OXFORDSHIRE
STRATEGIC RAIL FREIGHT INTERCHANGE

DCO Submission

Environmental Statement

Chapter 3: Transport
Appendix 3.1: Transport Assessment Part 08 of 11 – Appendices 24 to 26

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APPENDIX 24

TN13:M40 JUNCTION 10 OPTION 28

OXFORDSHIRE SRFI
TECHNICAL NOTE 13

M40 Junction 10 and Baynard's Green - Option 28

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CONTENTS

1.0 INTRODUCTION 4
2.0 BACKGROUND 7
3.0 ASSESSMENT YEARS AND TRAFFIC FLOW DATA 9
Assessment years 9
Traffic flow data 9
Albion Land and Tritax Symmetry planning applications 10
4.0 STRATEGIC HIGHWAY OPTION 28 11
5.0 ANALYSIS OF M40 JUNCTION 10 PERFORMANCE AND CONFLICT ASSESSMENT 13
Journey time 13
Headroom 14
Principal Site Access – capacity assessment 15
Conflict assessments 15
6.0 GEOMETRY ASSESSMENT 18
Link road geometry 18
Merge and diverge assessment 19
Detailed junction geometry 19
7.0 ENVIRONMENTAL 20
Introduction 20
Lighting 20
Landscape and Visual 20
Noise 20
Flood Risk 21
Ecology 21
Archaeology 22
8.0 LOCAL ACCESS, WALKING AND CYCLING 23
Local access and Cherwell MSA 23
Walking and cycling 23
9.0 SUMMARY AND CONCLUSIONS 25

DRAWINGS

OxSRFI-BWB-GEN-XX-SK-CH-SK092	M40J10 Strategic Option 28
OxSRFI-BWB-GEN-XX-SK-CH-SK094	M40J10 General Arrangement Option 28
OxSRFI-BWB-GEN-ZZ-SK-CH-SK018	OxSRFI Principal Access Junction General Arrangement
OxSRFI-BWB-GEN-ZZ-SK-CH-SK078	Bridge 12 General Arrangement Conceptual Design Sketch

APPENDICES

Appendix A	2031 Reference Case traffic flows (as extracted from BTM)
Appendix B	2034 Reference Case traffic flows
Appendix C	OxSRFI development traffic assignment (as extracted from BTM)
Appendix D	2034 Do Something traffic flows
Appendix E	Option 28 Journey Time Assessment
Appendix F	2034 Reference Case LinSig Modelling for M40 J10 and Baynard's Green
Appendix G	2034 Do Something (Option 28) LinSig Modelling for M40 J10 and Baynard's Green
Appendix H	2034 Do Something (Option 28) LinSig Modelling of Principal Site Access
Appendix I	M40 Merge and Diverge assessment and traffic flows

1.0 INTRODUCTION

1.1 ADC Infrastructure Ltd and BWB Consulting Ltd are appointed by Oxfordshire Railfreight Ltd (the Applicant) to assess and design the transport and infrastructure requirements of a Nationally Significant Infrastructure Project (NSIP), that being a proposed Strategic Rail Freight Interchange (SRFI) in Oxfordshire, to be known as Oxfordshire Strategic Rail Freight Interchange (OxSRFI).

1.2 A Transport Working Group (TWG) comprising representatives from National Highways (who have responsibility for the Strategic Road Network (SRN)), Aecom (National Highways' term consultant), and Oxfordshire County Council, who have responsibility for the local highway network, was established in November 2020. In addition, Cherwell District Council, the local planning authority, contribute to and attend the TWG meetings as appropriate.

1.3 Throughout the period up until April 2023 the Applicant worked closely with the TWG to agree key components of the transport work required to support an application for OxSRFI via the Development Consent Order (DCO) process. This included significant work on the form and layout of the highway access strategy for the site.

1.4 During this period, the approach to the highway access strategy evolved to be centred on significant improvements to Junction 10 of the M40 motorway, in combination with a provision of a new bypass for the village of Ardley and a new relief road around the north-east quadrant of the village of Middleton Stoney and a Heyford Park Link Road. The objectives of this approach were to ensure adequate capacity at M40 Junction 10 to accommodate the required access to the SRN, whilst delivering appropriate new site access infrastructure, along with aiding the delivery of planned growth and development across the wider area.

1.5 In January 2022, it was agreed with National Highways and OCC that strategic highway Options 18 and 19 were the preferred options to be taken forward at M40 Junction 10 and the A43/B4100 Baynard's Green Roundabout. They were demonstrated to provide improvement in the performance of M40 Junction 10 as compared to the future baseline position (Reference Case) without the OxSRFI scheme. Both options include a new free flow link for A43 southbound to M40 southbound traffic and built upon the capacity enhancements to be delivered by (the then) committed Growth Deal Scheme highway improvements at the Baynard's Green Roundabout and at the M40 Junction 10 Padbury Roundabout.

1.6 The only difference between Options 18 and 19 was the location of the M40 northbound on-slip at Ardley Roundabout. Option 19 retains the on-slip to the south of the junction as it is currently, whilst Option 18 relocates the northbound on-slip to the north of the junction.

1.7 As part of further assessment work to decide between Options 18 and 19, National Highways requested that analysis was undertaken to determine whether a M40 northbound to A43 northbound free-flow link road could be reasonably achieved, as this would provide future resilience at M40 Junction 10. This led to the development of strategic highway Option 26.

1.8 Option 26 includes free flow links between the A43 and M40 in both the southbound and northbound direction. The proposed northbound free flow link resulted in the need for substantial changes to the Baynard's Green Roundabout, and the provision of a new local link between Baynard's Green and the M40 Junction 10 Padbury Roundabout.

1.9 In October 2022 it was announced that the previously committed and funded Growth Deal improvements to Baynard's Green had been cancelled, and only the highway improvements at Padbury Roundabout would now be implemented and are expected to be complete by Spring

2025. The cancelling of the Growth Deal highway improvement scheme at Baynard's Green altered the future baseline position. In the absence of improvement works at the junction, congestion at the Baynard's Green Roundabout is a significant constraint on the effective operation of the existing highway network.

1.10 Notwithstanding the above, work continued to progress Option 26 as the preferred highway strategy. However, in April 2023, the Applicant took the decision to pause work on the OxSRFI project, stating:

"The reasons for this are that the scale and complexity of transport infrastructure works have become such that the project team have decided that it is right to pause the wider work on the project to allow for a thorough review to take place. The highway works, in combination, are now significantly in excess of the scale of works carried out on other approved and similarly sized SRFIs. The project team is clear that the scheme cannot be expected to resolve significant existing highway problems as well as mitigate its own impacts. Careful reflection is required before the scheme will be progressed to statutory consultation and examination."

1.11 This Technical Note reports on the outcome of that review, which revisited the strategic highway options work i.e. the works at M40 J10.

1.12 As part of the review work, an Option 27 was developed, and it was discussed with the TWG at the meeting held on 4 October 2024. Option 27 removed both the southbound and northbound free flow links at Junction 10, in favour of on-line improvements to the A43, an alternative improvement scheme at Cherwell junction, and the reintroduction of the Ardley East junction (as per Option 18). It was recognised that:

- Option 27 introduces additional delay for M40 to A43 northbound traffic through the additional junction at Ardley East; and
- Option 27 would bring in extra land requirements and could have additional environmental effects on Ardley village as compared to Option 26 due to the elevation and increased traffic flows on the Ardley Bypass.

1.13 Following the TWG meeting and being mindful of the above points, a further option was developed, Option 28. That work included further assessment of the junction complex including sensitivity test work that considered traffic generation from nearby planning applications adjacent to the Baynard's Green Roundabout[1].

1.14 The Option 28 scheme was presented at the TWG meeting held on 9 November 2024. The TWG provided some initial feedback on Option 28 during the TWG meeting. It was agreed that ADC and BWB would further develop Option 28 and prepare this Technical Note to set out the Option 28 proposals for in principle agreement with NH and OCC.

1.15 Accordingly, this Technical Note is structure as follows:

- Section 2 provides a brief summary of the previous options testing and development work.
- Section 3 presents the updated traffic data and assessment years used in this Technical Note.
- Section 4 presents strategic highway Option 28 as the preferred option for M40 Junction 10 and Baynard's Green.

[1] Albion Land Eastern Parcel '21/03267/OUT', Albion Land Western Parcel '21/03268/OUT', and associated enabling works '21/03266/F'. Tritax Symmetry Ardley Ltd '22/01340/OUT'.

- Section 5 present an evaluation of the proposed strategic Option 28 using the assessment criteria (Journey Time, Headroom, and Conflict Assessment) previously developed with the TWG for this purpose.
- Section 6 provides a high-level Geometry Assessment.
- Section 7 considers the potential environmental effects of the proposed Option 28.
- Section 8 considers local access, walking and cycling.
- Section 9 presents the summary and conclusions.

2.0 BACKGROUND

2.1 An SRFI is a large multi-purpose freight interchange and distribution centre linked into both the strategic rail and road systems. It has rail served warehousing and container handling facilities and enables freight to be transferred between transport modes (i.e. from lorry to train). SRFI allow rail to be used to undertake the long-haul primary journey, with other modes (usually road) providing the secondary, and often final, delivery leg of the journey.

2.2 Given the requirement for good access to the strategic rail and road systems, there are relatively few locations this criterion can be met whilst also meeting requirements for appropriate land-use planning and environmental considerations.

2.3 The OxSRFI site is located on land south of the Chiltern Railway line, and west of the B430, east of Upper Heyford Former Airfield, and south of the village of Ardley in Cherwell District, Oxfordshire. It is located west of the M40, with Junction 10 of the M40 located nearby to the north-east, as shown in **Figure 1**. The Proposed Development is located on land entirely within the administrative boundaries of Cherwell District Council and OCC.

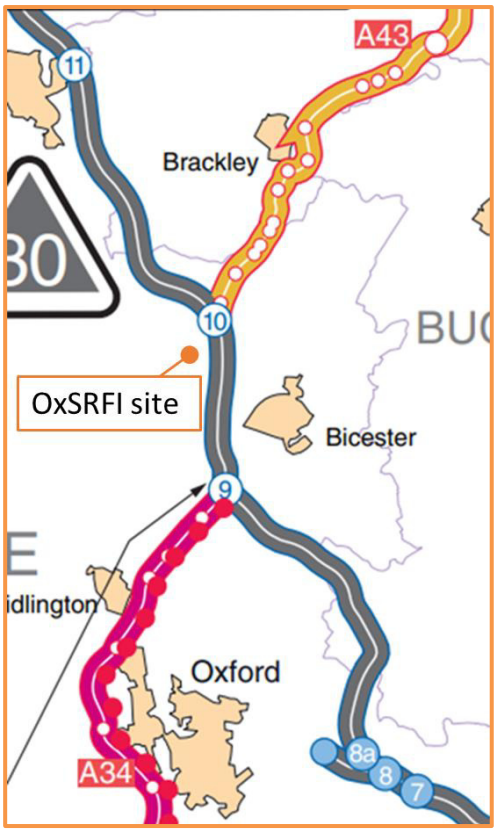


Figure 1: OxSRFI location in relation to SRN

2.4 Whilst adjacent to the Chiltern Railway line, the existing road access to the site from all directions is via single carriageway roads and would involve passing through the village of Ardley to the north, or the village of Middleton Stoney to the south.

2.5 Ensuring good access to the SRN is a prerequisite for the OxSRFI development. Throughout the period June 2021 to April 2023, in consultation with the TWG, ADC Infrastructure and BWB Consulting undertook assessment work to consider and identify an improvement scheme at M40 Junction 10, in combination with a provision of a new bypass for the village of Ardley. The latter, thereby significantly reducing traffic flow through the Ardley and avoiding the need for OxSRFI

traffic to pass through the village. That work was set out in several Technical Notes (TN), as summarised in the table below.

Start	Sift 1	Sift 2	Sift 3	Sift 4	Sift 5	Sift 6
Report	**TN5**	**TN8**	**TN 5 Addendum**	**TN9**	**TN9 Addendum**	**TN 10**
Strategic highway option for M40 J10 and Baynards Green	Option 11					
	Option 13					
	Option 18		Preferred Option 18*	Sub-options 20, 21, 22, 23, 24, 25	Option 25a	Preferred Option 26**
	Option 19		Preferred Option 19*			
	Option 3	Sub Option 3C				

* OCC and NH confirmed Options 18 and 19 as preferred options to be taken forward in January 2022
**identified as preferred option, but infrastructure costs too great and impacted project viability

2.6 This Technical Note presents the findings of Sift 7, which has led to Option 28, as presented in more detail in Section 4 of this note.

2.7 The highway access strategy also includes a new relief road around the north-east quadrant of the village of Middleton Stoney and a Heyford Park link. The options assessment work is summarised in the Middleton Stoney Relief Road (MSRR) and Heyford Park Link Road (HPLR) Options Report.

2.8 A substantial package of new footway, cycleway and changes and enhancements to the PRoW network are also proposed as part of the access strategy, supported by a Public Transport Strategy that includes new bus services that would route through the OxSRFI site.

3.0 ASSESSMENT YEARS AND TRAFFIC FLOW DATA

Assessment years

3.1 The following agreements with regards to assessment years were in place at the time that the OxSRFI project was placed on pause in April 2023:

- 2028 Opening Year
- 2031 Future Year.

3.2 Given the passage of time, the project timeline has been updated and the anticipated revised programme is set out below:

- DCO submission Dec 2025
- DCO Examination during 2026
- DCO Order made 2027
- Construction period of 6 years (including technical approvals)
- First occupation after 3 years (2030/2031)
- Fully built out and occupied 2033/2034.

3.3 Therefore, the Transport Assessment will now consider the following assessment years:

- 2031 Opening Year
- 2034 Future Year

Traffic flow data

3.4 The option assessment work described in Section 2 of this report used 2031 Reference Case traffic flow data for M40 Junction 10 and Baynard's Green that was extracted from the 'M40 Junction 10 TN 11 VISSIM Forecast Modelling' report that was prepared by Aecom for National Highways[2]. The forecast OxSRFI development traffic was then added to these flows, to give the 2031 Do-something (with development) traffic flow data. That work is detailed in ADC Technical Note 6 'M40 Junction 10 Options Report – Traffic Flow Derivation'[3]. TN6 used an initial distribution and assignment for the OxSRFI as explained in that Technical Note.

3.5 Since that work was undertaken, and prior to the OxSRFI project pause, ADC, in agreement with the TWG, updated the M40 Junction 10 and Baynard's Green 2031 Reference Case VISSIM model. This included the use of updated traffic flow data taken from the agreed 2031 Reference Case run of the Bicester Transport Model (BTM). The 2031 Reference Case traffic flow cordon for the VISSIM model (as extracted from the BTM) is provided at **Appendix A**.

3.6 For the purposes of this Technical Note, the 2031 Reference Case traffic flows have been factored up to represent the new 2034 future assessment year traffic flows through the application of the following Tempro 8.1 growth rates (Core Scenario/Oxfordshire/NTM all roads).

- AM peak hour 2031 to 2034 (1.0234)
- PM peak hour 2031 to 2034 (1.0237)

3.7 The resultant 2034 Reference Case traffic flows are also provided at **Appendix B**. These flows were then transposed into the M40 Junction 10 and Baynard's Green Reference Case LinSIG network model as also shown in **Appendix B**.

[2] M40 Junction 10 TN11 rev01, VISSIM Forecast Modelling, AECOM, March 2020
[3] Technical Note 6: M40 J10 Options Report – Traffic Flow Derivation (report reference ADC1794-RP-N-v2), ADC Infrastructure Ltd, June 2021.

3.8 Prior to the OxSRFI project pause, the BTM was also run for the 2031 Do-Something assessment scenario. The BTM modelling incorporates the agreed methodology for the distribution and assignment of the OxSRFI development traffic and therefore provides a more representative forecast of the development traffic assignment than was included in the original options assessment work (which was based on the initial assessments made in advance of undertaking BTM modelling). The corresponding OxSRFI development traffic cordon for the VISSIM model has therefore been extracted from the BTM model for the 2031 Do-Something assessment scenario and is provided at **Appendix C**.

3.9 The 2034 Do-Something traffic flows (i.e. with OxSRFI) have been derived by adding the OxSRFI development traffic assignment given at **Appendix C** to the 2034 Reference Case traffic flow given at **Appendix B**. These flows were then transposed into the M40 Junction 10 and Baynard's Green Do-Something LinSig network model. The 2034 Do-something traffic flow are provided at **Appendix D**.

3.10 Subject to in principle agreement with the TWG to the proposed strategic highway Option 28, the BTM modelling would be updated to represent the revised scheme and the resulting assessment traffic flows including for any assignment effects associated with Option 28 will be used in the Transport Assessment, including VISSIM modelling, and Environmental Statement that will support the DCO application.

Albion Land and Tritax Symmetry planning applications

3.11 It is agreed with the TWG that that Albion Land and Tritax Symmetry planning applications[1] should not be included in the future Reference Case. This is because these developments are speculative and do not have planning permission. Hence the traffic flows included in this report do not include for those development proposals.

3.12 It is agreed, however, that a sensitivity test will be undertaken as part of the OxSRFI to consider the implications should all three developments come forwards.

4.0 STRATEGIC HIGHWAY OPTION 28

4.1 The proposed strategic layout for M40 Junction 10 and the Bayard's Green junction is shown at drawing **OxSRFI-BWB-GEN-XX-SK-CH-SK092** and an extract is provided at **Figure 2**.

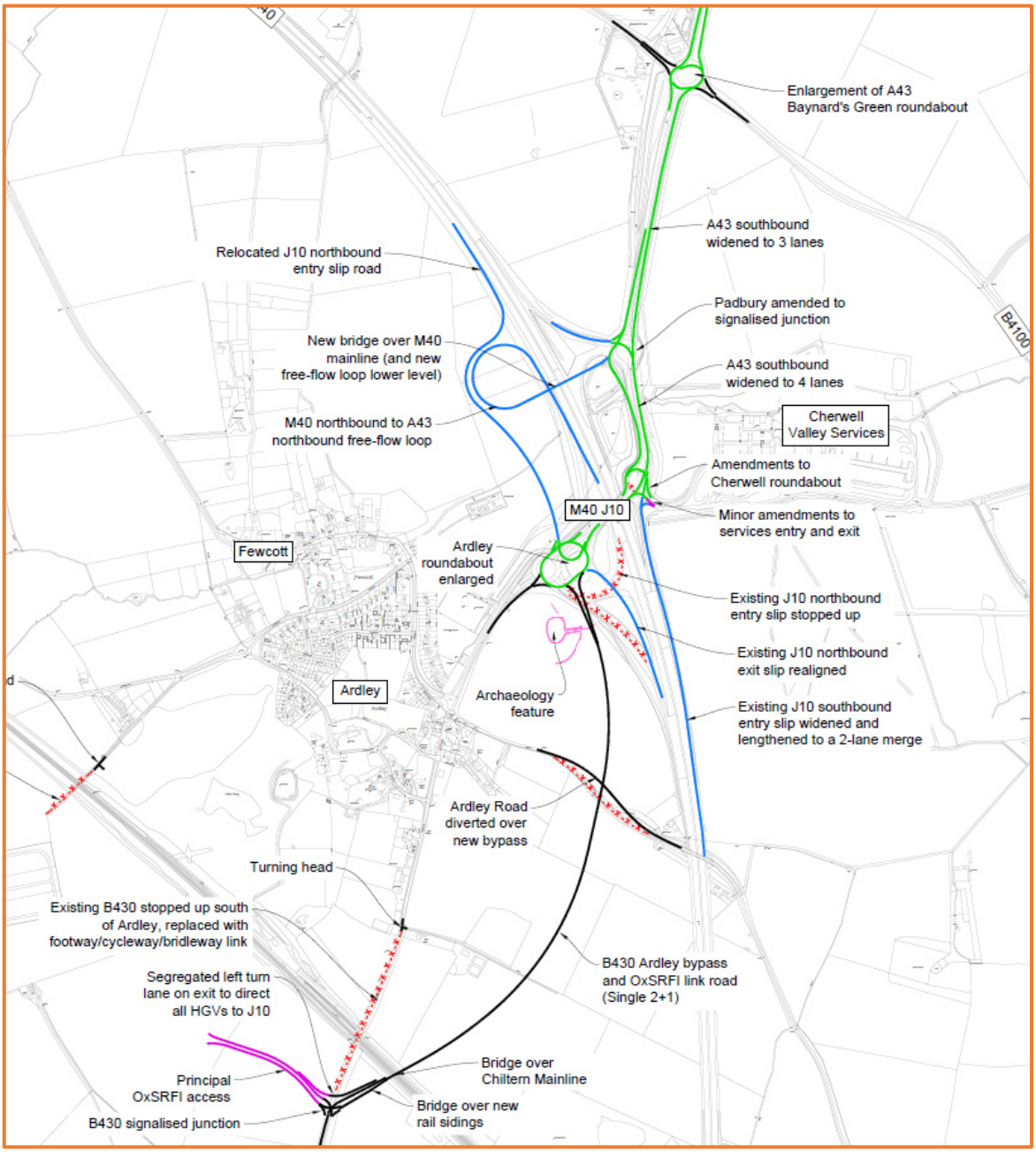


Figure 2: Option 28 – M40 Junction 10, Baynard's Green and Ardley Bypass

4.2 The key elements of the Option 28 arrangement are:

- As per previous options, the Ardley Bypass removes B430 through traffic from the village and links with the proposed Principal OxSRFI site access junction. The Bypass would be a Single 2 + 1 arrangement (two lanes northbound and one lane southbound).
- A section of the existing B430 to the north of the OxSRFI site access junction into the southern end of Ardley village would be stopped up.
- The Ardley Roundabout would be enlarged and signalised to accommodate the Ardley Bypass and provide additional operational capacity. The M40 northbound merge would be relocated to the north of the roundabout, to allow the new northbound free-flow link to be provided.

- The M40 to A43 northbound traffic is provided with a new northbound free-flow link as was the case in Option 26. However, this would now connect with Padbury, thereby reducing the third-party land requirements.
- As was the case with Option 26, the scheme eliminates the requirement for the Ardley East junction and the new south facing M40 slip road(s) (as were proposed in Options 18/19 and 27).
- The Ardley Bypass would therefore be at or below the existing levels, passing under Ardley Road, eliminating the complex engineering works required to achieve the 3D layout and thereby minimising environmental impacts on Ardley village.
- The northbound M40-A43 free-flow link significantly reduce traffic flows through the M40 Junction 10 complex and improve journey times for northbound traffic.
- The required number of new structures is reduced as compared to Option 26, therefore minimising the scheme cost.
- A revised improvement scheme at Cherwell Roundabout allows the A43 northbound movement to operate as free-flow, whilst providing increased right turn storage for the M40 southbound movement. Under this arrangement traffic exiting the Cherwell Services wishing to travel north of the A43 would do so via Ardley Roundabout.
- Online improvements by means of an additional lane southbound on the A43 between Baynard's Green and the Cherwell Roundabout, combined with improvements to the M40 southbound merge to provide a two-lane merge arrangement negates the requirement for the A43 to M40 southbound free flow slip road that was included in previous options.
- Enlargement and signalisation of Baynard's Green Roundabout provides significant improvement in junction operation, whilst still representing a smaller improvement, with reduced third part land requirements as compared to Option 26.
- The Principal Site Access junction on the B430 has been amended from a partially signalised roundabout to a signal-controlled T-junction, to provide a more compact arrangement.

4.3 Option 28 therefore delivers similar advantages to Option 26 for the M40 to A43 northbound traffic through the provision of a new free-flow link, whilst providing a high-quality access to the SRN for OxSRFI traffic and delivering enhancements to the A43 and a simplified layout at Cherwell improves journeys southbound.

4.4 The preliminary general arrangement drawing for M40 Junction 10 and Baynard's Green is presented at **drawing OxSRFI-BWB-GEN-XX-SK-CH-SK094**.

4.5 The amended layout for the Principal Site Access junction is shown on **drawing OxSRFI-BWB-GEN-ZZ-SK-CH-SK018**.

5.0 ANALYSIS OF M40 JUNCTION 10 PERFORMANCE AND CONFLICT ASSESSMENT

5.1 As agreed with the TWG, an assessment of the performance and safety of M40 Junction 10 and Baynard's Green as proposed in Option 28 has been undertaken. That assessment considers:

- Journey Time
- Headroom
- Conflict Assessment.

Journey time

5.2 As part of the option testing process which led to the previously identified preferred options to be taken forwards, an analysis of journey times across the M40 Junction 10 complex and Baynard's Green were undertaken using network LinSig models. Journey times on key routes across the SRN and Oxfordshire highway networks for the 2031 Reference Case scenario (with the OCC Housing Growth Deal improvements, without the OxSRFI development) were compared against the proposed mitigation options. Tables were provided to show the comparative differences in terms of average journey time per pcu in seconds, and also for total journey in pcuHr. This second metric is the aggregate time taken by traffic travelling on each route.

5.3 The same methodology was adopted for assessing the impact on journey times due to Option 28. As explained in Section 3, due to the passage of time, the assessment year has been updated from 2031 to 2034. Comparison tables are generated to compare the 2034 morning peak, 2034 evening peak, 2034 off-peak and 2034 inter-peak periods in the Reference Case (with the Padbury Roundabout Housing Growth Deal improvement but without OxSRFI traffic) to the Do-Something Case (with OxSRFI traffic and Option 28). The comparison uses the traffic flows presented in Section 3 of this Technical Note.

5.4 It is noted that the traffic flow scenario used for Option 28 includes the additional traffic from the OxSFRI development, whereas the Reference Case scenario does not include the additional traffic demand from the OxSRFI. Therefore, the total journey metric for the routes to and from the OxSRFI site (i.e. to and from the Ardley Bypass to each of the other locations) includes the additional OxSRFI traffic which increases the overall pcuHr, even if there is a reduction in the actual journey time for that route. Hence, a direct comparison of the total journey time metric between the Reference Case and the Option 28 for these routes is not provided.

5.5 The full journey time comparison tables are provided at **Appendix E**. By way of a summary of those detailed tables, the tables below provide a summary of the total average journey time on all assessed routes and compares this sum of the average journey times across the assessed routes for the Reference Case against Option 28.

Period	Average journey time (sum of all routes)					
	Option 28		Reference Case (RC)		Difference (Option 28 - RC)	
	seconds	minutes	seconds	minutes	seconds	minutes
Off-peak	1618	27	1870	31	-252	-4
AM Peak	1923	32	3663	61	-1740	-29
Interpeak	1903	32	2574	43	-671	-11
PM Peak	1978	33	3514	59	-1537	-26

5.6 The results at **Appendix E** and summarised above show that Option 28 would significantly reduce overall journey times across the assessed network when compared to the Reference Case, particularly in the morning peak and evening peak hour periods. However, Option 28 would also

reduce journey times as compared to the Reference Case during the inter-peak periods, and in the off-peak.

5.7 As shown at the more detailed results tables at **Appendix E**, there would be some increases in journey times for drivers accessing the MSA during some of the assessment periods. This is principally due to the introduction of additional signal control stop lines, and for the MSA to A43 northbound movement, the requirements for traffic to travel via Ardley Roundabout. However, as shown by the overall increase in pcuHr, which considers the traffic volumes undertaking these movements, is small.

5.8 Therefore, Option 28 would significantly improve overall journey times across the M40 Junction 10 complex when compared to the Reference Case (i.e. without the OxSRFI development), offering both strategic and local network improvements. Further, the improved journey time reliability provides a cost benefit when applied to trips through this part of the network and would help to reduce driver stress in terms of reduced delays and improved experience.

Headroom

5.9 The tables below provide a comparison between the forecast capacity at the future baseline (Reference Case) M40 Junction 10 and Baynard's Green junction (with Padbury Roundabout Housing Growth Deal improvements no OxSRFI development), with the forecast capacity at the junctions with Option 28 (the Do Something Case) with the OxSRFI development in place in the 2034 assessment year.

5.10 A copy of the Reference Case LinSig modelling output is provided at **Appendix F** and the Do-Something (Option 28) LinSig modelling output is provided at **Appendix G**.

Baynards Green Roundabout Capacity Results				
Scenario	Peak hour	Cycle time	Practical Reserve Capacity	Total delay (PCUhr)
2034 Reference Case*	AM	N/A	-68.3%	369.3
	PM	N/A	-58.1%	249.7
2034 Do Something	AM	60	3.8%	37.3
	PM	60	3.8%	40.2

Padbury Roundabout Capacity Results				
Scenario	Peak hour	Cycle time	Practical Reserve Capacity	Total delay (PCUhr)
2034 Reference Case	AM	60	10.3%	18.2
	PM	60	2.4%	18.9
2034 Do Something	AM	60	14.1%	23.9
	PM	60	4.4%	31.5

Cherwell Roundabout Capacity Results				
Scenario	Peak hour	Cycle time	Practical Reserve Capacity	Total delay (PCUhr)
2034 Reference Case	AM	60	-5.5%	25
	PM	60	-8.0%	23.3
2034 Do Something	AM	60	5.1%	19.6
	PM	60	12.5%	19.8

Ardley Roundabout Capacity Results				
Scenario	Peak hour	Cycle time	Practical Reserve Capacity	Total delay (PCUhr)
2034 Reference Case*	AM	N/A	8.0%	4.4
	PM	N/A	-7.5%	18.7
2034 Do Something	AM	60	11.2%	24.3
	PM	60	19.4%	24.6

* priority controlled roundabout

5.11 As shown in the tables above, the future baseline arrangements at Baynard's Green, Cherwell and Ardley junctions would be over capacity in 2034 in at least one of the peak hour periods. These junctions would therefore require improvement to facilitate background growth to 2034 and to accommodate the proposed OxSRFI development.

5.12 The Reference Case includes the committed Housing Growth Deal improvement scheme at the Padbury Roundabout, and hence this junction is shown to operate within capacity in the 2034 Reference Case assessment year.

5.13 The tables demonstrates that Option 28 offers sufficient capacity enhancements to accommodate background traffic growth up to 2034 and the OxSRFI development traffic. Additionally, there would be headroom at all four junctions to accommodate some future growth.

5.14 The next step is therefore to test the embedded highway works at M40 Junction 10 and Baynard's Green will now be in the BTM and then in VISSIM with PC MOVA.

Principal Site Access – capacity assessment

5.15 The operation of the proposed Principal Site Access junction is shown on **drawing OxSRFI-BWB-GEN-ZZ-SK-CH-SK018** has also been modelled using the 2034 Do Something traffic flows. The table below provides a summary of the results and a copy of the LinSig assessment is provided at **Appendix H**.

Site access				
Scenario	Peak hour	Cycle time	Practical Reserve Capacity	Total delay (PCUhr)
2034 Do Something	AM	60	14.4%	17.2
	PM	60	12.7%	20.39

5.16 As shown, the proposed site access arrangement would satisfactorily accommodate the 2034 assessment year traffic flows.

Conflict assessments

5.17 An assessment of the number of conflict points associated with Option 28 has also been undertaken and is compared with the previous preferred options (Options 18, 19 and 26) that were agreed in principle with the TWG. The three methods adopted by National Highways in their review of previous options have been used:

1. Journeys through the junction complex, including for the number of traffic lanes a driver would conflict with at each node point on a specific route.
2. Per junction, number of lanes in conflict:

- e.g. three entry lanes and two circulatory lanes: 3 + 2 = 5

3. Per junction, multiplying conflicting lanes:
   - e.g. three entry lanes and two circulatory lanes: 3 x 2 = 6.

5.18 The results are presented below at **Figures 3 and 4** for each of the three methods.

		Number of conflict points (journey based)			
From	To	Option 18	Option 19	Option 26	Option 28
A43 north of Baynards Green	M40 south	5	5	6	11
M40 south	A43 north of Baynards green	18	17	6	10
A43 north of Baynards Green	M40 north	19	12	12	15
M40 north	A43 north of Baynards green	7	7	11	7
A43 north of Baynards Green	B430 (or Ardley Bypass)	18	18	12	14
B430 (or Ardley Bypass)	A43 north of Baynards green	16	15	17	16
M40 north	B430 (or Ardley Bypass)	16	14	10	10
B430 (or Ardley Bypass)	M40 south	6	6	11	9
M40 south	B430 (or Ardley Bypass)	1	1	2	2
B430 (or Ardley Bypass)	M40 north	7	9	5	5
M40 north	MSA	6	6	5	5
M40 south	MSA	13	12	12	12
MSA	M40 south	6	6	2	2
MSA	M40 north	10	3	9	9
B4100 east	B4100 west	7	7	9	6
B4100 west	B4100 east	7	7	7	6

	Option 18	Option 19	Option 26	Option 28
Totals	162	145	136	139

Figure 3: method 1, conflict assessment based on journeys through the M40 Junction 10 complex

Junction	Node	Opt 18	Opt 19	Opt 26	Opt 28
Padbury Rbt	M40 SB Offslip	8	8	7	7
	A43 SB				7
Cherwell Rbt	A43 SB	4	4	4	5
	Services	5	5	6	6
	A43 NB	4	4	2	0
Ardley Rbt	A43 SB	4	4	5	5
	M40 NB offslip	-	-	4	4
	Ardley Bypass	6	5	5	5
	Cut-through	-	-	4	4
	B430	7	6	5	5
New Bypass Rbt	Ardley Bypass N	5	5	-	-
	M40 NB Offslip	5	5	-	-
	Ardley Bypass S	6	6	-	-
Baynard's Green	A43 SB	6	6	6	5
	B4100 WB	6	6	4	7
	New link road	-	-	4	-
	Cut-through	-	-	6	-
	A43 NB	7	7	7	5
	B4100 EB	5	5	5	5
New A43/B410 0 junction	A43 NB	-	-	-	
	B4100 WB	-	-	-	
	B4100 EB	-	-	-	
Total		78	76	74	70

Example:
Three entry lanes and 2 circulating lanes
= 3 + 2 = 5

Junction	Node	Opt 18	Opt 19	Opt 26	Opt 28
Padbury Rbt	M40 SB Offslip	15	15	12	12
	A43 SB				12
Cherwell Rbt	A43 SB	3	3	3	5
	Services	6	6	8	8
	A43 NB	3	3	1	0
Ardley Rbt	A43 SB	4	4	6	6
	M40 NB offslip	-	-	4	4
	Ardley Bypass	8	4	6	6
	Cut-through	-	-	4	4
	B430	10	8	6	6
New Bypass Rbt	Ardley Bypass N	6	6	-	-
	M40 NB Offslip	6	6	-	-
	Ardley Bypass S	9	9	-	-
Baynard's Green	A43 SB	8	8	8	6
	B4100 WB	9	9	4	12
	New link road	-	-	4	-
	Cut-through	-	-	8	-
	A43 NB	12	12	12	6
	B4100 EB	6	6	6	6
New A43/B410 0 junction	A43 NB	-	-	-	-
	B4100 WB	-	-	-	-
	B4100 EB	-	-	-	-
Total		105	99	92	93

Example:
Three entry lanes and 2 circulating lanes
= 3 x 2 = 6

Figure 4: methods 2 and 3, conflict assessment per junction basis

5.19 The results presented in **Figures 3 and 4** show that Option 28 would have similar conflicts to Option 26 and fewer conflicts then Options 18 and 19 when assessed using all three methodologies.

5.20 The table below summarises the conflicts by method and calculates an average.

	Number of conflicts			
Method	**Option 18**	**Option 19**	**Option 26**	**Option 28**
Journey based	162	145	136	139
Junction summing	78	76	74	70
Junction multiplying	105	99	92	93
Average	**115**	**107**	**101**	**101**

5.21 Based on the average of the assessment methods, Option 28 has the same number of conflicts the previously agreed Option 26.

6.0 GEOMETRY ASSESSMENT

Link road geometry

6.1 The geometry of the new connector roads has been assessed against DMRB standards CD 109, CD 122 and CD 127, which are the principal geometric design standards to be used in the design. The following table sets out for each connector road the design speed, cross-section and provides comments on key geometric features. The cross-sections are determined based on the link type and forecast traffic flows. Refer to **drawing OxSRFI-BWB-GEN-XX-SK-CH-SK094** for the preliminary geometric layout. The conceptual design sketch for the M40-A43 northbound free flow link and new bridge over the M40 is shown on **drawing OxSRFI-BWB-GEN-ZZ-SK-CH-SK078**.

Link	Link type	Design speed (and how it is derived)	Cross-section	Commentary on compliance with standards
M40 J10 SB merge slip road	Slip Road	70kph (CD 122 Table 5.4)	MG1A	Compliant geometry. Link is <0.75km and hence is designed as a slip road.
M40 J10 NB diverge slip road	Slip Road	70kph (CD 122 Table 5.4)	DG2A	Cross-section at the start of the slip road: existing lane widths are below standard width (existing departure from CD 127)
M40-A43 NB free flow	Interchange link	85kph (CD 122 Table 5.4)	IL2A	SSD of 295m achieved from back of nose into the loop (compliant), but the SSD into the diverge from the mainline reduces to approx. 260m due to the existing bridges (departure from CD 122 para 3.34) Hard-shoulder is not provided under the existing bridge, departure from CD 127 (this is an existing issue with the existing merge) Low-radius loop is compliant with standard but potential departure from CD 122 para 5.14 to retain some existing woodland within the loop Use of crest K 17 required over the M40 bridge after the loop, 2 steps below desirable minimum which is a departure from CD 122 para 1.3.
M40 J10 NB merge slip road	Slip Road	85kph (CD 122 Table 5.4)	IL1A	Compliant geometry. Link is >0.75km and hence is designed as an interchange link, but is <1km so a single lane is acceptable. Low-radius loop is provided on the link which is approx. 180 degrees.

6.2 It can be seen from the above that there are a small number of departures from standard proposed. There are two primary reasons for these departures as follows:

- Use of loops and reduction in crest K on the M40 bridge are to enable the scheme to be of a scale that is compatible with an overarching sustainability and environmental driver to retain a compact overall junction layout that sits within the general footprint of the existing highway network; and
- Retention of the existing bridges within M40 Junction 10 to avoid the disruption and cost associated with replacing them, this results in the hard shoulder departures and a northbound visibility departure into the diverge.

6.3 It is considered that the departures can be justified accordingly and that any residual risks can be appropriately mitigated. Formal submissions for departures will be made in due course.

Merge and diverge assessment

6.4 A merge and diverge assessment has been undertaken for all of the merges and diverges at M40 Junction 10 including the new free-flow link connection from the M40. The traffic data used for the assessment has been extracted from the 2034 Do Something traffic flows at **Appendix D**. A copy of the merge and diverge flows and merge and diverge assessment are provided at **Appendix I**. The following table sets out the findings of this assessment.

Merge/Diverge	CD 122 required layout	Proposed layout	Compliant with standards?	Commentary
SB diverge	A (taper)	A1 (taper)	Yes	Existing diverge retained
SB merge	E (2-lane merge with ghost island and single lane gain)	C (2-lane merge with ghost island	**No**	Lane gain on motorway is not proposed as part of scheme. Departure required. Traffic follow threshold is close to layout C in AM and PM. Departure also needed for either (a) relaxation of merge to all-purpose road standard or (b) no hard shoulder under the Ardley Road bridge.
NB Ardley diverge	A (taper)	A1 (taper)	Yes	Existing diverge retained
NB free flow diverge	D (lane drop with ghost island)	A1 (taper) or A2 (auxiliary lane)	**No**	A lane drop is not proposed as 4 lanes are not proposed upstream Due to the bridges only four lanes can be provided at this point but an auxiliary lane could be provided Further analysis needed to confirm preferred solution
NB merge	B (auxiliary lane)	B (auxiliary lane)	Yes	

6.5 It is considered that the departures from standard needed for the southbound merge and northbound free flow diverge will be justifiable for the following reasons:

- Retention of the Ardley Road bridge; and
- An additional lane between M40 Junctions 9 and 10 cannot be provided as part of the scheme.

6.6 There is potential for National Highways to promote, as part of a future road investment strategy (RIS) motorway widening or four lane all-lane running between M40 Junctions 9 and 10. This would change the south facing merges and diverges at M40 Junction 10.

6.7 With the Option 28 scheme in place, it is envisaged these merges and diverges would be amended as follows for such a future scheme:

- The southbound merge could be amended to provide a lane gain onto a four lane motorway instead of a three lane motorway;
- The northbound diverge to Ardley can be retained as a taper diverge from a four lane motorway instead of a three lane motorway; and
- The free-flow northbound diverge would become a lane drop. Without reconstruction of the existing bridges this would need to be a Layout C diverge (single lane drop diverge without ghost island or auxiliary lane).

Detailed junction geometry

6.8 A detailed assessment has not been undertaken at this stage, and this will be done as the junction designs are developed. It has been noted that there may be some departures from standard needed in relation to entry path curvature for approaches to signalised roundabouts.

7.0 ENVIRONMENTAL

Introduction

7.1 Option 28 has been considered by the Applicant's team of professional consultants across the areas of assessment that might be expected to arise in an Environmental Assessment (leading to an Environmental Statement) process. It should be noted that the assessment is based upon the high-level detail available at the stage of writing.

Lighting

7.2 Option 28 will increase lighting levels within the boundary of the Highways Works with visibility also possible from some receptors in Ardley. However, it is unlikely that potential receptors with views of the M40 Junction 10 improvement works would be subjected to an increase in obtrusive light due to existing lighting, and the embedded mitigation measures and compliance with lighting standards which will minimise light spill.

Landscape and Visual

7.3 The Option 28 does not appear to impact upon any additional designated or particularly sensitive landscape areas or features. It would directly impact upon some additional trees and a small woodland area immediately to the north of the proposed loop but this is not considered to be of any particular landscape value and proposed mounding with woodland planting would be included around part of the loop to mitigate effects.

7.4 In terms of the proposals south of the junction and to the east of Ardley, and in keeping with Option 26, Option 28 appears to offer a number of localised landscape and visual benefits compared to Options 18/19, with the bypass route generally sited at and below existing ground levels and without the need for an elevated south bound slip passing over the motorway. These changes would be preferable in landscape and visual terms, in comparison to Options 18/19.

7.5 In visual terms, whilst the new loop arrangement may be visible from a limited number of additional locations and properties on the northern edge of Ardley, and from some nearby public footpaths, these potentially additional effects are likely to be more than offset by the visual improvements from the changed arrangements further south (and to the east of Ardley).

7.6 Overall, based upon this desk-based review it is considered that J10 Option 28 is likely to result in a similar landscape and visual solution as compared to Option 26 and an improved landscape and visual solution as compared to Options 18 and 19.

Noise

7.7 Option 28 is likely to offer some beneficial reductions in road traffic noise levels to some of the nearest receptors. As was the case for Option 26, the removal of the previously proposed southern slip roads (Option 18/19), and reduction in traffic travelling southbound along the bypass from Ardley Roundabout to the now removed Ardley East Roundabout, is likely to result in less road traffic noise than the previous options at the nearest receptors.

7.8 Additional noise mitigation is potentially required to manage noise levels for proposed changes in this option for a small number of receptors north of Ardley Roundabout, where new road links and a bridge are introduced closer to receptors along Ardley / Fritwell Road. Proposed changes

to Ardley Roundabout to the south are not considered to be materially different from the previous options.

7.9 Option 28 offers a reduced enlargement of the Baynard's Green Roundabout compared to Option 26 which should have less of a noise impact on adjacent receptors. Under Option 28, the road alignment is similar to the existing highway alignment although it is noted the A43 southbound highway will be widened to three lanes.

Flood Risk

7.10 The floodplain and watercourse is shown in **Figure 5** below. Option 28 would require a new road link across the floodplain west of the M40, at this point the floodplain is narrower and there is land available to provide compensation floodplain.

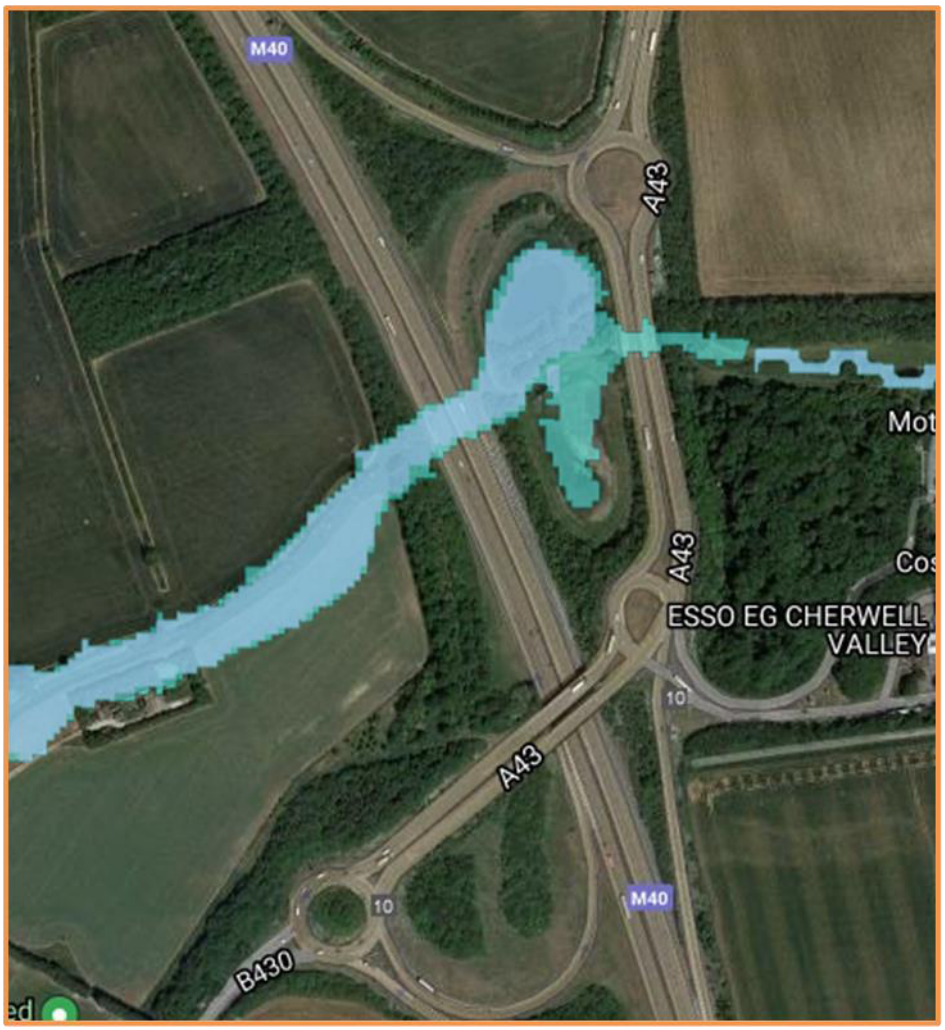


Figure 5: watercourse and floodplain at M40 Junction 10

7.11 The flood extents in Option 28 would likely be reduced compared with the previous options. The scheme would seek to retain existing culvert sizes and therefore the proposals appear acceptable from a flood risk perspective.

Ecology

7.12 Option 28 would result in reduced impacts on the woodland habitat to the west of the A43, south of Baynard's Green Roundabout through greater retention of woodland edge and tree habitat. In

conjunction with this, Option 28 may enable the impacts on the badger setts within this woodland to be reduced as it should allow the option for temporary exclusion of the setts in comparison to full closure as required by all previous options.

7.13 Widening of the A43 south of the Padbury Roundabout to accommodate four lanes would result in a slightly greater loss of screening planting to the east which forms a buffer to the priority woodland habitat known as Sycamore Grove. Option 28 would not result in direct impacts to this priority woodland and there would be opportunities to mitigate the loss of lower ecological value screening planting through additional structural planting throughout the M40 Junction 10 improvement works area.

7.14 The revised positions of the proposed new bridge of the M40 and the M40 to A43 northbound free-flow link in Option 28 will result in greater impacts to one of the existing ponds and the population of breeding great crest newt (GCN) it supports. The infrastructure required will encroach upon the ponds, which will likely need to be reduced in size to accommodate the bridge footings. All previous options would require a European Protected Species Licence (EPSL) to facilitate the works, however Option 28 would permanently impact a breeding pond and hence will require additional mitigation under a licence. There is scope to provide a GCN receptor area to the south of the proposed M40 northbound loop which would provide a suitable mitigation, and once works were completed allow GCN to recolonise the northern pond via the existing culvert beneath the M40.

7.15 The M40 northbound loop will not result in any additional impacts in comparison to Option 26 in terms of plantation woodland loss and anticipated losses can be mitigated for through additional structural planting.

7.16 Option 28 does not impact upon any additional designated sites of ecological value.

Archaeology

7.17 Option 28 has been designed to minimise physical impact on the Iron Age “banjo enclosure” located in this area. This enclosure is known through aerial photography, geophysical survey and archaeological trial trenching.

7.18 The banjo enclosure will be impacted by the route of Option 28; however, this will be restricted to the eastern limits of the entrance trackway of the enclosure. The main area of the enclosure, which could contain evidence of Prehistoric occupation, will not be physically impacted by the proposal.

7.19 The loss of the eastern limits of the banjo enclosure through the construction of Option 28 will be mitigated through a programme of archaeological excavation, recording and reporting, the scope of which will be agreed with the archaeological advisor to the local authority.

8.0 LOCAL ACCESS, WALKING AND CYCLING

Local access and Cherwell MSA

8.1 As well as providing for strategic road traffic between the M40 and A43, M40 Junction 10 is the local junction on the M40 for access to Ardley, Heyford Park, and, via the Baynard's Green Roundabout, the northern side of Bicester. M40 Junction 10 is also the junction for the Cherwell Valley MSA.

8.2 Option 28 would retain access to and from Ardley via Ardley Roundabout. However, traffic levels would be significantly reduced due to the proposed Ardley Bypass becoming the new route for all B430 traffic. Option 28 would retain the existing connectivity for Ardley Road.

8.3 As is currently the case, Option 28 would require road users to use several individual junctions to use the MSA as shown in the table below.

Direction	Access to MSA	Exit from MSA
M40 Southbound	Via Padbury and Cherwell junctions (as existing)	Via Cherwell (as existing)
M40 Northbound	Via Ardley and Cherwell (as existing)	Via Cherwell and Ardley (as existing, but with the northbound on-slip relocated to the northern side of Ardley Roundabout)
A43 Southbound	Via Baynard's Green, Padbury and Cherwell (as existing, but A43 widened to provide an additional lane)	n/a
A43 Northbound	n/a	Via Cherwell, Ardley, Padbury and Baynard's Green (one additional junction)

Walking and cycling

8.4 With the removal of northbound SRN through traffic travelling between the M40 and A43 north from the Ardley and Cherwell Roundabouts there is capacity headroom created in these junctions. This means that Option 28 can give an opportunity for providing crossing facilities for pedestrians and cyclists.

8.5 The draft Walking, Cycling and Horse Riding Assessment Report (WCHAR) identifies the following opportunities with regard to walkers (W) and cyclists (C) at M40 Junction 10 and Baynard's Green.

M40 Junction 10 Improvements and Baynard's Green		
Ref	**User**	**Opportunity**
5	W/C	As part of the proposed highway improvements to the A43 Baynard's Green Roundabout, provide a route for walkers and cyclists travelling between the two B4100 arms of the junction, and public footpath 367/28.
6	W/C	To provide a link between Ardley village and Cherwell Valley Services for walkers and cyclists.
7	W/C	To provide a link between Ardley village and public bridleway 367/20 (and Stoke Wood) for walkers and cyclists.
8	W	Retain connection to public footpath 109/32 to and from M40 J10.
9	W/C	With regard to the live planning applications for employment development adjacent to Barnard's Green, consider a footway/cycleway link between Padbury Roundabout and Baynard's Green.

8.6 The current proposals for improving connectivity for walkers and cyclists through M40 Junction 10 and Baynard's Green are shown on **drawing OxSRFI-BWB-GEN-XX-SK-CH-SK094**, and they will be assessed in detail as part of the WCHAR Review process.

8.7 The Option 28 proposals respond positively to the WCHAR opportunities set out above. The scheme would provide:

- A link across the A43 at Baynard's Green between the two B4100 arms of the junction for cyclists and walkers, including signal-controlled crossings on the A43, and a link to Bridleway 367/28.
- A link across the M40 using the existing M40 bridge for pedestrians and cyclists, and also connecting Bridleway 109/09 and footpath 109/32 in Ardley to Bridleway 367/20 (and Stoke Wood), with new signal-controlled crossings at the Ardley and Cherwell Roundabouts. It is noted that existing bridges over the M40 do not, however, have wide enough hardened verges to accommodate a cycle route so cyclists would need to dismount when crossing the M40 bridge.
- Provide a new shared use footway/cycleway alongside the A43 connecting the proposed new pedestrian and cyclist links at Cherwell Roundabout to those proposed at Baynard's Green.

9.0 SUMMARY AND CONCLUSIONS

9.1 ADC Infrastructure Ltd and BWB Consulting Ltd are appointed by Oxfordshire Railfreight Ltd (the Applicant) to assess and design the transport and infrastructure requirements of a Nationally Significant Infrastructure Project (NSIP), that being a proposed Strategic Rail Freight Interchange (SRFI) in Oxfordshire, to be known as Oxfordshire Strategic Rail Freight Interchange (OxSRFI).

9.2 A Transport Working Group (TWG) comprising representatives from National Highways and Oxfordshire County Council, was established in November 2020. In addition, Cherwell District Council, the local planning authority, contribute to and attend the TWG meetings.

9.3 Throughout the period up until April 2023 the Applicant worked closely with the TWG to agree key components of the transport work required to support an application for OxSRFI via the Development Consent Order (DCO) process. This included significant work on the form and layout of the highway access strategy for the site.

9.4 Ensuring good access to the SRN is a prerequisite for the OxSRFI development. Throughout the period June 2021 to April 2023, in consultation with the TWG, ADC and BWB undertook option assessment work to consider and identify an improvement scheme at M40 Junction 10 and the Baynard's Green junction, in combination with a provision of a new bypass for the village of Ardley. That work led to strategic highway Option 26 being developed as the preferred highway access strategy for the OxSRFI scheme.

9.5 In October 2022 it was announced that the previously committed and funded Growth Deal improvements to Baynard's Green had been cancelled, and only the highway improvements at Padbury Roundabout would now be implemented. The cancelling of the Growth Deal highway improvement scheme at Baynard's Green altered the future baseline position. In the absence of improvement works at the junction, congestion at the Baynard's Green Roundabout is a significant constraint on the effective operation of the existing highway network.

9.6 Notwithstanding the above, work continued to progress Option 26 as the preferred highway strategy. However, in April 2023, the Applicant took the decision to pause work on the OxSRFI project pending a review of the highway access strategy.

9.7 This Technical Note reports on the outcome of that review, which revisited the strategic highway options work. That work has resulted in strategic highway Option 28, which was presented at the TWG meeting held on 9 November 2024. The TWG provided initial feedback on Option 28 during the TWG meeting, and it was agreed that ADC and BWB would further develop Option 28 and prepare this technical note to set out the Option 28 proposals for in principle agreement with NH and OCC.

9.8 An evaluation of the Option 28 proposals on journey time, junction performance and conflict assessment at the M40 Junction 10 and Baynard's Green complex has been undertaken, along with an initial geometric assessment, review of potential environmental effects, and consideration of the opportunities to provide infrastructure improvements to enhance walking and cycling.

9.9 The assessments conclude that the Option 28 proposals would have a positive impact on journey time and junction performance. The proposed highway improvements would significantly improve overall journey times across the M40 Junction 10 complex when compared to the Reference Case, offering both strategic and local network improvements. The improvements would provide capacity enhancements to accommodate background traffic growth up to 2034

along with the OxSRFI development traffic. Additionally, there would be headroom at all four junctions to accommodate some future traffic growth.

9.10 Based on the average of the assessment methods, Option 28 has the same number of conflicts as Option 26 which was previous agreed in principle with the TWG.

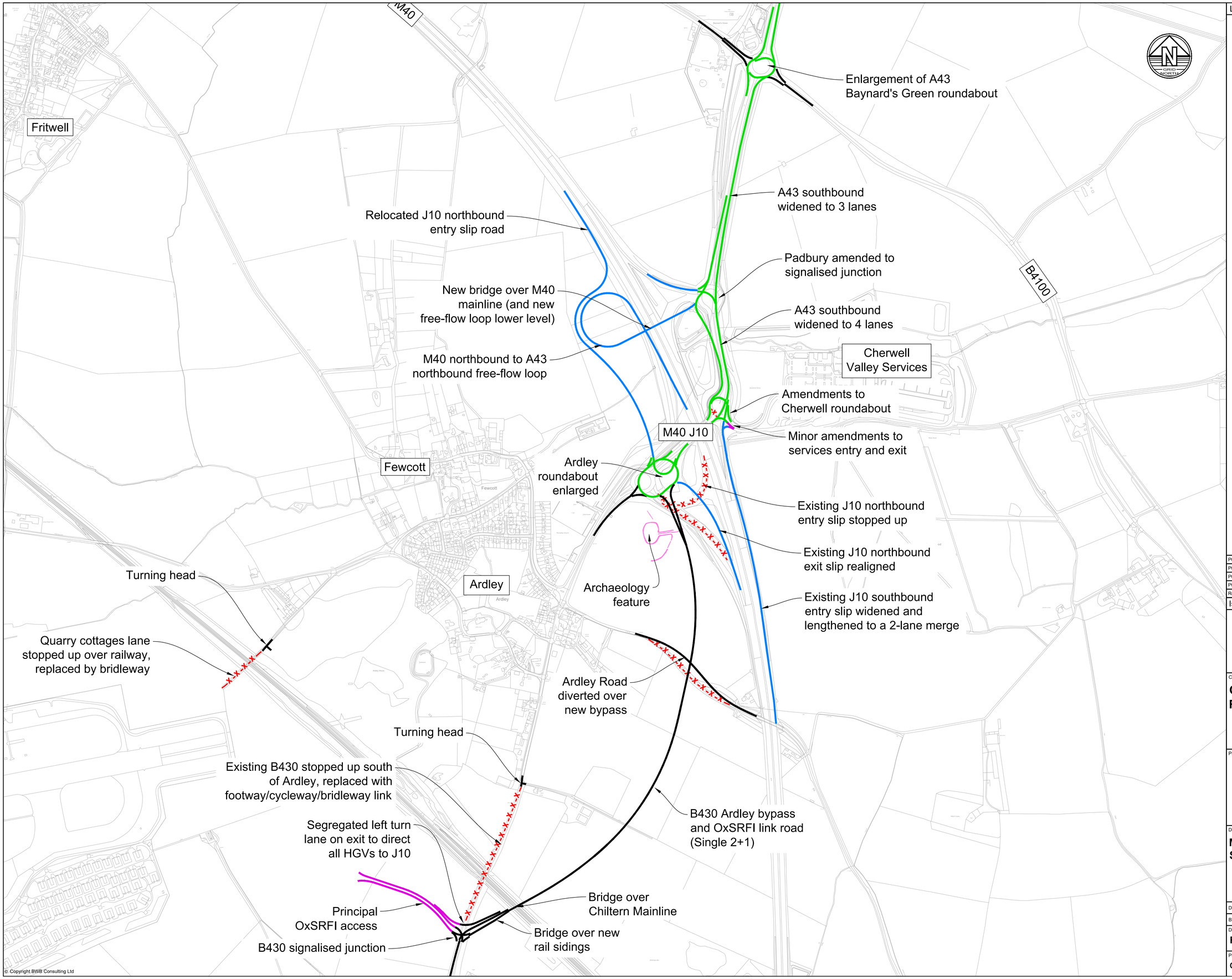
9.11 The Option 28 scheme responds positively to the opportunities identified in the draft WCHAR Assessment Report for M40 Junction 10 and Baynard's Green, and would provide new connectivity across the junctions for walkers and cyclists.

9.12 In addition, the amended layout of the Principal Site Access is presented and shown to satisfactorily accommodate the 2034 future traffic flows including for the OxSRFI development.

9.13 The next stage of work, subject to agreement in principle of Option 28 with the TWG, will be the testing of the embedded highway works proposed for the OxSRFI scheme using the BTM, with the Option 28 proposals at M40 Junction 10 then also tested using microsimulation (VISSIM) with PC MOVA.

9.14 Alongside the above, the scheme geometry will be developed and departures from standard applied for (these are likely to be for approval in principle until such time as the traffic modelling is agreed with the TWG). Environmental assessment work will be ongoing and Stage 1 RSAs and WCHAR Reviews will be undertaken in due course.

DRAWINGS



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Legend

- Upgraded / new motorway (National Highways)
- Upgraded / new all-purpose trunk road (National Highways)
- Upgraded / new local roads (OCC)
- Private access roads
- Existing highway stopped up

Rev	Date	Details of issue / revision	Drw	Rev
P04	07.11.24	MSA exit amended	SRH	SRH
P03	05.11.24	Principal access updated	SRH	SRH
P02	07.10.24	Preliminary Issue	JP	SRH
P01	05.09.24	Preliminary Issue	SRH	SRH

Issues & Revisions

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Client

OXFORDSHIRE RAILFREIGHT LTD.

Project Title

OxSRFI
OXFORDSHIRE
STRATEGIC RAIL FREIGHT INTERCHANGE

Drawing Title

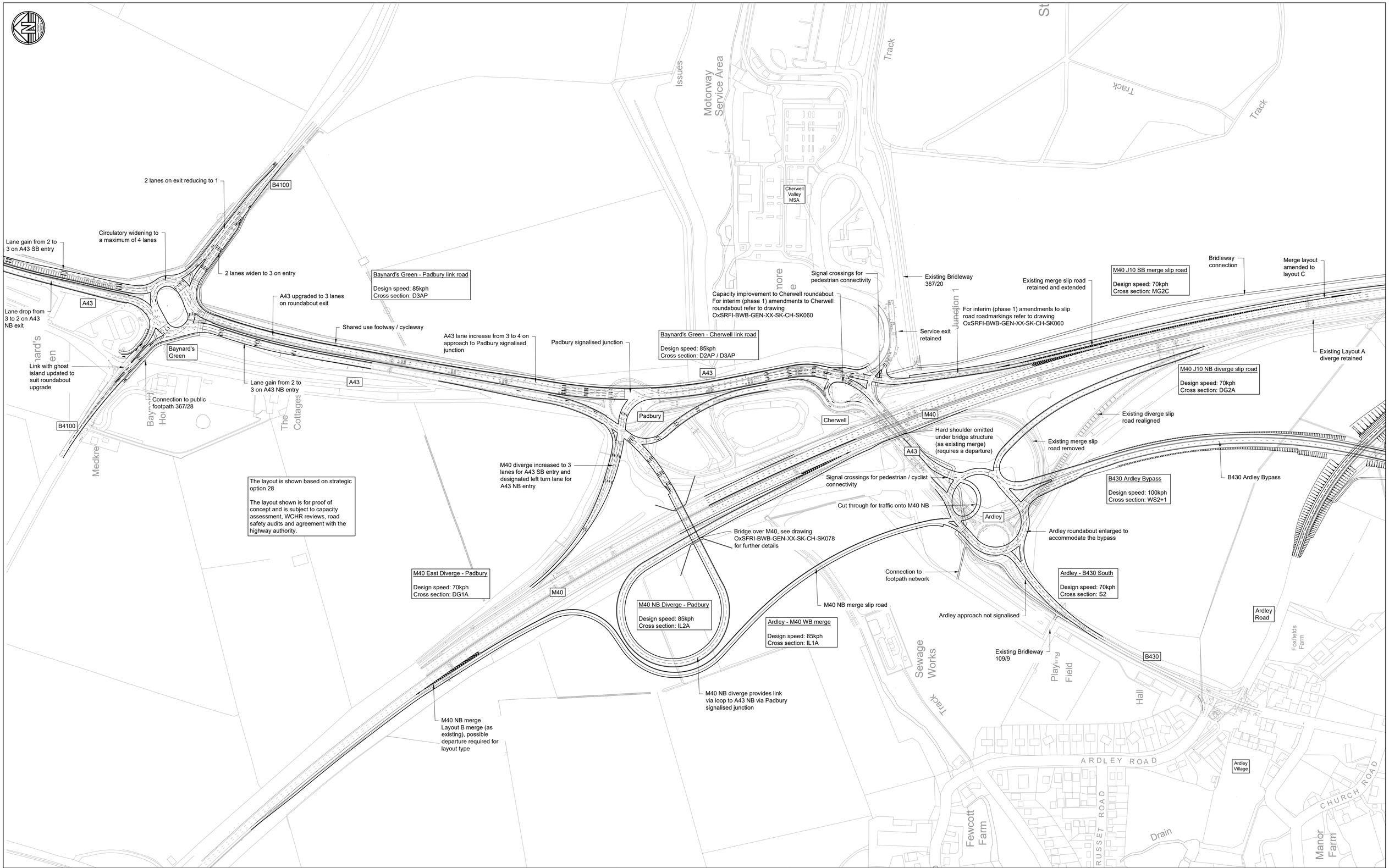
M40 JUNCTION 10
STRATEGIC OPTION 28

Drawn:	S. Hilditch		Reviewed:	S. Hilditch
BWB Ref:	NTH2479	Date:	04.09.24	Scale@A1: 1:5,000

Drawing Status

FOR COMMENT

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
OxSRFI-BWB-GEN-ZZ-SK-CH-SK092	S3	P04



NOTES

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions in metres unless noted otherwise. All levels in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.

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LEGEND

ISSUES & REVISIONS

Rev	Date	Details of issue / revision	Drw	Rev
P01	06.11.24	Preliminary Issue	SB	SRH
P02	07.11.24	Road markings updates & Cherwell junction layout	SB	SRH

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Client
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Project Title
OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Drawing Title
M40 JUNCTION 10 GENERAL ARRANGEMENT OPTION 28

Drawn:	S. Birchall	Reviewed:	S. Hilditch
BWB Ref:	NTH2479	Date:	06.11.24
Scale@A1:	1:2500		

Drawing Status: **PRELIMINARY**

Project - Originator - Zone - Level - Type - Role - Number: **OxSRFI-BWB-GEN-XX-SK-CH-SK094**

Status: **S1** Rev: **P02**

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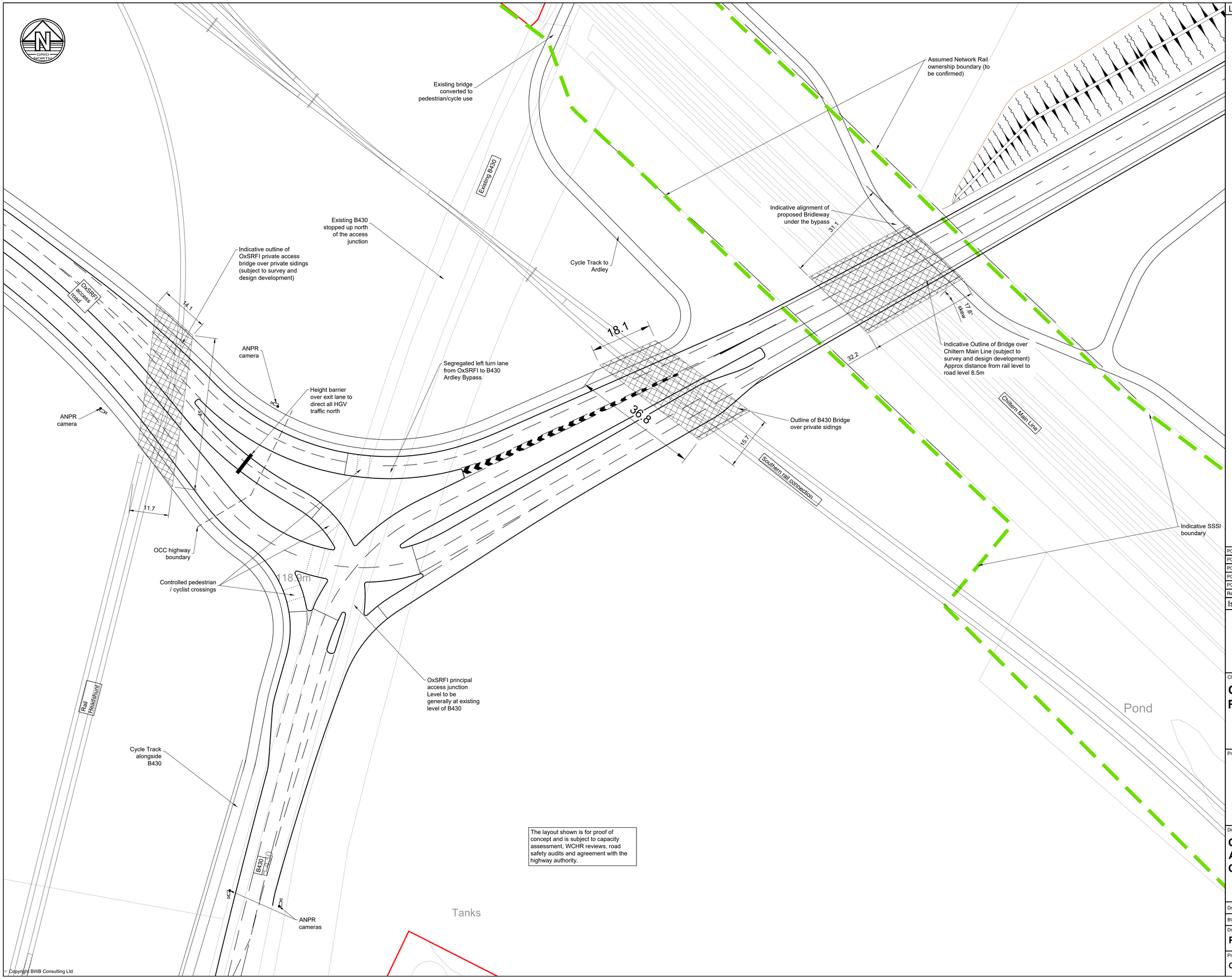

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Legend

Rev	Date	Details of issue / revision	Drw	Rev
P05	09.10.24	Layout amended to signalised junction	SRH	SRH
P04	30.03.23	General scheme updates	SRH	SRH
P03	03.05.22	Amendments to labels, cycle tracks added	SRH	SRH
P02	09.06.21	B430 NB exit widened to two lanes	SRH	SRH
P01	04.06.21	Preliminary issue	SRH	SRH

Issues & Revisions

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Client

OXFORDSHIRE RAILFREIGHT LIMITED

Project Title

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Drawing Title

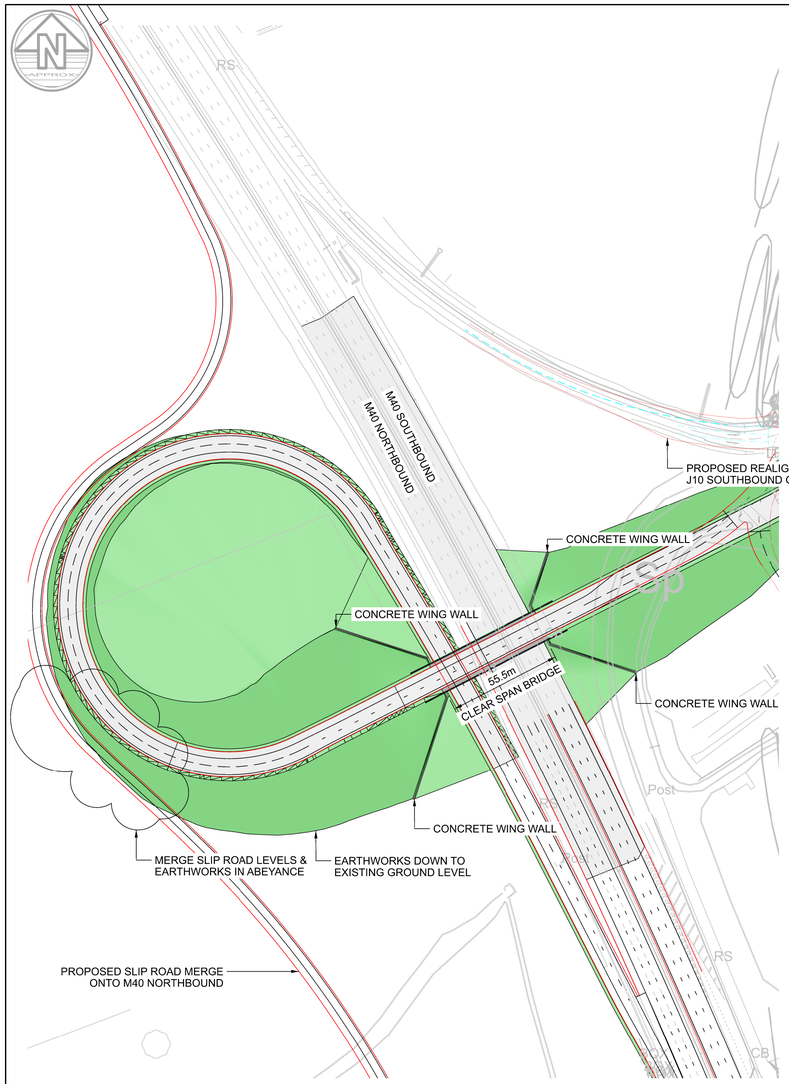
OxSRFI PRINCIPAL ACCESS JUNCTION GENERAL ARRANGEMENT

Drawn:	S. Hilditch	Reviewed:	S. Hilditch	
BWB Ref:	NTH2479	Date:	04.06.21	Scale@A1: 1:500

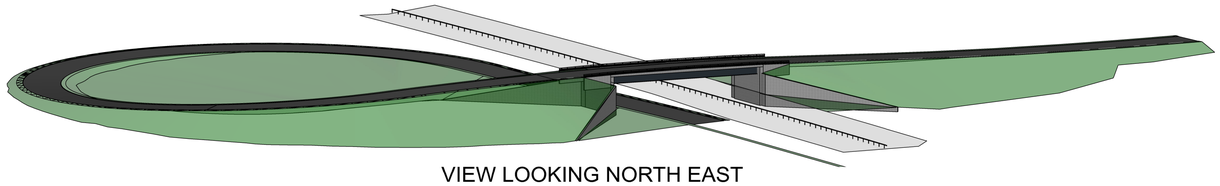
Drawing Status

PRELIMINARY

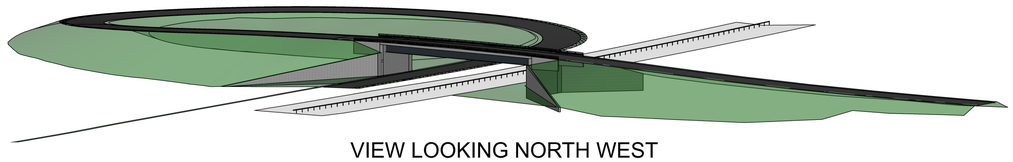
Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
OxSRFI-BWB-GEN-ZZ-SK-CH-SK018	S1	P05



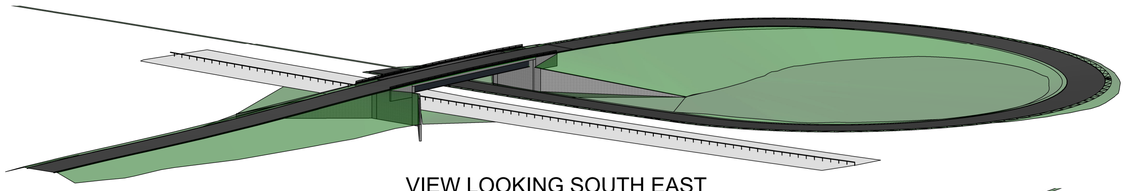
LOCATION PLAN
SCALE 1:1500



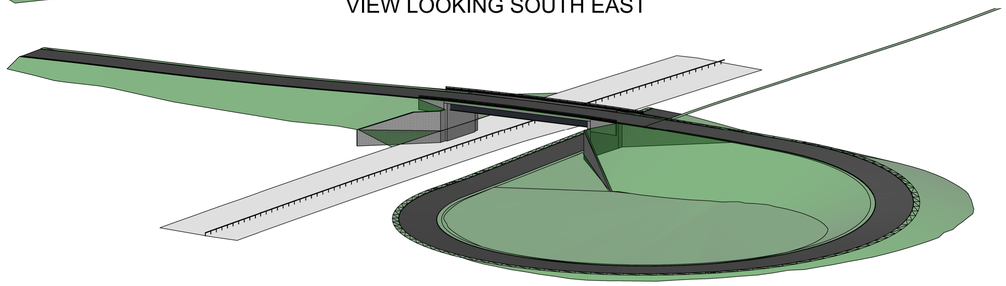
VIEW LOOKING NORTH EAST



VIEW LOOKING NORTH WEST



VIEW LOOKING SOUTH EAST



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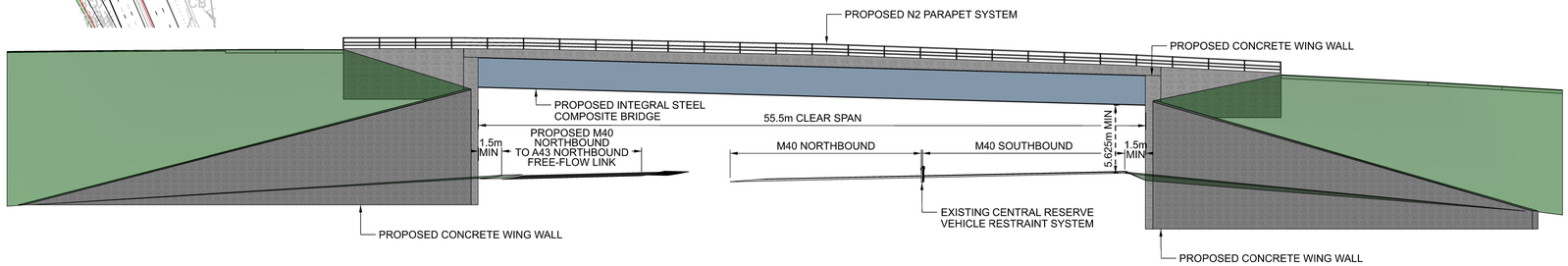
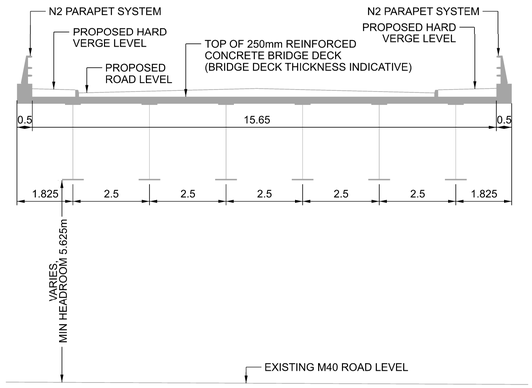
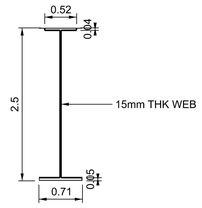


SOUTH ELEVATION OF BRIDGE
SCALE 1:250

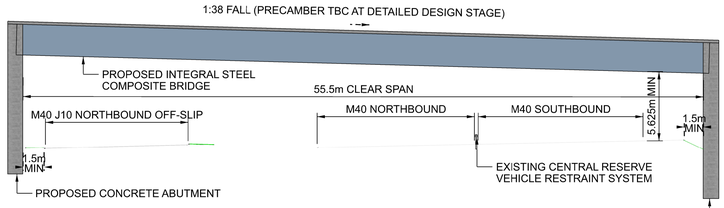


TYPICAL CROSS SECTION THROUGH BRIDGE
SCALE 1:100

BEAM SIZE SHOWN
INDICATIVE ONLY,
SUBJECT TO
DETAILED DESIGN



INDICATIVE BEAM SIZE
SCALE 1:50



FOUNDATIONS
NOT SHOWN AT
THIS STAGE

LONGSECTION THROUGH BRIDGE
SCALE 1:250

FOUNDATION NOT
INDICATED ON DRAWING

FOUNDATIONS
NOT SHOWN AT
THIS STAGE

NOTES-GENERAL

G1. DO NOT SCALE FROM THIS DRAWING.

G2. ALL DIMENSIONS ARE IN METRES UNLESS SHOWN OTHERWISE.

G3. ALL LEVELS IN METRES ABOVE ORDNANCE DATUM.

G4. ASSOCIATED CDM AND/OR PROJECT RISKS ARE NOT NOTED ON THIS SKETCH AS SKETCH IS FOR PROOF OF CONCEPT ONLY AND WILL BE SUBJECT TO FURTHER REVIEW

Rev	Date	Details of issue / revision	Drw	Rev
P01	24/10/24	PRELIMINARY ISSUE	JG	SH

Issues & Revisions

BWB
A CAF GROUP COMPANY
Birmingham | 0121 233 3322
Leeds | 0113 233 8000
London | 020 7407 3879
Manchester | 0161 233 4260
Nottingham | 0115 924 1100
www.bwbconsulting.com

Client
OXFORDSHIRE RAILFREIGHT LTD.

Project Title
OxSRFI
OXFORDSHIRE
STRATEGIC RAIL FREIGHT INTERCHANGE

Drawing Title
BRIDGE 12 GENERAL ARRANGEMENT CONCEPTUAL DESIGN SKETCH

Drawn:	J. GASCOIGNE	Reviewed	S. HILDITCH	
BWB Ref:	NTH2479	Date:	24/10/24	Scale@A1	As Shown

Drawing Status
FOR CO-ORDINATION

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
OxSFRI-BWB-GEN-ZZ-SK-CH-SK078	S1	P01

APPENDIX A

2031 REFERENCE CASE TRAFFIC FLOWS (AS EXTRACTED FROM BTM)

2031 AM Peak Reference Case LIGHT VEHICLES (in vehs) - from BTM											
		To Zone (Destination)									
		1	2	3	4	5	6	7	8	9	**Total**
From Zone (Origin)	1	0	169	59	1125	324	0	15	1	17	**1712**
	2	225	0	0	2	16	193	273	0	0	**708**
	3	52	0	0	163	70	106	0	0	0	**391**
	4	951	2	214	0	2	2636	6	13	4	**3829**
	5	119	15	0	0	0	91	12	31	110	**378**
	6	0	289	130	3052	145	0	29	11	43	**3700**
	7	70	455	0	108	0	0	0	0	1	**633**
	8	5	1	0	2	54	10	0	0	46	**117**
	9	12	0	0	0	174	98	9	16	0	**308**
	Total	**1433**	**932**	**404**	**4452**	**783**	**3136**	**344**	**72**	**221**	**11776**

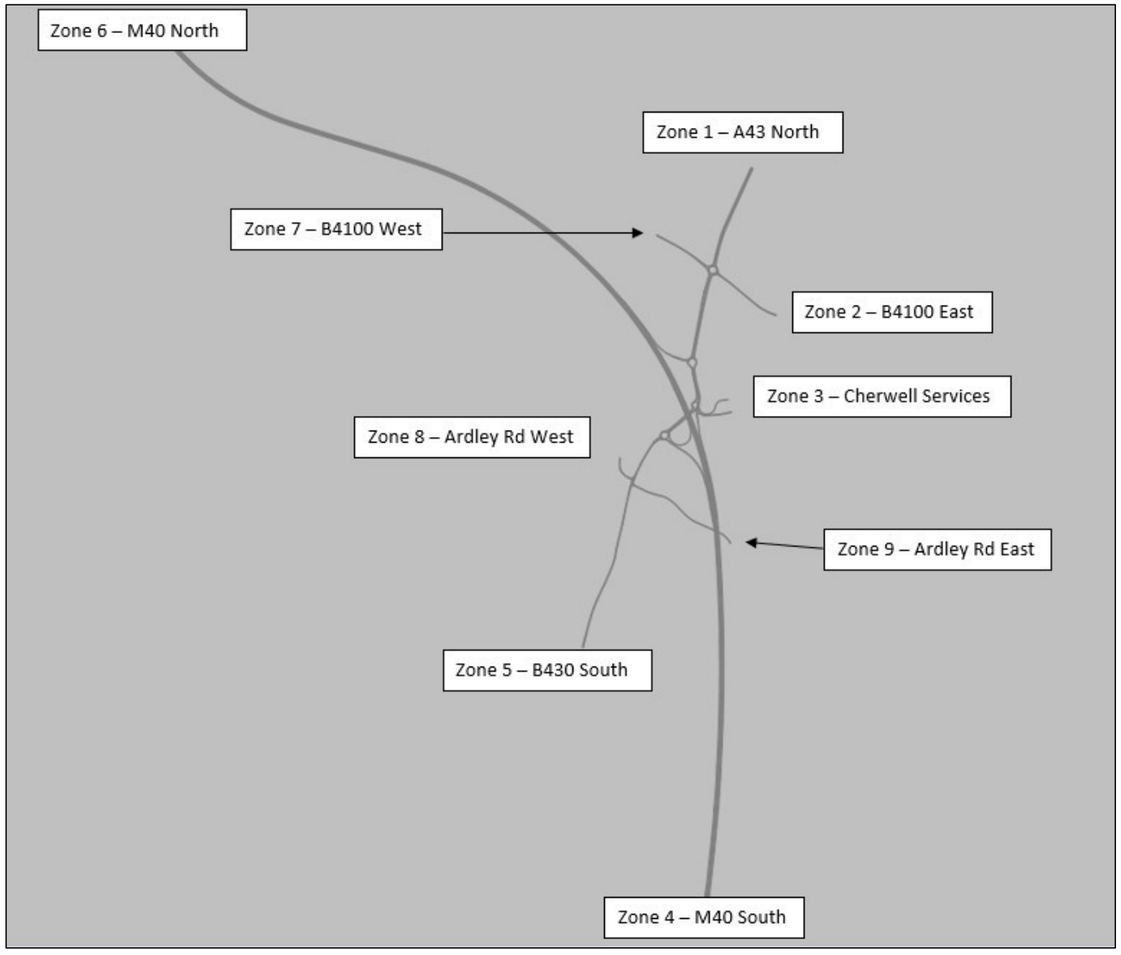
2031 AM Peak Reference Case HEAVY VEHICLES (in vehs) - from BTM											
		To Zone (Destination)									
		1	2	3	4	5	6	7	8	9	**Total**
From Zone (Origin)	1	0	0	2	231	5	0	0	0	0	**238**
	2	15	0	0	0	0	0	12	0	0	**27**
	3	12	0	0	54	0	43	0	0	0	**109**
	4	132	0	15	0	0	325	0	0	0	**473**
	5	0	0	0	0	0	14	0	0	0	**14**
	6	0	15	57	526	0	0	0	0	0	**598**
	7	0	7	0	0	0	0	0	0	0	**7**
	8	0	0	0	0	7	0	0	0	0	**7**
	9	0	0	0	0	0	0	0	0	0	**0**
	Total	**160**	**22**	**74**	**811**	**12**	**383**	**12**	**0**	**0**	**1474**

2031 AM Peak Reference Case TOTAL TRAFFIC (in vehs) - from BTM											
		To Zone (Destination)									
		1	2	3	4	5	6	7	8	9	**Total**
From Zone (Origin)	1	0	169	61	1357	328	0	15	1	17	**1950**
	2	240	0	0	2	16	193	285	0	0	**736**
	3	64	0	0	217	70	149	0	0	0	**500**
	4	1083	2	229	0	2	2962	6	13	4	**4303**
	5	119	15	0	0	0	105	12	31	110	**392**
	6	0	305	187	3578	145	0	29	11	43	**4298**
	7	70	461	0	108	0	0	0	0	1	**640**
	8	5	1	0	2	61	10	0	0	46	**124**
	9	12	0	0	0	174	98	9	16	0	**308**
	Total	**1593**	**954**	**478**	**5262**	**795**	**3518**	**356**	**72**	**221**	**13250**

2031 AM Peak Reference Case TOTAL TRAFFIC (in pcus*) - from BTM											
		To Zone (Destination)									
		1	2	3	4	5	6	7	8	9	**Total**
From Zone (Origin)	1	0	169	63	1541	332	0	15	1	17	**2139**
	2	252	0	0	2	16	193	294	0	0	**757**
	3	74	0	0	259	70	184	0	0	0	**586**
	4	1189	2	242	0	2	3221	6	13	4	**4679**
	5	119	15	0	0	0	116	12	31	110	**403**
	6	0	317	232	3997	145	0	29	11	43	**4774**
	7	70	467	0	108	0	0	0	0	1	**645**
	8	5	1	0	2	67	10	0	0	46	**130**
	9	12	0	0	0	174	98	9	16	0	**308**
	Total	**1720**	**972**	**537**	**5908**	**805**	**3823**	**365**	**72**	**221**	**14424**

*AM peak HGV pcus factor in the BTM (1 HGV equals 1.7966 pcus)

BTM Reference Case traffic flow data cordon



2031 PM Peak Reference Case LIGHT VEHICLES (in vehs) - from BTM											
		To Zone (Destination)									
		1	2	3	4	5	6	7	8	9	**Total**
From Zone (Origin)	1	0	263	109	1145	101	0	58	3	14	**1694**
	2	372	0	0	7	5	228	303	4	0	**918**
	3	76	0	0	219	0	144	0	0	0	**440**
	4	1581	1	182	0	6	3745	0	23	0	**5539**
	5	134	2	0	0	0	117	0	126	77	**456**
	6	0	168	145	3073	93	0	0	15	53	**3548**
	7	55	275	0	43	1	0	0	0	1	**375**
	8	8	0	0	2	35	9	0	0	21	**75**
	9	0	0	0	0	9	91	0	28	0	**128**
	Total	**2225**	**710**	**436**	**4490**	**251**	**4334**	**361**	**199**	**167**	**13172**

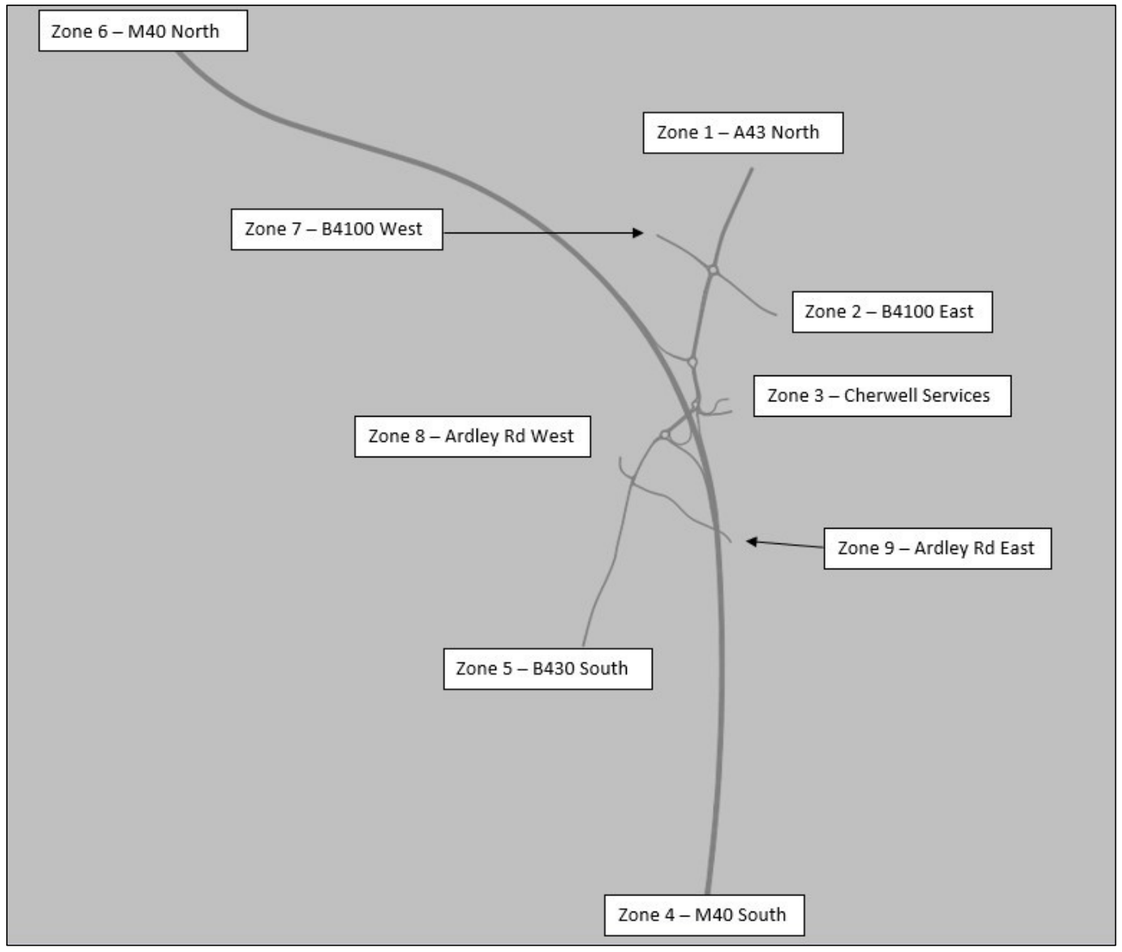
2031 PM Peak Reference Case HEAVY VEHICLES (in vehs) - from BTM											
		To Zone (Destination)									
		1	2	3	4	5	6	7	8	9	**Total**
From Zone (Origin)	1	0	9	1	96	0	0	0	0	0	**106**
	2	0	0	0	0	0	4	0	0	0	**5**
	3	13	0	0	46	0	37	0	0	0	**96**
	4	127	0	46	0	0	424	0	0	0	**597**
	5	3	0	0	0	0	0	0	1	0	**4**
	6	0	0	50	315	0	0	0	0	0	**365**
	7	0	5	0	0	0	0	0	0	0	**5**
	8	0	0	0	0	0	0	0	0	0	**0**
	9	0	0	0	0	0	0	0	0	0	**0**
	Total	**142**	**14**	**98**	**456**	**0**	**466**	**0**	**1**	**0**	**1177**

2031 PM Peak Reference Case TOTAL TRAFFIC (in vehs) - from BTM											
		To Zone (Destination)									
		1	2	3	4	5	6	7	8	9	**Total**
From Zone (Origin)	1	0	273	110	1241	101	0	58	3	14	**1801**
	2	372	0	0	7	5	232	303	4	0	**923**
	3	89	0	0	265	0	181	0	0	0	**535**
	4	1707	1	228	0	6	4170	0	23	0	**6136**
	5	136	2	0	0	0	117	0	127	77	**460**
	6	0	168	195	3388	93	0	0	15	53	**3913**
	7	55	280	0	43	1	0	0	0	1	**380**
	8	8	0	0	2	35	9	0	0	21	**75**
	9	0	0	0	0	9	91	0	28	0	**128**
	Total	**2367**	**725**	**533**	**4946**	**251**	**4799**	**361**	**201**	**167**	**14349**

2031 PM Peak Reference Case TOTAL TRAFFIC (in pcus*) - from BTM											
		To Zone (Destination)									
		1	2	3	4	5	6	7	8	9	**Total**
From Zone (Origin)	1	0	280	111	1316	101	0	58	3	14	**1884**
	2	372	0	0	7	5	235	303	4	0	**927**
	3	99	0	0	301	0	210	0	0	0	**610**
	4	1806	1	264	0	6	4500	0	23	0	**6601**
	5	138	2	0	0	0	117	0	128	77	**463**
	6	0	168	234	3633	93	0	0	15	53	**4197**
	7	55	284	0	43	1	0	0	0	1	**384**
	8	8	0	0	2	35	9	0	0	21	**75**
	9	0	0	0	0	9	91	0	28	0	**128**
	Total	**2477**	**736**	**609**	**5301**	**251**	**5162**	**361**	**202**	**167**	**15266**

*PM peak HGV pcus factor in the BTM (1 HGV equals 1.7786 pcus)

BTM Reference Case traffic flow data cordon



APPENDIX B

2034 REFERENCE CASE TRAFFIC FLOWS

2034 AM Peak Reference Case LIGHT VEHICLES (in vehs)											
		To Zone (Destination)									
		1	2	3	4	5	6	7	8	9	**Total**
From Zone (Origin)	1	0	173	61	1152	331	0	16	1	18	**1752**
	2	230	0	0	2	16	198	279	0	0	**725**
	3	53	0	0	167	71	109	0	0	0	**400**
	4	973	2	219	0	2	2698	6	14	5	**3919**
	5	122	15	0	0	0	93	12	32	113	**387**
	6	0	296	133	3123	148	0	30	11	44	**3787**
	7	72	465	0	110	0	0	0	0	1	**648**
	8	5	1	0	2	55	11	0	0	47	**120**
	9	12	0	0	0	178	101	9	16	0	**315**
	Total	**1467**	**953**	**413**	**4556**	**801**	**3209**	**352**	**74**	**227**	**12052**

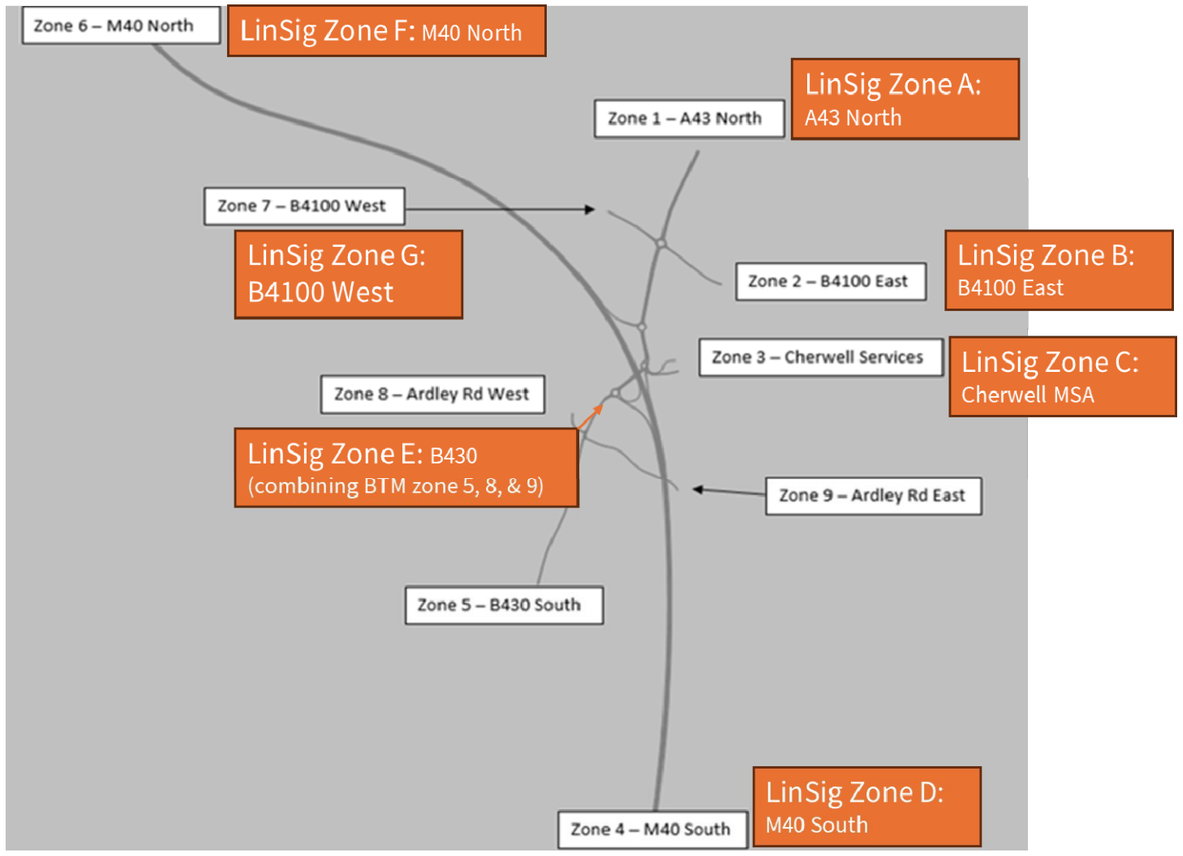
2034 AM Peak Reference Case HEAVY VEHICLES (in vehs)											
		To Zone (Destination)									
		1	2	3	4	5	6	7	8	9	**Total**
From Zone (Origin)	1	0	0	2	237	5	0	0	0	0	**244**
	2	16	0	0	0	0	0	12	0	0	**28**
	3	12	0	0	55	0	44	0	0	0	**111**
	4	135	0	16	0	0	333	0	0	0	**484**
	5	0	0	0	0	0	14	0	0	0	**14**
	6	0	16	58	538	0	0	0	0	0	**612**
	7	0	7	0	0	0	0	0	0	0	**7**
	8	0	0	0	0	8	0	0	0	0	**8**
	9	0	0	0	0	0	0	0	0	0	**0**
	Total	**163**	**23**	**76**	**830**	**12**	**392**	**12**	**0**	**0**	**1508**

2034 AM Peak Reference Case TOTAL TRAFFIC (in vehs)											
		To Zone (Destination)									
		1	2	3	4	5	6	7	8	9	**Total**
From Zone (Origin)	1	0	173	63	1388	336	0	16	1	18	**1995**
	2	245	0	0	2	16	198	291	0	0	**753**
	3	65	0	0	222	71	153	0	0	0	**511**
	4	1109	2	235	0	2	3031	6	14	5	**4403**
	5	122	15	0	0	0	107	12	32	113	**401**
	6	0	312	192	3661	148	0	30	11	44	**4399**
	7	72	472	0	110	0	0	0	0	1	**655**
	8	5	1	0	2	62	11	0	0	47	**127**
	9	12	0	0	0	178	101	9	16	0	**315**
	Total	**1630**	**976**	**489**	**5386**	**814**	**3601**	**364**	**74**	**227**	**13560**

2034 AM Peak Reference Case TOTAL TRAFFIC (in pcus)											
		To Zone (Destination)									
		1	2	3	4	5	6	7	8	9	**Total**
From Zone (Origin)	1	0	173	64	1577	340	0	16	1	18	**2189**
	2	258	0	0	2	16	198	301	0	0	**775**
	3	75	0	0	265	71	188	0	0	0	**600**
	4	1216	2	247	0	2	3296	6	14	5	**4789**
	5	122	15	0	0	0	119	12	32	113	**413**
	6	0	325	238	4090	148	0	30	11	44	**4886**
	7	72	478	0	110	0	0	0	0	1	**661**
	8	5	1	0	2	69	11	0	0	47	**133**
	9	12	0	0	0	178	101	9	16	0	**315**
	Total	**1760**	**995**	**550**	**6047**	**824**	**3913**	**374**	**74**	**227**	**14762**

2031 to 2034 growth 1.0234

BTM Reference Case traffic flow data cordon to LinSig network



LinSig Network (see above)

2034 AM Peak Reference Case TOTAL TRAFFIC (in pcus)								
	A	**B**	**C**	**D**	**E**	**F**	**G**	**Total**
A	0	173	64	1577	359	0	16	**2189**
B	258	0	0	2	17	198	301	**775**
C	75	0	0	265	71	188	0	**600**
D	1216	2	247	0	20	0	6	**1493**
E	139	16	0	2	0	230	21	**408**
F	0	325	238	0	204	0	30	**796**
G	72	478	0	110	1	0	0	**661**
Total	**1760**	**995**	**550**	**1956**	**671**	**616**	**374**	**6922**

2034 PM Peak Reference Case LIGHT VEHICLES (in vehs)											
		To Zone (Destination)									
		1	2	3	4	5	6	7	8	9	**Total**
From Zone (Origin)	1	0	270	111	1173	104	0	59	4	15	**1734**
	2	380	0	0	7	5	233	310	4	0	**940**
	3	78	0	0	224	0	148	0	0	0	**450**
	4	1618	1	187	0	6	3834	0	24	0	**5670**
	5	137	2	0	0	0	120	0	129	79	**467**
	6	0	172	148	3146	95	0	0	15	55	**3632**
	7	56	282	0	44	1	0	0	0	1	**384**
	8	8	0	0	2	36	9	0	0	22	**76**
	9	0	0	0	0	10	93	0	29	0	**131**
	Total	**2278**	**727**	**446**	**4596**	**257**	**4436**	**369**	**204**	**171**	**13484**

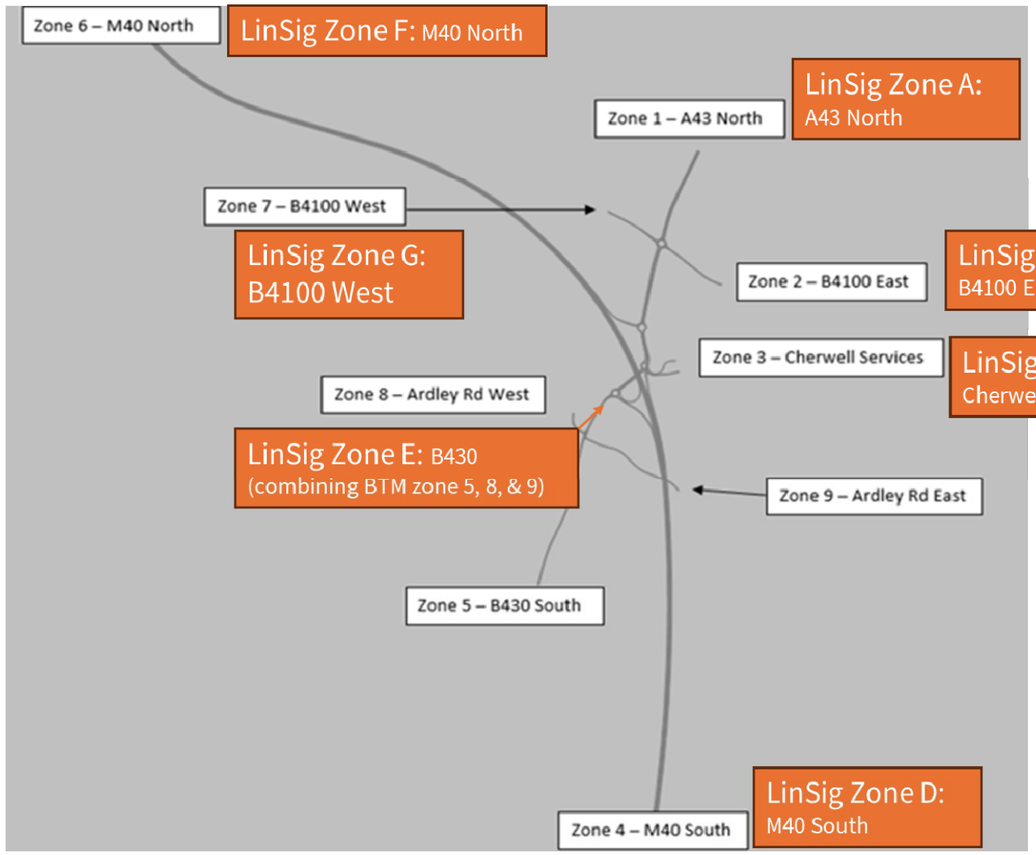
2034 PM Peak Reference Case HEAVY VEHICLES (in vehs)											
		To Zone (Destination)									
		1	2	3	4	5	6	7	8	9	**Total**
From Zone (Origin)	1	0	10	2	98	0	0	0	0	0	**109**
	2	0	0	0	0	0	4	0	0	0	**5**
	3	13	0	0	47	0	38	0	0	0	**98**
	4	130	0	47	0	0	435	0	0	0	**611**
	5	3	0	0	0	0	0	0	1	0	**4**
	6	0	0	51	322	0	0	0	0	0	**374**
	7	0	5	0	0	0	0	0	0	0	**5**
	8	0	0	0	0	0	0	0	0	0	**0**
	9	0	0	0	0	0	0	0	0	0	**0**
	Total	**145**	**15**	**100**	**467**	**0**	**477**	**0**	**1**	**0**	**1205**

2034 PM Peak Reference Case TOTAL TRAFFIC (in vehs)											
		To Zone (Destination)									
		1	2	3	4	5	6	7	8	9	**Total**
From Zone (Origin)	1	0	279	113	1270	104	0	59	4	15	**1843**
	2	380	0	0	7	5	237	310	4	0	**945**
	3	91	0	0	271	0	185	0	0	0	**548**
	4	1748	1	234	0	6	4268	0	24	0	**6281**
	5	140	2	0	0	0	120	0	130	79	**471**
	6	0	172	199	3468	95	0	0	15	55	**4005**
	7	56	287	0	44	1	0	0	0	1	**389**
	8	8	0	0	2	36	9	0	0	22	**76**
	9	0	0	0	0	10	93	0	29	0	**131**
	Total	**2423**	**742**	**546**	**5063**	**257**	**4913**	**370**	**205**	**171**	**14690**

2034 PM Peak Reference Case TOTAL TRAFFIC (in pcus)											
		To Zone (Destination)									
		1	2	3	4	5	6	7	8	9	**Total**
From Zone (Origin)	1	0	287	114	1347	104	0	59	4	15	**1928**
	2	380	0	0	7	5	241	311	4	0	**948**
	3	101	0	0	308	0	215	0	0	0	**624**
	4	1849	1	270	0	6	4607	0	24	0	**6757**
	5	142	2	0	0	0	120	0	131	79	**474**
	6	0	172	239	3719	95	0	0	15	55	**4296**
	7	56	291	0	44	1	0	0	0	1	**393**
	8	8	0	0	2	36	9	0	0	22	**76**
	9	0	0	0	0	10	93	0	29	0	**131**
	Total	**2536**	**753**	**624**	**5427**	**257**	**5284**	**370**	**206**	**171**	**15628**

2031 to 2034 growth 1.0237

BTM Reference Case traffic flow data cordon to LinSig network



LinSig Network (see above)

2034 PM Peak Reference Case TOTAL TRAFFIC (in pcus)								
	A	**B**	**C**	**D**	**E**	**F**	**G**	**Total**
A	0	287	114	1347	122	0	59	**1928**
B	380	0	0	7	9	241	311	**948**
C	101	0	0	308	0	215	0	**624**
D	1849	1	270	0	30	0	0	**2150**
E	149	2	0	2	0	222	0	**375**
F	0	172	239	0	165	0	0	**577**
G	56	291	0	44	2	0	0	**393**
Total	**2536**	**753**	**624**	**1708**	**328**	**678**	**370**	**6996**

APPENDIX C

OxSRFI DEVELOPMENT TRAFFIC ASSIGNMENT

OxSRFI DEVELOPMENT TRAFFIC AM PEAK - LIGHT VEHICLES (in vehs) - from BTM													
		To Zone (Destination)											
		1	2	3	4	5	6	7	8	9	10	11 + 12	**Total**
From Zone (Origin)	1											240	**240**
	2											56	**56**
	3											0	**0**
	4											14	**14**
	5											44	**44**
	6											99	**99**
	7											37	**37**
	8											8	**8**
	9											0	**0**
	10											407	**407**
	11 + 12	14	2	0	1	2	5	2	4	13	54	0	**97**
	Total	**14**	**2**	**0**	**1**	**2**	**5**	**2**	**4**	**13**	**54**	**905**	**1002**

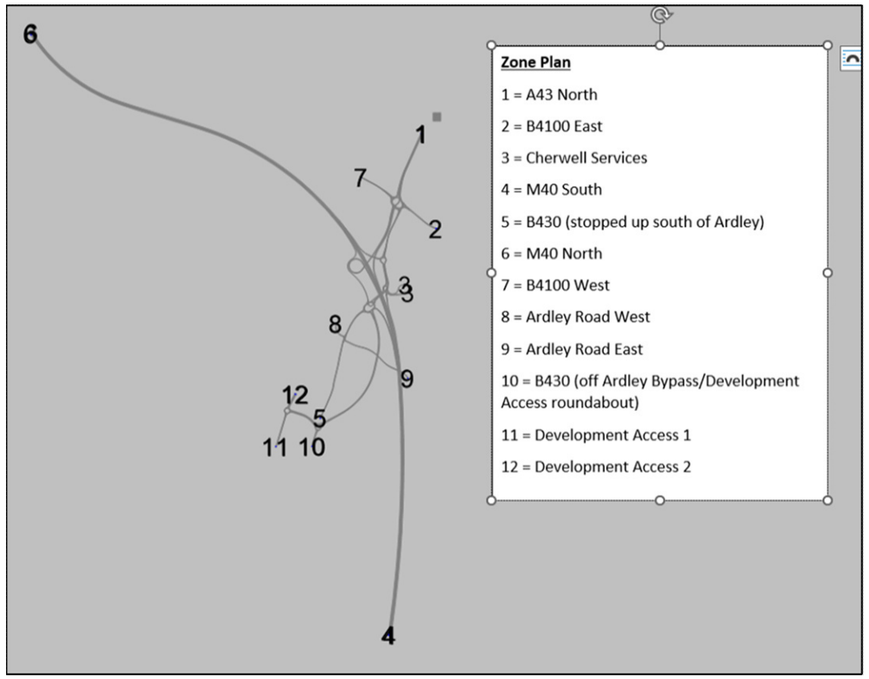
OxSRFI DEVELOPMENT TRAFFIC AM PEAK - HEAVY VEHICLES (in vehs) - from BTM													
		To Zone (Destination)											
		1	2	3	4	5	6	7	8	9	10	11 + 12	**Total**
From Zone (Origin)	1											17	**17**
	2											4	**4**
	3											0	**0**
	4											93	**93**
	5											0	**0**
	6											56	**56**
	7											1	**1**
	8											0	**0**
	9											0	**0**
	10											0	**0**
	11 + 12	16	3	0	87	0	52	1	0	0	0	0	**159**
	Total	**16**	**3**	**0**	**87**	**0**	**52**	**1**	**0**	**0**	**0**	**172**	**331**

OxSRFI DEVELOPMENT TRAFFIC AM Peak - TOTAL TRAFFIC (in vehs) - from BTM													
		To Zone (Destination)											
		1	2	3	4	5	6	7	8	9	10	11 + 12	**Total**
From Zone (Origin)	1											257	**257**
	2											60	**60**
	3											0	**0**
	4											108	**108**
	5											44	**44**
	6											155	**155**
	7											38	**38**
	8											8	**8**
	9											0	**0**
	10											407	**407**
	11 + 12	29	5	0	88	2	57	3	4	13	54	0	**256**
	Total	**29**	**5**	**0**	**88**	**2**	**57**	**3**	**4**	**13**	**54**	**1077**	**1333**

OxSRFI DEVELOPMENT TRAFFIC AM PEAK - TOTAL TRAFFIC (in pcus*)													
		To Zone (Destination)											
		1	2	3	4	5	6	7	8	9	10	11 + 12	**Total**
From Zone (Origin)	1											274	**274**
	2											64	**64**
	3											0	**0**
	4											201	**201**
	5											44	**44**
	6											211	**211**
	7											40	**40**
	8											8	**8**
	9											0	**0**
	10											407	**407**
	11 + 12	45	9	0	175	2	109	5	4	13	54	0	**415**
	Total	**45**	**9**	**0**	**175**	**2**	**109**	**5**	**4**	**13**	**54**	**1249**	**1664**

* 1 HGV equals 2 pcus

BTM traffic flow data cordon for OxSRFI development traffic (extracted from Option 26 BTM Do-Something BTM run)



Zones 11 and 12 are OxSRFI site

OxSRFI DEVELOPMENT TRAFFIC PM PEAK - LIGHT VEHICLES (in vehs) - from BTM													
		To Zone (Destination)											
		1	2	3	4	5	6	7	8	9	10	11 + 12	**Total**
From Zone (Origin)	1											68	**68**
	2											22	**22**
	3											0	**0**
	4											3	**3**
	5											12	**12**
	6											23	**23**
	7											5	**5**
	8											3	**3**
	9											0	**0**
	10											163	**163**
	11 + 12	281	28	0	17	52	118	45	11	66	421	0	**1038**
	Total	**281**	**28**	**0**	**17**	**52**	**118**	**45**	**11**	**66**	**421**	**299**	**1337**

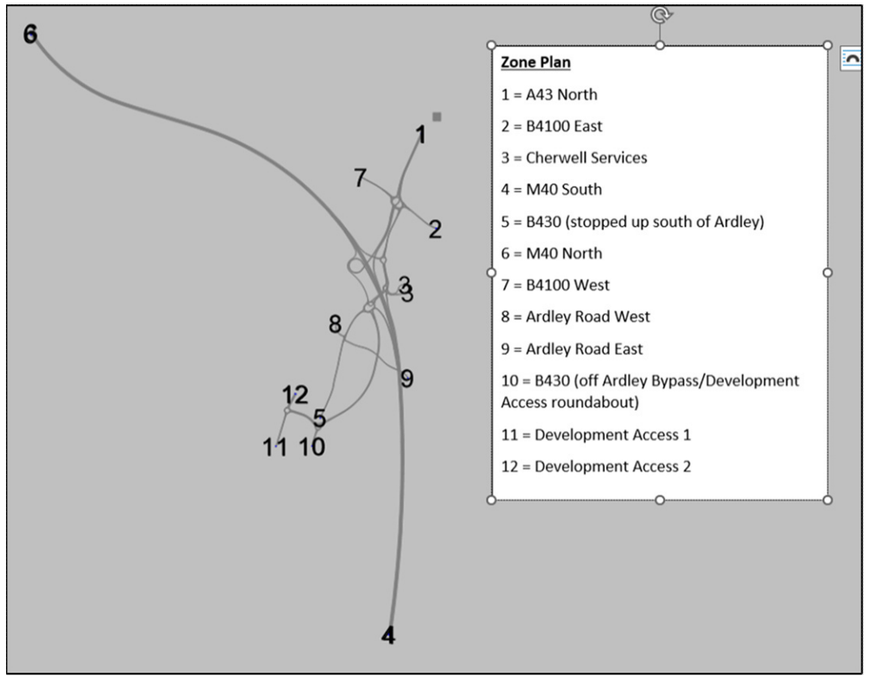
OxSRFI DEVELOPMENT TRAFFIC PM PEAK - HEAVY VEHICLES (in vehs) - from BTM													
		To Zone (Destination)											
		1	2	3	4	5	6	7	8	9	10	11 + 12	**Total**
From Zone (Origin)	1											16	**16**
	2											4	**4**
	3											0	**0**
	4											84	**84**
	5											0	**0**
	6											51	**51**
	7											1	**1**
	8											0	**0**
	9											0	**0**
	10											0	**0**
	11 + 12	15	3	0	77	0	46	1	0	0	0	0	**143**
	Total	**15**	**3**	**0**	**77**	**0**	**46**	**1**	**0**	**0**	**0**	**157**	**299**

OxSRFI DEVELOPMENT TRAFFIC PM Peak - TOTAL TRAFFIC (in vehs) - from BTM													
		To Zone (Destination)											
		1	2	3	4	5	6	7	8	9	10	11 + 12	**Total**
From Zone (Origin)	1											84	**84**
	2											26	**26**
	3											0	**0**
	4											87	**87**
	5											12	**12**
	6											74	**74**
	7											7	**7**
	8											3	**3**
	9											0	**0**
	10											163	**163**
	11 + 12	296	31	0	94	52	164	46	11	66	421	0	**1181**
	Total	**296**	**31**	**0**	**94**	**52**	**164**	**46**	**11**	**66**	**421**	**456**	**1636**

OxSRFI DEVELOPMENT TRAFFIC PM PEAK - TOTAL TRAFFIC (in pcus*)													
		To Zone (Destination)											
		1	2	3	4	5	6	7	8	9	10	11 + 12	**Total**
From Zone (Origin)	1											101	**101**
	2											30	**30**
	3											0	**0**
	4											171	**171**
	5											12	**12**
	6											125	**125**
	7											8	**8**
	8											3	**3**
	9											0	**0**
	10											163	**163**
	11 + 12	311	34	0	171	52	210	47	11	66	421	0	**1323**
	Total	**311**	**34**	**0**	**171**	**52**	**210**	**47**	**11**	**66**	**421**	**612**	**1935**

* 1 HGV equals 2 pcus

BTM traffic flow data cordon for OxSRFI development traffic (extracted from Option 26 BTM Do-Something BTM run)



Zones 11 and 12 are OxSRFI site

APPENDIX D

2034 DO SOMETHING TRAFFIC FLOWS

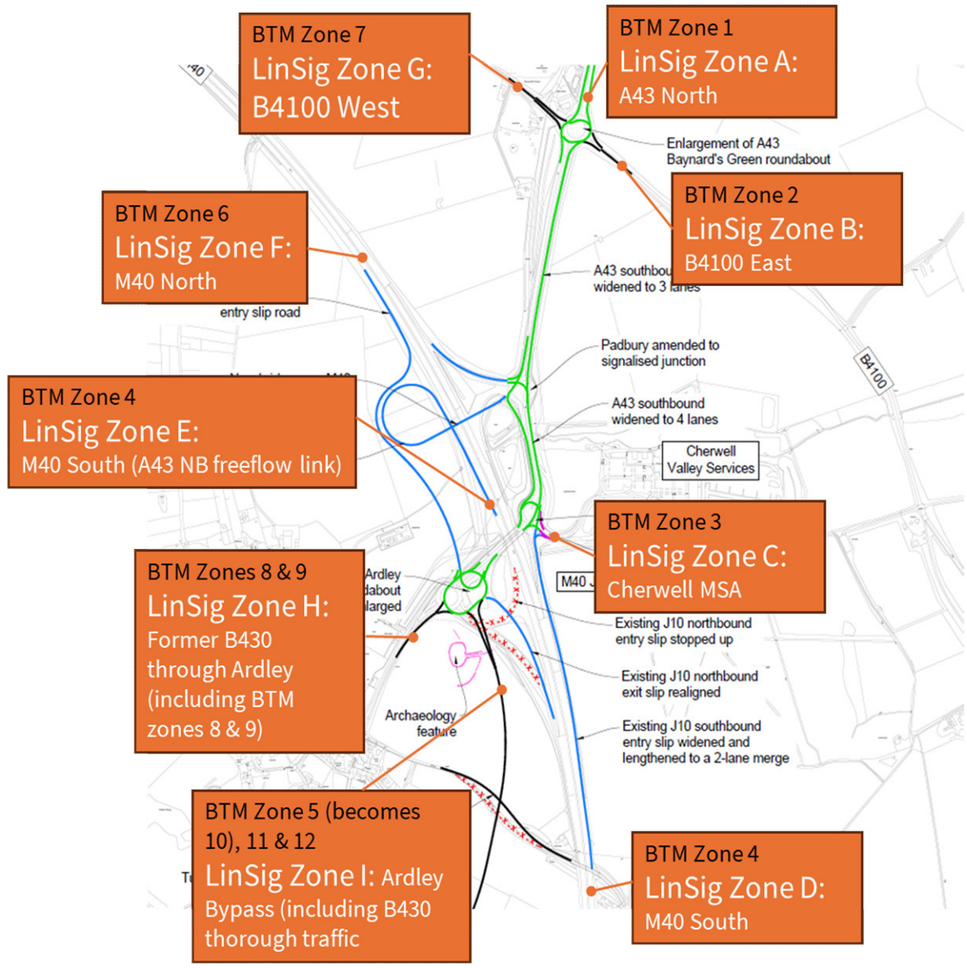
2034 Do-Something AM PEAK - LIGHT VEHICLES (in vehs)													
		To Zone (Destination)											
		1	2	3	4	5	6	7	8	9	10	11 + 12	**Total**
From Zone (Origin)	1	0	173	61	1152	0	0	16	1	18	331	240	**1992**
	2	230	0	0	2	0	198	279	0	0	16	56	**781**
	3	53	0	0	167	0	109	0	0	0	71	0	**400**
	4	973	2	219	0	0	2698	6	14	5	2	14	**3933**
	5	0	0	0	0	0	0	0	0	0	0	44	**44**
	6	0	296	133	3123	0	0	30	11	44	148	99	**3886**
	7	72	465	0	110	0	0	0	0	1	0	37	**685**
	8	5	1	0	2	0	11	0	0	47	55	8	**128**
	9	12	0	0	0	0	101	9	16	0	178	0	**315**
	10	122	15	0	0	0	93	12	32	113	0	407	**794**
	11 + 12	14	2	0	1	2	5	2	4	13	54	0	**97**
	Total	**1480**	**956**	**413**	**4557**	**2**	**3214**	**354**	**78**	**239**	**855**	**905**	**13054**

2034 Do-SomethingC AM PEAK - HEAVY VEHICLES (in vehs)													
		To Zone (Destination)											
		1	2	3	4	5	6	7	8	9	10	11 + 12	**Total**
From Zone (Origin)	1	0	0	2	237	0	0	0	0	0	5	17	**261**
	2	16	0	0	0	0	0	12	0	0	0	4	**32**
	3	12	0	0	55	0	44	0	0	0	0	0	**111**
	4	135	0	16	0	0	333	0	0	0	0	93	**578**
	5	0	0	0	0	0	0	0	0	0	0	0	**0**
	6	0	16	58	538	0	0	0	0	0	0	56	**668**
	7	0	7	0	0	0	0	0	0	0	0	1	**9**
	8	0	0	0	0	0	0	0	0	0	8	0	**8**
	9	0	0	0	0	0	0	0	0	0	0	0	**0**
	10	0	0	0	0	0	14	0	0	0	0	0	**14**
	11 + 12	16	3	0	87	0	52	1	0	0	0	0	**159**
	Total	**179**	**26**	**76**	**917**	**0**	**444**	**14**	**0**	**0**	**12**	**172**	**1839**

2034 Do-Something AM Peak - TOTAL TRAFFIC (in vehs)													
		To Zone (Destination)											
		1	2	3	4	5	6	7	8	9	10	11 + 12	**Total**
From Zone (Origin)	1	0	173	63	1388	0	0	16	1	18	336	257	**2252**
	2	245	0	0	2	0	198	291	0	0	16	60	**813**
	3	65	0	0	222	0	153	0	0	0	71	0	**511**
	4	1109	2	235	0	0	3031	6	14	5	2	108	**4511**
	5	0	0	0	0	0	0	0	0	0	0	44	**44**
	6	0	312	192	3661	0	0	30	11	44	148	155	**4554**
	7	72	472	0	110	0	0	0	0	1	0	38	**693**
	8	5	1	0	2	0	11	0	0	47	62	8	**135**
	9	12	0	0	0	0	101	9	16	0	178	0	**315**
	10	122	15	0	0	0	107	12	32	113	0	407	**809**
	11 + 12	29	5	0	88	2	57	3	4	13	54	0	**256**
	Total	**1659**	**982**	**489**	**5473**	**2**	**3658**	**367**	**78**	**239**	**868**	**1077**	**14893**

2034 Do-Something AM PEAK - TOTAL TRAFFIC (in pcus)													
		To Zone (Destination)											
		1	2	3	4	5	6	7	8	9	10	11 + 12	**Total**
From Zone (Origin)	1	0	173	64	1577	0	0	16	1	18	340	274	**2463**
	2	258	0	0	2	0	198	301	0	0	16	64	**839**
	3	75	0	0	265	0	188	0	0	0	71	0	**600**
	4	1216	2	247	0	0	3296	6	14	5	2	201	**4990**
	5	0	0	0	0	0	0	0	0	0	0	44	**44**
	6	0	325	238	4090	0	0	30	11	44	148	211	**5097**
	7	72	478	0	110	0	0	0	0	1	0	40	**700**
	8	5	1	0	2	0	11	0	0	47	69	8	**142**
	9	12	0	0	0	0	101	9	16	0	178	0	**315**
	10	122	15	0	0	0	119	12	32	113	0	407	**820**
	11 + 12	45	9	0	175	2	109	5	4	13	54	0	**415**
	Total	**1805**	**1003**	**550**	**6221**	**2**	**4022**	**378**	**78**	**239**	**878**	**1249**	**16425**

BTM and LingSig model zones for M40 Junction 10 and Baynard's Green Option 28



LinSig Network (Option 28)

2034 AM Do-Something TOTAL TRAFFIC (in pcus)										
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**Total**
A	0	173	64	1577	-	0	16	19	614	**2463**
B	258	0	0	2	-	198	301	0	81	**839**
C	75	0	0	265	-	188	0	0	71	**600**
D	-	-	247	-	-	-	-	18	203	**468**
E	1216	2	-	-	-	-	6	-	-	**1225**
F	0	325	238	-	-	0	30	55	359	**1007**
G	72	478	0	110	-	0	0	1	40	**700**
H	17	1	0	2	-	111	9	0	254	**394**
I	167	24	0	175	-	228	17	161	0	**772**
Total	**1805**	**1003**	**550**	**2131**	**-**	**726**	**378**	**255**	**1622**	**8469**

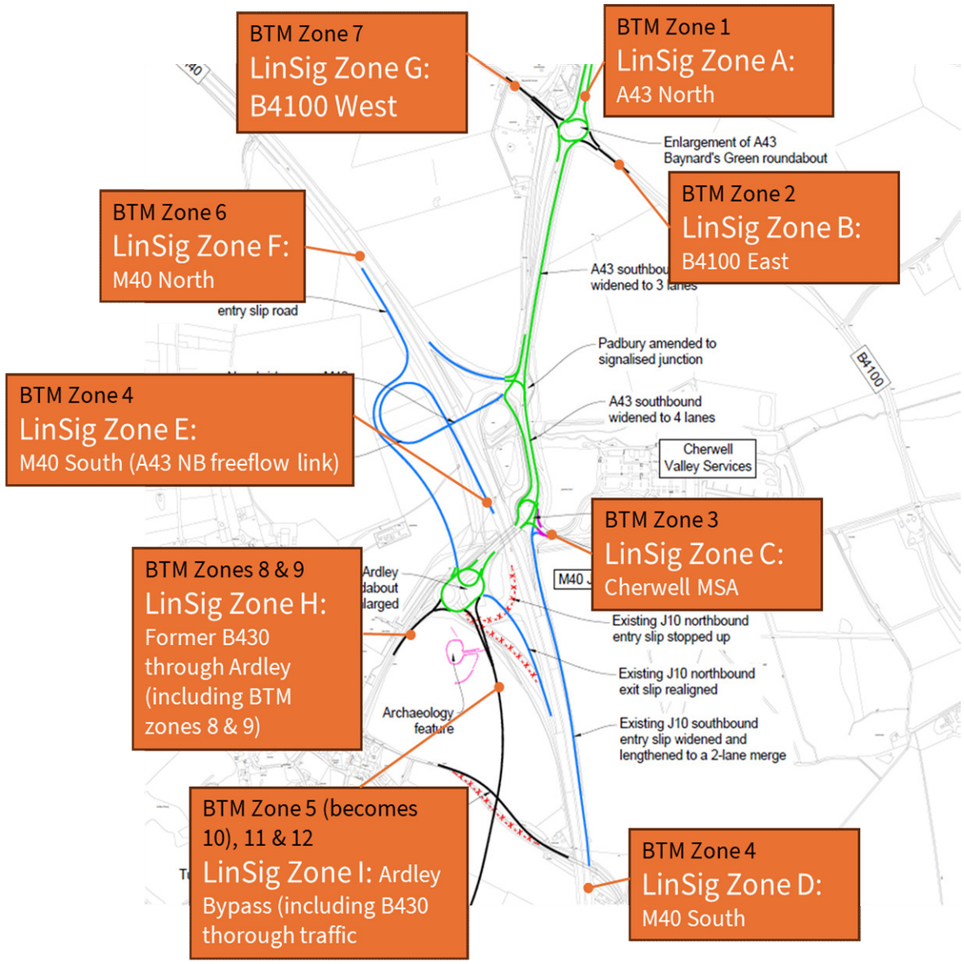
2034 Do-Something PM PEAK - LIGHT VEHICLES (in vehs)													
		To Zone (Destination)											
		1	2	3	4	5	6	7	8	9	10	11 + 12	**Total**
From Zone (Origin)	1	0	270	111	1173	0	0	59	4	15	104	68	**1803**
	2	380	0	0	7	0	233	310	4	0	5	22	**962**
	3	78	0	0	224	0	148	0	0	0	0	0	**450**
	4	1618	1	187	0	0	3834	0	24	0	6	3	**5673**
	5	0	0	0	0	0	0	0	0	0	0	12	**12**
	6	0	172	148	3146	0	0	0	15	55	95	23	**3655**
	7	56	282	0	44	0	0	0	0	1	1	5	**389**
	8	8	0	0	2	0	9	0	0	22	36	3	**79**
	9	0	0	0	0	0	93	0	29	0	10	0	**131**
	10	137	2	0	0	0	120	0	129	79	0	163	**629**
	11 + 12	281	28	0	17	52	118	45	11	66	421	0	**1038**
	Total	**2559**	**755**	**446**	**4613**	**52**	**4554**	**414**	**215**	**237**	**678**	**299**	**14821**

