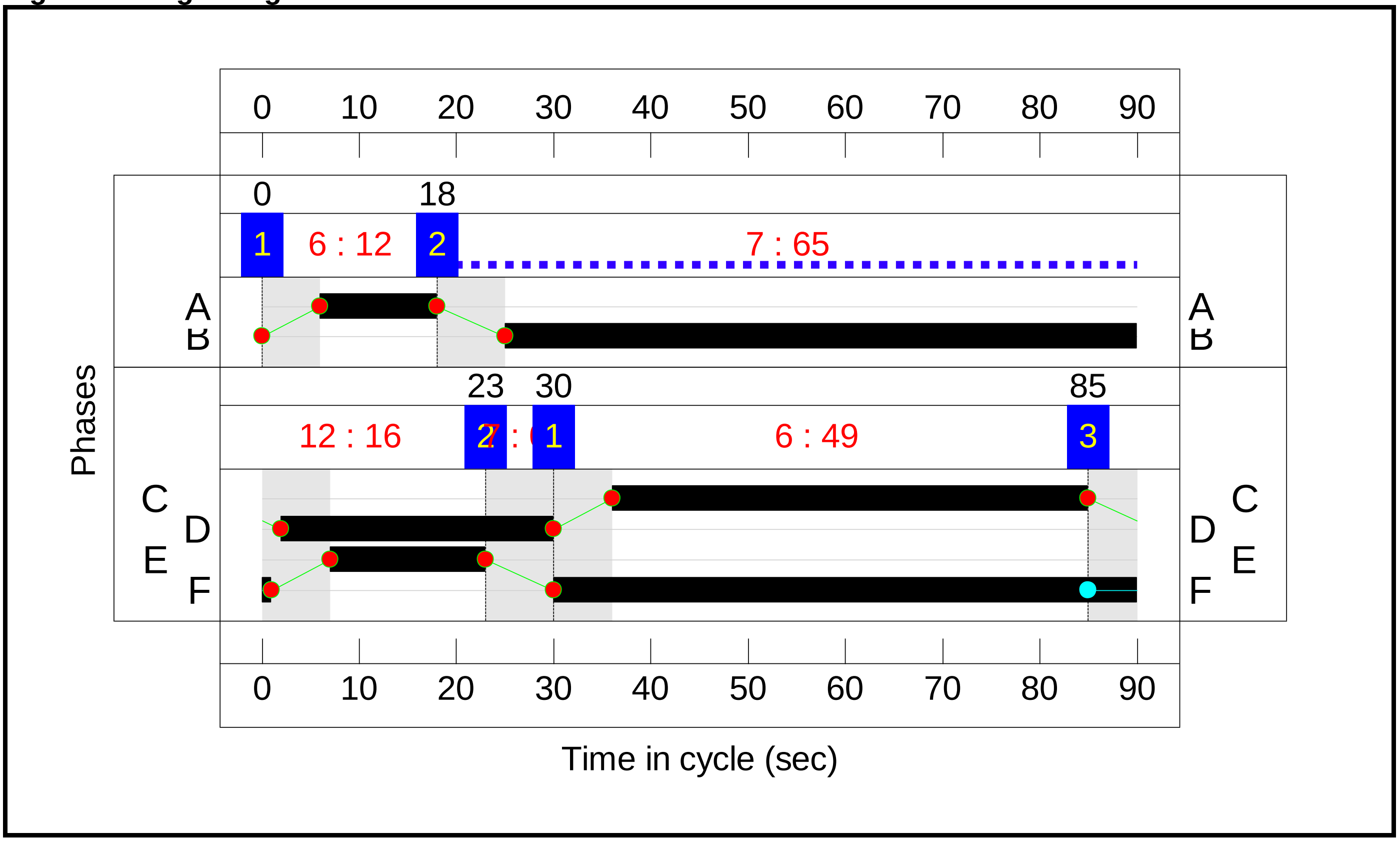
Stage	1	2
Duration	12	65
Change Point	0	18

Stage Stream: 2

Stage	1	3	2
Duration	49	16	0
Change Point	30	85	23

Full Input Data And Results

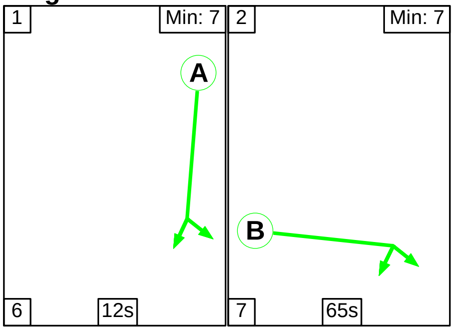
Signal Timings Diagram



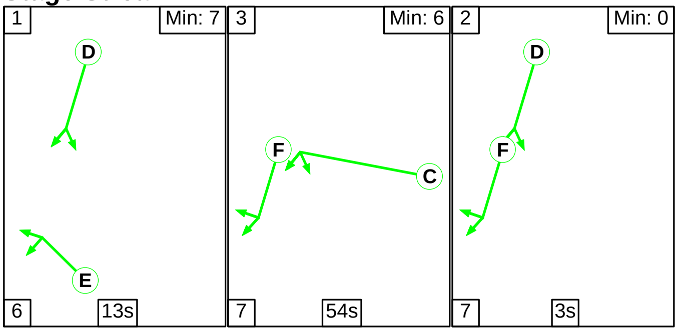
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

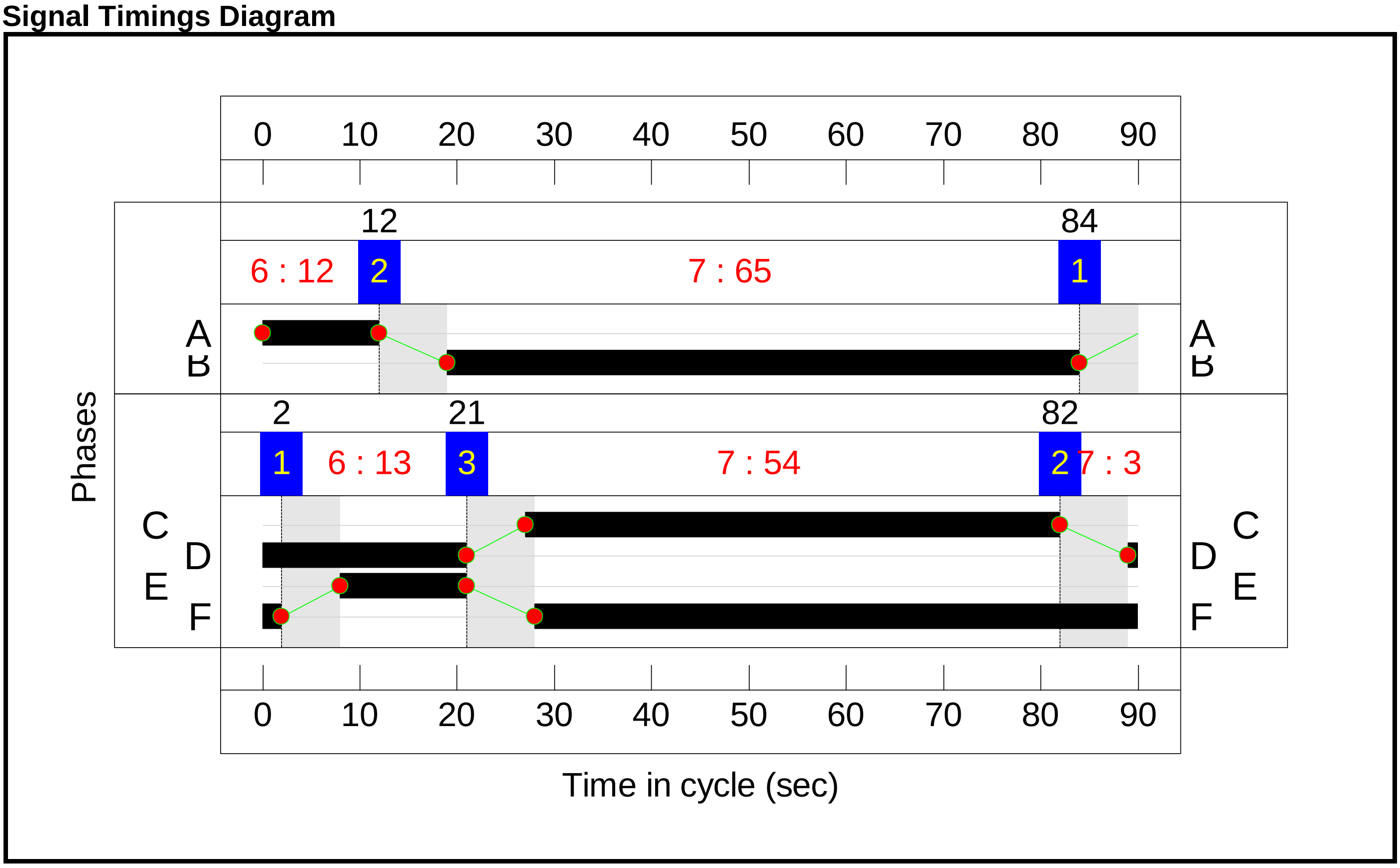
Stage Stream: 1

Stage	1	2
Duration	12	65
Change Point	84	12

Stage Stream: 2

Stage	1	3	2
Duration	13	54	3
Change Point	2	21	82

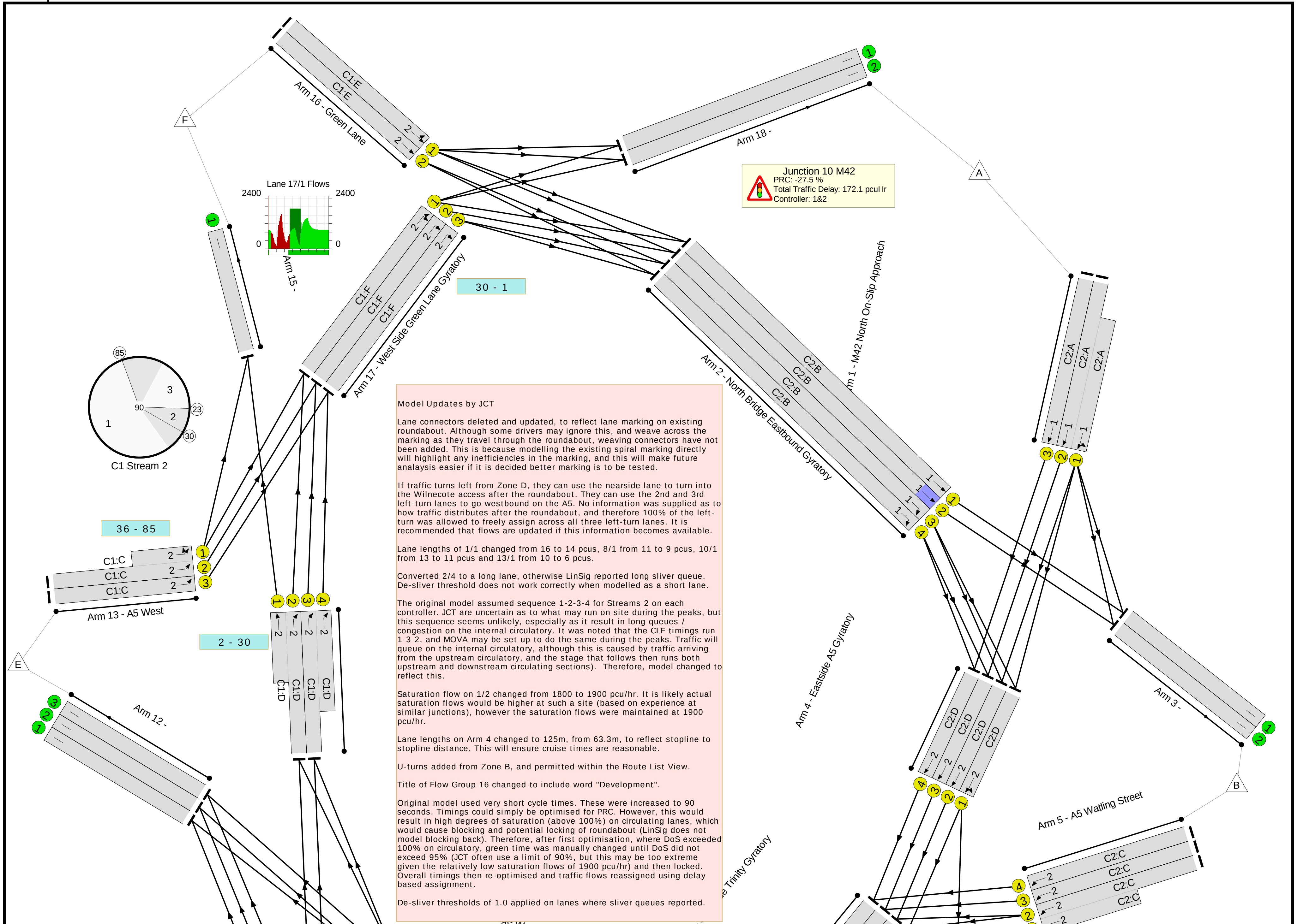
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



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De-sliver thresholds of 1.0 applied on lanes where sliver queues reported.

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**114.8%**
Junction 10 M42	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**114.8%**
1/2+1/1	M42 North On-Slip Approach Left Ahead	U	2:1	N/A	C2:A		1	12	-	285	1900:1900	274+274	42.6 : 61.2%
1/3	M42 North On-Slip Approach Ahead	U	2:1	N/A	C2:A		1	12	-	137	1900	274	49.9%
2/1	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	65	-	723	1900	1393	50.3%
2/2	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	65	-	877	1900	1393	60.6%
2/3	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	65	-	602	1900	1393	42.6%
2/4	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	65	-	154	1900	1393	11.1%
3/1		U	N/A	N/A	-		-	-	-	789	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	943	Inf	Inf	0.0%
4/1	Eastside A5 Gyratory Ahead Left	U	2:2	N/A	C2:D		1	22	-	355	1900	486	71.5%
4/2	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	22	-	283	1900	486	58.3%
4/3	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	22	-	226	1900	486	46.5%
4/4	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	22	-	182	1900	486	37.5%
5/2+5/1	A5 Watling Street Ahead Left	U	2:2	N/A	C2:C		1	55	-	666	1900:1900	942+416	49.1 : 49.1%
5/3	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	55	-	936	1900	1182	79.2%

5/4	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	55	-	908	1900	1182	76.8%
6/1	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	64	-	497	1900	1372	36.2%
6/2	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	64	-	371	1900	1372	27.0%
6/3	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	64	-	1162	1900	1372	84.7%
6/4	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	64	-	1090	1900	1372	79.4%
7/1		U	N/A	N/A	-		-	-	-	436	Inf	Inf	0.0%
8/2+8/1	Trinity Road Left Ahead	U	2:2	N/A	C2:E		1	13	-	420	1900:1900	296+235	79.2 : 79.2%
9/1		U	N/A	N/A	-		-	-	-	521	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	395	Inf	Inf	0.0%
10/2+10/1	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	12	-	387	1900:1900	274+274	70.7 : 70.3%
10/3	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	12	-	129	1900	274	47.0%
10/4	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	12	-	315	1900	274	114.8%
10/5	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	12	-	315	1900	274	114.8%
11/1	South Bridge Westbound Gyratory Ahead	U	1:1	N/A	C1:B		1	65	-	1300	1900	1393	93.3%
11/2	South Bridge Westbound Gyratory Ahead Right	U	1:1	N/A	C1:B		1	65	-	1324	1900	1393	95.0%
12/1		U	N/A	N/A	-		-	-	-	842	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	845	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	1033	Inf	Inf	0.0%
13/2+13/1	A5 West Left2	U	1:2	N/A	C1:C		1	49	-	1196	1900:1900	494+732	97.6 : 97.6%
13/3	A5 West Left	U	1:2	N/A	C1:C		1	49	-	348	1900	1056	33.0%

Full Input Data And Results

14/2+14/1	Westside A5 Gyratory Ahead Ahead2	U	1:2	N/A	C1:D		1	28	-	606	1900:1900	457+414	64.7 : 65.1%
14/3+14/4	Westside A5 Gyratory Ahead	U	1:2	N/A	C1:D		1	28	-	444	1900:1900	582+94	60.1 : 57.2%
15/1		U	N/A	N/A	-		-	-	-	434	Inf	Inf	0.0%
16/1	Green Lane Ahead Left	U	1:2	N/A	C1:E		1	16	-	256	1900	359	71.3%
16/2	Green Lane Ahead	U	1:2	N/A	C1:E		1	16	-	346	1900	359	96.4%
17/1	West Side Green Lane Gyratory Right Ahead	U	1:2	N/A	C1:F		1	61	-	886	1900	1309	66.0%
17/2	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	61	-	864	1900	1309	63.5%
17/3	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	61	-	410	1900	1309	30.7%
18/1		U	N/A	N/A	-		-	-	-	203	Inf	Inf	0.0%
18/2		U	N/A	N/A	-		-	-	-	203	Inf	Inf	0.0%

Full Input Data And Results

Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network	**-**	**-**	**0**	**0**	**0**	**69.8**	**102.3**	**0.0**	**172.1**	**-**	**-**	**-**	**-**
Junction 10 M42	**-**	**-**	**0**	**0**	**0**	**69.8**	**102.3**	**0.0**	**172.1**	**-**	**-**	**-**	**-**
1/2+1/1	285	285	-	-	-	2.8	0.5	-	3.4	42.5	3.9	0.5	4.5
1/3	137	137	-	-	-	1.4	0.5	-	1.8	48.5	3.1	0.5	3.6
2/1	701	701	-	-	-	0.9	0.5	-	1.5	7.5	6.0	0.5	6.5
2/2	844	844	-	-	-	0.9	0.8	-	1.7	7.2	5.0	0.8	5.8
2/3	594	594	-	-	-	0.4	0.4	-	0.8	4.6	2.9	0.4	3.3
2/4	154	154	-	-	-	0.0	0.1	-	0.1	1.5	0.0	0.1	0.1
3/1	767	767	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	910	910	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	347	347	-	-	-	2.9	1.2	-	4.1	42.4	8.1	1.2	9.3
4/2	283	283	-	-	-	3.0	0.7	-	3.7	47.6	7.0	0.7	7.7
4/3	226	226	-	-	-	1.7	0.4	-	2.1	33.8	3.1	0.4	3.5
4/4	182	182	-	-	-	0.9	0.3	-	1.2	23.7	1.6	0.3	1.9
5/2+5/1	666	666	-	-	-	1.5	0.5	-	2.0	10.7	5.6	0.5	6.1
5/3	936	936	-	-	-	3.3	1.9	-	5.2	19.9	17.4	1.9	19.3
5/4	908	908	-	-	-	3.1	1.6	-	4.7	18.8	16.4	1.6	18.0
6/1	497	497	-	-	-	0.5	0.3	-	0.8	5.8	3.2	0.3	3.5
6/2	371	371	-	-	-	1.5	0.2	-	1.6	15.9	7.6	0.2	7.8
6/3	1162	1162	-	-	-	1.4	2.7	-	4.1	12.7	9.4	2.7	12.1
6/4	1090	1090	-	-	-	0.7	1.9	-	2.6	8.6	6.4	1.9	8.3
7/1	428	428	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2+8/1	420	420	-	-	-	4.2	1.8	-	6.1	51.9	5.6	1.8	7.4
9/1	521	521	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	395	395	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	387	387	-	-	-	3.9	1.2	-	5.1	47.6	4.6	1.2	5.8

Full Input Data And Results

10/3	129	129	-	-	-	1.3	0.4	-	1.7	47.7	2.9	0.4	3.4
10/4	315	274	-	-	-	5.2	23.6	-	28.9	329.7	8.9	23.6	32.5
10/5	315	274	-	-	-	5.2	23.6	-	28.9	329.7	8.9	23.6	32.5
11/1	1300	1300	-	-	-	1.6	6.2	-	7.8	21.6	9.3	6.2	15.4
11/2	1324	1324	-	-	-	1.7	7.8	-	9.5	25.9	11.9	7.8	19.7
12/1	842	842	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	845	845	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	1033	1033	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2+13/1	1196	1196	-	-	-	5.5	11.4	-	16.9	50.9	24.5	11.4	36.0
13/3	348	348	-	-	-	1.1	0.2	-	1.3	13.4	4.6	0.2	4.9
14/2+14/1	565	565	-	-	-	2.6	0.9	-	3.5	22.5	3.7	0.9	4.6
14/3+14/4	403	403	-	-	-	1.5	0.7	-	2.3	20.1	3.3	0.7	4.0
15/1	415	415	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	256	256	-	-	-	2.4	1.2	-	3.6	51.3	6.0	1.2	7.2
16/2	346	346	-	-	-	3.5	6.6	-	10.1	105.1	8.6	6.6	15.2
17/1	864	864	-	-	-	1.4	1.0	-	2.4	9.8	8.6	1.0	9.5
17/2	831	831	-	-	-	1.4	0.9	-	2.3	9.9	12.8	0.9	13.6
17/3	402	402	-	-	-	0.2	0.2	-	0.4	3.5	0.8	0.2	1.1
18/1	203	203	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/2	203	203	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -27.5 Total Delay for Signalled Lanes (pcuHr): 81.86 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -8.4 Total Delay for Signalled Lanes (pcuHr): 42.81 Cycle Time (s): 90
C2 Stream: 1 PRC for Signalled Lanes (%): 47.0 Total Delay for Signalled Lanes (pcuHr): 9.18 Cycle Time (s): 90
C2 Stream: 2 PRC for Signalled Lanes (%): 6.3 Total Delay for Signalled Lanes (pcuHr): 38.25 Cycle Time (s): 90
PRC Over All Lanes (%): -27.5 Total Delay Over All Lanes(pcuHr): 172.10

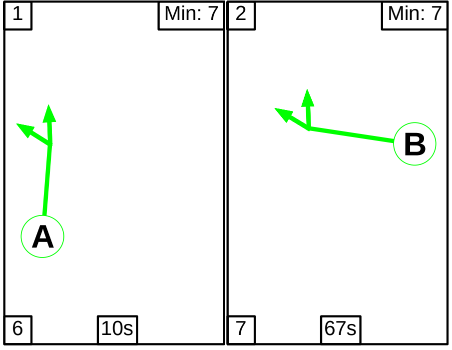
Full Input Data And Results

Scenario 12: '2031 R + D PM' (FG12: '2031 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

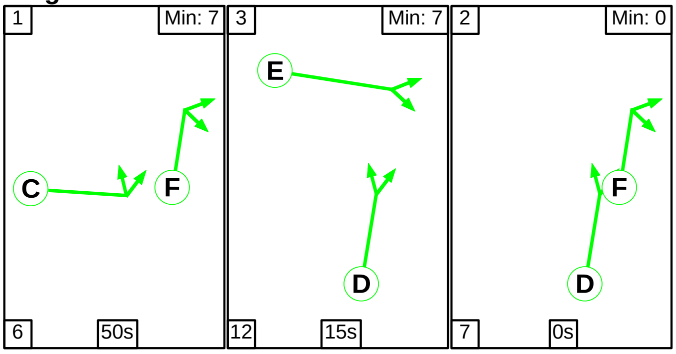
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

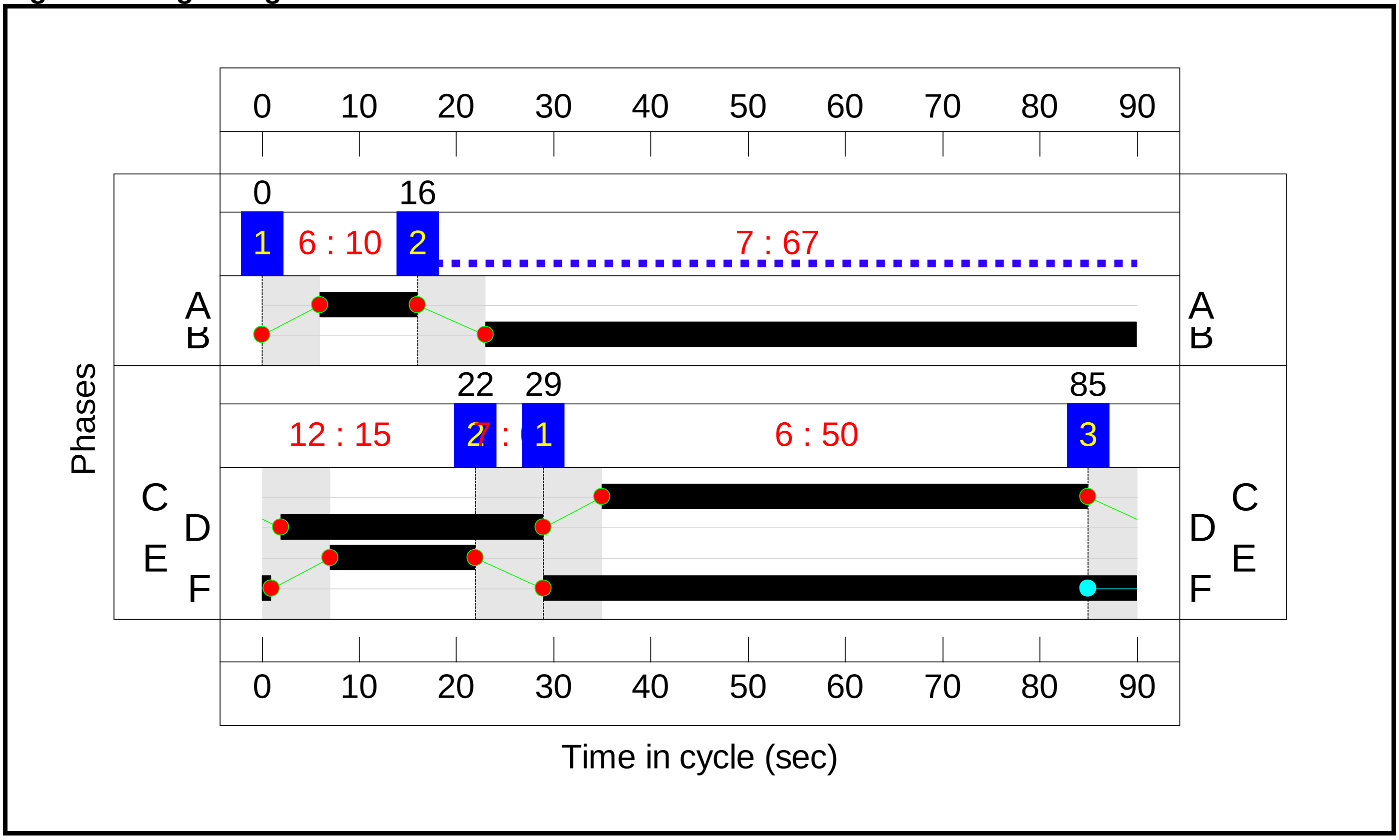
Stage	1	2
Duration	10	67
Change Point	0	16

Stage Stream: 2

Stage	1	3	2
Duration	50	15	0
Change Point	29	85	22

Full Input Data And Results

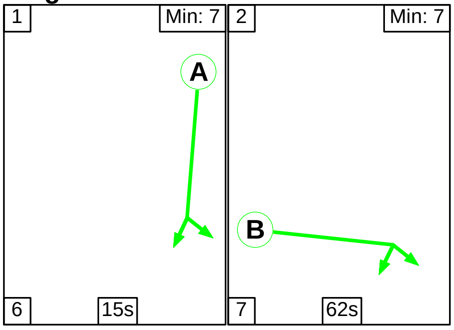
Signal Timings Diagram



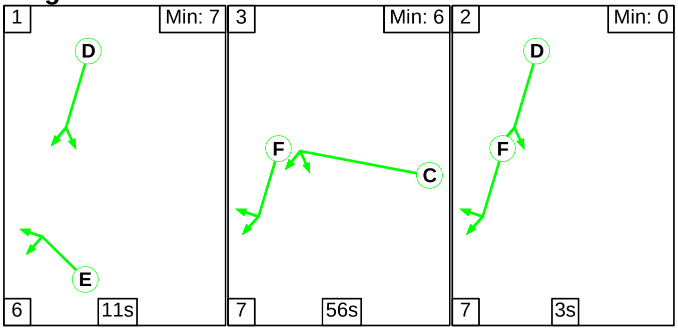
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

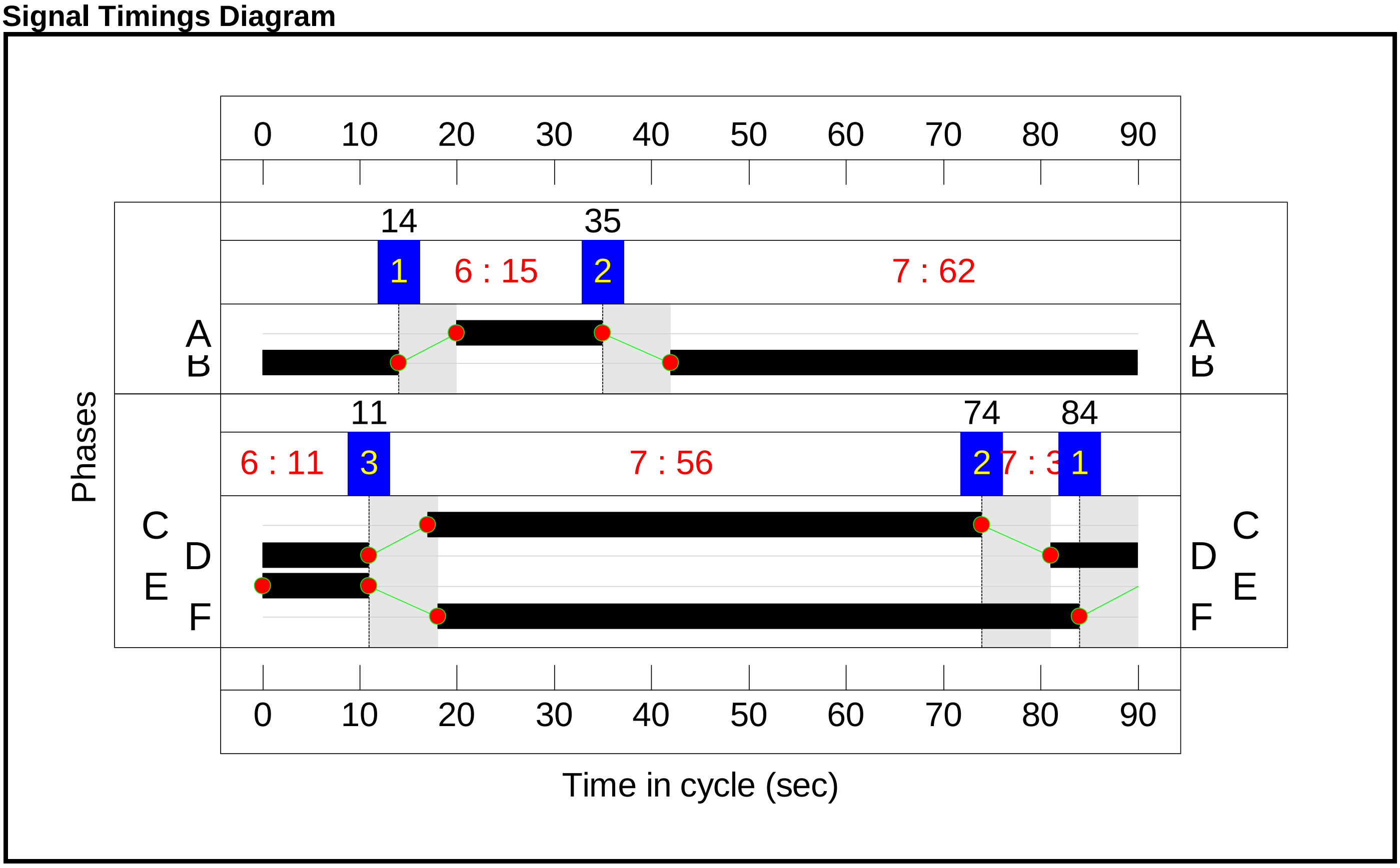
Stage Stream: 1

Stage	1	2
Duration	15	62
Change Point	14	35

Stage Stream: 2

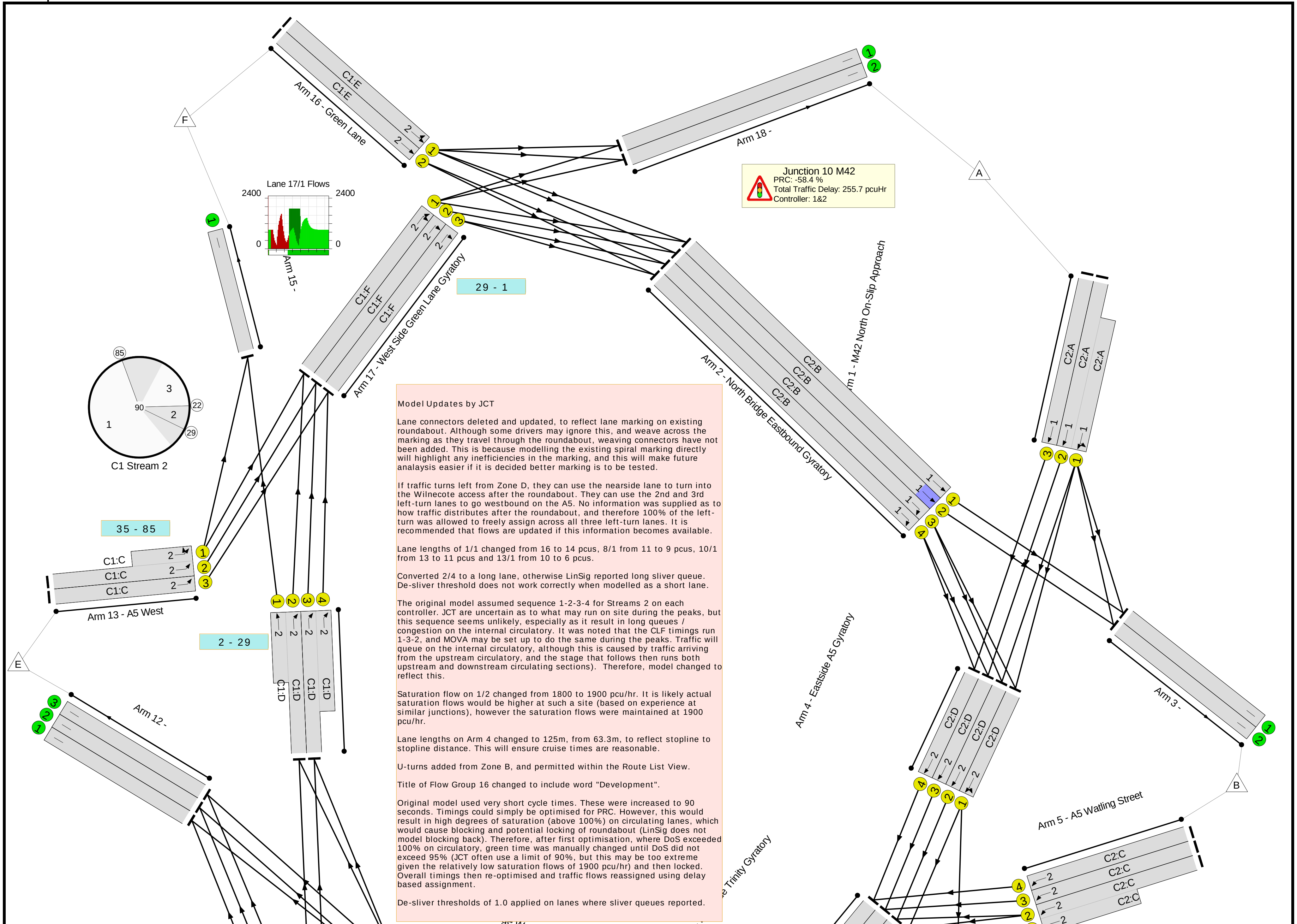
Stage	1	3	2
Duration	11	56	3
Change Point	84	11	74

Signal Timings Diagram



Network Layout Diagram

Full Input Data And Results



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Lane connectors deleted and updated, to reflect lane marking on existing roundabout. Although some drivers may ignore this, and weave across the marking as they travel through the roundabout, weaving connectors have not been added. This is because modelling the existing spiral marking directly will highlight any inefficiencies in the marking, and this will make future analaysis easier if it is decided better marking is to be tested.

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Lane lengths on Arm 4 changed to 125m, from 63.3m, to reflect stopline to stopline distance. This will ensure cruise times are reasonable.

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Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**142.5%**
Junction 10 M42	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**142.5%**
1/2+1/1	M42 North On-Slip Approach Left Ahead	U	2:1	N/A	C2:A		1	15	-	296	1900:1900	209+338	53.7 : 54.5%
1/3	M42 North On-Slip Approach Ahead	U	2:1	N/A	C2:A		1	15	-	142	1900	338	42.0%
2/1	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	62	-	764	1900	1330	52.7%
2/2	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	62	-	944	1900	1330	64.4%
2/3	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	62	-	602	1900	1330	43.5%
2/4	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	62	-	154	1900	1330	11.3%
3/1		U	N/A	N/A	-		-	-	-	838	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	1018	Inf	Inf	0.0%
4/1	Eastside A5 Gyratory Ahead Left	U	2:2	N/A	C2:D		1	20	-	351	1900	443	74.8%
4/2	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	20	-	287	1900	443	63.9%
4/3	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	20	-	222	1900	443	49.5%
4/4	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	20	-	186	1900	443	41.7%
5/2+5/1	A5 Watling Street Ahead Left	U	2:2	N/A	C2:C		1	57	-	748	1900:1900	994+383	54.3 : 54.3%
5/3	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	57	-	988	1900	1224	80.7%

Full Input Data And Results

5/4	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	57	-	930	1900	1224	76.0%
6/1	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	66	-	576	1900	1414	40.7%
6/2	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	66	-	370	1900	1414	25.9%
6/3	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	66	-	1210	1900	1414	85.4%
6/4	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	66	-	1116	1900	1414	78.8%
7/1		U	N/A	N/A	-		-	-	-	440	Inf	Inf	0.0%
8/2+8/1	Trinity Road Left Ahead	U	2:2	N/A	C2:E		1	11	-	424	1900:1900	253+208	95.5 : 87.5%
9/1		U	N/A	N/A	-		-	-	-	600	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	394	Inf	Inf	0.0%
10/2+10/1	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	10	-	373	1900:1900	232+232	80.1 : 80.5%
10/3	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	10	-	143	1900	232	61.6%
10/4	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	10	-	331	1900	232	142.5%
10/5	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	10	-	331	1900	232	142.5%
11/1	South Bridge Westbound Gyratory Ahead	U	1:1	N/A	C1:B		1	67	-	1344	1900	1436	93.4%
11/2	South Bridge Westbound Gyratory Ahead Right	U	1:1	N/A	C1:B		1	67	-	1358	1900	1436	94.5%
12/1		U	N/A	N/A	-		-	-	-	859	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	858	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	1071	Inf	Inf	0.0%
13/2+13/1	A5 West Left Left2	U	1:2	N/A	C1:C		1	50	-	1268	1900:1900	512+739	101.4 : 101.4%
13/3	A5 West Left	U	1:2	N/A	C1:C		1	50	-	348	1900	1077	32.3%

Full Input Data And Results

14/2+14/1	Westside A5 Gyratory Ahead Ahead2	U	1:2	N/A	C1:D		1	27	-	629	1900:1900	452+381	63.1 : 64.2%
14/3+14/4	Westside A5 Gyratory Ahead	U	1:2	N/A	C1:D		1	27	-	463	1900:1900	565+87	56.8 : 49.8%
15/1		U	N/A	N/A	-		-	-	-	434	Inf	Inf	0.0%
16/1	Green Lane Ahead Left	U	1:2	N/A	C1:E		1	15	-	256	1900	338	75.8%
16/2	Green Lane Ahead	U	1:2	N/A	C1:E		1	15	-	346	1900	338	102.4%
17/1	West Side Green Lane Gyratory Right Ahead	U	1:2	N/A	C1:F		1	62	-	944	1900	1330	66.2%
17/2	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	62	-	920	1900	1330	62.6%
17/3	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	62	-	410	1900	1330	29.4%
18/1		U	N/A	N/A	-		-	-	-	206	Inf	Inf	0.0%
18/2		U	N/A	N/A	-		-	-	-	206	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**77.9**	**177.8**	**0.0**	**255.7**	**-**	**-**	**-**	**-**
Junction 10 M42	**-**	**-**	**0**	**0**	**0**	**77.9**	**177.8**	**0.0**	**255.7**	**-**	**-**	**-**	**-**
1/2+1/1	296	296	-	-	-	2.7	0.6	-	3.3	40.3	4.1	0.6	4.7
1/3	142	142	-	-	-	1.3	0.4	-	1.7	42.0	3.1	0.4	3.5
2/1	701	701	-	-	-	0.5	0.6	-	1.0	5.4	3.3	0.6	3.8
2/2	857	857	-	-	-	0.3	0.9	-	1.2	5.1	2.2	0.9	3.1
2/3	579	579	-	-	-	1.0	0.4	-	1.4	8.6	6.2	0.4	6.6
2/4	150	150	-	-	-	0.6	0.1	-	0.7	15.9	3.7	0.1	3.8
3/1	775	775	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	931	931	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	332	332	-	-	-	2.2	1.4	-	3.7	39.6	7.8	1.4	9.2
4/2	283	283	-	-	-	1.8	0.9	-	2.7	34.1	6.7	0.9	7.5
4/3	219	219	-	-	-	2.3	0.5	-	2.8	46.5	5.5	0.5	6.0
4/4	185	185	-	-	-	2.2	0.4	-	2.6	49.9	4.6	0.4	5.0
5/2+5/1	748	748	-	-	-	1.6	0.6	-	2.2	10.4	6.6	0.6	7.2
5/3	988	988	-	-	-	3.3	2.1	-	5.3	19.3	18.1	2.1	20.2
5/4	930	930	-	-	-	2.9	1.6	-	4.4	17.2	16.0	1.6	17.6
6/1	575	575	-	-	-	0.4	0.3	-	0.7	4.6	3.1	0.3	3.4
6/2	366	366	-	-	-	1.3	0.2	-	1.5	14.3	7.5	0.2	7.7
6/3	1207	1207	-	-	-	1.4	2.8	-	4.3	12.7	8.3	2.8	11.1
6/4	1115	1115	-	-	-	1.0	1.8	-	2.8	9.1	7.4	1.8	9.2
7/1	421	421	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2+8/1	424	424	-	-	-	4.5	4.6	-	9.1	77.0	6.0	4.6	10.6
9/1	599	599	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	390	390	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	373	373	-	-	-	4.0	2.0	-	5.9	57.3	4.5	2.0	6.5

Full Input Data And Results

10/3	143	143	-	-	-	1.5	0.8	-	2.3	57.3	3.4	0.8	4.2
10/4	331	232	-	-	-	8.2	51.0	-	59.2	644.1	11.5	51.0	62.5
10/5	331	232	-	-	-	8.2	51.0	-	59.2	644.1	11.5	51.0	62.5
11/1	1341	1341	-	-	-	1.1	6.3	-	7.4	19.8	9.0	6.3	15.3
11/2	1357	1357	-	-	-	2.2	7.3	-	9.5	25.2	30.7	7.3	38.0
12/1	858	858	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	857	857	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	1070	1070	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2+13/1	1268	1251	-	-	-	6.4	22.6	-	29.0	82.5	28.7	22.6	51.3
13/3	348	348	-	-	-	1.0	0.2	-	1.2	12.8	4.5	0.2	4.8
14/2+14/1	530	530	-	-	-	2.9	0.9	-	3.8	25.5	3.8	0.9	4.7
14/3+14/4	364	364	-	-	-	1.7	0.6	-	2.3	22.8	3.3	0.6	4.0
15/1	389	389	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	256	256	-	-	-	2.5	1.5	-	4.0	56.4	6.0	1.5	7.6
16/2	346	338	-	-	-	3.9	11.6	-	15.5	161.4	8.9	11.6	20.4
17/1	880	880	-	-	-	1.5	1.0	-	2.4	10.0	8.7	1.0	9.6
17/2	833	833	-	-	-	1.4	0.8	-	2.2	9.6	11.1	0.8	12.0
17/3	391	391	-	-	-	0.2	0.2	-	0.4	3.4	0.8	0.2	1.0
18/1	205	205	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/2	205	205	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -58.4 Total Delay for Signalled Lanes (pcuHr): 143.53 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -13.8 Total Delay for Signalled Lanes (pcuHr): 60.90 Cycle Time (s): 90
C2 Stream: 1 PRC for Signalled Lanes (%): 39.7 Total Delay for Signalled Lanes (pcuHr): 9.28 Cycle Time (s): 90
C2 Stream: 2 PRC for Signalled Lanes (%): -6.1 Total Delay for Signalled Lanes (pcuHr): 41.99 Cycle Time (s): 90
PRC Over All Lanes (%): -58.4 Total Delay Over All Lanes(pcuHr): 255.70

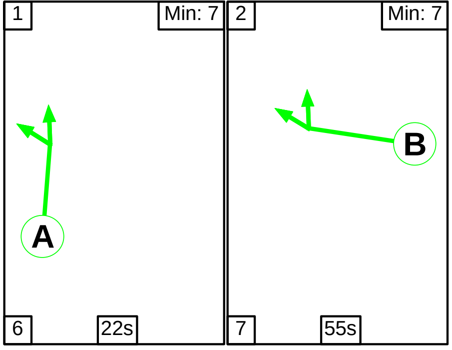
Full Input Data And Results

Scenario 13: '2031 L AM' (FG13: '2031 Local Plan AM Peak', Plan 1: 'Network Control Plan 1')

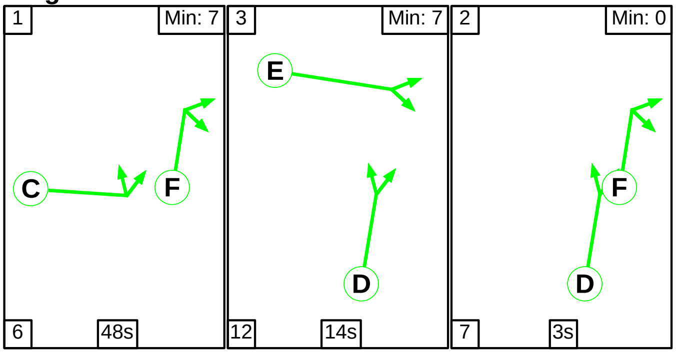
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

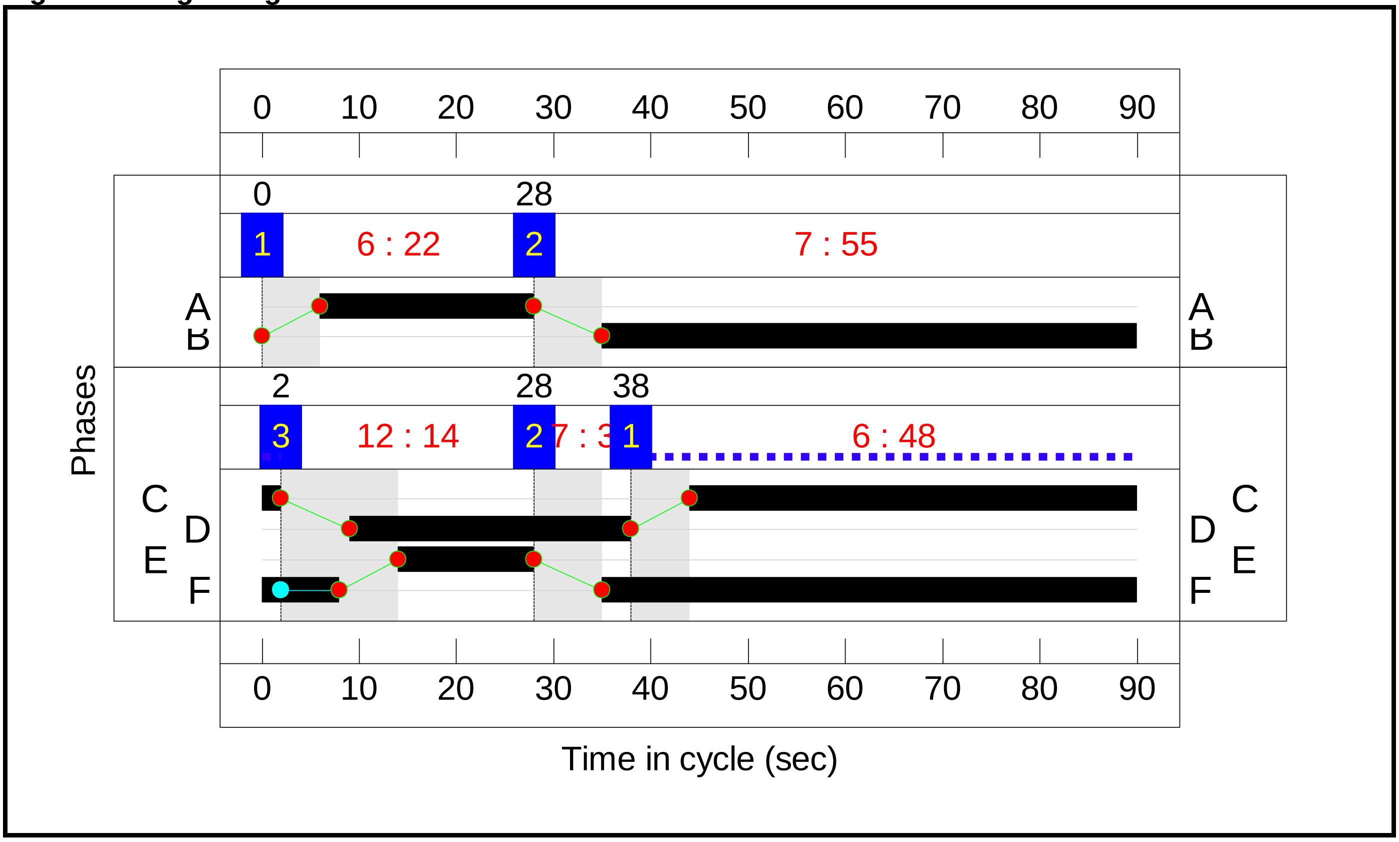
Stage Stream: 1

Stage	1	2
Duration	22	55
Change Point	0	28

Stage Stream: 2

Stage	1	3	2
Duration	48	14	3
Change Point	38	2	28

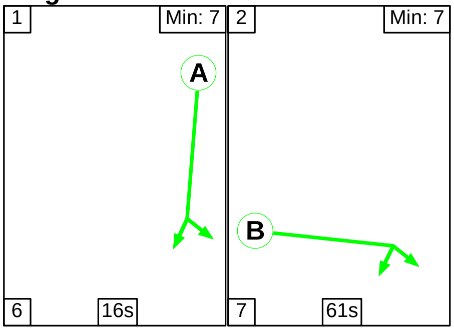
Signal Timings Diagram



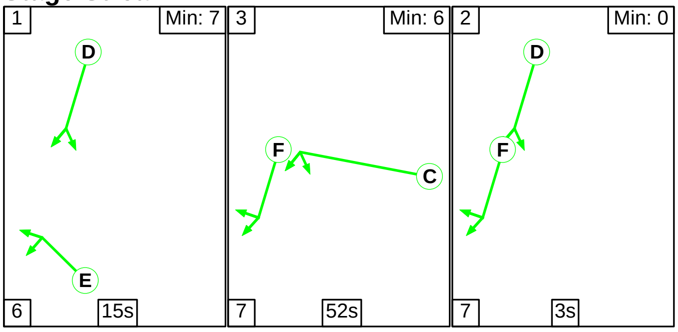
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

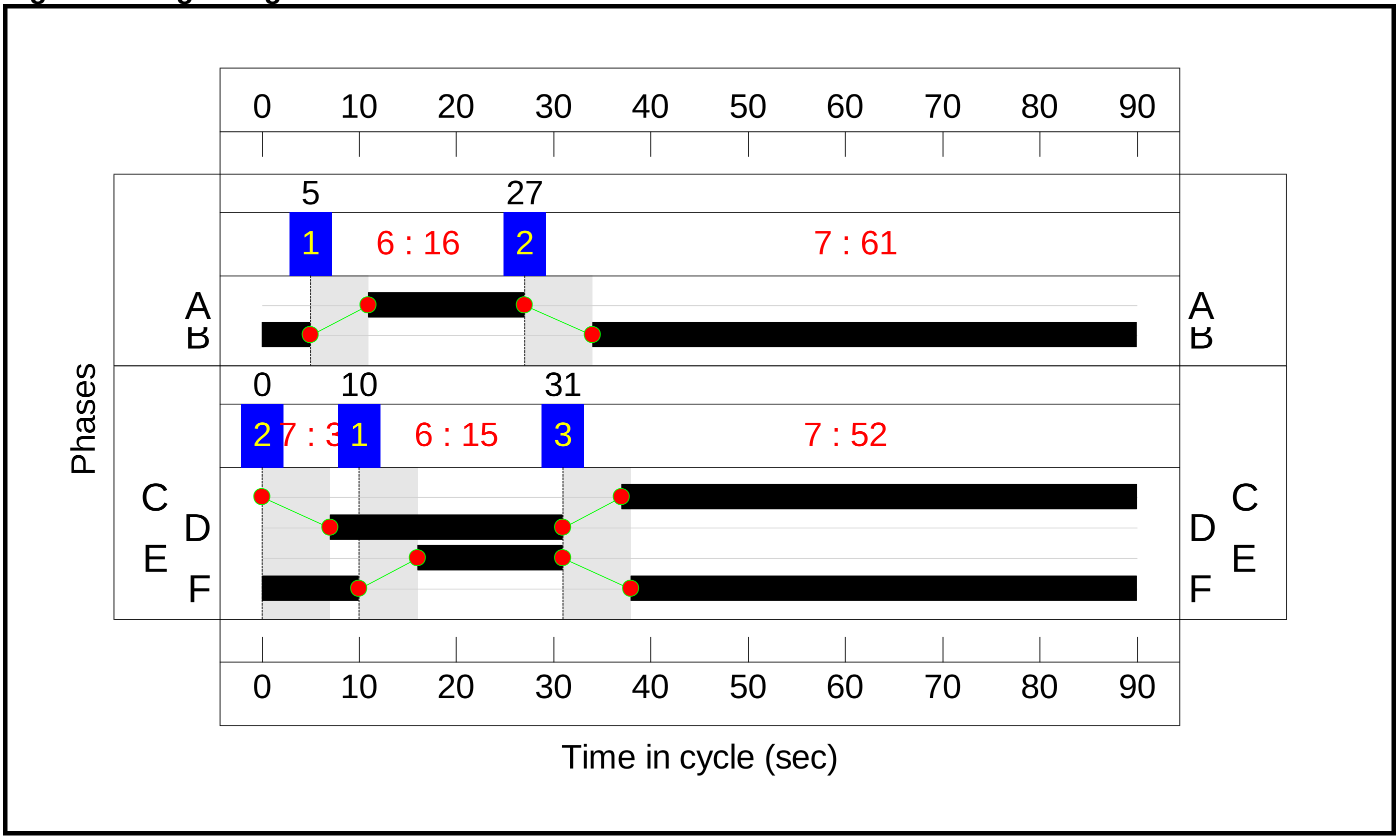
Stage Stream: 1

Stage	1	2
Duration	16	61
Change Point	5	27

Stage Stream: 2

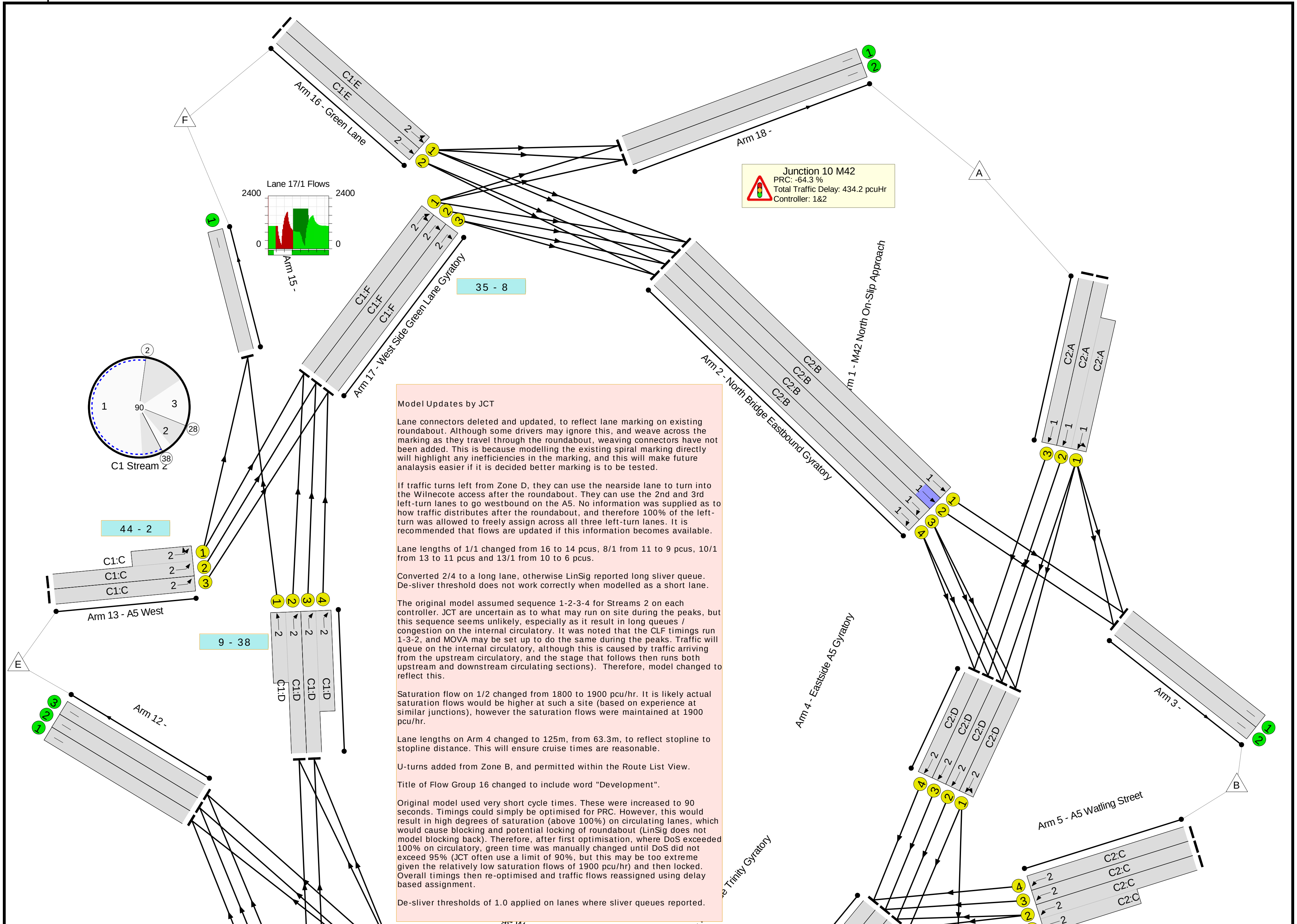
Stage	1	3	2
Duration	15	52	3
Change Point	10	31	0

Signal Timings Diagram



Network Layout Diagram

Full Input Data And Results



Junction 10 M42
PRC: -64.3 %
Total Traffic Delay: 434.2 pcuHr
Controller: 1&2

Model Updates by JCT

Lane connectors deleted and updated, to reflect lane marking on existing roundabout. Although some drivers may ignore this, and weave across the roundabout, weaving connectors have not been added. This is because modelling the existing spiral marking directly will highlight any inefficiencies in the marking, and this will make future analaysis easier if it is decided better marking is to be tested.

If traffic turns left from Zone D, they can use the nearside lane to turn into the Wilnecote access after the roundabout. They can use the 2nd and 3rd left-turn lanes to go westbound on the A5. No information was supplied as to how traffic distributes after the roundabout, and therefore 100% of the left-turn was allowed to freely assign across all three left-turn lanes. It is recommended that flows are updated if this information becomes available.

Lane lengths of 1/1 changed from 16 to 14 pcus, 8/1 from 11 to 9 pcus, 10/1 from 13 to 11 pcus and 13/1 from 10 to 6 pcus.

Converted 2/4 to a long lane, otherwise LinSig reported long sliver queue. De-sliver threshold does not work correctly when modelled as a short lane.

The original model assumed sequence 1-2-3-4 for Streams 2 on each controller. JCT are uncertain as to what may run on site during the peaks, but this sequence seems unlikely, especially as it result in long queues / congestion on the internal circulatory. It was noted that the CLF timings run 1-3-2, and MOVA may be set up to do the same during the peaks. Traffic will queue on the internal circulatory, although this is caused by traffic arriving from the upstream circulatory, and the stage that follows then runs both upstream and downstream circulating sections). Therefore, model changed to reflect this.

Saturation flow on 1/2 changed from 1800 to 1900 pcu/hr. It is likely actual saturation flows would be higher at such a site (based on experience at similar junctions), however the saturation flows were maintained at 1900 pcu/hr.

Lane lengths on Arm 4 changed to 125m, from 63.3m, to reflect stopline to stopline distance. This will ensure cruise times are reasonable.

U-turns added from Zone B, and permitted within the Route List View.

Title of Flow Group 16 changed to include word "Development".

Original model used very short cycle times. These were increased to 90 seconds. Timings could simply be optimised for PRC. However, this would result in high degrees of saturation (above 100%) on circulating lanes, which would cause blocking and potential locking of roundabout (LinSig does not model blocking back). Therefore, after first optimisation, where DoS exceeded 100% on circulatory, green time was manually changed until DoS did not exceed 95% (JCT often use a limit of 90%, but this may be too extreme given the relatively low saturation flows of 1900 pcu/hr) and then locked. Overall timings then re-optimised and traffic flows reassigned using delay based assignment.

De-sliver thresholds of 1.0 applied on lanes where sliver queues reported.

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**147.9%**
Junction 10 M42	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**147.9%**
1/2+1/1	M42 North On-Slip Approach Left Ahead	U	2:1	N/A	C2:A		1	16	-	347	1900:1900	202+359	61.9 : 61.9%
1/3	M42 North On-Slip Approach Ahead	U	2:1	N/A	C2:A		1	16	-	147	1900	359	41.0%
2/1	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	61	-	1069	1900	1309	60.9%
2/2	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	61	-	1143	1900	1309	73.0%
2/3	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	61	-	688	1900	1309	52.6%
2/4	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	61	-	92	1900	1309	7.0%
3/1		U	N/A	N/A	-		-	-	-	1150	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	1224	Inf	Inf	0.0%
4/1	Eastside A5 Gyratory Ahead Left	U	2:2	N/A	C2:D		1	24	-	406	1900	528	76.9%
4/2	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	24	-	342	1900	528	64.8%
4/3	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	24	-	188	1900	528	35.6%
4/4	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	24	-	176	1900	528	33.3%
5/2+5/1	A5 Watling Street Ahead Left	U	2:2	N/A	C2:C		1	53	-	974	1900:1900	981+266	78.1 : 78.1%
5/3	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	53	-	818	1900	1140	71.8%

Full Input Data And Results

5/4	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	53	-	752	1900	1140	66.0%
6/1	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	62	-	714	1900	1330	53.7%
6/2	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	62	-	502	1900	1330	37.7%
6/3	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	62	-	1006	1900	1330	75.6%
6/4	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	62	-	928	1900	1330	69.8%
7/1		U	N/A	N/A	-		-	-	-	506	Inf	Inf	0.0%
8/2+8/1	Trinity Road Left Ahead	U	2:2	N/A	C2:E		1	15	-	316	1900:1900	338+236	55.1 : 55.1%
9/1		U	N/A	N/A	-		-	-	-	736	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	524	Inf	Inf	0.0%
10/2+10/1	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	22	-	319	1900:1900	461+458	34.7 : 34.7%
10/3	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	22	-	69	1900	486	14.2%
10/4	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	22	-	442	1900	486	91.0%
10/5	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	22	-	454	1900	486	93.5%
11/1	South Bridge Westbound Gyratory Ahead	U	1:1	N/A	C1:B		1	55	-	1092	1900	1182	92.4%
11/2	South Bridge Westbound Gyratory Ahead Right	U	1:1	N/A	C1:B		1	55	-	1114	1900	1182	94.2%
12/1		U	N/A	N/A	-		-	-	-	705	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	706	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	701	Inf	Inf	0.0%
13/2+13/1	A5 West Left Left2	U	1:2	N/A	C1:C		1	48	-	1722	1900:1900	393+772	147.9 : 147.9%
13/3	A5 West Left	U	1:2	N/A	C1:C		1	48	-	506	1900	1034	48.9%

Full Input Data And Results

14/2+14/1	Westside A5 Gyratory Ahead Ahead2	U	1:2	N/A	C1:D		1	29	-	807	1900:1900	387+478	93.2 : 93.2%
14/3+14/4	Westside A5 Gyratory Ahead	U	1:2	N/A	C1:D		1	29	-	571	1900:1900	610+64	84.7 : 84.7%
15/1		U	N/A	N/A	-		-	-	-	602	Inf	Inf	0.0%
16/1	Green Lane Ahead Left	U	1:2	N/A	C1:E		1	14	-	212	1900	317	66.9%
16/2	Green Lane Ahead	U	1:2	N/A	C1:E		1	14	-	220	1900	317	69.5%
17/1	West Side Green Lane Gyratory Right Ahead	U	1:2	N/A	C1:F		1	63	-	1346	1900	1351	76.0%
17/2	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	63	-	1098	1900	1351	67.3%
17/3	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	63	-	560	1900	1351	41.4%
18/1		U	N/A	N/A	-		-	-	-	222	Inf	Inf	0.0%
18/2		U	N/A	N/A	-		-	-	-	222	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**102.7**	**331.5**	**0.0**	**434.2**	**-**	**-**	**-**	**-**
Junction 10 M42	**-**	**-**	**0**	**0**	**0**	**102.7**	**331.5**	**0.0**	**434.2**	**-**	**-**	**-**	**-**
1/2+1/1	347	347	-	-	-	3.2	0.8	-	4.0	41.2	5.1	0.8	5.9
1/3	147	147	-	-	-	1.3	0.3	-	1.7	40.6	3.2	0.3	3.6
2/1	797	797	-	-	-	1.4	0.8	-	2.1	9.6	5.9	0.8	6.7
2/2	955	955	-	-	-	0.9	1.3	-	2.2	8.4	4.4	1.3	5.8
2/3	688	688	-	-	-	0.9	0.6	-	1.5	7.7	5.8	0.6	6.4
2/4	92	92	-	-	-	0.1	0.0	-	0.1	3.5	1.4	0.0	1.4
3/1	878	878	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	1036	1036	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	406	406	-	-	-	3.0	1.6	-	4.6	40.7	9.2	1.6	10.8
4/2	342	342	-	-	-	2.9	0.9	-	3.8	39.9	8.5	0.9	9.4
4/3	188	188	-	-	-	1.3	0.3	-	1.5	29.5	2.2	0.3	2.5
4/4	176	176	-	-	-	0.9	0.2	-	1.2	23.7	1.5	0.2	1.7
5/2+5/1	974	974	-	-	-	3.1	1.8	-	4.9	18.0	14.6	1.8	16.4
5/3	818	818	-	-	-	2.9	1.3	-	4.1	18.2	14.3	1.3	15.6
5/4	752	752	-	-	-	2.5	1.0	-	3.5	16.5	12.3	1.0	13.3
6/1	714	714	-	-	-	0.5	0.6	-	1.1	5.4	2.9	0.6	3.5
6/2	502	502	-	-	-	2.0	0.3	-	2.3	16.4	9.5	0.3	9.8
6/3	1006	1006	-	-	-	0.8	1.5	-	2.4	8.5	5.4	1.5	6.9
6/4	928	928	-	-	-	0.7	1.1	-	1.8	7.0	5.4	1.1	6.5
7/1	506	506	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2+8/1	316	316	-	-	-	2.9	0.6	-	3.5	40.2	4.2	0.6	4.8
9/1	736	736	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	524	524	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	319	319	-	-	-	2.4	0.3	-	2.7	30.2	3.2	0.3	3.5

Full Input Data And Results

10/3	69	69	-	-	-	0.5	0.1	-	0.6	30.2	1.3	0.1	1.4
10/4	442	442	-	-	-	4.0	4.2	-	8.2	67.1	10.7	4.2	14.9
10/5	454	454	-	-	-	4.1	5.4	-	9.5	75.3	11.1	5.4	16.5
11/1	1092	1092	-	-	-	2.6	5.4	-	8.1	26.6	9.7	5.4	15.1
11/2	1114	1114	-	-	-	2.6	6.8	-	9.4	30.4	12.2	6.8	19.0
12/1	705	705	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	706	706	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	701	701	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2+13/1	1722	1164	-	-	-	40.0	280.3	-	320.3	669.7	65.5	280.3	345.8
13/3	506	506	-	-	-	1.8	0.5	-	2.3	16.1	7.7	0.5	8.2
14/2+14/1	807	807	-	-	-	3.2	5.8	-	9.0	40.2	5.5	5.8	11.3
14/3+14/4	571	571	-	-	-	1.4	2.6	-	4.1	25.7	3.2	2.6	5.9
15/1	551	551	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	212	212	-	-	-	2.1	1.0	-	3.1	52.1	4.9	1.0	5.9
16/2	220	220	-	-	-	2.2	1.1	-	3.3	53.6	5.1	1.1	6.2
17/1	1027	1027	-	-	-	2.0	1.6	-	3.5	12.3	11.7	1.6	13.3
17/2	910	910	-	-	-	2.3	1.0	-	3.4	13.3	17.1	1.0	18.2
17/3	560	560	-	-	-	0.2	0.4	-	0.6	3.9	1.4	0.4	1.7
18/1	199	199	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/2	199	199	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -4.7 Total Delay for Signalled Lanes (pcuHr): 38.46 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -64.3 Total Delay for Signalled Lanes (pcuHr): 349.52 Cycle Time (s): 90
C2 Stream: 1 PRC for Signalled Lanes (%): 23.4 Total Delay for Signalled Lanes (pcuHr): 11.56 Cycle Time (s): 90
C2 Stream: 2 PRC for Signalled Lanes (%): 15.3 Total Delay for Signalled Lanes (pcuHr): 34.62 Cycle Time (s): 90
PRC Over All Lanes (%): -64.3 Total Delay Over All Lanes(pcuHr): 434.16

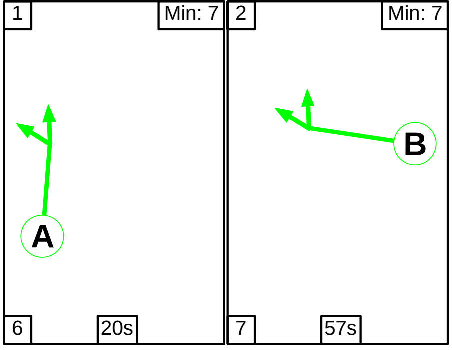
Full Input Data And Results

Scenario 14: '2031 L + D AM' (FG14: '2031 Local Plan + Development AM Peak', Plan 1: 'Network Control Plan 1')

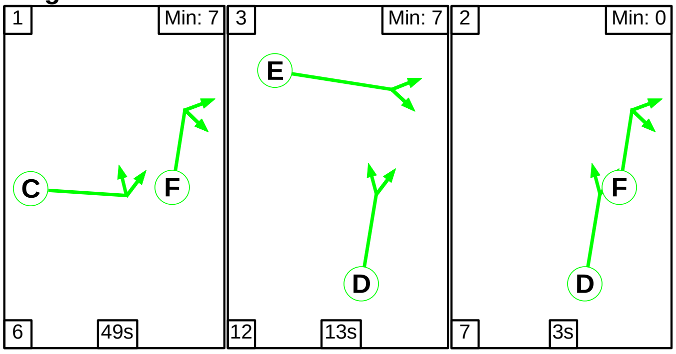
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

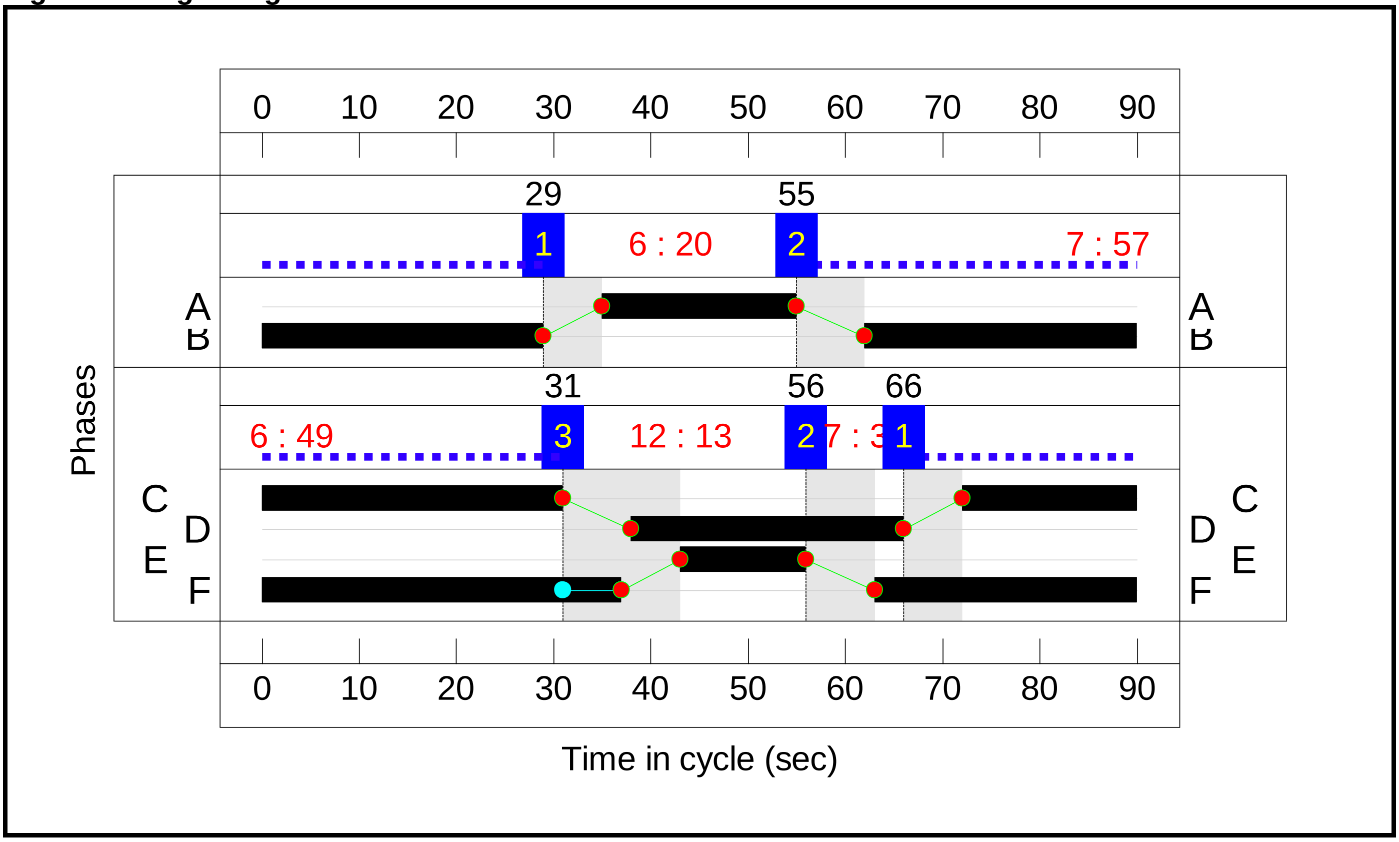
Stage Stream: 1

Stage	1	2
Duration	20	57
Change Point	29	55

Stage Stream: 2

Stage	1	3	2
Duration	49	13	3
Change Point	66	31	56

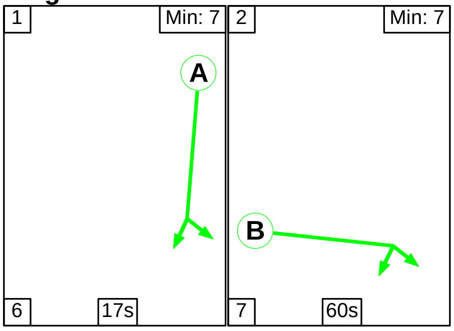
Signal Timings Diagram



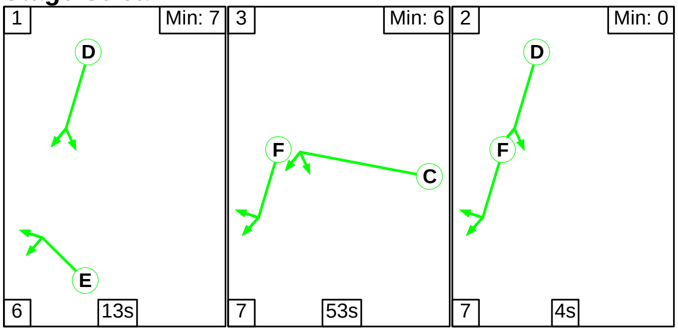
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

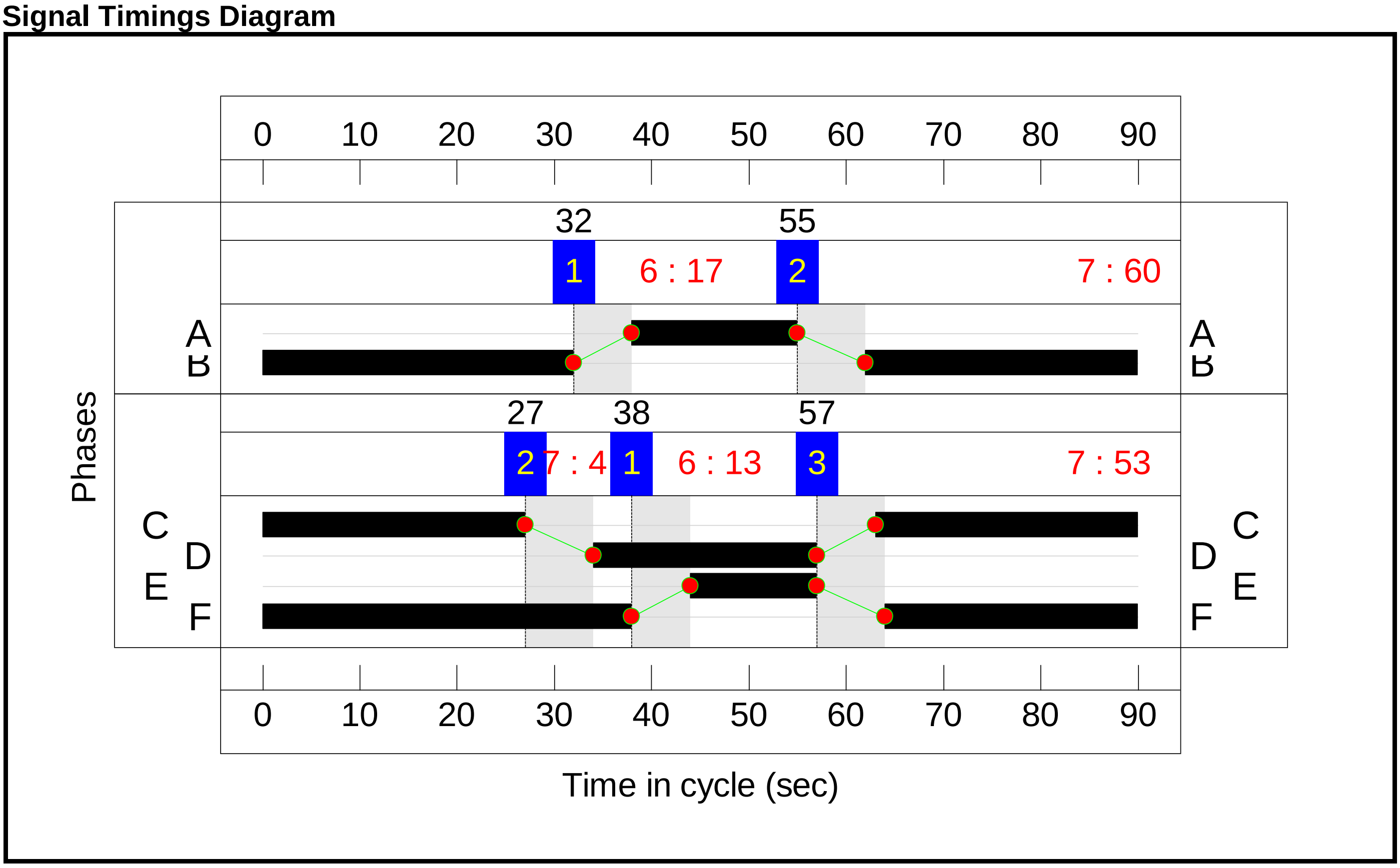
Stage Stream: 1

Stage	1	2
Duration	17	60
Change Point	32	55

Stage Stream: 2

Stage	1	3	2
Duration	13	53	4
Change Point	38	57	27

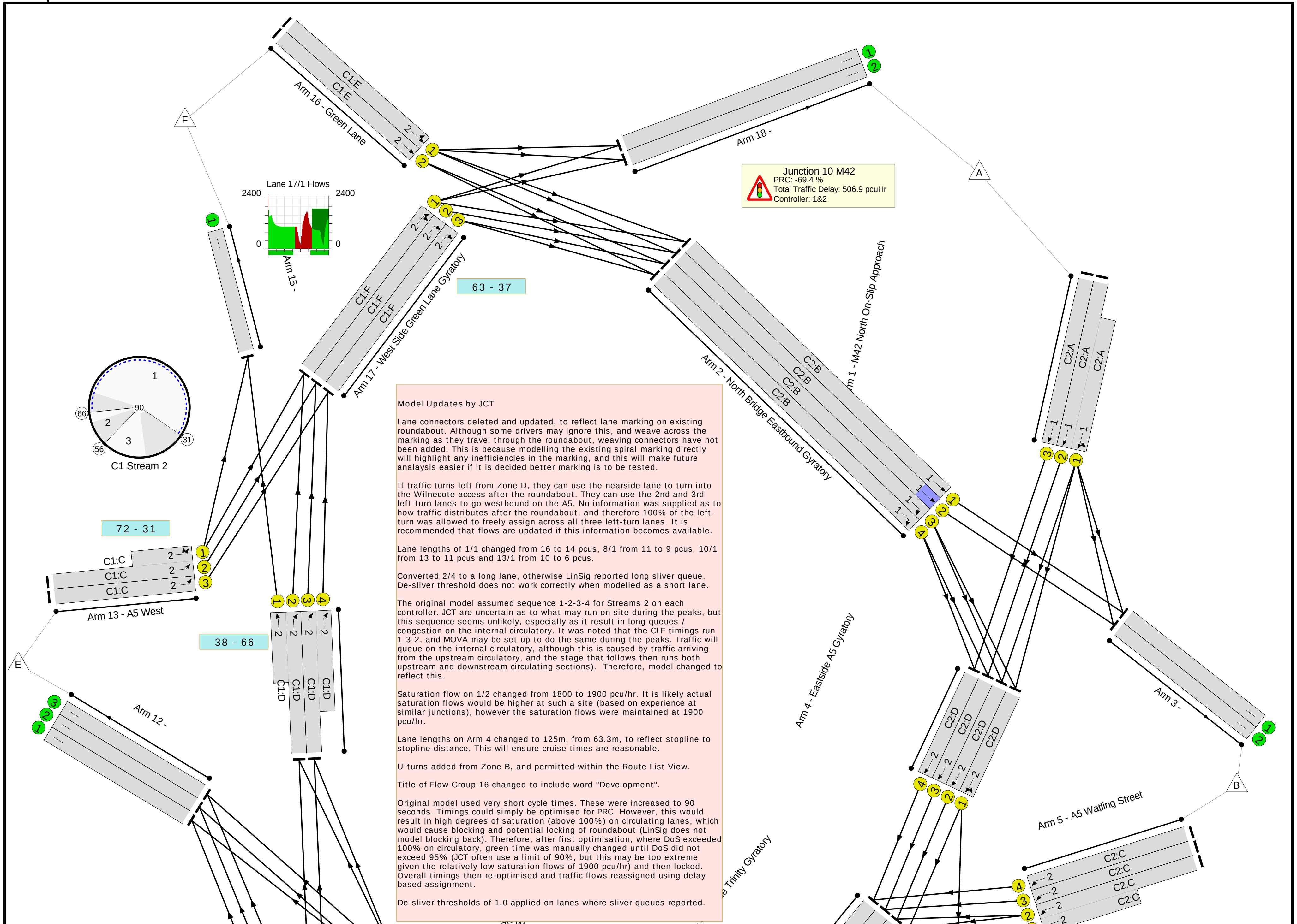
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Model Updates by JCT

Lane connectors deleted and updated, to reflect lane marking on existing roundabout. Although some drivers may ignore this, and weave across the marking as they travel through the roundabout, weaving connectors have not been added. This is because modelling the existing spiral marking directly will highlight any inefficiencies in the marking, and this will make future analaysis easier if it is decided better marking is to be tested.