2034 Do-Something PM PEAK - HEAVY VEHICLES (in vehs)													
		To Zone (Destination)											
		1	2	3	4	5	6	7	8	9	10	11 + 12	**Total**
From Zone (Origin)	1	0	10	2	98	0	0	0	0	0	0	16	**125**
	2	0	0	0	0	0	4	0	0	0	0	4	**9**
	3	13	0	0	47	0	38	0	0	0	0	0	**98**
	4	130	0	47	0	0	435	0	0	0	0	84	**695**
	5	0	0	0	0	0	0	0	0	0	0	0	**0**
	6	0	0	51	322	0	0	0	0	0	0	51	**425**
	7	0	5	0	0	0	0	0	0	0	0	1	**6**
	8	0	0	0	0	0	0	0	0	0	0	0	**0**
	9	0	0	0	0	0	0	0	0	0	0	0	**0**
	10	3	0	0	0	0	0	0	1	0	0	0	**4**
	11 + 12	15	3	0	77	0	46	1	0	0	0	0	**143**
	Total	**160**	**18**	**100**	**544**	**0**	**523**	**2**	**1**	**0**	**0**	**157**	**1504**

2034 Do-Something PM Peak - TOTAL TRAFFIC (in vehs)													
		To Zone (Destination)											
		1	2	3	4	5	6	7	8	9	10	11 + 12	**Total**
From Zone (Origin)	1	0	279	113	1270	0	0	59	4	15	104	84	**1928**
	2	380	0	0	7	0	237	310	4	0	5	26	**970**
	3	91	0	0	271	0	185	0	0	0	0	0	**548**
	4	1748	1	234	0	0	4268	0	24	0	6	87	**6368**
	5	0	0	0	0	0	0	0	0	0	0	12	**12**
	6	0	172	199	3468	0	0	0	15	55	95	74	**4080**
	7	56	287	0	44	0	0	0	0	1	1	7	**396**
	8	8	0	0	2	0	9	0	0	22	36	3	**79**
	9	0	0	0	0	0	93	0	29	0	10	0	**131**
	10	140	2	0	0	0	120	0	130	79	0	163	**634**
	11 + 12	296	31	0	94	52	164	46	11	66	421	0	**1181**
	Total	**2719**	**773**	**546**	**5157**	**52**	**5077**	**415**	**216**	**237**	**678**	**456**	**16326**

2034 Do-Something PM PEAK - TOTAL TRAFFIC (in pcus)													
		To Zone (Destination)											
		1	2	3	4	5	6	7	8	9	10	11 + 12	**Total**
From Zone (Origin)	1	0	287	114	1347	0	0	59	4	15	104	101	**2029**
	2	380	0	0	7	0	241	311	4	0	5	30	**978**
	3	101	0	0	308	0	215	0	0	0	0	0	**624**
	4	1849	1	270	0	0	4607	0	24	0	6	171	**6928**
	5	0	0	0	0	0	0	0	0	0	0	12	**12**
	6	0	172	239	3719	0	0	0	15	55	95	125	**4422**
	7	56	291	0	44	1	0	0	0	1	1	8	**402**
	8	8	0	0	2	0	9	0	0	22	36	3	**79**
	9	0	0	0	0	0	93	0	29	0	10	0	**131**
	10	142	2	0	0	0	120	0	131	79	0	163	**637**
	11 + 12	311	34	0	171	52	210	47	11	66	421	0	**1323**
	Total	**2848**	**787**	**624**	**5598**	**53**	**5494**	**417**	**217**	**237**	**678**	**612**	**17564**

BTM and LingSig model zones for M40 Junction 10 and Baynard's Green Option 28



LinSig Network (Option 28)

2034 PM Do-Something TOTAL TRAFFIC (in pcus)										
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**Total**
A	0	287	114	1347	-	0	59	18	204	**2029**
B	380	0	0	7	-	241	311	4	35	**978**
C	101	0	0	308	-	215	0	0	0	**624**
D	-	-	270	-	-	-	-	24	178	**471**
E	1849	1	-	-	-	-	0	-	-	**1850**
F	0	172	239	-	-	0	0	70	221	**703**
G	56	291	0	44	-	0	0	1	9	**401**
H	8	0	0	2	-	102	0	0	49	**160**
I	453	36	0	171	-	330	47	286	0	**1324**
Total	**2848**	**787**	**624**	**1879**	**-**	**887**	**417**	**403**	**695**	**8540**

APPENDIX E

OPTION 28 JOURNEY TIME ASSESSMENT

Key route journey time comparison for 2034 option 28 vs reference case- morning peak							
From	To	Option 28 average journey (s)	Reference average journey (s)	Difference (s)	Option 28 Total Journey (pcuHr)	Reference Total Journey (pcuHr)	Difference (pcuHr)
A43 north of Baynards Green	M40 south	150	381	-231	65.71	166.68	-101
M40 south	A43 north of Baynards green	134	173	-39	45.09	58.33	-13
A43 north of Baynards Green	M40 north	0	0	0	0.00	0.00	0
M40 north	A43 north of Baynards green	0	0	0	0.00	0.00	0
A43 north of Baynards Green	B430 (or Ardley Bypass)	165	446	-282			
B430 (or Ardley Bypass)	A43 north of Baynards green	211	222	-11			
M40 south	B430 (or Ardley Bypass)	112	141	-30			
B430 (or Ardley Bypass)	M40 south	183	228	-45			
M40 north	B430 (or Ardley Bypass)	141	205	-65			
B430 (or Ardley Bypass)	M40 north	93	143	-49			
M40 north	MSA	73	113	-40	4.83	7.46	-3
M40 south	MSA	132	123	9	9.04	8.43	1
MSA	M40 south	88	78	10	6.45	5.73	1
MSA	M40 north	115	83	32	5.98	4.31	2
MSA	A43 north of Baynards green	235	125	110	4.90	2.61	2
B4100 east	B4100 west	46	704	-658	3.85	58.87	-55
B4100 west	B4100 east	48	500	-452	6.35	66.34	-60
		Net change		**-1740**	**Net change**		**-227**

Key route journey time comparison for 2034 option 28 vs reference case - evening peak							
From	To	Option 28 average journey (s)	Reference average journey (s)	Difference (s)	Option 28 Total Journey (pcuHr)	Reference Total Journey (pcuHr)	Difference (pcuHr)
A43 north of Baynards Green	M40 south	150	161	-11	56.01	60.05	-4
M40 south	A43 north of Baynards green	141	314	-173	72.21	161.02	-89
A43 north of Baynards Green	M40 north	0	0	0	0.00	0.00	0
M40 north	A43 north of Baynards green	0	0	0	0.00	0.00	0
A43 north of Baynards Green	B430 (or Ardley Bypass)	167	224	-57			
B430 (or Ardley Bypass)	A43 north of Baynards green	240	342	-103			
M40 south	B430 (or Ardley Bypass)	117	164	-47			
B430 (or Ardley Bypass)	M40 south	175	225	-50			
M40 north	B430 (or Ardley Bypass)	151	220	-69			
B430 (or Ardley Bypass)	M40 north	105	145	-40			
M40 north	MSA	81	126	-45	5.40	8.35	-3
M40 south	MSA	153	144	9	11.46	10.78	1
MSA	M40 south	85	87	-2	7.30	7.47	0
MSA	M40 north	94	89	5	5.61	5.34	0
MSA	A43 north of Baynards green	219	254	-35	6.13	7.12	-1
B4100 east	B4100 west	48	622	-574	4.16	53.70	-50
B4100 west	B4100 east	53	399	-346	4.29	32.22	-28
		Net change		**-1537**	**Net change**		**-173**

Key route journey time comparison for 2034 option 28 vs reference case- off-peak							
From	To	Option 28 average journey (s)	Reference average journey (s)	Difference (s)	Option 28 Total Journey (pcuHr)	Reference Total Journey (pcuHr)	Difference (pcuHr)
A43 north of Baynards Green	M40 south	145	128	16	15.26	13.53	2
M40 south	A43 north of Baynards green	129	154	-25	14.25	17.03	-3
A43 north of Baynards Green	M40 north	0	0	0	0.00	0.00	0
M40 north	A43 north of Baynards green	0	0	0	0.00	0.00	0
A43 north of Baynards Green	B430 (or Ardley Bypass)	160	193	-34			
B430 (or Ardley Bypass)	A43 north of Baynards green	211	210	1			
M40 south	B430 (or Ardley Bypass)	101	133	-33			
B430 (or Ardley Bypass)	M40 south	133	214	-80			
M40 north	B430 (or Ardley Bypass)	105	175	-70			
B430 (or Ardley Bypass)	M40 north	68	141	-73			
M40 north	MSA	53	78	-25	0.99	1.46	0
M40 south	MSA	132	114	18	2.27	1.97	0
MSA	M40 south	69	69	0	1.42	1.42	0
MSA	M40 north	80	72	7	1.15	1.04	0
MSA	A43 north of Baynards green	164	117	46	1.05	0.75	0
B4100 east	B4100 west	35	36	-1	0.56	0.57	0
B4100 west	B4100 east	34	35	0	0.95	0.96	0
		Net change		**-252**	**Net change**		**-1**

Key route journey time comparison for 2034 option 28 vs reference case - inter-peak							
From	To	Option 28 average journey (s)	Reference average journey (s)	Difference (s)	Option 28 Total Journey (pcuHr)	Reference Total Journey (pcuHr)	Difference (pcuHr)
A43 north of Baynards Green	M40 south	143	157	-14	51.75	56.70	-5
M40 south	A43 north of Baynards green	137	176	-39	51.76	66.57	-15
A43 north of Baynards Green	M40 north	0	0	0	0.00	0.00	0
M40 north	A43 north of Baynards green	0	0	0	0.00	0.00	0
A43 north of Baynards Green	B430 (or Ardley Bypass)	156	220	-64			
B430 (or Ardley Bypass)	A43 north of Baynards green	234	225	10			
M40 south	B430 (or Ardley Bypass)	107	141	-35			
B430 (or Ardley Bypass)	M40 south	181	228	-47			
M40 north	B430 (or Ardley Bypass)	135	193	-58			
B430 (or Ardley Bypass)	M40 north	100	143	-43			
M40 north	MSA	67	105	-39	3.92	6.20	-2
M40 south	MSA	122	123	0	7.81	7.84	0
MSA	M40 south	84	78	7	5.98	5.50	0
MSA	M40 north	110	82	28	5.44	4.05	1
MSA	A43 north of Baynards green	230	129	101	4.99	2.80	2
B4100 east	B4100 west	49	413	-364	3.66	31.18	-28
B4100 west	B4100 east	48	163	-115	4.60	15.49	-11
		Net change		**-671**	**Net change**		**-56**

APPENDIX F

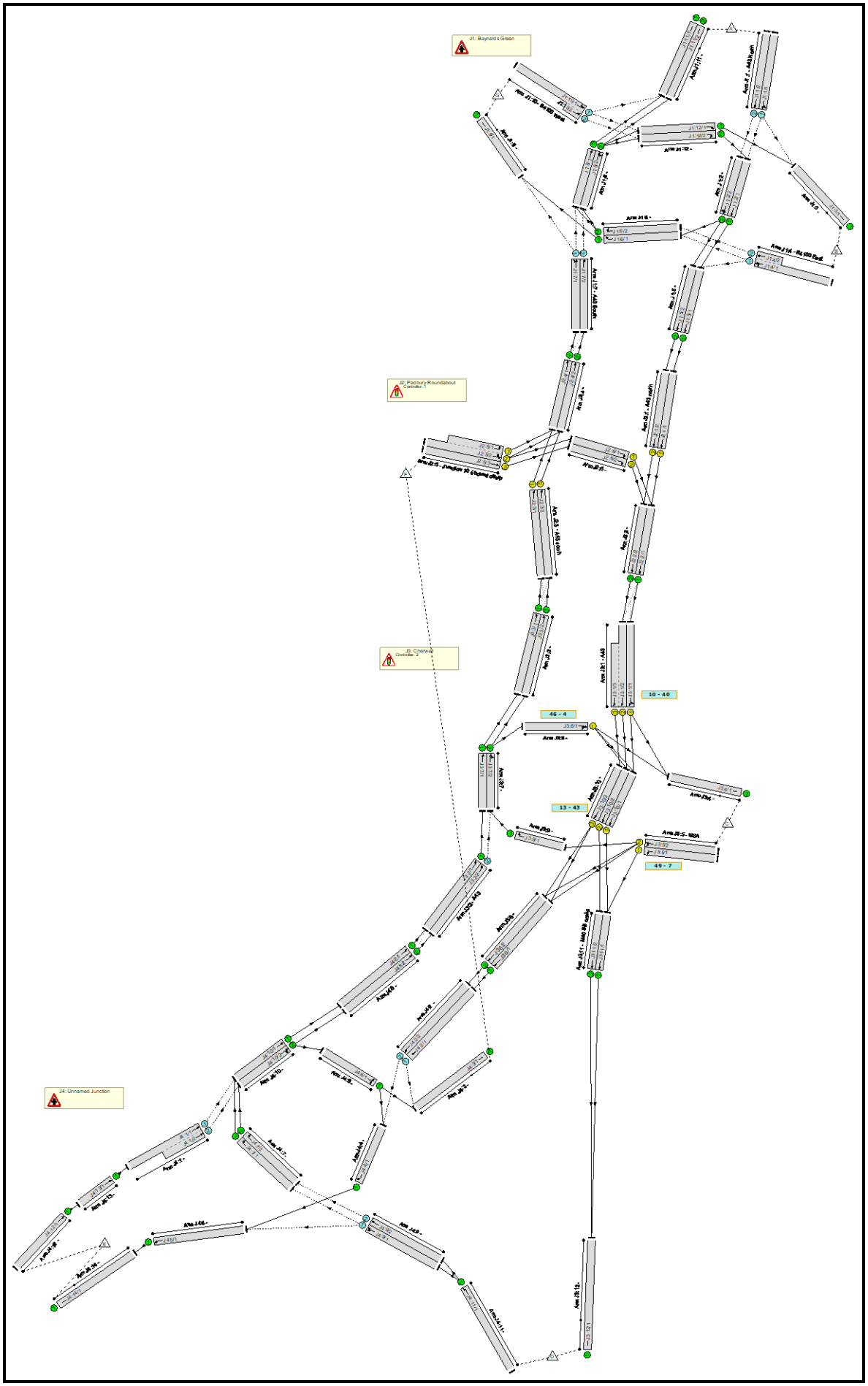
2034 REFERENCE CASE LINSIG MODELLING FOR M40 J10 AND BAYNARD'S GREEN

Full Input Data And Results

User and Project Details

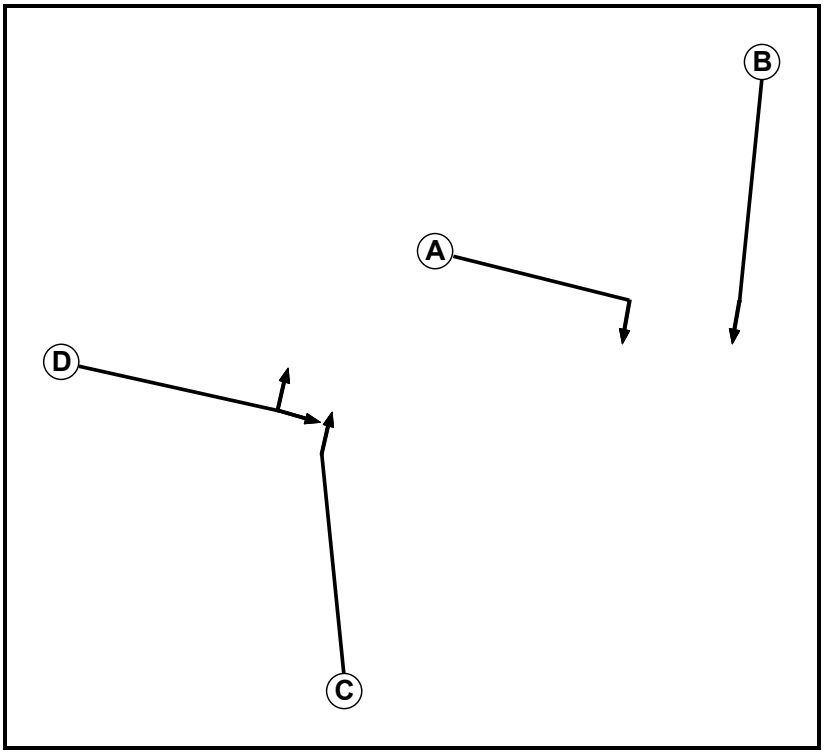
Project:	**Oxfordshire SRFI**
Title:	**2034 Reference Case Network Model**
Location:	
Additional detail:	Entry and exit links configured to be consistent with Option 28 for comparison. Flows are the 2031 BTM reference case, growthed to the new 2034 assessment year using TEMPRO.
File name:	241106 M40 J10 - 2034 reference case.lsg3x
Author:	Mark Higgins
Company:	ADC Infrastructure
Address:	Nottingham

Network Layout Diagram



C1

Phase Diagram



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

Phase Intergreens Matrix

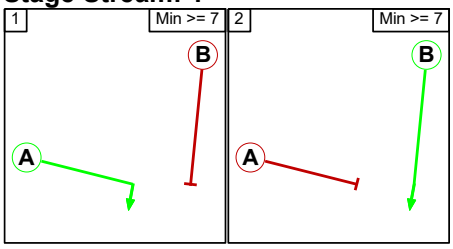
Terminating Phase	Starting Phase				
		A	B	C	D
	A		6	-	-
	B	6		-	-
	C	-	-		6
	D	-	-	6	

Phases in Stage

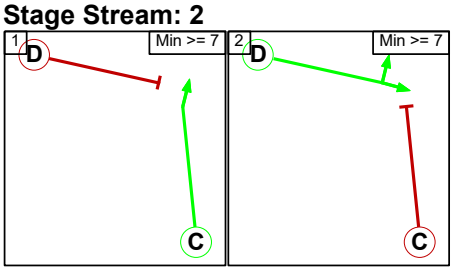
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Prohibited Stage Change

Stage Stream: 1

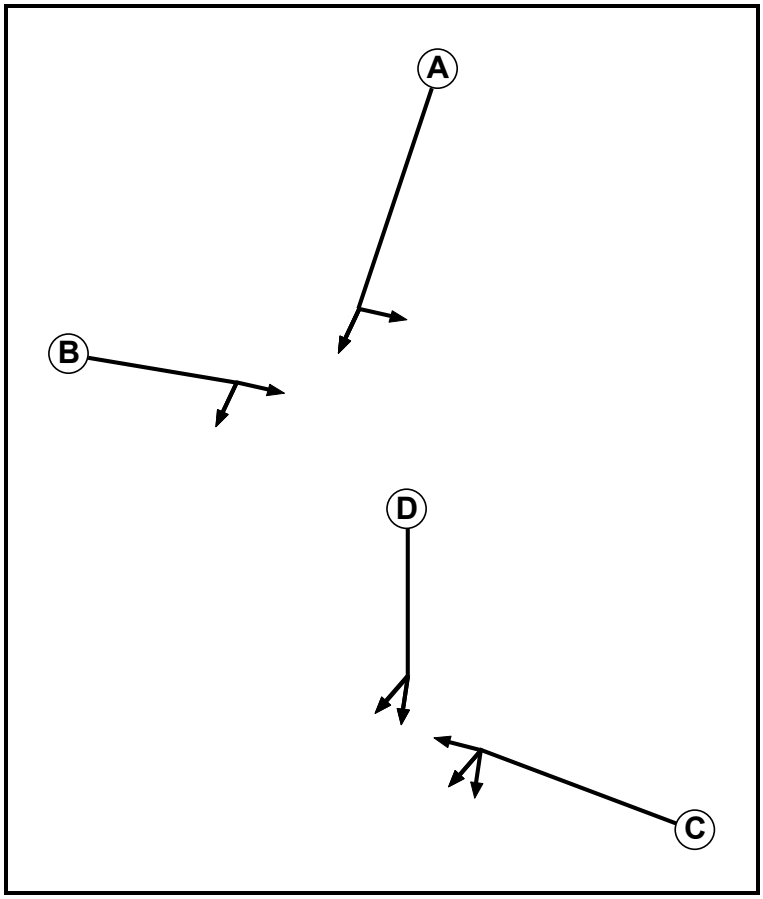
	To Stage		
From Stage		1	2
	1		6
	2	6	

Stage Stream: 2

	To Stage		
From Stage		1	2
	1		6
	2	6	

C2

Phase Diagram



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

Phase Intergreens Matrix

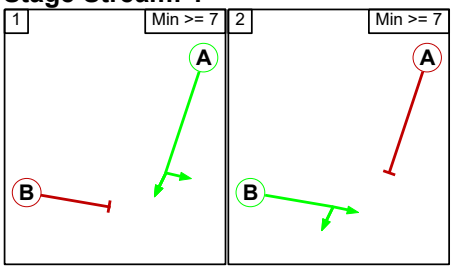
		Starting Phase			
		A	B	C	D
Terminating Phase	A		6	-	-
	B	6		-	-
	C	-	-		6
	D	-	-	6	

Phases in Stage

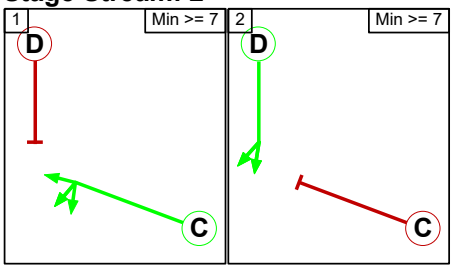
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Prohibited Stage Change

Stage Stream: 1

From Stage \ To Stage	1	2
1		6
2	6	

Stage Stream: 2

From Stage \ To Stage	1	2
1		6
2	6	

Give-Way Lane Input Data

Junction: J1: Baynards Green											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
J1:1/1 (A43 North)	J1:2/1 (Ahead)	1233	0	J1:12/1	0.30	All	-	-	-	-	-
				J1:12/2	0.30	All					
	J1:3/1 (Left)	1233	0	J1:12/1	0.30	All					
J1:1/2 (A43 North)	J1:2/2 (Ahead)	1233	0	J1:12/1	0.30	All	-	-	-	-	-
				J1:12/2	0.30	All					
J1:4/1 (B4100 East)	J1:5/1 (Left)	729	0	J1:2/1	0.24	All	-	-	-	-	-
	J1:6/1 (Ahead)	729	0	J1:2/1	0.24	All					
				J1:2/2	0.24	All					
J1:4/2 (B4100 East)	J1:6/2 (Ahead)	729	0	J1:2/1	0.24	All	-	-	-	-	-
				J1:2/2	0.24	All					
J1:7/1 (A43 South)	J1:8/1 (Ahead)	1268	0	J1:6/1	0.31	All	-	-	-	-	-
				J1:6/2	0.31	All					
	J1:9/1 (Ahead)	1268	0	J1:6/1	0.31	All					
J1:7/2 (A43 South)	J1:8/2 (Ahead)	1268	0	J1:6/1	0.31	All	-	-	-	-	-
				J1:6/2	0.31	All					
J1:10/1 (B4100 West)	J1:11/1 (Left)	882	0	J1:8/1	0.25	All	-	-	-	-	-
	J1:12/1 (Ahead)	883	0	J1:8/1	0.25	All					
				J1:8/2	0.25	All					
J1:10/2 (B4100 West)	J1:12/2 (Ahead)	883	0	J1:8/1	0.25	All	-	-	-	-	-
				J1:8/2	0.25	All					

Junction: J2: Padbury Roundabout
There are no Opposed Lanes in this Junction

Junction: J3: Cherwell											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
J3:2/2 (A43)	J3:7/2 (Ahead)	1030	0	J3:9/1	0.48	All	-	-	-	-	-

Junction: J4: Unnamed Junction											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
J4:1/1	J4:10/1 (Ahead)	1057	0	J4:7/1	0.28	All	-	-	-	-	-
J4:1/2	J4:10/2 (Ahead)	1057	0	J4:7/1	0.28	All	-	-	-	-	-
				J4:7/2	0.28	All					
J4:2/1	J4:3/1 (U-Turn)	1205	0	J4:6/1	0.31	All	-	-	-	-	-
J4:2/2	J4:4/1 (Ahead)	1205	0	J4:6/1	0.31	All	-	-	-	-	-
J4:9/1	J4:5/1 (Ahead)	1215	0	J4:4/1	0.32	All	-	-	-	-	-
	J4:7/1 (Ahead)	1215	0	J4:4/1	0.32	All					
J4:9/2	J4:7/2 (Ahead)	1215	0	J4:4/1	0.32	All	-	-	-	-	-

Lane Input Data

Junction: J1: Baynards Green												
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)**
J1:1/1 (A43 North)	O		2	3	60.0	Inf	-	-	-	-	-	-
J1:1/2 (A43 North)	O		2	3	60.0	Inf	-	-	-	-	-	-
J1:2/1	U		2	3	10.1	Inf	-	-	-	-	-	-
J1:2/2	U		2	3	10.1	Inf	-	-	-	-	-	-
J1:3/1	U		2	3	60.0	Inf	-	-	-	-	-	-
J1:4/1 (B4100 East)	O		2	3	60.0	Inf	-	-	-	-	-	-
J1:4/2 (B4100 East)	O		2	3	5.0	Inf	-	-	-	-	-	-
J1:5/1	U		2	3	17.4	User	2000	-	-	-	-	-
J1:5/2	U		2	3	17.4	Inf	-	-	-	-	-	-
J1:6/1	U		2	3	7.0	Inf	-	-	-	-	-	-
J1:6/2	U		2	3	7.0	Inf	-	-	-	-	-	-
J1:7/1 (A43 South)	O		2	3	104.3	Inf	-	-	-	-	-	-
J1:7/2 (A43 South)	O		2	3	104.3	Inf	-	-	-	-	-	-
J1:8/1	U		2	3	8.2	Inf	-	-	-	-	-	-
J1:8/2	U		2	3	8.2	Inf	-	-	-	-	-	-
J1:9/1	U		2	3	60.0	Inf	-	-	-	-	-	-
J1:10/1 (B4100 West)	O		2	3	60.0	Inf	-	-	-	-	-	-
J1:10/2 (B4100 West)	O		2	3	3.5	Inf	-	-	-	-	-	-
J1:11/1	U		2	3	60.0	Inf	-	-	-	-	-	-
J1:11/2	U		2	3	60.0	Inf	-	-	-	-	-	-
J1:12/1	U		2	3	7.8	Inf	-	-	-	-	-	-
J1:12/2	U		2	3	7.8	Inf	-	-	-	-	-	-

Junction: J2: Padbury Roundabout												
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)**
J2:1/1 (A43 north)	U	B	2	3	95.7	Geom	-	3.65	0.00	Y	Arm J2:2 Ahead	50.00
J2:1/2 (A43 north)	U	B	2	3	95.7	Geom	-	3.65	0.00	N	Arm J2:2 Ahead	50.00
J2:2/1	U		2	3	5.2	Inf	-	-	-	-	-	-
J2:2/2	U		2	3	5.2	Inf	-	-	-	-	-	-
J2:3/1 (A43 south)	U	C	2	3	52.2	Geom	-	3.65	0.00	Y	Arm J2:4 Ahead	30.00
J2:3/2 (A43 south)	U	C	2	3	52.2	Geom	-	3.65	0.00	N	Arm J2:4 Ahead	30.00
J2:4/1	U		2	3	13.0	Inf	-	-	-	-	-	-
J2:4/2	U		2	3	13.0	Inf	-	-	-	-	-	-
J2:5/1 (Junction 10 s'bound offslip)	U	D	2	3	10.8	Geom	-	3.65	0.00	Y	Arm J2:4 Left	40.00
J2:5/2 (Junction 10 s'bound offslip)	U	D	2	3	95.7	Geom	-	3.65	0.00	N	Arm J2:4 Left	50.00
											Arm J2:6 Ahead	50.00
J2:5/3 (Junction 10 s'bound offslip)	U	D	2	3	95.7	Geom	-	3.65	0.00	N	Arm J2:6 Ahead	50.00
J2:6/1	U	A	2	3	8.7	Geom	-	3.65	0.00	Y	Arm J2:2 Right	Inf
J2:6/2	U	A	2	3	8.7	Geom	-	3.65	0.00	N	Arm J2:2 Right	Inf

Junction: J3: Cherwell												
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)**
J3:1/1 (A43)	U	A	2	3	52.2	Geom	-	3.65	0.00	Y	Arm J3:4 Left Arm J3:10 Ahead	Inf Inf
J3:1/2 (A43)	U	A	2	3	52.2	Geom	-	3.65	0.00	Y	Arm J3:10 Ahead	Inf
J3:1/3 (A43)	U	A	2	3	12.2	Geom	-	3.65	0.00	Y	Arm J3:10 Ahead	Inf
J3:2/1 (A43)	U		2	3	41.7	Inf	-	-	-	-	-	-
J3:2/2 (A43)	O		2	3	41.7	Inf	-	-	-	-	-	-
J3:3/1	U		2	3	5.2	Inf	-	-	-	-	-	-
J3:3/2	U		2	3	5.2	Inf	-	-	-	-	-	-
J3:4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
J3:5/1 (MSA)	U	C	2	3	60.0	Geom	-	3.50	0.00	Y	Arm J3:11 Left	30.00
J3:5/2 (MSA)	U	C	2	3	60.0	Geom	-	3.50	0.00	N	Arm J3:6 Left Arm J3:9 Ahead	40.00 Inf
J3:6/1	U		2	3	5.2	Inf	-	-	-	-	-	-
J3:6/2	U		2	3	5.2	Inf	-	-	-	-	-	-
J3:7/1	U		2	3	7.0	Inf	-	-	-	-	-	-
J3:7/2	U		2	3	7.0	Inf	-	-	-	-	-	-
J3:8/1	U	B	2	3	5.2	User	1850	-	-	-	-	-
J3:9/1	U		2	3	7.8	Inf	-	-	-	-	-	-
J3:10/1	U	D	2	3	8.7	Geom	-	3.65	0.00	Y	Arm J3:11 Ahead	Inf
J3:10/2	U	D	2	3	8.7	Geom	-	3.65	0.00	N	Arm J3:11 Ahead	Inf
J3:10/3	U	D	2	3	8.7	Geom	-	3.65	0.00	N	Arm J3:6 Ahead	Inf
J3:11/1 (M40 SB onslip)	U		2	3	87.0	Inf	-	-	-	-	-	-
J3:11/2 (M40 SB onslip)	U		2	3	87.0	Inf	-	-	-	-	-	-
J3:12/1	U		2	3	173.9	Inf	-	-	-	-	-	-

Junction: J4: Unnamed Junction												
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)
J4:1/1	O		2	3	165.2	Inf	-	-	-	-	-	-
J4:1/2	O		2	3	8.7	Inf	-	-	-	-	-	-
J4:2/1	O		2	3	41.7	Inf	-	-	-	-	-	-
J4:2/2	O		2	3	41.7	Inf	-	-	-	-	-	-
J4:3/1	U		2	3	173.9	Inf	-	-	-	-	-	-
J4:4/1	U		2	3	9.6	Inf	-	-	-	-	-	-
J4:5/1	U		2	3	173.9	Inf	-	-	-	-	-	-
J4:6/1	U		2	3	5.2	Inf	-	-	-	-	-	-
J4:7/1	U		2	3	7.8	Inf	-	-	-	-	-	-
J4:7/2	U		2	3	7.8	Inf	-	-	-	-	-	-
J4:8/1	U		2	3	5.2	Inf	-	-	-	-	-	-
J4:8/2	U		2	3	5.2	Inf	-	-	-	-	-	-
J4:9/1	O		2	3	173.9	Inf	-	-	-	-	-	-
J4:9/2	O		2	3	173.9	Inf	-	-	-	-	-	-
J4:10/1	U		2	3	8.7	Inf	-	-	-	-	-	-
J4:10/2	U		2	3	8.7	Inf	-	-	-	-	-	-
J4:11/1	U		2	3	104.3	Inf	-	-	-	-	-	-
J4:12/1	U		2	3	8.7	Inf	-	-	-	-	-	-
J4:13/1	U		2	3	87.0	Inf	-	-	-	-	-	-
J4:14/1	U		2	3	87.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2034 ref case - AM'	08:00	09:00	01:00	
2: '2034 ref case - PM'	17:00	18:00	01:00	

Scenario 1: '2034 reference case - AM Peak' (FG1: '2034 ref case - AM', Plan 1: 'Network Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination							
		A	B	C	D	E	F	G	Tot.
Origin	A	0	173	64	1577	359	0	16	2189
	B	258	0	0	2	17	198	301	776
	C	75	0	0	265	71	188	0	599
	D	1216	2	247	0	20	0	6	1491
	E	139	16	0	2	0	230	21	408
	F	0	325	238	0	204	0	30	797
	G	72	478	0	110	1	0	0	661
	Tot.	1760	994	549	1956	672	616	374	6921

Traffic Lane Flows

Lane	Scenario 1: 2034 reference case - AM Peak
Junction: J1: Baynards Green	
J1:1/1	1116
J1:1/2	1073
J1:2/1	1054
J1:2/2	1073
J1:3/1	994
J1:4/1 (with short)	776(In) 518(Out)
J1:4/2 (short)	258
J1:5/1	1271
J1:5/2	1057
J1:6/1	317
J1:6/2	258
J1:7/1	849
J1:7/2	981
J1:8/1	921
J1:8/2	1110
J1:9/1	374
J1:10/1 (with short)	661(In) 550(Out)
J1:10/2 (short)	111
J1:11/1	993
J1:11/2	767
J1:12/1	821
J1:12/2	111
Junction: J2: Padbury Roundabout	
J2:1/1	1271
J2:1/2	1057
J2:2/1	1503
J2:2/2	1267
J2:3/1	819
J2:3/2	656
J2:4/1	1100
J2:4/2	730
J2:5/1 (short)	281
J2:5/2 (with short)	587(In) 306(Out)
J2:5/3	210
J2:6/1	232
J2:6/2	210
Junction: J3: Cherwell	

J3:1/1	1029
J3:1/2 (with short)	1741(In) 962(Out)
J3:1/3 (short)	779
J3:2/1	1151
J3:2/2	498
J3:3/1	1151
J3:3/2	324
J3:4/1	549
J3:5/1	265
J3:5/2	334
J3:6/1	386
J3:6/2	652
J3:7/1	1151
J3:7/2	573
J3:8/1	249
J3:9/1	75
J3:10/1	727
J3:10/2	964
J3:10/3	779
J3:11/1	992
J3:11/2	964
J3:12/1	1956
Junction: J4: Unnamed Junction	
J4:1/1 (with short)	408(In) 176(Out)
J4:1/2 (short)	232
J4:2/1	386
J4:2/2	652
J4:3/1	616
J4:4/1	652
J4:5/1	672
J4:6/1	230
J4:7/1	832
J4:7/2	639
J4:8/1	1008
J4:8/2	641
J4:9/1	852
J4:9/2	639
J4:10/1	1008
J4:10/2	871
J4:11/1	1491
J4:12/1	408
J4:13/1	408
J4:14/1	672

Lane Saturation Flows

Junction: J1: Baynards Green								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J1:1/1 (A43 North Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:1/2 (A43 North Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:2/1	Infinite Saturation Flow						Inf	Inf
J1:2/2	Infinite Saturation Flow						Inf	Inf
J1:3/1	Infinite Saturation Flow						Inf	Inf
J1:4/1 (B4100 East Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:4/2 (B4100 East Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:5/1	This lane uses a directly entered Saturation Flow						2000	2000
J1:5/2	Infinite Saturation Flow						Inf	Inf
J1:6/1	Infinite Saturation Flow						Inf	Inf
J1:6/2	Infinite Saturation Flow						Inf	Inf
J1:7/1 (A43 South Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:7/2 (A43 South Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:8/1	Infinite Saturation Flow						Inf	Inf
J1:8/2	Infinite Saturation Flow						Inf	Inf
J1:9/1	Infinite Saturation Flow						Inf	Inf
J1:10/1 (B4100 West Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:10/2 (B4100 West Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:11/1	Infinite Saturation Flow						Inf	Inf
J1:11/2	Infinite Saturation Flow						Inf	Inf
J1:12/1	Infinite Saturation Flow						Inf	Inf
J1:12/2	Infinite Saturation Flow						Inf	Inf

Junction: J2: Padbury Roundabout								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J2:1/1 (A43 north)	3.65	0.00	Y	Arm J2:2 Ahead	50.00	100.0 %	1922	1922
J2:1/2 (A43 north)	3.65	0.00	N	Arm J2:2 Ahead	50.00	100.0 %	2058	2058
J2:2/1	Infinite Saturation Flow						Inf	Inf
J2:2/2	Infinite Saturation Flow						Inf	Inf
J2:3/1 (A43 south)	3.65	0.00	Y	Arm J2:4 Ahead	30.00	100.0 %	1886	1886
J2:3/2 (A43 south)	3.65	0.00	N	Arm J2:4 Ahead	30.00	100.0 %	2019	2019
J2:4/1	Infinite Saturation Flow						Inf	Inf
J2:4/2	Infinite Saturation Flow						Inf	Inf
J2:5/1 (Junction 10 s'bound offslip)	3.65	0.00	Y	Arm J2:4 Left	40.00	100.0 %	1908	1908
J2:5/2 (Junction 10 s'bound offslip)	3.65	0.00	N	Arm J2:4 Left	50.00	24.2 %	2058	2058
				Arm J2:6 Ahead	50.00	75.8 %		
J2:5/3 (Junction 10 s'bound offslip)	3.65	0.00	N	Arm J2:6 Ahead	50.00	100.0 %	2058	2058
J2:6/1	3.65	0.00	Y	Arm J2:2 Right	Inf	100.0 %	1980	1980
J2:6/2	3.65	0.00	N	Arm J2:2 Right	Inf	100.0 %	2120	2120

Junction: J3: Cherwell								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J3:1/1 (A43)	3.65	0.00	Y	Arm J3:4 Left	Inf	29.3 %	1980	1980
				Arm J3:10 Ahead	Inf	70.7 %		
J3:1/2 (A43)	3.65	0.00	Y	Arm J3:10 Ahead	Inf	100.0 %	1980	1980
J3:1/3 (A43)	3.65	0.00	Y	Arm J3:10 Ahead	Inf	100.0 %	1980	1980
J3:2/1 (A43 Lane 1)	Infinite Saturation Flow						Inf	Inf
J3:2/2 (A43 Lane 2)	Infinite Saturation Flow						Inf	Inf
J3:3/1	Infinite Saturation Flow						Inf	Inf
J3:3/2	Infinite Saturation Flow						Inf	Inf
J3:4/1	Infinite Saturation Flow						Inf	Inf
J3:5/1 (MSA)	3.50	0.00	Y	Arm J3:11 Left	30.00	100.0 %	1871	1871
J3:5/2 (MSA)	3.50	0.00	N	Arm J3:6 Left	40.00	77.5 %	2046	2046
				Arm J3:9 Ahead	Inf	22.5 %		
J3:6/1	Infinite Saturation Flow						Inf	Inf
J3:6/2	Infinite Saturation Flow						Inf	Inf
J3:7/1	Infinite Saturation Flow						Inf	Inf
J3:7/2	Infinite Saturation Flow						Inf	Inf
J3:8/1	This lane uses a directly entered Saturation Flow						1850	1850
J3:9/1	Infinite Saturation Flow						Inf	Inf
J3:10/1	3.65	0.00	Y	Arm J3:11 Ahead	Inf	100.0 %	1980	1980
J3:10/2	3.65	0.00	N	Arm J3:11 Ahead	Inf	100.0 %	2120	2120
J3:10/3	3.65	0.00	N	Arm J3:6 Ahead	Inf	100.0 %	2120	2120
J3:11/1 (M40 SB onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
J3:11/2 (M40 SB onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
J3:12/1	Infinite Saturation Flow						Inf	Inf

Junction: J4: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J4:1/1	Infinite Saturation Flow						Inf	Inf
J4:1/2	Infinite Saturation Flow						Inf	Inf
J4:2/1	Infinite Saturation Flow						Inf	Inf
J4:2/2	Infinite Saturation Flow						Inf	Inf
J4:3/1	Infinite Saturation Flow						Inf	Inf
J4:4/1	Infinite Saturation Flow						Inf	Inf
J4:5/1	Infinite Saturation Flow						Inf	Inf
J4:6/1	Infinite Saturation Flow						Inf	Inf
J4:7/1	Infinite Saturation Flow						Inf	Inf
J4:7/2	Infinite Saturation Flow						Inf	Inf
J4:8/1	Infinite Saturation Flow						Inf	Inf
J4:8/2	Infinite Saturation Flow						Inf	Inf
J4:9/1	Infinite Saturation Flow						Inf	Inf
J4:9/2	Infinite Saturation Flow						Inf	Inf
J4:10/1	Infinite Saturation Flow						Inf	Inf
J4:10/2	Infinite Saturation Flow						Inf	Inf
J4:11/1	Infinite Saturation Flow						Inf	Inf
J4:12/1	Infinite Saturation Flow						Inf	Inf
J4:13/1	Infinite Saturation Flow						Inf	Inf
J4:14/1	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2034 reference case - PM Peak' (FG2: '2034 ref case - PM', Plan 1: 'Network Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination							
		A	B	C	D	E	F	G	Tot.
Origin	A	0	287	114	1347	122	0	59	1929
	B	380	0	0	7	9	241	311	948
	C	101	0	0	308	0	215	0	624
	D	1849	1	270	0	30	0	0	2150
	E	149	2	0	2	0	222	0	375
	F	0	172	239	0	165	0	0	576
	G	56	291	0	44	2	0	0	393
	Tot.	2535	753	623	1708	328	678	370	6995

Traffic Lane Flows

Lane	Scenario 2: 2034 reference case - PM Peak
Junction: J1: Baynards Green	
J1:1/1	964
J1:1/2	965
J1:2/1	723
J1:2/2	965
J1:3/1	753
J1:4/1 (with short)	948(In) 568(Out)
J1:4/2 (short)	380
J1:5/1	980
J1:5/2	906
J1:6/1	370
J1:6/2	380
J1:7/1	1133
J1:7/2	1141
J1:8/1	1323
J1:8/2	1331
J1:9/1	370
J1:10/1 (with short)	393(In) 347(Out)
J1:10/2 (short)	46
J1:11/1	1379
J1:11/2	1156
J1:12/1	466
J1:12/2	46
Junction: J2: Padbury Roundabout	
J2:1/1	980
J2:1/2	906
J2:2/1	1188
J2:2/2	1102
J2:3/1	1133
J2:3/2	969
J2:4/1	1261
J2:4/2	1013
J2:5/1 (short)	128
J2:5/2 (with short)	380(In) 252(Out)
J2:5/3	196
J2:6/1	208
J2:6/2	196
Junction: J3: Cherwell	

J3:1/1	882
J3:1/2 (with short)	1408(In) 869(Out)
J3:1/3 (short)	539
J3:2/1	1738
J3:2/2	535
J3:3/1	1738
J3:3/2	364
J3:4/1	623
J3:5/1	308
J3:5/2	316
J3:6/1	456
J3:6/2	298
J3:7/1	1738
J3:7/2	636
J3:8/1	272
J3:9/1	101
J3:10/1	529
J3:10/2	871
J3:10/3	539
J3:11/1	837
J3:11/2	871
J3:12/1	1708
Junction: J4: Unnamed Junction	
J4:1/1 (with short)	375(In) 151(Out)
J4:1/2 (short)	224
J4:2/1	456
J4:2/2	298
J4:3/1	678
J4:4/1	298
J4:5/1	328
J4:6/1	222
J4:7/1	1054
J4:7/2	1066
J4:8/1	1205
J4:8/2	1068
J4:9/1	1084
J4:9/2	1066
J4:10/1	1205
J4:10/2	1290
J4:11/1	2150
J4:12/1	375
J4:13/1	375
J4:14/1	328

Lane Saturation Flows

Junction: J1: Baynards Green								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J1:1/1 (A43 North Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:1/2 (A43 North Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:2/1	Infinite Saturation Flow						Inf	Inf
J1:2/2	Infinite Saturation Flow						Inf	Inf
J1:3/1	Infinite Saturation Flow						Inf	Inf
J1:4/1 (B4100 East Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:4/2 (B4100 East Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:5/1	This lane uses a directly entered Saturation Flow						2000	2000
J1:5/2	Infinite Saturation Flow						Inf	Inf
J1:6/1	Infinite Saturation Flow						Inf	Inf
J1:6/2	Infinite Saturation Flow						Inf	Inf
J1:7/1 (A43 South Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:7/2 (A43 South Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:8/1	Infinite Saturation Flow						Inf	Inf
J1:8/2	Infinite Saturation Flow						Inf	Inf
J1:9/1	Infinite Saturation Flow						Inf	Inf
J1:10/1 (B4100 West Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:10/2 (B4100 West Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:11/1	Infinite Saturation Flow						Inf	Inf
J1:11/2	Infinite Saturation Flow						Inf	Inf
J1:12/1	Infinite Saturation Flow						Inf	Inf
J1:12/2	Infinite Saturation Flow						Inf	Inf

Junction: J2: Padbury Roundabout								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J2:1/1 (A43 north)	3.65	0.00	Y	Arm J2:2 Ahead	50.00	100.0 %	1922	1922
J2:1/2 (A43 north)	3.65	0.00	N	Arm J2:2 Ahead	50.00	100.0 %	2058	2058
J2:2/1	Infinite Saturation Flow						Inf	Inf
J2:2/2	Infinite Saturation Flow						Inf	Inf
J2:3/1 (A43 south)	3.65	0.00	Y	Arm J2:4 Ahead	30.00	100.0 %	1886	1886
J2:3/2 (A43 south)	3.65	0.00	N	Arm J2:4 Ahead	30.00	100.0 %	2019	2019
J2:4/1	Infinite Saturation Flow						Inf	Inf
J2:4/2	Infinite Saturation Flow						Inf	Inf
J2:5/1 (Junction 10 s'bound offslip)	3.65	0.00	Y	Arm J2:4 Left	40.00	100.0 %	1908	1908
J2:5/2 (Junction 10 s'bound offslip)	3.65	0.00	N	Arm J2:4 Left	50.00	17.5 %	2058	2058
				Arm J2:6 Ahead	50.00	82.5 %		
J2:5/3 (Junction 10 s'bound offslip)	3.65	0.00	N	Arm J2:6 Ahead	50.00	100.0 %	2058	2058
J2:6/1	3.65	0.00	Y	Arm J2:2 Right	Inf	100.0 %	1980	1980
J2:6/2	3.65	0.00	N	Arm J2:2 Right	Inf	100.0 %	2120	2120

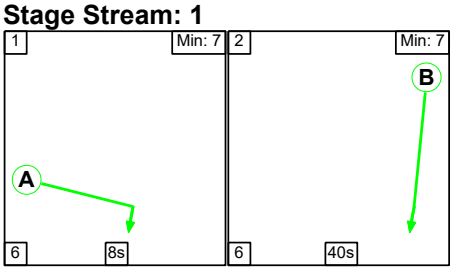
Junction: J3: Cherwell								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J3:1/1 (A43)	3.65	0.00	Y	Arm J3:4 Left	Inf	40.0 %	1980	1980
				Arm J3:10 Ahead	Inf	60.0 %		
J3:1/2 (A43)	3.65	0.00	Y	Arm J3:10 Ahead	Inf	100.0 %	1980	1980
J3:1/3 (A43)	3.65	0.00	Y	Arm J3:10 Ahead	Inf	100.0 %	1980	1980
J3:2/1 (A43 Lane 1)	Infinite Saturation Flow						Inf	Inf
J3:2/2 (A43 Lane 2)	Infinite Saturation Flow						Inf	Inf
J3:3/1	Infinite Saturation Flow						Inf	Inf
J3:3/2	Infinite Saturation Flow						Inf	Inf
J3:4/1	Infinite Saturation Flow						Inf	Inf
J3:5/1 (MSA)	3.50	0.00	Y	Arm J3:11 Left	30.00	100.0 %	1871	1871
J3:5/2 (MSA)	3.50	0.00	N	Arm J3:6 Left	40.00	68.0 %	2053	2053
				Arm J3:9 Ahead	Inf	32.0 %		
J3:6/1	Infinite Saturation Flow						Inf	Inf
J3:6/2	Infinite Saturation Flow						Inf	Inf
J3:7/1	Infinite Saturation Flow						Inf	Inf
J3:7/2	Infinite Saturation Flow						Inf	Inf
J3:8/1	This lane uses a directly entered Saturation Flow						1850	1850
J3:9/1	Infinite Saturation Flow						Inf	Inf
J3:10/1	3.65	0.00	Y	Arm J3:11 Ahead	Inf	100.0 %	1980	1980
J3:10/2	3.65	0.00	N	Arm J3:11 Ahead	Inf	100.0 %	2120	2120
J3:10/3	3.65	0.00	N	Arm J3:6 Ahead	Inf	100.0 %	2120	2120
J3:11/1 (M40 SB onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
J3:11/2 (M40 SB onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
J3:12/1	Infinite Saturation Flow						Inf	Inf

Junction: J4: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J4:1/1	Infinite Saturation Flow						Inf	Inf
J4:1/2	Infinite Saturation Flow						Inf	Inf
J4:2/1	Infinite Saturation Flow						Inf	Inf
J4:2/2	Infinite Saturation Flow						Inf	Inf
J4:3/1	Infinite Saturation Flow						Inf	Inf
J4:4/1	Infinite Saturation Flow						Inf	Inf
J4:5/1	Infinite Saturation Flow						Inf	Inf
J4:6/1	Infinite Saturation Flow						Inf	Inf
J4:7/1	Infinite Saturation Flow						Inf	Inf
J4:7/2	Infinite Saturation Flow						Inf	Inf
J4:8/1	Infinite Saturation Flow						Inf	Inf
J4:8/2	Infinite Saturation Flow						Inf	Inf
J4:9/1	Infinite Saturation Flow						Inf	Inf
J4:9/2	Infinite Saturation Flow						Inf	Inf
J4:10/1	Infinite Saturation Flow						Inf	Inf
J4:10/2	Infinite Saturation Flow						Inf	Inf
J4:11/1	Infinite Saturation Flow						Inf	Inf
J4:12/1	Infinite Saturation Flow						Inf	Inf
J4:13/1	Infinite Saturation Flow						Inf	Inf
J4:14/1	Infinite Saturation Flow						Inf	Inf

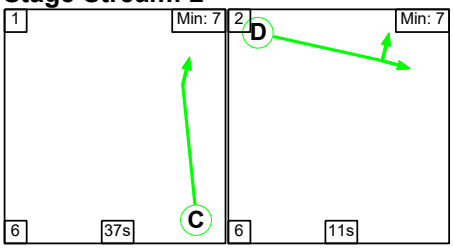
Scenario 1: '2034 reference case - AM Peak' (FG1: '2034 ref case - AM', Plan 1: 'Network Plan 1')
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

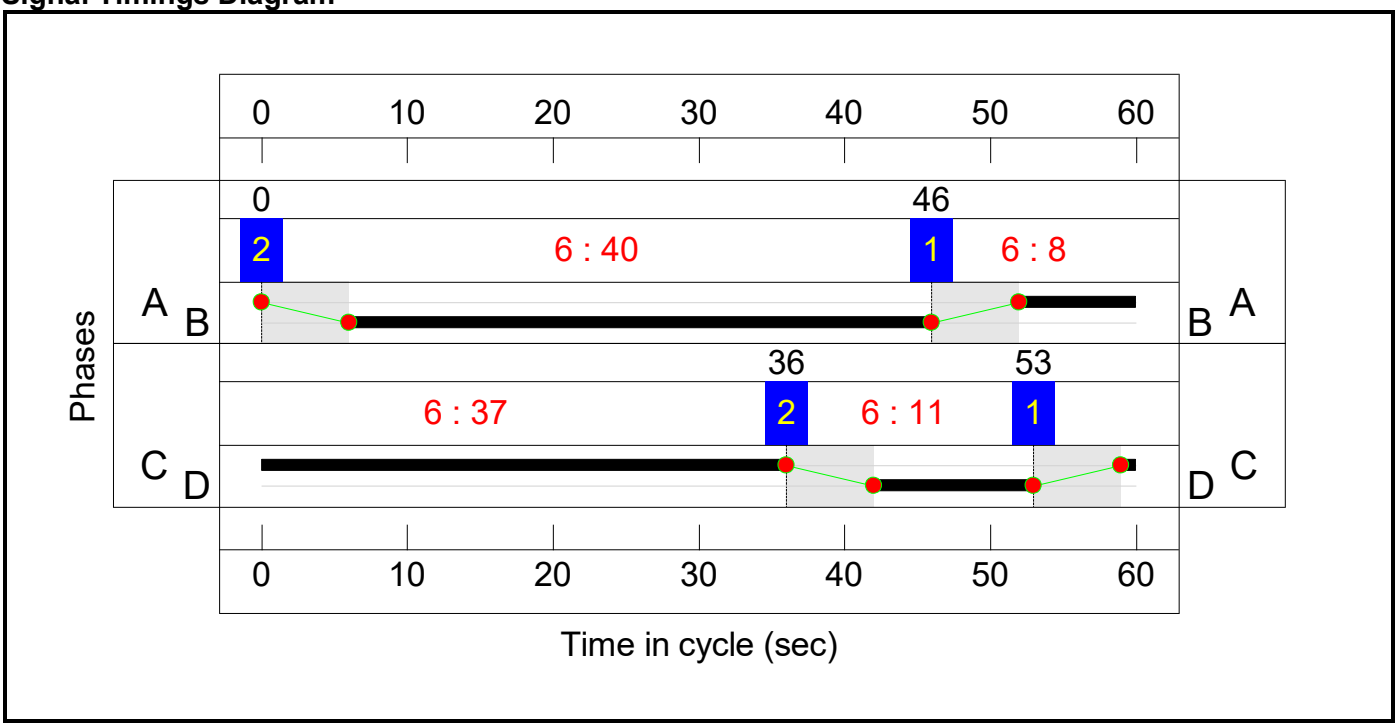
Stage Stream: 1

Stage	1	2
Duration	8	40
Change Point	46	0

Stage Stream: 2

Stage	1	2
Duration	37	11
Change Point	53	36

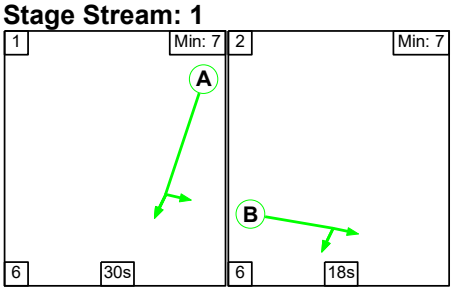
Signal Timings Diagram



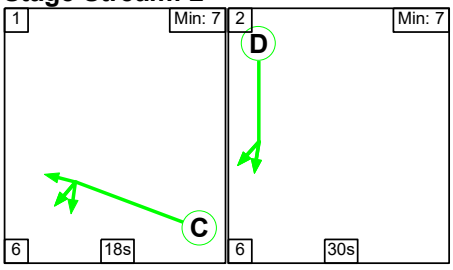
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

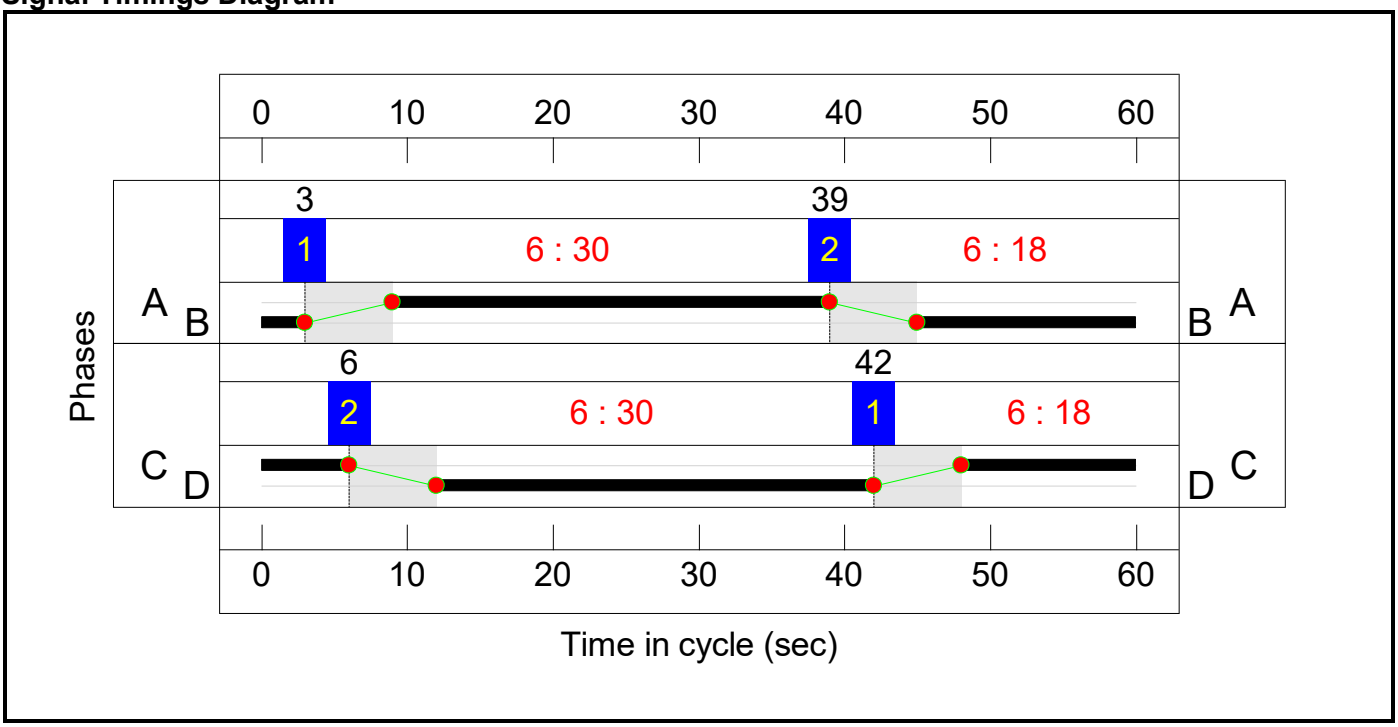
Stage Stream: 1

Stage	1	2
Duration	30	18
Change Point	3	39

Stage Stream: 2

Stage	1	2
Duration	18	30
Change Point	42	6

Signal Timings Diagram



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: 2034 Reference Case Network Model	-	-	**N/A**	-	-		-	-	-	-	-	-	**151.5%**
J1: Baynards Green	-	-	**N/A**	-	-		-	-	-	-	-	-	**151.5%**
1/1	A43 North Ahead Left	O	N/A	N/A	-		-	-	-	1116	Inf	999	111.7%
1/2	A43 North Ahead	O	N/A	N/A	-		-	-	-	1073	Inf	953	112.5%
4/1+4/2	B4100 East Left Ahead	O	N/A	N/A	-		-	-	-	776	Inf : Inf	342+170	151.5 : 151.5%
5/1	Ahead	U	N/A	N/A	-		-	-	-	1271	2000	2000	53.6%
7/1	A43 South Ahead Ahead2	O	N/A	N/A	-		-	-	-	849	Inf	1160	73.2%
7/2	A43 South Ahead	O	N/A	N/A	-		-	-	-	981	Inf	1149	85.4%
10/1+10/2	B4100 West Left Ahead	O	N/A	N/A	-		-	-	-	661	Inf : Inf	421+85	130.7 : 130.7%
J2: Padbury Roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**81.6%**
1/1	A43 north Ahead	U	1:1	N/A	C1:B		1	40	-	1271	1922	1313	81.6%
1/2	A43 north Ahead	U	1:1	N/A	C1:B		1	40	-	1057	2058	1406	66.8%
3/1	A43 south Ahead	U	1:2	N/A	C1:C		1	37	-	819	1886	1194	68.6%
3/2	A43 south Ahead	U	1:2	N/A	C1:C		1	37	-	656	2019	1279	51.3%
5/2+5/1	Junction 10 s'bound offslip Left Ahead	U	1:2	N/A	C1:D		1	11	-	587	2058:1908	412+382	74.3 : 73.6%
5/3	Junction 10 s'bound offslip Ahead	U	1:2	N/A	C1:D		1	11	-	210	2058	412	51.0%
6/1	Right	U	1:1	N/A	C1:A		1	8	-	232	1980	297	78.1%
6/2	Right	U	1:1	N/A	C1:A		1	8	-	210	2120	318	66.0%

J3: Cherwell	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**95.0%**
1/1	A43 Left Ahead	U	2:1	N/A	C2:A		1	30	-	1029	1980	1023	91.7%
1/2+1/3	A43 Ahead	U	2:1	N/A	C2:A		1	30	-	1741	1980:1980	894+724	95.0 : 90.0%
2/2	A43 Ahead	O	N/A	N/A	-		-	-	-	498	Inf	994	50.1%
5/1	MSA Left	U	2:2	N/A	C2:C		1	18	-	265	1871	592	44.7%
5/2	MSA Left Ahead	U	2:2	N/A	C2:C		1	18	-	334	2046	648	51.6%
8/1	Ahead Right	U	2:1	N/A	C2:B		1	18	-	249	1850	586	42.5%
10/1	Ahead	U	2:2	N/A	C2:D		1	30	-	727	1980	1023	62.8%
10/2	Ahead	U	2:2	N/A	C2:D		1	30	-	964	2120	1095	77.7%
10/3	Ahead	U	2:2	N/A	C2:D		1	30	-	779	2120	1095	59.5%
J4: Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.3%**
1/1+1/2	Ahead	O	N/A	N/A	-		-	-	-	408	Inf : Inf	489+645	36.0 : 36.0%
2/1	U-Turn	O	N/A	N/A	-		-	-	-	386	Inf	1134	27.3%
2/2	Ahead	O	N/A	N/A	-		-	-	-	652	Inf	1134	53.0%
9/1	Ahead Ahead2	O	N/A	N/A	-		-	-	-	852	Inf	1023	83.3%
9/2	Ahead	O	N/A	N/A	-		-	-	-	639	Inf	1023	62.5%

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: 2034 Reference Case Network Model	**-**	**-**	**9534**	**0**	**0**	**48.6**	**368.3**	**0.0**	**416.9**	**-**	**-**	**-**	**-**
J1: Baynards Green	**-**	**-**	**5818**	**0**	**0**	**24.5**	**344.8**	**0.0**	**369.3**	**-**	**-**	**-**	**-**
1/1	1116	999	999	0	0	4.8	63.1	-	67.9	218.9	53.0	63.1	116.1
1/2	1073	953	953	0	0	5.0	64.0	-	69.0	231.5	53.7	64.0	117.6
4/1+4/2	776	512	1025	0	0	8.6	133.3	-	142.0	658.6	22.1	133.3	155.4
5/1	1072	1072	-	-	-	0.0	0.6	-	0.6	1.9	0.0	0.6	0.6
7/1	849	849	849	0	0	0.4	1.4	-	1.7	7.4	11.0	1.4	12.3
7/2	981	981	981	0	0	0.2	2.8	-	3.0	11.0	7.6	2.8	10.5
10/1+10/2	661	506	1012	0	0	5.5	79.6	-	85.2	463.8	24.5	79.6	104.2
J2: Padbury Roundabout	**-**	**-**	**0**	**0**	**0**	**11.5**	**6.7**	**0.0**	**18.2**	**-**	**-**	**-**	**-**
1/1	1072	1072	-	-	-	2.0	2.2	-	4.2	13.9	11.9	2.2	14.1
1/2	939	939	-	-	-	1.4	1.0	-	2.4	9.4	8.9	1.0	9.9
3/1	819	819	-	-	-	1.5	1.1	-	2.6	11.4	8.4	1.1	9.5
3/2	656	656	-	-	-	1.0	0.5	-	1.5	8.4	5.3	0.5	5.9
5/2+5/1	587	587	-	-	-	3.7	1.4	-	5.1	31.2	4.8	1.4	6.2
5/3	210	210	-	-	-	1.2	0.5	-	1.8	30.3	3.1	0.5	3.6
6/1	232	232	-	-	-	0.3	0.0	-	0.3	5.0	3.8	0.0	3.8
6/2	210	210	-	-	-	0.3	0.0	-	0.3	5.6	3.4	0.0	3.4
J3: Cherwell	**-**	**-**	**498**	**0**	**0**	**12.4**	**12.5**	**0.0**	**25.0**	**-**	**-**	**-**	**-**
1/1	938	938	-	-	-	2.8	4.9	-	7.7	29.7	13.2	4.9	18.1
1/2+1/3	1500	1500	-	-	-	5.7	5.8	-	11.5	27.7	27.7	5.8	33.5
2/2	498	498	498	0	0	0.0	0.5	-	0.5	3.6	0.0	0.5	0.5
5/1	265	265	-	-	-	1.2	0.4	-	1.6	21.8	3.5	0.4	3.9
5/2	334	334	-	-	-	1.6	0.5	-	2.1	22.5	4.5	0.5	5.0
8/1	249	249	-	-	-	1.1	0.4	-	1.5	21.5	3.3	0.4	3.6

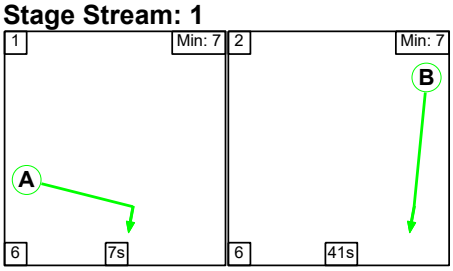
10/1	643	643	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	851	851	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/3	651	651	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
J4: Unnamed Junction	**-**	**-**	**3217**	**0**	**0**	**0.2**	**4.3**	**0.0**	**4.4**	**-**	**-**	**-**	**-**
1/1+1/2	408	408	816	0	0	0.0	0.3	-	0.3	2.5	0.0	0.3	0.3
2/1	310	310	310	0	0	0.0	0.2	-	0.2	2.2	0.0	0.2	0.2
2/2	601	601	601	0	0	0.2	0.6	-	0.7	4.3	5.8	0.6	6.4
9/1	852	852	852	0	0	0.0	2.4	-	2.4	10.2	0.0	2.4	2.4
9/2	639	639	639	0	0	0.0	0.8	-	0.8	4.7	0.0	0.8	0.8

C1	Stream: 1 PRC for Signalled Lanes (%):	10.3	Total Delay for Signalled Lanes (pcuHr):	7.25	Cycle Time (s):	60
C1	Stream: 2 PRC for Signalled Lanes (%):	21.1	Total Delay for Signalled Lanes (pcuHr):	10.97	Cycle Time (s):	60
C2	Stream: 1 PRC for Signalled Lanes (%):	-5.5	Total Delay for Signalled Lanes (pcuHr):	20.77	Cycle Time (s):	60
C2	Stream: 2 PRC for Signalled Lanes (%):	15.9	Total Delay for Signalled Lanes (pcuHr):	3.70	Cycle Time (s):	60
	PRC Over All Lanes (%):	-68.3	Total Delay Over All Lanes(pcuHr):	416.92		

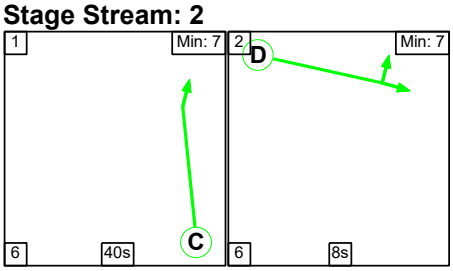
Scenario 2: '2034 reference case - PM Peak' (FG2: '2034 ref case - PM', Plan 1: 'Network Plan 1')
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

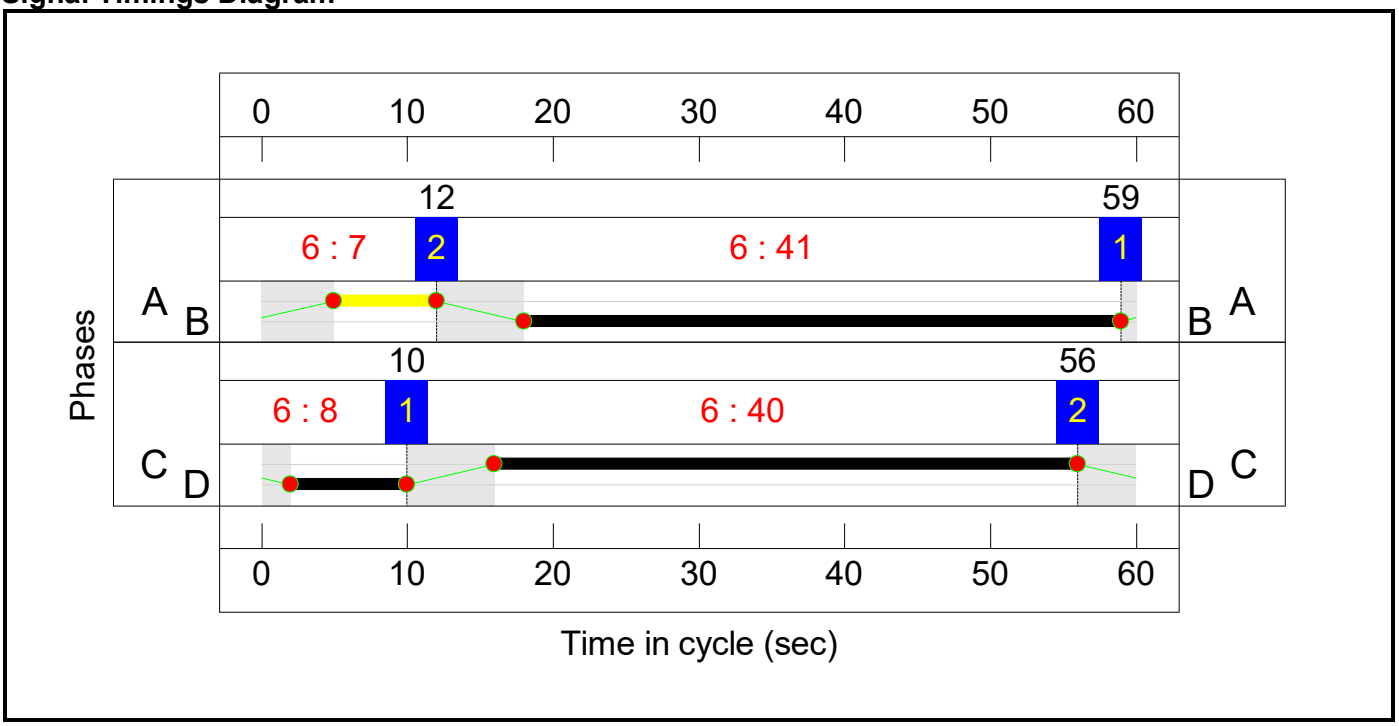
Stage Stream: 1

Stage	1	2
Duration	7	41
Change Point	59	12

Stage Stream: 2

Stage	1	2
Duration	40	8
Change Point	10	56

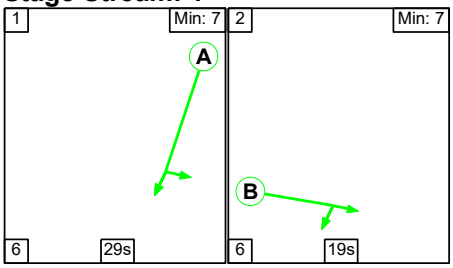
Signal Timings Diagram



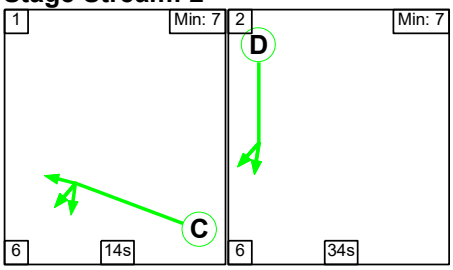
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

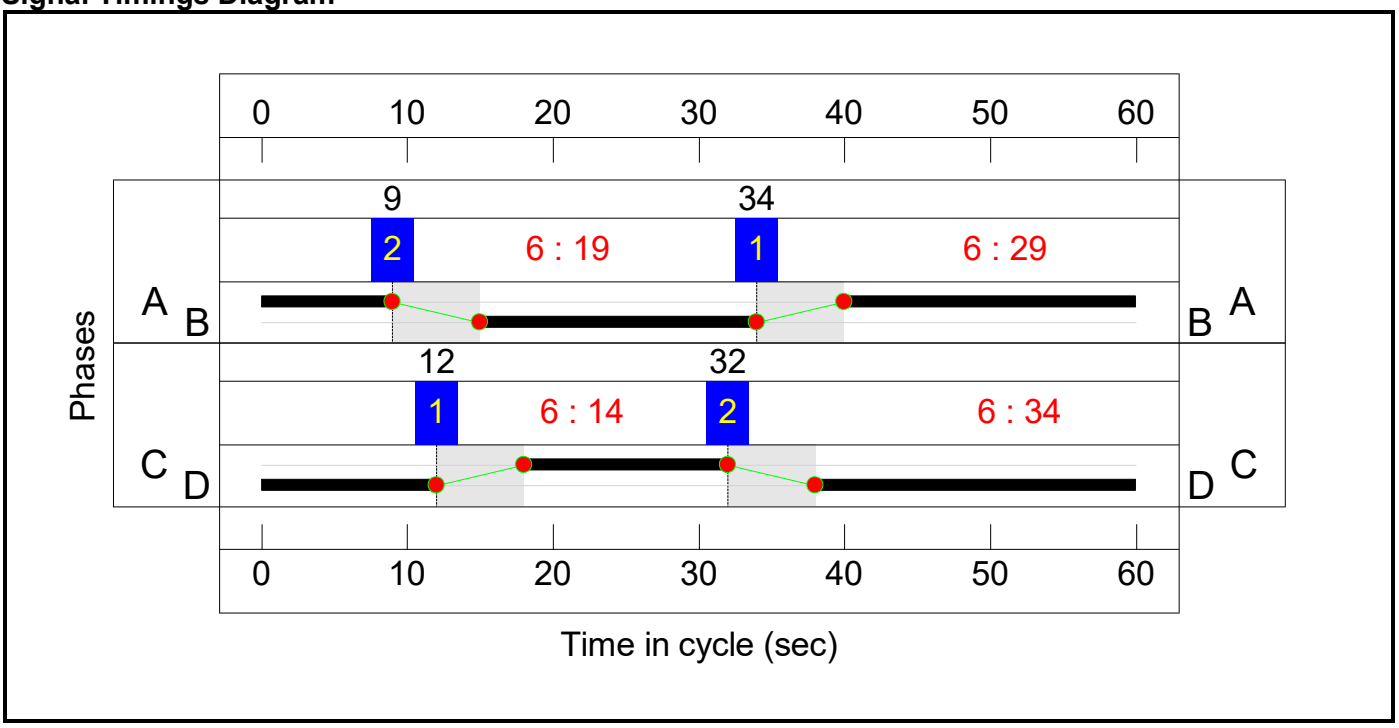
Stage Stream: 1

Stage	1	2
Duration	29	19
Change Point	34	9

Stage Stream: 2

Stage	1	2
Duration	14	34
Change Point	12	32

Signal Timings Diagram



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: 2034 Reference Case Network Model	-	-	**N/A**	-	-		-	-	-	-	-	-	**142.3%**
J1: Baynards Green	-	-	**N/A**	-	-		-	-	-	-	-	-	**142.3%**
1/1	A43 North Ahead Left	O	N/A	N/A	-		-	-	-	964	Inf	1100	87.6%
1/2	A43 North Ahead	O	N/A	N/A	-		-	-	-	965	Inf	1079	89.4%
4/1+4/2	B4100 East Left Ahead	O	N/A	N/A	-		-	-	-	948	Inf : Inf	399+324	142.3 : 117.3%
5/1	Ahead	U	N/A	N/A	-		-	-	-	980	2000	2000	45.2%
7/1	A43 South Ahead Ahead2	O	N/A	N/A	-		-	-	-	1133	Inf	1081	104.8%
7/2	A43 South Ahead	O	N/A	N/A	-		-	-	-	1141	Inf	1081	105.5%
10/1+10/2	B4100 West Left Ahead	O	N/A	N/A	-		-	-	-	393	Inf : Inf	286+38	121.3 : 121.3%
J2: Padbury Roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**87.9%**
1/1	A43 north Ahead	U	1:1	N/A	C1:B		1	41	-	980	1922	1345	67.2%
1/2	A43 north Ahead	U	1:1	N/A	C1:B		1	41	-	906	2058	1441	62.9%
3/1	A43 south Ahead	U	1:2	N/A	C1:C		1	40	-	1133	1886	1289	87.9%
3/2	A43 south Ahead	U	1:2	N/A	C1:C		1	40	-	969	2019	1380	70.2%
5/2+5/1	Junction 10 s'bound offslip Left Ahead	U	1:2	N/A	C1:D		1	8	-	380	2058:1908	309+222	81.6 : 57.6%
5/3	Junction 10 s'bound offslip Ahead	U	1:2	N/A	C1:D		1	8	-	196	2058	309	63.5%
6/1	Right	U	1:1	N/A	C1:A		1	7	-	208	1980	264	78.8%
6/2	Right	U	1:1	N/A	C1:A		1	7	-	196	2120	283	69.3%

J3: Cherwell	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**97.2%**
1/1	A43 Left Ahead	U	2:1	N/A	C2:A		1	29	-	882	1980	990	89.0%
1/2+1/3	A43 Ahead	U	2:1	N/A	C2:A		1	29	-	1408	1980:1980	892+553	97.2 : 84.0%
2/2	A43 Ahead	O	N/A	N/A	-		-	-	-	535	Inf	981	54.5%
5/1	MSA Left	U	2:2	N/A	C2:C		1	14	-	308	1871	468	65.8%
5/2	MSA Left Ahead	U	2:2	N/A	C2:C		1	14	-	316	2053	513	61.6%
8/1	Ahead Right	U	2:1	N/A	C2:B		1	19	-	272	1850	617	44.1%
10/1	Ahead	U	2:2	N/A	C2:D		1	34	-	529	1980	1155	45.7%
10/2	Ahead	U	2:2	N/A	C2:D		1	34	-	871	2120	1237	70.3%
10/3	Ahead	U	2:2	N/A	C2:D		1	34	-	539	2120	1237	37.6%
J4: Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**96.7%**
1/1+1/2	Ahead	O	N/A	N/A	-		-	-	-	375	Inf : Inf	312+463	48.3 : 48.3%
2/1	U-Turn	O	N/A	N/A	-		-	-	-	456	Inf	1136	33.8%
2/2	Ahead	O	N/A	N/A	-		-	-	-	298	Inf	1136	26.0%
9/1	Ahead Ahead2	O	N/A	N/A	-		-	-	-	1084	Inf	1120	96.7%
9/2	Ahead	O	N/A	N/A	-		-	-	-	1066	Inf	1120	95.1%

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: 2034 Reference Case Network Model	**-**	**-**	**10317**	**0**	**0**	**41.0**	**269.6**	**0.0**	**310.6**	**-**	**-**	**-**	**-**
J1: Baynards Green	**-**	**-**	**6202**	**0**	**0**	**18.8**	**230.9**	**0.0**	**249.7**	**-**	**-**	**-**	**-**
1/1	964	964	964	0	0	0.0	3.4	-	3.4	12.6	3.2	3.4	6.6
1/2	965	965	965	0	0	0.0	3.9	-	3.9	14.7	0.0	3.9	3.9
4/1+4/2	948	723	1446	0	0	9.4	114.5	-	123.9	470.7	25.0	114.5	139.5
5/1	904	904	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
7/1	1133	1081	1081	0	0	3.8	34.1	-	37.9	120.4	56.7	34.1	90.7
7/2	1141	1081	1081	0	0	3.1	37.4	-	40.4	127.6	57.1	37.4	94.4
10/1+10/2	393	332	664	0	0	2.5	37.1	-	39.7	363.5	17.4	37.1	54.5
J2: Padbury Roundabout	**-**	**-**	**0**	**0**	**0**	**10.3**	**8.6**	**0.0**	**18.9**	**-**	**-**	**-**	**-**
1/1	904	904	-	-	-	1.3	1.0	-	2.3	9.2	8.3	1.0	9.3
1/2	906	906	-	-	-	1.2	0.8	-	2.1	8.2	8.1	0.8	8.9
3/1	1133	1133	-	-	-	2.0	3.5	-	5.5	17.6	13.7	3.5	17.2
3/2	969	969	-	-	-	1.4	1.2	-	2.6	9.5	9.1	1.2	10.3
5/2+5/1	380	380	-	-	-	2.6	1.2	-	3.8	36.0	4.1	1.2	5.3
5/3	196	196	-	-	-	1.3	0.9	-	2.2	39.7	3.0	0.9	3.9
6/1	208	208	-	-	-	0.3	0.0	-	0.3	5.4	0.6	0.0	0.6
6/2	196	196	-	-	-	0.2	0.0	-	0.2	3.2	0.2	0.0	0.2
J3: Cherwell	**-**	**-**	**535**	**0**	**0**	**11.4**	**11.9**	**0.0**	**23.3**	**-**	**-**	**-**	**-**
1/1	881	881	-	-	-	3.3	3.8	-	7.1	29.1	13.8	3.8	17.6
1/2+1/3	1332	1332	-	-	-	3.4	5.4	-	8.8	23.8	16.7	5.4	22.1
2/2	535	535	535	0	0	0.0	0.6	-	0.6	4.0	0.0	0.6	0.6
5/1	308	308	-	-	-	1.7	1.0	-	2.7	31.3	4.5	1.0	5.5
5/2	316	316	-	-	-	1.8	0.8	-	2.5	29.0	4.7	0.8	5.4
8/1	272	272	-	-	-	1.1	0.4	-	1.5	20.2	3.5	0.4	3.9

10/1	528	528	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	870	870	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/3	465	465	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
J4: Unnamed Junction	**-**	**-**	**3580**	**0**	**0**	**0.5**	**18.2**	**0.0**	**18.7**	**-**	**-**	**-**	**-**
1/1+1/2	375	375	750	0	0	0.0	0.5	-	0.5	4.5	0.0	0.5	0.5
2/1	384	384	384	0	0	0.0	0.3	-	0.3	2.4	0.0	0.3	0.3
2/2	295	295	295	0	0	0.0	0.2	-	0.2	2.2	2.2	0.2	2.4
9/1	1084	1084	1084	0	0	0.3	9.7	-	10.0	33.1	12.6	9.7	22.3
9/2	1066	1066	1066	0	0	0.2	7.6	-	7.8	26.5	11.0	7.6	18.6

C1	Stream: 1 PRC for Signalled Lanes (%):	14.2	Total Delay for Signalled Lanes (pcuHr):	4.84	Cycle Time (s): 60
C1	Stream: 2 PRC for Signalled Lanes (%):	2.4	Total Delay for Signalled Lanes (pcuHr):	14.05	Cycle Time (s): 60
C2	Stream: 1 PRC for Signalled Lanes (%):	-8.0	Total Delay for Signalled Lanes (pcuHr):	17.45	Cycle Time (s): 60
C2	Stream: 2 PRC for Signalled Lanes (%):	28.0	Total Delay for Signalled Lanes (pcuHr):	5.24	Cycle Time (s): 60
	PRC Over All Lanes (%):	-58.1	Total Delay Over All Lanes(pcuHr):	310.58	

APPENDIX G

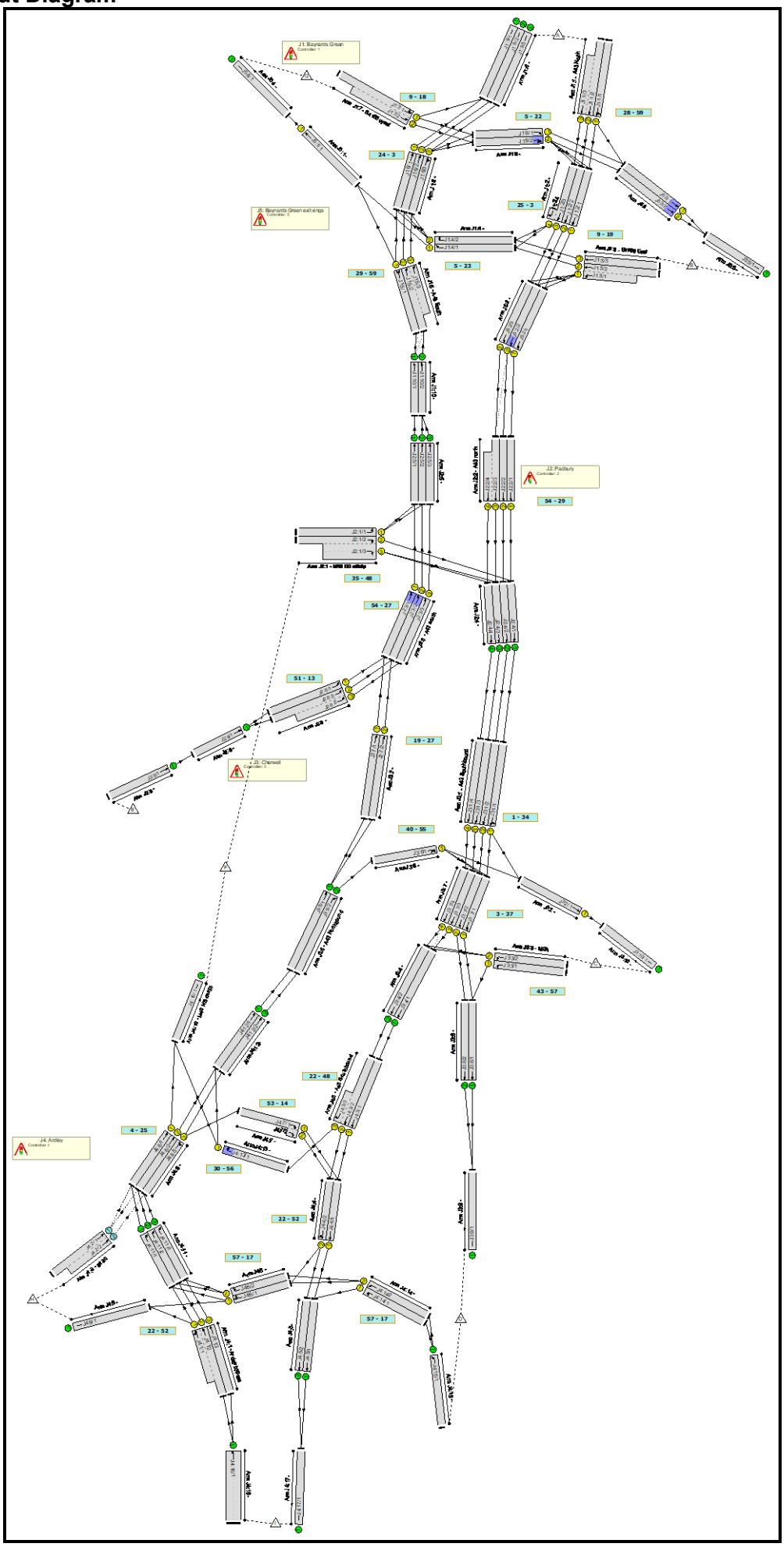
2034 DO SOMETHING (OPTON 28) LINSIG MODELLING FOR M40 J10 AND BAYNARD'S GREEN

Full Input Data And Results

User and Project Details

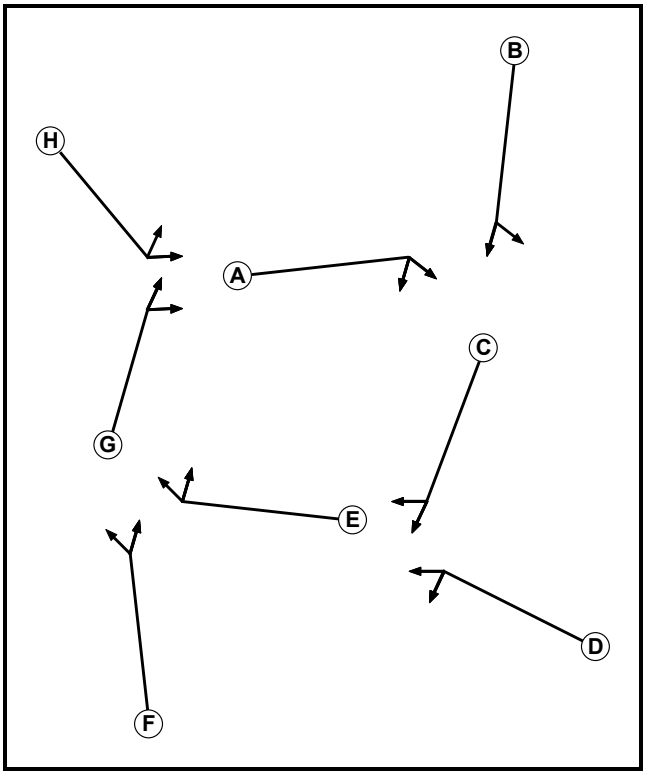
Project:	**Oxfordshire SRFI**
Title:	**Option 28 Network Model**
Location:	
Additional detail:	Entry and exit links configured to be consistent with ref case for comparison. Flows are 2031 BTM reference case, growthed to 2034 with TEMPRO and the development assignment added.
File name:	241106 Option 28.lsg3x
Author:	Mark Higgins
Company:	ADC Infrastructure
Address:	Nottingham

Network Layout Diagram



C1 - Baynards Green

Phase Diagram



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	3		7	7
F	Traffic	3		7	7
G	Traffic	4		7	7
H	Traffic	4		7	7

Phase Intergreens Matrix

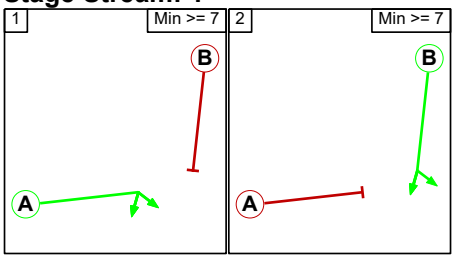
		Starting Phase							
		A	B	C	D	E	F	G	H
Terminating Phase	A		6	-	-	-	-	-	-
	B	6		-	-	-	-	-	-
	C	-	-		6	-	-	-	-
	D	-	-	6		-	-	-	-
	E	-	-	-	-		6	-	-
	F	-	-	-	-	6		-	-
	G	-	-	-	-	-	-		6
	H	-	-	-	-	-	-	6	

Phases in Stage

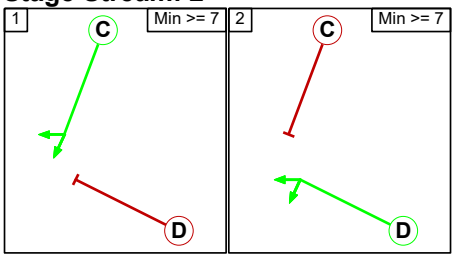
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E
3	2	F
4	1	G
4	2	H

Stage Diagram

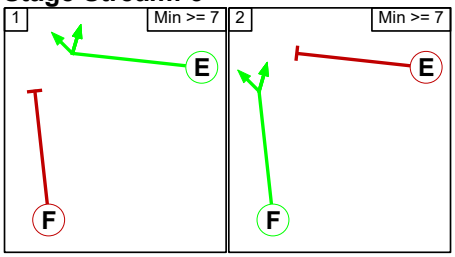
Stage Stream: 1



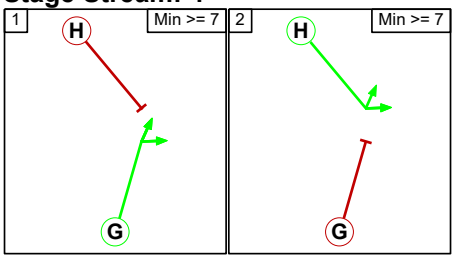
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Prohibited Stage Change

Stage Stream: 1

From Stage	To Stage 1	To Stage 2
1		6
2	6	

Stage Stream: 2

From Stage	To Stage 1	To Stage 2
1		6
2	6	

Stage Stream: 3

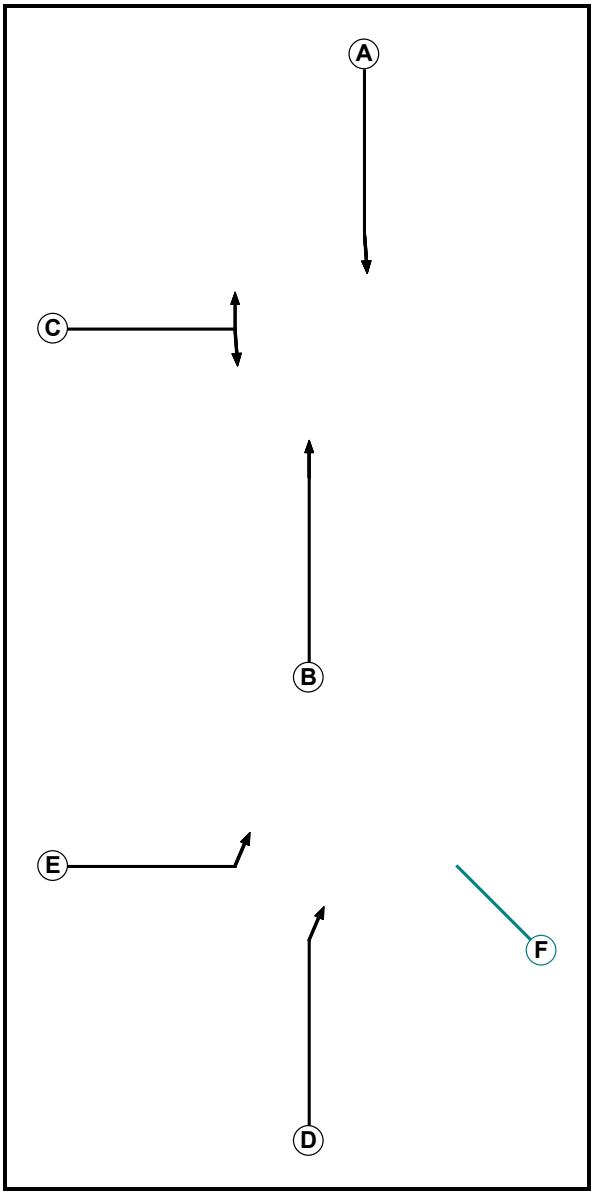
From Stage	To Stage 1	To Stage 2
1		6
2	6	

Stage Stream: 4

From Stage	To Stage 1	To Stage 2
1		6
2	6	

C2 - Padbury

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	5
B	Traffic	1		7	7
C	Traffic	1		7	7
D	Traffic	2		7	7
E	Traffic	2		7	7
F	Dummy	2		2	2

Phase Intergreens Matrix

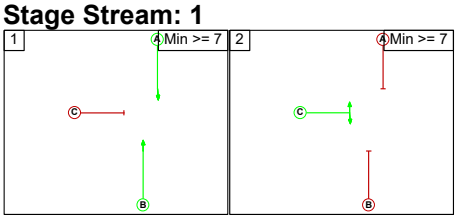
		Starting Phase					
		A	B	C	D	E	F
Terminating Phase	A		-	6	-	-	-
	B	-		7	-	-	-
	C	6	6		-	-	-
	D	-	-	-		6	2
	E	-	-	-	6		2
	F	-	-	-	3	3	

Phases in Stage

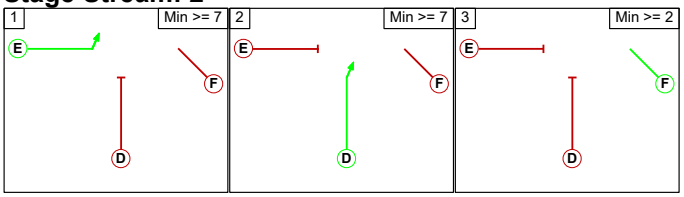
Stream	Stage No.	Phases in Stage
1	1	A B
1	2	C
2	1	E
2	2	D
2	3	F

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Prohibited Stage Change

Stage Stream: 1

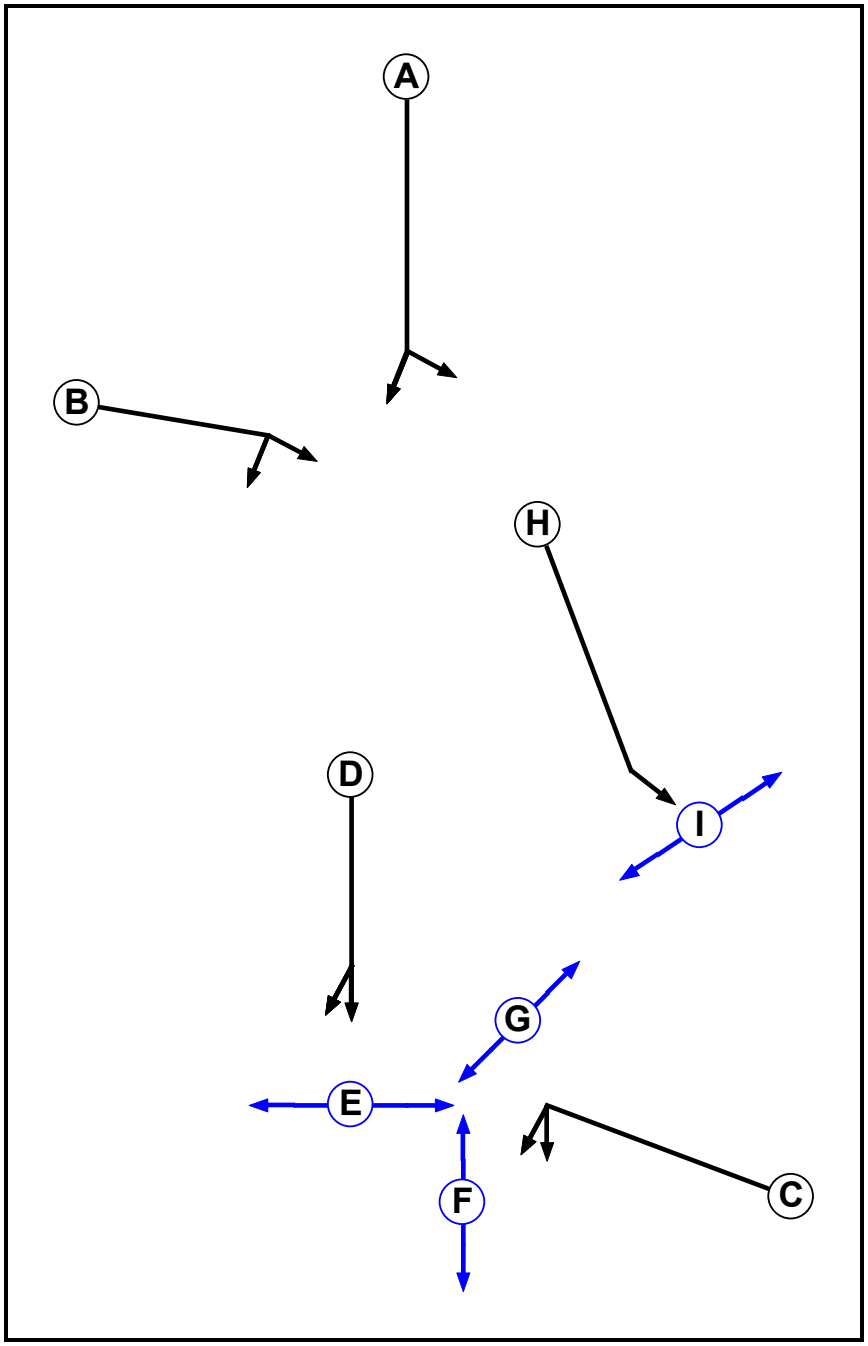
		To Stage	
		1	2
From Stage	1		8
	2	6	

Stage Stream: 2

		To Stage		
		1	2	3
From Stage	1		6	2
	2	6		2
	3	3	3	

C3 - Cherwell

Phase Diagram



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	Pedestrian	2		5	5
F	Pedestrian	2		5	5
G	Pedestrian	2		5	5
H	Traffic	3		7	7
I	Pedestrian	3		5	5

Phase Intergreens Matrix

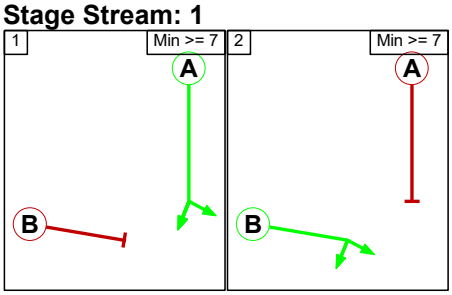
		Starting Phase								
		A	B	C	D	E	F	G	H	I
Terminating Phase	A		6	-	-	-	-	-	-	-
	B	6		-	-	-	-	-	-	-
	C	-	-		6	-	6	6	-	-
	D	-	-	6		6	-	-	-	-
	E	-	-	-	6		-	-	-	-
	F	-	-	6	-	-		-	-	-
	G	-	-	6	-	-	-		-	-
	H	-	-	-	-	-	-	-		6
	I	-	-	-	-	-	-	-	6	

Phases in Stage

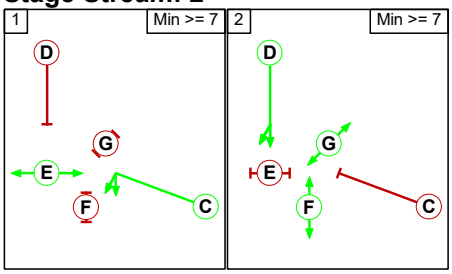
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C E
2	2	D F G
3	1	H
3	2	I

Stage Diagram

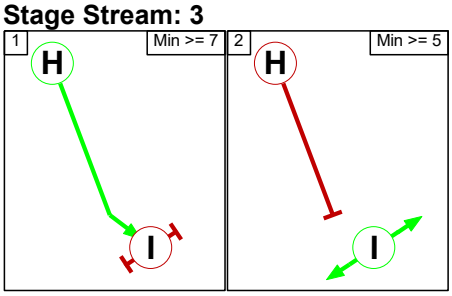
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		6
	2	6	

Stage Stream: 2

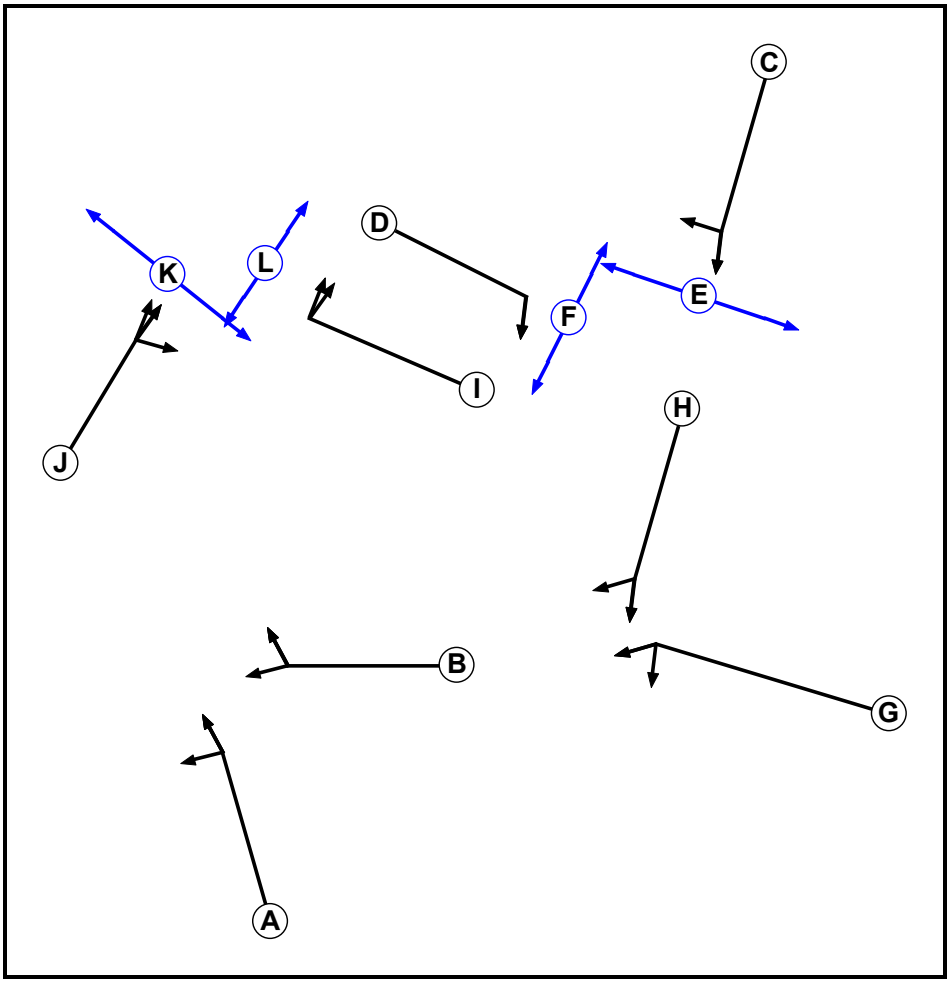
	To Stage		
		1	2
From Stage	1		6
	2	6	

Stage Stream: 3

	To Stage		
		1	2
From Stage	1		6
	2	6	

C4 - Ardley

Phase Diagram



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	Pedestrian	2		7	7
F	Pedestrian	2		5	5
G	Traffic	3		7	7
H	Traffic	3		7	7
I	Traffic	4		7	7
J	Traffic	4		7	7
K	Pedestrian	4		7	7
L	Pedestrian	4		5	5

Phase Intergreens Matrix

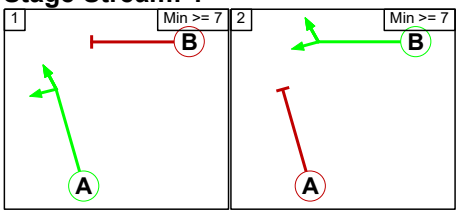
		Starting Phase											
		A	B	C	D	E	F	G	H	I	J	K	L
Terminating Phase	A		5	-	-	-	-	-	-	-	-	-	-
	B	5		-	-	-	-	-	-	-	-	-	-
	C	-	-		5	5	-	-	-	-	-	-	-
	D	-	-	5		-	5	-	-	-	-	-	-
	E	-	-	8	-		-	-	-	-	-	-	-
	F	-	-	-	5	-		-	-	-	-	-	-
	G	-	-	-	-	-	-		5	-	-	-	-
	H	-	-	-	-	-	-	5		-	-	-	-
	I	-	-	-	-	-	-	-	-		5	-	5
	J	-	-	-	-	-	-	-	-	5		5	-
	K	-	-	-	-	-	-	-	-	-	8		-
	L	-	-	-	-	-	-	-	-	5	-	-	

Phases in Stage

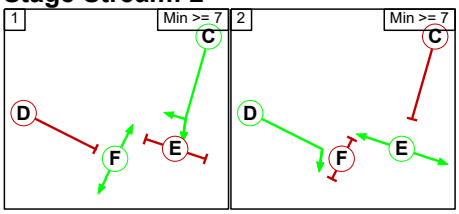
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C F
2	2	D E
3	1	G
3	2	H
4	1	J L
4	2	I K

Stage Diagram

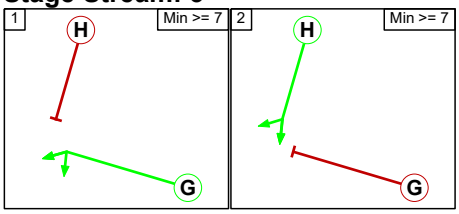
Stage Stream: 1



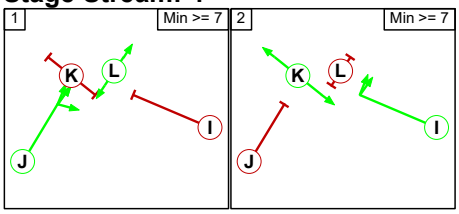
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		5
	2	5	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		5
	2	8	

Stage Stream: 3

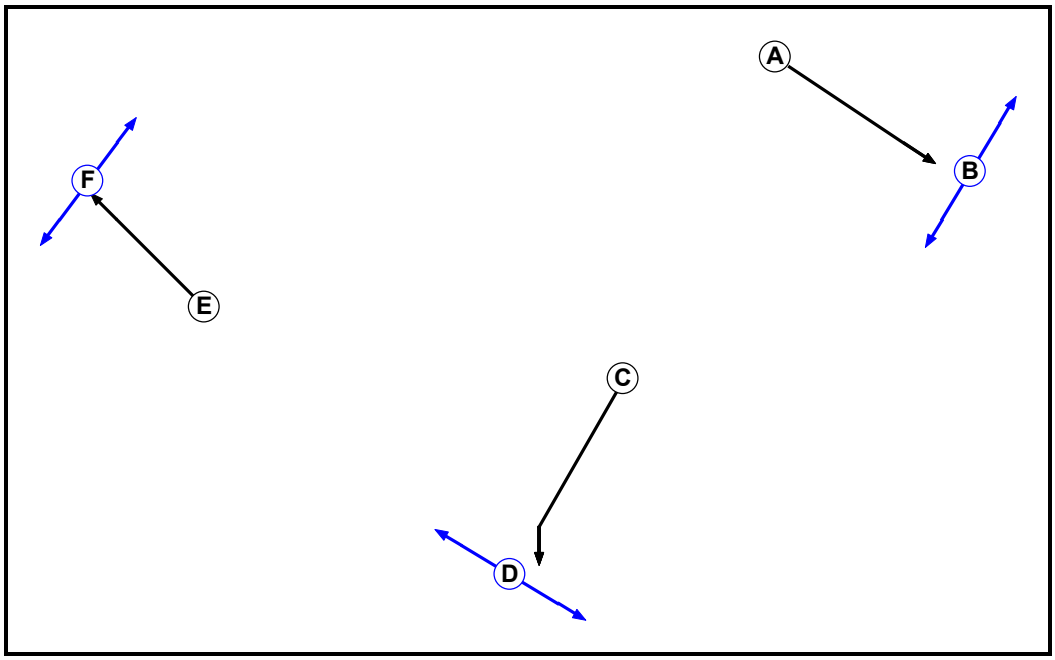
	To Stage		
		1	2
From Stage	1		5
	2	5	

Stage Stream: 4

	To Stage		
		1	2
From Stage	1		5
	2	8	

C5 - Baynards Green exit xings

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Pedestrian	1		5	5
C	Traffic	2		7	7
D	Pedestrian	2		7	7
E	Traffic	3		7	7
F	Pedestrian	3		5	5

Phase Intergreens Matrix

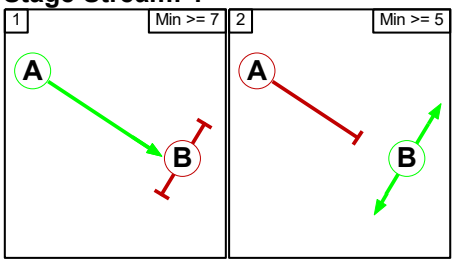
		Starting Phase					
		A	B	C	D	E	F
Terminating Phase	A		5	-	-	-	-
	B	6		-	-	-	-
	C	-	-		5	-	-
	D	-	-	7		-	-
	E	-	-	-	-		5
	F	-	-	-	-	5	

Phases in Stage

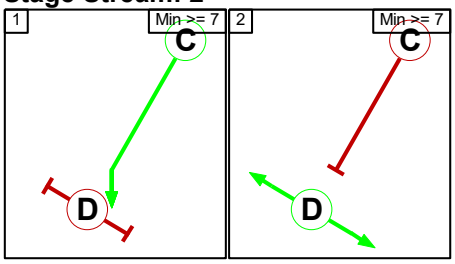
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E
3	2	F

Stage Diagram

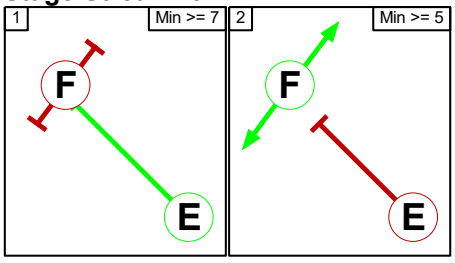
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		5
	2	6	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		5
	2	7	

Stage Stream: 3

	To Stage		
		1	2
From Stage	1		5
	2	5	

Give-Way Lane Input Data

Junction: J4: Ardley											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
J4:2/1 (B430)	J4:8/1 (Ahead)	1000	0	J4:11/1	0.33	All	-	-	-	-	-
				J4:11/2	0.33	All					
	J4:8/2 (Ahead)	1000	0	J4:11/1	0.33	All					
				J4:11/2	0.33	All					
J4:2/2 (B430)	J4:8/3 (Ahead)	1000	0	J4:11/1	0.33	All	-	-	-	-	-
				J4:11/2	0.33	All					
				J4:11/3	0.33	All					

Lane Input Data

Junction: J1: Baynards Green												
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)**
J1:1/1 (A43 North)	U	B	2	3	60.0	Geom	-	4.00	0.00	Y	Arm J1:2 Ahead	45.00
											Arm J5:3 Left	45.00
J1:1/2 (A43 North)	U	B	2	3	60.0	Geom	-	4.00	0.00	N	Arm J1:2 Ahead	45.00
J1:1/3 (A43 North)	U	B	2	3	15.7	Geom	-	4.00	0.00	N	Arm J1:2 Ahead	45.00
J1:2/1	U	C	1	3	10.4	Geom	-	4.00	0.00	Y	Arm J5:2 Ahead	50.00
J1:2/2	U	C	1	3	10.4	Geom	-	4.00	0.00	N	Arm J5:2 Ahead	50.00
J1:2/3	U	C	1	3	10.4	Geom	-	4.00	0.00	N	Arm J5:2 Ahead	50.00
J1:2/4	U	C	1	3	2.1	Geom	-	4.00	0.00	N	Arm J1:4 Right	50.00
J1:3/1 (B4100 East)	U	D	2	3	10.4	Geom	-	3.65	0.00	Y	Arm J5:2 Left	30.00
J1:3/2 (B4100 East)	U	D	2	3	60.0	Geom	-	3.65	0.00	Y	Arm J1:4 Ahead	50.00
J1:3/3 (B4100 East)	U	D	2	3	60.0	Geom	-	3.65	0.00	N	Arm J1:4 Ahead	50.00
J1:4/1	U	E	1	3	10.4	Geom	-	4.50	0.00	Y	Arm J5:1 Ahead	30.00
J1:4/2	U	E	1	3	10.4	Geom	-	4.50	0.00	N	Arm J1:6 Right	25.00
J1:5/1 (A43 South)	U	F	2	3	52.2	Geom	-	3.65	0.00	Y	Arm J1:6 Ahead	55.00
											Arm J5:1 Ahead	55.00
J1:5/2 (A43 South)	U	F	2	3	52.2	Geom	-	3.65	0.00	N	Arm J1:6 Ahead	50.00
J1:5/3 (A43 South)	U	F	2	3	15.7	Geom	-	3.65	0.00	N	Arm J1:6 Ahead	50.00

J1:6/1	U	G	1	3	10.4	Geom	-	4.00	0.00	Y	Arm J1:8 Ahead	35.00
J1:6/2	U	G	1	3	10.4	Geom	-	4.00	0.00	N	Arm J1:8 Ahead	35.00
J1:6/3	U	G	1	3	10.4	Geom	-	4.00	0.00	N	Arm J1:8 Ahead	35.00
											Arm J1:9 Right	30.00
J1:7/1 (B4100 West)	U	H	2	3	60.0	Geom	-	3.65	0.00	Y	Arm J1:8 Left	30.00
											Arm J1:9 Ahead	40.00
J1:7/2 (B4100 West)	U	H	2	3	15.7	Geom	-	3.65	0.00	N	Arm J1:9 Ahead	40.00
J1:8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
J1:8/2	U		2	3	60.0	Inf	-	-	-	-	-	-
J1:8/3	U		2	3	60.0	Inf	-	-	-	-	-	-
J1:9/1	U	A	1	3	10.4	Geom	-	4.50	0.00	Y	Arm J5:3 Ahead	35.00
J1:9/2	U	A	1	3	10.4	Geom	-	4.50	0.00	N	Arm J1:2 Right	30.00
											Arm J5:3 Ahead	35.00
J1:10/1	U		2	3	52.2	Inf	-	-	-	-	-	-
J1:10/2	U		2	3	52.2	Inf	-	-	-	-	-	-

Junction: J2: Padbury												
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)**
J2:1/1 (M40 SB offslip)	U	C	2	3	95.7	Geom	-	4.00	0.00	Y	Arm J2:5 Left	40.00
J2:1/2 (M40 SB offslip)	U	C	2	3	95.7	Geom	-	3.65	0.00	Y	Arm J2:4 Right	50.00
J2:1/3 (M40 SB offslip)	U	C	2	3	10.4	User	3400	-	-	-	-	-
J2:2/1 (A43 north)	U	A	2	3	109.6	Geom	-	3.65	0.00	Y	Arm J2:4 Ahead	Inf
J2:2/2 (A43 north)	U	A	2	3	109.6	Geom	-	3.65	0.00	N	Arm J2:4 Ahead	Inf
J2:2/3 (A43 north)	U	A	2	3	109.6	Geom	-	3.65	0.00	N	Arm J2:4 Ahead	Inf
J2:2/4 (A43 north)	U	A	2	3	15.7	Geom	-	3.63	0.00	Y	Arm J2:4 Ahead	Inf
J2:3/1 (A43 south)	U	B	0	3	4.3	Geom	-	3.65	0.00	Y	Arm J2:5 Ahead	Inf
J2:3/2 (A43 south)	U	B	0	3	4.3	Geom	-	3.65	0.00	N	Arm J2:5 Ahead	Inf
J2:3/3 (A43 south)	U	B	0	3	4.3	Geom	-	3.65	0.00	N	Arm J2:5 Ahead	Inf
J2:4/1	U		2	3	0.9	Inf	-	-	-	-	-	-
J2:4/2	U		2	3	0.9	Inf	-	-	-	-	-	-
J2:4/3	U		2	3	0.9	Inf	-	-	-	-	-	-
J2:4/4	U		2	3	0.9	Inf	-	-	-	-	-	-
J2:5/1	U		2	3	10.4	Inf	-	-	-	-	-	-
J2:5/2	U		2	3	10.4	Inf	-	-	-	-	-	-
J2:5/3	U		2	3	10.4	User	3000	-	-	-	-	-
J2:6/1	U	E	2	3	173.9	Geom	-	3.65	0.00	Y	Arm J2:3 Left	Inf
J2:6/2	U	E	2	3	173.9	Geom	-	3.65	0.00	N	Arm J2:3 Left	Inf
J2:6/3	U	E	2	3	10.4	Geom	-	3.65	0.00	Y	Arm J2:3 Left	Inf
J2:7/1	U	D	2	3	57.4	Geom	-	3.65	0.00	Y	Arm J2:3 Ahead	50.00

J2:7/2	U	D	2	3	57.4	Geom	-	3.65	0.00	N	Arm J2:3 Ahead	50.00
J2:8/1	U		2	3	173.9	Inf	-	-	-	-	-	-
J2:9/1	U		2	3	52.2	Inf	-	-	-	-	-	-

Junction: J3: Cherwell												
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)**
J3:1/1 (A43 Southbound)	U	A	2	3	52.2	Geom	-	3.70	0.00	Y	Arm J3:2 Left Arm J3:7 Ahead	Inf Inf
J3:1/2 (A43 Southbound)	U	A	2	3	52.2	Geom	-	3.70	0.00	N	Arm J3:7 Ahead	Inf
J3:1/3 (A43 Southbound)	U	A	2	3	52.2	Geom	-	3.65	0.00	Y	Arm J3:7 Ahead	Inf
J3:1/4 (A43 Southbound)	U	A	2	3	52.2	Geom	-	3.65	0.00	N	Arm J3:7 Ahead	Inf
J3:2/1	U	H	2	3	10.4	Geom	-	4.00	0.00	Y	Arm J3:10 Ahead	Inf
J3:3/1 (MSA)	U	C	2	3	60.0	Geom	-	4.00	0.00	Y	Arm J3:8 Left	15.00
J3:3/2 (MSA)	U	C	2	3	60.0	Geom	-	4.00	0.00	Y	Arm J3:4 Left	Inf
J3:4/1	U		2	3	5.2	Inf	-	-	-	-	-	-
J3:4/2	U		2	3	5.2	Inf	-	-	-	-	-	-
J3:5/1 (A43 Northbound)	U		2	3	36.5	Inf	-	-	-	-	-	-
J3:5/2 (A43 Northbound)	U		2	3	36.5	Inf	-	-	-	-	-	-
J3:6/1	U	B	2	3	10.4	Geom	-	4.50	0.00	Y	Arm J3:2 Ahead Arm J3:7 Right	40.00 30.00
J3:7/1	U	D	0	3	8.7	Geom	-	4.00	0.00	Y	Arm J3:8 Ahead	Inf
J3:7/2	U	D	0	3	8.7	Geom	-	4.00	0.00	N	Arm J3:8 Ahead	Inf
J3:7/3	U	D	0	3	8.7	Geom	-	4.00	0.00	Y	Arm J3:4 Ahead	Inf
J3:7/4	U	D	0	3	8.7	Geom	-	4.00	0.00	N	Arm J3:4 Ahead	Inf
J3:8/1	U		2	3	87.0	Inf	-	-	-	-	-	-
J3:8/2	U		2	3	87.0	Inf	-	-	-	-	-	-
J3:9/1	U		2	3	173.9	Inf	-	-	-	-	-	-
J3:10/1	U		2	3	48.7	Inf	-	-	-	-	-	-

Junction: J4: Ardley												
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)**
J4:1/1 (Ardley bypass)	U	A	2	3	15.7	Geom	-	3.65	0.00	Y	Arm J4:9 Left	30.00
											Arm J4:11 Ahead	30.00
J4:1/2 (Ardley bypass)	U	A	2	3	87.0	Geom	-	3.65	0.00	N	Arm J4:11 Ahead	30.00
J4:1/3 (Ardley bypass)	U	A	2	3	87.0	Geom	-	3.65	0.00	N	Arm J4:11 Ahead	30.00
J4:2/1 (B430)	O		2	3	60.0	Geom	-	3.50	0.00	Y	Arm J4:8 Ahead	40.00
J4:2/2 (B430)	O		2	3	10.4	Geom	-	3.50	0.00	N	Arm J4:8 Ahead	Inf
J4:3/1 (A43 Southbound)	U	C	2	3	26.1	Geom	-	4.00	0.00	Y	Arm J4:4 Ahead	30.00
J4:3/2 (A43 Southbound)	U	C	2	3	26.1	Geom	-	4.00	0.00	N	Arm J4:4 Ahead	30.00
J4:3/3 (A43 Southbound)	U	C	2	3	6.3	Geom	-	4.00	0.00	N	Arm J4:13 Right	50.00
J4:4/1	U	H	1	3	10.4	Geom	-	4.50	0.00	Y	Arm J4:5 Ahead	30.00
J4:4/2	U	H	1	3	10.4	Geom	-	4.50	0.00	N	Arm J4:5 Ahead	30.00
											Arm J4:6 Right	30.00
J4:5/1	U		2	3	87.0	Inf	-	-	-	-	-	-
J4:5/2	U		2	3	87.0	Inf	-	-	-	-	-	-
J4:6/1	U	B	1	3	10.4	Geom	-	4.50	0.00	Y	Arm J4:9 Ahead	40.00
											Arm J4:11 Right	40.00
J4:6/2	U	B	1	3	10.4	Geom	-	4.50	0.00	Y	Arm J4:11 Right	40.00
J4:7/1	U	D	2	3	12.2	Geom	-	4.00	0.00	Y	Arm J4:4 Right	40.00
J4:7/2	U	D	2	3	2.1	Geom	-	4.00	0.00	N	Arm J4:4 Right	40.00

J4:8/1	U	J	2	3	13.9	Geom	-	4.00	0.00	Y	Arm J4:10 Ahead	Inf
J4:8/2	U	J	2	3	13.9	Geom	-	4.00	0.00	Y	Arm J4:12 Ahead	Inf
J4:8/3	U	J	2	3	13.9	Geom	-	4.00	0.00	Y	Arm J4:7 Right	Inf
											Arm J4:12 Ahead	Inf
J4:9/1	U		2	3	60.0	Inf	-	-	-	-	-	-
J4:10/1 (M40 NB onslip)	U		2	3	139.1	Inf	-	-	-	-	-	-
J4:11/1	U		2	3	13.9	Inf	-	-	-	-	-	-
J4:11/2	U		0	3	13.9	Inf	-	-	-	-	-	-
J4:11/3	U		0	3	13.9	Inf	-	-	-	-	-	-
J4:12/1	U		2	3	8.7	Inf	-	-	-	-	-	-
J4:12/2	U		2	3	8.7	Inf	-	-	-	-	-	-
J4:13/1	U	I	1	3	16.5	Geom	-	4.50	0.00	Y	Arm J4:10 Right	40.00
											Arm J4:12 Right	40.00
J4:14/1	U	G	2	3	173.9	Geom	-	3.65	0.00	Y	Arm J4:5 Left	30.00
J4:14/2	U	G	2	3	173.9	Geom	-	3.65	0.00	N	Arm J4:6 Ahead	30.00
J4:15/1	U		2	3	60.9	Inf	-	-	-	-	-	-
J4:16/1	U		2	3	173.9	Inf	-	-	-	-	-	-
J4:17/1	U		2	3	173.9	Inf	-	-	-	-	-	-

Junction: J5: Baynards Green exit xings												
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)**
J5:1/1	U	E	2	3	11.3	Geom	-	3.65	0.00	Y	Arm J5:4 Ahead	Inf
J5:2/1	U	C	2	3	8.7	Geom	-	3.65	0.00	Y	Arm J2:2 Ahead	Inf
J5:2/2	U	C	2	3	8.7	Geom	-	3.65	0.00	N	Arm J2:2 Ahead	Inf
J5:2/3	U	C	2	3	8.7	Geom	-	3.65	0.00	N	Arm J2:2 Ahead	Inf
J5:3/1	U	A	2	3	11.3	Geom	-	3.60	0.00	Y	Arm J5:5 Ahead	Inf
J5:3/2	U	A	2	3	11.3	Geom	-	3.60	0.00	Y	Arm J5:5 Ahead	Inf
J5:4/1	U		2	3	48.7	Inf	-	-	-	-	-	-
J5:5/1	U		2	3	48.7	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2034 do something - off-peak'	00:00	01:00	01:00	((F3+F4)/2)*0.26
2: '2034 do something - inter-peak '	12:00	13:00	01:00	((F3+F4)/2)*0.89
3: '2034 do something - AM'	08:00	09:00	01:00	
4: '2034 do something - PM'	17:00	18:00	01:00	

Scenario 1: '2034 Option 28 - AM peak' (FG3: '2034 do something - AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination									
		A	B	C	D	E	F	G	H	I	Tot.
Origin	A	0	173	64	1577	0	0	16	19	614	2463
	B	258	0	0	2	0	198	301	0	81	840
	C	75	0	0	265	0	188	0	0	71	599
	D	0	0	247	0	0	0	0	18	203	468
	E	1216	2	0	0	0	0	6	0	0	1224
	F	0	325	238	0	0	0	30	55	359	1007
	G	72	478	0	110	0	0	0	1	40	701
	H	17	1	0	2	0	111	9	0	254	394
	I	167	24	0	175	0	228	17	161	0	772
	Tot.	1805	1003	549	2131	0	725	379	254	1622	8468

Traffic Lane Flows

Lane	Scenario 1: 2034 Option 28 - AM peak
Junction: J1: Baynards Green	
J1:1/1	907
J1:1/2 (with short)	1556(In) 933(Out)
J1:1/3 (short)	623
J1:2/1	750
J1:2/2	1029
J1:2/3 (with short)	662(In) 646(Out)
J1:2/4 (short)	16
J1:3/1 (short)	281
J1:3/2 (with short)	582(In) 301(Out)
J1:3/3	258
J1:4/1	317
J1:4/2	258
J1:5/1	615
J1:5/2 (with short)	1274(In) 769(Out)
J1:5/3 (short)	505
J1:6/1	611
J1:6/2	870
J1:6/3	604
J1:7/1 (with short)	701(In) 356(Out)
J1:7/2 (short)	345
J1:8/1	683
J1:8/2	870
J1:8/3	252
J1:9/1	453
J1:9/2	528
J1:10/1	702
J1:10/2	1187
Junction: J2: Padbury	
J2:1/1	355
J2:1/2 (with short)	652(In) 238(Out)
J2:1/3 (short)	414
J2:2/1	750
J2:2/2	1003
J2:2/3 (with short)	953(In) 376(Out)

J2:2/4 (short)	577
J2:3/1	524
J2:3/2	653
J2:3/3	357
J2:4/1	988
J2:4/2	1003
J2:4/3	553
J2:4/4	814
J2:5/1	702
J2:5/2	830
J2:5/3	357
J2:6/1	378
J2:6/2 (with short)	846(In) 489(Out)
J2:6/3 (short)	357
J2:7/1	146
J2:7/2	164
J2:8/1	1224
J2:9/1	1224
Junction: J3: Cherwell	
J3:1/1	988
J3:1/2	1003
J3:1/3	553
J3:1/4	814
J3:2/1	549
J3:3/1	265
J3:3/2	334
J3:4/1	676
J3:4/2	1025
J3:5/1	310
J3:5/2	424
J3:6/1	424
J3:7/1	762
J3:7/2	1104
J3:7/3	553
J3:7/4	814
J3:8/1	1027
J3:8/2	1104
J3:9/1	2131
J3:10/1	549
Junction: J4: Ardley	
J4:1/1 (short)	389
J4:1/2 (with short)	597(In) 208(Out)

J4:1/3	175
J4:2/1 (with short)	394(In) 138(Out)
J4:2/2 (short)	256
J4:3/1	676
J4:3/2 (with short)	1025(In) 564(Out)
J4:3/3 (short)	461
J4:4/1	793
J4:4/2	701
J4:5/1	996
J4:5/2	626
J4:6/1	93
J4:6/2	247
J4:7/1 (with short)	254(In) 117(Out)
J4:7/2 (short)	137
J4:8/1	339
J4:8/2	235
J4:8/3	678
J4:9/1	254
J4:10/1	725
J4:11/1	228
J4:11/2	208
J4:11/3	422
J4:12/1	310
J4:12/2	424
J4:13/1	461
J4:14/1	203
J4:14/2	265
J4:15/1	468
J4:16/1	772
J4:17/1	1622
Junction: J5: Baynards Green exit xings	
J5:1/1	379
J5:2/1	750
J5:2/2	1174
J5:2/3	782
J5:3/1	626
J5:3/2	377
J5:4/1	379
J5:5/1	1003

Lane Saturation Flows

Junction: J1: Baynards Green

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J1:1/1 (A43 North)	4.00	0.00	Y	Arm J1:2 Ahead	45.00	80.9 %	1950	1950
				Arm J5:3 Left	45.00	19.1 %		
J1:1/2 (A43 North)	4.00	0.00	N	Arm J1:2 Ahead	45.00	100.0 %	2085	2085
J1:1/3 (A43 North)	4.00	0.00	N	Arm J1:2 Ahead	45.00	100.0 %	2085	2085
J1:2/1	4.00	0.00	Y	Arm J5:2 Ahead	50.00	100.0 %	1956	1956
J1:2/2	4.00	0.00	N	Arm J5:2 Ahead	50.00	100.0 %	2092	2092
J1:2/3	4.00	0.00	N	Arm J5:2 Ahead	50.00	100.0 %	2092	2092
J1:2/4	4.00	0.00	N	Arm J1:4 Right	50.00	100.0 %	2092	2092
J1:3/1 (B4100 East)	3.65	0.00	Y	Arm J5:2 Left	30.00	100.0 %	1886	1886
J1:3/2 (B4100 East)	3.65	0.00	Y	Arm J1:4 Ahead	50.00	100.0 %	1922	1922
J1:3/3 (B4100 East)	3.65	0.00	N	Arm J1:4 Ahead	50.00	100.0 %	2058	2058
J1:4/1	4.50	0.00	Y	Arm J5:1 Ahead	30.00	100.0 %	1967	1967
J1:4/2	4.50	0.00	N	Arm J1:6 Right	25.00	100.0 %	2080	2080
J1:5/1 (A43 South)	3.65	0.00	Y	Arm J1:6 Ahead	55.00	89.9 %	1927	1927
				Arm J5:1 Ahead	55.00	10.1 %		
J1:5/2 (A43 South)	3.65	0.00	N	Arm J1:6 Ahead	50.00	100.0 %	2058	2058
J1:5/3 (A43 South)	3.65	0.00	N	Arm J1:6 Ahead	50.00	100.0 %	2058	2058
J1:6/1	4.00	0.00	Y	Arm J1:8 Ahead	35.00	100.0 %	1932	1932
J1:6/2	4.00	0.00	N	Arm J1:8 Ahead	35.00	100.0 %	2066	2066
J1:6/3	4.00	0.00	N	Arm J1:8 Ahead	35.00	41.7 %	2058	2058
				Arm J1:9 Right	30.00	58.3 %		
J1:7/1 (B4100 West)	3.65	0.00	Y	Arm J1:8 Left	30.00	20.2 %	1904	1904
				Arm J1:9 Ahead	40.00	79.8 %		
J1:7/2 (B4100 West)	3.65	0.00	N	Arm J1:9 Ahead	40.00	100.0 %	2043	2043
J1:8/1	Infinite Saturation Flow						Inf	Inf
J1:8/2	Infinite Saturation Flow						Inf	Inf
J1:8/3	Infinite Saturation Flow						Inf	Inf
J1:9/1	4.50	0.00	Y	Arm J5:3 Ahead	35.00	100.0 %	1980	1980
J1:9/2	4.50	0.00	N	Arm J1:2 Right	30.00	28.6 %	2110	2110
				Arm J5:3 Ahead	35.00	71.4 %		
J1:10/1	Infinite Saturation Flow						Inf	Inf
J1:10/2	Infinite Saturation Flow						Inf	Inf

Junction: J2: Padbury								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J2:1/1 (M40 SB offslip)	4.00	0.00	Y	Arm J2:5 Left	40.00	100.0 %	1942	1942
J2:1/2 (M40 SB offslip)	3.65	0.00	Y	Arm J2:4 Right	50.00	100.0 %	1922	1922
J2:1/3 (M40 SB offslip Lane 3)	This lane uses a directly entered Saturation Flow						3400	3400
J2:2/1 (A43 north)	3.65	0.00	Y	Arm J2:4 Ahead	Inf	100.0 %	1980	1980
J2:2/2 (A43 north)	3.65	0.00	N	Arm J2:4 Ahead	Inf	100.0 %	2120	2120
J2:2/3 (A43 north)	3.65	0.00	N	Arm J2:4 Ahead	Inf	100.0 %	2120	2120
J2:2/4 (A43 north)	3.63	0.00	Y	Arm J2:4 Ahead	Inf	100.0 %	1978	1978
J2:3/1 (A43 south)	3.65	0.00	Y	Arm J2:5 Ahead	Inf	100.0 %	1980	1980
J2:3/2 (A43 south)	3.65	0.00	N	Arm J2:5 Ahead	Inf	100.0 %	2120	2120
J2:3/3 (A43 south)	3.65	0.00	N	Arm J2:5 Ahead	Inf	100.0 %	2120	2120
J2:4/1	Infinite Saturation Flow						Inf	Inf
J2:4/2	Infinite Saturation Flow						Inf	Inf
J2:4/3	Infinite Saturation Flow						Inf	Inf
J2:4/4	Infinite Saturation Flow						Inf	Inf
J2:5/1	Infinite Saturation Flow						Inf	Inf
J2:5/2	Infinite Saturation Flow						Inf	Inf
J2:5/3	This lane uses a directly entered Saturation Flow						3000	3000
J2:6/1	3.65	0.00	Y	Arm J2:3 Left	Inf	100.0 %	1980	1980
J2:6/2	3.65	0.00	N	Arm J2:3 Left	Inf	100.0 %	2120	2120
J2:6/3	3.65	0.00	Y	Arm J2:3 Left	Inf	100.0 %	1980	1980
J2:7/1	3.65	0.00	Y	Arm J2:3 Ahead	50.00	100.0 %	1922	1922
J2:7/2	3.65	0.00	N	Arm J2:3 Ahead	50.00	100.0 %	2058	2058
J2:8/1	Infinite Saturation Flow						Inf	Inf
J2:9/1	Infinite Saturation Flow						Inf	Inf

Junction: J3: Cherwell								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J3:1/1 (A43 Southbound)	3.70	0.00	Y	Arm J3:2 Left	Inf	30.6 %	1985	1985
				Arm J3:7 Ahead	Inf	69.4 %		
J3:1/2 (A43 Southbound)	3.70	0.00	N	Arm J3:7 Ahead	Inf	100.0 %	2125	2125
J3:1/3 (A43 Southbound)	3.65	0.00	Y	Arm J3:7 Ahead	Inf	100.0 %	1980	1980
J3:1/4 (A43 Southbound)	3.65	0.00	N	Arm J3:7 Ahead	Inf	100.0 %	2120	2120
J3:2/1	4.00	0.00	Y	Arm J3:10 Ahead	Inf	100.0 %	2015	2015
J3:3/1 (MSA)	4.00	0.00	Y	Arm J3:8 Left	15.00	100.0 %	1832	1832
J3:3/2 (MSA)	4.00	0.00	Y	Arm J3:4 Left	Inf	100.0 %	2015	2015
J3:4/1	Infinite Saturation Flow						Inf	Inf
J3:4/2	Infinite Saturation Flow						Inf	Inf
J3:5/1 (A43 Northbound Lane 1)	Infinite Saturation Flow						Inf	Inf
J3:5/2 (A43 Northbound Lane 2)	Infinite Saturation Flow						Inf	Inf
J3:6/1	4.50	0.00	Y	Arm J3:2 Ahead	40.00	58.3 %	1980	1980
				Arm J3:7 Right	30.00	41.7 %		
J3:7/1	4.00	0.00	Y	Arm J3:8 Ahead	Inf	100.0 %	2015	2015
J3:7/2	4.00	0.00	N	Arm J3:8 Ahead	Inf	100.0 %	2155	2155
J3:7/3	4.00	0.00	Y	Arm J3:4 Ahead	Inf	100.0 %	2015	2015
J3:7/4	4.00	0.00	N	Arm J3:4 Ahead	Inf	100.0 %	2155	2155
J3:8/1	Infinite Saturation Flow						Inf	Inf
J3:8/2	Infinite Saturation Flow						Inf	Inf
J3:9/1	Infinite Saturation Flow						Inf	Inf
J3:10/1	Infinite Saturation Flow						Inf	Inf

Junction: J4: Ardley								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J4:1/1 (Ardley bypass)	3.65	0.00	Y	Arm J4:9 Left	30.00	41.4 %	1886	1886
				Arm J4:11 Ahead	30.00	58.6 %		
J4:1/2 (Ardley bypass)	3.65	0.00	N	Arm J4:11 Ahead	30.00	100.0 %	2019	2019
J4:1/3 (Ardley bypass)	3.65	0.00	N	Arm J4:11 Ahead	30.00	100.0 %	2019	2019
J4:2/1 (B430)	3.50	0.00	Y	Arm J4:8 Ahead	40.00	100.0 %	1894	1894
J4:2/2 (B430)	3.50	0.00	N	Arm J4:8 Ahead	Inf	100.0 %	2105	2105
J4:3/1 (A43 Southbound)	4.00	0.00	Y	Arm J4:4 Ahead	30.00	100.0 %	1919	1919
J4:3/2 (A43 Southbound)	4.00	0.00	N	Arm J4:4 Ahead	30.00	100.0 %	2052	2052
J4:3/3 (A43 Southbound)	4.00	0.00	N	Arm J4:13 Right	50.00	100.0 %	2092	2092
J4:4/1	4.50	0.00	Y	Arm J4:5 Ahead	30.00	100.0 %	1967	1967
J4:4/2	4.50	0.00	N	Arm J4:5 Ahead	30.00	89.3 %	2100	2100
				Arm J4:6 Right	30.00	10.7 %		
J4:5/1	Infinite Saturation Flow						Inf	Inf
J4:5/2	Infinite Saturation Flow						Inf	Inf
J4:6/1	4.50	0.00	Y	Arm J4:9 Ahead	40.00	100.0 %	1990	1990
				Arm J4:11 Right	40.00	0.0 %		
J4:6/2	4.50	0.00	Y	Arm J4:11 Right	40.00	100.0 %	1990	1990
J4:7/1	4.00	0.00	Y	Arm J4:4 Right	40.00	100.0 %	1942	1942
J4:7/2	4.00	0.00	N	Arm J4:4 Right	40.00	100.0 %	2077	2077
J4:8/1	4.00	0.00	Y	Arm J4:10 Ahead	Inf	100.0 %	2015	2015
J4:8/2	4.00	0.00	Y	Arm J4:12 Ahead	Inf	100.0 %	2015	2015
J4:8/3	4.00	0.00	Y	Arm J4:7 Right	Inf	37.5 %	2015	2015
				Arm J4:12 Ahead	Inf	62.5 %		
J4:9/1	Infinite Saturation Flow						Inf	Inf
J4:10/1 (M40 NB onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
J4:11/1	Infinite Saturation Flow						Inf	Inf
J4:11/2	Infinite Saturation Flow						Inf	Inf
J4:11/3	Infinite Saturation Flow						Inf	Inf
J4:12/1	Infinite Saturation Flow						Inf	Inf
J4:12/2	Infinite Saturation Flow						Inf	Inf
J4:13/1	4.50	0.00	Y	Arm J4:10 Right	40.00	83.7 %	1990	1990
				Arm J4:12 Right	40.00	16.3 %		
J4:14/1	3.65	0.00	Y	Arm J4:5 Left	30.00	100.0 %	1886	1886
J4:14/2	3.65	0.00	N	Arm J4:6 Ahead	30.00	100.0 %	2019	2019

J4:15/1	Infinite Saturation Flow	Inf	Inf
J4:16/1	Infinite Saturation Flow	Inf	Inf
J4:17/1	Infinite Saturation Flow	Inf	Inf

Junction: J5: Baynards Green exit xings								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J5:1/1	3.65	0.00	Y	Arm J5:4 Ahead	Inf	100.0 %	1980	1980
J5:2/1	3.65	0.00	Y	Arm J2:2 Ahead	Inf	100.0 %	1980	1980
J5:2/2	3.65	0.00	N	Arm J2:2 Ahead	Inf	100.0 %	2120	2120
J5:2/3	3.65	0.00	N	Arm J2:2 Ahead	Inf	100.0 %	2120	2120
J5:3/1	3.60	0.00	Y	Arm J5:5 Ahead	Inf	100.0 %	1975	1975
J5:3/2	3.60	0.00	Y	Arm J5:5 Ahead	Inf	100.0 %	1975	1975
J5:4/1	Infinite Saturation Flow						Inf	Inf
J5:5/1	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2034 Option 28 - PM peak' (FG4: '2034 do something - PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination									
		A	B	C	D	E	F	G	H	I	Tot.
Origin	A	0	287	114	1347	0	0	59	18	204	2029
	B	380	0	0	7	0	241	311	4	35	978
	C	101	0	0	308	0	215	0	0	0	624
	D	0	0	270	0	0	0	0	24	178	472
	E	1849	1	0	0	0	0	0	0	0	1850
	F	0	172	239	0	0	0	0	70	221	702
	G	56	291	0	44	0	0	0	1	9	401
	H	8	0	0	2	0	102	0	0	49	161
	I	453	36	0	171	0	330	47	286	0	1323
	Tot.	2847	787	623	1879	0	888	417	403	696	8540

Traffic Lane Flows

Lane	Scenario 2: 2034 Option 28 - PM peak
Junction: J1: Baynards Green	
J1:1/1	849
J1:1/2 (with short)	1180(In) 899(Out)
J1:1/3 (short)	281
J1:2/1	576
J1:2/2	930
J1:2/3 (with short)	290(In) 231(Out)
J1:2/4 (short)	59
J1:3/1 (short)	287
J1:3/2 (with short)	598(In) 311(Out)
J1:3/3	380
J1:4/1	370
J1:4/2	380
J1:5/1	971
J1:5/2 (with short)	1696(In) 999(Out)
J1:5/3 (short)	697
J1:6/1	1036
J1:6/2	1125
J1:6/3	839
J1:7/1 (with short)	401(In) 193(Out)
J1:7/2 (short)	208
J1:8/1	1092
J1:8/2	1125
J1:8/3	630
J1:9/1	212
J1:9/2	342
J1:10/1	1062
J1:10/2	1605
Junction: J2: Padbury	
J2:1/1	172
J2:1/2 (with short)	530(In) 239(Out)
J2:1/3 (short)	291
J2:2/1	577
J2:2/2	935

J2:2/3 (with short)	512(In) 243(Out)
J2:2/4 (short)	269
J2:3/1	976
J2:3/2	1025
J2:3/3	494
J2:4/1	816
J2:4/2	935
J2:4/3	382
J2:4/4	421
J2:5/1	1062
J2:5/2	1111
J2:5/3	494
J2:6/1	668
J2:6/2 (with short)	1182(In) 688(Out)
J2:6/3 (short)	494
J2:7/1	308
J2:7/2	337
J2:8/1	1850
J2:9/1	1850
Junction: J3: Cherwell	
J3:1/1	816
J3:1/2	935
J3:1/3	382
J3:1/4	421
J3:2/1	623
J3:3/1	308
J3:3/2	316
J3:4/1	429
J3:4/2	690
J3:5/1	645
J3:5/2	443
J3:6/1	443
J3:7/1	554
J3:7/2	1017
J3:7/3	382
J3:7/4	421
J3:8/1	862
J3:8/2	1017
J3:9/1	1879
J3:10/1	623
Junction: J4: Ardley	
J4:1/1 (short)	616

J4:1/2 (with short)	1152(In) 536(Out)
J4:1/3	171
J4:2/1 (with short)	161(In) 110(Out)
J4:2/2 (short)	51
J4:3/1	429
J4:3/2 (with short)	690(In) 133(Out)
J4:3/3 (short)	557
J4:4/1	430
J4:4/2	181
J4:5/1	608
J4:5/2	88
J4:6/1	117
J4:6/2	270
J4:7/1 (with short)	49(In) 1(Out)
J4:7/2 (short)	48
J4:8/1	432
J4:8/2	544
J4:8/3	492
J4:9/1	403
J4:10/1	888
J4:11/1	330
J4:11/2	536
J4:11/3	441
J4:12/1	645
J4:12/2	443
J4:13/1	557
J4:14/1	178
J4:14/2	294
J4:15/1	472
J4:16/1	1323
J4:17/1	696
Junction: J5: Baynards Green exit xings	
J5:1/1	417
J5:2/1	577
J5:2/2	1139
J5:2/3	308
J5:3/1	499
J5:3/2	288
J5:4/1	417
J5:5/1	787

Lane Saturation Flows

Junction: J1: Baynards Green

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J1:1/1 (A43 North)	4.00	0.00	Y	Arm J1:2 Ahead	45.00	66.2 %	1950	1950
				Arm J5:3 Left	45.00	33.8 %		
J1:1/2 (A43 North)	4.00	0.00	N	Arm J1:2 Ahead	45.00	100.0 %	2085	2085
J1:1/3 (A43 North)	4.00	0.00	N	Arm J1:2 Ahead	45.00	100.0 %	2085	2085
J1:2/1	4.00	0.00	Y	Arm J5:2 Ahead	50.00	100.0 %	1956	1956
J1:2/2	4.00	0.00	N	Arm J5:2 Ahead	50.00	100.0 %	2092	2092
J1:2/3	4.00	0.00	N	Arm J5:2 Ahead	50.00	100.0 %	2092	2092
J1:2/4	4.00	0.00	N	Arm J1:4 Right	50.00	100.0 %	2092	2092
J1:3/1 (B4100 East)	3.65	0.00	Y	Arm J5:2 Left	30.00	100.0 %	1886	1886
J1:3/2 (B4100 East)	3.65	0.00	Y	Arm J1:4 Ahead	50.00	100.0 %	1922	1922
J1:3/3 (B4100 East)	3.65	0.00	N	Arm J1:4 Ahead	50.00	100.0 %	2058	2058
J1:4/1	4.50	0.00	Y	Arm J5:1 Ahead	30.00	100.0 %	1967	1967
J1:4/2	4.50	0.00	N	Arm J1:6 Right	25.00	100.0 %	2080	2080
J1:5/1 (A43 South)	3.65	0.00	Y	Arm J1:6 Ahead	55.00	95.2 %	1927	1927
				Arm J5:1 Ahead	55.00	4.8 %		
J1:5/2 (A43 South)	3.65	0.00	N	Arm J1:6 Ahead	50.00	100.0 %	2058	2058
J1:5/3 (A43 South)	3.65	0.00	N	Arm J1:6 Ahead	50.00	100.0 %	2058	2058
J1:6/1	4.00	0.00	Y	Arm J1:8 Ahead	35.00	100.0 %	1932	1932
J1:6/2	4.00	0.00	N	Arm J1:8 Ahead	35.00	100.0 %	2066	2066
J1:6/3	4.00	0.00	N	Arm J1:8 Ahead	35.00	75.1 %	2063	2063
				Arm J1:9 Right	30.00	24.9 %		
J1:7/1 (B4100 West)	3.65	0.00	Y	Arm J1:8 Left	30.00	29.0 %	1902	1902
				Arm J1:9 Ahead	40.00	71.0 %		
J1:7/2 (B4100 West)	3.65	0.00	N	Arm J1:9 Ahead	40.00	100.0 %	2043	2043
J1:8/1	Infinite Saturation Flow						Inf	Inf
J1:8/2	Infinite Saturation Flow						Inf	Inf
J1:8/3	Infinite Saturation Flow						Inf	Inf
J1:9/1	4.50	0.00	Y	Arm J5:3 Ahead	35.00	100.0 %	1980	1980
J1:9/2	4.50	0.00	N	Arm J1:2 Right	30.00	15.8 %	2112	2112
				Arm J5:3 Ahead	35.00	84.2 %		
J1:10/1	Infinite Saturation Flow						Inf	Inf
J1:10/2	Infinite Saturation Flow						Inf	Inf

Junction: J2: Padbury								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J2:1/1 (M40 SB offslip)	4.00	0.00	Y	Arm J2:5 Left	40.00	100.0 %	1942	1942
J2:1/2 (M40 SB offslip)	3.65	0.00	Y	Arm J2:4 Right	50.00	100.0 %	1922	1922
J2:1/3 (M40 SB offslip Lane 3)	This lane uses a directly entered Saturation Flow						3400	3400
J2:2/1 (A43 north)	3.65	0.00	Y	Arm J2:4 Ahead	Inf	100.0 %	1980	1980
J2:2/2 (A43 north)	3.65	0.00	N	Arm J2:4 Ahead	Inf	100.0 %	2120	2120
J2:2/3 (A43 north)	3.65	0.00	N	Arm J2:4 Ahead	Inf	100.0 %	2120	2120
J2:2/4 (A43 north)	3.63	0.00	Y	Arm J2:4 Ahead	Inf	100.0 %	1978	1978
J2:3/1 (A43 south)	3.65	0.00	Y	Arm J2:5 Ahead	Inf	100.0 %	1980	1980
J2:3/2 (A43 south)	3.65	0.00	N	Arm J2:5 Ahead	Inf	100.0 %	2120	2120
J2:3/3 (A43 south)	3.65	0.00	N	Arm J2:5 Ahead	Inf	100.0 %	2120	2120
J2:4/1	Infinite Saturation Flow						Inf	Inf
J2:4/2	Infinite Saturation Flow						Inf	Inf
J2:4/3	Infinite Saturation Flow						Inf	Inf
J2:4/4	Infinite Saturation Flow						Inf	Inf
J2:5/1	Infinite Saturation Flow						Inf	Inf
J2:5/2	Infinite Saturation Flow						Inf	Inf
J2:5/3	This lane uses a directly entered Saturation Flow						3000	3000
J2:6/1	3.65	0.00	Y	Arm J2:3 Left	Inf	100.0 %	1980	1980
J2:6/2	3.65	0.00	N	Arm J2:3 Left	Inf	100.0 %	2120	2120
J2:6/3	3.65	0.00	Y	Arm J2:3 Left	Inf	100.0 %	1980	1980
J2:7/1	3.65	0.00	Y	Arm J2:3 Ahead	50.00	100.0 %	1922	1922
J2:7/2	3.65	0.00	N	Arm J2:3 Ahead	50.00	100.0 %	2058	2058
J2:8/1	Infinite Saturation Flow						Inf	Inf
J2:9/1	Infinite Saturation Flow						Inf	Inf

Junction: J3: Cherwell								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J3:1/1 (A43 Southbound)	3.70	0.00	Y	Arm J3:2 Left	Inf	43.3 %	1985	1985
				Arm J3:7 Ahead	Inf	56.7 %		
J3:1/2 (A43 Southbound)	3.70	0.00	N	Arm J3:7 Ahead	Inf	100.0 %	2125	2125
J3:1/3 (A43 Southbound)	3.65	0.00	Y	Arm J3:7 Ahead	Inf	100.0 %	1980	1980
J3:1/4 (A43 Southbound)	3.65	0.00	N	Arm J3:7 Ahead	Inf	100.0 %	2120	2120
J3:2/1	4.00	0.00	Y	Arm J3:10 Ahead	Inf	100.0 %	2015	2015
J3:3/1 (MSA)	4.00	0.00	Y	Arm J3:8 Left	15.00	100.0 %	1832	1832
J3:3/2 (MSA)	4.00	0.00	Y	Arm J3:4 Left	Inf	100.0 %	2015	2015
J3:4/1	Infinite Saturation Flow						Inf	Inf
J3:4/2	Infinite Saturation Flow						Inf	Inf
J3:5/1 (A43 Northbound Lane 1)	Infinite Saturation Flow						Inf	Inf
J3:5/2 (A43 Northbound Lane 2)	Infinite Saturation Flow						Inf	Inf
J3:6/1	4.50	0.00	Y	Arm J3:2 Ahead	40.00	60.9 %	1981	1981
				Arm J3:7 Right	30.00	39.1 %		
J3:7/1	4.00	0.00	Y	Arm J3:8 Ahead	Inf	100.0 %	2015	2015
J3:7/2	4.00	0.00	N	Arm J3:8 Ahead	Inf	100.0 %	2155	2155
J3:7/3	4.00	0.00	Y	Arm J3:4 Ahead	Inf	100.0 %	2015	2015
J3:7/4	4.00	0.00	N	Arm J3:4 Ahead	Inf	100.0 %	2155	2155
J3:8/1	Infinite Saturation Flow						Inf	Inf
J3:8/2	Infinite Saturation Flow						Inf	Inf
J3:9/1	Infinite Saturation Flow						Inf	Inf
J3:10/1	Infinite Saturation Flow						Inf	Inf

Junction: J4: Ardley								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J4:1/1 (Ardley bypass)	3.65	0.00	Y	Arm J4:9 Left	30.00	46.4 %	1886	1886
				Arm J4:11 Ahead	30.00	53.6 %		
J4:1/2 (Ardley bypass)	3.65	0.00	N	Arm J4:11 Ahead	30.00	100.0 %	2019	2019
J4:1/3 (Ardley bypass)	3.65	0.00	N	Arm J4:11 Ahead	30.00	100.0 %	2019	2019
J4:2/1 (B430)	3.50	0.00	Y	Arm J4:8 Ahead	40.00	100.0 %	1894	1894
J4:2/2 (B430)	3.50	0.00	N	Arm J4:8 Ahead	Inf	100.0 %	2105	2105
J4:3/1 (A43 Southbound)	4.00	0.00	Y	Arm J4:4 Ahead	30.00	100.0 %	1919	1919
J4:3/2 (A43 Southbound)	4.00	0.00	N	Arm J4:4 Ahead	30.00	100.0 %	2052	2052
J4:3/3 (A43 Southbound)	4.00	0.00	N	Arm J4:13 Right	50.00	100.0 %	2092	2092
J4:4/1	4.50	0.00	Y	Arm J4:5 Ahead	30.00	100.0 %	1967	1967
J4:4/2	4.50	0.00	N	Arm J4:5 Ahead	30.00	48.6 %	2100	2100
				Arm J4:6 Right	30.00	51.4 %		
J4:5/1	Infinite Saturation Flow						Inf	Inf
J4:5/2	Infinite Saturation Flow						Inf	Inf
J4:6/1	4.50	0.00	Y	Arm J4:9 Ahead	40.00	100.0 %	1990	1990
				Arm J4:11 Right	40.00	0.0 %		
J4:6/2	4.50	0.00	Y	Arm J4:11 Right	40.00	100.0 %	1990	1990
J4:7/1	4.00	0.00	Y	Arm J4:4 Right	40.00	100.0 %	1942	1942
J4:7/2	4.00	0.00	N	Arm J4:4 Right	40.00	100.0 %	2077	2077
J4:8/1	4.00	0.00	Y	Arm J4:10 Ahead	Inf	100.0 %	2015	2015
J4:8/2	4.00	0.00	Y	Arm J4:12 Ahead	Inf	100.0 %	2015	2015
J4:8/3	4.00	0.00	Y	Arm J4:7 Right	Inf	10.0 %	2015	2015
				Arm J4:12 Ahead	Inf	90.0 %		
J4:9/1	Infinite Saturation Flow						Inf	Inf
J4:10/1 (M40 NB onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
J4:11/1	Infinite Saturation Flow						Inf	Inf
J4:11/2	Infinite Saturation Flow						Inf	Inf
J4:11/3	Infinite Saturation Flow						Inf	Inf
J4:12/1	Infinite Saturation Flow						Inf	Inf
J4:12/2	Infinite Saturation Flow						Inf	Inf
J4:13/1	4.50	0.00	Y	Arm J4:10 Right	40.00	81.9 %	1990	1990
				Arm J4:12 Right	40.00	18.1 %		
J4:14/1	3.65	0.00	Y	Arm J4:5 Left	30.00	100.0 %	1886	1886
J4:14/2	3.65	0.00	N	Arm J4:6 Ahead	30.00	100.0 %	2019	2019

J4:15/1	Infinite Saturation Flow	Inf	Inf
J4:16/1	Infinite Saturation Flow	Inf	Inf
J4:17/1	Infinite Saturation Flow	Inf	Inf

Junction: J5: Baynards Green exit xings								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J5:1/1	3.65	0.00	Y	Arm J5:4 Ahead	Inf	100.0 %	1980	1980
J5:2/1	3.65	0.00	Y	Arm J2:2 Ahead	Inf	100.0 %	1980	1980
J5:2/2	3.65	0.00	N	Arm J2:2 Ahead	Inf	100.0 %	2120	2120
J5:2/3	3.65	0.00	N	Arm J2:2 Ahead	Inf	100.0 %	2120	2120
J5:3/1	3.60	0.00	Y	Arm J5:5 Ahead	Inf	100.0 %	1975	1975
J5:3/2	3.60	0.00	Y	Arm J5:5 Ahead	Inf	100.0 %	1975	1975
J5:4/1	Infinite Saturation Flow						Inf	Inf
J5:5/1	Infinite Saturation Flow						Inf	Inf

Scenario 3: '2034 Option 28 - Off peak' (FG1: '2034 do something - off-peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination									
		A	B	C	D	E	F	G	H	I	Tot.
Origin	A	0	60	23	380	0	0	10	5	106	584
	B	83	0	0	1	0	57	80	1	15	237
	C	23	0	0	74	0	52	0	0	9	158
	D	0	0	67	0	0	0	0	5	50	122
	E	398	0	0	0	0	0	1	0	0	399
	F	0	65	62	0	0	0	4	16	75	222
	G	17	100	0	20	0	0	0	0	6	143
	H	3	0	0	1	0	28	1	0	39	72
	I	81	8	0	45	0	73	8	58	0	273
	Tot.	605	233	152	521	0	210	104	85	300	2210

Traffic Lane Flows

Lane	Scenario 3: 2034 Option 28 - Off peak
Junction: J1: Baynards Green	
J1:1/1	224
J1:1/2 (with short)	360(In) 239(Out)
J1:1/3 (short)	121
J1:2/1	169
J1:2/2	254
J1:2/3 (with short)	127(In) 117(Out)
J1:2/4 (short)	10
J1:3/1 (short)	74
J1:3/2 (with short)	154(In) 80(Out)
J1:3/3	83
J1:4/1	90
J1:4/2	83
J1:5/1	150
J1:5/2 (with short)	442(In) 221(Out)
J1:5/3 (short)	221
J1:6/1	138
J1:6/2	272
J1:6/3	251
J1:7/1 (with short)	143(In) 70(Out)
J1:7/2 (short)	73
J1:8/1	155
J1:8/2	272
J1:8/3	178
J1:9/1	79
J1:9/2	120
J1:10/1	189
J1:10/2	403
Junction: J2: Padbury	
J2:1/1	69
J2:1/2 (with short)	153(In) 62(Out)
J2:1/3 (short)	91
J2:2/1	169
J2:2/2	255

J2:2/3 (with short)	190(In) 55(Out)
J2:2/4 (short)	135
J2:3/1	155
J2:3/2	271
J2:3/3	97
J2:4/1	231
J2:4/2	255
J2:4/3	88
J2:4/4	193
J2:5/1	189
J2:5/2	306
J2:5/3	97
J2:6/1	96
J2:6/2 (with short)	303(In) 206(Out)
J2:6/3 (short)	97
J2:7/1	59
J2:7/2	65
J2:8/1	399
J2:9/1	399
Junction: J3: Cherwell	
J3:1/1	231
J3:1/2	255
J3:1/3	88
J3:1/4	193
J3:2/1	152
J3:3/1	74
J3:3/2	84
J3:4/1	93
J3:4/2	272
J3:5/1	124
J3:5/2	113
J3:6/1	113
J3:7/1	159
J3:7/2	288
J3:7/3	88
J3:7/4	193
J3:8/1	233
J3:8/2	288
J3:9/1	521
J3:10/1	152
Junction: J4: Ardley	
J4:1/1 (short)	131

J4:1/2 (with short)	228(In) 97(Out)
J4:1/3	45
J4:2/1 (with short)	72(In) 32(Out)
J4:2/2 (short)	40
J4:3/1	93
J4:3/2 (with short)	272(In) 140(Out)
J4:3/3 (short)	132
J4:4/1	99
J4:4/2	173
J4:5/1	149
J4:5/2	151
J4:6/1	27
J4:6/2	67
J4:7/1 (with short)	39(In) 6(Out)
J4:7/2 (short)	33
J4:8/1	101
J4:8/2	101
J4:8/3	152
J4:9/1	85
J4:10/1	210
J4:11/1	73
J4:11/2	97
J4:11/3	112
J4:12/1	124
J4:12/2	113
J4:13/1	132
J4:14/1	50
J4:14/2	72
J4:15/1	122
J4:16/1	273
J4:17/1	300
Junction: J5: Baynards Green exit xings	
J5:1/1	104
J5:2/1	169
J5:2/2	328
J5:2/3	117
J5:3/1	139
J5:3/2	94
J5:4/1	104
J5:5/1	233

Lane Saturation Flows

Junction: J1: Baynards Green

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J1:1/1 (A43 North)	4.00	0.00	Y	Arm J1:2 Ahead	45.00	73.2 %	1950	1950
				Arm J5:3 Left	45.00	26.8 %		
J1:1/2 (A43 North)	4.00	0.00	N	Arm J1:2 Ahead	45.00	100.0 %	2085	2085
J1:1/3 (A43 North)	4.00	0.00	N	Arm J1:2 Ahead	45.00	100.0 %	2085	2085
J1:2/1	4.00	0.00	Y	Arm J5:2 Ahead	50.00	100.0 %	1956	1956
J1:2/2	4.00	0.00	N	Arm J5:2 Ahead	50.00	100.0 %	2092	2092
J1:2/3	4.00	0.00	N	Arm J5:2 Ahead	50.00	100.0 %	2092	2092
J1:2/4	4.00	0.00	N	Arm J1:4 Right	50.00	100.0 %	2092	2092
J1:3/1 (B4100 East)	3.65	0.00	Y	Arm J5:2 Left	30.00	100.0 %	1886	1886
J1:3/2 (B4100 East)	3.65	0.00	Y	Arm J1:4 Ahead	50.00	100.0 %	1922	1922
J1:3/3 (B4100 East)	3.65	0.00	N	Arm J1:4 Ahead	50.00	100.0 %	2058	2058
J1:4/1	4.50	0.00	Y	Arm J5:1 Ahead	30.00	100.0 %	1967	1967
J1:4/2	4.50	0.00	N	Arm J1:6 Right	25.00	100.0 %	2080	2080
J1:5/1 (A43 South)	3.65	0.00	Y	Arm J1:6 Ahead	55.00	90.7 %	1927	1927
				Arm J5:1 Ahead	55.00	9.3 %		
J1:5/2 (A43 South)	3.65	0.00	N	Arm J1:6 Ahead	50.00	100.0 %	2058	2058
J1:5/3 (A43 South)	3.65	0.00	N	Arm J1:6 Ahead	50.00	100.0 %	2058	2058
J1:6/1	4.00	0.00	Y	Arm J1:8 Ahead	35.00	100.0 %	1932	1932
J1:6/2	4.00	0.00	N	Arm J1:8 Ahead	35.00	100.0 %	2066	2066
J1:6/3	4.00	0.00	N	Arm J1:8 Ahead	35.00	70.9 %	2062	2062
				Arm J1:9 Right	30.00	29.1 %		
J1:7/1 (B4100 West)	3.65	0.00	Y	Arm J1:8 Left	30.00	24.3 %	1903	1903
				Arm J1:9 Ahead	40.00	75.7 %		
J1:7/2 (B4100 West)	3.65	0.00	N	Arm J1:9 Ahead	40.00	100.0 %	2043	2043
J1:8/1	Infinite Saturation Flow						Inf	Inf
J1:8/2	Infinite Saturation Flow						Inf	Inf
J1:8/3	Infinite Saturation Flow						Inf	Inf
J1:9/1	4.50	0.00	Y	Arm J5:3 Ahead	35.00	100.0 %	1980	1980
J1:9/2	4.50	0.00	N	Arm J1:2 Right	30.00	21.7 %	2111	2111
				Arm J5:3 Ahead	35.00	78.3 %		
J1:10/1	Infinite Saturation Flow						Inf	Inf
J1:10/2	Infinite Saturation Flow						Inf	Inf

Junction: J2: Padbury								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J2:1/1 (M40 SB offslip)	4.00	0.00	Y	Arm J2:5 Left	40.00	100.0 %	1942	1942
J2:1/2 (M40 SB offslip)	3.65	0.00	Y	Arm J2:4 Right	50.00	100.0 %	1922	1922
J2:1/3 (M40 SB offslip Lane 3)	This lane uses a directly entered Saturation Flow						3400	3400
J2:2/1 (A43 north)	3.65	0.00	Y	Arm J2:4 Ahead	Inf	100.0 %	1980	1980
J2:2/2 (A43 north)	3.65	0.00	N	Arm J2:4 Ahead	Inf	100.0 %	2120	2120
J2:2/3 (A43 north)	3.65	0.00	N	Arm J2:4 Ahead	Inf	100.0 %	2120	2120
J2:2/4 (A43 north)	3.63	0.00	Y	Arm J2:4 Ahead	Inf	100.0 %	1978	1978
J2:3/1 (A43 south)	3.65	0.00	Y	Arm J2:5 Ahead	Inf	100.0 %	1980	1980
J2:3/2 (A43 south)	3.65	0.00	N	Arm J2:5 Ahead	Inf	100.0 %	2120	2120
J2:3/3 (A43 south)	3.65	0.00	N	Arm J2:5 Ahead	Inf	100.0 %	2120	2120
J2:4/1	Infinite Saturation Flow						Inf	Inf
J2:4/2	Infinite Saturation Flow						Inf	Inf
J2:4/3	Infinite Saturation Flow						Inf	Inf
J2:4/4	Infinite Saturation Flow						Inf	Inf
J2:5/1	Infinite Saturation Flow						Inf	Inf
J2:5/2	Infinite Saturation Flow						Inf	Inf
J2:5/3	This lane uses a directly entered Saturation Flow						3000	3000
J2:6/1	3.65	0.00	Y	Arm J2:3 Left	Inf	100.0 %	1980	1980
J2:6/2	3.65	0.00	N	Arm J2:3 Left	Inf	100.0 %	2120	2120
J2:6/3	3.65	0.00	Y	Arm J2:3 Left	Inf	100.0 %	1980	1980
J2:7/1	3.65	0.00	Y	Arm J2:3 Ahead	50.00	100.0 %	1922	1922
J2:7/2	3.65	0.00	N	Arm J2:3 Ahead	50.00	100.0 %	2058	2058
J2:8/1	Infinite Saturation Flow						Inf	Inf
J2:9/1	Infinite Saturation Flow						Inf	Inf

Junction: J3: Cherwell								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J3:1/1 (A43 Southbound)	3.70	0.00	Y	Arm J3:2 Left	Inf	36.8 %	1985	1985
				Arm J3:7 Ahead	Inf	63.2 %		
J3:1/2 (A43 Southbound)	3.70	0.00	N	Arm J3:7 Ahead	Inf	100.0 %	2125	2125
J3:1/3 (A43 Southbound)	3.65	0.00	Y	Arm J3:7 Ahead	Inf	100.0 %	1980	1980
J3:1/4 (A43 Southbound)	3.65	0.00	N	Arm J3:7 Ahead	Inf	100.0 %	2120	2120
J3:2/1	4.00	0.00	Y	Arm J3:10 Ahead	Inf	100.0 %	2015	2015
J3:3/1 (MSA)	4.00	0.00	Y	Arm J3:8 Left	15.00	100.0 %	1832	1832
J3:3/2 (MSA)	4.00	0.00	Y	Arm J3:4 Left	Inf	100.0 %	2015	2015
J3:4/1	Infinite Saturation Flow						Inf	Inf
J3:4/2	Infinite Saturation Flow						Inf	Inf
J3:5/1 (A43 Northbound Lane 1)	Infinite Saturation Flow						Inf	Inf
J3:5/2 (A43 Northbound Lane 2)	Infinite Saturation Flow						Inf	Inf
J3:6/1	4.50	0.00	Y	Arm J3:2 Ahead	40.00	59.3 %	1981	1981
				Arm J3:7 Right	30.00	40.7 %		
J3:7/1	4.00	0.00	Y	Arm J3:8 Ahead	Inf	100.0 %	2015	2015
J3:7/2	4.00	0.00	N	Arm J3:8 Ahead	Inf	100.0 %	2155	2155
J3:7/3	4.00	0.00	Y	Arm J3:4 Ahead	Inf	100.0 %	2015	2015
J3:7/4	4.00	0.00	N	Arm J3:4 Ahead	Inf	100.0 %	2155	2155
J3:8/1	Infinite Saturation Flow						Inf	Inf
J3:8/2	Infinite Saturation Flow						Inf	Inf
J3:9/1	Infinite Saturation Flow						Inf	Inf
J3:10/1	Infinite Saturation Flow						Inf	Inf

Junction: J4: Ardley								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J4:1/1 (Ardley bypass)	3.65	0.00	Y	Arm J4:9 Left	30.00	44.3 %	1886	1886
				Arm J4:11 Ahead	30.00	55.7 %		
J4:1/2 (Ardley bypass)	3.65	0.00	N	Arm J4:11 Ahead	30.00	100.0 %	2019	2019
J4:1/3 (Ardley bypass)	3.65	0.00	N	Arm J4:11 Ahead	30.00	100.0 %	2019	2019
J4:2/1 (B430)	3.50	0.00	Y	Arm J4:8 Ahead	40.00	100.0 %	1894	1894
J4:2/2 (B430)	3.50	0.00	N	Arm J4:8 Ahead	Inf	100.0 %	2105	2105
J4:3/1 (A43 Southbound)	4.00	0.00	Y	Arm J4:4 Ahead	30.00	100.0 %	1919	1919
J4:3/2 (A43 Southbound)	4.00	0.00	N	Arm J4:4 Ahead	30.00	100.0 %	2052	2052
J4:3/3 (A43 Southbound)	4.00	0.00	N	Arm J4:13 Right	50.00	100.0 %	2092	2092
J4:4/1	4.50	0.00	Y	Arm J4:5 Ahead	30.00	100.0 %	1967	1967
J4:4/2	4.50	0.00	N	Arm J4:5 Ahead	30.00	87.3 %	2100	2100
				Arm J4:6 Right	30.00	12.7 %		
J4:5/1	Infinite Saturation Flow						Inf	Inf
J4:5/2	Infinite Saturation Flow						Inf	Inf
J4:6/1	4.50	0.00	Y	Arm J4:9 Ahead	40.00	100.0 %	1990	1990
				Arm J4:11 Right	40.00	0.0 %		
J4:6/2	4.50	0.00	Y	Arm J4:11 Right	40.00	100.0 %	1990	1990
J4:7/1	4.00	0.00	Y	Arm J4:4 Right	40.00	100.0 %	1942	1942
J4:7/2	4.00	0.00	N	Arm J4:4 Right	40.00	100.0 %	2077	2077
J4:8/1	4.00	0.00	Y	Arm J4:10 Ahead	Inf	100.0 %	2015	2015
J4:8/2	4.00	0.00	Y	Arm J4:12 Ahead	Inf	100.0 %	2015	2015
J4:8/3	4.00	0.00	Y	Arm J4:7 Right	Inf	25.7 %	2015	2015
				Arm J4:12 Ahead	Inf	74.3 %		
J4:9/1	Infinite Saturation Flow						Inf	Inf
J4:10/1 (M40 NB onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
J4:11/1	Infinite Saturation Flow						Inf	Inf
J4:11/2	Infinite Saturation Flow						Inf	Inf
J4:11/3	Infinite Saturation Flow						Inf	Inf
J4:12/1	Infinite Saturation Flow						Inf	Inf
J4:12/2	Infinite Saturation Flow						Inf	Inf
J4:13/1	4.50	0.00	Y	Arm J4:10 Right	40.00	82.6 %	1990	1990
				Arm J4:12 Right	40.00	17.4 %		
J4:14/1	3.65	0.00	Y	Arm J4:5 Left	30.00	100.0 %	1886	1886
J4:14/2	3.65	0.00	N	Arm J4:6 Ahead	30.00	100.0 %	2019	2019

J4:15/1	Infinite Saturation Flow	Inf	Inf
J4:16/1	Infinite Saturation Flow	Inf	Inf
J4:17/1	Infinite Saturation Flow	Inf	Inf

Junction: J5: Baynards Green exit xings								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J5:1/1	3.65	0.00	Y	Arm J5:4 Ahead	Inf	100.0 %	1980	1980
J5:2/1	3.65	0.00	Y	Arm J2:2 Ahead	Inf	100.0 %	1980	1980
J5:2/2	3.65	0.00	N	Arm J2:2 Ahead	Inf	100.0 %	2120	2120
J5:2/3	3.65	0.00	N	Arm J2:2 Ahead	Inf	100.0 %	2120	2120
J5:3/1	3.60	0.00	Y	Arm J5:5 Ahead	Inf	100.0 %	1975	1975
J5:3/2	3.60	0.00	Y	Arm J5:5 Ahead	Inf	100.0 %	1975	1975
J5:4/1	Infinite Saturation Flow						Inf	Inf
J5:5/1	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2034 Option 28 - Inter peak' (FG2: '2034 do something - inter-peak ', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination									
		A	B	C	D	E	F	G	H	I	Tot.
Origin	A	0	205	79	1301	0	0	33	16	364	1998
	B	284	0	0	4	0	195	272	2	52	809
	C	78	0	0	255	0	179	0	0	32	544
	D	0	0	230	0	0	0	0	19	170	419
	E	1364	1	0	0	0	0	3	0	0	1368
	F	0	221	212	0	0	0	13	56	258	760
	G	57	342	0	69	0	0	0	1	22	491
	H	11	0	0	2	0	95	4	0	135	247
	I	276	27	0	154	0	248	28	199	0	932
	Tot.	2070	796	521	1785	0	717	353	293	1033	7568

Traffic Lane Flows

Lane	Scenario 4: 2034 Option 28 - Inter peak
Junction: J1: Baynards Green	
J1:1/1	751
J1:1/2 (with short)	1247(In) 834(Out)
J1:1/3 (short)	413
J1:2/1	593
J1:2/2	856
J1:2/3 (with short)	436(In) 403(Out)
J1:2/4 (short)	33
J1:3/1 (short)	253
J1:3/2 (with short)	525(In) 272(Out)
J1:3/3	284
J1:4/1	305
J1:4/2	284
J1:5/1	724
J1:5/2 (with short)	1302(In) 837(Out)
J1:5/3 (short)	465
J1:6/1	749
J1:6/2	939
J1:6/3	574
J1:7/1 (with short)	491(In) 237(Out)
J1:7/2 (short)	254
J1:8/1	806
J1:8/2	939
J1:8/3	325
J1:9/1	309
J1:9/2	374
J1:10/1	778
J1:10/2	1248
Junction: J2: Padbury	
J2:1/1	234
J2:1/2 (with short)	526(In) 212(Out)
J2:1/3 (short)	314
J2:2/1	594
J2:2/2	859

J2:2/3 (with short)	652(In) 234(Out)
J2:2/4 (short)	418
J2:3/1	661
J2:3/2	772
J2:3/3	359
J2:4/1	806
J2:4/2	859
J2:4/3	350
J2:4/4	616
J2:5/1	778
J2:5/2	889
J2:5/3	359
J2:6/1	458
J2:6/2 (with short)	910(In) 551(Out)
J2:6/3 (short)	359
J2:7/1	203
J2:7/2	221
J2:8/1	1368
J2:9/1	1368
Junction: J3: Cherwell	
J3:1/1	806
J3:1/2	859
J3:1/3	350
J3:1/4	616
J3:2/1	521
J3:3/1	255
J3:3/2	289
J3:4/1	434
J3:4/2	821
J3:5/1	424
J3:5/2	386
J3:6/1	386
J3:7/1	590
J3:7/2	940
J3:7/3	350
J3:7/4	616
J3:8/1	845
J3:8/2	940
J3:9/1	1785
J3:10/1	521
Junction: J4: Ardley	
J4:1/1 (short)	447

J4:1/2 (with short)	778(In) 331(Out)
J4:1/3	154
J4:2/1 (with short)	247(In) 110(Out)
J4:2/2 (short)	137
J4:3/1	434
J4:3/2 (with short)	821(In) 369(Out)
J4:3/3 (short)	452
J4:4/1	487
J4:4/2	451
J4:5/1	657
J4:5/2	376
J4:6/1	94
J4:6/2	230
J4:7/1 (with short)	135(In) 53(Out)
J4:7/2 (short)	82
J4:8/1	343
J4:8/2	346
J4:8/3	521
J4:9/1	293
J4:10/1	717
J4:11/1	248
J4:11/2	331
J4:11/3	384
J4:12/1	424
J4:12/2	386
J4:13/1	452
J4:14/1	170
J4:14/2	249
J4:15/1	419
J4:16/1	932
J4:17/1	1033
Junction: J5: Baynards Green exit xings	
J5:1/1	353
J5:2/1	594
J5:2/2	1021
J5:2/3	490
J5:3/1	514
J5:3/2	282
J5:4/1	353
J5:5/1	796

Lane Saturation Flows

Junction: J1: Baynards Green

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J1:1/1 (A43 North)	4.00	0.00	Y	Arm J1:2 Ahead	45.00	72.7 %	1950	1950
				Arm J5:3 Left	45.00	27.3 %		
J1:1/2 (A43 North)	4.00	0.00	N	Arm J1:2 Ahead	45.00	100.0 %	2085	2085
J1:1/3 (A43 North)	4.00	0.00	N	Arm J1:2 Ahead	45.00	100.0 %	2085	2085
J1:2/1	4.00	0.00	Y	Arm J5:2 Ahead	50.00	100.0 %	1956	1956
J1:2/2	4.00	0.00	N	Arm J5:2 Ahead	50.00	100.0 %	2092	2092
J1:2/3	4.00	0.00	N	Arm J5:2 Ahead	50.00	100.0 %	2092	2092
J1:2/4	4.00	0.00	N	Arm J1:4 Right	50.00	100.0 %	2092	2092
J1:3/1 (B4100 East)	3.65	0.00	Y	Arm J5:2 Left	30.00	100.0 %	1886	1886
J1:3/2 (B4100 East)	3.65	0.00	Y	Arm J1:4 Ahead	50.00	100.0 %	1922	1922
J1:3/3 (B4100 East)	3.65	0.00	N	Arm J1:4 Ahead	50.00	100.0 %	2058	2058
J1:4/1	4.50	0.00	Y	Arm J5:1 Ahead	30.00	100.0 %	1967	1967
J1:4/2	4.50	0.00	N	Arm J1:6 Right	25.00	100.0 %	2080	2080
J1:5/1 (A43 South)	3.65	0.00	Y	Arm J1:6 Ahead	55.00	93.4 %	1927	1927
				Arm J5:1 Ahead	55.00	6.6 %		
J1:5/2 (A43 South)	3.65	0.00	N	Arm J1:6 Ahead	50.00	100.0 %	2058	2058
J1:5/3 (A43 South)	3.65	0.00	N	Arm J1:6 Ahead	50.00	100.0 %	2058	2058
J1:6/1	4.00	0.00	Y	Arm J1:8 Ahead	35.00	100.0 %	1932	1932
J1:6/2	4.00	0.00	N	Arm J1:8 Ahead	35.00	100.0 %	2066	2066
J1:6/3	4.00	0.00	N	Arm J1:8 Ahead	35.00	56.6 %	2060	2060
				Arm J1:9 Right	30.00	43.4 %		
J1:7/1 (B4100 West)	3.65	0.00	Y	Arm J1:8 Left	30.00	24.1 %	1903	1903
				Arm J1:9 Ahead	40.00	75.9 %		
J1:7/2 (B4100 West)	3.65	0.00	N	Arm J1:9 Ahead	40.00	100.0 %	2043	2043
J1:8/1	Infinite Saturation Flow						Inf	Inf
J1:8/2	Infinite Saturation Flow						Inf	Inf
J1:8/3	Infinite Saturation Flow						Inf	Inf
J1:9/1	4.50	0.00	Y	Arm J5:3 Ahead	35.00	100.0 %	1980	1980
J1:9/2	4.50	0.00	N	Arm J1:2 Right	30.00	24.6 %	2111	2111
				Arm J5:3 Ahead	35.00	75.4 %		
J1:10/1	Infinite Saturation Flow						Inf	Inf
J1:10/2	Infinite Saturation Flow						Inf	Inf

Junction: J2: Padbury								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J2:1/1 (M40 SB offslip)	4.00	0.00	Y	Arm J2:5 Left	40.00	100.0 %	1942	1942
J2:1/2 (M40 SB offslip)	3.65	0.00	Y	Arm J2:4 Right	50.00	100.0 %	1922	1922
J2:1/3 (M40 SB offslip Lane 3)	This lane uses a directly entered Saturation Flow						3400	3400
J2:2/1 (A43 north)	3.65	0.00	Y	Arm J2:4 Ahead	Inf	100.0 %	1980	1980
J2:2/2 (A43 north)	3.65	0.00	N	Arm J2:4 Ahead	Inf	100.0 %	2120	2120
J2:2/3 (A43 north)	3.65	0.00	N	Arm J2:4 Ahead	Inf	100.0 %	2120	2120
J2:2/4 (A43 north)	3.63	0.00	Y	Arm J2:4 Ahead	Inf	100.0 %	1978	1978
J2:3/1 (A43 south)	3.65	0.00	Y	Arm J2:5 Ahead	Inf	100.0 %	1980	1980
J2:3/2 (A43 south)	3.65	0.00	N	Arm J2:5 Ahead	Inf	100.0 %	2120	2120
J2:3/3 (A43 south)	3.65	0.00	N	Arm J2:5 Ahead	Inf	100.0 %	2120	2120
J2:4/1	Infinite Saturation Flow						Inf	Inf
J2:4/2	Infinite Saturation Flow						Inf	Inf
J2:4/3	Infinite Saturation Flow						Inf	Inf
J2:4/4	Infinite Saturation Flow						Inf	Inf
J2:5/1	Infinite Saturation Flow						Inf	Inf
J2:5/2	Infinite Saturation Flow						Inf	Inf
J2:5/3	This lane uses a directly entered Saturation Flow						3000	3000
J2:6/1	3.65	0.00	Y	Arm J2:3 Left	Inf	100.0 %	1980	1980
J2:6/2	3.65	0.00	N	Arm J2:3 Left	Inf	100.0 %	2120	2120
J2:6/3	3.65	0.00	Y	Arm J2:3 Left	Inf	100.0 %	1980	1980
J2:7/1	3.65	0.00	Y	Arm J2:3 Ahead	50.00	100.0 %	1922	1922
J2:7/2	3.65	0.00	N	Arm J2:3 Ahead	50.00	100.0 %	2058	2058
J2:8/1	Infinite Saturation Flow						Inf	Inf
J2:9/1	Infinite Saturation Flow						Inf	Inf

Junction: J3: Cherwell								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J3:1/1 (A43 Southbound)	3.70	0.00	Y	Arm J3:2 Left	Inf	36.1 %	1985	1985
				Arm J3:7 Ahead	Inf	63.9 %		
J3:1/2 (A43 Southbound)	3.70	0.00	N	Arm J3:7 Ahead	Inf	100.0 %	2125	2125
J3:1/3 (A43 Southbound)	3.65	0.00	Y	Arm J3:7 Ahead	Inf	100.0 %	1980	1980
J3:1/4 (A43 Southbound)	3.65	0.00	N	Arm J3:7 Ahead	Inf	100.0 %	2120	2120
J3:2/1	4.00	0.00	Y	Arm J3:10 Ahead	Inf	100.0 %	2015	2015
J3:3/1 (MSA)	4.00	0.00	Y	Arm J3:8 Left	15.00	100.0 %	1832	1832
J3:3/2 (MSA)	4.00	0.00	Y	Arm J3:4 Left	Inf	100.0 %	2015	2015
J3:4/1	Infinite Saturation Flow						Inf	Inf
J3:4/2	Infinite Saturation Flow						Inf	Inf
J3:5/1 (A43 Northbound Lane 1)	Infinite Saturation Flow						Inf	Inf
J3:5/2 (A43 Northbound Lane 2)	Infinite Saturation Flow						Inf	Inf
J3:6/1	4.50	0.00	Y	Arm J3:2 Ahead	40.00	59.6 %	1981	1981
				Arm J3:7 Right	30.00	40.4 %		
J3:7/1	4.00	0.00	Y	Arm J3:8 Ahead	Inf	100.0 %	2015	2015
J3:7/2	4.00	0.00	N	Arm J3:8 Ahead	Inf	100.0 %	2155	2155
J3:7/3	4.00	0.00	Y	Arm J3:4 Ahead	Inf	100.0 %	2015	2015
J3:7/4	4.00	0.00	N	Arm J3:4 Ahead	Inf	100.0 %	2155	2155
J3:8/1	Infinite Saturation Flow						Inf	Inf
J3:8/2	Infinite Saturation Flow						Inf	Inf
J3:9/1	Infinite Saturation Flow						Inf	Inf
J3:10/1	Infinite Saturation Flow						Inf	Inf

Junction: J4: Ardley								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J4:1/1 (Ardley bypass)	3.65	0.00	Y	Arm J4:9 Left	30.00	44.5 %	1886	1886
				Arm J4:11 Ahead	30.00	55.5 %		
J4:1/2 (Ardley bypass)	3.65	0.00	N	Arm J4:11 Ahead	30.00	100.0 %	2019	2019
J4:1/3 (Ardley bypass)	3.65	0.00	N	Arm J4:11 Ahead	30.00	100.0 %	2019	2019
J4:2/1 (B430)	3.50	0.00	Y	Arm J4:8 Ahead	40.00	100.0 %	1894	1894
J4:2/2 (B430)	3.50	0.00	N	Arm J4:8 Ahead	Inf	100.0 %	2105	2105
J4:3/1 (A43 Southbound)	4.00	0.00	Y	Arm J4:4 Ahead	30.00	100.0 %	1919	1919
J4:3/2 (A43 Southbound)	4.00	0.00	N	Arm J4:4 Ahead	30.00	100.0 %	2052	2052
J4:3/3 (A43 Southbound)	4.00	0.00	N	Arm J4:13 Right	50.00	100.0 %	2092	2092
J4:4/1	4.50	0.00	Y	Arm J4:5 Ahead	30.00	100.0 %	1967	1967
J4:4/2	4.50	0.00	N	Arm J4:5 Ahead	30.00	83.4 %	2100	2100
				Arm J4:6 Right	30.00	16.6 %		
J4:5/1	Infinite Saturation Flow						Inf	Inf
J4:5/2	Infinite Saturation Flow						Inf	Inf
J4:6/1	4.50	0.00	Y	Arm J4:9 Ahead	40.00	100.0 %	1990	1990
				Arm J4:11 Right	40.00	0.0 %		
J4:6/2	4.50	0.00	Y	Arm J4:11 Right	40.00	100.0 %	1990	1990
J4:7/1	4.00	0.00	Y	Arm J4:4 Right	40.00	100.0 %	1942	1942
J4:7/2	4.00	0.00	N	Arm J4:4 Right	40.00	100.0 %	2077	2077
J4:8/1	4.00	0.00	Y	Arm J4:10 Ahead	Inf	100.0 %	2015	2015
J4:8/2	4.00	0.00	Y	Arm J4:12 Ahead	Inf	100.0 %	2015	2015
J4:8/3	4.00	0.00	Y	Arm J4:7 Right	Inf	25.9 %	2015	2015
				Arm J4:12 Ahead	Inf	74.1 %		
J4:9/1	Infinite Saturation Flow						Inf	Inf
J4:10/1 (M40 NB onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
J4:11/1	Infinite Saturation Flow						Inf	Inf
J4:11/2	Infinite Saturation Flow						Inf	Inf
J4:11/3	Infinite Saturation Flow						Inf	Inf
J4:12/1	Infinite Saturation Flow						Inf	Inf
J4:12/2	Infinite Saturation Flow						Inf	Inf
J4:13/1	4.50	0.00	Y	Arm J4:10 Right	40.00	82.7 %	1990	1990
				Arm J4:12 Right	40.00	17.3 %		
J4:14/1	3.65	0.00	Y	Arm J4:5 Left	30.00	100.0 %	1886	1886
J4:14/2	3.65	0.00	N	Arm J4:6 Ahead	30.00	100.0 %	2019	2019

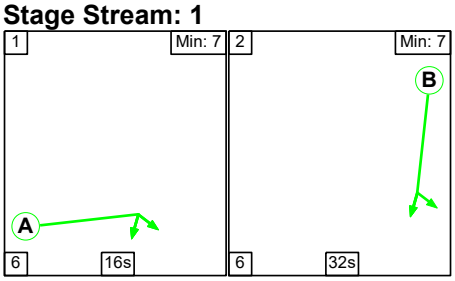
J4:15/1	Infinite Saturation Flow	Inf	Inf
J4:16/1	Infinite Saturation Flow	Inf	Inf
J4:17/1	Infinite Saturation Flow	Inf	Inf

Junction: J5: Baynards Green exit xings								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J5:1/1	3.65	0.00	Y	Arm J5:4 Ahead	Inf	100.0 %	1980	1980
J5:2/1	3.65	0.00	Y	Arm J2:2 Ahead	Inf	100.0 %	1980	1980
J5:2/2	3.65	0.00	N	Arm J2:2 Ahead	Inf	100.0 %	2120	2120
J5:2/3	3.65	0.00	N	Arm J2:2 Ahead	Inf	100.0 %	2120	2120
J5:3/1	3.60	0.00	Y	Arm J5:5 Ahead	Inf	100.0 %	1975	1975
J5:3/2	3.60	0.00	Y	Arm J5:5 Ahead	Inf	100.0 %	1975	1975
J5:4/1	Infinite Saturation Flow						Inf	Inf
J5:5/1	Infinite Saturation Flow						Inf	Inf

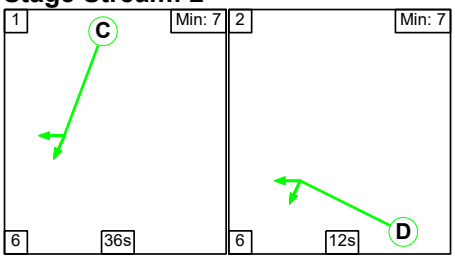
Scenario 1: '2034 Option 28 - AM peak' (FG3: '2034 do something - AM', Plan 1: 'Network Control Plan 1')
C1 - Baynards Green

Stage Sequence Diagram

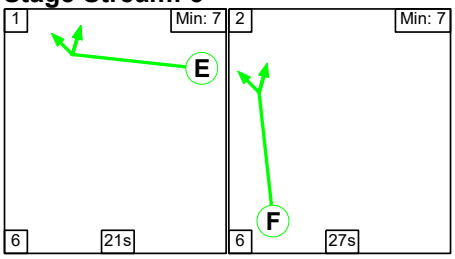
Stage Stream: 1



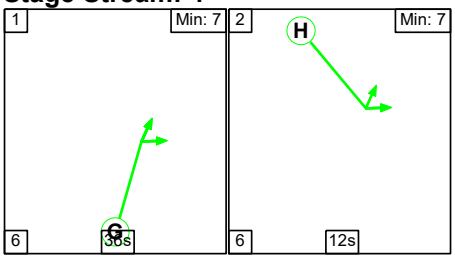
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	16	32
Change Point	57	19

Stage Stream: 2

Stage	1	2
Duration	36	12
Change Point	19	1

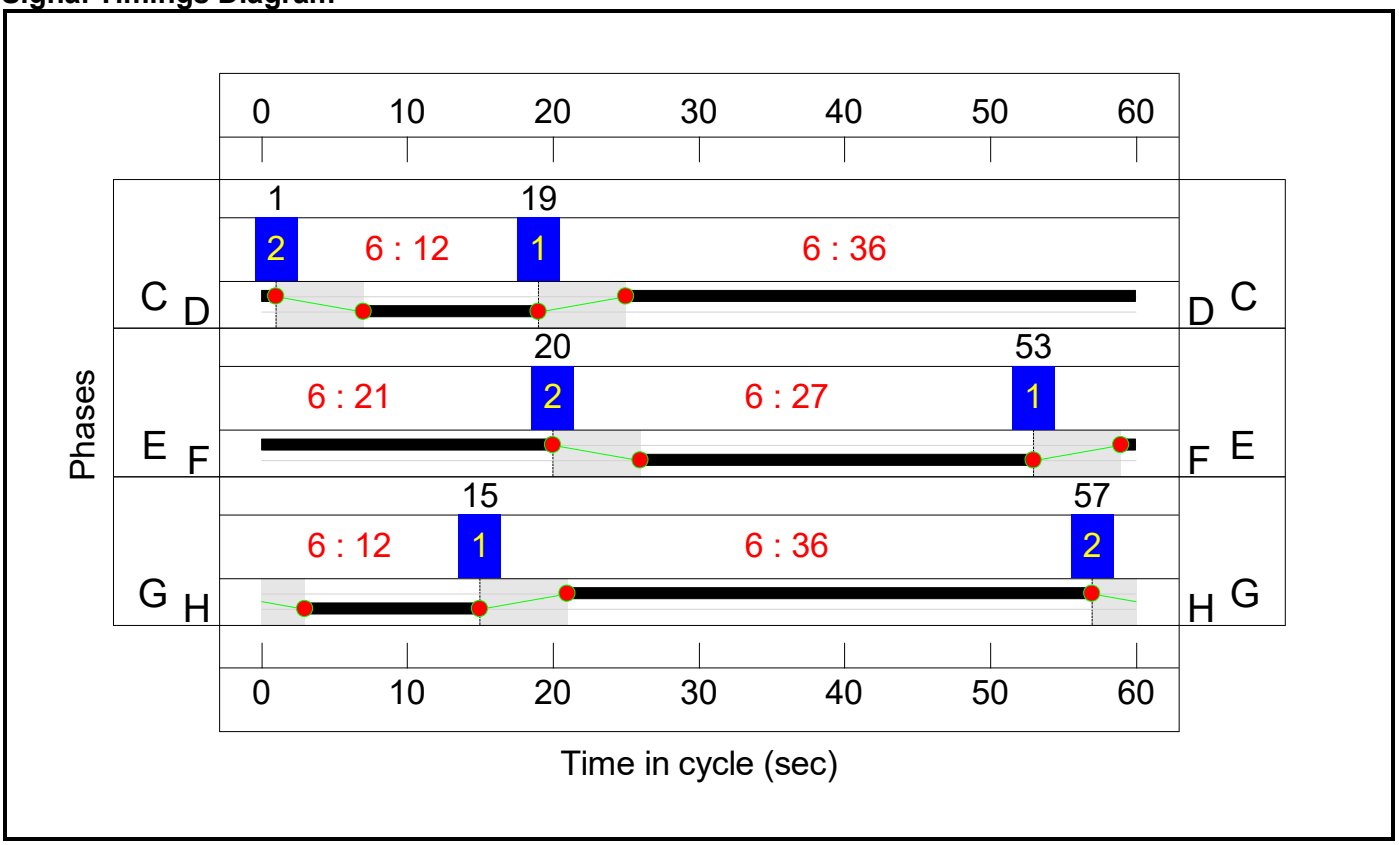
Stage Stream: 3

Stage	1	2
Duration	21	27
Change Point	53	20

Stage Stream: 4

Stage	1	2
Duration	36	12
Change Point	15	57

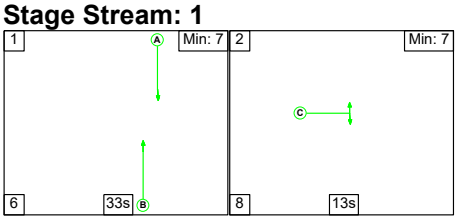
Signal Timings Diagram



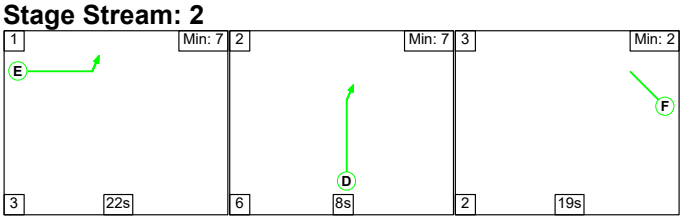
C2 - Padbury

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

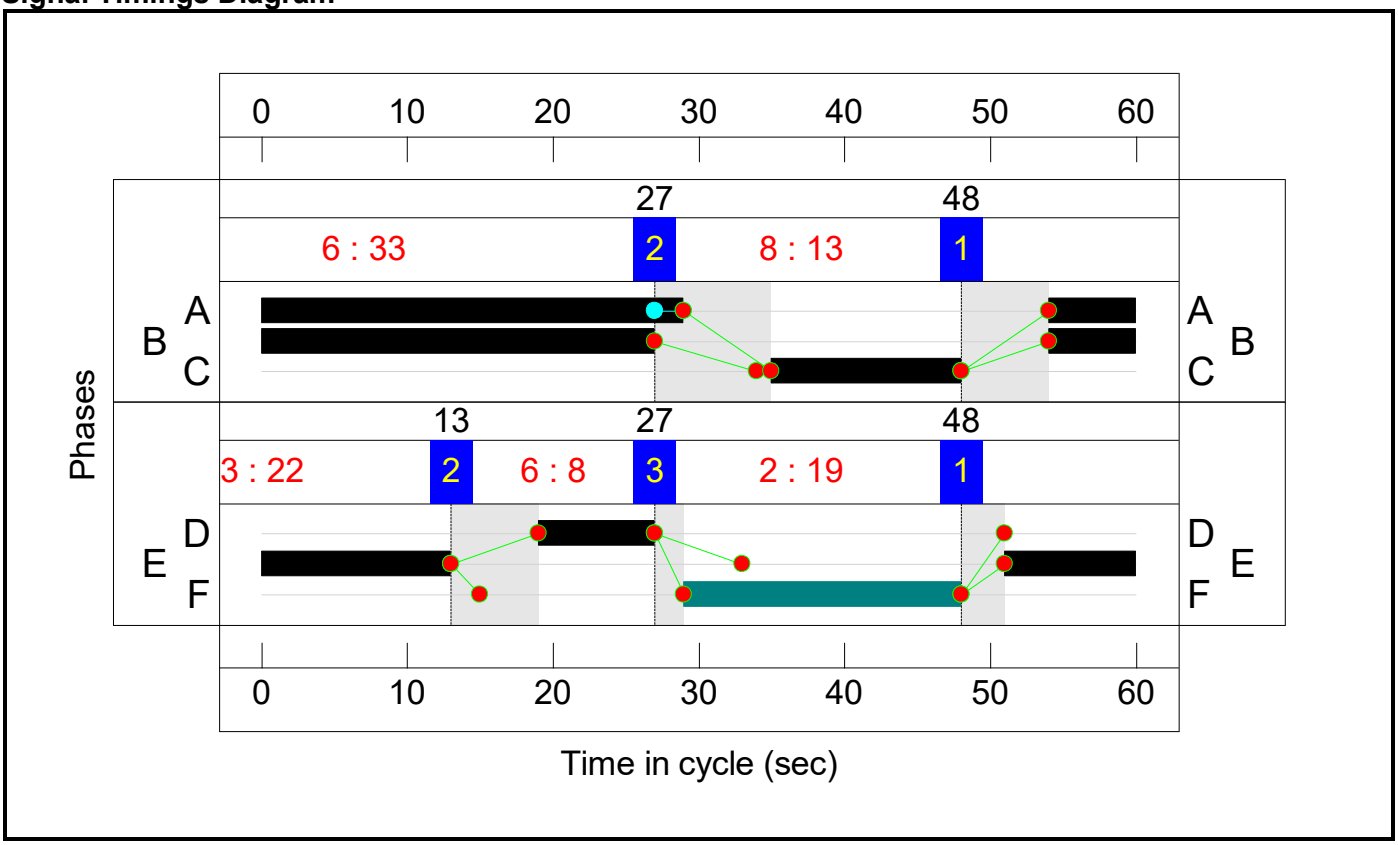
Stage Stream: 1

Stage	1	2
Duration	33	13
Change Point	48	27

Stage Stream: 2

Stage	1	2	3
Duration	22	8	19
Change Point	48	13	27

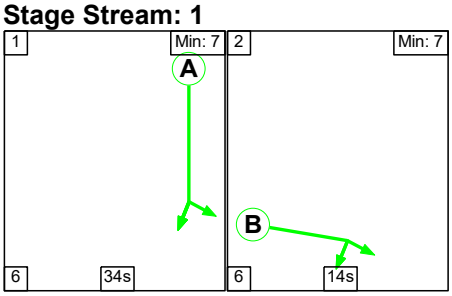
Signal Timings Diagram



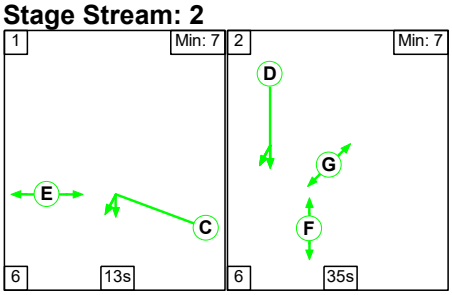
C3 - Cherwell

Stage Sequence Diagram

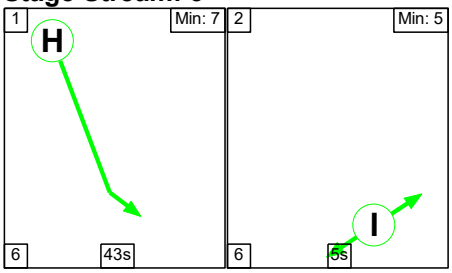
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	34	14
Change Point	56	36

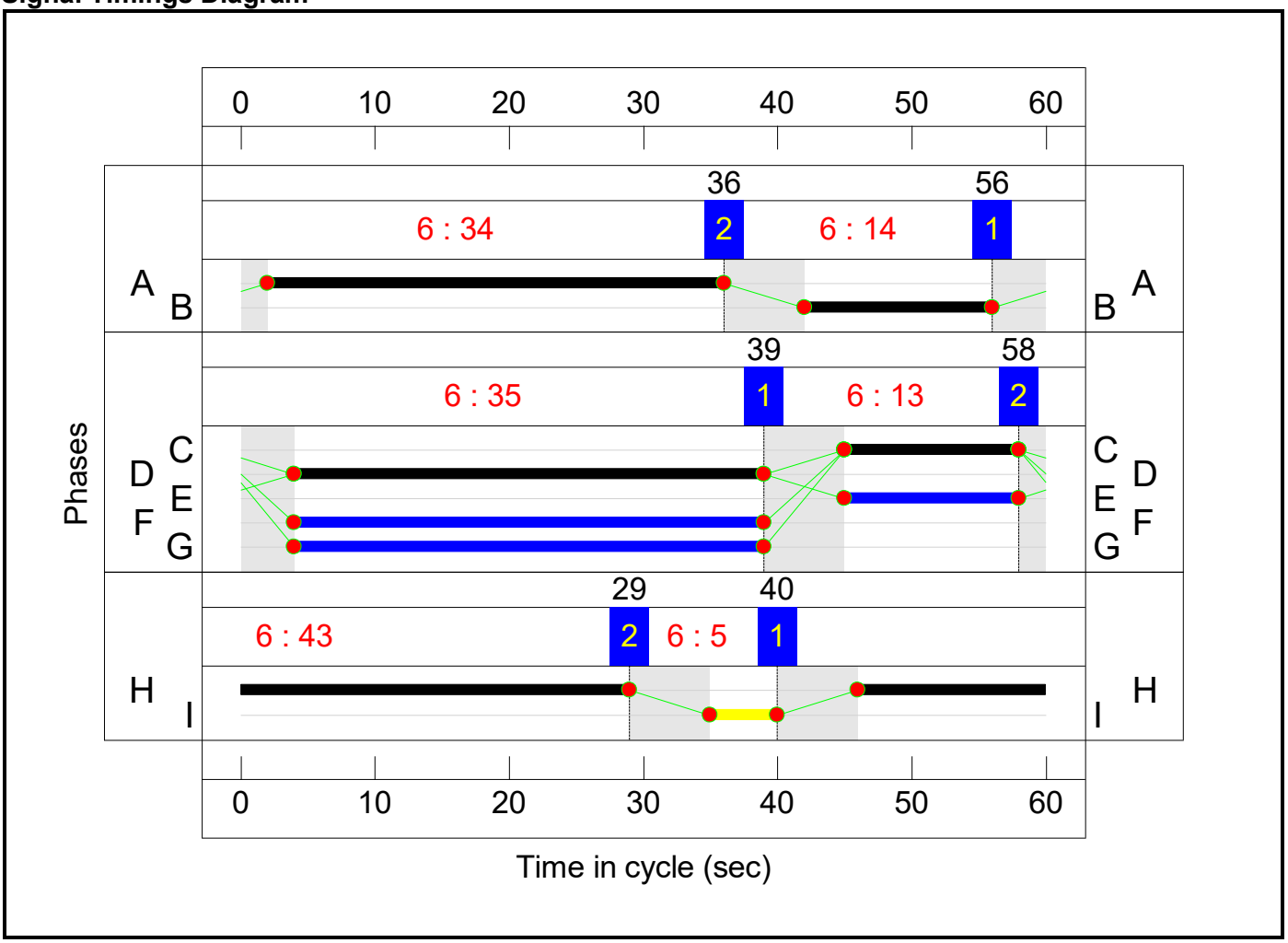
Stage Stream: 2

Stage	1	2
Duration	13	35
Change Point	39	58

Stage Stream: 3

Stage	1	2
Duration	43	5
Change Point	40	29

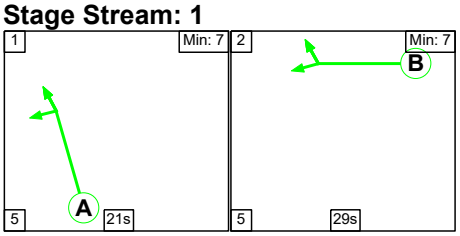
Signal Timings Diagram



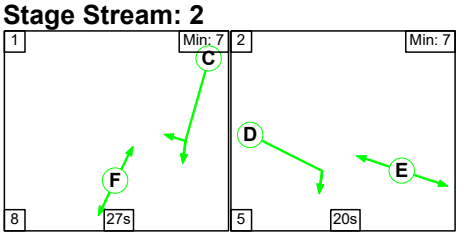
C4 - Ardley

Stage Sequence Diagram

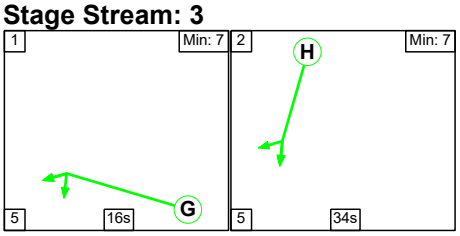
Stage Stream: 1



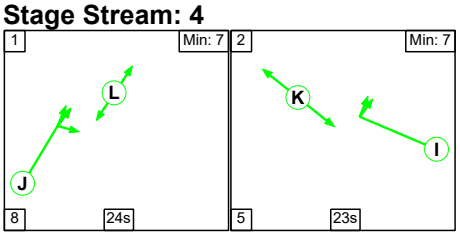
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	21	29
Change Point	29	55

Stage Stream: 2

Stage	1	2
Duration	27	20
Change Point	12	47

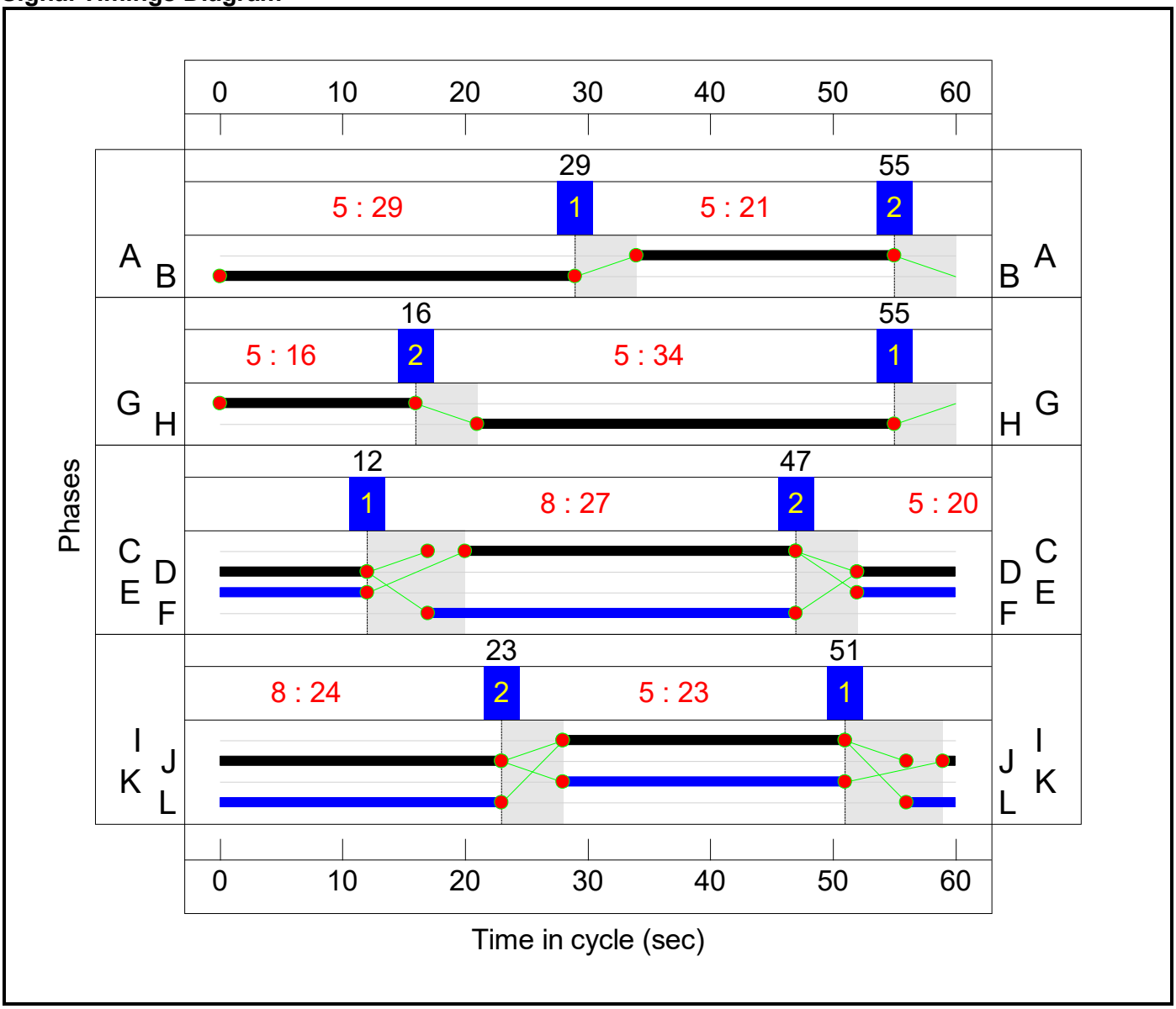
Stage Stream: 3

Stage	1	2
Duration	16	34
Change Point	55	16

Stage Stream: 4

Stage	1	2
Duration	24	23
Change Point	51	23

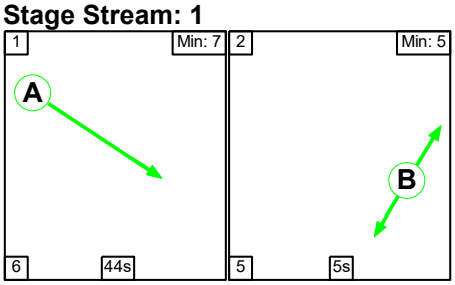
Signal Timings Diagram



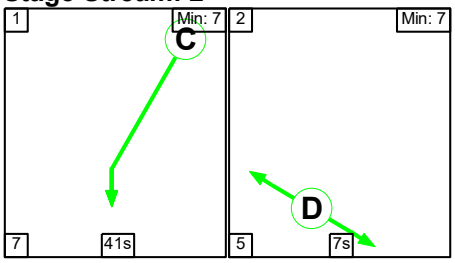
C5 - Baynards Green exit xings

Stage Sequence Diagram

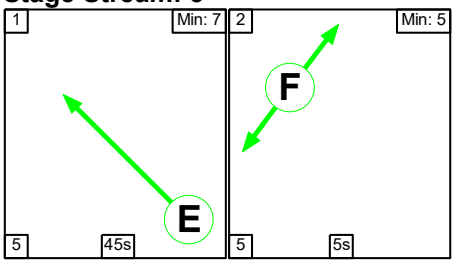
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	44	5
Change Point	59	49

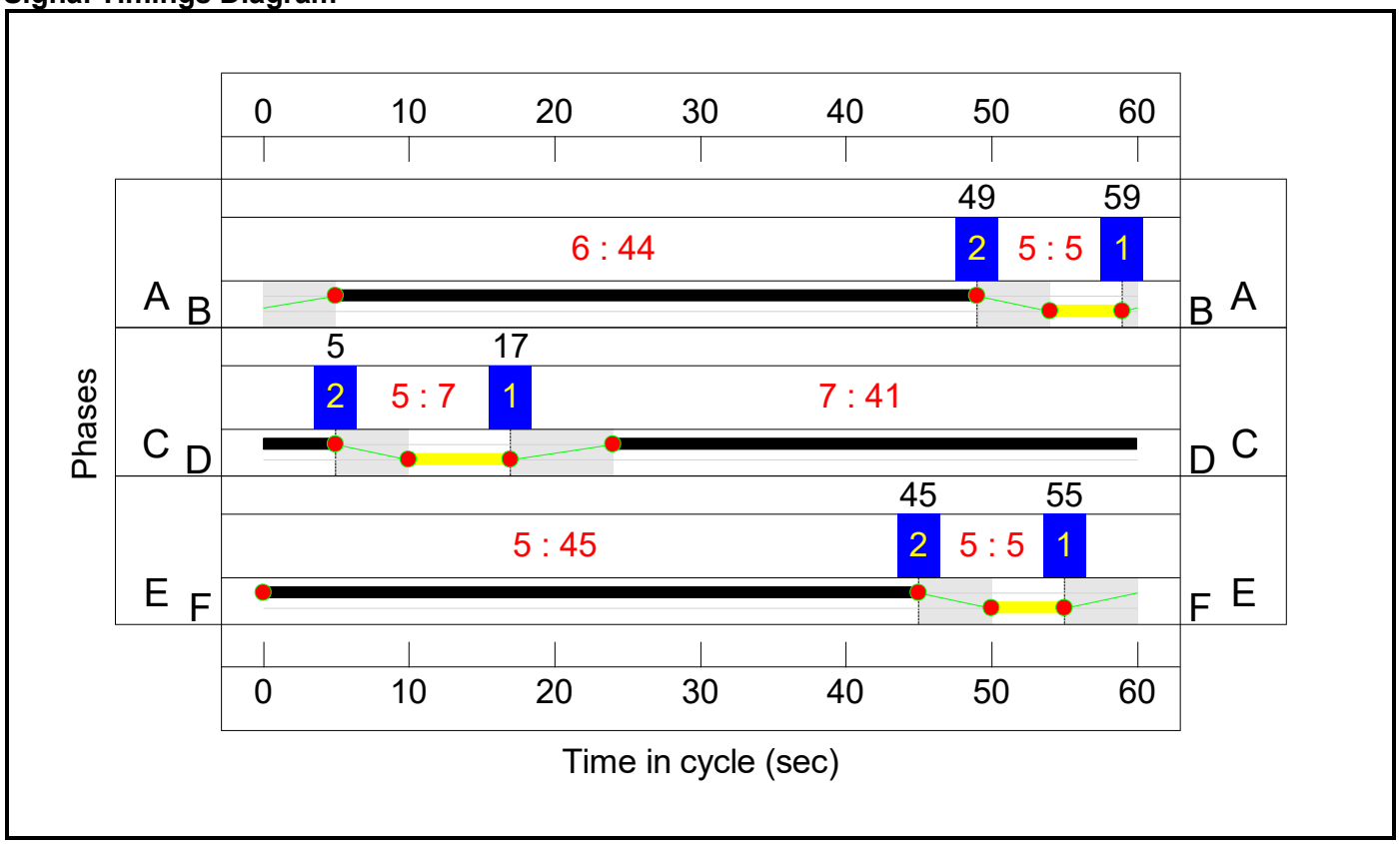
Stage Stream: 2

Stage	1	2
Duration	41	7
Change Point	17	5

Stage Stream: 3

Stage	1	2
Duration	45	5
Change Point	55	45

Signal Timings Diagram



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: Option 28 Network Model	-	-	**N/A**	-	-		-	-	-	-	-	-	**86.7%**
J1: Baynards Green	-	-	**N/A**	-	-		-	-	-	-	-	-	**86.7%**
1/1	A43 North Ahead Left	U	1:1	N/A	C1:B		1	32	-	907	1950	1073	84.6%
1/2+1/3	A43 North Ahead	U	1:1	N/A	C1:B		1	32	-	1556	2085:2085	1076+718	86.7 : 86.7%
2/1	Ahead	U	1:2	N/A	C1:C		1	36	-	750	1956	1239	60.5%
2/2	Ahead	U	1:2	N/A	C1:C		1	36	-	1029	2092	1325	77.7%
2/3+2/4	Right Ahead	U	1:2	N/A	C1:C		1	36	-	662	2092:2092	1314+33	49.2 : 49.2%
3/2+3/1	B4100 East Ahead Left	U	1:2	N/A	C1:D		1	12	-	582	1922:1886	416+409	72.3 : 68.8%
3/3	B4100 East Ahead	U	1:2	N/A	C1:D		1	12	-	258	2058	446	57.9%
4/1	Ahead	U	1:3	N/A	C1:E		1	21	-	317	1967	754	42.0%
4/2	Right	U	1:3	N/A	C1:E		1	21	-	258	2080	797	32.4%
5/1	A43 South Ahead Ahead2	U	1:3	N/A	C1:F		1	27	-	615	1927	899	68.4%
5/2+5/3	A43 South Ahead	U	1:3	N/A	C1:F		1	27	-	1274	2058:2058	960+631	80.1 : 80.1%
6/1	Ahead	U	1:4	N/A	C1:G		1	36	-	611	1932	1224	49.9%
6/2	Ahead	U	1:4	N/A	C1:G		1	36	-	870	2066	1308	66.5%
6/3	Ahead Right	U	1:4	N/A	C1:G		1	36	-	604	2058	1303	46.3%
7/1+7/2	B4100 West Left Ahead	U	1:4	N/A	C1:H		1	12	-	701	1904:2043	413+443	86.3 : 77.9%
9/1	Ahead	U	1:1	N/A	C1:A		1	16	-	453	1980	594	76.3%
9/2	Right Ahead	U	1:1	N/A	C1:A		1	16	-	528	2110	633	83.4%
J2: Padbury	-	-	**N/A**	-	-		-	-	-	-	-	-	**78.9%**
1/1	M40 SB offslip Left	U	2:1	N/A	C2:C		1	13	-	355	1942	453	78.3%

1/2+1/3	M40 SB offslip Right	U	2:1	N/A	C2:C		1	13	-	652	1922:3400	448+793	53.1 : 52.2%
2/1	A43 north Ahead	U	2:1	N/A	C2:A		1	35	-	750	1980	1188	63.1%
2/2	A43 north Ahead	U	2:1	N/A	C2:A		1	35	-	1003	2120	1272	78.9%
2/3+2/4	A43 north Ahead	U	2:1	N/A	C2:A		1	35	-	953	2120:1978	726+1114	51.8 : 51.8%
3/1	A43 south Ahead	U	2:1	N/A	C2:B		1	33	-	524	1980	1188	44.1%
3/2	A43 south Ahead	U	2:1	N/A	C2:B		1	33	-	653	2120	1272	51.3%
3/3	A43 south Ahead	U	2:1	N/A	C2:B		1	33	-	357	2120	1272	28.1%
5/3	Ahead	U	N/A	N/A	-		-	-	-	357	3000	3000	11.9%
6/1	Left	U	2:2	N/A	C2:E		1	22	-	378	1980	759	49.8%
6/2+6/3	Left	U	2:2	N/A	C2:E		1	22	-	846	2120:1980	738+538	66.3 : 66.3%
7/1	Ahead	U	2:2	N/A	C2:D		1	8	-	146	1922	288	50.6%
7/2	Ahead	U	2:2	N/A	C2:D		1	8	-	164	2058	309	53.1%
J3: Cherwell	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**85.7%**
1/1	A43 Southbound Left Ahead	U	3:1	N/A	C3:A		1	34	-	988	1985	1158	85.3%
1/2	A43 Southbound Ahead	U	3:1	N/A	C3:A		1	34	-	1003	2125	1240	80.9%
1/3	A43 Southbound Ahead	U	3:1	N/A	C3:A		1	34	-	553	1980	1155	47.9%
1/4	A43 Southbound Ahead	U	3:1	N/A	C3:A		1	34	-	814	2120	1237	65.8%
2/1	Ahead	U	3:3	N/A	C3:H		1	43	-	549	2015	1478	37.2%
3/1	MSA Left	U	3:2	N/A	C3:C		1	13	-	265	1832	427	62.0%
3/2	MSA Left	U	3:2	N/A	C3:C		1	13	-	334	2015	470	71.0%
6/1	Ahead Right	U	3:1	N/A	C3:B		1	14	-	424	1980	495	85.7%
7/1	Ahead	U	3:2	N/A	C3:D		1	35	-	762	2015	1276	59.7%

7/2	Ahead	U	3:2	N/A	C3:D		1	35	-	1104	2155	1365	80.9%
7/3	Ahead	U	3:2	N/A	C3:D		1	35	-	553	2015	1276	43.3%
7/4	Ahead	U	3:2	N/A	C3:D		1	35	-	814	2155	1365	59.6%
J4: Ardley	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.9%**
1/2+1/1	Ardley bypass Left Ahead	U	4:1	N/A	C4:A		1	21	-	597	2019:1886	370+692	56.3 : 56.3%
1/3	Ardley bypass Ahead	U	4:1	N/A	C4:A		1	21	-	175	2019	740	23.6%
2/1+2/2	B430 Ahead	O	N/A	N/A	-		-	-	-	394	1894:2105	409+759	33.7 : 33.7%
3/1	A43 Southbound Ahead	U	4:2	N/A	C4:C		1	27	-	676	1919	896	75.5%
3/2+3/3	A43 Southbound Ahead Right	U	4:2	N/A	C4:C		1	27	-	1025	2052:2092	697+570	80.9 : 80.9%
4/1	Ahead	U	4:3	N/A	C4:H		1	34	-	793	1967	1180	67.2%
4/2	Ahead Right	U	4:3	N/A	C4:H		1	34	-	701	2100	1260	55.6%
6/1	Ahead Right	U	4:1	N/A	C4:B		1	29	-	93	1990	1028	9.0%
6/2	Right	U	4:1	N/A	C4:B		1	29	-	247	1990	1028	24.0%
7/1+7/2	Right	U	4:2	N/A	C4:D		1	20	-	254	1942:2077	385+451	30.4 : 30.4%
8/1	Ahead	U	4:4	N/A	C4:J		1	24	-	339	2015	840	40.4%
8/2	Ahead	U	4:4	N/A	C4:J		1	24	-	235	2015	840	28.0%
8/3	Right Ahead	U	4:4	N/A	C4:J		1	24	-	678	2015	840	80.8%
13/1	Right Right2	U	4:4	N/A	C4:I		1	23	-	461	1990	829	55.6%
14/1	Left	U	4:3	N/A	C4:G		1	16	-	203	1886	534	38.0%
14/2	Ahead	U	4:3	N/A	C4:G		1	16	-	265	2019	572	46.3%
J5: Baynards Green exit xings	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**79.1%**
1/1	Ahead	U	5:3	N/A	C5:E		1	45	-	379	1980	1518	25.0%
2/1	Ahead	U	5:2	N/A	C5:C		1	41	-	750	1980	1386	54.1%
2/2	Ahead	U	5:2	N/A	C5:C		1	41	-	1174	2120	1484	79.1%
2/3	Ahead	U	5:2	N/A	C5:C		1	41	-	782	2120	1484	52.7%

3/1	Ahead	U	5:1	N/A	C5:A		1	44	-	626	1975	1481	42.3%
3/2	Ahead	U	5:1	N/A	C5:A		1	44	-	377	1975	1481	25.5%

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: Option 28 Network Model	**-**	**-**	**788**	**0**	**0**	**69.1**	**37.4**	**0.0**	**106.5**	**-**	**-**	**-**	**-**
J1: Baynards Green	**-**	**-**	**0**	**0**	**0**	**24.7**	**13.0**	**0.0**	**37.7**	**-**	**-**	**-**	**-**
1/1	907	907	-	-	-	2.9	2.7	-	5.5	21.9	12.6	2.7	15.3
1/2+1/3	1556	1556	-	-	-	4.4	3.2	-	7.5	17.4	12.4	3.2	15.6
2/1	750	750	-	-	-	0.0	0.0	-	0.0	0.2	0.3	0.0	0.3
2/2	1029	1029	-	-	-	0.2	0.0	-	0.2	0.8	1.6	0.0	1.6
2/3+2/4	662	662	-	-	-	0.1	0.0	-	0.1	0.4	0.6	0.0	0.6
3/2+3/1	582	582	-	-	-	3.5	1.2	-	4.7	29.1	4.6	1.2	5.8
3/3	258	258	-	-	-	1.5	0.7	-	2.2	30.6	3.8	0.7	4.5
4/1	317	317	-	-	-	0.2	0.0	-	0.2	2.4	0.5	0.0	0.5
4/2	258	258	-	-	-	0.1	0.0	-	0.1	1.8	0.2	0.0	0.2
5/1	615	615	-	-	-	1.3	1.1	-	2.4	14.2	8.2	1.1	9.2
5/2+5/3	1274	1274	-	-	-	3.6	2.0	-	5.6	15.9	19.2	2.0	21.2
6/1	611	611	-	-	-	0.0	0.0	-	0.0	0.2	0.6	0.0	0.6
6/2	870	870	-	-	-	0.1	0.0	-	0.1	0.3	1.4	0.0	1.4
6/3	604	604	-	-	-	0.1	0.0	-	0.1	0.4	1.7	0.0	1.7
7/1+7/2	701	701	-	-	-	4.4	2.2	-	6.6	33.8	5.6	2.2	7.8
9/1	453	453	-	-	-	1.1	0.0	-	1.1	8.7	2.8	0.0	2.8
9/2	528	528	-	-	-	1.2	0.0	-	1.2	8.1	3.6	0.0	3.6
J2: Padbury	**-**	**-**	**0**	**0**	**0**	**15.8**	**8.1**	**0.0**	**23.9**	**-**	**-**	**-**	**-**
1/1	355	355	-	-	-	2.1	1.7	-	3.9	39.3	5.5	1.7	7.3
1/2+1/3	652	652	-	-	-	3.6	0.6	-	4.2	23.2	3.4	0.6	4.0
2/1	750	750	-	-	-	0.5	0.9	-	1.3	6.5	1.9	0.9	2.7
2/2	1003	1003	-	-	-	0.7	1.8	-	2.5	9.0	4.2	1.8	6.0
2/3+2/4	953	953	-	-	-	0.6	0.5	-	1.1	4.3	15.8	0.5	16.3

3/1	524	524	-	-	-	0.0	0.0	-	0.0	0.2	0.1	0.0	0.1
3/2	653	653	-	-	-	0.0	0.0	-	0.0	0.2	0.1	0.0	0.1
3/3	357	357	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	357	357	-	-	-	0.0	0.1	-	0.1	0.7	0.0	0.1	0.1
6/1	378	378	-	-	-	1.5	0.5	-	2.0	18.8	4.7	0.5	5.2
6/2+6/3	846	846	-	-	-	3.4	1.0	-	4.4	18.6	6.5	1.0	7.5
7/1	146	146	-	-	-	1.5	0.5	-	2.0	49.3	2.4	0.5	2.9
7/2	164	164	-	-	-	1.8	0.6	-	2.3	51.3	2.7	0.6	3.2
J3: Cherwell	**-**	**-**	**0**	**0**	**0**	**11.3**	**8.3**	**0.0**	**19.6**	**-**	**-**	**-**	**-**
1/1	988	988	-	-	-	2.1	2.8	-	5.0	18.0	10.6	2.8	13.4
1/2	1003	1003	-	-	-	1.0	2.1	-	3.1	11.2	3.1	2.1	5.2
1/3	553	553	-	-	-	0.9	0.5	-	1.4	8.8	4.5	0.5	5.0
1/4	814	814	-	-	-	1.3	1.0	-	2.2	9.9	9.5	1.0	10.4
2/1	549	549	-	-	-	0.1	0.0	-	0.1	0.5	0.4	0.0	0.4
3/1	265	265	-	-	-	1.5	0.8	-	2.3	31.6	3.9	0.8	4.7
3/2	334	334	-	-	-	2.0	1.2	-	3.2	34.1	5.1	1.2	6.3
6/1	424	424	-	-	-	1.7	0.0	-	1.7	14.8	7.0	0.0	7.0
7/1	762	762	-	-	-	0.3	0.0	-	0.3	1.3	1.3	0.0	1.3
7/2	1104	1104	-	-	-	0.4	0.0	-	0.4	1.2	1.7	0.0	1.7
7/3	553	553	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/4	814	814	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
J4: Ardley	**-**	**-**	**788**	**0**	**0**	**16.3**	**8.0**	**0.0**	**24.3**	**-**	**-**	**-**	**-**
1/2+1/1	597	597	-	-	-	2.4	0.6	-	3.1	18.4	5.1	0.6	5.7
1/3	175	175	-	-	-	0.6	0.2	-	0.8	16.4	2.0	0.2	2.1
2/1+2/2	394	394	788	0	0	0.0	0.3	-	0.3	2.6	0.6	0.3	0.8
3/1	676	676	-	-	-	1.2	1.5	-	2.7	14.3	9.1	1.5	10.6
3/2+3/3	1025	1025	-	-	-	2.3	2.1	-	4.4	15.4	9.0	2.1	11.1
4/1	793	793	-	-	-	0.6	0.0	-	0.6	2.7	2.0	0.0	2.0
4/2	701	701	-	-	-	0.7	0.0	-	0.7	3.5	2.3	0.0	2.3
6/1	93	93	-	-	-	0.5	0.0	-	0.5	18.6	1.2	0.0	1.2

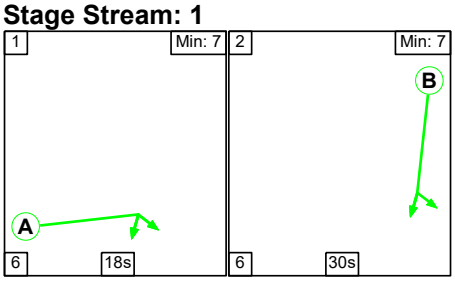
6/2	247	247	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1+7/2	254	254	-	-	-	1.5	0.0	-	1.5	21.4	1.4	0.0	1.4
8/1	339	339	-	-	-	1.2	0.3	-	1.5	16.1	5.2	0.3	5.5
8/2	235	235	-	-	-	0.8	0.2	-	1.0	15.8	3.7	0.2	3.9
8/3	678	678	-	-	-	2.1	2.0	-	4.2	22.1	6.9	2.0	8.9
13/1	461	461	-	-	-	0.1	0.0	-	0.1	0.5	0.3	0.0	0.3
14/1	203	203	-	-	-	1.0	0.3	-	1.3	22.7	2.7	0.3	3.0
14/2	265	265	-	-	-	1.3	0.4	-	1.7	23.6	3.6	0.4	4.0
J5: Baynards Green exit xings	**-**	**-**	**0**	**0**	**0**	**1.0**	**0.0**	**0.0**	**1.0**	**-**	**-**	**-**	**-**
1/1	379	379	-	-	-	0.0	0.0	-	0.0	0.1	0.2	0.0	0.2
2/1	750	750	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	1174	1174	-	-	-	0.5	0.0	-	0.5	1.5	3.0	0.0	3.0
2/3	782	782	-	-	-	0.4	0.0	-	0.4	1.8	2.3	0.0	2.3
3/1	626	626	-	-	-	0.1	0.0	-	0.1	0.7	0.7	0.0	0.7
3/2	377	377	-	-	-	0.0	0.0	-	0.0	0.1	0.2	0.0	0.2

C1 - Baynards Green	Stream: 1 PRC for Signalled Lanes (%):	3.8	Total Delay for Signalled Lanes (pcuHr):	15.33	Cycle Time (s):	60
C1 - Baynards Green	Stream: 2 PRC for Signalled Lanes (%):	15.9	Total Delay for Signalled Lanes (pcuHr):	7.22	Cycle Time (s):	60
C1 - Baynards Green	Stream: 3 PRC for Signalled Lanes (%):	12.4	Total Delay for Signalled Lanes (pcuHr):	8.39	Cycle Time (s):	60
C1 - Baynards Green	Stream: 4 PRC for Signalled Lanes (%):	4.3	Total Delay for Signalled Lanes (pcuHr):	6.75	Cycle Time (s):	60
C2 - Padbury	Stream: 1 PRC for Signalled Lanes (%):	14.1	Total Delay for Signalled Lanes (pcuHr):	13.14	Cycle Time (s):	60
C2 - Padbury	Stream: 2 PRC for Signalled Lanes (%):	35.8	Total Delay for Signalled Lanes (pcuHr):	10.69	Cycle Time (s):	60
C3 - Cherwell	Stream: 1 PRC for Signalled Lanes (%):	5.1	Total Delay for Signalled Lanes (pcuHr):	13.40	Cycle Time (s):	60
C3 - Cherwell	Stream: 2 PRC for Signalled Lanes (%):	11.3	Total Delay for Signalled Lanes (pcuHr):	6.15	Cycle Time (s):	60
C3 - Cherwell	Stream: 3 PRC for Signalled Lanes (%):	142.2	Total Delay for Signalled Lanes (pcuHr):	0.07	Cycle Time (s):	60
C4 - Ardley	Stream: 1 PRC for Signalled Lanes (%):	60.0	Total Delay for Signalled Lanes (pcuHr):	4.33	Cycle Time (s):	60
C4 - Ardley	Stream: 2 PRC for Signalled Lanes (%):	11.2	Total Delay for Signalled Lanes (pcuHr):	8.56	Cycle Time (s):	60
C4 - Ardley	Stream: 3 PRC for Signalled Lanes (%):	33.9	Total Delay for Signalled Lanes (pcuHr):	4.29	Cycle Time (s):	60
C4 - Ardley	Stream: 4 PRC for Signalled Lanes (%):	11.4	Total Delay for Signalled Lanes (pcuHr):	6.78	Cycle Time (s):	60
C5 - Baynards Green exit xings	Stream: 1 PRC for Signalled Lanes (%):	113.0	Total Delay for Signalled Lanes (pcuHr):	0.14	Cycle Time (s):	60
C5 - Baynards Green exit xings	Stream: 2 PRC for Signalled Lanes (%):	13.8	Total Delay for Signalled Lanes (pcuHr):	0.89	Cycle Time (s):	60
C5 - Baynards Green exit xings	Stream: 3 PRC for Signalled Lanes (%):	260.5	Total Delay for Signalled Lanes (pcuHr):	0.01	Cycle Time (s):	60
	PRC Over All Lanes (%):	3.8	Total Delay Over All Lanes(pcuHr):	106.50		

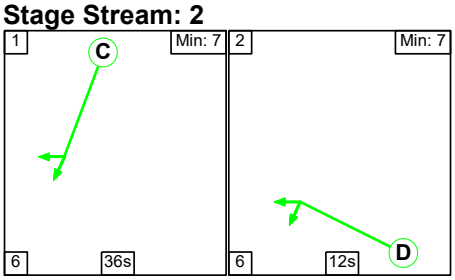
Scenario 2: '2034 Option 28 - PM peak' (FG4: '2034 do something - PM', Plan 1: 'Network Control Plan 1')
C1 - Baynards Green

Stage Sequence Diagram

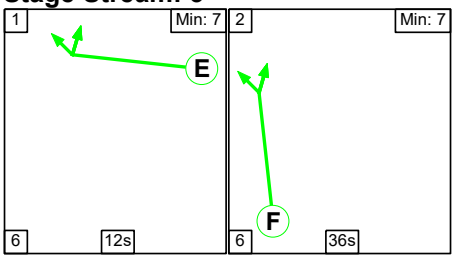
Stage Stream: 1



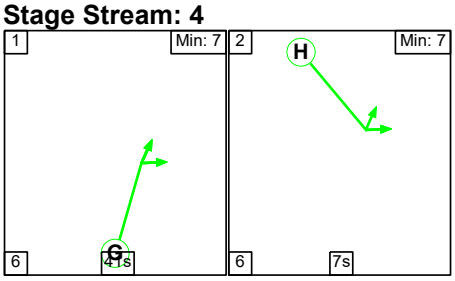
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	18	30
Change Point	0	24

Stage Stream: 2

Stage	1	2
Duration	36	12
Change Point	22	4

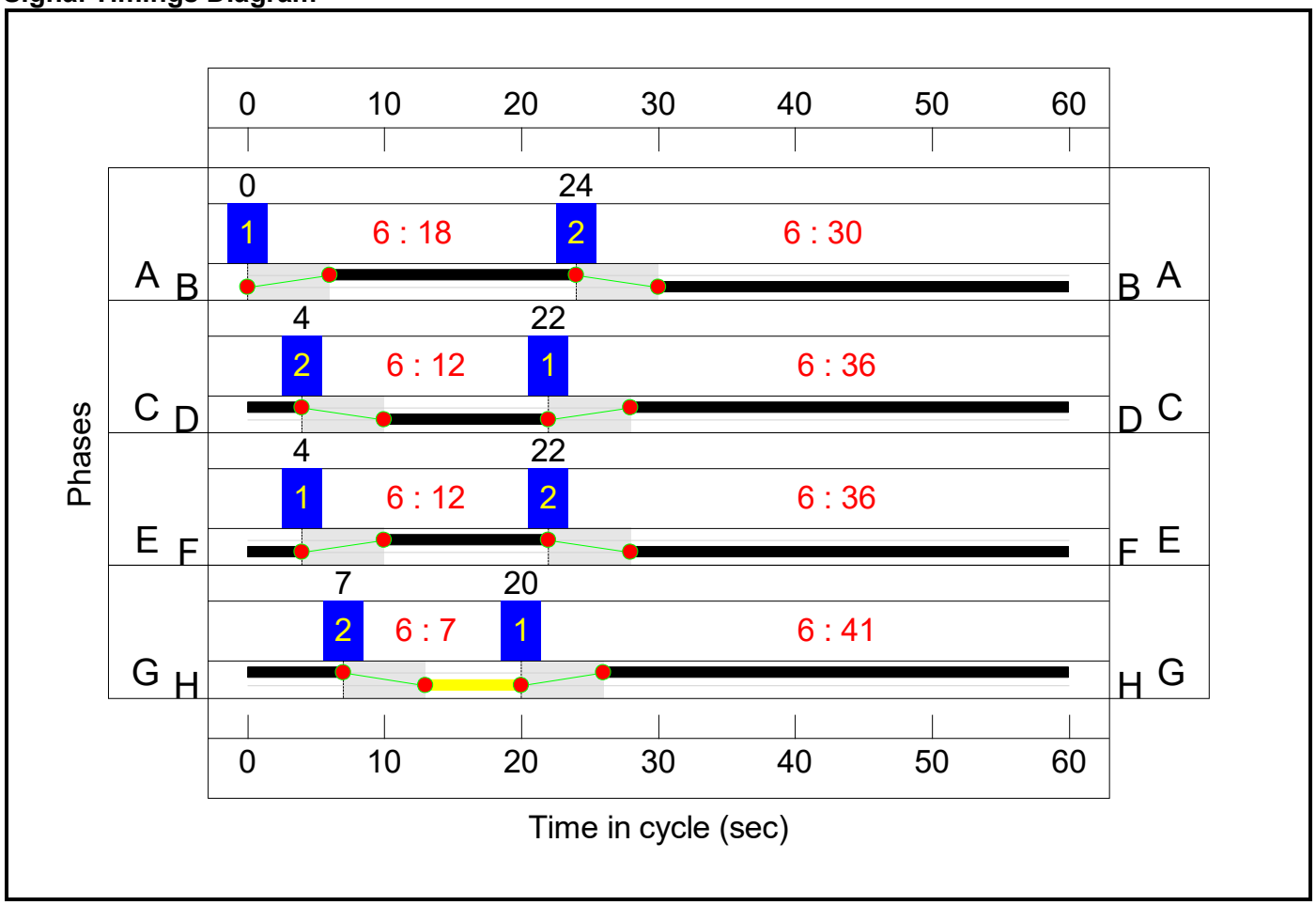
Stage Stream: 3

Stage	1	2
Duration	12	36
Change Point	4	22

Stage Stream: 4

Stage	1	2
Duration	41	7
Change Point	20	7

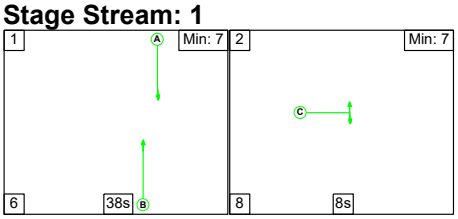
Signal Timings Diagram



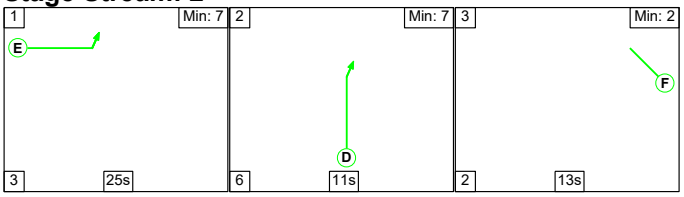
C2 - Padbury

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

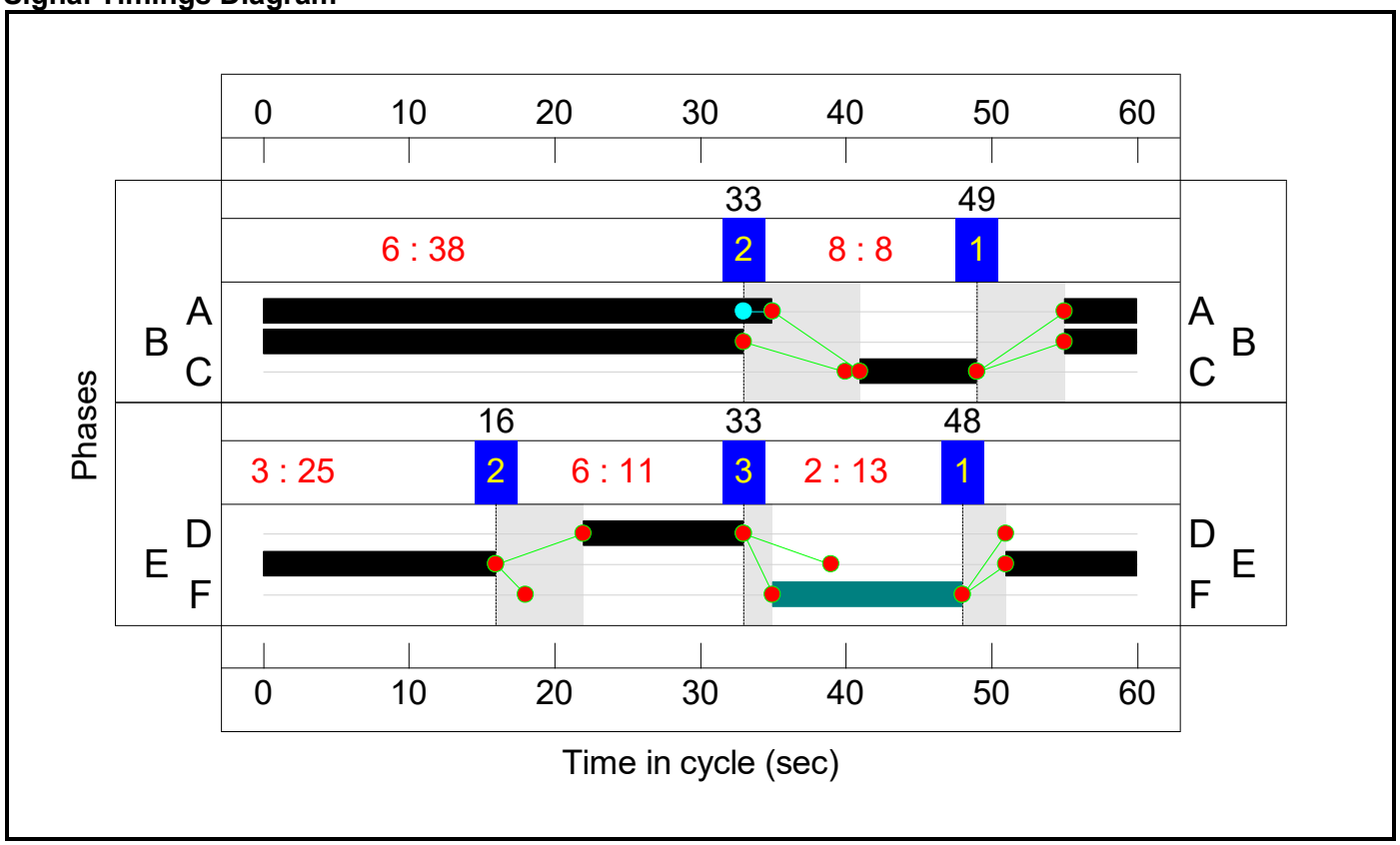
Stage Stream: 1

Stage	1	2
Duration	38	8
Change Point	49	33

Stage Stream: 2

Stage	1	2	3
Duration	25	11	13
Change Point	48	16	33

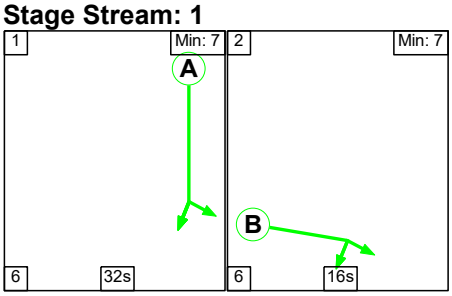
Signal Timings Diagram



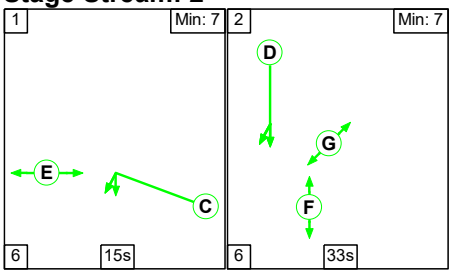
C3 - Cherwell

Stage Sequence Diagram

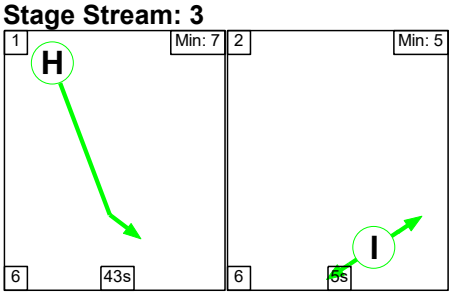
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	32	16
Change Point	19	57

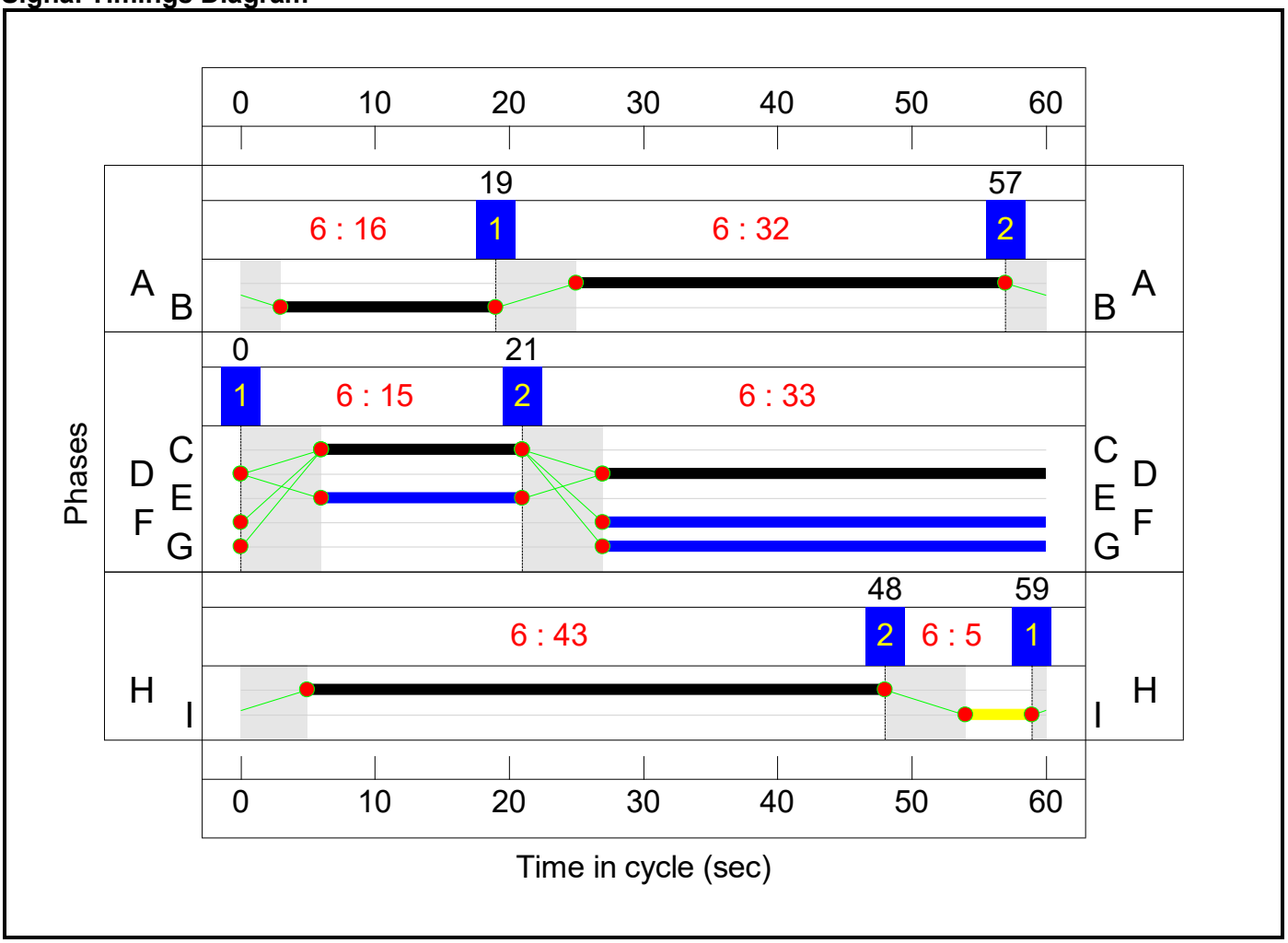
Stage Stream: 2

Stage	1	2
Duration	15	33
Change Point	0	21

Stage Stream: 3

Stage	1	2
Duration	43	5
Change Point	59	48

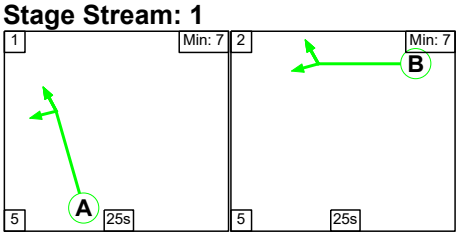
Signal Timings Diagram



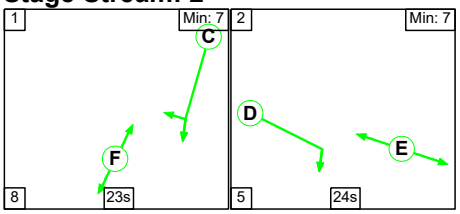
C4 - Ardley

Stage Sequence Diagram

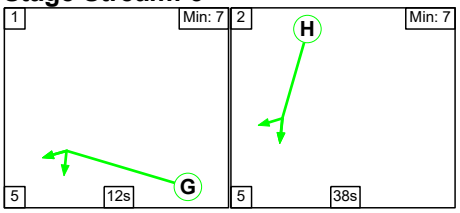
Stage Stream: 1



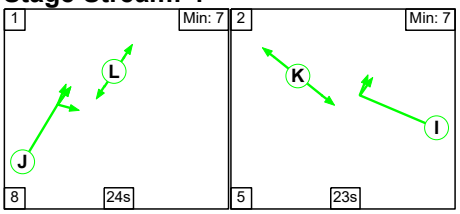
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	25	25
Change Point	10	40

Stage Stream: 2

Stage	1	2
Duration	23	24
Change Point	18	49

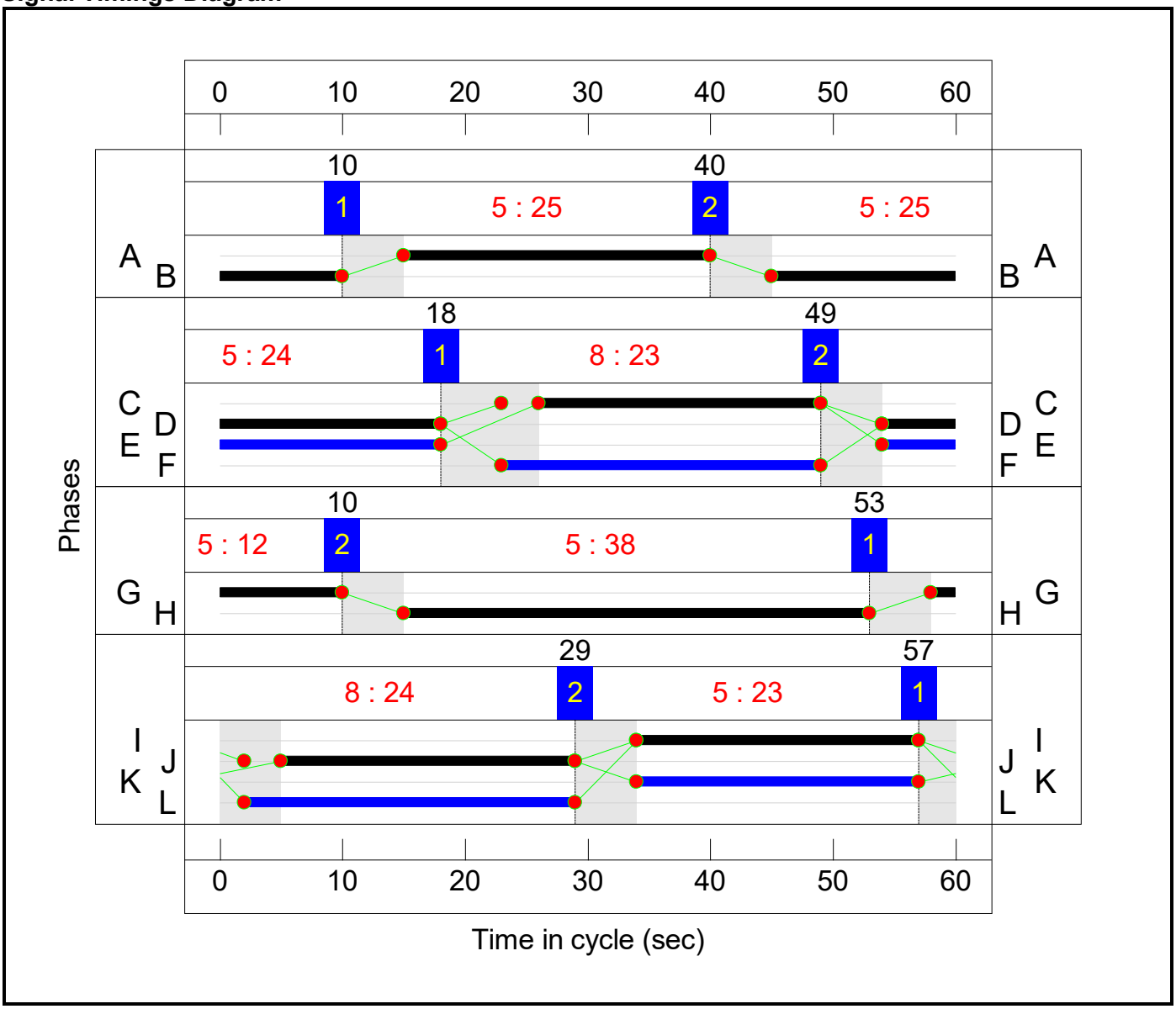
Stage Stream: 3

Stage	1	2
Duration	12	38
Change Point	53	10

Stage Stream: 4

Stage	1	2
Duration	24	23
Change Point	57	29

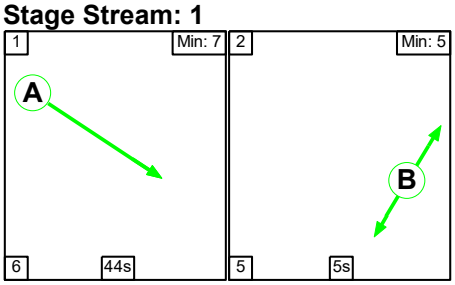
Signal Timings Diagram



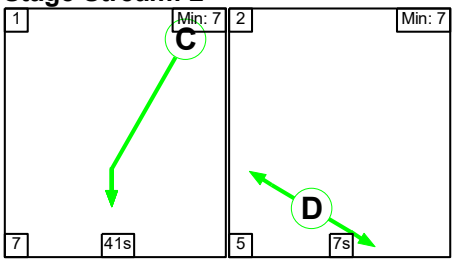
C5 - Baynards Green exit xings

Stage Sequence Diagram

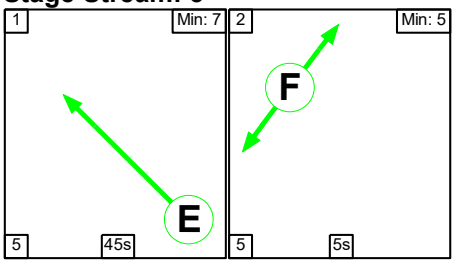
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	44	5
Change Point	5	55