If traffic turns left from Zone D, they can use the nearside lane to turn into the Wilnecote access after the roundabout. They can use the 2nd and 3rd left-turn lanes to go westbound on the A5. No information was supplied as to how traffic distributes after the roundabout, and therefore 100% of the left-turn was allowed to freely assign across all three left-turn lanes. It is recommended that flows are updated if this information becomes available.

Lane lengths of 1/1 changed from 16 to 14 pcus, 8/1 from 11 to 9 pcus, 10/1 from 13 to 11 pcus and 13/1 from 10 to 6 pcus.

Converted 2/4 to a long lane, otherwise LinSig reported long sliver queue. De-sliver threshold does not work correctly when modelled as a short lane.

The original model assumed sequence 1-2-3-4 for Streams 2 on each controller. JCT are uncertain as to what may run on site during the peaks, but this sequence seems unlikely, especially as it result in long queues / congestion on the internal circulatory. It was noted that the CLF timings run 1-3-2, and MOVA may be set up to do the same during the peaks. Traffic will queue on the internal circulatory, although this is caused by traffic arriving from the upstream circulatory, and the stage that follows then runs both upstream and downstream circulating sections). Therefore, model changed to reflect this.

Saturation flow on 1/2 changed from 1800 to 1900 pcu/hr. It is likely actual saturation flows would be higher at such a site (based on experience at similar junctions), however the saturation flows were maintained at 1900 pcu/hr.

Lane lengths on Arm 4 changed to 125m, from 63.3m, to reflect stopline to stopline distance. This will ensure cruise times are reasonable.

U-turns added from Zone B, and permitted within the Route List View.

Title of Flow Group 16 changed to include word "Development".

Original model used very short cycle times. These were increased to 90 seconds. Timings could simply be optimised for PRC. However, this would result in high degrees of saturation (above 100%) on circulating lanes, which would cause blocking and potential locking of roundabout (LinSig does not model blocking back). Therefore, after first optimisation, where DoS exceeded 100% on circulatory, green time was manually changed until DoS did not exceed 95% (JCT often use a limit of 90%, but this may be too extreme given the relatively low saturation flows of 1900 pcu/hr) and then locked. Overall timings then re-optimised and traffic flows reassigned using delay based assignment.

De-sliver thresholds of 1.0 applied on lanes where sliver queues reported.

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**152.4%**
Junction 10 M42	-	-	**N/A**	-	-		-	-	-	-	-	-	**152.4%**
1/2+1/1	M42 North On-Slip Approach Left Ahead	U	2:1	N/A	C2:A		1	17	-	375	1900:1900	190+380	65.8 : 65.8%
1/3	M42 North On-Slip Approach Ahead	U	2:1	N/A	C2:A		1	17	-	147	1900	380	38.7%
2/1	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	60	-	1133	1900	1288	63.9%
2/2	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	60	-	1235	1900	1288	76.2%
2/3	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	60	-	688	1900	1288	53.2%
2/4	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	60	-	92	1900	1288	7.1%
3/1		U	N/A	N/A	-		-	-	-	1228	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	1330	Inf	Inf	0.0%
4/1	Eastside A5 Gyratory Ahead Left	U	2:2	N/A	C2:D		1	23	-	403	1900	507	78.9%
4/2	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	23	-	345	1900	507	68.1%
4/3	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	23	-	195	1900	507	38.5%
4/4	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	23	-	169	1900	507	33.4%
5/2+5/1	A5 Watling Street Ahead Left	U	2:2	N/A	C2:C		1	54	-	988	1900:1900	1000+267	78.0 : 78.0%
5/3	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	54	-	856	1900	1161	73.7%

Full Input Data And Results

5/4	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	54	-	802	1900	1161	69.1%
6/1	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	64	-	737	1900	1372	53.7%
6/2	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	64	-	493	1900	1372	35.9%
6/3	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	64	-	1051	1900	1372	76.6%
6/4	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	64	-	971	1900	1372	70.8%
7/1		U	N/A	N/A	-		-	-	-	506	Inf	Inf	0.0%
8/2+8/1	Trinity Road Left Ahead	U	2:2	N/A	C2:E		1	13	-	316	1900:1900	296+212	62.3 : 62.3%
9/1		U	N/A	N/A	-		-	-	-	759	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	515	Inf	Inf	0.0%
10/2+10/1	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	20	-	324	1900:1900	440+440	36.8 : 36.8%
10/3	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	20	-	64	1900	443	14.4%
10/4	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	20	-	472	1900	443	106.5%
10/5	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	20	-	470	1900	443	106.0%
11/1	South Bridge Westbound Gyratory Ahead	U	1:1	N/A	C1:B		1	57	-	1139	1900	1224	93.0%
11/2	South Bridge Westbound Gyratory Ahead Right	U	1:1	N/A	C1:B		1	57	-	1155	1900	1224	94.3%
12/1		U	N/A	N/A	-		-	-	-	732	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	731	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	731	Inf	Inf	0.0%
13/2+13/1	A5 West Left Left2	U	1:2	N/A	C1:C		1	49	-	1832	1900:1900	439+762	152.4 : 152.4%
13/3	A5 West Left	U	1:2	N/A	C1:C		1	49	-	506	1900	1056	47.9%

14/2+14/1	Westside A5 Gyratory Ahead Ahead2	U	1:2	N/A	C1:D		1	28	-	842	1900:1900	407+459	94.0 : 93.8%
14/3+14/4	Westside A5 Gyratory Ahead	U	1:2	N/A	C1:D		1	28	-	588	1900:1900	592+60	86.3 : 85.1%
15/1		U	N/A	N/A	-		-	-	-	602	Inf	Inf	0.0%
16/1	Green Lane Ahead Left	U	1:2	N/A	C1:E		1	13	-	212	1900	296	71.7%
16/2	Green Lane Ahead	U	1:2	N/A	C1:E		1	13	-	220	1900	296	74.4%
17/1	West Side Green Lane Gyratory Right Ahead	U	1:2	N/A	C1:F		1	64	-	1402	1900	1372	76.0%
17/2	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	64	-	1204	1900	1372	69.2%
17/3	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	64	-	560	1900	1372	40.6%
18/1		U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%
18/2		U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**105.8**	**401.1**	**0.0**	**506.9**	**-**	**-**	**-**	**-**
Junction 10 M42	**-**	**-**	**0**	**0**	**0**	**105.8**	**401.1**	**0.0**	**506.9**	**-**	**-**	**-**	**-**
1/2+1/1	375	375	-	-	-	3.4	1.0	-	4.3	41.5	5.7	1.0	6.6
1/3	147	147	-	-	-	1.3	0.3	-	1.6	38.9	3.2	0.3	3.5
2/1	823	823	-	-	-	1.5	0.9	-	2.4	10.4	6.6	0.9	7.5
2/2	981	981	-	-	-	1.1	1.6	-	2.7	9.7	4.8	1.6	6.4
2/3	685	685	-	-	-	1.0	0.6	-	1.6	8.2	6.1	0.6	6.7
2/4	92	92	-	-	-	0.0	0.0	-	0.1	3.0	1.2	0.0	1.2
3/1	918	918	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	1076	1076	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	400	400	-	-	-	3.1	1.8	-	4.9	44.0	9.2	1.8	11.1
4/2	345	345	-	-	-	2.9	1.1	-	3.9	41.0	8.6	1.1	9.6
4/3	195	195	-	-	-	1.4	0.3	-	1.8	32.3	2.5	0.3	2.8
4/4	169	169	-	-	-	0.9	0.2	-	1.2	25.3	1.5	0.2	1.8
5/2+5/1	988	988	-	-	-	3.0	1.8	-	4.8	17.4	14.4	1.8	16.1
5/3	856	856	-	-	-	2.9	1.4	-	4.3	18.2	15.0	1.4	16.4
5/4	802	802	-	-	-	2.6	1.1	-	3.7	16.8	13.4	1.1	14.5
6/1	737	737	-	-	-	0.4	0.6	-	1.0	4.9	2.8	0.6	3.4
6/2	493	493	-	-	-	1.9	0.3	-	2.2	15.9	9.5	0.3	9.8
6/3	1051	1051	-	-	-	0.8	1.6	-	2.5	8.4	5.5	1.6	7.1
6/4	971	971	-	-	-	0.6	1.2	-	1.8	6.6	4.8	1.2	6.0
7/1	503	503	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2+8/1	316	316	-	-	-	3.1	0.8	-	3.9	44.4	4.3	0.8	5.1
9/1	759	759	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	515	515	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	324	324	-	-	-	2.6	0.3	-	2.9	32.2	3.4	0.3	3.7

Full Input Data And Results

10/3	64	64	-	-	-	0.5	0.1	-	0.6	32.2	1.3	0.1	1.3
10/4	472	443	-	-	-	5.6	20.2	-	25.8	196.5	12.5	20.2	32.7
10/5	470	443	-	-	-	5.5	19.4	-	24.9	190.6	12.4	19.4	31.8
11/1	1139	1139	-	-	-	2.4	5.9	-	8.2	26.0	9.6	5.9	15.4
11/2	1155	1155	-	-	-	2.4	6.9	-	9.4	29.2	12.4	6.9	19.3
12/1	732	732	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	731	731	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	731	731	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2+13/1	1832	1202	-	-	-	39.3	316.6	-	355.9	699.4	60.6	316.6	377.2
13/3	506	506	-	-	-	1.7	0.5	-	2.2	15.4	7.6	0.5	8.0
14/2+14/1	813	813	-	-	-	3.5	6.2	-	9.7	43.1	5.5	6.2	11.7
14/3+14/4	561	561	-	-	-	1.5	2.9	-	4.5	28.6	3.3	2.9	6.2
15/1	533	533	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	212	212	-	-	-	2.1	1.2	-	3.4	57.1	5.0	1.2	6.2
16/2	220	220	-	-	-	2.2	1.4	-	3.6	59.3	5.2	1.4	6.6
17/1	1043	1043	-	-	-	1.9	1.6	-	3.5	12.1	13.3	1.6	14.9
17/2	950	950	-	-	-	2.3	1.1	-	3.4	12.8	17.6	1.1	18.7
17/3	557	557	-	-	-	0.2	0.3	-	0.6	3.7	1.3	0.3	1.6
18/1	200	200	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/2	200	200	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -18.3 Total Delay for Signalled Lanes (pcuHr): 71.69 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -69.4 Total Delay for Signalled Lanes (pcuHr): 386.74 Cycle Time (s): 90
C2 Stream: 1 PRC for Signalled Lanes (%): 18.2 Total Delay for Signalled Lanes (pcuHr): 12.57 Cycle Time (s): 90
C2 Stream: 2 PRC for Signalled Lanes (%): 14.0 Total Delay for Signalled Lanes (pcuHr): 35.90 Cycle Time (s): 90
PRC Over All Lanes (%): -69.4 Total Delay Over All Lanes(pcuHr): 506.91

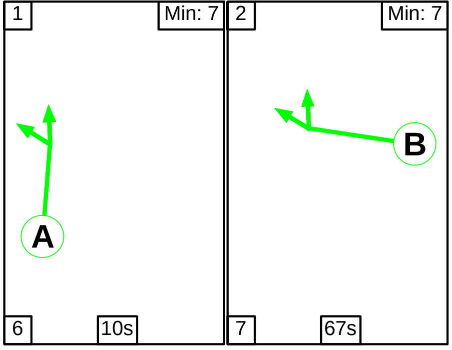
Full Input Data And Results

Scenario 15: '2031 L PM' (FG15: '2031 Local Plan PM Peak', Plan 1: 'Network Control Plan 1')

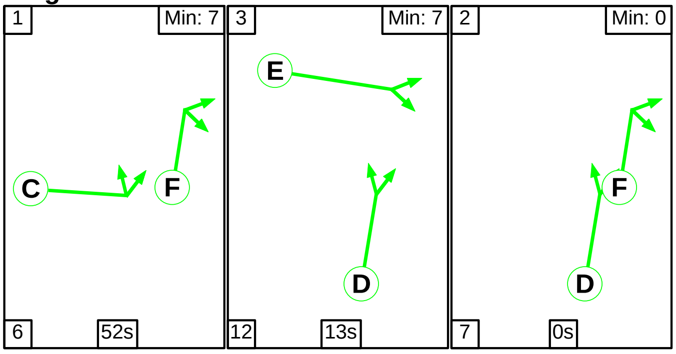
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

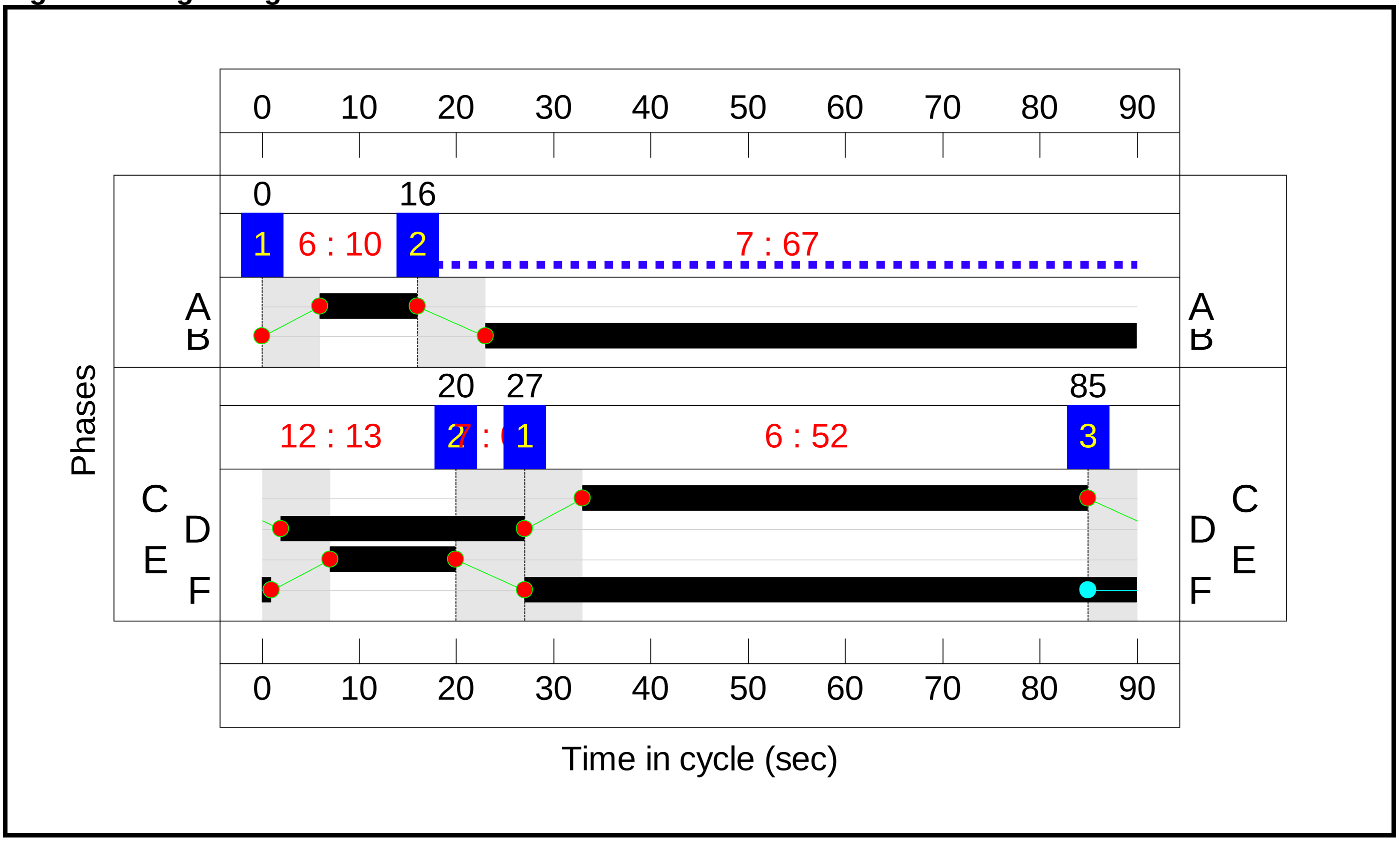
Stage Stream: 1

Stage	**1**	**2**
Duration	10	67
Change Point	0	16

Stage Stream: 2

Stage	**1**	**3**	**2**
Duration	52	13	0
Change Point	27	85	20

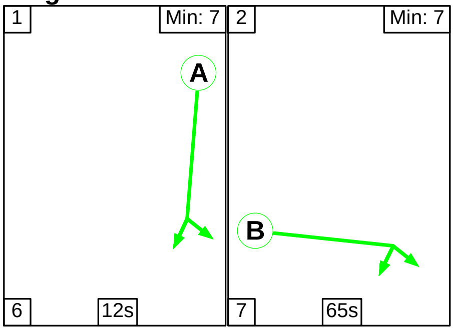
Signal Timings Diagram



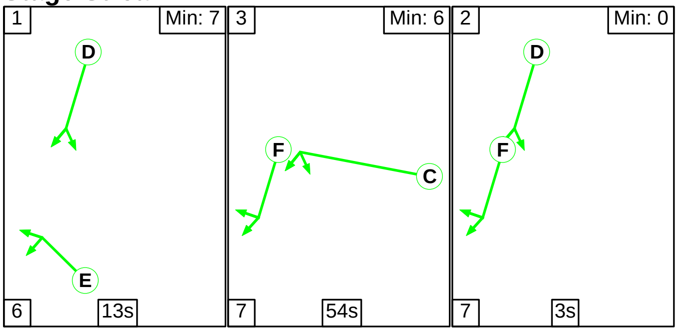
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

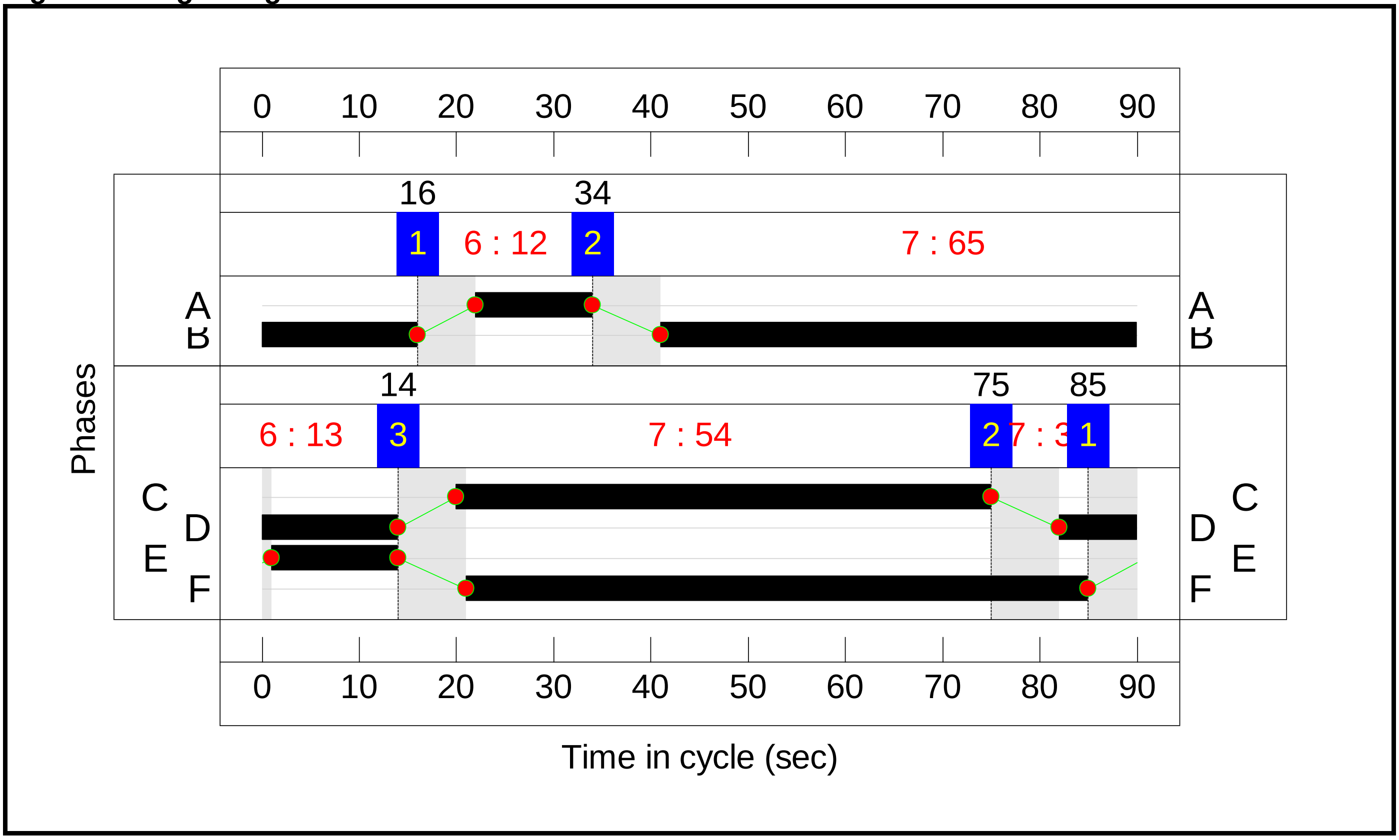
Stage Stream: 1

Stage	1	2
Duration	12	65
Change Point	16	34

Stage Stream: 2

Stage	1	3	2
Duration	13	54	3
Change Point	85	14	75

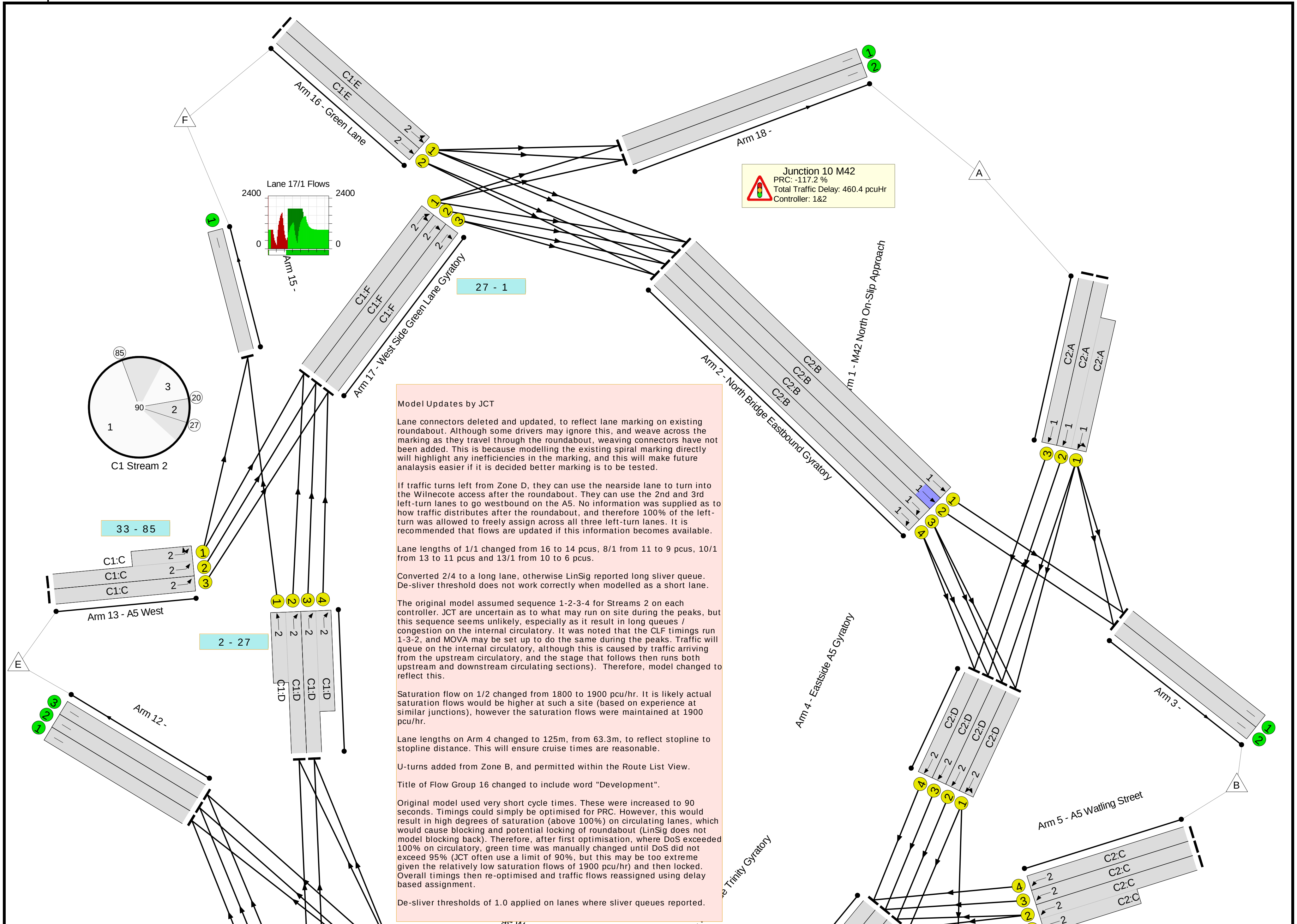
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Model Updates by JCT

Lane connectors deleted and updated, to reflect lane marking on existing roundabout. Although some drivers may ignore this, and weave across the marking as they travel through the roundabout, weaving connectors have not been added. This is because modelling the existing spiral marking directly will highlight any inefficiencies in the marking, and this will make future analaysis easier if it is decided better marking is to be tested.

If traffic turns left from Zone D, they can use the nearside lane to turn into the Wilnecote access after the roundabout. They can use the 2nd and 3rd left-turn lanes to go westbound on the A5. No information was supplied as to how traffic distributes after the roundabout, and therefore 100% of the left-turn was allowed to freely assign across all three left-turn lanes. It is recommended that flows are updated if this information becomes available.

Lane lengths of 1/1 changed from 16 to 14 pcus, 8/1 from 11 to 9 pcus, 10/1 from 13 to 11 pcus and 13/1 from 10 to 6 pcus.

Converted 2/4 to a long lane, otherwise LinSig reported long sliver queue. De-sliver threshold does not work correctly when modelled as a short lane.

The original model assumed sequence 1-2-3-4 for Streams 2 on each controller. JCT are uncertain as to what may run on site during the peaks, but this sequence seems unlikely, especially as it result in long queues / congestion on the internal circulatory. It was noted that the CLF timings run 1-3-2, and MOVA may be set up to do the same during the peaks. Traffic will queue on the internal circulatory, although this is caused by traffic arriving from the upstream circulatory, and the stage that follows then runs both upstream and downstream circulating sections). Therefore, model changed to reflect this.

Saturation flow on 1/2 changed from 1800 to 1900 pcu/hr. It is likely actual saturation flows would be higher at such a site (based on experience at similar junctions), however the saturation flows were maintained at 1900 pcu/hr.

Lane lengths on Arm 4 changed to 125m, from 63.3m, to reflect stopline to stopline distance. This will ensure cruise times are reasonable.

U-turns added from Zone B, and permitted within the Route List View.

Title of Flow Group 16 changed to include word "Development".

Original model used very short cycle times. These were increased to 90 seconds. Timings could simply be optimised for PRC. However, this would result in high degrees of saturation (above 100%) on circulating lanes, which would cause blocking and potential locking of roundabout (LinSig does not model blocking back). Therefore, after first optimisation, where DoS exceeded 100% on circulatory, green time was manually changed until DoS did not exceed 95% (JCT often use a limit of 90%, but this may be too extreme given the relatively low saturation flows of 1900 pcu/hr) and then locked. Overall timings then re-optimised and traffic flows reassigned using delay based assignment.

De-sliver thresholds of 1.0 applied on lanes where sliver queues reported.

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**195.5%**
Junction 10 M42	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**195.5%**
1/2+1/1	M42 North On-Slip Approach Left Ahead	U	2:1	N/A	C2:A		1	12	-	275	1900:1900	274+274	43.4 : 56.8%
1/3	M42 North On-Slip Approach Ahead	U	2:1	N/A	C2:A		1	12	-	129	1900	274	47.0%
2/1	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	65	-	979	1900	1393	55.0%
2/2	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	65	-	1181	1900	1393	66.5%
2/3	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	65	-	620	1900	1393	40.9%
2/4	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	65	-	148	1900	1393	9.4%
3/1		U	N/A	N/A	-		-	-	-	1039	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	1241	Inf	Inf	0.0%
4/1	Eastside A5 Gyratory Ahead Left	U	2:2	N/A	C2:D		1	22	-	370	1900	486	69.5%
4/2	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	22	-	286	1900	486	55.2%
4/3	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	22	-	227	1900	486	44.2%
4/4	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	22	-	169	1900	486	33.9%
5/2+5/1	A5 Watling Street Ahead Left	U	2:2	N/A	C2:C		1	55	-	642	1900:1900	986+327	48.9 : 48.9%
5/3	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	55	-	966	1900	1182	81.7%

Full Input Data And Results

5/4	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	55	-	950	1900	1182	80.4%
6/1	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	64	-	517	1900	1372	37.5%
6/2	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	64	-	385	1900	1372	26.7%
6/3	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	64	-	1193	1900	1372	86.0%
6/4	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	64	-	1119	1900	1372	81.2%
7/1		U	N/A	N/A	-		-	-	-	396	Inf	Inf	0.0%
8/2+8/1	Trinity Road Left Ahead	U	2:2	N/A	C2:E		1	13	-	436	1900:1900	296+260	79.8 : 76.9%
9/1		U	N/A	N/A	-		-	-	-	541	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	409	Inf	Inf	0.0%
10/2+10/1	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	10	-	372	1900:1900	232+232	80.1 : 80.1%
10/3	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	10	-	142	1900	232	61.1%
10/4	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	10	-	452	1900	232	194.6%
10/5	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	10	-	454	1900	232	195.5%
11/1	South Bridge Westbound Gyratory Ahead	U	1:1	N/A	C1:B		1	67	-	1345	1900	1436	92.8%
11/2	South Bridge Westbound Gyratory Ahead Right	U	1:1	N/A	C1:B		1	67	-	1355	1900	1436	94.1%
12/1		U	N/A	N/A	-		-	-	-	859	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	858	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	1049	Inf	Inf	0.0%
13/2+13/1	A5 West Left Left2	U	1:2	N/A	C1:C		1	52	-	1454	1900:1900	574+739	110.7 : 110.7%
13/3	A5 West Left	U	1:2	N/A	C1:C		1	52	-	374	1900	1119	33.4%

Full Input Data And Results

14/2+14/1	Westside A5 Gyratory Ahead Ahead2	U	1:2	N/A	C1:D		1	25	-	782	1900:1900	451+274	73.3 : 84.5%
14/3+14/4	Westside A5 Gyratory Ahead	U	1:2	N/A	C1:D		1	25	-	572	1900:1900	532+62	60.0 : 49.2%
15/1		U	N/A	N/A	-		-	-	-	422	Inf	Inf	0.0%
16/1	Green Lane Ahead Left	U	1:2	N/A	C1:E		1	13	-	262	1900	296	88.6%
16/2	Green Lane Ahead	U	1:2	N/A	C1:E		1	13	-	334	1900	296	113.0%
17/1	West Side Green Lane Gyratory Right Ahead	U	1:2	N/A	C1:F		1	64	-	1178	1900	1372	69.6%
17/2	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	64	-	1148	1900	1372	65.1%
17/3	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	64	-	434	1900	1372	29.5%
18/1		U	N/A	N/A	-		-	-	-	214	Inf	Inf	0.0%
18/2		U	N/A	N/A	-		-	-	-	214	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**98.6**	**361.8**	**0.0**	**460.4**	**-**	**-**	**-**	**-**
Junction 10 M42	**-**	**-**	**0**	**0**	**0**	**98.6**	**361.8**	**0.0**	**460.4**	**-**	**-**	**-**	**-**
1/2+1/1	275	275	-	-	-	2.7	0.5	-	3.2	42.1	3.6	0.5	4.1
1/3	129	129	-	-	-	1.3	0.4	-	1.7	47.7	2.9	0.4	3.4
2/1	766	766	-	-	-	0.4	0.6	-	1.0	4.8	3.3	0.6	3.9
2/2	927	927	-	-	-	0.3	1.0	-	1.3	5.2	2.9	1.0	3.9
2/3	569	569	-	-	-	0.8	0.3	-	1.2	7.3	5.3	0.3	5.7
2/4	131	131	-	-	-	0.5	0.1	-	0.6	15.4	3.2	0.1	3.3
3/1	826	826	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	987	987	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	337	337	-	-	-	2.2	1.1	-	3.3	35.4	7.8	1.1	8.9
4/2	268	268	-	-	-	1.8	0.6	-	2.4	31.8	6.2	0.6	6.8
4/3	215	215	-	-	-	2.4	0.4	-	2.8	46.6	5.4	0.4	5.8
4/4	164	164	-	-	-	2.0	0.3	-	2.2	48.6	4.1	0.3	4.4
5/2+5/1	642	642	-	-	-	1.5	0.5	-	1.9	10.9	6.0	0.5	6.5
5/3	966	966	-	-	-	3.5	2.2	-	5.7	21.2	18.5	2.2	20.7
5/4	950	950	-	-	-	3.4	2.0	-	5.4	20.5	17.7	2.0	19.7
6/1	515	515	-	-	-	0.5	0.3	-	0.8	5.6	3.4	0.3	3.7
6/2	367	367	-	-	-	1.4	0.2	-	1.5	15.1	7.1	0.2	7.3
6/3	1181	1181	-	-	-	1.5	3.0	-	4.5	13.7	7.7	3.0	10.7
6/4	1114	1114	-	-	-	1.0	2.1	-	3.1	10.0	4.9	2.1	7.0
7/1	365	365	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2+8/1	436	436	-	-	-	4.4	1.8	-	6.2	50.9	5.6	1.8	7.4
9/1	539	539	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	391	391	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	372	372	-	-	-	4.0	1.9	-	5.9	57.1	4.5	1.9	6.4

Full Input Data And Results

10/3	142	142	-	-	-	1.5	0.8	-	2.3	57.1	3.4	0.8	4.1
10/4	452	232	-	-	-	15.2	110.9	-	126.1	1004.0	19.9	110.9	130.8
10/5	454	232	-	-	-	15.3	111.9	-	127.2	1008.4	20.0	111.9	131.9
11/1	1333	1333	-	-	-	1.2	5.8	-	7.0	18.9	8.0	5.8	13.8
11/2	1350	1350	-	-	-	1.5	6.8	-	8.4	22.3	13.0	6.8	19.8
12/1	853	853	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	852	852	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	1044	1044	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2+13/1	1454	1313	-	-	-	11.6	75.2	-	86.8	215.0	36.7	75.2	111.9
13/3	374	374	-	-	-	1.0	0.3	-	1.2	11.9	4.8	0.3	5.0
14/2+14/1	562	562	-	-	-	3.4	1.7	-	5.1	32.4	4.4	1.7	6.1
14/3+14/4	350	350	-	-	-	1.7	0.7	-	2.4	24.9	3.2	0.7	4.0
15/1	346	346	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	262	262	-	-	-	2.7	3.3	-	6.0	82.1	6.4	3.3	9.7
16/2	334	296	-	-	-	5.3	22.9	-	28.2	303.5	9.3	22.9	32.2
17/1	955	955	-	-	-	1.5	1.1	-	2.6	10.0	11.7	1.1	12.8
17/2	894	894	-	-	-	1.2	0.9	-	2.2	8.7	11.6	0.9	12.6
17/3	405	405	-	-	-	0.2	0.2	-	0.4	3.3	0.7	0.2	0.9
18/1	209	209	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/2	209	209	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1	PRC for Signalled Lanes (%):	-117.2	Total Delay for Signalled Lanes (pcuHr):	276.74	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	-25.6	Total Delay for Signalled Lanes (pcuHr):	134.85	Cycle Time (s):	90
C2	Stream: 1	PRC for Signalled Lanes (%):	35.3	Total Delay for Signalled Lanes (pcuHr):	9.00	Cycle Time (s):	90
C2	Stream: 2	PRC for Signalled Lanes (%):	4.6	Total Delay for Signalled Lanes (pcuHr):	39.80	Cycle Time (s):	90
		PRC Over All Lanes (%):	-117.2	Total Delay Over All Lanes(pcuHr):	460.40		

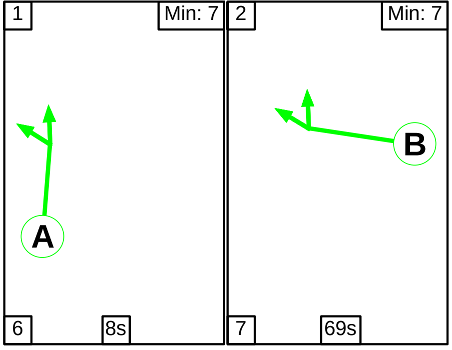
Full Input Data And Results

Scenario 16: '2031 L + D PM' (FG16: '2031 Local Plan + Development PM Peak', Plan 1: 'Network Control Plan 1')

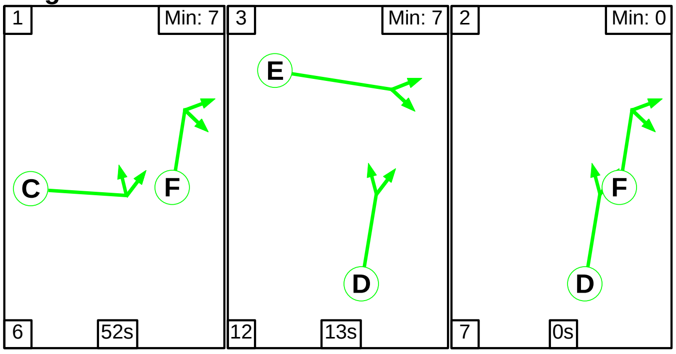
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

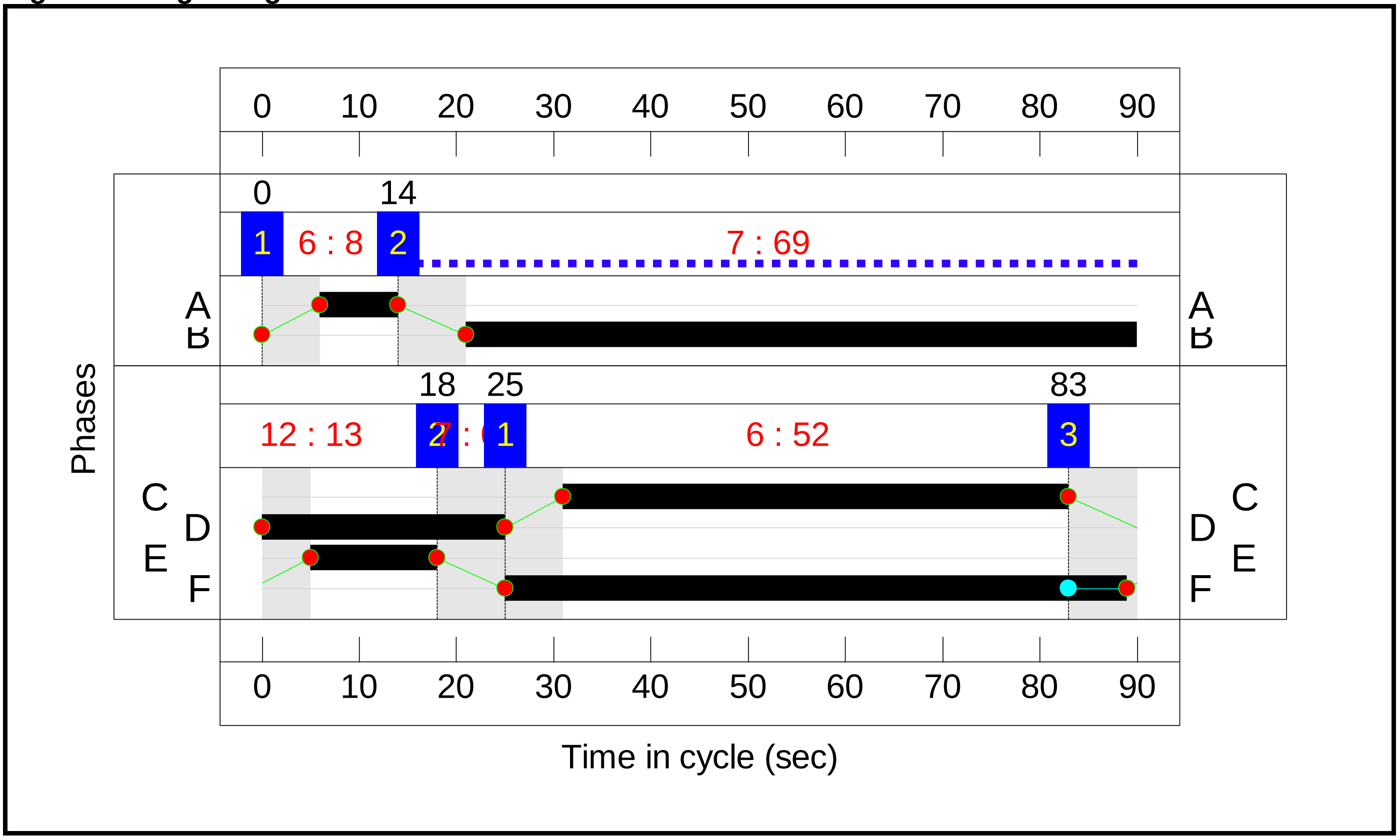
Stage Stream: 1

Stage	**1**	**2**
Duration	8	69
Change Point	0	14

Stage Stream: 2

Stage	**1**	**3**	**2**
Duration	52	13	0
Change Point	25	83	18

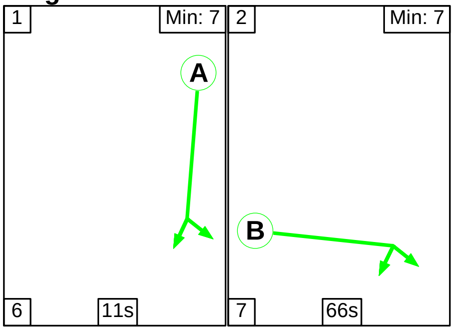
Signal Timings Diagram



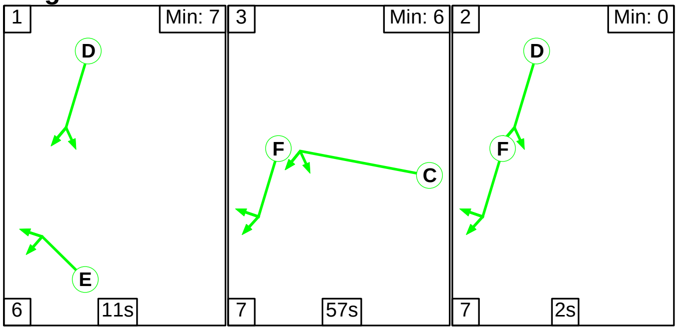
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

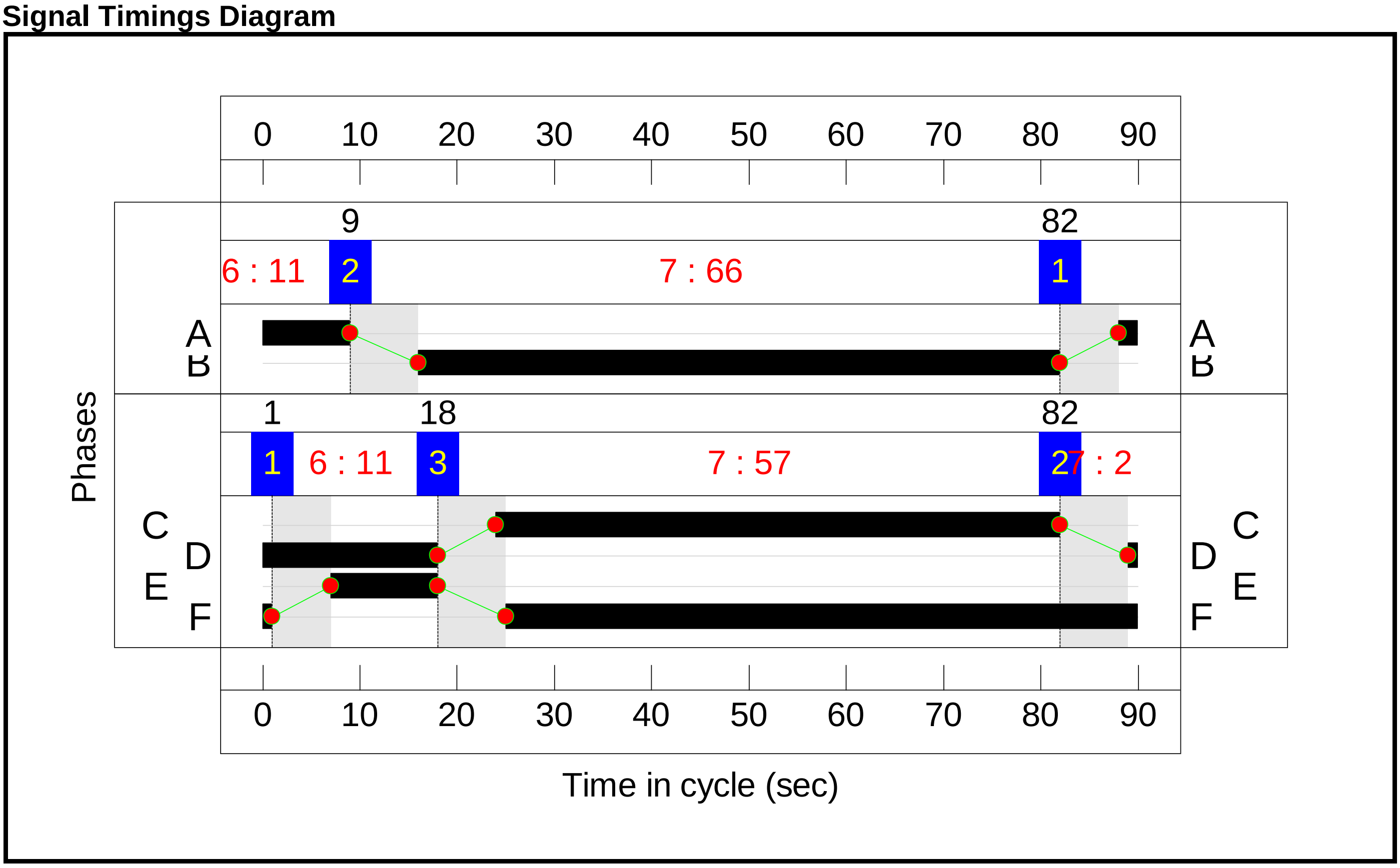
Stage Stream: 1

Stage	1	2
Duration	11	66
Change Point	82	9

Stage Stream: 2

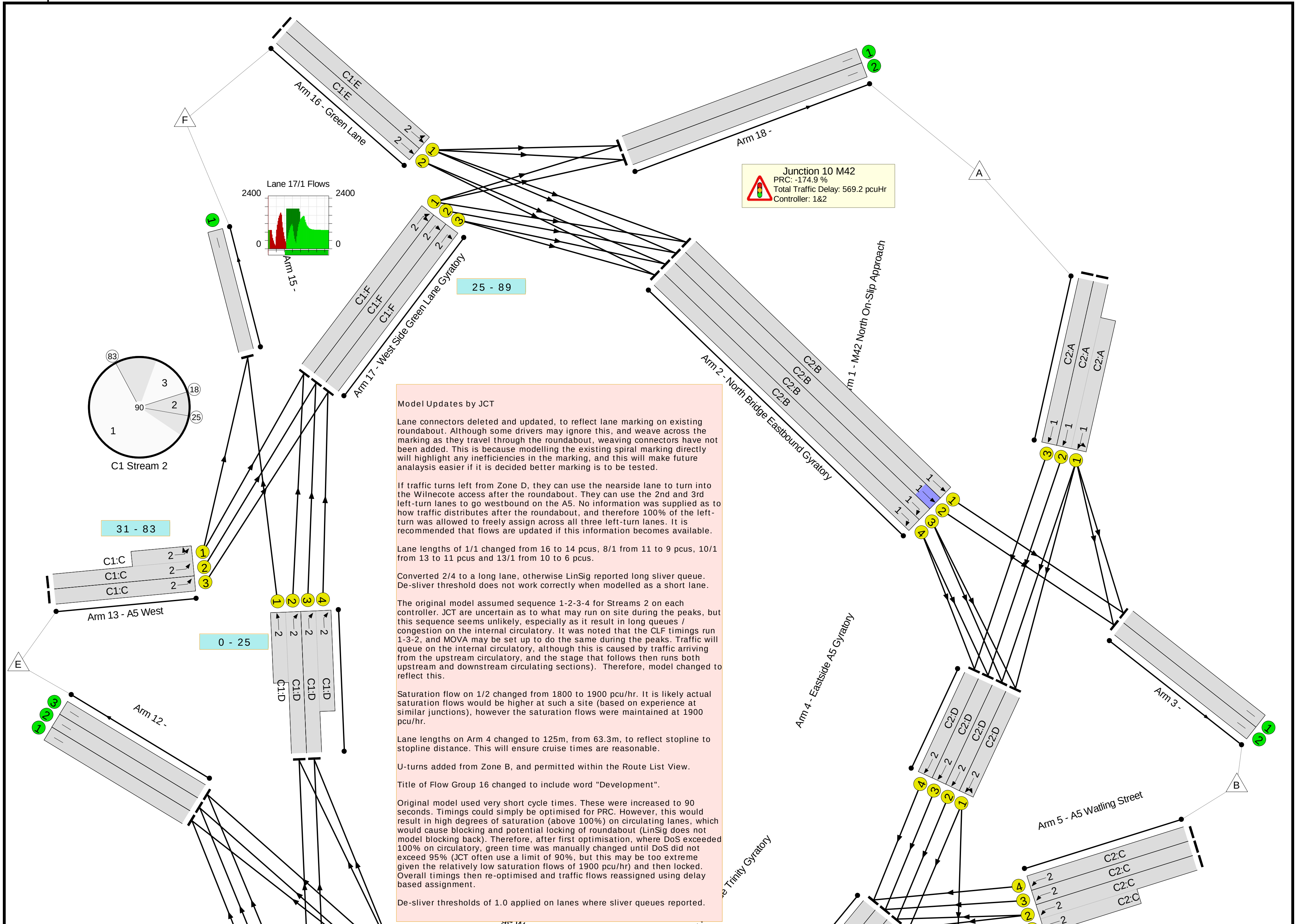
Stage	1	3	2
Duration	11	57	2
Change Point	1	18	82

Signal Timings Diagram



Network Layout Diagram

Full Input Data And Results



Model Updates by JCT

Lane connectors deleted and updated, to reflect lane marking on existing roundabout. Although some drivers may ignore this, and weave across the marking as they travel through the roundabout, weaving connectors have not been added. This is because modelling the existing spiral marking directly will highlight any inefficiencies in the marking, and this will make future analysis easier if it is decided better marking is to be tested.

If traffic turns left from Zone D, they can use the nearside lane to turn into the Wilnecote access after the roundabout. They can use the 2nd and 3rd left-turn lanes to go westbound on the A5. No information was supplied as to how traffic distributes after the roundabout, and therefore 100% of the left-turn was allowed to freely assign across all three left-turn lanes. It is recommended that flows are updated if this information becomes available.

Lane lengths of 1/1 changed from 16 to 14 pcus, 8/1 from 11 to 9 pcus, 10/1 from 13 to 11 pcus and 13/1 from 10 to 6 pcus.

Converted 2/4 to a long lane, otherwise LinSig reported long sliver queue. De-sliver threshold does not work correctly when modelled as a short lane.

The original model assumed sequence 1-2-3-4 for Streams 2 on each controller. JCT are uncertain as to what may run on site during the peaks, but this sequence seems unlikely, especially as it result in long queues / congestion on the internal circulatory. It was noted that the CLF timings run 1-3-2, and MOVA may be set up to do the same during the peaks. Traffic will queue on the internal circulatory, although this is caused by traffic arriving from the upstream circulatory, and the stage that follows then runs both upstream and downstream circulating sections). Therefore, model changed to reflect this.

Saturation flow on 1/2 changed from 1800 to 1900 pcu/hr. It is likely actual saturation flows would be higher at such a site (based on experience at similar junctions), however the saturation flows were maintained at 1900 pcu/hr.

Lane lengths on Arm 4 changed to 125m, from 63.3m, to reflect stopline to stopline distance. This will ensure cruise times are reasonable.

U-turns added from Zone B, and permitted within the Route List View.

Title of Flow Group 16 changed to include word "Development".

Original model used very short cycle times. These were increased to 90 seconds. Timings could simply be optimised for PRC. However, this would result in high degrees of saturation (above 100%) on circulating lanes, which would cause blocking and potential locking of roundabout (LinSig does not model blocking back). Therefore, after first optimisation, where DoS exceeded 100% on circulatory, green time was manually changed until DoS did not exceed 95% (JCT often use a limit of 90%, but this may be too extreme given the relatively low saturation flows of 1900 pcu/hr) and then locked. Overall timings then re-optimised and traffic flows reassigned using delay based assignment.

De-sliver thresholds of 1.0 applied on lanes where sliver queues reported.

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**247.4%**
Junction 10 M42	-	-	**N/A**	-	-		-	-	-	-	-	-	**247.4%**
1/2+1/1	M42 North On-Slip Approach Left Ahead	U	2:1	N/A	C2:A		1	11	-	290	1900:1900	253+253	46.6 : 67.9%
1/3	M42 North On-Slip Approach Ahead	U	2:1	N/A	C2:A		1	11	-	130	1900	253	51.3%
2/1	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	66	-	1042	1900	1414	53.5%
2/2	North Bridge Eastbound Gyratory Ahead	U	2:1	N/A	C2:B		1	66	-	1236	1900	1414	63.4%
2/3	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	66	-	620	1900	1414	39.8%
2/4	North Bridge Eastbound Gyratory Right	U	2:1	N/A	C2:B		1	66	-	148	1900	1414	9.3%
3/1		U	N/A	N/A	-		-	-	-	1110	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	1304	Inf	Inf	0.0%
4/1	Eastside A5 Gyratory Ahead Left	U	2:2	N/A	C2:D		1	19	-	358	1900	422	75.4%
4/2	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	19	-	298	1900	422	66.5%
4/3	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	19	-	225	1900	422	50.4%
4/4	Eastside A5 Gyratory Ahead	U	2:2	N/A	C2:D		1	19	-	171	1900	422	39.4%
5/2+5/1	A5 Watling Street Ahead Left	U	2:2	N/A	C2:C		1	58	-	722	1900:1900	1055+305	53.1 : 53.1%
5/3	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	58	-	1006	1900	1246	80.8%

Full Input Data And Results

5/4	A5 Watling Street Ahead	U	2:2	N/A	C2:C		1	58	-	990	1900	1246	79.5%
6/1	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	66	-	583	1900	1414	41.0%
6/2	East Side Trinity Gyratory Ahead	U	2:2	N/A	C2:F		1	66	-	397	1900	1414	26.8%
6/3	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	66	-	1231	1900	1414	86.2%
6/4	East Side Trinity Gyratory Right	U	2:2	N/A	C2:F		1	66	-	1161	1900	1414	81.7%
7/1		U	N/A	N/A	-		-	-	-	398	Inf	Inf	0.0%
8/2+8/1	Trinity Road Left Ahead	U	2:2	N/A	C2:E		1	11	-	444	1900:1900	253+253	94.7 : 80.5%
9/1		U	N/A	N/A	-		-	-	-	607	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	421	Inf	Inf	0.0%
10/2+10/1	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	8	-	353	1900:1900	190+190	92.6 : 93.2%
10/3	M42 Northbound Offslip Left	U	1:1	N/A	C1:A		1	8	-	161	1900	190	84.7%
10/4	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	8	-	466	1900	190	245.3%
10/5	M42 Northbound Offslip Ahead	U	1:1	N/A	C1:A		1	8	-	470	1900	190	247.4%
11/1	South Bridge Westbound Gyratory Ahead	U	1:1	N/A	C1:B		1	69	-	1387	1900	1478	93.0%
11/2	South Bridge Westbound Gyratory Ahead Right	U	1:1	N/A	C1:B		1	69	-	1401	1900	1478	94.5%
12/1		U	N/A	N/A	-		-	-	-	870	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	870	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	1094	Inf	Inf	0.0%
13/2+13/1	A5 West Left Left2	U	1:2	N/A	C1:C		1	52	-	1534	1900:1900	587+732	116.3 : 116.3%
13/3	A5 West Left	U	1:2	N/A	C1:C		1	52	-	374	1900	1119	33.4%

Full Input Data And Results

14/2+14/1	Westside A5 Gyratory Ahead Ahead2	U	1:2	N/A	C1:D		1	25	-	808	1900:1900	454+262	69.2 : 83.0%
14/3+14/4	Westside A5 Gyratory Ahead	U	1:2	N/A	C1:D		1	25	-	596	1900:1900	533+60	54.7 : 40.7%
15/1		U	N/A	N/A	-		-	-	-	422	Inf	Inf	0.0%
16/1	Green Lane Ahead Left	U	1:2	N/A	C1:E		1	13	-	262	1900	296	88.6%
16/2	Green Lane Ahead	U	1:2	N/A	C1:E		1	13	-	334	1900	296	113.0%
17/1	West Side Green Lane Gyratory Right Ahead	U	1:2	N/A	C1:F		1	64	-	1237	1900	1372	68.3%
17/2	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	64	-	1219	1900	1372	64.1%
17/3	West Side Green Lane Gyratory Right	U	1:2	N/A	C1:F		1	64	-	434	1900	1372	29.0%
18/1		U	N/A	N/A	-		-	-	-	220	Inf	Inf	0.0%
18/2		U	N/A	N/A	-		-	-	-	220	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**107.9**	**461.3**	**0.0**	**569.2**	**-**	**-**	**-**	**-**
Junction 10 M42	**-**	**-**	**0**	**0**	**0**	**107.9**	**461.3**	**0.0**	**569.2**	**-**	**-**	**-**	**-**
1/2+1/1	290	290	-	-	-	3.0	0.7	-	3.6	45.0	4.1	0.7	4.7
1/3	130	130	-	-	-	1.3	0.5	-	1.8	50.8	3.0	0.5	3.5
2/1	757	757	-	-	-	0.9	0.6	-	1.5	7.1	6.1	0.6	6.6
2/2	896	896	-	-	-	1.0	0.9	-	1.9	7.4	5.6	0.9	6.5
2/3	563	563	-	-	-	0.4	0.3	-	0.7	4.5	2.9	0.3	3.2
2/4	131	131	-	-	-	0.0	0.1	-	0.1	1.4	0.0	0.1	0.1
3/1	825	825	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	964	964	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	318	318	-	-	-	2.8	1.5	-	4.2	47.9	7.5	1.5	9.0
4/2	281	281	-	-	-	3.2	1.0	-	4.2	54.0	7.0	1.0	8.0
4/3	213	213	-	-	-	1.6	0.5	-	2.1	36.4	2.8	0.5	3.3
4/4	166	166	-	-	-	0.9	0.3	-	1.2	25.8	1.4	0.3	1.7
5/2+5/1	722	722	-	-	-	1.4	0.6	-	2.0	10.0	6.7	0.6	7.3
5/3	1006	1006	-	-	-	3.2	2.1	-	5.2	18.7	18.2	2.1	20.2
5/4	990	990	-	-	-	3.1	1.9	-	5.0	18.1	17.6	1.9	19.5
6/1	581	581	-	-	-	0.4	0.3	-	0.8	4.9	3.2	0.3	3.6
6/2	380	380	-	-	-	1.2	0.2	-	1.4	13.3	7.5	0.2	7.7
6/3	1219	1219	-	-	-	1.2	3.0	-	4.2	12.5	8.3	3.0	11.3
6/4	1156	1156	-	-	-	0.6	2.2	-	2.8	8.8	5.4	2.2	7.6
7/1	361	361	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2+8/1	444	444	-	-	-	4.7	3.2	-	7.9	64.4	5.9	3.2	9.1
9/1	605	605	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	404	404	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2+10/1	353	353	-	-	-	3.9	4.8	-	8.8	89.3	4.4	4.8	9.2

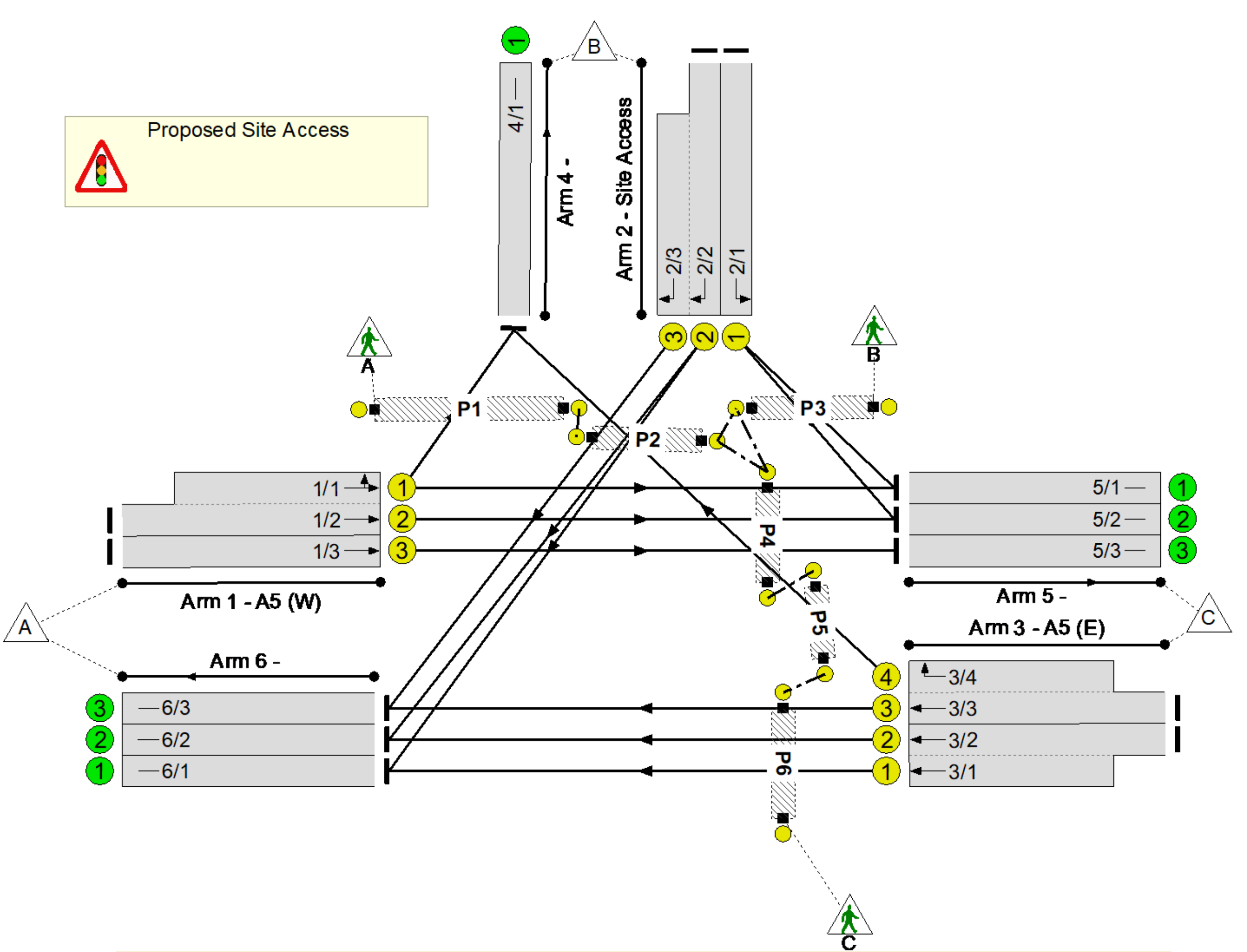
Full Input Data And Results

10/3	161	161	-	-	-	1.8	2.4	-	4.2	93.1	3.9	2.4	6.3
10/4	466	190	-	-	-	18.1	138.8	-	157.0	1212.6	23.2	138.8	162.1
10/5	470	190	-	-	-	18.4	140.8	-	159.2	1219.3	23.5	140.8	164.4
11/1	1375	1375	-	-	-	1.3	6.0	-	7.3	19.1	9.6	6.0	15.6
11/2	1396	1396	-	-	-	1.4	7.3	-	8.7	22.4	11.8	7.3	19.1
12/1	864	864	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	864	864	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	1089	1089	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2+13/1	1534	1319	-	-	-	15.4	110.8	-	126.2	296.3	42.1	110.8	153.0
13/3	374	374	-	-	-	1.0	0.3	-	1.2	11.9	4.8	0.3	5.0
14/2+14/1	532	532	-	-	-	3.2	1.4	-	4.6	31.3	4.5	1.4	6.0
14/3+14/4	316	316	-	-	-	1.7	0.6	-	2.3	25.8	3.4	0.6	4.0
15/1	326	326	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	262	262	-	-	-	2.7	3.3	-	6.0	82.1	6.4	3.3	9.7
16/2	334	296	-	-	-	5.3	22.9	-	28.2	303.7	9.3	22.9	32.2
17/1	938	938	-	-	-	1.4	1.1	-	2.5	9.7	10.2	1.1	11.2
17/2	879	879	-	-	-	1.1	0.9	-	2.0	8.3	8.6	0.9	9.5
17/3	398	398	-	-	-	0.2	0.2	-	0.4	3.3	0.7	0.2	0.9
18/1	213	213	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
18/2	213	213	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -174.9 Total Delay for Signalled Lanes (pcuHr): 345.03 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -29.2 Total Delay for Signalled Lanes (pcuHr): 173.43 Cycle Time (s): 90
C2 Stream: 1 PRC for Signalled Lanes (%): 32.6 Total Delay for Signalled Lanes (pcuHr): 9.56 Cycle Time (s): 90
C2 Stream: 2 PRC for Signalled Lanes (%): -5.3 Total Delay for Signalled Lanes (pcuHr): 41.19 Cycle Time (s): 90
PRC Over All Lanes (%): -174.9 Total Delay Over All Lanes(pcuHr): 569.22

Full Input Data And Results

Network Layout Diagram



Updated by JCT

Arm 2 changed so that offside lane was the short lane, length 15 pcus. Provided drawing would not print to scale, so length estimated based on lane marking.

Lane 3/4 converted to short lane, length 25 pcus.

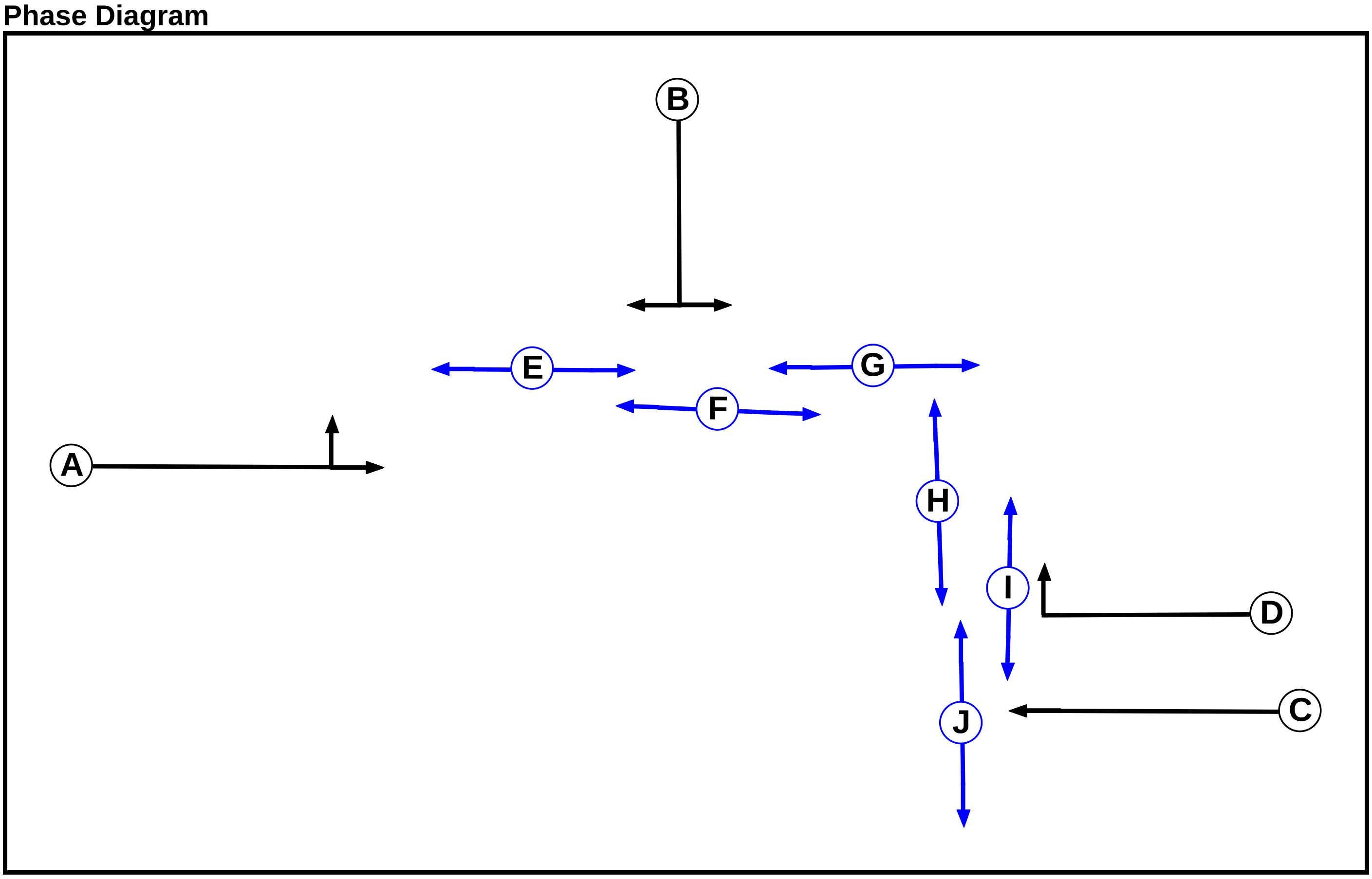
Intergreens updated based on those measured in JCT quickGreen file. An additional phase was not added for the left-turn from Arm 2, as this would make little difference to overall modelling results due to the critical traffic flows. However, it would be recommended operationally, as left-turn could start early, when the right-turn runs into the site.

Phase I also set to run in Stage 1.

Phase delays added to improve interstage efficiency.

Timongs re-optimised and flows re-assigned.