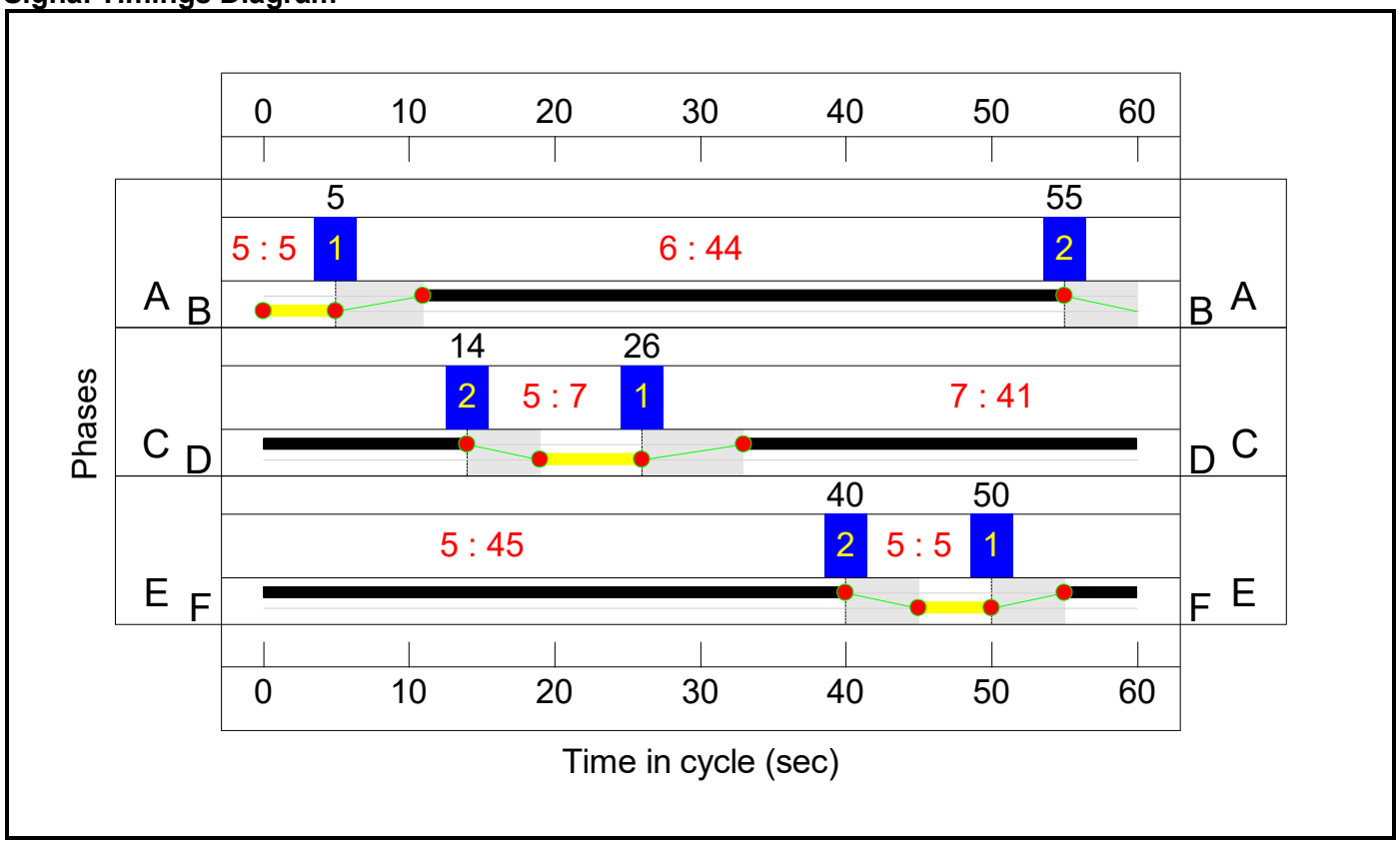
Stage Stream: 2

Stage	1	2
Duration	41	7
Change Point	26	14

Stage Stream: 3

Stage	1	2
Duration	45	5
Change Point	50	40

Signal Timings Diagram



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: Option 28 Network Model	-	-	**N/A**	-	-		-	-	-	-	-	-	**86.7%**
J1: Baynards Green	-	-	**N/A**	-	-		-	-	-	-	-	-	**86.7%**
1/1	A43 North Ahead Left	U	1:1	N/A	C1:B		1	30	-	849	1950	1007	84.3%
1/2+1/3	A43 North Ahead	U	1:1	N/A	C1:B		1	30	-	1180	2085:2085	1057+331	85.0 : 85.0%
2/1	Ahead	U	1:2	N/A	C1:C		1	36	-	576	1956	1239	46.5%
2/2	Ahead	U	1:2	N/A	C1:C		1	36	-	930	2092	1325	70.2%
2/3+2/4	Right Ahead	U	1:2	N/A	C1:C		1	36	-	290	2092:2092	1096+280	21.1 : 21.1%
3/2+3/1	B4100 East Ahead Left	U	1:2	N/A	C1:D		1	12	-	598	1922:1886	416+409	74.7 : 70.2%
3/3	B4100 East Ahead	U	1:2	N/A	C1:D		1	12	-	380	2058	446	85.2%
4/1	Ahead	U	1:3	N/A	C1:E		1	12	-	370	1967	459	80.6%
4/2	Right	U	1:3	N/A	C1:E		1	12	-	380	2080	485	78.3%
5/1	A43 South Ahead Ahead2	U	1:3	N/A	C1:F		1	36	-	971	1927	1188	81.7%
5/2+5/3	A43 South Ahead	U	1:3	N/A	C1:F		1	36	-	1696	2058:2058	1153+804	86.7 : 86.7%
6/1	Ahead	U	1:4	N/A	C1:G		1	41	-	1036	1932	1385	74.8%
6/2	Ahead	U	1:4	N/A	C1:G		1	41	-	1125	2066	1481	76.0%
6/3	Ahead Right	U	1:4	N/A	C1:G		1	41	-	839	2063	1478	56.7%
7/1+7/2	B4100 West Left Ahead	U	1:4	N/A	C1:H		1	7	-	401	1902:2043	254+272	76.1 : 76.4%
9/1	Ahead	U	1:1	N/A	C1:A		1	18	-	212	1980	660	32.1%
9/2	Right Ahead	U	1:1	N/A	C1:A		1	18	-	342	2112	704	48.6%
J2: Padbury	-	-	**N/A**	-	-		-	-	-	-	-	-	**86.2%**
1/1	M40 SB offslip Left	U	2:1	N/A	C2:C		1	8	-	172	1942	291	59.0%

1/2+1/3	M40 SB offslip Right	U	2:1	N/A	C2:C		1	8	-	530	1922:3400	288+442	82.9 : 65.9%
2/1	A43 north Ahead	U	2:1	N/A	C2:A		1	40	-	577	1980	1353	42.6%
2/2	A43 north Ahead	U	2:1	N/A	C2:A		1	40	-	935	2120	1449	64.5%
2/3+2/4	A43 north Ahead	U	2:1	N/A	C2:A		1	40	-	512	2120:1978	970+1073	25.1 : 25.1%
3/1	A43 south Ahead	U	2:1	N/A	C2:B		1	38	-	976	1980	1353	72.1%
3/2	A43 south Ahead	U	2:1	N/A	C2:B		1	38	-	1025	2120	1449	70.8%
3/3	A43 south Ahead	U	2:1	N/A	C2:B		1	38	-	494	2120	1449	34.1%
5/3	Ahead	U	N/A	N/A	-		-	-	-	494	3000	3000	16.5%
6/1	Left	U	2:2	N/A	C2:E		1	25	-	668	1980	858	77.9%
6/2+6/3	Left	U	2:2	N/A	C2:E		1	25	-	1182	2120:1980	798+573	86.2 : 86.2%
7/1	Ahead	U	2:2	N/A	C2:D		1	11	-	308	1922	384	80.1%
7/2	Ahead	U	2:2	N/A	C2:D		1	11	-	337	2058	412	81.9%
J3: Cherwell	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.0%**
1/1	A43 Southbound Left Ahead	U	3:1	N/A	C3:A		1	32	-	816	1985	1092	74.7%
1/2	A43 Southbound Ahead	U	3:1	N/A	C3:A		1	32	-	935	2125	1169	80.0%
1/3	A43 Southbound Ahead	U	3:1	N/A	C3:A		1	32	-	382	1980	1089	35.1%
1/4	A43 Southbound Ahead	U	3:1	N/A	C3:A		1	32	-	421	2120	1166	36.1%
2/1	Ahead	U	3:3	N/A	C3:H		1	43	-	623	2015	1478	42.2%
3/1	MSA Left	U	3:2	N/A	C3:C		1	15	-	308	1832	489	63.0%
3/2	MSA Left	U	3:2	N/A	C3:C		1	15	-	316	2015	537	58.8%
6/1	Ahead Right	U	3:1	N/A	C3:B		1	16	-	443	1981	561	78.9%
7/1	Ahead	U	3:2	N/A	C3:D		1	33	-	554	2015	1209	45.8%

7/2	Ahead	U	3:2	N/A	C3:D		1	33	-	1017	2155	1293	78.7%
7/3	Ahead	U	3:2	N/A	C3:D		1	33	-	382	2015	1209	31.6%
7/4	Ahead	U	3:2	N/A	C3:D		1	33	-	421	2155	1293	32.6%
J4: Ardley	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.4%**
1/2+1/1	Ardley bypass Left Ahead	U	4:1	N/A	C4:A		1	25	-	1152	2019:1886	711+817	75.4 : 75.4%
1/3	Ardley bypass Ahead	U	4:1	N/A	C4:A		1	25	-	171	2019	875	19.5%
2/1+2/2	B430 Ahead	O	N/A	N/A	-		-	-	-	161	1894:2105	714+331	15.4 : 15.4%
3/1	A43 Southbound Ahead	U	4:2	N/A	C4:C		1	23	-	429	1919	768	55.9%
3/2+3/3	A43 Southbound Ahead Right	U	4:2	N/A	C4:C		1	23	-	690	2052:2092	182+763	73.0 : 73.0%
4/1	Ahead	U	4:3	N/A	C4:H		1	38	-	430	1967	1311	32.8%
4/2	Ahead Right	U	4:3	N/A	C4:H		1	38	-	181	2100	1400	12.9%
6/1	Ahead Right	U	4:1	N/A	C4:B		1	25	-	117	1990	896	13.1%
6/2	Right	U	4:1	N/A	C4:B		1	25	-	270	1990	896	30.2%
7/1+7/2	Right	U	4:2	N/A	C4:D		1	24	-	49	1942:2077	18+865	5.5 : 5.5%
8/1	Ahead	U	4:4	N/A	C4:J		1	24	-	432	2015	840	51.5%
8/2	Ahead	U	4:4	N/A	C4:J		1	24	-	544	2015	840	64.8%
8/3	Right Ahead	U	4:4	N/A	C4:J		1	24	-	492	2015	840	58.6%
13/1	Right Right2	U	4:4	N/A	C4:I		1	23	-	557	1990	829	67.2%
14/1	Left	U	4:3	N/A	C4:G		1	12	-	178	1886	409	43.6%
14/2	Ahead	U	4:3	N/A	C4:G		1	12	-	294	2019	437	67.2%
J5: Baynards Green exit xings	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.8%**
1/1	Ahead	U	5:3	N/A	C5:E		1	45	-	417	1980	1518	27.5%
2/1	Ahead	U	5:2	N/A	C5:C		1	41	-	577	1980	1386	41.6%
2/2	Ahead	U	5:2	N/A	C5:C		1	41	-	1139	2120	1484	76.8%
2/3	Ahead	U	5:2	N/A	C5:C		1	41	-	308	2120	1484	20.8%

3/1	Ahead	U	5:1	N/A	C5:A		1	44	-	499	1975	1481	33.7%
3/2	Ahead	U	5:1	N/A	C5:A		1	44	-	288	1975	1481	19.4%

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: Option 28 Network Model	**-**	**-**	**322**	**0**	**0**	**75.9**	**41.4**	**0.0**	**117.3**	**-**	**-**	**-**	**-**
J1: Baynards Green	**-**	**-**	**0**	**0**	**0**	**24.0**	**16.3**	**0.0**	**40.2**	**-**	**-**	**-**	**-**
1/1	849	849	-	-	-	2.9	2.6	-	5.5	23.4	12.0	2.6	14.6
1/2+1/3	1180	1180	-	-	-	3.7	2.8	-	6.5	19.8	12.5	2.8	15.2
2/1	576	576	-	-	-	0.0	0.0	-	0.0	0.1	0.2	0.0	0.2
2/2	930	930	-	-	-	0.0	0.0	-	0.0	0.1	0.4	0.0	0.4
2/3+2/4	290	290	-	-	-	0.0	0.0	-	0.0	0.1	0.1	0.0	0.1
3/2+3/1	598	598	-	-	-	3.6	1.3	-	4.9	29.7	4.8	1.3	6.1
3/3	380	380	-	-	-	2.4	2.7	-	5.1	47.9	6.0	2.7	8.7
4/1	370	370	-	-	-	0.6	0.0	-	0.6	6.3	1.4	0.0	1.4
4/2	380	380	-	-	-	0.9	0.0	-	0.9	8.6	1.2	0.0	1.2
5/1	971	971	-	-	-	1.3	2.2	-	3.5	13.1	12.0	2.2	14.2
5/2+5/3	1696	1696	-	-	-	3.5	3.2	-	6.6	14.1	30.6	3.2	33.8
6/1	1036	1036	-	-	-	0.2	0.0	-	0.2	0.7	1.9	0.0	1.9
6/2	1125	1125	-	-	-	0.3	0.0	-	0.3	1.0	2.5	0.0	2.5
6/3	839	839	-	-	-	0.3	0.0	-	0.3	1.1	2.5	0.0	2.5
7/1+7/2	401	401	-	-	-	2.8	1.6	-	4.4	39.1	3.3	1.6	4.9
9/1	212	212	-	-	-	0.5	0.0	-	0.5	8.1	1.1	0.0	1.1
9/2	342	342	-	-	-	0.9	0.0	-	0.9	9.2	2.0	0.0	2.0
J2: Padbury	**-**	**-**	**0**	**0**	**0**	**19.1**	**12.4**	**0.0**	**31.5**	**-**	**-**	**-**	**-**
1/1	172	172	-	-	-	1.1	0.7	-	1.8	38.7	2.6	0.7	3.3
1/2+1/3	530	530	-	-	-	3.6	1.3	-	4.9	33.1	3.9	1.3	5.2
2/1	577	577	-	-	-	0.2	0.4	-	0.6	3.5	0.9	0.4	1.2
2/2	935	935	-	-	-	0.3	0.9	-	1.2	4.7	1.4	0.9	2.3
2/3+2/4	512	512	-	-	-	0.3	0.2	-	0.5	3.4	1.1	0.2	1.3

3/1	976	976	-	-	-	0.1	0.0	-	0.1	0.4	0.3	0.0	0.3
3/2	1025	1025	-	-	-	0.1	0.0	-	0.1	0.4	0.4	0.0	0.4
3/3	494	494	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	494	494	-	-	-	0.0	0.1	-	0.1	0.7	0.0	0.1	0.1
6/1	668	668	-	-	-	2.7	1.7	-	4.4	23.8	9.5	1.7	11.2
6/2+6/3	1182	1182	-	-	-	4.5	3.0	-	7.5	22.9	9.6	3.0	12.6
7/1	308	308	-	-	-	2.9	1.9	-	4.8	56.6	5.1	1.9	7.0
7/2	337	337	-	-	-	3.3	2.1	-	5.4	57.7	5.6	2.1	7.7
J3: Cherwell	**-**	**-**	**0**	**0**	**0**	**14.2**	**5.5**	**0.0**	**19.8**	**-**	**-**	**-**	**-**
1/1	816	816	-	-	-	2.2	1.5	-	3.6	16.1	10.7	1.5	12.2
1/2	935	935	-	-	-	2.0	2.0	-	4.0	15.3	15.1	2.0	17.1
1/3	382	382	-	-	-	0.8	0.3	-	1.1	10.3	3.9	0.3	4.2
1/4	421	421	-	-	-	1.4	0.3	-	1.7	14.7	5.4	0.3	5.7
2/1	623	623	-	-	-	0.2	0.0	-	0.2	1.4	2.0	0.0	2.0
3/1	308	308	-	-	-	1.7	0.8	-	2.5	29.3	4.4	0.8	5.3
3/2	316	316	-	-	-	1.7	0.7	-	2.4	27.2	4.6	0.7	5.3
6/1	443	443	-	-	-	3.7	0.0	-	3.7	29.8	7.4	0.0	7.4
7/1	554	554	-	-	-	0.3	0.0	-	0.3	1.9	1.5	0.0	1.5
7/2	1017	1017	-	-	-	0.3	0.0	-	0.3	0.9	1.4	0.0	1.4
7/3	382	382	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/4	421	421	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
J4: Ardley	**-**	**-**	**322**	**0**	**0**	**17.3**	**7.2**	**0.0**	**24.6**	**-**	**-**	**-**	**-**
1/2+1/1	1152	1152	-	-	-	4.4	1.5	-	5.9	18.5	8.6	1.5	10.1
1/3	171	171	-	-	-	0.5	0.1	-	0.6	13.1	1.8	0.1	1.9
2/1+2/2	161	161	322	0	0	0.1	0.1	-	0.2	3.6	0.5	0.1	0.5
3/1	429	429	-	-	-	1.2	0.6	-	1.8	15.2	3.0	0.6	3.6
3/2+3/3	690	690	-	-	-	1.3	1.3	-	2.6	13.5	5.7	1.3	7.0
4/1	430	430	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	181	181	-	-	-	0.1	0.0	-	0.1	1.0	0.2	0.0	0.2
6/1	117	117	-	-	-	0.1	0.0	-	0.1	4.3	0.8	0.0	0.8

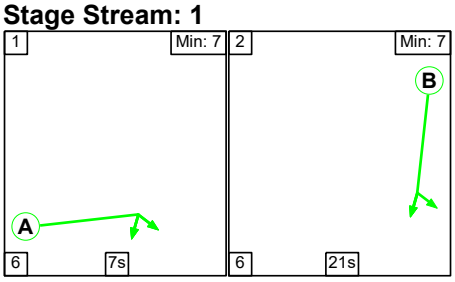
6/2	270	270	-	-	-	0.2	0.0	-	0.2	2.6	0.4	0.0	0.4
7/1+7/2	49	49	-	-	-	0.1	0.0	-	0.1	7.0	0.2	0.0	0.2
8/1	432	432	-	-	-	2.5	0.5	-	3.1	25.6	5.4	0.5	5.9
8/2	544	544	-	-	-	3.5	0.9	-	4.4	28.9	6.2	0.9	7.2
8/3	492	492	-	-	-	0.7	0.7	-	1.4	10.0	1.9	0.7	2.6
13/1	557	557	-	-	-	0.0	0.0	-	0.0	0.2	0.3	0.0	0.3
14/1	178	178	-	-	-	1.0	0.4	-	1.4	28.1	2.5	0.4	2.9
14/2	294	294	-	-	-	1.8	1.0	-	2.8	33.9	4.5	1.0	5.5
J5: Baynards Green exit xings	**-**	**-**	**0**	**0**	**0**	**1.2**	**0.0**	**0.0**	**1.2**	**-**	**-**	**-**	**-**
1/1	417	417	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	577	577	-	-	-	0.0	0.0	-	0.0	0.1	0.2	0.0	0.2
2/2	1139	1139	-	-	-	0.7	0.0	-	0.7	2.2	2.9	0.0	2.9
2/3	308	308	-	-	-	0.3	0.0	-	0.3	3.4	1.3	0.0	1.3
3/1	499	499	-	-	-	0.2	0.0	-	0.2	1.4	1.9	0.0	1.9
3/2	288	288	-	-	-	0.0	0.0	-	0.0	0.5	2.1	0.0	2.1

C1 - Baynards Green	Stream: 1 PRC for Signalled Lanes (%):	5.9	Total Delay for Signalled Lanes (pcuHr):	13.35	Cycle Time (s):	60		
C1 - Baynards Green	Stream: 2 PRC for Signalled Lanes (%):	5.6	Total Delay for Signalled Lanes (pcuHr):	10.02	Cycle Time (s):	60		
C1 - Baynards Green	Stream: 3 PRC for Signalled Lanes (%):	3.8	Total Delay for Signalled Lanes (pcuHr):	11.72	Cycle Time (s):	60		
C1 - Baynards Green	Stream: 4 PRC for Signalled Lanes (%):	17.9	Total Delay for Signalled Lanes (pcuHr):	5.13	Cycle Time (s):	60		
C2 - Padbury	Stream: 1 PRC for Signalled Lanes (%):	8.6	Total Delay for Signalled Lanes (pcuHr):	9.20	Cycle Time (s):	60		
C2 - Padbury	Stream: 2 PRC for Signalled Lanes (%):	4.4	Total Delay for Signalled Lanes (pcuHr):	22.18	Cycle Time (s):	60		
C3 - Cherwell	Stream: 1 PRC for Signalled Lanes (%):	12.5	Total Delay for Signalled Lanes (pcuHr):	14.09	Cycle Time (s):	60		
C3 - Cherwell	Stream: 2 PRC for Signalled Lanes (%):	14.4	Total Delay for Signalled Lanes (pcuHr):	5.45	Cycle Time (s):	60		
C3 - Cherwell	Stream: 3 PRC for Signalled Lanes (%):	113.5	Total Delay for Signalled Lanes (pcuHr):	0.24	Cycle Time (s):	60		
C4 - Ardley	Stream: 1 PRC for Signalled Lanes (%):	19.4	Total Delay for Signalled Lanes (pcuHr):	6.88	Cycle Time (s):	60		
C4 - Ardley	Stream: 2 PRC for Signalled Lanes (%):	23.3	Total Delay for Signalled Lanes (pcuHr):	4.50	Cycle Time (s):	60		
C4 - Ardley	Stream: 3 PRC for Signalled Lanes (%):	33.9	Total Delay for Signalled Lanes (pcuHr):	4.21	Cycle Time (s):	60		
C4 - Ardley	Stream: 4 PRC for Signalled Lanes (%):	34.0	Total Delay for Signalled Lanes (pcuHr):	8.83	Cycle Time (s):	60		
C5 - Baynards Green exit xings	Stream: 1 PRC for Signalled Lanes (%):	167.2	Total Delay for Signalled Lanes (pcuHr):	0.23	Cycle Time (s):	60		
C5 - Baynards Green exit xings	Stream: 2 PRC for Signalled Lanes (%):	17.3	Total Delay for Signalled Lanes (pcuHr):	1.00	Cycle Time (s):	60		
C5 - Baynards Green exit xings	Stream: 3 PRC for Signalled Lanes (%):	227.6	Total Delay for Signalled Lanes (pcuHr):	0.00	Cycle Time (s):	60		
	PRC Over All Lanes (%):	3.8	Total Delay Over All Lanes(pcuHr):	117.29				

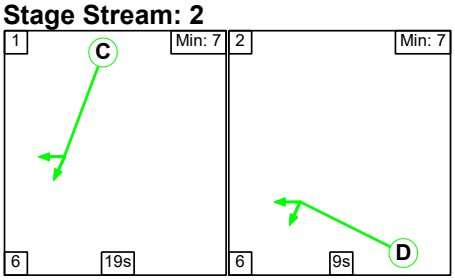
Scenario 3: '2034 Option 28 - Off peak' (FG1: '2034 do something - off-peak', Plan 1: 'Network Control Plan 1')
C1 - Baynards Green

Stage Sequence Diagram

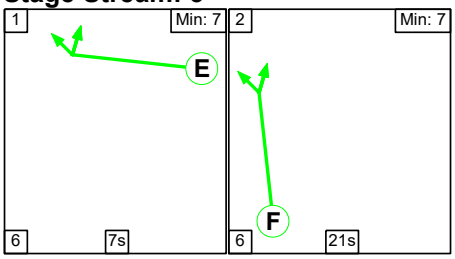
Stage Stream: 1



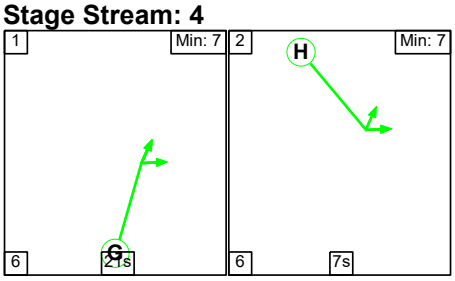
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	7	21
Change Point	31	4

Stage Stream: 2

Stage	1	2
Duration	19	9
Change Point	8	33

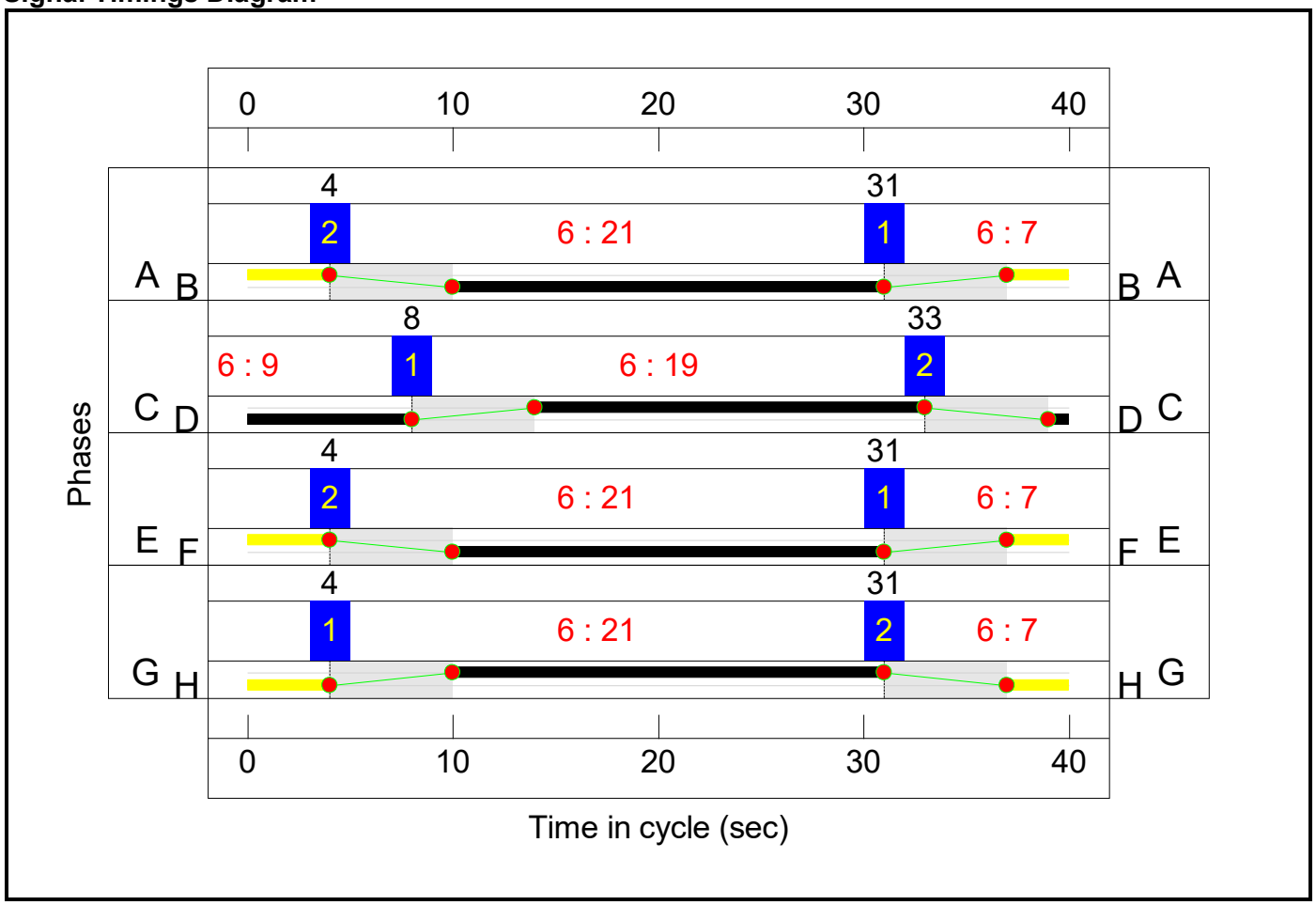
Stage Stream: 3

Stage	1	2
Duration	7	21
Change Point	31	4

Stage Stream: 4

Stage	1	2
Duration	21	7
Change Point	4	31

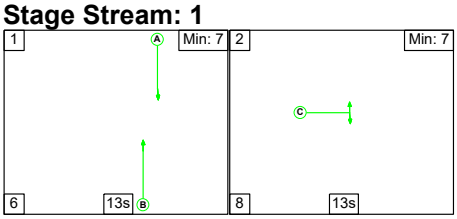
Signal Timings Diagram



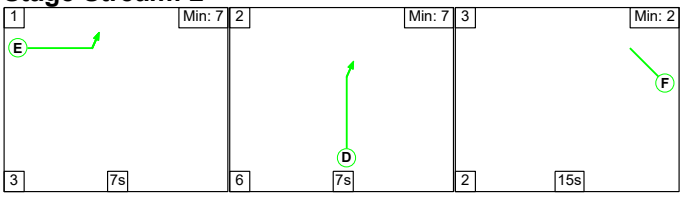
C2 - Padbury

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

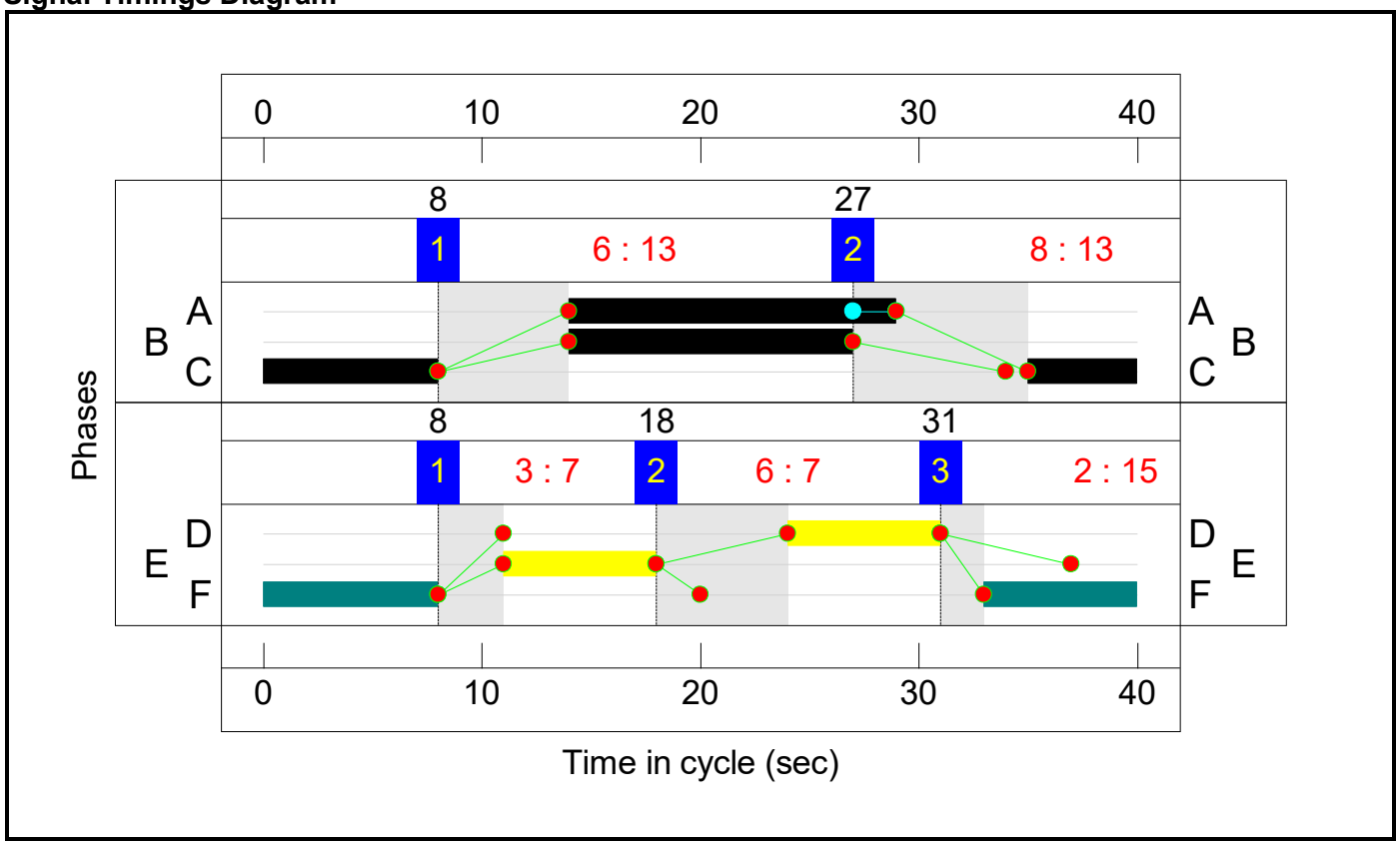
Stage Stream: 1

Stage	1	2
Duration	13	13
Change Point	8	27

Stage Stream: 2

Stage	1	2	3
Duration	7	7	15
Change Point	8	18	31

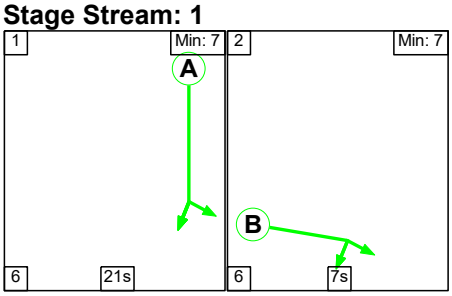
Signal Timings Diagram



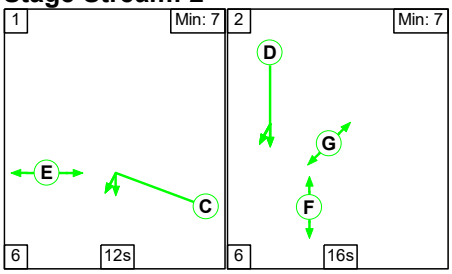
C3 - Cherwell

Stage Sequence Diagram

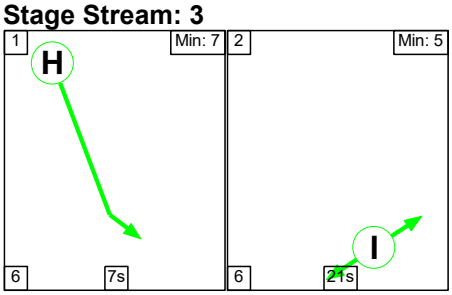
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	21	7
Change Point	0	27

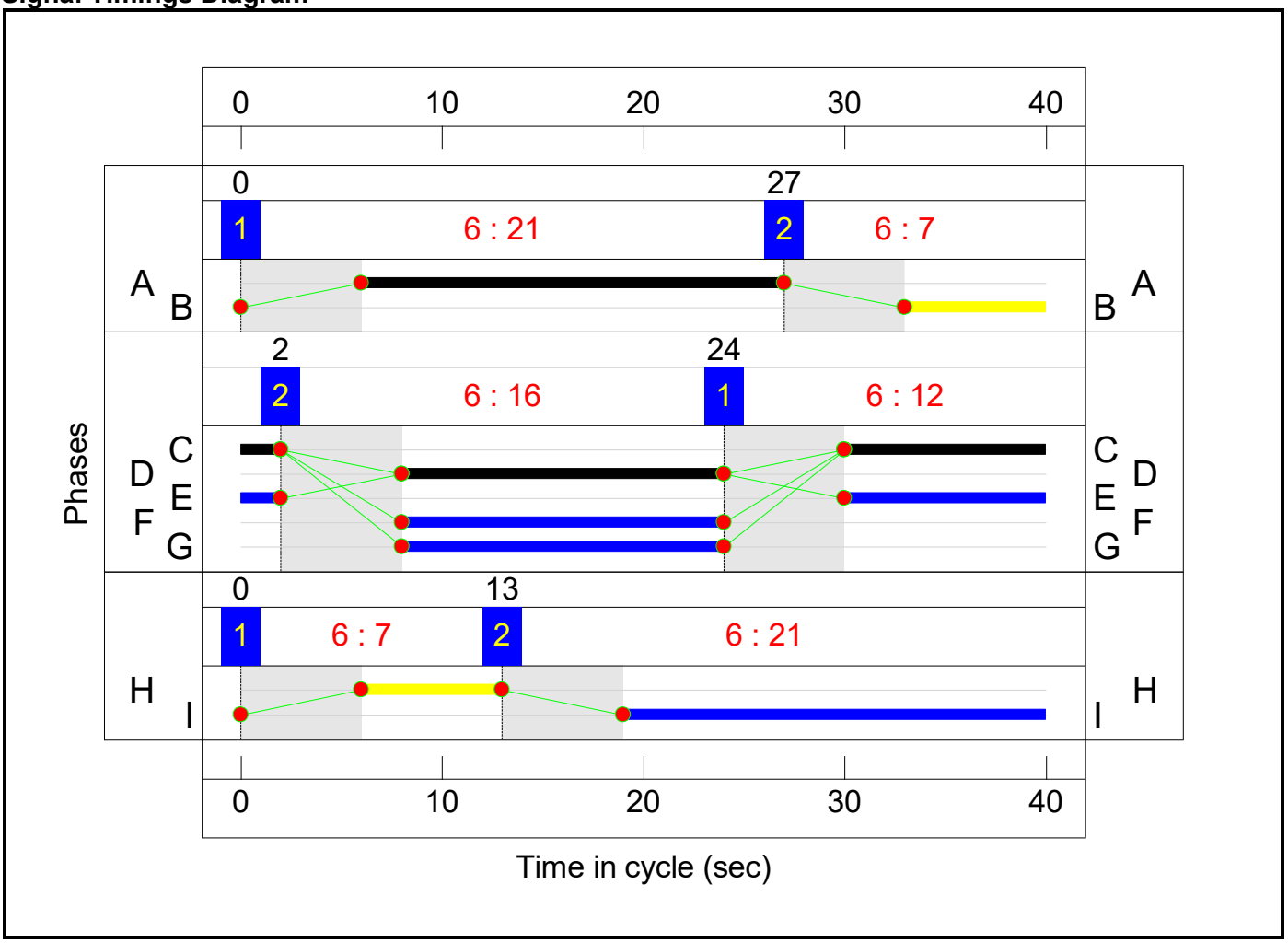
Stage Stream: 2

Stage	1	2
Duration	12	16
Change Point	24	2

Stage Stream: 3

Stage	1	2
Duration	7	21
Change Point	0	13

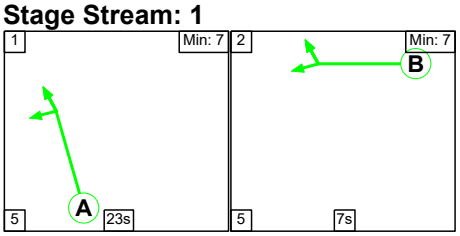
Signal Timings Diagram



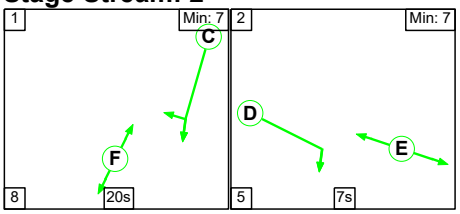
C4 - Ardley

Stage Sequence Diagram

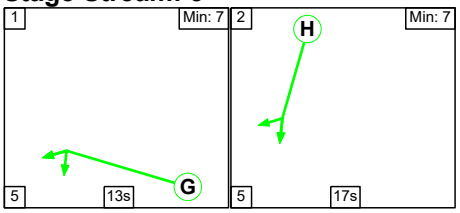
Stage Stream: 1



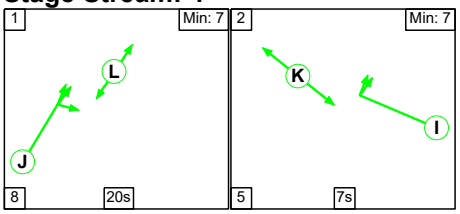
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	23	7
Change Point	33	21

Stage Stream: 2

Stage	1	2
Duration	20	7
Change Point	10	38

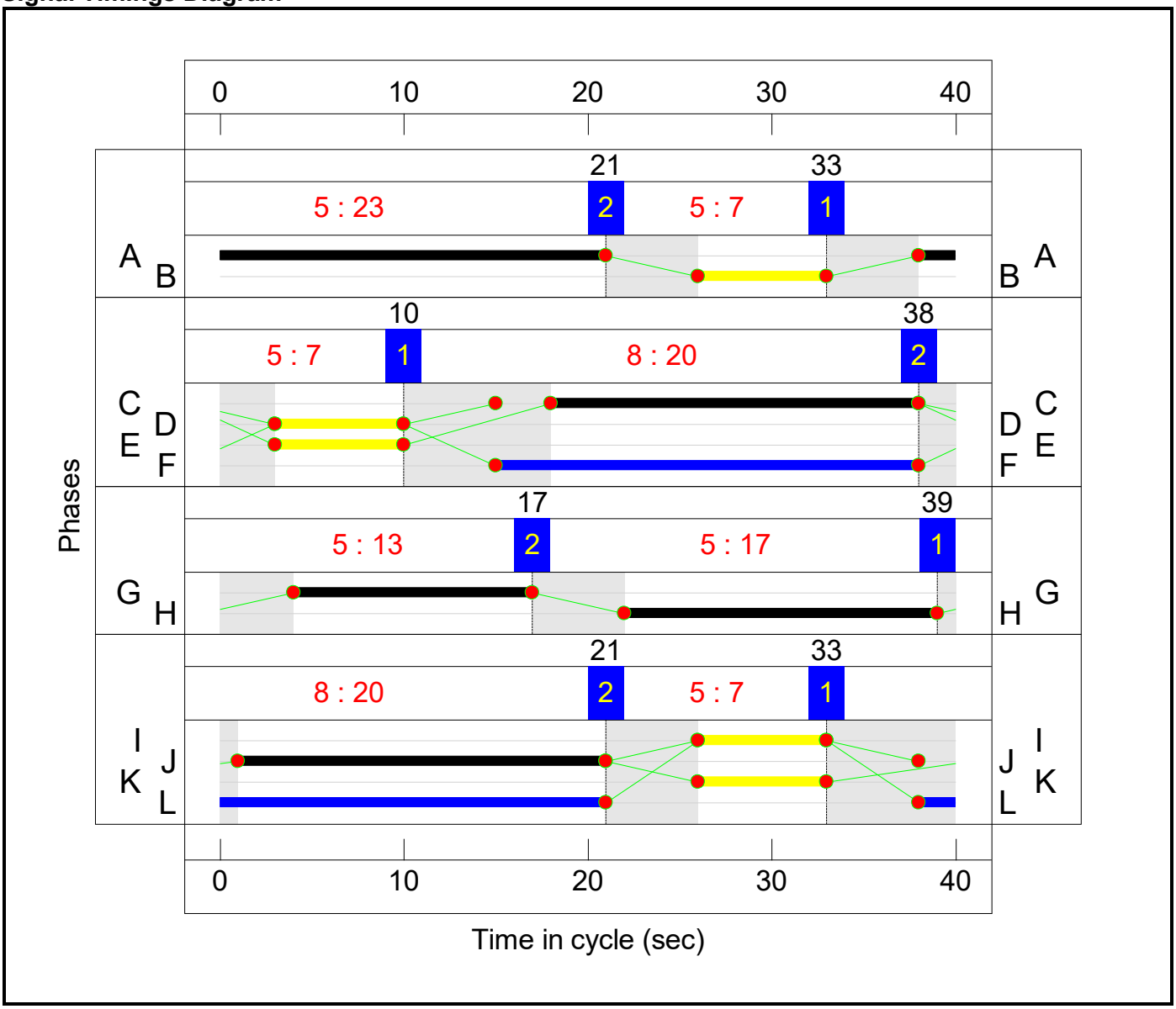
Stage Stream: 3

Stage	1	2
Duration	13	17
Change Point	39	17

Stage Stream: 4

Stage	1	2
Duration	20	7
Change Point	33	21

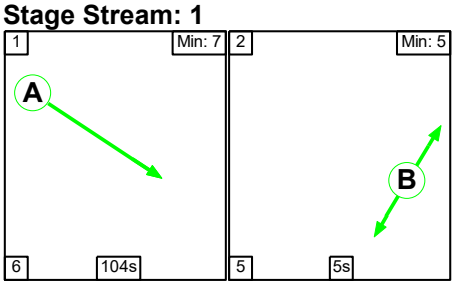
Signal Timings Diagram



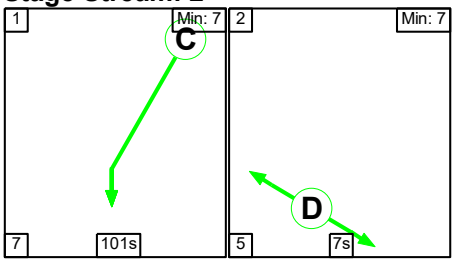
C5 - Baynards Green exit xings

Stage Sequence Diagram

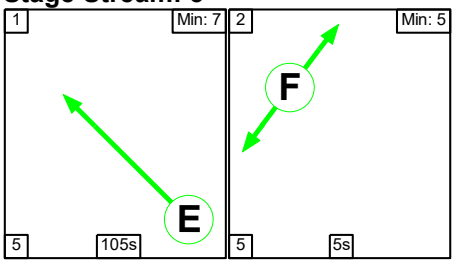
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	104	5
Change Point	0	110

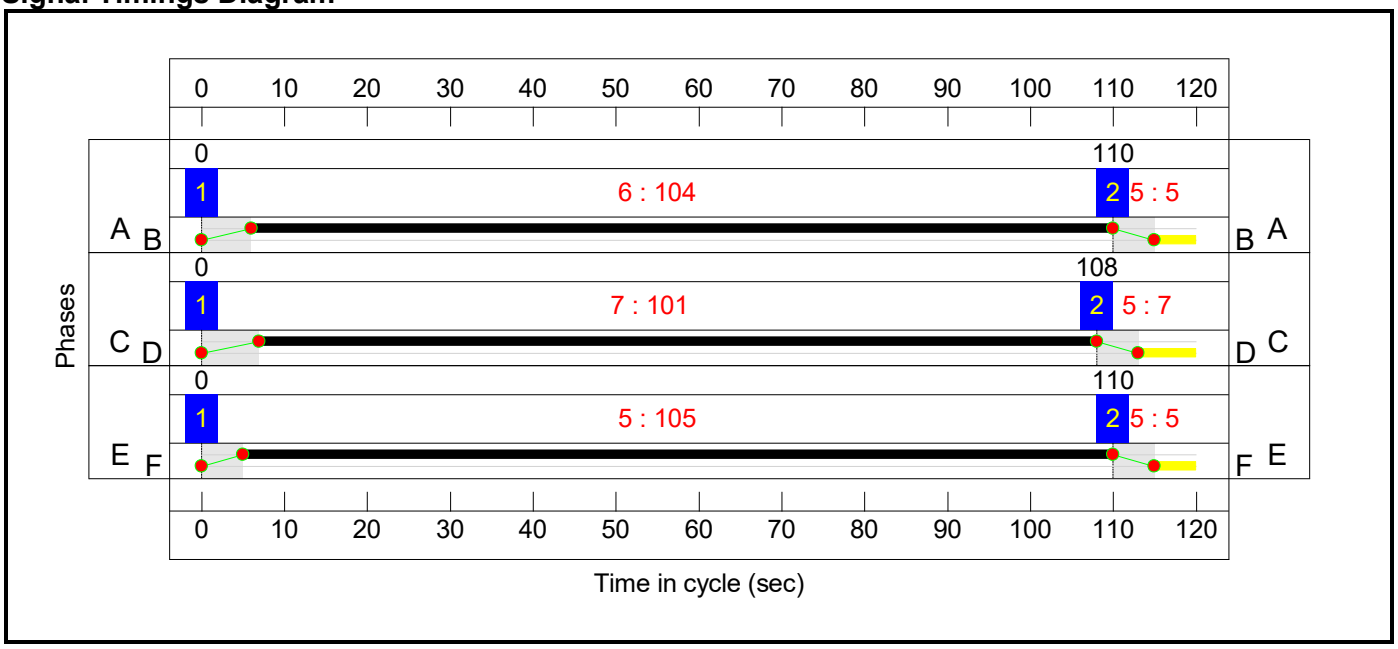
Stage Stream: 2

Stage	1	2
Duration	101	7
Change Point	0	108

Stage Stream: 3

Stage	1	2
Duration	105	5
Change Point	0	110

Signal Timings Diagram



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: Option 28 Network Model	-	-	**N/A**	-	-		-	-	-	-	-	-	**48.6%**
J1: Baynards Green	-	-	**N/A**	-	-		-	-	-	-	-	-	**25.3%**
1/1	A43 North Ahead Left	U	1:1	N/A	C1:B		1	21	-	224	1950	1073	20.9%
1/2+1/3	A43 North Ahead	U	1:1	N/A	C1:B		1	21	-	360	2085:2085	1147+595	20.8 : 20.3%
2/1	Ahead	U	1:2	N/A	C1:C		1	19	-	169	1956	1027	16.5%
2/2	Ahead	U	1:2	N/A	C1:C		1	19	-	254	2092	1098	23.1%
2/3+2/4	Right Ahead	U	1:2	N/A	C1:C		1	19	-	127	2092:2092	1052+90	11.1 : 11.1%
3/2+3/1	B4100 East Ahead Left	U	1:2	N/A	C1:D		1	9	-	154	1922:1886	480+471	16.6 : 15.7%
3/3	B4100 East Ahead	U	1:2	N/A	C1:D		1	9	-	83	2058	515	16.1%
4/1	Ahead	U	1:3	N/A	C1:E		1	7	-	90	1967	443	20.3%
4/2	Right	U	1:3	N/A	C1:E		1	7	-	83	2080	468	17.7%
5/1	A43 South Ahead Ahead2	U	1:3	N/A	C1:F		1	21	-	150	1927	1060	14.2%
5/2+5/3	A43 South Ahead	U	1:3	N/A	C1:F		1	21	-	442	2058:2058	1029+1029	21.5 : 21.5%
6/1	Ahead	U	1:4	N/A	C1:G		1	21	-	138	1932	1111	12.4%
6/2	Ahead	U	1:4	N/A	C1:G		1	21	-	272	2066	1188	22.9%
6/3	Ahead Right	U	1:4	N/A	C1:G		1	21	-	251	2062	1186	21.2%
7/1+7/2	B4100 West Left Ahead	U	1:4	N/A	C1:H		1	7	-	143	1903:2043	381+409	18.4 : 17.9%
9/1	Ahead	U	1:1	N/A	C1:A		1	7	-	79	1980	446	17.7%
9/2	Right Ahead	U	1:1	N/A	C1:A		1	7	-	120	2111	475	25.3%
J2: Padbury	-	-	**N/A**	-	-		-	-	-	-	-	-	**48.6%**
1/1	M40 SB offslip Left	U	2:1	N/A	C2:C		1	13	-	69	1942	680	10.2%

1/2+1/3	M40 SB offslip Right	U	2:1	N/A	C2:C		1	13	-	153	1922:3400	673+1061	9.2 : 8.6%
2/1	A43 north Ahead	U	2:1	N/A	C2:A		1	15	-	169	1980	792	21.3%
2/2	A43 north Ahead	U	2:1	N/A	C2:A		1	15	-	255	2120	848	30.1%
2/3+2/4	A43 north Ahead	U	2:1	N/A	C2:A		1	15	-	190	2120:1978	322+791	17.1 : 17.1%
3/1	A43 south Ahead	U	2:1	N/A	C2:B		1	13	-	155	1980	792	19.6%
3/2	A43 south Ahead	U	2:1	N/A	C2:B		1	13	-	271	2120	848	32.0%
3/3	A43 south Ahead	U	2:1	N/A	C2:B		1	13	-	97	2120	848	11.4%
5/3	Ahead	U	N/A	N/A	-		-	-	-	97	3000	3000	3.2%
6/1	Left	U	2:2	N/A	C2:E		1	7	-	96	1980	396	24.2%
6/2+6/3	Left	U	2:2	N/A	C2:E		1	7	-	303	2120:1980	424+228	48.6 : 42.5%
7/1	Ahead	U	2:2	N/A	C2:D		1	7	-	59	1922	384	15.3%
7/2	Ahead	U	2:2	N/A	C2:D		1	7	-	65	2058	412	15.8%
J3: Cherwell	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**37.7%**
1/1	A43 Southbound Left Ahead	U	3:1	N/A	C3:A		1	21	-	231	1985	1092	21.2%
1/2	A43 Southbound Ahead	U	3:1	N/A	C3:A		1	21	-	255	2125	1169	21.8%
1/3	A43 Southbound Ahead	U	3:1	N/A	C3:A		1	21	-	88	1980	1089	8.1%
1/4	A43 Southbound Ahead	U	3:1	N/A	C3:A		1	21	-	193	2120	1166	16.6%
2/1	Ahead	U	3:3	N/A	C3:H		1	7	-	152	2015	403	37.7%
3/1	MSA Left	U	3:2	N/A	C3:C		1	12	-	74	1832	595	12.4%
3/2	MSA Left	U	3:2	N/A	C3:C		1	12	-	84	2015	655	12.8%
6/1	Ahead Right	U	3:1	N/A	C3:B		1	7	-	113	1981	396	28.5%
7/1	Ahead	U	3:2	N/A	C3:D		1	16	-	159	2015	957	16.6%

7/2	Ahead	U	3:2	N/A	C3:D		1	16	-	288	2155	1024	28.1%
7/3	Ahead	U	3:2	N/A	C3:D		1	16	-	88	2015	957	9.2%
7/4	Ahead	U	3:2	N/A	C3:D		1	16	-	193	2155	1024	18.9%
J4: Ardley	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**29.5%**
1/2+1/1	Ardley bypass Left Ahead	U	4:1	N/A	C4:A		1	23	-	228	2019:1886	826+1115	11.8 : 11.8%
1/3	Ardley bypass Ahead	U	4:1	N/A	C4:A		1	23	-	45	2019	1211	3.7%
2/1+2/2	B430 Ahead	O	N/A	N/A	-		-	-	-	72	1894:2105	885+910	3.6 : 4.4%
3/1	A43 Southbound Ahead	U	4:2	N/A	C4:C		1	20	-	93	1919	1007	9.2%
3/2+3/3	A43 Southbound Ahead Right	U	4:2	N/A	C4:C		1	20	-	272	2052:2092	829+781	16.9 : 16.9%
4/1	Ahead	U	4:3	N/A	C4:H		1	17	-	99	1967	934	10.6%
4/2	Ahead Right	U	4:3	N/A	C4:H		1	17	-	173	2100	997	17.3%
6/1	Ahead Right	U	4:1	N/A	C4:B		1	7	-	27	1990	448	6.0%
6/2	Right	U	4:1	N/A	C4:B		1	7	-	67	1990	448	15.0%
7/1+7/2	Right	U	4:2	N/A	C4:D		1	7	-	39	1942:2077	73+403	8.2 : 8.2%
8/1	Ahead	U	4:4	N/A	C4:J		1	20	-	101	2015	1058	9.5%
8/2	Ahead	U	4:4	N/A	C4:J		1	20	-	101	2015	1058	9.5%
8/3	Right Ahead	U	4:4	N/A	C4:J		1	20	-	152	2015	1058	14.4%
13/1	Right Right2	U	4:4	N/A	C4:I		1	7	-	132	1990	448	29.5%
14/1	Left	U	4:3	N/A	C4:G		1	13	-	50	1886	660	7.6%
14/2	Ahead	U	4:3	N/A	C4:G		1	13	-	72	2019	707	10.2%
J5: Baynards Green exit xings	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**18.2%**
1/1	Ahead	U	5:3	N/A	C5:E		1	105	-	104	1980	1749	5.9%
2/1	Ahead	U	5:2	N/A	C5:C		1	101	-	169	1980	1683	10.0%
2/2	Ahead	U	5:2	N/A	C5:C		1	101	-	328	2120	1802	18.2%
2/3	Ahead	U	5:2	N/A	C5:C		1	101	-	117	2120	1802	6.5%
3/1	Ahead	U	5:1	N/A	C5:A		1	104	-	139	1975	1728	8.0%

3/2	Ahead	U	5:1	N/A	C5:A		1	104	-	94	1975	1728	5.4%

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: Option 28 Network Model	**-**	**-**	**144**	**0**	**0**	**13.7**	**3.2**	**0.0**	**17.0**	**-**	**-**	**-**	**-**
J1: Baynards Green	**-**	**-**	**0**	**0**	**0**	**3.6**	**0.8**	**0.0**	**4.4**	**-**	**-**	**-**	**-**
1/1	224	224	-	-	-	0.3	0.1	-	0.4	6.7	1.2	0.1	1.4
1/2+1/3	360	360	-	-	-	0.5	0.1	-	0.6	5.8	1.3	0.1	1.5
2/1	169	169	-	-	-	0.1	0.0	-	0.1	1.1	0.1	0.0	0.1
2/2	254	254	-	-	-	0.1	0.0	-	0.1	1.3	0.3	0.0	0.3
2/3+2/4	127	127	-	-	-	0.0	0.0	-	0.0	1.2	0.1	0.0	0.1
3/2+3/1	154	154	-	-	-	0.5	0.1	-	0.6	14.0	0.7	0.1	0.8
3/3	83	83	-	-	-	0.3	0.1	-	0.4	15.9	0.7	0.1	0.8
4/1	90	90	-	-	-	0.2	0.0	-	0.2	6.3	0.3	0.0	0.3
4/2	83	83	-	-	-	0.1	0.0	-	0.1	5.5	0.2	0.0	0.2
5/1	150	150	-	-	-	0.2	0.1	-	0.2	5.7	1.1	0.1	1.2
5/2+5/3	442	442	-	-	-	0.5	0.1	-	0.6	4.8	1.7	0.1	1.9
6/1	138	138	-	-	-	0.0	0.0	-	0.0	0.2	0.0	0.0	0.0
6/2	272	272	-	-	-	0.0	0.0	-	0.0	0.5	0.6	0.0	0.6
6/3	251	251	-	-	-	0.1	0.0	-	0.1	1.3	0.5	0.0	0.5
7/1+7/2	143	143	-	-	-	0.5	0.1	-	0.6	16.1	0.7	0.1	0.8
9/1	79	79	-	-	-	0.1	0.0	-	0.1	5.8	0.3	0.0	0.3
9/2	120	120	-	-	-	0.2	0.0	-	0.2	6.3	0.6	0.0	0.6
J2: Padbury	**-**	**-**	**0**	**0**	**0**	**4.2**	**1.4**	**0.0**	**5.6**	**-**	**-**	**-**	**-**
1/1	69	69	-	-	-	0.2	0.1	-	0.2	11.7	0.5	0.1	0.6
1/2+1/3	153	153	-	-	-	0.4	0.0	-	0.4	9.9	0.4	0.0	0.5
2/1	169	169	-	-	-	0.4	0.1	-	0.5	10.8	1.2	0.1	1.4
2/2	255	255	-	-	-	0.6	0.2	-	0.8	11.2	1.9	0.2	2.1
2/3+2/4	190	190	-	-	-	0.4	0.1	-	0.5	9.6	0.9	0.1	1.0

3/1	155	155	-	-	-	0.1	0.0	-	0.1	2.4	0.2	0.0	0.2
3/2	271	271	-	-	-	0.1	0.0	-	0.1	1.5	0.2	0.0	0.2
3/3	97	97	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	97	97	-	-	-	0.0	0.0	-	0.0	0.6	0.0	0.0	0.0
6/1	96	96	-	-	-	0.4	0.2	-	0.5	19.5	0.9	0.2	1.0
6/2+6/3	303	303	-	-	-	1.2	0.4	-	1.6	19.1	2.0	0.4	2.4
7/1	59	59	-	-	-	0.2	0.1	-	0.3	20.3	0.6	0.1	0.7
7/2	65	65	-	-	-	0.3	0.1	-	0.4	23.7	0.6	0.1	0.7
J3: Cherwell	**-**	**-**	**0**	**0**	**0**	**3.6**	**0.6**	**0.0**	**4.2**	**-**	**-**	**-**	**-**
1/1	231	231	-	-	-	0.4	0.1	-	0.6	8.9	1.5	0.1	1.6
1/2	255	255	-	-	-	0.7	0.1	-	0.9	12.2	2.1	0.1	2.3
1/3	88	88	-	-	-	0.1	0.0	-	0.2	6.7	0.4	0.0	0.4
1/4	193	193	-	-	-	0.3	0.1	-	0.4	7.9	1.2	0.1	1.3
2/1	152	152	-	-	-	0.5	0.0	-	0.5	11.3	1.3	0.0	1.3
3/1	74	74	-	-	-	0.2	0.1	-	0.3	13.0	0.6	0.1	0.6
3/2	84	84	-	-	-	0.2	0.1	-	0.3	12.7	0.7	0.1	0.7
6/1	113	113	-	-	-	0.3	0.0	-	0.3	9.2	1.1	0.0	1.1
7/1	159	159	-	-	-	0.2	0.0	-	0.2	4.9	0.6	0.0	0.6
7/2	288	288	-	-	-	0.3	0.0	-	0.3	4.3	1.0	0.0	1.0
7/3	88	88	-	-	-	0.1	0.0	-	0.1	3.9	0.2	0.0	0.2
7/4	193	193	-	-	-	0.2	0.0	-	0.2	3.8	0.5	0.0	0.5
J4: Ardley	**-**	**-**	**144**	**0**	**0**	**1.9**	**0.5**	**0.0**	**2.5**	**-**	**-**	**-**	**-**
1/2+1/1	228	228	-	-	-	0.2	0.1	-	0.3	4.5	0.6	0.1	0.7
1/3	45	45	-	-	-	0.0	0.0	-	0.1	4.9	0.2	0.0	0.2
2/1+2/2	72	72	144	0	0	0.0	0.0	-	0.0	1.1	0.0	0.0	0.0
3/1	93	93	-	-	-	0.0	0.1	-	0.1	2.9	0.2	0.1	0.2
3/2+3/3	272	272	-	-	-	0.3	0.1	-	0.4	5.4	0.9	0.1	1.0
4/1	99	99	-	-	-	0.0	0.0	-	0.0	0.9	0.1	0.0	0.1
4/2	173	173	-	-	-	0.1	0.0	-	0.1	2.2	0.4	0.0	0.4
6/1	27	27	-	-	-	0.1	0.0	-	0.1	10.0	0.1	0.0	0.1

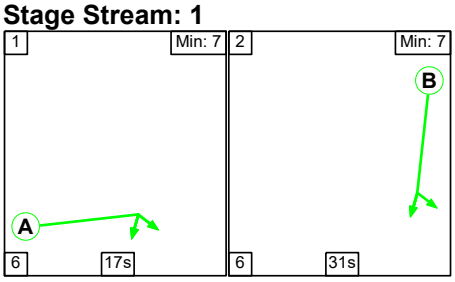
6/2	67	67	-	-	-	0.3	0.0	-	0.3	14.0	0.7	0.0	0.7
7/1+7/2	39	39	-	-	-	0.1	0.0	-	0.1	10.2	0.2	0.0	0.2
8/1	101	101	-	-	-	0.1	0.1	-	0.2	5.8	0.4	0.1	0.4
8/2	101	101	-	-	-	0.1	0.1	-	0.2	5.6	0.3	0.1	0.3
8/3	152	152	-	-	-	0.2	0.1	-	0.3	6.7	1.1	0.1	1.2
13/1	132	132	-	-	-	0.0	0.0	-	0.0	0.9	0.0	0.0	0.0
14/1	50	50	-	-	-	0.1	0.0	-	0.2	11.7	0.4	0.0	0.4
14/2	72	72	-	-	-	0.2	0.1	-	0.2	11.6	0.5	0.1	0.6
J5: Baynards Green exit xings	**-**	**-**	**0**	**0**	**0**	**0.4**	**0.0**	**0.0**	**0.4**	**-**	**-**	**-**	**-**
1/1	104	104	-	-	-	0.0	0.0	-	0.0	0.9	0.4	0.0	0.4
2/1	169	169	-	-	-	0.1	0.0	-	0.1	1.5	0.9	0.0	0.9
2/2	328	328	-	-	-	0.1	0.0	-	0.1	1.6	1.9	0.0	1.9
2/3	117	117	-	-	-	0.0	0.0	-	0.0	1.4	0.6	0.0	0.6
3/1	139	139	-	-	-	0.0	0.0	-	0.0	1.0	0.6	0.0	0.6
3/2	94	94	-	-	-	0.0	0.0	-	0.0	1.0	0.4	0.0	0.4

C1 - Baynards Green	Stream: 1 PRC for Signalled Lanes (%):	256.2	Total Delay for Signalled Lanes (pcuHr):	1.34	Cycle Time (s):	40		
C1 - Baynards Green	Stream: 2 PRC for Signalled Lanes (%):	289.2	Total Delay for Signalled Lanes (pcuHr):	1.16	Cycle Time (s):	40		
C1 - Baynards Green	Stream: 3 PRC for Signalled Lanes (%):	319.0	Total Delay for Signalled Lanes (pcuHr):	1.11	Cycle Time (s):	40		
C1 - Baynards Green	Stream: 4 PRC for Signalled Lanes (%):	293.1	Total Delay for Signalled Lanes (pcuHr):	0.78	Cycle Time (s):	40		
C2 - Padbury	Stream: 1 PRC for Signalled Lanes (%):	181.6	Total Delay for Signalled Lanes (pcuHr):	2.67	Cycle Time (s):	40		
C2 - Padbury	Stream: 2 PRC for Signalled Lanes (%):	85.2	Total Delay for Signalled Lanes (pcuHr):	2.89	Cycle Time (s):	40		
C3 - Cherwell	Stream: 1 PRC for Signalled Lanes (%):	215.6	Total Delay for Signalled Lanes (pcuHr):	2.31	Cycle Time (s):	40		
C3 - Cherwell	Stream: 2 PRC for Signalled Lanes (%):	219.9	Total Delay for Signalled Lanes (pcuHr):	1.42	Cycle Time (s):	40		
C3 - Cherwell	Stream: 3 PRC for Signalled Lanes (%):	138.6	Total Delay for Signalled Lanes (pcuHr):	0.48	Cycle Time (s):	40		
C4 - Ardley	Stream: 1 PRC for Signalled Lanes (%):	501.5	Total Delay for Signalled Lanes (pcuHr):	0.68	Cycle Time (s):	40		
C4 - Ardley	Stream: 2 PRC for Signalled Lanes (%):	432.7	Total Delay for Signalled Lanes (pcuHr):	0.60	Cycle Time (s):	40		
C4 - Ardley	Stream: 3 PRC for Signalled Lanes (%):	418.9	Total Delay for Signalled Lanes (pcuHr):	0.53	Cycle Time (s):	40		
C4 - Ardley	Stream: 4 PRC for Signalled Lanes (%):	205.3	Total Delay for Signalled Lanes (pcuHr):	0.64	Cycle Time (s):	40		
C5 - Baynards Green exit xings	Stream: 1 PRC for Signalled Lanes (%):	1018.9	Total Delay for Signalled Lanes (pcuHr):	0.07	Cycle Time (s):	120		
C5 - Baynards Green exit xings	Stream: 2 PRC for Signalled Lanes (%):	394.5	Total Delay for Signalled Lanes (pcuHr):	0.26	Cycle Time (s):	120		
C5 - Baynards Green exit xings	Stream: 3 PRC for Signalled Lanes (%):	1413.6	Total Delay for Signalled Lanes (pcuHr):	0.03	Cycle Time (s):	120		
	PRC Over All Lanes (%):	85.2	Total Delay Over All Lanes(pcuHr):	16.99				

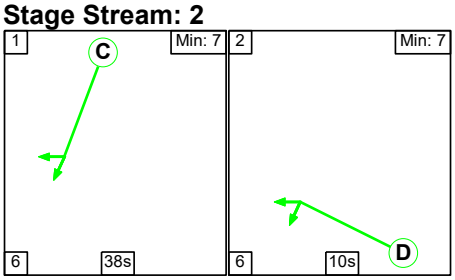
Scenario 4: '2034 Option 28 - Inter peak' (FG2: '2034 do something - inter-peak ', Plan 1: 'Network Control Plan 1')
C1 - Baynards Green

Stage Sequence Diagram

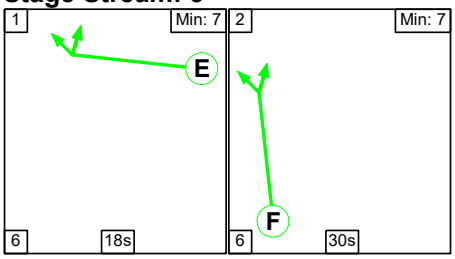
Stage Stream: 1



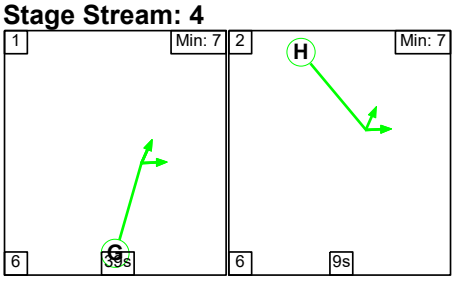
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	17	31
Change Point	59	22

Stage Stream: 2

Stage	1	2
Duration	38	10
Change Point	19	3

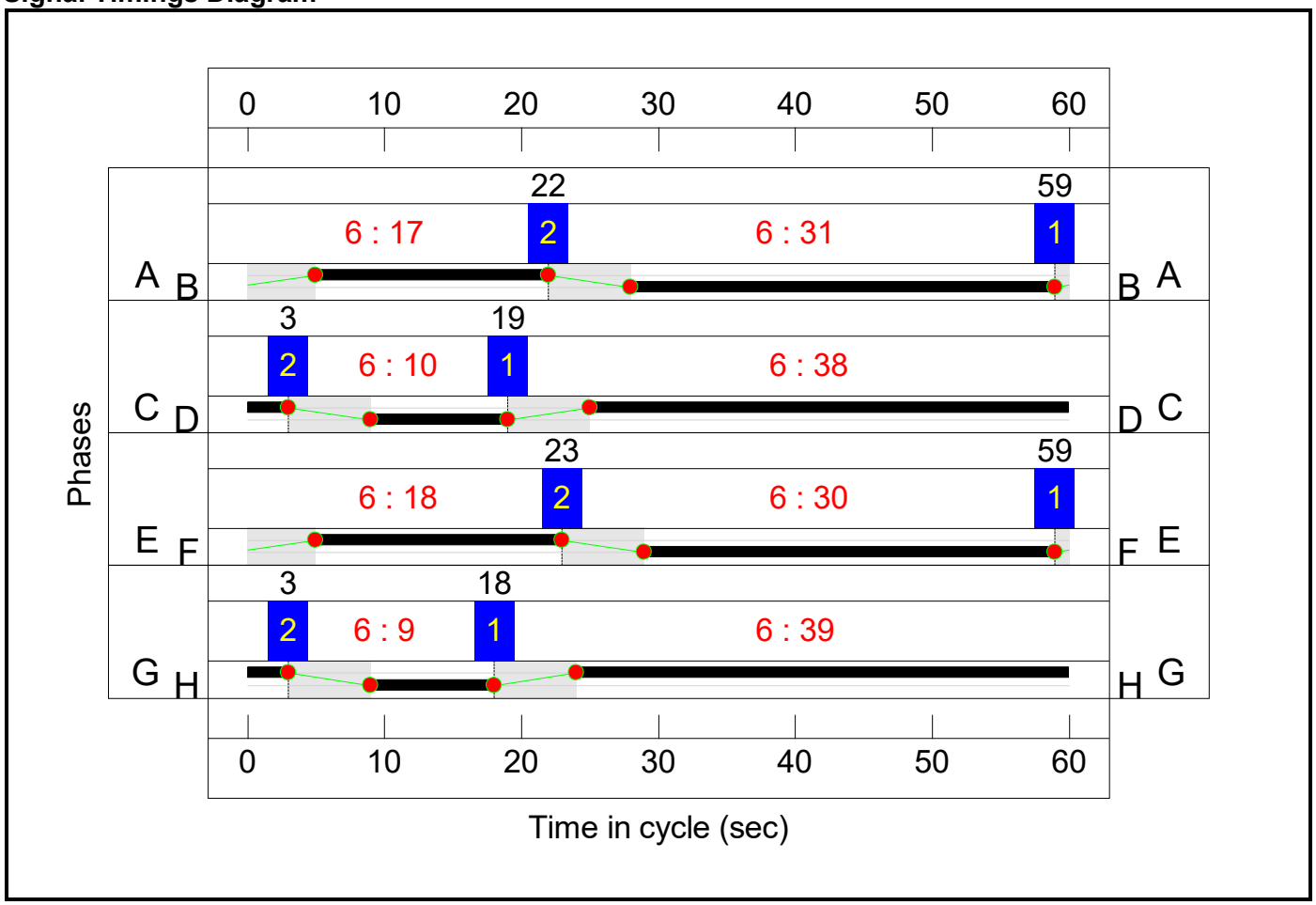
Stage Stream: 3

Stage	1	2
Duration	18	30
Change Point	59	23

Stage Stream: 4

Stage	1	2
Duration	39	9
Change Point	18	3

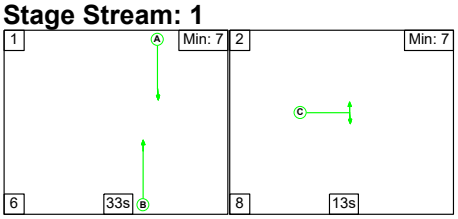
Signal Timings Diagram



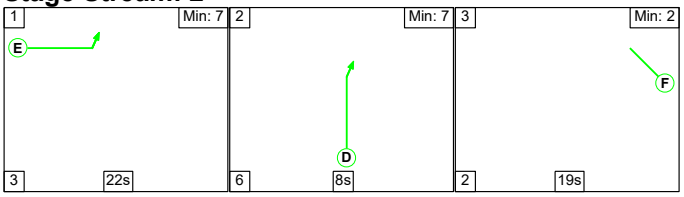
C2 - Padbury

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

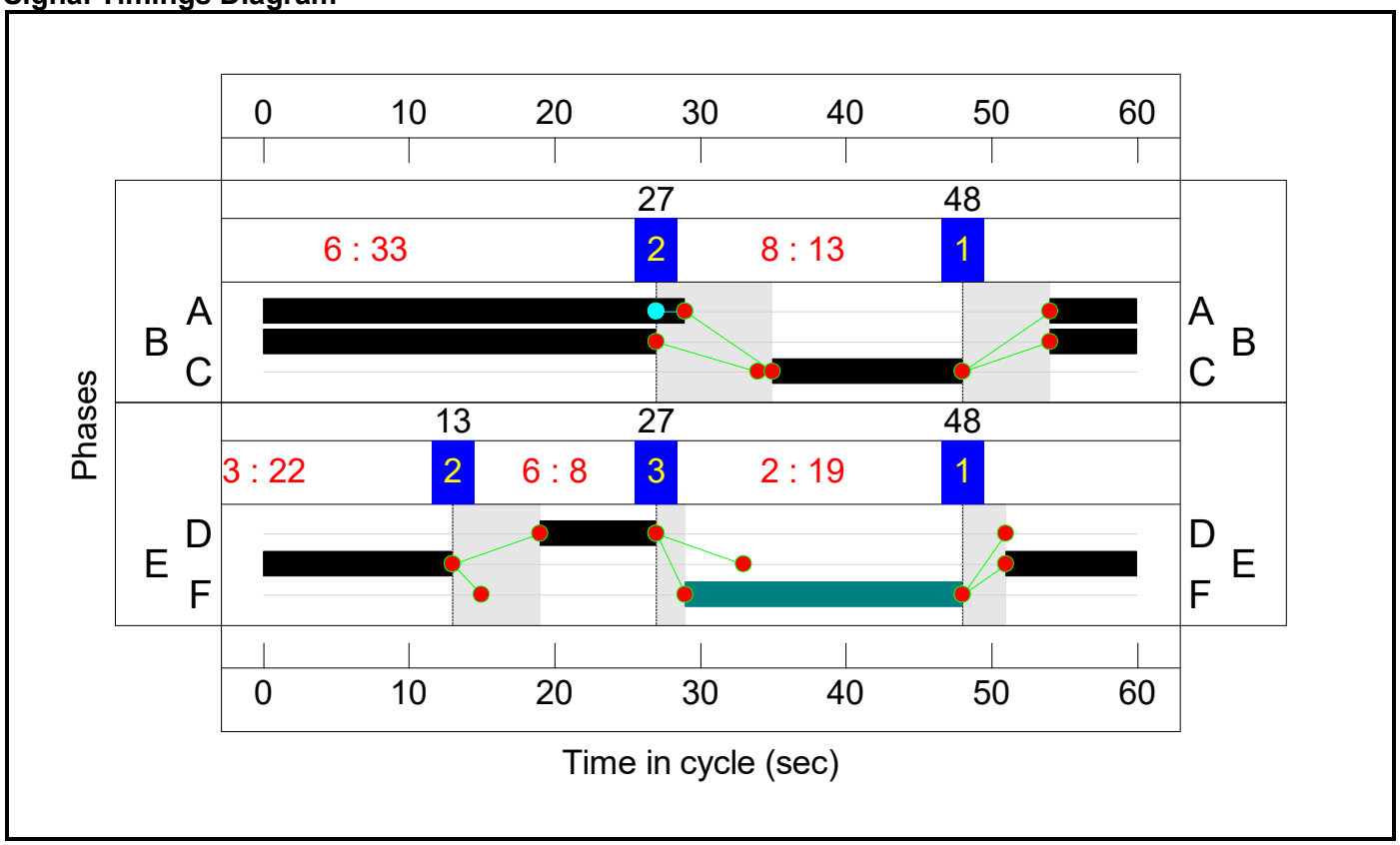
Stage Stream: 1

Stage	1	2
Duration	33	13
Change Point	48	27

Stage Stream: 2

Stage	1	2	3
Duration	22	8	19
Change Point	48	13	27

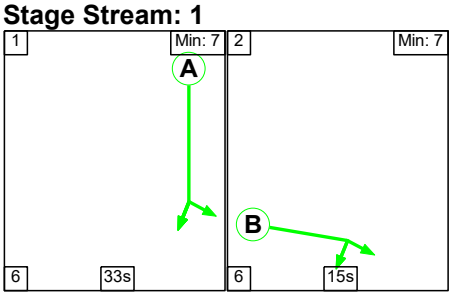
Signal Timings Diagram



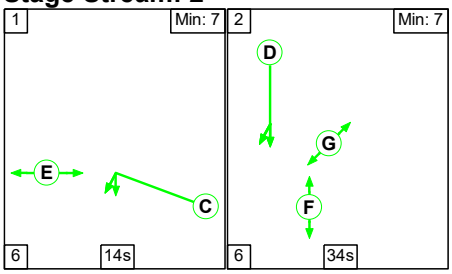
C3 - Cherwell

Stage Sequence Diagram

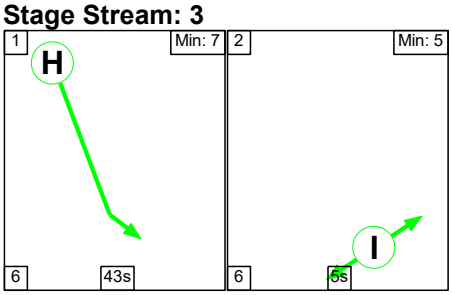
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	33	15
Change Point	55	34

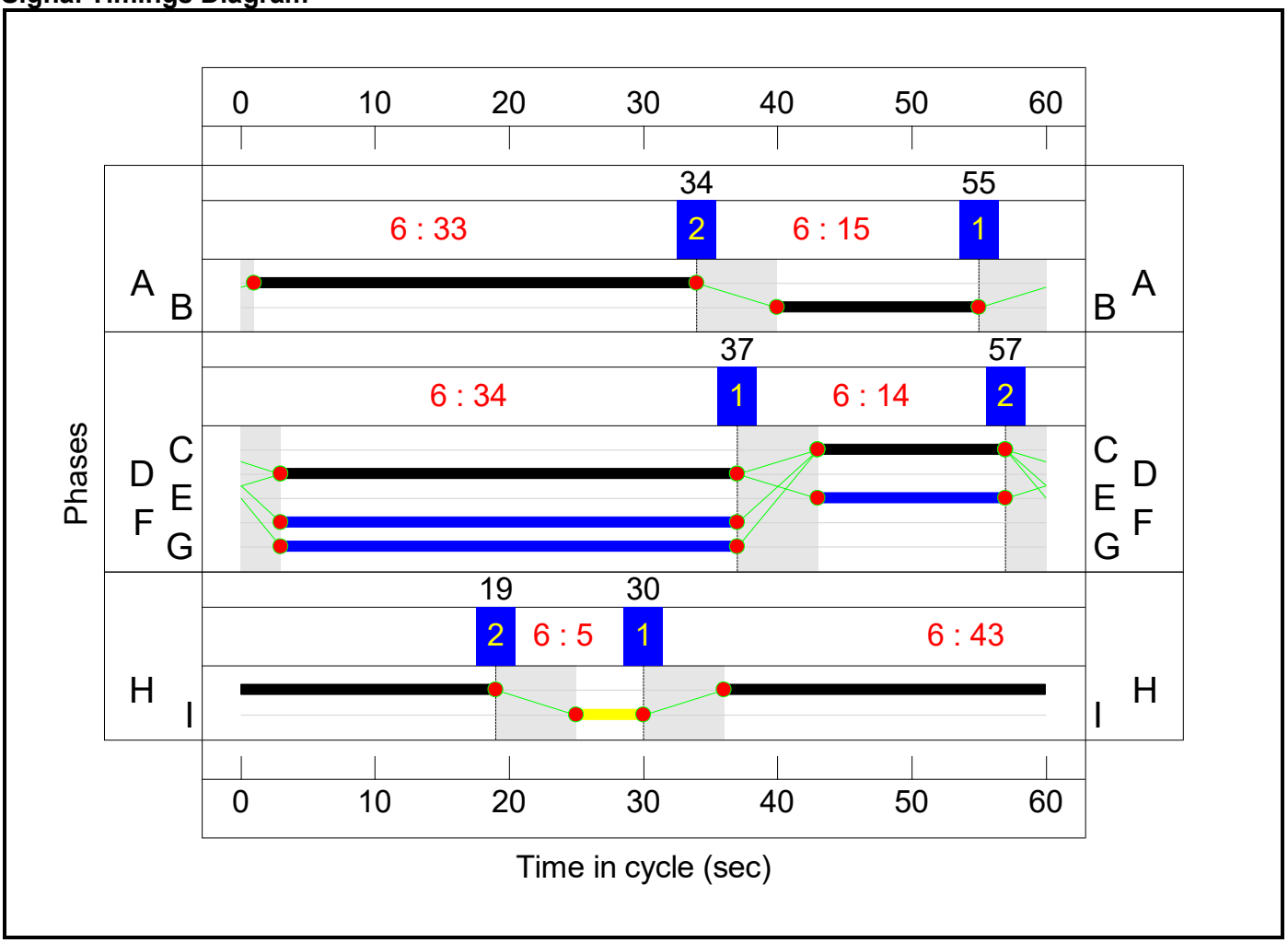
Stage Stream: 2

Stage	1	2
Duration	14	34
Change Point	37	57

Stage Stream: 3

Stage	1	2
Duration	43	5
Change Point	30	19

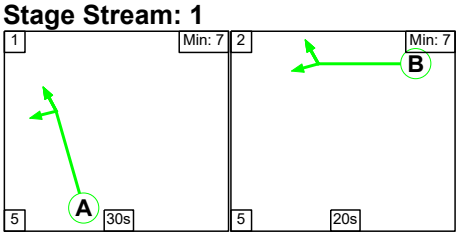
Signal Timings Diagram



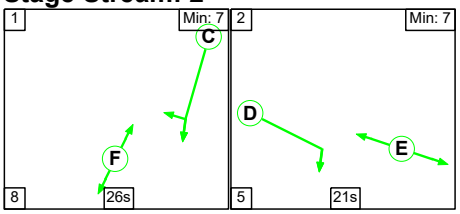
C4 - Ardley

Stage Sequence Diagram

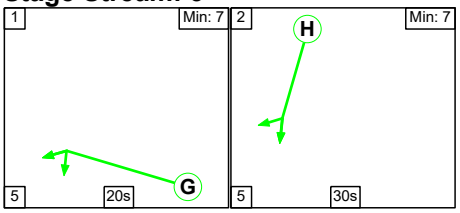
Stage Stream: 1



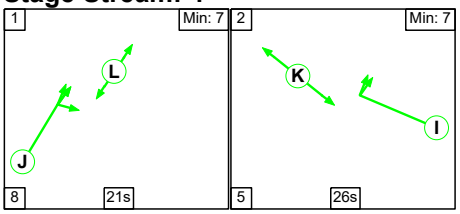
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	30	20
Change Point	17	52

Stage Stream: 2

Stage	1	2
Duration	26	21
Change Point	14	48

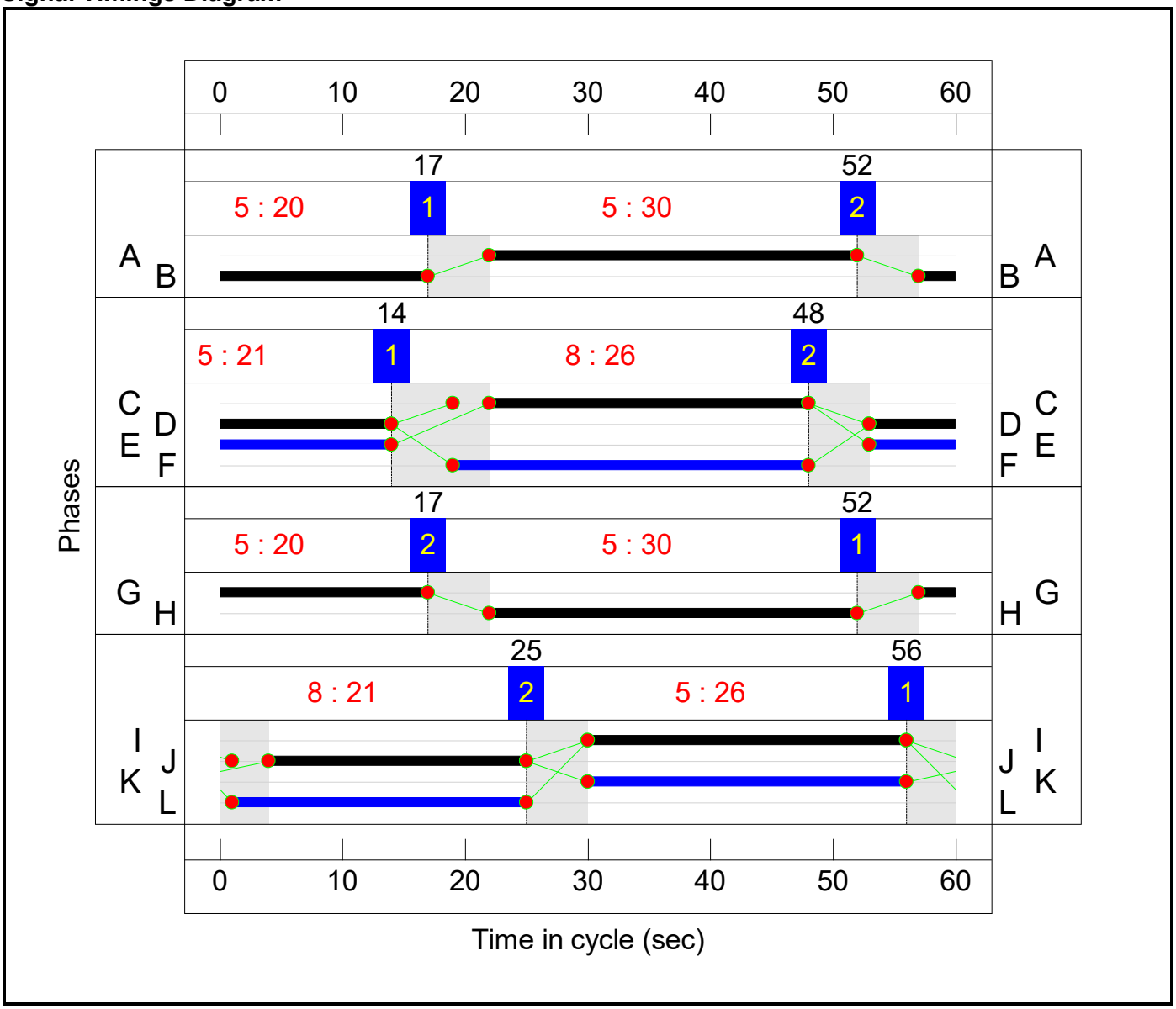
Stage Stream: 3

Stage	1	2
Duration	20	30
Change Point	52	17

Stage Stream: 4

Stage	1	2
Duration	21	26
Change Point	56	25

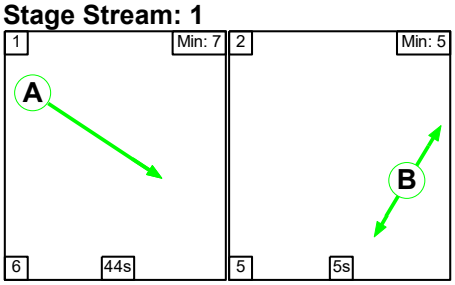
Signal Timings Diagram



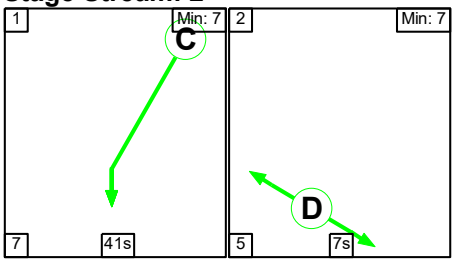
C5 - Baynards Green exit xings

Stage Sequence Diagram

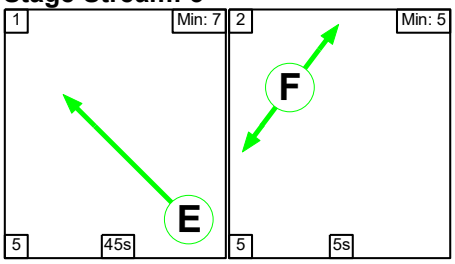
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	44	5
Change Point	2	52

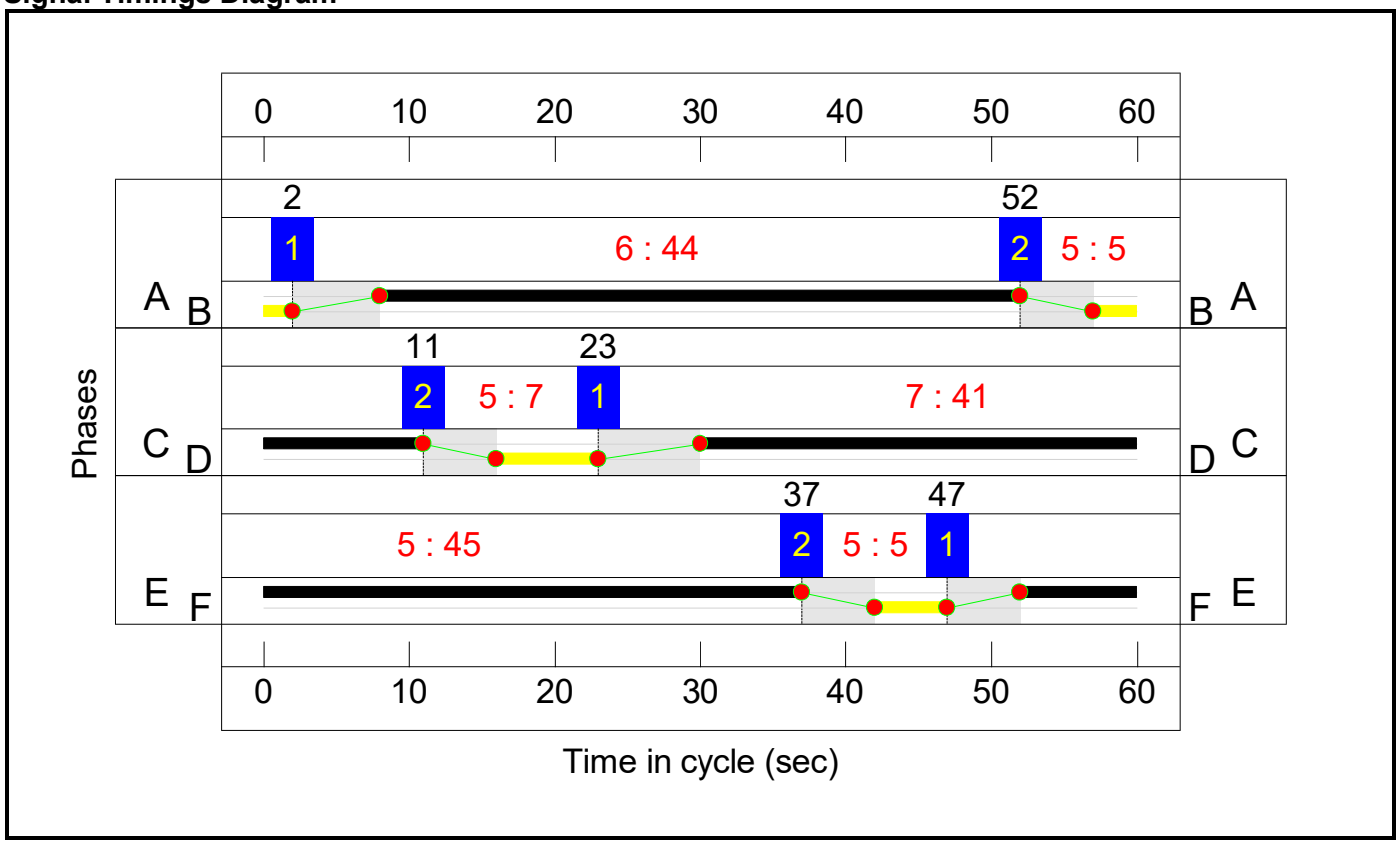
Stage Stream: 2

Stage	1	2
Duration	41	7
Change Point	23	11

Stage Stream: 3

Stage	1	2
Duration	45	5
Change Point	47	37

Signal Timings Diagram



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: Option 28 Network Model	-	-	**N/A**	-	-		-	-	-	-	-	-	**80.6%**
J1: Baynards Green	-	-	**N/A**	-	-		-	-	-	-	-	-	**80.6%**
1/1	A43 North Ahead Left	U	1:1	N/A	C1:B		1	31	-	751	1950	1040	72.2%
1/2+1/3	A43 North Ahead	U	1:1	N/A	C1:B		1	31	-	1247	2085:2085	1067+529	78.1 : 78.1%
2/1	Ahead	U	1:2	N/A	C1:C		1	38	-	593	1956	1304	45.5%
2/2	Ahead	U	1:2	N/A	C1:C		1	38	-	856	2092	1395	61.4%
2/3+2/4	Right Ahead	U	1:2	N/A	C1:C		1	38	-	436	2092:2092	1315+108	30.6 : 30.6%
3/2+3/1	B4100 East Ahead Left	U	1:2	N/A	C1:D		1	10	-	525	1922:1886	352+346	77.2 : 73.2%
3/3	B4100 East Ahead	U	1:2	N/A	C1:D		1	10	-	284	2058	377	75.3%
4/1	Ahead	U	1:3	N/A	C1:E		1	18	-	305	1967	656	46.5%
4/2	Right	U	1:3	N/A	C1:E		1	18	-	284	2080	693	41.0%
5/1	A43 South Ahead Ahead2	U	1:3	N/A	C1:F		1	30	-	724	1927	996	72.7%
5/2+5/3	A43 South Ahead	U	1:3	N/A	C1:F		1	30	-	1302	2058:2058	1039+577	80.6 : 80.6%
6/1	Ahead	U	1:4	N/A	C1:G		1	39	-	749	1932	1320	56.7%
6/2	Ahead	U	1:4	N/A	C1:G		1	39	-	939	2066	1412	66.5%
6/3	Ahead Right	U	1:4	N/A	C1:G		1	39	-	574	2060	1408	40.8%
7/1+7/2	B4100 West Left Ahead	U	1:4	N/A	C1:H		1	9	-	491	1903:2043	317+340	74.7 : 74.6%
9/1	Ahead	U	1:1	N/A	C1:A		1	17	-	309	1980	627	49.3%
9/2	Right Ahead	U	1:1	N/A	C1:A		1	17	-	374	2111	668	55.9%
J2: Padbury	-	-	**N/A**	-	-		-	-	-	-	-	-	**74.2%**
1/1	M40 SB offslip Left	U	2:1	N/A	C2:C		1	13	-	234	1942	453	51.6%

1/2+1/3	M40 SB offslip Right	U	2:1	N/A	C2:C		1	13	-	526	1922:3400	448+750	47.3 : 41.9%
2/1	A43 north Ahead	U	2:1	N/A	C2:A		1	35	-	594	1980	1188	50.0%
2/2	A43 north Ahead	U	2:1	N/A	C2:A		1	35	-	859	2120	1272	67.5%
2/3+2/4	A43 north Ahead	U	2:1	N/A	C2:A		1	35	-	652	2120:1978	629+1124	37.2 : 37.2%
3/1	A43 south Ahead	U	2:1	N/A	C2:B		1	33	-	661	1980	1188	55.6%
3/2	A43 south Ahead	U	2:1	N/A	C2:B		1	33	-	772	2120	1272	60.7%
3/3	A43 south Ahead	U	2:1	N/A	C2:B		1	33	-	359	2120	1272	28.2%
5/3	Ahead	U	N/A	N/A	-		-	-	-	359	3000	3000	12.0%
6/1	Left	U	2:2	N/A	C2:E		1	22	-	458	1980	759	60.3%
6/2+6/3	Left	U	2:2	N/A	C2:E		1	22	-	910	2120:1980	743+484	74.2 : 74.2%
7/1	Ahead	U	2:2	N/A	C2:D		1	8	-	203	1922	288	70.4%
7/2	Ahead	U	2:2	N/A	C2:D		1	8	-	221	2058	309	71.6%
J3: Cherwell	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.1%**
1/1	A43 Southbound Left Ahead	U	3:1	N/A	C3:A		1	33	-	806	1985	1125	71.7%
1/2	A43 Southbound Ahead	U	3:1	N/A	C3:A		1	33	-	859	2125	1204	71.3%
1/3	A43 Southbound Ahead	U	3:1	N/A	C3:A		1	33	-	350	1980	1122	31.2%
1/4	A43 Southbound Ahead	U	3:1	N/A	C3:A		1	33	-	616	2120	1201	51.3%
2/1	Ahead	U	3:3	N/A	C3:H		1	43	-	521	2015	1478	35.3%
3/1	MSA Left	U	3:2	N/A	C3:C		1	14	-	255	1832	458	55.7%
3/2	MSA Left	U	3:2	N/A	C3:C		1	14	-	289	2015	504	57.4%
6/1	Ahead Right	U	3:1	N/A	C3:B		1	15	-	386	1981	528	73.1%
7/1	Ahead	U	3:2	N/A	C3:D		1	34	-	590	2015	1243	47.5%

7/2	Ahead	U	3:2	N/A	C3:D		1	34	-	940	2155	1329	70.7%
7/3	Ahead	U	3:2	N/A	C3:D		1	34	-	350	2015	1243	28.2%
7/4	Ahead	U	3:2	N/A	C3:D		1	34	-	616	2155	1329	46.4%
J4: Ardley	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**70.5%**
1/2+1/1	Ardley bypass Left Ahead	U	4:1	N/A	C4:A		1	30	-	778	2019:1886	717+968	46.2 : 46.2%
1/3	Ardley bypass Ahead	U	4:1	N/A	C4:A		1	30	-	154	2019	1043	14.8%
2/1+2/2	B430 Ahead	O	N/A	N/A	-		-	-	-	247	1894:2105	571+712	19.2 : 19.2%
3/1	A43 Southbound Ahead	U	4:2	N/A	C4:C		1	26	-	434	1919	864	50.3%
3/2+3/3	A43 Southbound Ahead Right	U	4:2	N/A	C4:C		1	26	-	821	2052:2092	570+698	64.8 : 64.8%
4/1	Ahead	U	4:3	N/A	C4:H		1	30	-	487	1967	1049	46.4%
4/2	Ahead Right	U	4:3	N/A	C4:H		1	30	-	451	2100	1120	40.3%
6/1	Ahead Right	U	4:1	N/A	C4:B		1	20	-	94	1990	730	12.9%
6/2	Right	U	4:1	N/A	C4:B		1	20	-	230	1990	730	31.5%
7/1+7/2	Right	U	4:2	N/A	C4:D		1	21	-	135	1942:2077	332+514	16.0 : 16.0%
8/1	Ahead	U	4:4	N/A	C4:J		1	21	-	343	2015	739	46.4%
8/2	Ahead	U	4:4	N/A	C4:J		1	21	-	346	2015	739	46.8%
8/3	Right Ahead	U	4:4	N/A	C4:J		1	21	-	521	2015	739	70.5%
13/1	Right Right2	U	4:4	N/A	C4:I		1	26	-	452	1990	929	48.7%
14/1	Left	U	4:3	N/A	C4:G		1	20	-	170	1886	660	25.8%
14/2	Ahead	U	4:3	N/A	C4:G		1	20	-	249	2019	707	35.2%
J5: Baynards Green exit xings	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**68.8%**
1/1	Ahead	U	5:3	N/A	C5:E		1	45	-	353	1980	1518	23.3%
2/1	Ahead	U	5:2	N/A	C5:C		1	41	-	594	1980	1386	42.9%
2/2	Ahead	U	5:2	N/A	C5:C		1	41	-	1021	2120	1484	68.8%
2/3	Ahead	U	5:2	N/A	C5:C		1	41	-	490	2120	1484	33.0%

3/1	Ahead	U	5:1	N/A	C5:A		1	44	-	514	1975	1481	34.7%
3/2	Ahead	U	5:1	N/A	C5:A		1	44	-	282	1975	1481	19.0%

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: Option 28 Network Model	**-**	**-**	**494**	**0**	**0**	**62.8**	**27.3**	**0.0**	**90.1**	**-**	**-**	**-**	**-**
J1: Baynards Green	**-**	**-**	**0**	**0**	**0**	**20.5**	**10.8**	**0.0**	**31.3**	**-**	**-**	**-**	**-**
1/1	751	751	-	-	-	2.2	1.3	-	3.5	16.8	9.4	1.3	10.7
1/2+1/3	1247	1247	-	-	-	3.5	1.8	-	5.2	15.1	10.7	1.8	12.4
2/1	593	593	-	-	-	0.0	0.0	-	0.0	0.2	0.7	0.0	0.7
2/2	856	856	-	-	-	0.0	0.0	-	0.0	0.1	0.3	0.0	0.3
2/3+2/4	436	436	-	-	-	0.0	0.0	-	0.0	0.1	0.3	0.0	0.3
3/2+3/1	525	525	-	-	-	3.4	1.5	-	4.9	33.4	4.3	1.5	5.8
3/3	284	284	-	-	-	1.8	1.5	-	3.3	41.9	4.4	1.5	5.9
4/1	305	305	-	-	-	0.2	0.0	-	0.2	1.9	0.5	0.0	0.5
4/2	284	284	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	724	724	-	-	-	1.3	1.3	-	2.6	12.8	9.2	1.3	10.6
5/2+5/3	1302	1302	-	-	-	3.1	2.0	-	5.2	14.3	19.2	2.0	21.2
6/1	749	749	-	-	-	0.0	0.0	-	0.0	0.1	0.7	0.0	0.7
6/2	939	939	-	-	-	0.1	0.0	-	0.1	0.3	1.4	0.0	1.4
6/3	574	574	-	-	-	0.1	0.0	-	0.1	0.5	1.7	0.0	1.7
7/1+7/2	491	491	-	-	-	3.2	1.4	-	4.7	34.4	4.0	1.4	5.5
9/1	309	309	-	-	-	0.8	0.0	-	0.8	9.2	2.1	0.0	2.1
9/2	374	374	-	-	-	0.8	0.0	-	0.8	7.3	2.0	0.0	2.0
J2: Padbury	**-**	**-**	**0**	**0**	**0**	**15.7**	**7.4**	**0.0**	**23.1**	**-**	**-**	**-**	**-**
1/1	234	234	-	-	-	1.3	0.5	-	1.8	28.2	3.4	0.5	3.9
1/2+1/3	526	526	-	-	-	2.9	0.4	-	3.3	22.3	3.0	0.4	3.4
2/1	594	594	-	-	-	0.4	0.5	-	0.9	5.6	1.7	0.5	2.2
2/2	859	859	-	-	-	0.7	1.0	-	1.7	7.2	2.2	1.0	3.2
2/3+2/4	652	652	-	-	-	0.3	0.3	-	0.6	3.4	0.7	0.3	1.0

3/1	661	661	-	-	-	0.1	0.0	-	0.1	0.5	0.2	0.0	0.2
3/2	772	772	-	-	-	0.1	0.0	-	0.1	0.5	0.3	0.0	0.3
3/3	359	359	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	359	359	-	-	-	0.0	0.1	-	0.1	0.7	0.0	0.1	0.1
6/1	458	458	-	-	-	1.9	0.8	-	2.6	20.8	6.1	0.8	6.9
6/2+6/3	910	910	-	-	-	3.7	1.4	-	5.2	20.5	7.5	1.4	8.9
7/1	203	203	-	-	-	2.0	1.2	-	3.2	56.5	3.4	1.2	4.5
7/2	221	221	-	-	-	2.2	1.2	-	3.5	56.6	3.7	1.2	4.9
J3: Cherwell	**-**	**-**	**0**	**0**	**0**	**9.6**	**4.5**	**0.0**	**14.1**	**-**	**-**	**-**	**-**
1/1	806	806	-	-	-	1.8	1.3	-	3.0	13.6	7.8	1.3	9.0
1/2	859	859	-	-	-	1.3	1.2	-	2.6	10.8	3.8	1.2	5.0
1/3	350	350	-	-	-	0.6	0.2	-	0.8	8.2	2.5	0.2	2.7
1/4	616	616	-	-	-	0.9	0.5	-	1.4	8.2	4.3	0.5	4.9
2/1	521	521	-	-	-	0.1	0.0	-	0.1	0.6	0.7	0.0	0.7
3/1	255	255	-	-	-	1.4	0.6	-	2.0	28.4	3.7	0.6	4.3
3/2	289	289	-	-	-	1.6	0.7	-	2.3	28.0	4.2	0.7	4.8
6/1	386	386	-	-	-	1.3	0.0	-	1.3	11.9	6.4	0.0	6.4
7/1	590	590	-	-	-	0.3	0.0	-	0.3	1.9	1.3	0.0	1.3
7/2	940	940	-	-	-	0.3	0.0	-	0.3	1.3	1.4	0.0	1.4
7/3	350	350	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/4	616	616	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
J4: Ardley	**-**	**-**	**494**	**0**	**0**	**15.9**	**4.6**	**0.0**	**20.4**	**-**	**-**	**-**	**-**
1/2+1/1	778	778	-	-	-	1.9	0.4	-	2.3	10.8	4.7	0.4	5.1
1/3	154	154	-	-	-	0.3	0.1	-	0.4	9.6	1.3	0.1	1.4
2/1+2/2	247	247	494	0	0	0.0	0.1	-	0.1	2.1	0.3	0.1	0.4
3/1	434	434	-	-	-	0.7	0.5	-	1.2	9.8	4.5	0.5	5.0
3/2+3/3	821	821	-	-	-	2.4	0.9	-	3.3	14.5	6.6	0.9	7.5
4/1	487	487	-	-	-	0.2	0.0	-	0.2	1.8	0.9	0.0	0.9
4/2	451	451	-	-	-	0.4	0.0	-	0.4	3.1	1.4	0.0	1.4
6/1	94	94	-	-	-	0.5	0.0	-	0.5	17.6	1.3	0.0	1.3

6/2	230	230	-	-	-	0.2	0.0	-	0.2	3.0	0.3	0.0	0.3
7/1+7/2	135	135	-	-	-	0.8	0.0	-	0.8	22.6	0.9	0.0	0.9
8/1	343	343	-	-	-	2.2	0.4	-	2.7	27.9	5.4	0.4	5.8
8/2	346	346	-	-	-	2.6	0.4	-	3.1	31.7	5.7	0.4	6.2
8/3	521	521	-	-	-	1.9	1.2	-	3.1	21.1	4.8	1.2	6.0
13/1	452	452	-	-	-	0.0	0.0	-	0.0	0.3	0.3	0.0	0.3
14/1	170	170	-	-	-	0.7	0.2	-	0.8	17.6	2.0	0.2	2.2
14/2	249	249	-	-	-	1.0	0.3	-	1.3	18.4	3.0	0.3	3.3
J5: Baynards Green exit xings	**-**	**-**	**0**	**0**	**0**	**1.2**	**0.0**	**0.0**	**1.2**	**-**	**-**	**-**	**-**
1/1	353	353	-	-	-	0.0	0.0	-	0.0	0.1	0.1	0.0	0.1
2/1	594	594	-	-	-	0.0	0.0	-	0.0	0.2	0.8	0.0	0.8
2/2	1021	1021	-	-	-	0.7	0.0	-	0.7	2.5	2.8	0.0	2.8
2/3	490	490	-	-	-	0.4	0.0	-	0.4	2.7	1.8	0.0	1.8
3/1	514	514	-	-	-	0.1	0.0	-	0.1	0.8	1.2	0.0	1.2
3/2	282	282	-	-	-	0.0	0.0	-	0.0	0.0	0.1	0.0	0.1

C1 - Baynards Green	Stream: 1 PRC for Signalled Lanes (%):	15.2	Total Delay for Signalled Lanes (pcuHr):	10.28	Cycle Time (s):	60
C1 - Baynards Green	Stream: 2 PRC for Signalled Lanes (%):	16.6	Total Delay for Signalled Lanes (pcuHr):	8.26	Cycle Time (s):	60
C1 - Baynards Green	Stream: 3 PRC for Signalled Lanes (%):	11.7	Total Delay for Signalled Lanes (pcuHr):	7.90	Cycle Time (s):	60
C1 - Baynards Green	Stream: 4 PRC for Signalled Lanes (%):	20.4	Total Delay for Signalled Lanes (pcuHr):	4.86	Cycle Time (s):	60
C2 - Padbury	Stream: 1 PRC for Signalled Lanes (%):	33.3	Total Delay for Signalled Lanes (pcuHr):	8.54	Cycle Time (s):	60
C2 - Padbury	Stream: 2 PRC for Signalled Lanes (%):	21.4	Total Delay for Signalled Lanes (pcuHr):	14.47	Cycle Time (s):	60
C3 - Cherwell	Stream: 1 PRC for Signalled Lanes (%):	23.2	Total Delay for Signalled Lanes (pcuHr):	9.09	Cycle Time (s):	60
C3 - Cherwell	Stream: 2 PRC for Signalled Lanes (%):	27.2	Total Delay for Signalled Lanes (pcuHr):	4.91	Cycle Time (s):	60
C3 - Cherwell	Stream: 3 PRC for Signalled Lanes (%):	155.3	Total Delay for Signalled Lanes (pcuHr):	0.09	Cycle Time (s):	60
C4 - Ardley	Stream: 1 PRC for Signalled Lanes (%):	95.0	Total Delay for Signalled Lanes (pcuHr):	3.40	Cycle Time (s):	60
C4 - Ardley	Stream: 2 PRC for Signalled Lanes (%):	39.0	Total Delay for Signalled Lanes (pcuHr):	5.34	Cycle Time (s):	60
C4 - Ardley	Stream: 3 PRC for Signalled Lanes (%):	93.9	Total Delay for Signalled Lanes (pcuHr):	2.74	Cycle Time (s):	60
C4 - Ardley	Stream: 4 PRC for Signalled Lanes (%):	27.6	Total Delay for Signalled Lanes (pcuHr):	8.79	Cycle Time (s):	60
C5 - Baynards Green exit xings	Stream: 1 PRC for Signalled Lanes (%):	159.4	Total Delay for Signalled Lanes (pcuHr):	0.11	Cycle Time (s):	60
C5 - Baynards Green exit xings	Stream: 2 PRC for Signalled Lanes (%):	30.8	Total Delay for Signalled Lanes (pcuHr):	1.09	Cycle Time (s):	60
C5 - Baynards Green exit xings	Stream: 3 PRC for Signalled Lanes (%):	287.0	Total Delay for Signalled Lanes (pcuHr):	0.01	Cycle Time (s):	60
	PRC Over All Lanes (%):	11.7	Total Delay Over All Lanes(pcuHr):	90.12		

APPENDIX H

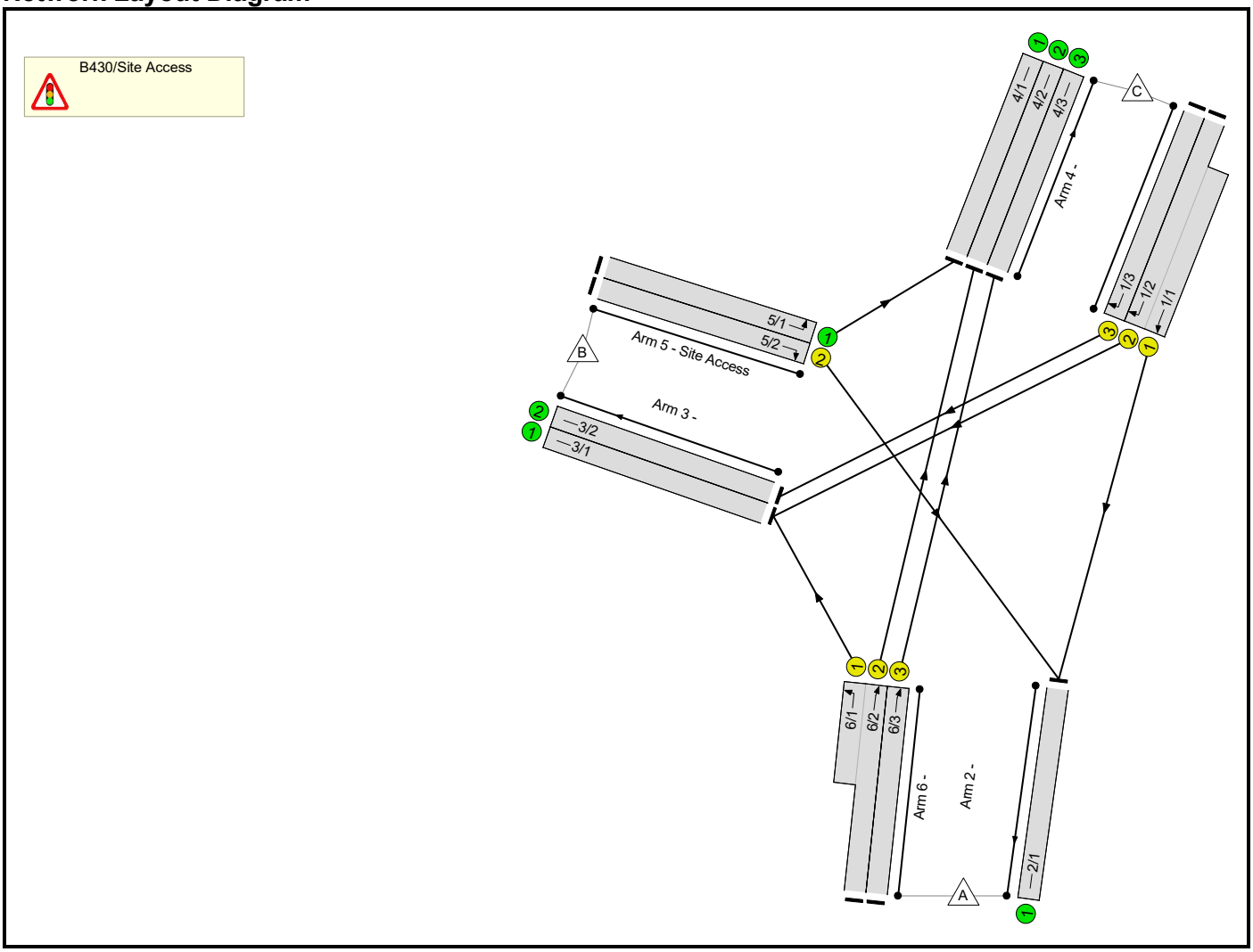
2034 DO SOMETHING (OPTON 28) LINSIG MODELLING FOR PRINCIPAL SITE ACCESS

Full Input Data And Results

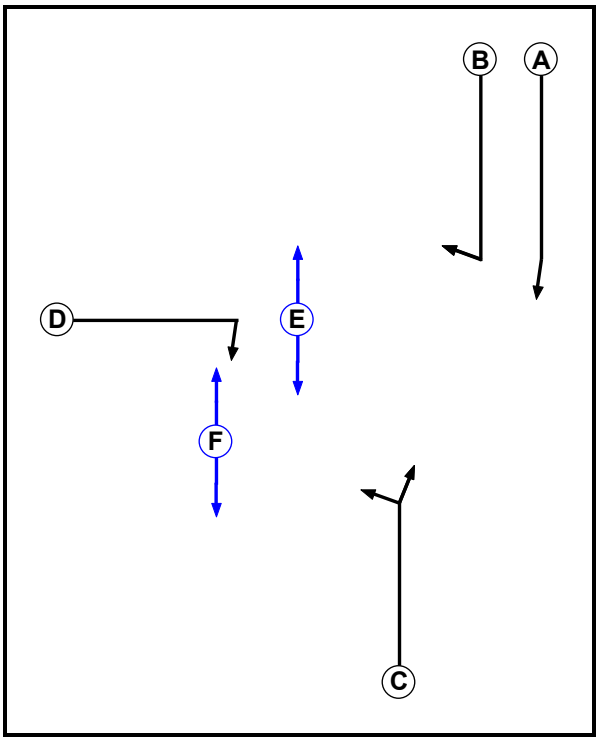
User and Project Details

Project:	**OxSRFI**
Title:	**Proposed site access gyratory**
Location:	
Additional detail:	
File name:	241106 Site Access T-junction.lsg3x
Author:	Mark Higgins
Company:	ADC Infrastructure
Address:	Nottingham

Network Layout Diagram



Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Pedestrian		6	6
F	Pedestrian		5	5

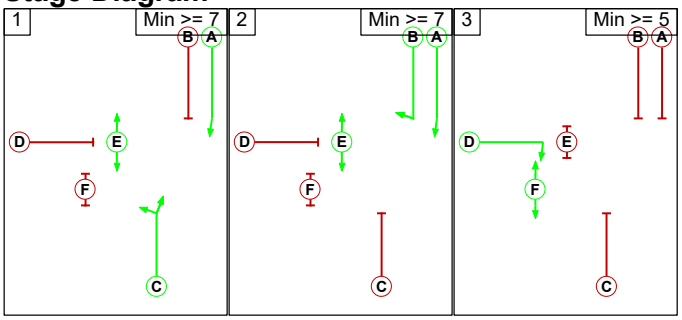
Phase Intergreens Matrix

		Starting Phase					
		A	B	C	D	E	F
Terminating Phase	A		-	-	6	-	-
	B	-		6	6	-	8
	C	-	6		6	-	7
	D	5	5	5		5	-
	E	-	-	-	5		-
	F	-	5	5	-	-	

Phases in Stage

Stage No.	Phases in Stage
1	A C E
2	A B E
3	D F

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

		To Stage		
		1	2	3
From Stage	1		6	7
	2	6		8
	3	5	5	

Lane Input Data

Junction: B430/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 (Ardley Bypass)	U	A	2	3	15.7	Geom	-	3.65	0.00	Y	Arm 2 Ahead	70.00
1/2 (Ardley Bypass)	U	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 3 Right	25.00
1/3 (Ardley Bypass)	U	B	2	3	60.0	Geom	-	3.50	0.00	N	Arm 3 Right	20.00
2/1	U		2	3	60.0	Inf	-	-	-	-	-	-
3/1	U		2	3	60.0	Inf	-	-	-	-	-	-
3/2	U		2	3	60.0	Inf	-	-	-	-	-	-
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
4/2	U		2	3	60.0	Inf	-	-	-	-	-	-
4/3	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (Site Access)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2 (Site Access)	U	D	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 2 Right	30.00
6/1	U	C	2	3	7.0	Geom	-	3.25	0.00	Y	Arm 3 Left	15.00
6/2	U	C	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 4 Ahead	80.00
6/3	U	C	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 4 Ahead	80.00

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2034 With Dev - AM'	08:00	09:00	01:00	
2: '2034 With Dev - PM'	17:00	18:00	01:00	

Scenario 1: '2034 With Development - Morning Peak' (FG1: '2034 With Dev - AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	395	777	1172
	B	42	0	373	415
	C	993	852	0	1845
	Tot.	1035	1247	1150	3432

Traffic Lane Flows

Lane	Scenario 1: 2034 With Development - Morning Peak
Junction: B430/Site Access	
1/1 (short)	993
1/2 (with short)	1419(In) 426(Out)
1/3	426
2/1	1035
3/1	821
3/2	426
4/1	373
4/2	388
4/3	389
5/1	373
5/2	42
6/1 (short)	395
6/2 (with short)	783(In) 388(Out)
6/3	389

Lane Saturation Flows

Junction: B430/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 (Ardley Bypass)	3.65	0.00	Y	Arm 2 Ahead	70.00	100.0 %	1938	1938
1/2 (Ardley Bypass)	3.50	0.00	Y	Arm 3 Right	25.00	100.0 %	1854	1854
1/3 (Ardley Bypass)	3.50	0.00	N	Arm 3 Right	20.00	100.0 %	1958	1958
2/1	Infinite Saturation Flow						Inf	Inf
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1	Infinite Saturation Flow						Inf	Inf
4/2	Infinite Saturation Flow						Inf	Inf
4/3	Infinite Saturation Flow						Inf	Inf
5/1 (Site Access Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Site Access)	3.65	0.00	Y	Arm 2 Right	30.00	100.0 %	1886	1886
6/1	3.25	0.00	Y	Arm 3 Left	15.00	100.0 %	1764	1764
6/2	3.65	0.00	Y	Arm 4 Ahead	80.00	100.0 %	1944	1944
6/3	3.65	0.00	Y	Arm 4 Ahead	80.00	100.0 %	1944	1944

Scenario 2: '2034 With Development - Evening Peak' (FG2: '2034 With Dev - PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	130	839	969
	B	452	0	872	1324
	C	769	481	0	1250
	Tot.	1221	611	1711	3543

Traffic Lane Flows

Lane	Scenario 2: 2034 With Development - Evening Peak
Junction: B430/Site Access	
1/1 (short)	769
1/2 (with short)	1009(In) 240(Out)
1/3	241
2/1	1221
3/1	370
3/2	241
4/1	872
4/2	419
4/3	420
5/1	872
5/2	452
6/1 (short)	130
6/2 (with short)	549(In) 419(Out)
6/3	420

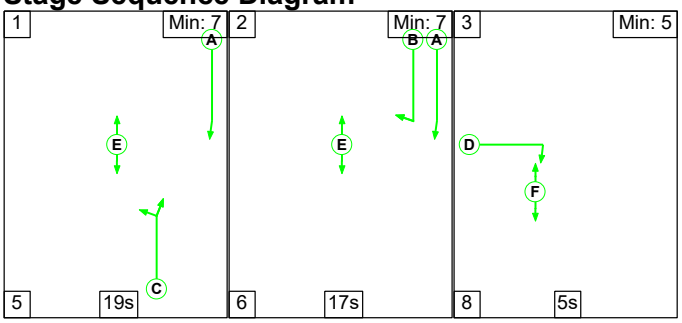
Lane Saturation Flows

Junction: B430/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 (Ardley Bypass)	3.65	0.00	Y	Arm 2 Ahead	70.00	100.0 %	1938	1938
1/2 (Ardley Bypass)	3.50	0.00	Y	Arm 3 Right	25.00	100.0 %	1854	1854
1/3 (Ardley Bypass)	3.50	0.00	N	Arm 3 Right	20.00	100.0 %	1958	1958
2/1	Infinite Saturation Flow						Inf	Inf
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1	Infinite Saturation Flow						Inf	Inf
4/2	Infinite Saturation Flow						Inf	Inf
4/3	Infinite Saturation Flow						Inf	Inf
5/1 (Site Access Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Site Access)	3.65	0.00	Y	Arm 2 Right	30.00	100.0 %	1886	1886
6/1	3.25	0.00	Y	Arm 3 Left	15.00	100.0 %	1764	1764
6/2	3.65	0.00	Y	Arm 4 Ahead	80.00	100.0 %	1944	1944
6/3	3.65	0.00	Y	Arm 4 Ahead	80.00	100.0 %	1944	1944

Scenario 1: '2034 With Development - Morning Peak' (FG1: '2034 With Dev - AM', Plan 1: 'Network Control Plan 1')

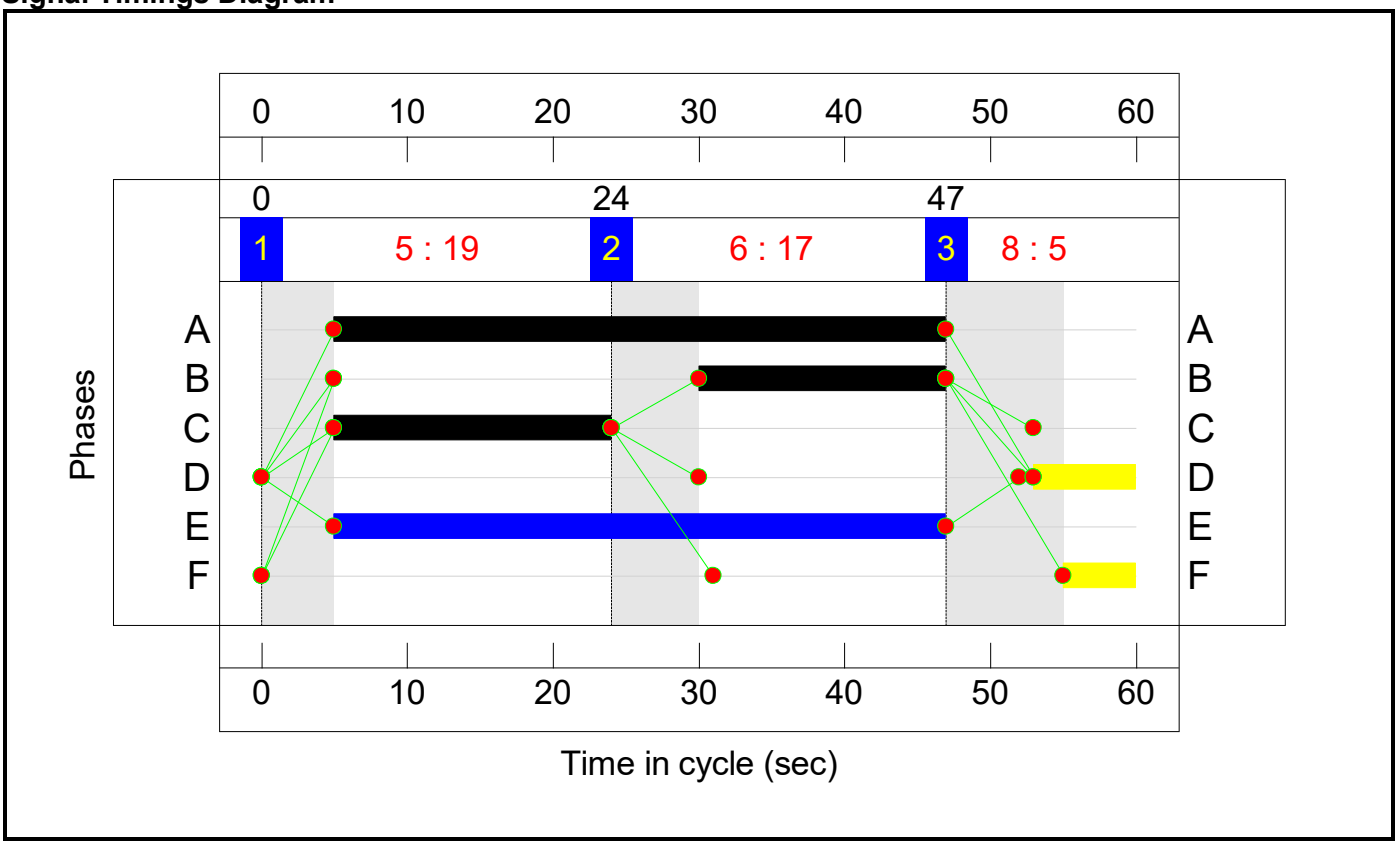
Stage Sequence Diagram



Stage Timings

Stage	1	2	3
Duration	19	17	5
Change Point	0	24	47

Signal Timings Diagram



Network Results

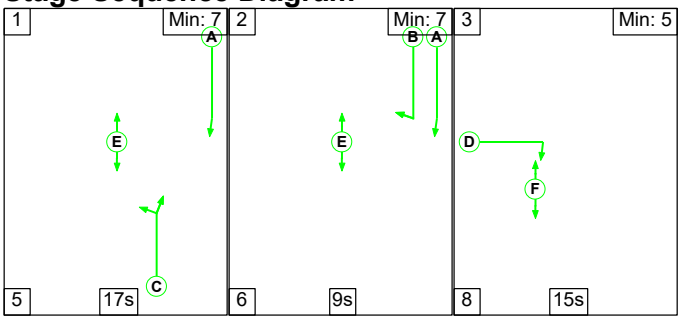
Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Proposed site access gyratory	-	-	**N/A**	-	-		-	-	-	-	-	-	**78.6%**
B430/Site Access	-	-	**N/A**	-	-		-	-	-	-	-	-	**78.6%**
1/2+1/1	Ardley Bypass Ahead Right	U	N/A	N/A	B A		1	17:42	-	1419	1854:1938	542+1263	78.6 : 78.6%
1/3	Ardley Bypass Right	U	N/A	N/A	B		1	17	-	426	1958	587	72.5%
2/1		U	N/A	N/A	-		-	-	-	1035	Inf	Inf	0.0%
3/1		U	N/A	N/A	-		-	-	-	821	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	426	Inf	Inf	0.0%
4/1		U	N/A	N/A	-		-	-	-	373	Inf	Inf	0.0%
4/2		U	N/A	N/A	-		-	-	-	388	Inf	Inf	0.0%
4/3		U	N/A	N/A	-		-	-	-	389	Inf	Inf	0.0%
5/1	Site Access Left	U	N/A	N/A	-		-	-	-	373	Inf	Inf	0.0%
5/2	Site Access Right	U	N/A	N/A	D		1	7	-	42	1886	251	16.7%
6/2+6/1	Left Ahead	U	N/A	N/A	C		1	19	-	783	1944:1764	504+513	77.0 : 77.0%
6/3	Ahead	U	N/A	N/A	C		1	19	-	389	1944	648	60.0%