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	3
C	Traffic		7	4
D	Traffic		7	4
E	Pedestrian		6	3
F	Pedestrian		6	6
G	Pedestrian		4	3
H	Pedestrian		6	6
I	Pedestrian		4	4
J	Pedestrian		6	6

Full Input Data And Results

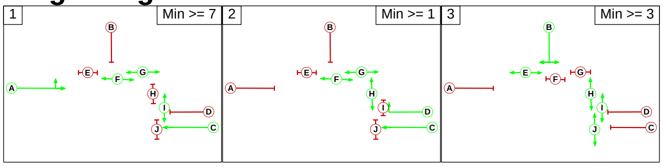
Phase Intergreens Matrix

		Starting Phase									
		A	B	C	D	E	F	G	H	I	J
Terminating Phase	A		8	-	5	7	-	-	8	-	-
	B	5		7	5	-	5	5	-	-	-
	C	-	5		-	-	-	-	-	-	5
	D	7	5	-		10	-	-	-	5	-
	E	6	-	-	6		-	-	-	-	-
	F	-	8	-	-	-		-	-	-	-
	G	-	7	-	-	-	-		-	-	-
	H	12	-	-	-	-	-	-		-	-
	I	-	-	-	5	-	-	-	-		-
	J	-	-	11	-	-	-	-	-	-	

Phases in Stage

Stage No.	Phases in Stage
1	A C F G I
2	C D F G H
3	B E H I J

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	3	C	Losing	3	3
1	3	G	Losing	1	1
2	1	D	Losing	5	5
2	3	C	Losing	3	3
2	3	D	Losing	3	3
2	3	G	Losing	1	1
3	1	B	Losing	5	5
3	1	E	Losing	5	5
3	1	J	Losing	1	1
3	2	B	Losing	4	4
3	2	E	Losing	3	3
3	2	I	Losing	4	4

User and Project Details

Project:	**Land North of Dordon**
Title:	**Proposed Site Access LinSig Option 1**
Location:	
Client:	Hodgetts Estates
Checked By:	Simon Swanston (JCT)
Checked By Date:	22/10/2021
Additional detail:	Model updated by JCT based on comments in MOT21042C
File name:	Proposed Site Access Layout - JCT.lsg3x
Author:	
Company:	
Address:	

Prohibited Stage Change

		To Stage		
		1	2	3
From Stage	1	■	8	8
	2	12	■	13
	3	12	11	■

Full Input Data And Results

Give-Way Lane Input Data

Junction: Proposed Site Access
There are no Opposed Lanes in this Junction

Lane Input Data

Junction: Proposed Site Access												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A5 (W))	U	A	2	3	20.9	Geom	-	3.50	0.00	Y	Arm 4 Left Arm 5 Ahead	16.50 Inf
1/2 (A5 (W))	U	A	2	3	60.0	Geom	-	3.50	0.00	N	Arm 5 Ahead	Inf
1/3 (A5 (W))	U	A	2	3	60.0	Geom	-	3.50	0.00	N	Arm 5 Ahead	Inf
2/1 (Site Access)	U	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 5 Left	22.50
2/2 (Site Access)	U	B	2	3	34.8	Geom	-	3.50	0.00	Y	Arm 6 Right	30.00
2/3 (Site Access)	U	B	2	3	15.0	Geom	-	3.50	0.00	N	Arm 6 Right	25.00
3/1 (A5 (E))	U	C	2	3	13.9	Geom	-	3.50	0.00	Y	Arm 6 Ahead	Inf
3/2 (A5 (E))	U	C	2	3	60.0	Geom	-	3.50	0.00	N	Arm 6 Ahead	Inf
3/3 (A5 (E))	U	C	2	3	60.0	Geom	-	3.50	0.00	N	Arm 6 Ahead	Inf
3/4 (A5 (E))	U	D	2	3	25.0	Geom	-	3.50	0.00	Y	Arm 4 Right	20.00
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2	U		2	3	60.0	Inf	-	-	-	-	-	-
5/3	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2	U		2	3	60.0	Inf	-	-	-	-	-	-
6/3	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 Reference + Development AM Peak'	08:00	09:00	01:00	
2: '2021 Reference + Development PM Peak'	17:00	18:00	01:00	
3: '2026 Reference + Development AM Peak'	08:00	09:00	01:00	
4: '2026 Reference + Development PM Peak'	17:00	18:00	01:00	
5: '2031 Reference + Development AM Peak'	08:00	09:00	01:00	
6: '2031 Reference + Development PM Peak'	17:00	18:00	01:00	
7: '2031 Local Plan + Development AM Peak'	08:00	09:00	01:00	
8: '2031 Local Plan + Development PM Peak'	17:00	18:00	01:00	

Scenario 1: '2021 AM' (FG1: '2021 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	186	2132	2318
	B	98	0	42	140
	C	1962	40	0	2002
	Tot.	2060	226	2174	4460

Traffic Lane Flows

Lane	Scenario 1: 2021 AM
Junction: Proposed Site Access	
1/1 (short)	729
1/2 (with short)	1529(In) 800(Out)
1/3	789
2/1	42
2/2 (with short)	98(In) 48(Out)
2/3 (short)	50
3/1 (short)	606
3/2 (with short)	1258(In) 652(Out)
3/3 (with short)	744(In) 704(Out)
3/4 (short)	40
4/1	226
5/1	564
5/2	821
5/3	789
6/1	630
6/2	676
6/3	754

Lane Saturation Flows

Junction: Proposed Site Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 (W))	3.50	0.00	Y	Arm 4 Left	16.50	25.5 %	1920	1920
				Arm 5 Ahead	Inf	74.5 %		
1/2 (A5 (W))	3.50	0.00	N	Arm 5 Ahead	Inf	100.0 %	2105	2105
1/3 (A5 (W))	3.50	0.00	N	Arm 5 Ahead	Inf	100.0 %	2105	2105
2/1 (Site Access)	3.50	0.00	Y	Arm 5 Left	22.50	100.0 %	1842	1842
2/2 (Site Access)	3.50	0.00	Y	Arm 6 Right	30.00	100.0 %	1871	1871
2/3 (Site Access)	3.50	0.00	N	Arm 6 Right	25.00	100.0 %	1986	1986
3/1 (A5 (E))	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/2 (A5 (E))	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
3/3 (A5 (E))	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
3/4 (A5 (E))	3.50	0.00	Y	Arm 4 Right	20.00	100.0 %	1828	1828
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
5/3	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
6/3	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2021 PM' (FG2: '2021 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	116	1646	1762
	B	154	0	46	200
	C	2380	24	0	2404
	Tot.	2534	140	1692	4366

Traffic Lane Flows

Lane	Scenario 2: 2021 PM
Junction: Proposed Site Access	
1/1 (short)	572
1/2 (with short)	1196(In) 624(Out)
1/3	566
2/1	46
2/2 (with short)	154(In) 74(Out)
2/3 (short)	80
3/1 (short)	721
3/2 (with short)	1489(In) 768(Out)
3/3 (with short)	915(In) 891(Out)
3/4 (short)	24
4/1	140
5/1	479
5/2	647
5/3	566
6/1	758
6/2	805
6/3	971

Lane Saturation Flows

Junction: Proposed Site Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 (W))	3.50	0.00	Y	Arm 4 Left	16.50	20.3 %	1929	1929
				Arm 5 Ahead	Inf	79.7 %		
1/2 (A5 (W))	3.50	0.00	N	Arm 5 Ahead	Inf	100.0 %	2105	2105
1/3 (A5 (W))	3.50	0.00	N	Arm 5 Ahead	Inf	100.0 %	2105	2105
2/1 (Site Access)	3.50	0.00	Y	Arm 5 Left	22.50	100.0 %	1842	1842
2/2 (Site Access)	3.50	0.00	Y	Arm 6 Right	30.00	100.0 %	1871	1871
2/3 (Site Access)	3.50	0.00	N	Arm 6 Right	25.00	100.0 %	1986	1986
3/1 (A5 (E))	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/2 (A5 (E))	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
3/3 (A5 (E))	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
3/4 (A5 (E))	3.50	0.00	Y	Arm 4 Right	20.00	100.0 %	1828	1828
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
5/3	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
6/3	Infinite Saturation Flow						Inf	Inf

Scenario 3: '2026 AM' (FG3: '2026 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	184	2160	2344
	B	102	0	46	148
	C	1960	38	0	1998
	Tot.	2062	222	2206	4490

Traffic Lane Flows

Lane	Scenario 3: 2026 AM
Junction: Proposed Site Access	
1/1 (short)	737
1/2 (with short)	1544(In) 807(Out)
1/3	800
2/1	46
2/2 (with short)	102(In) 50(Out)
2/3 (short)	52
3/1 (short)	606
3/2 (with short)	1256(In) 650(Out)
3/3 (with short)	742(In) 704(Out)
3/4 (short)	38
4/1	222
5/1	576
5/2	830
5/3	800
6/1	631
6/2	675
6/3	756

Lane Saturation Flows

Junction: Proposed Site Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 (W))	3.50	0.00	Y	Arm 4 Left	16.50	25.0 %	1921	1921
				Arm 5 Ahead	Inf	75.0 %		
1/2 (A5 (W))	3.50	0.00	N	Arm 5 Ahead	Inf	100.0 %	2105	2105
1/3 (A5 (W))	3.50	0.00	N	Arm 5 Ahead	Inf	100.0 %	2105	2105
2/1 (Site Access)	3.50	0.00	Y	Arm 5 Left	22.50	100.0 %	1842	1842
2/2 (Site Access)	3.50	0.00	Y	Arm 6 Right	30.00	100.0 %	1871	1871
2/3 (Site Access)	3.50	0.00	N	Arm 6 Right	25.00	100.0 %	1986	1986
3/1 (A5 (E))	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/2 (A5 (E))	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
3/3 (A5 (E))	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
3/4 (A5 (E))	3.50	0.00	Y	Arm 4 Right	20.00	100.0 %	1828	1828
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
5/3	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
6/3	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2026 PM' (FG4: '2026 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	114	1784	1898
	B	162	0	54	216
	C	2338	18	0	2356
	Tot.	2500	132	1838	4470

Traffic Lane Flows

Lane	Scenario 4: 2026 PM
Junction: Proposed Site Access	
1/1 (short)	613
1/2 (with short)	1280(In) 667(Out)
1/3	618
2/1	54
2/2 (with short)	162(In) 78(Out)
2/3 (short)	84
3/1 (short)	708
3/2 (with short)	1466(In) 758(Out)
3/3 (with short)	890(In) 872(Out)
3/4 (short)	18
4/1	132
5/1	526
5/2	694
5/3	618
6/1	747
6/2	797
6/3	956

Lane Saturation Flows

Junction: Proposed Site Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 (W))	3.50	0.00	Y	Arm 4 Left	16.50	18.6 %	1932	1932
				Arm 5 Ahead	Inf	81.4 %		
1/2 (A5 (W))	3.50	0.00	N	Arm 5 Ahead	Inf	100.0 %	2105	2105
1/3 (A5 (W))	3.50	0.00	N	Arm 5 Ahead	Inf	100.0 %	2105	2105
2/1 (Site Access)	3.50	0.00	Y	Arm 5 Left	22.50	100.0 %	1842	1842
2/2 (Site Access)	3.50	0.00	Y	Arm 6 Right	30.00	100.0 %	1871	1871
2/3 (Site Access)	3.50	0.00	N	Arm 6 Right	25.00	100.0 %	1986	1986
3/1 (A5 (E))	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/2 (A5 (E))	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
3/3 (A5 (E))	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
3/4 (A5 (E))	3.50	0.00	Y	Arm 4 Right	20.00	100.0 %	1828	1828
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
5/3	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
6/3	Infinite Saturation Flow						Inf	Inf

Scenario 5: '2031 R + D AM' (FG5: '2031 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	182	2296	2478
	B	102	0	42	144
	C	2058	44	0	2102
	Tot.	2160	226	2338	4724

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2031 R + D AM
Junction: Proposed Site Access	
1/1 (short)	774
1/2 (with short)	1621(In) 847(Out)
1/3	857
2/1	42
2/2 (with short)	102(In) 50(Out)
2/3 (short)	52
3/1 (short)	633
3/2 (with short)	1311(In) 678(Out)
3/3 (with short)	791(In) 747(Out)
3/4 (short)	44
4/1	226
5/1	613
5/2	868
5/3	857
6/1	658
6/2	703
6/3	799

Lane Saturation Flows

Junction: Proposed Site Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 (W))	3.50	0.00	Y	Arm 4 Left	16.50	23.5 %	1924	1924
				Arm 5 Ahead	Inf	76.5 %		
1/2 (A5 (W))	3.50	0.00	N	Arm 5 Ahead	Inf	100.0 %	2105	2105
1/3 (A5 (W))	3.50	0.00	N	Arm 5 Ahead	Inf	100.0 %	2105	2105
2/1 (Site Access)	3.50	0.00	Y	Arm 5 Left	22.50	100.0 %	1842	1842
2/2 (Site Access)	3.50	0.00	Y	Arm 6 Right	30.00	100.0 %	1871	1871
2/3 (Site Access)	3.50	0.00	N	Arm 6 Right	25.00	100.0 %	1986	1986
3/1 (A5 (E))	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/2 (A5 (E))	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
3/3 (A5 (E))	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
3/4 (A5 (E))	3.50	0.00	Y	Arm 4 Right	20.00	100.0 %	1828	1828
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
5/3	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
6/3	Infinite Saturation Flow						Inf	Inf

Scenario 6: '2031 R + D PM' (FG6: '2031 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	126	1738	1864
	B	156	0	46	202
	C	2518	14	0	2532
	Tot.	2674	140	1784	4598

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2031 R + D PM
Junction: Proposed Site Access	
1/1 (short)	602
1/2 (with short)	1259(In) 657(Out)
1/3	605
2/1	46
2/2 (with short)	156(In) 76(Out)
2/3 (short)	80
3/1 (short)	754
3/2 (with short)	1561(In) 807(Out)
3/3 (with short)	971(In) 957(Out)
3/4 (short)	14
4/1	140
5/1	499
5/2	680
5/3	605
6/1	792
6/2	845
6/3	1037

Lane Saturation Flows

Junction: Proposed Site Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 (W))	3.50	0.00	Y	Arm 4 Left	16.50	20.9 %	1928	1928
				Arm 5 Ahead	Inf	79.1 %		
1/2 (A5 (W))	3.50	0.00	N	Arm 5 Ahead	Inf	100.0 %	2105	2105
1/3 (A5 (W))	3.50	0.00	N	Arm 5 Ahead	Inf	100.0 %	2105	2105
2/1 (Site Access)	3.50	0.00	Y	Arm 5 Left	22.50	100.0 %	1842	1842
2/2 (Site Access)	3.50	0.00	Y	Arm 6 Right	30.00	100.0 %	1871	1871
2/3 (Site Access)	3.50	0.00	N	Arm 6 Right	25.00	100.0 %	1986	1986
3/1 (A5 (E))	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/2 (A5 (E))	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
3/3 (A5 (E))	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
3/4 (A5 (E))	3.50	0.00	Y	Arm 4 Right	20.00	100.0 %	1828	1828
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
5/3	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
6/3	Infinite Saturation Flow						Inf	Inf

Scenario 7: '2031 LP + D AM' (FG7: '2031 Local Plan + Development AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	176	2376	2552
	B	100	0	44	144
	C	2558	34	0	2592
	Tot.	2658	210	2420	5288

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2031 LP + D AM
Junction: Proposed Site Access	
1/1 (short)	794
1/2 (with short)	1662(In) 868(Out)
1/3	890
2/1	44
2/2 (with short)	100(In) 48(Out)
2/3 (short)	52
3/1 (short)	762
3/2 (with short)	1582(In) 820(Out)
3/3 (with short)	1010(In) 976(Out)
3/4 (short)	34
4/1	210
5/1	640
5/2	890
5/3	890
6/1	786
6/2	844
6/3	1028

Lane Saturation Flows

Junction: Proposed Site Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 (W))	3.50	0.00	Y	Arm 4 Left	16.50	22.2 %	1926	1926
				Arm 5 Ahead	Inf	77.8 %		
1/2 (A5 (W))	3.50	0.00	N	Arm 5 Ahead	Inf	100.0 %	2105	2105
1/3 (A5 (W))	3.50	0.00	N	Arm 5 Ahead	Inf	100.0 %	2105	2105
2/1 (Site Access)	3.50	0.00	Y	Arm 5 Left	22.50	100.0 %	1842	1842
2/2 (Site Access)	3.50	0.00	Y	Arm 6 Right	30.00	100.0 %	1871	1871
2/3 (Site Access)	3.50	0.00	N	Arm 6 Right	25.00	100.0 %	1986	1986
3/1 (A5 (E))	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/2 (A5 (E))	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
3/3 (A5 (E))	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
3/4 (A5 (E))	3.50	0.00	Y	Arm 4 Right	20.00	100.0 %	1828	1828
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
5/3	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
6/3	Infinite Saturation Flow						Inf	Inf

Scenario 8: '2031 LP + D PM' (FG8: '2031 Local Plan + Development PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	130	2284	2414
	B	158	0	56	214
	C	2558	26	0	2584
	Tot.	2716	156	2340	5212

Traffic Lane Flows

Lane	Scenario 8: 2031 LP + D PM
Junction: Proposed Site Access	
1/1 (short)	760
1/2 (with short)	1587(In) 827(Out)
1/3	827
2/1	56
2/2 (with short)	158(In) 76(Out)
2/3 (short)	82
3/1 (short)	764
3/2 (with short)	1582(In) 818(Out)
3/3 (with short)	1002(In) 976(Out)
3/4 (short)	26
4/1	156
5/1	658
5/2	855
5/3	827
6/1	802
6/2	856
6/3	1058

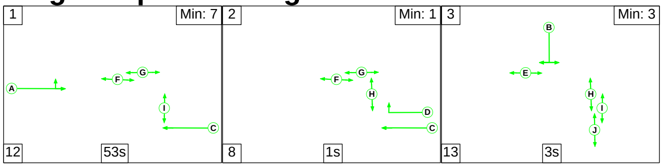
Full Input Data And Results

Lane Saturation Flows

Junction: Proposed Site Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 (W))	3.50	0.00	Y	Arm 4 Left	16.50	17.1 %	1935	1935
				Arm 5 Ahead	Inf	82.9 %		
1/2 (A5 (W))	3.50	0.00	N	Arm 5 Ahead	Inf	100.0 %	2105	2105
1/3 (A5 (W))	3.50	0.00	N	Arm 5 Ahead	Inf	100.0 %	2105	2105
2/1 (Site Access)	3.50	0.00	Y	Arm 5 Left	22.50	100.0 %	1842	1842
2/2 (Site Access)	3.50	0.00	Y	Arm 6 Right	30.00	100.0 %	1871	1871
2/3 (Site Access)	3.50	0.00	N	Arm 6 Right	25.00	100.0 %	1986	1986
3/1 (A5 (E))	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/2 (A5 (E))	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
3/3 (A5 (E))	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
3/4 (A5 (E))	3.50	0.00	Y	Arm 4 Right	20.00	100.0 %	1828	1828
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
5/3	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
6/3	Infinite Saturation Flow						Inf	Inf

Scenario 1: '2021 AM' (FG1: '2021 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

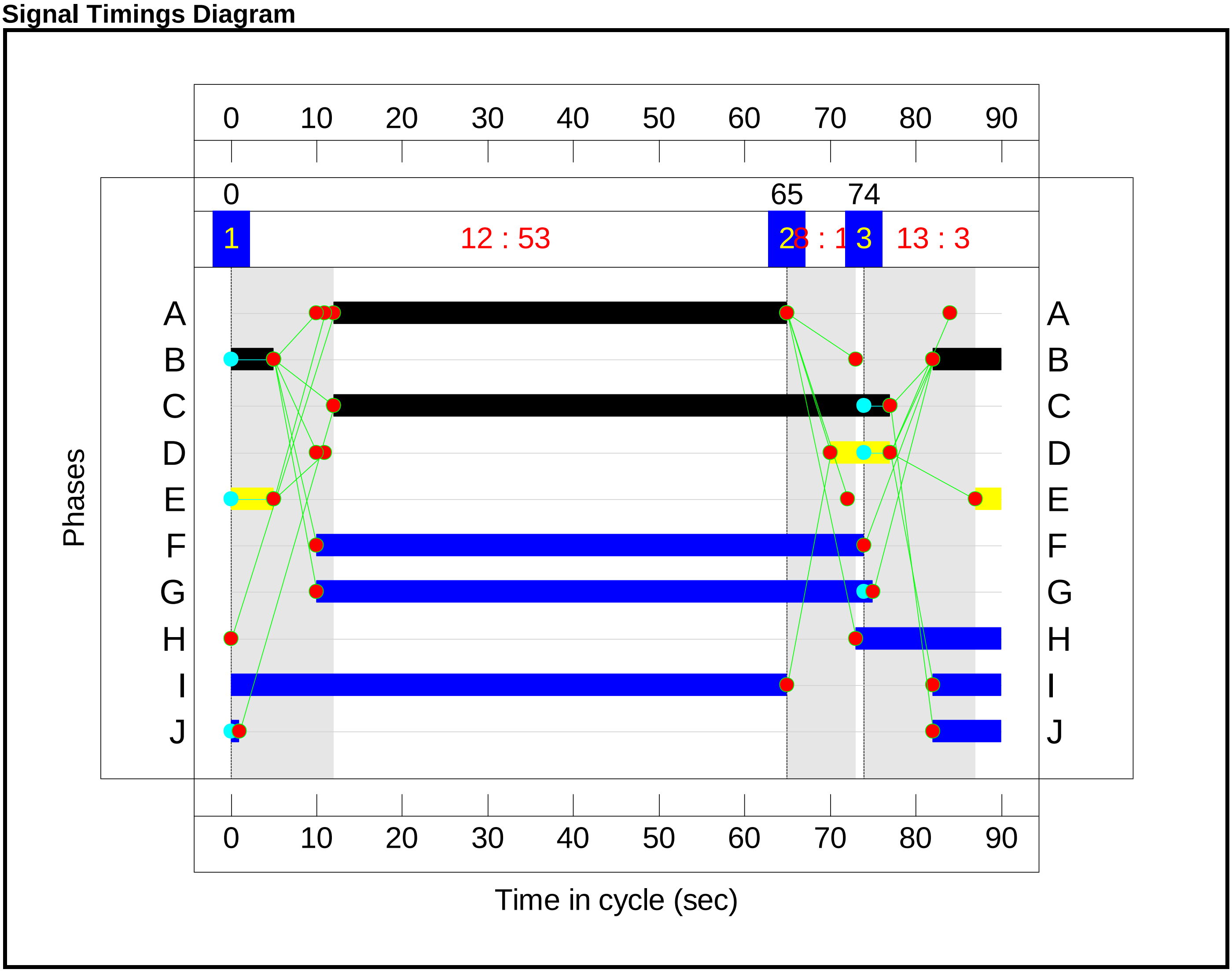
Stage Sequence Diagram



Stage Timings

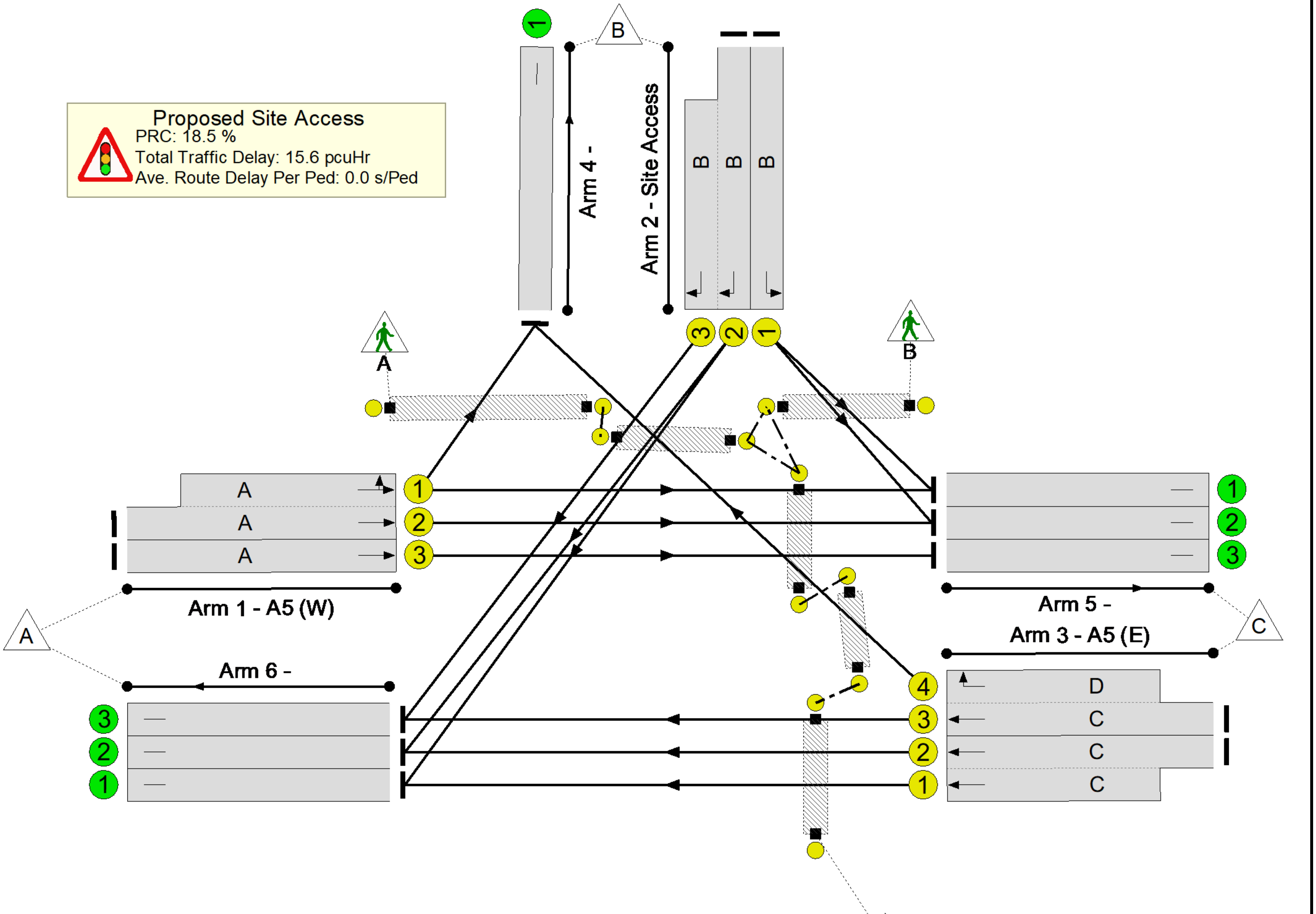
Stage	**1**	**2**	**3**
Duration	53	1	3
Change Point	0	65	74

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Proposed Site Access

PRC: 18.5 %

Total Traffic Delay: 15.6 pcuHr

Ave. Route Delay Per Ped: 0.0 s/Ped

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Proposed Site Access LinSig Option 1	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.0%**
Proposed Site Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.0%**
1/2+1/1	A5 (W) Left Ahead	U	N/A	N/A	A		1	53	-	1529	2105:1920	1053+960	76.0 : 76.0%
1/3	A5 (W) Ahead	U	N/A	N/A	A		1	53	-	789	2105	1263	62.5%
2/1	Site Access Left	U	N/A	N/A	B		1	13	-	42	1842	287	14.7%
2/2+2/3	Site Access Right	U	N/A	N/A	B		1	13	-	98	1871:1986	291+309	16.5 : 16.2%
3/2+3/1	A5 (E) Ahead	U	N/A	N/A	C		1	65	-	1258	2105:1965	1055+980	61.8 : 61.8%
3/3+3/4	A5 (E) Right Ahead	U	N/A	N/A	C D		1	65:7	-	744	2105:1828	1505+86	46.8 : 46.8%
4/1		U	N/A	N/A	-		-	-	-	226	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	564	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	821	Inf	Inf	0.0%
5/3		U	N/A	N/A	-		-	-	-	789	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	630	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	676	Inf	Inf	0.0%
6/3		U	N/A	N/A	-		-	-	-	754	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	8	-	0	-	6400	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	F		1	64	-	0	-	51200	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	65	-	0	-	52000	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	H		1	17	-	0	-	13600	0.0%

Full Input Data And Results

Ped Link: P5	Unnamed Ped Link	-	N/A	-	I		1	73	-	0	-	58400	0.0%
Ped Link: P6	Unnamed Ped Link	-	N/A	-	J		1	9	-	0	-	7200	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Proposed Site Access LinSig Option 1	**-**	**-**	**0**	**0**	**0**	**11.7**	**3.8**	**0.0**	**15.6**	**-**	**-**	**-**	**-**
Proposed Site Access	**-**	**-**	**0**	**0**	**0**	**11.7**	**3.8**	**0.0**	**15.6**	**-**	**-**	**-**	**-**
1/2+1/1	1529	1529	-	-	-	4.9	1.6	-	6.5	15.3	12.9	1.6	14.5
1/3	789	789	-	-	-	2.5	0.8	-	3.4	15.3	12.5	0.8	13.3
2/1	42	42	-	-	-	0.4	0.1	-	0.5	40.2	0.9	0.1	1.0
2/2+2/3	98	98	-	-	-	0.9	0.1	-	1.0	36.5	1.1	0.1	1.2
3/2+3/1	1258	1258	-	-	-	1.6	0.8	-	2.4	6.9	6.2	0.8	7.0
3/3+3/4	744	744	-	-	-	1.4	0.4	-	1.8	8.7	7.0	0.4	7.5
4/1	226	226	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	564	564	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	821	821	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	789	789	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	630	630	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	676	676	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/3	754	754	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P3	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P4	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P5	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P6	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

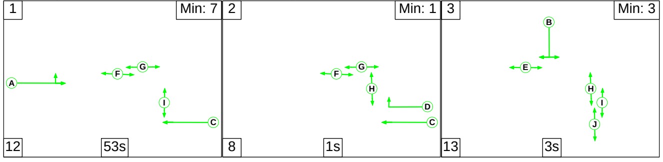
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	18.5	Total Delay for Signalled Lanes (pcuHr):	15.55	Cycle Time (s):	90
	PRC Over All Lanes (%):	18.5	Total Delay Over All Lanes(pcuHr):	15.55		

Full Input Data And Results

Scenario 2: '2021 PM' (FG2: '2021 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

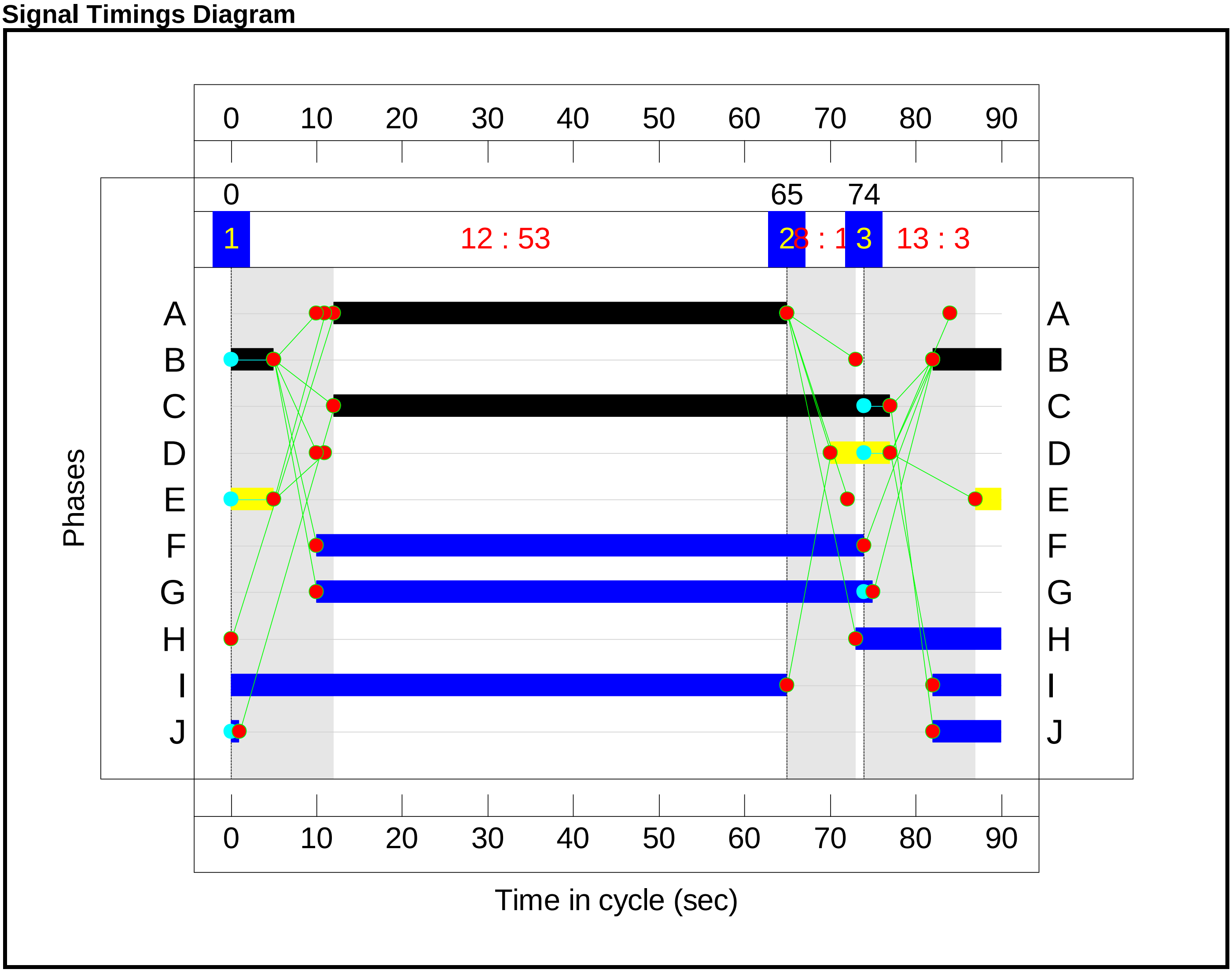
Stage Sequence Diagram



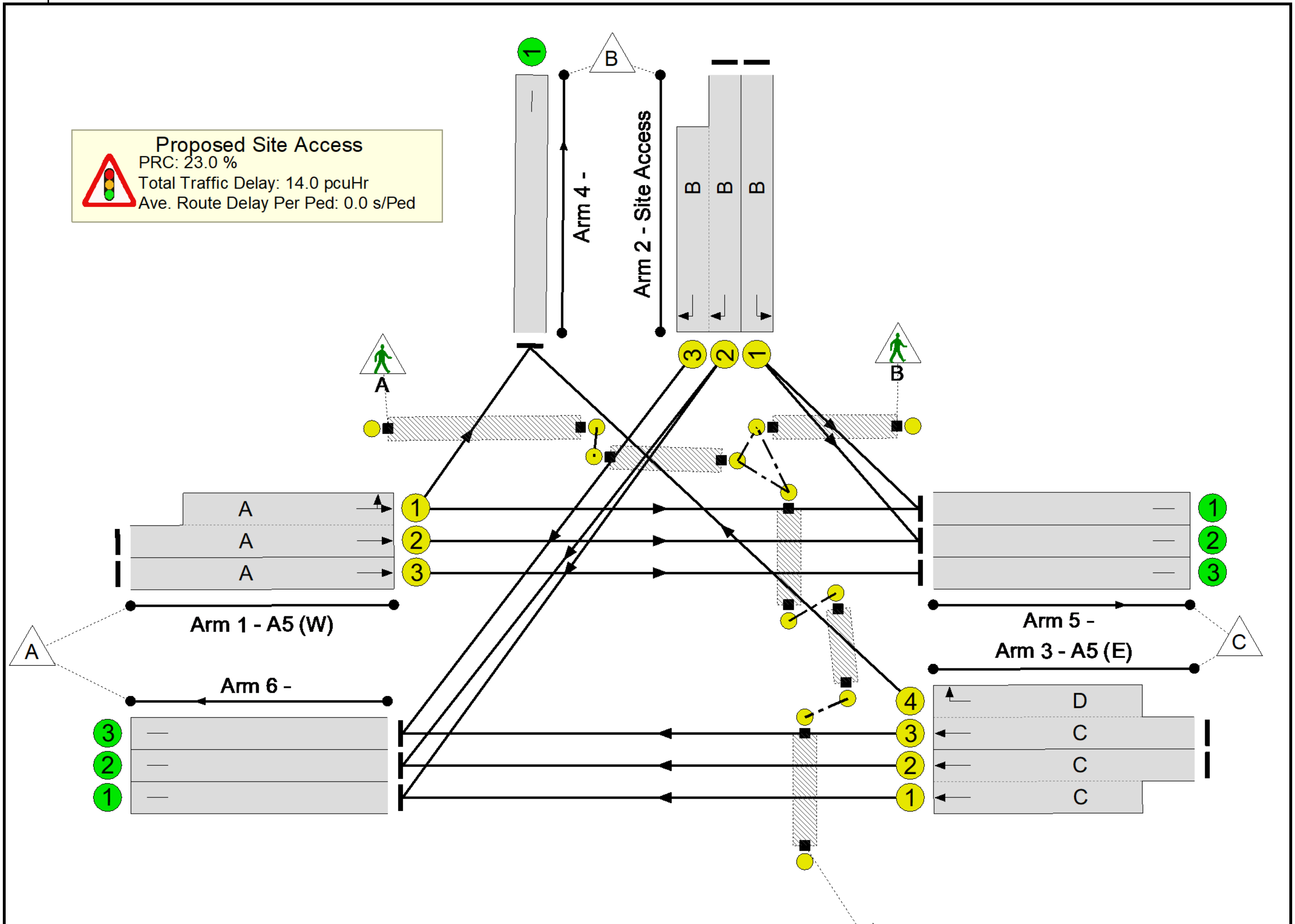
Stage Timings

Stage	1	2	3
Duration	53	1	3
Change Point	0	65	74

Signal Timings Diagram



Network Layout Diagram


Proposed Site Access
PRC: 23.0 %
Total Traffic Delay: 14.0 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Arm 4 -
Arm 2 - Site Access
B
B
B
B
A
B
A
A
A
Arm 1 - A5 (W)
Arm 5 -
Arm 3 - A5 (E)
C
A
Arm 6 -
D
C
C
C
1
2
3
1
2
3
4

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Proposed Site Access LinSig Option 1	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.2%**
Proposed Site Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.2%**
1/2+1/1	A5 (W) Left Ahead	U	N/A	N/A	A		1	53	-	1196	2105:1929	1052+965	59.3 : 59.3%
1/3	A5 (W) Ahead	U	N/A	N/A	A		1	53	-	566	2105	1263	44.8%
2/1	Site Access Left	U	N/A	N/A	B		1	13	-	46	1842	287	16.1%
2/2+2/3	Site Access Right	U	N/A	N/A	B		1	13	-	154	1871:1986	291+309	25.4 : 25.9%
3/2+3/1	A5 (E) Ahead	U	N/A	N/A	C		1	65	-	1489	2105:1965	1050+985	73.2 : 73.2%
3/3+3/4	A5 (E) Right Ahead	U	N/A	N/A	C D		1	65:7	-	915	2105:1828	1522+41	58.6 : 58.6%
4/1		U	N/A	N/A	-		-	-	-	140	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	479	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	647	Inf	Inf	0.0%
5/3		U	N/A	N/A	-		-	-	-	566	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	758	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	805	Inf	Inf	0.0%
6/3		U	N/A	N/A	-		-	-	-	971	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	8	-	0	-	6400	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	F		1	64	-	0	-	51200	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	65	-	0	-	52000	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	H		1	17	-	0	-	13600	0.0%

Ped Link: P5	Unnamed Ped Link	-	N/A	-	I		1	73	-	0	-	58400	0.0%
Ped Link: P6	Unnamed Ped Link	-	N/A	-	J		1	9	-	0	-	7200	0.0%

Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network: Proposed Site Access LinSig Option 1	**-**	**-**	**0**	**0**	**0**	**10.5**	**3.5**	**0.0**	**14.0**	**-**	**-**	**-**	**-**
Proposed Site Access	**-**	**-**	**0**	**0**	**0**	**10.5**	**3.5**	**0.0**	**14.0**	**-**	**-**	**-**	**-**
1/2+1/1	1196	1196	-	-	-	3.4	0.7	-	4.1	12.4	8.8	0.7	9.6
1/3	566	566	-	-	-	1.5	0.4	-	2.0	12.4	7.7	0.4	8.1
2/1	46	46	-	-	-	0.4	0.1	-	0.5	40.4	1.0	0.1	1.1
2/2+2/3	154	154	-	-	-	1.4	0.2	-	1.6	37.5	1.8	0.2	1.9
3/2+3/1	1489	1489	-	-	-	2.1	1.4	-	3.4	8.3	7.9	1.4	9.3
3/3+3/4	915	915	-	-	-	1.6	0.7	-	2.3	9.2	10.1	0.7	10.9
4/1	140	140	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	479	479	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	647	647	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	566	566	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	758	758	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	805	805	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/3	971	971	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P3	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P4	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P5	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P6	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

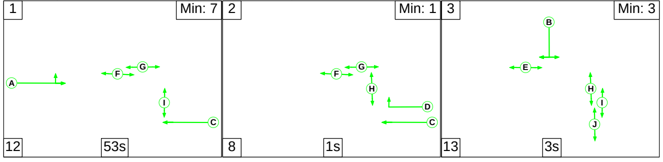
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	23.0	Total Delay for Signalled Lanes (pcuHr):	13.98	Cycle Time (s):	90
	PRC Over All Lanes (%):	23.0	Total Delay Over All Lanes(pcuHr):	13.98		

Full Input Data And Results

Scenario 3: '2026 AM' (FG3: '2026 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

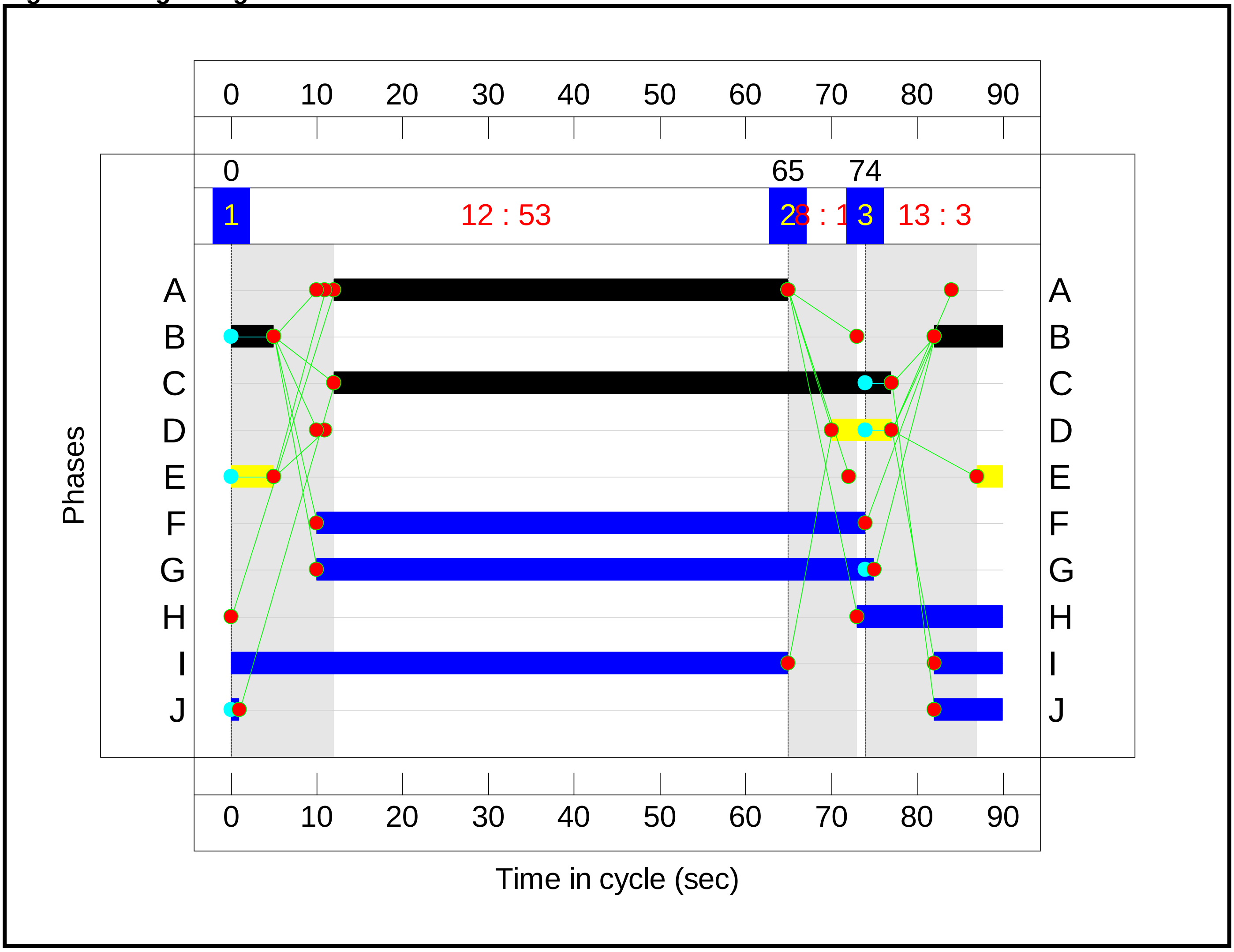
Stage Sequence Diagram



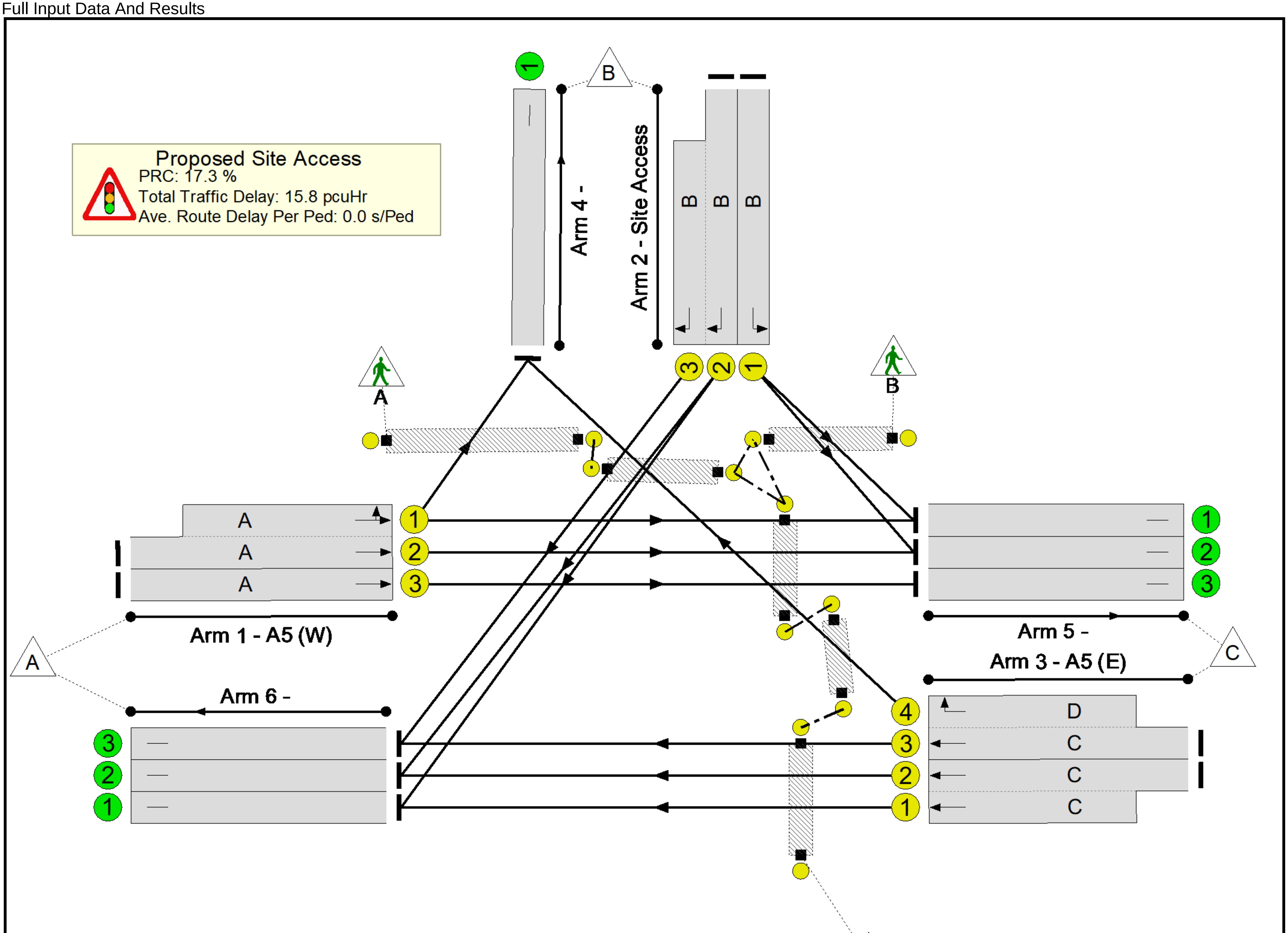
Stage Timings

Stage	1	2	3
Duration	53	1	3
Change Point	0	65	74

Signal Timings Diagram



Network Layout Diagram


Proposed Site Access
PRC: 17.3 %
Total Traffic Delay: 15.8 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Arm 4 -
Arm 2 - Site Access
B
B
B
B
A
B
A
A
A
Arm 1 - A5 (W)
A
Arm 6 -
Arm 5 -
Arm 3 - A5 (E)
C
D
C
C
C
1
2
3
4

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Proposed Site Access LinSig Option 1	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.7%**
Proposed Site Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.7%**
1/2+1/1	A5 (W) Left Ahead	U	N/A	N/A	A		1	53	-	1544	2105:1921	1052+961	76.7 : 76.7%
1/3	A5 (W) Ahead	U	N/A	N/A	A		1	53	-	800	2105	1263	63.3%
2/1	Site Access Left	U	N/A	N/A	B		1	13	-	46	1842	287	16.1%
2/2+2/3	Site Access Right	U	N/A	N/A	B		1	13	-	102	1871:1986	291+309	17.2 : 16.8%
3/2+3/1	A5 (E) Ahead	U	N/A	N/A	C		1	65	-	1256	2105:1965	1053+982	61.7 : 61.7%
3/3+3/4	A5 (E) Right Ahead	U	N/A	N/A	C D		1	65:7	-	742	2105:1828	1506+81	46.7 : 46.7%
4/1		U	N/A	N/A	-		-	-	-	222	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	576	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	830	Inf	Inf	0.0%
5/3		U	N/A	N/A	-		-	-	-	800	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	631	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	675	Inf	Inf	0.0%
6/3		U	N/A	N/A	-		-	-	-	756	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	8	-	0	-	6400	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	F		1	64	-	0	-	51200	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	65	-	0	-	52000	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	H		1	17	-	0	-	13600	0.0%

Ped Link: P5	Unnamed Ped Link	-	N/A	-	I		1	73	-	0	-	58400	0.0%
Ped Link: P6	Unnamed Ped Link	-	N/A	-	J		1	9	-	0	-	7200	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Proposed Site Access LinSig Option 1	**-**	**-**	**0**	**0**	**0**	**11.9**	**3.9**	**0.0**	**15.8**	**-**	**-**	**-**	**-**
Proposed Site Access	**-**	**-**	**0**	**0**	**0**	**11.9**	**3.9**	**0.0**	**15.8**	**-**	**-**	**-**	**-**
1/2+1/1	1544	1544	-	-	-	5.0	1.6	-	6.6	15.5	13.0	1.6	14.6
1/3	800	800	-	-	-	2.6	0.9	-	3.4	15.5	12.9	0.9	13.7
2/1	46	46	-	-	-	0.4	0.1	-	0.5	40.4	1.0	0.1	1.1
2/2+2/3	102	102	-	-	-	0.9	0.1	-	1.0	36.6	1.1	0.1	1.2
3/2+3/1	1256	1256	-	-	-	1.6	0.8	-	2.4	6.9	6.1	0.8	6.9
3/3+3/4	742	742	-	-	-	1.3	0.4	-	1.8	8.6	7.0	0.4	7.5
4/1	222	222	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	576	576	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	830	830	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	800	800	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	631	631	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	675	675	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/3	756	756	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P3	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P4	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P5	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P6	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

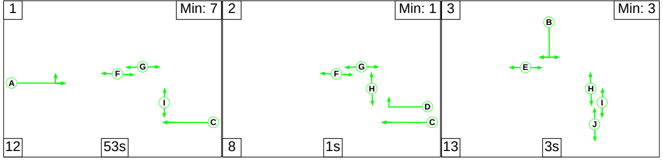
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	17.3	Total Delay for Signalled Lanes (pcuHr):	15.84	Cycle Time (s):	90
	PRC Over All Lanes (%):	17.3	Total Delay Over All Lanes(pcuHr):	15.84		

Full Input Data And Results

Scenario 4: '2026 PM' (FG4: '2026 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

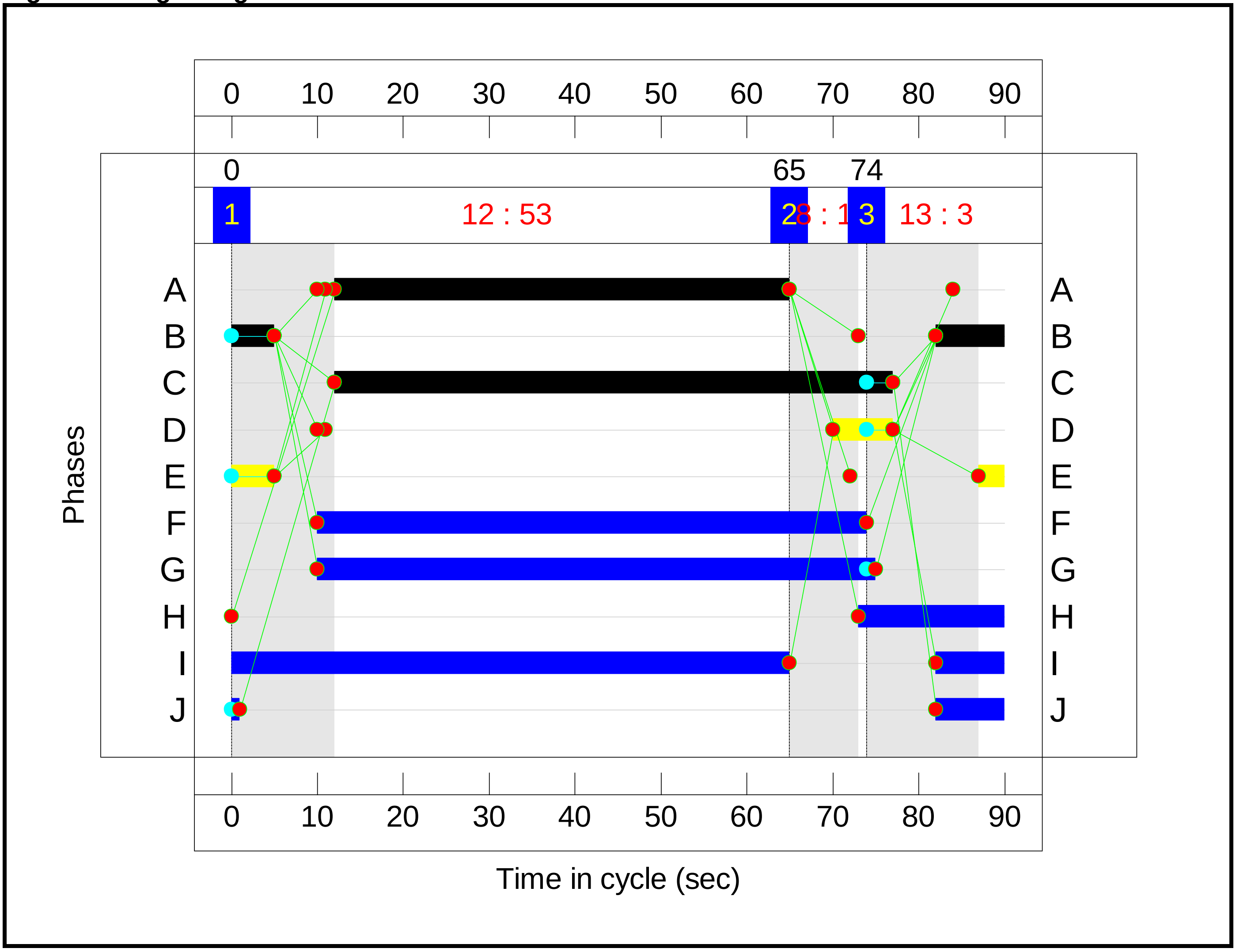
Stage Sequence Diagram



Stage Timings

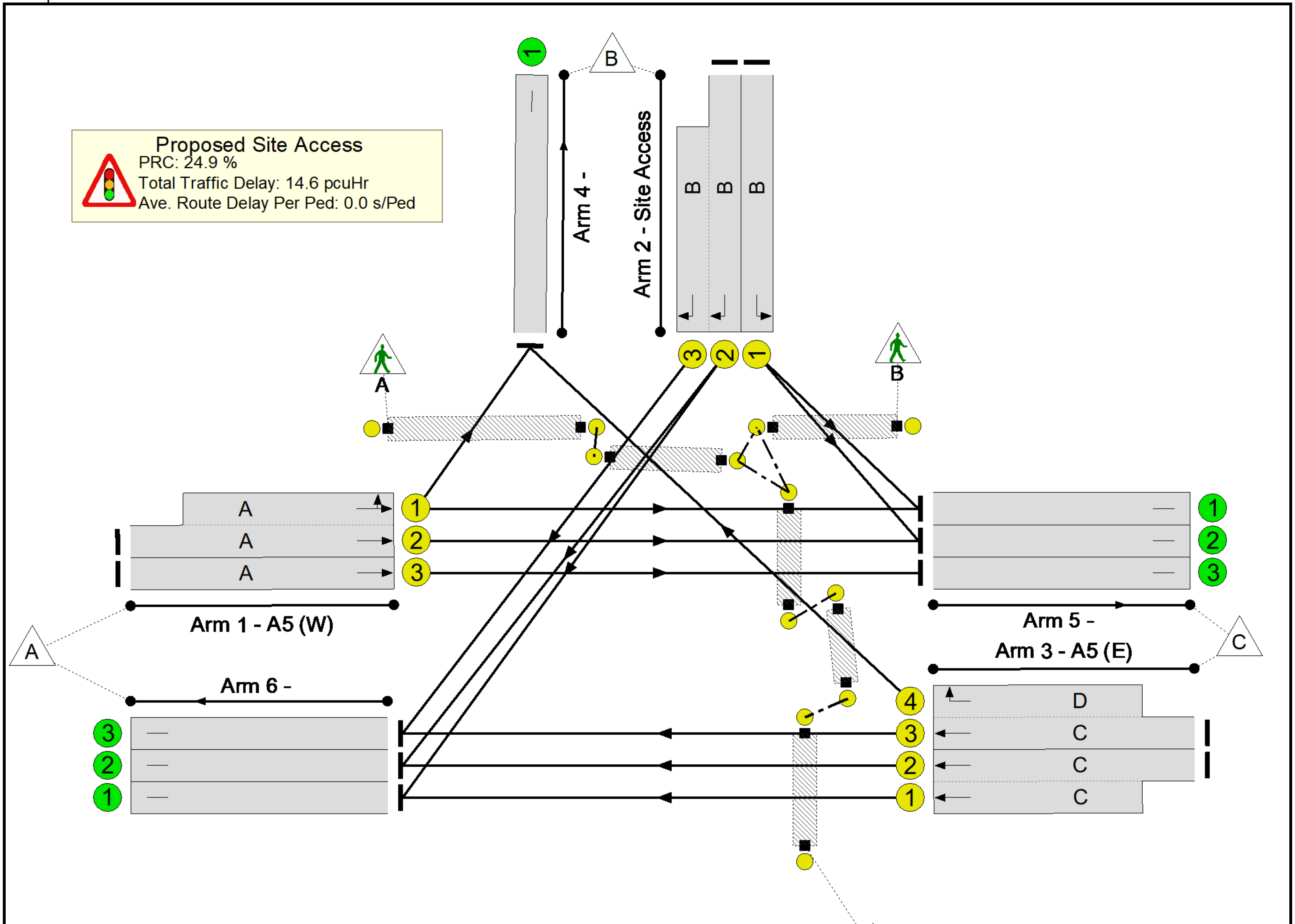
Stage	1	2	3
Duration	53	1	3
Change Point	0	65	74

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Proposed Site Access
PRC: 24.9 %
Total Traffic Delay: 14.6 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Arm 4 -
Arm 2 - Site Access
Arm 1 - A5 (W)
Arm 5 -
Arm 3 - A5 (E)
Arm 6 -
A
B
C
D
1
2
3
4

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Proposed Site Access LinSig Option 1	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**72.0%**
Proposed Site Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**72.0%**
1/2+1/1	A5 (W) Left Ahead	U	N/A	N/A	A		1	53	-	1280	2105:1932	1052+967	63.4 : 63.4%
1/3	A5 (W) Ahead	U	N/A	N/A	A		1	53	-	618	2105	1263	48.9%
2/1	Site Access Left	U	N/A	N/A	B		1	13	-	54	1842	287	18.8%
2/2+2/3	Site Access Right	U	N/A	N/A	B		1	13	-	162	1871:1986	291+309	26.8 : 27.2%
3/2+3/1	A5 (E) Ahead	U	N/A	N/A	C		1	65	-	1466	2105:1965	1052+983	72.0 : 72.0%
3/3+3/4	A5 (E) Right Ahead	U	N/A	N/A	C D		1	65:7	-	890	2105:1828	1525+31	57.2 : 57.2%
4/1		U	N/A	N/A	-		-	-	-	132	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	526	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	694	Inf	Inf	0.0%
5/3		U	N/A	N/A	-		-	-	-	618	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	747	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	797	Inf	Inf	0.0%
6/3		U	N/A	N/A	-		-	-	-	956	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	8	-	0	-	6400	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	F		1	64	-	0	-	51200	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	65	-	0	-	52000	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	H		1	17	-	0	-	13600	0.0%

Ped Link: P5	Unnamed Ped Link	-	N/A	-	I		1	73	-	0	-	58400	0.0%
Ped Link: P6	Unnamed Ped Link	-	N/A	-	J		1	9	-	0	-	7200	0.0%

Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network: Proposed Site Access LinSig Option 1	**-**	**-**	**0**	**0**	**0**	**11.1**	**3.6**	**0.0**	**14.6**	**-**	**-**	**-**	**-**
Proposed Site Access	**-**	**-**	**0**	**0**	**0**	**11.1**	**3.6**	**0.0**	**14.6**	**-**	**-**	**-**	**-**
1/2+1/1	1280	1280	-	-	-	3.7	0.9	-	4.6	13.0	9.6	0.9	10.5
1/3	618	618	-	-	-	1.7	0.5	-	2.2	13.0	8.6	0.5	9.1
2/1	54	54	-	-	-	0.5	0.1	-	0.6	40.8	1.2	0.1	1.3
2/2+2/3	162	162	-	-	-	1.5	0.2	-	1.7	37.6	1.8	0.2	2.0
3/2+3/1	1466	1466	-	-	-	2.0	1.3	-	3.3	8.2	7.8	1.3	9.1
3/3+3/4	890	890	-	-	-	1.5	0.7	-	2.2	8.8	9.7	0.7	10.4
4/1	132	132	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	526	526	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	694	694	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	618	618	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	747	747	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	797	797	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/3	956	956	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P3	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P4	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P5	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P6	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

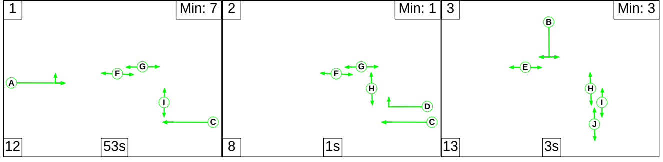
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	24.9	Total Delay for Signalled Lanes (pcuHr):	14.65	Cycle Time (s):	90
	PRC Over All Lanes (%):	24.9	Total Delay Over All Lanes(pcuHr):	14.65		

Full Input Data And Results

Scenario 5: '2031 R + D AM' (FG5: '2031 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

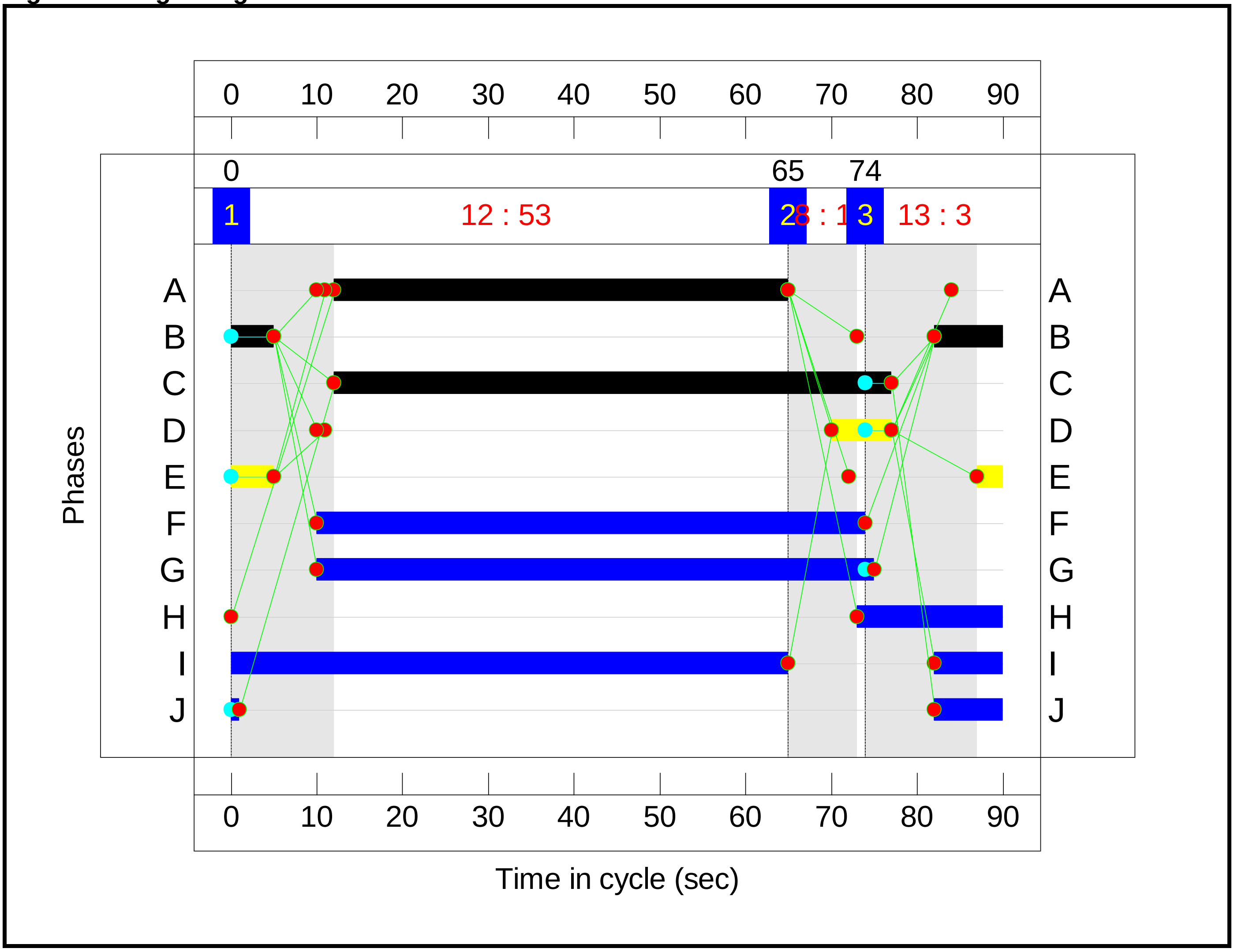
Stage Sequence Diagram



Stage Timings

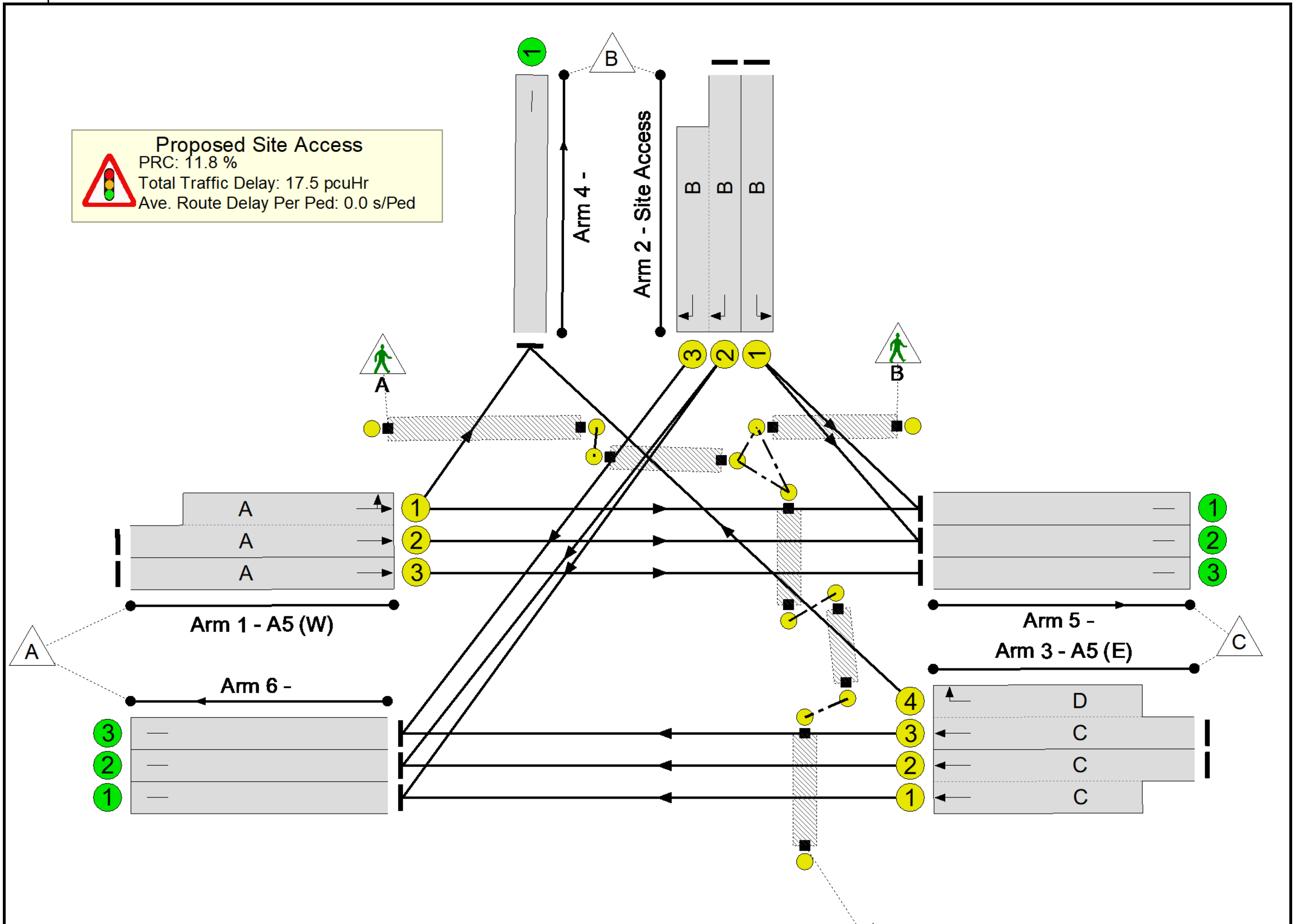
Stage	1	2	3
Duration	53	1	3
Change Point	0	65	74

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Proposed Site Access
PRC: 11.8 %
Total Traffic Delay: 17.5 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Arm 4 -
Arm 2 - Site Access
B
B
B
B
A
B
A
A
A
Arm 1 - A5 (W)
A
Arm 6 -
Arm 5 -
Arm 3 - A5 (E)
C
D
C
C
C
1
2
3
4

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Proposed Site Access LinSig Option 1	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.5%**
Proposed Site Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.5%**
1/2+1/1	A5 (W) Left Ahead	U	N/A	N/A	A		1	53	-	1621	2105:1924	1053+962	80.5 : 80.5%
1/3	A5 (W) Ahead	U	N/A	N/A	A		1	53	-	857	2105	1263	67.9%
2/1	Site Access Left	U	N/A	N/A	B		1	13	-	42	1842	287	14.7%
2/2+2/3	Site Access Right	U	N/A	N/A	B		1	13	-	102	1871:1986	291+309	17.2 : 16.8%
3/2+3/1	A5 (E) Ahead	U	N/A	N/A	C		1	65	-	1311	2105:1965	1052+983	64.4 : 64.4%
3/3+3/4	A5 (E) Right Ahead	U	N/A	N/A	C D		1	65:7	-	791	2105:1828	1504+89	49.7 : 49.7%
4/1		U	N/A	N/A	-		-	-	-	226	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	613	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	868	Inf	Inf	0.0%
5/3		U	N/A	N/A	-		-	-	-	857	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	658	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	703	Inf	Inf	0.0%
6/3		U	N/A	N/A	-		-	-	-	799	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	8	-	0	-	6400	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	F		1	64	-	0	-	51200	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	65	-	0	-	52000	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	H		1	17	-	0	-	13600	0.0%

Full Input Data And Results

Ped Link: P5	Unnamed Ped Link	-	N/A	-	I		1	73	-	0	-	58400	0.0%
Ped Link: P6	Unnamed Ped Link	-	N/A	-	J		1	9	-	0	-	7200	0.0%

Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network: Proposed Site Access LinSig Option 1	**-**	**-**	**0**	**0**	**0**	**12.9**	**4.7**	**0.0**	**17.5**	**-**	**-**	**-**	**-**
Proposed Site Access	**-**	**-**	**0**	**0**	**0**	**12.9**	**4.7**	**0.0**	**17.5**	**-**	**-**	**-**	**-**
1/2+1/1	1621	1621	-	-	-	5.4	2.0	-	7.5	16.6	14.1	2.0	16.2
1/3	857	857	-	-	-	2.9	1.0	-	3.9	16.6	14.3	1.0	15.3
2/1	42	42	-	-	-	0.4	0.1	-	0.5	40.2	0.9	0.1	1.0
2/2+2/3	102	102	-	-	-	0.9	0.1	-	1.0	36.6	1.1	0.1	1.2
3/2+3/1	1311	1311	-	-	-	1.7	0.9	-	2.6	7.2	6.6	0.9	7.5
3/3+3/4	791	791	-	-	-	1.5	0.5	-	2.0	9.1	7.7	0.5	8.2
4/1	226	226	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	613	613	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	868	868	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	857	857	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	658	658	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	703	703	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/3	799	799	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P3	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P4	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P5	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P6	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

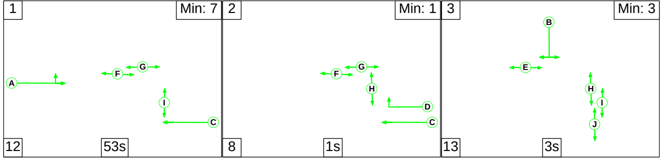
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	11.8	Total Delay for Signalled Lanes (pcuHr):	17.52	Cycle Time (s):	90
	PRC Over All Lanes (%):	11.8	Total Delay Over All Lanes(pcuHr):	17.52		

Full Input Data And Results

Scenario 6: '2031 R + D PM' (FG6: '2031 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

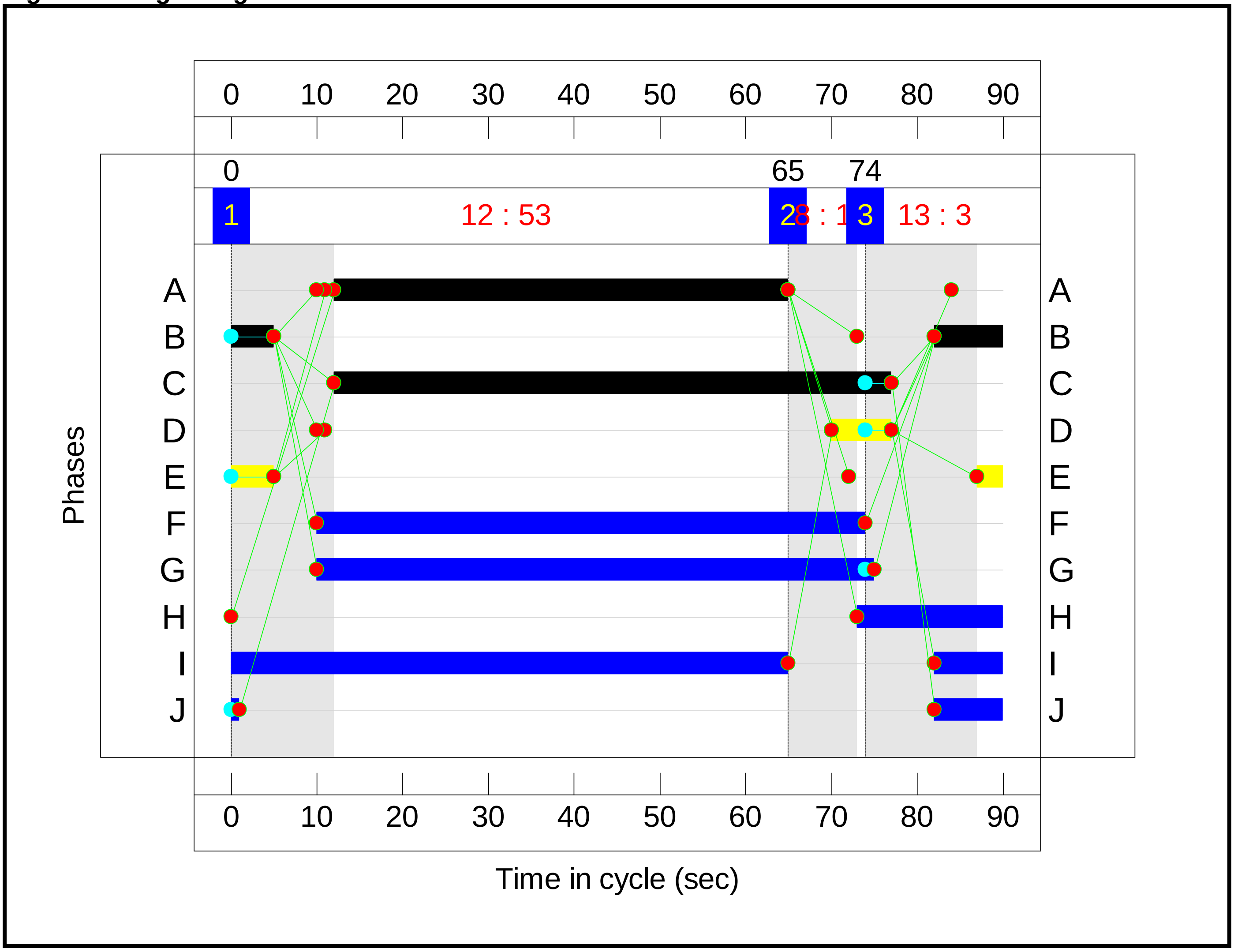
Stage Sequence Diagram



Stage Timings

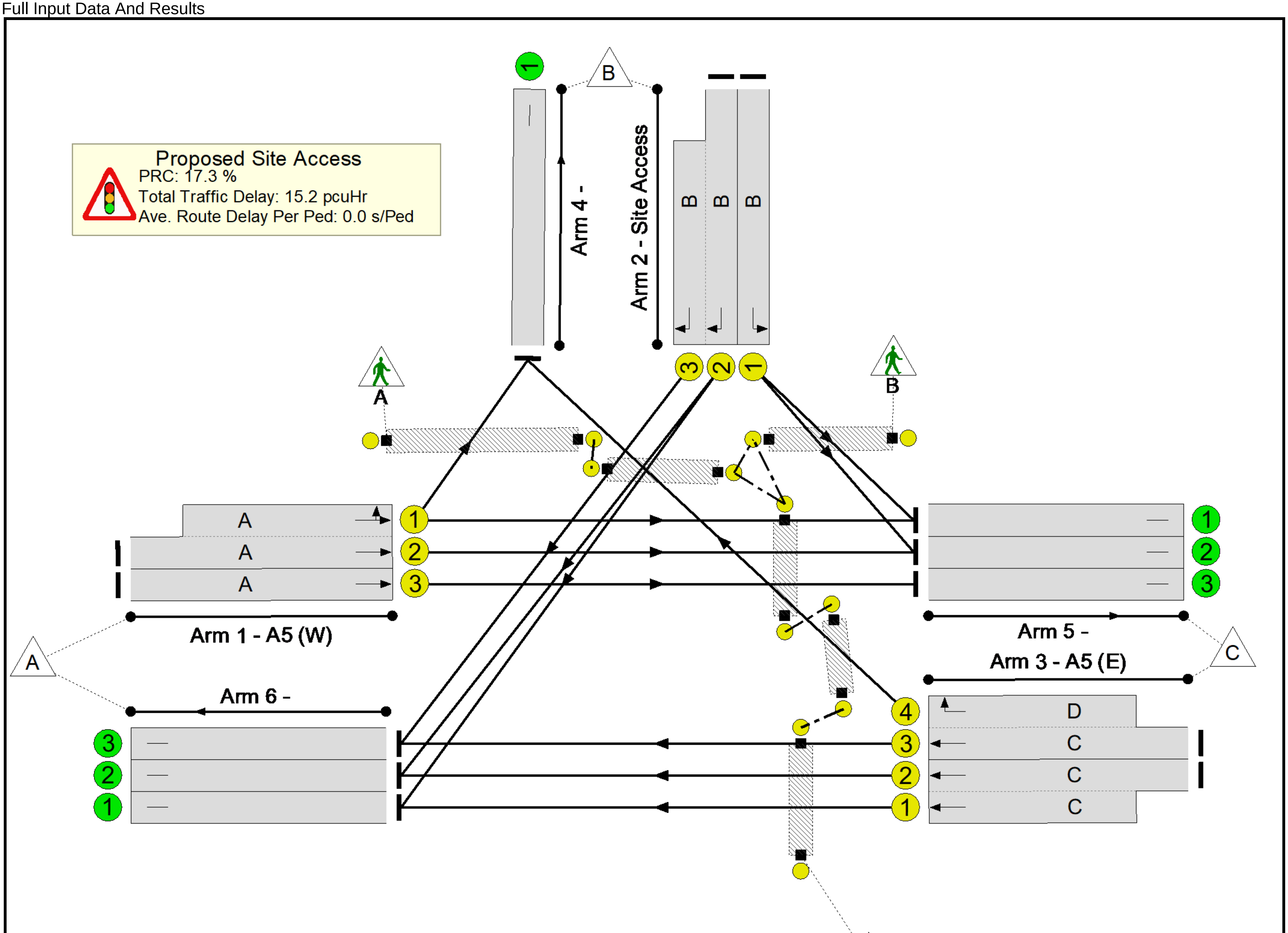
Stage	1	2	3
Duration	53	1	3
Change Point	0	65	74