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 gyratory	**-**	**-**	**0**	**0**	**0**	**11.6**	**5.6**	**0.0**	**17.2**	**-**	**-**	**-**	**-**
B430/Site Access	**-**	**-**	**0**	**0**	**0**	**11.6**	**5.6**	**0.0**	**17.2**	**-**	**-**	**-**	**-**
1/2+1/1	1419	1419	-	-	-	3.6	1.8	-	5.4	13.8	9.4	1.8	11.2
1/3	426	426	-	-	-	2.2	1.3	-	3.5	29.8	6.3	1.3	7.6
2/1	1035	1035	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	821	821	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	426	426	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	373	373	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	388	388	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	389	389	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	373	373	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	42	42	-	-	-	0.3	0.1	-	0.4	31.7	0.6	0.1	0.7
6/2+6/1	783	783	-	-	-	3.7	1.6	-	5.3	24.5	5.6	1.6	7.2
6/3	389	389	-	-	-	1.8	0.7	-	2.5	23.6	5.4	0.7	6.1

C1 PRC for Signalled Lanes (%): 14.4 Total Delay for Signalled Lanes (pcuHr): 17.21 Cycle Time (s): 60
PRC Over All Lanes (%): 14.4 Total Delay Over All Lanes(pcuHr): 17.21

Scenario 2: '2034 With Development - Evening Peak' (FG2: '2034 With Dev - PM', Plan 1: 'Network Control Plan 1')

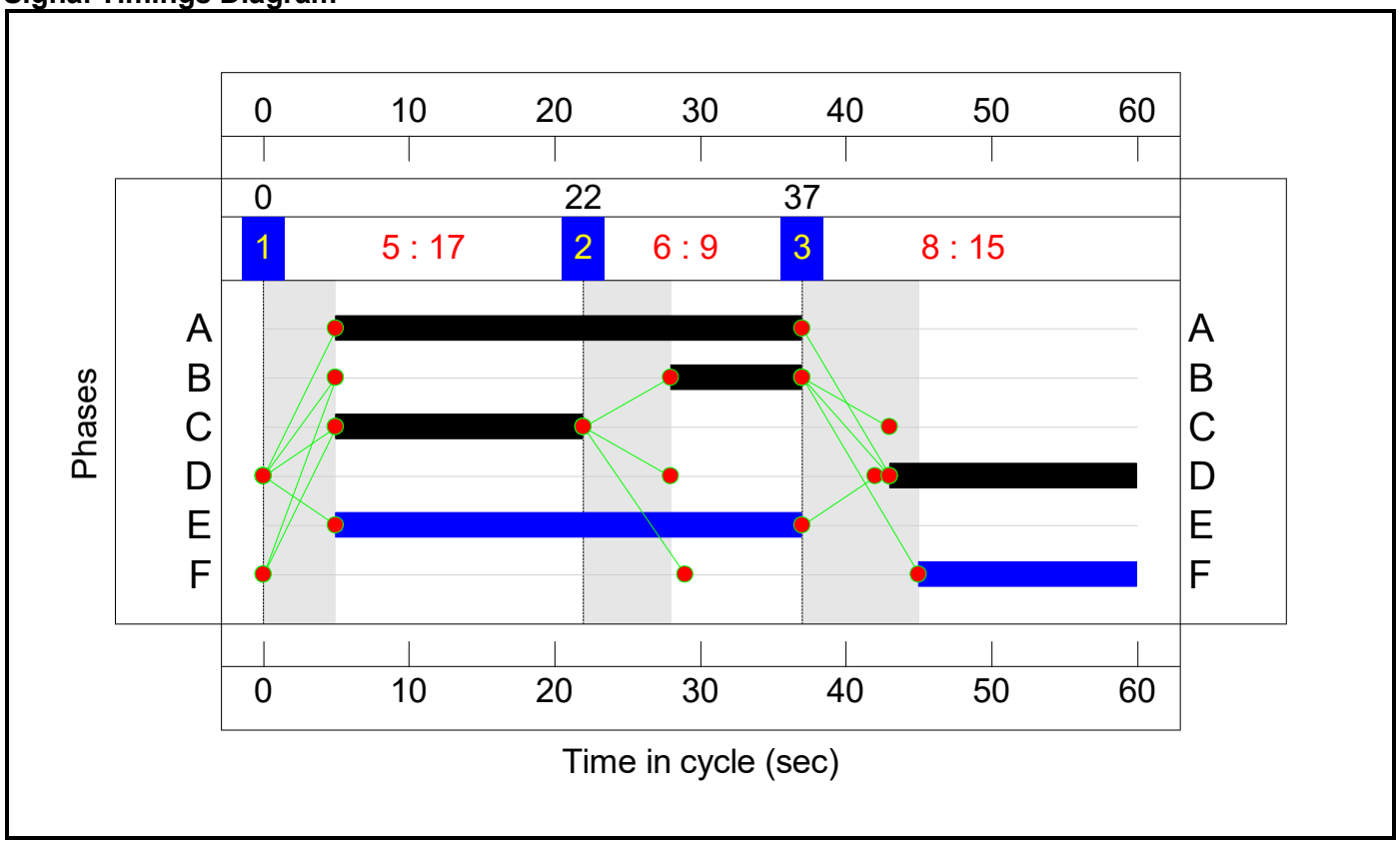
Stage Sequence Diagram



Stage Timings

Stage	1	2	3
Duration	17	9	15
Change Point	0	22	37

Signal Timings Diagram



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 gyratory	-	-	**N/A**	-	-		-	-	-	-	-	-	**79.9%**
B430/Site Access	-	-	**N/A**	-	-		-	-	-	-	-	-	**79.9%**
1/2+1/1	Ardley Bypass Ahead Right	U	N/A	N/A	B A		1	9:32	-	1009	1854:1938	309+1048	77.7 : 73.4%
1/3	Ardley Bypass Right	U	N/A	N/A	B		1	9	-	241	1958	326	73.9%
2/1		U	N/A	N/A	-		-	-	-	1221	Inf	Inf	0.0%
3/1		U	N/A	N/A	-		-	-	-	370	Inf	Inf	0.0%
3/2		U	N/A	N/A	-		-	-	-	241	Inf	Inf	0.0%
4/1		U	N/A	N/A	-		-	-	-	872	Inf	Inf	0.0%
4/2		U	N/A	N/A	-		-	-	-	419	Inf	Inf	0.0%
4/3		U	N/A	N/A	-		-	-	-	420	Inf	Inf	0.0%
5/1	Site Access Left	U	N/A	N/A	-		-	-	-	872	Inf	Inf	0.0%
5/2	Site Access Right	U	N/A	N/A	D		1	17	-	452	1886	566	79.9%
6/2+6/1	Left Ahead	U	N/A	N/A	C		1	17	-	549	1944:1764	541+168	77.5 : 77.5%
6/3	Ahead	U	N/A	N/A	C		1	17	-	420	1944	583	72.0%

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 gyratory	**-**	**-**	**0**	**0**	**0**	**12.7**	**7.7**	**0.0**	**20.4**	**-**	**-**	**-**	**-**
B430/Site Access	**-**	**-**	**0**	**0**	**0**	**12.7**	**7.7**	**0.0**	**20.4**	**-**	**-**	**-**	**-**
1/2+1/1	1009	1009	-	-	-	3.7	1.4	-	5.2	18.5	9.4	1.4	10.8
1/3	241	241	-	-	-	1.6	1.4	-	3.0	44.2	3.8	1.4	5.2
2/1	1221	1221	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	370	370	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2	241	241	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	872	872	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	419	419	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	420	420	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	872	872	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	452	452	-	-	-	2.4	1.9	-	4.3	34.6	6.9	1.9	8.8
6/2+6/1	549	549	-	-	-	2.8	1.7	-	4.4	29.1	6.2	1.7	7.9
6/3	420	420	-	-	-	2.2	1.3	-	3.5	29.6	6.2	1.3	7.5

C1 PRC for Signalled Lanes (%): 12.7 Total Delay for Signalled Lanes (pcuHr): 20.39 Cycle Time (s): 60
PRC Over All Lanes (%): 12.7 Total Delay Over All Lanes(pcuHr): 20.39

APPENDIX I

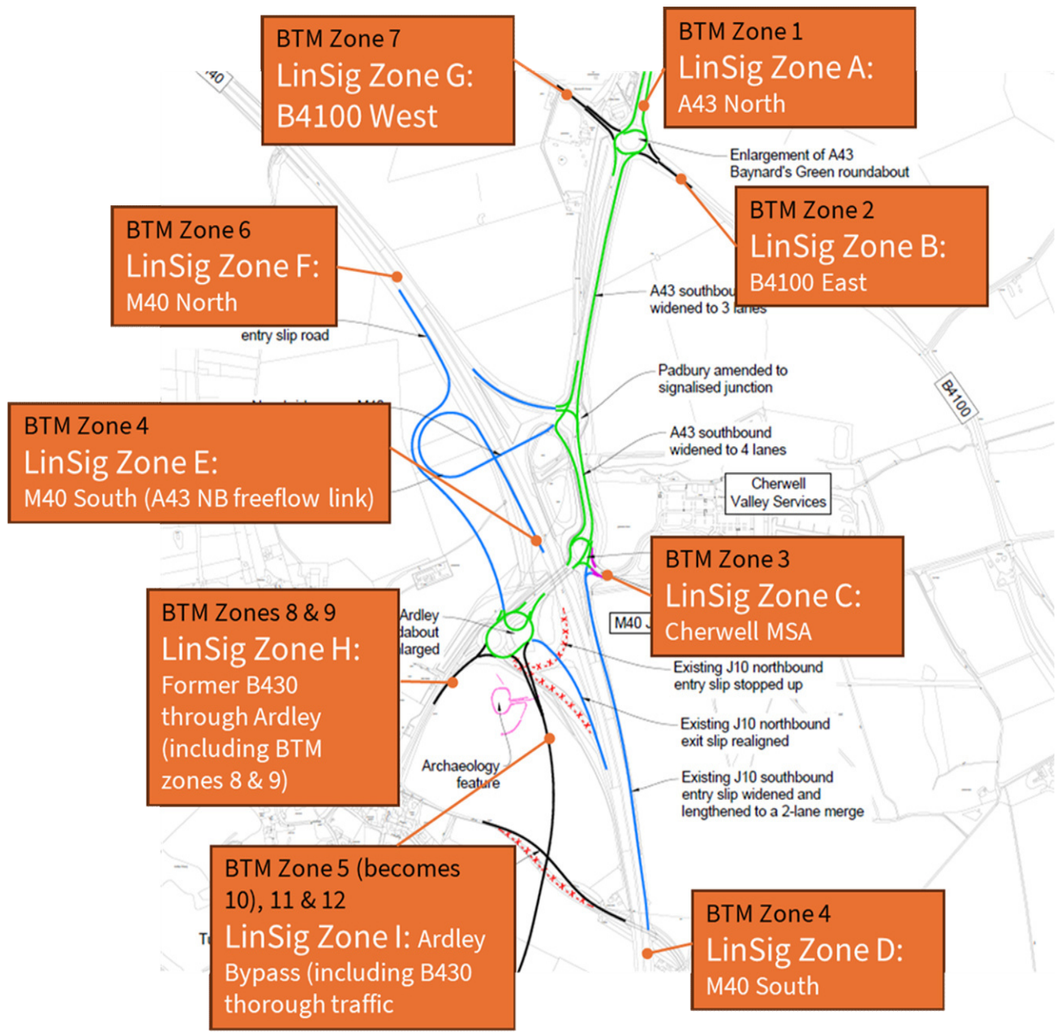
M40 MERGE AND DIVERGE ASSESSMENT AND TRAFFIC FLOWS

2034 Do Something (Option 28) - with OxSRFI

Diverges		AM Peak						PM Peak					
		downstream mainline			diverge flow			downstream mainline			diverge flow		
	zones	vph	hgv	%HGV	vph	hgv	%HGV	vph	hgv	%HGV	vph	hgv	%HGV
M40 NB diverge (local Ardley Roundabout)	from 4 to 3,4,8,9, 10(5), 11	4148	468	11.3%	363	109	30.1%	6018	564	9.4%	351	131	37.4%
M40 NB diverge (free flow link)	from 4 to 1,2,7	3031	333	11.0%	1117	135	12.1%	4268	435	10.2%	1749	130	7.4%
M40 SB diverge	from 6 to 1,2,3,6,7,8,9, 10(5), 11	3661	538	14.7%	893	130	14.6%	3468	322	9.3%	611	103	16.8%

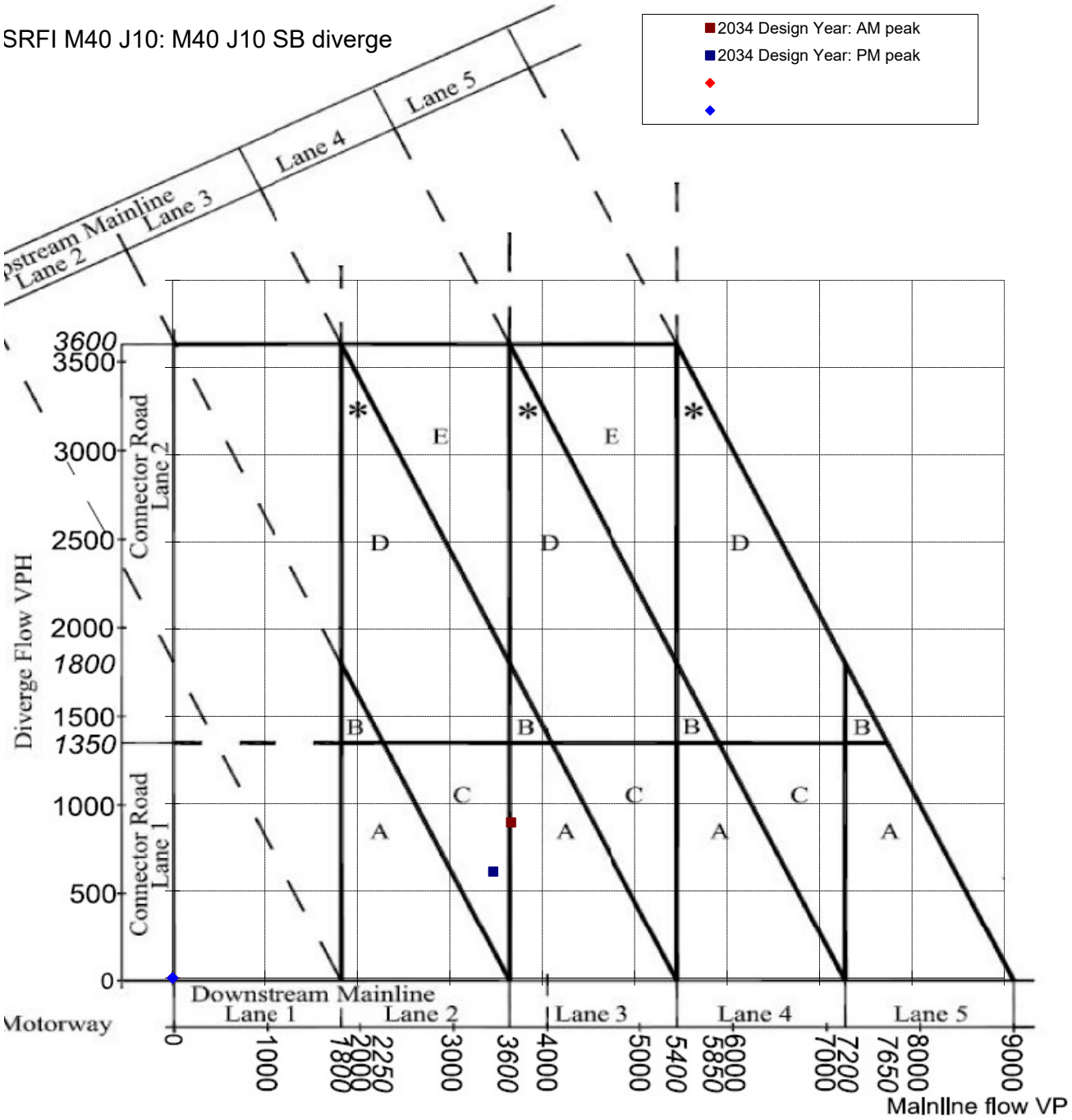
Merges		AM Peak						PM Peak					
		upstream mainline			merge flow			upstream mainline			merge flow		
		vph	hgv	%HGV	vph	hgv	%HGV	vph	hgv	%HGV	vph	hgv	%HGV
M40 SB merge	from 1,2,3,4,7, 8,9, 10(5), 11 to 4	3661	538	14.7%	1812	379	20.9%	3468	322	9.3%	1689	222	13.1%
M40 NB merge	from 1,2,3,7,8,9,10(5), 11 to 6	3031	333	11.0%	627	111	17.6%	4268	435	10.2%	808	88	10.9%

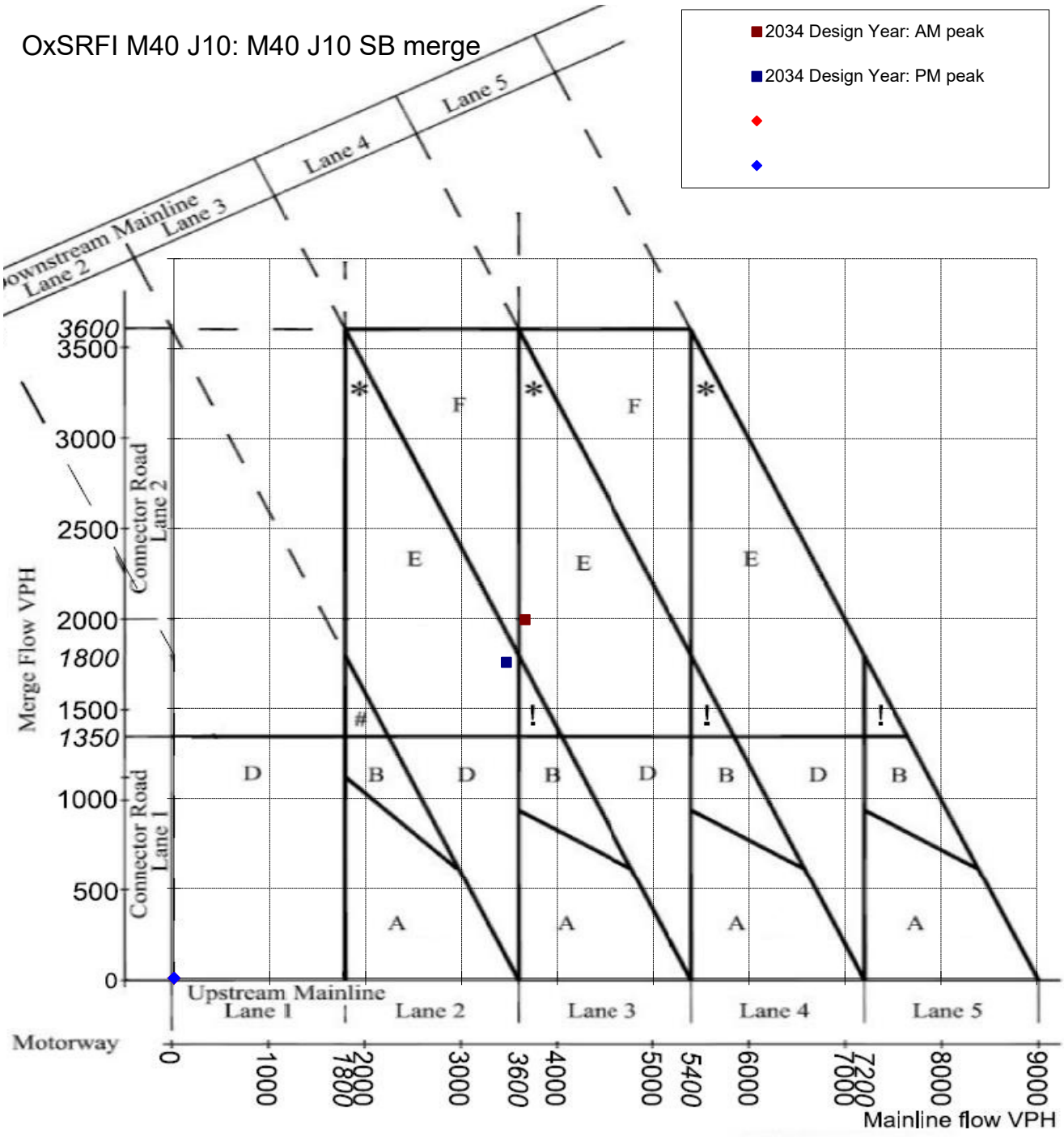
note adjustments to flows required for merges as per Table 3.9a and 3.9b of CD 122



BTM Reference Case zone 5 becomes BTM Zone 10 in DS model
BTM Zone 11 is OxSRFI (which in BTM includes 11 and 12)

SRFI M40 J10: M40 J10 SB diverge



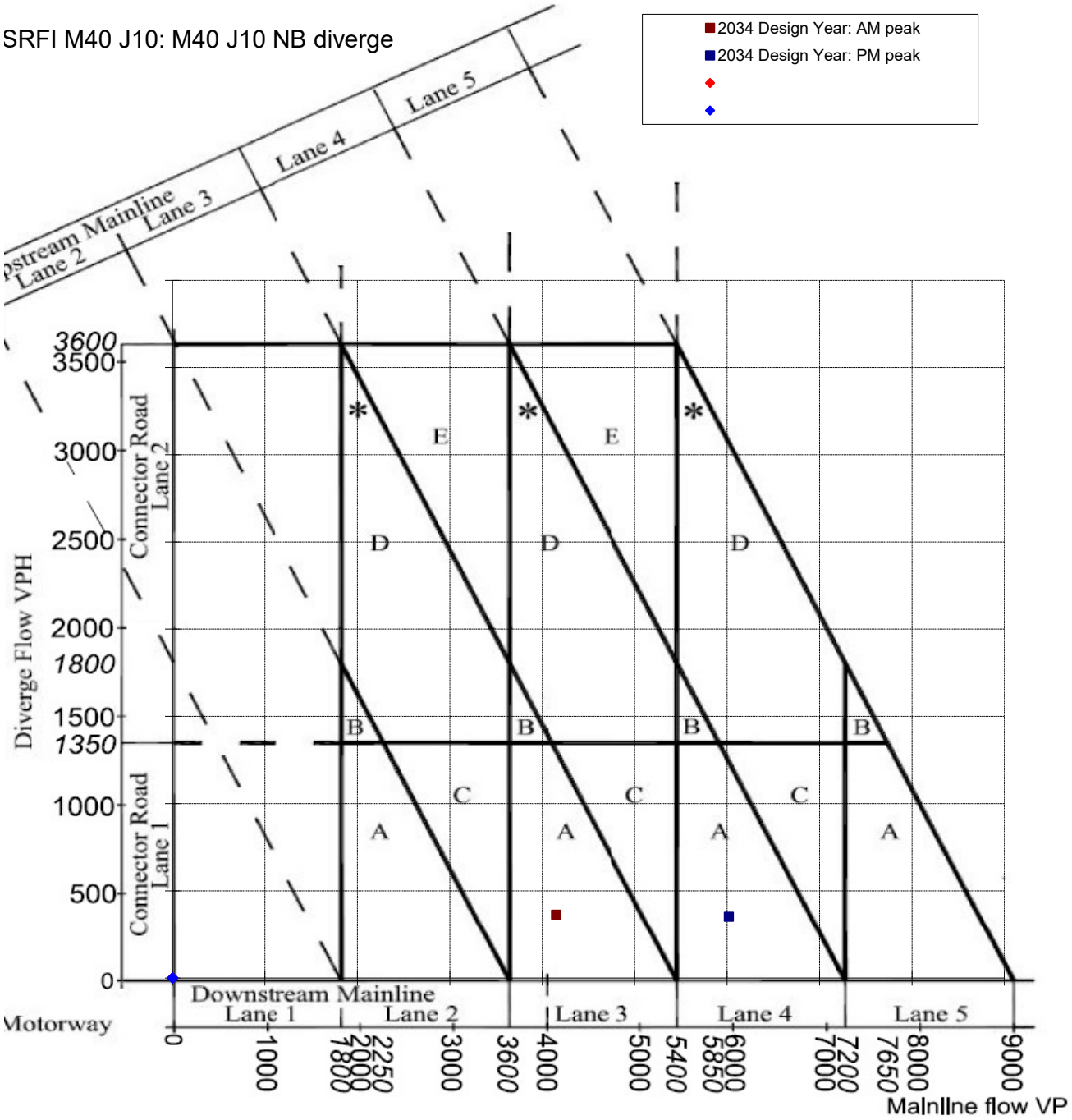


the # symbol indicates areas of uncertainty and the choice depends on the upstream and downstream provision and the ability for the mainline to accept the flows from the merge

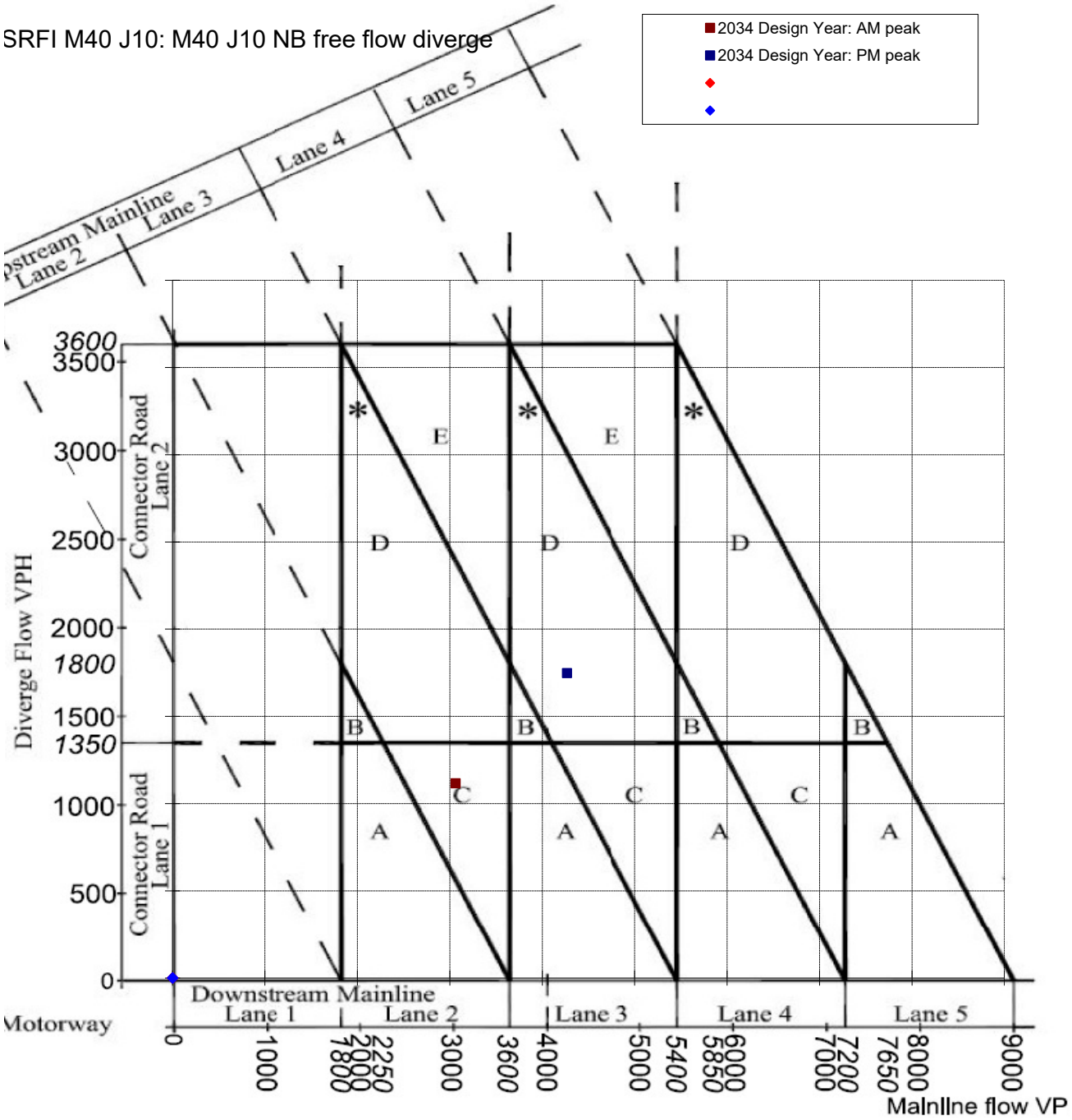
the ! symbol indicates that the minimum layout to be provided is:
1) Layout C for rural roads;
2) Layout A Option 2 for urban roads.

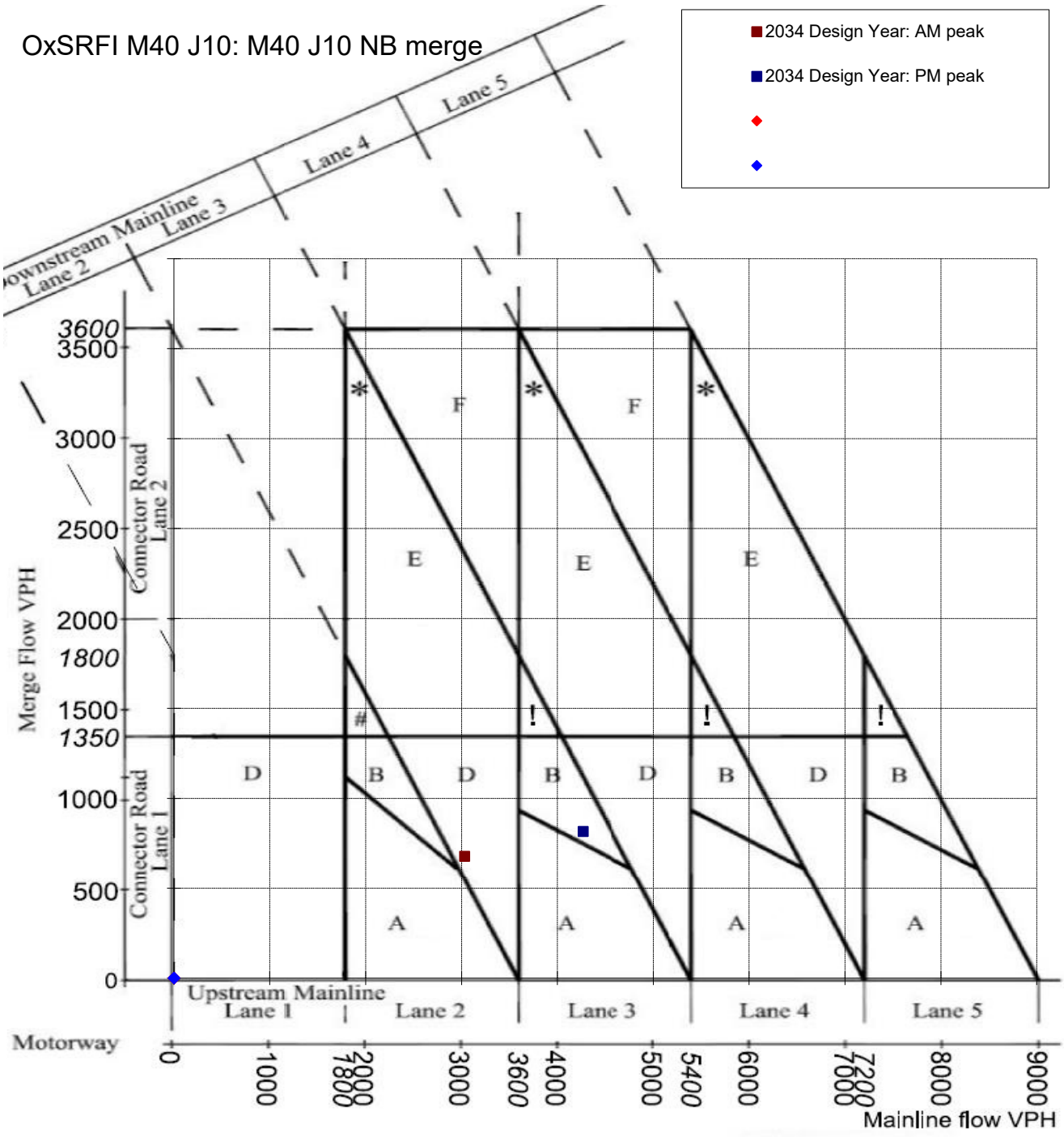
Where the flows are in the region indicated by the * symbol in Figure 3.12b and Layout E option 2 is to be used, an extended auxiliary lane should be provided instead of a taper merge

SRFI M40 J10: M40 J10 NB diverge



SRFI M40 J10: M40 J10 NB free flow diverge





the # symbol indicates areas of uncertainty and the choice depends on the upstream and downstream provision and the ability for the mainline to accept the flows from the merge

the ! symbol indicates that the minimum layout to be provided is:
1) Layout C for rural roads;
2) Layout A Option 2 for urban roads.

Where the flows are in the region indicated by the * symbol in Figure 3.12b and Layout E option 2 is to be used, an extended auxiliary lane should be provided instead of a taper merge

APPENDIX 25

MIDDLETON STONEY RELIEF ROAD AND HEYFORD PARK LINK ROAD OPTIONS REPORT

Middleton Stoney Relief Road and Heyford Park Link Road Options Report

'Proposed Oxfordshire Strategic Rail Freight Interchange

Land west of the B430
East of Upper Heyford Former Airfield, Ardley
Cherwell District

SUBMITTED ON BEHALF of
Oxfordshire Railfreight Limited

March 2022

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CONTENTS PAGE

1.0 INTRODUCTION AND PURPOSE

2.0 EXISTING CONDITIONS AND BACKGROUND

3.0 INITIAL ROUTE OPTIONS

4.0 ROUTE OPTIONS ASSESSMENT AND PREFERRED ROUTE SELECTION

5.0 JUNCTION OPTIONS ASSESSMENT

Appendix A Middleton Stoney Relief Road and Heyford Park Link Road junctions options report
Appendix B Assessment of initial route options

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1.0 INTRODUCTION AND PURPOSE

Introduction

1.1 Oxfordshire Railfreight Limited ('the Applicant') intends to apply for a Development Consent Order (DCO) for a Strategic Rail Freight Interchange (SRFI) together with associated development on land south of the Chiltern Railway line, and west of the B430, east of Upper Heyford Former Airfield, and south of the village of Ardley in Cherwell District, Oxfordshire. The DCO will authorise the Applicant to construct and operate a SRFI which is a "nationally significant infrastructure project", as defined in the Planning Act 2008. It will therefore be the subject of an application to the Planning Inspectorate which will be determined by the Secretary of State for Transport.

1.2 The proposed SRFI site is located west of the M40, with Junction 10 of the M40 located nearby to the north-east. It comprises a total of approximately 300 ha including the works associated with Junction 10.

1.3 The current proposals include:

- An intermodal freight terminal including container storage and HGV parking, rail sidings to serve individual warehouses;
- Up to 603,850 sq.m. (approx. 6.5 million square feet) with an allowance also made for the provision of additional mezzanine floorspace (up to one third of the total floorspace – approximately 201,283 sq.m.).
- New road infrastructure and works to the existing road network, including an improved and reconfigured Junction 10 of the M40 motorway, a bypass to the east of Ardley linking J10 and the site, a relief road to the north east of Middleton Stoney between the B430 and B4030 and, a new Heyford Park Link road between the B430 and Heyford Park, which also includes a pedestrian, cycle, bus and emergency access into the SRFI site;
- Strategic landscaping and tree planting, including diverted public rights of way;
- Earthworks and demolition of existing structures on the SRFI site.

1.4 This report examines the options considered for the Middleton Stoney Relief Road (MSRR) and the Heyford Park Link Road (HPLR). The report presents preliminary details of the preferred option to be taken forward in the DCO application.

Purpose

1.5 The purpose of this report is to capture and collate the data considered in the selection of the options for the MSRR and HPLR. It goes on to present the relative merits of each of the options, leading to a conclusion as to which of those options should be taken forward as part of the DCO application and, should the application be successful, designed in detail for subsequent construction. Preliminary details of the preferred option are presented as part of the conclusion.

2.0 EXISTING CONDITIONS AND BACKGROUND

Site location

2.1 The SRFI site is in Cherwell District Council, Oxfordshire. The site is located to the southwest of M40 Junction 10, approximately 6km from Bicester.

2.2 The main site is bounded to the north by the Chiltern Main Line Railway, to the east by the B430 and the Viridor 'Ardley Energy from Waste' facility, to the south by farmland, and to the west by the Heyford Park development, which is located on the former RAF Upper Heyford site. The village of Ardley is approximately 1km to the north of the site and the village of Middleton Stoney is approximately 2km to the south of the site. **Figure 1** shows the site location.

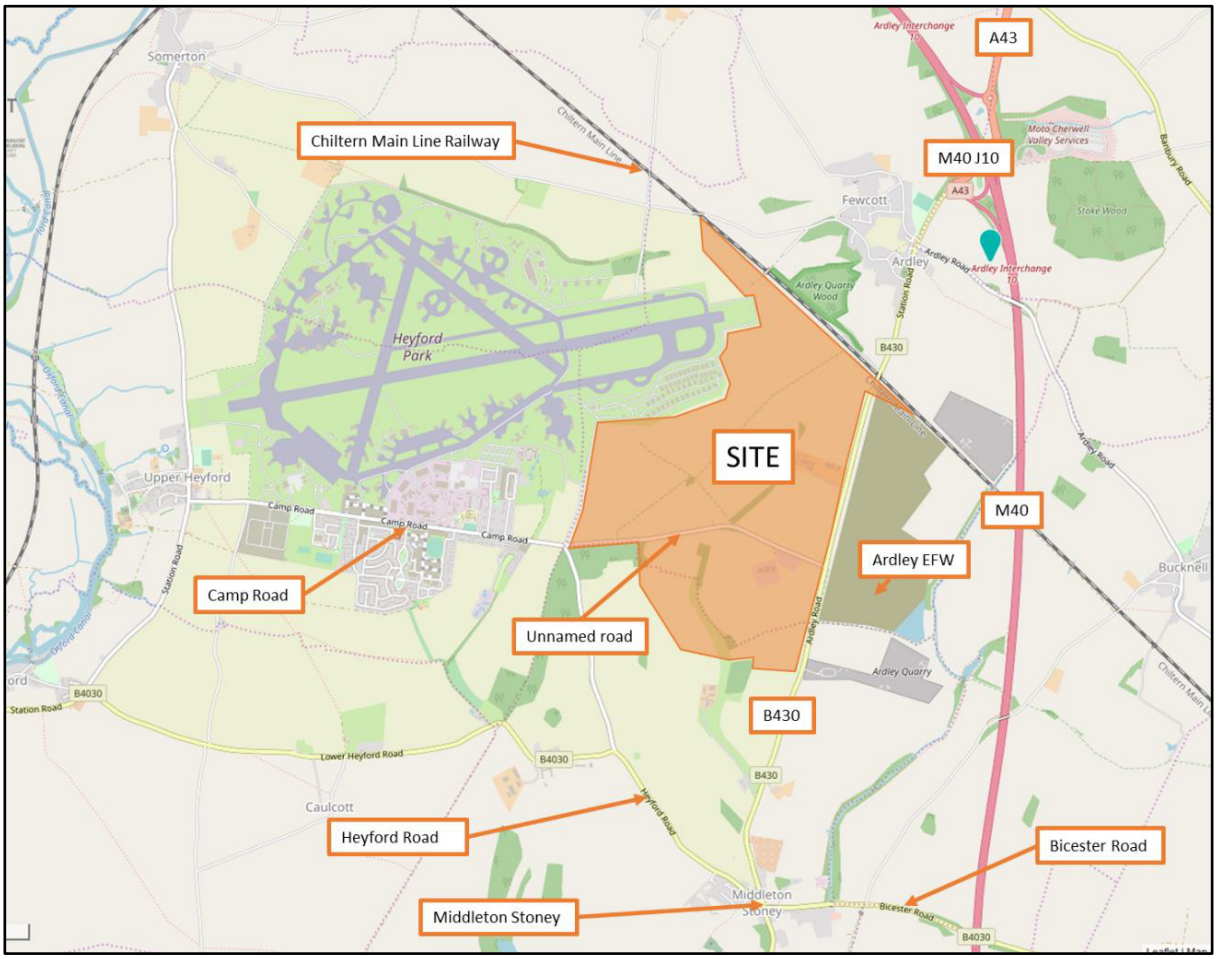

Figure 1: Site location

2.3 As shown in **Figure 1**, an unnamed road passes through the main site area. It connects the B430 to Camp Road. Camp Road continues west towards Upper Heyford and provides access to the Heyford Park development.

2.4 The Heyford Park development area is located directly west of the proposed SRFI site. It has an allocation for 1,600 homes and 1,500 jobs in accordance with Policy Villages 5 of the adopted Cherwell District Council (CDC) Local Plan. The Heyford Park site has

been the subject of several planning applications the most recent of which[1] was supported by a Transport Assessment (TA) and TA Addendum that considered the transport impacts resulting from the allocated development proposals.

Local road network

2.5 The village of Ardley is approximately 1km to the north of the site. The B430 runs through the east of the village, with the main village centre to the west of the B430. To access the site from M40 Junction 10 it is necessary to pass through Ardley on the B430 and over the Chiltern Main Line railway bridge, which narrows slightly, potentially making it difficult for two HGVs to pass one another.

2.6 The village of Middleton Stoney is approximately 2km south of the site, accessed by the B430 which runs through the village in a north-south direction, connecting to the A34 to the south, and in doing so also passing through the village of Weston-on-the-Green.

2.7 In the centre of Middleton Stoney there is a signalised staggered crossroads junction between the B430 and the B4030. The B4030 runs through the village in an east-west direction connecting to the A44 to the west, and to the east it connects with Bicester and in turn the A41, from where access to M40 Junction 9 can be gained.

2.8 There is a committed highway improvement scheme at the Middleton Stoney crossroads associated with the 2008 planning approval at the Heyford Park site. The committed highway improvement scheme retains the existing signalised junction, but widens the B430 Oxford Road approach, providing a right turn flare for vehicles turning into the B4030 Bicester Road and provides a short right turn island for vehicles turning into B4030 Heyford Road. However, this scheme has not yet been implemented and the assessment work undertaken to support the Local Plan allocation at Heyford Park concludes that highway impacts at that junction would be severe unless other highway mitigation measures are also implemented.

2.9 The Heyford Park planning application therefore proposed a 'Middleton Stoney Mitigation Package', that would comprise the following measures:

- A bus gate on the B4030 to the west of the village, including a change in priority at the junction of the B4030 with the unnamed road running north to Camp Road.
- The introduction of more frequent 15-minute bus services between the Heyford Park development and Bicester via Middleton Stoney during weekdays.
- The introduction of a cycle route between Heyford Park and Middleton Stoney.
- A weight restriction on the B4030 to the east of Middleton Stoney to reduce the number of HGVs passing through the village.
- The preparation of a full Travel Plan setting out measures aimed at reducing journeys by the private car, especially between Heyford Park and Bicester.

2.10 The Heyford Park scheme received a resolution to grant planning permission subject to the S106 Agreement at the 5 November 2020 Planning Committee meeting.

[1] Planning reference number 18/00825/HYBRID

Nevertheless, due to the strength of feeling against the bus gate, which it is understood was considered by residents to simply move traffic from the B4030 Heyford Road to the B430 Ardley Road without reducing traffic flow through the village, it was agreed that rather than implement the Middleton Stoney Mitigation Package of improvement works, a 'monitor and manage' option will be implemented.

2.11 The Heyford Park developer will provide a financial contribution equivalent to the cost of the proposed Middleton Stoney Mitigation Package and including an additional sum for traffic monitoring. This traffic monitoring will then be carried out by Oxfordshire County Council in the intervening period before the need for a bus gate is required. This period is likely to be several years dependent on the rate of development at Heyford Park. In this way, the monies are available to deliver the Middleton Stoney Mitigation Package, if it is still shown as necessary, or an alternative solution of equivalent benefit (termed 'the Revised Middleton Stoney Mitigation Package') can then be delivered by Oxfordshire County Council within the amount of the financial contribution as specified.

2.12 It is clear from the above that the means of dealing with the Heyford Park traffic impact through Middleton Stoney are not yet fully resolved and that the existing constraints would make it difficult to cater for further traffic impacts associated with the proposed SRFI development.

Impact of SRFI development

2.13 As described above, the unnamed road passes through the main site area, connecting the B430 to Camp Road and therefore providing access to Heyford Park and Upper Heyford. It is not desirable for the SRFI development to retain this route for through-traffic and hence a new Heyford Park Link Road (HPLR) is proposed, connecting Camp Road and the B430 south of the development site. This would form part of the embedded highway mitigation associated with the SRFI development.

2.14 The TA for the Heyford Park development area identified that the B430/B4030 junction in Middleton Stoney would suffer from severe congestion in the 2031 'Reference Case' (no Heyford Park development). The proposed SRFI could further increase traffic demand through the village and hence options to improve traffic conditions in Middleton Stoney and improve journey time reliability for employees accessing the development through the provision of a relief road have been investigated. The potential impact of the proposed SRFI development traffic is considered further at the ADC Infrastructure Ltd report provided at **Appendix A**.

3.0 INITIAL ROUTE OPTIONS

Overall design proposal

3.1 The MSRR and HPLR would be designed in accordance with the 'Design Manual for Roads and Bridges' (DMRB) and would incorporate, where required, suitable facilities for walking, cycling and horse-riding (known as non-motorised users or NMUs). The MSRR and HPRL would be designed in accordance with a derestricted rural road, in keeping with the existing derestricted speed limits on the B4030, the B430 and the unnamed road. Both road links would include environmental mitigation, where considered appropriate.

Terminal connection points for all options

3.2 All of the route options would include a roundabout at the B4030/Middleton Road junction, a link road which crosses over the Gagle Brook and then on to the B430 (the MSRR). A further connection would then run from the B430 to Camp Road (the HPLR), which would feed into wider proposals relating to the realignment of the unnamed road (that links with Camp Road) as part of the SRFI development. These connection points for all options considered were selected to keep all routes to a sensible minimum length in their own right, whilst respecting apparent constraints. The purpose in adopting this approach is to minimise the overall environmental impact as well as limiting construction cost.

3.3 With the above approach adopted, obvious connection points along the B430 and Camp Road are evident and have been explored. Along the B430 the relatively straight section of road north of Middleton Stoney and south of the Dewars Farm Quarry access, provides a potential location for a new junction/s serving both the MSRR and HPLR. Along the unnamed road the relatively straight section from the turn in the road heading west to the junction with Chilgrove Drive/Camp Road provides a suitable location for either a tie-in to the existing road or a new junction, and this would be east of the Heyford Park development proposals.

3.4 All route options are shown in **Figure 2** below, with an explanation of each below.

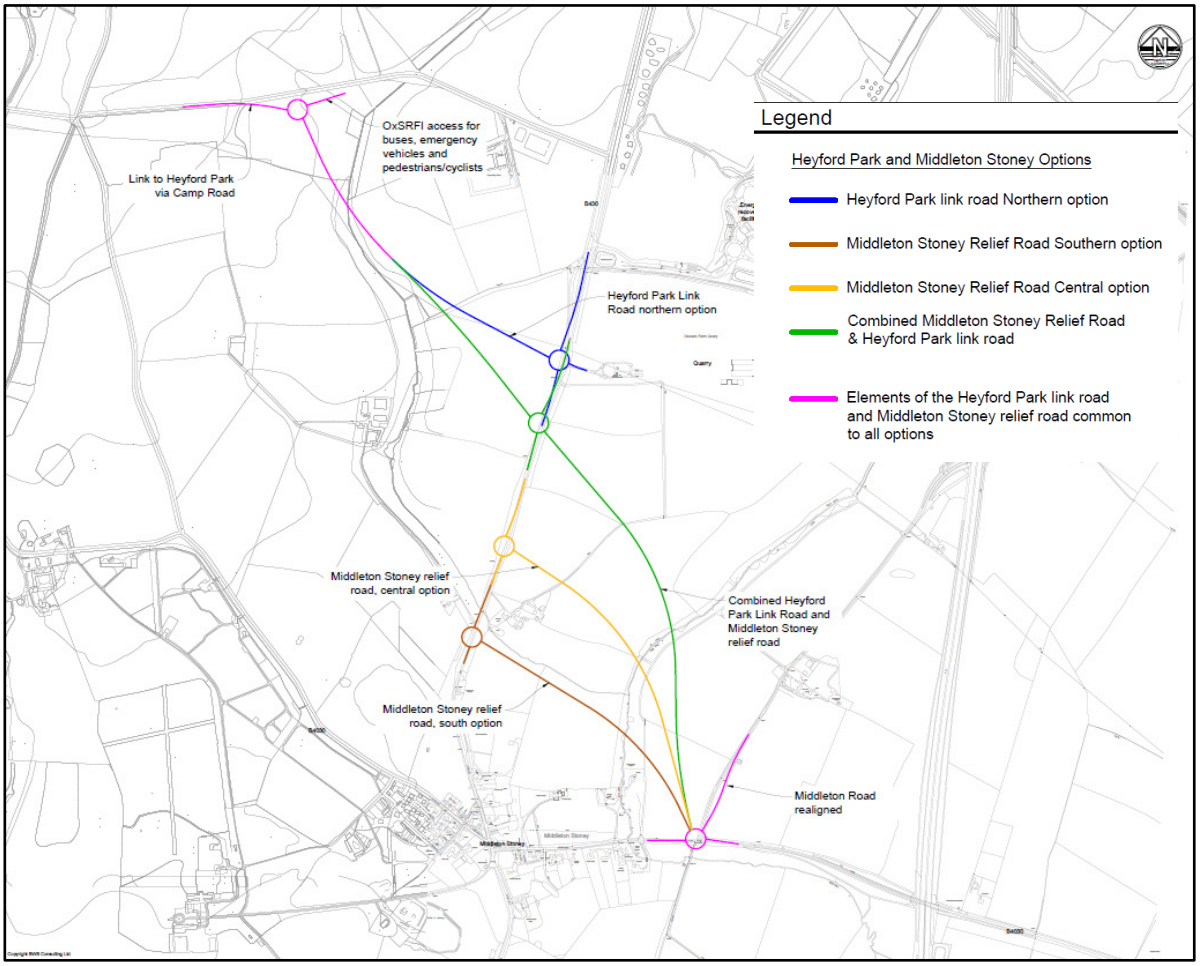

Figure 2: MSRR and HLRP initial route options

MSRR options

3.5 Three route options have been considered for the MSRR. Each route was prepared in consideration of existing properties between the B4030/Middleton Road junction and B430 which includes properties within the north-east quadrant area of Middleton Stoney, Coppice Cottage, Dewars Farm Cottage and Dewars Farm.

3.6 The options were therefore proposed to ensure some separation away from these properties but also kept as short as reasonably practicable to limit the environmental impact, construction cost and, importantly, reduce the risk that road users might be induced to continue to pass through the village rather than use a long relief road.

3.7 With the guiding principle set out above, and having identified no major topographical or other readily identifiable constraints to be considered, the three possible route options considered were:

- Southern option (**shown in brown on Figure 2**) – this route crosses the Gagle Brook corridor north of the sewage works and joins the B430 via a new junction between the Dewars Farm cottages to the south and Dewars Farm to the north.

- Central option (**shown in yellow on Figure 2**) – this route crosses the Gagle Brook corridor at a thinner section than the southern option and as it begins to bend slightly eastward and joins the B430 via a new junction north of Dewars Farm.

- Northern option (**shown in green on Figure 2**) – this route crosses the Gagle Brook corridor slightly east of the central option (with a similar width) and joins the B430 via a new junction south of the Dewars Farm Quarry entrance. This option is also known as the 'combined' option as the new junction on the B430 would also have an exit to the HPLR. This option takes up the most amount of land.

HPLR options

3.8 Two route options have been considered for the HPLR and both have been proposed in view of the relief road options for Middleton Stoney. Both routes are similar with the only difference relating to their starting location along the B430 as both options then connect midway to the proposed junction or tie-in with the unnamed road further to the north.

3.9 The only existing properties in the vicinity of both options comprises the entrance to Dewars Farm Quarry east of the B430 and Manor Farm further to the west of the B430. No other readily identifiable constraints or major topographical features that might influence the route choices were noted and the two possible routes considered for the HPLR were:

- Southern option (**shown in green on figure 2**) – this route connects from the new Middleton Stoney northern option junction on the B430, south of the Dewars Farm Quarry and runs north up to Camp Road. This option would only be used as part of the combined route with the northern MSRR option to minimise route length;

- Northern option (**shown in blue on figure 2**) – this route connects from a new junction on the B430 adjacent to the Dewars Farm Quarry entrance and then runs up to Camp Road.

Junctions

3.10 Whilst **Figure 2** shows indicative arrangements for junctions at the B430 and Camp Road, it must be emphasised that these are indicative options.

3.11 Traffic modelling has been undertaken (**Appendix A**) in order to assist in identifying the most advantageous solution for junctions, balancing the need to provide connectivity whilst not encouraging traffic onto inappropriate routes. Consideration has also been given to the road safety and potential environmental impact aspects of the available junction options, along with provisions of NMUs.

4.0 ROUTE OPTIONS ASSESSMENT AND PREFERRED ROUTE SELECTION

Technical and Environmental Assessments

4.1 The available route options identified have been considered by the Applicant's team of professional consultants across the areas of assessment that might be expected to arise in an Environmental Assessment (leading to an Environmental Statement) process. Each consultant was also asked to suggest a preference of the given options. The findings are presented in a spreadsheet in Appendix B. It should be noted that the assessment is based upon the high-level detail available at the stage of writing

4.2 A summary of the findings is presented below.

MSRR assessment findings

4.3 The assessment findings from the Applicant's consultant team are:

- Air Quality: had a low preference for the northern (green) route as it is further away from sensitive receptors than the other options. Mitigation would reduce any impacts from this option.

- Agricultural Land: had a moderate to high preference for the southern (brown) route as it would result in the least land lost and crosses the fewest fields.

- Cultural Heritage – Archaeology: had a moderate preference for the northern (green) route as it would have the least impact on potential archaeological features, although there are no know features along any route.

- Cultural Heritage – Built Heritage: had a moderate preference for the northern (green) route as it would have the least impact on heritage assets in Middleton Stoney, although some greater impact on the Grade II Lodge Farmhouse.

- Drainage and Water Environment: no preference for any route as it is considered at this stage that there are no significant drainage or flood risk constraints for any option.

- Geology and Soils: had a preference for the central (yellow) route. The northern (green) route is not preferred due to it crossing the Ardley Trackways SSSI.

- LVIA – Landscape: had a preference for the northerly routes (northern - green and central - yellow), as they are furthest away from Middleton Stoney and cut through narrower sections of existing tree belt.

- LVIA – Visual: had a slight preference for the northern (green) route as it is furthest away from Middleton Stoney and Dewars Farm with the potential for effective mitigation for any properties with views of this option.

- Lighting: had a low preference for the northern (green) route as it would have the least affect on residential amenity with mitigation for ecological receptors.

- Nature and Ecology: had a moderate preference for the northern (green) route as it results in the least loss of the trees along the Gagle Brook corridor and, as part of the combined Heyford Park link, would result in less habitat loss along the B430 corridor.

- Noise and Vibration (operation): had a preference for the northerly routes (northern – green and central - yellow) as they are further away from dwellings in Middleton Stoney and would also have lower impacts on sensitive receptors.

- Noise and Vibration (construction): had a preference for the northerly routes (northern – green and central - yellow) due to a greater distance between construction works and the sensitive receptors.

- Non-motorised uses: had a moderate preference for the northern (green) route, of the combined option, due to it being the shortest alignment from the B4030 east of Middleton Stoney up to Heyford Park.

- Public Transport: had a moderate preference for the northern (green) route, if the combined option, as it would be the shortest overall route alignment option for buses travelling between the B4030 east of Middleton Stoney (i.e. Bicester) and Heyford Park.

- Transport (HGVs): had a slight preference for the northern (green) route, if the combined option, as it would result in only one junction on the B430. Note that HGVs serving the OxSRFI site would not be permitted to access the development from south of the site access. The HGV routing strategy would be enforced through a combination of a physical restriction to prevent HGVs exiting the site from being able to travel south on the B430, paired with an enforcement methodology, likely to be based on Automatic Number Plate Recognition (ANPR) cameras.

- Transport (non-HGVs): had a moderate preference for the northern (green) route, if the combined option, as it would be the shortest overall route alignment option for travel between Bicester and Heyford Park and, it would result in only one junction on the B430.

4.4 The above findings demonstrate that the northern (green) route is predominantly preferred by most consultants. The reasons given relate to the distance from Middleton Stoney and other sensitive receptors for air quality, noise, lighting and visual purposes, as well as how the route works as part of the combined option with the southern Heyford Park link and the need for one less junction on the B430.

4.5 A main constraint to the north (green) route is that it crosses through the Ardley Trackways SSSI which is a geologically important site that has revealed fossilised

trackways within the immediate vicinity of the SSSI. In addition, the northern route crosses land that is within the interests of the active Dewars Farm Quarry which has planning permission from Oxfordshire County Council to quarry this area of the site under ref. 18/01610/CM (MW.0123/15).

HPLR assessment findings

4.6 The assessment findings from the Applicant's consultant team are:

- Air Quality: had a low preference for the southern (green) route as it maximises distance of the relief road from the sensitive receptors in both Middleton Stoney and off the B430.

- Agricultural Land: had no preference for either option.

- Cultural Heritage - Archaeology: had a preference for the southern (green) route due to the potential for buried archaeology along the northern route, although there is also a moderate to high potential for buried archaeology along the southern route as well. In either case measures would be implemented to mitigate the harm to archaeology receptors.

- Cultural Heritage – Built Heritage: a weak preference for the southern (green) route although both have a low potential for impacts on heritage assets.

- Drainage and Water Environment: no preference for either route as there are no significant drainage or flood risk constraints for any option.

- Geology and Soils: no preference for either route.

- LVIA – Landscape: had a minimal preference for the southern (green) route as it would reduce the number of junctions on the B430.

- LVIA – Visual: had a minimal preference for the southern (green) route as it would reduce the number of junctions on the B430.

- Lighting: no preference for either route, both have the potential to affect ecological receptors, but this could be effectively managed by mitigation measures.

- Nature and Ecology: had a moderate preference for the southern (green) route as it would reduce the number of junctions on the B430.

- Noise and Vibration (operation): had a preference for the northern (blue) route as it is likely to have a lower adverse impact on Manor Farm due to increased distance.

- Noise and Vibration (construction): had a preference for the northern (blue) route as it is likely to have a lower adverse impact on Manor Farm due to increased distance.

- Non-motorised uses: had a moderate preference for the southern (green) route, if the combined option, due to it being the shortest alignment from the B4030 east of Middleton Stoney up to Heyford Park and, would result in one less junction on the B430 to navigate.

- Public Transport: had a moderate preference for the southern (green) route, if the combined option, as it would be the shortest overall route alignment option for buses travelling between the B4030 east of Middleton Stoney (i.e. Bicester) and Heyford Park and, would result in one less junction on the B430 to navigate.

- Transport (HGVs): had a slight preference for the northern (blue) route as it would be the shortest alignment for the link road. Note that HGVs serving the OxSRFI site would not be permitted to access the development from south of the site access. The HGV routing strategy would be enforced through a combination of a physical restriction to prevent HGVs exiting the site from being able to travel south on the B430, paired with an enforcement methodology, likely to be based on Automatic Number Plate Recognition (ANPR) cameras.

- Transport (non-HGVs): had a slight preference for the southern (green) route, if the combined option, as it would be the shortest overall route alignment option for travel between Bicester and Heyford Park and, it would result in only one junction on the B430.

4.7 The above findings demonstrate that the southern (green) route is marginally preferred by most consultants. The reasons given relate to how the route works as part of the combined option with the southern Heyford Park link and the need for one less junction on the B430. The differences are mostly slight and even in the case of archaeology, where there is a preference due to the high potential for buried features along the northern (blue) route, the difference is marginal as there is also still a moderate to high potential for buried features along the southern (green) route. From a noise perspective there is a slight preference for the northern (blue) route as it further away from the nearest sensitive receptors.

Preferred route selection

4.8 As noted above, the technical and environmental assessment carried out and summarised above shows that there is a preference for a northerly MSRR option that is furthest away from sensitive receptors. Therefore, in considering comments by consultants, the southern and central MSRR routes are rejected from future consideration due to their closer proximity to sensitive receptors for air quality, noise, lighting and visual purposes.

4.9 The consultants set out a preference for the northern (green) MSRR route, however this option must be considered further in light of its constraints which includes a direct impact

on the Ardley Trackways SSSI and the Dewars Farm Quarry site which has permission to quarry the same land. Importantly, the detailed junction assessment work (**Appendix A**) found that likely traffic flow demands associated with a four-arm junction (either roundabout or signal controlled) between the B430, the MSRR and HPLR at this location, would lead to capacity issues.

4.10 Accordingly, an additional MSRR option, known as the upper central route, was drawn up and is shown in **Figure 3** below. This route is a southward adjustment of the northern (green) route and retains the benefits of a northerly option by being further away from sensitive receptors but avoids issues associated with the Ardley Trackways SSSI and Dewars Farm Quarry land, and the traffic capacity constraints associated with a four-arm junction.

4.11 This route could be used in combination with the southern (green) HPLR route which was preferred in the consultant's assessment. The central upper MSRR option (yellow) with the southern HPLR option (green) is therefore the preferred route with the northern MSRR (green) option and northern HPRL (blue) option rejected.

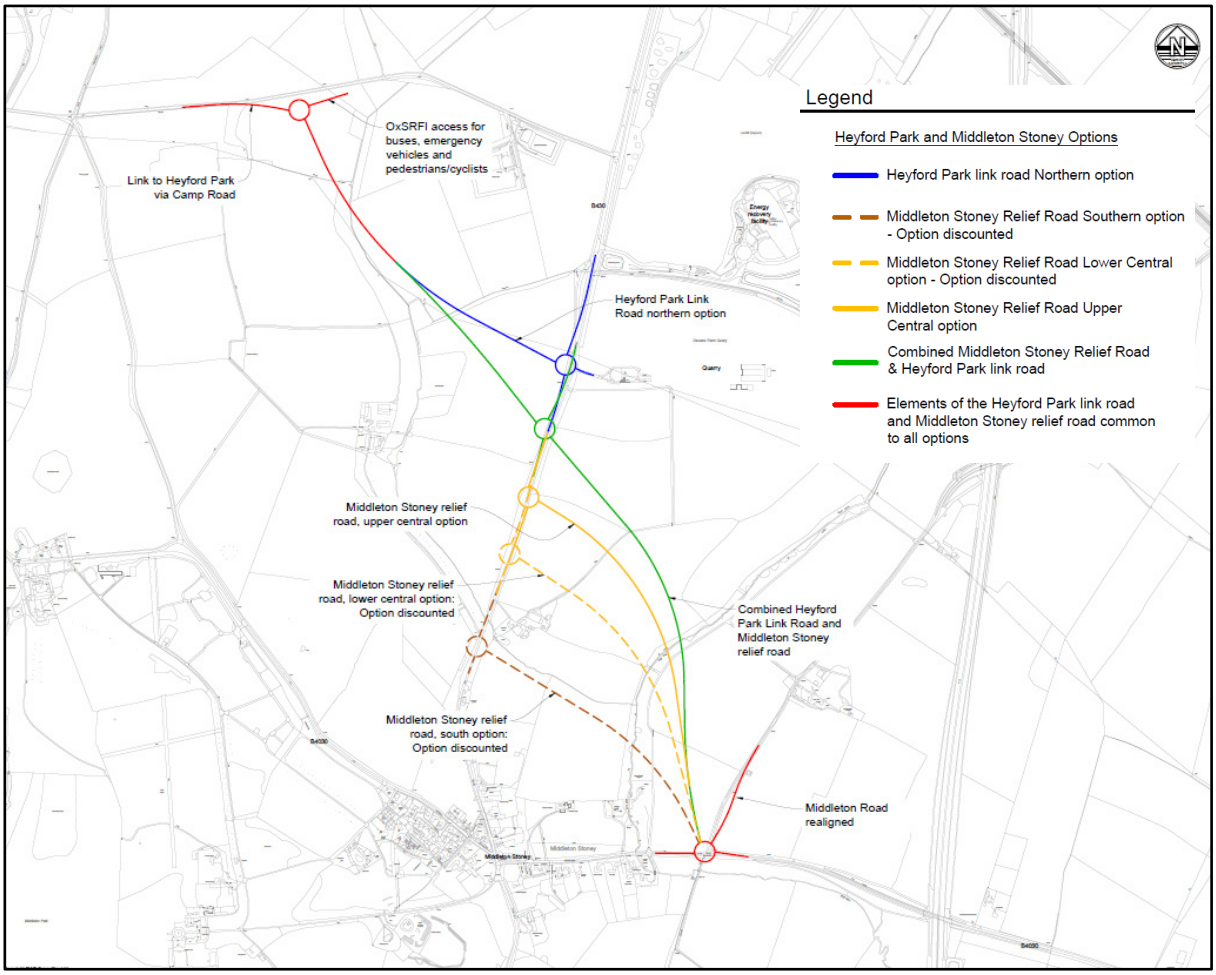

Figure 3: MSRR upper central route (in yellow)

4.12 Whilst environmental considerations have clearly been taken into account in selecting the preferred route, the full Environmental Assessment for the preferred route will be undertaken as part of the Environmental Statement. Similarly, a detailed assessment of the needs and provision for NMUs will be provided as part of the DCO application and will be found in the Walking Cycling and Horse-Riding Assessment and Review Reports, both of which will be appended to the Transport Assessment.

5.0 JUNCTION OPTIONS ASSESSMENT

5.1 Whilst environmental factors are of high importance when determining the preferred route option (as examined within this report), the form and capacity of the required junction is also a key factor when deciding the optimum solution. These factors are specifically examined within the 'MSRR and HPLR junction options report' provided at **Appendix A**. The Junction Options report has been prepared to provide the background and design development of the junction options considered for the MSRR and HPLR based on the alignment options set out in this Options Report.

MSRR south roundabout (B4030 / Middleton Road)

5.2 A roundabout is considered the most appropriate solution for this junction for the following reasons:

- It forms an eastern gateway to Middleton Stoney;
- It allows for a change in direction between the B4030 and MSRR;
- It would provide a safer junction for right turners, the notable right turn flow being from Middleton Stoney onto the B4030 to Bicester; and
- It provides a connection to Middleton Road.

MSRR/B430 and B430/HPLR junctions

5.3 The junction options report concludes that:

- The provision for a single four-arm junction to connect the HPLR and the MSRR at the B430 would introduce a capacity constraint on the road network. A single junction does not provide an optimum solution. Hence, the green route for the MSRR was dismissed.
- A roundabout junction at the B430/HPLR (northern blue route) would introduce a capacity constraint and does not provide an optimum solution. This would also affect access to the quarry.
- The most suitable form of junction for the B430/MSRR connection (MSRR upper central route, yellow route) would be a traffic signal controlled T-junction.
- Providing the HPLR/B430 junction as a traffic signal controlled T-junction would allow the two junctions to be very closely spaced and coordinated. This would allow the B430/HLPR junction to be provided on the green route and establish a consistent approach to providing pedestrian and cycle crossing facilities.
- A traffic signal controlled T-junction is therefore also identified as the preferred option for the B430/HPLR junction (green route).

HPLR OxSRFI secondary access junction

5.4 The secondary access to OxSRFI is for the use of buses and cyclists and hence has a very low traffic flow. On this basis a simple priority junction is proposed.

Selected alignment

5.5 The resulting selected alignment of the MSRR and HPLR is shown at Figure 4. It can be seen that this closely follows the **MSRR upper central route** and **HPLR green** route.

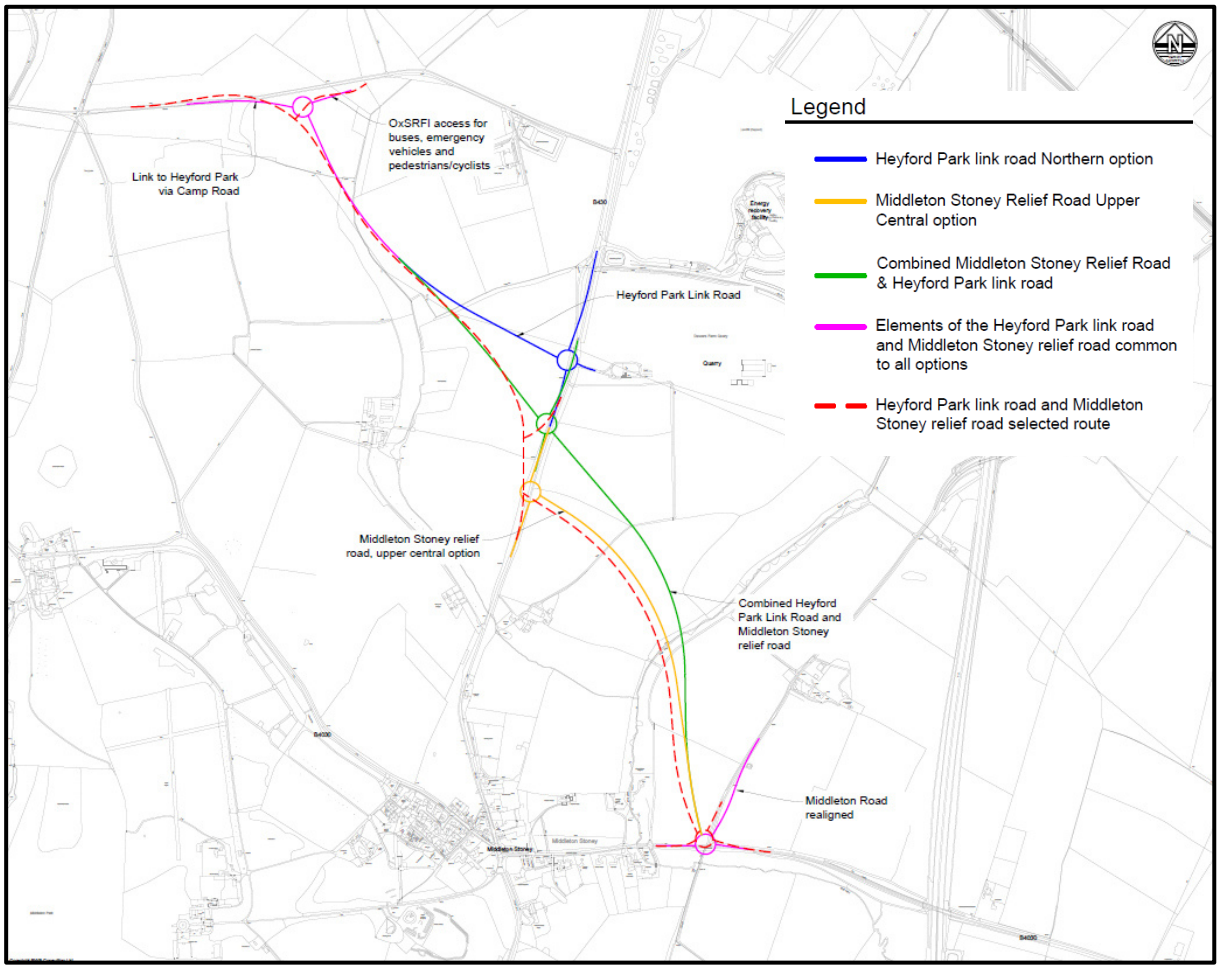

Figure 4: selected MSRR and HPLR alignment

Preliminary General Arrangement drawings

5.6 Preliminary general arrangement drawings of the selected **MSRR upper central route** and **HPLR green** route are included as part of the Junction Options report provided at **Appendix A**.

Appendix A Middleton Stoney Relief Road and Heyford Park Link Road junctions options report

OXFORDSHIRE RAILFREIGHT INTERCHANGE LIMITED

MIDDLETON STONEY RELIEF ROAD AND HEYFORD PARK LINK ROAD JUNCTIONS OPTIONS REPORT

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CONTENTS PAGE

1.0 INTRODUCTION 5

2.0 CASE FOR THE MSRR AND HPLR 6

Existing conditions 6
OxSRFI development 7
MSRR and HPLR route options 10

3.0 ASSESMENT SCENARIOS AND TRAFFIC FLOWS 13

Introduction 13
Assessment scenarios 13
2031 background traffic flows without bus gate (for DS1 and DS2) 13
OxSRFI development traffic 14
2031 DS1 traffic flows 15
2031 DS2 traffic flows 15
2031 background traffic flows with bus gate (for DS3) 15
2031 DS3 traffic flows 16

4.0 INITIAL JUNCTION OPTIONS 17

Introduction 17
Green route: four arm junction 17
Yellow route: MSRR upper central route (3-arm roundabout) 19
HPLR blue route: 4-arm roundabout 20
Summary 21

5.0 PROPOSED JUNCTION ARRANGEMENTS 22

Introduction 22
B430/Middleton Stoney Relief Road junction 22
B430/Hayford Park Link Road junction 24
B4030/Middleton Road/MSRR 4-arm roundabout 27
HPLR OxSRFI secondary access junction 28

6.0 SUMMARY AND CONCLUSIONS 29

TRAFFIC FLOW DIAGRAMS

Diagram 1 Total traffic 2031 DS1 AM peak hour
Diagram 2 Total traffic 2031 DS1 PM peak hour
Diagram 3 Total traffic 2031 DS1 AM peak hour (two junction layout)
Diagram 4 Total traffic 2031 DS1 PM peak hour (two junction layout)
Diagram 5 Total traffic 2031 DS2 AM peak hour
Diagram 6 Total traffic 2031 DS2 PM peak hour
Diagram 7 Total traffic 2031 DS2 AM peak hour (two junction layout)
Diagram 8 Total traffic 2031 DS2 PM peak hour (two junction layout)
Diagram 9 Total traffic 2031 DS3 AM peak hour
Diagram 10 Total traffic 2031 DS3 PM peak hour
Diagram 11 Total traffic 2031 DS3 AM peak hour (two junction layout)
Diagram 12 Total traffic 2031 DS3 PM peak hour (two junction layout)

DRAWINGS

BWB drawing OxSRFI-BWB-GEN-ZZ-SK-CH-SK025-S1-P02
BWB drawing OxSRFI-BWB-GEN-ZZ-SK-CH-SK026-S1-P01

BWB drawing OxSRFI-BWB-GEN-ZZ-SK-CH-SK023-S1-P03

APPENDICES

Appendix A	Traffic flow diagrams
Appendix B	Heyford Park distribution
Appendix C	Unequal Lane usage assessment (B430/MRSS/HPLR four arm roundabout)
Appendix D	ARCADY assessment (B430/MSRR/HPLR four arm roundabout)
Appendix E	ARCADY assessment (B430/MSRR three arm roundabout)
Appendix F	Unequal Lane usage assessment (B430/HPLR/Quarry four arm roundabout)
Appendix G	ARCADY assessment (B430/HPLR/Quarry four arm roundabout)
Appendix H	LingSig assessment (B430/MSRR three arm signal junction)
Appendix I	LingSig assessment (B430/HPLR three arm signal junction)
Appendix J	LingSig assessment (B430/MSRR and B430/HPLR network model)
Appendix K	ARCADY assessment (MSRR/B4030/Middleton Road four arm roundabout)

1.0 INTRODUCTION

1.1 ADC Infrastructure Ltd are appointed by Oxfordshire Railfreight Ltd (the Applicant) to assess the transport and infrastructure requirements of a Nationally Significant Infrastructure Project (NSIP), that being a proposed Strategic Rail Freight Interchange in Oxfordshire, to be known as Oxfordshire Strategic Rail Freight Interchange (OxSRFI).

1.2 Oxfordshire County Council (OCC) are the local highway authority and National Highways have responsibility for the strategic road network (SRN), which in the vicinity of the site comprises the M40, A43 and A34.

1.3 The embedded highway mitigation for the OxSRFI scheme includes the Middleton Stoney Relief Road (MSRR) and the Heyford Park Link Road (HPLR). Whilst environmental factors are of high importance when determining the preferred route option (as examined in the MSRR and HPLR Options Report), the form and capacity of the required junctions are also a key factor when deciding the optimum solution. This report has been prepared to provide the background and design development of the junction options considered for the MSRR and HPLR and it presents the preferred solution. The document is structured as follows:

- Section 2 sets out a summary of the case for the MSRR and HPLR.
- Section 3 sets out the traffic flow data and assessment scenarios used in the design development work.
- Section 4 details the initial junction options considered.
- Section 5 presents the proposed junction arrangements.
- Section 6 provides a summary and conclusions.

2.0 CASE FOR THE MSRR AND HPLR

Existing conditions

2.1 The OxSRFI site is in Cherwell District Council, Oxfordshire. The site is located to the southwest of M40 Junction 10, approximately 6km from Bicester.

2.2 The site is bounded to the north by the Chiltern Main Line Railway, to the east by the B430 and the Viridor 'Ardley Energy from Waste' facility, to the south by farmland, and to the west by the Heyford Park development[1], which is located on the former RAF Upper Heyford site. The village of Ardley is approximately 1km to the north of the site and the village of Middleton Stoney is approximately 2km to the south of the site. **Figure 1** shows the site location.

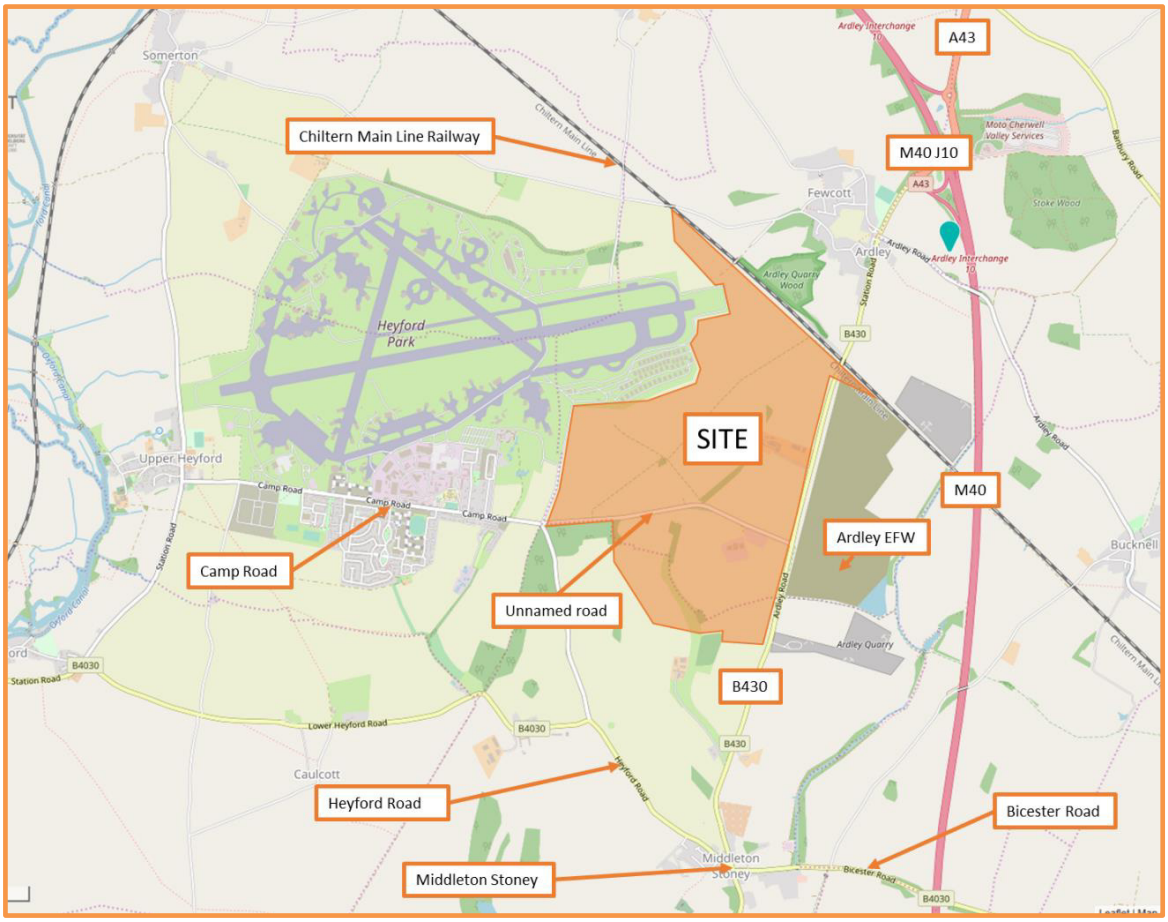


Figure 1: site location

2.3 The closest point of access to the Strategic Road Network from the main site is at M40 Junction 10, approximately 1.6km to the north when accessed via the B430. Although less direct, access to the M40 is also possible via M40 Junction 9, which is a 10.5km drive to the south of the site, when accessed via the B430, passing through the village of Middleton Stoney.

2.4 As shown in **Figure 1**, an unnamed road passes through the main site area. It connects the B430 to Camp Road. Camp Road continues west towards Upper Heyford and provides access to the Heyford Park development.

[1] Planning reference number 18/00825/HYBRID

2.5 To the south of the site the B430 runs north-south through the centre of Middleton Stoney, forming a staggered traffic signal-controlled crossroads with the B4030 Heyford Road.

OxSRFI development

2.6 The proposed OxSRFI would deliver B8 warehousing up to a maximum floor space of 6.5 million sqft (603,850 sqm), with up to one third (201,283 sqm) of additional mezzanine floor space use, with capacity to accommodate 12 freight trains per day. The development would be accessed via a new roundabout on the B430 located south of the Chiltern Mainline railway line. The development would also deliver a bypass of Ardley village as part of the embedded mitigation package, originating at the site access roundabout and routing around the east of the village, connecting with the M40 Junction 10, which would be significantly improved as part of the embedded highway mitigation package of works.

HPLR

2.7 The unnamed road passes through the main site area, connecting the B430 to Camp Road and providing access to Heyford Park and Upper Heyford. It is not desirable for the OxSRFI development to retain this route for through-traffic and hence a new Heyford Park Link Road (HPLR) is proposed, connecting Camp Road and the B430 south of the development site. This would form part of the embedded mitigation.

Middleton Stoney

2.8 The Transport Assessment for the Heyford Park development area identified that the B430/B4030 signal controlled crossroads junction in Middleton Stoney would suffer from severe congestion in the 2031 'Reference Case' (no Heyford Park development). As is explained in the MSRR and HPLR Options Report, the assessment work undertaken to support the Heyford Park development concludes that highway impacts at the B30/B4030 junction in Middleton Stoney would be severe with the Heyford Park development in place, unless other highway mitigation measures are also implemented.

2.9 The Heyford Park planning application therefore proposed a 'Middleton Stoney Mitigation Package', that would comprise the following measures:

- A bus gate on the B4030 to the west of the village, including a change in priority at the junction of the B4030 with the unnamed road running north to Camp Road.
- The introduction of more frequent 15-minute bus services between the Heyford Park development and Bicester via Middleton Stoney during weekdays.
- The introduction of a cycle route between Heyford Park and Middleton Stoney.
- A weight restriction on the B4030 to the east of Middleton Stoney to reduce the number of HGVs passing through the village.
- The preparation of a full Travel Plan setting out measures aimed at reducing journeys by the private car, especially between Heyford Park and Bicester.

2.10 The Heyford Park scheme received a resolution to grant planning permission subject to the S106 Agreement at the 5 November 2020 Planning Committee meeting. Nevertheless, due to the strength of feeling against the bus gate it was agreed that rather than implement the Middleton Stoney Mitigation Package of improvement works, a 'monitor and manage' option will be implemented.

2.11 The Heyford Park developer will provide a financial contribution equivalent to the cost of the proposed Middleton Stoney Mitigation Package and including an additional sum for traffic monitoring. This traffic monitoring will then be carried out by Oxfordshire County Council in the

intervening period before the need for a bus gate is required. This period is likely to be several years dependent on the rate of development at Heyford Park. In this way, the monies are available to deliver the Middleton Stoney Mitigation Package, if it is still shown as necessary, or an alternative solution of equivalent benefit (termed 'the Revised Middleton Stoney Mitigation Package') can then be delivered by Oxfordshire County Council within the amount of the financial contribution as specified.

2.12 It is clear from the above that the means of dealing with the Heyford Park traffic impact through Middleton Stoney are not yet fully resolved and that the existing constraints would make it difficult to cater for further traffic impacts associated with the proposed OxSRFI development.

2.13 The proposed OxSRFI could further increase traffic demand through the village and hence an initial assessment of that increased demand was undertaken.

OxSRFI trip generation

2.14 The OxSRFI development vehicle trip generation calculations are contained within Technical Note 3 'Trip Generation'[2] and presented below for ease of reference.

total development peak hour vehicle trips									
period	light vehicles			heavy vehicles			total vehicles		
	arrive	depart	2-way	arrive	depart	2-way	arrive	depart	2-way
AM peak	903	97	1,000	172	159	331	1,075	256	1,331
PM peak	298	1,038	1,336	157	143	300	455	1,181	1,636

Trip distribution – light vehicle trips

2.15 The Bicester Transport Model (BTM) will be used to examine the transport impacts of the proposed OxSRFI scheme. However, at this stage the outputs from the BTM are not available. Therefore, to inform the ongoing assessment work the light vehicle distribution has been assessed based on the 2011 National Census 'location of usual residence and place of work' journey to work data, as described in Technical Note 1 'New M40 Junction'[3]. The schematic shown at **Figure 2** shows the resultant trip distribution pattern for the light vehicle trips.

[2] OxSRFI-ADC1794-RP-J-V3 – Technical Note 3: Trip Generation
[3] OxSRFI-ADC1794-RP-G-V3 – Technical Note 1: New M40 Junction

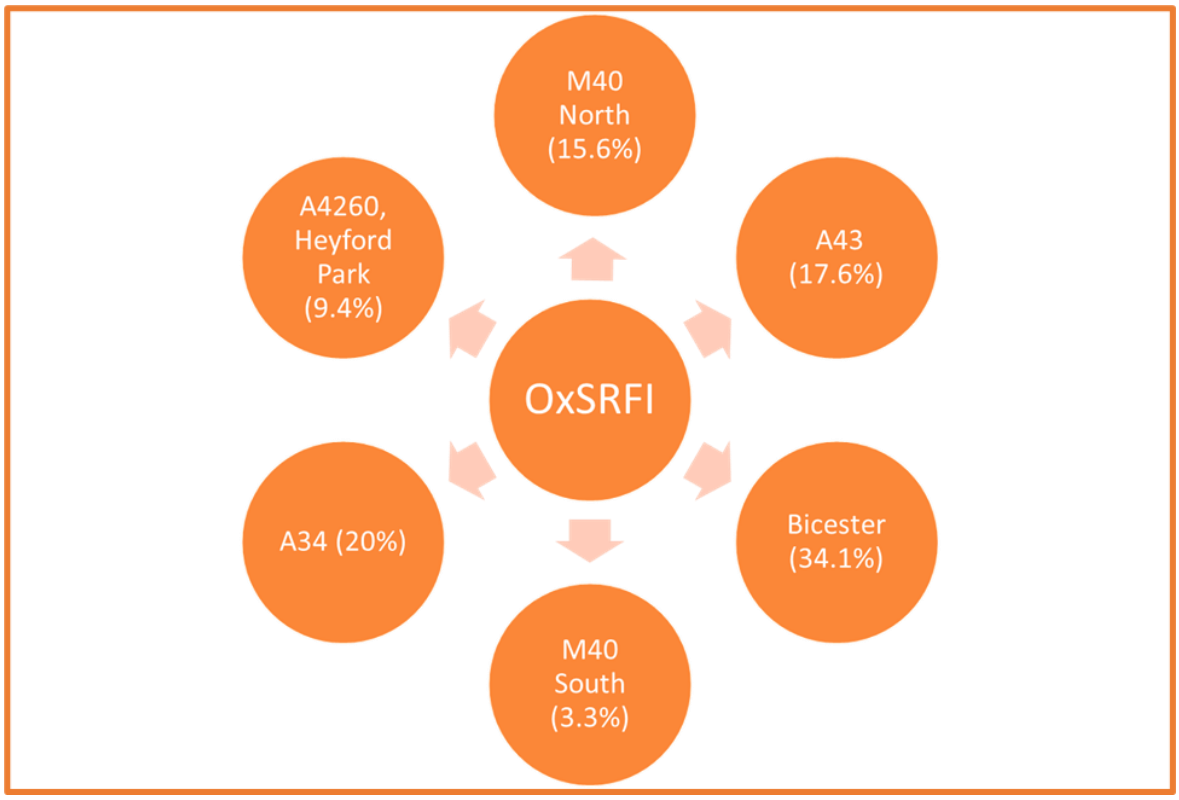


Figure 2: schematic representing the employee (light vehicle) distribution pattern

2.16 The distribution pattern shows that 34.1% of development light vehicle trips would be to/from Bicester with the most likely route being via the B430 and B4030 Bicester Road through the centre of Middleton Stoney. The distribution pattern also shows that 20% of development light vehicle trips would be to/from the A34, with the most likely route being via the B430 through the centre of Middleton Stoney.

2.17 The light vehicle trip distribution will be confirmed via the BTM transport modelling. However, at this stage, the Census assessment serves to indicate the likley magnitude of the additional demand travelling through the B430/B4030 junction. Based on the Census assessment, up to 54.1% of development light vehicle traffic could route through Middleton Stoney. This would equate to 541 two-way vehicles in the morning peak hour (341 vehicles traveling to/from Bicester, 200 vehicles travelling to/from the A34) and 723 vehicles in the evening peak hour (456 vehicles traveling to/from Bicester, 267 vehicles travelling to/from the A34).

Trip distribution – HGV trips

2.18 It has been agreed with OCC that the OxSRFI development would be subject to a HGV routing strategy to restrict HGVs from travelling to and from the south of the site on the B430. This is consistent with the routing agreement that is in place for the adjacent Ardley EFW facility, which requires all HGV traffic to access Junction 10 of the M40 via the B430 to the north.

2.19 The HGV routing strategy would be enforced through a combination of a physical restriction to prevent HGVs exiting the site from being able to travel south on the B430, paired with an enforcement methodology, likely to be based on Automatic Number Plate Recognition (ANPR) cameras. Therefore, HGV traffic associated with the OxSRFI development would not travel to and from the south of the site on the B430.

Summary

2.20 The proposed OxSRFI could significantly increase traffic demand in Middleton Stoney, with the largest increase being between the B430 north of the village and the B4030 Bicester Road to the east. Based on the work undertaken to support the Heyford Park development, it is recognised that further improvements at the junction would not be feasible without impacting properties within the village, nor would such traffic increases through the village be desirable for environmental reasons such as the impact on noise, air quality and amenity.

2.21 Therefore, given the identified congestion issues within Middleton Stoney and the significant demand likely to be induced by the proposed OxSRFI development, a Middleton Stoney relief road (MSRR) is proposed, to improve traffic conditions within the village and improve journey time reliability for employees accessing the OxSRFI from the south. The MSRR would be provided around the northeast quadrate of the village, connecting the B430 and the B4030 (east).

2.22 It is proposed that this could work in combination with a bus gate on the B4030 (west) of the village, as proposed as part of the Heyford Park 'Middleton Stoney Mitigation Package', to be delivered either as planned as part of the Heyford Park development, or potentially as part of the OxSRFI package of measures.

2.23 It is expected that these measures would lead to a significant reduction in the east-west (and vice versa) traffic flows through the village, which would more than off-set the additional north-south (and vice versa) traffic flows on the B430 that would be associated with the OxSRFI development.

2.24 To complement the MSRR, a 7.5T environmental weight restriction would be proposed on the eastern side of Middleton Stoney, between the MSRR and the exiting B430.

MSRR and HPLR route options

2.25 As identified above, the HLRP section of the route would run between Camp Road and the B430, replacing the unnamed road that runs through the OxSRFI development site. The MSRR section of the route would run between the B430 and the B4030, bypassing Middleton Stoney to the northeast. Specific route options for the MSRR and HPLR have been considered against the criteria of minimising the overall distance of the route, minimising any likely environmental impacts, avoiding existing properties and complying with the geometrical requirements of the Design Manual for Roads and Bridges (DMRB).

2.26 The MSRR and HPLR Option Report presents the technical and environmental examinations that have been undertaken to assess the route options. As detailed in the MSRR and HPLR Option Report, two potential routes for the HPLR section and three potential routes for the MSRR section were initially identified, as shown on **Figure 3** below.

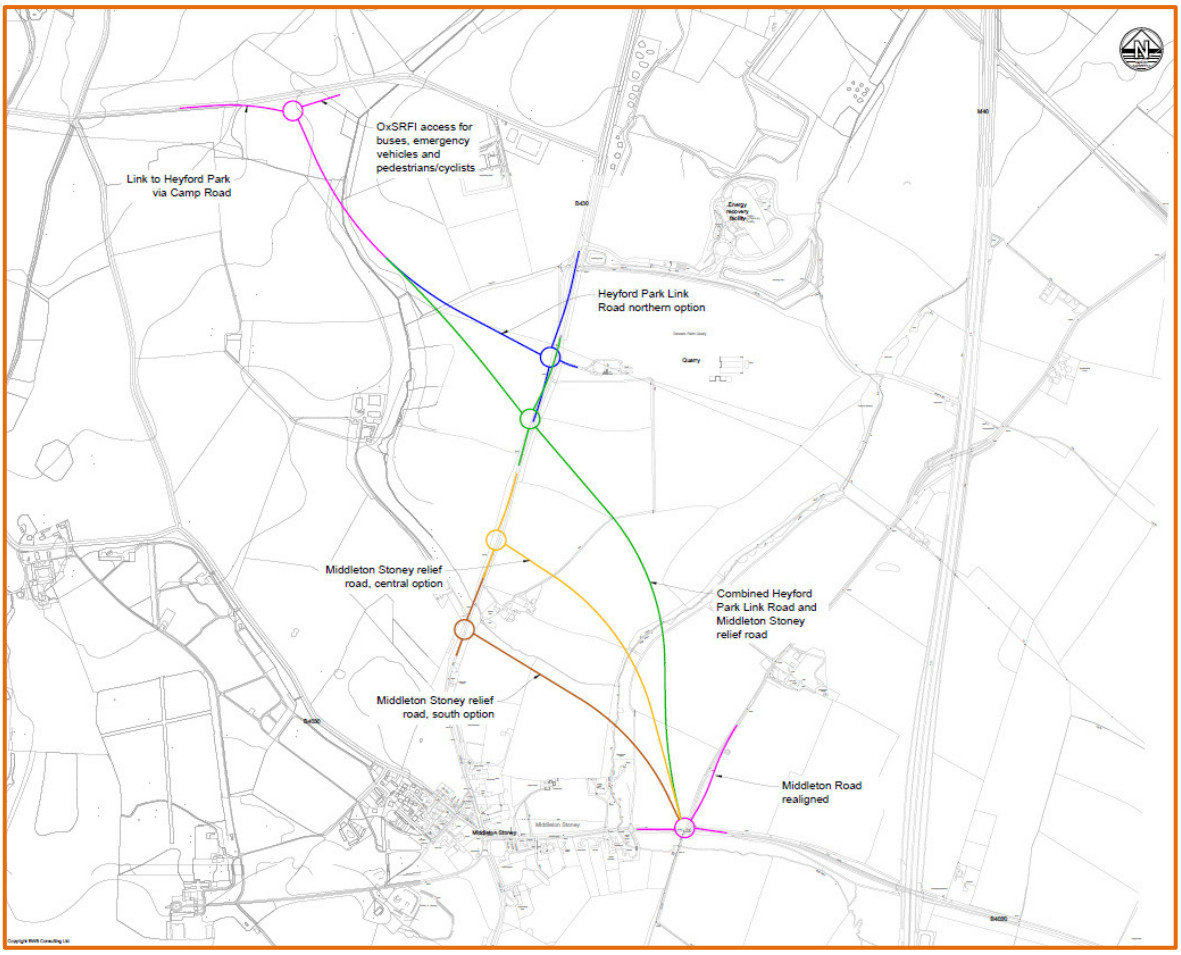


Figure 3: initial HPLR and MSRR routing options

2.27 The technical and environmental assessment carried out and summarised in the MSRR and HPLR Options Report identified a preference for a northerly MSRR option that is furthest away from sensitive receptors. Therefore, the southern and central MSRR routes were rejected from future consideration due to their closer proximity to sensitive receptors for air quality, noise, lighting and visual impacts.

2.28 There was a preference for the northern (green) MSRR route, however this option must be considered further in light of its constraints which includes a direct impact on the Ardley Trackways SSSI and the Dewars Farm Quarry site which has permission to quarry the same land.

2.29 Accordingly, an additional MSRR option, known as the upper central route, was drawn up and is shown in **Figure 4**. This route is a southward adjustment of the northern (green) route and retains the benefits of a northerly option by being further away from sensitive receptors but avoids issues associated with the Ardley Trackways SSSI and Dewars Farm Quarry land.

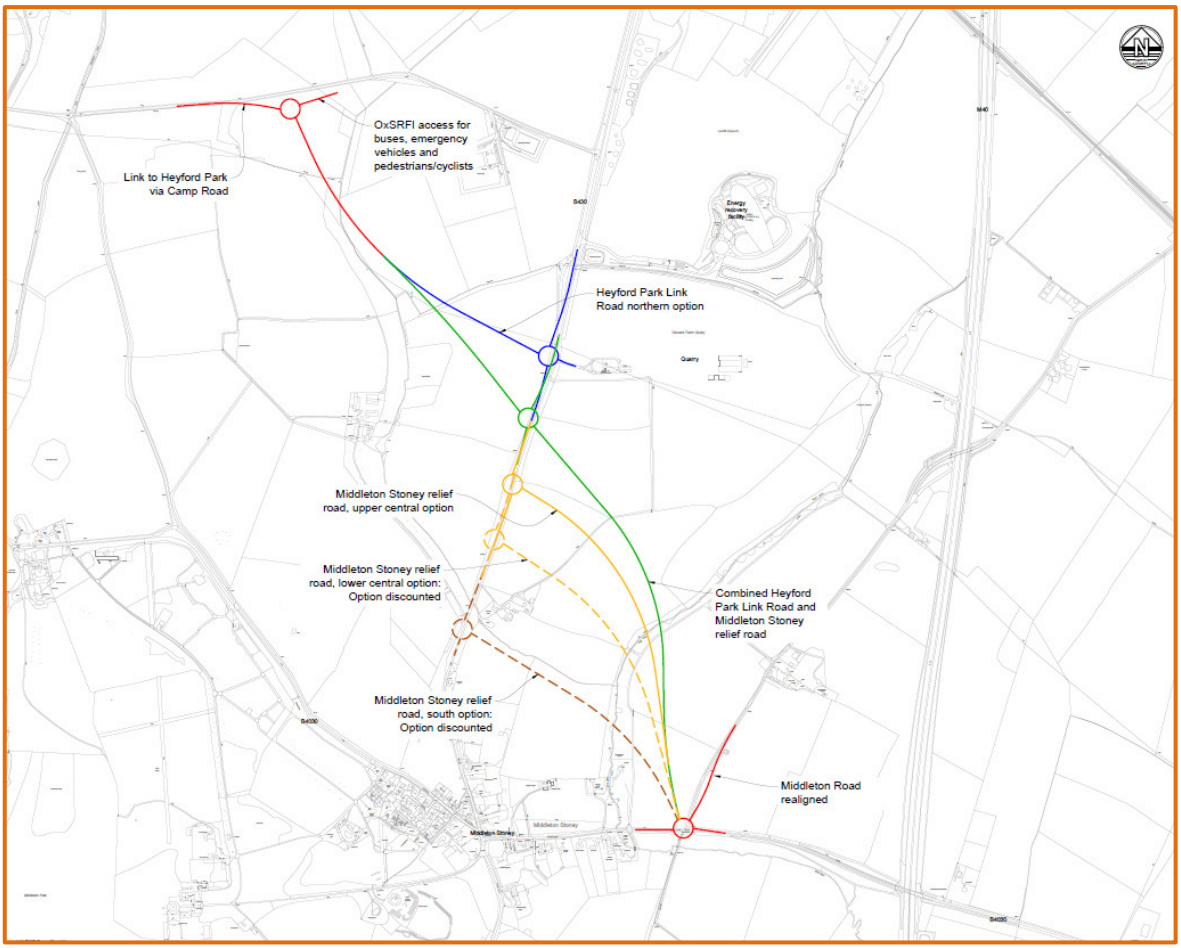


Figure 4: HPLR and MSRR routing options taken forward for detailed junction modelling

2.30 Whilst environmental factors are of high importance when determining the preferred route option, the form and capacity of the required junction is also a key factor when deciding the optimum solution. Hence, the remainder of this technical note presents the junction option testing that has been undertaken to consider the alignment options presented in **Figure 4**.

3.0 ASSESMENT SCENARIOS AND TRAFFIC FLOWS

Introduction

3.1 The effect of the proposed MSRR and HPLR on driver route choice will be examined as part of the transport modelling to be undertaken using the BTM. However, to inform the options appraisal and preliminary design work for these elements of the embedded highway mitigation, initial traffic flow groups have been derived based on traffic flow data available from the transport work undertaken to support the Heyford Park development.

3.2 It is anticipated that the MSRR and HPLR will provide the preferred route for drivers travelling between Bicester and the Heyford Park development, and surrounding areas, and would lead to traffic using this new route instead of the B4030 to the west of Middleton Stoney.

3.3 As part of the highway mitigation works associated with the Heyford Park development, a bus gate is proposed on the B4030 to the west on Middleton Stoney. The bus gate would prevent motorised traffic (other than buses) from using the section of the B4030 to the west of Middleton Stoney, and hence with the bus gate in place, background traffic reassigns from the B4030 to use the unnamed road and the B430.

3.4 To consider the above factors three scenarios have been considered in this junction options report. These are described below.

Assessment scenarios

3.5 The following assessment scenarios are considered. All three scenarios include the proposed MSRR and HPLR:

- **2031 DS1** = No Heyford Park bus gate and it is assumed no Heyford Park traffic reassigns to use the HPLR or MSRR but continues to use the B4030 as per the Heyford Park traffic assignment extracted from the TA undertaken to support that scheme.
- **2031 DS2** = No Heyford Park bus gate but it is assumed that Heyford Park traffic travelling to and from the B4030 to the east of Middleton Stoney or the B430 south of Middleton Stoney, would reassign to use the HPLR and/or MSRR.
- **2031 DS3** = With the bus gate on the B4030 to the west of Middleton Stoney in place, and therefore Heyford Park traffic and background traffic travelling to and from the B4030 to the east of Middleton Stoney or the B430 south of Middleton Stoney, would reassign to use the HPLR and/or MSRR.

3.6 The form and efficiency of the junction(s) connecting the HPRL, the MSRR and the B430 will influence the traffic flow assignment. Therefore, two sets of traffic flows have been calculated for the three 2031 DS scenarios above:

- single B430 junction flow set (green route for MSRR and HPLR).
- two B430 junction flow set (yellow route for MSRR with either green or blue route for HPLR).

2031 background traffic flows without bus gate (for DS1 and DS2)

3.7 Reference has been made to the Heyford Park TA[4] to obtain background traffic flows for the 2031 DS1 scenario.

[4] Figures 9.2b and 9.3b from Heyford Park Transport Assessment, April 2018, PBA

3.8 The 2031 with development 'Sensitivity Test Case' morning and evening peak hour traffic flows at the B430/B4030 crossroads within Middleton Stoney and at the B430/unnamed road junction have been extracted from Figures 9.2b and 9.3b of the Heyford Park TA Heyford Park traffic flow scenarios:

- 2031 Sensitivity Test Case traffic flows include:
  - consented Heyford Park development
  - committed Local Plan / third party development sites
  - the full Heyford Park allocation (1,600 units, 1,500 jobs).

3.9 The extracted base traffic flows (in PCUs) are provided at **Appendix A** at Diagrams A1 and A2 for the morning and evening peak hour periods.

3.10 These same flows are shown at Diagrams A3 and A4 but with the proposed MSRR and HPLR in place for the single junction layout, and at Diagrams A5 and A6 for the two B430 junction layout. In addition, nominal traffic flows of 25 PCUs per movements have been added to represent traffic travelling to and from Middleton Road and the B4030 east and west, and the MSRR. For the two B439 junction layout traffic flows movements have been added at the B430/HLPR junction to represent traffic travelling to and from Dewers Quarry, based on information provided by the Quarry.

3.11 With the MSRR in place, it is reasonable to assume that drivers travelling between the B430 Ardley Road and the B4030 Bicester Road and vice versa (movements A to B and B to C at the B430/B4030 junction in Diagrams A3 to A6) would reassign to use the MSRR. Hence, this traffic would reassigned, as shown in Diagrams A7 and A8 for the single junction layout and at Diagrams A9 and A10 for the two B430 junction layout.

3.12 The resultant 2031 background traffic flows with the proposed MSRR and HPLR in place were calculated for the single B430 junction layout by adding Diagrams A3 and A7 for the morning peak hour and Diagrams A4 and A8 for the evening peak hour. For the two B430 junction layout, the 2031 background traffic flows with the proposed MSRR and HPLR in place were calculated by adding Diagrams A5 and A9 for the morning peak hour and Diagrams A6 and A10 for the evening peak hour. The resultant morning and evening peak hour background traffic flows are given at Diagrams A11 and A12 for the single B430 junction layout, and at Diagrams A13 and A14 for the two B430 junction layout.

OxSRFI development traffic

3.13 To produce the 2031 DS1 traffic flows for use in the assessment work, the OxSRFI development traffic described at paragraph 2.14 has been assigned to the highway network using the indicative distribution presented at **Figure 2**. Only the light vehicle trips are assigned, as a HGV routing strategy would prevent HGV traffic from access the B430 to the south of the site.

3.14 The resultant OxSRFI development traffic is shown at Diagrams A15 and A16 for the morning and evening peak hour periods for the single B430 flow set, and at Diagrams A17 and A18 for the two B430 junction flow set.

3.15 Note that the actual distribution and assignment of the OxSRFI development traffic will be undertaken using the Bicester Transport Model.

2031 DS1 traffic flows

3.16 To derive the traffic flows for the 2031 DS1 scenario for the single B430 junction layout, the OxSRFI development traffic flows at Diagrams A15 and A16 were added to the 2031 background traffic flows at Diagrams A11 and A12 for the morning and evening peak hours, respectively.

3.17 The resultant 2031 DS1 total traffic flows for the single junction arrangement are given at **Diagrams 1 and 2** for the morning and evening peak hours.

3.18 To derive the traffic flows for the 2031 DS1 scenario for the two B430 junction layout, the OxSRFI development traffic flows at Diagrams A17 and A18 were added to the 2031 background traffic flows at Diagrams A13 and A14 for the morning and evening peak hours, respectively.

3.19 The resultant 2031 DS1 scenario for the two B430 junction arrangement are given at **Diagrams 3 and 4** for the morning and evening peak hours.

2031 DS2 traffic flows

3.20 In the DS2 scenario it is assumed that the Heyford Park traffic:

- travelling to and from the B4030 to the east of Middleton Stoney would reassign to use the HPLR and the MSRR.
- travelling to and from the B430 to the south of Middleton Stoney would reassign to use the HPLR and the B430.

3.21 Therefore, the Heyford Park trip distribution was extracted from Figures 6.3 and 6.4 of the Heyford Park TA, along with the Heyford Park vehicle trip generation and the resultant Heyford Park vehicle traffic assignment associated with the above routes determined (**Appendix B**).

3.22 The resultant Heyford Park traffic reassignment is shown at Diagrams A19 and A20 for the morning and evening peak hour periods for the single B430 junction arrangement, and at Diagrams A21 and A22 for the two B430 junction arrangement.

3.23 To derive the traffic flows for the 2031 DS2 scenario for the single B430 junction arrangement, the reassigned Heyford Park traffic flows at Diagrams A19 and A20, the OxSRFI development traffic at Diagrams A15 and A16, and the 2031 background traffic flows shown at Diagrams A11 and A12 were added together for the morning and evening peak hours, respectively.

3.24 The resultant 2031 DS2 total traffic flows for the signal B430 junction arrangement are given at **Diagrams 5 and 6** for the morning and evening peak hours.

3.25 To derive the traffic flows for the 2031 DS2 scenario for the two B430 junction arrangement, the reassigned Heyford Park traffic flows at Diagrams A21 and A22, the OxSRFI development traffic at Diagrams A17 and A18, and the 2031 background traffic flows shown at Diagrams A13 and A14 were added together for the morning and evening peak hours, respectively.

3.26 The resultant 2031 DS2 total traffic flows for the two B430 junction arrangement are given at **Diagrams 7 and 8** for the morning and evening peak hours.

2031 background traffic flows with bus gate (for DS3)

3.27 The DS3 scenario includes the bus gate on the B4030 to the west of Middleton Stoney. With the bus gate in place, Heyford Park traffic and background traffic would no longer be able to use this route and would need to use an alternative. This was examined as part of the work undertaken

by Heyford Park in their Transport Assessment Addendum[5]. That work examined the impact of the bus gate on the local traffic flows using the Bicester Transport Model. It included a Do Something 1 (DS1) scenario, which modelled the traffic flows in 2031 with the Heyford Park allocation in place along with the proposed Heyford Park highway mitigation, including the proposed bus gate on the B4030 to the west of Middleton Stoney.

3.28 The Heyford Park DS1 scenario therefore provides the base traffic flows for the OxSRFI 2031 DS3 assessment. The relevant traffic flows have therefore been extracted from the Heyford Park Transport Assessment Addendum[6]. The 2031 base flows (with the bus gate in place) are shown at Diagrams A23 and A24.

3.29 These same flows are shown at Diagrams A25 and A26 but with the proposed MSRR and HPLR in place for the single B430 junction layout, and at Diagrams A27 and A28 for the two B430 junction layout. In addition, nominal traffic flows of 25 PCUs per movements have been added to represent traffic travelling to and from Middleton Road and the B4030 east and west, and the MSRR. For the two B439 junction layout traffic flows movements have been added at the B430/HLPR junction to represent traffic travelling to and from Dewers Quarry, based on information provided by the Quarry.

3.30 With the MSRR in place, it is reasonable to assume that drivers travelling between the B430 Ardley Road and the B4030 Bicester Road and vice versa (movements A to B and B to C at the B430/B4030 junction in Diagrams A25 and A28) would reassign to use the MSRR. Hence, this traffic was reassigned, as shown in Diagrams A29 and A30 for the single B430 junction layout, and in Diagrams A31 and A32 for the two B430 junction layout.

3.31 The resultant 2031 background traffic flows with the proposed MSRR and HPLR in place was calculated by adding Diagrams A25 and A29 for the morning peak hour and Diagrams A26 and A30 for the evening peak hour, for the single B430 junction flow sets. The resultant background traffic flows with the bus gate on the B4030 to the west of Middleton Stoney place are given at Diagrams A33 and A34 for the morning and evening peak hours, for the single B430 junction flow set.

3.32 The resultant 2031 background traffic flows with the proposed MSRR and HPLR in place for the two B430 junction flow set was calculated by adding Diagrams A27 and A31 for the morning peak hour and Diagrams A28 and A32 for the evening peak hour. The resultant background traffic flows with the bus gate on the B4030 to the west of Middleton Stoney place are given at Diagrams A35 and A36 for the morning and evening peak hours, for the two B430 junction flow set.

2031 DS3 traffic flows

3.33 To derive the traffic flows for the 2031 DS3 scenario, the OxSRFI development traffic were added to the 2031 background traffic flows with the bus gate, for the morning and evening peak hours, respectively.

3.34 The resultant 2031 DS3 total traffic flows for the signal B430 junction arrangement are given at **Diagrams 9 and 10** for the morning and evening peak hours. The resultant 2031 DS3 total traffic flows for the two B430 junction arrangement are given at **Diagrams 11 and 12** for the morning and evening peak hours.

[5] Heyford Park Transport Assessment Addendum Revision 1, 10 March 2020, Stantec (formerly PBA)
[6] Extracted from LinSig models provided at part of Technical Note 024 RevD, Appendix E of Heyford Park Transport Assessment Addendum Revision 1, 10 March 2020, Stantec

4.0 INITIAL JUNCTION OPTIONS

Introduction

4.1 In this section of the technical note, the initial junction options associated with the following HPLR and MSRR route alignments shown in **Figure 4** are considered:

- the green route, with a single junction linking the B430 with the HPLR and MSRR sections.
- the MSRR upper central route (yellow route).
- the HPLR northern route (blue route).

Green route: four-arm junction

4.2 The green route shown at **Figure 4** was identified in the MSRR and HPLR Option Report to be the preferred route, with a single junction linking the B430 with the HPLR and MSRR sections. To consider whether a 4-arm roundabout would have sufficient capacity to achieve the strategic aims of the HPLR and MSRR, option testing was undertaken using a junction model developed in the ARCADY module of Junctions 9.

4.3 The theoretical roundabout would have an inscribed circle diameter (ICD) of 60 metres. The B430 southbound, B430 northbound and the HPLR and MSRR approaches to the roundabout would flare to two lanes, and there are two circulating lanes. All exits are also two-lane, merging back to single lane after the junction. Generous assumptions for entry geometry have been made.

4.4 When modelling the roundabout, inspection of the traffic flows showed that there would be a degree of unequal lane usage on the HPLR and MSRR approaches to the roundabout in every flow group scenario. There would also be unequal lane usage on both B430 approaches (B430 north - PM for DS1/DS2, AM and PM for DS3. B430 south - AM and PM for DS3). It would not be reasonably possible to design this out and hence, intercept corrections have been calculated using the Barbara Chard methodology and applied to the ARCADY model, as shown in **Appendix C**.

4.5 The operation of the roundabout was modelled using the morning and evening total traffic flows for the '2031 DS1' (**Diagrams 1 and 2**), '2031 DS2' (**Diagrams 5 and 6**) and '2031 DS3' (**Diagrams 9 and 10**) scenarios described in Section 3. A summary of the ARCADY results is shown below, with the full results provided at **Appendix D**.

arm	morning peak hour			evening peak hour		
	queue	delay	RFC	queue	delay	RFC
2031 DS1						
B430 (south)	0.6	4.50	37%	0.6	4.06	39%
HPLR	33.4	151.79	106%	5.9	33.36	87%
B430 (north)	3.1	7.03	76%	3.4	7.95	78%
MSRR	43.6	309.53	120%	0.6	9.42	37%
2031 DS2						
B430 (south)	0.8	5.48	45%	0.9	4.72	46%
HPLR	11.9	45.91	95%	3.5	15.56	79%
B430 (north)	4.2	9.51	81%	4.2	10.00	81%
MSRR	22.8	144.25	105%	0.5	5.81	32%
2031 DS3						
B430 (south)	1.6	8.99	62%	1.8	8.38	65%
HPLR	3.5	13.12	78%	2.1	9.15	69%
B430 (north)	2.2	6.61	69%	19.1	47.91	97%
MSRR	4.4	18.47	82%	1.3	7.73	57%

4.6 The table above shows that in the '2031 DS1' scenario, the single roundabout option for the green route would operate significantly over capacity on the morning peak hour, with the HPLR and MSRR approaches suffering congestion. Whilst the roundabout would operate within 100% of capacity in the '2031 DS1' scenario in the evening peak hour, the HPLR approach would begin to suffer congestion with over 33 seconds delay per vehicle.

4.7 In the '2031 DS2' scenario, Heyford Park traffic is modelled as reassigning to use the HPLR and MSRR. This has the effect of better balancing the traffic flows at the roundabout. Therefore, despite the increase in traffic using the junction a roundabout junction would perform better than in the '2031 DS1' scenario. Nevertheless, in similarity to the '2031 DS1' scenario, the above results table shows that in '2031 DS2' scenario the single roundabout option for the green route would also operate significantly over capacity on the morning peak hour, with the MSRR approach suffering congestion and the HPLR approach operating close to 100% of its capacity and with delay of over 45 seconds per vehicle. The roundabout would operate satisfactorily in the '2031 DS2' scenario in the evening peak hour.

4.8 In the '2031 DS3' scenario, the table above shows that in the morning peak hour the roundabout would operate within capacity. In the '2031 DS3' evening peak hour the above table shows that the single roundabout option for the green route would operate within 100% of its capacity, though the B430 (north) approach would suffer congestion, with a ratio of flow to capacity of 97% and with over 48 seconds delay per vehicle.

4.9 Based on this assessment it was concluded that a single 4-arm roundabout junction to link the HPLR and the MSRR on the 'green route' would not provide an optimum solution.

4.10 When considering the results of the 4-arm roundabout modelling, it is evident that the capacity constraints in the '2031 DS1' and '2031 DS2' scenarios are largely caused due to the unevenness of the traffic flows across the junction. In both the '2031 DS1' and '2031 DS2'scenarios, the majority of vehicle movements are to/from the HPLR and the MSRR are to/from the B430 (north).

4.11 In the '2031 DS3' scenario, the turning movements on the HPLR and MSRR approaches are more evenly balanced, though traffic volumes increase, especially in the evening peak hour due to the reassignment effects of the HPLR/MSRR routes and the B4030 bus gate, causing congestion on the B430 (north) approach.

4.12 The very large right-turn and left-turn movements in the '2031 DS1' and '2031 DS2' scenarios result in large circulating flows that are difficult to design for at a 4-arm roundabout as they result in multiple large conflicts. Equally, these movements would be difficult to design for at a traffic signal controlled crossroads, requiring multiple right-turn lanes on the MSRR and B430 (north) approaches and multiple left-turn lanes on the HPLR approach.

4.13 The large traffic volumes associated with the '2031 DS3' scenario would also be problematic for a traffic signal controlled crossroads. Such a junction would likely require a very large footprint and require a minimum of four stages, making it inefficient. The large flow on the B430 (north) approach in the '2031 DS3' evening peak hour would likely result in queuing blocking back beyond the existing quarry access.

4.14 Further, due to the large flow on the B430 (north) approach in the '2031 DS3' scenario, the large number of entry and exit lanes, plus the splitter islands required would make it difficult to tie back in to the existing B430 carriageway before the existing quarry access junction to the north.

4.15 Hence, the modelling results presented above demonstrate that a single 4-arm roundabout would not deliver suitable capacity to accommodate both the HPLR and MSRR at a single junction. The underlying issues which cause congestion for the 4-arm roundabout option would also cause capacity issues for a traffic signal controlled crossroads.

Yellow route: MSRR upper central route (three-arm roundabout)

4.16 The theoretical three-arm roundabout would have an inscribed circle diameter (ICD) of 60 metres. The B430 southbound, B430 northbound and the MSRR approaches to the roundabout would flare to two lanes, and there are two circulating lanes and all three exits would have two lanes.

4.17 The operation of the roundabout was modelled using the morning and evening peak hour traffic flows for the '2031 DS1' (**Diagrams 3 and 4**), '2031 DS2' (**Diagrams 7 and 8**) and '2031 DS3' (**Diagrams 11 and 12**) scenarios described in Section 3. A summary of the ARCADY results are shown below, with the full results provided at **Appendix E**.

	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
	Proposed Layout - DS1					
Arm 1	0.7	2.89	0.42	0.9	3.12	0.46
Arm 2	0.4	3.08	0.28	0.1	2.35	0.13
Arm 3	0.4	3.07	0.29	0.5	2.91	0.32
	Proposed Layout - DS2					
Arm 1	1.0	3.30	0.49	1.1	3.57	0.53
Arm 2	0.5	3.45	0.34	0.2	2.53	0.17
Arm 3	0.6	3.61	0.38	0.6	3.25	0.37
	Proposed Layout - DS3					
Arm 1	1.9	4.86	0.66	2.7	6.22	0.73
Arm 2	1.5	6.06	0.60	0.6	3.49	0.38
Arm 3	0.9	4.92	0.47	1.0	4.68	0.50

Arm 1 = B430 (north), Arm 2 = MSRR, Arm 3 = B430 (south)

4.18 The modelling demonstrates that in all '2031 DS' scenarios, the roundabout is forecast to operate acceptably in both the morning and evening peak hours, with a ratio of flow to capacity below 85% for all movements.

4.19 Notwithstanding the above, when the traffic flows are interrogated, it becomes clear that a roundabout may not be the most efficient junction form at this location. In all three traffic flow scenarios, there would be no (or very small) right-turn movement between the B430 (south) and the MSRR. There would also be no (or very small) left-turn flow between the MSRR and the B430 (south). This is because drivers would not travel north along the MSRR only to turn back south (and vice versa with the B430).

4.20 The traffic flows could be efficiently accommodated by a simple two stage traffic signal controlled T-junction. Such an arrangement would prioritise the biggest flows and would result in a much smaller footprint. The left-turn from the B430 (north) to the MSRR could be provided

via a segregated left-turn lane and would therefore be free-flow, enhancing its attractiveness as a bypass of Middleton Stoney. The T-junction option could also allow pedestrians and cyclist movements to be catered for though provision of Toucan crossing facilities.

4.21 Hence, a traffic signal-controlled T-junction was identified as the preferred option for the B430/MSRR junction and this is discussed in detail in Section 5.

HPLR blue route: four-arm roundabout

4.22 The location and form of the Dewars Farm Quarry access junction is a material concern for the location and form of the HPLR connection to the B430. Therefore, under a two junction option, the HPLR junction was firstly considered as a four-arm roundabout incorporating the existing quarry access (this is the northern blue route in **Figure 4**), and option testing has been undertaken using a junction model developed in the ARCADY module of Junctions 9.

4.23 The theoretical roundabout would have an inscribed circle diameter (ICD) of 60 metres. The B430 southbound, B430 northbound and the HPLR approaches to the roundabout would flare to two lanes, and there are two circulating lanes and all three exits would have two lanes. The quarry access would have single lane entry and exit. Generous assumptions for entry geometry have been made.

4.24 When modelling the roundabout it was identified that there would be a degree of unequal lane usage on the HPLR and B430 north approaches for the '2031 DS1' scenario, all three approaches (excluding the Quarry) in the '2031 DS2' scenario and on the B430 north and south approaches in the '2031 DS3' scenario. It would not be reasonably possible to design this out and hence, intercept corrections have been calculated using the Barbara Chard methodology and applied to the ARCADY model, as shown in **Appendix F**.

4.25 The operation of the roundabout was modelled using the morning and evening peak hour '2031 DS1' (**Diagrams 3 and 4**), '2031 DS2' (**Diagrams 7 and 8**) and '2031 DS3' (**Diagrams 11 and 12**) traffic flow scenarios described in Section 3. A summary of the ARCADY results are shown below, with the full results provided at **Appendix G**.

arm	morning peak hour			evening peak hour		
	queue	delay	RFC	queue	delay	RFC
2031 DS1						
B430 (south)	1.5	5.66	60%	0.9	4.16	48%
HPLR	105.1	504.04	133%	19.0	100.67	101%
B430 (north)	4.5	10.04	82%	7.5	18.04	89%
Quarry access	0.0	3.78	1%	0.0	3.70	3%
2031 DS2						
B430 (south)	23.2	76.38	100%	4.4	17.21	82%
HPLR	44.8	148.79	108%	6.8	31.43	89%
B430 (north)	6.6	15.06	87%	12.2	29.94	94%
Quarry access	0.0	4.32	1%	0.0	4.07	3%
2031 DS3						
B430 (south)	196.61	563.01	114%	96.6	237.69	114%
HPLR	1.6	6.10	62%	1.6	5.61	57%
B430 (north)	2.8	8.37	74%	10.7	27.33	93%
Quarry access	0.0	4.12	1%	0.0	4.69	3%

4.26 The table above shows that in the '2031 DS1' scenario, the roundabout option would operate significantly over capacity in the morning peak hour, with the HPLR approach suffering congestion. In the '2031 DS1' evening peak hour, the HPLR approach would also operate over capacity, with over 100 seconds delay per vehicle, and the B430 (north) approach would operate over the design ratio flow to capacity threshold of 85%.

4.27 In morning peak hour for the '2031 DS2' scenario, the above results table shows that the roundabout would also operate significantly over capacity, with the HPLR approach suffering congestion and the B430 (north) approach operating at 100% of its capacity and with delay of over 148 seconds per vehicle. The roundabout would operate within 100% of capacity in the '2031 DS2' scenario in the evening peak hour, though the HPLR and B430 (north) approaches would operate close to their full capacity, with delays of 31 and 30 seconds per vehicle, respectively.

4.28 In the '2031 DS3' scenario, the table above shows that in both the morning and evening peak hours the roundabout would operate over capacity, with the B430 (south) approach suffering congestion with a ratio of flow to capacity of 114% in both peak hours. In the morning peak hour, the B430 (south) approach would have a queue of 197 vehicles and an average delay per vehicle above 563 seconds. In the evening peak hour, the B430 (south) approach would have a queue of 97 vehicles and an average delay per vehicle above 237 seconds. In the evening peak hour, the B430 (north) approach would operate over the design ratio to flow capacity threshold of 85%.

4.29 Therefore, it was concluded that providing a four-arm roundabout junction to link the HPLR and the quarry access would not provide an optimum solution.

Summary

4.30 The initial junction options associated with the following HPLR and MSRR route alignments have been considered:

- the green route, with a single junction linking the B430 with the HPLR and MSRR sections.
- the MSRR upper central route (yellow route).
- the HPLR northern route (blue route).

4.31 It was found that a single junction linking the B430 with the HPLR and MSRR would introduce a capacity constraint on the network. Hence a single junction does not provide an optimum solution and the green route for the MSRR is dismissed.

4.32 A two-junction arrangement comprising separate junctions between the B430 and the MSRR and the B430 and the HPLR were therefore examined. It has been identified that the most suitable form of junction for the B430/MSRR connection (MSRR upper central route) would be a traffic signal controlled T-junction.

4.33 A roundabout junction has been considered for the B430/HPLR (northern route), but it was found that this would introduce a capacity constraint and hence does not provide an optimum solution. Nor would it achieve the preferred alignment for the HPLR (which is the more southernly green route).

4.34 It was concluded that by providing the HPLR/B430 junction as a traffic signal controlled T-junction would allow it to be closely spaced and coordinated with the B430/MRSS junction. This would to maintain the green route for the HPLR and establish a consistent approach to providing pedestrian and cycle crossing facilities. This is examined further in detail in Section 5.

5.0 PROPOSED JUNCTION ARRANGEMENTS

Introduction

5.1 The analysis presented in Section 4 concluded that the provision for a single junction to connect the HPLR and the MSRR at the B430 would introduce a capacity constraint on the network. Hence a single junction does not provide an optimum solution and the green route for the MSRR (see **Figure 4**) was dismissed.

5.2 The analysis in Section 4 also concluded that a roundabout junction at the B430/HPLR (northern route) would introduce a capacity constraint and hence does not provide an optimum solution. Hence, the blue route for the HPLR (see **Figure 4**) was dismissed.

5.3 Section 4 concluded that the most suitable form of junction for the B430/MSRR connection (MSRR upper central route, yellow route in **Figure 4**) would be a traffic signal controlled T-junction. Providing the HPLR/B430 junction as a traffic signal controlled T-junction would allow the two junctions to be very closely spaced and efficiently coordinated. This would allow the B430/HLPR junction to be provided on the green route (see **Figure 4**) and establish a consistent approach to providing pedestrian and cycle crossing facilities. Hence, a traffic signal controlled T-junction was identified as the preferred option for the B430/HPLR junction.

5.4 This section presents the preliminary design and junction modelling of the proposed junctions with the B430. It also presents the proposed roundabout connection for the MSRR with the B4030 Bicester Road and discusses the secondary access to the OxSRFI site that would be provided on the HPLR.

B430/Middleton Stoney Relief Road junction

5.5 As discussed in Section 4, the proposed form of the new B430/MSRR junction would be a traffic signal controlled T-junction with a Toucan crossing facility across the southern B430 arm, as shown on BWB Consulting **drawing number OxSRFI-BWB-GEN-ZZ-SK-CH-SK025-S1-P02**. An extract is provided at **Figure 5**. The proposed junction design has evolved through an iterative process and has been extensively tested using a LinSig model (version 3.2.44.1).

5.6 The proposed junction has been designed to maximise the effectiveness of the MSRR in reducing traffic volumes through the centre of Middleton Stoney. To achieve this, the junction has been designed to prevent the right-turn from the B430 south to the MSRR and the left-turn from the MSRR to the B430 south. Consequently, banning these movements allows the left-turn from the B430 north to the MSRR to be free-flow and the junction would operate in two simple stages, significantly minimising delay for traffic using the MSRR.

5.7 The design also seeks to improve connectivity for pedestrians and cyclists as part of the wider strategy for sustainable transport provision.

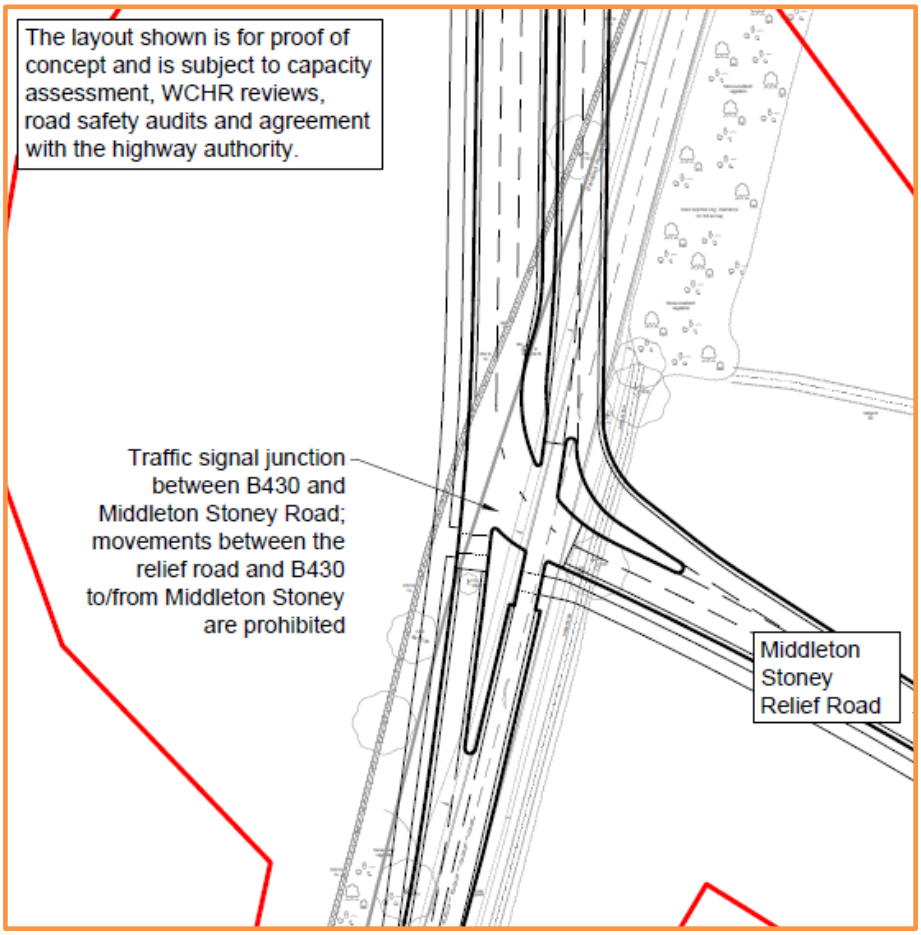


Figure 5: B430/MSRR traffic signal controlled T-junction (extract of BWB drawing OxSRFI-BWB-GEN-ZZ-SK-CH-SK025-S1-P02)

5.8 The stage arrangement is shown at **Figure 6** below, and is described as follows:

- Stage 1: B430 north (phase A) and B430 south (phase C) ahead.
- Stage 2: MSRR right-turn (phase B), B430 south Toucan crossings (phases D and E).

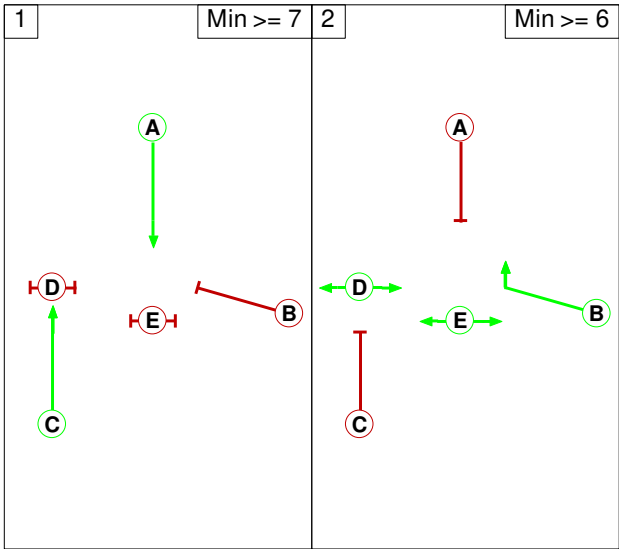
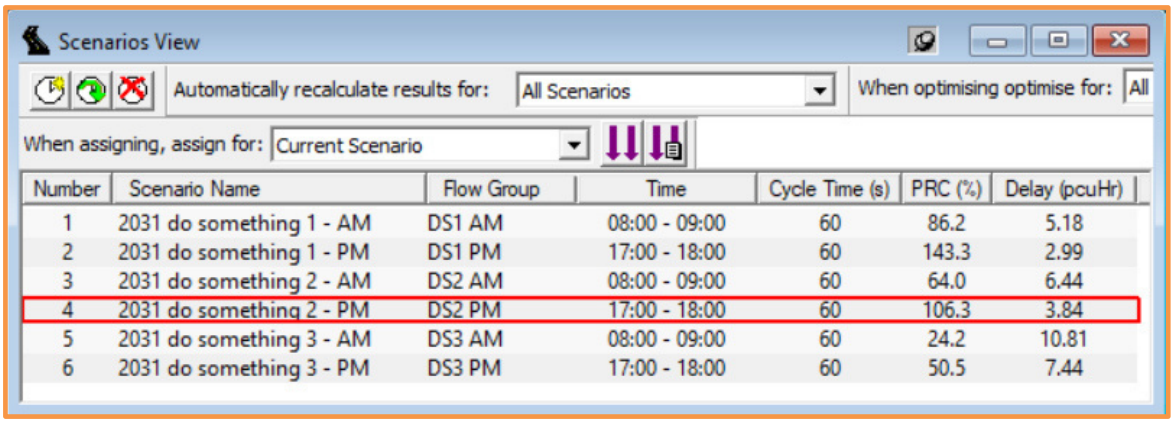


Figure 6: proposed B430/MSRR junction stage arrangement

5.9 The LinSig model has been run with the morning and evening peak hour '2031 DS1' (**Diagrams 3 and 4**), '2031 DS2' (**Diagrams 7 and 8**) and '2031 DS3' (**Diagrams 11 and 12**) traffic flow scenarios

identified in Section 3. The model runs a 60 second cycle time in both peak hours. The LinSig model report is provided at **Appendix H** and the results are summarised below.



Number	Scenario Name	Flow Group	Time	Cycle Time (s)	PRC (%)	Delay (pcuHr)
1	2031 do something 1 - AM	DS1 AM	08:00 - 09:00	60	86.2	5.18
2	2031 do something 1 - PM	DS1 PM	17:00 - 18:00	60	143.3	2.99
3	2031 do something 2 - AM	DS2 AM	08:00 - 09:00	60	64.0	6.44
4	2031 do something 2 - PM	DS2 PM	17:00 - 18:00	60	106.3	3.84
5	2031 do something 3 - AM	DS3 AM	08:00 - 09:00	60	24.2	10.81
6	2031 do something 3 - PM	DS3 PM	17:00 - 18:00	60	50.5	7.44

5.10 The results provided at **Appendix H** and summarised above show that the proposed B430/MSRR junction would operate acceptably in the 2031 morning and evening peak hours for all three 'DS' scenarios. The practical reserve capacity (PRC) is positive in all scenarios indicating that all links are operating less than 90% saturated. The LinSig results provided at **Appendix H** show that there would no significant delay or queueing on any approach to the junction.

B430/Hayford Park Link Road junction

5.11 As discussed in Section 4, the proposed form of the new B430/HPLR junction would be a traffic signal controlled T-junction. The proposed junction design has evolved through an iterative process and has been extensively tested using a LinSig model (version 3.2.44.1). One of the major influences on the design was the alignment of the HPLR approach and the requirement to reduce the distance between the two junctions as much as possible to provide good co-ordination. The optimum solution was to change the priority of the B430 (north) and HPLR approaches such that the B430 (north) forms the minor arm at the T-junction, as shown on BWB Consulting **drawing number OxSRFI-BWB-GEN-ZZ-SK-CH-SK026-S1-P01**. An extract is provided at **Figure 7**.

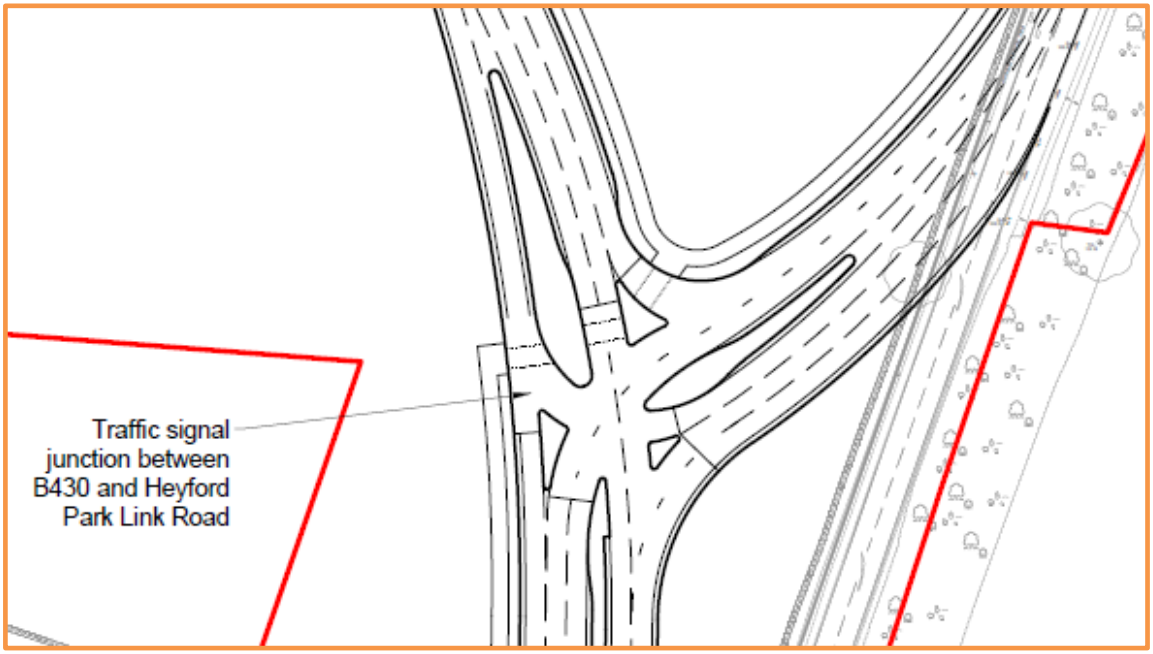


Figure 7: B430/HPLR traffic signal controlled T-junction (extract from BWB drawing OxSRFI-BWB-GEN-ZZ-SK-CH-SK026-S1-P01)

5.12 This approach to the configuration of the junction allows for an efficient phase/stage arrangement which incorporates Toucan crossing facility across the northern HPLR arm.

5.13 The proposed junction has been designed to efficiently facilitate movements between the B430 south (and therefore the MSRR) and both the B430 north and the HPLR. The design also seeks to improve connectivity for pedestrians and cyclists as part of the wider strategy for sustainable transport provision. The junction would have four stages as shown in **Figure 8** below.

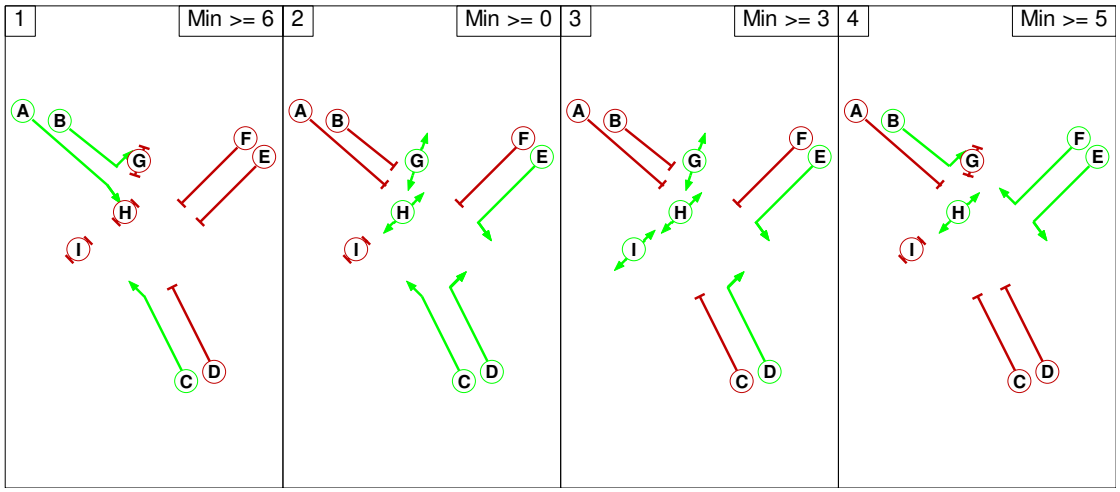


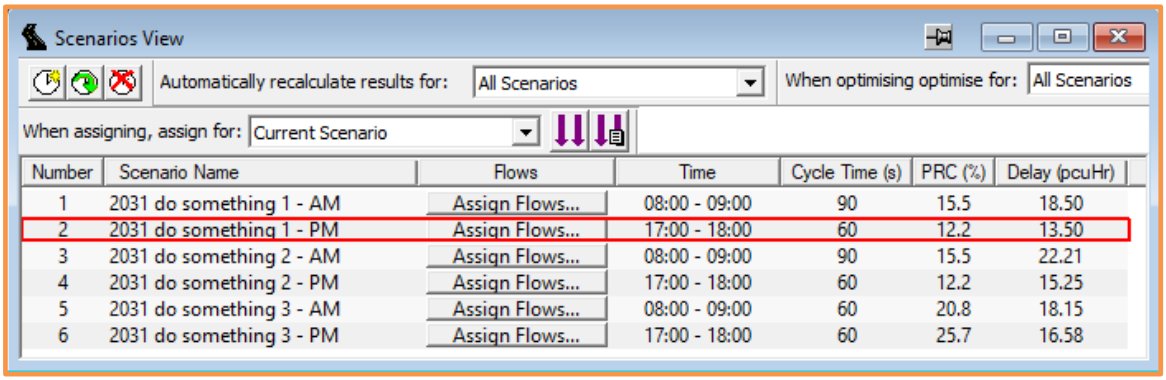
Figure 8: proposed northern site access stage arrangement

5.14 The main traffic movements are provided for in a standard three stage sequence, with pedestrian/cycle crossings provided for as 'walk with traffic'. An additional demand-dependant stage is provided to facilitate pedestrian movements on the B430 northbound exit. Additional left-turn filter phases are provided within the phase/stage strategy to increase efficiency. The stages are described as follows:

- Stage 1: B430 south ahead and HPLR ahead and left
- Stage 2: B430 south ahead and right-turn, B430 north left-turn filter
- Stage 3: a demand-dependant alternate stage to stage 2 that would only be called by the Toucan crossing phase I.
- Stage 4: B430 north left and right turns, HPLR left-turn filter.

5.15 The LinSig model has been run with the morning and evening peak hour traffic flows for the '2031 DS1' (**Diagrams 3 and 4**), '2031 DS2' (**Diagrams 7 and 8**) and '2031 DS3' (**Diagrams 11 and 12**) scenarios identified in Section 3[7]. The modelled stage sequence runs all four stages, though in practice Stage 3 would not be called every cycle and hence the analysis is robust. The LinSig model report is provided at **Appendix I** and the results are summarised below.

[7] The junction was modelled as a three-arm and hence the assumed traffic flows associated with the Quarry (arm D in the traffic flow diagrams were ignored)



Number	Scenario Name	Flows	Time	Cycle Time (s)	PRC (%)	Delay (pcuHr)
1	2031 do something 1 - AM	Assign Flows...	08:00 - 09:00	90	15.5	18.50
2	2031 do something 1 - PM	Assign Flows...	17:00 - 18:00	60	12.2	13.50
3	2031 do something 2 - AM	Assign Flows...	08:00 - 09:00	90	15.5	22.21
4	2031 do something 2 - PM	Assign Flows...	17:00 - 18:00	60	12.2	15.25
5	2031 do something 3 - AM	Assign Flows...	08:00 - 09:00	60	20.8	18.15
6	2031 do something 3 - PM	Assign Flows...	17:00 - 18:00	60	25.7	16.58

5.16 The results provided at **Appendix I** and summarised above show that the proposed B430/HPLR junction would operate acceptably in the 2031 morning and evening peak hours for all three 'DS' scenarios. The practical reserve capacity (PRC) is positive in all scenarios indicating that all links are operating less than 90% saturated. The LinSig results provided at **Appendix I** show that there would not be excessive queueing on any approach to the junction.

Network model

5.17 To demonstrate that the proposed B430/MSRR and B430/HPLR junctions would operate acceptably together with no adverse issues due to exit blocking, a network model has been created in LinSig. The HPLR, MSRR and the connecting junctions have been designed to accommodate OxSRFI traffic and induce positive reassignment away from Middleton Stoney. This is effectively the '2031 DS3' scenario which also includes implementation of the Heyford Park proposed bus gate on the B4030. It is likely that the OxSRFI development would implement the bus gate, even if Heyford Park do not. Therefore, the network model has been considered only for the '2031 DS3' scenario.

5.18 The network model has been tested with the '2031 DS3' traffic flow scenario for the morning and evening peak hours. The network model runs a 60 second cycle time in both morning and evening peak hours and the stage sequences from the stand-alone models described above are retained. The LinSig model report is provided at **Appendix J** and the results are summarised below.

modelled scenario		PRC (%)		Delay (pcu/hr)		B430 queueing between junctions (pcus)	
		B430/MSRR	B430/HPLR	B430/MSRR	B430/HPLR	N'bound	S'bound
2031 DS3	AM	25.7%	20.4%	9.7	18.0	8.2	9.1
	PM	35.6%	24.3%	7.0	17.1	7.4	3.8

5.19 The results show that individually, the two junctions operate with a similar level of PRC and delay as shown above for the respective standalone junction assessments. In terms of internal mean maximum queueing between the two junctions, the detailed results provided at **Appendix J** and summarised above show that the longest northbound queue (on approach to the B430/HPLR junction) would be 8.2 pcus (c. 50m) and the longest southbound queue (on approach to the B430/MSRR junction) would be 9.1 pcus (c. 55m). There is approximately 200m between the two junctions and therefore the queuing could easily be accommodated without negatively effecting overall performance.

5.20 The proposed B430/MSRR and B430/HPLR junctions would operate a linked MOVA control system. LinSig provides aggregated results based on uniform traffic flows and fixed signal timings and, therefore, does not take into account the advantages afforded by the demand responsive

MOVA control system. The benefits expected from the introduction of MOVA is a reduction in queuing and delay of 13% which generally equates to about 2% to 3% improvement in capacity.

5.21 Therefore, in reality the network under linked MOVA control would operate more efficiently and with better queue performance than shown in the LinSig modelling. This would further reduce delay to traffic on the network.

B4030/Middleton Road/MSRR four-arm roundabout

5.22 To provide a junction which can accommodate both the new MSRR and the existing Middleton Road, a four-arm roundabout option has been considered as shown at BWB Consulting **drawing number OxSRFI-BWB-GEN-ZZ-SK-CH-SK025-S1-P02**. An extract is provided at **Figure 9**. It is considered that the roundabout would:

- forms an eastern village gateway to Middleton Stoney
- allow for a change in direction between the B4030 and MSRR
- would provide a safer junction for right turners, the notable right turn flow being from Middleton Stoney onto the B4030 to Bicester
- provides a connection to Middleton Road.

5.23 The geometry of the roundabout has been designed in accordance with the standards outlined in the DMRB CD 116, following an iterative process using the ARCADY module of Junctions 9 as the design tool.

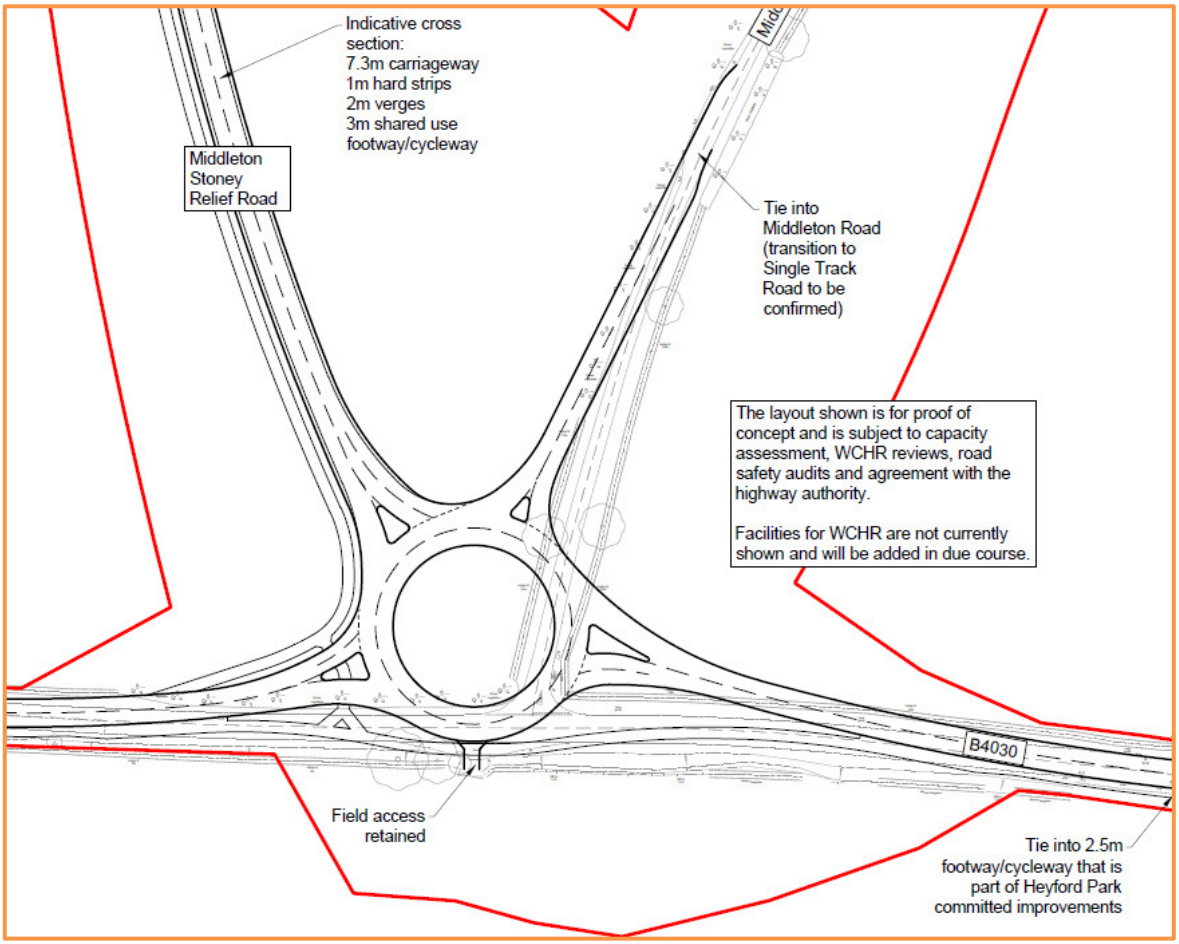


Figure 9: B4030/Middleton Road/MSRR 4-arm roundabout (extract from BWB drawing OxSRFI-BWB-GEN-ZZ-SK-CH-SK025-S1-P02)

5.24 The roundabout has an inscribed circle diameter (ICD) of 60 metres. The B4030 eastbound, B4030 westbound and MSRR approaches to the roundabout flare to two lanes, and there are two circulating lanes. The Middleton Road approach has a single lane entry. All exits are also single lane. The existing field access located opposite the existing B4030/Middelton Road T-junction is provided for via a private access to the south of the roundabout.

5.25 The operation of the roundabout was modelled in the ARCADY module of Junctions 9 using the morning and evening peak hour traffic flows for the 2031 DS1' (**Diagrams 3 and 4**), '2031 DS2' (**Diagrams 7 and 8**) and '2031 DS3' (**Diagrams 11 and 12**) the 2031 'DS1, DS2 and DS3' scenarios described in Section 3. A summary of the ARCADY results are shown below, with the full results provided at **Appendix K**.

	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
	proposed roundabout layout - DS1					
1 - B4030 (W)	0.8	5.22	0.45	0.6	4.30	0.39
2 - MSRR	0.2	2.80	0.18	0.5	3.52	0.36
3 - Middleton Road	0.1	3.92	0.08	0.1	4.54	0.09
4 - B4030 (E)	1.6	5.59	0.61	0.8	3.94	0.45
	proposed roundabout layout - DS2					
1 - B4030 (W)	0.6	4.88	0.39	0.5	4.10	0.34
2 - MSRR	0.3	2.88	0.23	0.6	3.62	0.39
3 - Middleton Road	0.1	3.92	0.08	0.1	4.54	0.09
4 - B4030 (E)	1.6	5.59	0.61	0.8	3.94	0.45
	proposed roundabout layout - DS3					
1 - B4030 (W)	0.1	3.78	0.05	0.1	3.62	0.12
2 - MSRR	0.6	3.13	0.39	0.4	2.85	0.31
3 - Middleton Road	0.1	3.79	0.08	0.1	3.63	0.08
4 - B4030 (E)	1.6	5.59	0.61	0.8	3.94	0.45

5.26 The modelling demonstrates that in all 2031 'DS' scenarios, the roundabout is forecast to operate acceptably in both the morning and evening peak hours, with a ratio of flow to capacity below 85% for all movements.

HPLR OxSRFI secondary access junction

5.27 The secondary access to OxSRFI is for the use of buses and cyclists and hence has a very low traffic flow. On this basis a simple priority junction is proposed, as shown on **BWB drawing OxSRFI-BWB-GEN-ZZ-SK-CH-SK023-S1.**

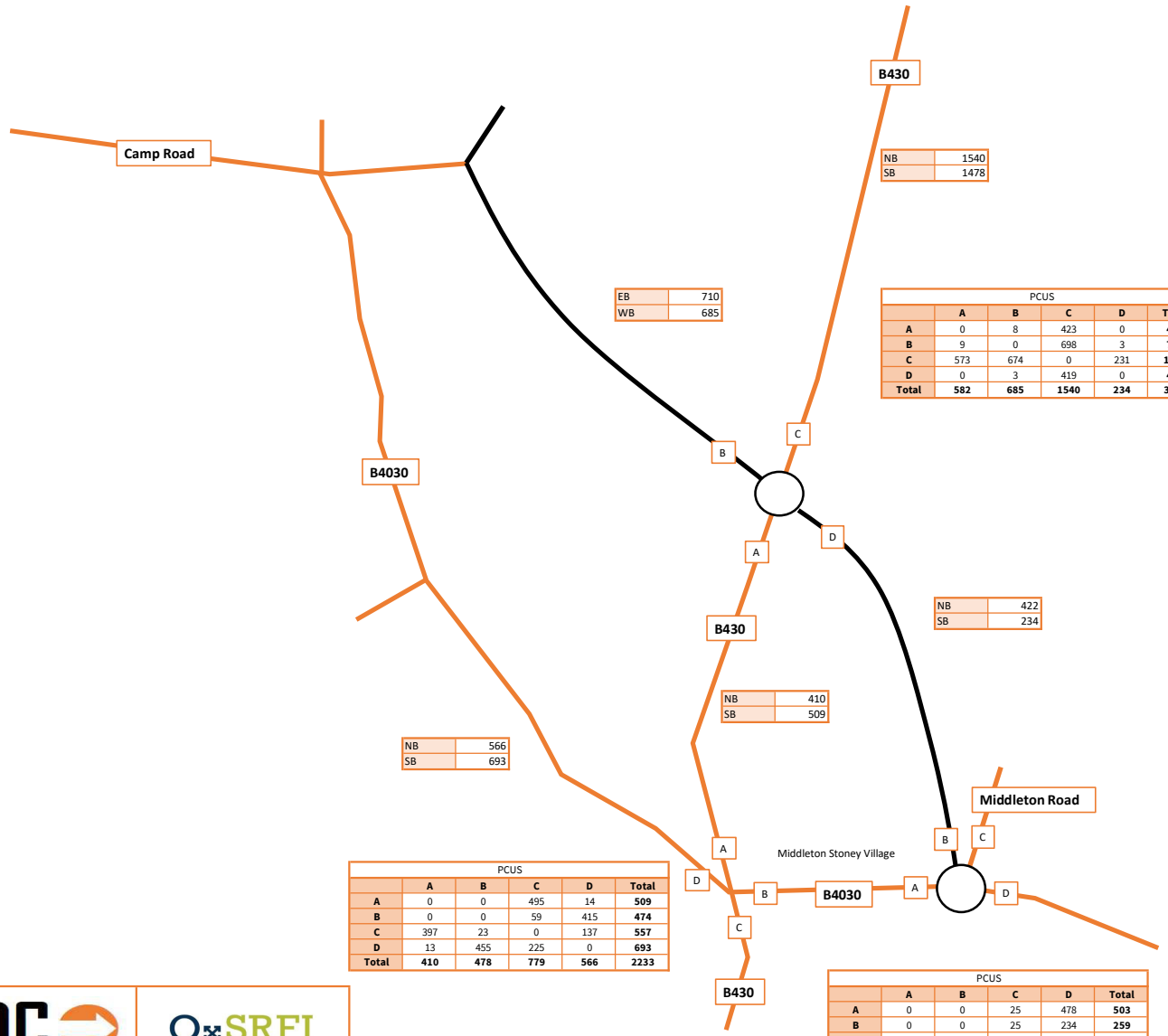
6.0 SUMMARY AND CONCLUSIONS

6.1 The embedded highway mitigation for the OxSRFI scheme includes the Middleton Stoney Relief Road (MSRR) and the Heyford Park Link Road (HPLR). Whilst environmental factors are of high importance when determining the preferred route option (as examined in the MSRR and HPLR Options Report), the form and capacity of the required junction is also a key factor when deciding the optimum solution. This report has been prepared to provide the background and design development of the junction options considered for the MSRR and HPLR based on the alignment options set out in the MSRR and HPLR Options Report.

6.2 It is concluded that:

- the provision for a single junction to connect the HPLR and the MSRR at the B430 would introduce a capacity constraint on the road network. A single junction does not provide an optimum solution. Hence, the green route for the MSRR was dismissed.
- a roundabout junction at the B430/HPLR (northern blue route) would introduce a capacity constraint and does not provide an optimum solution. Hence, the blue route for the HPLR was dismissed.
- the most suitable form of junction for the B430/MSRR connection (MSRR upper central route, yellow route) would be a traffic signal controlled T-junction.
- providing the HPLR/B430 junction as a traffic signal controlled T-junction would allow the two junctions to be very closely spaced and coordinated. This would allow the B430/HLPR junction to be provided on the green route and establish a consistent approach to providing pedestrian and cycle crossing facilities.
- a traffic signal controlled T-junction is also identified as the preferred option for the B430/HPLR junction (green route).

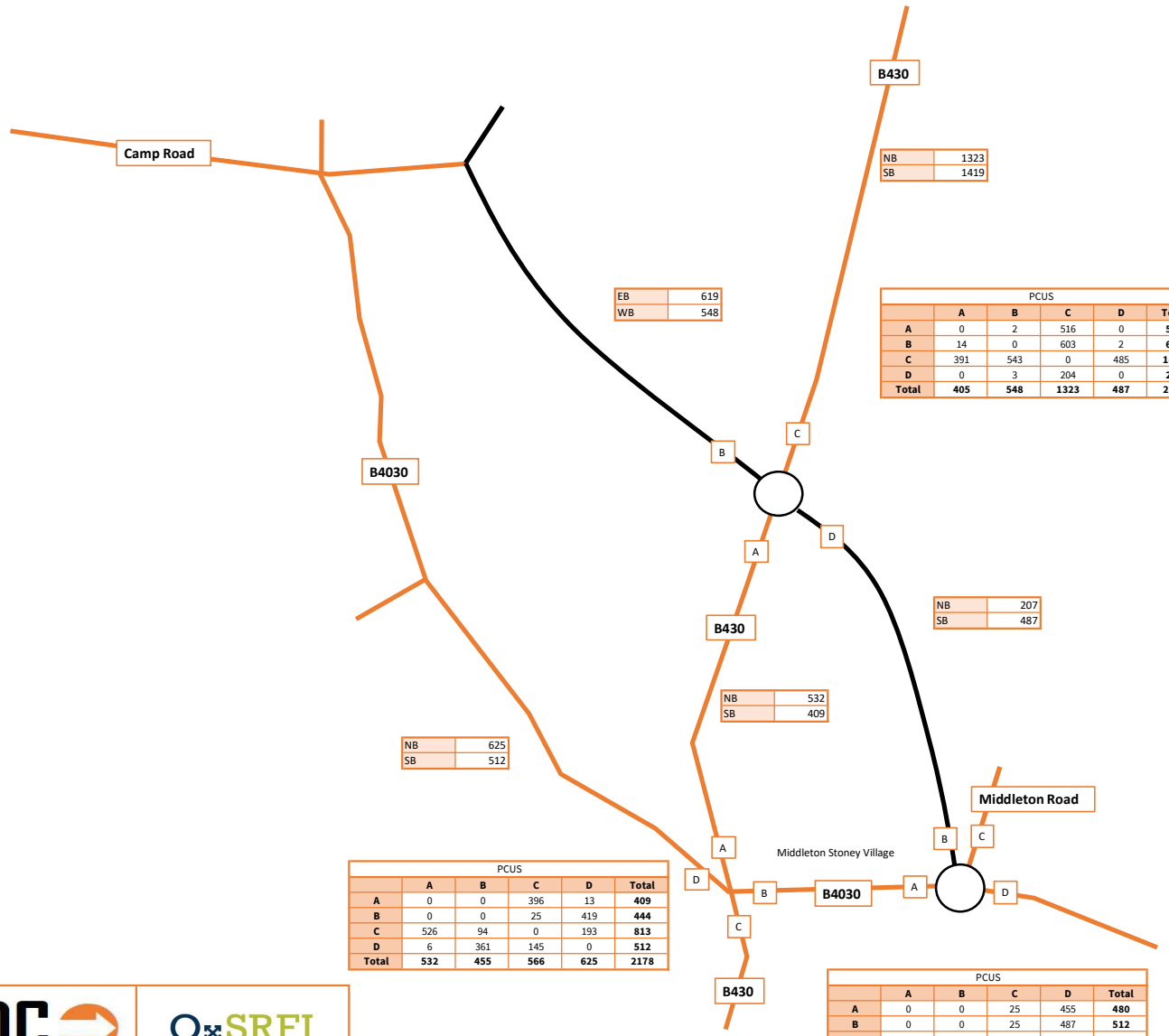
TRAFFIC FLOW DIAGRAMS



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Diagram 1: Total traffic 2031 DS1 AM peak hour



PCUS

	A	B	C	D	Total
A	0	2	516	0	518
B	14	0	603	2	619
C	391	543	0	485	1419
D	0	3	204	0	207
Total	405	548	1323	487	2763

PCUS

	A	B	C	D	Total
A	0	0	396	13	409
B	0	0	25	419	444
C	526	94	0	193	813
D	6	361	145	0	512
Total	532	455	566	625	2178

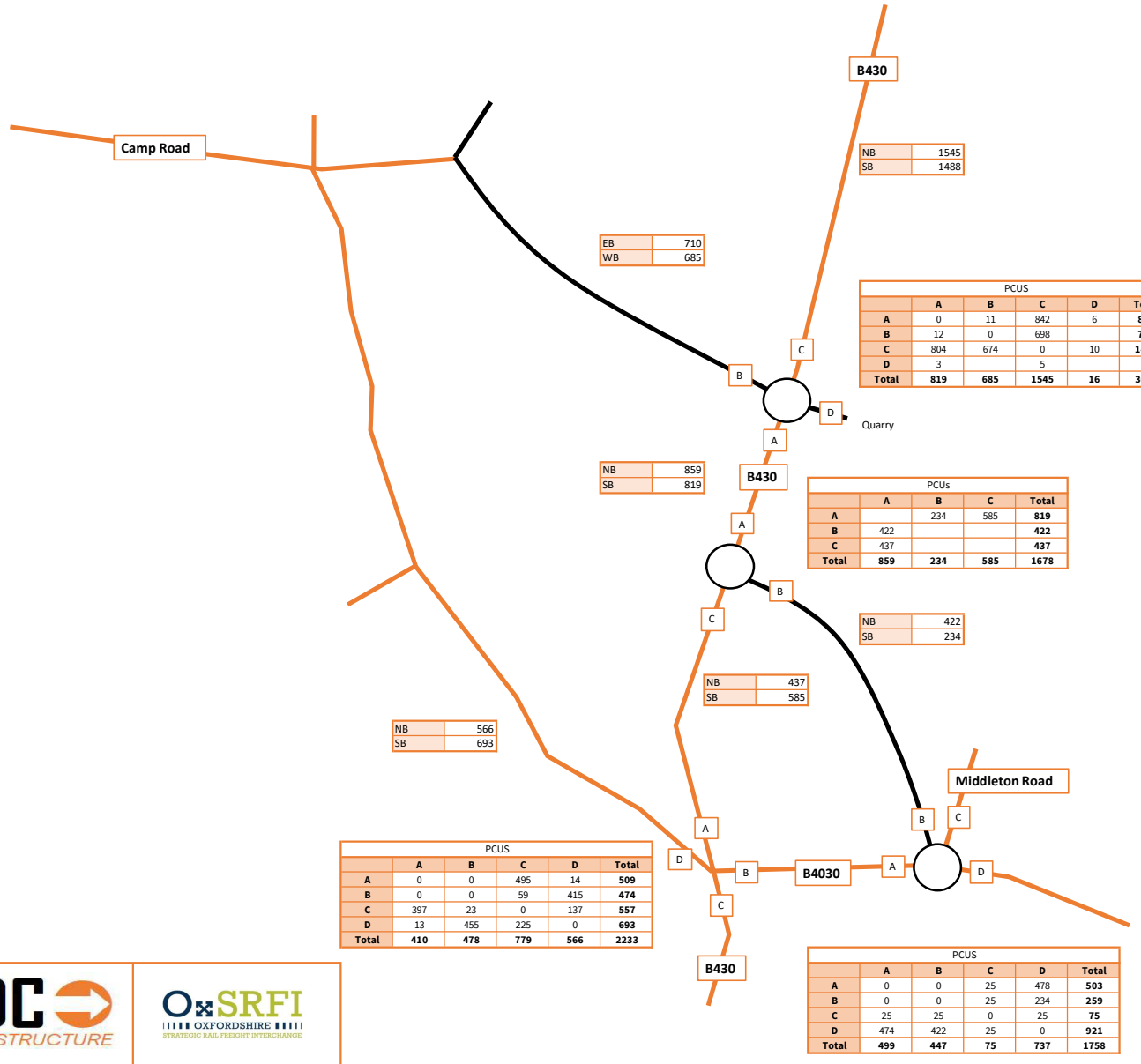
PCUS

	A	B	C	D	Total
A	0	0	25	455	480
B	0	0	25	487	512
C	25	25	0	25	75
D	444	207	25	0	676
Total	469	232	75	967	1743

ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Diagram 2: Total traffic 2031 DS1 PM peak hour



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Diagram 3: Total Traffic DS1 2031 AM peak hour (two junction layout)

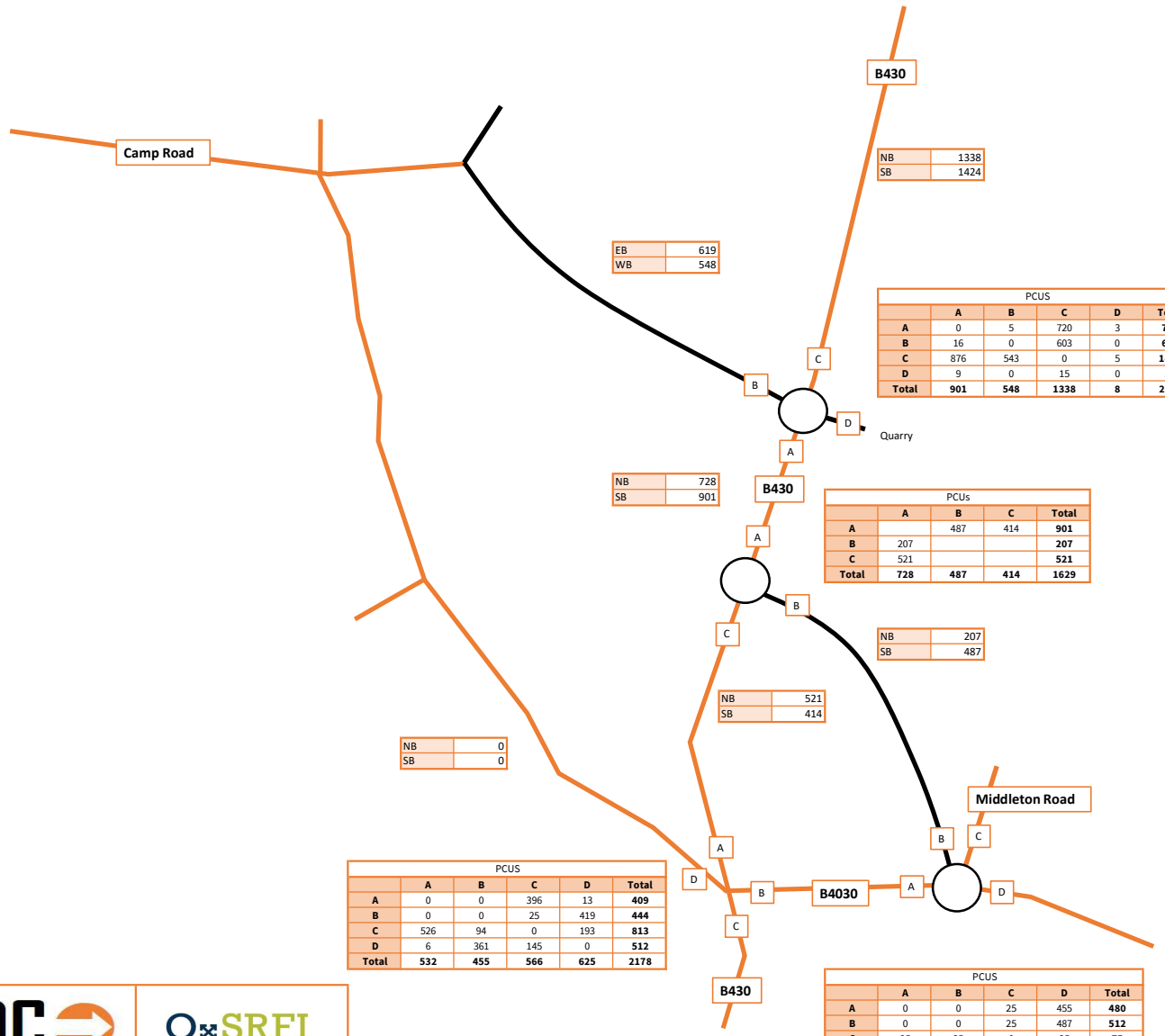
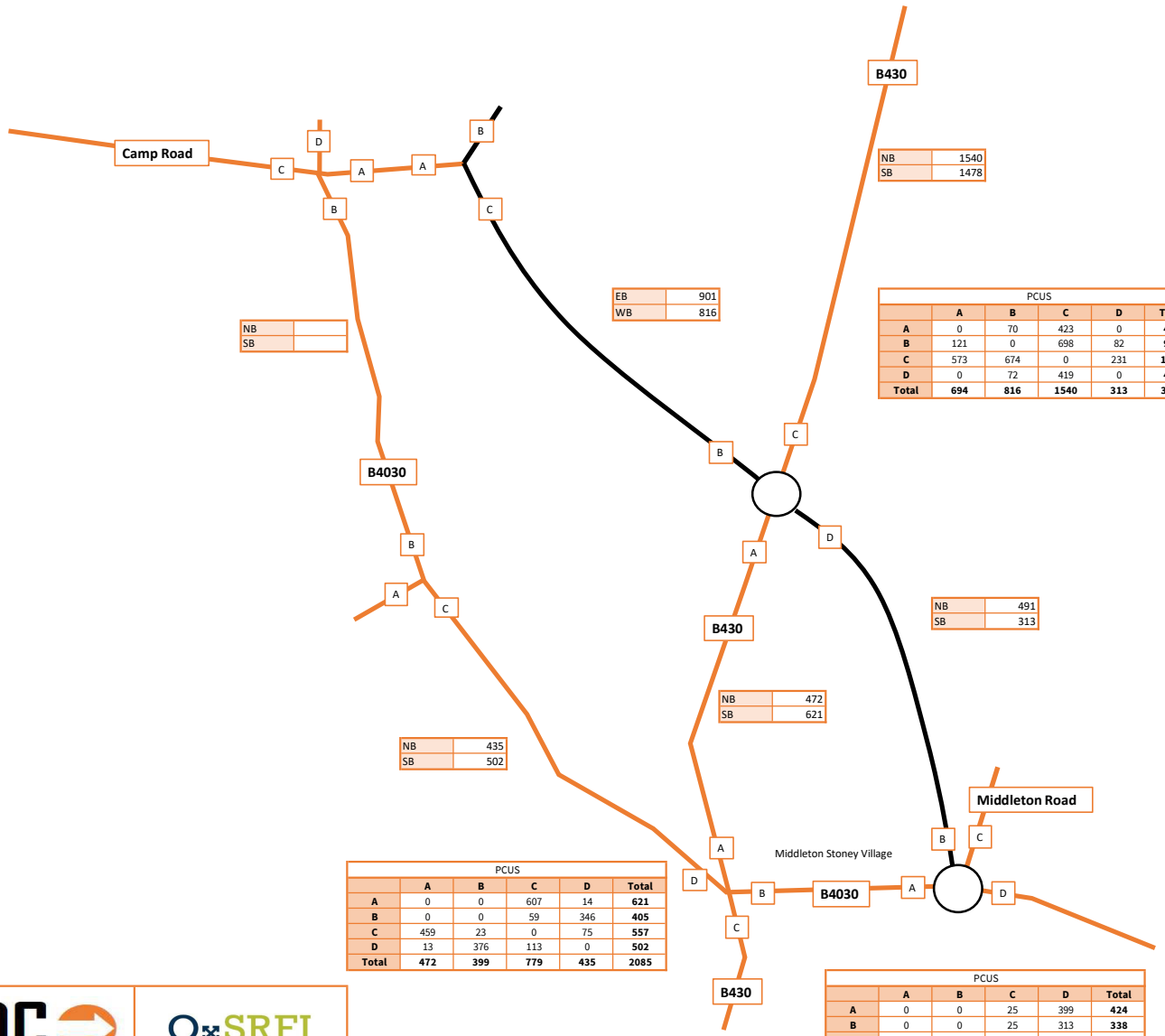


Diagram 4: Total Traffic DS1 2031 PM peak hour (two junction layout)



ADC INFRASTRUCTURE

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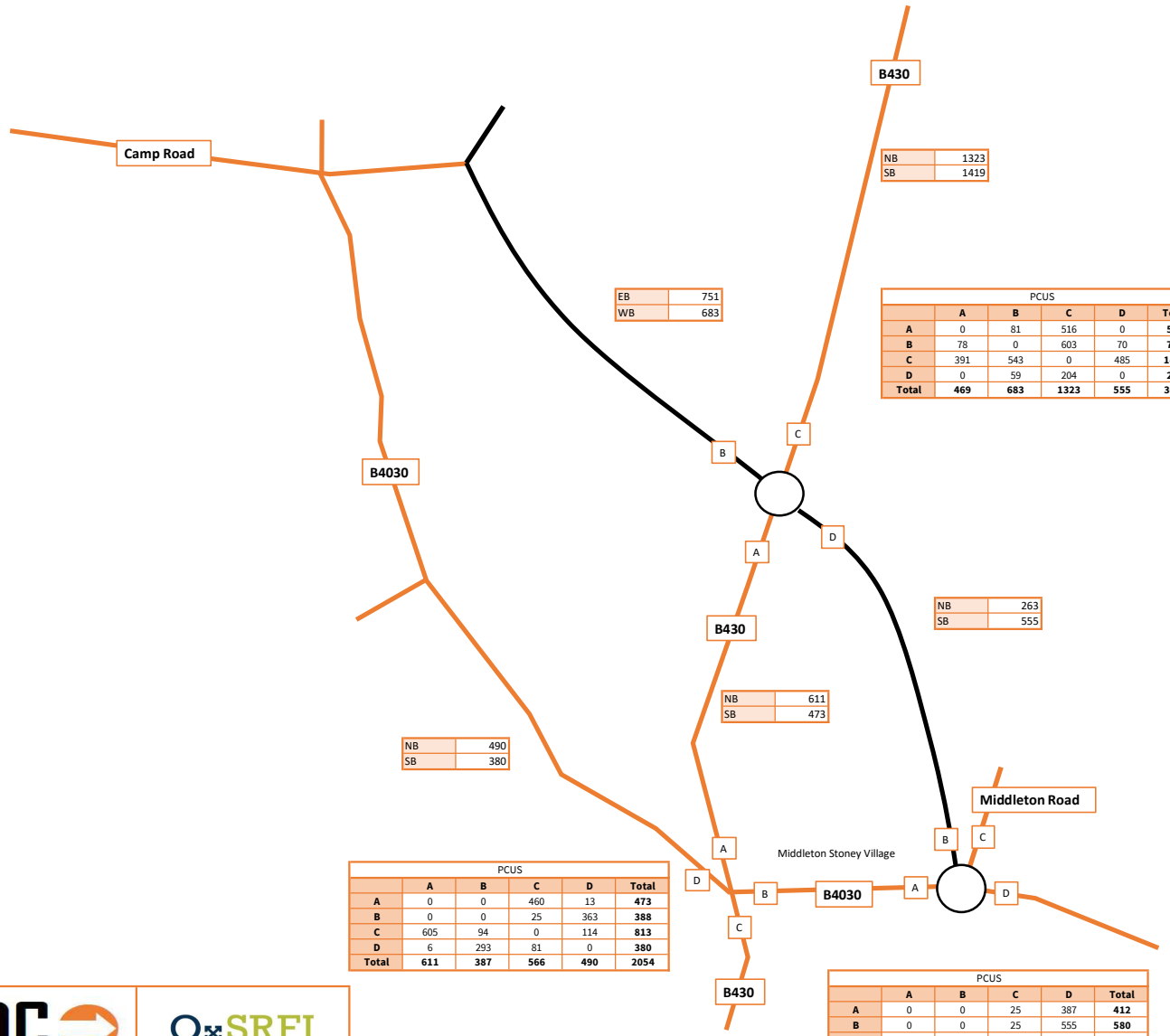
Diagram 5: Total traffic 2031 DS2 AM peak hour



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE #STRATEGIC RAIL FREIGHT INTERCHANGE

Diagram 6: Total traffic 2031 DS2 PM peak hour

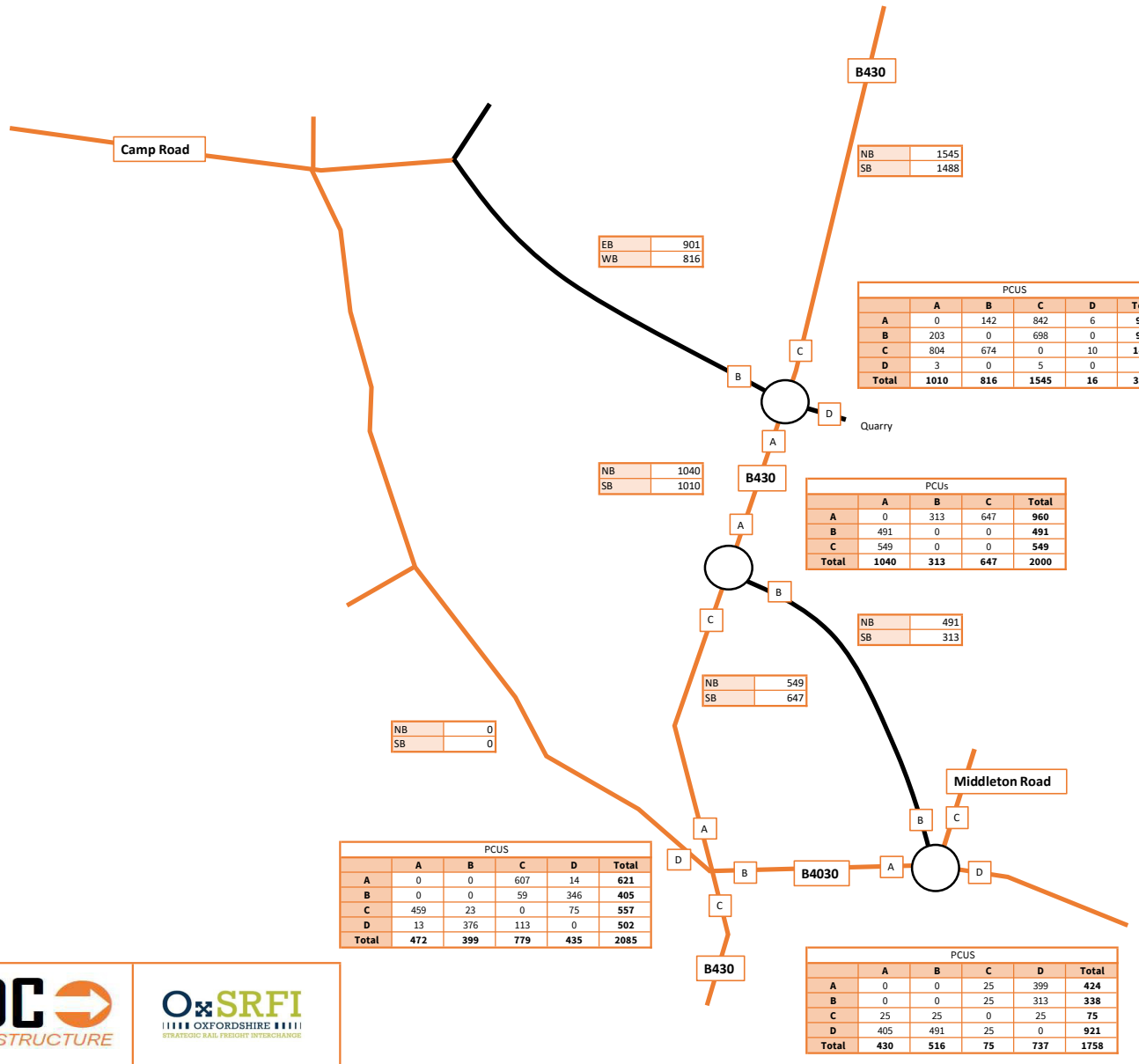


Diagram 7: Total Traffic DS2 2031 AM peak hour (two junction layout)

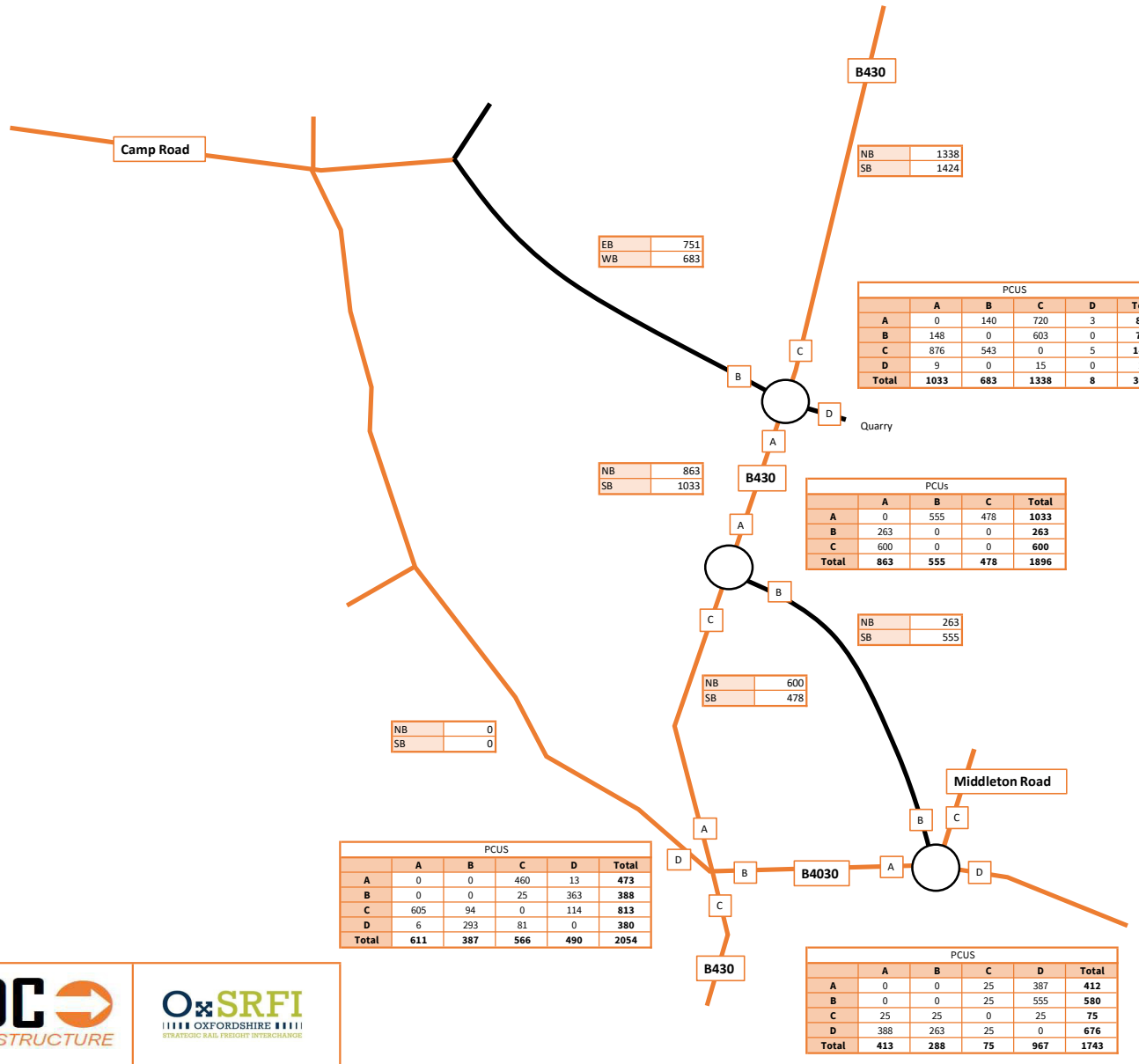
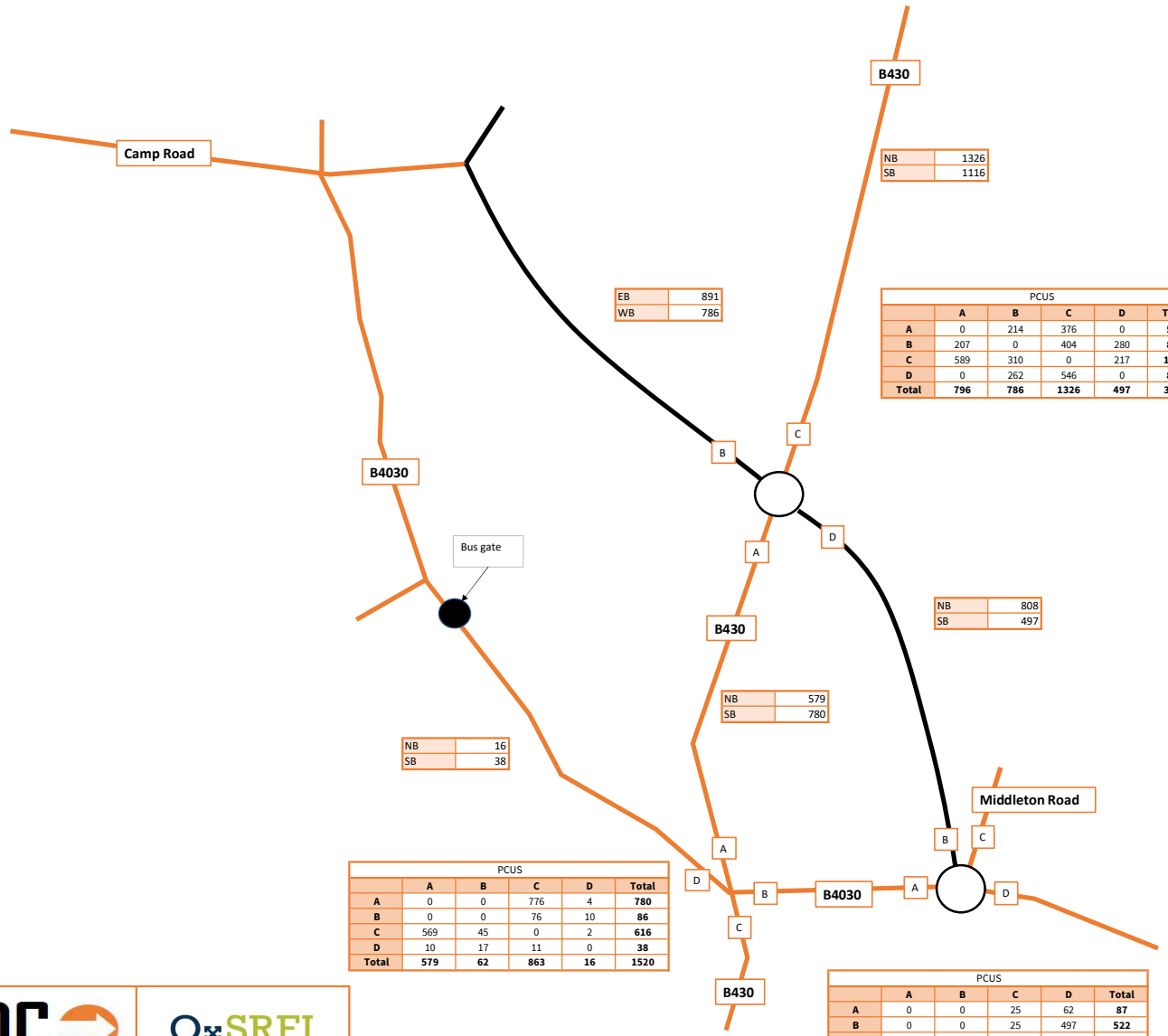


Diagram 8: Total Traffic DS2 2031 PM peak hour (two junction layout)



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Diagram 9: Total traffic 2031 DS3 AM peak hour

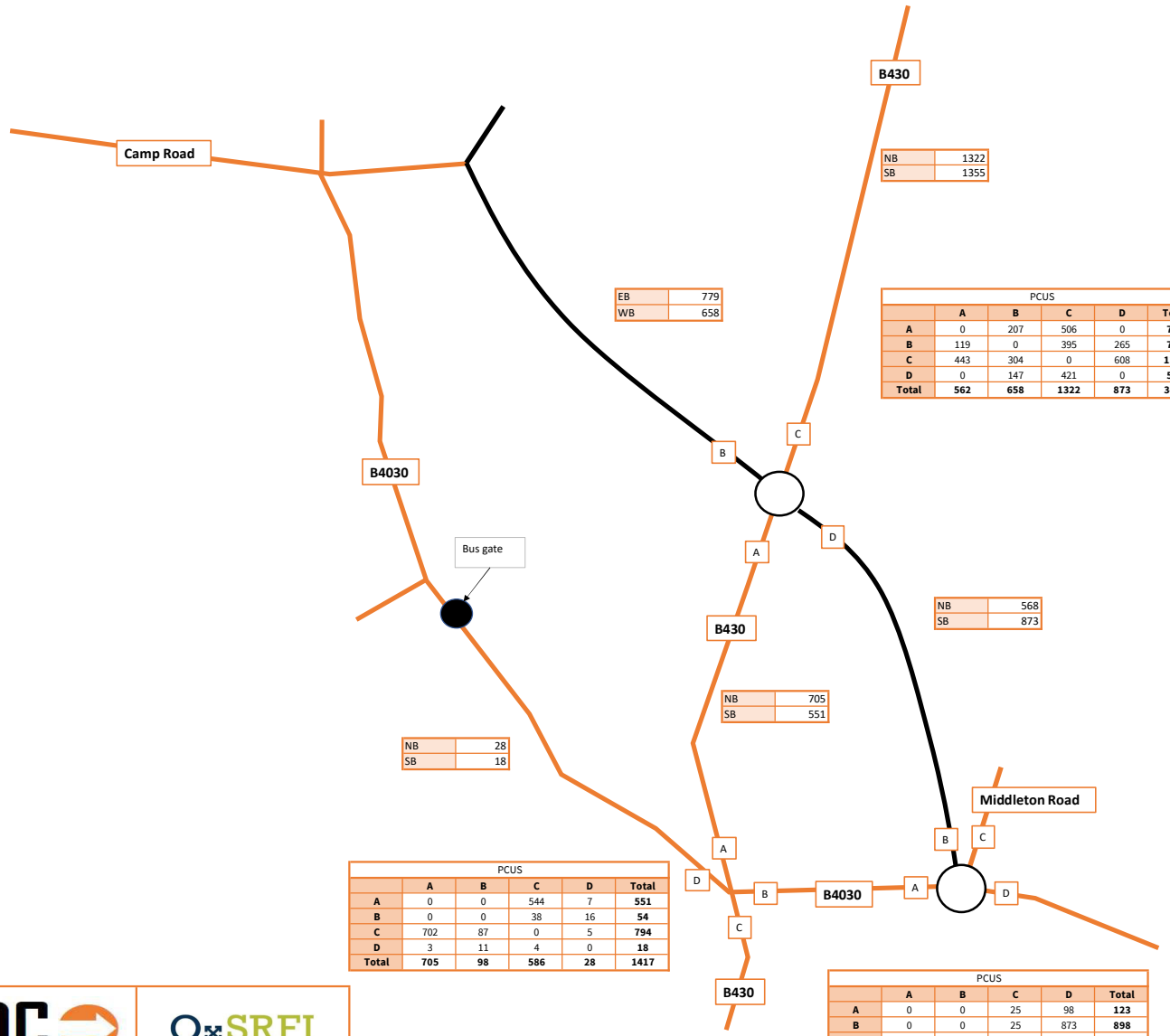
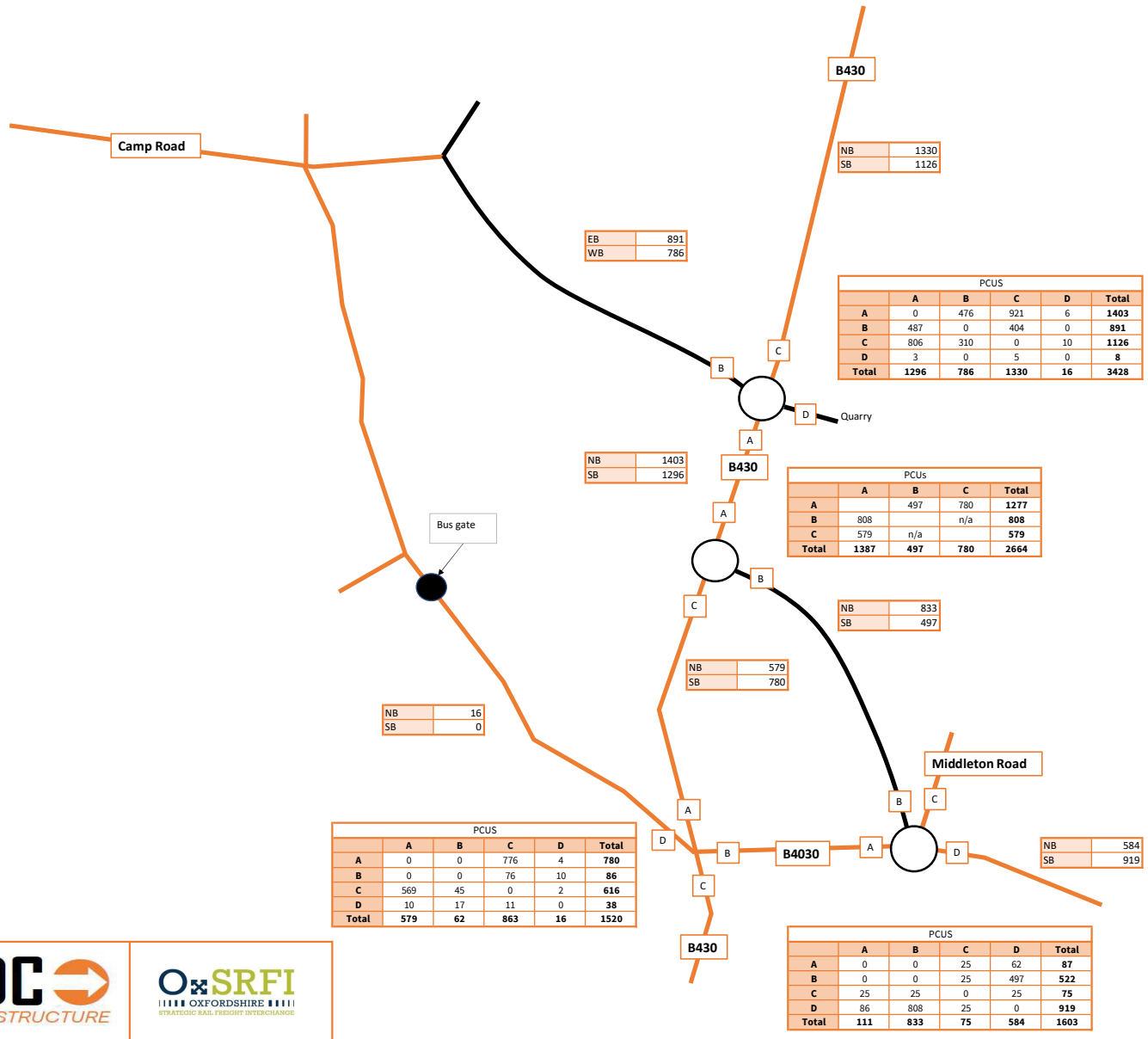


Diagram 10: Total traffic 2031 DS3 PM peak hour



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Diagram 11: Total traffic 2031 DS3 AM peak hour (two junction layout)

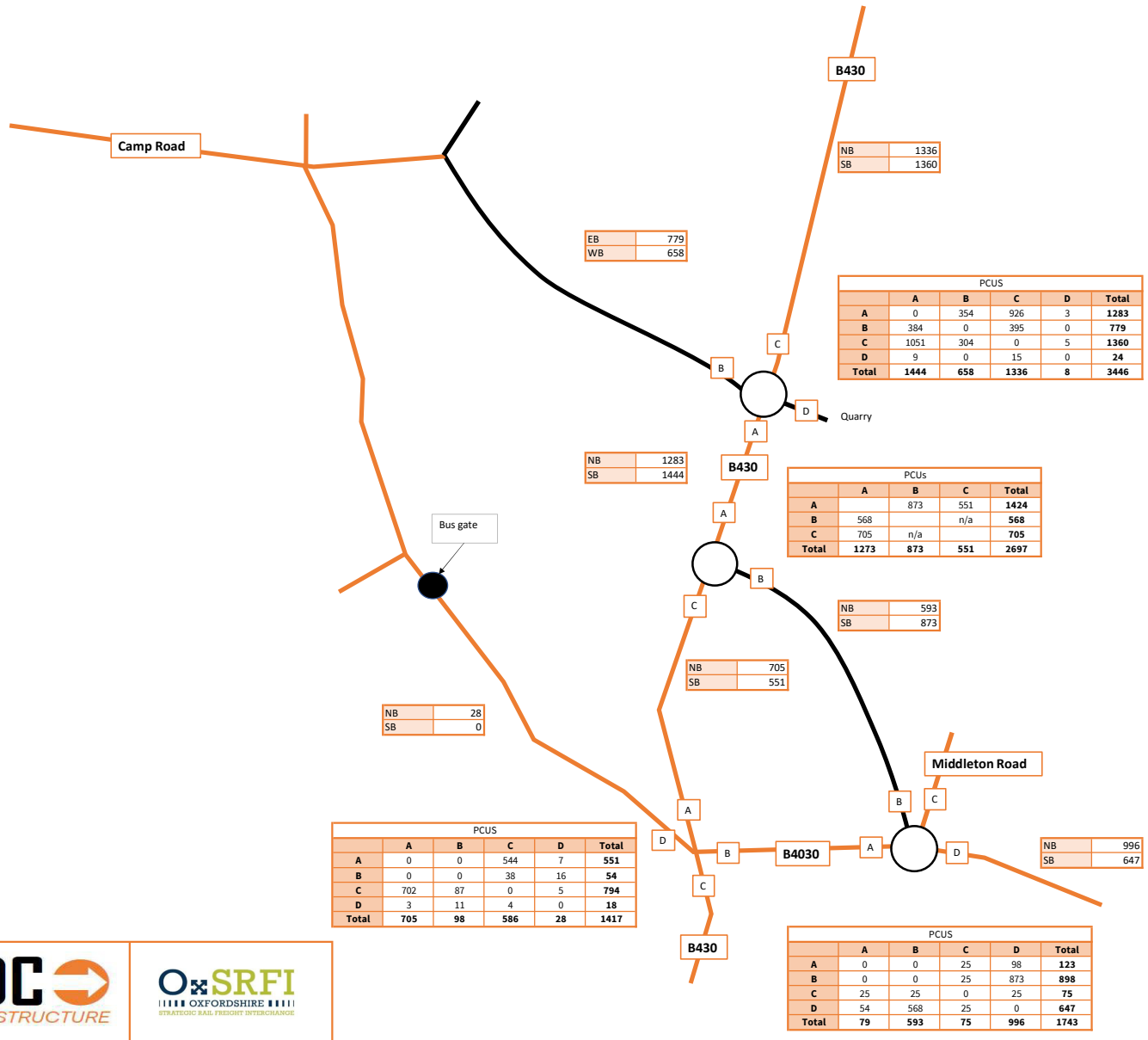
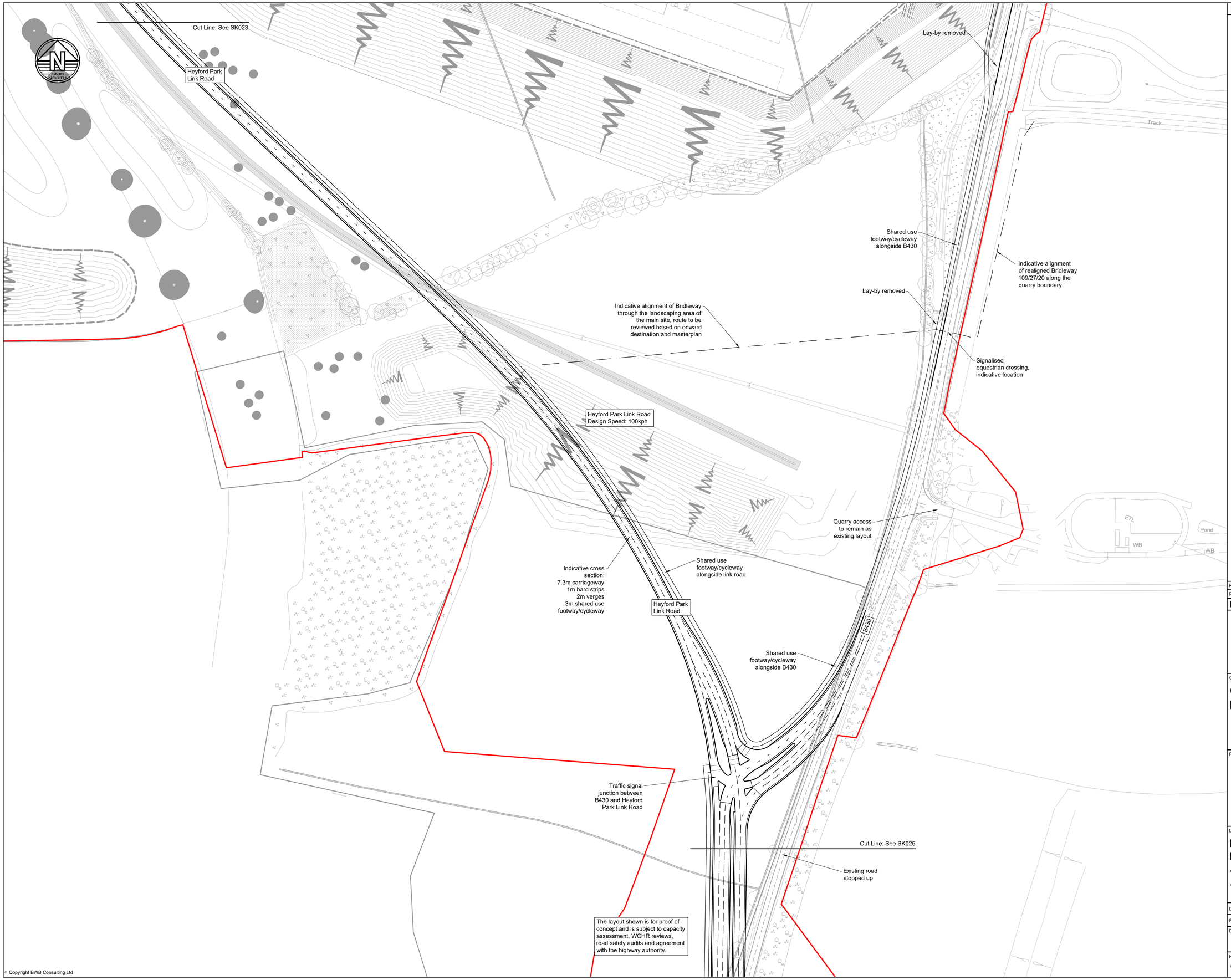


Diagram 12: Total traffic 2031 DS3 PM peak hour (two junction layout)

DRAWINGS



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Draft Order Limits

Rev	Date	Details of issue / revision	Drw	Rev
P01	12.10.21	Preliminary issue	SRH	SC

Issues & Revisions

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Client

OXFORDSHIRE RAILFREIGHT LTD.

Project Title

OxSRFI
OXFORDSHIRE
STRATEGIC RAIL FREIGHT INTERCHANGE

Drawing Title

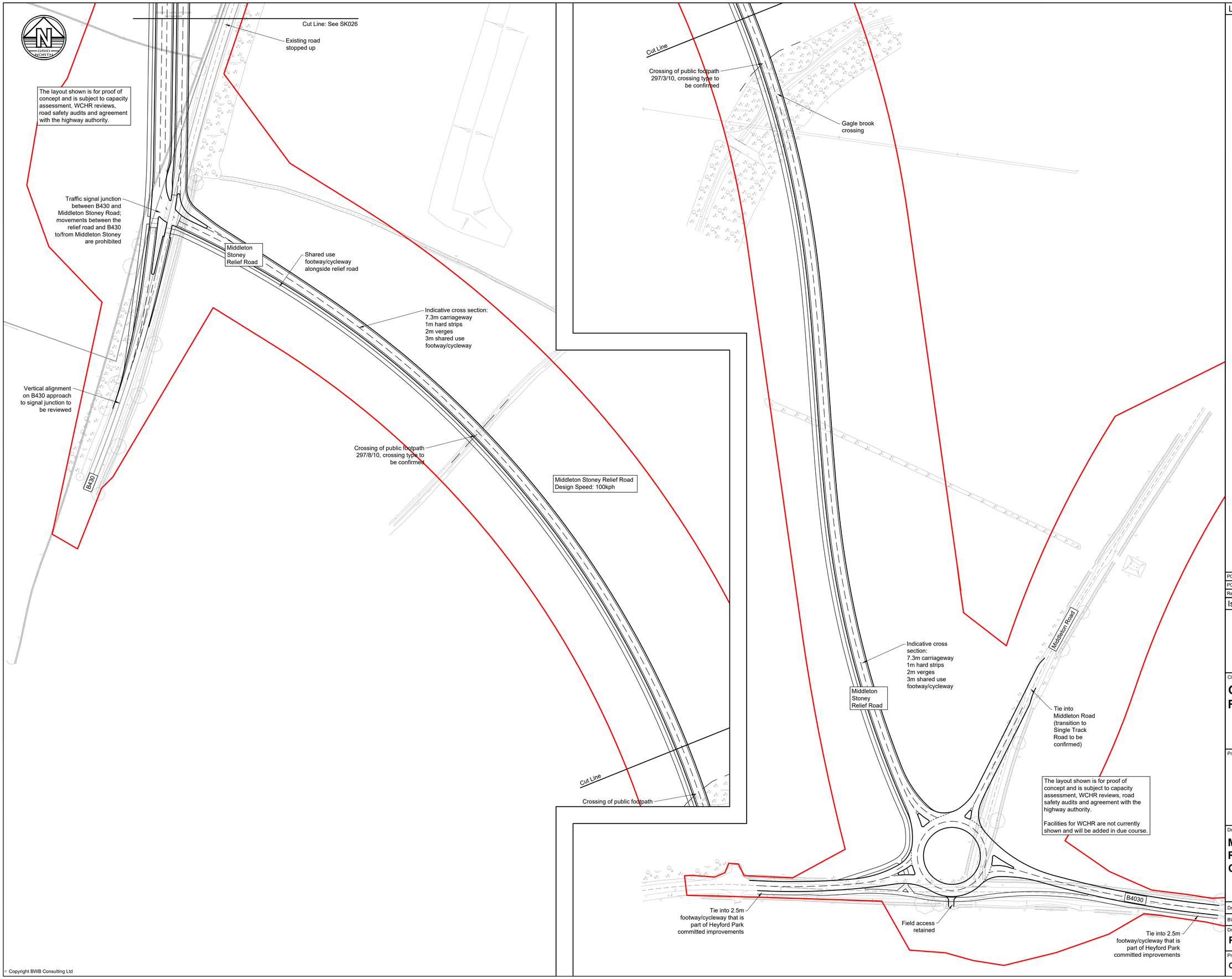
HEYFORD PARK LINK ROAD EAST AND B430 JUNCTION GENERAL ARRANGEMENT

Drawn:	S. Hilditch		Reviewed:	S. Carter	
BWB Ref:	NTH2479	Date:	12.10.21	Scale@A1:	1:1250

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
OxSRFI-BWB-GEN-ZZ-SK-CH-SK026	S1	P01



Legend

- Draft Order Limits

Rev	Date	Details of issue / revision	Drw	Rev
P02	12.10.21	B430 junction added	SRH	SC
P01	13.09.21	Preliminary issue	SRH	SC

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Project Title

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Drawing Title

MIDDLETON STONEY RELIEF ROAD GENERAL ARRANGEMENT

Drawn:	S. Hilditch		Reviewed:	S.Carter	
BWB Ref:	NTH2479	Date:	13.09.21	Scale@A1:	1:1250

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
OxSRFI-BWB-GEN-ZZ-SK-CH-SK025	S1	P02

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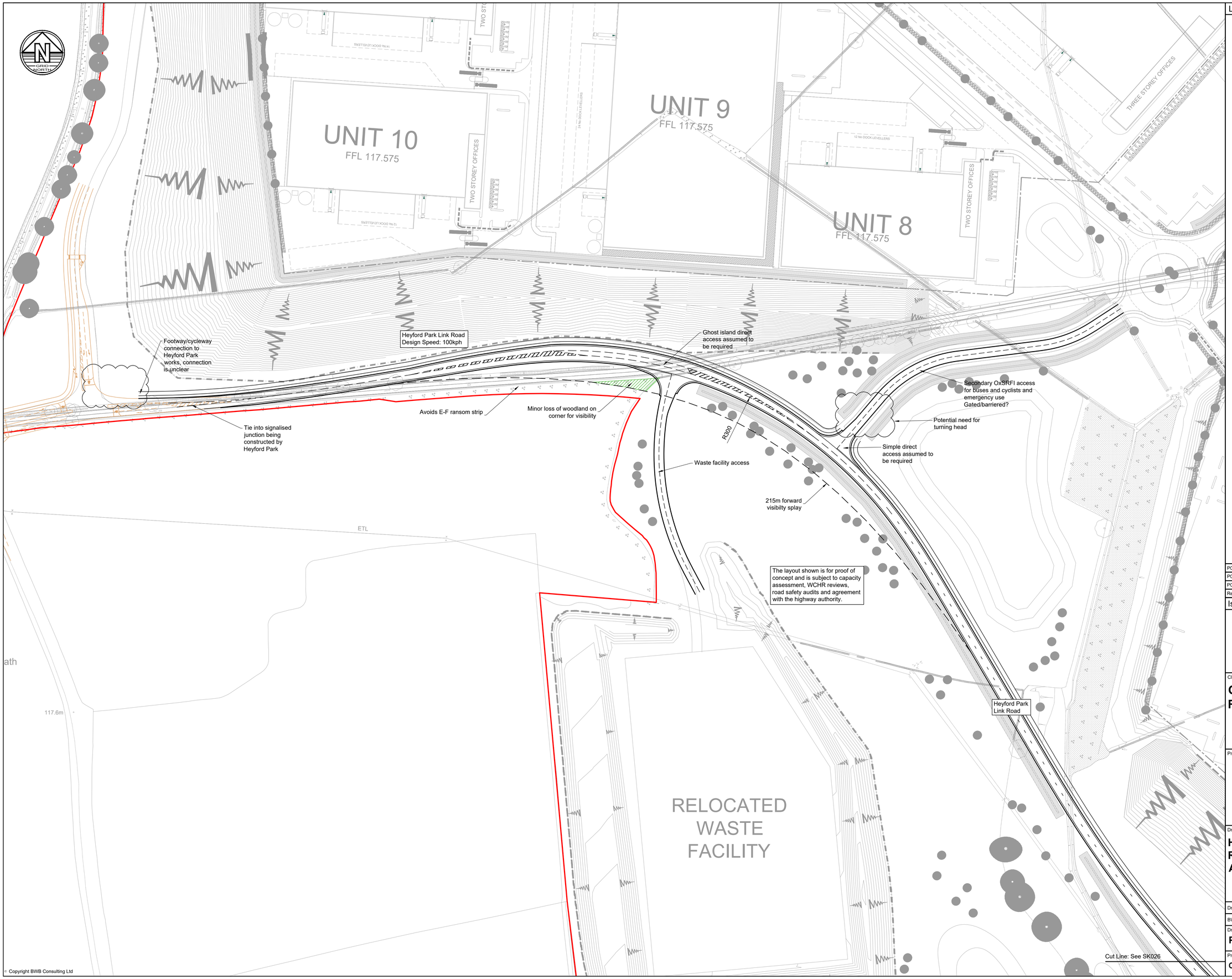

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Legend

- Draft Order Limits
- Heyford Park highway works

Rev	Date	Details of issue / revision	Drw	Rev
P03	27.10.21	Western end - Heyford Park design added	SRH	PW
P02	12.10.21	Eastern end moved to SK026	SRH	SC
P01	03.08.21	Preliminary issue	SRH	PW

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OXFORDSHIRE RAILFREIGHT LTD.

Project Title

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Drawing Title

HEYFORD PARK LINK ROAD WEST GENERAL ARRANGEMENT

Drawn:	S. Hilditch	Reviewed:	P. Webb
BWB Ref:	NTH2479	Date:	03.08.21
Scale@A1:	1:1250		

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
OxSRFI-BWB-GEN-ZZ-SK-CH-SK023	S1	P03

APPENDIX A

Traffic Flow Diagrams

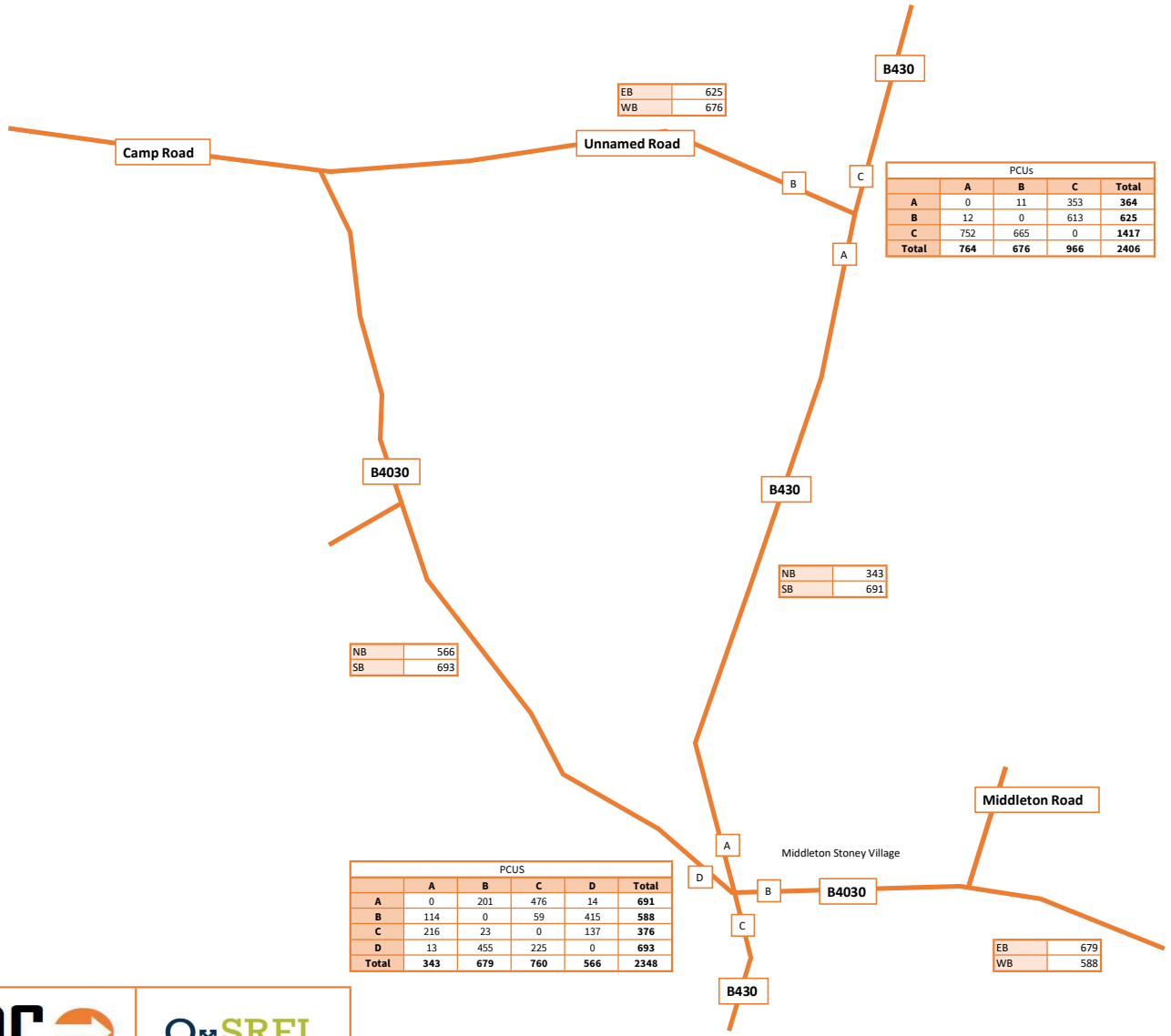
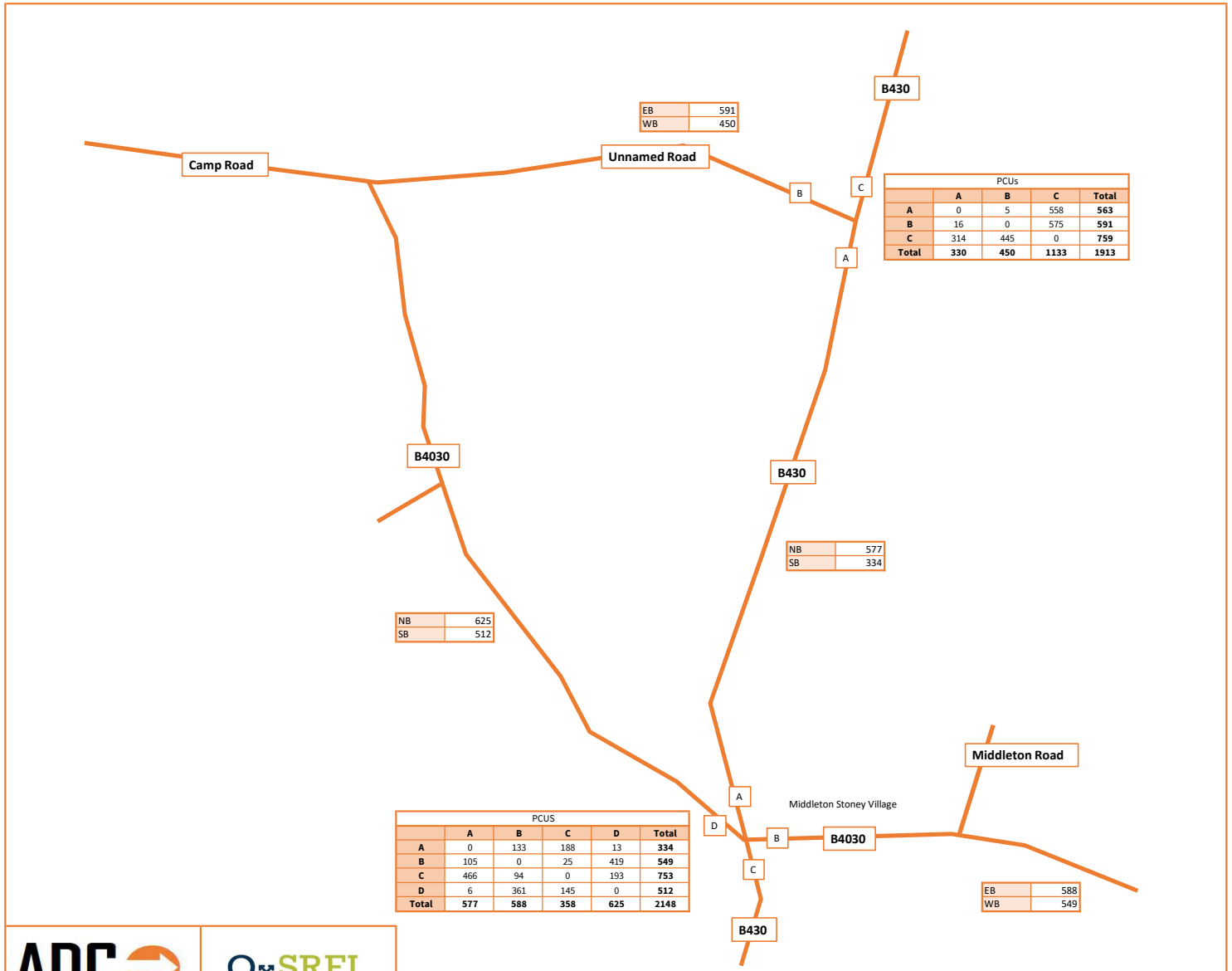


Diagram A1: 2031 AM peak hour base traffic flows with Heyford Park development

Sourced from Figure 9.2B of Heyford Park TA, April 2018, PBA

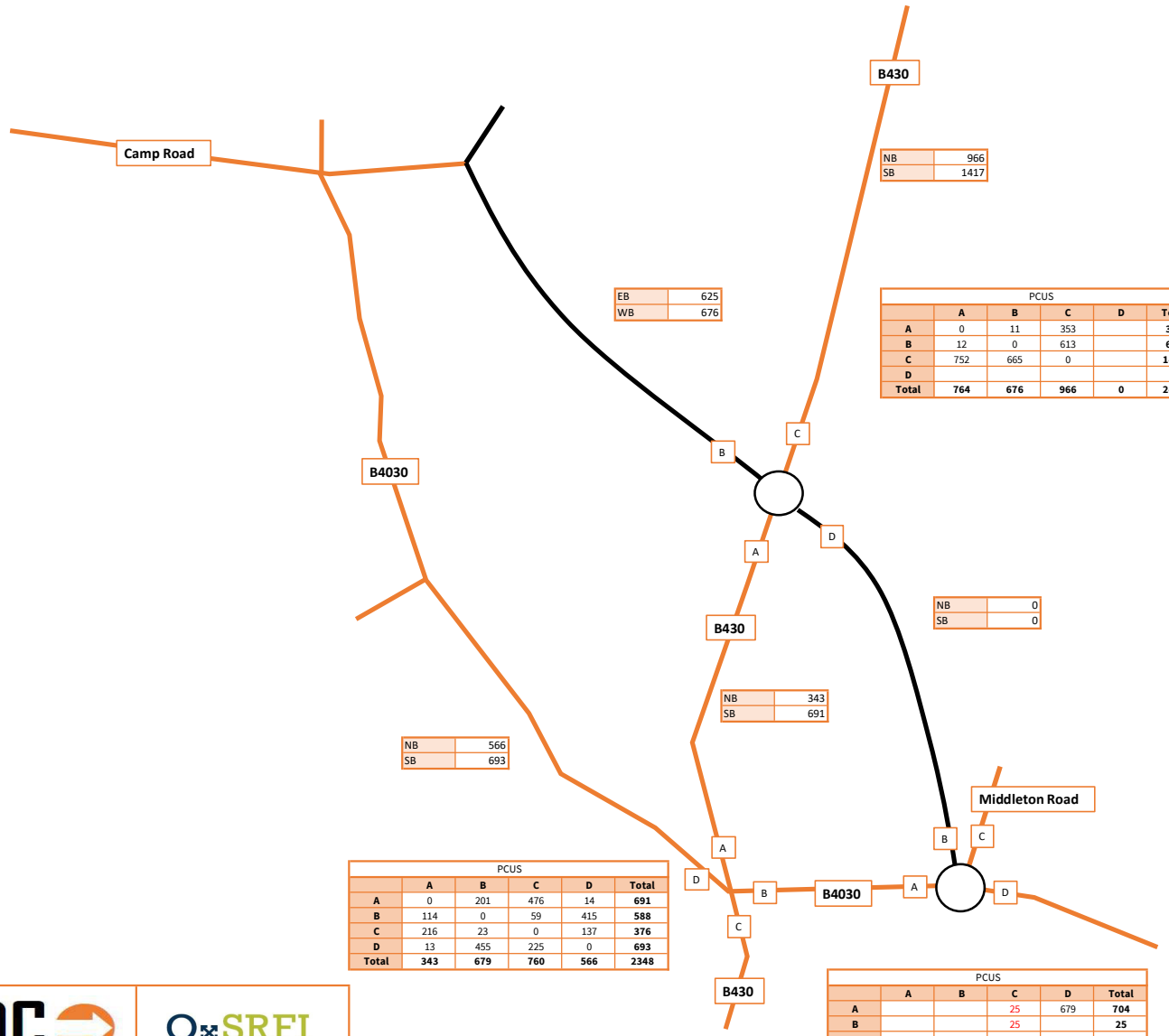


ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Diagram A2: 2031 PM peak hour base traffic flows with Heyford Park development

Sourced from Figure 9.3B of Heyford Park TA, April 2018, PBA



PCUS	A	B	C	D	Total
A	0	11	353		364
B	12	0	613		625
C	752	665	0		1417
D					0
Total	764	676	966	0	2406

PCUS	A	B	C	D	Total
A	0	201	476	14	691
B	114	0	59	415	588
C	216	23	0	137	376
D	13	455	225	0	693
Total	343	679	760	566	2348

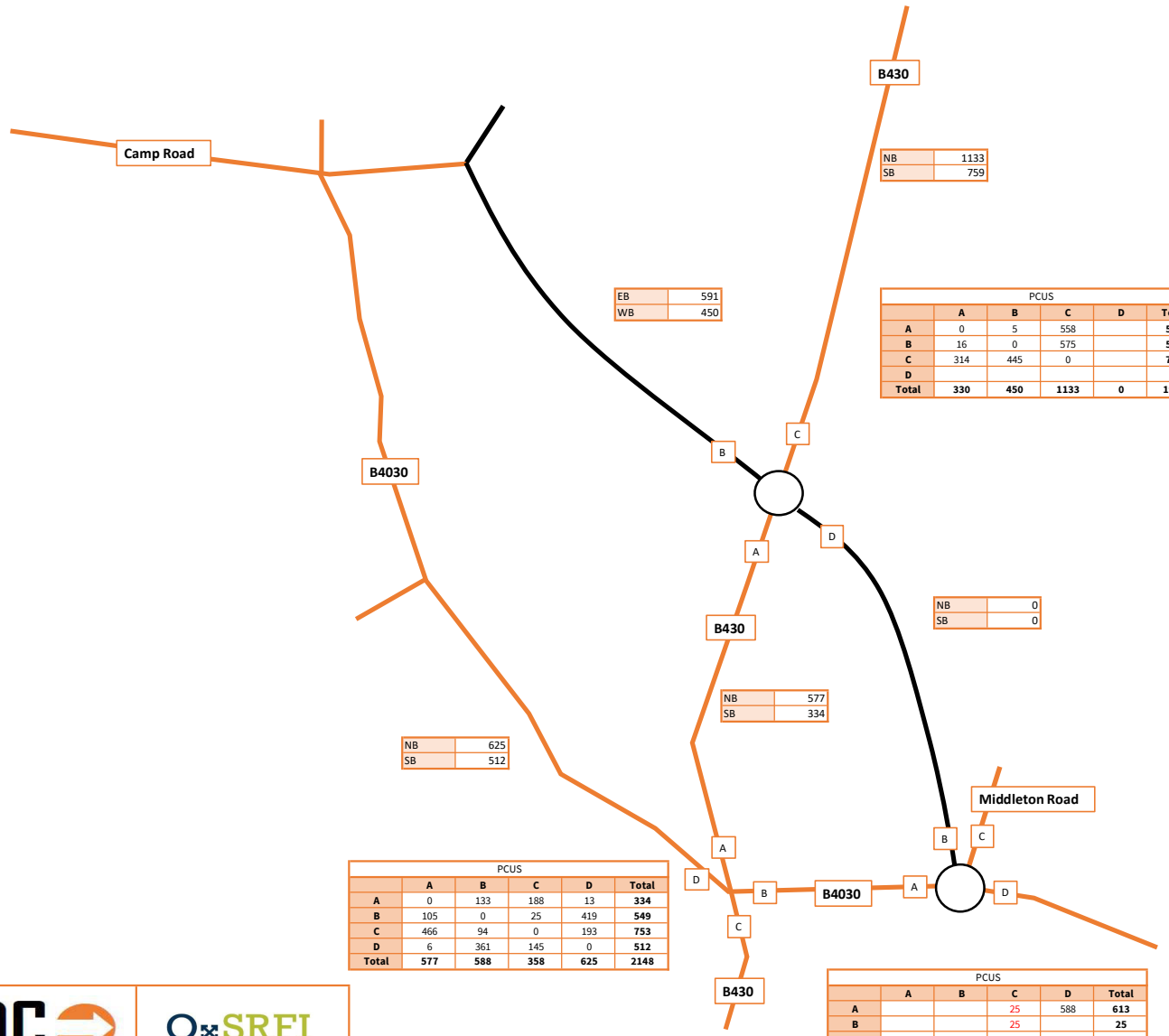
PCUS	A	B	C	D	Total
A			25	679	704
B			25		25
C	25	25		25	75
D	588		25		613
Total	613	25	75	704	1417

Arm C assumed nominal flows of 25 pcus between all movements

ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Diagram A3: 2031 AM peak hour base traffic flows with Heyford Park development (revised road layout)



PCUS					
	A	B	C	D	Total
A	0	5	558		563
B	16	0	575		591
C	314	445	0		759
D					0
Total	330	450	1133	0	1913

PCUS					
	A	B	C	D	Total
A	0	133	188	13	334
B	105	0	25	419	549
C	466	94	0	193	753
D	6	361	145	0	512
Total	577	588	358	625	2148

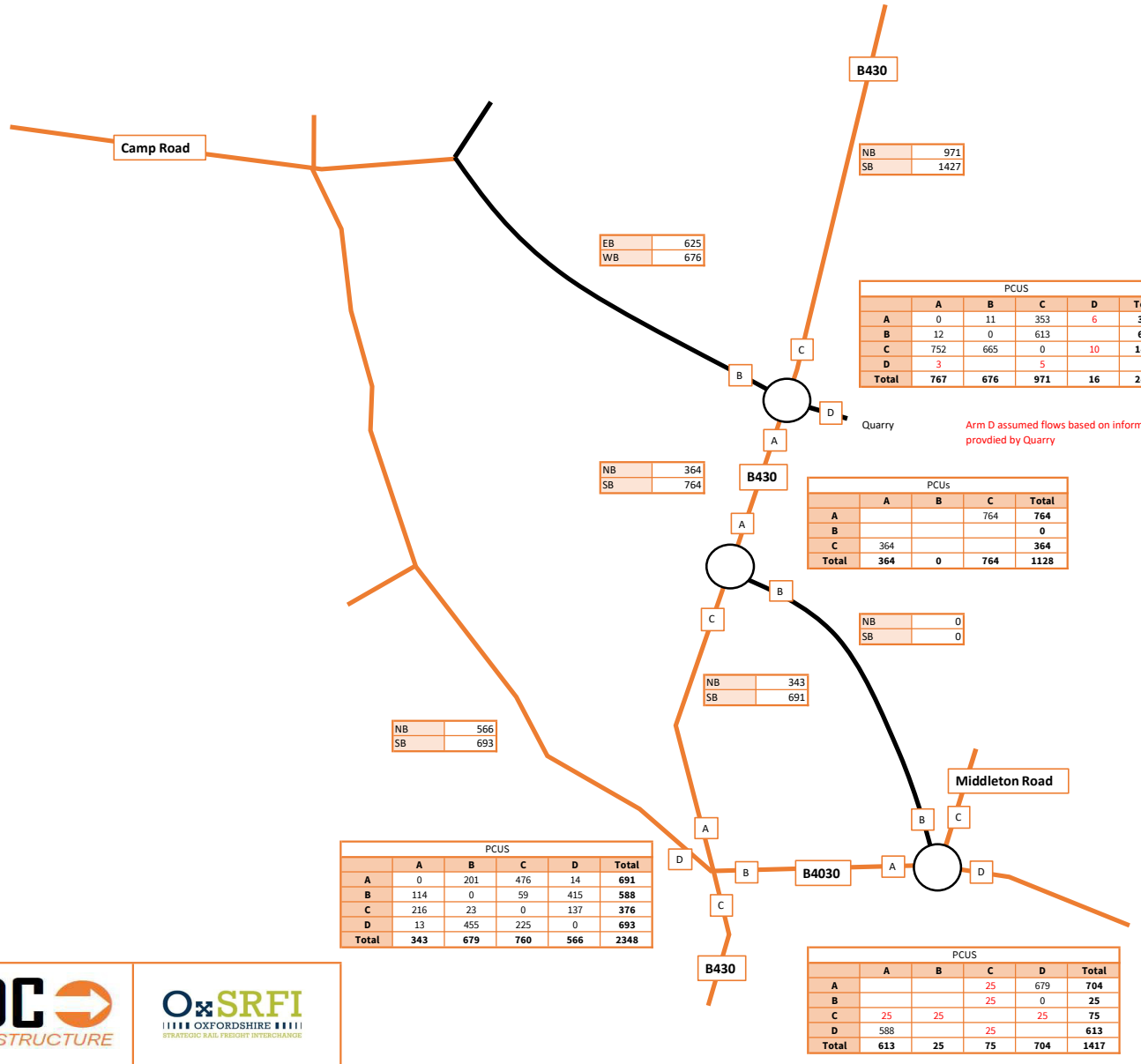
PCUS					
	A	B	C	D	Total
A			25	588	613
B			25		25
C	25	25		25	75
D	549		25		574
Total	574	25	75	613	1287

Arm C assumed nominal flows of 25 pcus between all movements

ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

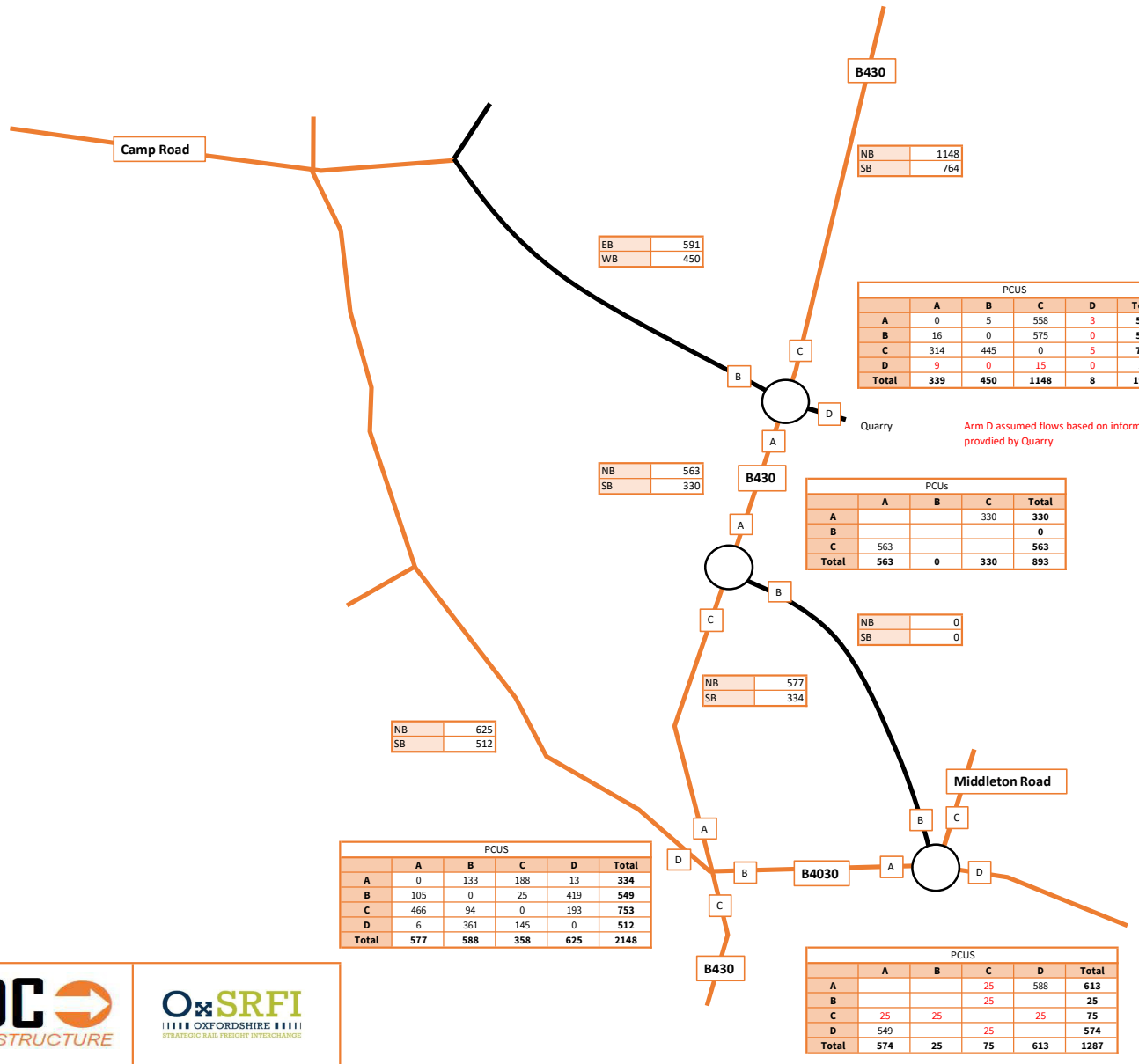
Diagram A4: 2031 PM peak hour base traffic flows with Heyford Park development (revised road layout)



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

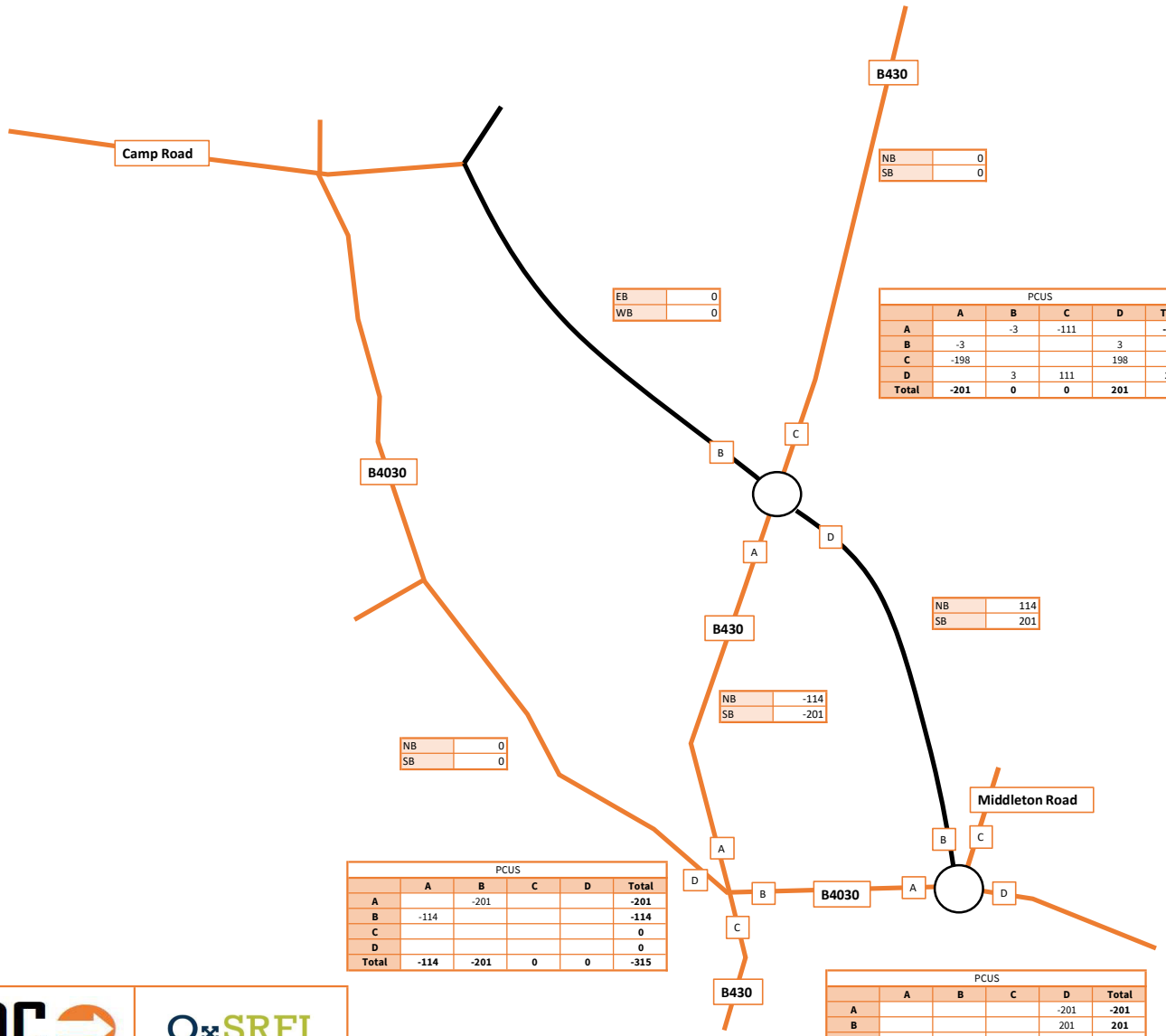
Diagram A5: 2031 AM peak hour base traffic flows with Heyford Park development (revised road layout) - two junctions



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

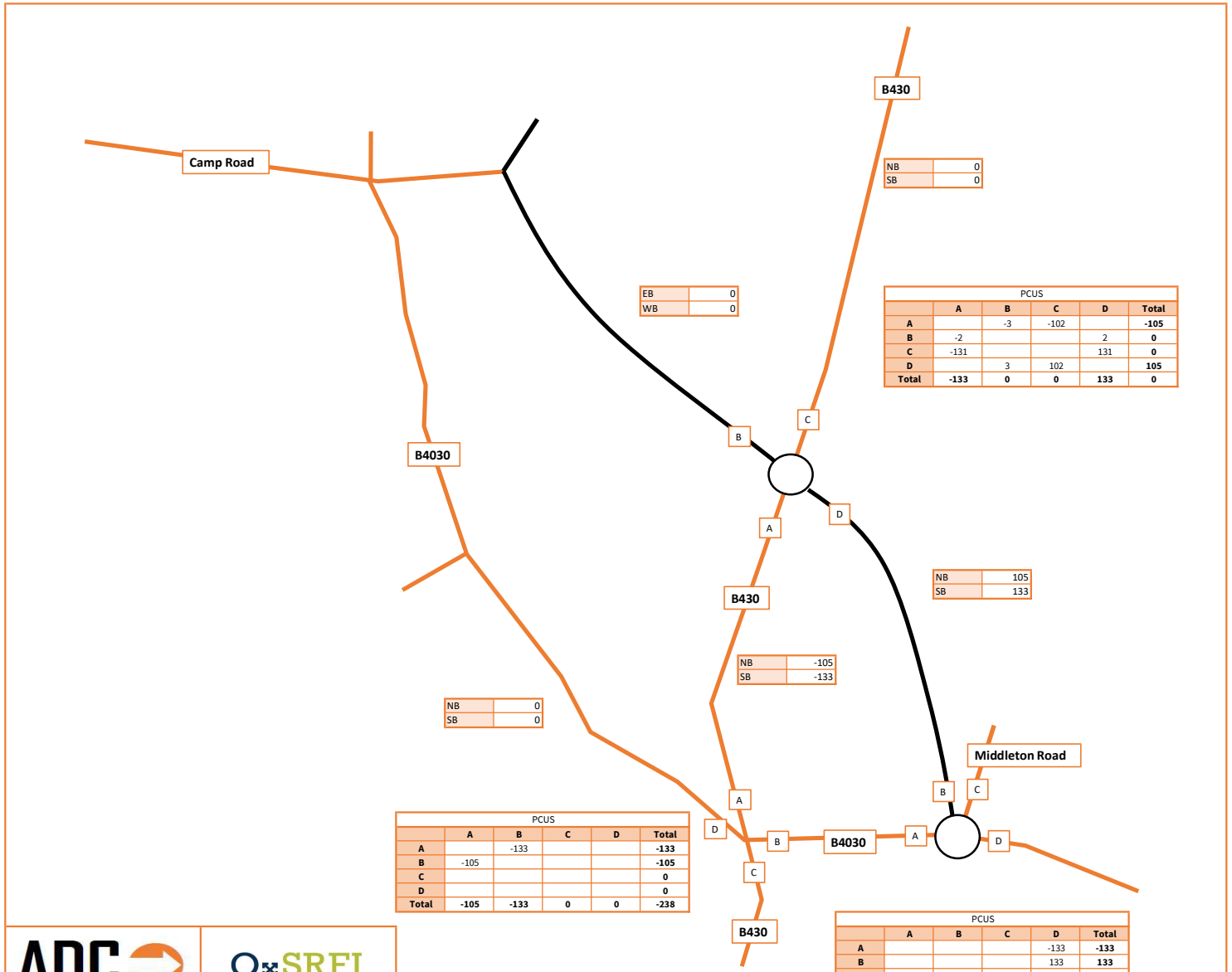
Diagram A6: 2031 PM peak hour base traffic flows with Heyford Park development (revised road layout) - two junctions



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

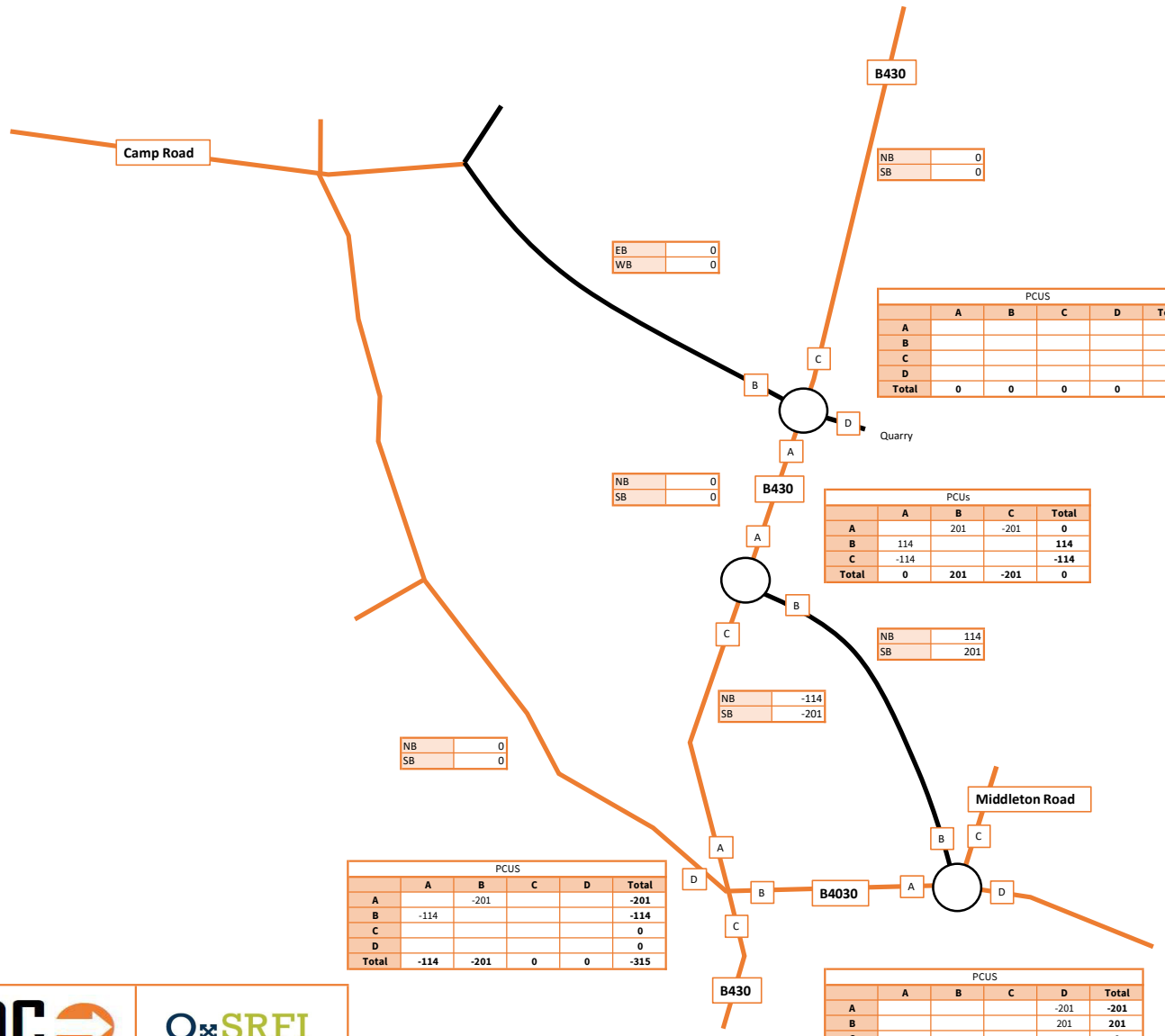
Diagram A7: resigned traffic due to MSRR - 2031 AM peak hour traffic flows



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

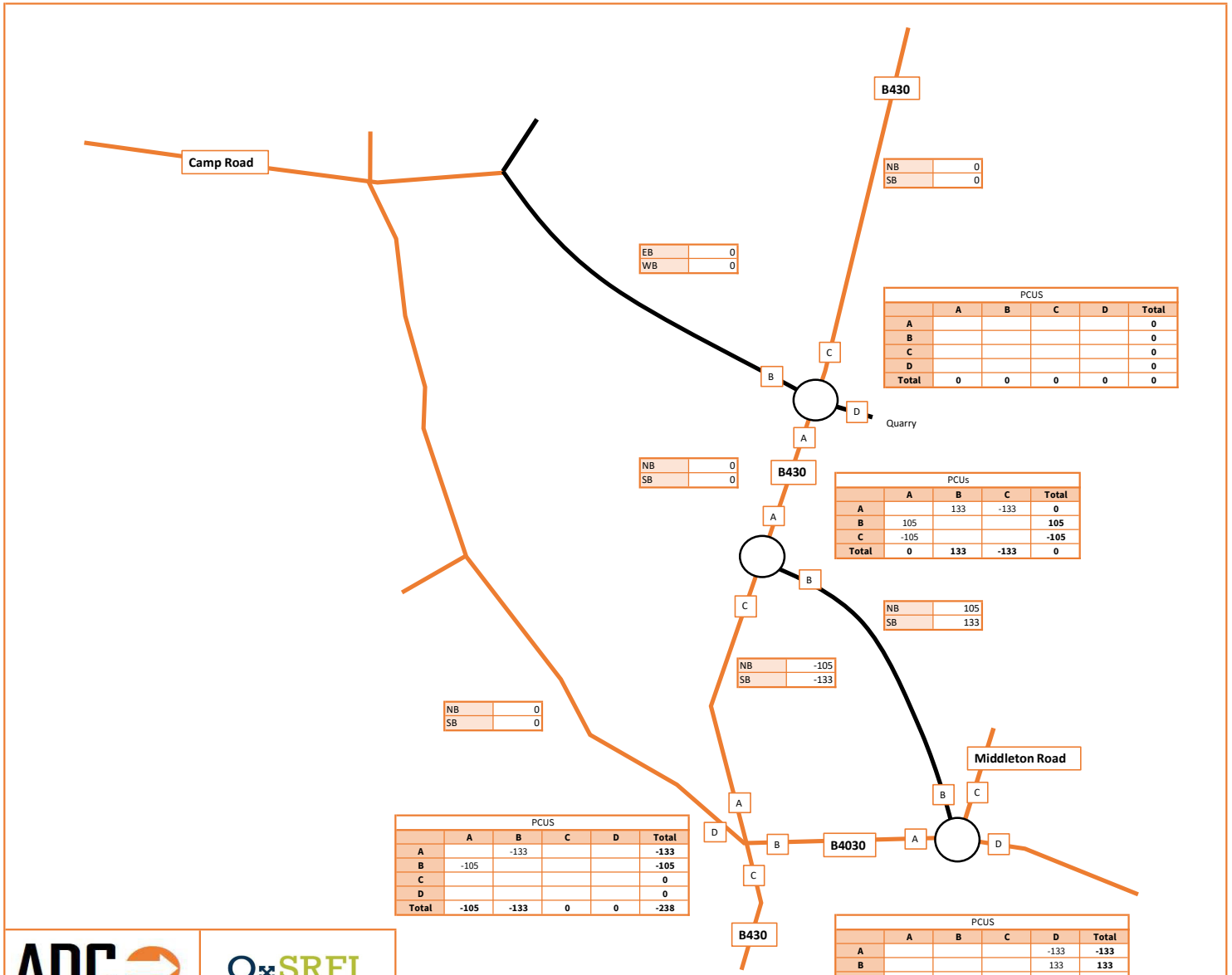
Diagram A8: resigned traffic due to MSRR - 2031 PM peak hour traffic flows



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

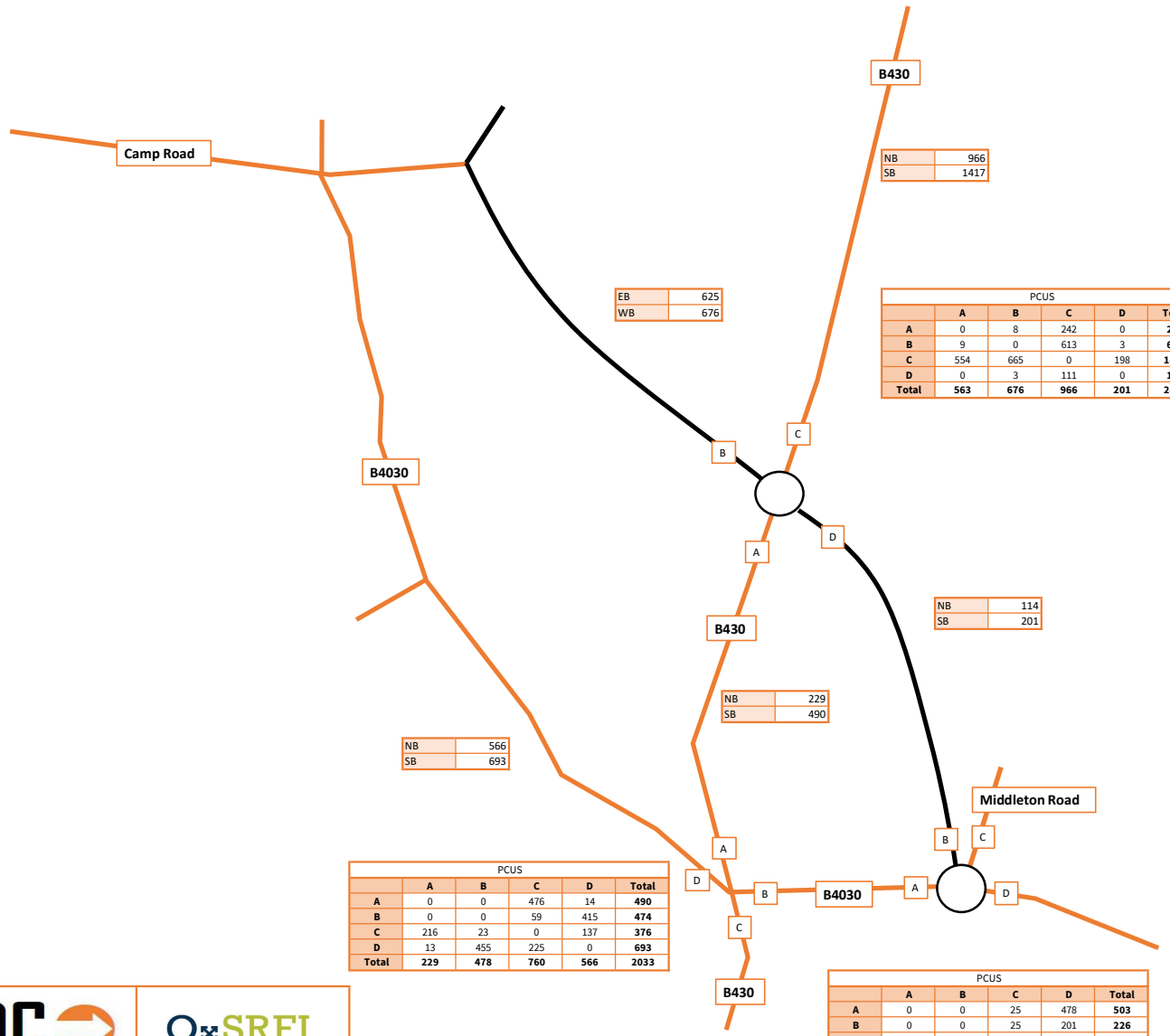
Diagram A9: resigned traffic due to MSRR - 2031 AM peak hour traffic flows (two junction layout)



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

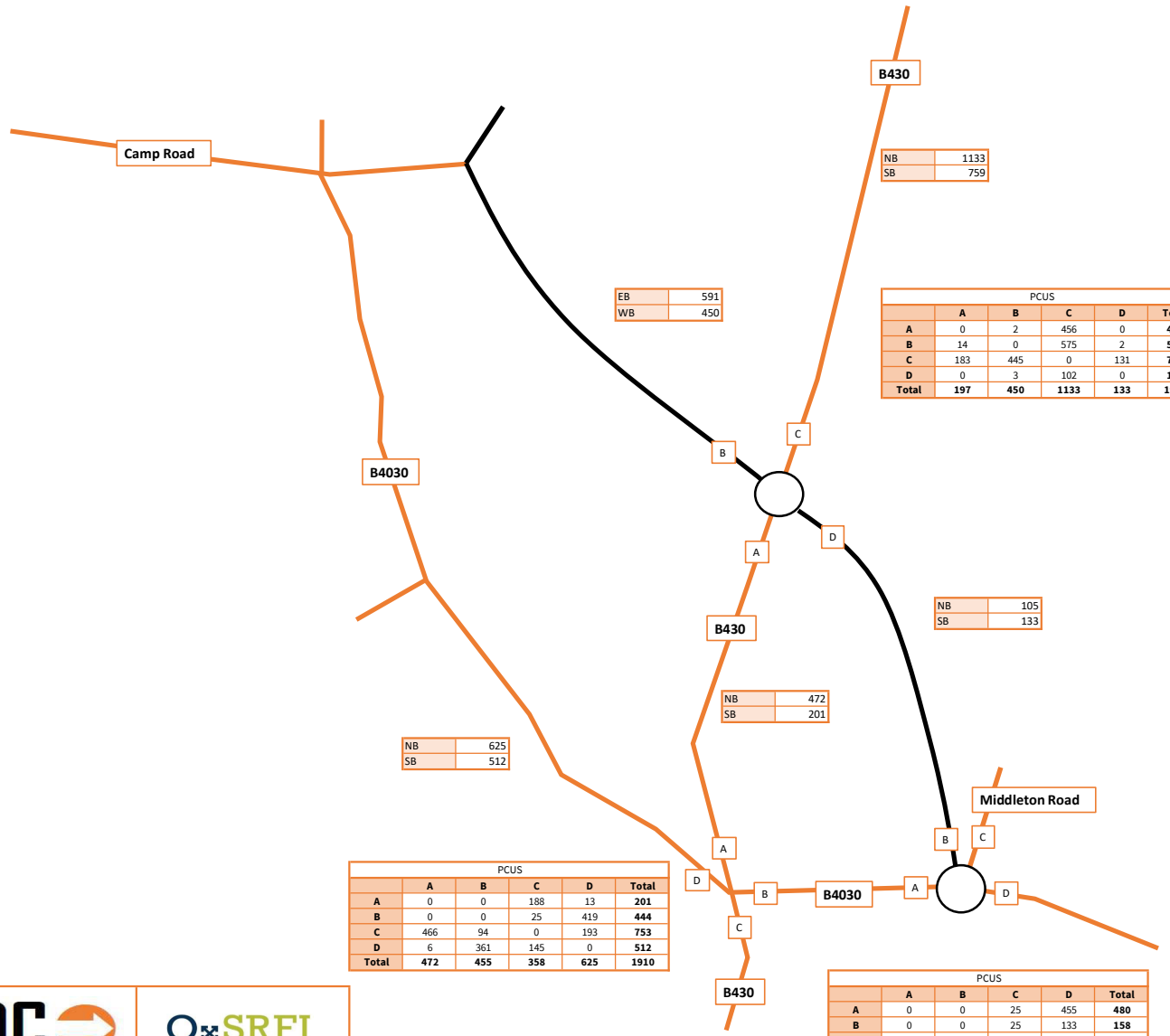
Diagram A10: resigned traffic due to MSRR - 2031
PM peak hour traffic flows (two junction layout)