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Proposed Site Access
PRC: 17.3 %
Total Traffic Delay: 15.2 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Arm 4 -
Arm 2 - Site Access
B
B
B
B
1
3
2
1
A
B
A
A
A
1
2
3
1
2
3
Arm 1 - A5 (W)
Arm 5 -
Arm 3 - A5 (E)
A
C
Arm 6 -
3
2
1
4
3
2
1
D
C
C
C

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Proposed Site Access LinSig Option 1	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.7%**
Proposed Site Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.7%**
1/2+1/1	A5 (W) Left Ahead	U	N/A	N/A	A		1	53	-	1259	2105:1928	1052+964	62.4 : 62.4%
1/3	A5 (W) Ahead	U	N/A	N/A	A		1	53	-	605	2105	1263	47.9%
2/1	Site Access Left	U	N/A	N/A	B		1	13	-	46	1842	287	16.1%
2/2+2/3	Site Access Right	U	N/A	N/A	B		1	13	-	156	1871:1986	291+309	26.1 : 25.9%
3/2+3/1	A5 (E) Ahead	U	N/A	N/A	C		1	65	-	1561	2105:1965	1052+983	76.7 : 76.7%
3/3+3/4	A5 (E) Right Ahead	U	N/A	N/A	C D		1	65:7	-	971	2105:1828	1529+22	62.6 : 62.6%
4/1		U	N/A	N/A	-		-	-	-	140	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	499	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	680	Inf	Inf	0.0%
5/3		U	N/A	N/A	-		-	-	-	605	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	792	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	845	Inf	Inf	0.0%
6/3		U	N/A	N/A	-		-	-	-	1037	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	8	-	0	-	6400	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	F		1	64	-	0	-	51200	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	65	-	0	-	52000	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	H		1	17	-	0	-	13600	0.0%

Ped Link: P5	Unnamed Ped Link	-	N/A	-	I		1	73	-	0	-	58400	0.0%
Ped Link: P6	Unnamed Ped Link	-	N/A	-	J		1	9	-	0	-	7200	0.0%

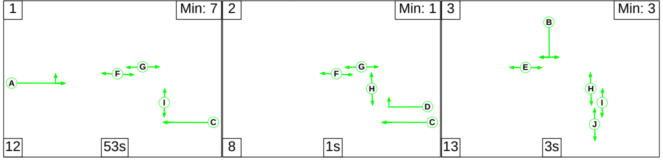
Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network: Proposed Site Access LinSig Option 1	**-**	**-**	**0**	**0**	**0**	**11.2**	**4.0**	**0.0**	**15.2**	**-**	**-**	**-**	**-**
Proposed Site Access	**-**	**-**	**0**	**0**	**0**	**11.2**	**4.0**	**0.0**	**15.2**	**-**	**-**	**-**	**-**
1/2+1/1	1259	1259	-	-	-	3.7	0.8	-	4.5	12.8	9.5	0.8	10.3
1/3	605	605	-	-	-	1.7	0.5	-	2.2	12.8	8.4	0.5	8.9
2/1	46	46	-	-	-	0.4	0.1	-	0.5	40.4	1.0	0.1	1.1
2/2+2/3	156	156	-	-	-	1.5	0.2	-	1.6	37.5	1.8	0.2	1.9
3/2+3/1	1561	1561	-	-	-	2.3	1.6	-	3.9	9.0	8.5	1.6	10.2
3/3+3/4	971	971	-	-	-	1.7	0.8	-	2.5	9.4	11.7	0.8	12.5
4/1	140	140	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	499	499	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	680	680	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	605	605	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	792	792	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	845	845	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/3	1037	1037	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P3	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P4	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P5	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P6	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

Full Input Data And Results

C1	PRC for Signalled Lanes (%):	17.3	Total Delay for Signalled Lanes (pcuHr):	15.22	Cycle Time (s):	90
	PRC Over All Lanes (%):	17.3	Total Delay Over All Lanes(pcuHr):	15.22		

Scenario 7: '2031 LP + D AM' (FG7: '2031 Local Plan + Development AM Peak', Plan 1: 'Network Control Plan 1')

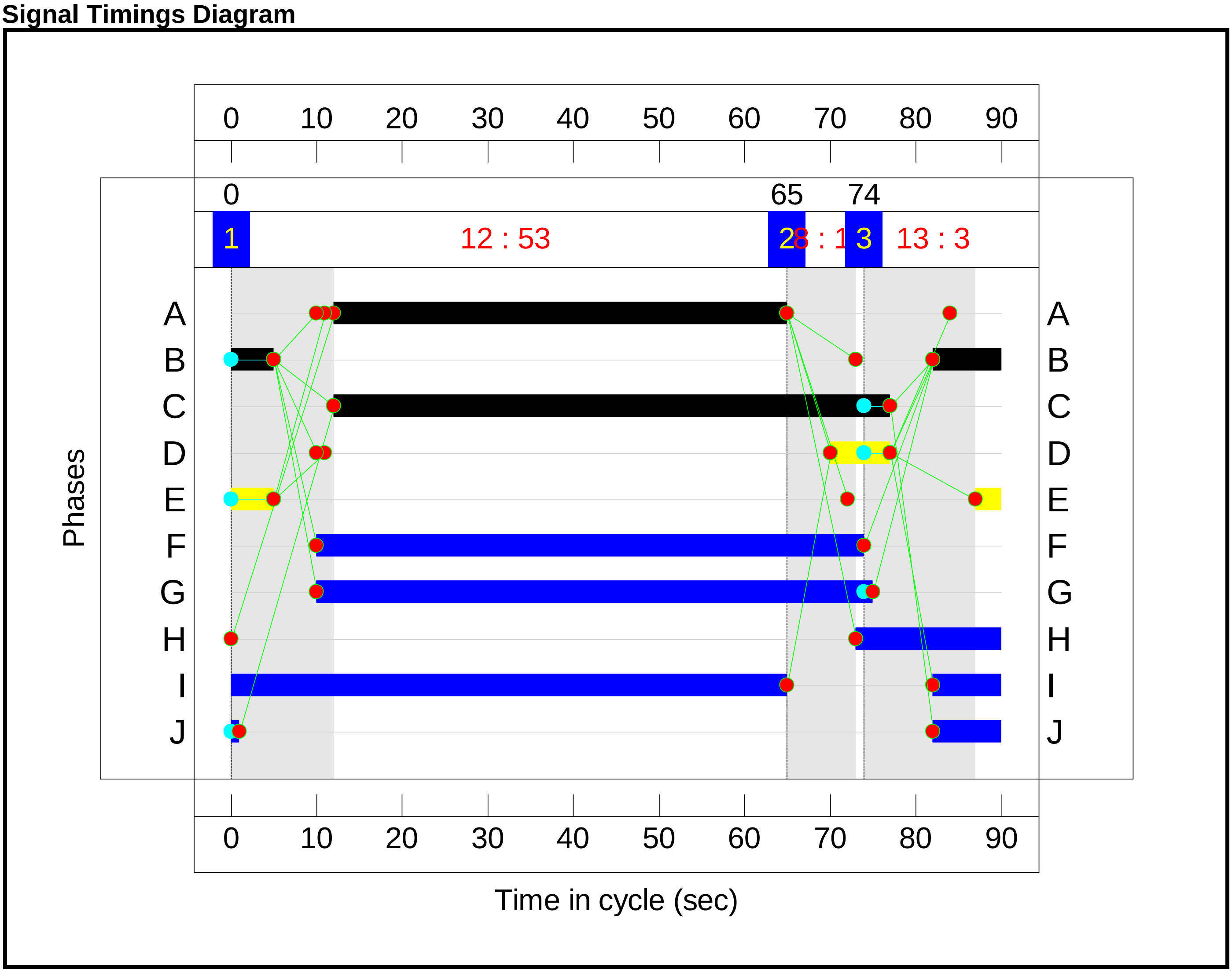
Stage Sequence Diagram



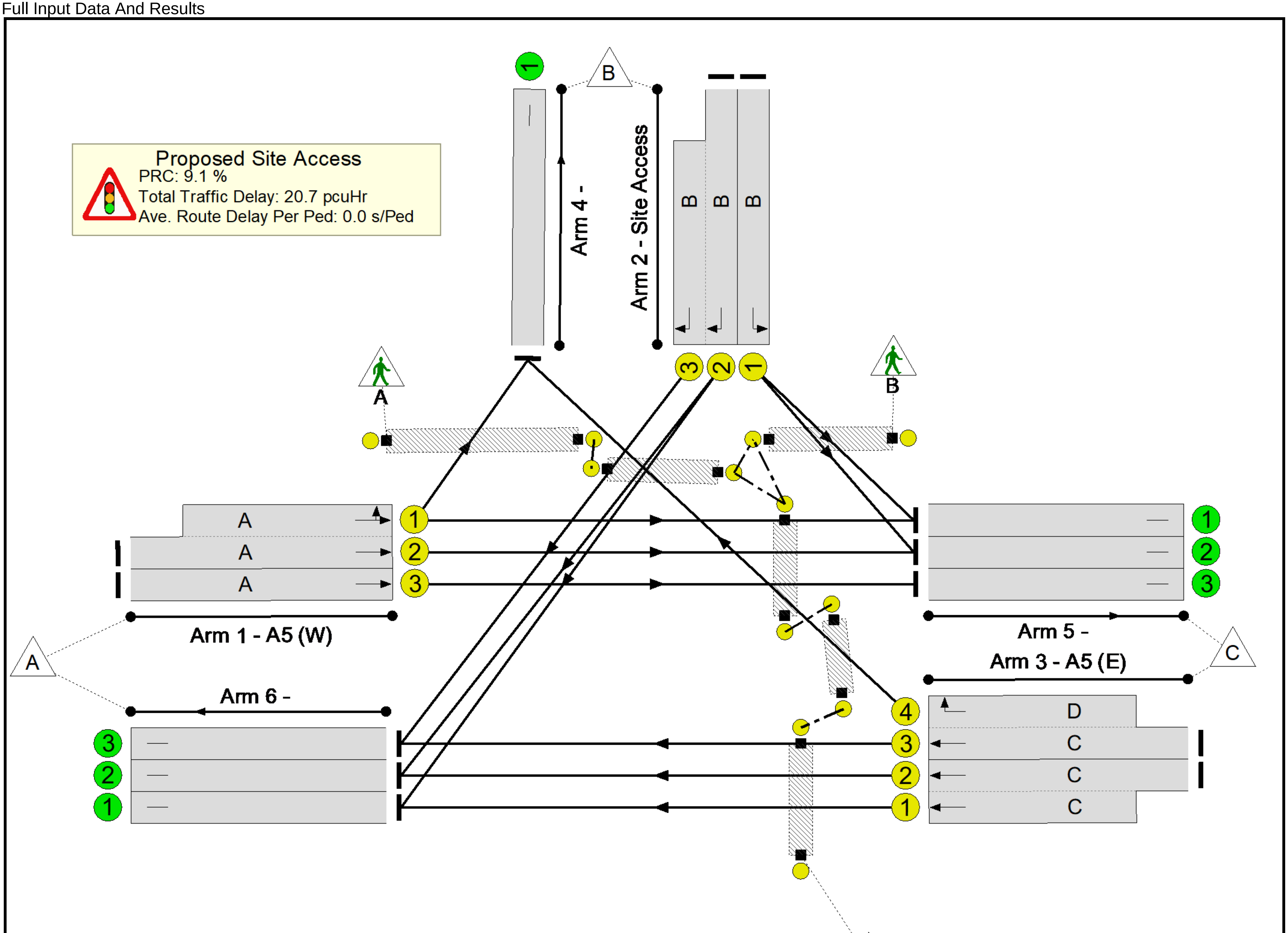
Stage Timings

Stage	1	2	3
Duration	53	1	3
Change Point	0	65	74

Signal Timings Diagram



Network Layout Diagram



Proposed Site Access
PRC: 9.1 %
Total Traffic Delay: 20.7 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Proposed Site Access LinSig Option 1	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.5%**
Proposed Site Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.5%**
1/2+1/1	A5 (W) Left Ahead	U	N/A	N/A	A		1	53	-	1662	2105:1926	1053+963	82.5 : 82.5%
1/3	A5 (W) Ahead	U	N/A	N/A	A		1	53	-	890	2105	1263	70.5%
2/1	Site Access Left	U	N/A	N/A	B		1	13	-	44	1842	287	15.4%
2/2+2/3	Site Access Right	U	N/A	N/A	B		1	13	-	100	1871:1986	291+309	16.5 : 16.8%
3/2+3/1	A5 (E) Ahead	U	N/A	N/A	C		1	65	-	1582	2105:1965	1055+980	77.7 : 77.7%
3/3+3/4	A5 (E) Right Ahead	U	N/A	N/A	C D		1	65:7	-	1010	2105:1828	1517+53	64.3 : 64.3%
4/1		U	N/A	N/A	-		-	-	-	210	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	640	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	890	Inf	Inf	0.0%
5/3		U	N/A	N/A	-		-	-	-	890	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	786	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	844	Inf	Inf	0.0%
6/3		U	N/A	N/A	-		-	-	-	1028	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	8	-	0	-	6400	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	F		1	64	-	0	-	51200	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	65	-	0	-	52000	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	H		1	17	-	0	-	13600	0.0%

Full Input Data And Results

Ped Link: P5	Unnamed Ped Link	-	N/A	-	I		1	73	-	0	-	58400	0.0%
Ped Link: P6	Unnamed Ped Link	-	N/A	-	J		1	9	-	0	-	7200	0.0%

Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network: Proposed Site Access LinSig Option 1	**-**	**-**	**0**	**0**	**0**	**14.3**	**6.3**	**0.0**	**20.7**	**-**	**-**	**-**	**-**
Proposed Site Access	**-**	**-**	**0**	**0**	**0**	**14.3**	**6.3**	**0.0**	**20.7**	**-**	**-**	**-**	**-**
1/2+1/1	1662	1662	-	-	-	5.7	2.3	-	8.0	17.3	14.7	2.3	17.0
1/3	890	890	-	-	-	3.1	1.2	-	4.3	17.3	15.3	1.2	16.5
2/1	44	44	-	-	-	0.4	0.1	-	0.5	40.3	0.9	0.1	1.0
2/2+2/3	100	100	-	-	-	0.9	0.1	-	1.0	36.5	1.1	0.1	1.2
3/2+3/1	1582	1582	-	-	-	2.3	1.7	-	4.0	9.2	8.9	1.7	10.6
3/3+3/4	1010	1010	-	-	-	2.0	0.9	-	2.9	10.3	11.9	0.9	12.8
4/1	210	210	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	640	640	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	890	890	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	890	890	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	786	786	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	844	844	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/3	1028	1028	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P3	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P4	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P5	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P6	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

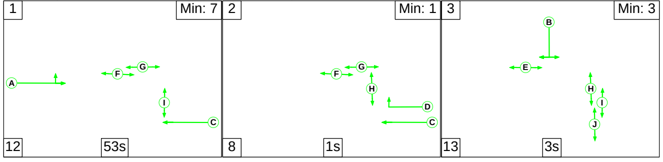
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	9.1	Total Delay for Signalled Lanes (pcuHr):	20.66	Cycle Time (s):	90
	PRC Over All Lanes (%):	9.1	Total Delay Over All Lanes(pcuHr):	20.66		

Full Input Data And Results

Scenario 8: '2031 LP + D PM' (FG8: '2031 Local Plan + Development PM Peak', Plan 1: 'Network Control Plan 1')

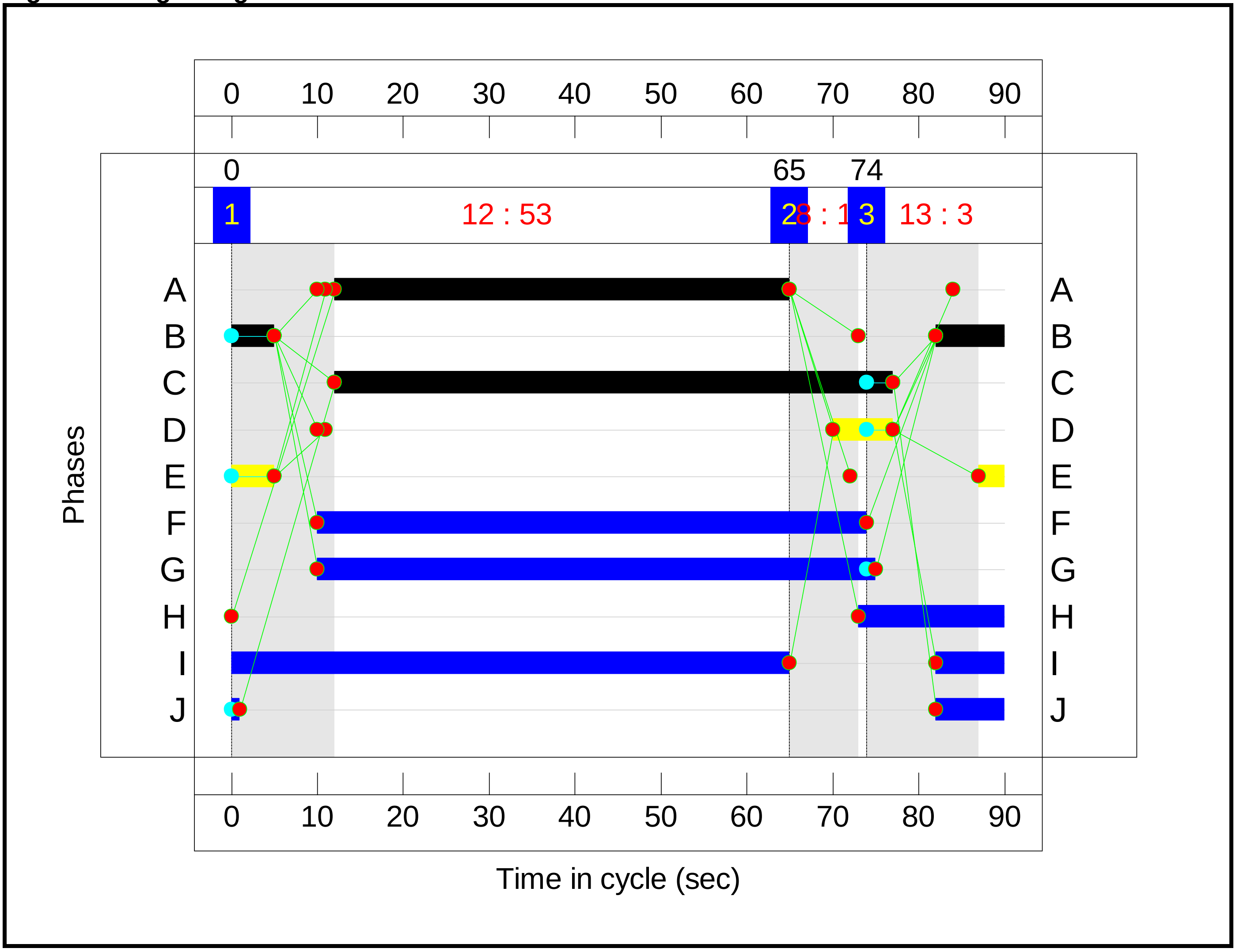
Stage Sequence Diagram



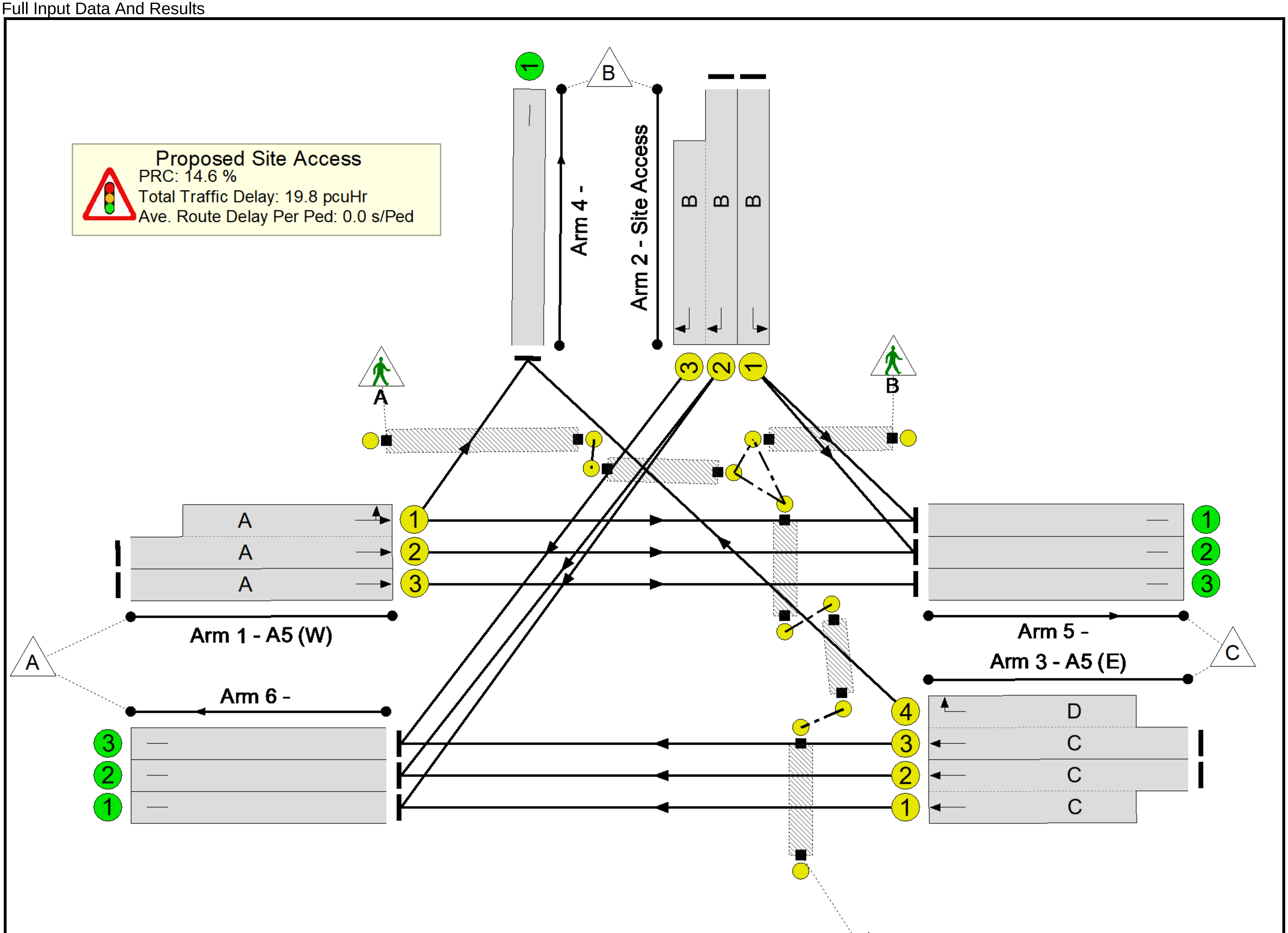
Stage Timings

Stage	1	2	3
Duration	53	1	3
Change Point	0	65	74

Signal Timings Diagram



Network Layout Diagram


Proposed Site Access
PRC: 14.6 %
Total Traffic Delay: 19.8 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Arm 4 -
Arm 2 - Site Access
B
B
B
B
A
B
A
A
A
Arm 1 - A5 (W)
A
Arm 6 -
Arm 5 -
Arm 3 - A5 (E)
C
D
C
C
C
1
2
3
4

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Proposed Site Access LinSig Option 1	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.6%**
Proposed Site Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.6%**
1/2+1/1	A5 (W) Left Ahead	U	N/A	N/A	A		1	53	-	1587	2105:1935	1053+967	78.6 : 78.6%
1/3	A5 (W) Ahead	U	N/A	N/A	A		1	53	-	827	2105	1263	65.5%
2/1	Site Access Left	U	N/A	N/A	B		1	13	-	56	1842	287	19.5%
2/2+2/3	Site Access Right	U	N/A	N/A	B		1	13	-	158	1871:1986	291+309	26.1 : 26.5%
3/2+3/1	A5 (E) Ahead	U	N/A	N/A	C		1	65	-	1582	2105:1965	1052+983	77.7 : 77.7%
3/3+3/4	A5 (E) Right Ahead	U	N/A	N/A	C D		1	65:7	-	1002	2105:1828	1522+41	64.1 : 64.1%
4/1		U	N/A	N/A	-		-	-	-	156	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	658	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	855	Inf	Inf	0.0%
5/3		U	N/A	N/A	-		-	-	-	827	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	802	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	856	Inf	Inf	0.0%
6/3		U	N/A	N/A	-		-	-	-	1058	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	E		1	8	-	0	-	6400	0.0%
Ped Link: P2	Unnamed Ped Link	-	N/A	-	F		1	64	-	0	-	51200	0.0%
Ped Link: P3	Unnamed Ped Link	-	N/A	-	G		1	65	-	0	-	52000	0.0%
Ped Link: P4	Unnamed Ped Link	-	N/A	-	H		1	17	-	0	-	13600	0.0%

Ped Link: P5	Unnamed Ped Link	-	N/A	-	I		1	73	-	0	-	58400	0.0%
Ped Link: P6	Unnamed Ped Link	-	N/A	-	J		1	9	-	0	-	7200	0.0%

Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network: Proposed Site Access LinSig Option 1	**-**	**-**	**0**	**0**	**0**	**14.1**	**5.7**	**0.0**	**19.8**	**-**	**-**	**-**	**-**
Proposed Site Access	**-**	**-**	**0**	**0**	**0**	**14.1**	**5.7**	**0.0**	**19.8**	**-**	**-**	**-**	**-**
1/2+1/1	1587	1587	-	-	-	5.2	1.8	-	7.0	16.0	13.6	1.8	15.4
1/3	827	827	-	-	-	2.7	0.9	-	3.7	16.0	13.6	0.9	14.5
2/1	56	56	-	-	-	0.5	0.1	-	0.6	40.9	1.2	0.1	1.3
2/2+2/3	158	158	-	-	-	1.5	0.2	-	1.6	37.6	1.8	0.2	2.0
3/2+3/1	1582	1582	-	-	-	2.3	1.7	-	4.0	9.2	8.9	1.7	10.6
3/3+3/4	1002	1002	-	-	-	1.9	0.9	-	2.8	10.0	11.9	0.9	12.8
4/1	156	156	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	658	658	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	855	855	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	827	827	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	802	802	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	856	856	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/3	1058	1058	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P3	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P4	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P5	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P6	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1	PRC for Signalled Lanes (%):	14.6	Total Delay for Signalled Lanes (pcuHr):	19.82	Cycle Time (s):	90
	PRC Over All Lanes (%):	14.6	Total Delay Over All Lanes(pcuHr):	19.82		

Model Audit

Scenario 5: '2031 R + D AM' (FG5: '2031 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

LinSig Network

Filename:	Proposed Site Access Layout - JCT.lsg3x
Project Title:	Proposed Site Access LinSig Option 1
PCU Length (m):	5.75

Scenario

Scenario Name: 2031 R + D AM

Network Layout

Junction	Name	Signal controlled?	Arms in Junction
1	Proposed Site Access	yes	1, 2, 3, 4, 5, 6

Full Input Data And Results

Lane Data (excluding exit bottlenecks)

Lane	Arm Name	Lane Length (m)	Short/Long	Multi-lane?	Saturation Flow (PCU/Hr)	RR67?	Short Lane Occupancy (PCU)	Associated Lane	Controlling Phase(s)	Start Displacement (s)	End Displacement (s)	Queue De-sliver Threshold (PCU)	Ignore Random Delay
1/1	A5 (W)	120	short	no	1924	yes	20.9	1/2	A	2	3	-	-
1/2	A5 (W)	345	long	no	2105	yes	-	-	A	2	3	-	no
1/3	A5 (W)	345	long	no	2105	yes	-	-	A	2	3	-	no
2/1	Site Access	345	long	no	1842	yes	-	-	B	2	3	-	no
2/2	Site Access	200	long	no	1871	yes	-	-	B	2	3	-	no
2/3	Site Access	86	short	no	1986	yes	15.0	2/2	B	2	3	-	-
3/1	A5 (E)	80	short	no	1965	yes	13.9	3/2	C	2	3	-	-
3/2	A5 (E)	345	long	no	2105	yes	-	-	C	2	3	-	no
3/3	A5 (E)	345	long	no	2105	yes	-	-	C	2	3	-	no
3/4	A5 (E)	144	short	no	1828	yes	25.0	3/3	D	2	3	-	-

Lane Data (exit bottlenecks only)

Lane	Arm Name	Lane Length (m)	Short/Long	Multi-lane?	Saturation Flow (PCU/Hr)	RR67?	Short Lane Occupancy (PCU)	Associated Lane	Controlling Phase(s)	Start Displacement (s)	End Displacement (s)	Queue De-sliver Threshold (PCU)	Ignore Random Delay
4/1		345	long	no	Inf	no	-	-	-	2	3	-	no
5/1		345	long	no	Inf	no	-	-	-	2	3	-	no
5/2		345	long	no	Inf	no	-	-	-	2	3	-	no
5/3		345	long	no	Inf	no	-	-	-	2	3	-	no
6/1		345	long	no	Inf	no	-	-	-	2	3	-	no
6/2		345	long	no	Inf	no	-	-	-	2	3	-	no
6/3		345	long	no	Inf	no	-	-	-	2	3	-	no

Full Input Data And Results

Storage In Front Of Stopline

No data

Multi-Lanes

No data

RR67 Sat Flow Input Data

Lane	Arm Name	Width (m)	Gradient (%)	Is Nearside?	Movement	Turning Radius (m)	Turning Proportion (%)
1/1	A5 (W)	3.50	0.00	yes	To Arm 4 (Left)	16.50	23.5
					To Arm 5 (Ahead)	Inf	76.5
1/2	A5 (W)	3.50	0.00	no	To Arm 5 (Ahead)	Inf	100.0
1/3	A5 (W)	3.50	0.00	no	To Arm 5 (Ahead)	Inf	100.0
2/1	Site Access	3.50	0.00	yes	To Arm 5 (Left)	22.50	100.0
2/2	Site Access	3.50	0.00	yes	To Arm 6 (Right)	30.00	100.0
2/3	Site Access	3.50	0.00	no	To Arm 6 (Right)	25.00	100.0
3/1	A5 (E)	3.50	0.00	yes	To Arm 6 (Ahead)	Inf	100.0
3/2	A5 (E)	3.50	0.00	no	To Arm 6 (Ahead)	Inf	100.0
3/3	A5 (E)	3.50	0.00	no	To Arm 6 (Ahead)	Inf	100.0
3/4	A5 (E)	3.50	0.00	yes	To Arm 4 (Right)	20.00	100.0

Full Input Data And Results

Connector Data

Connector	Platoon dispersion enabled?	Platoon dispersion coefficient	Layer / Route	Cruise time (s)	Cruise speed (km/Hr)	Custom Length (m)	Bus dwell time (s)	Bus speed (km/Hr)	Assignment Cruise Time Weighting (s)
1/1 to 4/1	yes	35	Default	5	-	-	-	35	-
1/1 to 5/1	yes	35	Default	5	-	-	-	35	-
1/2 to 5/2	yes	35	Default	5	-	-	-	35	-
1/3 to 5/3	yes	35	Default	5	-	-	-	35	-
2/1 to 5/1	yes	35	Default	5	-	-	-	35	-
2/1 to 5/2	yes	35	Default	5	-	-	-	35	-
2/2 to 6/1	yes	35	Default	5	-	-	-	35	-
2/2 to 6/2	yes	35	Default	5	-	-	-	35	-
2/3 to 6/3	yes	35	Default	5	-	-	-	35	-
3/1 to 6/1	yes	35	Default	5	-	-	-	35	-
3/2 to 6/2	yes	35	Default	5	-	-	-	35	-
3/3 to 6/3	yes	35	Default	5	-	-	-	35	-
3/4 to 4/1	yes	35	Default	5	-	-	-	35	-

Controller Data

Controller	Controller name	SCN	Type	Street / Controller mins?	Multiple streams?	Number of Streams	Notes
1			Generic	street	no	1	

Phase Data

Controller	Stream	Phase	PhaseDescription	Phase Type	Assoc. Phase	Phase Minimum (s)	Lanes controlled by this Phase	Phase Delays present?
C1	s1	A	A5 (W) Left Ahead	Traffic	-	7	1/1, 1/2, 1/3	no
C1	s1	B	Site Access Left Right	Traffic	-	7	2/1, 2/2, 2/3	yes
C1	s1	C	A5 (E) Ahead	Traffic	-	7	3/1, 3/2, 3/3	yes
C1	s1	D	A5 (E) Right	Traffic	-	7	3/4	yes
C1	s1	E	Pedestrians across	Pedestrian	-	6	1/1, 2/1	yes
C1	s1	F	Pedestrians across	Pedestrian	-	6	3/1, 4/1	no
C1	s1	G	Pedestrians across	Pedestrian	-	4	5/1, 6/1	yes
C1	s1	H	Pedestrians across	Pedestrian	-	6	7/1, 8/1	no
C1	s1	I	Pedestrians across	Pedestrian	-	4	9/1, 10/1	yes
C1	s1	J	Pedestrians across	Pedestrian	-	6	15/1, 16/1	yes

Phase Intergreens

Controller: C1

Phase	A	B	C	D	E	F	G	H	I	J
A	▨	8	-	5	7	-	-	8	-	-
B	5	▨	7	5	-	5	5	-	-	-
C	-	5	▨	-	-	-	-	-	-	5
D	7	5	-	▨	10	-	-	-	5	-
E	6	-	-	6	▨	-	-	-	-	-
F	-	8	-	-	-	▨	-	-	-	-
G	-	7	-	-	-	-	▨	-	-	-
H	12	-	-	-	-	-	-	▨	-	-
I	-	-	-	5	-	-	-	-	▨	-
J	-	-	11	-	-	-	-	-	-	▨

Full Input Data And Results

Give-Way Behaviour

Movement	Give-way controlled?	Flow when opposing traffic stopped
1/1 to 4/1	no	-
1/1 to 5/1	no	-
1/2 to 5/2	no	-
1/3 to 5/3	no	-
2/1 to 5/1	no	-
2/1 to 5/2	no	-
2/2 to 6/1	no	-
2/2 to 6/2	no	-
2/3 to 6/3	no	-
3/1 to 6/1	no	-
3/2 to 6/2	no	-
3/3 to 6/3	no	-
3/4 to 4/1	no	-

Stage Data

Controller : stream	Stage	Green Phases	Red Phases
C1 : s1	1	A, C, F, G, I	B, D, E, H, J
C1 : s1	2	C, D, F, G, H	A, B, E, I, J
C1 : s1	3	B, E, H, I, J	A, C, D, F, G

Prohibited Stage Changes

Controller : stream	Prohibited Stage Changes
C1 : s1	-

Full Input Data And Results

Phase Delays

Controller : stream	Phase	Stage Change	Gaining/Losing	Value	Controller Value
C1 : s1	C	1-3	Losing	3	3
C1 : s1	G	1-3	Losing	1	1
C1 : s1	D	2-1	Losing	5	5
C1 : s1	C	2-3	Losing	3	3
C1 : s1	D	2-3	Losing	3	3
C1 : s1	G	2-3	Losing	1	1
C1 : s1	B	3-1	Losing	5	5
C1 : s1	E	3-1	Losing	5	5
C1 : s1	J	3-1	Losing	1	1
C1 : s1	B	3-2	Losing	4	4
C1 : s1	E	3-2	Losing	3	3
C1 : s1	I	3-2	Losing	4	4

Stage Sequence Data

Controller : stream	Stage Sequence	Stage Minimums
C1 : s1	1-2-3	7, 1, 3

Cycle Times

Controller : stream	Cycle Time	Single/Double
C1 : s1	90	single

Stage & Interstage Timings

Controller : stream	Stage / Interstage	Start Time	End Time	Duration
C1 : s1	3-1	0	12	12
	1	12	65	53
	1-2	65	73	8
	2	73	74	1
	2-3	74	87	13
	3	87	0	3

Phase Timings

Controller : stream	Phase	Green start time	Green end time	Duration
C1 : s1	A	12	65	53
C1 : s1	B	82	5	13
C1 : s1	C	12	77	65
C1 : s1	D	70	77	7
C1 : s1	E	87	5	8
C1 : s1	F	10	74	64
C1 : s1	G	10	75	65
C1 : s1	H	73	0	17
C1 : s1	I	82	65	73
C1 : s1	J	82	1	9

Lane Timing Adjustments

Lane	Arm Name	Controller : stream	Start adjustment (DD)	Start adjustment (UGT)	Start adjustment (other)	Start adjustment (total)	End adjustment (DD)	End adjustment (UGT)	End adjustment (other)	End adjustment (total)
1/1	A5 (W)	C1 : s1	-	-	-	-	-	-	-	-
1/2	A5 (W)	C1 : s1	-	-	-	-	-	-	-	-
1/3	A5 (W)	C1 : s1	-	-	-	-	-	-	-	-
2/1	Site Access	C1 : s1	-	-	-	-	-	-	-	-
2/2	Site Access	C1 : s1	-	-	-	-	-	-	-	-
2/3	Site Access	C1 : s1	-	-	-	-	-	-	-	-
3/1	A5 (E)	C1 : s1	-	-	-	-	-	-	-	-
3/2	A5 (E)	C1 : s1	-	-	-	-	-	-	-	-
3/3	A5 (E)	C1 : s1	-	-	-	-	-	-	-	-
3/4	A5 (E)	C1 : s1	-	-	-	-	-	-	-	-

Flow Group Data

Flow Group Name:	2031 Reference + Development AM Peak
Flow Group Type:	Standard
Start Time:	08:00
End Time:	09:00
Duration (hrs):	01:00

Lane-Based Flow Layer Definitions (if applicable)

Layer Number	Layer Name	Bus Layer?
1	General Traffic	no

Full Input Data And Results

Lane-Based Flows

Lane	Arm Name	General Traffic	Total
1/1	A5 (W)	-	0
1/2	A5 (W)	-	0
1/3	A5 (W)	-	0
2/1	Site Access	-	0
2/2	Site Access	-	0
2/3	Site Access	-	0
3/1	A5 (E)	-	0
3/2	A5 (E)	-	0
3/3	A5 (E)	-	0
3/4	A5 (E)	-	0
4/1		-	0
5/1		-	0
5/2		-	0
5/3		-	0
6/1		-	0
6/2		-	0
6/3		-	0

Lane-Based Flow Inconsistencies (if applicable)

Lane	Arm Name	Inflow	Stopline Flow	Outflow	Inflow Difference	Outflow Difference
1/1	A5 (W)	-	-	-	-	-
1/2	A5 (W)	-	-	-	-	-
1/3	A5 (W)	-	-	-	-	-
2/1	Site Access	-	-	-	-	-
2/2	Site Access	-	-	-	-	-
2/3	Site Access	-	-	-	-	-
3/1	A5 (E)	-	-	-	-	-
3/2	A5 (E)	-	-	-	-	-
3/3	A5 (E)	-	-	-	-	-
3/4	A5 (E)	-	-	-	-	-
4/1		-	-	-	-	-
5/1		-	-	-	-	-
5/2		-	-	-	-	-
5/3		-	-	-	-	-
6/1		-	-	-	-	-
6/2		-	-	-	-	-
6/3		-	-	-	-	-

OD Flows

Zone	A	B	C
A	0	182	2296
B	102	0	42
C	2058	44	0

Full Input Data And Results

Route Flows

Route Number	Origin Zone	Destination Zone	Flow	Locked
1	A	B	182	-
4	A	C	857	-
5	A	C	847	-
13	A	C	592	-
2	B	A	52	-
3	B	A	25	-
12	B	A	25	-
6	B	C	21	-
7	B	C	21	-
9	C	A	747	-
10	C	A	678	-
11	C	A	633	-
8	C	B	44	-

Turning Counts

Movement	From Arm Name	Count	Assigned	Diff	GEH
1 -> 4	A5 (W)	-	182	-	-
1 -> 5	A5 (W)	-	2296	-	-
2 -> 5	Site Access	-	42	-	-
2 -> 6	Site Access	-	102	-	-
3 -> 4	A5 (E)	-	44	-	-
3 -> 6	A5 (E)	-	2058	-	-

Full Input Data And Results

Zone Totals

Zone	Origin Total	Destination Total
A	-	-
B	-	-
C	-	-

Lane Optimiser Weightings

Lane	Arm Name	Excess Queue Limit (pcu)	Excess Queue Dos Weight (% per excess pcu)	Excess Queue Delay Weight (pcuHr per excess pcu)	Stops Weighting (%)	Delay/DoS Weighting (%)	DoS Limit (%)
1/2+1/1	A5 (W)	-	-	-	-	-	-
1/3	A5 (W)	-	-	-	-	-	-
2/1	Site Access	-	-	-	-	-	-
2/2+2/3	Site Access	-	-	-	-	-	-
3/2+3/1	A5 (E)	-	-	-	-	-	-
3/3+3/4	A5 (E)	-	-	-	-	-	-
4/1		-	-	-	-	-	-
5/1		-	-	-	-	-	-
5/2		-	-	-	-	-	-
5/3		-	-	-	-	-	-
6/1		-	-	-	-	-	-
6/2		-	-	-	-	-	-
6/3		-	-	-	-	-	-

Model Results (excluding exit bottlenecks)

Lane	Arm Name	Degree of saturation (%)	Mean Max Queue (pcu)	Lane Length Excess Queue (pcu)
1/2+1/1	A5 (W)	80.5 : 80.5	16.2	-
1/3	A5 (W)	67.9	15.3	-
2/1	Site Access	14.7	1.0	-
2/2+2/3	Site Access	17.2 : 16.8	1.2	-
3/2+3/1	A5 (E)	64.4 : 64.4	7.5	-
3/3+3/4	A5 (E)	49.7 : 49.7	8.2	-

Advanced Lane Parameters

No data

Scenario 6: '2031 R + D PM' (FG6: '2031 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

LinSig Network

Filename:	Proposed Site Access Layout - JCT.lsg3x
Project Title:	Proposed Site Access LinSig Option 1
PCU Length (m):	5.75

Scenario

Scenario Name: 2031 R + D PM

Network Layout

Junction	Name	Signal controlled?	Arms in Junction
1	Proposed Site Access	yes	1, 2, 3, 4, 5, 6

Full Input Data And Results

Lane Data (excluding exit bottlenecks)

Lane	Arm Name	Lane Length (m)	Short/Long	Multi-lane?	Saturation Flow (PCU/Hr)	RR67?	Short Lane Occupancy (PCU)	Associated Lane	Controlling Phase(s)	Start Displacement (s)	End Displacement (s)	Queue De-sliver Threshold (PCU)	Ignore Random Delay
1/1	A5 (W)	120	short	no	1928	yes	20.9	1/2	A	2	3	-	-
1/2	A5 (W)	345	long	no	2105	yes	-	-	A	2	3	-	no
1/3	A5 (W)	345	long	no	2105	yes	-	-	A	2	3	-	no
2/1	Site Access	345	long	no	1842	yes	-	-	B	2	3	-	no
2/2	Site Access	200	long	no	1871	yes	-	-	B	2	3	-	no
2/3	Site Access	86	short	no	1986	yes	15.0	2/2	B	2	3	-	-
3/1	A5 (E)	80	short	no	1965	yes	13.9	3/2	C	2	3	-	-
3/2	A5 (E)	345	long	no	2105	yes	-	-	C	2	3	-	no
3/3	A5 (E)	345	long	no	2105	yes	-	-	C	2	3	-	no
3/4	A5 (E)	144	short	no	1828	yes	25.0	3/3	D	2	3	-	-

Lane Data (exit bottlenecks only)

Lane	Arm Name	Lane Length (m)	Short/Long	Multi-lane?	Saturation Flow (PCU/Hr)	RR67?	Short Lane Occupancy (PCU)	Associated Lane	Controlling Phase(s)	Start Displacement (s)	End Displacement (s)	Queue De-sliver Threshold (PCU)	Ignore Random Delay
4/1		345	long	no	Inf	no	-	-	-	2	3	-	no
5/1		345	long	no	Inf	no	-	-	-	2	3	-	no
5/2		345	long	no	Inf	no	-	-	-	2	3	-	no
5/3		345	long	no	Inf	no	-	-	-	2	3	-	no
6/1		345	long	no	Inf	no	-	-	-	2	3	-	no
6/2		345	long	no	Inf	no	-	-	-	2	3	-	no
6/3		345	long	no	Inf	no	-	-	-	2	3	-	no

Full Input Data And Results

Storage In Front Of Stopline

No data

Multi-Lanes

No data

RR67 Sat Flow Input Data

Lane	Arm Name	Width (m)	Gradient (%)	Is Nearside?	Movement	Turning Radius (m)	Turning Proportion (%)
1/1	A5 (W)	3.50	0.00	yes	To Arm 4 (Left)	16.50	20.9
					To Arm 5 (Ahead)	Inf	79.1
1/2	A5 (W)	3.50	0.00	no	To Arm 5 (Ahead)	Inf	100.0
1/3	A5 (W)	3.50	0.00	no	To Arm 5 (Ahead)	Inf	100.0
2/1	Site Access	3.50	0.00	yes	To Arm 5 (Left)	22.50	100.0
2/2	Site Access	3.50	0.00	yes	To Arm 6 (Right)	30.00	100.0
2/3	Site Access	3.50	0.00	no	To Arm 6 (Right)	25.00	100.0
3/1	A5 (E)	3.50	0.00	yes	To Arm 6 (Ahead)	Inf	100.0
3/2	A5 (E)	3.50	0.00	no	To Arm 6 (Ahead)	Inf	100.0
3/3	A5 (E)	3.50	0.00	no	To Arm 6 (Ahead)	Inf	100.0
3/4	A5 (E)	3.50	0.00	yes	To Arm 4 (Right)	20.00	100.0

Connector Data

Connector	Platoon dispersion enabled?	Platoon dispersion coefficient	Layer / Route	Cruise time (s)	Cruise speed (km/Hr)	Custom Length (m)	Bus dwell time (s)	Bus speed (km/Hr)	Assignment Cruise Time Weighting (s)
1/1 to 4/1	yes	35	Default	5	-	-	-	35	-
1/1 to 5/1	yes	35	Default	5	-	-	-	35	-
1/2 to 5/2	yes	35	Default	5	-	-	-	35	-
1/3 to 5/3	yes	35	Default	5	-	-	-	35	-
2/1 to 5/1	yes	35	Default	5	-	-	-	35	-
2/1 to 5/2	yes	35	Default	5	-	-	-	35	-
2/2 to 6/1	yes	35	Default	5	-	-	-	35	-
2/2 to 6/2	yes	35	Default	5	-	-	-	35	-
2/3 to 6/3	yes	35	Default	5	-	-	-	35	-
3/1 to 6/1	yes	35	Default	5	-	-	-	35	-
3/2 to 6/2	yes	35	Default	5	-	-	-	35	-
3/3 to 6/3	yes	35	Default	5	-	-	-	35	-
3/4 to 4/1	yes	35	Default	5	-	-	-	35	-

Controller Data

Controller	Controller name	SCN	Type	Street / Controller mins?	Multiple streams?	Number of Streams	Notes
1			Generic	street	no	1	

Full Input Data And Results

Phase Data

Controller	Stream	Phase	PhaseDescription	Phase Type	Assoc. Phase	Phase Minimum (s)	Lanes controlled by this Phase	Phase Delays present?
C1	s1	A	A5 (W) Left Ahead	Traffic	-	7	1/1, 1/2, 1/3	no
C1	s1	B	Site Access Left Right	Traffic	-	7	2/1, 2/2, 2/3	yes
C1	s1	C	A5 (E) Ahead	Traffic	-	7	3/1, 3/2, 3/3	yes
C1	s1	D	A5 (E) Right	Traffic	-	7	3/4	yes
C1	s1	E	Pedestrians across	Pedestrian	-	6	1/1, 2/1	yes
C1	s1	F	Pedestrians across	Pedestrian	-	6	3/1, 4/1	no
C1	s1	G	Pedestrians across	Pedestrian	-	4	5/1, 6/1	yes
C1	s1	H	Pedestrians across	Pedestrian	-	6	7/1, 8/1	no
C1	s1	I	Pedestrians across	Pedestrian	-	4	9/1, 10/1	yes
C1	s1	J	Pedestrians across	Pedestrian	-	6	15/1, 16/1	yes

Phase Intergreens

Controller: C1

Phase	A	B	C	D	E	F	G	H	I	J
A		8	-	5	7	-	-	8	-	-
B	5		7	5	-	5	5	-	-	-
C	-	5		-	-	-	-	-	-	5
D	7	5	-		10	-	-	-	5	-
E	6	-	-	6		-	-	-	-	-
F	-	8	-	-	-		-	-	-	-
G	-	7	-	-	-	-		-	-	-
H	12	-	-	-	-	-	-		-	-
I	-	-	-	5	-	-	-	-		-
J	-	-	11	-	-	-	-	-	-	

Full Input Data And Results

Give-Way Behaviour

Movement	Give-way controlled?	Flow when opposing traffic stopped
1/1 to 4/1	no	-
1/1 to 5/1	no	-
1/2 to 5/2	no	-
1/3 to 5/3	no	-
2/1 to 5/1	no	-
2/1 to 5/2	no	-
2/2 to 6/1	no	-
2/2 to 6/2	no	-
2/3 to 6/3	no	-
3/1 to 6/1	no	-
3/2 to 6/2	no	-
3/3 to 6/3	no	-
3/4 to 4/1	no	-

Stage Data

Controller : stream	Stage	Green Phases	Red Phases
C1 : s1	1	A, C, F, G, I	B, D, E, H, J
C1 : s1	2	C, D, F, G, H	A, B, E, I, J
C1 : s1	3	B, E, H, I, J	A, C, D, F, G

Prohibited Stage Changes

Controller : stream	Prohibited Stage Changes
C1 : s1	-

Full Input Data And Results

Phase Delays

Controller : stream	Phase	Stage Change	Gaining/Losing	Value	Controller Value
C1 : s1	C	1-3	Losing	3	3
C1 : s1	G	1-3	Losing	1	1
C1 : s1	D	2-1	Losing	5	5
C1 : s1	C	2-3	Losing	3	3
C1 : s1	D	2-3	Losing	3	3
C1 : s1	G	2-3	Losing	1	1
C1 : s1	B	3-1	Losing	5	5
C1 : s1	E	3-1	Losing	5	5
C1 : s1	J	3-1	Losing	1	1
C1 : s1	B	3-2	Losing	4	4
C1 : s1	E	3-2	Losing	3	3
C1 : s1	I	3-2	Losing	4	4

Stage Sequence Data

Controller : stream	Stage Sequence	Stage Minimums
C1 : s1	1-2-3	7, 1, 3

Cycle Times

Controller : stream	Cycle Time	Single/Double
C1 : s1	90	single

Full Input Data And Results

Stage & Interstage Timings

Controller : stream	Stage / Interstage	Start Time	End Time	Duration
C1 : s1	3-1	0	12	12
	1	12	65	53
	1-2	65	73	8
	2	73	74	1
	2-3	74	87	13
	3	87	0	3

Phase Timings

Controller : stream	Phase	Green start time	Green end time	Duration
C1 : s1	A	12	65	53
C1 : s1	B	82	5	13
C1 : s1	C	12	77	65
C1 : s1	D	70	77	7
C1 : s1	E	87	5	8
C1 : s1	F	10	74	64
C1 : s1	G	10	75	65
C1 : s1	H	73	0	17
C1 : s1	I	82	65	73
C1 : s1	J	82	1	9

Lane Timing Adjustments

Lane	Arm Name	Controller : stream	Start adjustment (DD)	Start adjustment (UGT)	Start adjustment (other)	Start adjustment (total)	End adjustment (DD)	End adjustment (UGT)	End adjustment (other)	End adjustment (total)
1/1	A5 (W)	C1 : s1	-	-	-	-	-	-	-	-
1/2	A5 (W)	C1 : s1	-	-	-	-	-	-	-	-
1/3	A5 (W)	C1 : s1	-	-	-	-	-	-	-	-
2/1	Site Access	C1 : s1	-	-	-	-	-	-	-	-
2/2	Site Access	C1 : s1	-	-	-	-	-	-	-	-
2/3	Site Access	C1 : s1	-	-	-	-	-	-	-	-
3/1	A5 (E)	C1 : s1	-	-	-	-	-	-	-	-
3/2	A5 (E)	C1 : s1	-	-	-	-	-	-	-	-
3/3	A5 (E)	C1 : s1	-	-	-	-	-	-	-	-
3/4	A5 (E)	C1 : s1	-	-	-	-	-	-	-	-

Flow Group Data

Flow Group Name:	2031 Reference + Development PM Peak
Flow Group Type:	Standard
Start Time:	17:00
End Time:	18:00
Duration (hrs):	01:00

Lane-Based Flow Layer Definitions (if applicable)

Layer Number	Layer Name	Bus Layer?
1	General Traffic	no

Full Input Data And Results

Lane-Based Flows

Lane	Arm Name	General Traffic	Total
1/1	A5 (W)	0	0
1/2	A5 (W)	0	0
1/3	A5 (W)	0	0
2/1	Site Access	0	0
2/2	Site Access	0	0
2/3	Site Access	0	0
3/1	A5 (E)	0	0
3/2	A5 (E)	0	0
3/3	A5 (E)	0	0
3/4	A5 (E)	0	0
4/1		-	0
5/1		-	0
5/2		-	0
5/3		-	0
6/1		-	0
6/2		-	0
6/3		-	0

Full Input Data And Results

Lane-Based Flow Inconsistencies (if applicable)

Lane	Arm Name	Inflow	Stopline Flow	Outflow	Inflow Difference	Outflow Difference
1/1	A5 (W)	0	0	0	-	-
1/2	A5 (W)	0	0	0	-	-
1/3	A5 (W)	0	0	0	-	-
2/1	Site Access	0	0	0	-	-
2/2	Site Access	0	0	0	-	-
2/3	Site Access	0	0	0	-	-
3/1	A5 (E)	0	0	0	-	-
3/2	A5 (E)	0	0	0	-	-
3/3	A5 (E)	0	0	0	-	-
3/4	A5 (E)	0	0	0	-	-
4/1		-	-	-	-	-
5/1		-	-	-	-	-
5/2		-	-	-	-	-
5/3		-	-	-	-	-
6/1		-	-	-	-	-
6/2		-	-	-	-	-
6/3		-	-	-	-	-

OD Flows

Zone	A	B	C
A	0	126	1738
B	156	0	46
C	2518	14	0

Full Input Data And Results

Route Flows

Route Number	Origin Zone	Destination Zone	Flow	Locked
1	A	B	126	-
4	A	C	605	-
5	A	C	657	-
13	A	C	476	-
2	B	A	80	-
3	B	A	38	-
12	B	A	38	-
6	B	C	23	-
7	B	C	23	-
9	C	A	957	-
10	C	A	807	-
11	C	A	754	-
8	C	B	14	-

Turning Counts

Movement	From Arm Name	Count	Assigned	Diff	GEH
1 -> 4	A5 (W)	-	126	-	-
1 -> 5	A5 (W)	-	1738	-	-
2 -> 5	Site Access	-	46	-	-
2 -> 6	Site Access	-	156	-	-
3 -> 4	A5 (E)	-	14	-	-
3 -> 6	A5 (E)	-	2518	-	-

Full Input Data And Results

Zone Totals

Zone	Origin Total	Destination Total
A	-	-
B	-	-
C	-	-

Lane Optimiser Weightings

Lane	Arm Name	Excess Queue Limit (pcu)	Excess Queue Dos Weight (% per excess pcu)	Excess Queue Delay Weight (pcuHr per excess pcu)	Stops Weighting (%)	Delay/DoS Weighting (%)	DoS Limit (%)
1/2+1/1	A5 (W)	-	-	-	-	-	-
1/3	A5 (W)	-	-	-	-	-	-
2/1	Site Access	-	-	-	-	-	-
2/2+2/3	Site Access	-	-	-	-	-	-
3/2+3/1	A5 (E)	-	-	-	-	-	-
3/3+3/4	A5 (E)	-	-	-	-	-	-
4/1		-	-	-	-	-	-
5/1		-	-	-	-	-	-
5/2		-	-	-	-	-	-
5/3		-	-	-	-	-	-
6/1		-	-	-	-	-	-
6/2		-	-	-	-	-	-
6/3		-	-	-	-	-	-

Model Results (excluding exit bottlenecks)

Lane	Arm Name	Degree of saturation (%)	Mean Max Queue (pcu)	Lane Length Excess Queue (pcu)
1/2+1/1	A5 (W)	62.4 : 62.4	10.3	-
1/3	A5 (W)	47.9	8.9	-
2/1	Site Access	16.1	1.1	-
2/2+2/3	Site Access	26.1 : 25.9	1.9	-
3/2+3/1	A5 (E)	76.7 : 76.7	10.2	-
3/3+3/4	A5 (E)	62.6 : 62.6	12.5	-

Advanced Lane Parameters

No data

Scenario 7: '2031 LP + D AM' (FG7: '2031 Local Plan + Development AM Peak', Plan 1: 'Network Control Plan 1')

LinSig Network

Filename:	Proposed Site Access Layout - JCT.lsg3x
Project Title:	Proposed Site Access LinSig Option 1
PCU Length (m):	5.75

Scenario

Scenario Name: 2031 LP + D AM

Network Layout

Junction	Name	Signal controlled?	Arms in Junction
1	Proposed Site Access	yes	1, 2, 3, 4, 5, 6

Full Input Data And Results

Lane Data (excluding exit bottlenecks)

Lane	Arm Name	Lane Length (m)	Short/Long	Multi-lane?	Saturation Flow (PCU/Hr)	RR67?	Short Lane Occupancy (PCU)	Associated Lane	Controlling Phase(s)	Start Displacement (s)	End Displacement (s)	Queue De-sliver Threshold (PCU)	Ignore Random Delay
1/1	A5 (W)	120	short	no	1926	yes	20.9	1/2	A	2	3	-	-
1/2	A5 (W)	345	long	no	2105	yes	-	-	A	2	3	-	no
1/3	A5 (W)	345	long	no	2105	yes	-	-	A	2	3	-	no
2/1	Site Access	345	long	no	1842	yes	-	-	B	2	3	-	no
2/2	Site Access	200	long	no	1871	yes	-	-	B	2	3	-	no
2/3	Site Access	86	short	no	1986	yes	15.0	2/2	B	2	3	-	-
3/1	A5 (E)	80	short	no	1965	yes	13.9	3/2	C	2	3	-	-
3/2	A5 (E)	345	long	no	2105	yes	-	-	C	2	3	-	no
3/3	A5 (E)	345	long	no	2105	yes	-	-	C	2	3	-	no
3/4	A5 (E)	144	short	no	1828	yes	25.0	3/3	D	2	3	-	-

Lane Data (exit bottlenecks only)

Lane	Arm Name	Lane Length (m)	Short/Long	Multi-lane?	Saturation Flow (PCU/Hr)	RR67?	Short Lane Occupancy (PCU)	Associated Lane	Controlling Phase(s)	Start Displacement (s)	End Displacement (s)	Queue De-sliver Threshold (PCU)	Ignore Random Delay
4/1		345	long	no	Inf	no	-	-	-	2	3	-	no
5/1		345	long	no	Inf	no	-	-	-	2	3	-	no
5/2		345	long	no	Inf	no	-	-	-	2	3	-	no
5/3		345	long	no	Inf	no	-	-	-	2	3	-	no
6/1		345	long	no	Inf	no	-	-	-	2	3	-	no
6/2		345	long	no	Inf	no	-	-	-	2	3	-	no
6/3		345	long	no	Inf	no	-	-	-	2	3	-	no

Full Input Data And Results

Storage In Front Of Stopline

No data

Multi-Lanes

No data

RR67 Sat Flow Input Data

Lane	Arm Name	Width (m)	Gradient (%)	Is Nearside?	Movement	Turning Radius (m)	Turning Proportion (%)
1/1	A5 (W)	3.50	0.00	yes	To Arm 4 (Left)	16.50	22.2
					To Arm 5 (Ahead)	Inf	77.8
1/2	A5 (W)	3.50	0.00	no	To Arm 5 (Ahead)	Inf	100.0
1/3	A5 (W)	3.50	0.00	no	To Arm 5 (Ahead)	Inf	100.0
2/1	Site Access	3.50	0.00	yes	To Arm 5 (Left)	22.50	100.0
2/2	Site Access	3.50	0.00	yes	To Arm 6 (Right)	30.00	100.0
2/3	Site Access	3.50	0.00	no	To Arm 6 (Right)	25.00	100.0
3/1	A5 (E)	3.50	0.00	yes	To Arm 6 (Ahead)	Inf	100.0
3/2	A5 (E)	3.50	0.00	no	To Arm 6 (Ahead)	Inf	100.0
3/3	A5 (E)	3.50	0.00	no	To Arm 6 (Ahead)	Inf	100.0
3/4	A5 (E)	3.50	0.00	yes	To Arm 4 (Right)	20.00	100.0

Connector Data

Connector	Platoon dispersion enabled?	Platoon dispersion coefficient	Layer / Route	Cruise time (s)	Cruise speed (km/Hr)	Custom Length (m)	Bus dwell time (s)	Bus speed (km/Hr)	Assignment Cruise Time Weighting (s)
1/1 to 4/1	yes	35	Default	5	-	-	-	35	-
1/1 to 5/1	yes	35	Default	5	-	-	-	35	-
1/2 to 5/2	yes	35	Default	5	-	-	-	35	-
1/3 to 5/3	yes	35	Default	5	-	-	-	35	-
2/1 to 5/1	yes	35	Default	5	-	-	-	35	-
2/1 to 5/2	yes	35	Default	5	-	-	-	35	-
2/2 to 6/1	yes	35	Default	5	-	-	-	35	-
2/2 to 6/2	yes	35	Default	5	-	-	-	35	-
2/3 to 6/3	yes	35	Default	5	-	-	-	35	-
3/1 to 6/1	yes	35	Default	5	-	-	-	35	-
3/2 to 6/2	yes	35	Default	5	-	-	-	35	-
3/3 to 6/3	yes	35	Default	5	-	-	-	35	-
3/4 to 4/1	yes	35	Default	5	-	-	-	35	-

Controller Data

Controller	Controller name	SCN	Type	Street / Controller mins?	Multiple streams?	Number of Streams	Notes
1			Generic	street	no	1	

Full Input Data And Results

Phase Data

Controller	Stream	Phase	PhaseDescription	Phase Type	Assoc. Phase	Phase Minimum (s)	Lanes controlled by this Phase	Phase Delays present?
C1	s1	A	A5 (W) Left Ahead	Traffic	-	7	1/1, 1/2, 1/3	no
C1	s1	B	Site Access Left Right	Traffic	-	7	2/1, 2/2, 2/3	yes
C1	s1	C	A5 (E) Ahead	Traffic	-	7	3/1, 3/2, 3/3	yes
C1	s1	D	A5 (E) Right	Traffic	-	7	3/4	yes
C1	s1	E	Pedestrians across	Pedestrian	-	6	1/1, 2/1	yes
C1	s1	F	Pedestrians across	Pedestrian	-	6	3/1, 4/1	no
C1	s1	G	Pedestrians across	Pedestrian	-	4	5/1, 6/1	yes
C1	s1	H	Pedestrians across	Pedestrian	-	6	7/1, 8/1	no
C1	s1	I	Pedestrians across	Pedestrian	-	4	9/1, 10/1	yes
C1	s1	J	Pedestrians across	Pedestrian	-	6	15/1, 16/1	yes

Phase Intergreens

Controller: C1

Phase	A	B	C	D	E	F	G	H	I	J
A		8	-	5	7	-	-	8	-	-
B	5		7	5	-	5	5	-	-	-
C	-	5		-	-	-	-	-	-	5
D	7	5	-		10	-	-	-	5	-
E	6	-	-	6		-	-	-	-	-
F	-	8	-	-	-		-	-	-	-
G	-	7	-	-	-	-		-	-	-
H	12	-	-	-	-	-	-		-	-
I	-	-	-	5	-	-	-	-		-
J	-	-	11	-	-	-	-	-	-	

Full Input Data And Results

Give-Way Behaviour

Movement	Give-way controlled?	Flow when opposing traffic stopped
1/1 to 4/1	no	-
1/1 to 5/1	no	-
1/2 to 5/2	no	-
1/3 to 5/3	no	-
2/1 to 5/1	no	-
2/1 to 5/2	no	-
2/2 to 6/1	no	-
2/2 to 6/2	no	-
2/3 to 6/3	no	-
3/1 to 6/1	no	-
3/2 to 6/2	no	-
3/3 to 6/3	no	-
3/4 to 4/1	no	-

Stage Data

Controller : stream	Stage	Green Phases	Red Phases
C1 : s1	1	A, C, F, G, I	B, D, E, H, J
C1 : s1	2	C, D, F, G, H	A, B, E, I, J
C1 : s1	3	B, E, H, I, J	A, C, D, F, G

Prohibited Stage Changes

Controller : stream	Prohibited Stage Changes
C1 : s1	-

Full Input Data And Results

Phase Delays

Controller : stream	Phase	Stage Change	Gaining/Losing	Value	Controller Value
C1 : s1	C	1-3	Losing	3	3
C1 : s1	G	1-3	Losing	1	1
C1 : s1	D	2-1	Losing	5	5
C1 : s1	C	2-3	Losing	3	3
C1 : s1	D	2-3	Losing	3	3
C1 : s1	G	2-3	Losing	1	1
C1 : s1	B	3-1	Losing	5	5
C1 : s1	E	3-1	Losing	5	5
C1 : s1	J	3-1	Losing	1	1
C1 : s1	B	3-2	Losing	4	4
C1 : s1	E	3-2	Losing	3	3
C1 : s1	I	3-2	Losing	4	4

Stage Sequence Data

Controller : stream	Stage Sequence	Stage Minimums
C1 : s1	1-2-3	7, 1, 3

Cycle Times

Controller : stream	Cycle Time	Single/Double
C1 : s1	90	single

Full Input Data And Results

Stage & Interstage Timings

Controller : stream	Stage / Interstage	Start Time	End Time	Duration
C1 : s1	3-1	0	12	12
	1	12	65	53
	1-2	65	73	8
	2	73	74	1
	2-3	74	87	13
	3	87	0	3

Phase Timings

Controller : stream	Phase	Green start time	Green end time	Duration
C1 : s1	A	12	65	53
C1 : s1	B	82	5	13
C1 : s1	C	12	77	65
C1 : s1	D	70	77	7
C1 : s1	E	87	5	8
C1 : s1	F	10	74	64
C1 : s1	G	10	75	65
C1 : s1	H	73	0	17
C1 : s1	I	82	65	73
C1 : s1	J	82	1	9

Lane Timing Adjustments

Lane	Arm Name	Controller : stream	Start adjustment (DD)	Start adjustment (UGT)	Start adjustment (other)	Start adjustment (total)	End adjustment (DD)	End adjustment (UGT)	End adjustment (other)	End adjustment (total)
1/1	A5 (W)	C1 : s1	-	-	-	-	-	-	-	-
1/2	A5 (W)	C1 : s1	-	-	-	-	-	-	-	-
1/3	A5 (W)	C1 : s1	-	-	-	-	-	-	-	-
2/1	Site Access	C1 : s1	-	-	-	-	-	-	-	-
2/2	Site Access	C1 : s1	-	-	-	-	-	-	-	-
2/3	Site Access	C1 : s1	-	-	-	-	-	-	-	-
3/1	A5 (E)	C1 : s1	-	-	-	-	-	-	-	-
3/2	A5 (E)	C1 : s1	-	-	-	-	-	-	-	-
3/3	A5 (E)	C1 : s1	-	-	-	-	-	-	-	-
3/4	A5 (E)	C1 : s1	-	-	-	-	-	-	-	-

Flow Group Data

Flow Group Name:	2031 Local Plan + Development AM Peak
Flow Group Type:	Standard
Start Time:	08:00
End Time:	09:00
Duration (hrs):	01:00

Lane-Based Flow Layer Definitions (if applicable)

Layer Number	Layer Name	Bus Layer?
1	General Traffic	no

Full Input Data And Results

Lane-Based Flows

Lane	Arm Name	General Traffic	Total
1/1	A5 (W)	0	0
1/2	A5 (W)	0	0
1/3	A5 (W)	0	0
2/1	Site Access	0	0
2/2	Site Access	0	0
2/3	Site Access	0	0
3/1	A5 (E)	0	0
3/2	A5 (E)	0	0
3/3	A5 (E)	0	0
3/4	A5 (E)	0	0
4/1		0	0
5/1		0	0
5/2		0	0
5/3		0	0
6/1		-	0
6/2		-	0
6/3		-	0

Lane-Based Flow Inconsistencies (if applicable)

Lane	Arm Name	Inflow	Stopline Flow	Outflow	Inflow Difference	Outflow Difference
1/1	A5 (W)	0	0	0	-	-
1/2	A5 (W)	0	0	0	-	-
1/3	A5 (W)	0	0	0	-	-
2/1	Site Access	0	0	0	-	-
2/2	Site Access	0	0	0	-	-
2/3	Site Access	0	0	0	-	-
3/1	A5 (E)	0	0	0	-	-
3/2	A5 (E)	0	0	0	-	-
3/3	A5 (E)	0	0	0	-	-
3/4	A5 (E)	0	0	0	-	-
4/1		0	0	0	-	-
5/1		0	0	0	-	-
5/2		0	0	0	-	-
5/3		0	0	0	-	-
6/1		-	-	-	-	-
6/2		-	-	-	-	-
6/3		-	-	-	-	-

OD Flows

Zone	A	B	C
A	0	176	2376
B	100	0	44
C	2558	34	0

Full Input Data And Results

Route Flows

Route Number	Origin Zone	Destination Zone	Flow	Locked
1	A	B	176	-
4	A	C	890	-
5	A	C	868	-
13	A	C	618	-
2	B	A	52	-
3	B	A	24	-
12	B	A	24	-
6	B	C	22	-
7	B	C	22	-
9	C	A	976	-
10	C	A	820	-
11	C	A	762	-
8	C	B	34	-

Turning Counts

Movement	From Arm Name	Count	Assigned	Diff	GEH
1 -> 4	A5 (W)	-	176	-	-
1 -> 5	A5 (W)	-	2376	-	-
2 -> 5	Site Access	-	44	-	-
2 -> 6	Site Access	-	100	-	-
3 -> 4	A5 (E)	-	34	-	-
3 -> 6	A5 (E)	-	2558	-	-

Full Input Data And Results

Zone Totals

Zone	Origin Total	Destination Total
A	-	-
B	-	-
C	-	-

Lane Optimiser Weightings

Lane	Arm Name	Excess Queue Limit (pcu)	Excess Queue Dos Weight (% per excess pcu)	Excess Queue Delay Weight (pcuHr per excess pcu)	Stops Weighting (%)	Delay/DoS Weighting (%)	DoS Limit (%)
1/2+1/1	A5 (W)	-	-	-	-	-	-
1/3	A5 (W)	-	-	-	-	-	-
2/1	Site Access	-	-	-	-	-	-
2/2+2/3	Site Access	-	-	-	-	-	-
3/2+3/1	A5 (E)	-	-	-	-	-	-
3/3+3/4	A5 (E)	-	-	-	-	-	-
4/1		-	-	-	-	-	-
5/1		-	-	-	-	-	-
5/2		-	-	-	-	-	-
5/3		-	-	-	-	-	-
6/1		-	-	-	-	-	-
6/2		-	-	-	-	-	-
6/3		-	-	-	-	-	-

Model Results (excluding exit bottlenecks)

Lane	Arm Name	Degree of saturation (%)	Mean Max Queue (pcu)	Lane Length Excess Queue (pcu)
1/2+1/1	A5 (W)	82.5 : 82.5	17.0	-
1/3	A5 (W)	70.5	16.5	-
2/1	Site Access	15.4	1.0	-
2/2+2/3	Site Access	16.5 : 16.8	1.2	-
3/2+3/1	A5 (E)	77.7 : 77.7	10.6	-
3/3+3/4	A5 (E)	64.3 : 64.3	12.8	-

Advanced Lane Parameters

No data

Scenario 8: '2031 LP + D PM' (FG8: '2031 Local Plan + Development PM Peak', Plan 1: 'Network Control Plan 1')

LinSig Network

Filename:	Proposed Site Access Layout - JCT.lsg3x
Project Title:	Proposed Site Access LinSig Option 1
PCU Length (m):	5.75

Scenario

Scenario Name: 2031 LP + D PM

Network Layout

Junction	Name	Signal controlled?	Arms in Junction
1	Proposed Site Access	yes	1, 2, 3, 4, 5, 6

Full Input Data And Results

Lane Data (excluding exit bottlenecks)

Lane	Arm Name	Lane Length (m)	Short/Long	Multi-lane?	Saturation Flow (PCU/Hr)	RR67?	Short Lane Occupancy (PCU)	Associated Lane	Controlling Phase(s)	Start Displacement (s)	End Displacement (s)	Queue De-sliver Threshold (PCU)	Ignore Random Delay
1/1	A5 (W)	120	short	no	1935	yes	20.9	1/2	A	2	3	-	-
1/2	A5 (W)	345	long	no	2105	yes	-	-	A	2	3	-	no
1/3	A5 (W)	345	long	no	2105	yes	-	-	A	2	3	-	no
2/1	Site Access	345	long	no	1842	yes	-	-	B	2	3	-	no
2/2	Site Access	200	long	no	1871	yes	-	-	B	2	3	-	no
2/3	Site Access	86	short	no	1986	yes	15.0	2/2	B	2	3	-	-
3/1	A5 (E)	80	short	no	1965	yes	13.9	3/2	C	2	3	-	-
3/2	A5 (E)	345	long	no	2105	yes	-	-	C	2	3	-	no
3/3	A5 (E)	345	long	no	2105	yes	-	-	C	2	3	-	no
3/4	A5 (E)	144	short	no	1828	yes	25.0	3/3	D	2	3	-	-

Lane Data (exit bottlenecks only)

Lane	Arm Name	Lane Length (m)	Short/Long	Multi-lane?	Saturation Flow (PCU/Hr)	RR67?	Short Lane Occupancy (PCU)	Associated Lane	Controlling Phase(s)	Start Displacement (s)	End Displacement (s)	Queue De-sliver Threshold (PCU)	Ignore Random Delay
4/1		345	long	no	Inf	no	-	-	-	2	3	-	no
5/1		345	long	no	Inf	no	-	-	-	2	3	-	no
5/2		345	long	no	Inf	no	-	-	-	2	3	-	no
5/3		345	long	no	Inf	no	-	-	-	2	3	-	no
6/1		345	long	no	Inf	no	-	-	-	2	3	-	no
6/2		345	long	no	Inf	no	-	-	-	2	3	-	no
6/3		345	long	no	Inf	no	-	-	-	2	3	-	no

Full Input Data And Results

Storage In Front Of Stopline

No data

Multi-Lanes

No data

RR67 Sat Flow Input Data

Lane	Arm Name	Width (m)	Gradient (%)	Is Nearside?	Movement	Turning Radius (m)	Turning Proportion (%)
1/1	A5 (W)	3.50	0.00	yes	To Arm 4 (Left)	16.50	17.1
					To Arm 5 (Ahead)	Inf	82.9
1/2	A5 (W)	3.50	0.00	no	To Arm 5 (Ahead)	Inf	100.0
1/3	A5 (W)	3.50	0.00	no	To Arm 5 (Ahead)	Inf	100.0
2/1	Site Access	3.50	0.00	yes	To Arm 5 (Left)	22.50	100.0
2/2	Site Access	3.50	0.00	yes	To Arm 6 (Right)	30.00	100.0
2/3	Site Access	3.50	0.00	no	To Arm 6 (Right)	25.00	100.0
3/1	A5 (E)	3.50	0.00	yes	To Arm 6 (Ahead)	Inf	100.0
3/2	A5 (E)	3.50	0.00	no	To Arm 6 (Ahead)	Inf	100.0
3/3	A5 (E)	3.50	0.00	no	To Arm 6 (Ahead)	Inf	100.0
3/4	A5 (E)	3.50	0.00	yes	To Arm 4 (Right)	20.00	100.0

Full Input Data And Results

Connector Data

Connector	Platoon dispersion enabled?	Platoon dispersion coefficient	Layer / Route	Cruise time (s)	Cruise speed (km/Hr)	Custom Length (m)	Bus dwell time (s)	Bus speed (km/Hr)	Assignment Cruise Time Weighting (s)
1/1 to 4/1	yes	35	Default	5	-	-	-	35	-
1/1 to 5/1	yes	35	Default	5	-	-	-	35	-
1/2 to 5/2	yes	35	Default	5	-	-	-	35	-
1/3 to 5/3	yes	35	Default	5	-	-	-	35	-
2/1 to 5/1	yes	35	Default	5	-	-	-	35	-
2/1 to 5/2	yes	35	Default	5	-	-	-	35	-
2/2 to 6/1	yes	35	Default	5	-	-	-	35	-
2/2 to 6/2	yes	35	Default	5	-	-	-	35	-
2/3 to 6/3	yes	35	Default	5	-	-	-	35	-
3/1 to 6/1	yes	35	Default	5	-	-	-	35	-
3/2 to 6/2	yes	35	Default	5	-	-	-	35	-
3/3 to 6/3	yes	35	Default	5	-	-	-	35	-
3/4 to 4/1	yes	35	Default	5	-	-	-	35	-

Controller Data

Controller	Controller name	SCN	Type	Street / Controller mins?	Multiple streams?	Number of Streams	Notes
1			Generic	street	no	1	

Full Input Data And Results

Phase Data

Controller	Stream	Phase	PhaseDescription	Phase Type	Assoc. Phase	Phase Minimum (s)	Lanes controlled by this Phase	Phase Delays present?
C1	s1	A	A5 (W) Left Ahead	Traffic	-	7	1/1, 1/2, 1/3	no
C1	s1	B	Site Access Left Right	Traffic	-	7	2/1, 2/2, 2/3	yes
C1	s1	C	A5 (E) Ahead	Traffic	-	7	3/1, 3/2, 3/3	yes
C1	s1	D	A5 (E) Right	Traffic	-	7	3/4	yes
C1	s1	E	Pedestrians across	Pedestrian	-	6	1/1, 2/1	yes
C1	s1	F	Pedestrians across	Pedestrian	-	6	3/1, 4/1	no
C1	s1	G	Pedestrians across	Pedestrian	-	4	5/1, 6/1	yes
C1	s1	H	Pedestrians across	Pedestrian	-	6	7/1, 8/1	no
C1	s1	I	Pedestrians across	Pedestrian	-	4	9/1, 10/1	yes
C1	s1	J	Pedestrians across	Pedestrian	-	6	15/1, 16/1	yes

Phase Intergreens

Controller: C1

Phase	A	B	C	D	E	F	G	H	I	J
A		8	-	5	7	-	-	8	-	-
B	5		7	5	-	5	5	-	-	-
C	-	5		-	-	-	-	-	-	5
D	7	5	-		10	-	-	-	5	-
E	6	-	-	6		-	-	-	-	-
F	-	8	-	-	-		-	-	-	-
G	-	7	-	-	-	-		-	-	-
H	12	-	-	-	-	-	-		-	-
I	-	-	-	5	-	-	-	-		-
J	-	-	11	-	-	-	-	-	-	