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

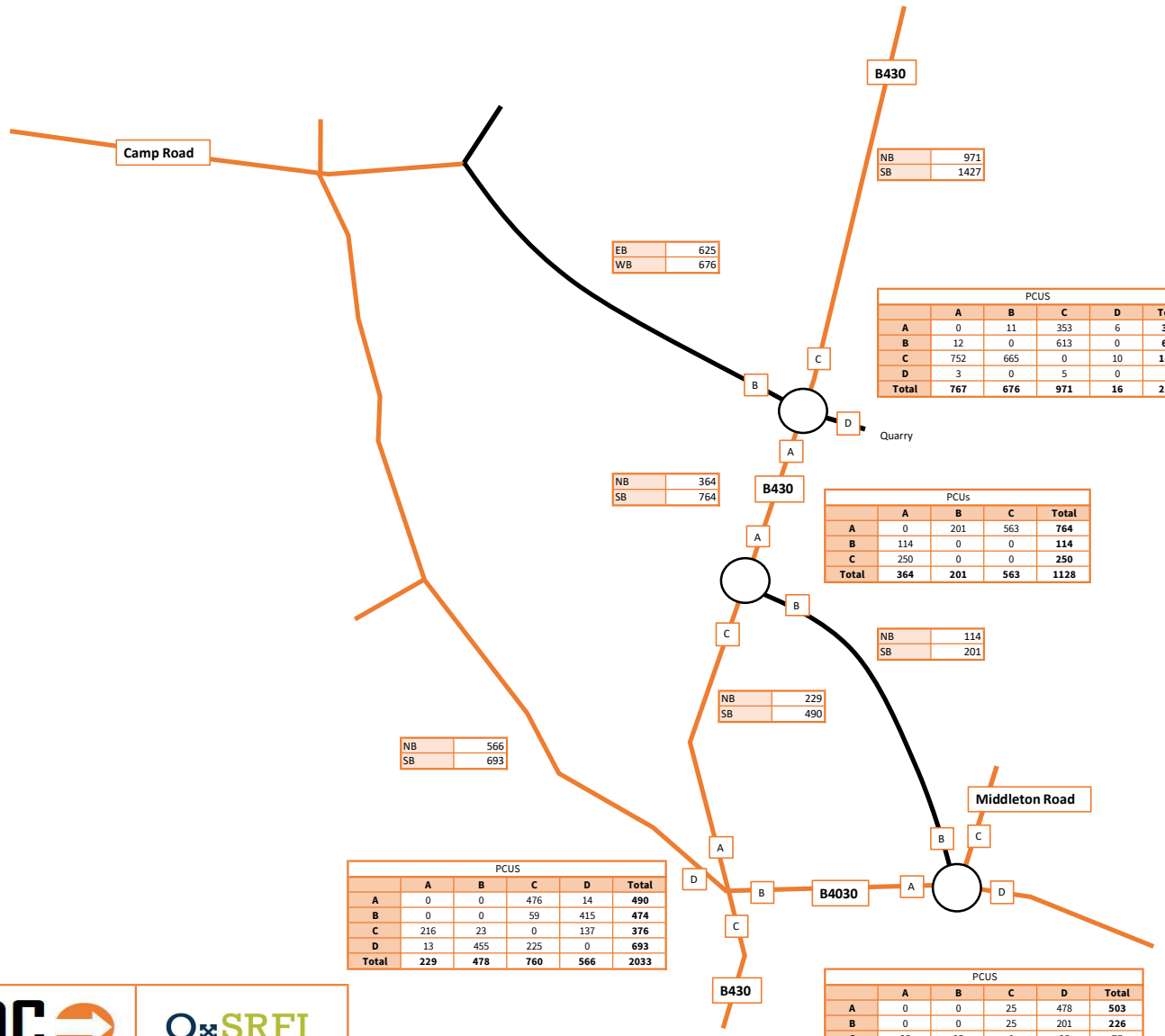
Diagram A11: 2031 AM peak hour background traffic flows



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

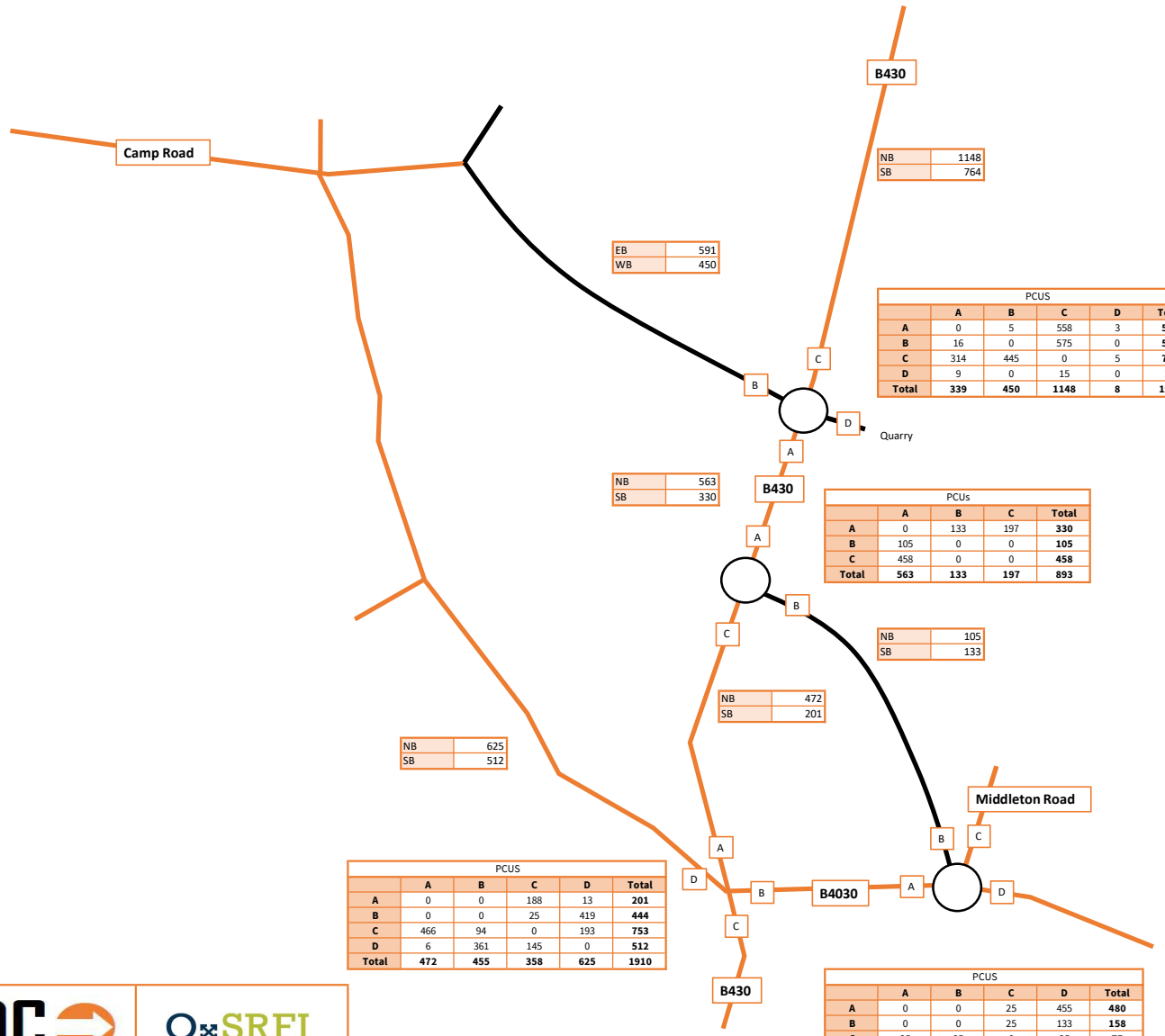
Diagram A12: 2031 PM peak hour background traffic flows



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Diagram A13: 2031 AM peak hour background traffic flows - two junction layout



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Diagram A14: 2031 PM peak hour background traffic flows - two junction layout

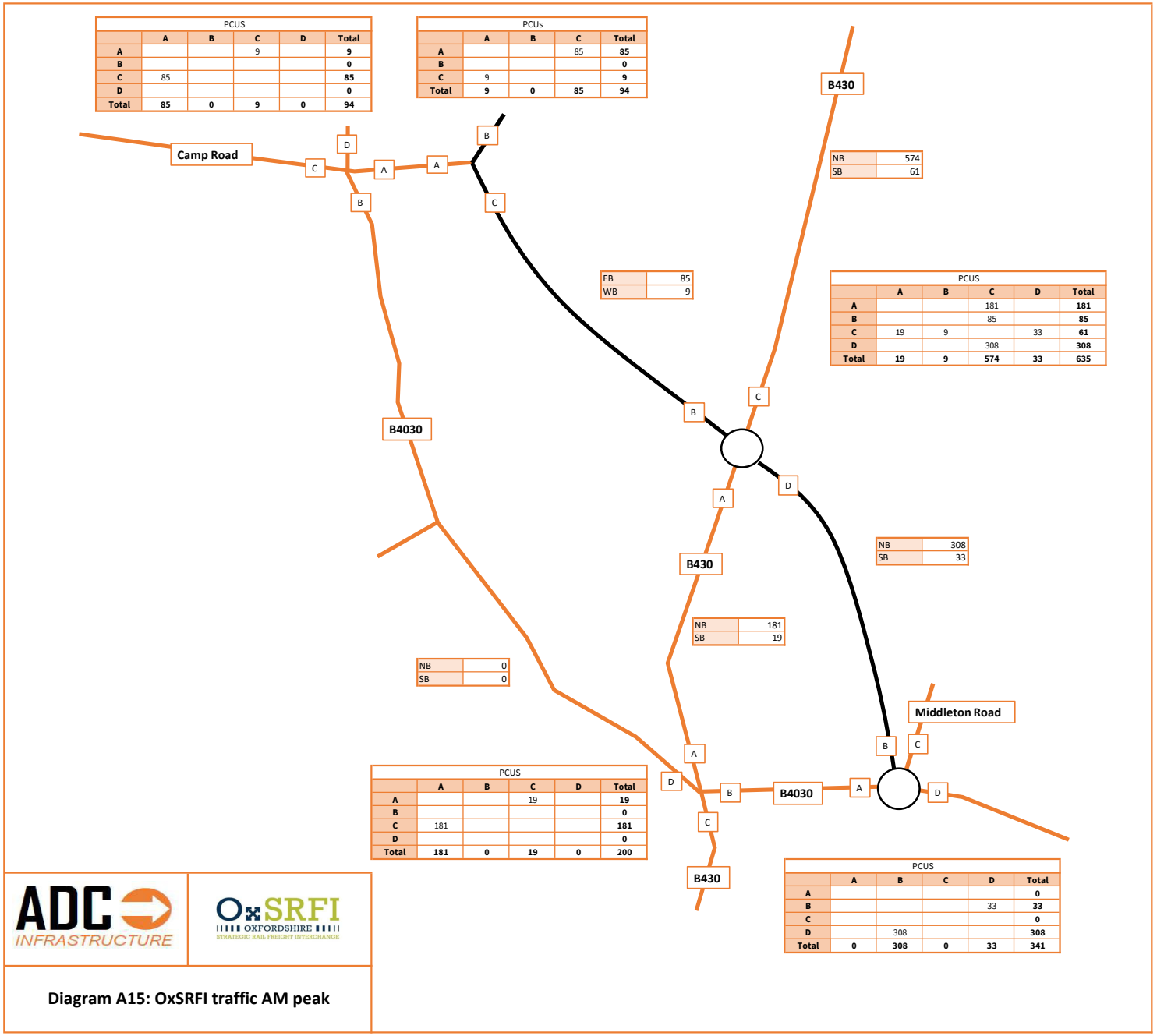


Diagram A15: OxSRFI traffic AM peak

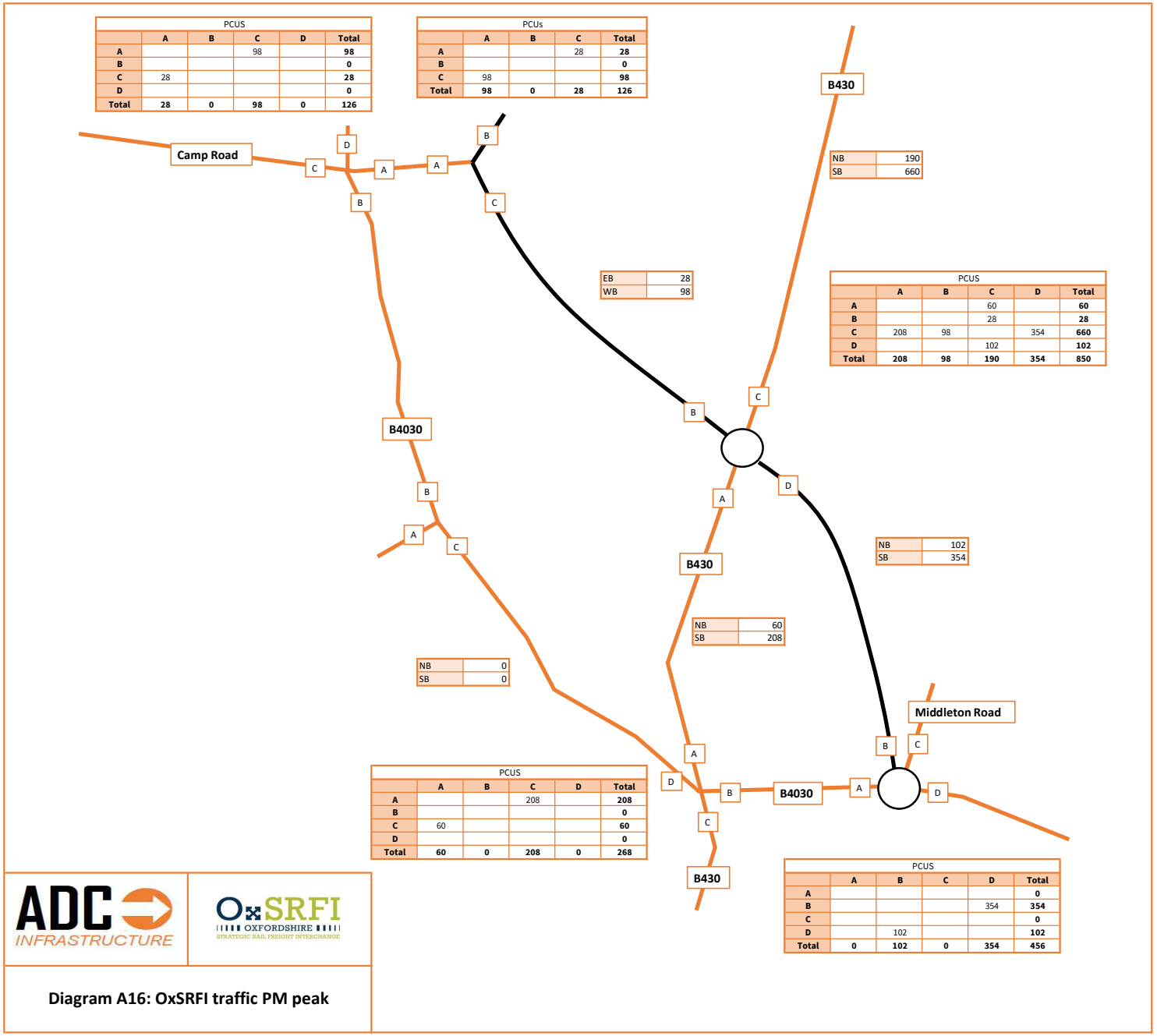
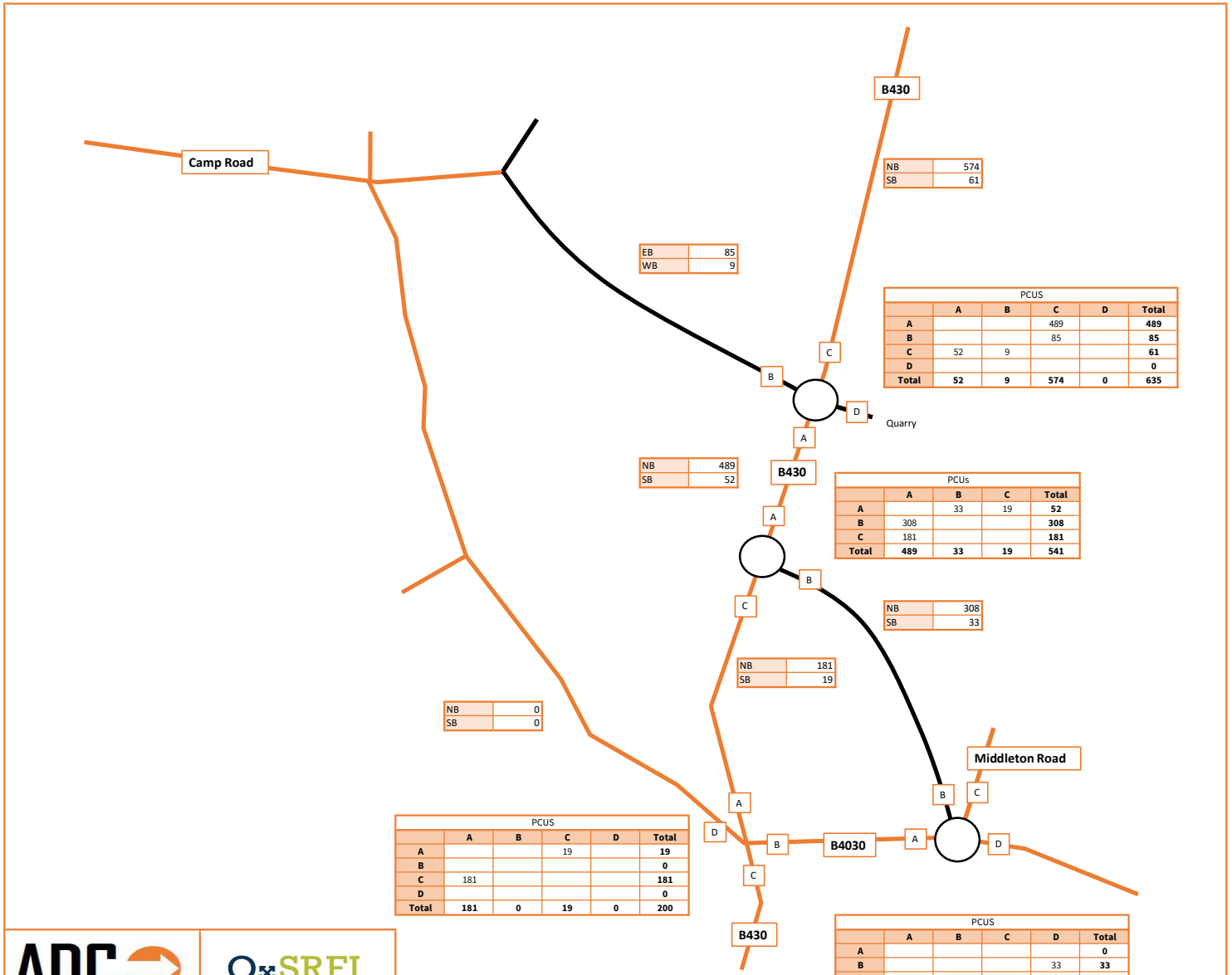


Diagram A16: OxSRFI traffic PM peak



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Diagram A17: OxSRFI traffic AM peak (two junctions)

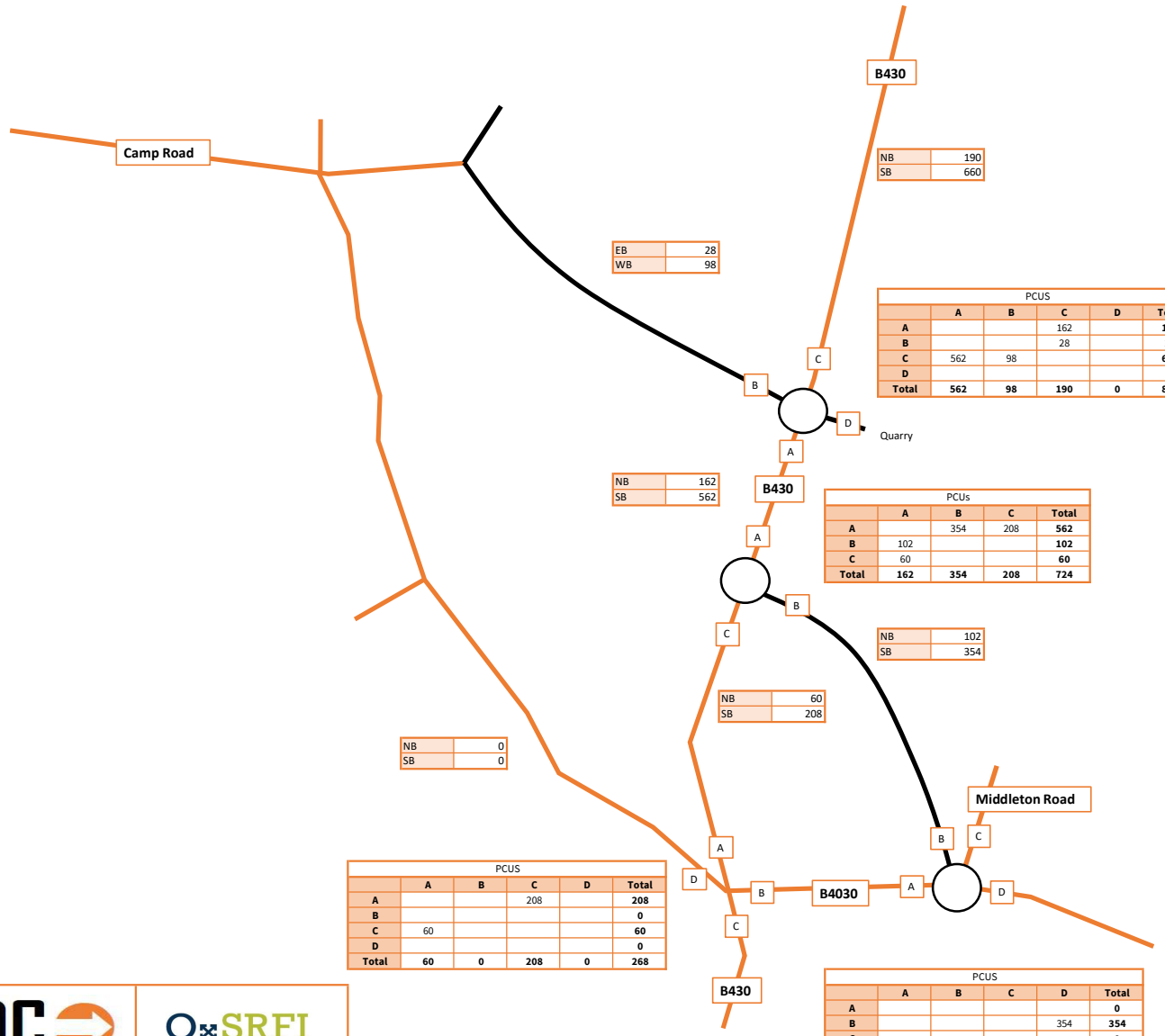
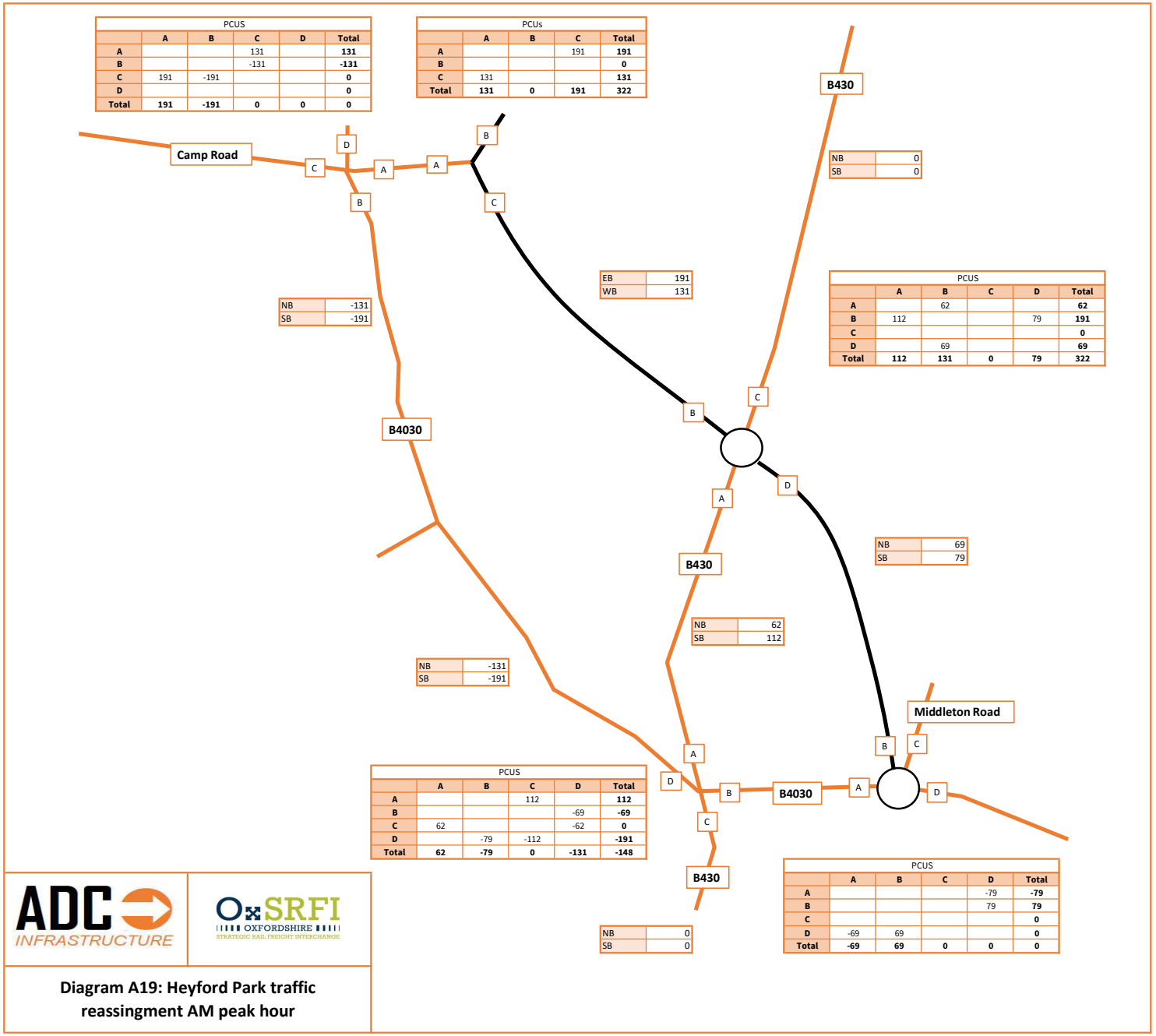


Diagram A18: OxSRFI traffic PM peak (two junctions)



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Diagram A19: Heyford Park traffic reassingment AM peak hour

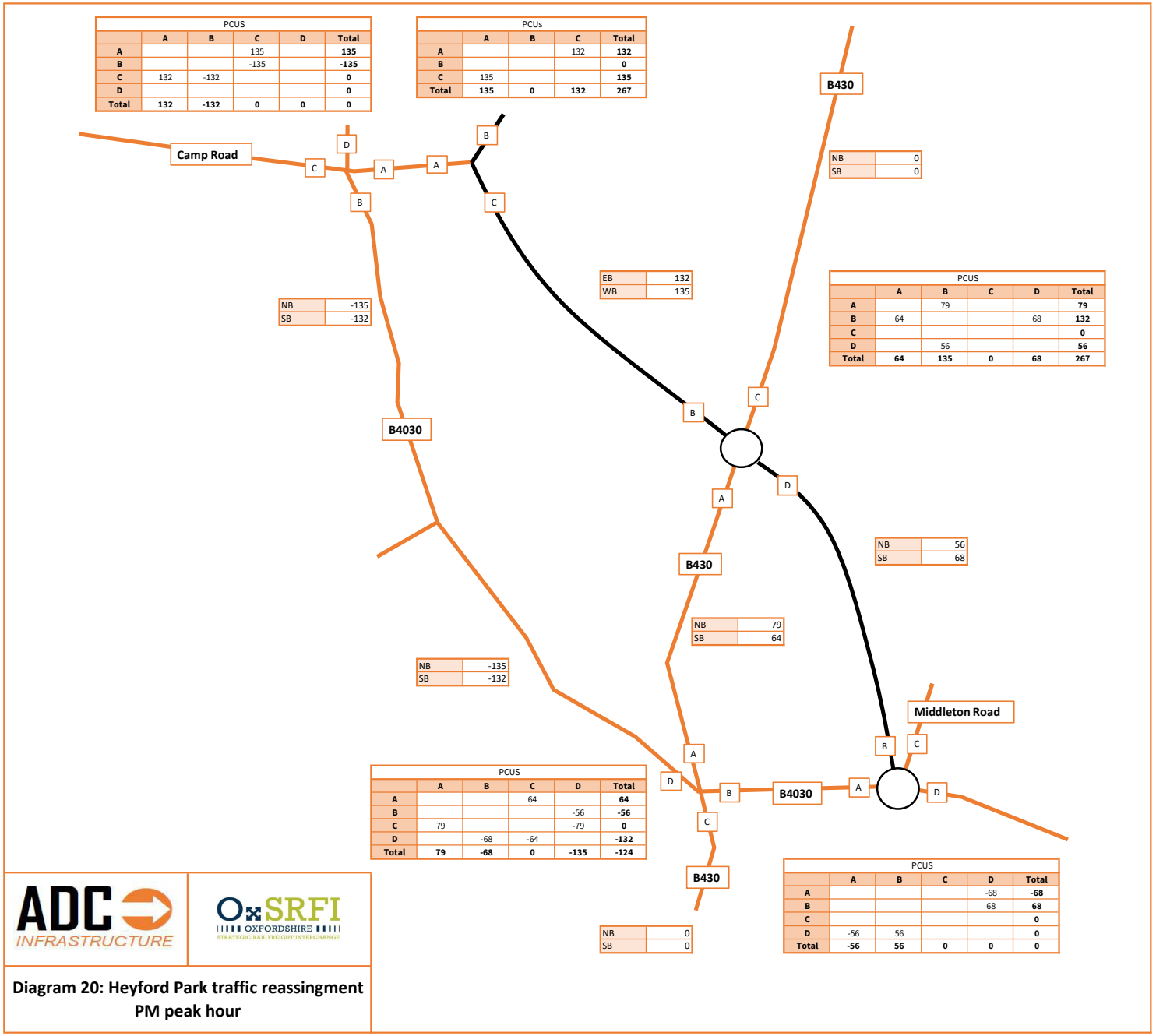


Diagram 20: Heyford Park traffic reassingment PM peak hour

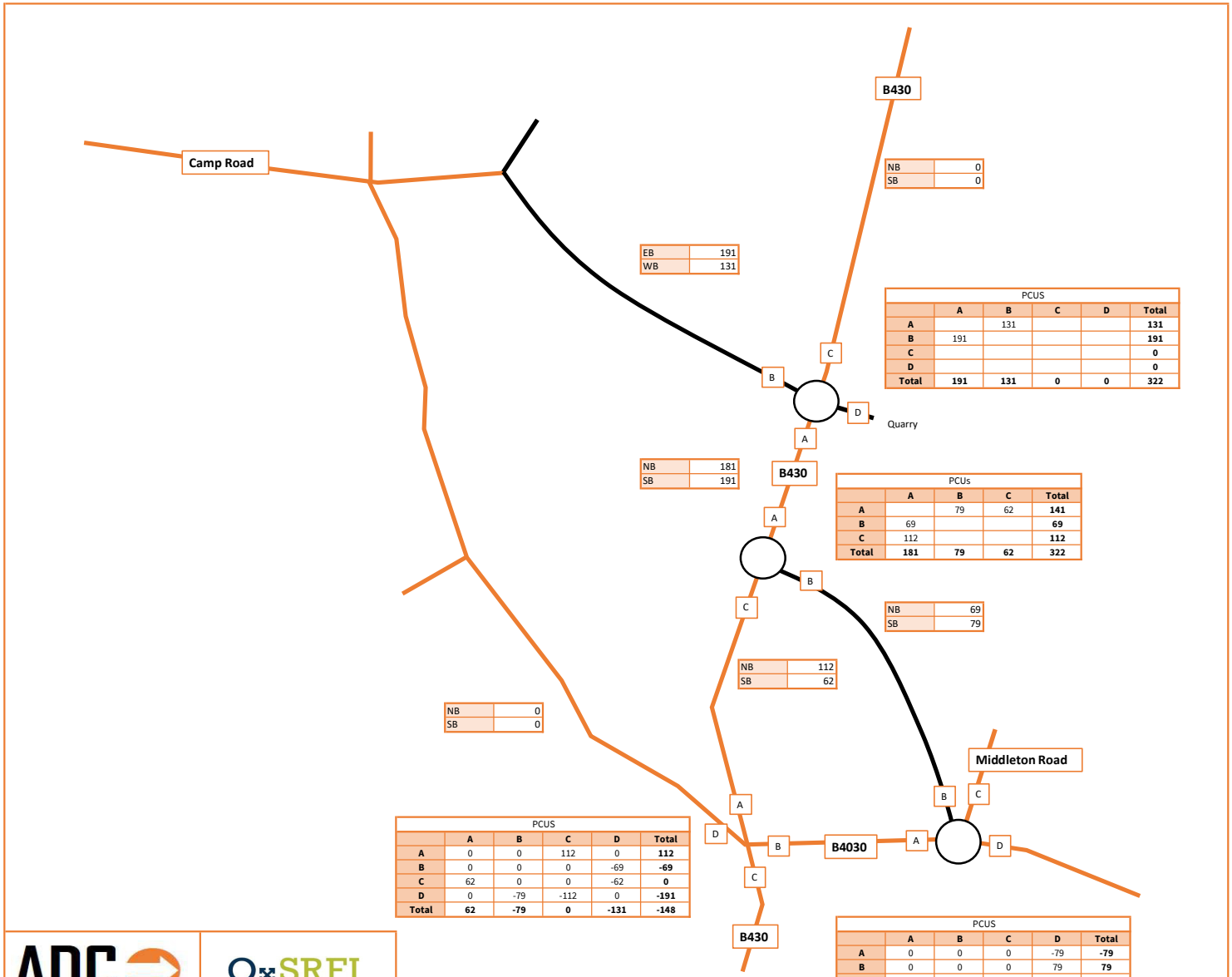
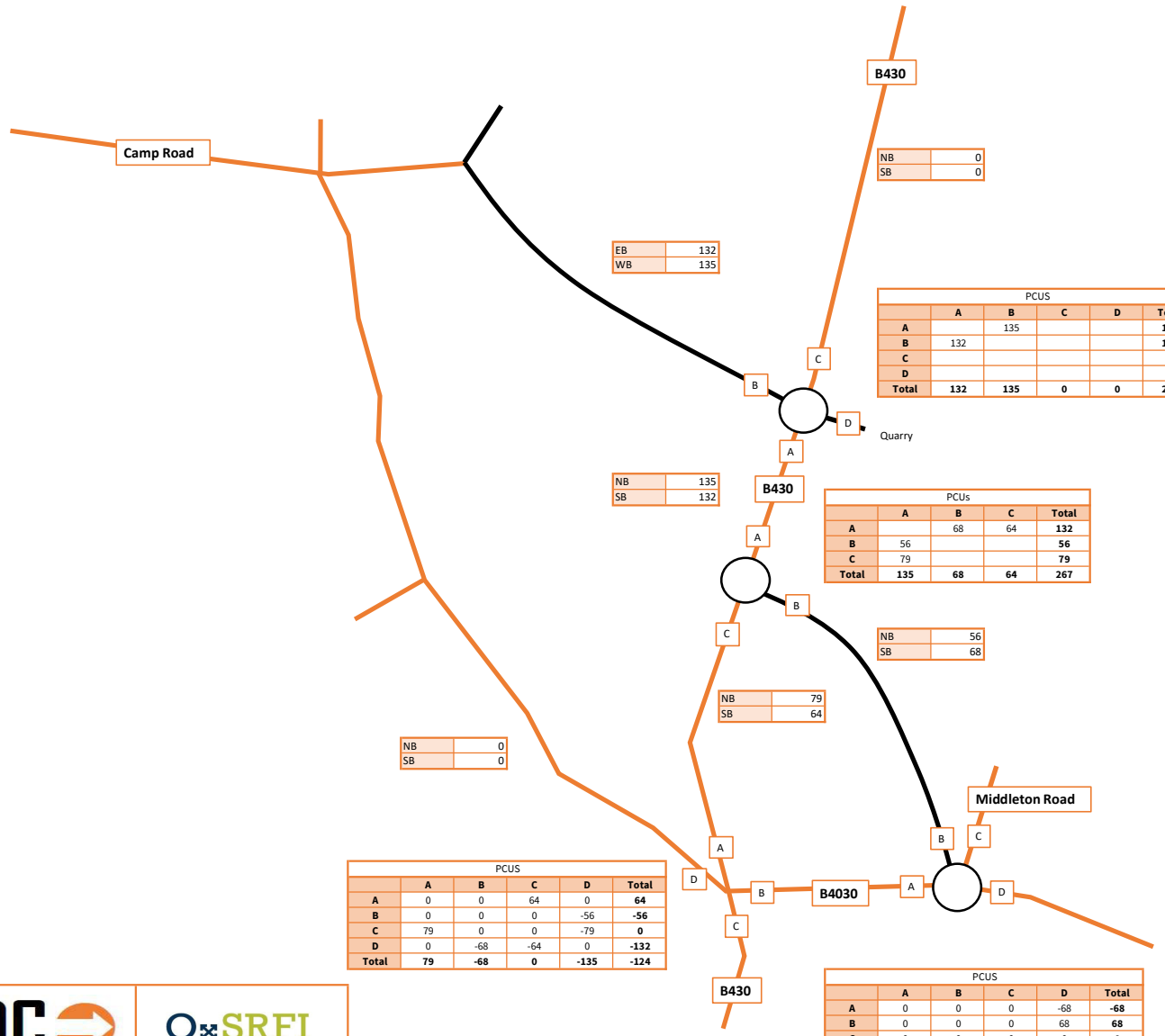


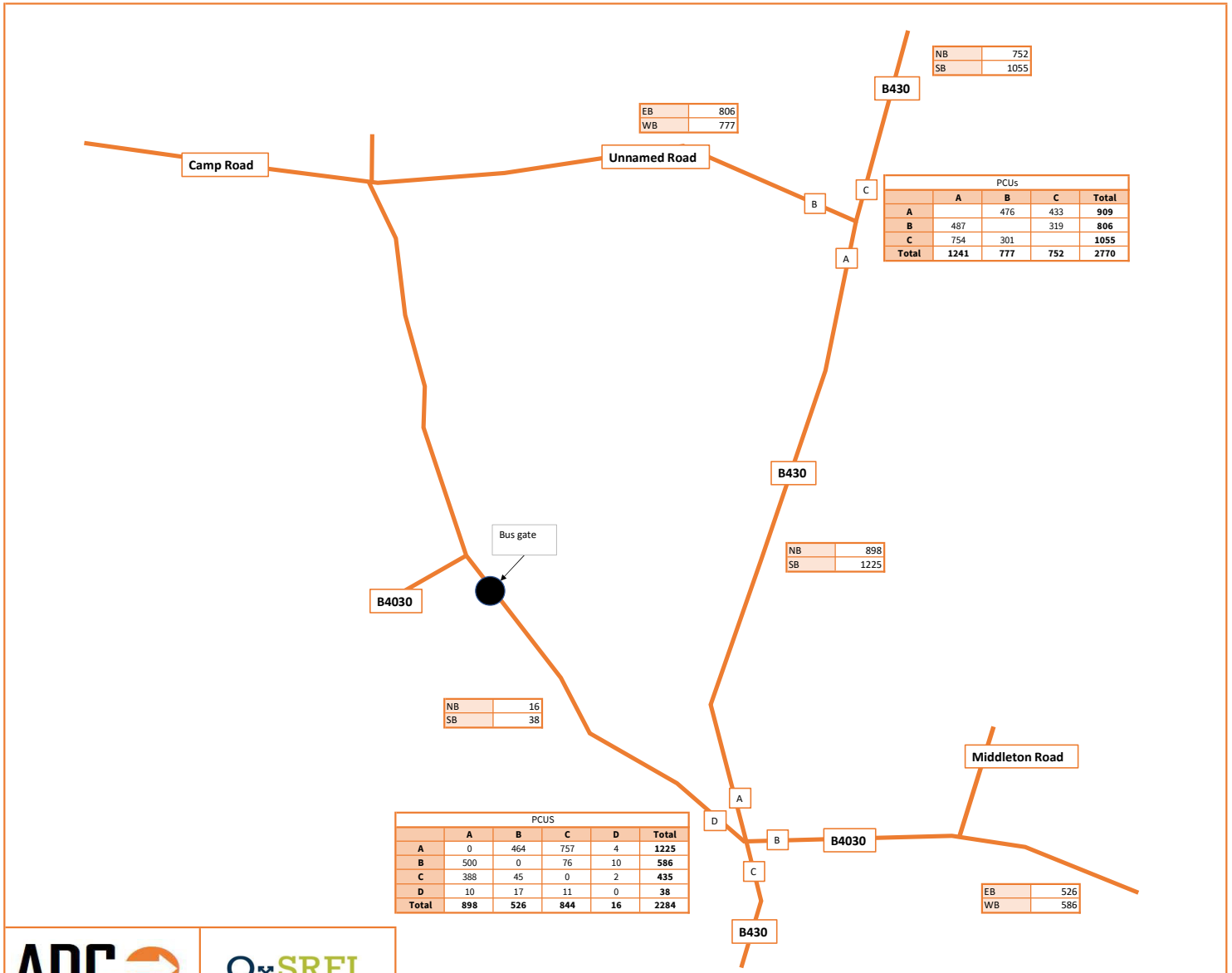
Diagram A21: Heyford Park traffic reassingment AM peak hour (two junction layout)



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Diagram A22: Heyford Park traffic reassingment PM peak hour (two junction layout)



PCUs

	A	B	C	Total
A		476	433	**909**
B	487		319	**806**
C	754	301		**1055**
Total	**1241**	**777**	**752**	**2770**

PCUS

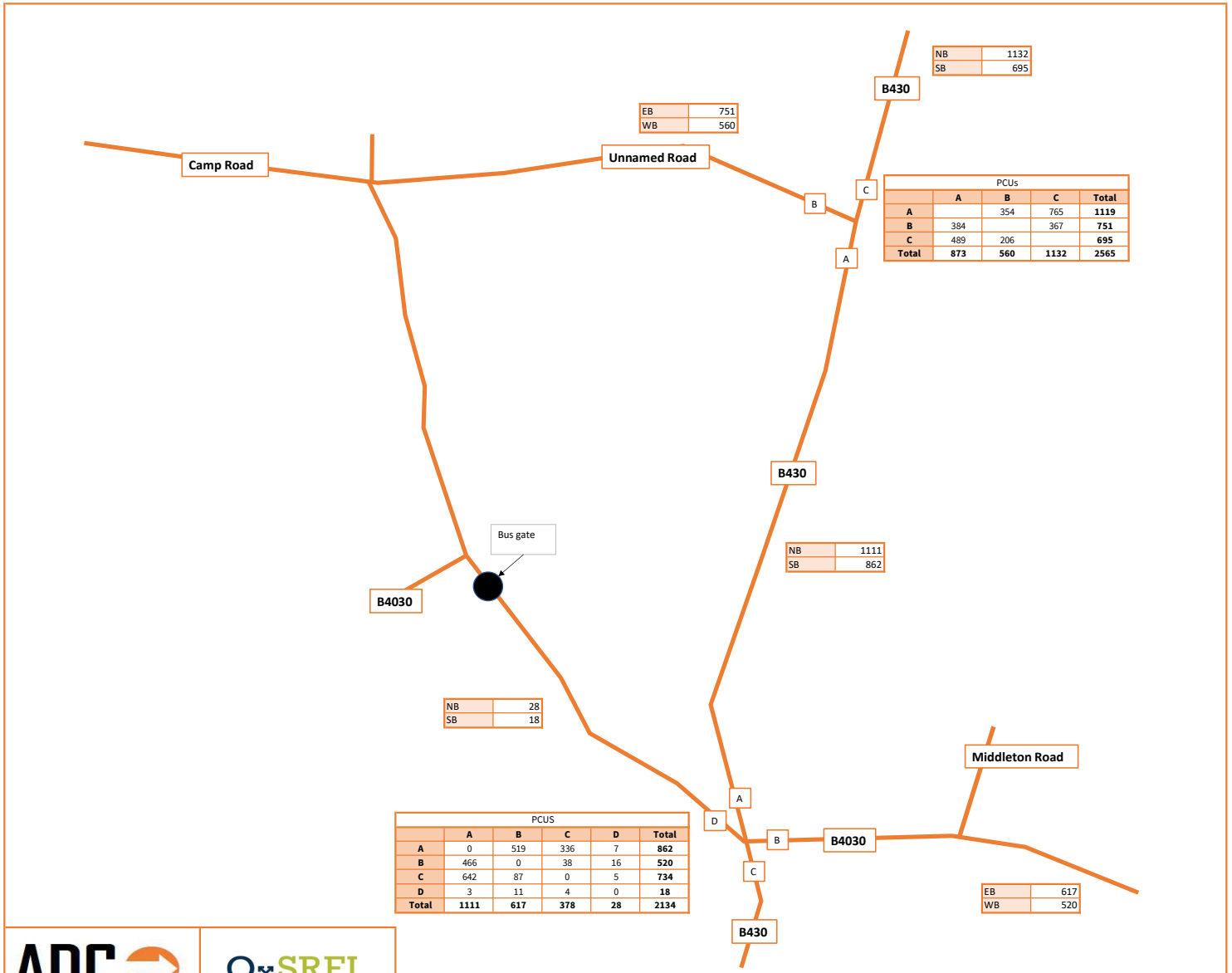
	A	B	C	D	Total
A	0	464	757	4	**1225**
B	500	0	76	10	**586**
C	388	45	0	2	**435**
D	10	17	11	0	**38**
Total	**898**	**526**	**844**	**16**	**2284**

ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Diagram A23: 2031 AM peak hour base traffic flows with Heyford Park development and bus gate

Sourced from LinSig models provided at part of Technical Note 024 RevD, Appendix E of Heyford Park Transport Assessment Addendum Revision 1, 10 March 2020, Stantec



PCUs

	A	B	C	Total
A		354	765	**1119**
B	384		367	**751**
C	489	206		**695**
Total	**873**	**560**	**1132**	**2565**

PCUS

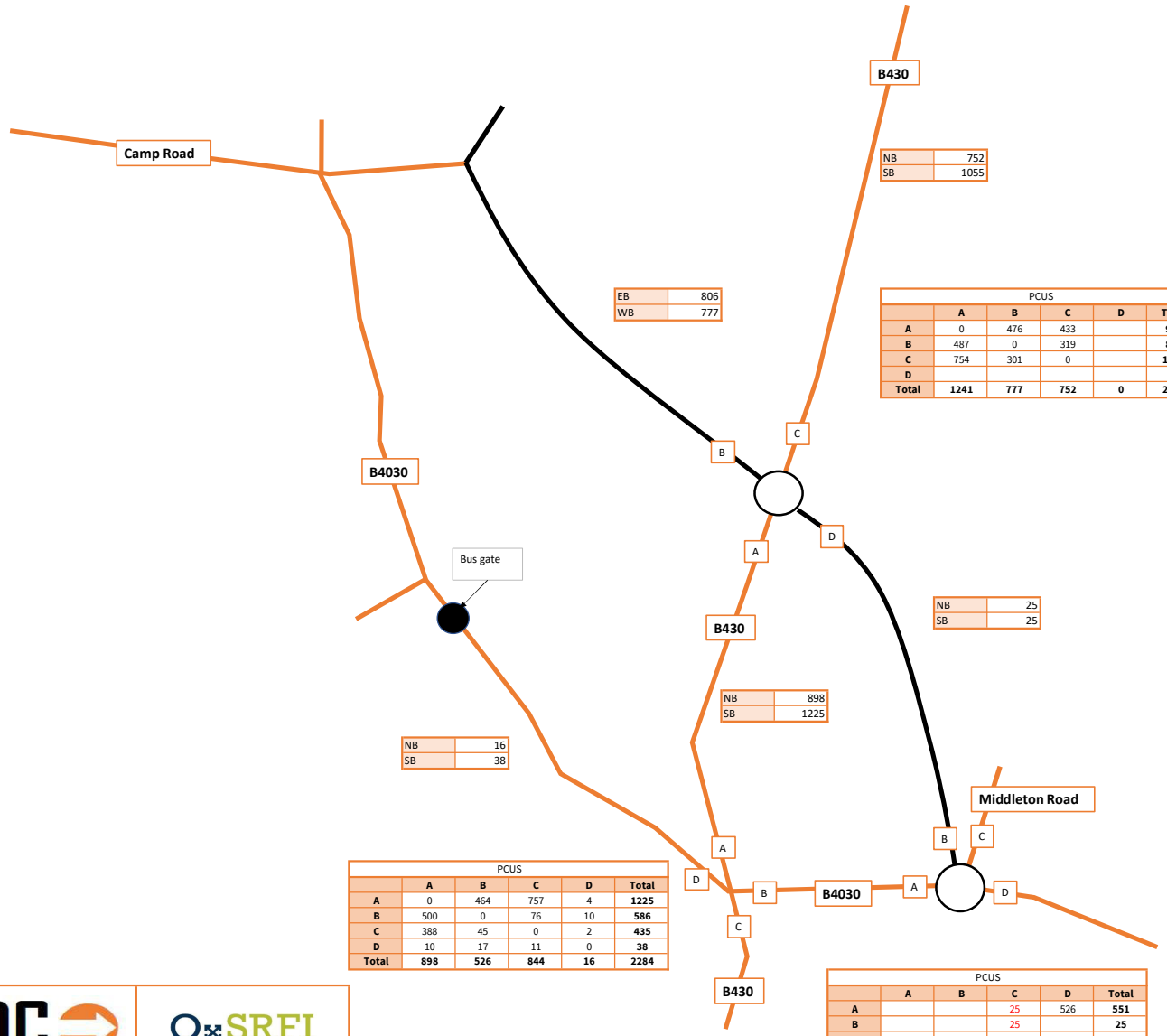
	A	B	C	D	Total
A	0	519	336	7	**862**
B	466	0	38	16	**520**
C	642	87	0	5	**734**
D	3	11	4	0	**18**
Total	**1111**	**617**	**378**	**28**	**2134**

ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

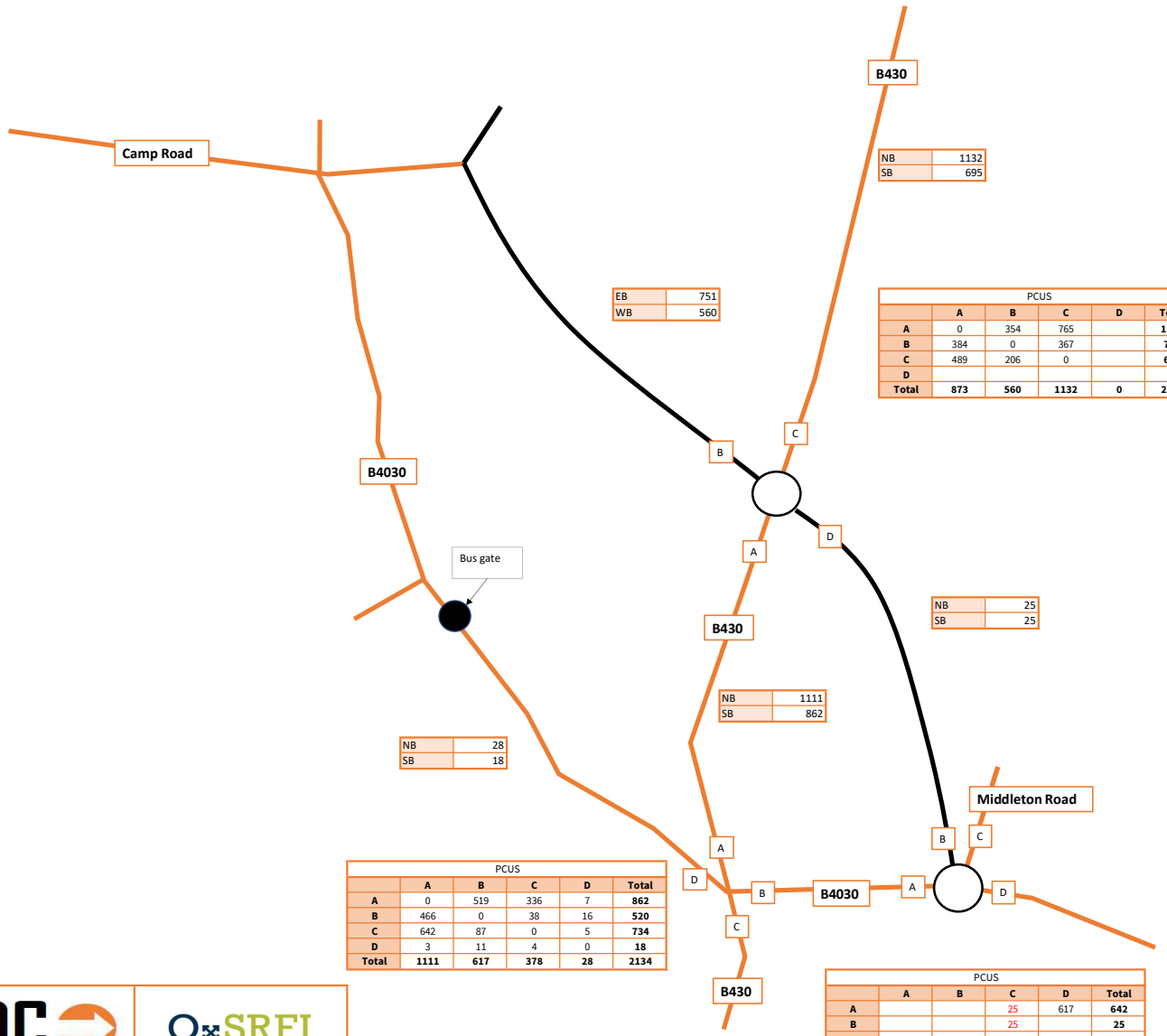
Diagram A24: 2031 PM peak hour base traffic flows with Heyford Park development and bus gate

Sourced from LinSig models provided at part of Technical Note 024 RevD, Appendix E of Heyford Park Transport Assessment Addendum Revision 1, 10 March 2020, Stantec



Arm C assumed nominal flows of 25 pcus between all movements

Diagram A25: 2031 AM peak hour base traffic flows with Heyford Park development and bus gate (revised road layout)



PCUS

	A	B	C	D	Total
A	0	354	765		1119
B	384	0	367		751
C	489	206	0		695
D					0
Total	873	560	1132	0	2565

PCUS

	A	B	C	D	Total
A	0	519	336	7	862
B	466	0	38	16	520
C	642	87	0	5	734
D	3	11	4	0	18
Total	1111	617	378	28	2134

PCUS

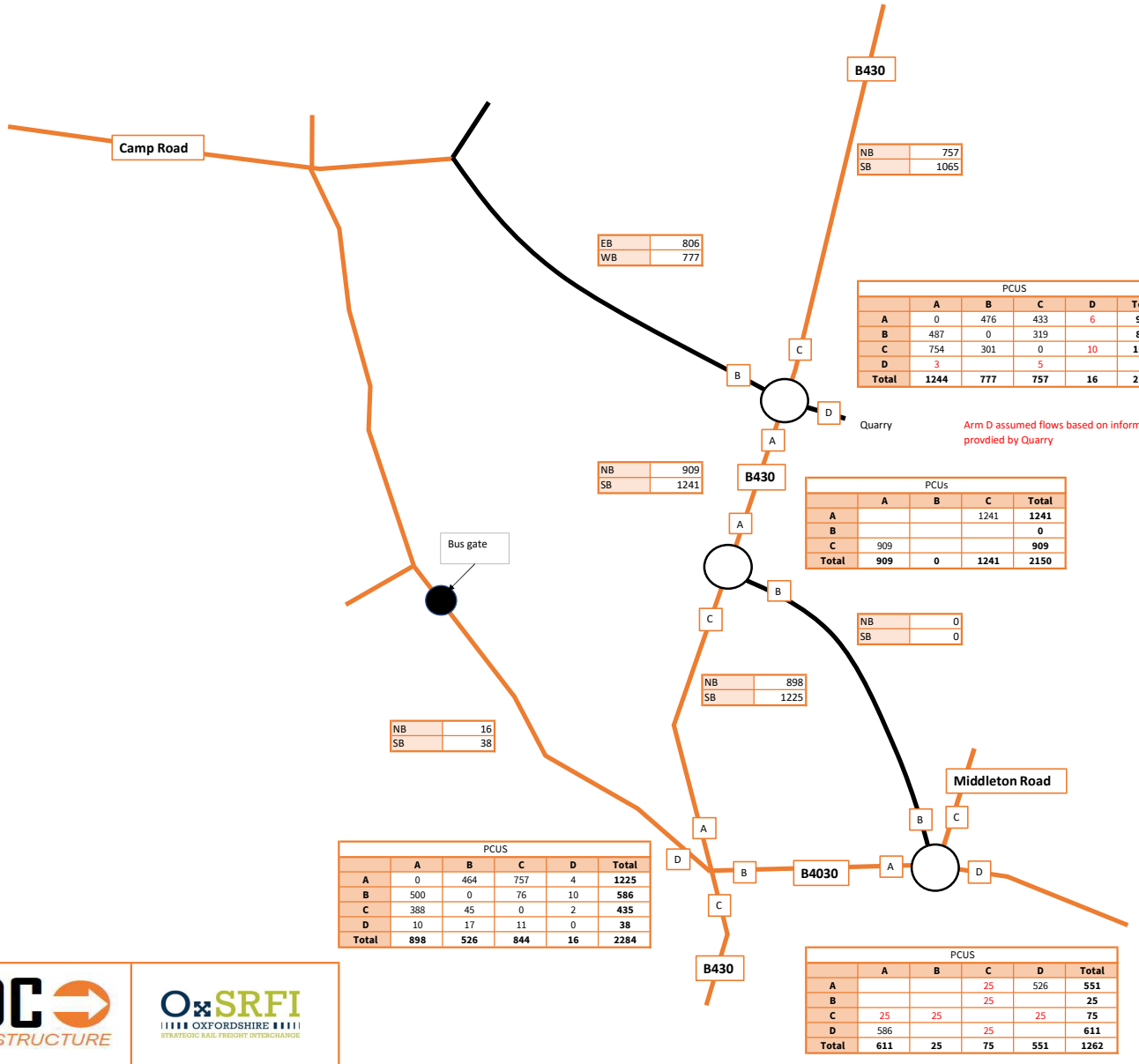
	A	B	C	D	Total
A			25	617	642
B			25		25
C	25	25		25	75
D	520		25		545
Total	545	25	75	642	1287

Arm C assumed nominal flows of 25 pcus between all movements

ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

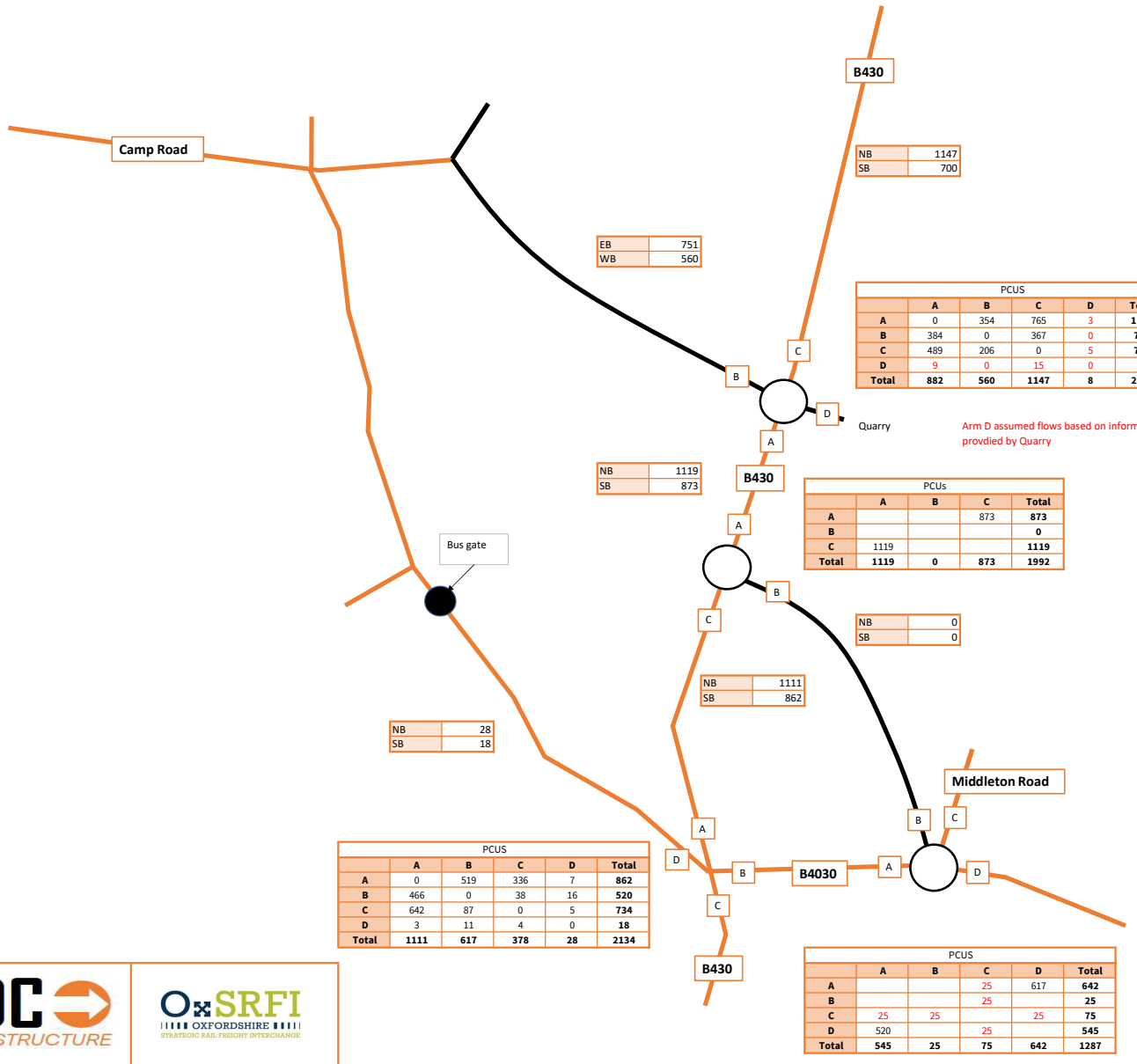
Diagram A26: 2031 PM peak hour base traffic flows with Heyford Park development and bus gate (revised road layout)



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

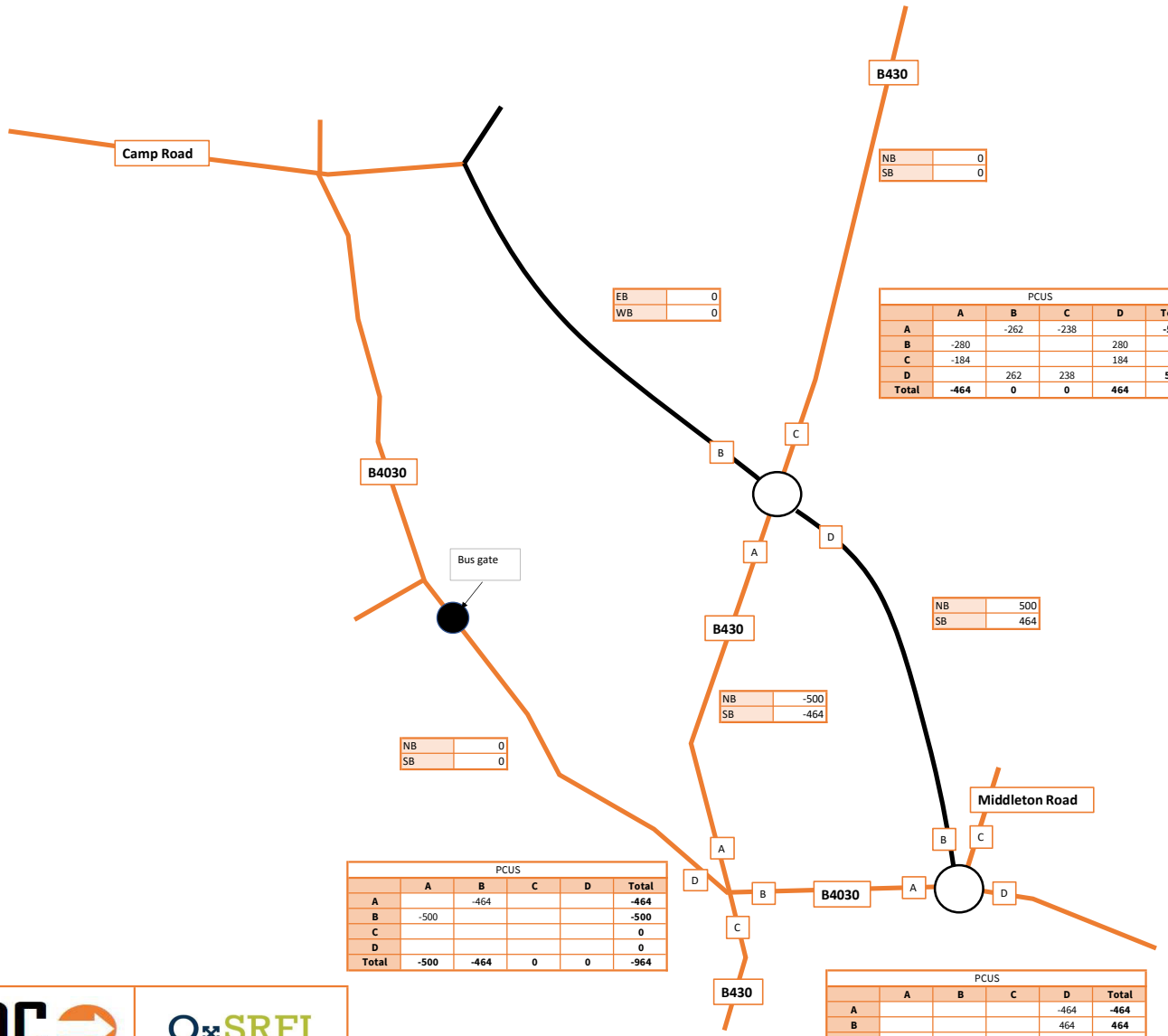
Diagram A27: 2031 AM peak hour base traffic flows with Heyford Park development (revised road layout) - two junctions



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

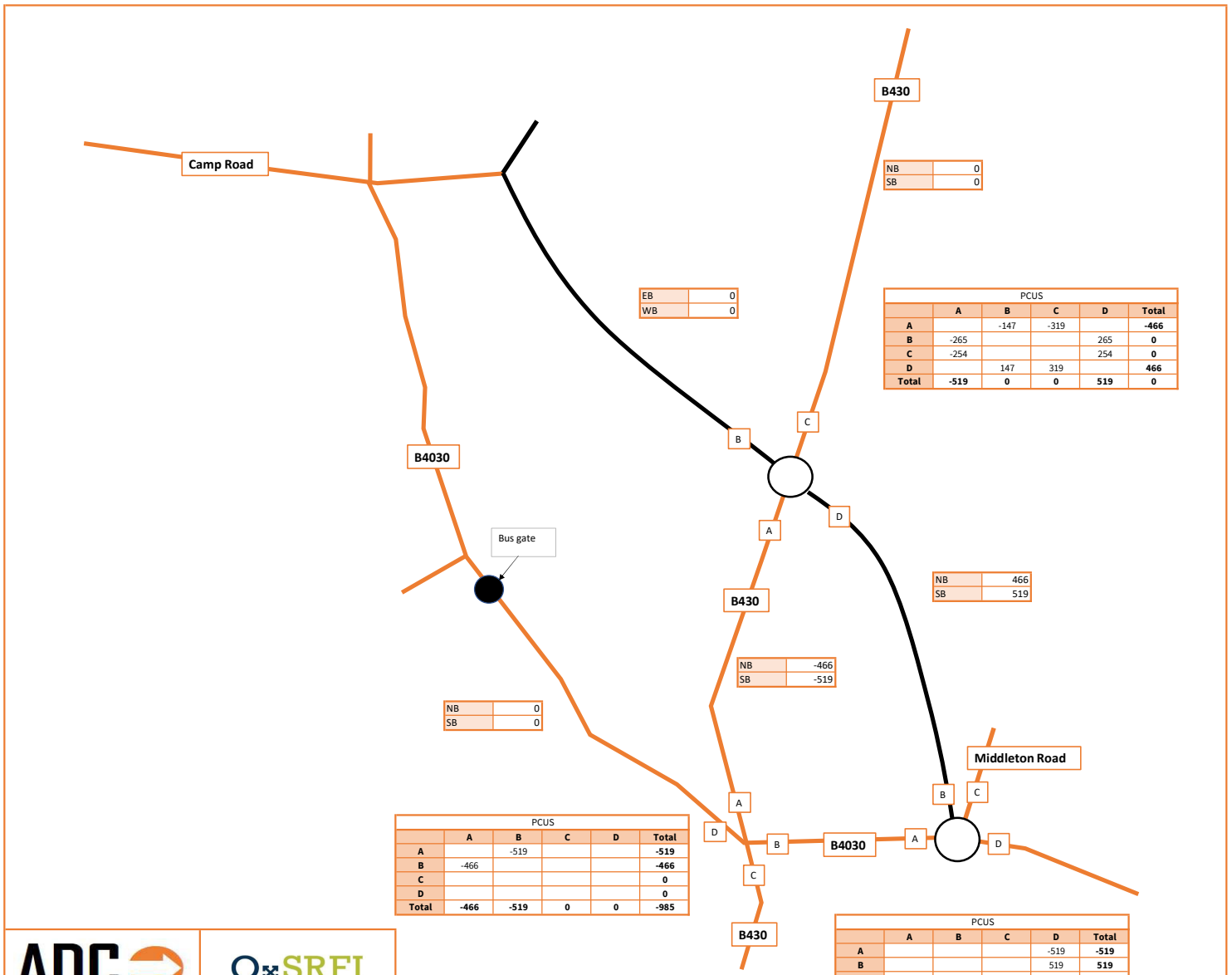
Diagram A28: 2031 PM peak hour base traffic flows with Heyford Park development (revised road layout) - two junctions



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

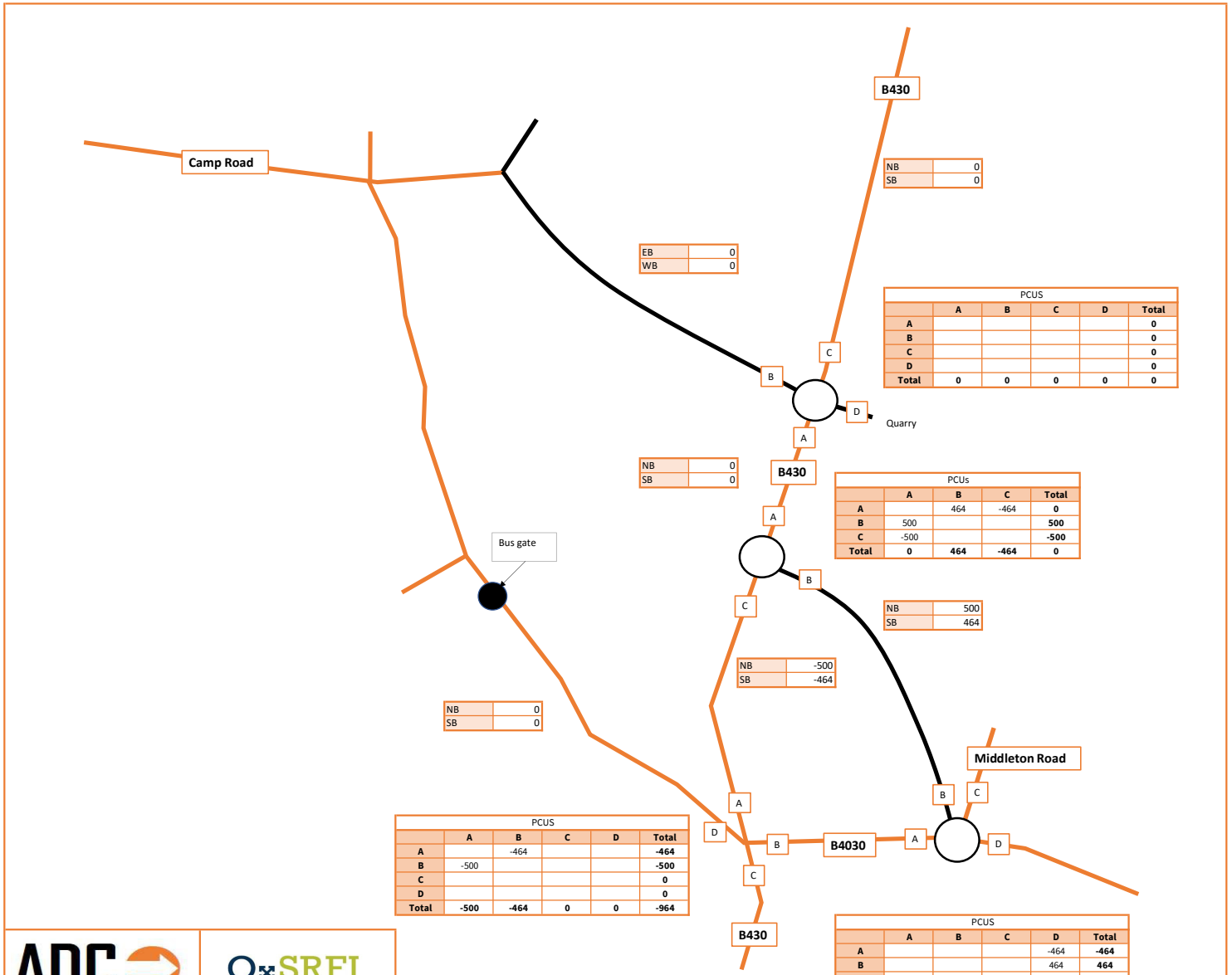
Diagram A29: resigned traffic due to MSRR - 2031 AM peak hour traffic flows (wth bus gate)



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE #STRATEGIC RAIL FREIGHT INTERCHANGE

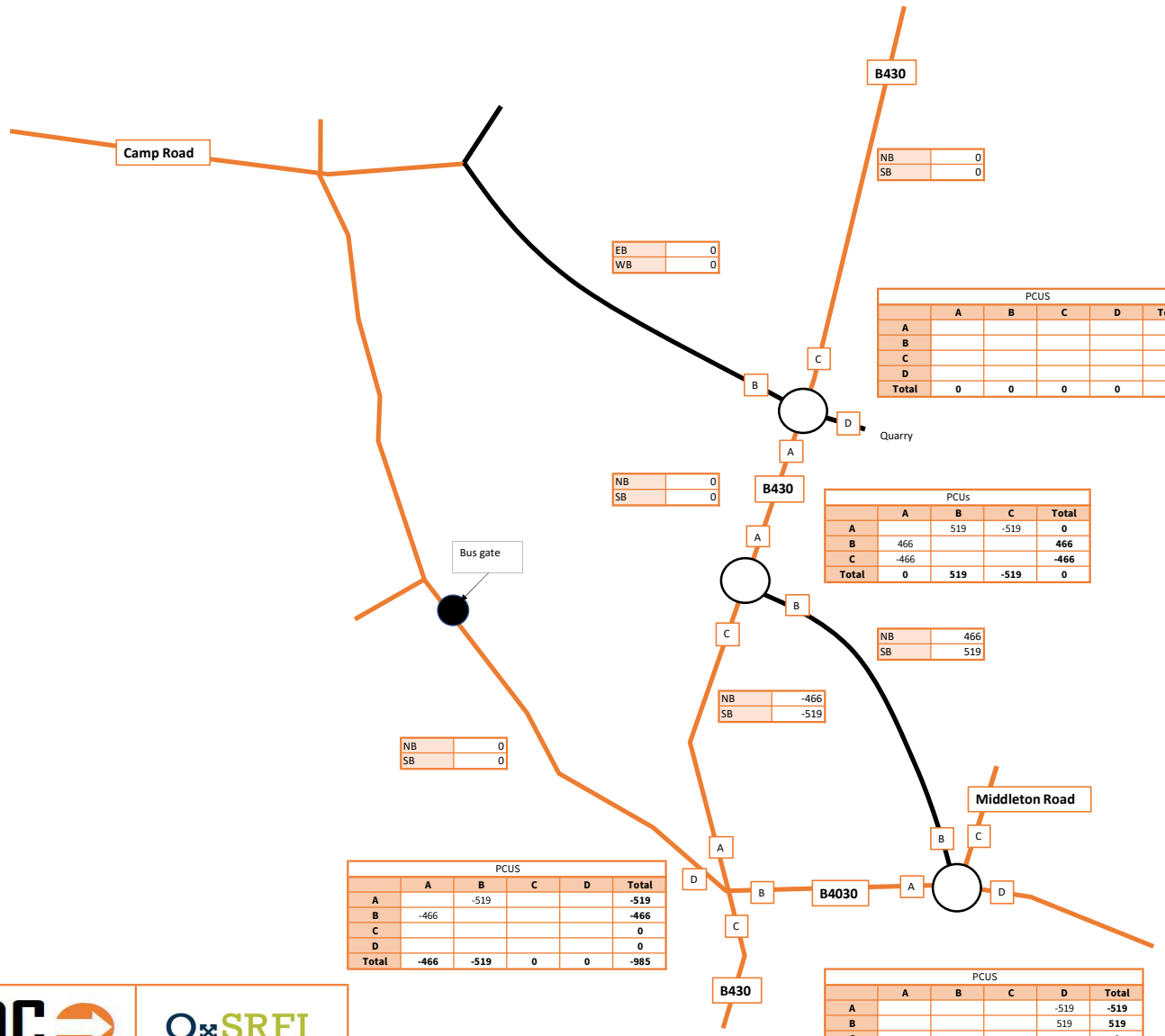
Diagram A30: resigned traffic due to MSRR - 2031 PM peak hour traffic flows (wth bus gate)



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

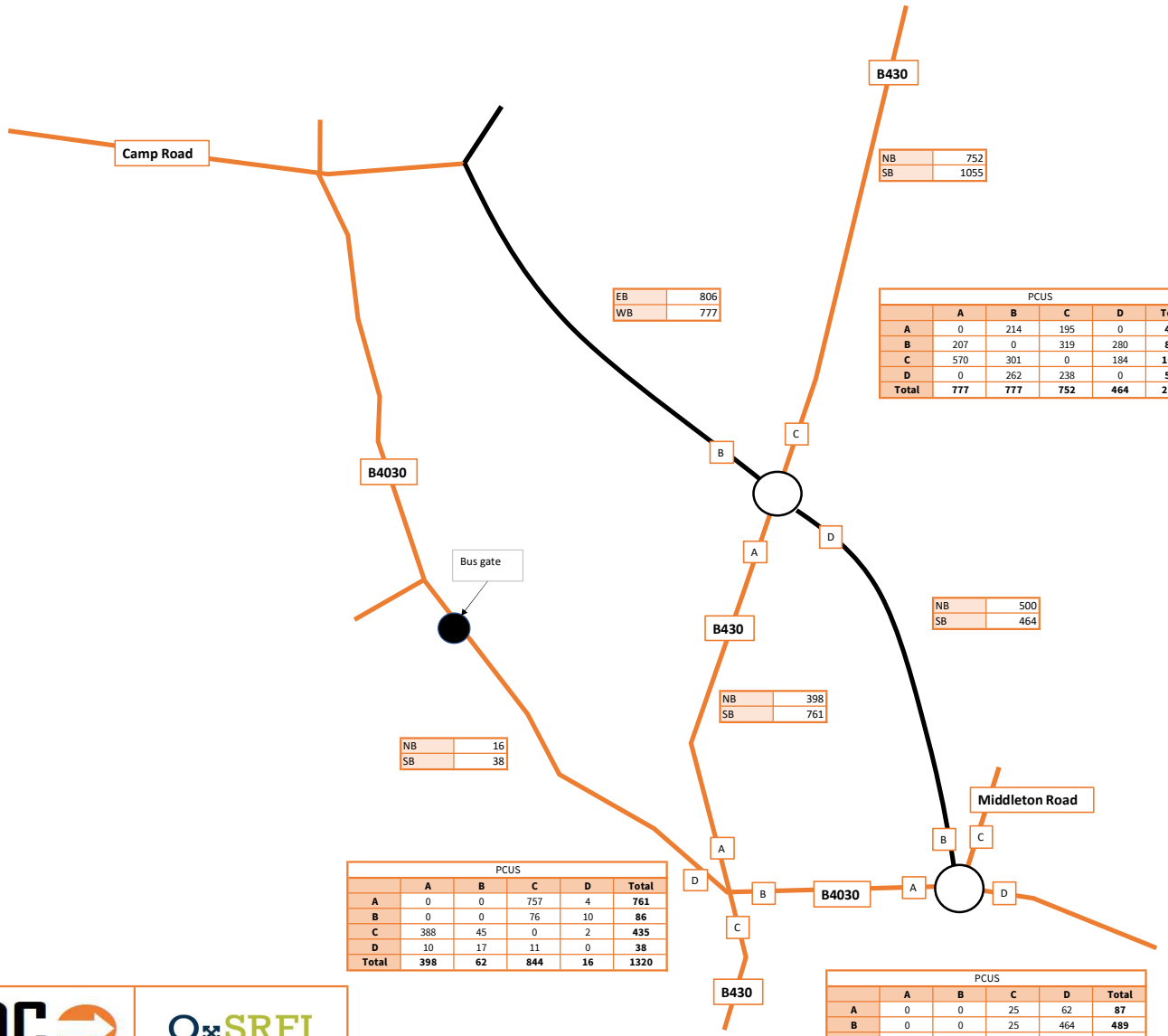
Diagram A31: resigned traffic due to MSRR DS3 - 2031 AM peak hour traffic flows (two junction layout)



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

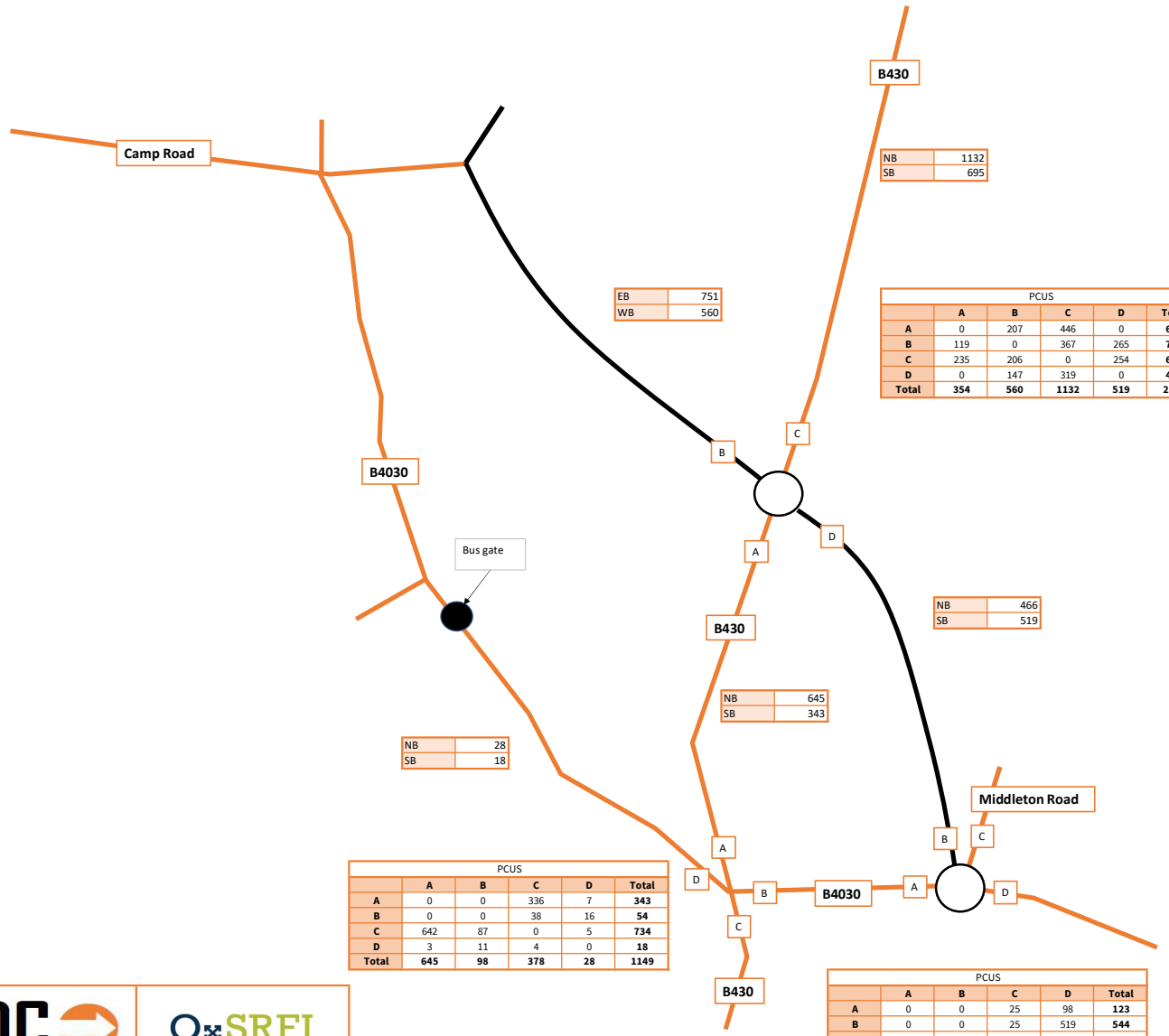
Diagram A32: resigned traffic due to MSRR DS3 - 2031 PM peak hour traffic flows (two junction layout)



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Diagram A33: 2031 AM peak hour background traffic flows (with bus gate)



PCUS

	A	B	C	D	Total
A	0	207	446	0	**653**
B	119	0	367	265	**751**
C	235	206	0	254	**695**
D	0	147	319	0	**466**
Total	**354**	**560**	**1132**	**519**	**2565**

PCUS

	A	B	C	D	Total
A	0	0	336	7	**343**
B	0	0	38	16	**54**
C	642	87	0	5	**734**
D	3	11	4	0	**18**
Total	**645**	**98**	**378**	**28**	**1149**

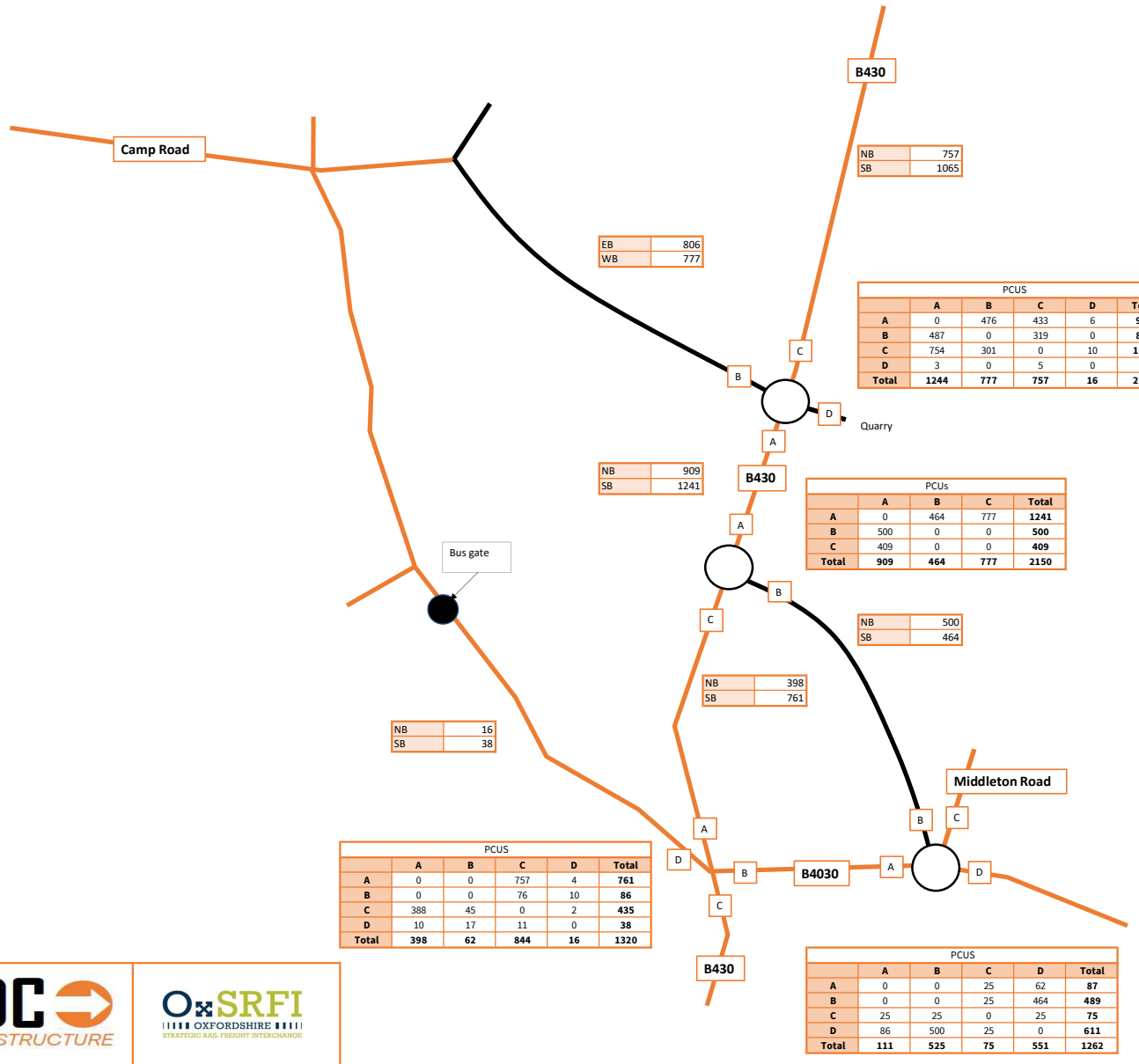
PCUS

	A	B	C	D	Total
A	0	0	25	98	**123**
B	0	0	25	519	**544**
C	25	25	0	25	**75**
D	54	466	25	0	**545**
Total	**79**	**491**	**75**	**642**	**1287**

ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

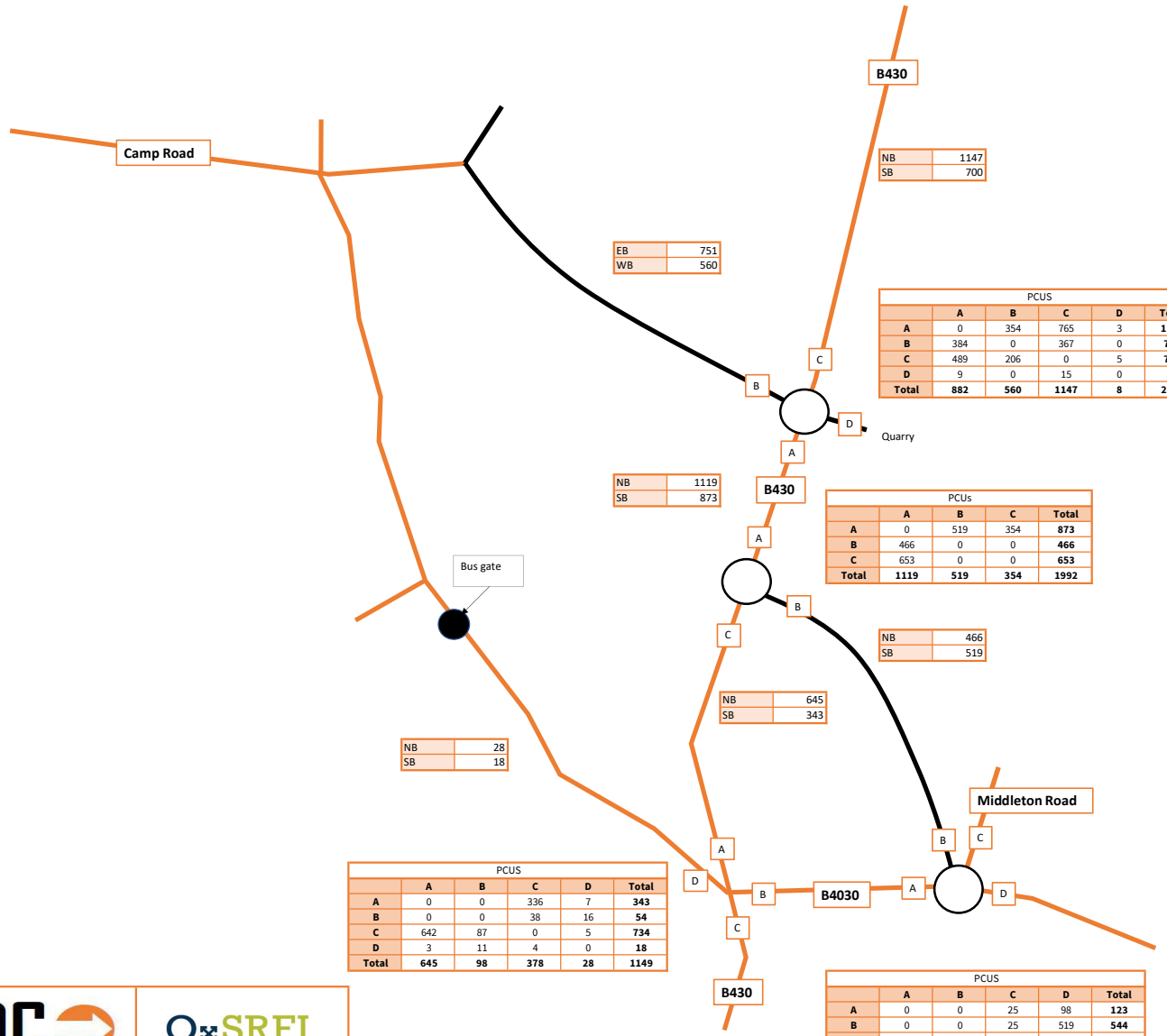
Diagram A34: 2031 PM peak hour background traffic flows (with bus gate)



ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Diagram A35: 2031 AM peak hour background traffic flows (with bus gate) - two junction layout



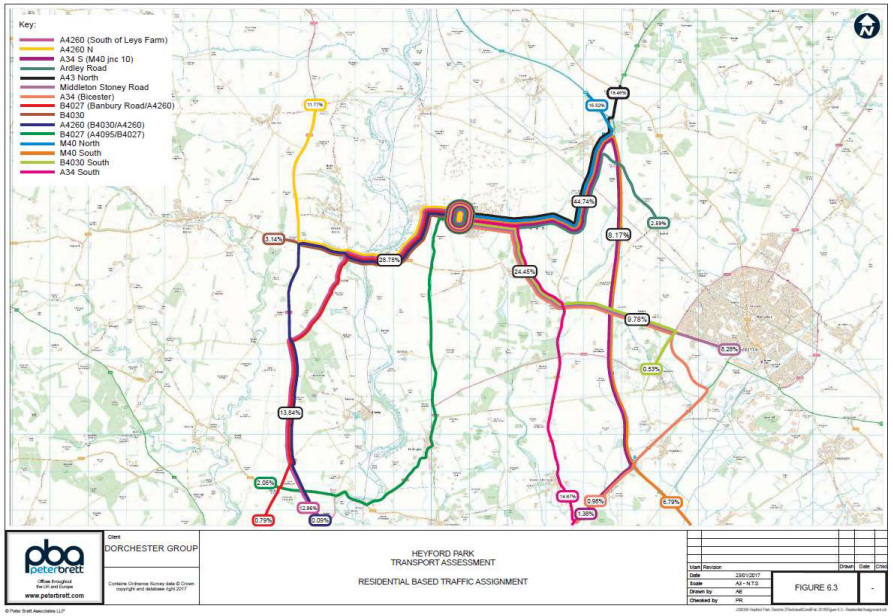
ADC INFRASTRUCTURE

OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

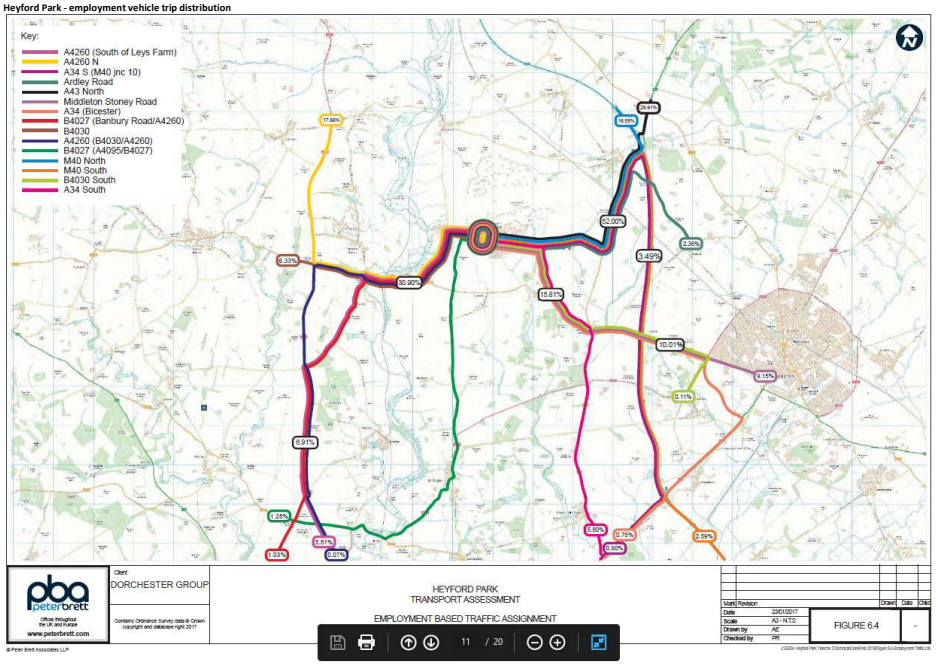
Diagram A36: 2031 PM peak hour background traffic flows (with bus gate) - two junction layout

APPENDIX B

HEYFORD PARK DISTRIBUTION



Heyford Park - employment vehicle trip distribution



Heyford Total Veh Trip Gen Table 6.16 PBA TA

	Arrive	Depart	Two-way
AM	694	808	1502
PM	570	688	1258

Residential veh trip rates Table 6.15 of PBA TA

	Arrive	Depart	Two-way
AM	0.147	0.452	0.599
PM	0.319	0.165	0.484

Heyford Park employment Veh Trip Gen
(Total veh trip gen - residential trip gen)

	Arrive	Depart	Two-way
AM	459	85	544
PM	60	424	484

Heyford Park residential Veh Trip Gen
1600 dwellings

	Arrive	Depart	Two-way
AM	235	723	958
PM	510	264	774

Employment

			Arrive	Depart	Two-way
B4030	15.81%	AM	73	13	86
		PM	9	67	77
B4030 to Bices	10.01%	AM	46	9	54
		PM	6	42	48
B430 to A34	5.80%	AM	27	5	32
		PM	3	25	28

Residential

			Arrive	Depart	Two-way
B4030	24.50%	AM	58	177	235
		PM	125	65	190
B4030 to Bices	9.78%	AM	23	71	94
		PM	50	26	76
B430 to A34	14.87%	AM	35	108	142
		PM	76	39	115

Total Heyford Park veh trip generation assignment

		Arrive	Depart	Two-way
B4030	AM	130	191	321
	PM	134	132	266
B4040 to Bicester	AM	69	79	148
	PM	56	68	124
B430 to A34	AM	62	112	174
	PM	79	64	143

0

APPENDIX C

UNEQUAL LANE USAGE ASSESSMENT (B430/MRSS/HPLR FOUR ARM ROUNDABOUT)

junction	HBLR B430 Single Roundabout															
arm	A - B430 (S)				B - HBLR				C - B430 (N)				D - MSRR			
flow scenario	DS1				DS1				DS1				DS1			
	AM peak hour		PM peak hour		AM peak hour		PM peak hour		AM peak hour		PM peak hour		AM peak hour		PM peak hour	
geometry	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**
v (m)	3.5	3.5	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
e (m)	8.0	4.0	8.0	4.0	8.0	4.0	8.0	4.0	8.5	4.0	8.5	4.0	8.0	4.0	8.0	4.0
l' (m)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
r (m)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
D (m)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
PHI	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
calculations																
K = 1 - 0.00347 (PHI-30) - 0.978(1/r-0.05)	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035
t_D = 1 + 0.5/(1+exp[(D-60)/10])	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250
X_2 = v + {(e-v)/(1+2S)}	6.541	3.975	6.541	3.975	6.621	3.987	6.621	3.987	6.846	3.987	6.846	3.987	6.621	3.987	6.621	3.987
S = 1.6{(e-v)/l'}	0.240	0.027	0.240	0.027	0.232	0.019	0.232	0.019	0.259	0.019	0.259	0.019	0.232	0.019	0.232	0.019
Q_c = circulatory flow passing entry arm	1096	1096	750	750	842	842	720	720	12	12	16	16	1256	1256	948	948
Q_e (entry capacity) = F - $f_c Q_c$ for at-grade rbs	1363	712	1580	880	1544	839	1621	899	2139	1244	2136	1242	1283	637	1477	787
f_c (slope) = 0.210t_DK(1+0.2X_2)	0.627	0.488	0.627	0.488	0.631	0.488	0.631	0.488	0.644	0.488	0.644	0.488	0.631	0.488	0.631	0.488
F (intercept) = 303X_2K	2051	1246	2051	1246	2076	1250	2076	1250	2146	1250	2146	1250	2076	1250	2076	1250
flow across whole approach	431		518		710		619		1478		1419		422		207	
flow in 'main' lane		215		259		698		603		804		876		419		204
Intercept Weighting Factor		2.005		2.000		1.017		1.027		1.838		1.620		1.007		1.015
Intercept Correction (pcus/hr)		447		442		-804		-793		152		-121		-817		-807

junction	HBLR B430 Single Roundabout															
arm	A - B430 (S)				B - HBLR				C - B430 (N)				D - MSRR			
flow scenario	DS2				DS2				DS2				DS2			
	AM peak hour		PM peak hour		AM peak hour		PM peak hour		AM peak hour		PM peak hour		AM peak hour		PM peak hour	
geometry	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**
v (m)	3.5	3.5	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
e (m)	8.0	4.0	8.0	4.0	8.0	4.0	8.0	4.0	8.5	4.0	8.5	4.0	8.0	4.0	8.0	4.0
l' (m)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
r (m)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
D (m)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
PHI	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
calculations																
K = 1 - 0.00347 (PHI-30) - 0.978(1/r-0.05)	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035
t_D = 1 + 0.5/(1+exp[(D-60)/10])	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250
X_2 = v + {(e-v)/(1+2S)}	6.541	3.975	6.541	3.975	6.621	3.987	6.621	3.987	6.846	3.987	6.846	3.987	6.621	3.987	6.621	3.987
S = 1.6{(e-v)/l'}	0.240	0.027	0.240	0.027	0.232	0.019	0.232	0.019	0.259	0.019	0.259	0.019	0.232	0.019	0.232	0.019
Q_c = circulatory flow passing entry arm	1165	1165	806	806	842	842	720	720	203	203	148	148	1368	1368	1012	1012
Q_e (entry capacity) = F - $f_c Q_c$ for at-grade rbs	1320	678	1545	853	1544	839	1621	899	2016	1151	2051	1178	1212	582	1437	756
f_c (slope) = 0.210t_DK(1+0.2X_2)	0.627	0.488	0.627	0.488	0.631	0.488	0.631	0.488	0.644	0.488	0.644	0.488	0.631	0.488	0.631	0.488
F (intercept) = 303X_2K	2051	1246	2051	1246	2076	1250	2076	1250	2146	1250	2146	1250	2076	1250	2076	1250
flow across whole approach	493		597		901		751		1478		1419		491		263	
flow in 'main' lane		247		299		698		603		804		876		419		204
Intercept Weighting Factor		1.996		1.997		1.291		1.245		1.838		1.620		1.172		1.289
Intercept Correction (pcus/hr)		437		438		-462		-519		152		-121		-611		-464

junction	HBLR B430 Single Roundabout															
arm	A - B430 (S)				B - HBLR				C - B430 (N)				D - MSRR			
flow scenario	DS3				DS3				DS3				DS3			
	AM peak hour		PM peak hour		AM peak hour		PM peak hour		AM peak hour		PM peak hour		AM peak hour		PM peak hour	
geometry	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**
v (m)	3.5	3.5	3.5	3.5	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
e (m)	8.0	4.0	8.0	4.0	8.0	4.0	8.0	4.0	8.5	4.0	8.5	4.0	8.0	4.0	8.0	4.0
l' (m)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
r (m)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
D (m)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
PHI	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
calculations																
K = 1 - 0.00347 (PHI-30) - 0.978(1/r-0.05)	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035
t_D = 1 + 0.5/(1+exp[(D-60)/10])	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250
X_2 = v + {(e-v)/(1+2S)}	6.541	3.975	6.541	3.975	6.621	3.987	6.621	3.987	6.846	3.987	6.846	3.987	6.621	3.987	6.621	3.987
S = 1.6{(e-v)/l'}	0.240	0.027	0.240	0.027	0.232	0.019	0.232	0.019	0.259	0.019	0.259	0.019	0.232	0.019	0.232	0.019
Q_c = circulatory flow passing entry arm	1118	1118	872	872	922	922	927	927	487	487	384	384	1290	1290	1120	1120
Q_e (entry capacity) = F - $f_c Q_c$ for at-grade rbs	1350	701	1504	821	1494	800	1491	798	1833	1012	1899	1063	1262	620	1369	703
f_c (slope) = 0.210t_DK(1+0.2X_2)	0.627	0.488	0.627	0.488	0.631	0.488	0.631	0.488	0.644	0.488	0.644	0.488	0.631	0.488	0.631	0.488
F (intercept) = 303X_2K	2051	1246	2051	1246	2076	1250	2076	1250	2146	1250	2146	1250	2076	1250	2076	1250
flow across whole approach	590		713		891		779		1116		1355		808		568	
flow in 'main' lane		389		471		588		514		659		940		546		421
Intercept Weighting Factor		1.517		1.514		1.515		1.516		1.693		1.441		1.480		1.349
Intercept Correction (pcus/hr)		-161		-164		-182		-181		-29		-344		-226		-389

APPENDIX D

ARCADY ASSESSMENT (B430/MSRR/HPLR FOUR ARM ROUNDABOUT)

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.0.6896
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The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: 220309 HBLR B430 Single Roundabout (Unequal Lane).j9
Path: C:\Users\ADC\Dropbox (ADC Infrastructure)\!!! ADC Projects\ADC1794 OxSRFI\Documents\reports\ADC\R. MSRR_HPLR
Report generation date: 10/03/2022 08:59:26

»DS1 AM - DS1, AM
»DS1 PM - DS1, PM
»DS2 AM - DS2, AM
»DS2 PM - DS2, PM
»DS3 AM - DS3, AM
»DS3 PM - DS3, PM

Summary of junction performance

	AM		
	Queue (PCU)	Delay (s)	RFC
	DS1 AM - DS1		
1 - B430 (S)	0.6	4.50	0.37
2 - HPLR	33.4	151.79	1.06
3 - B430 (N)	3.1	7.03	0.76
4 - MSRR	43.6	309.53	1.20

	PM		
	Queue (PCU)	Delay (s)	RFC
	DS1 PM - DS1		
1 - B430 (S)	0.6	4.06	0.39
2 - HPLR	5.9	33.36	0.87
3 - B430 (N)	3.4	7.95	0.78
4 - MSRR	0.6	9.42	0.37

	AM		
	Queue (PCU)	Delay (s)	RFC
	DS2 AM - DS2		
1 - B430 (S)	0.8	5.48	0.45
2 - HPLR	11.9	45.91	0.95
3 - B430 (N)	4.2	9.51	0.81
4 - MSRR	22.8	144.25	1.05

	PM

	Queue (PCU)	Delay (s)	RFC
	DS2 PM - DS2		
1 - B430 (S)	0.9	4.72	0.46
2 - HPLR	3.5	15.56	0.78
3 - B430 (N)	4.2	10.00	0.81
4 - MSRR	0.5	5.81	0.32

	AM		
	Queue (PCU)	Delay (s)	RFC
	DS3 AM - DS3		
1 - B430 (S)	1.6	8.99	0.62
2 - HPLR	3.5	13.12	0.78
3 - B430 (N)	2.2	6.61	0.69
4 - MSRR	4.4	18.47	0.82

	PM		
	Queue (PCU)	Delay (s)	RFC
	DS3 PM - DS3		
1 - B430 (S)	1.8	8.38	0.65
2 - HPLR	2.1	9.15	0.69
3 - B430 (N)	19.1	47.91	0.97
4 - MSRR	1.3	7.73	0.57

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

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

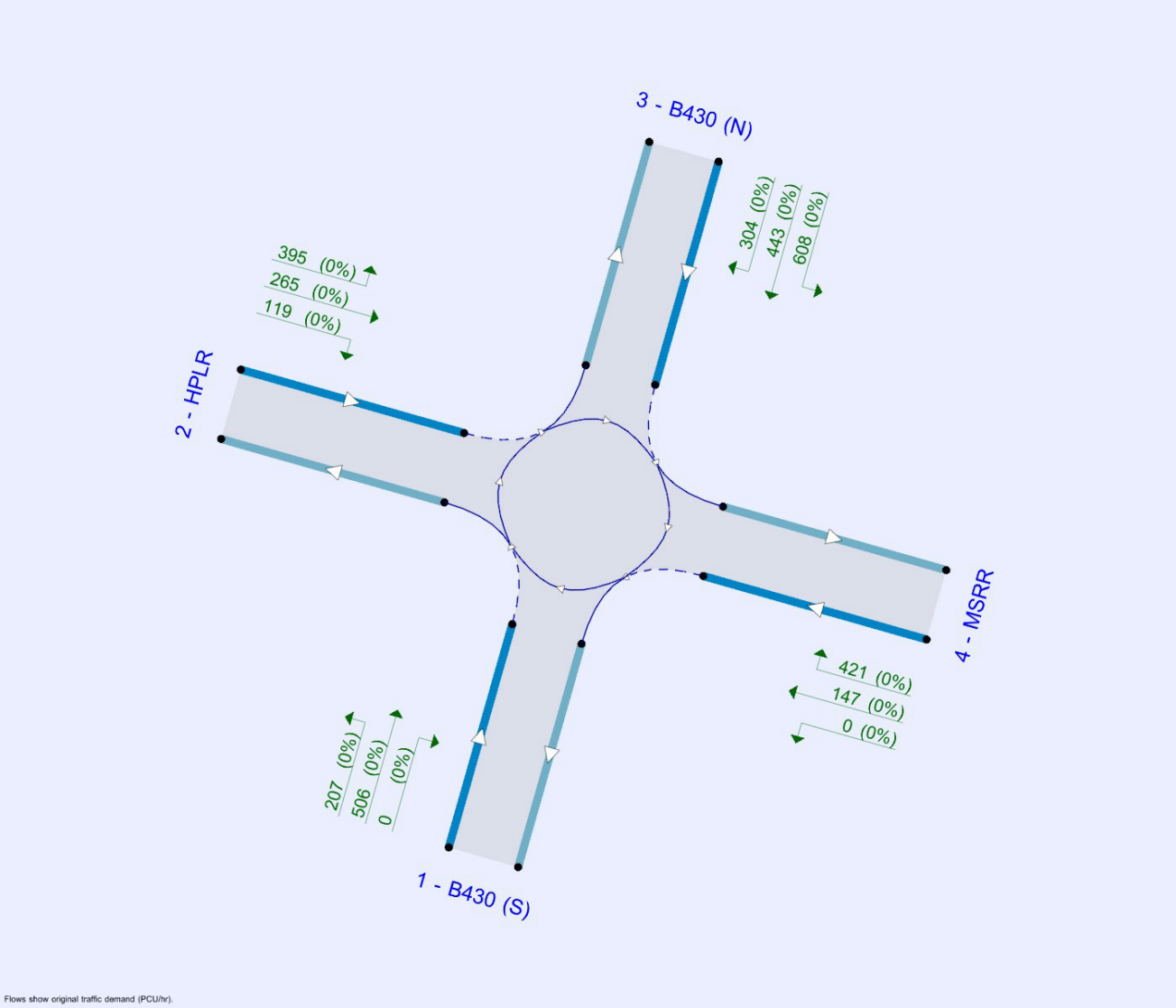
File summary

File Description

Title	
Location	
Site number	
Date	31/08/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	ADC-AUTOCAD\ADC
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	DS1	AM	ONE HOUR	07:45	09:15	15	✓
D2	DS1	PM	ONE HOUR	16:45	18:15	15	✓
D3	DS2	AM	ONE HOUR	07:45	09:15	15	✓
D4	DS2	PM	ONE HOUR	16:45	18:15	15	✓
D5	DS3	AM	ONE HOUR	07:45	09:15	15	✓
D6	DS3	PM	ONE HOUR	16:45	18:15	15	✓

DS1 AM - DS1, AM

Data Errors and Warnings

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

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	DS1 AM	✓	✓	D1	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	HBLR-B430 Single Roundabout	Standard Roundabout		1, 2, 3, 4	82.45	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B430 (S)	
2	HPLR	
3	B430 (N)	
4	MSRR	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - B430 (S)	3.00	8.00	30.0	20.0	60.0	20.0	
2 - HPLR	3.65	8.00	30.0	20.0	60.0	20.0	
3 - B430 (N)	3.65	8.50	30.0	20.0	60.0	20.0	
4 - MSRR	3.65	8.00	30.0	20.0	60.0	20.0	

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - B430 (S)	None		
2 - HPLR	Direct	Unequal Lane	-804
3 - B430 (N)	None		
4 - MSRR	Direct	Unequal Lane	-817

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - B430 (S)	0.612	1963
2 - HPLR	0.631	1272
3 - B430 (N)	0.644	2146
4 - MSRR	0.631	1259

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	DS1	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B430 (S)		ONE HOUR	✓	431	100.000
2 - HPLR		ONE HOUR	✓	710	100.000
3 - B430 (N)		ONE HOUR	✓	1478	100.000
4 - MSRR		ONE HOUR	✓	422	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0	8	423	0
	2 - HPLR	9	0	698	3
	3 - B430 (N)	573	674	0	231
	4 - MSRR	0	3	419	0

Proportions

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0.00	0.02	0.98	0.00
	2 - HPLR	0.01	0.00	0.98	0.00
	3 - B430 (N)	0.39	0.46	0.00	0.16
	4 - MSRR	0.00	0.01	0.99	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0	0	0	0
	2 - HPLR	0	0	0	0
	3 - B430 (N)	0	0	0	0
	4 - MSRR	0	0	0	0

Average PCU Per Veh

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	1.000	1.000	1.000	1.000
	2 - HPLR	1.000	1.000	1.000	1.000
	3 - B430 (N)	1.000	1.000	1.000	1.000
	4 - MSRR	1.000	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	1 - B430 (S)	324	324
	2 - HPLR	535	535
	3 - B430 (N)	1113	1113
	4 - MSRR	318	318
08:00-08:15	1 - B430 (S)	387	387
	2 - HPLR	638	638
	3 - B430 (N)	1329	1329
	4 - MSRR	379	379
08:15-08:30	1 - B430 (S)	475	475
	2 - HPLR	782	782
	3 - B430 (N)	1627	1627
	4 - MSRR	465	465
08:30-08:45	1 - B430 (S)	475	475
	2 - HPLR	782	782
	3 - B430 (N)	1627	1627
	4 - MSRR	465	465
08:45-09:00	1 - B430 (S)	387	387
	2 - HPLR	638	638
	3 - B430 (N)	1329	1329
	4 - MSRR	379	379
09:00-09:15	1 - B430 (S)	324	324
	2 - HPLR	535	535
	3 - B430 (N)	1113	1113
	4 - MSRR	318	318

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B430 (S)	0.37	4.50	0.6	A	395	593
2 - HPLR	1.06	151.79	33.4	F	652	977
3 - B430 (N)	0.76	7.03	3.1	A	1356	2034
4 - MSRR	1.20	309.53	43.6	F	387	581

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	324	81	820	1462	0.222	323	436	0.0	0.3	3.160	A
2 - HPLR	535	134	629	875	0.611	528	514	0.0	1.5	10.228	B
3 - B430 (N)	1113	278	9	2141	0.520	1108	1149	0.0	1.1	3.473	A
4 - MSRR	318	79	942	664	0.478	314	175	0.0	0.9	10.182	B

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	387	97	979	1364	0.284	387	522	0.3	0.4	3.683	A
2 - HPLR	638	160	752	797	0.801	630	615	1.5	3.6	20.543	C
3 - B430 (N)	1329	332	11	2140	0.621	1327	1371	1.1	1.6	4.416	A
4 - MSRR	379	95	1127	547	0.693	375	210	0.9	2.1	20.289	C

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	475	119	1118	1279	0.371	474	638	0.4	0.6	4.467	A
2 - HPLR	782	195	841	741	1.055	715	751	3.6	20.2	75.867	F
3 - B430 (N)	1627	407	12	2139	0.761	1621	1544	1.6	3.1	6.882	A
4 - MSRR	465	116	1377	390	1.193	378	256	2.1	23.7	144.497	F

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	475	119	1127	1274	0.373	475	640	0.6	0.6	4.504	A
2 - HPLR	782	195	848	737	1.061	729	754	20.2	33.4	147.138	F
3 - B430 (N)	1627	407	12	2139	0.761	1627	1564	3.1	3.1	7.033	A
4 - MSRR	465	116	1382	386	1.202	385	257	23.7	43.6	309.526	F

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	387	97	1139	1266	0.306	388	526	0.6	0.4	4.102	A
2 - HPLR	638	160	908	699	0.913	679	620	33.4	23.4	151.786	F
3 - B430 (N)	1329	332	11	2139	0.621	1335	1575	3.1	1.7	4.506	A
4 - MSRR	379	95	1135	543	0.699	530	211	43.6	5.9	177.126	F

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	324	81	846	1445	0.224	325	440	0.4	0.3	3.214	A
2 - HPLR	535	134	654	859	0.622	621	517	23.4	1.7	21.165	C
3 - B430 (N)	1113	278	10	2140	0.520	1115	1265	1.7	1.1	3.522	A
4 - MSRR	318	79	949	660	0.481	337	177	5.9	0.9	11.813	B

DS1 PM - DS1, PM

Data Errors and Warnings

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

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	DS1 PM	✓	✓	D2	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	HBLR-B430 Single Roundabout	Standard Roundabout		1, 2, 3, 4	13.02	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B430 (S)	
2	HPLR	
3	B430 (N)	
4	MSRR	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - B430 (S)	3.00	8.00	30.0	20.0	60.0	20.0	
2 - HPLR	3.65	8.00	30.0	20.0	60.0	20.0	
3 - B430 (N)	3.65	8.50	30.0	20.0	60.0	20.0	
4 - MSRR	3.65	8.00	30.0	20.0	60.0	20.0	

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - B430 (S)	None		
2 - HPLR	Direct	Unequal Lane	-793
3 - B430 (N)	Direct	Unequal Lane	-121
4 - MSRR	Direct	Unequal Lane	-807

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - B430 (S)	0.612	1963
2 - HPLR	0.631	1283
3 - B430 (N)	0.644	2025
4 - MSRR	0.631	1269

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	DS1	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B430 (S)		ONE HOUR	✓	518	100.000
2 - HPLR		ONE HOUR	✓	619	100.000
3 - B430 (N)		ONE HOUR	✓	1419	100.000
4 - MSRR		ONE HOUR	✓	207	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0	2	516	0
	2 - HPLR	14	0	603	2
	3 - B430 (N)	391	543	0	485
	4 - MSRR	0	3	204	0

Proportions

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0.00	0.00	1.00	0.00
	2 - HPLR	0.02	0.00	0.97	0.00
	3 - B430 (N)	0.28	0.38	0.00	0.34
	4 - MSRR	0.00	0.01	0.99	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0	0	0	0
	2 - HPLR	0	0	0	0
	3 - B430 (N)	0	0	0	0
	4 - MSRR	0	0	0	0

Average PCU Per Veh

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	1.000	1.000	1.000	1.000
	2 - HPLR	1.000	1.000	1.000	1.000
	3 - B430 (N)	1.000	1.000	1.000	1.000
	4 - MSRR	1.000	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	1 - B430 (S)	390	390
	2 - HPLR	466	466
	3 - B430 (N)	1068	1068
	4 - MSRR	156	156
17:00-17:15	1 - B430 (S)	466	466
	2 - HPLR	556	556
	3 - B430 (N)	1276	1276
	4 - MSRR	186	186
17:15-17:30	1 - B430 (S)	570	570
	2 - HPLR	682	682
	3 - B430 (N)	1562	1562
	4 - MSRR	228	228
17:30-17:45	1 - B430 (S)	570	570
	2 - HPLR	682	682
	3 - B430 (N)	1562	1562
	4 - MSRR	228	228
17:45-18:00	1 - B430 (S)	466	466
	2 - HPLR	556	556
	3 - B430 (N)	1276	1276
	4 - MSRR	186	186
18:00-18:15	1 - B430 (S)	390	390
	2 - HPLR	466	466
	3 - B430 (N)	1068	1068
	4 - MSRR	156	156

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B430 (S)	0.39	4.06	0.6	A	475	713
2 - HPLR	0.87	33.36	5.9	D	568	852
3 - B430 (N)	0.78	7.95	3.4	A	1302	1953
4 - MSRR	0.37	9.42	0.6	A	190	285

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	390	97	562	1619	0.241	389	304	0.0	0.3	2.923	A
2 - HPLR	466	117	540	942	0.495	462	411	0.0	1.0	7.443	A
3 - B430 (N)	1068	267	12	2018	0.529	1064	990	0.0	1.1	3.758	A
4 - MSRR	156	39	711	820	0.190	155	365	0.0	0.2	5.403	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	466	116	673	1551	0.300	465	363	0.3	0.4	3.312	A
2 - HPLR	556	139	646	875	0.636	554	492	1.0	1.7	11.105	B
3 - B430 (N)	1276	319	14	2016	0.633	1273	1186	1.1	1.7	4.830	A
4 - MSRR	186	47	851	732	0.254	186	437	0.2	0.3	6.591	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	570	143	822	1460	0.391	569	444	0.4	0.6	4.040	A
2 - HPLR	682	170	791	784	0.870	667	601	1.7	5.4	27.892	D
3 - B430 (N)	1562	391	17	2014	0.776	1556	1440	1.7	3.3	7.741	A
4 - MSRR	228	57	1039	613	0.372	227	534	0.3	0.6	9.302	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	570	143	826	1458	0.391	570	446	0.6	0.6	4.056	A
2 - HPLR	682	170	793	782	0.871	679	603	5.4	5.9	33.365	D
3 - B430 (N)	1562	391	18	2014	0.776	1562	1454	3.3	3.4	7.952	A
4 - MSRR	228	57	1044	610	0.374	228	536	0.6	0.6	9.417	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	466	116	678	1548	0.301	467	366	0.6	0.4	3.329	A
2 - HPLR	556	139	649	873	0.637	573	495	5.9	1.8	12.604	B
3 - B430 (N)	1276	319	15	2016	0.633	1282	1207	3.4	1.7	4.951	A
4 - MSRR	186	47	857	728	0.256	187	440	0.6	0.3	6.667	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	390	97	566	1617	0.241	390	306	0.4	0.3	2.938	A
2 - HPLR	466	117	543	940	0.496	469	414	1.8	1.0	7.699	A
3 - B430 (N)	1068	267	12	2018	0.529	1071	1000	1.7	1.1	3.813	A
4 - MSRR	156	39	715	817	0.191	156	367	0.3	0.2	5.449	A

DS2 AM - DS2, AM

Data Errors and Warnings

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

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A3	DS2 AM	✓	✓	D3	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	HBLR-B430 Single Roundabout	Standard Roundabout		1, 2, 3, 4	38.35	E

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B430 (S)	
2	HPLR	
3	B430 (N)	
4	MSRR	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - B430 (S)	3.00	8.00	30.0	20.0	60.0	20.0	
2 - HPLR	3.65	8.00	30.0	20.0	60.0	20.0	
3 - B430 (N)	3.65	8.50	30.0	20.0	60.0	20.0	
4 - MSRR	3.65	8.00	30.0	20.0	60.0	20.0	

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - B430 (S)	None		
2 - HPLR	Direct	Unequal Lane	-462
3 - B430 (N)	None		
4 - MSRR	Direct	Unequal Lane	-611

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - B430 (S)	0.612	1963
2 - HPLR	0.631	1614
3 - B430 (N)	0.644	2146
4 - MSRR	0.631	1465

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	DS2	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B430 (S)		ONE HOUR	✓	493	100.000
2 - HPLR		ONE HOUR	✓	901	100.000
3 - B430 (N)		ONE HOUR	✓	1478	100.000
4 - MSRR		ONE HOUR	✓	491	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0	70	423	0
	2 - HPLR	121	0	698	82
	3 - B430 (N)	573	674	0	231
	4 - MSRR	0	72	419	0

Proportions

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0.00	0.14	0.86	0.00
	2 - HPLR	0.13	0.00	0.77	0.09
	3 - B430 (N)	0.39	0.46	0.00	0.16
	4 - MSRR	0.00	0.15	0.85	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0	0	0	0
	2 - HPLR	0	0	0	0
	3 - B430 (N)	0	0	0	0
	4 - MSRR	0	0	0	0

Average PCU Per Veh

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	1.000	1.000	1.000	1.000
	2 - HPLR	1.000	1.000	1.000	1.000
	3 - B430 (N)	1.000	1.000	1.000	1.000
	4 - MSRR	1.000	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	1 - B430 (S)	371	371
	2 - HPLR	678	678
	3 - B430 (N)	1113	1113
	4 - MSRR	370	370
08:00-08:15	1 - B430 (S)	443	443
	2 - HPLR	810	810
	3 - B430 (N)	1329	1329
	4 - MSRR	441	441
08:15-08:30	1 - B430 (S)	543	543
	2 - HPLR	992	992
	3 - B430 (N)	1627	1627
	4 - MSRR	541	541
08:30-08:45	1 - B430 (S)	543	543
	2 - HPLR	992	992
	3 - B430 (N)	1627	1627
	4 - MSRR	541	541
08:45-09:00	1 - B430 (S)	443	443
	2 - HPLR	810	810
	3 - B430 (N)	1329	1329
	4 - MSRR	441	441
09:00-09:15	1 - B430 (S)	371	371
	2 - HPLR	678	678
	3 - B430 (N)	1113	1113
	4 - MSRR	370	370

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B430 (S)	0.45	5.48	0.8	A	452	679
2 - HPLR	0.95	45.91	11.9	E	827	1240
3 - B430 (N)	0.81	9.51	4.2	A	1356	2034
4 - MSRR	1.05	144.25	22.8	F	451	676

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	371	93	872	1430	0.260	370	520	0.0	0.3	3.392	A
2 - HPLR	678	170	630	1216	0.558	673	612	0.0	1.2	6.574	A
3 - B430 (N)	1113	278	152	2049	0.543	1108	1152	0.0	1.2	3.807	A
4 - MSRR	370	92	1025	818	0.452	366	234	0.0	0.8	7.922	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	443	111	1043	1325	0.334	443	622	0.3	0.5	4.076	A
2 - HPLR	810	202	753	1138	0.712	805	732	1.2	2.4	10.672	B
3 - B430 (N)	1329	332	181	2030	0.655	1326	1377	1.2	1.9	5.095	A
4 - MSRR	441	110	1227	690	0.639	438	281	0.8	1.7	14.060	B

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	543	136	1230	1211	0.448	542	757	0.5	0.8	5.370	A
2 - HPLR	992	248	884	1056	0.940	963	887	2.4	9.5	32.111	D
3 - B430 (N)	1627	407	217	2007	0.811	1618	1630	1.9	4.1	9.070	A
4 - MSRR	541	135	1495	521	1.037	491	341	1.7	14.0	76.293	F

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	543	136	1247	1200	0.452	543	763	0.8	0.8	5.477	A
2 - HPLR	992	248	897	1048	0.947	982	893	9.5	11.9	45.913	E
3 - B430 (N)	1627	407	221	2004	0.812	1627	1658	4.1	4.2	9.513	A
4 - MSRR	541	135	1504	515	1.050	505	344	14.0	22.8	144.250	F

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	443	111	1135	1269	0.349	444	632	0.8	0.5	4.373	A
2 - HPLR	810	202	829	1091	0.743	845	750	11.9	3.1	16.558	C
3 - B430 (N)	1329	332	190	2024	0.657	1338	1484	4.2	1.9	5.315	A
4 - MSRR	441	110	1242	681	0.648	525	286	22.8	2.0	35.229	E

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	371	93	883	1423	0.261	372	525	0.5	0.4	3.429	A
2 - HPLR	678	170	638	1211	0.560	685	616	3.1	1.3	6.938	A
3 - B430 (N)	1113	278	154	2047	0.544	1116	1169	1.9	1.2	3.877	A
4 - MSRR	370	92	1033	813	0.455	374	237	2.0	0.8	8.292	A