Full Input Data And Results

Give-Way Behaviour

Movement	Give-way controlled?	Flow when opposing traffic stopped
1/1 to 4/1	no	-
1/1 to 5/1	no	-
1/2 to 5/2	no	-
1/3 to 5/3	no	-
2/1 to 5/1	no	-
2/1 to 5/2	no	-
2/2 to 6/1	no	-
2/2 to 6/2	no	-
2/3 to 6/3	no	-
3/1 to 6/1	no	-
3/2 to 6/2	no	-
3/3 to 6/3	no	-
3/4 to 4/1	no	-

Stage Data

Controller : stream	Stage	Green Phases	Red Phases
C1 : s1	1	A, C, F, G, I	B, D, E, H, J
C1 : s1	2	C, D, F, G, H	A, B, E, I, J
C1 : s1	3	B, E, H, I, J	A, C, D, F, G

Prohibited Stage Changes

Controller : stream	Prohibited Stage Changes
C1 : s1	-

Full Input Data And Results

Phase Delays

Controller : stream	Phase	Stage Change	Gaining/Losing	Value	Controller Value
C1 : s1	C	1-3	Losing	3	3
C1 : s1	G	1-3	Losing	1	1
C1 : s1	D	2-1	Losing	5	5
C1 : s1	C	2-3	Losing	3	3
C1 : s1	D	2-3	Losing	3	3
C1 : s1	G	2-3	Losing	1	1
C1 : s1	B	3-1	Losing	5	5
C1 : s1	E	3-1	Losing	5	5
C1 : s1	J	3-1	Losing	1	1
C1 : s1	B	3-2	Losing	4	4
C1 : s1	E	3-2	Losing	3	3
C1 : s1	I	3-2	Losing	4	4

Stage Sequence Data

Controller : stream	Stage Sequence	Stage Minimums
C1 : s1	1-2-3	7, 1, 3

Cycle Times

Controller : stream	Cycle Time	Single/Double
C1 : s1	90	single

Full Input Data And Results

Stage & Interstage Timings

Controller : stream	Stage / Interstage	Start Time	End Time	Duration
C1 : s1	3-1	0	12	12
	1	12	65	53
	1-2	65	73	8
	2	73	74	1
	2-3	74	87	13
	3	87	0	3

Phase Timings

Controller : stream	Phase	Green start time	Green end time	Duration
C1 : s1	A	12	65	53
C1 : s1	B	82	5	13
C1 : s1	C	12	77	65
C1 : s1	D	70	77	7
C1 : s1	E	87	5	8
C1 : s1	F	10	74	64
C1 : s1	G	10	75	65
C1 : s1	H	73	0	17
C1 : s1	I	82	65	73
C1 : s1	J	82	1	9

Lane Timing Adjustments

Lane	Arm Name	Controller : stream	Start adjustment (DD)	Start adjustment (UGT)	Start adjustment (other)	Start adjustment (total)	End adjustment (DD)	End adjustment (UGT)	End adjustment (other)	End adjustment (total)
1/1	A5 (W)	C1 : s1	-	-	-	-	-	-	-	-
1/2	A5 (W)	C1 : s1	-	-	-	-	-	-	-	-
1/3	A5 (W)	C1 : s1	-	-	-	-	-	-	-	-
2/1	Site Access	C1 : s1	-	-	-	-	-	-	-	-
2/2	Site Access	C1 : s1	-	-	-	-	-	-	-	-
2/3	Site Access	C1 : s1	-	-	-	-	-	-	-	-
3/1	A5 (E)	C1 : s1	-	-	-	-	-	-	-	-
3/2	A5 (E)	C1 : s1	-	-	-	-	-	-	-	-
3/3	A5 (E)	C1 : s1	-	-	-	-	-	-	-	-
3/4	A5 (E)	C1 : s1	-	-	-	-	-	-	-	-

Flow Group Data

Flow Group Name:	2031 Local Plan + Development PM Peak
Flow Group Type:	Standard
Start Time:	17:00
End Time:	18:00
Duration (hrs):	01:00

Lane-Based Flow Layer Definitions (if applicable)

Layer Number	Layer Name	Bus Layer?
1	General Traffic	no

Full Input Data And Results

Lane-Based Flows

Lane	Arm Name	General Traffic	Total
1/1	A5 (W)	-	0
1/2	A5 (W)	0	0
1/3	A5 (W)	0	0
2/1	Site Access	0	0
2/2	Site Access	-	0
2/3	Site Access	0	0
3/1	A5 (E)	0	0
3/2	A5 (E)	0	0
3/3	A5 (E)	0	0
3/4	A5 (E)	0	0
4/1		-	0
5/1		-	0
5/2		-	0
5/3		-	0
6/1		-	0
6/2		-	0
6/3		-	0

Lane-Based Flow Inconsistencies (if applicable)

Lane	Arm Name	Inflow	Stopline Flow	Outflow	Inflow Difference	Outflow Difference
1/1	A5 (W)	-	-	-	-	-
1/2	A5 (W)	0	0	0	-	-
1/3	A5 (W)	0	0	0	-	-
2/1	Site Access	0	0	0	-	-
2/2	Site Access	-	-	-	-	-
2/3	Site Access	0	0	0	-	-
3/1	A5 (E)	0	0	0	-	-
3/2	A5 (E)	0	0	0	-	-
3/3	A5 (E)	0	0	0	-	-
3/4	A5 (E)	0	0	0	-	-
4/1		-	-	-	-	-
5/1		-	-	-	-	-
5/2		-	-	-	-	-
5/3		-	-	-	-	-
6/1		-	-	-	-	-
6/2		-	-	-	-	-
6/3		-	-	-	-	-

OD Flows

Zone	A	B	C
A	0	130	2284
B	158	0	56
C	2558	26	0

Full Input Data And Results

Route Flows

Route Number	Origin Zone	Destination Zone	Flow	Locked
1	A	B	130	-
4	A	C	827	-
5	A	C	827	-
13	A	C	630	-
2	B	A	82	-
3	B	A	38	-
12	B	A	38	-
6	B	C	28	-
7	B	C	28	-
9	C	A	976	-
10	C	A	818	-
11	C	A	764	-
8	C	B	26	-

Turning Counts

Movement	From Arm Name	Count	Assigned	Diff	GEH
1 -> 4	A5 (W)	-	130	-	-
1 -> 5	A5 (W)	-	2284	-	-
2 -> 5	Site Access	-	56	-	-
2 -> 6	Site Access	-	158	-	-
3 -> 4	A5 (E)	-	26	-	-
3 -> 6	A5 (E)	-	2558	-	-

Full Input Data And Results

Zone Totals

Zone	Origin Total	Destination Total
A	-	-
B	-	-
C	-	-

Lane Optimiser Weightings

Lane	Arm Name	Excess Queue Limit (pcu)	Excess Queue Dos Weight (% per excess pcu)	Excess Queue Delay Weight (pcuHr per excess pcu)	Stops Weighting (%)	Delay/DoS Weighting (%)	DoS Limit (%)
1/2+1/1	A5 (W)	-	-	-	-	-	-
1/3	A5 (W)	-	-	-	-	-	-
2/1	Site Access	-	-	-	-	-	-
2/2+2/3	Site Access	-	-	-	-	-	-
3/2+3/1	A5 (E)	-	-	-	-	-	-
3/3+3/4	A5 (E)	-	-	-	-	-	-
4/1		-	-	-	-	-	-
5/1		-	-	-	-	-	-
5/2		-	-	-	-	-	-
5/3		-	-	-	-	-	-
6/1		-	-	-	-	-	-
6/2		-	-	-	-	-	-
6/3		-	-	-	-	-	-

Full Input Data And Results

Model Results (excluding exit bottlenecks)

Lane	Arm Name	Degree of saturation (%)	Mean Max Queue (pcu)	Lane Length Excess Queue (pcu)
1/2+1/1	A5 (W)	78.6 : 78.6	15.4	-
1/3	A5 (W)	65.5	14.5	-
2/1	Site Access	19.5	1.3	-
2/2+2/3	Site Access	26.1 : 26.5	2.0	-
3/2+3/1	A5 (E)	77.7 : 77.7	10.6	-
3/3+3/4	A5 (E)	64.1 : 64.1	12.8	-

Advanced Lane Parameters

No data

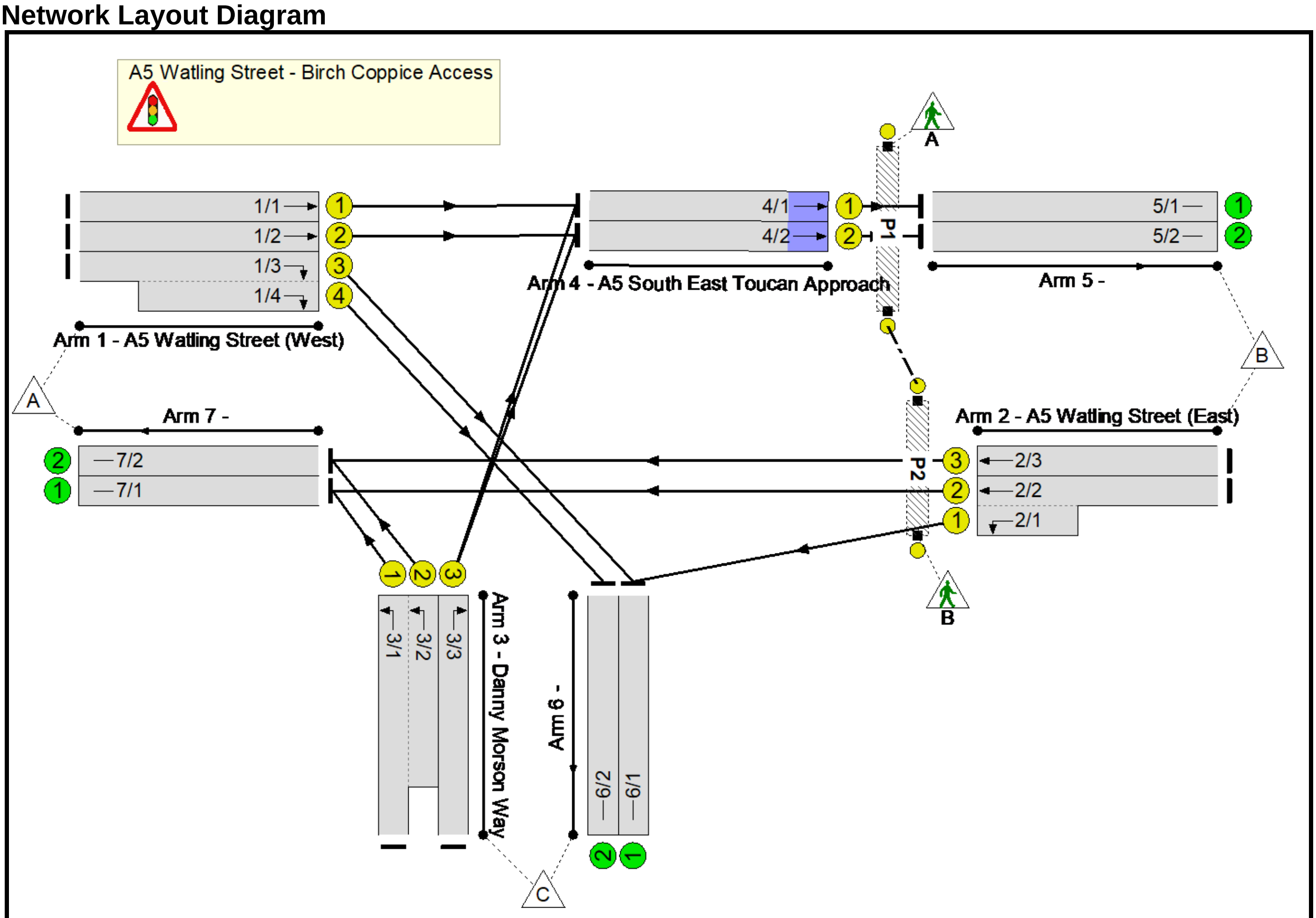
Full Input Data And Results

User and Project Details

Project:	**Dordon**
Title:	
Location:	Dordon
Client:	Hodgetts
Checked By:	Simon Swanston (JCT)
Checked By Date:	21/10/21
Additional detail:	Model updated by JCT based on comments in MOT21042A. Changes highlighted in Note within Network Layout View). Updates on 29/10/21
File name:	A5 - Birch Coppice Access Aug 21 update - JCT.lsg3x
Author:	John O'Neill (updated by SS at JCT)
Company:	Bancroft Consulting
Address:	

Full Input Data And Results

Network Layout Diagram



Model Updates by JCT

Flare length on 1/4 reduced from 20 to 9 pcus, and on 2/1 from 5 to 4 pcus.

All phases from Controller spec added to model, inlcuding those for the Farmers Access and Depot Access. However, as with initial modelling, it is assumed neither of these run in the modelling sequence due to neglibile demand.

Intergreens after pedestrian phases increased from zero to 5 seconds. These intergreens can be variable from cycle to cycle, so the model should assume the average intergreen. It is likely that this will be low (i.e. around 5 seconds) unless pedestrian demand is high of there is a controller fault.

Lane 2/2 treated as a nearside lane for saturation flow estimation.

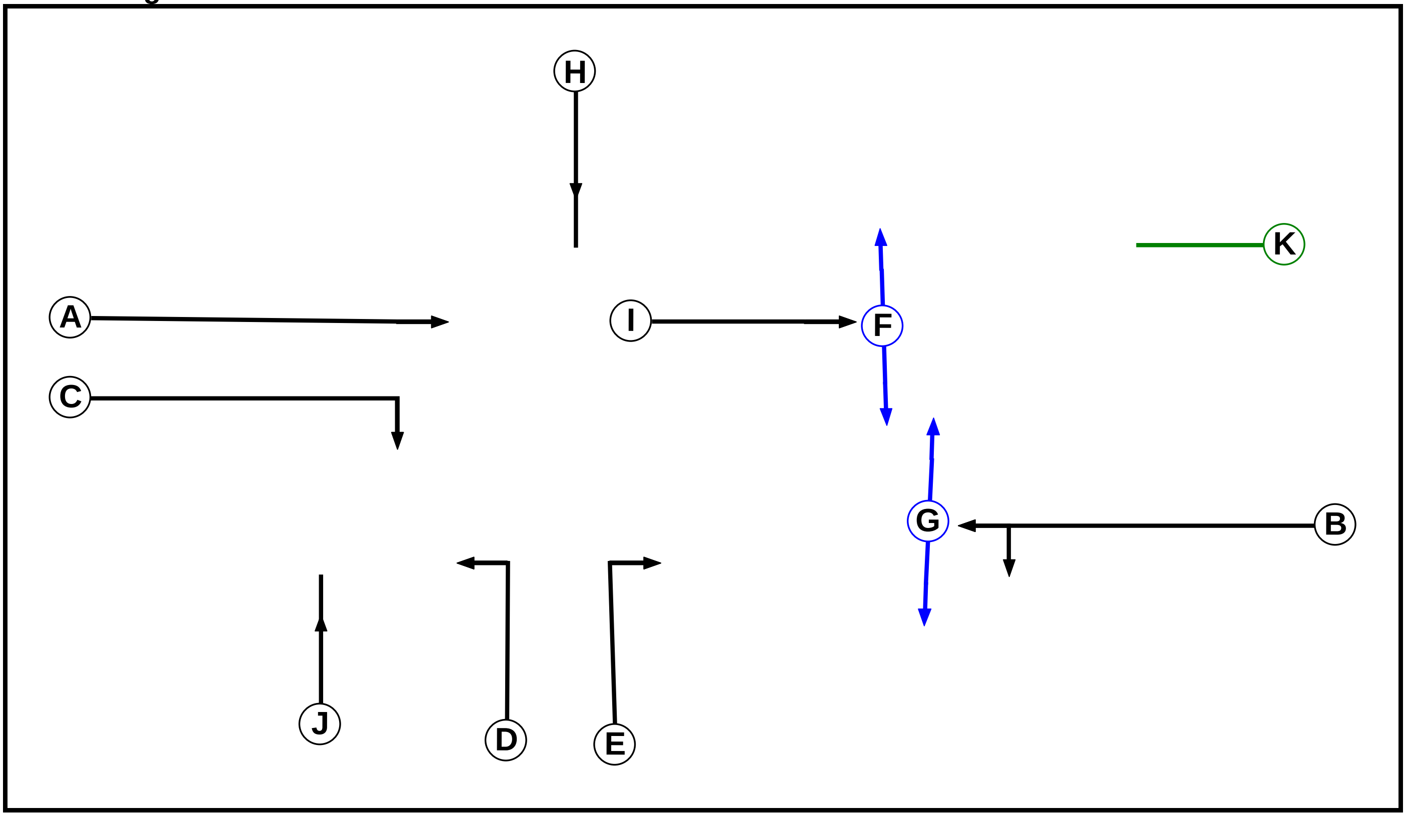
De-sliver thresholds of 1.0 applied to lanes on Arm 4. Random delay could be ignored on this arm also, as the vast majority of traffic would cross the stopline on a green wave.

Due to flow assignment issues of left-turn from Arm 3, Lane 3/2 was modelled as a short lane (attached to 3/1) rather than Lane 3/3 as the short lane. Although this does not model the interaction between the left and right-turns, predicted queues indicate this is not an issue. The updated model allows better assignment of left-turn.

Scenarios re-optimised and flows assigned until signal timings converge

Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		-9999	7
B	Traffic		-9999	7
C	Traffic		-9999	7
D	Traffic		-9999	7
E	Traffic		-9999	7
F	Pedestrian		-9999	6
G	Pedestrian		-9999	6
H	Traffic		-9999	7
I	Traffic		-9999	7
J	Traffic		-9999	7
K	Dummy R/A		-9999	3

Full Input Data And Results

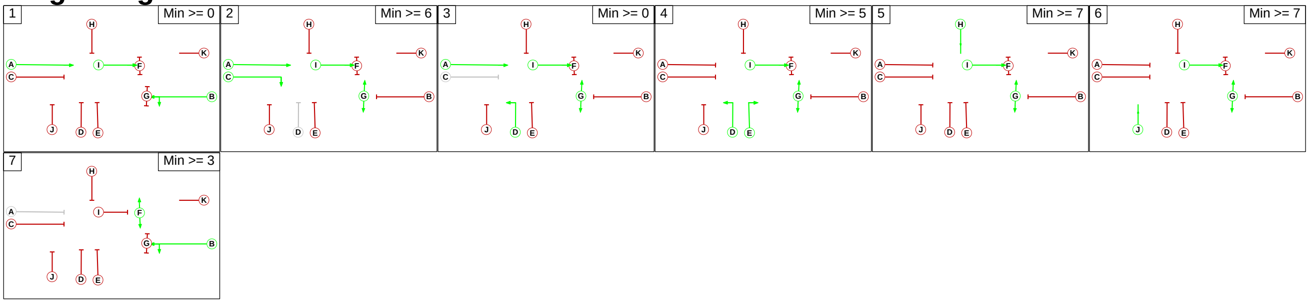
Phase Intergreens Matrix

		Starting Phase										
		A	B	C	D	E	F	G	H	I	J	K
Terminating Phase	A		-	-	-	7	-	-	7	-	8	3
	B	-		7	11	9	-	7	13	-	11	3
	C	-	8		-	7	-	-	7	-	7	3
	D	-	6	-		-	-	-	8	-	6	3
	E	6	6	6	-		-	-	6	-	6	3
	F	-	-	-	-	-		-	-	5	-	3
	G	-	5	-	-	-	-		-	-	-	3
	H	7	5	6	5	7	-	-		-	9	3
	I	-	-	-	-	-	5	-	-		-	3
	J	5	5	6	5	5	-	-	7	-		3
	K	2	2	2	2	2	2	2	2	2	2	

Phases in Stage

Stage No.	Phases in Stage
1	A B I
2	A C G I
3	A D G I
4	D E G I
5	G H I
6	G I J
7	B F

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	7	I	Losing	6	6

Full Input Data And Results

Prohibited Stage Change

	To Stage							
		1	2	3	4	5	6	7
From Stage	1		7	11	11	13	11	11
	2	8		2	7	7	8	8
	3	6	2		7	8	8	6
	4	6	6	6		8	6	6
	5	7	7	7	7		9	5
	6	5	6	5	5	7		5
	7	5	7	11	11	13	11	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A5 Watling Street - Birch Coppice Access
There are no Opposed Lanes in this Junction

Lane Input Data

Junction: A5 Watling Street - Birch Coppice Access												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A5 Watling Street (West))	U	A	2	3	60.0	Geom	-	3.52	0.00	Y	Arm 4 Ahead	Inf
1/2 (A5 Watling Street (West))	U	A	2	3	60.0	Geom	-	3.53	0.00	N	Arm 4 Ahead	Inf
1/3 (A5 Watling Street (West))	U	C	2	3	22.0	Geom	-	3.58	0.00	Y	Arm 6 Right	19.50
1/4 (A5 Watling Street (West))	U	C	2	3	9.0	Geom	-	3.58	0.00	N	Arm 6 Right	17.50
2/1 (A5 Watling Street (East))	U	B	2	3	5.0	Geom	-	3.75	0.00	Y	Arm 6 Left	18.75
2/2 (A5 Watling Street (East))	U	B	2	3	60.0	Geom	-	3.28	0.00	Y	Arm 7 Ahead	Inf
2/3 (A5 Watling Street (East))	U	B	2	3	60.0	Geom	-	3.71	0.00	N	Arm 7 Ahead	Inf
3/1 (Danny Morson Way)	U	D	2	3	60.0	Geom	-	4.50	0.00	Y	Arm 7 Left	21.50
3/2 (Danny Morson Way)	U	D	2	3	14.0	Geom	-	4.40	0.00	N	Arm 7 Left	29.00
3/3 (Danny Morson Way)	U	E	2	3	60.0	Geom	-	3.85	0.00	Y	Arm 4 Right	20.00
4/1 (A5 South East Toucan Approach)	U	I	2	3	10.0	Geom	-	3.33	0.00	Y	Arm 5 Ahead	Inf
4/2 (A5 South East Toucan Approach)	U	I	2	3	10.0	Geom	-	3.31	0.00	N	Arm 5 Ahead	Inf
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 Reference AM Peak'	08:00	09:00	01:00	
2: '2021 Reference + Development AM Peak'	08:00	09:00	01:00	
3: '2021 Reference PM Peak'	17:00	18:00	01:00	
4: '2021 Reference + Development PM Peak'	17:00	18:00	01:00	
5: '2026 Reference AM Peak'	08:00	09:00	01:00	
6: '2026 Reference + Development AM Peak'	08:00	09:00	01:00	
7: '2026 Reference PM Peak'	17:00	18:00	01:00	
8: '2026 Reference + Development PM Peak'	17:00	18:00	01:00	
9: '2031 Reference AM Peak'	08:00	09:00	01:00	
10: '2031 Reference + Development AM Peak'	08:00	09:00	01:00	
11: '2031 Reference PM Peak'	17:00	18:00	01:00	
12: '2031 Reference + Development PM Peak'	17:00	18:00	01:00	
13: '2031 Local Plan AM Peak'	08:00	09:00	01:00	
14: '2031 Local Plan + Development AM Peak'	08:00	09:00	01:00	
15: '2031 Local Plan PM Peak'	17:00	18:00	01:00	
16: '2031 Local Plan + Development PM Peak'	17:00	18:00	01:00	

Scenario 1: '2021 R AM' (FG1: '2021 Reference AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	1452	678	2130
	B	1566	0	484	2050
	C	392	142	0	534
	Tot.	1958	1594	1162	4714

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2021 R AM
Junction: A5 Watling Street - Birch Coppice Access	
1/1	690
1/2	762
1/3 (with short)	678(In) 326(Out)
1/4 (short)	352
2/1 (short)	484
2/2 (with short)	1043(In) 559(Out)
2/3	1007
3/1 (with short)	392(In) 188(Out)
3/2 (short)	204
3/3	142
4/1	757
4/2	837
5/1	757
5/2	837
6/1	810
6/2	352
7/1	747
7/2	1211

Lane Saturation Flows

Junction: A5 Watling Street - Birch Coppice Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 Watling Street (West))	3.52	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1967	1967
1/2 (A5 Watling Street (West))	3.53	0.00	N	Arm 4 Ahead	Inf	100.0 %	2108	2108
1/3 (A5 Watling Street (West))	3.58	0.00	Y	Arm 6 Right	19.50	100.0 %	1832	1832
1/4 (A5 Watling Street (West))	3.58	0.00	N	Arm 6 Right	17.50	100.0 %	1946	1946
2/1 (A5 Watling Street (East))	3.75	0.00	Y	Arm 6 Left	18.75	100.0 %	1843	1843
2/2 (A5 Watling Street (East))	3.28	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1943	1943
2/3 (A5 Watling Street (East))	3.71	0.00	N	Arm 7 Ahead	Inf	100.0 %	2126	2126
3/1 (Danny Morson Way)	4.50	0.00	Y	Arm 7 Left	21.50	100.0 %	1930	1930
3/2 (Danny Morson Way)	4.40	0.00	N	Arm 7 Left	29.00	100.0 %	2087	2087
3/3 (Danny Morson Way)	3.85	0.00	Y	Arm 4 Right	20.00	100.0 %	1860	1860
4/1 (A5 South East Toucan Approach)	3.33	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1948	1948
4/2 (A5 South East Toucan Approach)	3.31	0.00	N	Arm 5 Ahead	Inf	100.0 %	2086	2086
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2021 R + D AM' (FG2: '2021 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	1496	678	2174
	B	1606	0	484	2090
	C	392	142	0	534
	Tot.	1998	1638	1162	4798

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2021 R + D AM
Junction: A5 Watling Street - Birch Coppice Access	
1/1	711
1/2	785
1/3 (with short)	678(In) 326(Out)
1/4 (short)	352
2/1 (short)	484
2/2 (with short)	1059(In) 575(Out)
2/3	1031
3/1 (with short)	392(In) 188(Out)
3/2 (short)	204
3/3	142
4/1	778
4/2	860
5/1	778
5/2	860
6/1	810
6/2	352
7/1	763
7/2	1235

Lane Saturation Flows

Junction: A5 Watling Street - Birch Coppice Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 Watling Street (West))	3.52	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1967	1967
1/2 (A5 Watling Street (West))	3.53	0.00	N	Arm 4 Ahead	Inf	100.0 %	2108	2108
1/3 (A5 Watling Street (West))	3.58	0.00	Y	Arm 6 Right	19.50	100.0 %	1832	1832
1/4 (A5 Watling Street (West))	3.58	0.00	N	Arm 6 Right	17.50	100.0 %	1946	1946
2/1 (A5 Watling Street (East))	3.75	0.00	Y	Arm 6 Left	18.75	100.0 %	1843	1843
2/2 (A5 Watling Street (East))	3.28	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1943	1943
2/3 (A5 Watling Street (East))	3.71	0.00	N	Arm 7 Ahead	Inf	100.0 %	2126	2126
3/1 (Danny Morson Way)	4.50	0.00	Y	Arm 7 Left	21.50	100.0 %	1930	1930
3/2 (Danny Morson Way)	4.40	0.00	N	Arm 7 Left	29.00	100.0 %	2087	2087
3/3 (Danny Morson Way)	3.85	0.00	Y	Arm 4 Right	20.00	100.0 %	1860	1860
4/1 (A5 South East Toucan Approach)	3.33	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1948	1948
4/2 (A5 South East Toucan Approach)	3.31	0.00	N	Arm 5 Ahead	Inf	100.0 %	2086	2086
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf

Scenario 3: '2021 R PM' (FG3: '2021 Reference PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	1392	256	1648
	B	1624	0	208	1832
	C	770	374	0	1144
	Tot.	2394	1766	464	4624

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 R PM
Junction: A5 Watling Street - Birch Coppice Access	
1/1	665
1/2	727
1/3 (with short)	256(In) 124(Out)
1/4 (short)	132
2/1 (short)	208
2/2 (with short)	898(In) 690(Out)
2/3	934
3/1 (with short)	770(In) 370(Out)
3/2 (short)	400
3/3	374
4/1	839
4/2	927
5/1	839
5/2	927
6/1	332
6/2	132
7/1	1060
7/2	1334

Lane Saturation Flows

Junction: A5 Watling Street - Birch Coppice Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 Watling Street (West))	3.52	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1967	1967
1/2 (A5 Watling Street (West))	3.53	0.00	N	Arm 4 Ahead	Inf	100.0 %	2108	2108
1/3 (A5 Watling Street (West))	3.58	0.00	Y	Arm 6 Right	19.50	100.0 %	1832	1832
1/4 (A5 Watling Street (West))	3.58	0.00	N	Arm 6 Right	17.50	100.0 %	1946	1946
2/1 (A5 Watling Street (East))	3.75	0.00	Y	Arm 6 Left	18.75	100.0 %	1843	1843
2/2 (A5 Watling Street (East))	3.28	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1943	1943
2/3 (A5 Watling Street (East))	3.71	0.00	N	Arm 7 Ahead	Inf	100.0 %	2126	2126
3/1 (Danny Morson Way)	4.50	0.00	Y	Arm 7 Left	21.50	100.0 %	1930	1930
3/2 (Danny Morson Way)	4.40	0.00	N	Arm 7 Left	29.00	100.0 %	2087	2087
3/3 (Danny Morson Way)	3.85	0.00	Y	Arm 4 Right	20.00	100.0 %	1860	1860
4/1 (A5 South East Toucan Approach)	3.33	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1948	1948
4/2 (A5 South East Toucan Approach)	3.31	0.00	N	Arm 5 Ahead	Inf	100.0 %	2086	2086
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2021 R + D PM' (FG4: '2021 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	1440	256	1696
	B	1644	0	208	1852
	C	770	374	0	1144
	Tot.	2414	1814	464	4692

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 R + D PM
Junction: A5 Watling Street - Birch Coppice Access	
1/1	688
1/2	752
1/3 (with short)	256(In) 124(Out)
1/4 (short)	132
2/1 (short)	208
2/2 (with short)	907(In) 699(Out)
2/3	945
3/1 (with short)	770(In) 370(Out)
3/2 (short)	400
3/3	374
4/1	874
4/2	940
5/1	874
5/2	940
6/1	332
6/2	132
7/1	1069
7/2	1345

Lane Saturation Flows

Junction: A5 Watling Street - Birch Coppice Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 Watling Street (West))	3.52	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1967	1967
1/2 (A5 Watling Street (West))	3.53	0.00	N	Arm 4 Ahead	Inf	100.0 %	2108	2108
1/3 (A5 Watling Street (West))	3.58	0.00	Y	Arm 6 Right	19.50	100.0 %	1832	1832
1/4 (A5 Watling Street (West))	3.58	0.00	N	Arm 6 Right	17.50	100.0 %	1946	1946
2/1 (A5 Watling Street (East))	3.75	0.00	Y	Arm 6 Left	18.75	100.0 %	1843	1843
2/2 (A5 Watling Street (East))	3.28	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1943	1943
2/3 (A5 Watling Street (East))	3.71	0.00	N	Arm 7 Ahead	Inf	100.0 %	2126	2126
3/1 (Danny Morson Way)	4.50	0.00	Y	Arm 7 Left	21.50	100.0 %	1930	1930
3/2 (Danny Morson Way)	4.40	0.00	N	Arm 7 Left	29.00	100.0 %	2087	2087
3/3 (Danny Morson Way)	3.85	0.00	Y	Arm 4 Right	20.00	100.0 %	1860	1860
4/1 (A5 South East Toucan Approach)	3.33	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1948	1948
4/2 (A5 South East Toucan Approach)	3.31	0.00	N	Arm 5 Ahead	Inf	100.0 %	2086	2086
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf

Scenario 5: '2026 R AM' (FG5: '2026 Reference AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	1454	704	2158
	B	1554	0	482	2036
	C	404	146	0	550
	Tot.	1958	1600	1186	4744

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2026 R AM
Junction: A5 Watling Street - Birch Coppice Access	
1/1	691
1/2	763
1/3 (with short)	704(In) 338(Out)
1/4 (short)	366
2/1 (short)	482
2/2 (with short)	1036(In) 554(Out)
2/3	1000
3/1 (with short)	404(In) 194(Out)
3/2 (short)	210
3/3	146
4/1	760
4/2	840
5/1	760
5/2	840
6/1	820
6/2	366
7/1	748
7/2	1210

Lane Saturation Flows

Junction: A5 Watling Street - Birch Coppice Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 Watling Street (West))	3.52	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1967	1967
1/2 (A5 Watling Street (West))	3.53	0.00	N	Arm 4 Ahead	Inf	100.0 %	2108	2108
1/3 (A5 Watling Street (West))	3.58	0.00	Y	Arm 6 Right	19.50	100.0 %	1832	1832
1/4 (A5 Watling Street (West))	3.58	0.00	N	Arm 6 Right	17.50	100.0 %	1946	1946
2/1 (A5 Watling Street (East))	3.75	0.00	Y	Arm 6 Left	18.75	100.0 %	1843	1843
2/2 (A5 Watling Street (East))	3.28	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1943	1943
2/3 (A5 Watling Street (East))	3.71	0.00	N	Arm 7 Ahead	Inf	100.0 %	2126	2126
3/1 (Danny Morson Way)	4.50	0.00	Y	Arm 7 Left	21.50	100.0 %	1930	1930
3/2 (Danny Morson Way)	4.40	0.00	N	Arm 7 Left	29.00	100.0 %	2087	2087
3/3 (Danny Morson Way)	3.85	0.00	Y	Arm 4 Right	20.00	100.0 %	1860	1860
4/1 (A5 South East Toucan Approach)	3.33	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1948	1948
4/2 (A5 South East Toucan Approach)	3.31	0.00	N	Arm 5 Ahead	Inf	100.0 %	2086	2086
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf

Scenario 6: '2026 R +D AM' (FG6: '2026 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	1502	704	2206
	B	1594	0	482	2076
	C	404	146	0	550
	Tot.	1998	1648	1186	4832

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2026 R +D AM
Junction: A5 Watling Street - Birch Coppice Access	
1/1	714
1/2	788
1/3 (with short)	704(In) 337(Out)
1/4 (short)	367
2/1 (short)	482
2/2 (with short)	1052(In) 570(Out)
2/3	1024
3/1 (with short)	404(In) 194(Out)
3/2 (short)	210
3/3	146
4/1	782
4/2	866
5/1	782
5/2	866
6/1	819
6/2	367
7/1	764
7/2	1234

Lane Saturation Flows

Junction: A5 Watling Street - Birch Coppice Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 Watling Street (West))	3.52	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1967	1967
1/2 (A5 Watling Street (West))	3.53	0.00	N	Arm 4 Ahead	Inf	100.0 %	2108	2108
1/3 (A5 Watling Street (West))	3.58	0.00	Y	Arm 6 Right	19.50	100.0 %	1832	1832
1/4 (A5 Watling Street (West))	3.58	0.00	N	Arm 6 Right	17.50	100.0 %	1946	1946
2/1 (A5 Watling Street (East))	3.75	0.00	Y	Arm 6 Left	18.75	100.0 %	1843	1843
2/2 (A5 Watling Street (East))	3.28	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1943	1943
2/3 (A5 Watling Street (East))	3.71	0.00	N	Arm 7 Ahead	Inf	100.0 %	2126	2126
3/1 (Danny Morson Way)	4.50	0.00	Y	Arm 7 Left	21.50	100.0 %	1930	1930
3/2 (Danny Morson Way)	4.40	0.00	N	Arm 7 Left	29.00	100.0 %	2087	2087
3/3 (Danny Morson Way)	3.85	0.00	Y	Arm 4 Right	20.00	100.0 %	1860	1860
4/1 (A5 South East Toucan Approach)	3.33	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1948	1948
4/2 (A5 South East Toucan Approach)	3.31	0.00	N	Arm 5 Ahead	Inf	100.0 %	2086	2086
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf

Scenario 7: '2026 R PM' (FG7: '2026 Reference PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	1518	256	1774
	B	1562	0	192	1754
	C	778	394	0	1172
	Tot.	2340	1912	448	4700

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2026 R PM
Junction: A5 Watling Street - Birch Coppice Access	
1/1	726
1/2	792
1/3 (with short)	256(In) 124(Out)
1/4 (short)	132
2/1 (short)	192
2/2 (with short)	860(In) 668(Out)
2/3	894
3/1 (with short)	778(In) 374(Out)
3/2 (short)	404
3/3	394
4/1	924
4/2	988
5/1	924
5/2	988
6/1	316
6/2	132
7/1	1042
7/2	1298

Lane Saturation Flows

Junction: A5 Watling Street - Birch Coppice Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 Watling Street (West))	3.52	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1967	1967
1/2 (A5 Watling Street (West))	3.53	0.00	N	Arm 4 Ahead	Inf	100.0 %	2108	2108
1/3 (A5 Watling Street (West))	3.58	0.00	Y	Arm 6 Right	19.50	100.0 %	1832	1832
1/4 (A5 Watling Street (West))	3.58	0.00	N	Arm 6 Right	17.50	100.0 %	1946	1946
2/1 (A5 Watling Street (East))	3.75	0.00	Y	Arm 6 Left	18.75	100.0 %	1843	1843
2/2 (A5 Watling Street (East))	3.28	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1943	1943
2/3 (A5 Watling Street (East))	3.71	0.00	N	Arm 7 Ahead	Inf	100.0 %	2126	2126
3/1 (Danny Morson Way)	4.50	0.00	Y	Arm 7 Left	21.50	100.0 %	1930	1930
3/2 (Danny Morson Way)	4.40	0.00	N	Arm 7 Left	29.00	100.0 %	2087	2087
3/3 (Danny Morson Way)	3.85	0.00	Y	Arm 4 Right	20.00	100.0 %	1860	1860
4/1 (A5 South East Toucan Approach)	3.33	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1948	1948
4/2 (A5 South East Toucan Approach)	3.31	0.00	N	Arm 5 Ahead	Inf	100.0 %	2086	2086
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf

Scenario 8: '2026 R + D PM' (FG8: '2026 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	1574	256	1830
	B	1580	0	192	1772
	C	778	394	0	1172
	Tot.	2358	1968	448	4774

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2026 R + D PM
Junction: A5 Watling Street - Birch Coppice Access	
1/1	754
1/2	820
1/3 (with short)	256(In) 124(Out)
1/4 (short)	132
2/1 (short)	192
2/2 (with short)	868(In) 676(Out)
2/3	904
3/1 (with short)	778(In) 374(Out)
3/2 (short)	404
3/3	394
4/1	950
4/2	1018
5/1	950
5/2	1018
6/1	316
6/2	132
7/1	1050
7/2	1308

Lane Saturation Flows

Junction: A5 Watling Street - Birch Coppice Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 Watling Street (West))	3.52	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1967	1967
1/2 (A5 Watling Street (West))	3.53	0.00	N	Arm 4 Ahead	Inf	100.0 %	2108	2108
1/3 (A5 Watling Street (West))	3.58	0.00	Y	Arm 6 Right	19.50	100.0 %	1832	1832
1/4 (A5 Watling Street (West))	3.58	0.00	N	Arm 6 Right	17.50	100.0 %	1946	1946
2/1 (A5 Watling Street (East))	3.75	0.00	Y	Arm 6 Left	18.75	100.0 %	1843	1843
2/2 (A5 Watling Street (East))	3.28	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1943	1943
2/3 (A5 Watling Street (East))	3.71	0.00	N	Arm 7 Ahead	Inf	100.0 %	2126	2126
3/1 (Danny Morson Way)	4.50	0.00	Y	Arm 7 Left	21.50	100.0 %	1930	1930
3/2 (Danny Morson Way)	4.40	0.00	N	Arm 7 Left	29.00	100.0 %	2087	2087
3/3 (Danny Morson Way)	3.85	0.00	Y	Arm 4 Right	20.00	100.0 %	1860	1860
4/1 (A5 South East Toucan Approach)	3.33	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1948	1948
4/2 (A5 South East Toucan Approach)	3.31	0.00	N	Arm 5 Ahead	Inf	100.0 %	2086	2086
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf

Scenario 9: '2031 R AM' (FG9: '2031 Reference AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	1566	732	2298
	B	1606	0	458	2064
	C	426	124	0	550
	Tot.	2032	1690	1190	4912

Traffic Lane Flows

Lane	Scenario 9: 2031 R AM
Junction: A5 Watling Street - Birch Coppice Access	
1/1	744
1/2	822
1/3 (with short)	732(In) 350(Out)
1/4 (short)	382
2/1 (short)	458
2/2 (with short)	1041(In) 583(Out)
2/3	1023
3/1 (with short)	426(In) 205(Out)
3/2 (short)	221
3/3	124
4/1	803
4/2	887
5/1	803
5/2	887
6/1	808
6/2	382
7/1	788
7/2	1244

Lane Saturation Flows

Junction: A5 Watling Street - Birch Coppice Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 Watling Street (West))	3.52	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1967	1967
1/2 (A5 Watling Street (West))	3.53	0.00	N	Arm 4 Ahead	Inf	100.0 %	2108	2108
1/3 (A5 Watling Street (West))	3.58	0.00	Y	Arm 6 Right	19.50	100.0 %	1832	1832
1/4 (A5 Watling Street (West))	3.58	0.00	N	Arm 6 Right	17.50	100.0 %	1946	1946
2/1 (A5 Watling Street (East))	3.75	0.00	Y	Arm 6 Left	18.75	100.0 %	1843	1843
2/2 (A5 Watling Street (East))	3.28	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1943	1943
2/3 (A5 Watling Street (East))	3.71	0.00	N	Arm 7 Ahead	Inf	100.0 %	2126	2126
3/1 (Danny Morson Way)	4.50	0.00	Y	Arm 7 Left	21.50	100.0 %	1930	1930
3/2 (Danny Morson Way)	4.40	0.00	N	Arm 7 Left	29.00	100.0 %	2087	2087
3/3 (Danny Morson Way)	3.85	0.00	Y	Arm 4 Right	20.00	100.0 %	1860	1860
4/1 (A5 South East Toucan Approach)	3.33	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1948	1948
4/2 (A5 South East Toucan Approach)	3.31	0.00	N	Arm 5 Ahead	Inf	100.0 %	2086	2086
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf

Scenario 10: '2031 R + D AM' (FG10: '2031 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	1614	732	2346
	B	1652	0	458	2110
	C	426	124	0	550
	Tot.	2078	1738	1190	5006

Traffic Lane Flows

Lane	Scenario 10: 2031 R + D AM
Junction: A5 Watling Street - Birch Coppice Access	
1/1	768
1/2	846
1/3 (with short)	732(In) 350(Out)
1/4 (short)	382
2/1 (short)	458
2/2 (with short)	1062(In) 604(Out)
2/3	1048
3/1 (with short)	426(In) 205(Out)
3/2 (short)	221
3/3	124
4/1	828
4/2	910
5/1	828
5/2	910
6/1	808
6/2	382
7/1	809
7/2	1269

Lane Saturation Flows

Junction: A5 Watling Street - Birch Coppice Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 Watling Street (West))	3.52	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1967	1967
1/2 (A5 Watling Street (West))	3.53	0.00	N	Arm 4 Ahead	Inf	100.0 %	2108	2108
1/3 (A5 Watling Street (West))	3.58	0.00	Y	Arm 6 Right	19.50	100.0 %	1832	1832
1/4 (A5 Watling Street (West))	3.58	0.00	N	Arm 6 Right	17.50	100.0 %	1946	1946
2/1 (A5 Watling Street (East))	3.75	0.00	Y	Arm 6 Left	18.75	100.0 %	1843	1843
2/2 (A5 Watling Street (East))	3.28	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1943	1943
2/3 (A5 Watling Street (East))	3.71	0.00	N	Arm 7 Ahead	Inf	100.0 %	2126	2126
3/1 (Danny Morson Way)	4.50	0.00	Y	Arm 7 Left	21.50	100.0 %	1930	1930
3/2 (Danny Morson Way)	4.40	0.00	N	Arm 7 Left	29.00	100.0 %	2087	2087
3/3 (Danny Morson Way)	3.85	0.00	Y	Arm 4 Right	20.00	100.0 %	1860	1860
4/1 (A5 South East Toucan Approach)	3.33	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1948	1948
4/2 (A5 South East Toucan Approach)	3.31	0.00	N	Arm 5 Ahead	Inf	100.0 %	2086	2086
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf

Scenario 11: '2031 R PM' (FG11: '2031 Reference PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	1460	280	1740
	B	1718	0	214	1932
	C	778	368	0	1146
	Tot.	2496	1828	494	4818

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 11: 2031 R PM
Junction: A5 Watling Street - Birch Coppice Access	
1/1	698
1/2	762
1/3 (with short)	280(In) 136(Out)
1/4 (short)	144
2/1 (short)	214
2/2 (with short)	943(In) 729(Out)
2/3	989
3/1 (with short)	778(In) 374(Out)
3/2 (short)	404
3/3	368
4/1	875
4/2	953
5/1	875
5/2	953
6/1	350
6/2	144
7/1	1103
7/2	1393

Lane Saturation Flows

Junction: A5 Watling Street - Birch Coppice Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 Watling Street (West))	3.52	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1967	1967
1/2 (A5 Watling Street (West))	3.53	0.00	N	Arm 4 Ahead	Inf	100.0 %	2108	2108
1/3 (A5 Watling Street (West))	3.58	0.00	Y	Arm 6 Right	19.50	100.0 %	1832	1832
1/4 (A5 Watling Street (West))	3.58	0.00	N	Arm 6 Right	17.50	100.0 %	1946	1946
2/1 (A5 Watling Street (East))	3.75	0.00	Y	Arm 6 Left	18.75	100.0 %	1843	1843
2/2 (A5 Watling Street (East))	3.28	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1943	1943
2/3 (A5 Watling Street (East))	3.71	0.00	N	Arm 7 Ahead	Inf	100.0 %	2126	2126
3/1 (Danny Morson Way)	4.50	0.00	Y	Arm 7 Left	21.50	100.0 %	1930	1930
3/2 (Danny Morson Way)	4.40	0.00	N	Arm 7 Left	29.00	100.0 %	2087	2087
3/3 (Danny Morson Way)	3.85	0.00	Y	Arm 4 Right	20.00	100.0 %	1860	1860
4/1 (A5 South East Toucan Approach)	3.33	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1948	1948
4/2 (A5 South East Toucan Approach)	3.31	0.00	N	Arm 5 Ahead	Inf	100.0 %	2086	2086
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf

Scenario 12: '2031 R + D PM' (FG12: '2031 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	1510	280	1790
	B	1734	0	214	1948
	C	778	368	0	1146
	Tot.	2512	1878	494	4884

Traffic Lane Flows

Lane	Scenario 12: 2031 R + D PM
Junction: A5 Watling Street - Birch Coppice Access	
1/1	722
1/2	788
1/3 (with short)	280(In) 136(Out)
1/4 (short)	144
2/1 (short)	214
2/2 (with short)	951(In) 737(Out)
2/3	997
3/1 (with short)	778(In) 374(Out)
3/2 (short)	404
3/3	368
4/1	901
4/2	977
5/1	901
5/2	977
6/1	350
6/2	144
7/1	1111
7/2	1401

Lane Saturation Flows

Junction: A5 Watling Street - Birch Coppice Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 Watling Street (West))	3.52	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1967	1967
1/2 (A5 Watling Street (West))	3.53	0.00	N	Arm 4 Ahead	Inf	100.0 %	2108	2108
1/3 (A5 Watling Street (West))	3.58	0.00	Y	Arm 6 Right	19.50	100.0 %	1832	1832
1/4 (A5 Watling Street (West))	3.58	0.00	N	Arm 6 Right	17.50	100.0 %	1946	1946
2/1 (A5 Watling Street (East))	3.75	0.00	Y	Arm 6 Left	18.75	100.0 %	1843	1843
2/2 (A5 Watling Street (East))	3.28	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1943	1943
2/3 (A5 Watling Street (East))	3.71	0.00	N	Arm 7 Ahead	Inf	100.0 %	2126	2126
3/1 (Danny Morson Way)	4.50	0.00	Y	Arm 7 Left	21.50	100.0 %	1930	1930
3/2 (Danny Morson Way)	4.40	0.00	N	Arm 7 Left	29.00	100.0 %	2087	2087
3/3 (Danny Morson Way)	3.85	0.00	Y	Arm 4 Right	20.00	100.0 %	1860	1860
4/1 (A5 South East Toucan Approach)	3.33	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1948	1948
4/2 (A5 South East Toucan Approach)	3.31	0.00	N	Arm 5 Ahead	Inf	100.0 %	2086	2086
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf

Scenario 13: '2031 LP AM' (FG13: '2031 Local Plan AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	1998	376	2374
	B	2264	0	340	2604
	C	274	100	0	374
	Tot.	2538	2098	716	5352

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 13: 2031 LP AM
Junction: A5 Watling Street - Birch Coppice Access	
1/1	955
1/2	1043
1/3 (with short)	376(In) 182(Out)
1/4 (short)	194
2/1 (short)	340
2/2 (with short)	1267(In) 927(Out)
2/3	1337
3/1 (with short)	274(In) 132(Out)
3/2 (short)	142
3/3	100
4/1	1004
4/2	1094
5/1	1004
5/2	1094
6/1	522
6/2	194
7/1	1059
7/2	1479

Lane Saturation Flows

Junction: A5 Watling Street - Birch Coppice Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 Watling Street (West))	3.52	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1967	1967
1/2 (A5 Watling Street (West))	3.53	0.00	N	Arm 4 Ahead	Inf	100.0 %	2108	2108
1/3 (A5 Watling Street (West))	3.58	0.00	Y	Arm 6 Right	19.50	100.0 %	1832	1832
1/4 (A5 Watling Street (West))	3.58	0.00	N	Arm 6 Right	17.50	100.0 %	1946	1946
2/1 (A5 Watling Street (East))	3.75	0.00	Y	Arm 6 Left	18.75	100.0 %	1843	1843
2/2 (A5 Watling Street (East))	3.28	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1943	1943
2/3 (A5 Watling Street (East))	3.71	0.00	N	Arm 7 Ahead	Inf	100.0 %	2126	2126
3/1 (Danny Morson Way)	4.50	0.00	Y	Arm 7 Left	21.50	100.0 %	1930	1930
3/2 (Danny Morson Way)	4.40	0.00	N	Arm 7 Left	29.00	100.0 %	2087	2087
3/3 (Danny Morson Way)	3.85	0.00	Y	Arm 4 Right	20.00	100.0 %	1860	1860
4/1 (A5 South East Toucan Approach)	3.33	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1948	1948
4/2 (A5 South East Toucan Approach)	3.31	0.00	N	Arm 5 Ahead	Inf	100.0 %	2086	2086
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf

Scenario 14: '2031 LP + D AM' (FG14: '2031 Local Plan + Development AM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	2050	376	2426
	B	2300	0	340	2640
	C	274	100	0	374
	Tot.	2574	2150	716	5440

Traffic Lane Flows

Lane	Scenario 14: 2031 LP + D AM
Junction: A5 Watling Street - Birch Coppice Access	
1/1	980
1/2	1070
1/3 (with short)	376(In) 182(Out)
1/4 (short)	194
2/1 (short)	340
2/2 (with short)	1283(In) 943(Out)
2/3	1357
3/1 (with short)	274(In) 132(Out)
3/2 (short)	142
3/3	100
4/1	1028
4/2	1122
5/1	1028
5/2	1122
6/1	522
6/2	194
7/1	1075
7/2	1499

Lane Saturation Flows

Junction: A5 Watling Street - Birch Coppice Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 Watling Street (West))	3.52	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1967	1967
1/2 (A5 Watling Street (West))	3.53	0.00	N	Arm 4 Ahead	Inf	100.0 %	2108	2108
1/3 (A5 Watling Street (West))	3.58	0.00	Y	Arm 6 Right	19.50	100.0 %	1832	1832
1/4 (A5 Watling Street (West))	3.58	0.00	N	Arm 6 Right	17.50	100.0 %	1946	1946
2/1 (A5 Watling Street (East))	3.75	0.00	Y	Arm 6 Left	18.75	100.0 %	1843	1843
2/2 (A5 Watling Street (East))	3.28	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1943	1943
2/3 (A5 Watling Street (East))	3.71	0.00	N	Arm 7 Ahead	Inf	100.0 %	2126	2126
3/1 (Danny Morson Way)	4.50	0.00	Y	Arm 7 Left	21.50	100.0 %	1930	1930
3/2 (Danny Morson Way)	4.40	0.00	N	Arm 7 Left	29.00	100.0 %	2087	2087
3/3 (Danny Morson Way)	3.85	0.00	Y	Arm 4 Right	20.00	100.0 %	1860	1860
4/1 (A5 South East Toucan Approach)	3.33	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1948	1948
4/2 (A5 South East Toucan Approach)	3.31	0.00	N	Arm 5 Ahead	Inf	100.0 %	2086	2086
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf

Scenario 15: '2031 LP PM' (FG15: '2031 Local Plan PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	2090	186	2276
	B	2116	0	172	2288
	C	446	288	0	734
	Tot.	2562	2378	358	5298

Traffic Lane Flows

Lane	Scenario 15: 2031 LP PM
Junction: A5 Watling Street - Birch Coppice Access	
1/1	1003
1/2	1087
1/3 (with short)	186(In) 90(Out)
1/4 (short)	96
2/1 (short)	172
2/2 (with short)	1104(In) 932(Out)
2/3	1184
3/1 (with short)	446(In) 214(Out)
3/2 (short)	232
3/3	288
4/1	1140
4/2	1238
5/1	1140
5/2	1238
6/1	262
6/2	96
7/1	1146
7/2	1416

Lane Saturation Flows

Junction: A5 Watling Street - Birch Coppice Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 Watling Street (West))	3.52	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1967	1967
1/2 (A5 Watling Street (West))	3.53	0.00	N	Arm 4 Ahead	Inf	100.0 %	2108	2108
1/3 (A5 Watling Street (West))	3.58	0.00	Y	Arm 6 Right	19.50	100.0 %	1832	1832
1/4 (A5 Watling Street (West))	3.58	0.00	N	Arm 6 Right	17.50	100.0 %	1946	1946
2/1 (A5 Watling Street (East))	3.75	0.00	Y	Arm 6 Left	18.75	100.0 %	1843	1843
2/2 (A5 Watling Street (East))	3.28	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1943	1943
2/3 (A5 Watling Street (East))	3.71	0.00	N	Arm 7 Ahead	Inf	100.0 %	2126	2126
3/1 (Danny Morson Way)	4.50	0.00	Y	Arm 7 Left	21.50	100.0 %	1930	1930
3/2 (Danny Morson Way)	4.40	0.00	N	Arm 7 Left	29.00	100.0 %	2087	2087
3/3 (Danny Morson Way)	3.85	0.00	Y	Arm 4 Right	20.00	100.0 %	1860	1860
4/1 (A5 South East Toucan Approach)	3.33	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1948	1948
4/2 (A5 South East Toucan Approach)	3.31	0.00	N	Arm 5 Ahead	Inf	100.0 %	2086	2086
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf

Scenario 16: '2031 LP + D PM' (FG16: '2031 Local Plan + Development PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	2152	186	2338
	B	2144	0	172	2316
	C	446	288	0	734
	Tot.	2590	2440	358	5388

Traffic Lane Flows

Lane	Scenario 16: 2031 LP + D PM
Junction: A5 Watling Street - Birch Coppice Access	
1/1	1033
1/2	1119
1/3 (with short)	186(In) 90(Out)
1/4 (short)	96
2/1 (short)	172
2/2 (with short)	1117(In) 945(Out)
2/3	1199
3/1 (with short)	446(In) 214(Out)
3/2 (short)	232
3/3	288
4/1	1170
4/2	1270
5/1	1170
5/2	1270
6/1	262
6/2	96
7/1	1159
7/2	1431

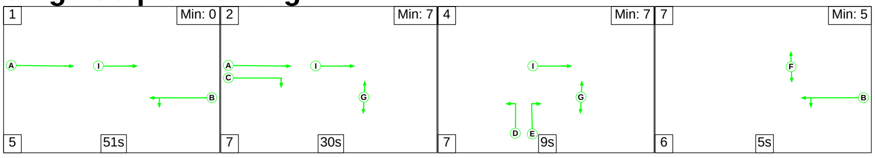
Lane Saturation Flows

Junction: A5 Watling Street - Birch Coppice Access

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A5 Watling Street (West))	3.52	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1967	1967
1/2 (A5 Watling Street (West))	3.53	0.00	N	Arm 4 Ahead	Inf	100.0 %	2108	2108
1/3 (A5 Watling Street (West))	3.58	0.00	Y	Arm 6 Right	19.50	100.0 %	1832	1832
1/4 (A5 Watling Street (West))	3.58	0.00	N	Arm 6 Right	17.50	100.0 %	1946	1946
2/1 (A5 Watling Street (East))	3.75	0.00	Y	Arm 6 Left	18.75	100.0 %	1843	1843
2/2 (A5 Watling Street (East))	3.28	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1943	1943
2/3 (A5 Watling Street (East))	3.71	0.00	N	Arm 7 Ahead	Inf	100.0 %	2126	2126
3/1 (Danny Morson Way)	4.50	0.00	Y	Arm 7 Left	21.50	100.0 %	1930	1930
3/2 (Danny Morson Way)	4.40	0.00	N	Arm 7 Left	29.00	100.0 %	2087	2087
3/3 (Danny Morson Way)	3.85	0.00	Y	Arm 4 Right	20.00	100.0 %	1860	1860
4/1 (A5 South East Toucan Approach)	3.33	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1948	1948
4/2 (A5 South East Toucan Approach)	3.31	0.00	N	Arm 5 Ahead	Inf	100.0 %	2086	2086
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
7/2	Infinite Saturation Flow						Inf	Inf

Scenario 1: '2021 R AM' (FG1: '2021 Reference AM Peak', Plan 1: 'Network Control Plan 1')

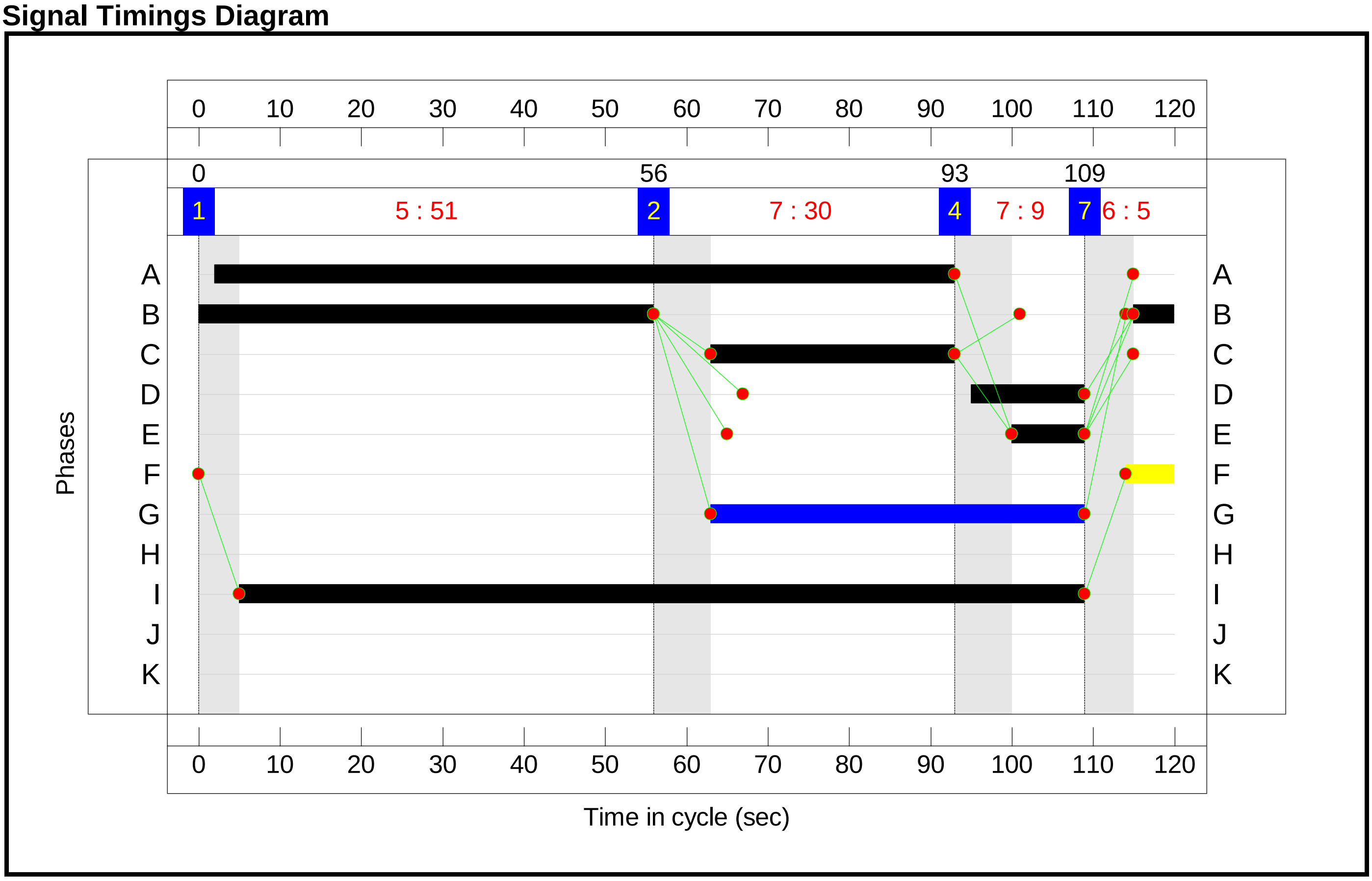
Stage Sequence Diagram



Stage Timings

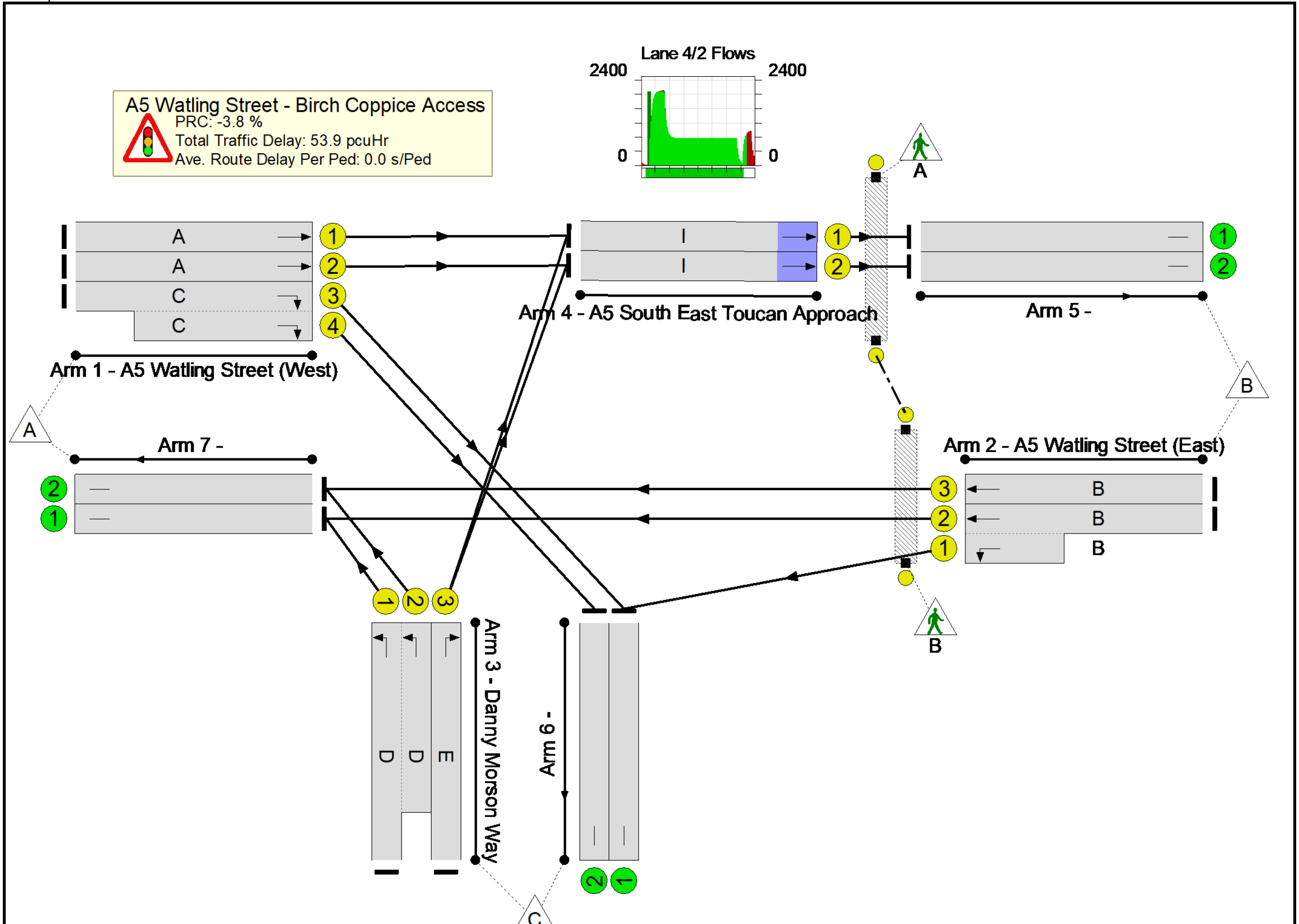
Stage	1	2	4	7
Duration	51	30	9	5
Change Point	0	56	93	109

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


A5 Watling Street - Birch Coppice Access
PRC: -3.8 %
Total Traffic Delay: 53.9 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Lane 4/2 Flows
2400
2400
0
0
Arm 1 - A5 Watling Street (West)
Arm 2 - A5 Watling Street (East)
Arm 3 - Danny Morson Way
Arm 4 - A5 South East Toucan Approach
Arm 5 -
Arm 6 -
Arm 7 -
A
A
C
C
I
I
B
B
B
D
D
E
A
B
C
1
2
3
4

Full Input Data And Results

Full Input Data And Results

Network Results

Item	**Lane Description**	**Lane Type**	**Controller Stream**	**Position In Filtered Route**	**Full Phase**	**Arrow Phase**	**Num Greens**	**Total Green (s)**	**Arrow Green (s)**	**Demand Flow (pcu)**	**Sat Flow (pcu/Hr)**	**Capacity (pcu)**	**Deg Sat (%)**
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.4%**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.4%**
1/1	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	91	-	690	1967	1508	45.8%
1/2	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	91	-	762	2108	1616	47.1%
1/3+1/4	A5 Watling Street (West) Right	U	N/A	N/A	C		1	30	-	678	1832:1946	356+384	91.6 : 91.6%
2/2+2/1	A5 Watling Street (East) Left Ahead	U	N/A	N/A	B		1	61	-	1043	1943:1843	599+518	93.4 : 93.4%
2/3	A5 Watling Street (East) Ahead	U	N/A	N/A	B		1	61	-	1007	2126	1098	91.7%
3/1+3/2	Danny Morson Way Left	U	N/A	N/A	D		1	14	-	392	1930:2087	241+261	77.9 : 78.2%
3/3	Danny Morson Way Right	U	N/A	N/A	E		1	9	-	142	1860	155	91.6%
4/1	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	757	1948	1704	44.4%
4/2	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	837	2086	1825	45.9%
5/1		U	N/A	N/A	-		-	-	-	757	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	837	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	810	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	352	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	747	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1211	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	6	-	0	-	3600	0.0%

Full Input Data And Results

Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	46	-	0	-	27600	0.0%

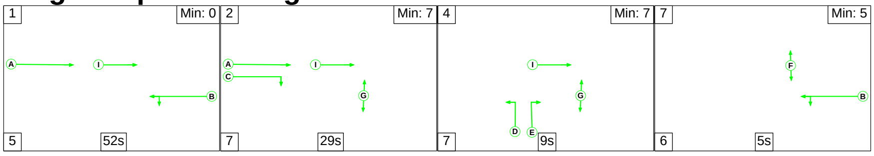
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**32.1**	**21.9**	**0.0**	**53.9**	**-**	**-**	**-**	**-**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**0**	**0**	**0**	**32.1**	**21.9**	**0.0**	**53.9**	**-**	**-**	**-**	**-**
1/1	690	690	-	-	-	1.0	0.4	-	1.4	7.2	8.2	0.4	8.7
1/2	762	762	-	-	-	1.1	0.4	-	1.5	7.2	9.1	0.4	9.5
1/3+1/4	678	678	-	-	-	7.7	4.7	-	12.4	65.7	12.9	4.7	17.7
2/2+2/1	1043	1043	-	-	-	6.9	6.1	-	13.0	44.7	27.3	6.1	33.3
2/3	1007	1007	-	-	-	7.4	5.0	-	12.4	44.4	30.8	5.0	35.7
3/1+3/2	392	392	-	-	-	5.5	1.7	-	7.3	66.8	6.6	1.7	8.3
3/3	142	142	-	-	-	2.2	3.5	-	5.7	144.3	4.7	3.5	8.2
4/1	757	757	-	-	-	0.2	0.0	-	0.2	0.7	1.4	0.0	1.4
4/2	837	837	-	-	-	0.2	0.0	-	0.2	0.7	1.6	0.0	1.6
5/1	757	757	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	837	837	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	810	810	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	352	352	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	747	747	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1211	1211	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1 PRC for Signalled Lanes (%): -3.8 Total Delay for Signalled Lanes (pcuHr): 53.93 Cycle Time (s): 120
PRC Over All Lanes (%): -3.8 Total Delay Over All Lanes(pcuHr): 53.93

Full Input Data And Results

Scenario 2: '2021 R + D AM' (FG2: '2021 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

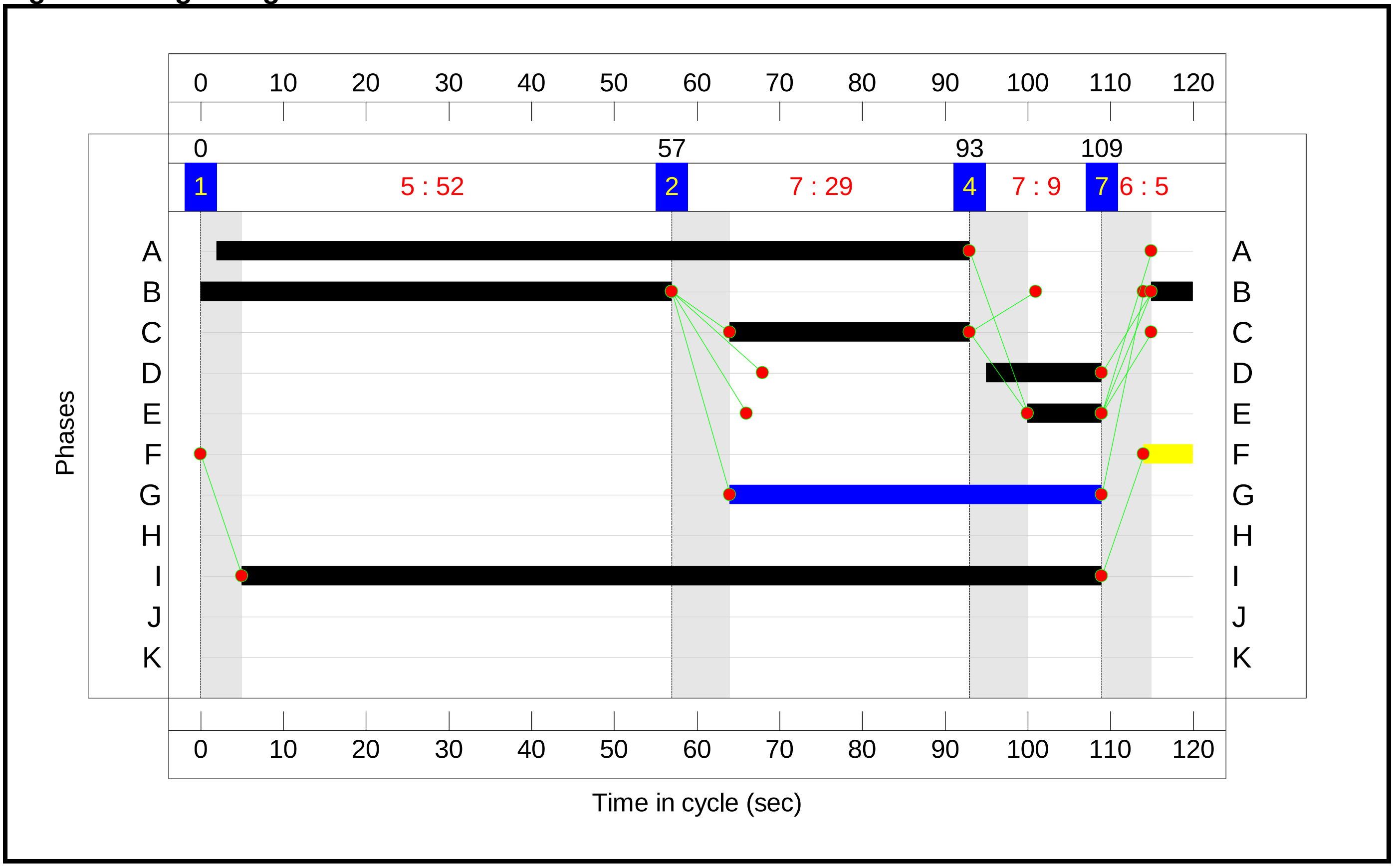
Stage Sequence Diagram



Stage Timings

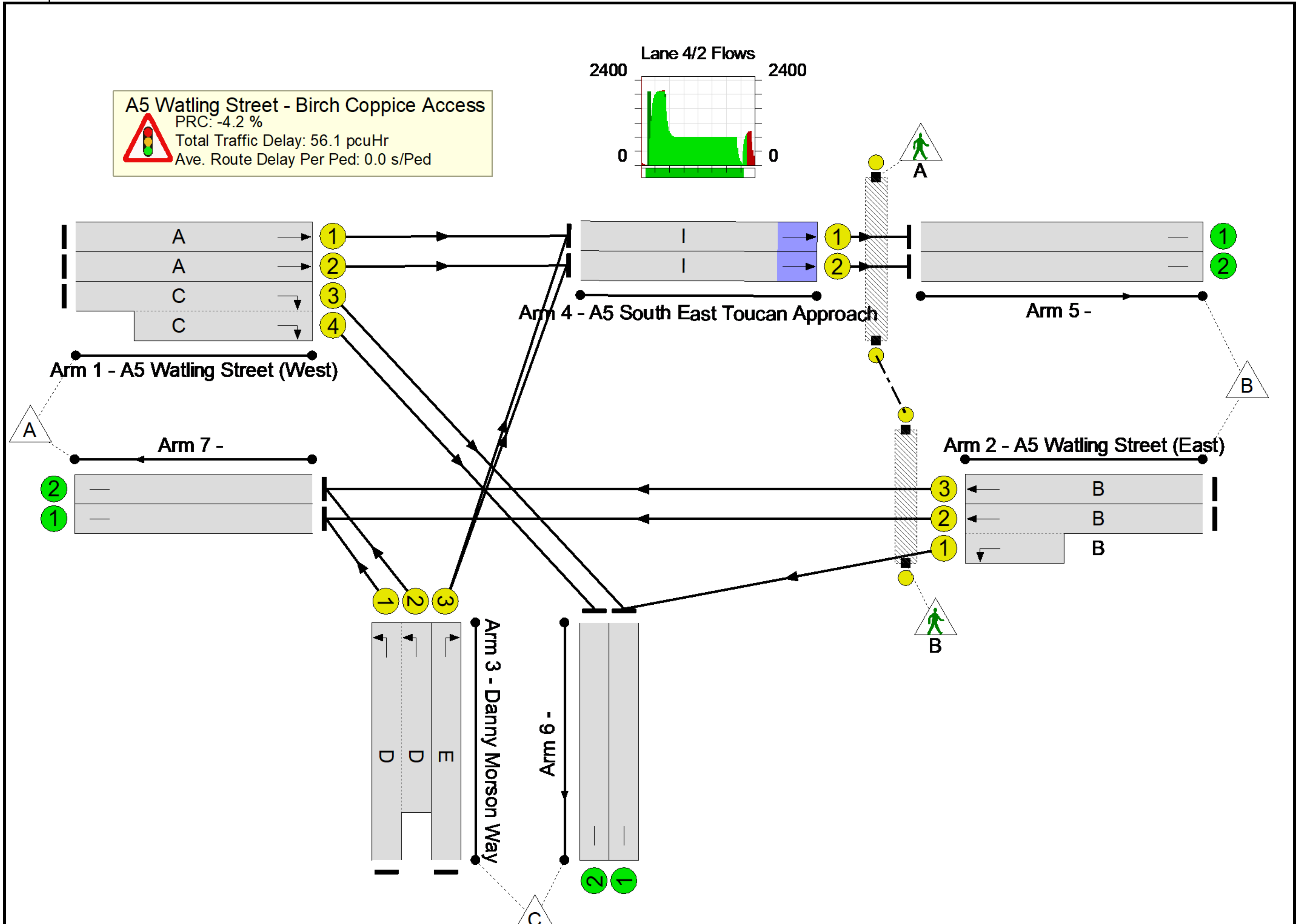
Stage	1	2	4	7
Duration	52	29	9	5
Change Point	0	57	93	109

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


A5 Watling Street - Birch Coppice Access
PRC: -4.2 %
Total Traffic Delay: 56.1 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Lane 4/2 Flows
2400
2400
0
0
A
B
A
B
A
A
C
C
1
2
3
4
Arm 1 - A5 Watling Street (West)
I
I
1
2
Arm 4 - A5 South East Toucan Approach
1
2
Arm 5 -
Arm 7 -
2
1
Arm 2 - A5 Watling Street (East)
3
2
1
B
B
B
1
2
3
D
D
E
Arm 3 - Danny Morson Way
Arm 6 -
2
1
C

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.8%**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.8%**
1/1	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	91	-	711	1967	1508	47.1%
1/2	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	91	-	785	2108	1616	48.6%
1/3+1/4	A5 Watling Street (West) Right	U	N/A	N/A	C		1	29	-	678	1832:1946	348+376	93.5 : 93.5%
2/2+2/1	A5 Watling Street (East) Left Ahead	U	N/A	N/A	B		1	62	-	1059	1943:1843	613+516	93.8 : 93.8%
2/3	A5 Watling Street (East) Ahead	U	N/A	N/A	B		1	62	-	1031	2126	1116	92.4%
3/1+3/2	Danny Morson Way Left	U	N/A	N/A	D		1	14	-	392	1930:2087	241+261	77.9 : 78.2%
3/3	Danny Morson Way Right	U	N/A	N/A	E		1	9	-	142	1860	155	91.6%
4/1	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	778	1948	1704	45.6%
4/2	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	860	2086	1825	47.1%
5/1		U	N/A	N/A	-		-	-	-	778	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	860	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	810	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	352	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	763	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1235	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	6	-	0	-	3600	0.0%

Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	45	-	0	-	27000	0.0%

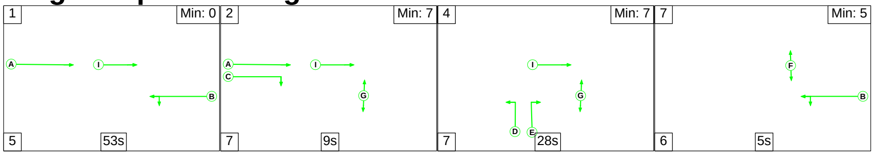
Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network	**-**	**-**	**0**	**0**	**0**	**32.4**	**23.7**	**0.0**	**56.1**	**-**	**-**	**-**	**-**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**0**	**0**	**0**	**32.4**	**23.7**	**0.0**	**56.1**	**-**	**-**	**-**	**-**
1/1	711	711	-	-	-	1.0	0.4	-	1.5	7.4	8.5	0.4	8.9
1/2	785	785	-	-	-	1.1	0.5	-	1.6	7.4	9.6	0.5	10.1
1/3+1/4	678	678	-	-	-	7.8	5.8	-	13.6	72.4	13.3	5.8	19.1
2/2+2/1	1059	1059	-	-	-	6.9	6.4	-	13.3	45.1	27.9	6.4	34.2
2/3	1031	1031	-	-	-	7.5	5.4	-	12.9	45.1	31.5	5.4	36.9
3/1+3/2	392	392	-	-	-	5.5	1.7	-	7.3	66.8	6.6	1.7	8.3
3/3	142	142	-	-	-	2.2	3.5	-	5.7	144.3	4.7	3.5	8.2
4/1	778	778	-	-	-	0.2	0.0	-	0.2	0.7	1.4	0.0	1.4
4/2	860	860	-	-	-	0.2	0.0	-	0.2	0.7	1.6	0.0	1.6
5/1	778	778	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	860	860	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	810	810	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	352	352	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	763	763	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1235	1235	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1 PRC for Signalled Lanes (%): -4.2 Total Delay for Signalled Lanes (pcuHr): 56.14 Cycle Time (s): 120
PRC Over All Lanes (%): -4.2 Total Delay Over All Lanes(pcuHr): 56.14

Full Input Data And Results

Scenario 3: '2021 R PM' (FG3: '2021 Reference PM Peak', Plan 1: 'Network Control Plan 1')

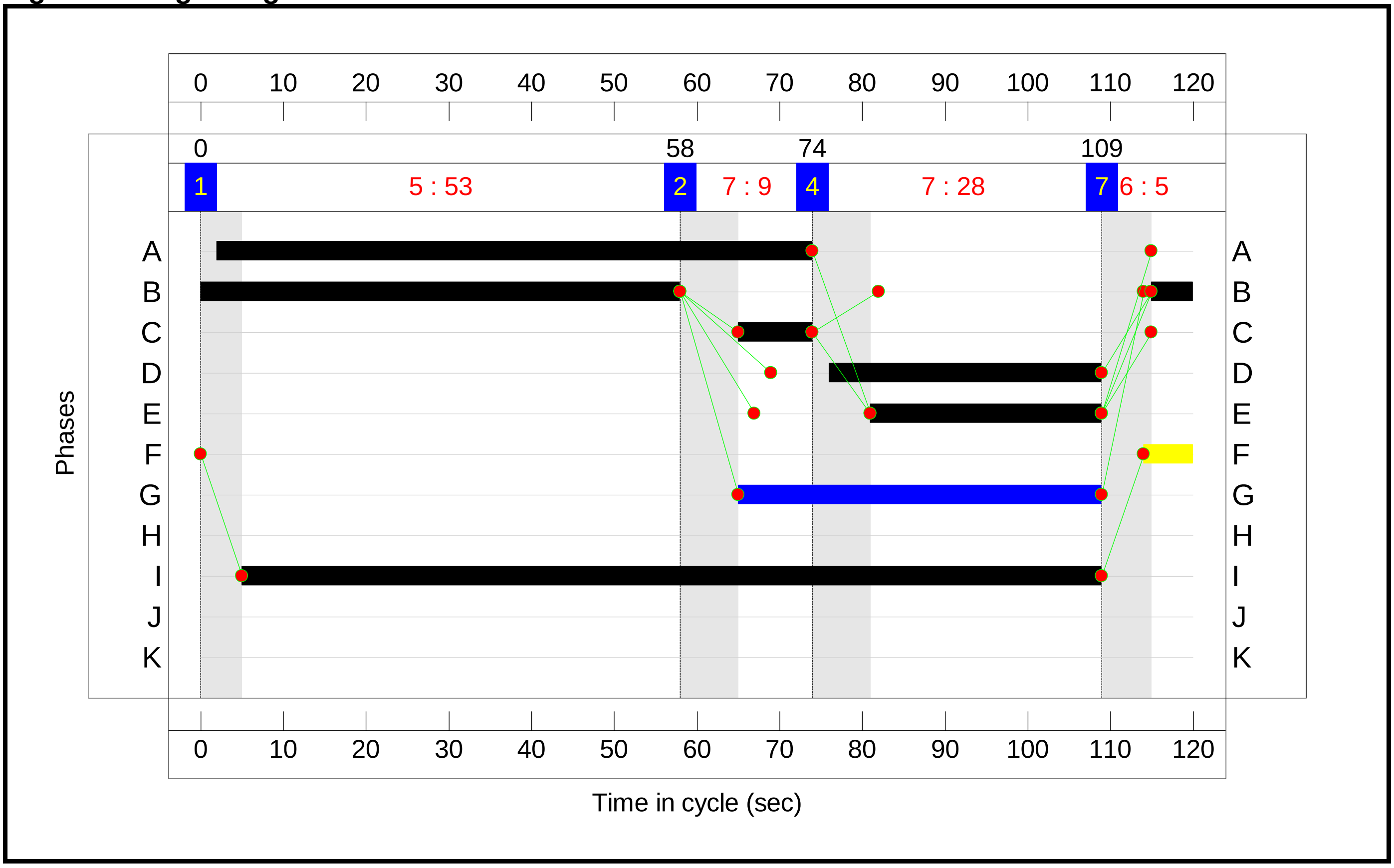
Stage Sequence Diagram



Stage Timings

Stage	1	2	4	7
Duration	53	9	28	5
Change Point	0	58	74	109

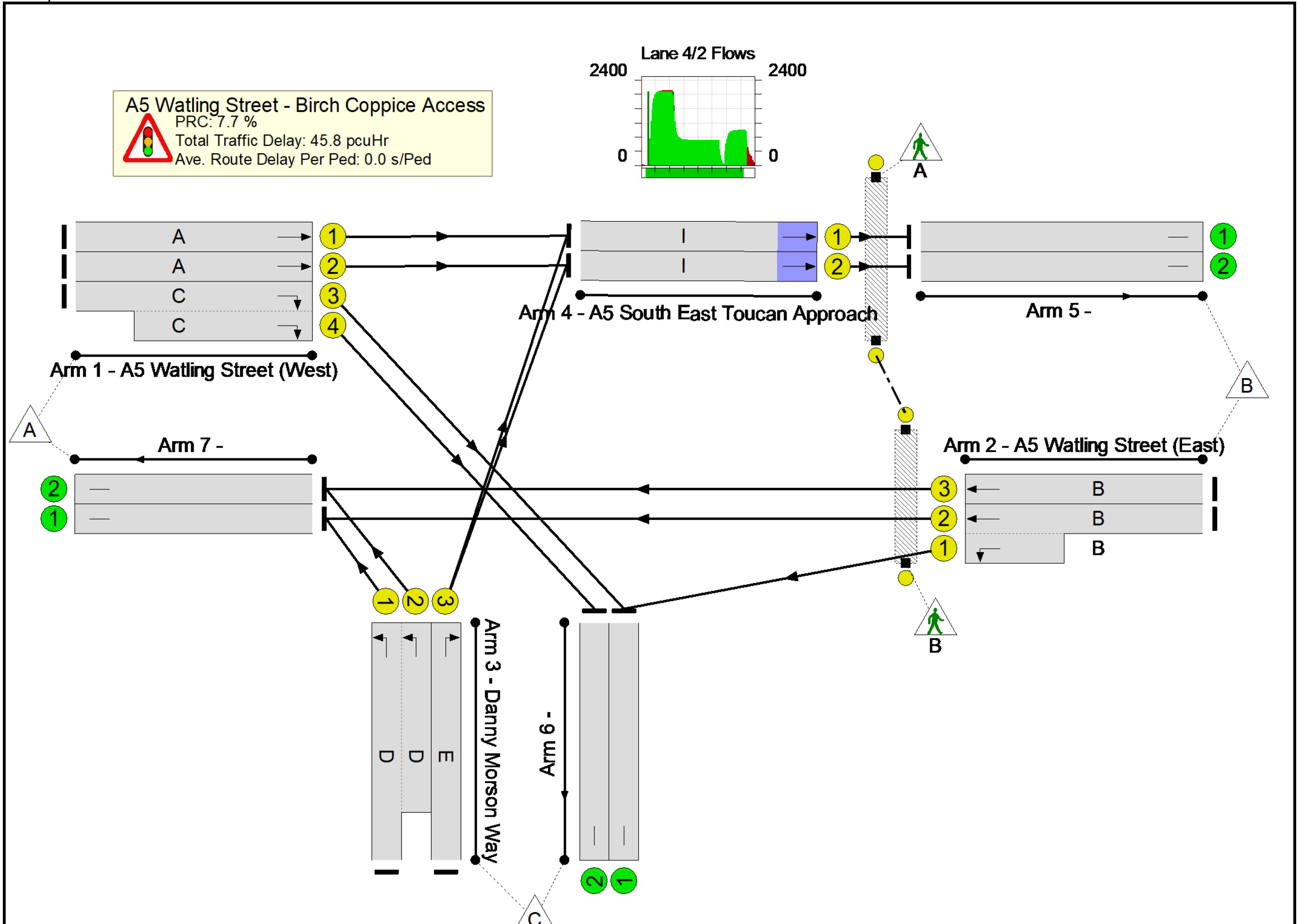
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.6%**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.6%**
1/1	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	72	-	665	1967	1197	55.6%
1/2	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	72	-	727	2108	1282	56.7%
1/3+1/4	A5 Watling Street (West) Right	U	N/A	N/A	C		1	9	-	256	1832:1946	153+162	81.2 : 81.4%
2/2+2/1	A5 Watling Street (East) Left Ahead	U	N/A	N/A	B		1	63	-	898	1943:1843	826+249	83.6 : 83.6%
2/3	A5 Watling Street (East) Ahead	U	N/A	N/A	B		1	63	-	934	2126	1134	82.4%
3/1+3/2	Danny Morson Way Left	U	N/A	N/A	D		1	33	-	770	1930:2087	469+507	78.9 : 78.9%
3/3	Danny Morson Way Right	U	N/A	N/A	E		1	28	-	374	1860	449	83.2%
4/1	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	839	1948	1704	49.2%
4/2	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	927	2086	1825	50.8%
5/1		U	N/A	N/A	-		-	-	-	839	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	927	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	332	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	132	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1060	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1334	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	6	-	0	-	3600	0.0%

Full Input Data And Results

Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	44	-	0	-	26400	0.0%

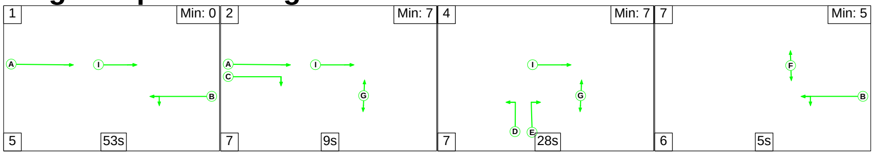
Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network	**-**	**-**	**0**	**0**	**0**	**33.6**	**12.2**	**0.0**	**45.8**	**-**	**-**	**-**	**-**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**0**	**0**	**0**	**33.6**	**12.2**	**0.0**	**45.8**	**-**	**-**	**-**	**-**
1/1	665	665	-	-	-	2.6	0.6	-	3.2	17.3	13.1	0.6	13.7
1/2	727	727	-	-	-	2.8	0.7	-	3.5	17.3	14.3	0.7	15.0
1/3+1/4	256	256	-	-	-	3.8	2.0	-	5.9	82.7	4.3	2.0	6.4
2/2+2/1	898	898	-	-	-	5.5	2.5	-	8.0	32.0	23.2	2.5	25.7
2/3	934	934	-	-	-	6.0	2.3	-	8.3	32.1	25.7	2.3	28.0
3/1+3/2	770	770	-	-	-	8.2	1.8	-	10.0	46.7	11.8	1.8	13.6
3/3	374	374	-	-	-	4.5	2.3	-	6.8	65.6	11.7	2.3	14.1
4/1	839	839	-	-	-	0.1	0.0	-	0.1	0.3	0.5	0.0	0.5
4/2	927	927	-	-	-	0.1	0.0	-	0.1	0.3	0.6	0.0	0.6
5/1	839	839	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	927	927	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	332	332	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	132	132	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1060	1060	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1334	1334	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1 PRC for Signalled Lanes (%): 7.7 Total Delay for Signalled Lanes (pcuHr): 45.82 Cycle Time (s): 120
PRC Over All Lanes (%): 7.7 Total Delay Over All Lanes(pcuHr): 45.82

Full Input Data And Results

Scenario 4: '2021 R + D PM' (FG4: '2021 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

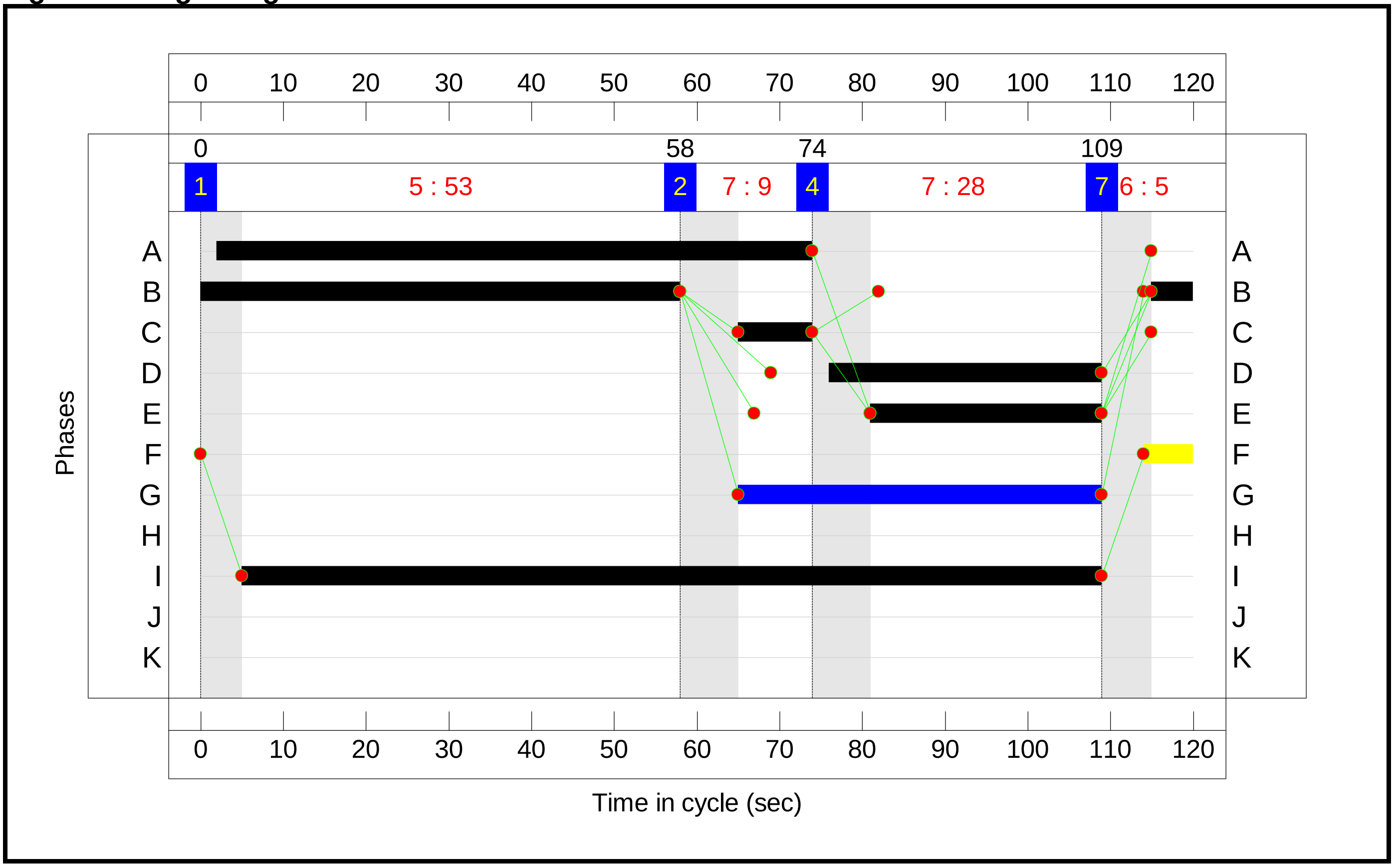
Stage Sequence Diagram



Stage Timings

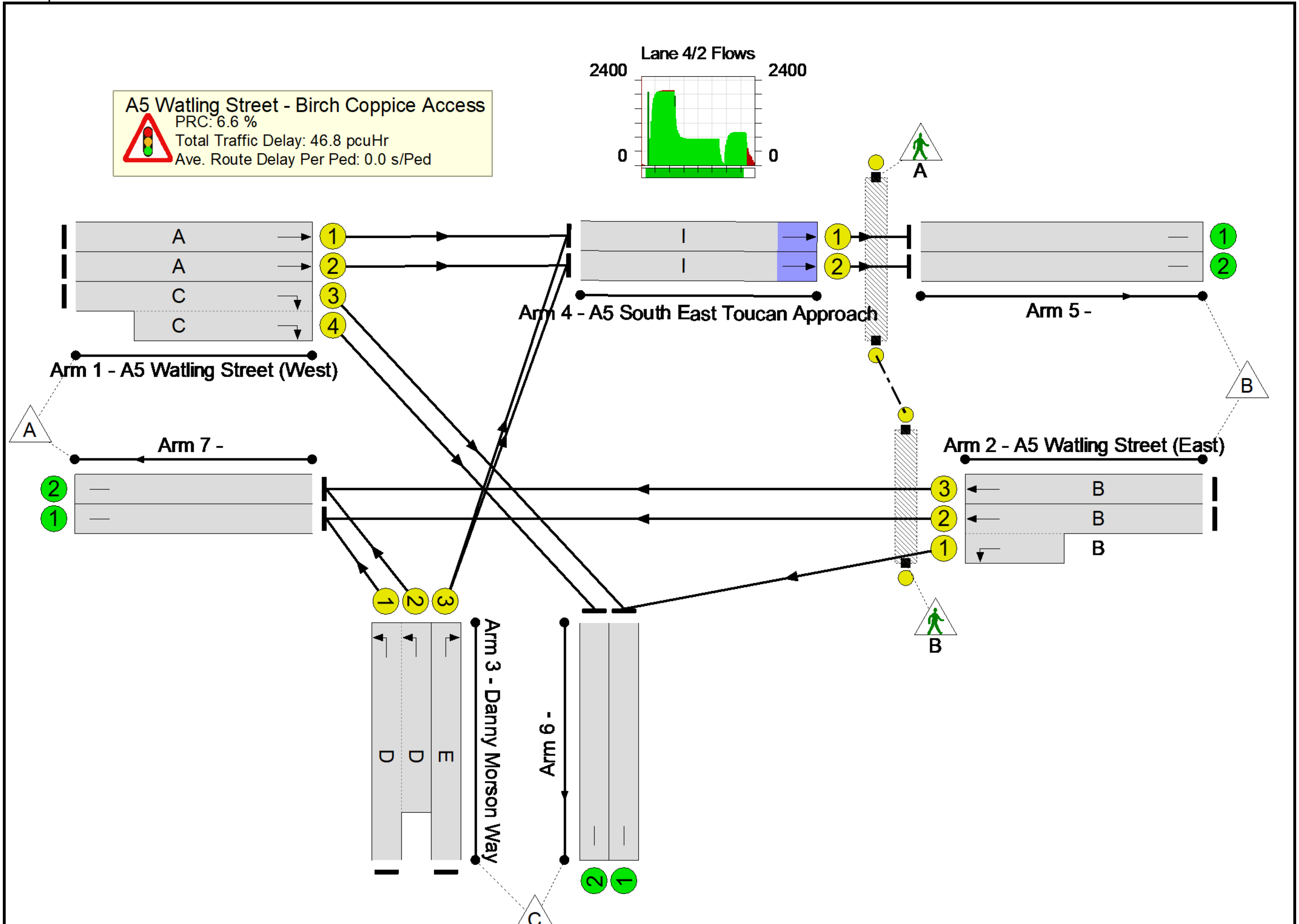
Stage	1	2	4	7
Duration	53	9	28	5
Change Point	0	58	74	109

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



A5 Watling Street - Birch Coppice Access
PRC: 6.6 %
Total Traffic Delay: 46.8 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.4%**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.4%**
1/1	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	72	-	688	1967	1197	57.5%
1/2	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	72	-	752	2108	1282	58.6%
1/3+1/4	A5 Watling Street (West) Right	U	N/A	N/A	C		1	9	-	256	1832:1946	153+162	81.2 : 81.4%
2/2+2/1	A5 Watling Street (East) Left Ahead	U	N/A	N/A	B		1	63	-	907	1943:1843	828+246	84.4 : 84.4%
2/3	A5 Watling Street (East) Ahead	U	N/A	N/A	B		1	63	-	945	2126	1134	83.3%
3/1+3/2	Danny Morson Way Left	U	N/A	N/A	D		1	33	-	770	1930:2087	469+507	78.9 : 78.9%
3/3	Danny Morson Way Right	U	N/A	N/A	E		1	28	-	374	1860	449	83.2%
4/1	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	874	1948	1704	51.3%
4/2	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	940	2086	1825	51.5%
5/1		U	N/A	N/A	-		-	-	-	874	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	940	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	332	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	132	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1069	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1345	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	6	-	0	-	3600	0.0%

Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	44	-	0	-	26400	0.0%

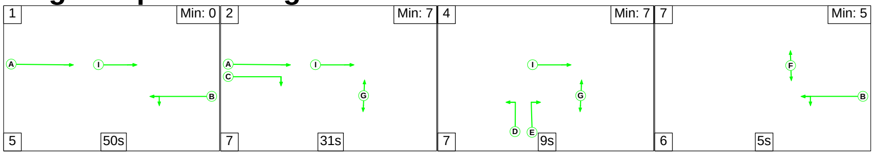
Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network	**-**	**-**	**0**	**0**	**0**	**34.1**	**12.7**	**0.0**	**46.8**	**-**	**-**	**-**	**-**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**0**	**0**	**0**	**34.1**	**12.7**	**0.0**	**46.8**	**-**	**-**	**-**	**-**
1/1	688	688	-	-	-	2.7	0.7	-	3.4	17.7	13.8	0.7	14.4
1/2	752	752	-	-	-	3.0	0.7	-	3.7	17.7	15.2	0.7	16.0
1/3+1/4	256	256	-	-	-	3.8	2.0	-	5.9	82.7	4.3	2.0	6.4
2/2+2/1	907	907	-	-	-	5.6	2.6	-	8.3	32.8	23.7	2.6	26.3
2/3	945	945	-	-	-	6.2	2.4	-	8.6	32.8	26.3	2.4	28.7
3/1+3/2	770	770	-	-	-	8.2	1.8	-	10.0	46.7	11.8	1.8	13.6
3/3	374	374	-	-	-	4.5	2.3	-	6.8	65.6	11.7	2.3	14.1
4/1	874	874	-	-	-	0.1	0.0	-	0.1	0.3	0.6	0.0	0.6
4/2	940	940	-	-	-	0.1	0.0	-	0.1	0.2	0.6	0.0	0.6
5/1	874	874	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	940	940	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	332	332	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	132	132	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1069	1069	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1345	1345	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1 PRC for Signalled Lanes (%): 6.6 Total Delay for Signalled Lanes (pcuHr): 46.76 Cycle Time (s): 120
PRC Over All Lanes (%): 6.6 Total Delay Over All Lanes(pcuHr): 46.76

Full Input Data And Results

Scenario 5: '2026 R AM' (FG5: '2026 Reference AM Peak', Plan 1: 'Network Control Plan 1')

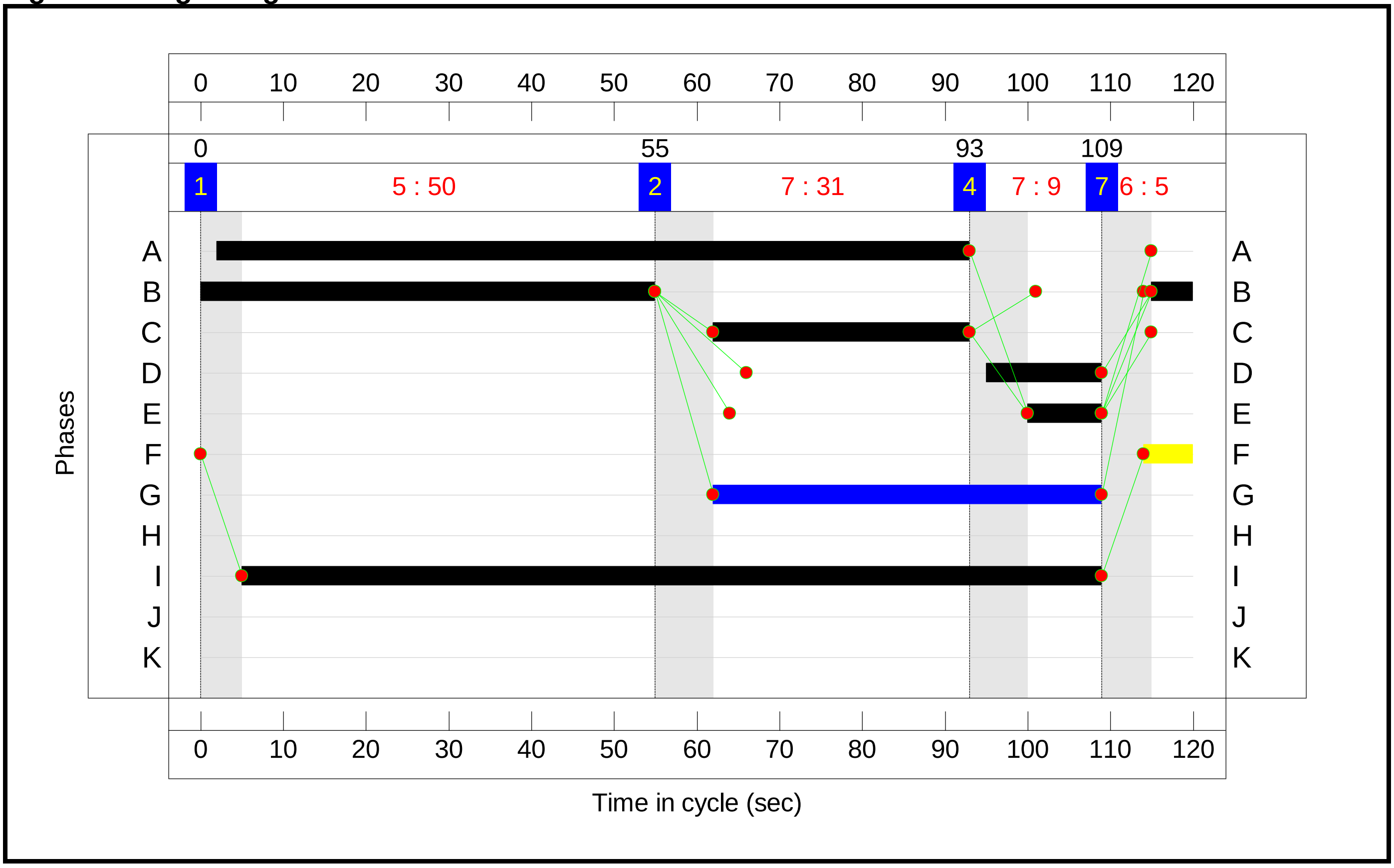
Stage Sequence Diagram



Stage Timings

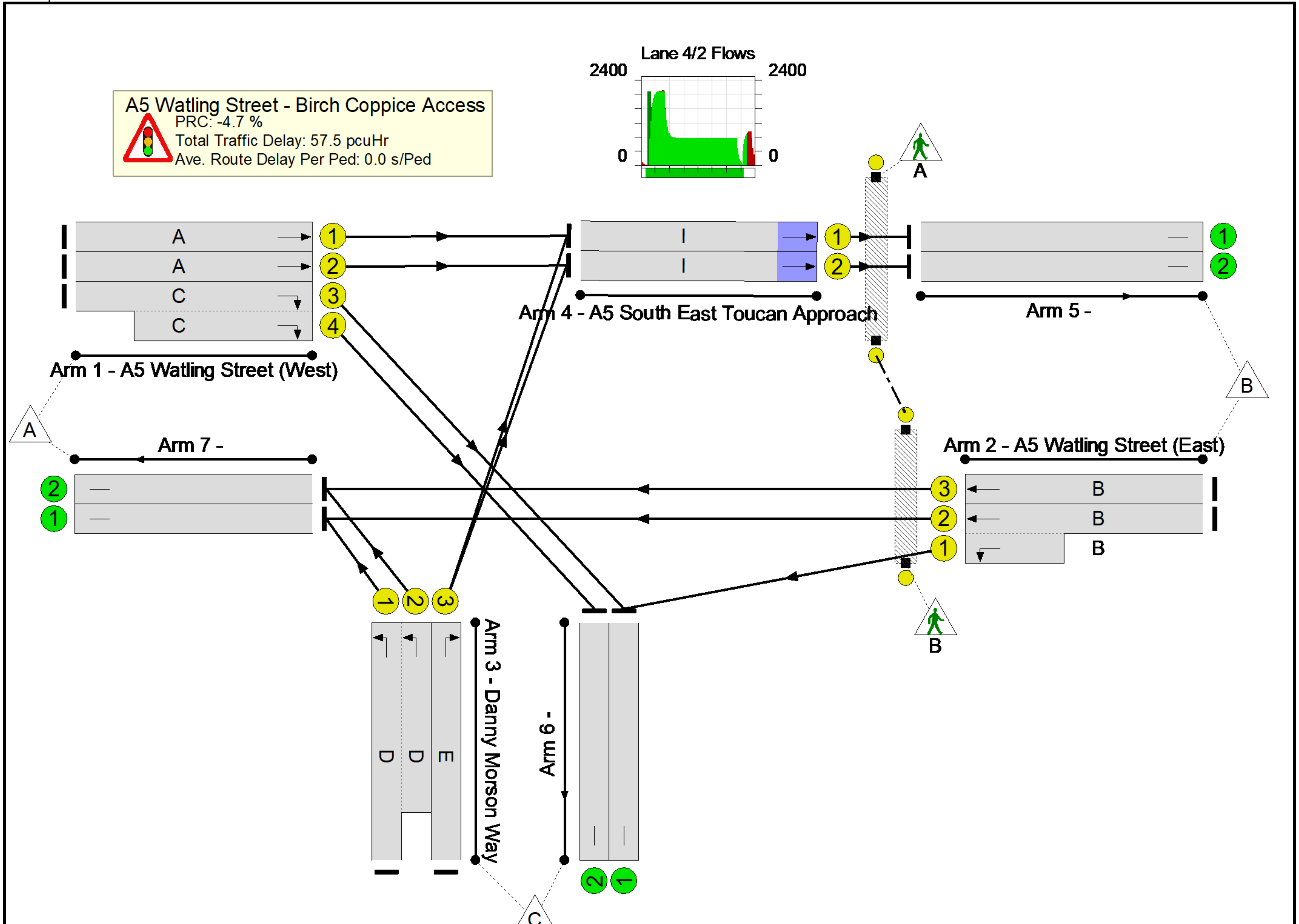
Stage	1	2	4	7
Duration	50	31	9	5
Change Point	0	55	93	109

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


A5 Watling Street - Birch Coppice Access
PRC: -4.7 %
Total Traffic Delay: 57.5 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Lane 4/2 Flows
2400
2400
0
0
Arm 1 - A5 Watling Street (West)
A
A
C
C
1
2
3
4
Arm 4 - A5 South East Toucan Approach
I
I
Arm 5 -
Arm 2 - A5 Watling Street (East)
B
B
B
Arm 7 -
Arm 3 - Danny Morson Way
D
D
E
Arm 6 -
A
B
C

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**94.2%**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**94.2%**
1/1	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	91	-	691	1967	1508	45.8%
1/2	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	91	-	763	2108	1616	47.2%
1/3+1/4	A5 Watling Street (West) Right	U	N/A	N/A	C		1	31	-	704	1832:1946	363+393	93.2 : 93.2%
2/2+2/1	A5 Watling Street (East) Left Ahead	U	N/A	N/A	B		1	60	-	1036	1943:1843	589+513	94.0 : 94.0%
2/3	A5 Watling Street (East) Ahead	U	N/A	N/A	B		1	60	-	1000	2126	1081	92.5%
3/1+3/2	Danny Morson Way Left	U	N/A	N/A	D		1	14	-	404	1930:2087	241+261	80.4 : 80.5%
3/3	Danny Morson Way Right	U	N/A	N/A	E		1	9	-	146	1860	155	94.2%
4/1	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	760	1948	1704	44.6%
4/2	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	840	2086	1825	46.0%
5/1		U	N/A	N/A	-		-	-	-	760	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	840	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	820	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	366	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	748	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1210	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	6	-	0	-	3600	0.0%

Full Input Data And Results

Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	47	-	0	-	28200	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**32.9**	**24.7**	**0.0**	**57.5**	**-**	**-**	**-**	**-**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**0**	**0**	**0**	**32.9**	**24.7**	**0.0**	**57.5**	**-**	**-**	**-**	**-**
1/1	691	691	-	-	-	1.0	0.4	-	1.4	7.2	8.3	0.4	8.7
1/2	763	763	-	-	-	1.1	0.4	-	1.5	7.2	9.1	0.4	9.6
1/3+1/4	704	704	-	-	-	7.9	5.6	-	13.5	68.9	14.0	5.6	19.6
2/2+2/1	1036	1036	-	-	-	7.1	6.6	-	13.6	47.3	27.3	6.6	33.9
2/3	1000	1000	-	-	-	7.6	5.5	-	13.1	47.0	30.8	5.5	36.3
3/1+3/2	404	404	-	-	-	5.7	2.0	-	7.7	68.7	6.8	2.0	8.7
3/3	146	146	-	-	-	2.2	4.2	-	6.4	158.2	4.8	4.2	9.0
4/1	760	760	-	-	-	0.2	0.0	-	0.2	0.7	1.5	0.0	1.5
4/2	840	840	-	-	-	0.2	0.0	-	0.2	0.8	1.8	0.0	1.8
5/1	760	760	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	840	840	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	820	820	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	366	366	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	748	748	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1210	1210	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1

PRC for Signalled Lanes (%): -4.7

PRC Over All Lanes (%): -4.7

Total Delay for Signalled Lanes (pcuHr): 57.54

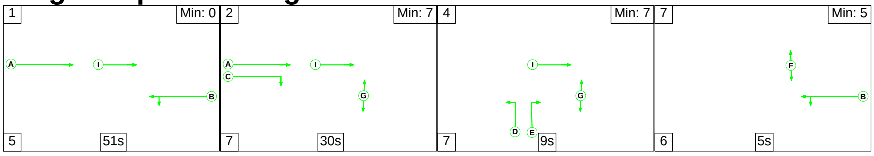
Total Delay Over All Lanes(pcuHr): 57.54

Cycle Time (s): 120

Full Input Data And Results

Scenario 6: '2026 R +D AM' (FG6: '2026 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

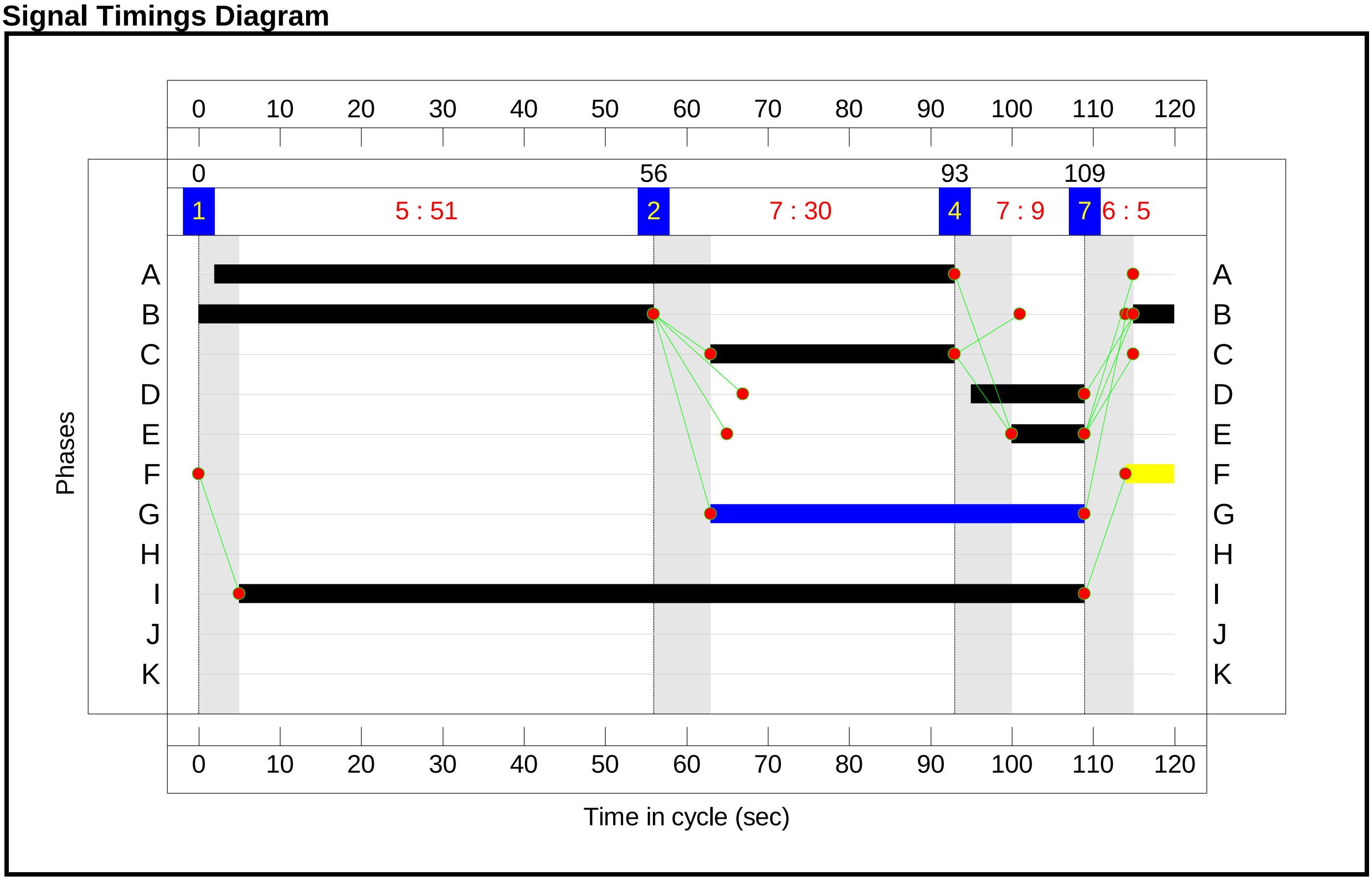
Stage Sequence Diagram



Stage Timings

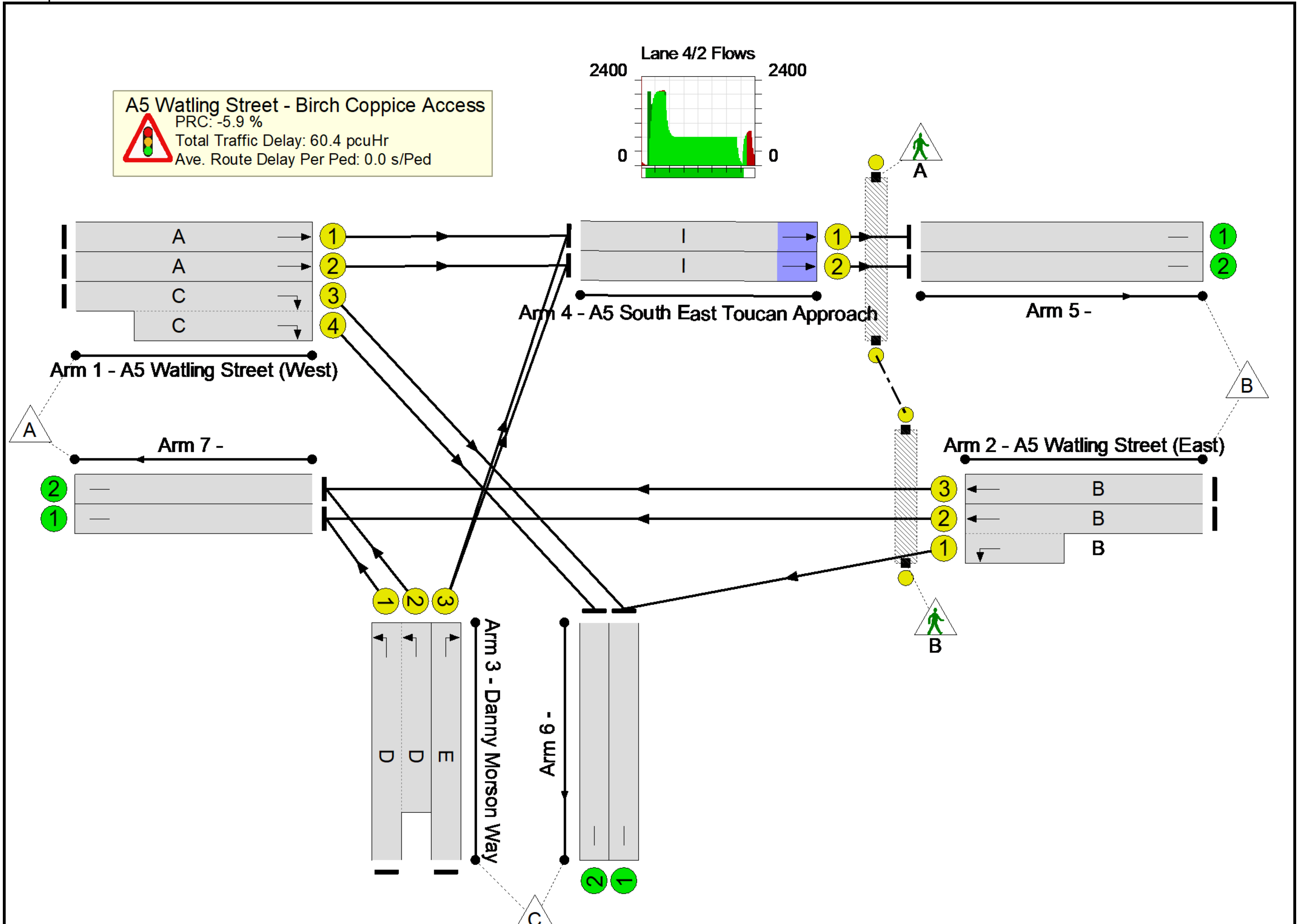
Stage	1	2	4	7
Duration	51	30	9	5
Change Point	0	56	93	109

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


A5 Watling Street - Birch Coppice Access
PRC: -5.9 %
Total Traffic Delay: 60.4 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Lane 4/2 Flows
2400
2400
0
0
Arm 1 - A5 Watling Street (West)
Arm 2 - A5 Watling Street (East)
Arm 3 - Danny Morson Way
Arm 4 - A5 South East Toucan Approach
Arm 5 -
Arm 6 -
Arm 7 -
A
A
C
C
I
I
B
B
B
D
D
E
1
2
3
4
A
B
C

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**95.3%**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**95.3%**
1/1	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	91	-	714	1967	1508	47.3%
1/2	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	91	-	788	2108	1616	48.8%
1/3+1/4	A5 Watling Street (West) Right	U	N/A	N/A	C		1	30	-	704	1832:1946	353+385	95.3 : 95.3%
2/2+2/1	A5 Watling Street (East) Left Ahead	U	N/A	N/A	B		1	61	-	1052	1943:1843	604+510	94.4 : 94.4%
2/3	A5 Watling Street (East) Ahead	U	N/A	N/A	B		1	61	-	1024	2126	1098	93.2%
3/1+3/2	Danny Morson Way Left	U	N/A	N/A	D		1	14	-	404	1930:2087	241+261	80.4 : 80.5%
3/3	Danny Morson Way Right	U	N/A	N/A	E		1	9	-	146	1860	155	94.2%
4/1	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	782	1948	1704	45.9%
4/2	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	866	2086	1825	47.4%
5/1		U	N/A	N/A	-		-	-	-	782	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	866	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	819	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	367	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	764	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1234	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	6	-	0	-	3600	0.0%

Full Input Data And Results

Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	46	-	0	-	27600	0.0%

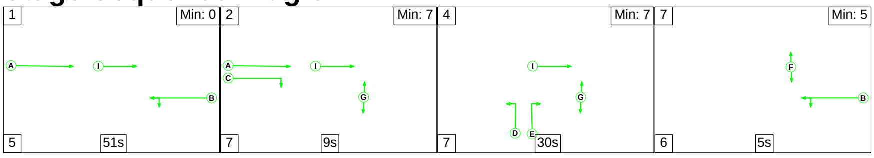
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**33.3**	**27.2**	**0.0**	**60.4**	**-**	**-**	**-**	**-**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**0**	**0**	**0**	**33.3**	**27.2**	**0.0**	**60.4**	**-**	**-**	**-**	**-**
1/1	714	714	-	-	-	1.0	0.4	-	1.5	7.4	8.5	0.4	9.0
1/2	788	788	-	-	-	1.1	0.5	-	1.6	7.4	9.6	0.5	10.1
1/3+1/4	704	704	-	-	-	8.1	7.2	-	15.3	78.1	14.4	7.2	21.6
2/2+2/1	1052	1052	-	-	-	7.1	6.9	-	14.0	47.8	28.2	6.9	35.1
2/3	1024	1024	-	-	-	7.7	5.9	-	13.6	47.9	31.6	5.9	37.5
3/1+3/2	404	404	-	-	-	5.7	2.0	-	7.7	68.7	6.8	2.0	8.7
3/3	146	146	-	-	-	2.2	4.2	-	6.4	158.2	4.8	4.2	9.0
4/1	782	782	-	-	-	0.2	0.0	-	0.2	0.7	1.4	0.0	1.4
4/2	866	866	-	-	-	0.2	0.0	-	0.2	0.7	1.9	0.0	1.9
5/1	782	782	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	866	866	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	819	819	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	367	367	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	764	764	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1234	1234	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1 PRC for Signalled Lanes (%): -5.9 Total Delay for Signalled Lanes (pcuHr): 60.42 Cycle Time (s): 120
PRC Over All Lanes (%): -5.9 Total Delay Over All Lanes(pcuHr): 60.42

Full Input Data And Results

Scenario 7: '2026 R PM' (FG7: '2026 Reference PM Peak', Plan 1: 'Network Control Plan 1')

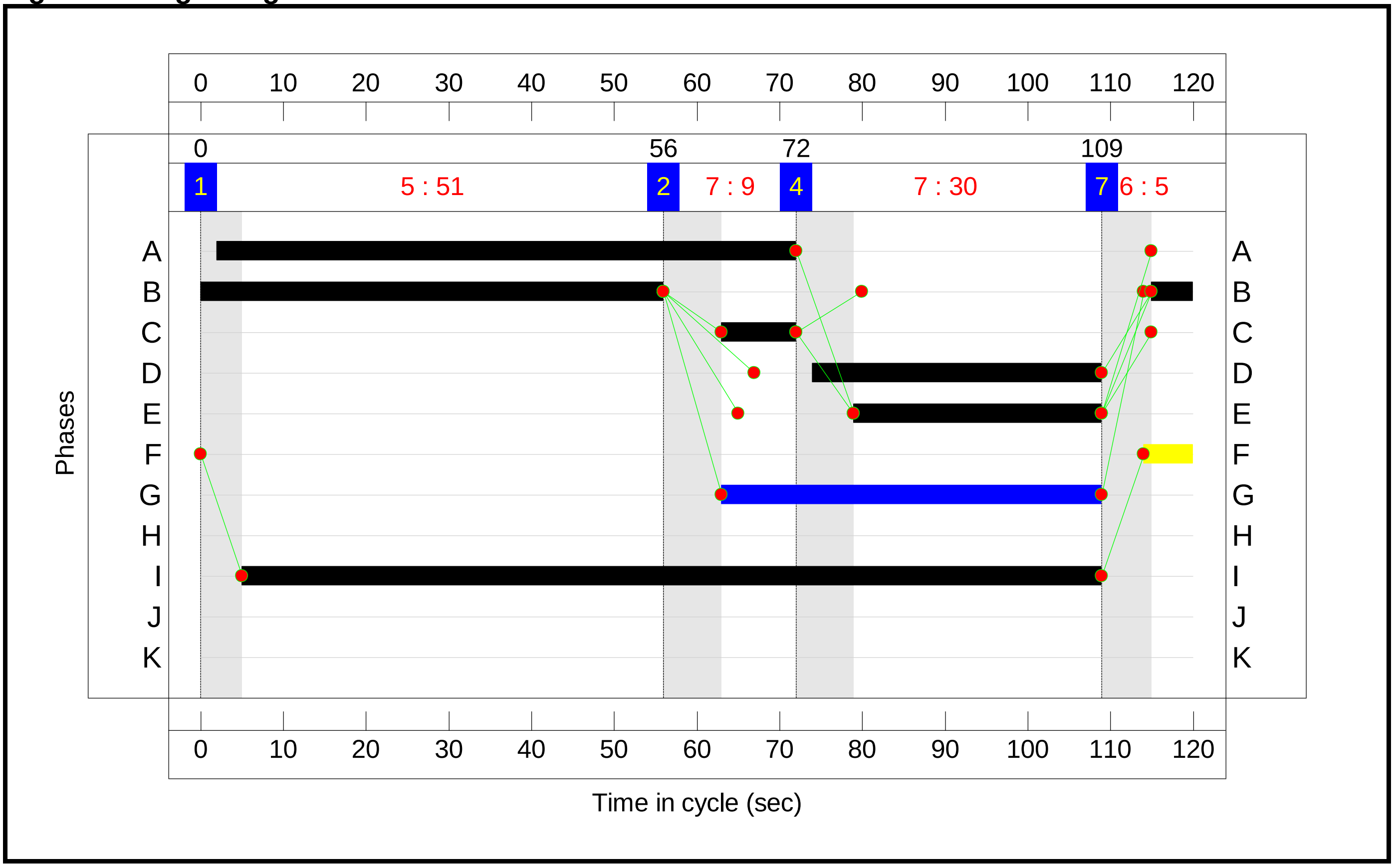
Stage Sequence Diagram



Stage Timings

Stage	1	2	4	7
Duration	51	9	30	5
Change Point	0	56	72	109

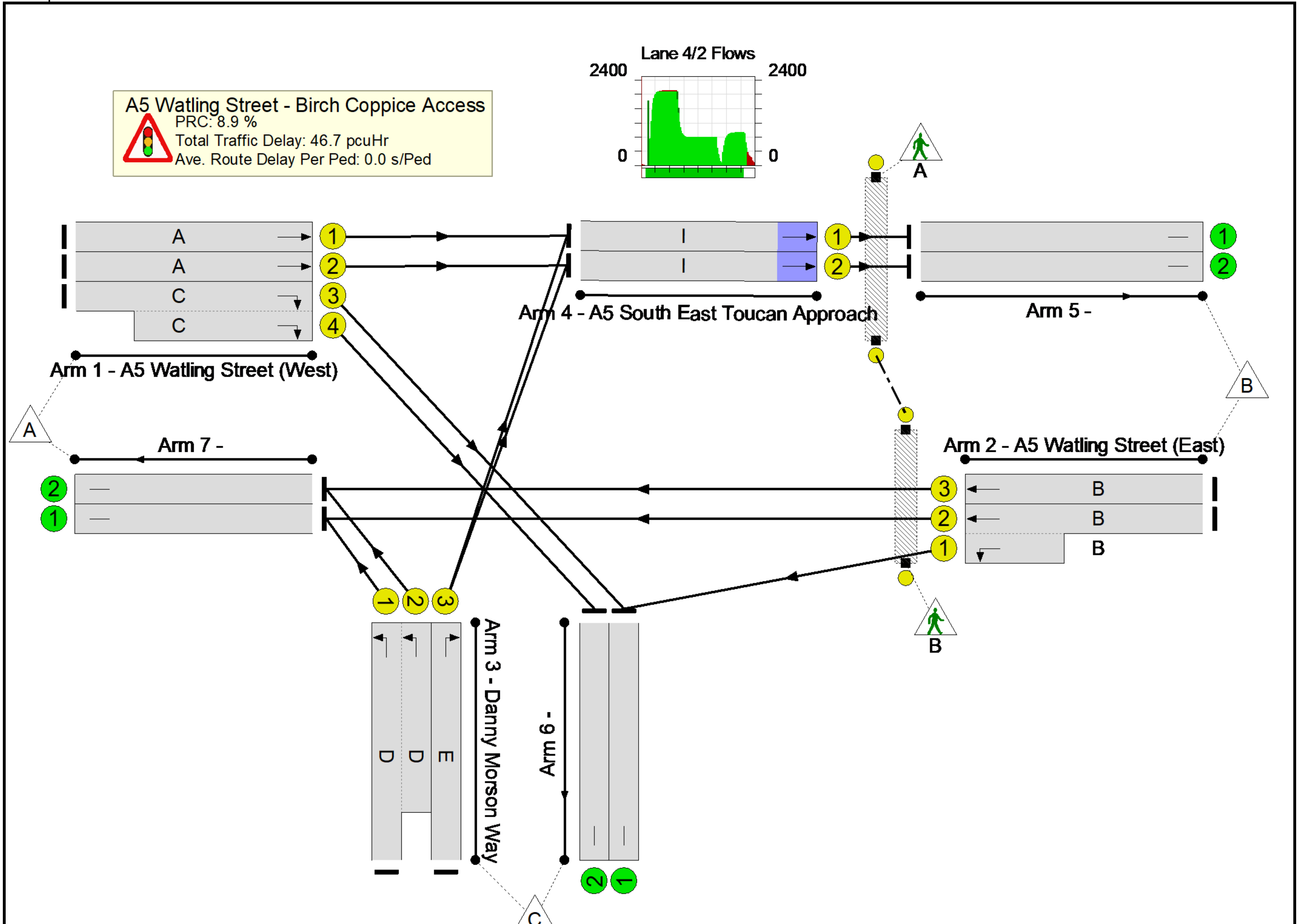
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.6%**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.6%**
1/1	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	70	-	726	1967	1164	62.4%
1/2	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	70	-	792	2108	1247	63.5%
1/3+1/4	A5 Watling Street (West) Right	U	N/A	N/A	C		1	9	-	256	1832:1946	153+162	81.2 : 81.4%
2/2+2/1	A5 Watling Street (East) Left Ahead	U	N/A	N/A	B		1	61	-	860	1943:1843	809+232	82.6 : 82.6%
2/3	A5 Watling Street (East) Ahead	U	N/A	N/A	B		1	61	-	894	2126	1098	81.4%
3/1+3/2	Danny Morson Way Left	U	N/A	N/A	D		1	35	-	778	1930:2087	485+524	77.1 : 77.1%
3/3	Danny Morson Way Right	U	N/A	N/A	E		1	30	-	394	1860	480	82.0%
4/1	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	924	1948	1704	54.2%
4/2	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	988	2086	1825	54.1%
5/1		U	N/A	N/A	-		-	-	-	924	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	988	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	316	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	132	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1042	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1298	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	6	-	0	-	3600	0.0%

Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	46	-	0	-	27600	0.0%

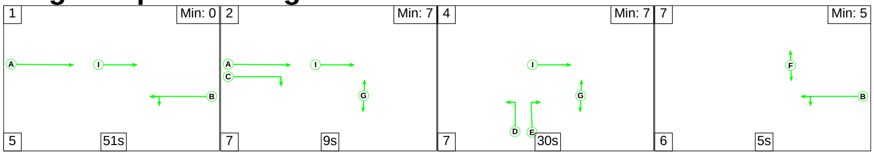
Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network	**-**	**-**	**0**	**0**	**0**	**34.7**	**12.0**	**0.0**	**46.7**	**-**	**-**	**-**	**-**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**0**	**0**	**0**	**34.7**	**12.0**	**0.0**	**46.7**	**-**	**-**	**-**	**-**
1/1	726	726	-	-	-	3.2	0.8	-	4.0	20.0	15.5	0.8	16.4
1/2	792	792	-	-	-	3.5	0.9	-	4.4	20.0	17.2	0.9	18.0
1/3+1/4	256	256	-	-	-	3.8	2.0	-	5.9	82.7	4.3	2.0	6.4
2/2+2/1	860	860	-	-	-	5.5	2.3	-	7.8	32.7	22.2	2.3	24.5
2/3	894	894	-	-	-	6.0	2.1	-	8.1	32.8	24.8	2.1	27.0
3/1+3/2	778	778	-	-	-	7.9	1.7	-	9.5	44.1	11.7	1.7	13.3
3/3	394	394	-	-	-	4.6	2.2	-	6.8	61.7	12.3	2.2	14.4
4/1	924	924	-	-	-	0.1	0.0	-	0.1	0.2	0.5	0.0	0.5
4/2	988	988	-	-	-	0.1	0.0	-	0.1	0.2	0.5	0.0	0.5
5/1	924	924	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	988	988	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	316	316	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	132	132	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1042	1042	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1298	1298	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1 PRC for Signalled Lanes (%): 8.9 Total Delay for Signalled Lanes (pcuHr): 46.68 Cycle Time (s): 120
PRC Over All Lanes (%): 8.9 Total Delay Over All Lanes(pcuHr): 46.68

Full Input Data And Results

Scenario 8: '2026 R + D PM' (FG8: '2026 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

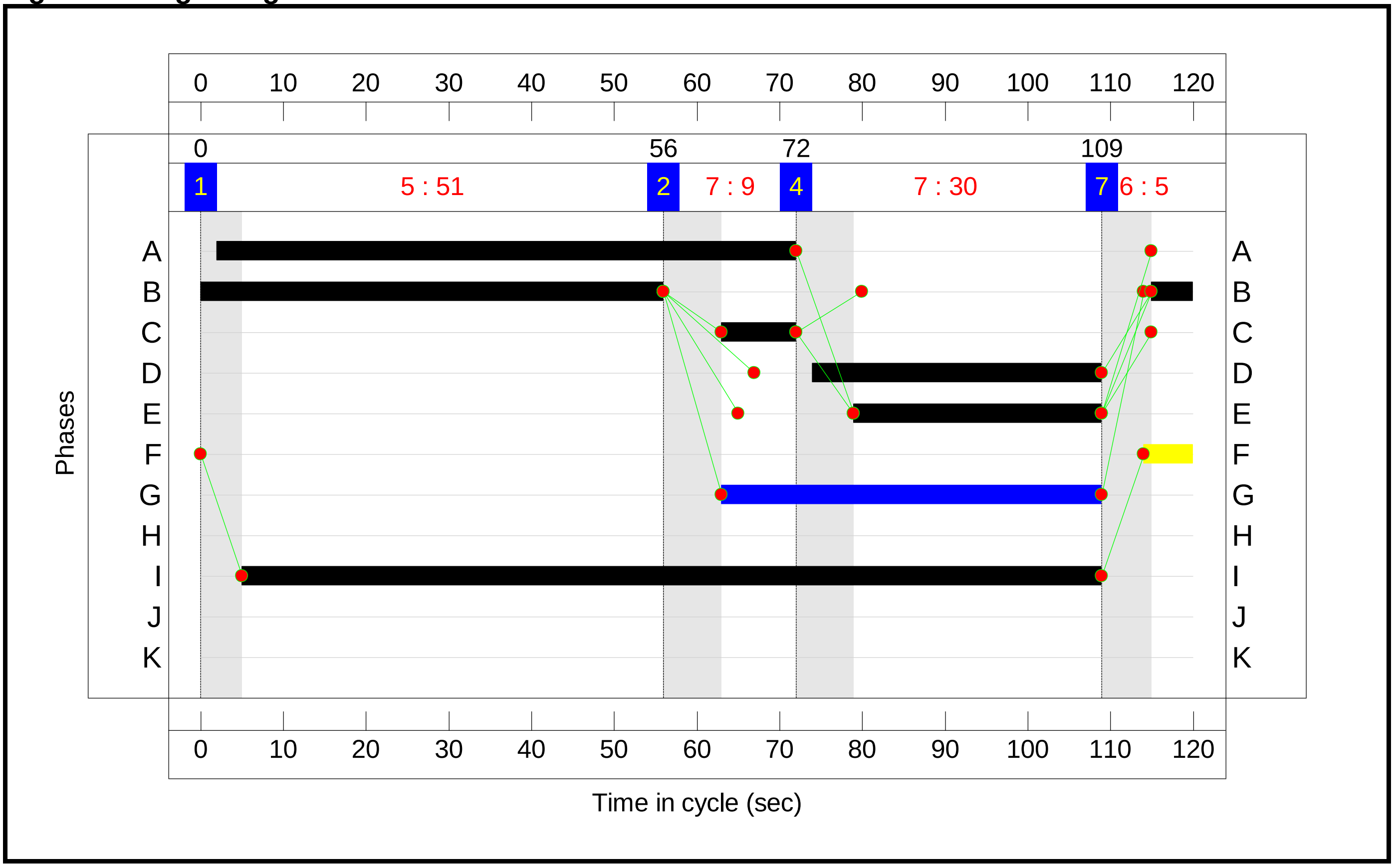
Stage Sequence Diagram



Stage Timings

Stage	1	2	4	7
Duration	51	9	30	5
Change Point	0	56	72	109

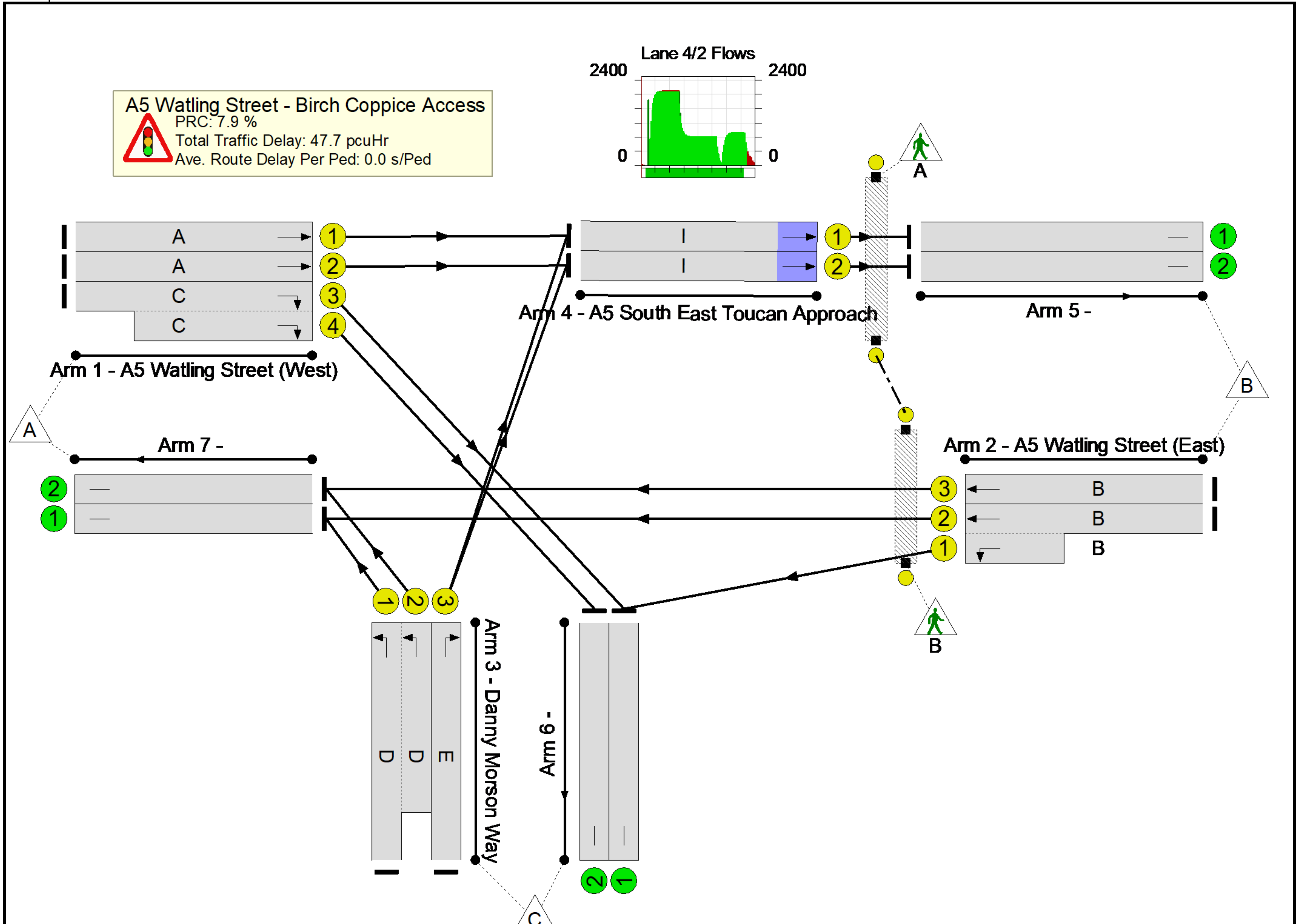
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.4%**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.4%**
1/1	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	70	-	754	1967	1164	64.8%
1/2	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	70	-	820	2108	1247	65.7%
1/3+1/4	A5 Watling Street (West) Right	U	N/A	N/A	C		1	9	-	256	1832:1946	153+162	81.2 : 81.4%
2/2+2/1	A5 Watling Street (East) Left Ahead	U	N/A	N/A	B		1	61	-	868	1943:1843	810+230	83.4 : 83.4%
2/3	A5 Watling Street (East) Ahead	U	N/A	N/A	B		1	61	-	904	2126	1098	82.3%
3/1+3/2	Danny Morson Way Left	U	N/A	N/A	D		1	35	-	778	1930:2087	485+524	77.1 : 77.1%
3/3	Danny Morson Way Right	U	N/A	N/A	E		1	30	-	394	1860	480	82.0%
4/1	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	950	1948	1704	55.7%
4/2	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	1018	2086	1825	55.8%
5/1		U	N/A	N/A	-		-	-	-	950	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	1018	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	316	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	132	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1050	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1308	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	6	-	0	-	3600	0.0%

Full Input Data And Results

Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	46	-	0	-	27600	0.0%

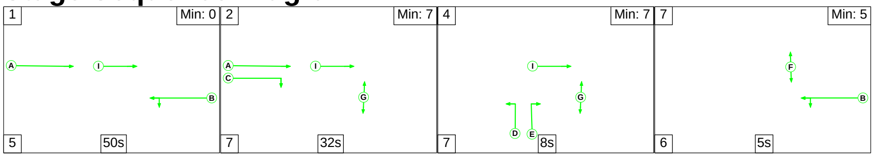
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**35.3**	**12.4**	**0.0**	**47.7**	**-**	**-**	**-**	**-**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**0**	**0**	**0**	**35.3**	**12.4**	**0.0**	**47.7**	**-**	**-**	**-**	**-**
1/1	754	754	-	-	-	3.4	0.9	-	4.3	20.6	16.5	0.9	17.5
1/2	820	820	-	-	-	3.7	1.0	-	4.7	20.6	18.2	1.0	19.2
1/3+1/4	256	256	-	-	-	3.8	2.0	-	5.9	82.7	4.3	2.0	6.4
2/2+2/1	868	868	-	-	-	5.6	2.4	-	8.1	33.4	22.7	2.4	25.1
2/3	904	904	-	-	-	6.1	2.3	-	8.4	33.4	25.1	2.3	27.4
3/1+3/2	778	778	-	-	-	7.9	1.7	-	9.5	44.1	11.7	1.7	13.3
3/3	394	394	-	-	-	4.6	2.2	-	6.8	61.7	12.3	2.2	14.4
4/1	950	950	-	-	-	0.1	0.0	-	0.1	0.2	0.5	0.0	0.5
4/2	1018	1018	-	-	-	0.1	0.0	-	0.1	0.2	0.5	0.0	0.5
5/1	950	950	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	1018	1018	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	316	316	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	132	132	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1050	1050	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1308	1308	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1 PRC for Signalled Lanes (%): 7.9 Total Delay for Signalled Lanes (pcuHr): 47.73 Cycle Time (s): 120
PRC Over All Lanes (%): 7.9 Total Delay Over All Lanes(pcuHr): 47.73

Full Input Data And Results

Scenario 9: '2031 R AM' (FG9: '2031 Reference AM Peak', Plan 1: 'Network Control Plan 1')

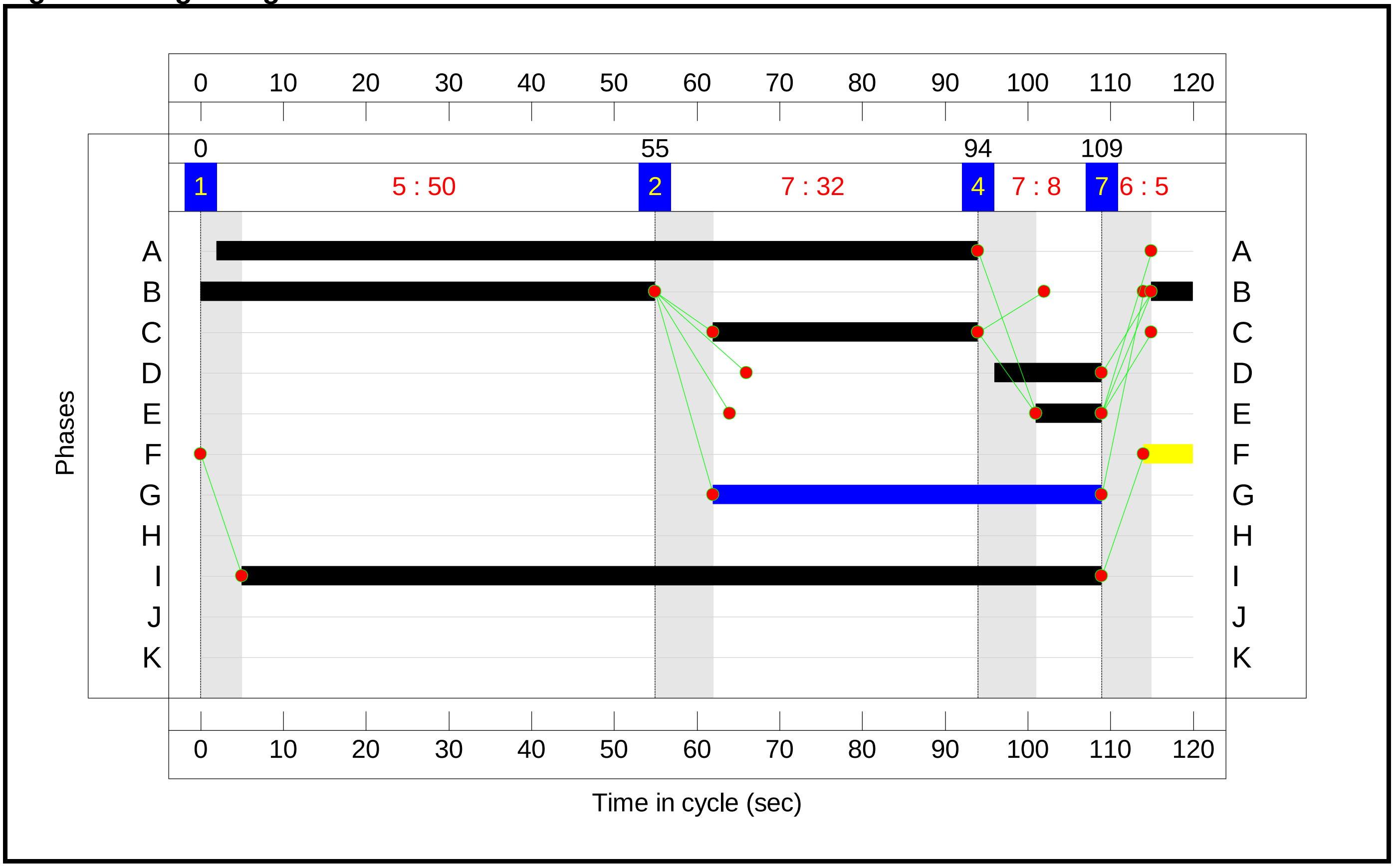
Stage Sequence Diagram



Stage Timings

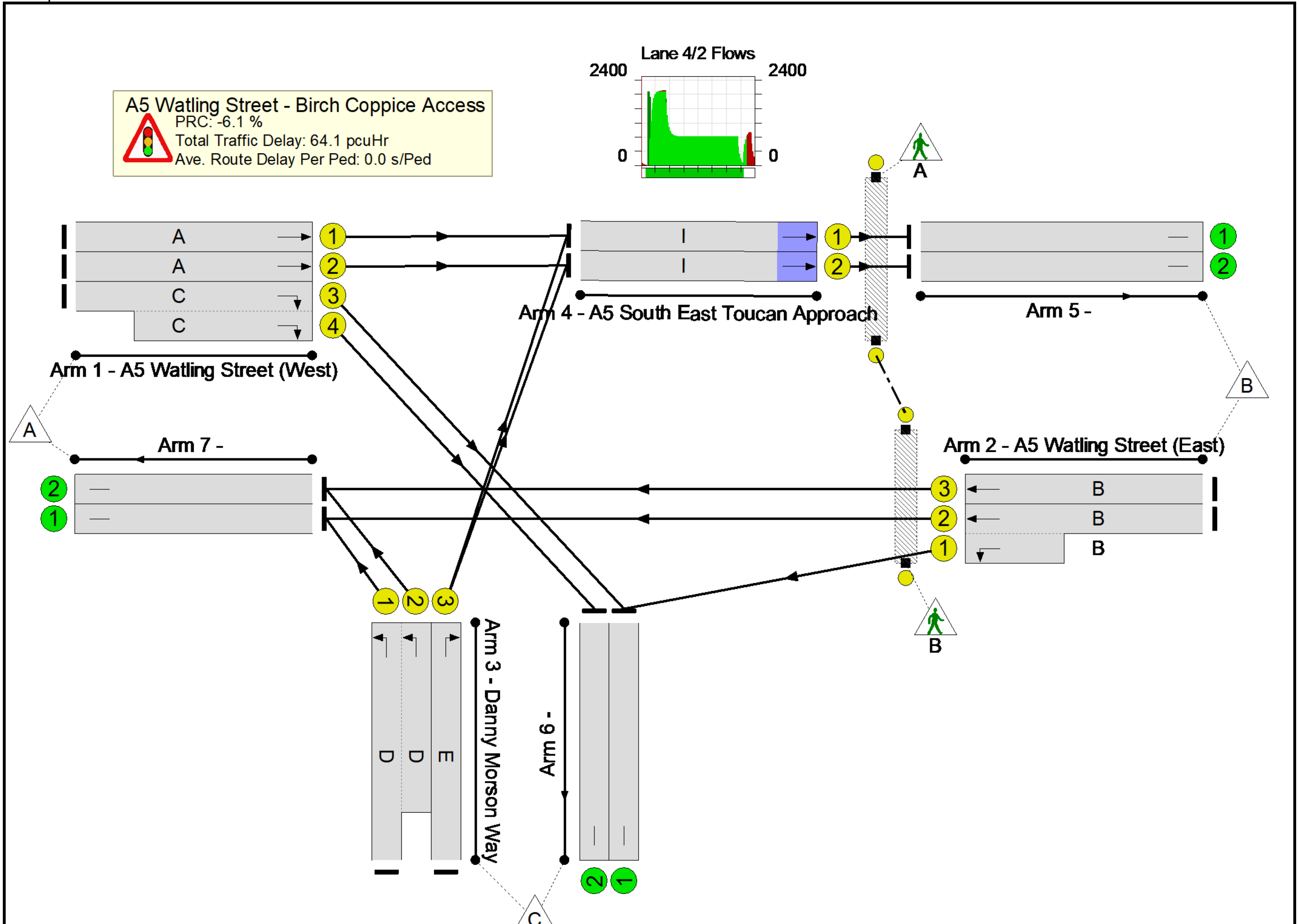
Stage	1	2	4	7
Duration	50	32	8	5
Change Point	0	55	94	109

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


A5 Watling Street - Birch Coppice Access
PRC: -6.1 %
Total Traffic Delay: 64.1 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Lane 4/2 Flows
2400
2400
0
0
A
A
C
C
1
2
3
4
Arm 1 - A5 Watling Street (West)
I
I
1
2
Arm 4 - A5 South East Toucan Approach
1
2
Arm 5 -
A
B
A
Arm 7 -
2
1
Arm 2 - A5 Watling Street (East)
B
B
B
3
2
1
B
1
2
3
D
D
E
Arm 3 - Danny Morson Way
Arm 6 -
2
1
C

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**95.5%**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**95.5%**
1/1	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	92	-	744	1967	1524	48.8%
1/2	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	92	-	822	2108	1634	50.3%
1/3+1/4	A5 Watling Street (West) Right	U	N/A	N/A	C		1	32	-	732	1832:1946	368+401	95.1 : 95.1%
2/2+2/1	A5 Watling Street (East) Left Ahead	U	N/A	N/A	B		1	60	-	1041	1943:1843	611+480	95.5 : 95.5%
2/3	A5 Watling Street (East) Ahead	U	N/A	N/A	B		1	60	-	1023	2126	1081	94.7%
3/1+3/2	Danny Morson Way Left	U	N/A	N/A	D		1	13	-	426	1930:2087	225+243	91.0 : 90.8%
3/3	Danny Morson Way Right	U	N/A	N/A	E		1	8	-	124	1860	140	88.9%
4/1	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	803	1948	1704	47.1%
4/2	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	887	2086	1825	48.6%
5/1		U	N/A	N/A	-		-	-	-	803	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	887	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	808	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	382	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	788	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1244	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	6	-	0	-	3600	0.0%

Full Input Data And Results

Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	47	-	0	-	28200	0.0%

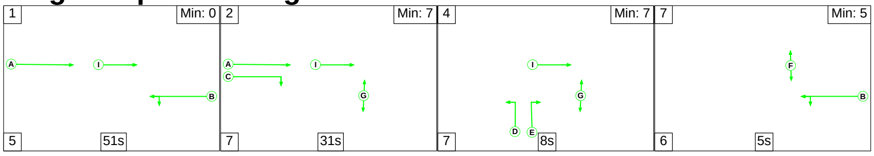
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**33.9**	**30.3**	**0.0**	**64.1**	**-**	**-**	**-**	**-**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**0**	**0**	**0**	**33.9**	**30.3**	**0.0**	**64.1**	**-**	**-**	**-**	**-**
1/1	744	744	-	-	-	1.0	0.5	-	1.5	7.2	8.9	0.5	9.4
1/2	822	822	-	-	-	1.1	0.5	-	1.6	7.2	10.0	0.5	10.6
1/3+1/4	732	732	-	-	-	8.1	7.1	-	15.2	74.8	15.3	7.1	22.4
2/2+2/1	1041	1041	-	-	-	7.3	8.0	-	15.3	52.8	28.7	8.0	36.7
2/3	1023	1023	-	-	-	7.9	7.1	-	15.1	53.0	32.1	7.1	39.2
3/1+3/2	426	426	-	-	-	6.2	4.2	-	10.4	87.7	7.2	4.2	11.4
3/3	124	124	-	-	-	1.9	2.9	-	4.8	139.4	4.1	2.9	7.0
4/1	803	803	-	-	-	0.1	0.0	-	0.1	0.7	1.3	0.0	1.3
4/2	887	887	-	-	-	0.2	0.0	-	0.2	0.7	1.5	0.0	1.5
5/1	803	803	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	887	887	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	808	808	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	382	382	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	788	788	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1244	1244	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1

PRC for Signalled Lanes (%): -6.1
PRC Over All Lanes (%): -6.1
Total Delay for Signalled Lanes (pcuHr): 64.15
Total Delay Over All Lanes(pcuHr): 64.15
Cycle Time (s): 120

Scenario 10: '2031 R + D AM' (FG10: '2031 Reference + Development AM Peak', Plan 1: 'Network Control Plan 1')

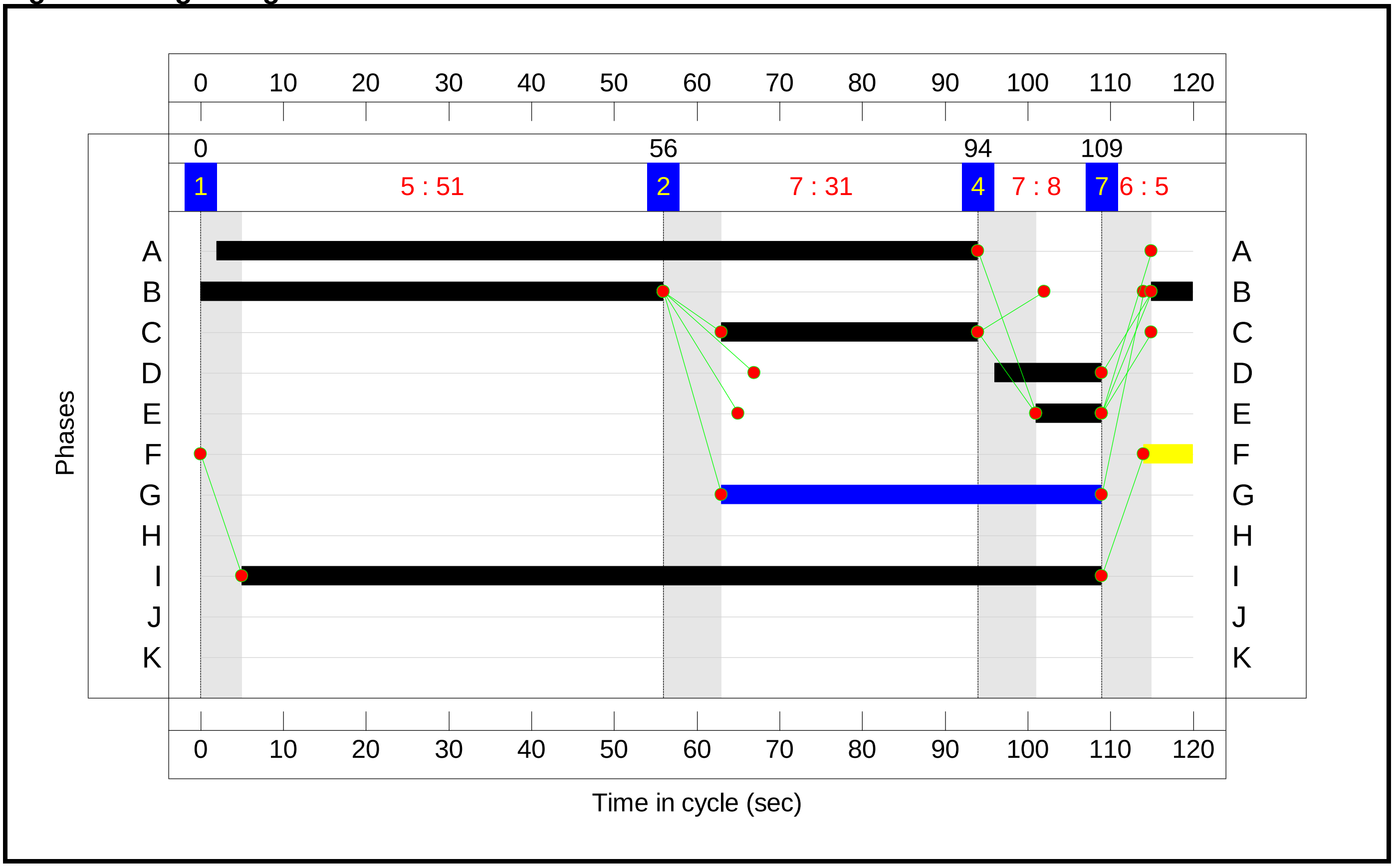
Stage Sequence Diagram



Stage Timings

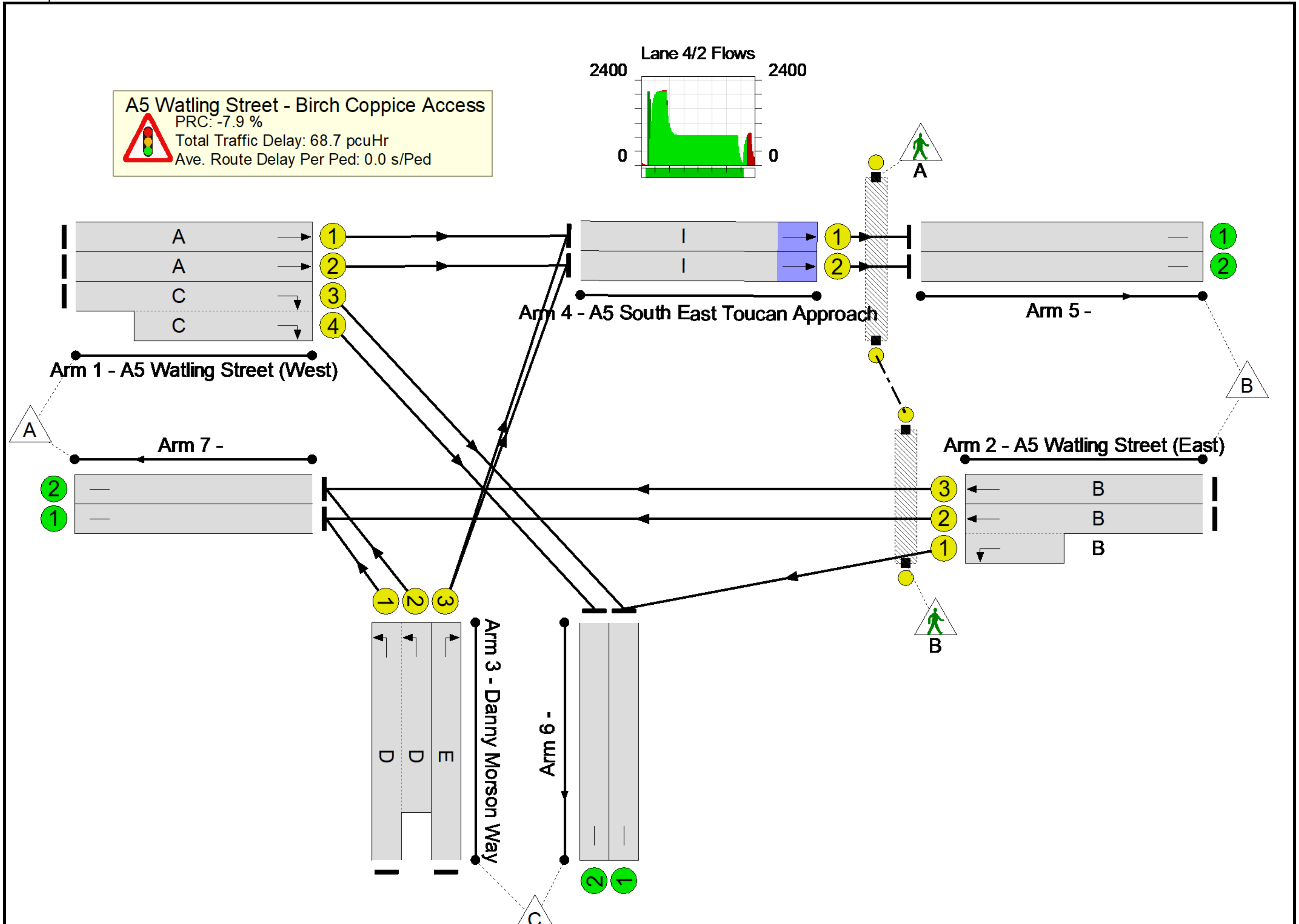
Stage	1	2	4	7
Duration	51	31	8	5
Change Point	0	56	94	109

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


A5 Watling Street - Birch Coppice Access
PRC: -7.9 %
Total Traffic Delay: 68.7 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Lane 4/2 Flows
2400
2400
0
0
Arm 1 - A5 Watling Street (West)
Arm 2 - A5 Watling Street (East)
Arm 3 - Danny Morson Way
Arm 4 - A5 South East Toucan Approach
Arm 5 -
Arm 6 -
Arm 7 -
A
A
C
C
I
I
B
B
B
D
D
E
1
2
3
4
A
B
C

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**97.1%**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**97.1%**
1/1	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	92	-	768	1967	1524	50.4%
1/2	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	92	-	846	2108	1634	51.8%
1/3+1/4	A5 Watling Street (West) Right	U	N/A	N/A	C		1	31	-	732	1832:1946	360+393	97.1 : 97.1%
2/2+2/1	A5 Watling Street (East) Left Ahead	U	N/A	N/A	B		1	61	-	1062	1943:1843	627+475	96.3 : 96.3%
2/3	A5 Watling Street (East) Ahead	U	N/A	N/A	B		1	61	-	1048	2126	1098	95.4%
3/1+3/2	Danny Morson Way Left	U	N/A	N/A	D		1	13	-	426	1930:2087	225+243	91.0 : 90.8%
3/3	Danny Morson Way Right	U	N/A	N/A	E		1	8	-	124	1860	140	88.9%
4/1	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	828	1948	1704	48.6%
4/2	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	910	2086	1825	49.9%
5/1		U	N/A	N/A	-		-	-	-	828	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	910	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	808	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	382	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	809	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1269	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	6	-	0	-	3600	0.0%

Full Input Data And Results

Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	46	-	0	-	27600	0.0%

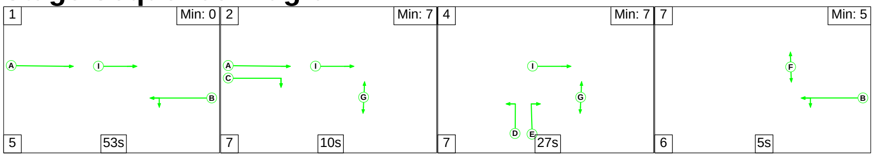
Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network	**-**	**-**	**0**	**0**	**0**	**34.4**	**34.3**	**0.0**	**68.7**	**-**	**-**	**-**	**-**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**0**	**0**	**0**	**34.4**	**34.3**	**0.0**	**68.7**	**-**	**-**	**-**	**-**
1/1	768	768	-	-	-	1.1	0.5	-	1.6	7.4	9.4	0.5	9.9
1/2	846	846	-	-	-	1.2	0.5	-	1.7	7.4	10.6	0.5	11.1
1/3+1/4	732	732	-	-	-	8.3	9.2	-	17.5	86.0	15.5	9.2	24.7
2/2+2/1	1062	1062	-	-	-	7.4	9.1	-	16.5	55.8	29.8	9.1	38.9
2/3	1048	1048	-	-	-	8.0	7.9	-	16.0	54.8	33.2	7.9	41.1
3/1+3/2	426	426	-	-	-	6.2	4.2	-	10.4	87.7	7.2	4.2	11.4
3/3	124	124	-	-	-	1.9	2.9	-	4.8	139.4	4.1	2.9	7.0
4/1	828	828	-	-	-	0.1	0.0	-	0.1	0.6	1.4	0.0	1.4
4/2	910	910	-	-	-	0.2	0.0	-	0.2	0.6	1.5	0.0	1.5
5/1	828	828	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	910	910	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	808	808	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	382	382	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	809	809	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1269	1269	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1
PRC for Signalled Lanes (%): -7.9
PRC Over All Lanes (%): -7.9
Total Delay for Signalled Lanes (pcuHr): 68.67
Total Delay Over All Lanes(pcuHr): 68.67
Cycle Time (s): 120

Full Input Data And Results

Scenario 11: '2031 R PM' (FG11: '2031 Reference PM Peak', Plan 1: 'Network Control Plan 1')

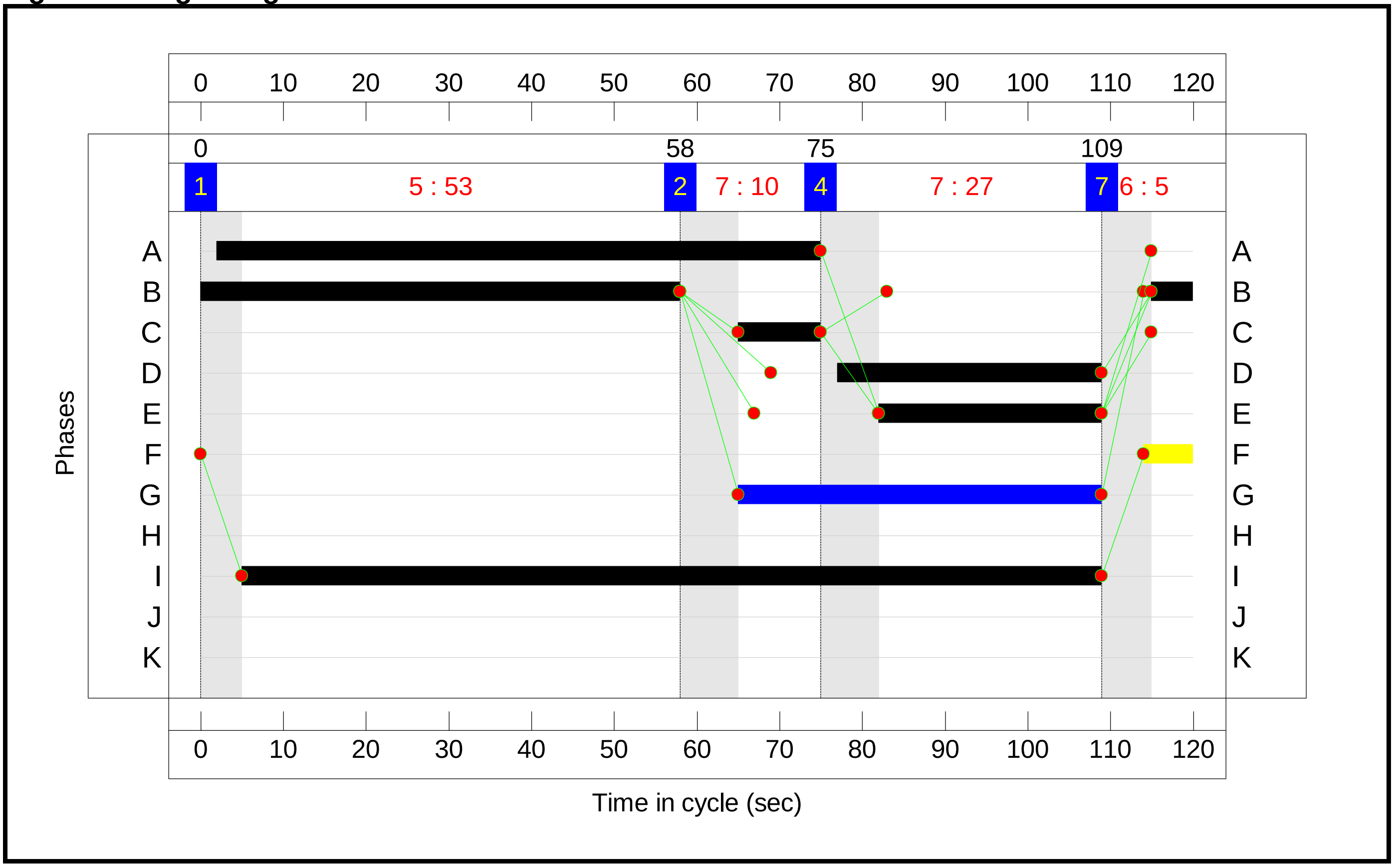
Stage Sequence Diagram



Stage Timings

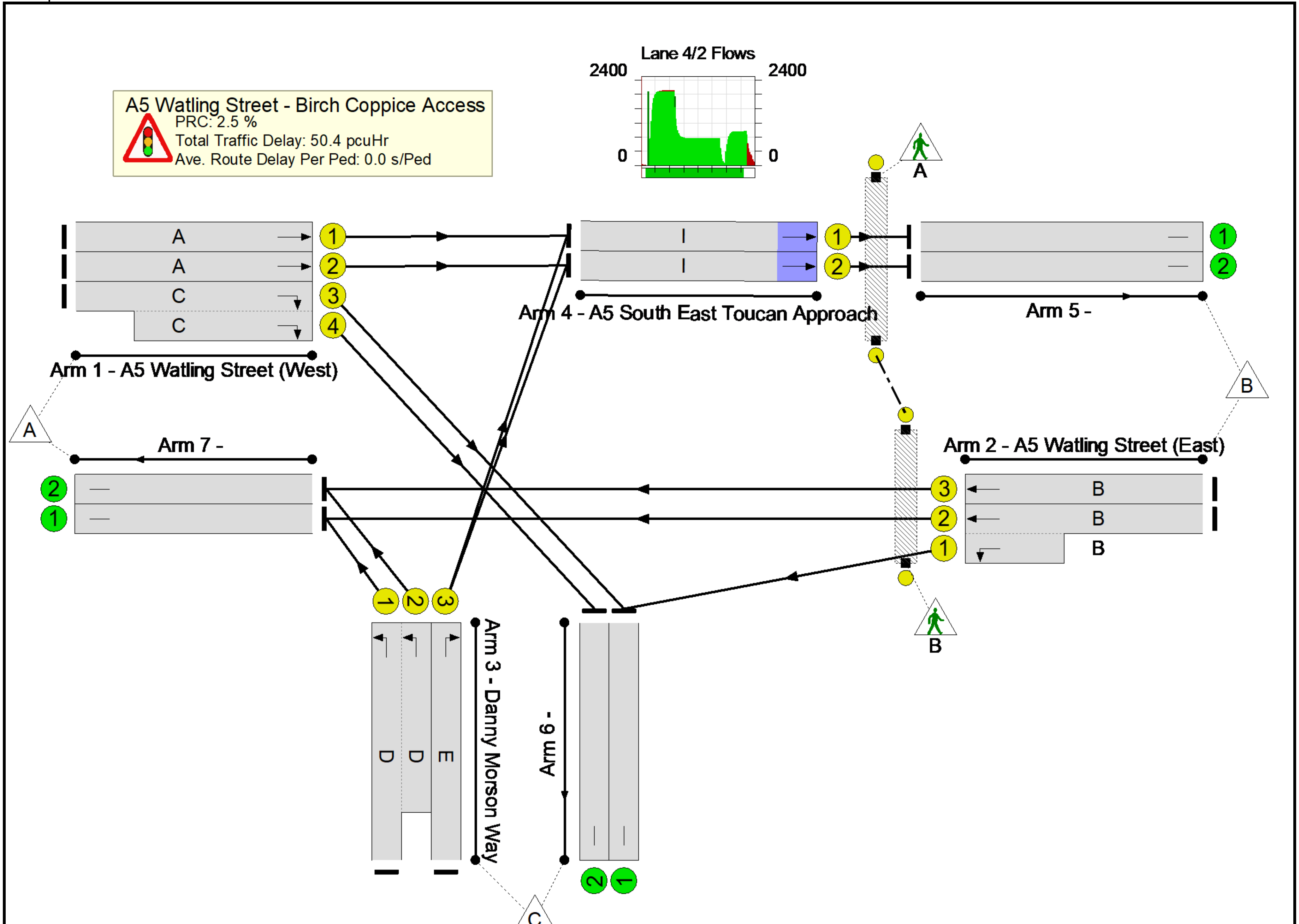
Stage	1	2	4	7
Duration	53	10	27	5
Change Point	0	58	75	109

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


A5 Watling Street - Birch Coppice Access
PRC: 2.5 %
Total Traffic Delay: 50.4 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Lane 4/2 Flows
2400
2400
0
0
A
A
C
C
1
2
3
4
Arm 1 - A5 Watling Street (West)
I
I
1
2
Arm 4 - A5 South East Toucan Approach
1
2
Arm 5 -
A
B
Arm 7 -
2
1
A
Arm 2 - A5 Watling Street (East)
3
2
1
B
B
B
B
1
2
3
D
D
E
Arm 3 - Danny Morson Way
Arm 6 -
2
1
C

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.8%**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.8%**
1/1	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	73	-	698	1967	1213	57.5%
1/2	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	73	-	762	2108	1300	58.6%
1/3+1/4	A5 Watling Street (West) Right	U	N/A	N/A	C		1	10	-	280	1832:1946	168+178	81.0 : 80.7%
2/2+2/1	A5 Watling Street (East) Left Ahead	U	N/A	N/A	B		1	63	-	943	1943:1843	830+244	87.8 : 87.8%
2/3	A5 Watling Street (East) Ahead	U	N/A	N/A	B		1	63	-	989	2126	1134	87.2%
3/1+3/2	Danny Morson Way Left	U	N/A	N/A	D		1	32	-	778	1930:2087	461+498	81.1 : 81.1%
3/3	Danny Morson Way Right	U	N/A	N/A	E		1	27	-	368	1860	434	84.8%
4/1	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	875	1948	1704	51.3%
4/2	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	953	2086	1825	52.2%
5/1		U	N/A	N/A	-		-	-	-	875	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	953	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	350	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	144	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1103	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1393	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	6	-	0	-	3600	0.0%

Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	44	-	0	-	26400	0.0%

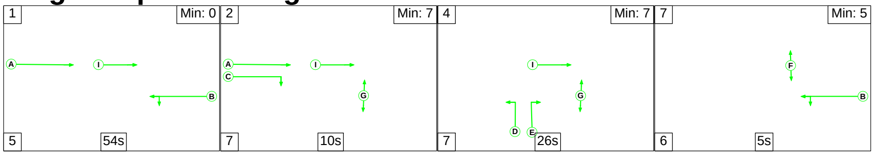
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**35.6**	**14.7**	**0.0**	**50.4**	**-**	**-**	**-**	**-**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**0**	**0**	**0**	**35.6**	**14.7**	**0.0**	**50.4**	**-**	**-**	**-**	**-**
1/1	698	698	-	-	-	2.7	0.7	-	3.3	17.2	13.8	0.7	14.4
1/2	762	762	-	-	-	2.9	0.7	-	3.6	17.1	15.2	0.7	15.9
1/3+1/4	280	280	-	-	-	4.2	2.0	-	6.2	79.1	4.7	2.0	6.7
2/2+2/1	943	943	-	-	-	6.1	3.4	-	9.5	36.2	25.5	3.4	28.9
2/3	989	989	-	-	-	6.7	3.3	-	10.0	36.3	28.6	3.3	31.8
3/1+3/2	778	778	-	-	-	8.5	2.1	-	10.5	48.8	12.0	2.1	14.1
3/3	368	368	-	-	-	4.5	2.6	-	7.1	69.3	11.7	2.6	14.2
4/1	875	875	-	-	-	0.1	0.0	-	0.1	0.3	0.6	0.0	0.6
4/2	953	953	-	-	-	0.1	0.0	-	0.1	0.3	0.7	0.0	0.7
5/1	875	875	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	953	953	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	350	350	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	144	144	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1103	1103	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1393	1393	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1 PRC for Signalled Lanes (%): 2.5 Total Delay for Signalled Lanes (pcuHr): 50.36 Cycle Time (s): 120
PRC Over All Lanes (%): 2.5 Total Delay Over All Lanes(pcuHr): 50.36

Full Input Data And Results

Scenario 12: '2031 R + D PM' (FG12: '2031 Reference + Development PM Peak', Plan 1: 'Network Control Plan 1')

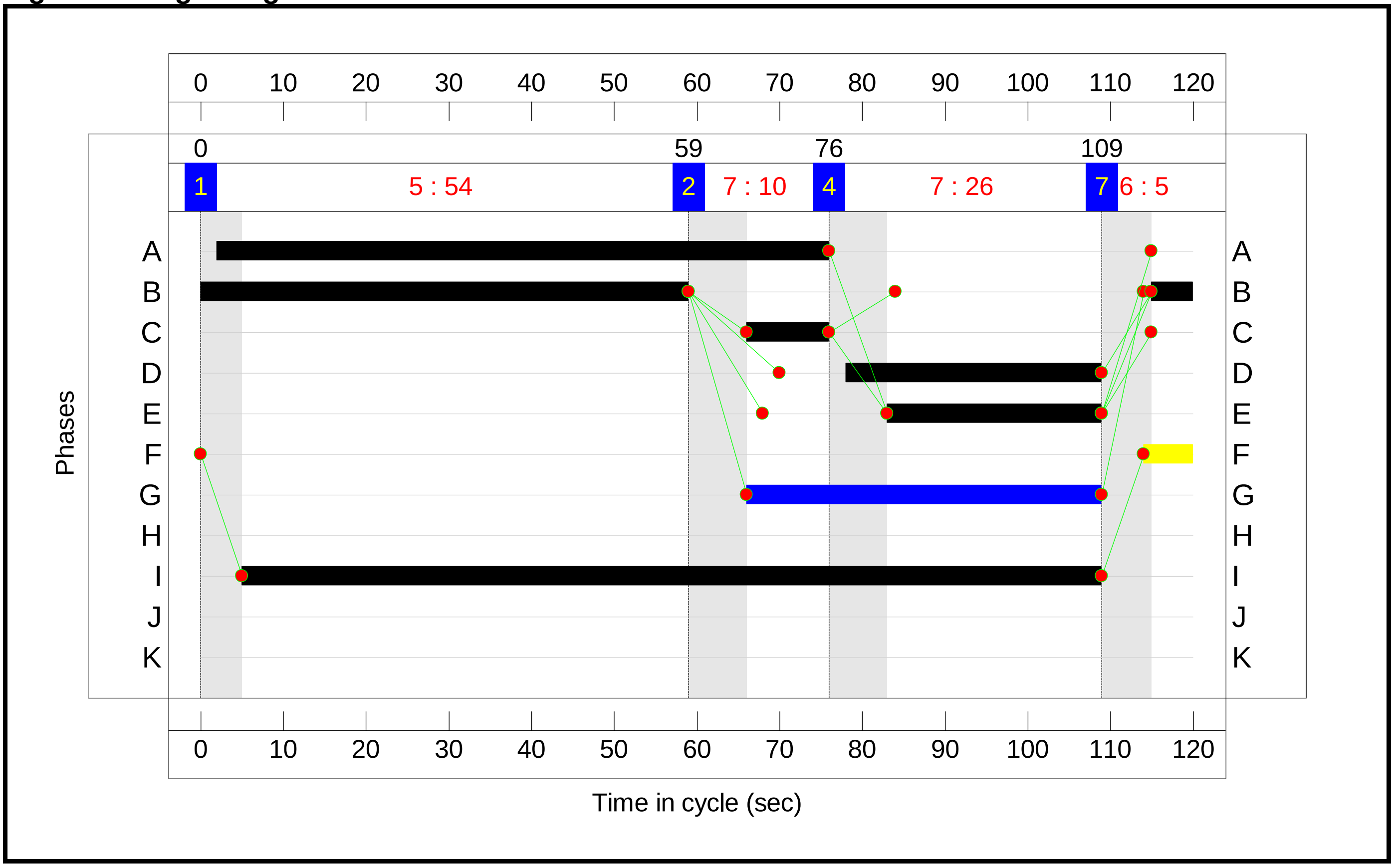
Stage Sequence Diagram



Stage Timings

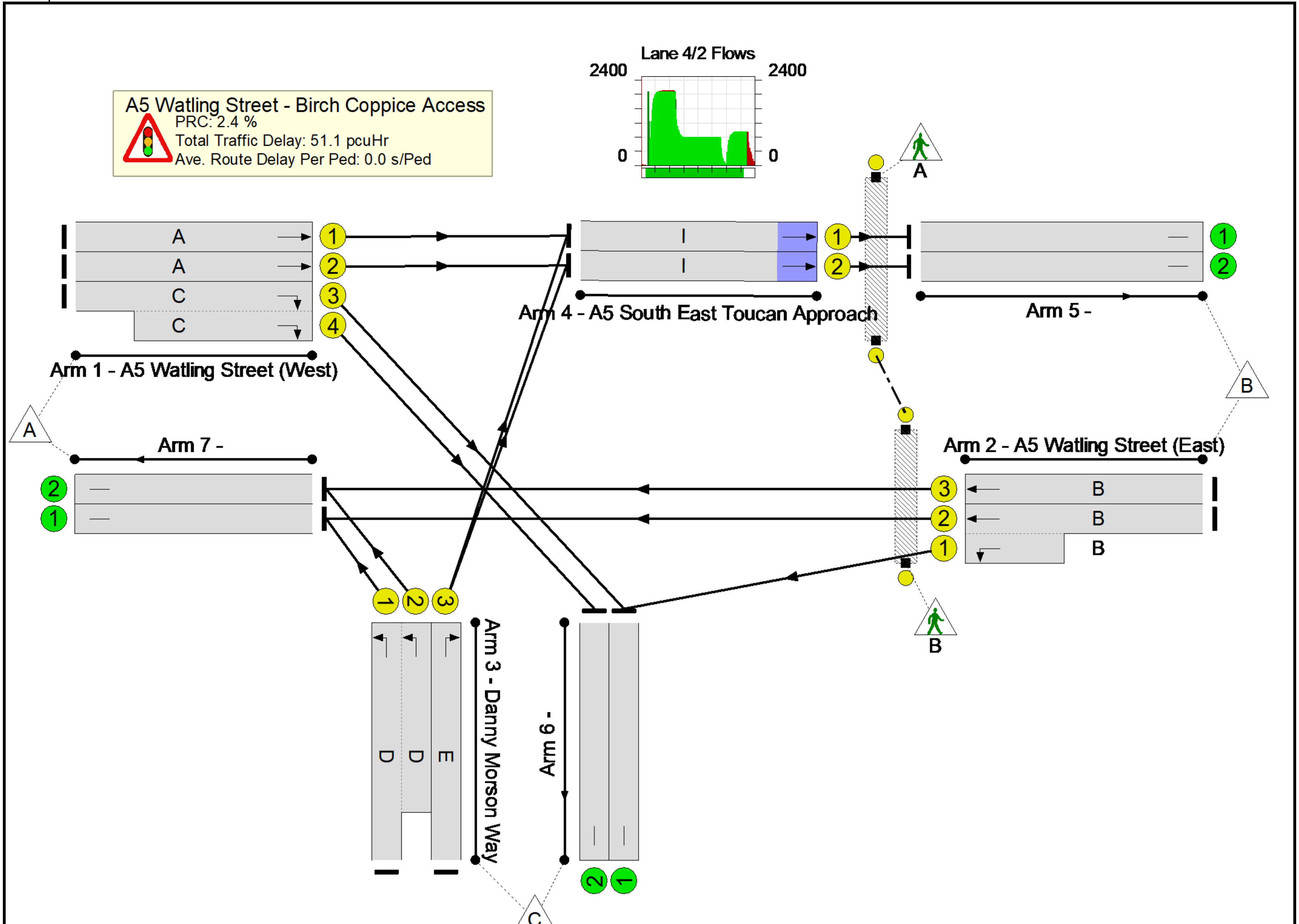
Stage	1	2	4	7
Duration	54	10	26	5
Change Point	0	59	76	109

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


A5 Watling Street - Birch Coppice Access
PRC: 2.4 %
Total Traffic Delay: 51.1 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Lane 4/2 Flows
2400
2400
0
0
A
A
C
C
1
2
3
4
Arm 1 - A5 Watling Street (West)
I
I
Arm 4 - A5 South East Toucan Approach
Arm 5 -
Arm 7 -
Arm 2 - A5 Watling Street (East)
B
B
B
Arm 3 - Danny Morson Way
D
D
E
Arm 6 -
A
B
C

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.9%**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.9%**
1/1	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	74	-	722	1967	1229	58.7%
1/2	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	74	-	788	2108	1318	59.8%
1/3+1/4	A5 Watling Street (West) Right	U	N/A	N/A	C		1	10	-	280	1832:1946	168+178	81.0 : 80.7%
2/2+2/1	A5 Watling Street (East) Left Ahead	U	N/A	N/A	B		1	64	-	951	1943:1843	844+245	87.3 : 87.3%
2/3	A5 Watling Street (East) Ahead	U	N/A	N/A	B		1	64	-	997	2126	1152	86.6%
3/1+3/2	Danny Morson Way Left	U	N/A	N/A	D		1	31	-	778	1930:2087	453+490	82.5 : 82.5%
3/3	Danny Morson Way Right	U	N/A	N/A	E		1	26	-	368	1860	419	87.9%
4/1	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	901	1948	1704	52.9%
4/2	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	977	2086	1825	53.5%
5/1		U	N/A	N/A	-		-	-	-	901	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	977	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	350	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	144	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1111	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1401	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	6	-	0	-	3600	0.0%

Full Input Data And Results

Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	43	-	0	-	25800	0.0%

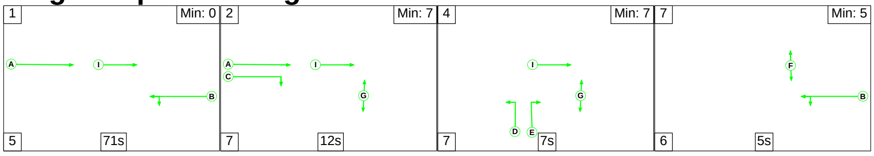
Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network	**-**	**-**	**0**	**0**	**0**	**35.7**	**15.4**	**0.0**	**51.1**	**-**	**-**	**-**	**-**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**0**	**0**	**0**	**35.7**	**15.4**	**0.0**	**51.1**	**-**	**-**	**-**	**-**
1/1	722	722	-	-	-	2.7	0.7	-	3.4	16.9	14.2	0.7	14.9
1/2	788	788	-	-	-	2.9	0.7	-	3.7	16.9	15.5	0.7	16.3
1/3+1/4	280	280	-	-	-	4.2	2.0	-	6.2	79.1	4.7	2.0	6.7
2/2+2/1	951	951	-	-	-	5.9	3.3	-	9.2	34.9	25.5	3.3	28.8
2/3	997	997	-	-	-	6.6	3.1	-	9.7	34.9	28.5	3.1	31.6
3/1+3/2	778	778	-	-	-	8.6	2.3	-	10.9	50.7	12.2	2.3	14.5
3/3	368	368	-	-	-	4.6	3.2	-	7.8	76.5	11.8	3.2	15.0
4/1	901	901	-	-	-	0.1	0.0	-	0.1	0.4	0.9	0.0	0.9
4/2	977	977	-	-	-	0.1	0.0	-	0.1	0.4	0.9	0.0	0.9
5/1	901	901	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	977	977	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	350	350	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	144	144	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1111	1111	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1401	1401	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1
PRC for Signalled Lanes (%): 2.4
Total Delay for Signalled Lanes (pcuHr): 51.10
Cycle Time (s): 120
PRC Over All Lanes (%): 2.4
Total Delay Over All Lanes(pcuHr): 51.10

Full Input Data And Results

Scenario 13: '2031 LP AM' (FG13: '2031 Local Plan AM Peak', Plan 1: 'Network Control Plan 1')

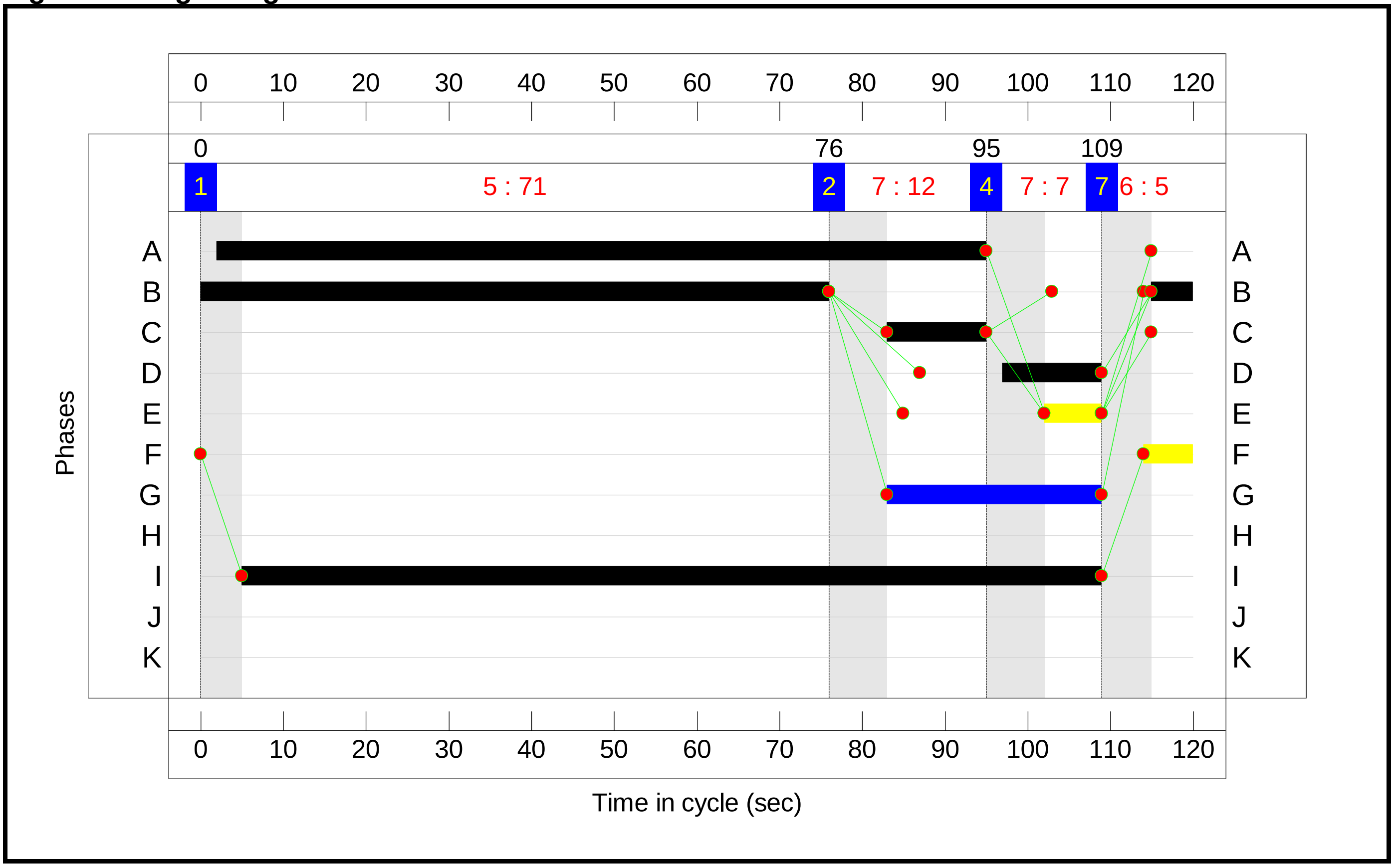
Stage Sequence Diagram



Stage Timings

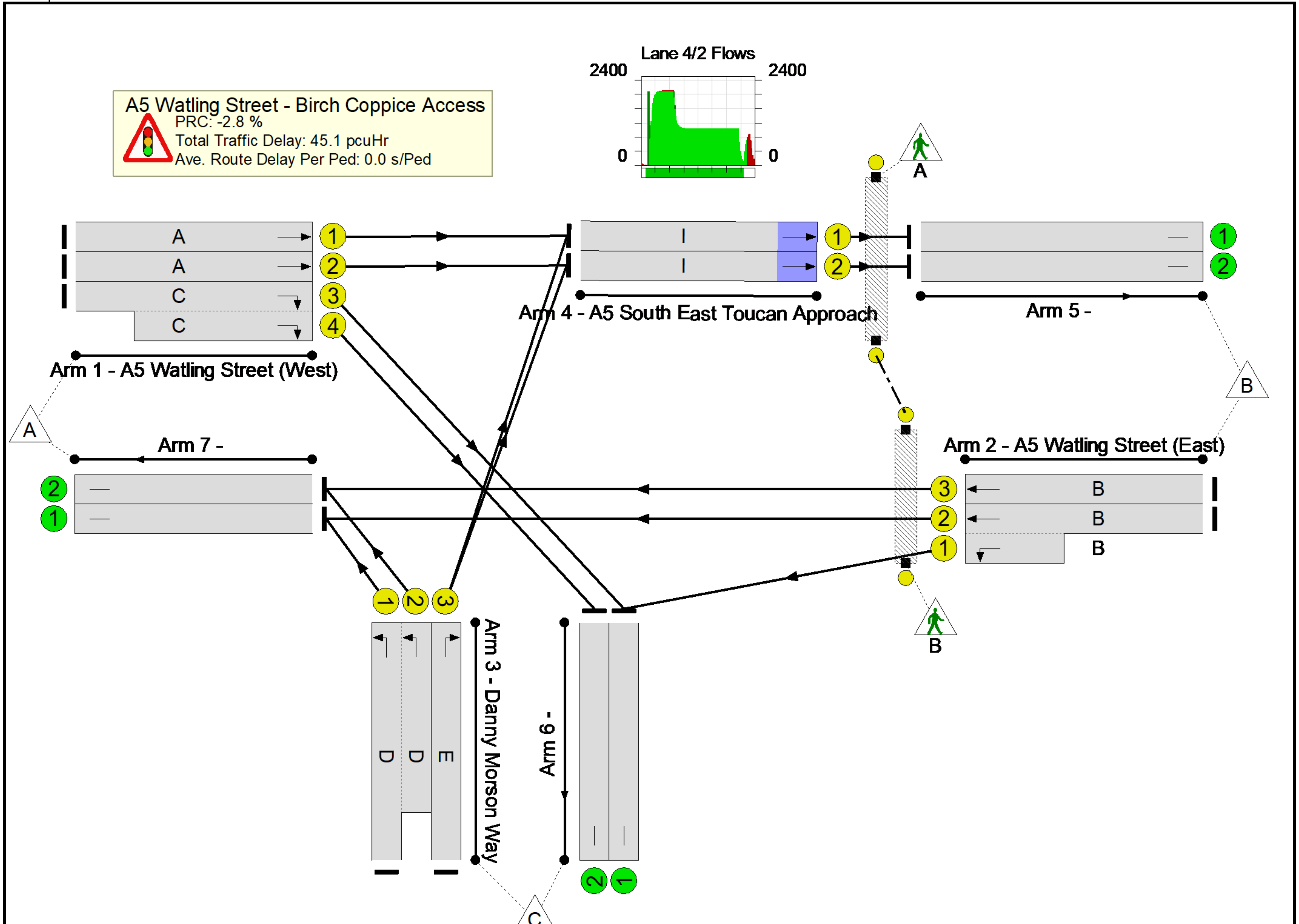
Stage	1	2	4	7
Duration	71	12	7	5
Change Point	0	76	95	109

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


A5 Watling Street - Birch Coppice Access
PRC: -2.8 %
Total Traffic Delay: 45.1 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Lane 4/2 Flows
2400
2400
0
0
Arm 1 - A5 Watling Street (West)
A
A
C
C
1
2
3
4
Arm 4 - A5 South East Toucan Approach
I
I
Arm 5 -
Arm 2 - A5 Watling Street (East)
B
B
B
Arm 7 -
Arm 3 - Danny Morson Way
D
D
E
Arm 6 -
A
B
C

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**92.5%**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**92.5%**
1/1	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	93	-	955	1967	1541	62.0%
1/2	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	93	-	1043	2108	1651	63.2%
1/3+1/4	A5 Watling Street (West) Right	U	N/A	N/A	C		1	12	-	376	1832:1946	198+211	91.7 : 92.0%
2/2+2/1	A5 Watling Street (East) Left Ahead	U	N/A	N/A	B		1	81	-	1267	1943:1843	1002+368	92.5 : 92.5%
2/3	A5 Watling Street (East) Ahead	U	N/A	N/A	B		1	81	-	1337	2126	1453	92.0%
3/1+3/2	Danny Morson Way Left	U	N/A	N/A	D		1	12	-	274	1930:2087	209+226	63.1 : 62.8%
3/3	Danny Morson Way Right	U	N/A	N/A	E		1	7	-	100	1860	124	80.6%
4/1	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	1004	1948	1704	58.9%
4/2	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	1094	2086	1825	59.9%
5/1		U	N/A	N/A	-		-	-	-	1004	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	1094	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	522	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	194	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1059	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1479	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	6	-	0	-	3600	0.0%

Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	26	-	0	-	15600	0.0%

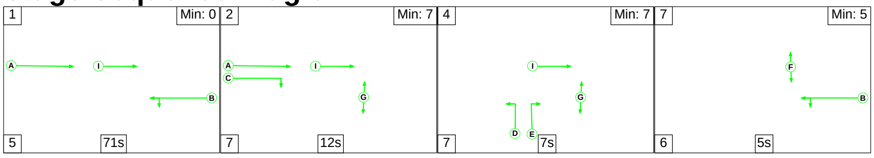
Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network	**-**	**-**	**0**	**0**	**0**	**25.5**	**19.6**	**0.0**	**45.1**	**-**	**-**	**-**	**-**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**0**	**0**	**0**	**25.5**	**19.6**	**0.0**	**45.1**	**-**	**-**	**-**	**-**
1/1	955	955	-	-	-	1.5	0.8	-	2.3	8.5	13.3	0.8	14.1
1/2	1043	1043	-	-	-	1.6	0.9	-	2.5	8.5	14.8	0.9	15.6
1/3+1/4	376	376	-	-	-	5.5	4.5	-	10.0	95.6	6.4	4.5	10.8
2/2+2/1	1267	1267	-	-	-	5.1	5.5	-	10.7	30.4	33.4	5.5	38.9
2/3	1337	1337	-	-	-	6.0	5.3	-	11.3	30.5	37.9	5.3	43.2
3/1+3/2	274	274	-	-	-	3.9	0.8	-	4.7	62.3	4.5	0.8	5.3
3/3	100	100	-	-	-	1.5	1.8	-	3.3	120.4	3.3	1.8	5.1
4/1	1004	1004	-	-	-	0.1	0.0	-	0.1	0.5	1.2	0.0	1.2
4/2	1094	1094	-	-	-	0.1	0.0	-	0.1	0.5	1.3	0.0	1.3
5/1	1004	1004	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	1094	1094	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	522	522	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	194	194	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1059	1059	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1479	1479	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1 PRC for Signalled Lanes (%): -2.8 Total Delay for Signalled Lanes (pcuHr): 45.09 Cycle Time (s): 120
PRC Over All Lanes (%): -2.8 Total Delay Over All Lanes(pcuHr): 45.09

Full Input Data And Results

Scenario 14: '2031 LP + D AM' (FG14: '2031 Local Plan + Development AM Peak', Plan 1: 'Network Control Plan 1')

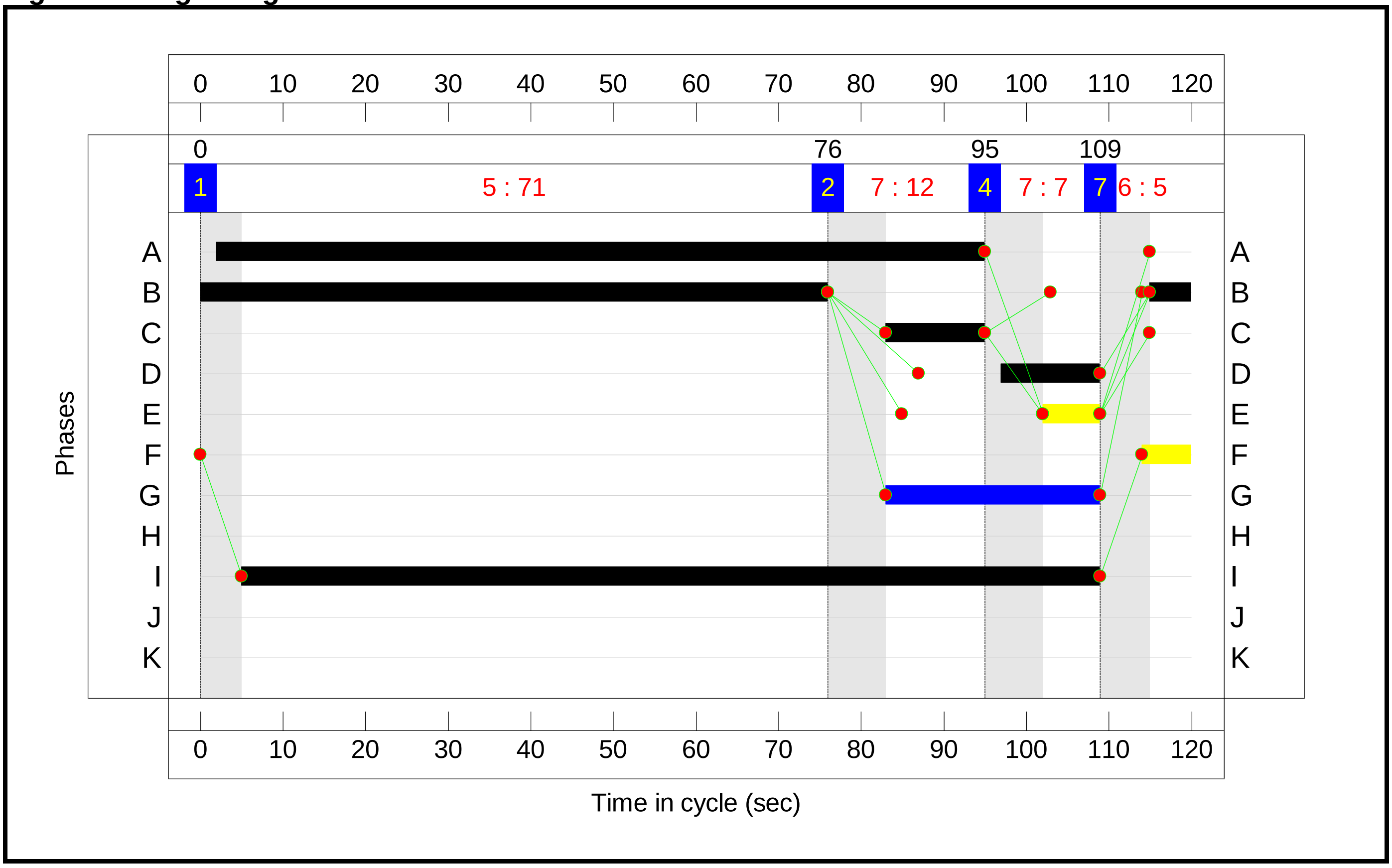
Stage Sequence Diagram



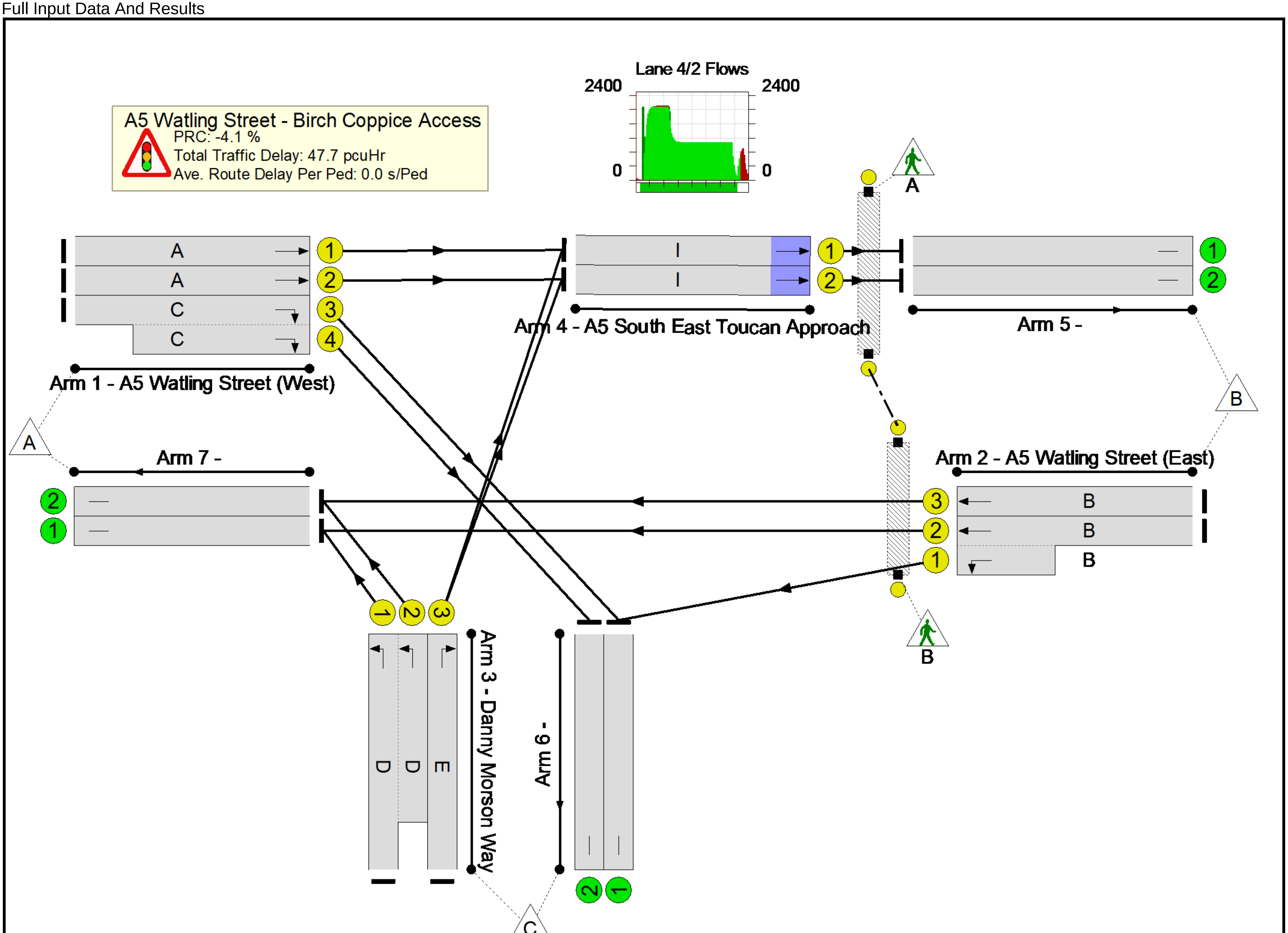
Stage Timings

Stage	**1**	**2**	**4**	**7**
Duration	71	12	7	5
Change Point	0	76	95	109

Signal Timings Diagram



Network Layout Diagram


A5 Watling Street - Birch Coppice Access
PRC: -4.1 %
Total Traffic Delay: 47.7 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Lane 4/2 Flows
2400
2400
0
0
Arm 1 - A5 Watling Street (West)
A
A
C
C
1
2
3
4
Arm 4 - A5 South East Toucan Approach
I
I
Arm 5 -
Arm 2 - A5 Watling Street (East)
B
B
B
Arm 7 -
Arm 3 - Danny Morson Way
D
D
E
Arm 6 -
A
B
C

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.7%**
A5 Watling Street - Birch Coppice Access	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.7%**
1/1	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	93	-	980	1967	1541	63.6%
1/2	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	93	-	1070	2108	1651	64.8%
1/3+1/4	A5 Watling Street (West) Right	U	N/A	N/A	C		1	12	-	376	1832:1946	198+211	91.7 : 92.0%
2/2+2/1	A5 Watling Street (East) Left Ahead	U	N/A	N/A	B		1	81	-	1283	1943:1843	1006+363	93.7 : 93.7%
2/3	A5 Watling Street (East) Ahead	U	N/A	N/A	B		1	81	-	1357	2126	1453	93.4%
3/1+3/2	Danny Morson Way Left	U	N/A	N/A	D		1	12	-	274	1930:2087	209+226	63.1 : 62.8%
3/3	Danny Morson Way Right	U	N/A	N/A	E		1	7	-	100	1860	124	80.6%
4/1	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	1028	1948	1704	60.3%
4/2	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	1122	2086	1825	61.5%
5/1		U	N/A	N/A	-		-	-	-	1028	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	1122	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	522	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	194	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1075	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1499	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	6	-	0	-	3600	0.0%

Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	26	-	0	-	15600	0.0%

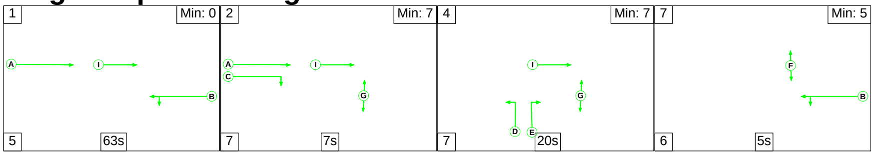
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**26.1**	**21.6**	**0.0**	**47.7**	**-**	**-**	**-**	**-**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**0**	**0**	**0**	**26.1**	**21.6**	**0.0**	**47.7**	**-**	**-**	**-**	**-**
1/1	980	980	-	-	-	1.5	0.9	-	2.4	8.8	13.9	0.9	14.8
1/2	1070	1070	-	-	-	1.7	0.9	-	2.6	8.8	15.5	0.9	16.4
1/3+1/4	376	376	-	-	-	5.5	4.5	-	10.0	95.6	6.4	4.5	10.8
2/2+2/1	1283	1283	-	-	-	5.4	6.5	-	11.8	33.2	34.9	6.5	41.4
2/3	1357	1357	-	-	-	6.3	6.3	-	12.5	33.3	39.6	6.3	45.8
3/1+3/2	274	274	-	-	-	3.9	0.8	-	4.7	62.3	4.5	0.8	5.3
3/3	100	100	-	-	-	1.5	1.8	-	3.3	120.4	3.3	1.8	5.1
4/1	1028	1028	-	-	-	0.1	0.0	-	0.1	0.5	1.2	0.0	1.2
4/2	1122	1122	-	-	-	0.1	0.0	-	0.1	0.5	1.3	0.0	1.3
5/1	1028	1028	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	1122	1122	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	522	522	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	194	194	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1075	1075	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1499	1499	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1 PRC for Signalled Lanes (%): -4.1 Total Delay for Signalled Lanes (pcuHr): 47.72 Cycle Time (s): 120
PRC Over All Lanes (%): -4.1 Total Delay Over All Lanes(pcuHr): 47.72

Full Input Data And Results

Scenario 15: '2031 LP PM' (FG15: '2031 Local Plan PM Peak', Plan 1: 'Network Control Plan 1')

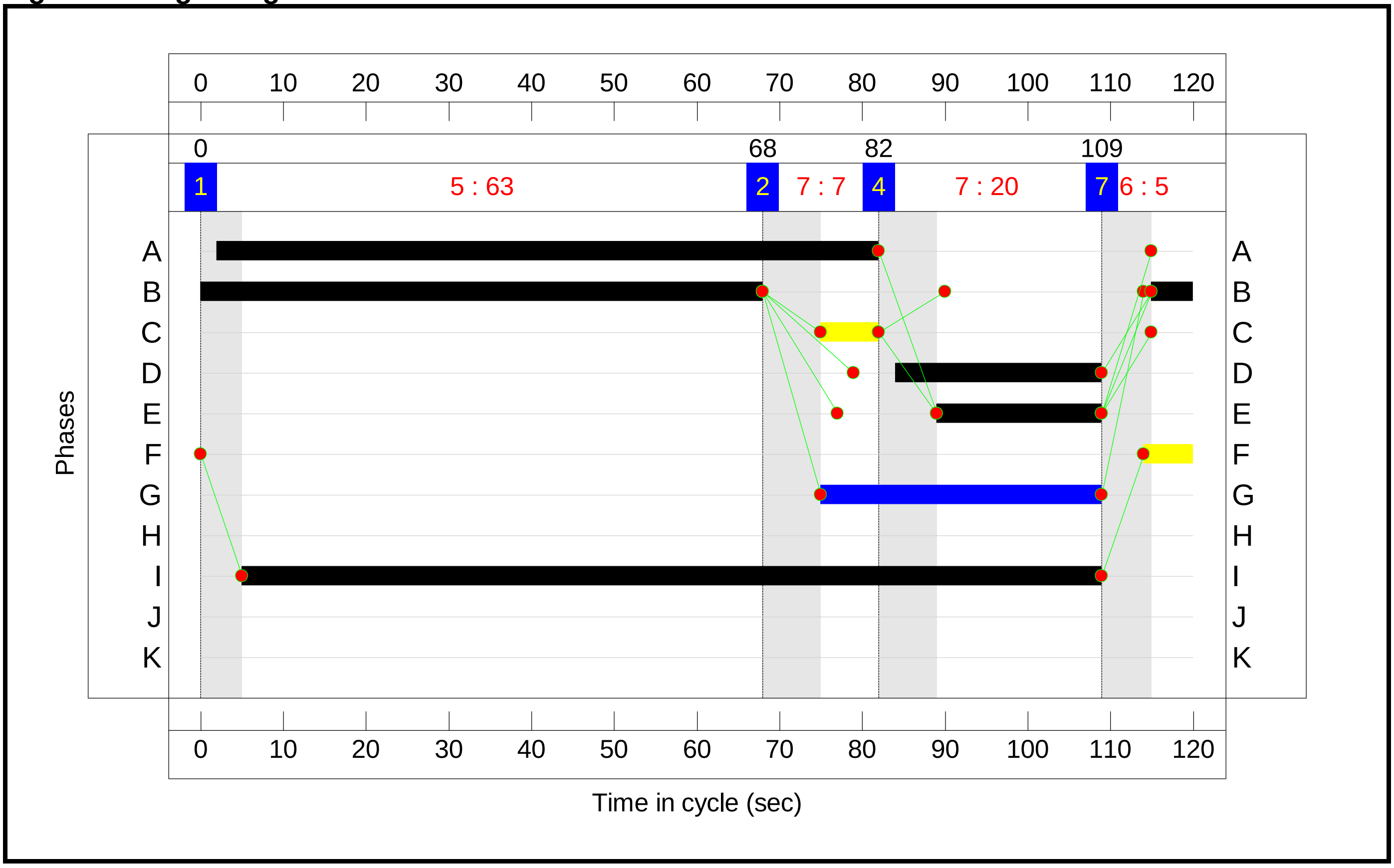
Stage Sequence Diagram



Stage Timings

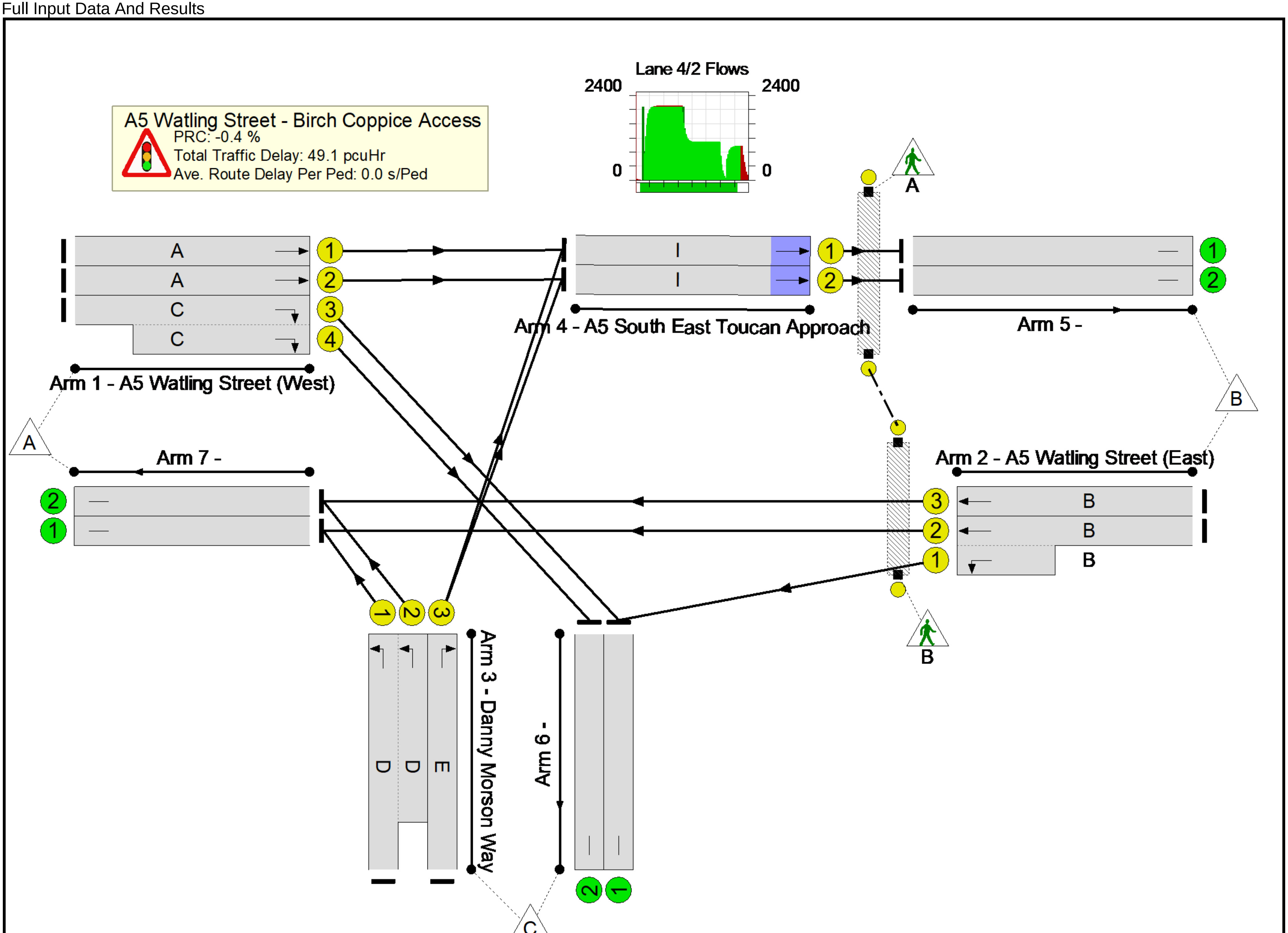
Stage	1	2	4	7
Duration	63	7	20	5
Change Point	0	68	82	109

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


A5 Watling Street - Birch Coppice Access
PRC: -0.4 %
Total Traffic Delay: 49.1 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Lane 4/2 Flows
2400
2400
0
0
A
A
C
C
1
2
3
4
Arm 1 - A5 Watling Street (West)
I
I
1
2
Arm 4 - A5 South East Toucan Approach
1
2
Arm 5 -
A
B
A
Arm 7 -
2
1
Arm 2 - A5 Watling Street (East)
3
2
1
B
B
B
B
1
2
3
D
D
E
Arm 3 - Danny Morson Way
Arm 6 -
2
1
C

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**90.4%**
A5 Watling Street - Birch Coppice Access	-	-	**N/A**	-	-		-	-	-	-	-	-	**90.4%**
1/1	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	80	-	1003	1967	1328	75.5%
1/2	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	80	-	1087	2108	1423	76.4%
1/3+1/4	A5 Watling Street (West) Right	U	N/A	N/A	C		1	7	-	186	1832:1946	122+130	73.7 : 74.0%
2/2+2/1	A5 Watling Street (East) Left Ahead	U	N/A	N/A	B		1	73	-	1104	1943:1843	1031+190	90.4 : 90.4%
2/3	A5 Watling Street (East) Ahead	U	N/A	N/A	B		1	73	-	1184	2126	1311	90.3%
3/1+3/2	Danny Morson Way Left	U	N/A	N/A	D		1	25	-	446	1930:2087	403+437	53.0 : 53.0%
3/3	Danny Morson Way Right	U	N/A	N/A	E		1	20	-	288	1860	326	88.5%
4/1	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	1140	1948	1704	66.9%
4/2	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	1238	2086	1825	67.8%
5/1		U	N/A	N/A	-		-	-	-	1140	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	1238	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	262	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	96	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1146	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1416	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	6	-	0	-	3600	0.0%

Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	34	-	0	-	20400	0.0%

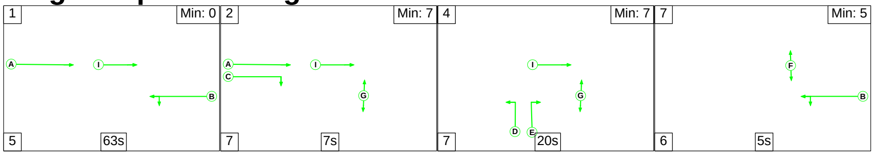
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**32.0**	**17.1**	**0.0**	**49.1**	**-**	**-**	**-**	**-**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**0**	**0**	**0**	**32.0**	**17.1**	**0.0**	**49.1**	**-**	**-**	**-**	**-**
1/1	1003	1003	-	-	-	3.6	1.5	-	5.1	18.4	22.0	1.5	23.5
1/2	1087	1087	-	-	-	4.0	1.6	-	5.6	18.4	24.2	1.6	25.8
1/3+1/4	186	186	-	-	-	2.8	1.4	-	4.2	81.2	3.1	1.4	4.5
2/2+2/1	1104	1104	-	-	-	5.8	4.4	-	10.2	33.2	30.4	4.4	34.7
2/3	1184	1184	-	-	-	6.5	4.4	-	10.9	33.2	33.9	4.4	38.2
3/1+3/2	446	446	-	-	-	5.1	0.6	-	5.7	46.0	6.8	0.6	7.3
3/3	288	288	-	-	-	3.9	3.3	-	7.1	89.2	9.4	3.3	12.6
4/1	1140	1140	-	-	-	0.1	0.0	-	0.1	0.4	1.1	0.0	1.1
4/2	1238	1238	-	-	-	0.2	0.0	-	0.2	0.4	1.2	0.0	1.2
5/1	1140	1140	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	1238	1238	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	262	262	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	96	96	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1146	1146	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1416	1416	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1 PRC for Signalled Lanes (%): -0.4 Total Delay for Signalled Lanes (pcuHr): 49.10 Cycle Time (s): 120
PRC Over All Lanes (%): -0.4 Total Delay Over All Lanes(pcuHr): 49.10

Full Input Data And Results

Scenario 16: '2031 LP + D PM' (FG16: '2031 Local Plan + Development PM Peak', Plan 1: 'Network Control Plan 1')

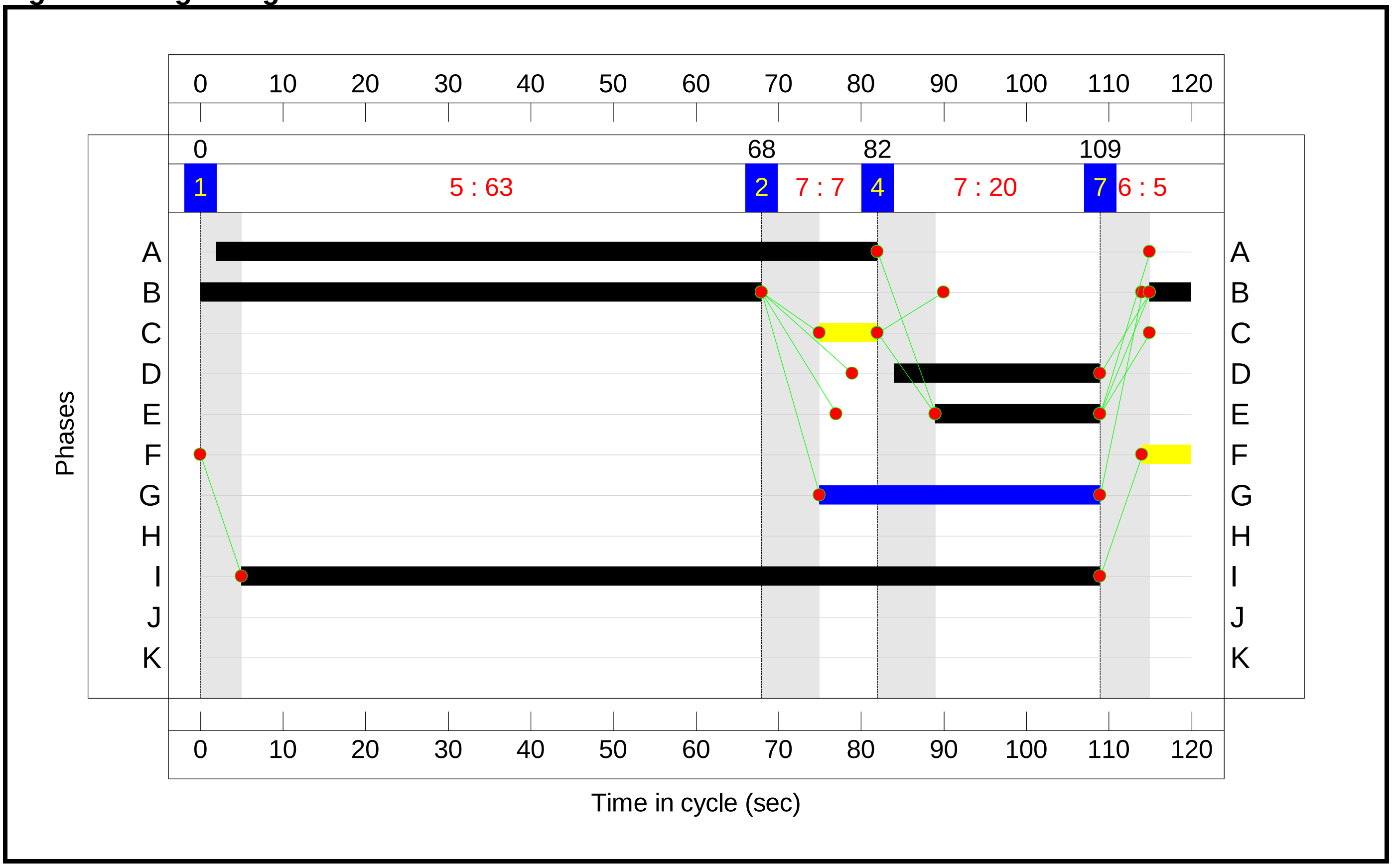
Stage Sequence Diagram



Stage Timings

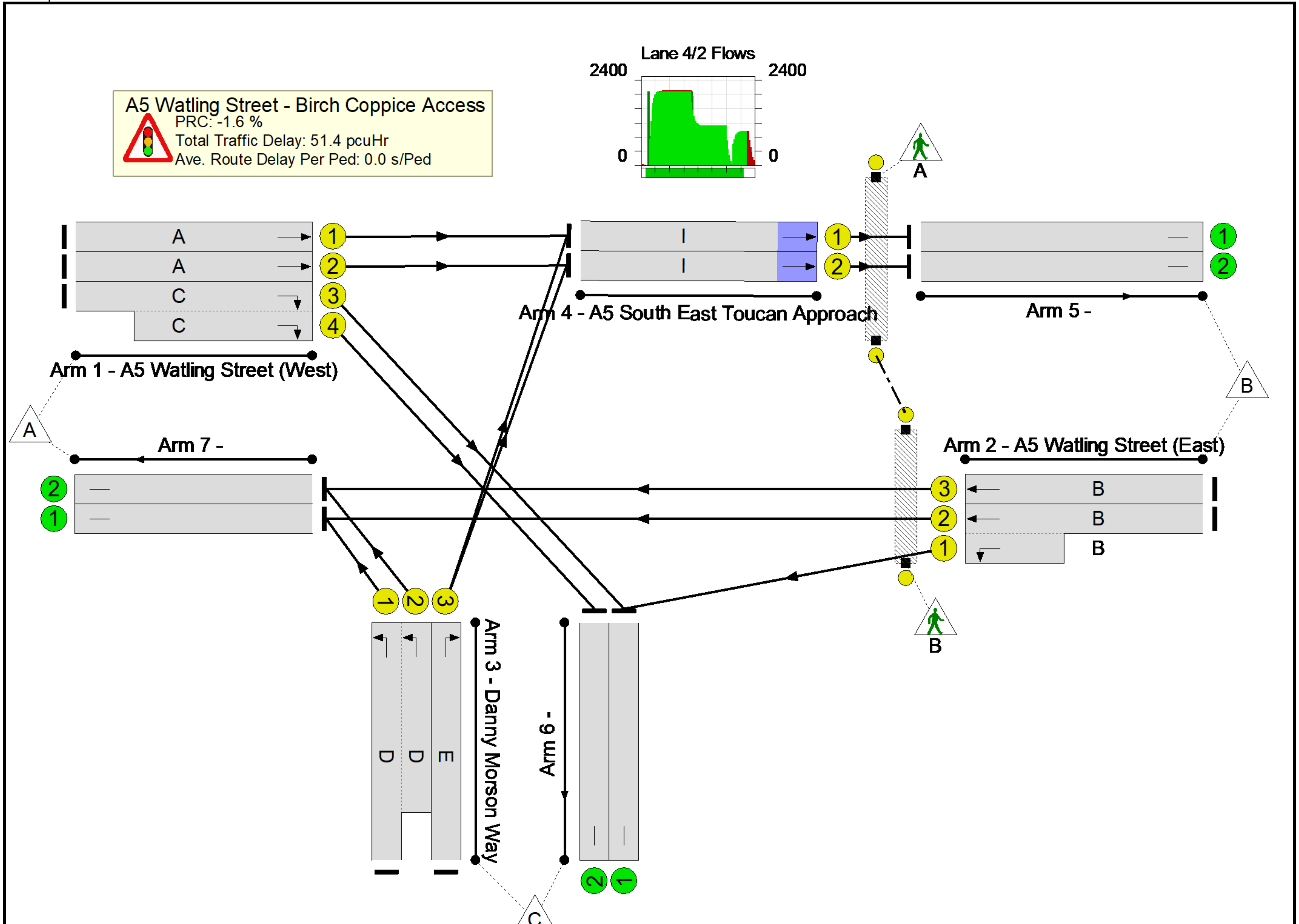
Stage	1	2	4	7
Duration	63	7	20	5
Change Point	0	68	82	109

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


A5 Watling Street - Birch Coppice Access
PRC: -1.6 %
Total Traffic Delay: 51.4 pcuHr
Ave. Route Delay Per Ped: 0.0 s/Ped
Lane 4/2 Flows
2400
2400
0
0
A
A
C
C
1
2
3
4
Arm 1 - A5 Watling Street (West)
I
I
1
2
Arm 4 - A5 South East Toucan Approach
A
B
Arm 5 -
1
2
Arm 7 -
2
1
Arm 2 - A5 Watling Street (East)
B
B
B
3
2
1
1
2
3
D
D
E
Arm 3 - Danny Morson Way
Arm 6 -
2
1
A
B
C

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.5%**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.5%**
1/1	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	80	-	1033	1967	1328	77.8%
1/2	A5 Watling Street (West) Ahead	U	N/A	N/A	A		1	80	-	1119	2108	1423	78.6%
1/3+1/4	A5 Watling Street (West) Right	U	N/A	N/A	C		1	7	-	186	1832:1946	122+130	73.7 : 74.0%
2/2+2/1	A5 Watling Street (East) Left Ahead	U	N/A	N/A	B		1	73	-	1117	1943:1843	1033+188	91.5 : 91.5%
2/3	A5 Watling Street (East) Ahead	U	N/A	N/A	B		1	73	-	1199	2126	1311	91.5%
3/1+3/2	Danny Morson Way Left	U	N/A	N/A	D		1	25	-	446	1930:2087	403+437	53.0 : 53.0%
3/3	Danny Morson Way Right	U	N/A	N/A	E		1	20	-	288	1860	326	88.5%
4/1	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	1170	1948	1704	68.6%
4/2	A5 South East Toucan Approach Ahead	U	N/A	N/A	I		1	104	-	1270	2086	1825	69.6%
5/1		U	N/A	N/A	-		-	-	-	1170	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	1270	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	262	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	96	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	1159	Inf	Inf	0.0%
7/2		U	N/A	N/A	-		-	-	-	1431	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	N/A	-	F		1	6	-	0	-	3600	0.0%

Ped Link: P2	Unnamed Ped Link	-	N/A	-	G		1	34	-	0	-	20400	0.0%

Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network	**-**	**-**	**0**	**0**	**0**	**32.9**	**18.6**	**0.0**	**51.4**	**-**	**-**	**-**	**-**
A5 Watling Street - Birch Coppice Access	**-**	**-**	**0**	**0**	**0**	**32.9**	**18.6**	**0.0**	**51.4**	**-**	**-**	**-**	**-**
1/1	1033	1033	-	-	-	3.8	1.7	-	5.6	19.4	23.5	1.7	25.3
1/2	1119	1119	-	-	-	4.2	1.8	-	6.0	19.4	25.8	1.8	27.6
1/3+1/4	186	186	-	-	-	2.8	1.4	-	4.2	81.2	3.1	1.4	4.5
2/2+2/1	1117	1117	-	-	-	6.0	4.9	-	10.9	35.1	31.4	4.9	36.3
2/3	1199	1199	-	-	-	6.7	4.9	-	11.7	35.0	35.0	4.9	39.9
3/1+3/2	446	446	-	-	-	5.1	0.6	-	5.7	46.0	6.8	0.6	7.3
3/3	288	288	-	-	-	3.9	3.3	-	7.1	89.2	9.4	3.3	12.6
4/1	1170	1170	-	-	-	0.1	0.0	-	0.1	0.4	1.1	0.0	1.1
4/2	1270	1270	-	-	-	0.2	0.0	-	0.2	0.4	1.2	0.0	1.2
5/1	1170	1170	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	1270	1270	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	262	262	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	96	96	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1159	1159	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	1431	1431	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0
Ped Link: P2	0	0	-	-	-	-	-	-	0.0	0.0	-	-	0.0

C1 PRC for Signalled Lanes (%): -1.6 Total Delay for Signalled Lanes (pcuHr): 51.45 Cycle Time (s): 120
PRC Over All Lanes (%): -1.6 Total Delay Over All Lanes(pcuHr): 51.45

APPENDIX Q – RAIL TERMINAL CONNECTIVITY STATEMENT

Rail Terminal Connectivity Statement

November 2021

MDS Transmodal

Ref: 220053r_rail_final

CONTENTS

1. INTRODUCTION

1.1 This technical report has been prepared to support *Hodgetts Estates* who are submitting proposals for a new strategic industrial warehousing scheme on land to the north-east of Junction 10 of the M42. Up to 100,000 square metres of new high-bay logistics and industrial floor space is proposed for the site. The scheme has been planned from the outset to operate successfully as a standalone road-based logistics warehousing facility, and accompanying documents demonstrate market need for such and that it is acceptable and deliverable in planning application traffic terms. The logic for locating the facility in this location is clear, J10 of the M42 being the nexus of the M42 motorway and the A5 trunk road, both major freight corridors, as well as its close proximity to *Birmingham Intermodal Freight Terminal (BIFT)* at *Birch Coppice Business Park* (around 500m) and *Hams Hall Rail Freight Terminal* (15km)

1.2 Notwithstanding this position, due to its close proximity to *Birch Coppice Business Park*, the proposed warehouse development can also in practice be classified as rail-served. Occupiers will be able to access the *BIFT* facilities on the same basis as those currently located within the business park. A higher proportion of the resultant traffic can therefore be expected to arrive or depart using rail via Birch Coppice than might otherwise be the case. The purpose of this technical note, therefore, is to explain why this situation arises, and to demonstrate the benefits of rail connectivity that will potentially accrue to future warehouse occupiers at the planned development and wider society. These added benefits, while not central to the planning justification, provide additional support for the proposed development.

1.3 The significance of this position is that Government planning policy promotes the location of logistics facilities at sites which offer genuine modal choice to shippers. This is for two principal reasons:

- It creates the conditions where rail freight can become cost competitive when compared with road haulage. Shippers utilising rail freight under these conditions can therefore expect to accrue financial (productivity) benefits (so called user benefits); and
- It promotes mode shift to rail freight. Rail freight is recognised as being a substantially more sustainable mode of transport, which generates wider societal benefits when compared with road haulage. Emissions of greenhouse gases (GHG), for example, are significantly lower on tonne-km basis, which is particularly important given internationally binding national commitments to reduce and ultimately become a net-zero GHG emitter.

1.4 The proposed development will therefore conform with the Government's current policy with respect to promoting modal choice and the location of large scale logistics facilities.

2. PLANNING POLICY – SUPPORT FOR RAIL FREIGHT

2.1 Planning policy alongside the proposed scheme's acceptability and deliverability in planning terms is addressed in accompanying documents. However, by way of background it is worth briefly setting out current planning policy with respect to rail-served freight/logistics developments.

National Planning Policy Framework

2.2 National planning policy for England is set out in the *National Planning Policy Framework (NPPF)*. This was originally published by the *Department for Communities and Local Government (DCLG)* in March 2012 and then revised and reissued reissued in February 2019 and July 2021 (by the renamed *Ministry of Housing, Communities and Local Government* or *MHCLG*).

2.3 Section 9 of the NPPF provides for transport policies that facilitate sustainable development but also contribute towards wider sustainability objectives. In particular, it notes that significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes (Para 105). This can help to reduce congestion and emissions, and improve air quality and public health. It notes that plans and decisions should identify and protect, where there is robust evidence, sites and routes which could be critical in developing infrastructure to widen transport choice and realise opportunities for large scale development (Para 106c). It also stipulates that plans and decisions should recognise the importance of providing adequate overnight lorry parking facilities, taking into account any local shortages, to reduce the risk of parking in locations that lack proper facilities or could cause a nuisance (Para 109).

National Planning Statement for National Networks

2.4 On a similar basis, the *National Planning Statement (NPS) for National Networks*, published by the *Department for Transport (DfT)* in December 2014, includes the Government's current policies concerning the development of *Strategic Rail Freight Interchanges (SRFIs)*. It is considered to be the principal policy document concerning the development of rail-served warehousing and logistics facilities. While the proposed Junction 10 scheme is being progressed through the planning system as a stand-alone road-based development, as will be demonstrated below it would in practice be a rail-served site (it will be able to access Birch Coppice's rail terminal facilities at *BIFT* on the same basis as those currently located within the business park).

2.5 The NPS states that the aim of SRFIs is to optimise the use of rail in the freight journey through the co-location of freight and distribution activities (Para 2.44). Further, the NPS states that the users of warehousing and distribution services are increasingly looking to integrate rail into their transport operations. This will require the logistics industry to develop new facilities that need to be located alongside the major rail routes, close to major trunk roads as well as near the conurbations that consume the goods (Paragraph 2.45).

2.6 The NPS notes that the Government's vision is for a sustainable transport system that is an engine for economic growth. The NPS consequently states that the transfer of freight from road to rail has an important part to play in reducing greenhouse gas emissions and addressing climate change (Paragraph 2.53). To facilitate this modal transfer, the NPS concludes that a network of SRFIs is needed across the regions, to serve regional, sub-regional and cross-regional markets. The NPS concludes that a reliance on existing rail freight interchanges and on road-only based logistics is neither viable nor desirable. The Government has therefore concluded that there is a compelling need for an expanded network of SRFIs (Paragraphs 2.54-2.56 and Table 4).

3. RAIL-SERVED LOGISTICS WAREHOUSING

3.1 Rail-served logistics warehouses fall into two types. The first type involves the installation of rail sidings along one side of the warehouse (normally one of the long sides) or even into the warehouse itself. Cargo is transferred directly between railway wagons positioned in the sidings and the warehouse using fork-lift trucks or similar lifting equipment, thereby avoiding the need to use road transport. Such facilities are only suitable (and economic) when handling commodities which tend to move in full train-load volumes (train of at least 400m length). Consequently, their use is fairly niche and normally associated with semi-bulk cargoes such as steel or forest products moved in conventional box or flat wagons. Consumer goods normally move in much smaller (less than train-load) volumes but more frequently. *ProLogis Park* in Coventry (Kerseley), due to a condition of its planning consent, had such sidings installed alongside a number of the warehouses. The site has never handled regular services and is currently not receiving trains.

3.2 The second type of rail-served logistics warehousing is where they are located within close proximity to an intermodal terminal, and connected to the terminal by ‘internal’ roads which tend to be privately owned and maintained (although this is not the case at Hams Hall where the internal site roads are adopted by the local highway authority).

3.3 An intermodal terminal is a set of railway sidings where containers and other types of intermodal units are lifted to and from railway wagons using fixed overhead or mobile lifting equipment. Goods conveyed in intermodal units arrive by train at the terminal, from where they are subsequently transferred to the warehousing by means of a short distance shunt via the internal roads using yard tractors and skeletal semi-trailer equipment. Yard tractors are designed to haul semi-trailers away from the public road network, such as within port estates, at large distribution centres and rail terminals. They are highly manoeuvrable and can lift/drop trailers quickly and efficiently. An example of such equipment is provided in the picture below.

Picture 1: Yard Tractor and Semi-trailer

3.4 This type of rail connectivity is possible due to the 'off public highway' connectivity and generates the following benefits:

- Vehicles which operate entirely within private land are currently able to operate with lower operating costs, meaning terminal to warehouse transfer costs are lower (see below);
- Drivers of yard tractors do not need to be fully qualified HGV licence holders (though operators would need to provide training), meaning wage rates are generally lower. It also means operators are not impacted by the current significant shortage of HGV drivers;
- Yard tractor equipment is cheaper to purchase or lease when compared with road-legal HGVs; and
- As the container is already 'on-site', there is no public highway network congestion to negotiate. Consequently, there is no requirement to build in any buffer time to ensure 'just-in-time' delivery time-windows are met, meaning the yard tractor equipment can be utilised more intensively when compared with road-legal HGVs serving off-site origins/destinations.

3.4 The implications of this position are explored in the following section. Developments over the past two decades have seen multiple warehouse new-builds 'cluster' around an intermodal terminal within a single rail-served site. In planning terms these have become known as *Strategic Rail Freight Interchanges (SRFIs)*, and include facilities at *DIRFT* (near Crick, Northants), *East Midlands Gateway* (Kegworth, Notts), *Hams Hall* and *Birch Coppice Business Park*. This clustering has the effect of concentrating large freight volumes at one location, thereby generating a critical mass capable of attracting viable intermodal rail freight services from a variety of origins (rail freight is generally only economically viable in train lengths over c400m).

3.5 For consumer cargo (i.e. that which passes through warehouses of the type proposed), intermodal rail is the more attractive option. As these goods generally move in smaller volumes, intermodal rail allows individual shippers to move goods at less than train-load volumes (e.g. single or a few containers at one time); a full-length train comprising containers from multiple shippers. For this reason, warehouses which are rail-served by means of being within close proximity to an intermodal terminal are the preferred type of connectivity. In contrast to directly rail-connected warehouses, where SRFIs have been developed, intermodal train services have been quickly established. For example, *East Midlands Gateway*, which officially opened in February 2020, has recently announced a fifth daily service (to/from Felixstowe, to complement the existing services from Felixstowe, Southampton and Liverpool).

3.6 *Birch Coppice Business Park* was originally developed by IM Properties at the end of the 1990s. It initially consisted of a single directly rail-connected warehouse (VW spare parts), though today it is a full-scale SRFI accommodating a modern intermodal terminal operated by *Maritime Transport* (known as *BIFT*) and a significant quantum of warehouse floor space. On a typical weekday, the terminal receives three trains/day from the Port of Felixstowe and two trains/day from the Port of Southampton. The table below summarises the key characteristics of the site.

	Birmingham International Rail Terminal (BIFT), Birch Coppice Business Park, Tamworth.
Railway Line	Birmingham-Derby Main Line
Loading Gauge	W10
Terminal Operator	Maritime Transport
Number sidings and train length	6 x reception sidings - varying length up to 530m 4 x 340m terminal sidings
On-site warehousing	Circa 450,000 sqm across +25 occupiers, including at Core 42 Business Park
Additional Information	Loading using overhead gantry cranes.

3.7 It is interesting to note that the original directly rail-connected warehouse, designed to handle cargo in conventional box wagons rather than intermodal, resulted from a planning consent condition, albeit it never received regular train services. Since the development of the intermodal terminal, the SRFI has grown to handle 5 trains/day as described.

3.8 The proposals are on the opposite side of the A5 to the existing Birch Coppice SRFI. The gate-to-gate public road network distance between the two sites is likely to be around 500m (i.e., the distance on the public road network connecting the respective private estate roads).

3.9 The site is also a short distance from the Hams Hall SRFI (circa 15km via the M42). Originally developed by Powergen in the late 1990s, it accommodates a modern intermodal terminal operated by *ABP Connect*. The table below summarises the key characteristics of the site. On a typical weekday, the terminal receives three trains/day from the Port of Felixstowe and daily trains from the ports of Southampton and London Gateway.

Terminal Name and Location	Hams Hall, near Coleshill.
Railway Line	Birmingham to Nuneaton/Derby
Loading Gauge	W10
Terminal Operator	ABP Connect
Number sidings and train length	2 x reception sidings 775m 4 x 400m terminal sidings
On-site warehousing	Circa 320,000 sqm
Additional Information	Loading using mobile reach stackers. Internal site roads are adopted highway.

3.10 However, given the distance from the application site via the public road network (M42), transfers of containers to/from Hams Hall would need to be undertaken by road-legal HGVs. In this case, it would be a standard articulated HGV, comprising a tractor unit hauling a skeletal semi-trailer. An example is provided in the picture below.

Picture 2: Tractor Unit and Semi-trailer

3.11 When compared with yard tractors within an SRFI, the terminal to off-site warehouse transfer process (whether in this case to Hams Hall or more generally) has the following disadvantages:

- Drivers need to be fully licenced and qualified HGV drivers (significantly higher wage rates and current recruitment issues due to shortages of fully qualified drivers);
- Road-legal HGV equipment is more expensive to purchase or lease when compared with yard tractors; and

- Buffer time has to be built into schedules to ensure ‘just-in-time’ delivery time-windows are met therefore meaning the equipment is potentially utilised less intensively.

3.12 Overall, transfer costs from terminal to warehousing which is not rail-served are substantially higher. This issue is addressed in the following section of this report.

4. RAIL CONNECTIVITY – LOGISTICS OPERATOR BENEFITS

Use of Yard Tractors on the Public Road Network

4.1 While yard tractors (as described in the previous section) have been designed to haul semi-trailers on private land (such as between intermodal terminals and warehousing within SRFIs), under limited circumstances they can also be operated on the public highway (defined as roads maintained at public expense). In these situations, they are classed as *'works trucks'* and are defined under the Construction and Use Regulation as:

> *"A motor vehicle (other than a straddle carrier) designed for use in private premises and used on a road only in delivering goods from or to such premises, to or from a vehicle on a road in the immediate neighbourhood, or in passing from one part of any such premises to another or to other private premises in the immediate neighbourhood"*

4.2 When operated on the public highway, a works truck needs to be licenced with the DVLA and pay Vehicle Excise Duty (VED). While certain derogations exist for 'works trucks', by and large they must conform to the requirements of the Construction and Use Regulations when operating on the public highway, particularly with respect to being within gross vehicle weight limits, having a speedometer (if they can exceed 25mph), fitment of suitable brakes and appropriate lighting (headlights, indicators etc..). Note that the definition requires the vehicle to be 'designed for use in private premises', meaning that former road-going vehicles used as 'shunters', such as old tractor units, cannot be classed as works trucks.

4.3 The term *'immediate neighbourhood'* in the works truck description is not defined in terms of distance. It is regarded as a matter of judgement for the operator and ultimately would be for a Court to determine. However, given the location of the application site on the opposite side of the A5 to Birch Coppice (gate-to-gate around 500m) and that Revenue and Customs have to date adopted 1km when permitting the use of rebated fuels on public roads (see below), the proposed warehouse development clearly falls within the description of the term 'immediate neighbourhood'. On that basis, yard tractors which operate internally within the *Birch Coppice Business Park* (to/from *BIFT*) will also be able to access the site on the same terms (under the works truck conditions).

4.4 In addition to their lower purchase/lease costs, there are currently two important exemptions for works trucks when used on the public highway which when compared with the use of standard road-legal HGVs can generate a significant operating cost advantage.

4.5 Firstly, works trucks can be legally driven on a standard Category B 'car' driving licence when on the public highway. They are classed as an 'exempted goods vehicle'; the driver must be aged 21 or older and have held a Category B driving licence for at least two years (albeit for health and safety reasons operators would need to ensure adequate training had been provided to the driver). Drivers of road-legal HGVs must hold a vocational driving licence (Category C+E for articulated HGVs) and possess a Driver Certificate of Professional Competence (Driver CPC) qualification. Consequently, wage rates for fully qualified HGV drivers (C+E licence plus Driver CPC) are significantly higher than for yard tractor operatives. This is significant in light of the identified (and well publicised) shortage of qualified HGV drivers nationally[1].

4.6 Secondly, VED rates are significantly lower for a works truck. Currently it is only £165 per annum, compared with the full rate of £1,200 for a standard articulated HGV.

4.7 Vehicles such as yard tractors which operate entirely within private land have also been able to use fuel where a much lower rate of excise duty has been charged. For diesel powered vehicles, the fuel is referred to as 'rebated diesel' or 'red diesel' (after the colour of the dye which is added to distinguish it from the full duty paid version). However, the Chancellor of the Exchequer announced in the March 2021 Budget that most rebated diesel exemptions are to be removed from April 2022 onwards, even on vehicles operating entirely on private land. That includes yard tractors.

4.8 Drawing the above together, it can be concluded that the proposed warehouse development adjacent to Junction 10 can in practice be classified as rail-served (effectively it will be 'inside' the SRFI). Occupiers will be able to access *BIFT* on the same basis as those currently located within the SRFI (i.e., using work trucks). The implications of this position in terms of transport/transfer costs are explored below.

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[1] Letter to Prime Minister from Road Haulage Association, 23 June 2021

Transfer Costs to and from BIFT

4.9 The internal shunting operation between *BIFT* and the surrounding warehousing (within the SRFI and the application site) would most likely adopt the 'drop trailer' method. A loaded container on a skeletal semi-trailer would be shunted from the rail terminal to its destination warehouse, and positioned at the appropriate loading dock. The yard tractor/works truck would then leave the container/semi-trailer combination at the loading dock for discharge, and subsequently collect an empty container/semi-trailer combination, ideally from another loading dock or nearby warehouse, before returning to the rail terminal. The yard tractor therefore 'keeps moving' and a round-trip out from and back to the rail terminal is able to shunt two containers.

4.10 Occupiers with a sufficiently high volume of incoming/outgoing freight via the *BIFT* may elect to invest their own yard tractor/works truck, either purchase outright or lease. The annual leasing costs (including maintenance) for a typical yard tractor/works truck that is used in ports and rail terminals is around £25,000. Vehicle Excise Duty (so that it can operate as a 'Works Truck' on the public highway network, as per above) is £165 per year. Annual driver wages, including on-costs, would be around £32,000 per driver. It is assumed that overheads would equate to around 25% of the yard tractor fixed costs. Total annual fixed costs would therefore total around £111,500 per annum for each yard tractor operated, assuming two drivers per vehicle. A skeletal semi-trailer would cost around £6,000 per annum to lease. Duty paid diesel (excluding VAT) currently costs around £1.19 per litre and fuel consumption is around 1.4km/l (4 mpg) for a yard tractor. Once tyre wear is accounted for, the running costs for the yard tractor/works truck and semi-trailer combination would be around £0.90 per km.

4.11 Given the scale of the Birch Coppice SRFI, it is likely that a driver would be able to undertake 7 x drop/collect round-trips as described within an 11 hour shift (i.e., between 1.25-1.5 hours per round trip once shunting, waiting time, paperwork and statutory breaks etc. are accounted for). This equates to 14 round-trips per 24 hour period for each yard tractor/works truck, shunting a total of 28 containers to or from *BIFT*. Assuming a dwell time of around 4 hours at each warehouse, a skeletal semi-trailer would therefore undertake 2 x round-trips per driver shift. Terminals such as *BIFT* generally operate 5.5 days per week (i.e., Saturday AM), equating to 275 days per annum.

4.12 On that basis, the total costs per round-trip (assuming an average round-trip distance is 6km) will be approximately £40 or £20 per container shunted. Once the operator's margin is accounted for, this would equate to a rate per shunt of around £22. This is shown in the table below.

Table 4.1: Yard Tractor/Works Truck Transfer Costs with SRFIs

Red Diesel			
Yard Tractor/Works Truck		Days pa	275
Annual lease inc maint & ins	£25,000	Round trips/day - yard tractor	14
VED	£165	Round trips/day - semi-trailer	4
Driver wages - 2 x £32k inc NIC	£64,000		
Overheads (25%)	£22,291	*Fixed cost round trip*	
Total pa	£111,456	Yard tractor	£29
		Semi-trailer	£5
Skeletal semi-trailer		*Total*	*£34*
Annual lease inc maintenance	£6,000		
		Running costs per km	£0.90
		Distance/round trip (km)	6
		Running costs	£6
		Total cost per round trip	**£40**
		Total cost per container	**£20**

4.13 In contrast, for a road-legal 6x2 tractor unit the annual leasing costs (including maintenance) is around £33,000. Vehicle Excise Duty is £1,200 per year. Annual driver's wages, including on-costs, in this case would be around £42,000 per driver. Once other operating costs are accounted for and overheads (again, it is assumed that overheads would equate to around 25% of the tractor unit fixed costs), annual fixed costs would therefore total around £154,000 per annum for each tractor unit operated - £42,500 more than the yard tractor option. The lease of the skeletal semi-trailer would again be on top of this. Assuming fuel consumption is around 2.5km/l (7 mpg), once tyre wear is accounted for the running costs for the road legal tractor unit and semi-trailer combination would actually be lower at around £0.54 per km.

4.14 Consider a transfer operation from *BIFT* to warehousing within the vicinity of the SRFI but beyond the 'works truck' limitations (as described). Such an operation would see a container road haulier collect the unit from the rail terminal and transport it to the destination warehouse. It would then wait with the container at the loading dock while it is discharged before returning it to the terminal. Assuming this round-trip operation takes 3.5 hours (waiting, travel time, discharge etc..), the total costs per round-trip (assuming an average round-trip distance is 15km) will be around £116 per container. Once the operator's margin is accounted for, this would equate to a rate per container moved of around £130. This is shown in the table below.

4.15 Clearly, being rail-served 'results in significantly lower transfer costs between rail terminal and warehouse.

Table 4.2: Road Legal-HGV Transfer Costs Beyond SRFIs

Road Legal HGV			
Tractor			
Annual lease inc maint & ins	£33,000	Days pa	275
VED	£1,200	Hours pa	5,000
Driver wages - 2 x £42k inc NIC	£84,000		
Overheads (25%)	£29,550	Fixed cost per hour	£30.75
Total pa	£147,750	Running costs per km	£0.54
Skeletal semi-trailer		Fixed cost (3.5 hours)	£108
Annual lease inc maintenance	£6,000	Running cost (15km)	£8
		Total	**£116**
Total Fixed Costs pa	£153,750		

User Benefits

4.16 Consider the example of deep-sea maritime containers being transported from the Port of Southampton to a distribution centre in the Tamworth area. The shipper would have the option of using intermodal rail freight (via *BIFT*) or road haulage direct from the port to warehouse.

4.17 A typical intermodal freight trains costs around £12 per train-km to operate (fixed costs plus fuel) on a siding-to-siding basis. Based on this rate plus a further £1,500 per train to account for other fixed costs (shunting, wagon down-time etc..), the total train cost for the 240km trip between Southampton and BIFT would be in the region of £4,400. Assuming a mean loading of 36 containers per train, that equates to a port gate to *BIFT* sidings rate of £122 per container. The port at Southampton would charge around £35 per container to load to rail. Terminal lift charges at BIFT are around £25 per container, plus £22 for a local shunt within or close by to the Birch Coppice estate. Assuming the destination warehouse is within the Birch Coppice SRFI (and by extension the application site), total port to warehouse costs are therefore estimated to be in the region of £204 per container.

4.18 For a destination beyond Birch Coppice, a local road haul is estimated (from above) to be around £120. For an off-site destination, total port to warehouse costs are therefore estimated to be in the region of £300 per container.

4.19 The same trip by road haulage would most likely take around 6.5 hours once waiting time at the port and warehouse are accounted for. On the basis of the fixed and running costs stated above, the total port to warehouse costs are also estimated to be in the region of £290 per container. This is shown in the table below.

Table 4.3: Estimated Intermodal and Road Haulage Costs Southampton to Tamworth

Rail			**Road**		
Cost per train-km	£12		Travel time + waiting	6.5	hrs
Distance	240	km	Distance	240	km
Containers/train	36				
Train cost	£2,880		Fixed cost	£200	
Other fixed costs	£1,500		Running cost	£94	
Total Costs	£4,380		***Total cost***	***£293***	
SRFI Rail-served					
Train cost/container	£122				
Port handling - rail	£35				
Terminal lift	£25				
Internal shunt	£22				
Total cost	***£204***				
Off-site					
Cost/container	£122				
Port handling - rail	£35				
Terminal lift	£25				
Local road haul	£120				
Total cost	***£302***				

4.20 This analysis demonstrates that one of the main factors which renders rail freight cost competitive against road haulage is the ability to locate distribution centres in rail-served locations. Where this occurs, shippers are able to accrue financial benefits (which in transport economics and appraisal are termed *user benefits*). In the costed example above, rates to a rail-served warehouse from a deep-sea port (in this case Southampton) are around *£80 per container less* when compared with road haulage. For a warehouse located away from a rail-served site, transport rates are broadly comparable. Given that future occupiers at the application site will be able to access *BIFT* on the same basis as those currently located within the SRFI (as described), they will consequently be able to accrue these user benefits. A proportion of the resultant traffic at the planned development can therefore be expected to arrive or depart using rail via Birch Coppice (BIFT), and this is addressed in the following section.

4.21 Shippers will therefore consider other factors (speed, delivery times, etc..) when deciding which mode to use. For reference, intermodal rail's market share into the Midlands from the Port of Southampton is currently around 45%. It is also worth noting that 250km is the approximate 'break even' distance above which intermodal rail freight should offer a more cost competitive solution where one end of the trip is rail-served (in this example the Port of Southampton, but several of the UK's main container ports including London Gateway, Teesport and Felixstowe all also exceed this distance).

4.22 It is worth noting that Maritime Transport already runs several yard tractors/works trucks from *BIFT* so in reality there will be no cost associated with leasing these, making the option much more cost effective for prospective site occupiers. Furthermore, given the short distance journeys involved in shunting between *BIFT* and the application site, the work load involved allows the yard tractors/works trucks to be adapted to low cardon technologies such as fully electric (EVs) or hybrid electric vehicles, which have a limited range at present. This, in turn, would save on VED making the use of *BIFT* even more cost effective whilst also saving carbon.

5. WIDER SUSTAINABILITY BENEFITS

5.1 In addition to the potential user benefits described above, rail freight is recognised as being a more sustainable mode of transport, generating wider societal benefits when compared with road haulage. Modal switch to rail from road generates lower levels of pollutants (improved air quality), causes fewer accidents and leads to less wear/tear on road surfaces. Emissions of greenhouse gases (GHG), in particular, are significantly lower on tonne-km basis, which is particularly important given internationally binding national commitments to reduce and ultimately become a net-zero GHG emitter.

5.2 The Department for Transport (DfT) has monetised the wider societal benefits of moving goods by rail freight rather than road haulage (which in transport appraisals are termed mode shift benefits (MSBs) or non-user benefits). On a weighted average basis, MSBs are currently valued by the DfT at £0.34 per HGV-km removed from the road network. For the Port of Southampton to BIFT example flow presented above, moving the container by rail rather than road haulage would therefore generate around £82 in wider non-user benefits. This section of the report has therefore estimated the potential mode-shift to rail resulting from the proposed development being ‘rail-served’ (as described) alongside the wider non-user benefits, with a particular focus on the estimated reduction in GHG emissions.

Traffic Volumes and Distribution

5.3 The starting point of this assessment was the forecast HGV trip generation to/from the proposed warehouse units during the peak hours, as agreed by *Bancroft Consulting* with the various highway authorities. Then using TRICS data, these were expanded upon to estimate that over the 12-hour period 07:00 to 19:00, *627 HGVs* will depart the site, as follows:

- 157 HGVs to the South East of the site (A5);
- 33 HGVs to the North East of the site (M42);
- 338 HGVs to the North West of the site (A5); and
- 99 HGVs to the South West of the site (M42).

5.4 An equivalent level for incoming traffic is also forecast. For the purposes of this wider benefits exercise, these 12-hour figures needed to be translated into an estimated 24-hour total[2]. This was based on observed traffic flows (by means of a survey) at the Swan Valley warehousing development in Northampton, data which subsequently formed the basis of the accepted trip generation analysis for the East Midlands Gateway SRFI Development Consent Order

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[2] Warehouses such as that planned for the application site will receive and despatch HGVs 24 hours per day, whereas the highway traffic assessment is principally concerned with daytime traffic flows measured against network capacity during the busy daytime period.

examination. This suggests that 56.8% of observed HGV arrivals and departures took place during the 07:00 to 19:00 time period. Consequently, the agreed 12-hour figure has been scaled by 1/0.568 to establish an estimated 24-hour total. On this basis, the planned warehousing at the application site can expect to despatch *1,104 HGVs per 24-hour period* (with an equivalent level for incoming traffic).

5.5 The Swan Valley traffic survey was utilised as that particular development has a broadly similar quantum of floor space (c135,000 sqm) to that planned for the application site, a range of warehouse and manufacturer occupiers and that the 24-hour distribution of traffic subsequently formed the basis of the accepted traffic generation rates at the East Midlands Gateway examination. Also, for the avoidance of doubt, these 24-hour traffic figures (as described) have been estimated purely to establish the potential mode shift to rail and the wider non-user benefits. As noted, Bancroft Consulting's previously agreed peak-hour rates should be adopted for any highway capacity assessments.

5.6 The total HGV arrivals and departures over the 24-hour period will include both loaded and empty re-positioning movements (Bancroft Consulting's figures include both loaded and empty HGVs). For example, a loaded outbound departure to a retail outlet or another distribution centre might return empty (albeit conveying empty roll cages/pallets or waste packaging). Likewise, a loaded arrival from a supplier would realistically depart empty, potentially to collect a backload from another warehouse in the vicinity.

5.7 The table below therefore shows the total estimated 24-hour flows to and from the application site once empty arrivals and departures are accounted for. In this case, we have assumed that 75% of loaded inbound HGVs subsequently depart empty (25% collecting a backload directly from the site), and likewise that 75% of loaded outbound HGVs will return to the site empty. On this basis, the Junction 10 site is estimated to attract 631 loaded HGVs per 24-hour period (and likewise a similar level of departing loaded HGVs).

Table 5.1: Summary of Estimated 24-hour HGV Arrivals and Departures

HGVs			
Loaded inbound	631	Empty Outbound	473
Empty inbound	473	Loaded outbound - backload	158
		Loaded outbound - empty in	473
Total inbound	1,104	Total outbound	1,104
Total per 24-hours	***2,209***		

Source: Bancroft Consulting (agreed peak-hour flows), expanded to 24-hour based on TRICS data and Swan Valley observed traffic flows

5.8 The MDS Transmodal *GB Freight Model (GB Freight Model)*[3] provides an origin-destination matrix of loaded warehousing traffic to/from the site's zone (MSOA: E02006469; North Warwickshire 002: Dordon, Hurley & Wood End). This includes both domestic and unitised port traffic. The imported proportion of incoming cargo to the zone in this case is set at 33%. This is potentially conservative as some warehouses, particularly those operating as National Distribution Centres typical of the area (e.g., Aldi National Distribution Centre at Atherstone), will be handling significantly higher proportions of imported cargo; this is typically more suitable to rail, particularly if moved through one of the rail-served deep-sea container ports.

5.9 The estimated loaded 24-hour HGV traffic in each of the 4 directions has subsequently been distributed nationally in-line with the GB Freight Model's origin-destination matrix of loaded warehousing traffic for the Dordon zone. This is shown in the table below differentiated by standard geographical regions.

Table 5.2: Estimated Distribution of Application Site Loaded Warehouse Traffic by Region

	Loaded HGVs	
GB Region	From Dordon	To Dordon
North East	2	2
North West	127	144
Yorkshire & the Humber	11	14
East Midlands	111	67
West Midlands	238	168
Eastern	40	86
Greater London	25	7
South East	29	95
South West	12	10
Wales	14	22
Scotland	23	15
Total	**631**	**631**

Source: GB Freight Model, based on Table 5.1

5.10 On the basis that all loaded traffic moves by road haulage i.e., assuming initially that no traffic arrives/depart by rail via *BIFT* (this is 'corrected' below), derived from the GB Freight Model's highway assignment module the total daily loaded HGV-km is estimated to be as follows:

- 98,180 HGV-km for loaded inbound HGVs;

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[3] Comprehensive freight analytical tool developed/maintained by MDST that models current and forecasts future freight flows by mode, Origin-Destination and commodity grouping. Produces forecasts for, amongst others, DfT, Network Rail, TfN and Midlands Connect.

- 70,933 HGV-km for loaded outbound HGVs; and
- 169,113 HGV-km total for loaded HGVs.

5.11 This represents an average length of haul (ALOH) of 156km for loaded inbound HGVs and 112km for loaded outbound HGVs. For the empty HGVs arriving and departing (Table 5.1 above), these are assumed to have repositioned empty for 25km prior to arriving or following departure from the site. This equates to *23,663 HGV-km per* 24-hour period (i.e., 473 X 2 directions x 25km). The total HGV-km are therefore *192,776 HGV-km* per 24-hour period (i.e., 169,113km + 23,663km).

5.12 However, as described above future occupiers at the application site site will be able to access *BIFT* on the same basis as those currently located within the SRFI, and subsequently accrue user-benefits for some flows. A proportion of the traffic estimated in Table 5.2 above can therefore be expected to arrive or depart using rail freight via BIFT (modal shift). Using the GB Freight Model's mode assignment module, the level of traffic that could be expected to arrive or depart by rail freight has subsequently been estimated (including the origin and destinations). One of the main components of GB Freight Model is the cost-based mode choice calculation which, for every origin to destination, works out the cheapest rail route (including local road hauls at either end). It then calculates the road versus rail trunk haul mode share based on a Logit model. This mode share calculation approach has therefore been applied to the loaded traffic distribution described above. This is shown in the table below.

Table 5.3: Estimated Mode Split at the Proposed Junction 10 Warehouse Development

	Loaded HGV-equivalent units				
	By Rail		Remaining by Road		Rail mode share
GB Region	From Dordon	To Dordon	From Dordon	To Dordon	(Both directions together)
North East	1	0	1	2	20%
North West	8	8	119	136	6%
Yorkshire & the Humber	1	0	10	14	5%
East Midlands	2	1	109	66	2%
West Midlands	3	2	235	166	1%
Eastern	4	38	36	48	33%
Greater London	2	0	23	6	8%
South East	3	12	26	83	12%
South West	2	1	10	9	13%
Wales	1	1	13	21	7%
Scotland	19	11	4	4	79%
Total	**46**	**76**	**585**	**555**	**10%**

Source: GB Freight Model

5.13 On that basis, around 76 loaded inbound HGV-equivalent units can be expected to arrive by rail via *BIFT* across the 24-hour period. The equivalent for loaded outbound is 46 HGV-equivalent units. Combined, rail therefore equates to 122 loaded HGV-equivalent units (sum of both directions) across the 24-hour period. This suggests just over 3 'works trucks' shuttle movements per hour between BIFT and the application site when spread evenly across the 24-hour period (as described in Section 4, in each case delivering a loaded container and returning to *BIFT* with a loaded outbound or empty container). Overall, the rail mode share for all cargo, when simply measured in terms of the number of HGV-equivalent units passing through the gate, is 7% for outgoing traffic and 12% for incoming traffic (10% for both directions combined). When measured in terms of unit-km i.e., also accounting for distance moved, the rail mode share is estimated to be around 21%.

Reduction in GHG Emissions

5.14 The *Department of Business, Energy and Industrial Strategy (BEIS)* publishes conversion factors in order that those organisations required to can calculate and report their GHG emissions[4]. The current figure for an average laden articulated HGV is 0.91569kg CO_2e per HGV-km. Therefore, on the basis that all cargo moves by road haulage, the total of 192,776 HGV-km per 24-hour period (as per above) equates to GHG emissions of 176,523kg CO_2e (i.e., 192,776km x 0.91569). Assuming the equivalent of 300 operating days per year, this equates to *53,000 tonnes of* CO_2e *per year*.

5.15 On a per tonne-km basis, rail transport has lower carbon emissions than the equivalent road transport. Therefore, a switching of appropriate movements from road to rail can be expected to result in a reduction in GHG emissions. For rail freight, the BEIS conversion factors only provides a per tonne-km value. This is 3.1 times lower than that for the average laden articulated HGV, meaning that the like-for-like figure for movements by rail freight is 0.29492kg CO_2e per HGV-equivalent km. The total of 122 loaded HGV-equivalent units (sum of both directions) across the 24-hour period equates to *34,915 HGV-equivalent km*, with an ALOH of 286km. This equates to GHG emissions of 10,297kg CO_2e per 24-hour period directly associated with rail freight transport or just under *3,100 tonnes* CO_2e *per annum* assuming 300 operating days. However, for rail freight the estimation also needs to consider the emissions derived from:

- Lifting equipment at the terminals and ports; and
- Local road hauls and 'works truck' shunting between BIFT and the application site.

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[4] www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020
Outputs are reported as kilograms of carbon dioxide equivalent (kg CO_2e)

5.16 Container lifting operations (to/from rail wagons) at each end of the journey will involve either a reach stacker or a terminal gantry crane. Compared to the transport legs, the GHG emissions will be very small and these have been estimated these to be the equivalent of 1km of HGV haulage (at the BEIS conversion factor for average laden HGV).

5.17 We have assumed 6km of 'works truck' shunting at BIFT per unit moved (at the BEIS conversion factor for an average laden HGV). For non-port rail traffic, a local road haul from the destination terminal to the cargo's final destination is assumed at a distance of 40km. As with road journeys direct from the application site, it is assumed that there will be an additional 75 empty movements associated with every 100 loaded movements, each travelling 25km. Therefore, for each non-port loaded rail unit moved there are 65.75 HGV-km of GHG emissions to include in the calculation (i.e., 6km + 1km + 40km + (75% X 25km) = 65.75 HGV-km), again at the BEIS conversion factor for an average laden HGV. For each port loaded rail unit moved, there are 7 HGV-km of GHG emissions to include (i.e., 6km + 1km = 7km).

5.18 Due to the estimated modal shift from road to rail, the GB Freight Model forecasts that the remaining loaded road journeys to and from the application site are as follows:

- 555 HGVs inbound to the site with an ALOH of 141km, equating to 77,981 HGV-km daily;
- 585 HGVs outbound from the site with an ALOH of 96km, equating to 56,217 HGV-km daily; and
- Daily total of *134,198 loaded HGV-km*.

5.19 The associated empty HGV movements are *21,375 HGV-km*, calculated on the same basis as the 'road only' served site (i.e. (585+554) x 75% x 25km). The total HGV-km are therefore 155,573 *HGV-km* per 24-hour day (i.e., 134,198km + 21,375km). The estimated GHG emissions associated with the forecast road and rail freight volumes (Table 5.3) is therefore shown in the table below, and subsequently compared with the 'road only' figure calculated earlier.

Table 5.4: Estimated GHG Emissions at Junction 10 Site

		GHG Emissions (CO_2e) per 24-hours
Road and Rail		
Rail	34,915 HGV-equiv km x 0.29492kg CO_2e	10,297kg CO_2e
Non-port	72 HGV-equiv units x 65.75km x 0.91569kg CO_2e	4,335kg CO_2e
Port	50 HGV-equiv units x 7km x 0.91569kg CO_2e	320kg CO_2e
Remaining Road	155,575 HGV-km x 0.91569kg CO_2e	142,458kg CO_2e
Total		*157,410kg CO_2e*
Road Only		
Road	192,776 HGV-km x 0.91569kgCO_2e	*176,523kg CO_2e*
		GHG Emissions (CO_2e) per annum*
Road		*52,957 tonnes CO_2e*
Road and Rail		*47,223 tonnes CO_2e*
Saving		***5,734 tonnes CO_2e***

**300 operating days per annum*

Source: GB Freight Model and BEIS Conversion Factors

5.20 On this basis, it is estimated that the modal shift from road to rail will generate a saving of just under **5,800 tonnes of carbon dioxide equivalent per annum**. To put that figure into context, it is broadly the same amount of carbon dioxide equivalent produced by around *2,750 typical mid-sized diesel powered cars* during the course of a year (on the basis that a typical mid-sized diesel car generates around 130g CO_2e per km and will on average cover 16,000km/c10,000 miles per annum)[5].

Non-User Benefits

5.21 Further, from the above forecasts the overall reduction in loaded HGV-km to and from the application site resulting from this modal shift is estimated to be around 34,915 HGV-km per 24-hour period (i.e., 169,113 HGV-km – 134,198 HGV-km). Assuming 300 operating days per annum, this represents a reduction of 10.4 million HGV-km over the course of a year. Based on the current MSB rate (weighted average) of £0.34 per HGV-km removed from the road network, this represents total non-user benefits to the country of around *£3.5 million per annum*.

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[5] 0.130kg CO_2e x 16,000km = 2,080kg per annum (i.e., 2.08 tonnes) for each car. 5,734 tonnes/ 2.08 tonnes = 2,756 cars

6. SUMMARY AND CONCLUSIONS

6.1 The proposed road-based warehouse development is justifiable and deliverable in both planning and road traffic terms, based on the overarching identified need for logistics development in this location. However, due to the application site's close proximity to *Birmingham Intermodal Freight Terminal*, the proposed development can also in practice be classified as rail-served, and a proportion of the resultant traffic can therefore be expected to arrive or depart using rail freight. The purpose of this technical note is to explain why this situation arises, and to demonstrate the benefits of rail connectivity that will would be accrued by future warehouse occupiers at the application site and wider society.

6.2 Government planning policy (NPPF and NPS for National Networks) promotes the location of logistics facilities at sites which offer genuine modal choice to shippers. This is for two principal reasons:

- It creates the conditions where rail freight can become cost competitive when compared with road haulage, generating so called user benefits; and
- Rail freight is recognised as being a more sustainable mode of transport, generating wider societal benefits (non-user benefits) when compared with road haulage.

6.3 Developments over the past two decades have seen multiple warehouse new-builds 'cluster' around an intermodal terminal. In planning terms, these have become known as *Strategic Rail Freight Interchanges (SRFIs)* and it includes the warehousing and rail terminal developed at *Birch Coppice Business Park*. The proposed scheme is on the opposite side of the A5 to the existing Birch Coppice SRFI; the gate-to-gate distance via the public road network will be around 500m.

6.4 While yard tractors have been designed to haul semi-trailers on private land (such as between intermodal terminals and warehousing within SRFIs), under limited circumstances they can also be operated on the public road network. In these situations, they are classed as *'works trucks'*. It was demonstrated that the proposed warehouse development falls within the 'works truck' conditions and can therefore in practice be classified as rail-served (effectively it will be 'inside' the SRFI). Occupiers will be able to access *BIFT* on the same basis as those currently located within the SRFI.

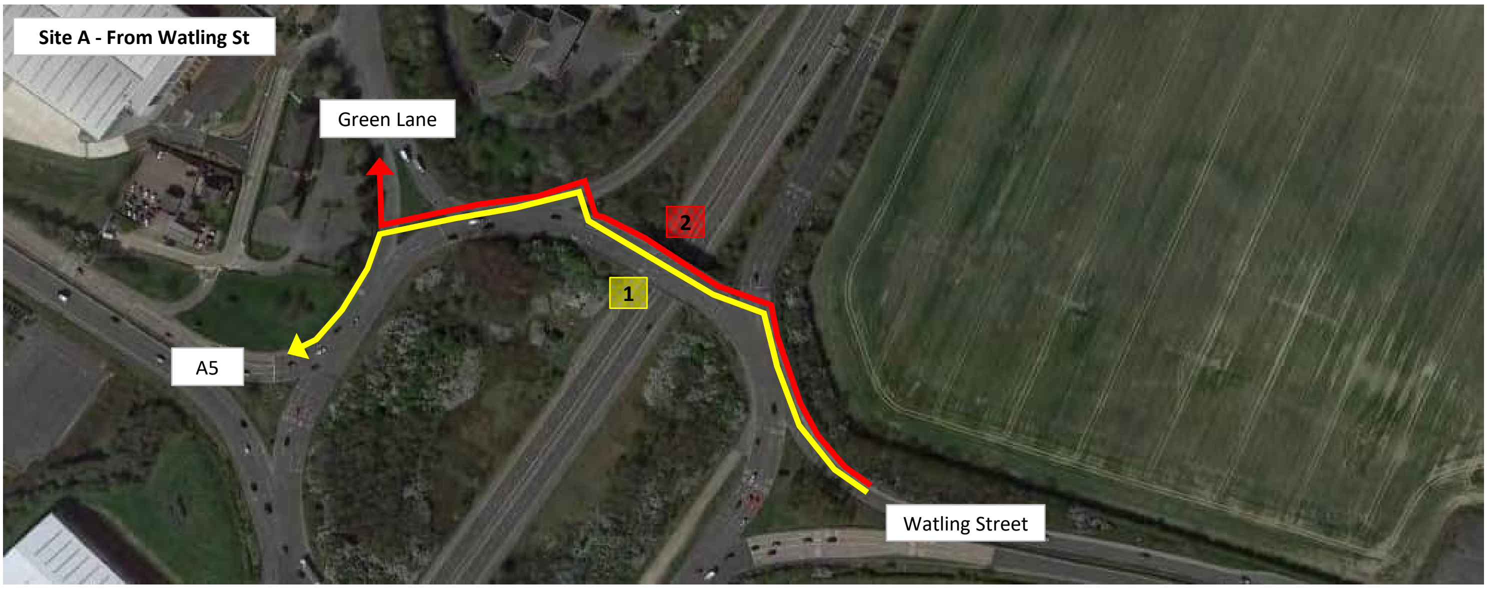
6.5 It was subsequently shown that, for certain flows, future occupiers located at the application site would be able to accrue user benefits when using rail freight via *BIFT*. A proportion of the resultant traffic at the planned development can therefore be expected to arrive or depart using rail via *BIFT*. Given that position, analysis has forecast (using the GB Freight Model) that around 10% of loaded inbound and outbound traffic could be expected to move by rail freight via *BIFT*. It was subsequently estimated that the forecast modal shift from road to rail will, in terms of GHG emissions, generate a saving of just under *5,800 tonnes of carbon dioxide equivalent per annum*. Based on the current MSB rate (weighted average) of £0.34 per HGV-km removed from the road network, the forecast modal shift equates to annual non-user benefits of around *£3.5 million* to the nation but focused locally to the site.

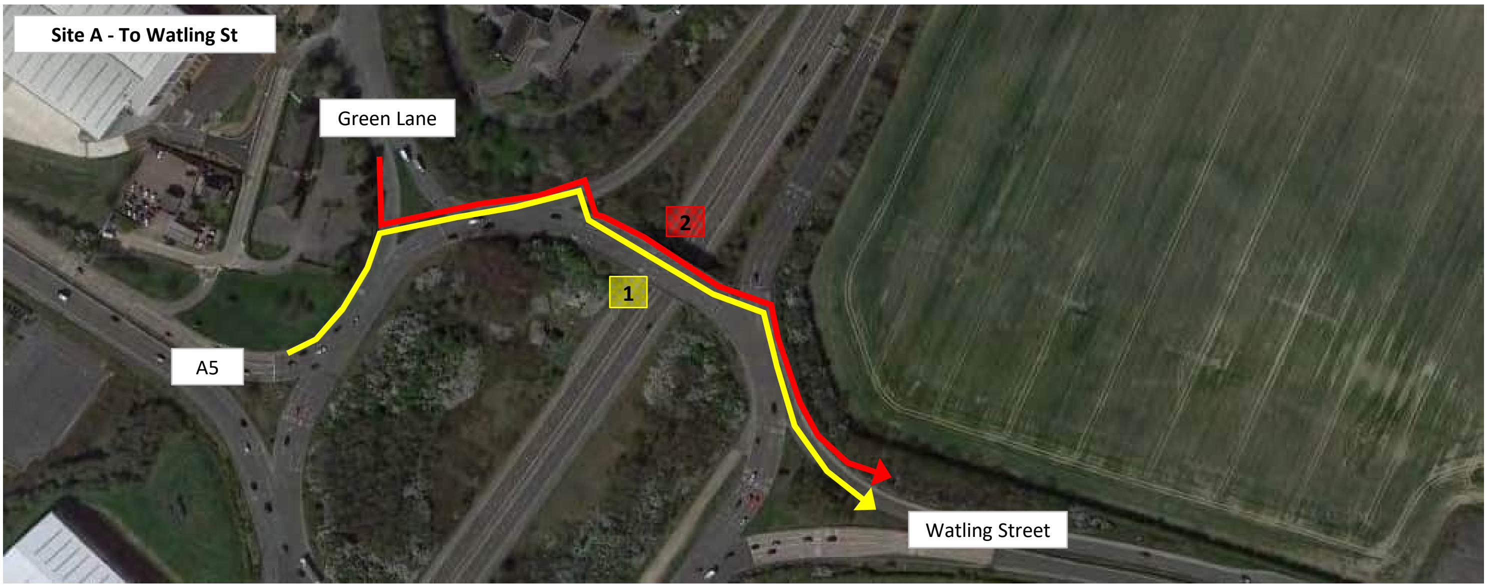
6.6 It is therefore concluded that while the proposed road-based warehouse development is not dependent on access to *BIFT*, the plans conform with the Government's current policy with respect to the location of large scale logistics facilities, promoting modal choice and the transition to net-zero GHG emissions and as such, will generate several user and non-user benefits planning benefits, when compared to a site that is not rail-served.

APPENDIX R – RESULTS OF SEPTEMBER 2021 PEDESTRIAN AND CYCLIST COUNT

DATE : Thursday 23rd September 2021.

LOCATION : M42 Junction 10, Dordon (B78 1TB)





Please be advised there was no movements recorded from or to point B as no Buses stopped during the survey.

CHARGE SURVEYS
TRAFFIC DATA SPECIALISTS

DATE : Thursday 23rd September 2021.

LOCATION : M42 Junction 10, Dordon (B78 1TB)

SITE A - WATLING STREET TO A5 & GREEN LANE

	MOVEMENT 1					MOVEMENT 2				
	USER TRAVELLING FROM WATLING STREET TURNING LEFT TO A5					USER TRAVELLING FROM WATLING STREET TURNING RIGHT TO GREEN LANE				
	PEDESTRIANS	PCY	E-SCOOTER	MOBILITY SCOOTER	TOTAL	PEDESTRIANS	PCY	E-SCOOTER	MOBILITY SCOOTER	TOTAL
0700-0715	0	0	0	0	**0**	0	0	0	0	**0**
0715-0730	0	1	0	0	**1**	0	0	0	0	**0**
0730-0745	0	0	0	0	**0**	0	0	0	0	**0**
0745-0800	0	1	0	0	**1**	0	1	0	0	**1**
0800-0815	0	0	0	0	**0**	0	0	0	0	**0**
0815-0830	0	0	0	0	**0**	0	0	0	0	**0**
0830-0845	0	1	0	0	**1**	0	0	0	0	**0**
0845-0900	0	0	0	0	**0**	0	0	0	0	**0**
0900-0915	0	0	0	0	**0**	0	0	0	0	**0**
0915-0930	0	0	0	0	**0**	0	0	0	0	**0**
0930-0945	0	0	0	0	**0**	0	0	0	0	**0**
0945-1000	0	0	0	0	**0**	1	0	0	0	**1**
1000-1015	0	0	0	0	**0**	0	1	0	0	**1**
1015-1030	0	0	0	0	**0**	0	0	0	0	**0**
1030-1045	0	0	0	0	**0**	0	1	0	0	**1**
1045-1100	0	0	0	0	**0**	0	0	0	0	**0**
1100-1115	0	0	0	0	**0**	0	0	0	0	**0**
1115-1130	0	0	0	0	**0**	0	0	0	0	**0**
1130-1145	0	0	0	0	**0**	0	0	0	0	**0**
1145-1200	0	0	0	0	**0**	0	0	0	0	**0**
1200-1215	0	0	0	0	**0**	0	1	0	0	**1**
1215-1230	0	0	0	0	**0**	0	0	0	0	**0**
1230-1245	0	0	0	0	**0**	0	0	0	0	**0**
1245-1300	0	0	0	0	**0**	1	0	0	0	**1**
1300-1315	0	0	0	0	**0**	0	0	0	0	**0**
1315-1330	0	0	0	0	**0**	0	0	0	0	**0**
1330-1345	0	0	0	0	**0**	0	1	0	0	**1**
1345-1400	0	0	0	0	**0**	0	0	0	0	**0**
1400-1415	0	0	0	0	**0**	0	0	0	0	**0**
1415-1430	0	0	0	0	**0**	0	1	0	0	**1**
1430-1445	0	0	0	0	**0**	0	0	0	0	**0**
1445-1500	0	0	0	0	**0**	0	0	0	0	**0**
1500-1515	0	0	0	0	**0**	1	0	0	0	**1**
1515-1530	0	0	0	0	**0**	0	2	0	0	**2**
1530-1545	0	0	0	0	**0**	0	2	0	0	**2**
1545-1600	0	0	0	0	**0**	0	1	0	1	**2**
1600-1615	0	1	0	0	**1**	1	1	0	0	**2**
1615-1630	0	0	0	0	**0**	0	1	0	0	**1**
1630-1645	0	0	0	0	**0**	0	1	0	0	**1**
1645-1700	0	0	0	0	**0**	0	0	0	0	**0**
1700-1715	0	0	0	0	**0**	0	0	1	0	**1**
1715-1730	1	0	0	0	**1**	1	2	0	0	**3**
1730-1745	0	0	0	0	**0**	0	1	0	0	**1**
1745-1800	0	1	0	0	**1**	0	0	0	0	**0**
1800-1815	0	0	0	0	**0**	0	1	0	0	**1**
1815-1830	0	1	0	0	**1**	0	1	0	0	**1**
1830-1845	0	0	0	0	**0**	0	0	0	0	**0**
1845-1900	0	0	0	0	**0**	0	0	0	0	**0**
0700-1900	**1**	**6**	**0**	**0**	**7**	**5**	**19**	**1**	**1**	**26**

DATE : Thursday 23rd September 2021.

LOCATION : M42 Junction 10, Dordon (B78 1TB)

SITE A - WATLING STREET TO A5 & GREEN LANE

	MOVEMENT 1					MOVEMENT 2				
	USER TRAVELLING FROM WATLING STREET TURNING LEFT TO A5					USER TRAVELLING FROM WATLING STREET TURNING RIGHT TO GREEN LANE				
	PEDESTRIANS	PCY	E-SCOOTER	MOBILITY SCOOTER	**TOTAL**	PEDESTRIANS	PCY	E-SCOOTER	MOBILITY SCOOTER	**TOTAL**
0700-0800	0	2	0	0	**2**	0	1	0	0	**1**
0715-0815	0	2	0	0	**2**	0	1	0	0	**1**
0730-0830	0	1	0	0	**1**	0	1	0	0	**1**
0745-0845	0	2	0	0	**2**	0	1	0	0	**1**
0800-0900	0	1	0	0	**1**	0	0	0	0	**0**
0815-0915	0	1	0	0	**1**	0	0	0	0	**0**
0830-0930	0	1	0	0	**1**	0	0	0	0	**0**
0845-0945	0	0	0	0	**0**	0	0	0	0	**0**
0900-1000	0	0	0	0	**0**	1	0	0	0	**1**
0915-1015	0	0	0	0	**0**	1	1	0	0	**2**
0930-1030	0	0	0	0	**0**	1	1	0	0	**2**
0945-1045	0	0	0	0	**0**	1	2	0	0	**3**
1000-1100	0	0	0	0	**0**	0	2	0	0	**2**
1015-1115	0	0	0	0	**0**	0	1	0	0	**1**
1030-1130	0	0	0	0	**0**	0	1	0	0	**1**
1045-1145	0	0	0	0	**0**	0	0	0	0	**0**
1100-1200	0	0	0	0	**0**	0	0	0	0	**0**
1115-1215	0	0	0	0	**0**	0	1	0	0	**1**
1130-1230	0	0	0	0	**0**	0	1	0	0	**1**
1145-1245	0	0	0	0	**0**	0	1	0	0	**1**
1200-1300	0	0	0	0	**0**	1	1	0	0	**2**
1215-1315	0	0	0	0	**0**	1	0	0	0	**1**
1230-1330	0	0	0	0	**0**	1	0	0	0	**1**
1245-1345	0	0	0	0	**0**	1	1	0	0	**2**
1300-1400	0	0	0	0	**0**	0	1	0	0	**1**
1315-1415	0	0	0	0	**0**	0	1	0	0	**1**
1330-1430	0	0	0	0	**0**	0	2	0	0	**2**
1345-1445	0	0	0	0	**0**	0	1	0	0	**1**
1400-1500	0	0	0	0	**0**	0	1	0	0	**1**
1415-1515	0	0	0	0	**0**	1	1	0	0	**2**
1430-1530	0	0	0	0	**0**	1	2	0	0	**3**
1445-1545	0	0	0	0	**0**	1	4	0	0	**5**
1500-1600	0	0	0	0	**0**	1	5	0	1	**7**
1515-1615	0	1	0	0	**1**	1	6	0	1	**8**
1530-1630	0	1	0	0	**1**	1	5	0	1	**7**
1545-1645	0	1	0	0	**1**	1	4	0	1	**6**
1600-1700	0	1	0	0	**1**	1	3	0	0	**4**
1615-1715	0	0	0	0	**0**	0	2	1	0	**3**
1630-1730	1	0	0	0	**1**	1	3	1	0	**5**
1645-1745	1	0	0	0	**1**	1	3	1	0	**5**
1700-1800	1	1	0	0	**2**	1	3	1	0	**5**
1715-1815	1	1	0	0	**2**	1	4	0	0	**5**
1730-1830	0	2	0	0	**2**	0	3	0	0	**3**
1745-1845	0	2	0	0	**2**	0	2	0	0	**2**
1800-1900	0	1	0	0	**1**	0	2	0	0	**2**
	HOURLY TOTALS					HOURLY TOTALS				

DATE : Thursday 23rd September 2021.

LOCATION : M42 Junction 10, Dordon (B78 1TB)

SITE A - A5 & GREEN LANE TO WATLING STREET

	MOVEMENT 1					MOVEMENT 2				
	USER TRAVELLING FROM A5 TO WATLING STREET					USER TRAVELLING FROM GREEN LANE TO WATLING STREET				
	PEDESTRIANS	PCY	E-SCOOTER	MOBILITY SCOOTER	TOTAL	PEDESTRIANS	PCY	E-SCOOTER	MOBILITY SCOOTER	TOTAL
0700-0715	0	0	0	0	**0**	0	0	0	0	**0**
0715-0730	0	0	0	0	**0**	0	0	0	0	**0**
0730-0745	0	1	0	0	**1**	0	0	0	0	**0**
0745-0800	0	0	0	0	**0**	0	1	0	0	**1**
0800-0815	1	0	0	0	**1**	0	0	0	0	**0**
0815-0830	0	1	0	0	**1**	1	2	0	0	**3**
0830-0845	0	2	1	0	**3**	1	0	0	0	**1**
0845-0900	0	0	0	0	**0**	0	0	0	0	**0**
0900-0915	0	0	0	0	**0**	0	0	0	0	**0**
0915-0930	0	0	0	0	**0**	0	0	0	0	**0**
0930-0945	0	0	0	0	**0**	0	0	0	0	**0**
0945-1000	0	0	0	0	**0**	0	0	0	0	**0**
1000-1015	0	0	0	0	**0**	0	0	0	0	**0**
1015-1030	0	0	0	0	**0**	0	0	0	0	**0**
1030-1045	0	1	0	0	**1**	0	1	0	0	**1**
1045-1100	0	0	0	0	**0**	0	0	0	0	**0**
1100-1115	0	0	0	0	**0**	0	0	0	0	**0**
1115-1130	0	0	0	0	**0**	0	0	0	0	**0**
1130-1145	1	0	0	0	**1**	0	0	0	0	**0**
1145-1200	0	0	0	0	**0**	0	0	0	0	**0**
1200-1215	0	0	0	0	**0**	0	0	0	0	**0**
1215-1230	1	0	0	0	**1**	0	1	0	0	**1**
1230-1245	0	0	0	0	**0**	0	1	0	0	**1**
1245-1300	0	0	0	0	**0**	0	0	0	0	**0**
1300-1315	0	0	0	0	**0**	0	0	0	0	**0**
1315-1330	0	1	0	0	**1**	0	0	0	0	**0**
1330-1345	0	0	0	0	**0**	0	0	0	0	**0**
1345-1400	0	0	0	0	**0**	0	1	0	0	**1**
1400-1415	0	0	0	0	**0**	0	0	0	0	**0**
1415-1430	0	0	0	0	**0**	0	0	0	0	**0**
1430-1445	0	0	0	0	**0**	0	0	0	0	**0**
1445-1500	0	1	0	0	**1**	0	0	0	0	**0**
1500-1515	0	0	0	0	**0**	0	0	0	0	**0**
1515-1530	0	0	0	0	**0**	0	0	0	0	**0**
1530-1545	0	0	0	0	**0**	0	0	0	0	**0**
1545-1600	0	0	0	0	**0**	0	1	0	0	**1**
1600-1615	0	1	0	0	**1**	0	0	0	0	**0**
1615-1630	0	0	0	0	**0**	0	0	0	0	**0**
1630-1645	1	0	0	0	**1**	0	0	0	0	**0**
1645-1700	0	0	0	0	**0**	0	1	0	0	**1**
1700-1715	0	2	0	0	**2**	0	4	0	0	**4**
1715-1730	0	2	0	0	**2**	0	0	0	0	**0**
1730-1745	0	0	0	0	**0**	1	1	0	0	**2**
1745-1800	0	1	0	0	**1**	0	0	0	0	**0**
1800-1815	0	0	0	0	**0**	0	1	0	0	**1**
1815-1830	0	0	0	0	**0**	0	0	0	0	**0**
1830-1845	0	0	0	0	**0**	0	1	0	0	**1**
1845-1900	0	1	0	0	**1**	0	1	0	0	**1**
0700-1900	**4**	**14**	**1**	**0**	**19**	**3**	**17**	**0**	**0**	**20**

CHARGE SURVEYS
TRAFFIC DATA SPECIALISTS

DATE : Thursday 23rd September 2021.

LOCATION : M42 Junction 10, Dordon (B78 1TB)

SITE A - A5 & GREEN LANE TO WATLING STREET

	MOVEMENT 1					**MOVEMENT 2**				
	USER TRAVELLING FROM A5 TO WATLING STREET					**USER TRAVELLING FROM GREEN LANE TO WATLING STREET**				
	PEDESTRIANS	PCY	E-SCOOTER	MOBILITY SCOOTER	**TOTAL**	PEDESTRIANS	PCY	E-SCOOTER	MOBILITY SCOOTER	**TOTAL**
0700-0800	0	1	0	0	**1**	0	1	0	0	**1**
0715-0815	1	1	0	0	**2**	0	1	0	0	**1**
0730-0830	1	2	0	0	**3**	1	3	0	0	**4**
0745-0845	1	3	1	0	**5**	2	3	0	0	**5**
0800-0900	1	3	1	0	**5**	2	2	0	0	**4**
0815-0915	0	3	1	0	**4**	2	2	0	0	**4**
0830-0930	0	2	1	0	**3**	1	0	0	0	**1**
0845-0945	0	0	0	0	**0**	0	0	0	0	**0**
0900-1000	0	0	0	0	**0**	0	0	0	0	**0**
0915-1015	0	0	0	0	**0**	0	0	0	0	**0**
0930-1030	0	0	0	0	**0**	0	0	0	0	**0**
0945-1045	0	1	0	0	**1**	0	1	0	0	**1**
1000-1100	0	1	0	0	**1**	0	1	0	0	**1**
1015-1115	0	1	0	0	**1**	0	1	0	0	**1**
1030-1130	0	1	0	0	**1**	0	1	0	0	**1**
1045-1145	1	0	0	0	**1**	0	0	0	0	**0**
1100-1200	1	0	0	0	**1**	0	0	0	0	**0**
1115-1215	1	0	0	0	**1**	0	0	0	0	**0**
1130-1230	2	0	0	0	**2**	0	1	0	0	**1**
1145-1245	1	0	0	0	**1**	0	2	0	0	**2**
1200-1300	1	0	0	0	**1**	0	2	0	0	**2**
1215-1315	1	0	0	0	**1**	0	2	0	0	**2**
1230-1330	0	1	0	0	**1**	0	1	0	0	**1**
1245-1345	0	1	0	0	**1**	0	0	0	0	**0**
1300-1400	0	1	0	0	**1**	0	1	0	0	**1**
1315-1415	0	1	0	0	**1**	0	1	0	0	**1**
1330-1430	0	0	0	0	**0**	0	1	0	0	**1**
1345-1445	0	0	0	0	**0**	0	1	0	0	**1**
1400-1500	0	1	0	0	**1**	0	0	0	0	**0**
1415-1515	0	1	0	0	**1**	0	0	0	0	**0**
1430-1530	0	1	0	0	**1**	0	0	0	0	**0**
1445-1545	0	1	0	0	**1**	0	0	0	0	**0**
1500-1600	0	0	0	0	**0**	0	1	0	0	**1**
1515-1615	0	1	0	0	**1**	0	1	0	0	**1**
1530-1630	0	1	0	0	**1**	0	1	0	0	**1**
1545-1645	1	1	0	0	**2**	0	1	0	0	**1**
1600-1700	1	1	0	0	**2**	0	1	0	0	**1**
1615-1715	1	2	0	0	**3**	0	5	0	0	**5**
1630-1730	1	4	0	0	**5**	0	5	0	0	**5**
1645-1745	0	4	0	0	**4**	1	6	0	0	**7**
1700-1800	0	5	0	0	**5**	1	5	0	0	**6**
1715-1815	0	3	0	0	**3**	1	2	0	0	**3**
1730-1830	0	1	0	0	**1**	1	2	0	0	**3**
1745-1845	0	1	0	0	**1**	0	2	0	0	**2**
1800-1900	0	1	0	0	**1**	0	3	0	0	**3**
	HOURLY TOTALS					**HOURLY TOTALS**				

CHARGE SURVEYS
TRAFFIC DATA SPECIALISTS

DATE : Thursday 23rd September 2021.

LOCATION : M42 Junction 10, Dordon (B78 1TB)

SITE B - WATLING STREET

	USER TRAVELLING ON FOOTPATH NORTH OF WATLING STREET FROM POINT A TO POINT C (EASTBOUND)					USER TRAVELLING ON FOOTPATH NORTH OF WATLING STREET FROM POINT C TO POINT A (WESTBOUND)					USER TRAVELLING ON FOOTPATH SOUTH OF WATLING STREET FROM POINT D TO POINT E (EASTBOUND)					USER TRAVELLING ON FOOTPATH SOUTH OF WATLING STREET FROM POINT E TO POINT D (WESTBOUND)				
	PEDESTRIANS	PCY	E-SCOOTER	MOBILITY SCOOTER	**TOTAL**	PEDESTRIANS	PCY	E-SCOOTER	MOBILITY SCOOTER	**TOTAL**	PEDESTRIANS	PCY	E-SCOOTER	MOBILITY SCOOTER	**TOTAL**	PEDESTRIANS	PCY	E-SCOOTER	MOBILITY SCOOTER	**TOTAL**
0700-0715	0	0	0	0	**0**	0	0	0	0	**0**	0	1	0	0	**1**	1	2	0	0	**3**
0715-0730	0	0	0	0	**0**	0	1	0	0	**1**	0	1	0	0	**1**	0	0	0	0	**0**
0730-0745	0	1	0	0	**1**	0	2	0	0	**2**	0	2	0	0	**2**	0	0	0	0	**0**
0745-0800	0	1	0	0	**1**	0	0	0	0	**0**	0	1	0	0	**1**	0	4	0	0	**4**
0800-0815	0	0	0	0	**0**	0	0	0	0	**0**	1	1	0	0	**2**	0	0	0	0	**0**
0815-0830	3	1	0	0	**4**	0	1	0	0	**1**	0	1	0	0	**1**	2	0	0	0	**2**
0830-0845	2	3	1	0	**6**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**
0845-0900	0	0	0	0	**0**	0	0	0	0	**0**	1	0	0	0	**1**	0	0	0	0	**0**
0900-0915	0	0	0	0	**0**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**
0915-0930	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	1	0	0	0	**1**
0930-0945	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	1	0	0	**1**
0945-1000	0	1	0	0	**1**	0	1	0	0	**1**	0	0	0	0	**0**	1	0	0	0	**1**
1000-1015	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	0	1	0	0	**1**
1015-1030	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**
1030-1045	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**
1045-1100	0	2	0	0	**2**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**
1100-1115	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**
1115-1130	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**
1130-1145	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**
1145-1200	0	0	0	0	**0**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**
1200-1215	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	0	1	0	0	**1**
1215-1230	1	0	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**
1230-1245	0	1	0	0	**1**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**
1245-1300	0	0	0	0	**0**	0	0	0	0	**0**	1	0	0	0	**1**	0	1	0	0	**1**
1300-1315	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	0	1	0	0	**1**
1315-1330	0	1	0	0	**1**	0	0	0	0	**0**	0	2	0	0	**2**	0	1	0	0	**1**
1330-1345	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	0	1	0	0	**1**
1345-1400	0	1	0	0	**1**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**
1400-1415	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	1	1	0	0	**2**
1415-1430	0	0	0	0	**0**	0	1	0	0	**1**	2	0	0	0	**2**	0	1	0	0	**1**
1430-1445	0	0	0	0	**0**	0	0	0	0	**0**	0	1	0	0	**1**	1	2	0	0	**3**
1445-1500	0	0	0	0	**0**	0	0	0	0	**0**	1	1	0	0	**2**	0	1	0	0	**1**
1500-1515	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	0	1	0	0	**1**
1515-1530	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	2	1	0	0	**3**
1530-1545	0	0	0	0	**0**	0	1	0	0	**1**	1	0	0	0	**1**	0	2	0	0	**2**
1545-1600	0	0	0	0	**0**	0	1	0	1	**2**	0	2	0	0	**2**	0	1	0	0	**1**
1600-1615	0	0	0	0	**0**	0	0	0	0	**0**	0	1	0	0	**1**	1	0	0	0	**1**
1615-1630	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**
1630-1645	1	0	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**
1645-1700	0	1	0	0	**1**	0	0	1	0	**1**	2	0	0	0	**2**	0	0	0	0	**0**
1700-1715	0	4	0	0	**4**	1	0	0	0	**1**	1	3	0	0	**4**	1	2	0	0	**3**
1715-1730	0	4	0	0	**4**	1	1	0	0	**2**	1	4	0	0	**5**	0	1	0	0	**1**
1730-1745	0	1	0	0	**1**	0	1	0	0	**1**	1	0	0	0	**1**	0	2	0	0	**2**
1745-1800	1	1	0	0	**2**	0	1	0	0	**1**	1	2	0	0	**3**	0	3	0	0	**3**
1800-1815	0	0	0	0	**0**	0	2	0	0	**2**	1	0	0	0	**1**	0	2	0	0	**2**
1815-1830	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	1	1	0	0	**2**
1830-1845	0	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	0	1	0	0	**1**
1845-1900	0	1	0	0	**1**	0	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**
0700-1900	**8**	**25**	**1**	**0**	**34**	**2**	**24**	**1**	**1**	**28**	**14**	**30**	**0**	**0**	**44**	**12**	**35**	**0**	**0**	**47**

SITE B - CROSSINGS (refer to map of movements)		
TIME	CLASS	MOVEMENT
0815-0830	1 PCY	C TO D
0900-0915	1 PED	D TO C
0900-0915	1 PED	E TO A
1130-1145	1 PCY	A TO E
1145-1200	1 PED	A TO E
1145-1200	1 PCY	D TO C
1230-1245	1 PCY	A TO E
1245-1300	1 PED	E TO A
1500-1515	1 PED	E TO A
1530-1545	1 PED	D TO C
1600-1615	1 PCY	D TO A
1630-1645	1 PCY	E TO A
1630-1645	1 PCY	E TO A
1700-1715	1 PCY	A TO E
1715-1730	1 PCY	D TO C
1715-1730	1 PCY	D TO A
1800-1815	1 PED	D TO C
1800-1815	1 PCY	A TO E

CHARGE SURVEYS
TRAFFIC DATA SPECIALISTS

DATE : Thursday 23rd September 2021.

LOCATION : M42 Junction 10, Dordon (B78 1TB)

SITE B - WATLING STREET

	USER TRAVELLING ON FOOTPATH NORTH OF WATLING STREET FROM POINT A TO POINT C (EASTBOUND)					USER TRAVELLING ON FOOTPATH NORTH OF WATLING STREET FROM POINT C TO POINT A (WESTBOUND)					USER TRAVELLING ON FOOTPATH SOUTH OF WATLING STREET FROM POINT D TO POINT E (EASTBOUND)					USER TRAVELLING ON FOOTPATH SOUTH OF WATLING STREET FROM POINT E TO POINT D (WESTBOUND)				
	PEDESTRIANS	PCY	E-SCOOTER	MOBILITY SCOOTER	TOTAL	PEDESTRIANS	PCY	E-SCOOTER	MOBILITY SCOOTER	TOTAL	PEDESTRIANS	PCY	E-SCOOTER	MOBILITY SCOOTER	TOTAL	PEDESTRIANS	PCY	E-SCOOTER	MOBILITY SCOOTER	TOTAL
0700-0800	0	2	0	0	**2**	0	3	0	0	**3**	0	5	0	0	**5**	1	6	0	0	**7**
0715-0815	0	2	0	0	**2**	0	3	0	0	**3**	1	5	0	0	**6**	0	4	0	0	**4**
0730-0830	3	3	0	0	**6**	0	3	0	0	**3**	1	5	0	0	**6**	2	4	0	0	**6**
0745-0845	5	5	1	0	**11**	0	1	0	0	**1**	1	4	0	0	**5**	2	4	0	0	**6**
0800-0900	5	4	1	0	**10**	0	1	0	0	**1**	2	3	0	0	**5**	2	0	0	0	**2**
0815-0915	5	4	1	0	**10**	0	1	0	0	**1**	1	3	0	0	**4**	2	0	0	0	**2**
0830-0930	2	3	1	0	**6**	0	0	0	0	**0**	1	2	0	0	**3**	1	0	0	0	**1**
0845-0945	0	0	0	0	**0**	0	0	0	0	**0**	1	1	0	0	**2**	1	1	0	0	**2**
0900-1000	0	1	0	0	**1**	0	1	0	0	**1**	0	1	0	0	**1**	2	1	0	0	**3**
0915-1015	0	1	0	0	**1**	0	2	0	0	**2**	0	0	0	0	**0**	2	2	0	0	**4**
0930-1030	0	1	0	0	**1**	0	2	0	0	**2**	0	0	0	0	**0**	1	2	0	0	**3**
0945-1045	0	1	0	0	**1**	0	3	0	0	**3**	0	0	0	0	**0**	1	1	0	0	**2**
1000-1100	0	2	0	0	**2**	0	2	0	0	**2**	0	0	0	0	**0**	0	1	0	0	**1**
1015-1115	0	2	0	0	**2**	0	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**
1030-1130	0	2	0	0	**2**	0	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**
1045-1145	0	2	0	0	**2**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**
1100-1200	0	0	0	0	**0**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**
1115-1215	0	0	0	0	**0**	0	1	0	0	**1**	0	1	0	0	**1**	0	1	0	0	**1**
1130-1230	1	0	0	0	**1**	0	1	0	0	**1**	0	1	0	0	**1**	0	1	0	0	**1**
1145-1245	1	1	0	0	**2**	0	1	0	0	**1**	0	4	0	0	**4**	0	1	0	0	**1**
1200-1300	1	1	0	0	**2**	0	1	0	0	**1**	1	3	0	0	**4**	0	2	0	0	**2**
1215-1315	1	1	0	0	**2**	0	1	0	0	**1**	1	3	0	0	**4**	0	2	0	0	**2**
1230-1330	0	2	0	0	**2**	0	1	0	0	**1**	1	5	0	0	**6**	0	3	0	0	**3**
1245-1345	0	1	0	0	**1**	0	2	0	0	**2**	1	2	0	0	**3**	0	4	0	0	**4**
1300-1400	0	2	0	0	**2**	0	2	0	0	**2**	0	3	0	0	**3**	0	3	0	0	**3**
1315-1415	0	2	0	0	**2**	0	1	0	0	**1**	0	3	0	0	**3**	1	3	0	0	**4**
1330-1430	0	1	0	0	**1**	0	2	0	0	**2**	2	1	0	0	**3**	1	3	0	0	**4**
1345-1445	0	1	0	0	**1**	0	1	0	0	**1**	2	2	0	0	**4**	2	4	0	0	**6**
1400-1500	0	0	0	0	**0**	0	1	0	0	**1**	3	2	0	0	**5**	2	5	0	0	**7**
1415-1515	0	0	0	0	**0**	0	3	0	0	**3**	3	2	0	0	**5**	1	5	0	0	**6**
1430-1530	0	0	0	0	**0**	0	3	0	0	**3**	1	2	0	0	**3**	3	5	0	0	**8**
1445-1545	0	0	0	0	**0**	0	4	0	0	**4**	2	1	0	0	**3**	2	5	0	0	**7**
1500-1600	0	0	0	0	**0**	0	5	0	1	**6**	1	2	0	0	**3**	2	5	0	0	**7**
1515-1615	0	0	0	0	**0**	0	3	0	1	**4**	1	3	0	0	**4**	3	4	0	0	**7**
1530-1630	0	0	0	0	**0**	0	3	0	1	**4**	1	3	0	0	**4**	1	3	0	0	**4**
1545-1645	1	0	0	0	**1**	0	2	0	1	**3**	0	3	0	0	**3**	1	1	0	0	**2**
1600-1700	1	1	0	0	**2**	0	1	1	0	**2**	2	1	0	0	**3**	1	0	0	0	**1**
1615-1715	1	5	0	0	**6**	1	1	1	0	**3**	3	3	0	0	**6**	1	2	0	0	**3**
1630-1730	1	9	0	0	**10**	2	1	1	0	**4**	4	7	0	0	**11**	1	3	0	0	**4**
1645-1745	0	10	0	0	**10**	2	2	1	0	**5**	5	7	0	0	**12**	1	5	0	0	**6**
1700-1800	1	10	0	0	**11**	2	3	0	0	**5**	4	9	0	0	**13**	1	8	0	0	**9**
1715-1815	1	6	0	0	**7**	1	5	0	0	**6**	4	6	0	0	**10**	0	8	0	0	**8**
1730-1830	1	2	0	0	**3**	0	5	0	0	**5**	3	2	0	0	**5**	1	8	0	0	**9**
1745-1845	1	2	0	0	**3**	0	4	0	0	**4**	2	2	0	0	**4**	1	7	0	0	**8**
1800-1900	0	2	0	0	**2**	0	4	0	0	**4**	1	0	0	0	**1**	1	4	0	0	**5**
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