DS2 PM - DS2, PM

Data Errors and Warnings

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

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A4	DS2 PM	✓	✓	D4	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	HBLR-B430 Single Roundabout	Standard Roundabout		1, 2, 3, 4	9.97	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B430 (S)	
2	HPLR	
3	B430 (N)	
4	MSRR	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - B430 (S)	3.00	8.00	30.0	20.0	60.0	20.0	
2 - HPLR	3.65	8.00	30.0	20.0	60.0	20.0	
3 - B430 (N)	3.65	8.50	30.0	20.0	60.0	20.0	
4 - MSRR	3.65	8.00	30.0	20.0	60.0	20.0	

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - B430 (S)	None		
2 - HPLR	Direct	Unequal Lane	-519
3 - B430 (N)	Direct	Unequal Lane	-121
4 - MSRR	Direct	Unequal Lane	-464

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - B430 (S)	0.612	1963
2 - HPLR	0.631	1557
3 - B430 (N)	0.644	2025
4 - MSRR	0.631	1612

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	DS2	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B430 (S)		ONE HOUR	✓	597	100.000
2 - HPLR		ONE HOUR	✓	751	100.000
3 - B430 (N)		ONE HOUR	✓	1419	100.000
4 - MSRR		ONE HOUR	✓	263	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0	81	516	0
	2 - HPLR	78	0	603	70
	3 - B430 (N)	391	543	0	485
	4 - MSRR	0	59	204	0

Proportions

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0.00	0.14	0.86	0.00
	2 - HPLR	0.10	0.00	0.80	0.09
	3 - B430 (N)	0.28	0.38	0.00	0.34
	4 - MSRR	0.00	0.22	0.78	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0	0	0	0
	2 - HPLR	0	0	0	0
	3 - B430 (N)	0	0	0	0
	4 - MSRR	0	0	0	0

Average PCU Per Veh

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	1.000	1.000	1.000	1.000
	2 - HPLR	1.000	1.000	1.000	1.000
	3 - B430 (N)	1.000	1.000	1.000	1.000
	4 - MSRR	1.000	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	1 - B430 (S)	449	449
	2 - HPLR	565	565
	3 - B430 (N)	1068	1068
	4 - MSRR	198	198
17:00-17:15	1 - B430 (S)	537	537
	2 - HPLR	675	675
	3 - B430 (N)	1276	1276
	4 - MSRR	236	236
17:15-17:30	1 - B430 (S)	657	657
	2 - HPLR	827	827
	3 - B430 (N)	1562	1562
	4 - MSRR	290	290
17:30-17:45	1 - B430 (S)	657	657
	2 - HPLR	827	827
	3 - B430 (N)	1562	1562
	4 - MSRR	290	290
17:45-18:00	1 - B430 (S)	537	537
	2 - HPLR	675	675
	3 - B430 (N)	1276	1276
	4 - MSRR	236	236
18:00-18:15	1 - B430 (S)	449	449
	2 - HPLR	565	565
	3 - B430 (N)	1068	1068
	4 - MSRR	198	198

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B430 (S)	0.46	4.72	0.9	A	548	822
2 - HPLR	0.78	15.56	3.5	C	689	1034
3 - B430 (N)	0.81	10.00	4.2	A	1302	1953
4 - MSRR	0.32	5.81	0.5	A	241	362

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	449	112	604	1593	0.282	448	351	0.0	0.4	3.139	A
2 - HPLR	565	141	540	1216	0.465	562	512	0.0	0.9	5.476	A
3 - B430 (N)	1068	267	111	1954	0.547	1064	991	0.0	1.2	4.020	A
4 - MSRR	198	50	758	1133	0.175	197	416	0.0	0.2	3.843	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	537	134	723	1520	0.353	536	421	0.4	0.5	3.655	A
2 - HPLR	675	169	646	1149	0.588	673	613	0.9	1.4	7.531	A
3 - B430 (N)	1276	319	133	1940	0.658	1273	1187	1.2	1.9	5.373	A
4 - MSRR	236	59	908	1039	0.228	236	498	0.2	0.3	4.482	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	657	164	883	1423	0.462	656	513	0.5	0.9	4.689	A
2 - HPLR	827	207	791	1057	0.782	819	748	1.4	3.3	14.646	B
3 - B430 (N)	1562	391	161	1922	0.813	1553	1449	1.9	4.1	9.551	A
4 - MSRR	290	72	1108	913	0.317	289	607	0.3	0.5	5.765	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	657	164	887	1420	0.463	657	516	0.9	0.9	4.718	A
2 - HPLR	827	207	793	1056	0.783	826	752	3.3	3.5	15.559	C
3 - B430 (N)	1562	391	163	1921	0.813	1562	1456	4.1	4.2	10.000	A
4 - MSRR	290	72	1114	909	0.319	290	611	0.5	0.5	5.814	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	537	134	729	1517	0.354	538	425	0.9	0.6	3.683	A
2 - HPLR	675	169	649	1147	0.588	683	618	3.5	1.5	7.886	A
3 - B430 (N)	1276	319	135	1939	0.658	1285	1197	4.2	2.0	5.578	A
4 - MSRR	236	59	917	1033	0.229	237	503	0.5	0.3	4.525	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	449	112	608	1591	0.283	450	354	0.6	0.4	3.159	A
2 - HPLR	565	141	543	1214	0.466	568	515	1.5	0.9	5.589	A
3 - B430 (N)	1068	267	112	1953	0.547	1071	999	2.0	1.2	4.094	A
4 - MSRR	198	50	764	1130	0.175	198	419	0.3	0.2	3.868	A

DS3 AM - DS3, AM

Data Errors and Warnings

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

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A5	DS3 AM	✓	✓	D5	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	HBLR-B430 Single Roundabout	Standard Roundabout		1, 2, 3, 4	11.54	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B430 (S)	
2	HPLR	
3	B430 (N)	
4	MSRR	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - B430 (S)	3.00	8.00	30.0	20.0	60.0	20.0	
2 - HPLR	3.65	8.00	30.0	20.0	60.0	20.0	
3 - B430 (N)	3.65	8.50	30.0	20.0	60.0	20.0	
4 - MSRR	3.65	8.00	30.0	20.0	60.0	20.0	

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - B430 (S)	Direct	Unequal Lane	-161
2 - HPLR	Direct	Unequal Lane	-182
3 - B430 (N)	Direct	Unequal Lane	-29
4 - MSRR	Direct	Unequal Lane	-226

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - B430 (S)	0.612	1802
2 - HPLR	0.631	1894
3 - B430 (N)	0.644	2117
4 - MSRR	0.631	1850

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	DS3	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B430 (S)		ONE HOUR	✓	590	100.000
2 - HPLR		ONE HOUR	✓	891	100.000
3 - B430 (N)		ONE HOUR	✓	1116	100.000
4 - MSRR		ONE HOUR	✓	808	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0	214	376	0
	2 - HPLR	207	0	404	280
	3 - B430 (N)	589	310	0	217
	4 - MSRR	0	262	546	0

Proportions

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0.00	0.36	0.64	0.00
	2 - HPLR	0.23	0.00	0.45	0.31
	3 - B430 (N)	0.53	0.28	0.00	0.19
	4 - MSRR	0.00	0.32	0.68	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0	0	0	0
	2 - HPLR	0	0	0	0
	3 - B430 (N)	0	0	0	0
	4 - MSRR	0	0	0	0

Average PCU Per Veh

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	1.000	1.000	1.000	1.000
	2 - HPLR	1.000	1.000	1.000	1.000
	3 - B430 (N)	1.000	1.000	1.000	1.000
	4 - MSRR	1.000	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	1 - B430 (S)	444	444
	2 - HPLR	671	671
	3 - B430 (N)	840	840
	4 - MSRR	608	608
08:00-08:15	1 - B430 (S)	530	530
	2 - HPLR	801	801
	3 - B430 (N)	1003	1003
	4 - MSRR	726	726
08:15-08:30	1 - B430 (S)	650	650
	2 - HPLR	981	981
	3 - B430 (N)	1229	1229
	4 - MSRR	890	890
08:30-08:45	1 - B430 (S)	650	650
	2 - HPLR	981	981
	3 - B430 (N)	1229	1229
	4 - MSRR	890	890
08:45-09:00	1 - B430 (S)	530	530
	2 - HPLR	801	801
	3 - B430 (N)	1003	1003
	4 - MSRR	726	726
09:00-09:15	1 - B430 (S)	444	444
	2 - HPLR	671	671
	3 - B430 (N)	840	840
	4 - MSRR	608	608

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B430 (S)	0.62	8.99	1.6	A	541	812
2 - HPLR	0.78	13.12	3.5	B	818	1226
3 - B430 (N)	0.69	6.61	2.2	A	1024	1536
4 - MSRR	0.82	18.47	4.4	C	741	1112

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	444	111	837	1290	0.344	442	597	0.0	0.5	4.237	A
2 - HPLR	671	168	691	1458	0.460	667	589	0.0	0.8	4.535	A
3 - B430 (N)	840	210	365	1883	0.446	837	993	0.0	0.8	3.433	A
4 - MSRR	608	152	829	1326	0.459	605	372	0.0	0.8	4.968	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	530	133	1002	1189	0.446	529	714	0.5	0.8	5.450	A
2 - HPLR	801	200	827	1372	0.584	799	705	0.8	1.4	6.256	A
3 - B430 (N)	1003	251	437	1836	0.546	1002	1189	0.8	1.2	4.305	A
4 - MSRR	726	182	993	1223	0.594	724	446	0.8	1.4	7.175	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	650	162	1219	1056	0.615	647	872	0.8	1.6	8.723	A
2 - HPLR	981	245	1006	1259	0.779	973	860	1.4	3.3	12.279	B
3 - B430 (N)	1229	307	532	1775	0.692	1225	1447	1.2	2.2	6.492	A
4 - MSRR	890	222	1213	1084	0.820	879	544	1.4	4.1	16.707	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	650	162	1230	1050	0.619	649	876	1.6	1.6	8.991	A
2 - HPLR	981	245	1014	1253	0.783	980	865	3.3	3.5	13.120	B
3 - B430 (N)	1229	307	536	1773	0.693	1229	1459	2.2	2.2	6.613	A
4 - MSRR	890	222	1217	1081	0.823	889	547	4.1	4.4	18.470	C

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	530	133	1018	1179	0.450	533	720	1.6	0.8	5.601	A
2 - HPLR	801	200	839	1364	0.587	809	713	3.5	1.4	6.572	A
3 - B430 (N)	1003	251	442	1833	0.547	1007	1205	2.2	1.2	4.381	A
4 - MSRR	726	182	999	1219	0.596	738	450	4.4	1.5	7.654	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	444	111	845	1285	0.346	445	601	0.8	0.5	4.292	A
2 - HPLR	671	168	697	1454	0.461	673	593	1.4	0.9	4.622	A
3 - B430 (N)	840	210	368	1881	0.447	842	1002	1.2	0.8	3.472	A
4 - MSRR	608	152	835	1323	0.460	611	375	1.5	0.9	5.072	A

DS3 PM - DS3, PM

Data Errors and Warnings

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

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A6	DS3 PM	✓	✓	D6	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	HBLR-B430 Single Roundabout	Standard Roundabout		1, 2, 3, 4	24.13	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B430 (S)	
2	HPLR	
3	B430 (N)	
4	MSRR	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - B430 (S)	3.00	8.00	30.0	20.0	60.0	20.0	
2 - HPLR	3.65	8.00	30.0	20.0	60.0	20.0	
3 - B430 (N)	3.65	8.50	30.0	20.0	60.0	20.0	
4 - MSRR	3.65	8.00	30.0	20.0	60.0	20.0	

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - B430 (S)	Direct	Unequal Lane	-164
2 - HPLR	Direct	Unequal Lane	-181
3 - B430 (N)	Direct	Unequal Lane	-344
4 - MSRR	Direct	Unequal Lane	-389

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - B430 (S)	0.612	1799
2 - HPLR	0.631	1895
3 - B430 (N)	0.644	1802
4 - MSRR	0.631	1687

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	DS3	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B430 (S)		ONE HOUR	✓	713	100.000
2 - HPLR		ONE HOUR	✓	779	100.000
3 - B430 (N)		ONE HOUR	✓	1355	100.000
4 - MSRR		ONE HOUR	✓	568	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0	207	506	0
	2 - HPLR	119	0	395	265
	3 - B430 (N)	443	304	0	608
	4 - MSRR	0	147	421	0

Proportions

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0.00	0.29	0.71	0.00
	2 - HPLR	0.15	0.00	0.51	0.34
	3 - B430 (N)	0.33	0.22	0.00	0.45
	4 - MSRR	0.00	0.26	0.74	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	0	0	0	0
	2 - HPLR	0	0	0	0
	3 - B430 (N)	0	0	0	0
	4 - MSRR	0	0	0	0

Average PCU Per Veh

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - MSRR
From	1 - B430 (S)	1.000	1.000	1.000	1.000
	2 - HPLR	1.000	1.000	1.000	1.000
	3 - B430 (N)	1.000	1.000	1.000	1.000
	4 - MSRR	1.000	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	1 - B430 (S)	537	537
	2 - HPLR	586	586
	3 - B430 (N)	1020	1020
	4 - MSRR	428	428
17:00-17:15	1 - B430 (S)	641	641
	2 - HPLR	700	700
	3 - B430 (N)	1218	1218
	4 - MSRR	511	511
17:15-17:30	1 - B430 (S)	785	785
	2 - HPLR	858	858
	3 - B430 (N)	1492	1492
	4 - MSRR	625	625
17:30-17:45	1 - B430 (S)	785	785
	2 - HPLR	858	858
	3 - B430 (N)	1492	1492
	4 - MSRR	625	625
17:45-18:00	1 - B430 (S)	641	641
	2 - HPLR	700	700
	3 - B430 (N)	1218	1218
	4 - MSRR	511	511
18:00-18:15	1 - B430 (S)	537	537
	2 - HPLR	586	586
	3 - B430 (N)	1020	1020
	4 - MSRR	428	428

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B430 (S)	0.65	8.38	1.8	A	654	981
2 - HPLR	0.69	9.15	2.1	A	715	1072
3 - B430 (N)	0.97	47.91	19.1	E	1243	1865
4 - MSRR	0.57	7.73	1.3	A	521	782

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	537	134	653	1399	0.384	534	420	0.0	0.6	4.150	A
2 - HPLR	586	147	695	1456	0.403	584	493	0.0	0.7	4.113	A
3 - B430 (N)	1020	255	288	1617	0.631	1013	991	0.0	1.7	5.898	A
4 - MSRR	428	107	648	1278	0.335	426	653	0.0	0.5	4.215	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	641	160	782	1321	0.485	640	503	0.6	0.9	5.276	A
2 - HPLR	700	175	832	1370	0.511	699	590	0.7	1.0	5.353	A
3 - B430 (N)	1218	305	344	1581	0.771	1212	1186	1.7	3.2	9.609	A
4 - MSRR	511	128	775	1198	0.426	510	782	0.5	0.7	5.224	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	785	196	947	1219	0.644	782	603	0.9	1.8	8.164	A
2 - HPLR	858	214	1017	1253	0.684	853	713	1.0	2.1	8.912	A
3 - B430 (N)	1492	373	421	1532	0.974	1445	1449	3.2	14.8	31.632	D
4 - MSRR	625	156	927	1102	0.568	623	939	0.7	1.3	7.491	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	785	196	956	1214	0.647	785	613	1.8	1.8	8.381	A
2 - HPLR	858	214	1020	1251	0.686	858	721	2.1	2.1	9.147	A
3 - B430 (N)	1492	373	423	1530	0.975	1475	1455	14.8	19.1	47.911	E
4 - MSRR	625	156	944	1091	0.573	625	954	1.3	1.3	7.727	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	641	160	800	1309	0.489	644	526	1.8	1.0	5.440	A
2 - HPLR	700	175	837	1366	0.513	705	607	2.1	1.1	5.477	A
3 - B430 (N)	1218	305	347	1579	0.771	1280	1195	19.1	3.6	14.356	B
4 - MSRR	511	128	813	1173	0.435	513	814	1.3	0.8	5.469	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	537	134	659	1396	0.385	538	426	1.0	0.6	4.206	A
2 - HPLR	586	147	700	1453	0.404	588	498	1.1	0.7	4.169	A
3 - B430 (N)	1020	255	290	1616	0.631	1027	998	3.6	1.7	6.189	A
4 - MSRR	428	107	656	1273	0.336	429	661	0.8	0.5	4.270	A

APPENDIX E

ARCADY ASSESSMENT (B430/MSRR THREE ARM ROUNDABOUT)

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.0.6896
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Filename: 220217 MSSR North Roundbaout AB 50m ICD.j9
Path: C:\Users\ADC\Dropbox (ADC Infrastructure)\!!! ADC Projects\ADC1794 OxSRFI\Documents\reports\ADC\R. MSRR_HPLR
Report generation date: 17/02/2022 12:05:15

»Proposed Layout - DS1 , AM
»Proposed Layout - DS1 , PM
»Proposed Layout - DS2 , AM
»Proposed Layout - DS2 , PM
»Proposed Layout - DS3, AM
»Proposed Layout - DS3 , PM

Summary of junction performance

	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
	Proposed Layout - DS1					
Arm 1	0.7	2.89	0.42	0.9	3.12	0.46
Arm 2	0.4	3.08	0.28	0.1	2.35	0.13
Arm 3	0.4	3.07	0.29	0.5	2.91	0.32
	Proposed Layout - DS2					
Arm 1	1.0	3.30	0.49	1.1	3.57	0.53
Arm 2	0.5	3.45	0.34	0.2	2.53	0.17
Arm 3	0.6	3.61	0.38	0.6	3.25	0.37
	Proposed Layout - DS3					
Arm 1	1.9	4.86	0.66	2.7	6.22	0.73
Arm 2	1.5	6.06	0.60	0.6	3.49	0.38
Arm 3	0.9	4.92	0.47	1.0	4.68	0.50

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

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

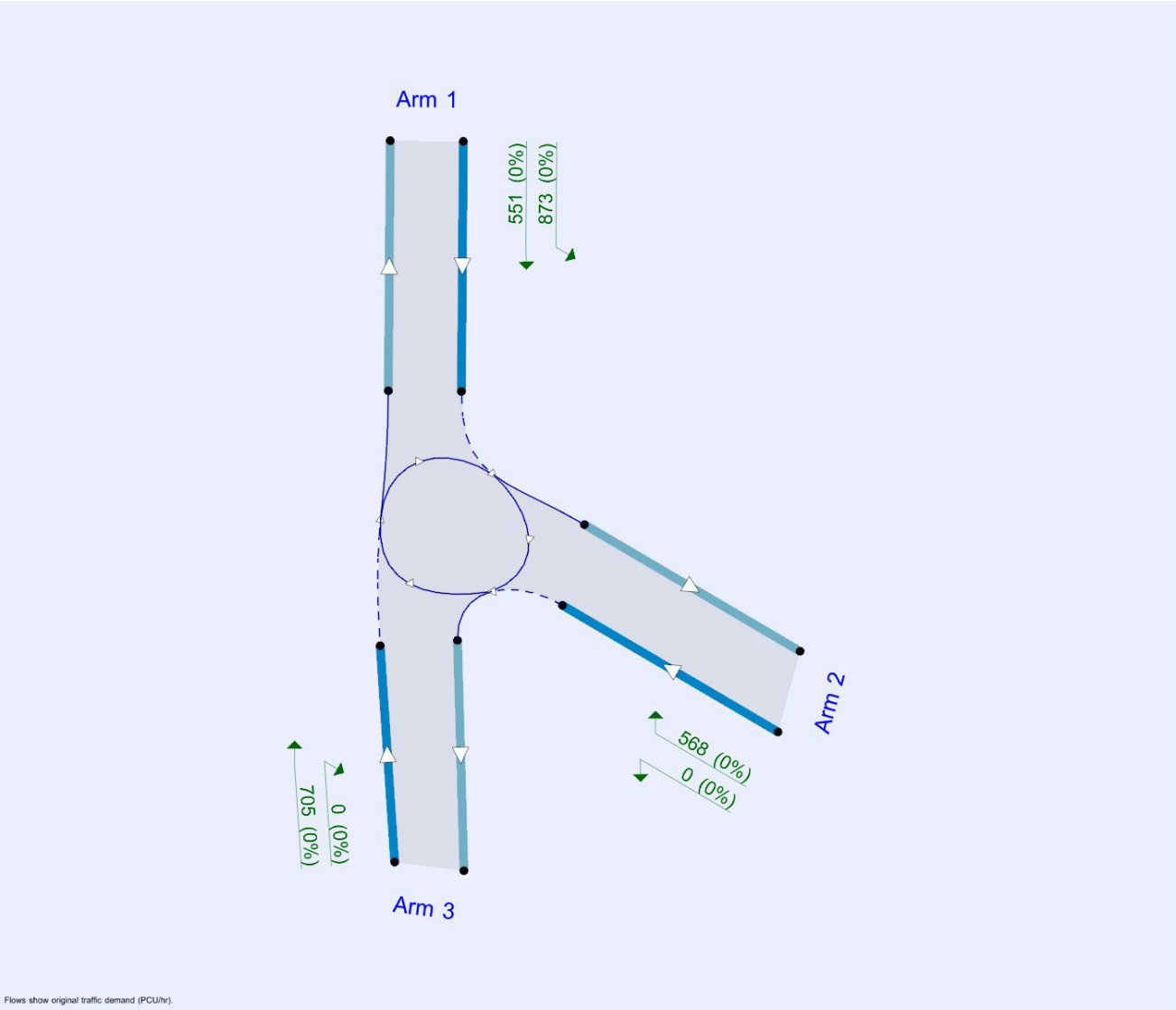
File summary

File Description

Title	Proposed north MSRR roudabout
Location	
Site number	
Date	31/08/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	ADC-AUTOCAD\ADC
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	DS1	AM	ONE HOUR	07:45	09:15	15
D2	DS1	PM	ONE HOUR	16:45	18:15	15
D3	DS2	AM	ONE HOUR	07:45	09:15	15
D4	DS2	PM	ONE HOUR	16:45	18:15	15
D5	DS3	AM	ONE HOUR	07:45	09:15	15
D6	DS3	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	Proposed Layout	100.000

Proposed Layout - DS1 , AM

Data Errors and Warnings

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

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3	2.99	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B430 (N)	
2	MSRR	
3	B430 (S)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	3.65	8.50	30.0	20.0	50.0	20.0	
2	3.65	8.00	30.0	20.0	50.0	20.0	
3	3.00	8.00	30.0	20.0	50.0	20.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.703	2146
2	0.690	2076
3	0.668	1963

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	DS1	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	819	100.000
2		✓	422	100.000
3		✓	437	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	234	585
	2	422	0	0
	3	437	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	1	617	617
	2	318	318
	3	329	329
08:00-08:15	1	736	736
	2	379	379
	3	393	393
08:15-08:30	1	902	902
	2	465	465
	3	481	481
08:30-08:45	1	902	902
	2	465	465
	3	481	481
08:45-09:00	1	736	736
	2	379	379
	3	393	393
09:00-09:15	1	617	617
	2	318	318
	3	329	329

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.42	2.89	0.7	A
2	0.28	3.08	0.4	A
3	0.29	3.07	0.4	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	617	0	2146	0.287	615	0.4	2.349	A
2	318	439	1773	0.179	317	0.2	2.471	A
3	329	317	1751	0.188	328	0.2	2.528	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	736	0	2146	0.343	736	0.5	2.552	A
2	379	526	1713	0.221	379	0.3	2.697	A
3	393	379	1710	0.230	393	0.3	2.733	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	902	0	2146	0.420	901	0.7	2.889	A
2	465	644	1632	0.285	464	0.4	3.082	A
3	481	464	1653	0.291	481	0.4	3.072	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	902	0	2146	0.420	902	0.7	2.891	A
2	465	644	1632	0.285	465	0.4	3.083	A
3	481	465	1652	0.291	481	0.4	3.072	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	736	0	2146	0.343	737	0.5	2.555	A
2	379	526	1713	0.221	380	0.3	2.701	A
3	393	380	1709	0.230	393	0.3	2.736	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	617	0	2146	0.287	617	0.4	2.354	A
2	318	441	1772	0.179	318	0.2	2.476	A
3	329	318	1750	0.188	329	0.2	2.533	A

Proposed Layout - DS1 , PM

Data Errors and Warnings

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

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3	2.95	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	DS1	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	901	100.000
2		✓	207	100.000
3		✓	521	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	487	414
	2	207	0	0
	3	521	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	1	678	678
	2	156	156
	3	392	392
17:00-17:15	1	810	810
	2	186	186
	3	468	468
17:15-17:30	1	992	992
	2	228	228
	3	574	574
17:30-17:45	1	992	992
	2	228	228
	3	574	574
17:45-18:00	1	810	810
	2	186	186
	3	468	468
18:00-18:15	1	678	678
	2	156	156
	3	392	392

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.46	3.12	0.9	A
2	0.13	2.35	0.1	A
3	0.32	2.91	0.5	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	678	0	2146	0.316	676	0.5	2.445	A
2	156	311	1862	0.084	155	0.1	2.110	A
3	392	155	1859	0.211	391	0.3	2.452	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	810	0	2146	0.377	809	0.6	2.691	A
2	186	372	1819	0.102	186	0.1	2.203	A
3	468	186	1839	0.255	468	0.3	2.626	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	992	0	2146	0.462	991	0.9	3.112	A
2	228	455	1762	0.129	228	0.1	2.346	A
3	574	228	1811	0.317	573	0.5	2.907	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	992	0	2146	0.462	992	0.9	3.117	A
2	228	456	1762	0.129	228	0.1	2.346	A
3	574	228	1811	0.317	574	0.5	2.909	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	810	0	2146	0.377	811	0.6	2.699	A
2	186	373	1819	0.102	186	0.1	2.204	A
3	468	186	1838	0.255	469	0.3	2.630	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	678	0	2146	0.316	679	0.5	2.453	A
2	156	312	1861	0.084	156	0.1	2.111	A
3	392	156	1859	0.211	393	0.3	2.455	A

Proposed Layout - DS2 , AM

Data Errors and Warnings

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

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3	3.42	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	DS2	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	960	100.000
2		✓	491	100.000
3		✓	549	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	313	647
	2	491	0	0
	3	549	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	1	723	723
	2	370	370
	3	413	413
08:00-08:15	1	863	863
	2	441	441
	3	494	494
08:15-08:30	1	1057	1057
	2	541	541
	3	604	604
08:30-08:45	1	1057	1057
	2	541	541
	3	604	604
08:45-09:00	1	863	863
	2	441	441
	3	494	494
09:00-09:15	1	723	723
	2	370	370
	3	413	413

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.49	3.30	1.0	A
2	0.34	3.45	0.5	A
3	0.38	3.61	0.6	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	723	0	2146	0.337	721	0.5	2.522	A
2	370	486	1741	0.212	369	0.3	2.623	A
3	413	369	1717	0.241	412	0.3	2.757	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	863	0	2146	0.402	862	0.7	2.802	A
2	441	581	1675	0.264	441	0.4	2.917	A
3	494	441	1668	0.296	493	0.4	3.064	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1057	0	2146	0.492	1056	1.0	3.298	A
2	541	712	1585	0.341	540	0.5	3.442	A
3	604	540	1602	0.377	604	0.6	3.605	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1057	0	2146	0.492	1057	1.0	3.303	A
2	541	712	1585	0.341	541	0.5	3.447	A
3	604	541	1602	0.377	604	0.6	3.609	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	863	0	2146	0.402	864	0.7	2.809	A
2	441	582	1674	0.264	442	0.4	2.922	A
3	494	442	1667	0.296	494	0.4	3.069	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	723	0	2146	0.337	723	0.5	2.530	A
2	370	488	1740	0.212	370	0.3	2.628	A
3	413	370	1716	0.241	414	0.3	2.765	A

Proposed Layout - DS2 , PM

Data Errors and Warnings

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

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3	3.32	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	DS2	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	1033	100.000
2		✓	263	100.000
3		✓	600	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	555	478
	2	263	0	0
	3	600	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	1	778	778
	2	198	198
	3	452	452
17:00-17:15	1	929	929
	2	236	236
	3	539	539
17:15-17:30	1	1137	1137
	2	290	290
	3	661	661
17:30-17:45	1	1137	1137
	2	290	290
	3	661	661
17:45-18:00	1	929	929
	2	236	236
	3	539	539
18:00-18:15	1	778	778
	2	198	198
	3	452	452

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.53	3.57	1.1	A
2	0.17	2.53	0.2	A
3	0.37	3.25	0.6	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	778	0	2146	0.362	775	0.6	2.621	A
2	198	359	1828	0.108	198	0.1	2.207	A
3	452	198	1831	0.247	450	0.3	2.605	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	929	0	2146	0.433	928	0.8	2.953	A
2	236	429	1780	0.133	236	0.2	2.332	A
3	539	236	1805	0.299	539	0.4	2.843	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1137	0	2146	0.530	1136	1.1	3.558	A
2	290	526	1713	0.169	289	0.2	2.527	A
3	661	289	1770	0.373	660	0.6	3.243	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1137	0	2146	0.530	1137	1.1	3.566	A
2	290	526	1713	0.169	290	0.2	2.528	A
3	661	290	1769	0.373	661	0.6	3.246	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	929	0	2146	0.433	930	0.8	2.964	A
2	236	430	1779	0.133	237	0.2	2.335	A
3	539	237	1805	0.299	540	0.4	2.849	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	778	0	2146	0.362	778	0.6	2.632	A
2	198	360	1827	0.108	198	0.1	2.209	A
3	452	198	1830	0.247	452	0.3	2.614	A

Proposed Layout - DS3, AM

Data Errors and Warnings

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

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3	5.24	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	DS3	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	1277	100.000
2		✓	808	100.000
3		✓	579	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	497	780
	2	808	0	0
	3	579	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	1	961	961
	2	608	608
	3	436	436
08:00-08:15	1	1148	1148
	2	726	726
	3	521	521
08:15-08:30	1	1406	1406
	2	890	890
	3	637	637
08:30-08:45	1	1406	1406
	2	890	890
	3	637	637
08:45-09:00	1	1148	1148
	2	726	726
	3	521	521
09:00-09:15	1	961	961
	2	608	608
	3	436	436

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.66	4.86	1.9	A
2	0.60	6.06	1.5	A
3	0.47	4.92	0.9	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	961	0	2146	0.448	958	0.8	3.022	A
2	608	585	1672	0.364	606	0.6	3.369	A
3	436	606	1558	0.280	434	0.4	3.200	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1148	0	2146	0.535	1147	1.1	3.596	A
2	726	700	1593	0.456	725	0.8	4.144	A
3	521	725	1478	0.352	520	0.5	3.755	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1406	0	2146	0.655	1403	1.9	4.823	A
2	890	857	1485	0.599	887	1.5	5.997	A
3	637	887	1370	0.465	636	0.9	4.896	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1406	0	2146	0.655	1406	1.9	4.861	A
2	890	859	1484	0.600	890	1.5	6.059	A
3	637	890	1368	0.466	637	0.9	4.924	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1148	0	2146	0.535	1151	1.2	3.628	A
2	726	703	1591	0.457	729	0.8	4.189	A
3	521	729	1476	0.353	522	0.5	3.780	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	961	0	2146	0.448	963	0.8	3.044	A
2	608	588	1670	0.364	609	0.6	3.398	A
3	436	609	1556	0.280	437	0.4	3.220	A

Proposed Layout - DS3 , PM

Data Errors and Warnings

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

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3	5.24	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	DS3	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		✓	1424	100.000
2		✓	568	100.000
3		✓	705	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	873	551
	2	568	0	0
	3	705	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	1	1072	1072
	2	428	428
	3	531	531
17:00-17:15	1	1280	1280
	2	511	511
	3	634	634
17:15-17:30	1	1568	1568
	2	625	625
	3	776	776
17:30-17:45	1	1568	1568
	2	625	625
	3	776	776
17:45-18:00	1	1280	1280
	2	511	511
	3	634	634
18:00-18:15	1	1072	1072
	2	428	428
	3	531	531

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.73	6.22	2.7	A
2	0.38	3.49	0.6	A
3	0.50	4.68	1.0	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1072	0	2146	0.499	1068	1.0	3.326	A
2	428	413	1791	0.239	426	0.3	2.636	A
3	531	426	1678	0.316	529	0.5	3.127	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1280	0	2146	0.596	1278	1.5	4.137	A
2	511	495	1735	0.294	510	0.4	2.940	A
3	634	510	1622	0.391	633	0.6	3.639	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1568	0	2146	0.730	1563	2.6	6.121	A
2	625	605	1659	0.377	625	0.6	3.480	A
3	776	625	1545	0.502	775	1.0	4.663	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1568	0	2146	0.730	1568	2.7	6.216	A
2	625	607	1658	0.377	625	0.6	3.487	A
3	776	625	1545	0.502	776	1.0	4.682	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1280	0	2146	0.596	1285	1.5	4.202	A
2	511	497	1733	0.295	511	0.4	2.947	A
3	634	511	1621	0.391	635	0.6	3.655	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1072	0	2146	0.499	1074	1.0	3.364	A
2	428	416	1789	0.239	428	0.3	2.647	A
3	531	428	1677	0.317	531	0.5	3.144	A

APPENDIX F

UNEQUAL LANE USAGE ASSESSMENT (B430/HPLR/QUARRY FOUR ARM ROUNDABOUT)

junction	HBLR B430 Quarry Roundabout															
arm	A - B430 (S)				B - HBLR				C - B430 (N)				D - Quarry Access			
flow scenario	DS1				DS1				DS1				DS1			
	AM peak hour		PM peak hour		AM peak hour		PM peak hour		AM peak hour		PM peak hour		AM peak hour		PM peak hour	
geometry	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**
v (m)	3.5	3.5	3.5	3.5	3.7	3.7	3.7	3.7	3.5	3.5	3.5	3.5	3.0	3.0	3.0	3.0
e (m)	8.0	3.5	8.0	3.5	8.0	3.7	8.0	3.7	8.0	3.5	8.0	3.5	7.0	3.0	7.0	3.0
l' (m)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
r (m)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
D (m)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
PHI	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
calculations																
K = 1 - 0.00347 (PHI-30) - 0.978(1/r-0.05)	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035
t_D = 1 + 0.5/(1+exp[(D-60)/10])	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250
X_2 = v + {(e-v)/(1+2S)}	6.541	3.500	6.541	3.500	6.621	3.700	6.621	3.700	6.541	3.500	6.541	3.500	4.754	3.000	4.754	3.000
S = 1.6{(e-v)/l'}	0.240	0.000	0.240	0.000	0.232	0.003	0.232	0.003	0.240	0.000	0.240	0.000	0.640	0.000	0.640	0.000
Q_c = circulatory flow passing entry arm	679	679	558	558	853	853	738	738	18	18	19	19	1490	1490	1435	1435
Q_e (entry capacity) = F - $f_c Q_c$ for at-grade rbs	1625	784	1701	840	1537	757	1610	811	2039	1089	2039	1089	701	293	730	317
f_c (slope) = $0.210 t_D K(1+0.2X_2)$	0.627	0.462	0.627	0.462	0.631	0.473	0.631	0.473	0.627	0.462	0.627	0.462	0.530	0.435	0.530	0.435
F (intercept) = $303X_2K$	2051	1097	2051	1097	2076	1160	2076	1160	2051	1097	2051	1097	1491	941	1491	941
flow across whole approach	859		728		710		619		1488		1424		8		24	
flow in 'main' lane		430		364		698		603		814		881		5		15
Intercept Weighting Factor		1.998		2.000		1.017		1.027		1.828		1.616		1.600		1.600
Intercept Correction (pcus/hr)		141		144		-896		-885		-45		-277		14		14

junction	HBLR B430 Quarry Roundabout															
arm	A - B430 (S)				B - HBLR				C - B430 (N)				D - Quarry Access			
flow scenario	DS2				DS2				DS2				DS2			
	AM peak hour		PM peak hour		AM peak hour		PM peak hour		AM peak hour		PM peak hour		AM peak hour		PM peak hour	
geometry	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**
v (m)	3.5	3.5	3.5	3.5	3.7	3.7	3.7	3.7	3.5	3.5	3.5	3.5	3.0	3.0	3.0	3.0
e (m)	8.0	3.5	8.0	3.5	8.0	3.7	8.0	3.7	8.0	3.5	8.0	3.5	7.0	3.0	7.0	3.0
l' (m)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
r (m)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
D (m)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
PHI	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
calculations																
K = 1 - 0.00347 (PHI-30) - 0.978(1/r-0.05)	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035
t_D = 1 + 0.5/(1+exp[(D-60)/10])	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250
X_2 = v + {(e-v)/(1+2S)}	6.541	3.500	6.541	3.500	6.621	3.700	6.621	3.700	6.541	3.500	6.541	3.500	4.754	3.000	4.754	3.000
S = 1.6{(e-v)/l'}	0.240	0.000	0.240	0.000	0.232	0.003	0.232	0.003	0.240	0.000	0.240	0.000	0.640	0.000	0.640	0.000
Q_c = circulatory flow passing entry arm	679	679	558	558	858	858	738	738	209	209	151	151	1681	1681	1567	1567
Q_e (entry capacity) = F - $f_c Q_c$ for at-grade rbs	1625	784	1701	840	1534	754	1610	811	1920	1001	1956	1028	600	210	660	260
f_c (slope) = $0.210 t_D K(1+0.2X_2)$	0.627	0.462	0.627	0.462	0.631	0.473	0.631	0.473	0.627	0.462	0.627	0.462	0.530	0.435	0.530	0.435
F (intercept) = $303X_2K$	2051	1097	2051	1097	2076	1160	2076	1160	2051	1097	2051	1097	1491	941	1491	941
flow across whole approach	990		863		901		751		1488		1424		8		24	
flow in 'main' lane		698		615		698		603		814		881		5		15
Intercept Weighting Factor		1.418		1.403		1.291		1.245		1.828		1.616		1.600		1.600
Intercept Correction (pcus/hr)		-494		-511		-579		-631		-45		-277		14		14

junction	HBLR B430 Quarry Roundabout															
arm	A - B430 (S)				B - HBLR				C - B430 (N)				D - Quarry Access			
flow scenario	DS3				DS3				DS3				DS3			
	AM peak hour		PM peak hour		AM peak hour		PM peak hour		AM peak hour		PM peak hour		AM peak hour		PM peak hour	
geometry	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**	**existing**	**adjusted**
v (m)	3.5	3.5	3.5	3.5	3.7	3.7	3.7	3.7	3.5	3.5	3.5	3.5	3.0	3.0	3.0	3.0
e (m)	8.0	3.5	8.0	3.5	8.0	3.7	8.0	3.7	8.0	3.5	8.0	3.5	7.0	3.0	7.0	3.0
l' (m)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
r (m)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
D (m)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
PHI	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
calculations																
K = 1 - 0.00347 (PHI-30) - 0.978(1/r-0.05)	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035	1.035
t_D = 1 + 0.5/(1+exp[(D-60)/10])	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250	1.250
X_2 = v + {(e-v)/(1+2S)}	6.541	3.500	6.541	3.500	6.621	3.700	6.621	3.700	6.541	3.500	6.541	3.500	4.754	3.000	4.754	3.000
S = 1.6{(e-v)/l'}	0.240	0.000	0.240	0.000	0.232	0.003	0.232	0.003	0.240	0.000	0.240	0.000	0.640	0.000	0.640	0.000
Q_c = circulatory flow passing entry arm	315	315	319	319	932	932	944	944	493	493	387	387	1603	1603	1739	1739
Q_e (entry capacity) = F - $f_c Q_c$ for at-grade rbs	1853	952	1851	950	1488	719	1480	714	1741	870	1808	919	641	244	569	185
f_c (slope) = $0.210 t_D K(1+0.2X_2)$	0.627	0.462	0.627	0.462	0.631	0.473	0.631	0.473	0.627	0.462	0.627	0.462	0.530	0.435	0.530	0.435
F (intercept) = $303X_2K$	2051	1097	2051	1097	2076	1160	2076	1160	2051	1097	2051	1097	1491	941	1491	941
flow across whole approach	1403		1283		891		779		1126		1360		8		24	
flow in 'main' lane		1084		965		487		395		615		793		5		15
Intercept Weighting Factor		1.294		1.330		1.830		1.972		1.831		1.715		1.600		1.600
Intercept Correction (pcus/hr)		-630		-592		46		212		-42		-169		14		14

APPENDIX G

ARCADY ASSESSMENT (B430/HPLR/QUARRY FOUR ARM ROUNDABOUT)

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.0.6896
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Filename: 220217 HBLR B430 Roundabout (With Quarry) - Unequal Lane.j9
Path: C:\Users\ADC\Dropbox (ADC Infrastructure)\!!! ADC Projects\ADC1794 OxSRFI\Documents\reports\ADC\R. MSRR_HPLR
Report generation date: 23/02/2022 15:47:48

»DS1 AM - DS1, AM
»DS1 PM - DS1, PM
»DS2 AM - DS2, AM
»DS2 PM - DS2, PM
»DS3 AM - DS3, AM
»DS3 PM - DS3, PM

Summary of junction performance

	AM		
	Queue (PCU)	Delay (s)	RFC
	DS1 AM - DS1		
1 - B430 (S)	1.5	5.66	0.60
2 - HPLR	105.1	504.04	1.33
3 - B430 (N)	4.5	10.04	0.82
4 - Quarry Access	0.0	3.78	0.01

	PM		
	Queue (PCU)	Delay (s)	RFC
	DS1 PM - DS1		
1 - B430 (S)	0.9	4.16	0.48
2 - HPLR	19.0	100.67	1.01
3 - B430 (N)	7.5	18.04	0.89
4 - Quarry Access	0.0	3.70	0.03

	AM		
	Queue (PCU)	Delay (s)	RFC
	DS2 AM - DS2		
1 - B430 (S)	23.2	76.38	1.00
2 - HPLR	44.8	148.79	1.08
3 - B430 (N)	6.6	15.06	0.87
4 - Quarry Access	0.0	4.32	0.01

	PM

	Queue (PCU)	Delay (s)	RFC
	DS2 PM - DS2		
1 - B430 (S)	4.4	17.21	0.82
2 - HPLR	6.8	31.43	0.89
3 - B430 (N)	12.2	29.94	0.94
4 - Quarry Access	0.0	4.07	0.03

	AM		
	Queue (PCU)	Delay (s)	RFC
	DS3 AM - DS3		
1 - B430 (S)	196.6	563.01	1.28
2 - HPLR	1.6	6.10	0.62
3 - B430 (N)	2.8	8.37	0.74
4 - Quarry Access	0.0	4.12	0.01

	PM		
	Queue (PCU)	Delay (s)	RFC
	DS3 PM - DS3		
1 - B430 (S)	96.6	237.69	1.14
2 - HPLR	1.3	5.61	0.57
3 - B430 (N)	10.7	27.33	0.93
4 - Quarry Access	0.0	4.69	0.03

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

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

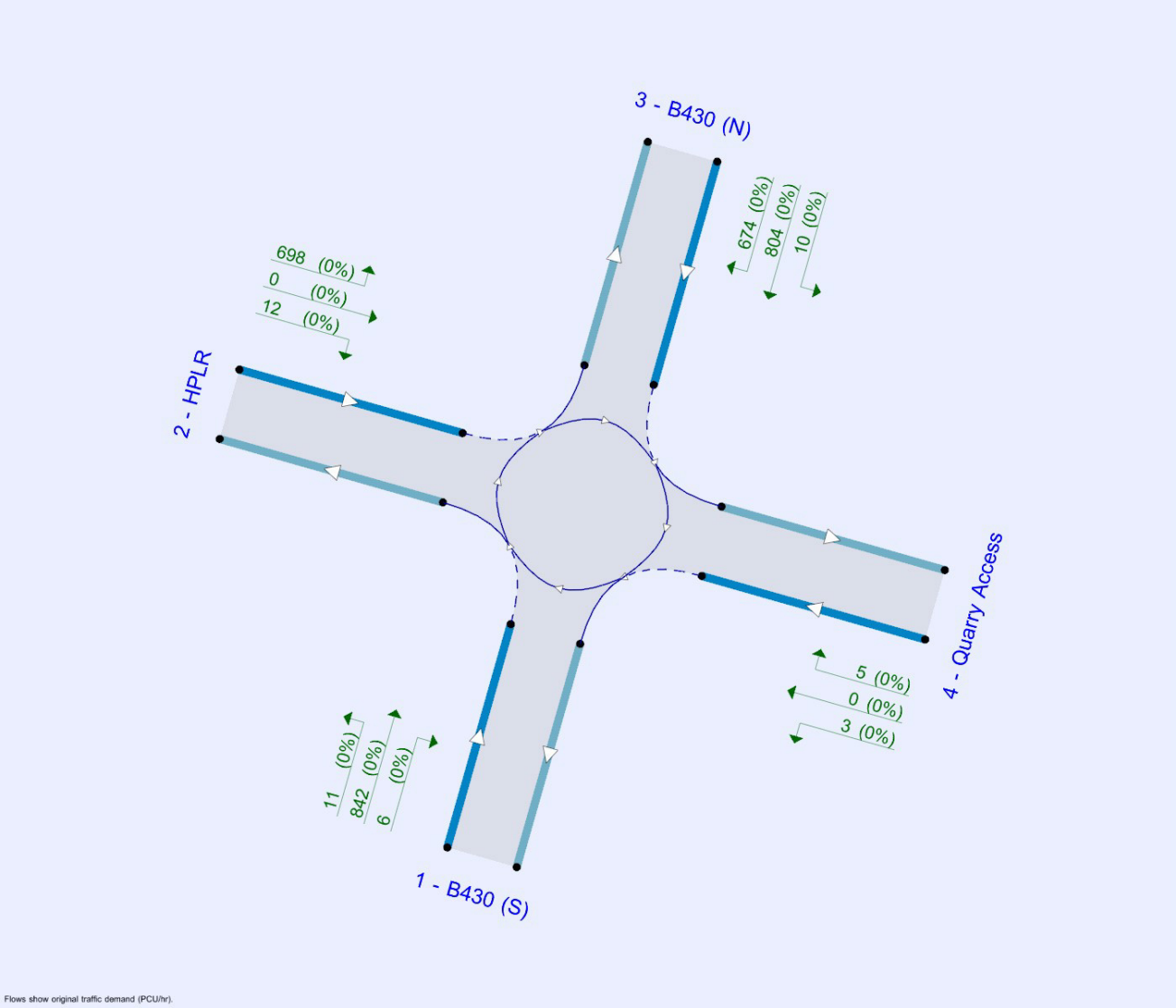
File summary

File Description

Title	
Location	
Site number	
Date	31/08/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	ADC-AUTOCAD\ADC
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	DS1	AM	ONE HOUR	07:45	09:15	15	✓
D2	DS1	PM	ONE HOUR	16:45	18:15	15	✓
D3	DS2	AM	ONE HOUR	07:45	09:15	15	✓
D4	DS2	PM	ONE HOUR	16:45	18:15	15	✓
D5	DS3	AM	ONE HOUR	07:45	09:15	15	✓
D6	DS3	PM	ONE HOUR	16:45	18:15	15	✓

DS1 AM - DS1, AM

Data Errors and Warnings

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

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	DS1 AM	✓	✓	D1	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	HBLR-B430 Roundabout (With Quarry)	Standard Roundabout		1, 2, 3, 4	123.23	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B430 (S)	
2	HPLR	
3	B430 (N)	
4	Quarry Access	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - B430 (S)	3.50	8.00	30.0	20.0	60.0	20.0	
2 - HPLR	3.65	8.00	30.0	20.0	60.0	20.0	
3 - B430 (N)	3.50	8.00	30.0	20.0	60.0	20.0	
4 - Quarry Access	3.00	8.00	30.0	20.0	60.0	20.0	

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - B430 (S)	None		
2 - HPLR	Direct	Unequal Lane	-896
3 - B430 (N)	Direct	Unequal Lane	-45
4 - Quarry Access	None		

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - B430 (S)	0.627	2051
2 - HPLR	0.631	1180
3 - B430 (N)	0.627	2006
4 - Quarry Access	0.612	1963

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	DS1	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B430 (S)		ONE HOUR	✓	859	100.000
2 - HPLR		ONE HOUR	✓	710	100.000
3 - B430 (N)		ONE HOUR	✓	1488	100.000
4 - Quarry Access		ONE HOUR	✓	8	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0	11	842	6
	2 - HPLR	12	0	698	0
	3 - B430 (N)	804	674	0	10
	4 - Quarry Access	3	0	5	0

Proportions

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0.00	0.01	0.98	0.01
	2 - HPLR	0.02	0.00	0.98	0.00
	3 - B430 (N)	0.54	0.45	0.00	0.01
	4 - Quarry Access	0.38	0.00	0.63	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0	0	0	0
	2 - HPLR	0	0	0	0
	3 - B430 (N)	0	0	0	0
	4 - Quarry Access	0	0	0	0

Average PCU Per Veh

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	1.000	1.000	1.000	1.000
	2 - HPLR	1.000	1.000	1.000	1.000
	3 - B430 (N)	1.000	1.000	1.000	1.000
	4 - Quarry Access	1.000	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	1 - B430 (S)	647	647
	2 - HPLR	535	535
	3 - B430 (N)	1120	1120
	4 - Quarry Access	6	6
08:00-08:15	1 - B430 (S)	772	772
	2 - HPLR	638	638
	3 - B430 (N)	1338	1338
	4 - Quarry Access	7	7
08:15-08:30	1 - B430 (S)	946	946
	2 - HPLR	782	782
	3 - B430 (N)	1638	1638
	4 - Quarry Access	9	9
08:30-08:45	1 - B430 (S)	946	946
	2 - HPLR	782	782
	3 - B430 (N)	1638	1638
	4 - Quarry Access	9	9
08:45-09:00	1 - B430 (S)	772	772
	2 - HPLR	638	638
	3 - B430 (N)	1338	1338
	4 - Quarry Access	7	7
09:00-09:15	1 - B430 (S)	647	647
	2 - HPLR	535	535
	3 - B430 (N)	1120	1120
	4 - Quarry Access	6	6

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B430 (S)	0.60	5.66	1.5	A	788	1182
2 - HPLR	1.33	504.04	105.1	F	652	977
3 - B430 (N)	0.82	10.04	4.5	B	1365	2048
4 - Quarry Access	0.01	3.78	0.0	A	7	11

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	647	162	509	1732	0.373	644	614	0.0	0.6	3.304	A
2 - HPLR	535	134	640	776	0.689	526	513	0.0	2.1	13.978	B
3 - B430 (N)	1120	280	13	1997	0.561	1115	1153	0.0	1.3	4.060	A
4 - Quarry Access	6	2	1117	1280	0.005	6	12	0.0	0.0	2.825	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	772	193	609	1669	0.463	771	734	0.6	0.9	4.005	A
2 - HPLR	638	160	766	696	0.916	618	614	2.1	7.2	38.652	E
3 - B430 (N)	1338	334	16	1996	0.670	1335	1368	1.3	2.0	5.424	A
4 - Quarry Access	7	2	1336	1145	0.006	7	14	0.0	0.0	3.161	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	946	236	743	1585	0.597	943	893	0.9	1.5	5.593	A
2 - HPLR	782	195	937	588	1.328	585	750	7.2	56.4	210.838	F
3 - B430 (N)	1638	410	16	1995	0.821	1629	1505	2.0	4.3	9.589	A
4 - Quarry Access	9	2	1628	967	0.009	9	18	0.0	0.0	3.755	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	946	236	747	1582	0.598	946	898	1.5	1.5	5.657	A
2 - HPLR	782	195	939	587	1.332	587	754	56.4	105.1	478.817	F
3 - B430 (N)	1638	410	17	1995	0.821	1638	1509	4.3	4.5	10.037	B
4 - Quarry Access	9	2	1637	962	0.009	9	18	0.0	0.0	3.777	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	772	193	615	1665	0.464	775	742	1.5	0.9	4.053	A
2 - HPLR	638	160	769	694	0.919	688	620	105.1	92.8	504.043	F
3 - B430 (N)	1338	334	17	1995	0.671	1347	1440	4.5	2.1	5.637	A
4 - Quarry Access	7	2	1350	1137	0.006	7	14	0.0	0.0	3.187	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	647	162	513	1729	0.374	648	622	0.9	0.6	3.334	A
2 - HPLR	535	134	643	774	0.691	766	517	92.8	35.0	303.942	F
3 - B430 (N)	1120	280	17	1995	0.562	1123	1391	2.1	1.3	4.148	A
4 - Quarry Access	6	2	1129	1272	0.005	6	12	0.0	0.0	2.844	A

DS1 PM - DS1, PM

Data Errors and Warnings

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

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	DS1 PM	✓	✓	D2	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	HBLR-B430 Roundabout (With Quarry)	Standard Roundabout		1, 2, 3, 4	32.60	D

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B430 (S)	
2	HPLR	
3	B430 (N)	
4	Quarry Access	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - B430 (S)	3.50	8.00	30.0	20.0	60.0	20.0	
2 - HPLR	3.65	8.00	30.0	20.0	60.0	20.0	
3 - B430 (N)	3.50	8.00	30.0	20.0	60.0	20.0	
4 - Quarry Access	3.00	8.00	30.0	20.0	60.0	20.0	

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - B430 (S)	None		
2 - HPLR	Direct	Unequal Lane	-885
3 - B430 (N)	Direct	Unequal Lane	-277
4 - Quarry Access	None		

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - B430 (S)	0.627	2051
2 - HPLR	0.631	1191
3 - B430 (N)	0.627	1774
4 - Quarry Access	0.612	1963

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	DS1	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B430 (S)		ONE HOUR	✓	728	100.000
2 - HPLR		ONE HOUR	✓	619	100.000
3 - B430 (N)		ONE HOUR	✓	1424	100.000
4 - Quarry Access		ONE HOUR	✓	24	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0	5	720	3
	2 - HPLR	16	0	603	0
	3 - B430 (N)	876	543	0	5
	4 - Quarry Access	9	0	15	0

Proportions

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0.00	0.01	0.99	0.00
	2 - HPLR	0.03	0.00	0.97	0.00
	3 - B430 (N)	0.62	0.38	0.00	0.00
	4 - Quarry Access	0.38	0.00	0.63	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0	0	0	0
	2 - HPLR	0	0	0	0
	3 - B430 (N)	0	0	0	0
	4 - Quarry Access	0	0	0	0

Average PCU Per Veh

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	1.000	1.000	1.000	1.000
	2 - HPLR	1.000	1.000	1.000	1.000
	3 - B430 (N)	1.000	1.000	1.000	1.000
	4 - Quarry Access	1.000	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	1 - B430 (S)	548	548
	2 - HPLR	466	466
	3 - B430 (N)	1072	1072
	4 - Quarry Access	18	18
17:00-17:15	1 - B430 (S)	654	654
	2 - HPLR	556	556
	3 - B430 (N)	1280	1280
	4 - Quarry Access	22	22
17:15-17:30	1 - B430 (S)	802	802
	2 - HPLR	682	682
	3 - B430 (N)	1568	1568
	4 - Quarry Access	26	26
17:30-17:45	1 - B430 (S)	802	802
	2 - HPLR	682	682
	3 - B430 (N)	1568	1568
	4 - Quarry Access	26	26
17:45-18:00	1 - B430 (S)	654	654
	2 - HPLR	556	556
	3 - B430 (N)	1280	1280
	4 - Quarry Access	22	22
18:00-18:15	1 - B430 (S)	548	548
	2 - HPLR	466	466
	3 - B430 (N)	1072	1072
	4 - Quarry Access	18	18

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B430 (S)	0.48	4.16	0.9	A	668	1002
2 - HPLR	1.01	100.67	19.0	F	568	852
3 - B430 (N)	0.89	18.04	7.5	C	1307	1960
4 - Quarry Access	0.03	3.70	0.0	A	22	33

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	548	137	418	1789	0.306	546	674	0.0	0.4	2.894	A
2 - HPLR	466	117	554	841	0.554	461	410	0.0	1.2	9.357	A
3 - B430 (N)	1072	268	14	1765	0.608	1066	1001	0.0	1.5	5.109	A
4 - Quarry Access	18	5	1074	1306	0.014	18	6	0.0	0.0	2.795	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	654	164	500	1737	0.377	654	807	0.4	0.6	3.321	A
2 - HPLR	556	139	663	772	0.720	552	491	1.2	2.4	15.952	C
3 - B430 (N)	1280	320	17	1763	0.726	1276	1197	1.5	2.6	7.327	A
4 - Quarry Access	22	5	1286	1176	0.018	22	7	0.0	0.0	3.116	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	802	200	608	1670	0.480	800	980	0.6	0.9	4.135	A
2 - HPLR	682	170	811	679	1.004	638	597	2.4	13.2	59.900	F
3 - B430 (N)	1568	392	20	1761	0.890	1550	1430	2.6	7.0	15.874	C
4 - Quarry Access	26	7	1561	1008	0.026	26	9	0.0	0.0	3.667	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	802	200	614	1666	0.481	802	990	0.9	0.9	4.164	A
2 - HPLR	682	170	813	678	1.005	658	603	13.2	19.0	100.672	F
3 - B430 (N)	1568	392	20	1761	0.890	1566	1451	7.0	7.5	18.036	C
4 - Quarry Access	26	7	1577	998	0.026	26	9	0.0	0.0	3.704	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	654	164	509	1732	0.378	656	823	0.9	0.6	3.351	A
2 - HPLR	556	139	665	771	0.722	621	500	19.0	2.8	32.605	D
3 - B430 (N)	1280	320	19	1762	0.727	1299	1267	7.5	2.7	8.082	A
4 - Quarry Access	22	5	1311	1161	0.019	22	7	0.0	0.0	3.158	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	548	137	422	1786	0.307	549	681	0.6	0.4	2.910	A
2 - HPLR	466	117	556	840	0.555	472	414	2.8	1.3	9.950	A
3 - B430 (N)	1072	268	14	1764	0.608	1077	1014	2.7	1.6	5.270	A
4 - Quarry Access	18	5	1085	1299	0.014	18	6	0.0	0.0	2.811	A

DS2 AM - DS2, AM

Data Errors and Warnings

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

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A3	DS2 AM	✓	✓	D3	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	HBLR-B430 Roundabout (With Quarry)	Standard Roundabout		1, 2, 3, 4	68.53	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B430 (S)	
2	HPLR	
3	B430 (N)	
4	Quarry Access	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - B430 (S)	3.50	8.00	30.0	20.0	60.0	20.0	
2 - HPLR	3.65	8.00	30.0	20.0	60.0	20.0	
3 - B430 (N)	3.50	8.00	30.0	20.0	60.0	20.0	
4 - Quarry Access	3.00	8.00	30.0	20.0	60.0	20.0	

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - B430 (S)	Direct	Unequal Lane	-494
2 - HPLR	Direct	Unequal Lane	-579
3 - B430 (N)	Direct	Unequal Lane	-45
4 - Quarry Access	None		

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - B430 (S)	0.627	1557
2 - HPLR	0.631	1497
3 - B430 (N)	0.627	2006
4 - Quarry Access	0.612	1963

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	DS2	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B430 (S)		ONE HOUR	✓	990	100.000
2 - HPLR		ONE HOUR	✓	901	100.000
3 - B430 (N)		ONE HOUR	✓	1488	100.000
4 - Quarry Access		ONE HOUR	✓	8	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0	142	842	6
	2 - HPLR	203	0	698	0
	3 - B430 (N)	804	674	0	10
	4 - Quarry Access	3	0	5	0

Proportions

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0.00	0.14	0.85	0.01
	2 - HPLR	0.23	0.00	0.77	0.00
	3 - B430 (N)	0.54	0.45	0.00	0.01
	4 - Quarry Access	0.38	0.00	0.63	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0	0	0	0
	2 - HPLR	0	0	0	0
	3 - B430 (N)	0	0	0	0
	4 - Quarry Access	0	0	0	0

Average PCU Per Veh

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	1.000	1.000	1.000	1.000
	2 - HPLR	1.000	1.000	1.000	1.000
	3 - B430 (N)	1.000	1.000	1.000	1.000
	4 - Quarry Access	1.000	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	1 - B430 (S)	745	745
	2 - HPLR	678	678
	3 - B430 (N)	1120	1120
	4 - Quarry Access	6	6
08:00-08:15	1 - B430 (S)	890	890
	2 - HPLR	810	810
	3 - B430 (N)	1338	1338
	4 - Quarry Access	7	7
08:15-08:30	1 - B430 (S)	1090	1090
	2 - HPLR	992	992
	3 - B430 (N)	1638	1638
	4 - Quarry Access	9	9
08:30-08:45	1 - B430 (S)	1090	1090
	2 - HPLR	992	992
	3 - B430 (N)	1638	1638
	4 - Quarry Access	9	9
08:45-09:00	1 - B430 (S)	890	890
	2 - HPLR	810	810
	3 - B430 (N)	1338	1338
	4 - Quarry Access	7	7
09:00-09:15	1 - B430 (S)	745	745
	2 - HPLR	678	678
	3 - B430 (N)	1120	1120
	4 - Quarry Access	6	6

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B430 (S)	1.00	76.38	23.2	F	908	1363
2 - HPLR	1.08	148.79	44.8	F	827	1240
3 - B430 (N)	0.87	15.06	6.6	C	1365	2048
4 - Quarry Access	0.01	4.32	0.0	A	7	11

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	745	186	509	1238	0.602	739	756	0.0	1.5	7.142	A
2 - HPLR	678	170	637	1095	0.620	672	611	0.0	1.6	8.395	A
3 - B430 (N)	1120	280	156	1908	0.587	1115	1153	0.0	1.4	4.508	A
4 - Quarry Access	6	2	1259	1193	0.005	6	12	0.0	0.0	3.032	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	890	222	609	1175	0.757	884	904	1.5	3.0	12.130	B
2 - HPLR	810	202	762	1016	0.797	802	731	1.6	3.6	16.222	C
3 - B430 (N)	1338	334	186	1889	0.708	1334	1378	1.4	2.4	6.440	A
4 - Quarry Access	7	2	1506	1042	0.007	7	14	0.0	0.0	3.478	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	1090	273	741	1092	0.998	1038	1084	3.0	16.1	45.059	E
2 - HPLR	992	248	894	932	1.064	906	884	3.6	25.1	71.147	F
3 - B430 (N)	1638	410	210	1874	0.874	1623	1590	2.4	6.2	13.587	B
4 - Quarry Access	9	2	1816	852	0.010	9	17	0.0	0.0	4.269	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	1090	273	747	1088	1.002	1062	1094	16.1	23.2	76.379	F
2 - HPLR	992	248	915	919	1.079	913	894	25.1	44.8	148.785	F
3 - B430 (N)	1638	410	212	1873	0.875	1637	1616	6.2	6.6	15.057	C
4 - Quarry Access	9	2	1832	842	0.010	9	17	0.0	0.0	4.318	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	890	222	618	1169	0.761	969	948	23.2	3.4	24.190	C
2 - HPLR	810	202	835	970	0.835	949	752	44.8	10.0	110.681	F
3 - B430 (N)	1338	334	220	1868	0.716	1354	1564	6.6	2.6	7.206	A
4 - Quarry Access	7	2	1558	1010	0.007	7	15	0.0	0.0	3.590	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	745	186	513	1235	0.604	753	770	3.4	1.6	7.579	A
2 - HPLR	678	170	649	1087	0.624	711	617	10.0	1.7	10.394	B
3 - B430 (N)	1120	280	165	1902	0.589	1125	1195	2.6	1.5	4.658	A
4 - Quarry Access	6	2	1278	1181	0.005	6	12	0.0	0.0	3.064	A

DS2 PM - DS2, PM

Data Errors and Warnings

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

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A4	DS2 PM	✓	✓	D4	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	HBLR-B430 Roundabout (With Quarry)	Standard Roundabout		1, 2, 3, 4	26.51	D

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B430 (S)	
2	HPLR	
3	B430 (N)	
4	Quarry Access	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - B430 (S)	3.50	8.00	30.0	20.0	60.0	20.0	
2 - HPLR	3.65	8.00	30.0	20.0	60.0	20.0	
3 - B430 (N)	3.50	8.00	30.0	20.0	60.0	20.0	
4 - Quarry Access	3.00	8.00	30.0	20.0	60.0	20.0	

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - B430 (S)	Direct	Unequal Lane	-511
2 - HPLR	Direct	Unequal Lane	-631
3 - B430 (N)	Direct	Unequal Lane	-277
4 - Quarry Access	None		

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - B430 (S)	0.627	1540
2 - HPLR	0.631	1445
3 - B430 (N)	0.627	1774
4 - Quarry Access	0.612	1963

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	DS2	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B430 (S)		ONE HOUR	✓	863	100.000
2 - HPLR		ONE HOUR	✓	751	100.000
3 - B430 (N)		ONE HOUR	✓	1424	100.000
4 - Quarry Access		ONE HOUR	✓	24	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0	140	720	3
	2 - HPLR	148	0	603	0
	3 - B430 (N)	876	543	0	5
	4 - Quarry Access	9	0	15	0

Proportions

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0.00	0.16	0.83	0.00
	2 - HPLR	0.20	0.00	0.80	0.00
	3 - B430 (N)	0.62	0.38	0.00	0.00
	4 - Quarry Access	0.38	0.00	0.63	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0	0	0	0
	2 - HPLR	0	0	0	0
	3 - B430 (N)	0	0	0	0
	4 - Quarry Access	0	0	0	0

Average PCU Per Veh

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	1.000	1.000	1.000	1.000
	2 - HPLR	1.000	1.000	1.000	1.000
	3 - B430 (N)	1.000	1.000	1.000	1.000
	4 - Quarry Access	1.000	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	1 - B430 (S)	650	650
	2 - HPLR	565	565
	3 - B430 (N)	1072	1072
	4 - Quarry Access	18	18
17:00-17:15	1 - B430 (S)	776	776
	2 - HPLR	675	675
	3 - B430 (N)	1280	1280
	4 - Quarry Access	22	22
17:15-17:30	1 - B430 (S)	950	950
	2 - HPLR	827	827
	3 - B430 (N)	1568	1568
	4 - Quarry Access	26	26
17:30-17:45	1 - B430 (S)	950	950
	2 - HPLR	827	827
	3 - B430 (N)	1568	1568
	4 - Quarry Access	26	26
17:45-18:00	1 - B430 (S)	776	776
	2 - HPLR	675	675
	3 - B430 (N)	1280	1280
	4 - Quarry Access	22	22
18:00-18:15	1 - B430 (S)	650	650
	2 - HPLR	565	565
	3 - B430 (N)	1072	1072
	4 - Quarry Access	18	18

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B430 (S)	0.82	17.21	4.4	C	792	1188
2 - HPLR	0.89	31.43	6.8	D	689	1034
3 - B430 (N)	0.94	29.94	12.2	D	1307	1960
4 - Quarry Access	0.03	4.07	0.0	A	22	33

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	650	162	418	1278	0.508	646	773	0.0	1.0	5.659	A
2 - HPLR	565	141	552	1096	0.516	561	511	0.0	1.0	6.676	A
3 - B430 (N)	1072	268	113	1703	0.630	1065	1001	0.0	1.7	5.590	A
4 - Quarry Access	18	5	1172	1246	0.015	18	6	0.0	0.0	2.931	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	776	194	500	1226	0.633	773	925	1.0	1.7	7.896	A
2 - HPLR	675	169	661	1027	0.657	672	612	1.0	1.9	10.033	B
3 - B430 (N)	1280	320	135	1689	0.758	1275	1198	1.7	3.0	8.580	A
4 - Quarry Access	22	5	1403	1105	0.020	22	7	0.0	0.0	3.322	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	950	238	603	1162	0.818	940	1115	1.7	4.1	15.628	C
2 - HPLR	827	207	804	937	0.882	810	739	1.9	6.0	25.597	D
3 - B430 (N)	1568	392	163	1671	0.938	1538	1452	3.0	10.6	22.970	C
4 - Quarry Access	26	7	1692	928	0.028	26	9	0.0	0.0	3.992	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	950	238	612	1156	0.822	949	1133	4.1	4.4	17.212	C
2 - HPLR	827	207	812	932	0.887	824	749	6.0	6.8	31.427	D
3 - B430 (N)	1568	392	166	1670	0.939	1561	1470	10.6	12.2	29.935	D
4 - Quarry Access	26	7	1718	912	0.029	26	9	0.0	0.0	4.065	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	776	194	515	1217	0.638	786	954	4.4	1.8	8.554	A
2 - HPLR	675	169	672	1021	0.662	694	629	6.8	2.0	11.624	B
3 - B430 (N)	1280	320	140	1686	0.759	1316	1227	12.2	3.3	10.594	B
4 - Quarry Access	22	5	1448	1077	0.020	22	7	0.0	0.0	3.412	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	650	162	422	1275	0.510	653	782	1.8	1.1	5.814	A
2 - HPLR	565	141	558	1093	0.518	569	517	2.0	1.1	6.927	A
3 - B430 (N)	1072	268	114	1702	0.630	1078	1013	3.3	1.7	5.829	A
4 - Quarry Access	18	5	1187	1237	0.015	18	6	0.0	0.0	2.952	A

DS3 AM - DS3, AM

Data Errors and Warnings

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

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A5	DS3 AM	✓	✓	D5	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	HBLR-B430 Roundabout (With Quarry)	Standard Roundabout		1, 2, 3, 4	234.77	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B430 (S)	
2	HPLR	
3	B430 (N)	
4	Quarry Access	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - B430 (S)	3.50	8.00	30.0	20.0	60.0	20.0	
2 - HPLR	3.65	8.00	30.0	20.0	60.0	20.0	
3 - B430 (N)	3.50	8.00	30.0	20.0	60.0	20.0	
4 - Quarry Access	3.00	8.00	30.0	20.0	60.0	20.0	

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - B430 (S)	Direct	Unequal Lane	-630
2 - HPLR	None		
3 - B430 (N)	Direct	Unequal Lane	-42
4 - Quarry Access	None		

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - B430 (S)	0.627	1421
2 - HPLR	0.631	2076
3 - B430 (N)	0.627	2009
4 - Quarry Access	0.612	1963

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	DS3	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B430 (S)		ONE HOUR	✓	1403	100.000
2 - HPLR		ONE HOUR	✓	891	100.000
3 - B430 (N)		ONE HOUR	✓	1126	100.000
4 - Quarry Access		ONE HOUR	✓	8	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0	476	921	6
	2 - HPLR	487	0	404	0
	3 - B430 (N)	806	310	0	10
	4 - Quarry Access	3	0	5	0

Proportions

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0.00	0.34	0.66	0.00
	2 - HPLR	0.55	0.00	0.45	0.00
	3 - B430 (N)	0.72	0.28	0.00	0.01
	4 - Quarry Access	0.38	0.00	0.63	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0	0	0	0
	2 - HPLR	0	0	0	0
	3 - B430 (N)	0	0	0	0
	4 - Quarry Access	0	0	0	0

Average PCU Per Veh

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	1.000	1.000	1.000	1.000
	2 - HPLR	1.000	1.000	1.000	1.000
	3 - B430 (N)	1.000	1.000	1.000	1.000
	4 - Quarry Access	1.000	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	1 - B430 (S)	1056	1056
	2 - HPLR	671	671
	3 - B430 (N)	848	848
	4 - Quarry Access	6	6
08:00-08:15	1 - B430 (S)	1261	1261
	2 - HPLR	801	801
	3 - B430 (N)	1012	1012
	4 - Quarry Access	7	7
08:15-08:30	1 - B430 (S)	1545	1545
	2 - HPLR	981	981
	3 - B430 (N)	1240	1240
	4 - Quarry Access	9	9
08:30-08:45	1 - B430 (S)	1545	1545
	2 - HPLR	981	981
	3 - B430 (N)	1240	1240
	4 - Quarry Access	9	9
08:45-09:00	1 - B430 (S)	1261	1261
	2 - HPLR	801	801
	3 - B430 (N)	1012	1012
	4 - Quarry Access	7	7
09:00-09:15	1 - B430 (S)	1056	1056
	2 - HPLR	671	671
	3 - B430 (N)	848	848
	4 - Quarry Access	6	6

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B430 (S)	1.28	563.01	196.6	F	1287	1931
2 - HPLR	0.62	6.10	1.6	A	818	1226
3 - B430 (N)	0.74	8.37	2.8	A	1033	1550
4 - Quarry Access	0.01	4.12	0.0	A	7	11

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	1056	264	236	1273	0.830	1039	972	0.0	4.4	14.451	B
2 - HPLR	671	168	690	1640	0.409	668	585	0.0	0.7	3.691	A
3 - B430 (N)	848	212	370	1777	0.477	844	988	0.0	0.9	3.845	A
4 - Quarry Access	6	2	1202	1228	0.005	6	12	0.0	0.0	2.945	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	1261	315	283	1243	1.014	1197	1163	4.4	20.4	48.952	E
2 - HPLR	801	200	796	1574	0.509	800	684	0.7	1.0	4.643	A
3 - B430 (N)	1012	253	442	1731	0.585	1010	1153	0.9	1.4	4.980	A
4 - Quarry Access	7	2	1438	1083	0.007	7	14	0.0	0.0	3.345	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	1545	386	345	1204	1.283	1202	1422	20.4	106.0	198.060	F
2 - HPLR	981	245	800	1571	0.624	979	748	1.0	1.6	6.051	A
3 - B430 (N)	1240	310	540	1670	0.742	1234	1238	1.4	2.8	8.155	A
4 - Quarry Access	9	2	1758	887	0.010	9	16	0.0	0.0	4.096	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	1545	386	347	1203	1.284	1203	1427	106.0	191.5	446.477	F
2 - HPLR	981	245	800	1571	0.625	981	749	1.6	1.6	6.104	A
3 - B430 (N)	1240	310	541	1669	0.743	1240	1240	2.8	2.8	8.367	A
4 - Quarry Access	9	2	1765	883	0.010	9	16	0.0	0.0	4.115	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	1261	315	285	1242	1.015	1241	1170	191.5	196.6	563.015	F
2 - HPLR	801	200	824	1555	0.515	803	701	1.6	1.1	4.800	A
3 - B430 (N)	1012	253	444	1730	0.585	1018	1183	2.8	1.4	5.094	A
4 - Quarry Access	7	2	1448	1077	0.007	7	14	0.0	0.0	3.363	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	1056	264	238	1272	0.831	1265	978	196.6	144.4	485.945	F
2 - HPLR	671	168	840	1546	0.434	672	663	1.1	0.8	4.125	A
3 - B430 (N)	848	212	373	1775	0.478	850	1139	1.4	0.9	3.899	A
4 - Quarry Access	6	2	1209	1223	0.005	6	13	0.0	0.0	2.957	A

DS3 PM - DS3, PM

Data Errors and Warnings

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

Analysis Set Details

ID	Name	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A6	DS3 PM	✓	✓	D6	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	HBLR-B430 Roundabout (With Quarry)	Standard Roundabout		1, 2, 3, 4	100.58	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B430 (S)	
2	HPLR	
3	B430 (N)	
4	Quarry Access	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - B430 (S)	3.50	8.00	30.0	20.0	60.0	20.0	
2 - HPLR	3.65	8.00	30.0	20.0	60.0	20.0	
3 - B430 (N)	3.50	8.00	30.0	20.0	60.0	20.0	
4 - Quarry Access	3.00	8.00	30.0	20.0	60.0	20.0	

Slope / Intercept / Capacity

Arm Intercept Adjustments

Arm	Type	Reason	Direct intercept adjustment (PCU/hr)
1 - B430 (S)	Direct	Unequal Lane	-592
2 - HPLR	None		
3 - B430 (N)	Direct	Unequal Lane	-169
4 - Quarry Access	None		

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - B430 (S)	0.627	1459
2 - HPLR	0.631	2076
3 - B430 (N)	0.627	1882
4 - Quarry Access	0.612	1963

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	DS3	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B430 (S)		ONE HOUR	✓	1283	100.000
2 - HPLR		ONE HOUR	✓	779	100.000
3 - B430 (N)		ONE HOUR	✓	1360	100.000
4 - Quarry Access		ONE HOUR	✓	24	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0	354	926	3
	2 - HPLR	384	0	395	0
	3 - B430 (N)	1051	304	0	5
	4 - Quarry Access	9	0	15	0

Proportions

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0.00	0.28	0.72	0.00
	2 - HPLR	0.49	0.00	0.51	0.00
	3 - B430 (N)	0.77	0.22	0.00	0.00
	4 - Quarry Access	0.38	0.00	0.63	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	0	0	0	0
	2 - HPLR	0	0	0	0
	3 - B430 (N)	0	0	0	0
	4 - Quarry Access	0	0	0	0

Average PCU Per Veh

		To			
		1 - B430 (S)	2 - HPLR	3 - B430 (N)	4 - Quarry Access
From	1 - B430 (S)	1.000	1.000	1.000	1.000
	2 - HPLR	1.000	1.000	1.000	1.000
	3 - B430 (N)	1.000	1.000	1.000	1.000
	4 - Quarry Access	1.000	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	1 - B430 (S)	966	966
	2 - HPLR	586	586
	3 - B430 (N)	1024	1024
	4 - Quarry Access	18	18
17:00-17:15	1 - B430 (S)	1153	1153
	2 - HPLR	700	700
	3 - B430 (N)	1223	1223
	4 - Quarry Access	22	22
17:15-17:30	1 - B430 (S)	1413	1413
	2 - HPLR	858	858
	3 - B430 (N)	1497	1497
	4 - Quarry Access	26	26
17:30-17:45	1 - B430 (S)	1413	1413
	2 - HPLR	858	858
	3 - B430 (N)	1497	1497
	4 - Quarry Access	26	26
17:45-18:00	1 - B430 (S)	1153	1153
	2 - HPLR	700	700
	3 - B430 (N)	1223	1223
	4 - Quarry Access	22	22
18:00-18:15	1 - B430 (S)	966	966
	2 - HPLR	586	586
	3 - B430 (N)	1024	1024
	4 - Quarry Access	18	18

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - B430 (S)	1.14	237.69	96.6	F	1177	1766
2 - HPLR	0.57	5.61	1.3	A	715	1072
3 - B430 (N)	0.93	27.33	10.7	D	1248	1872
4 - Quarry Access	0.03	4.69	0.0	A	22	33

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	966	241	239	1309	0.738	955	1081	0.0	2.7	9.898	A
2 - HPLR	586	147	703	1632	0.359	584	491	0.0	0.6	3.428	A
3 - B430 (N)	1024	256	290	1700	0.602	1018	997	0.0	1.5	5.237	A
4 - Quarry Access	18	5	1302	1166	0.015	18	6	0.0	0.0	3.134	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	1153	288	286	1279	0.901	1135	1294	2.7	7.3	22.457	C
2 - HPLR	700	175	835	1549	0.452	699	585	0.6	0.8	4.233	A
3 - B430 (N)	1223	306	347	1664	0.735	1218	1187	1.5	2.7	7.987	A
4 - Quarry Access	22	5	1558	1010	0.021	22	7	0.0	0.0	3.642	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	1413	353	345	1242	1.137	1231	1568	7.3	52.8	99.034	F
2 - HPLR	858	214	908	1503	0.571	856	668	0.8	1.3	5.546	A
3 - B430 (N)	1497	374	425	1615	0.927	1470	1339	2.7	9.5	21.661	C
4 - Quarry Access	26	7	1887	809	0.033	26	8	0.0	0.0	4.601	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	1413	353	350	1239	1.140	1237	1586	52.8	96.6	224.036	F
2 - HPLR	858	214	913	1500	0.572	858	675	1.3	1.3	5.605	A
3 - B430 (N)	1497	374	426	1615	0.927	1493	1345	9.5	10.7	27.328	D
4 - Quarry Access	26	7	1910	795	0.033	26	8	0.0	0.0	4.685	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	1153	288	294	1274	0.905	1261	1323	96.6	69.6	237.691	F
2 - HPLR	700	175	927	1491	0.470	702	628	1.3	0.9	4.573	A
3 - B430 (N)	1223	306	349	1663	0.735	1254	1280	10.7	2.9	9.431	A
4 - Quarry Access	22	5	1595	987	0.022	22	8	0.0	0.0	3.728	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B430 (S)	966	241	241	1307	0.739	1231	1092	69.6	3.3	90.621	F
2 - HPLR	586	147	903	1506	0.389	587	570	0.9	0.6	3.923	A
3 - B430 (N)	1024	256	292	1698	0.603	1029	1198	2.9	1.5	5.424	A
4 - Quarry Access	18	5	1315	1158	0.016	18	7	0.0	0.0	3.158	A

APPENDIX H

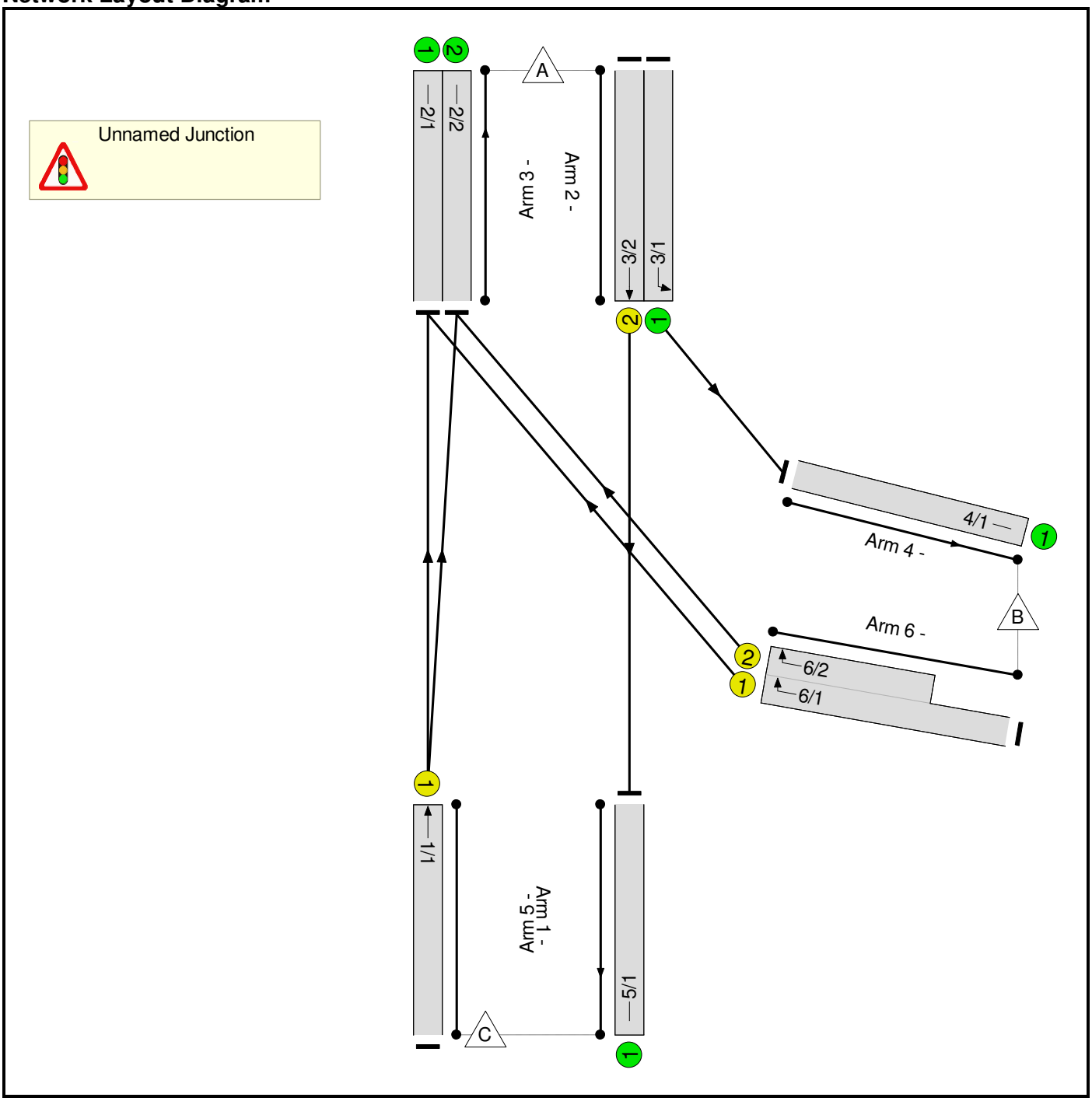
LINGSIG ASSESSMENT (B430/MSRR THREE ARM SIGNAL JUNCTION)

Full Input Data And Results

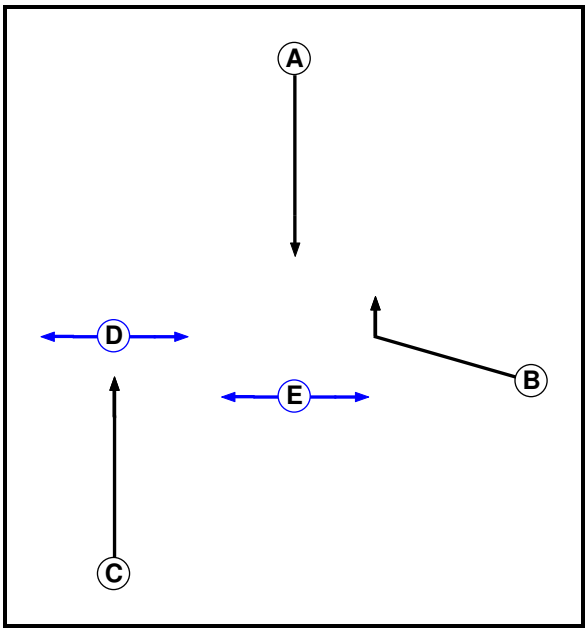
User and Project Details

Project:	**OxSRFI**
Title:	**MSRR junction with B430**
Location:	
Additional detail:	
File name:	211011 MSRR T-junction.lsg3x
Author:	Mark Higgins
Company:	ADC Infrastructure
Address:	Nottingham

Network Layout Diagram



Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	6
D	Pedestrian		5	5
E	Pedestrian		5	5

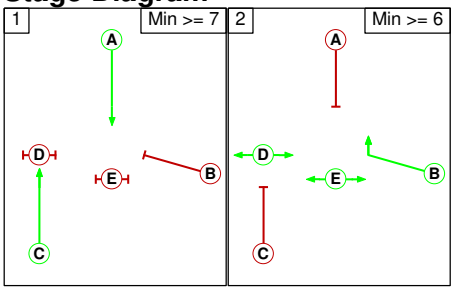
Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E
A		6	-	-	7
B	5		5	-	-
C	-	5		5	-
D	-	-	5		-
E	5	-	-	-	

Phases in Stage

Stage No.	Phases in Stage
1	A C
2	B D E

Stage Diagram



Prohibited Stage Change

From Stage \ To Stage	1	2
1		7
2	5	

Lane Input Data

Junction: Unnamed Junction

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	U	C	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 2 Ahead	Inf
2/1	U		2	3	3.5	Inf	-	-	-	-	-	-
2/2	U		2	3	3.5	Inf	-	-	-	-	-	-
3/1	U		2	3	60.0	Inf	-	-	-	-	-	-
3/2	U	A	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 5 Ahead	Inf
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U	B	2	3	60.0	Geom	-	3.55	0.00	Y	Arm 2 Right	30.00
6/2	U	B	2	3	8.7	Geom	-	3.50	0.00	Y	Arm 2 Right	30.00

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'DS1 AM'	08:00	09:00	01:00	
2: 'DS1 PM'	17:00	18:00	01:00	
3: 'DS2 AM'	08:00	09:00	01:00	
4: 'DS2 PM'	17:00	18:00	01:00	
5: 'DS3 AM'	08:00	09:00	01:00	
6: 'DS3 PM'	17:00	18:00	01:00	

Scenario 1: '2031 do something 1 - AM ' (FG1: 'DS1 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

Origin \ Destination	A	B	C	Tot.
A	0	234	585	819
B	422	0	0	422
C	437	0	0	437
Tot.	859	234	585	1678

Traffic Lane Flows

Lane	Scenario 1: 2031 do something 1 - AM
Junction: Unnamed Junction	
1/1	437
2/1	429
2/2	430
3/1	234
3/2	585
4/1	234
5/1	585
6/1 (with short)	422(In) 211(Out)
6/2 (short)	211

Lane Saturation Flows

Junction: Unnamed Junction								
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	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
2/1	Infinite Saturation Flow						Inf	Inf
2/2	Infinite Saturation Flow						Inf	Inf
3/1	Infinite Saturation Flow						Inf	Inf
3/2	3.50	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1965	1965
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.55	0.00	Y	Arm 2 Right	30.00	100.0 %	1876	1876
6/2	3.50	0.00	Y	Arm 2 Right	30.00	100.0 %	1871	1871

Scenario 2: '2031 do something 1 - PM ' (FG2: 'DS1 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	487	414	901
	B	207	0	0	207
	C	521	0	0	521
	Tot.	728	487	414	1629

Traffic Lane Flows

Lane	Scenario 2: 2031 do something 1 - PM
Junction: Unnamed Junction	
1/1	521
2/1	364
2/2	364
3/1	487
3/2	414
4/1	487
5/1	414
6/1 (with short)	207(In) 104(Out)
6/2 (short)	103

Lane Saturation Flows

Junction: Unnamed Junction								
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	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
2/1	Infinite Saturation Flow						Inf	Inf
2/2	Infinite Saturation Flow						Inf	Inf
3/1	Infinite Saturation Flow						Inf	Inf
3/2	3.50	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1965	1965
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.55	0.00	Y	Arm 2 Right	30.00	100.0 %	1876	1876
6/2	3.50	0.00	Y	Arm 2 Right	30.00	100.0 %	1871	1871

Scenario 3: '2031 do something 2 - AM ' (FG3: 'DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	313	647	960
	B	491	0	0	491
	C	549	0	0	549
	Tot.	1040	313	647	2000

Traffic Lane Flows

Lane	Scenario 3: 2031 do something 2 - AM
Junction: Unnamed Junction	
1/1	549
2/1	520
2/2	520
3/1	313
3/2	647
4/1	313
5/1	647
6/1 (with short)	491(In) 246(Out)
6/2 (short)	245

Lane Saturation Flows

Junction: Unnamed Junction								
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	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
2/1	Infinite Saturation Flow						Inf	Inf
2/2	Infinite Saturation Flow						Inf	Inf
3/1	Infinite Saturation Flow						Inf	Inf
3/2	3.50	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1965	1965
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.55	0.00	Y	Arm 2 Right	30.00	100.0 %	1876	1876
6/2	3.50	0.00	Y	Arm 2 Right	30.00	100.0 %	1871	1871

Scenario 4: '2031 do something 2 - PM ' (FG4: 'DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	555	478	1033
	B	263	0	0	263
	C	600	0	0	600
	Tot.	863	555	478	1896

Traffic Lane Flows

Lane	Scenario 4: 2031 do something 2 - PM
Junction: Unnamed Junction	
1/1	600
2/1	432
2/2	431
3/1	555
3/2	478
4/1	555
5/1	478
6/1 (with short)	263(In) 132(Out)
6/2 (short)	131

Lane Saturation Flows

Junction: Unnamed Junction								
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	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
2/1	Infinite Saturation Flow						Inf	Inf
2/2	Infinite Saturation Flow						Inf	Inf
3/1	Infinite Saturation Flow						Inf	Inf
3/2	3.50	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1965	1965
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.55	0.00	Y	Arm 2 Right	30.00	100.0 %	1876	1876
6/2	3.50	0.00	Y	Arm 2 Right	30.00	100.0 %	1871	1871

Scenario 5: '2031 do something 3 - AM ' (FG5: 'DS3 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	497	780	1277
	B	808	0	0	808
	C	579	0	0	579
	Tot.	1387	497	780	2664

Traffic Lane Flows

Lane	Scenario 5: 2031 do something 3 - AM
Junction: Unnamed Junction	
1/1	579
2/1	694
2/2	693
3/1	497
3/2	780
4/1	497
5/1	780
6/1 (with short)	808(In) 405(Out)
6/2 (short)	403

Lane Saturation Flows

Junction: Unnamed Junction								
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	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
2/1	Infinite Saturation Flow						Inf	Inf
2/2	Infinite Saturation Flow						Inf	Inf
3/1	Infinite Saturation Flow						Inf	Inf
3/2	3.50	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1965	1965
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.55	0.00	Y	Arm 2 Right	30.00	100.0 %	1876	1876
6/2	3.50	0.00	Y	Arm 2 Right	30.00	100.0 %	1871	1871

Scenario 6: '2031 do something 3 - PM ' (FG6: 'DS3 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	873	551	1424
	B	568	0	0	568
	C	705	0	0	705
	Tot.	1273	873	551	2697

Traffic Lane Flows

Lane	Scenario 6: 2031 do something 3 - PM
Junction: Unnamed Junction	
1/1	705
2/1	636
2/2	637
3/1	873
3/2	551
4/1	873
5/1	551
6/1 (with short)	568(In) 284(Out)
6/2 (short)	284

Lane Saturation Flows

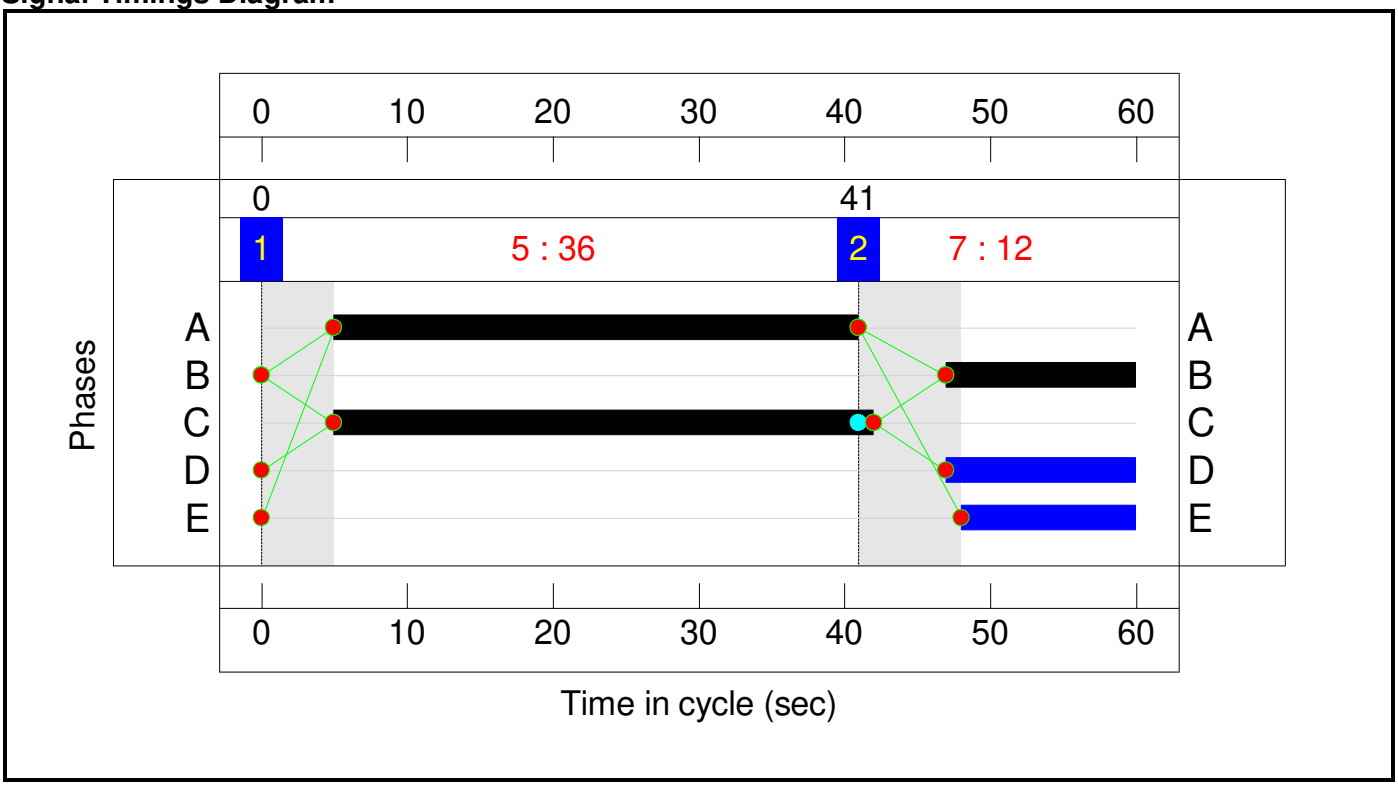
Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
2/1	Infinite Saturation Flow						Inf	Inf
2/2	Infinite Saturation Flow						Inf	Inf
3/1	Infinite Saturation Flow						Inf	Inf
3/2	3.50	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1965	1965
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	3.55	0.00	Y	Arm 2 Right	30.00	100.0 %	1876	1876
6/2	3.50	0.00	Y	Arm 2 Right	30.00	100.0 %	1871	1871

Scenario 1: '2031 do something 1 - AM ' (FG1: 'DS1 AM', Plan 1: 'Network Control Plan 1')

Stage Timings

Stage	1	2
Duration	36	12
Change Point	0	41

Signal Timings Diagram



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: MSRR junction with B430	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**48.3%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**48.3%**
1/1	Ahead	U	N/A	N/A	C		1	37	-	437	1965	1244	35.1%
3/2	Ahead	U	N/A	N/A	A		1	36	-	585	1965	1212	48.3%
6/1+6/2	Right	U	N/A	N/A	B		1	13	-	422	1876:1871	438+437	48.2 : 48.3%

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: MSRR junction with B430	**-**	**-**	**0**	**0**	**0**	**4.0**	**1.2**	**0.0**	**5.2**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**4.0**	**1.2**	**0.0**	**5.2**	**-**	**-**	**-**	**-**
1/1	437	437	-	-	-	0.6	0.3	-	0.9	7.4	3.4	0.3	3.7
3/2	585	585	-	-	-	1.0	0.5	-	1.5	9.1	5.2	0.5	5.7
6/1+6/2	422	422	-	-	-	2.3	0.5	-	2.8	23.9	3.0	0.5	3.5

C1

PRC for Signalled Lanes (%): 86.2
PRC Over All Lanes (%): 86.2

Total Delay for Signalled Lanes (pcuHr): 5.18
Total Delay Over All Lanes(pcuHr): 5.18

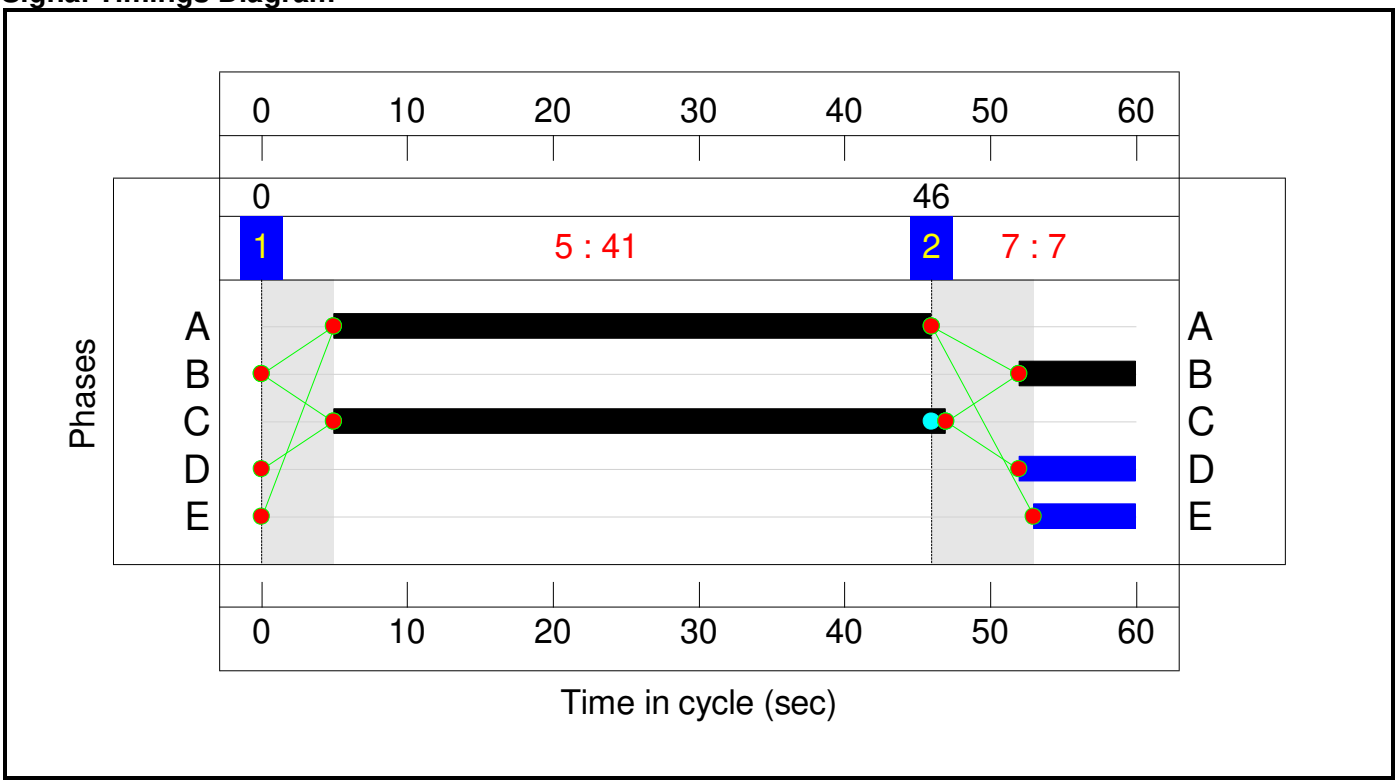
Cycle Time (s): 60

Scenario 2: '2031 do something 1 - PM ' (FG2: 'DS1 PM', Plan 1: 'Network Control Plan 1')

Stage Timings

Stage	1	2
Duration	41	7
Change Point	0	46

Signal Timings Diagram



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: MSRR junction with B430	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**37.0%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**37.0%**
1/1	Ahead	U	N/A	N/A	C		1	42	-	521	1965	1408	37.0%
3/2	Ahead	U	N/A	N/A	A		1	41	-	414	1965	1375	30.1%
6/1+6/2	Right	U	N/A	N/A	B		1	8	-	207	1876:1871	281+281	37.0 : 36.7%

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: MSRR junction with B430	**-**	**-**	**0**	**0**	**0**	**2.2**	**0.8**	**0.0**	**3.0**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**2.2**	**0.8**	**0.0**	**3.0**	**-**	**-**	**-**	**-**
1/1	521	521	-	-	-	0.5	0.3	-	0.8	5.3	3.3	0.3	3.6
3/2	414	414	-	-	-	0.4	0.2	-	0.6	5.3	2.5	0.2	2.7
6/1+6/2	207	207	-	-	-	1.3	0.3	-	1.6	28.0	1.5	0.3	1.8

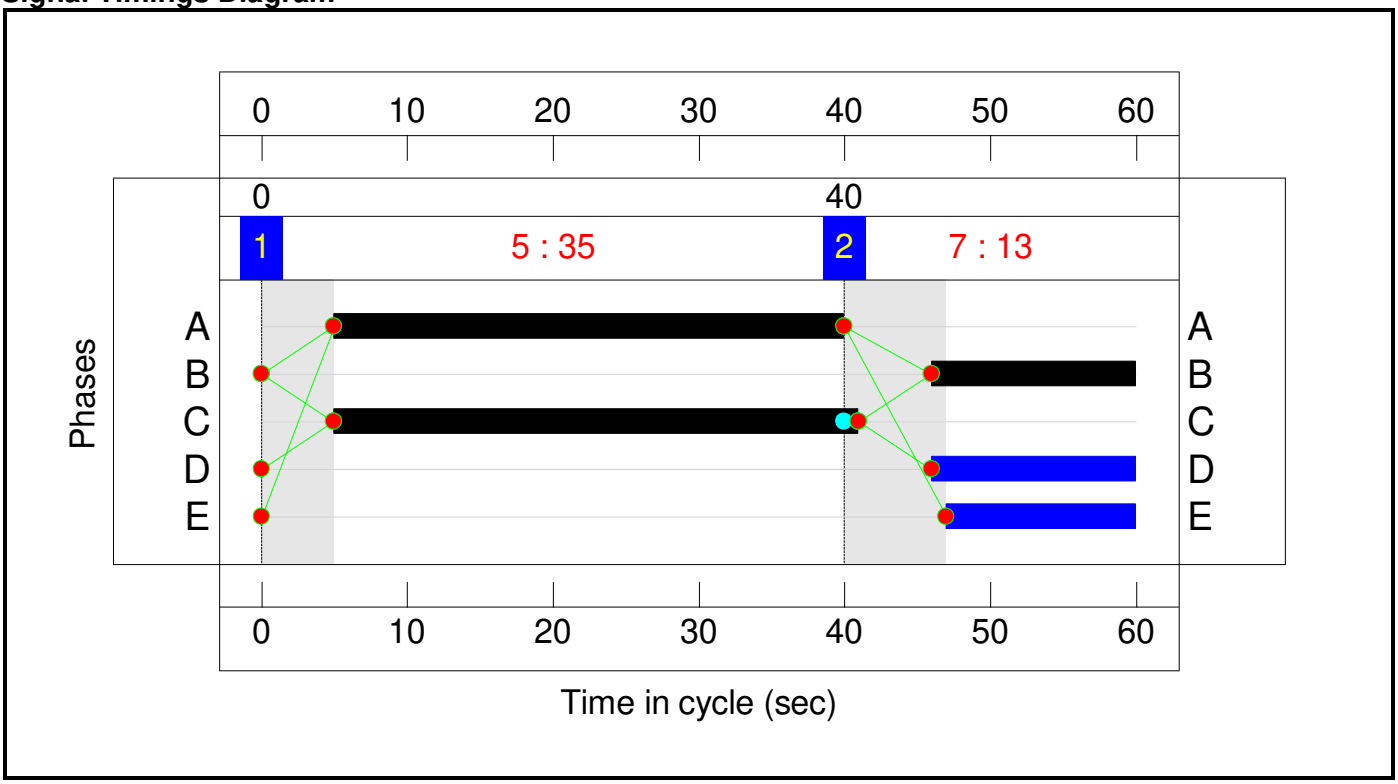
C1 PRC for Signalled Lanes (%): 143.3 Total Delay for Signalled Lanes (pcuHr): 2.99 Cycle Time (s): 60
PRC Over All Lanes (%): 143.3 Total Delay Over All Lanes(pcuHr): 2.99

Scenario 3: '2031 do something 2 - AM ' (FG3: 'DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Timings

Stage	1	2
Duration	35	13
Change Point	0	40

Signal Timings Diagram



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: MSRR junction with B430	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**54.9%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**54.9%**
1/1	Ahead	U	N/A	N/A	C		1	36	-	549	1965	1212	45.3%
3/2	Ahead	U	N/A	N/A	A		1	35	-	647	1965	1179	54.9%
6/1+6/2	Right	U	N/A	N/A	B		1	14	-	491	1876:1871	469+468	52.5 : 52.4%

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: MSRR junction with B430	**-**	**-**	**0**	**0**	**0**	**4.9**	**1.6**	**0.0**	**6.4**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**4.9**	**1.6**	**0.0**	**6.4**	**-**	**-**	**-**	**-**
1/1	549	549	-	-	-	0.9	0.4	-	1.3	8.8	4.7	0.4	5.1
3/2	647	647	-	-	-	1.3	0.6	-	1.9	10.5	6.3	0.6	6.9
6/1+6/2	491	491	-	-	-	2.6	0.5	-	3.2	23.5	3.5	0.5	4.0

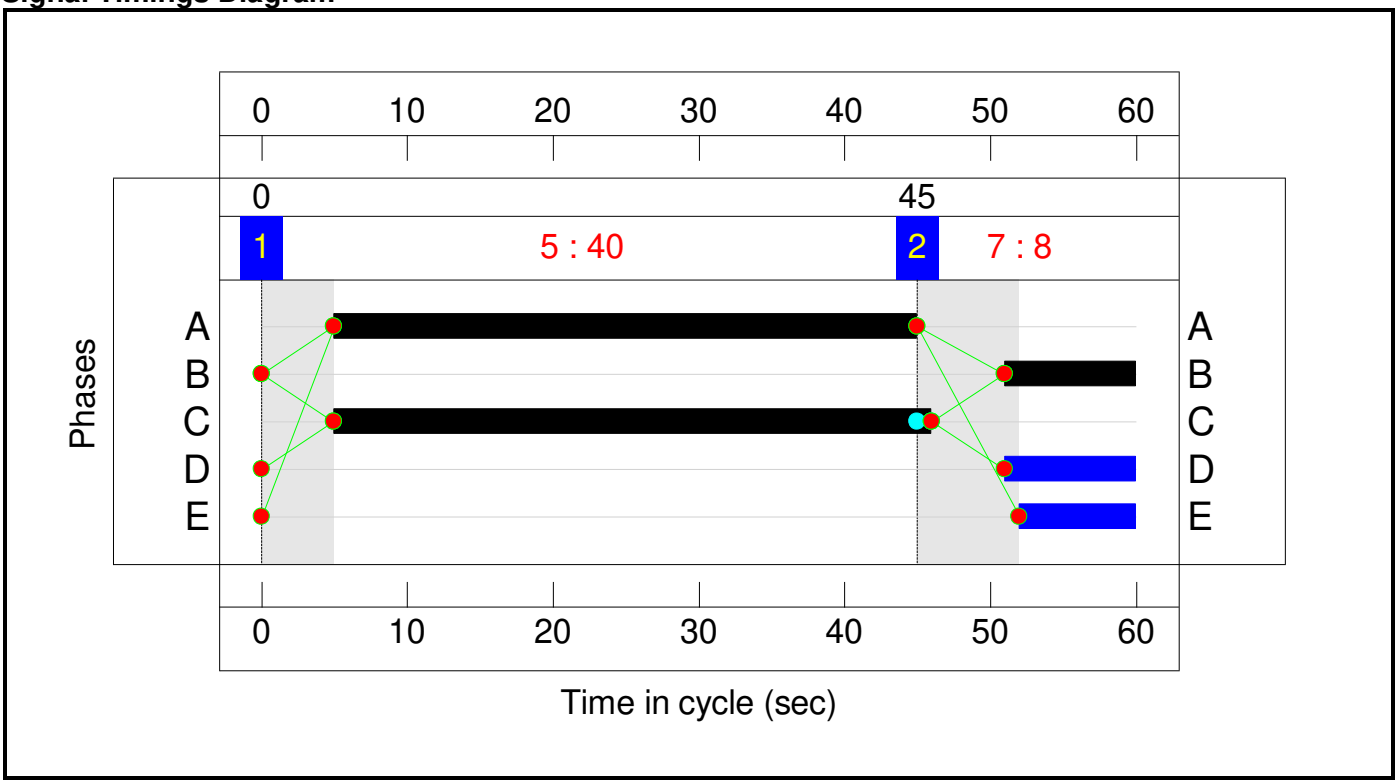
C1 PRC for Signalled Lanes (%): 64.0 Total Delay for Signalled Lanes (pcuHr): 6.44 Cycle Time (s): 60
PRC Over All Lanes (%): 64.0 Total Delay Over All Lanes(pcuHr): 6.44

Scenario 4: '2031 do something 2 - PM ' (FG4: 'DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Timings

Stage	1	2
Duration	40	8
Change Point	0	45

Signal Timings Diagram



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: MSRR junction with B430	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**43.6%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**43.6%**
1/1	Ahead	U	N/A	N/A	C		1	41	-	600	1965	1375	43.6%
3/2	Ahead	U	N/A	N/A	A		1	40	-	478	1965	1343	35.6%
6/1+6/2	Right	U	N/A	N/A	B		1	9	-	263	1876:1871	313+312	42.2 : 42.0%

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: MSRR junction with B430	**-**	**-**	**0**	**0**	**0**	**2.8**	**1.0**	**0.0**	**3.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**2.8**	**1.0**	**0.0**	**3.8**	**-**	**-**	**-**	**-**
1/1	600	600	-	-	-	0.6	0.4	-	1.0	6.2	4.2	0.4	4.6
3/2	478	478	-	-	-	0.5	0.3	-	0.8	6.1	3.3	0.3	3.6
6/1+6/2	263	263	-	-	-	1.6	0.4	-	2.0	27.4	1.9	0.4	2.3

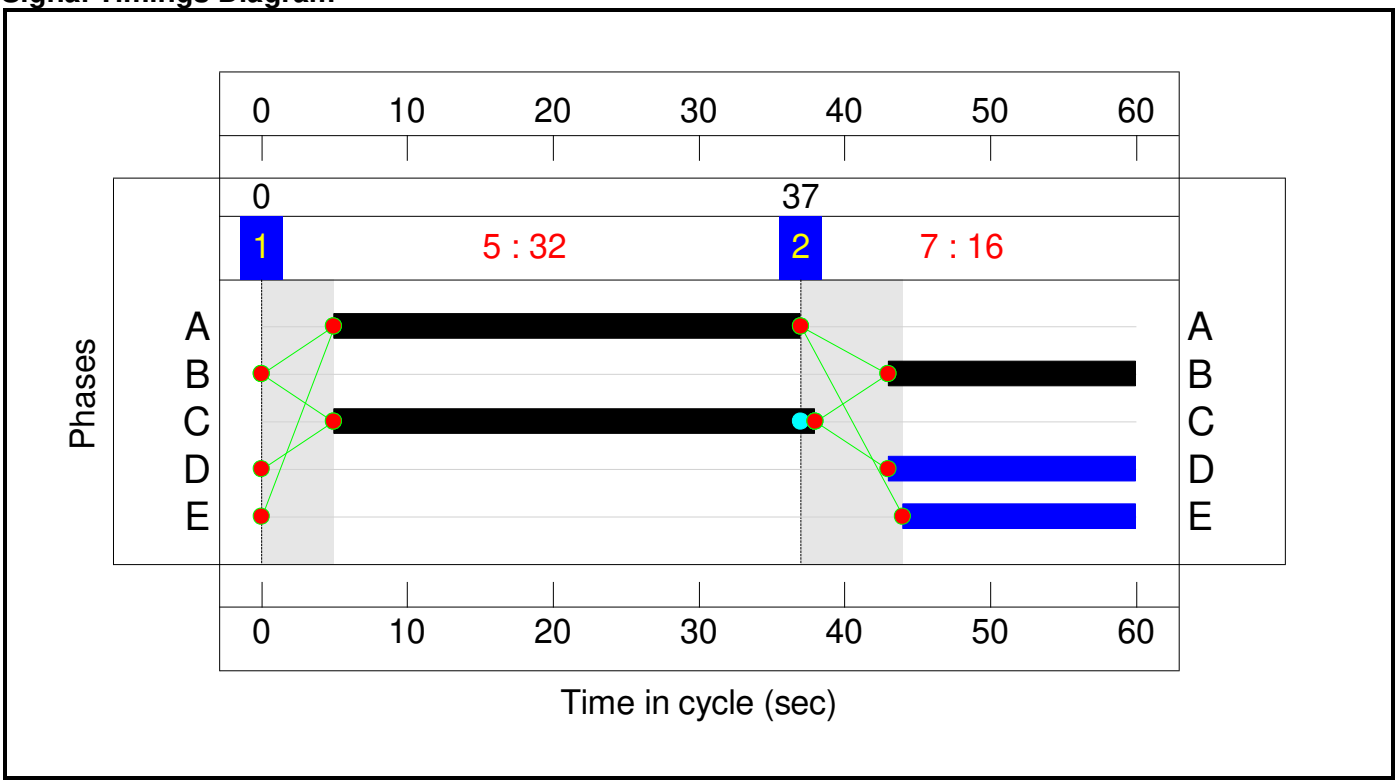
C1 PRC for Signalled Lanes (%): 106.3 Total Delay for Signalled Lanes (pcuHr): 3.84 Cycle Time (s): 60
PRC Over All Lanes (%): 106.3 Total Delay Over All Lanes(pcuHr): 3.84

Scenario 5: '2031 do something 3 - AM ' (FG5: 'DS3 AM', Plan 1: 'Network Control Plan 1')

Stage Timings

Stage	1	2
Duration	32	16
Change Point	0	37

Signal Timings Diagram



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: MSRR junction with B430	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**72.5%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**72.5%**
1/1	Ahead	U	N/A	N/A	C		1	33	-	579	1965	1113	52.0%
3/2	Ahead	U	N/A	N/A	A		1	32	-	780	1965	1081	72.2%
6/1+6/2	Right	U	N/A	N/A	B		1	17	-	808	1876:1871	559+556	72.5 : 72.5%

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: MSRR junction with B430	**-**	**-**	**0**	**0**	**0**	**7.7**	**3.1**	**0.0**	**10.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**7.7**	**3.1**	**0.0**	**10.8**	**-**	**-**	**-**	**-**
1/1	579	579	-	-	-	1.3	0.5	-	1.8	11.3	5.8	0.5	6.3
3/2	780	780	-	-	-	2.2	1.3	-	3.5	16.0	9.5	1.3	10.8
6/1+6/2	808	808	-	-	-	4.2	1.3	-	5.5	24.6	6.0	1.3	7.3

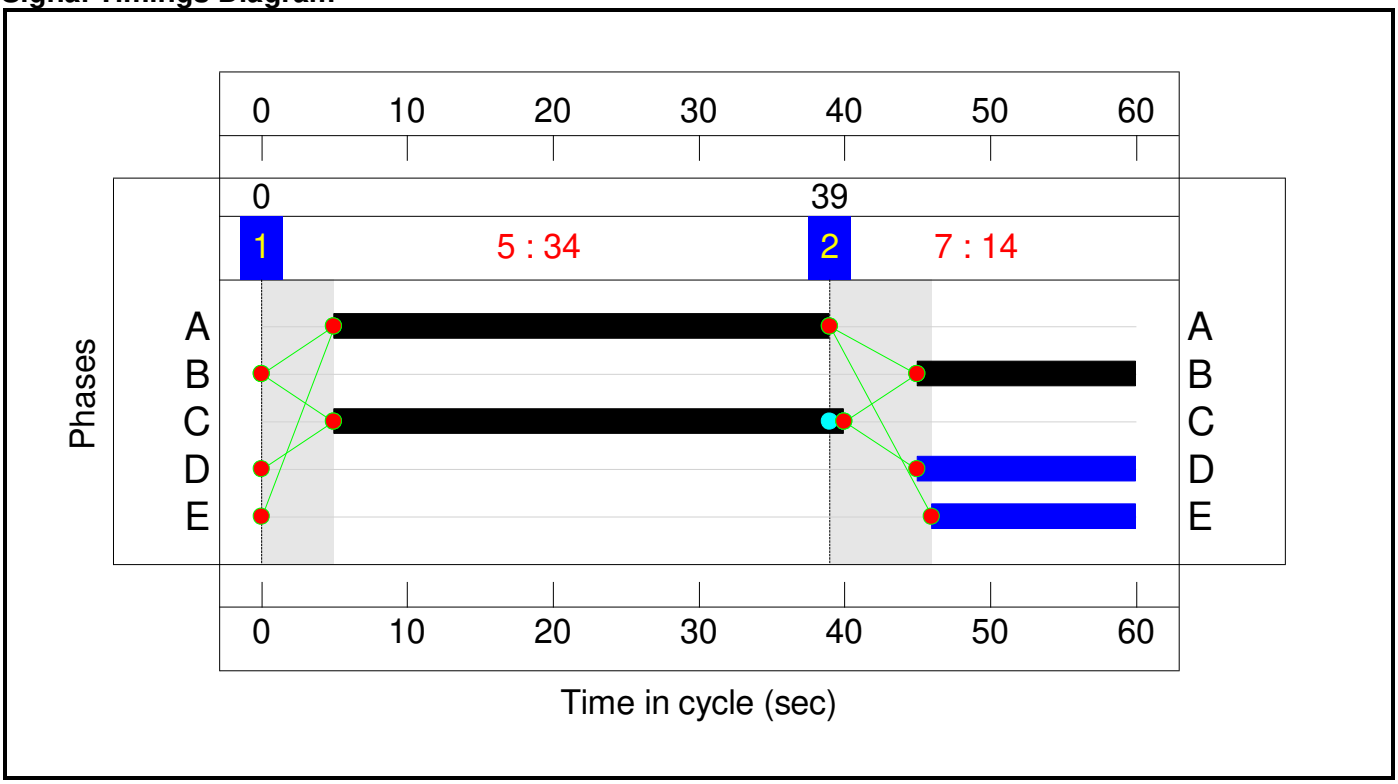
C1 PRC for Signalled Lanes (%): 24.2 Total Delay for Signalled Lanes (pcuHr): 10.81 Cycle Time (s): 60
PRC Over All Lanes (%): 24.2 Total Delay Over All Lanes(pcuHr): 10.81

Scenario 6: '2031 do something 3 - PM ' (FG6: 'DS3 PM', Plan 1: 'Network Control Plan 1')

Stage Timings

Stage	1	2
Duration	34	14
Change Point	0	39

Signal Timings Diagram



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: MSRR junction with B430	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**59.8%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**59.8%**
1/1	Ahead	U	N/A	N/A	C		1	35	-	705	1965	1179	59.8%
3/2	Ahead	U	N/A	N/A	A		1	34	-	551	1965	1146	48.1%
6/1+6/2	Right	U	N/A	N/A	B		1	15	-	568	1876:1871	500+499	56.8 : 56.9%

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: MSRR junction with B430	**-**	**-**	**0**	**0**	**0**	**5.6**	**1.9**	**0.0**	**7.4**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**5.6**	**1.9**	**0.0**	**7.4**	**-**	**-**	**-**	**-**
1/1	705	705	-	-	-	1.5	0.7	-	2.2	11.3	7.2	0.7	8.0
3/2	551	551	-	-	-	1.1	0.5	-	1.6	10.3	5.2	0.5	5.7
6/1+6/2	568	568	-	-	-	3.0	0.7	-	3.7	23.2	4.0	0.7	4.7

C1

PRC for Signalled Lanes (%): 50.5

PRC Over All Lanes (%): 50.5

Total Delay for Signalled Lanes (pcuHr): 7.44

Total Delay Over All Lanes(pcuHr): 7.44

Cycle Time (s): 60

APPENDIX I

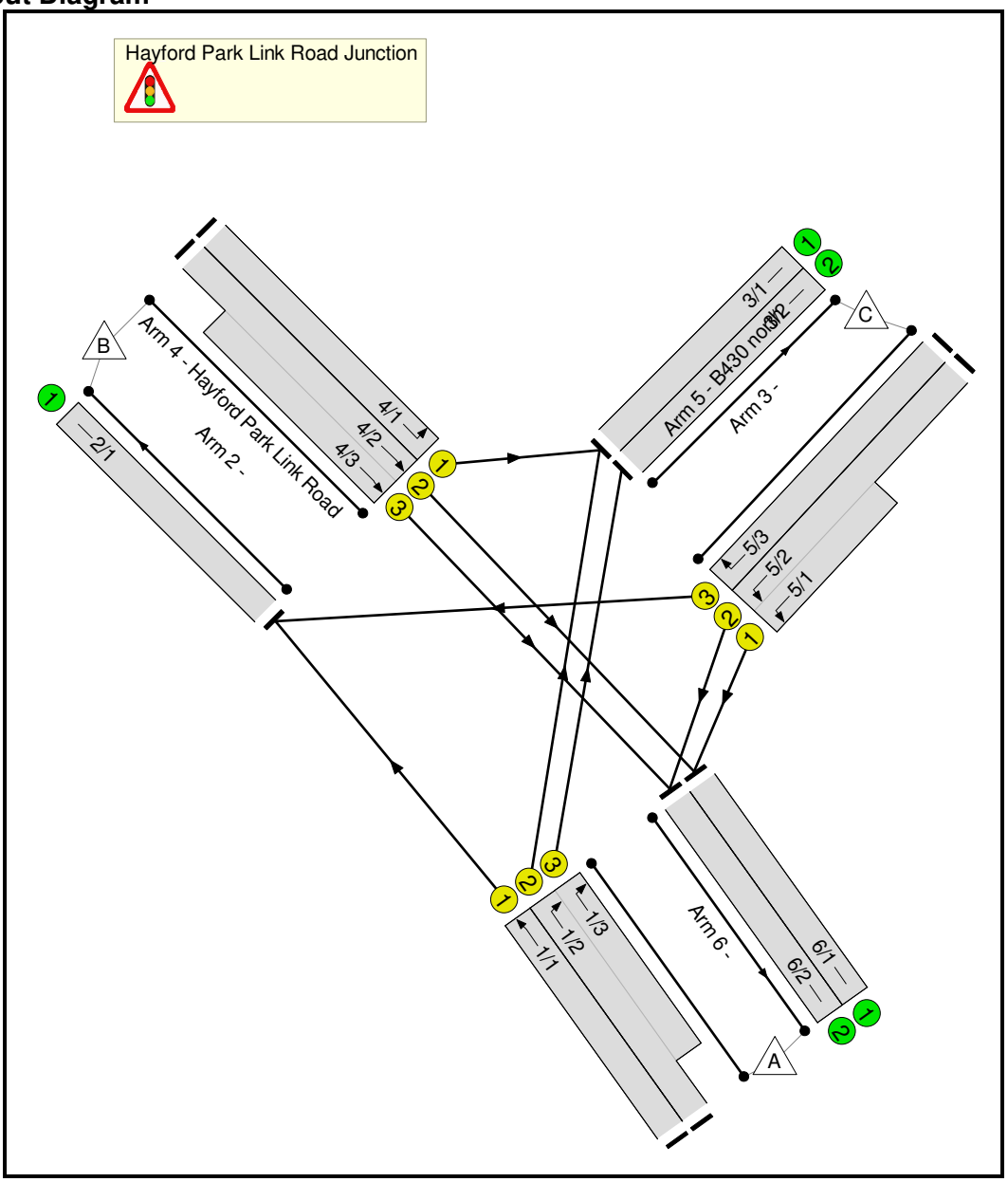
LINGSIG ASSESSMENT (B430/HPLR THREE ARM SIGNAL JUNCTION)

Full Input Data And Results

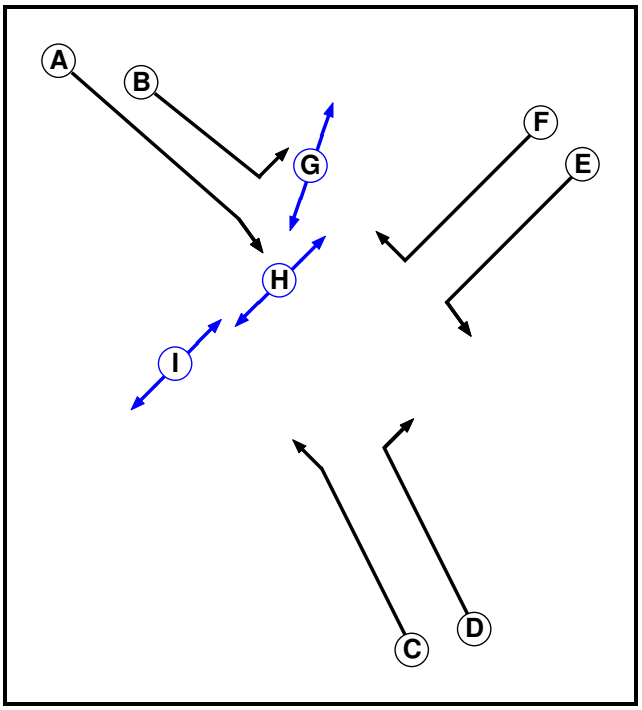
User and Project Details

Project:	**OxSRFI**
Title:	**HPLR junction with B430**
Location:	
Additional detail:	
File name:	211011 HPLR T-junction.lsg3x
Author:	Mark Higgins
Company:	ADC Infrastructure
Address:	Nottingham

Network Layout Diagram



Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		7	7
F	Traffic		7	7
G	Pedestrian		5	5
H	Pedestrian		6	6
I	Pedestrian		5	5

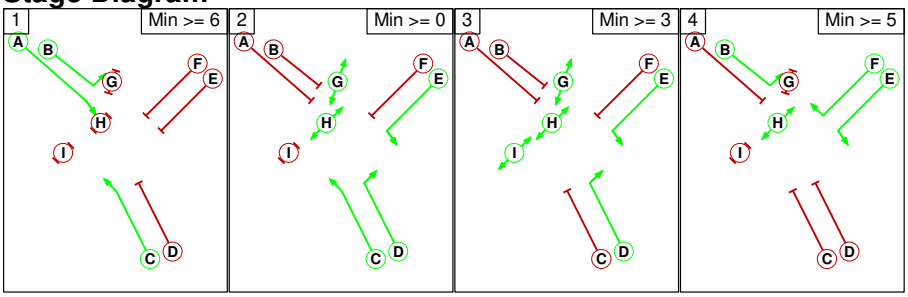
Phase Intergreens Matrix

		Starting Phase								
		A	B	C	D	E	F	G	H	I
Terminating Phase	A		-	-	5	7	5	-	5	-
	B	-		-	5	-	-	5	-	-
	C	-	-		-	-	5	-	-	5
	D	5	7	-		-	6	-	-	-
	E	5	-	-	-		-	-	-	-
	F	5	-	5	5	-		-	-	6
	G	-	5	-	-	-	-		-	-
	H	6	-	-	-	-	-	-		-
	I	-	-	5	-	-	5	-	-	

Phases in Stage

Stage No.	Phases in Stage
1	A B C
2	C D E G H
3	D E G H I
4	B E F H

Stage Diagram



Prohibited Stage Change

		To Stage			
		1	2	3	4
From Stage	1		7	7	7
	2	7		5	7
	3	7	5		7
	4	6	5	6	

Lane Input Data

Junction: Hayford Park Link Road Junction												
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 (B430 south)	U	C	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 2 Ahead	Inf
1/2 (B430 south)	U	D	2	3	40.0	Geom	-	3.50	0.00	Y	Arm 3 Right	40.00
1/3 (B430 south)	U	D	2	3	17.4	Geom	-	3.50	0.00	Y	Arm 3 Right	40.00
2/1	U		2	3	60.0	Inf	-	-	-	-	-	-
3/1	U		2	3	60.0	Inf	-	-	-	-	-	-
3/2	U		2	3	60.0	Inf	-	-	-	-	-	-
4/1 (Hayford Park Link Road)	U	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 3 Left	15.00
4/2 (Hayford Park Link Road)	U	A	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Ahead	Inf
4/3 (Hayford Park Link Road)	U	A	2	3	87.5	Geom	-	3.50	0.00	Y	Arm 6 Ahead	Inf
5/1 (B430 north)	U	E	2	3	8.7	Geom	-	3.50	0.00	Y	Arm 6 Left	40.00
5/2 (B430 north)	U	E	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Left	40.00
5/3 (B430 north)	U	F	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 2 Right	25.00
6/1	U		2	3	3.5	Inf	-	-	-	-	-	-
6/2	U		2	3	3.5	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'DS1 AM'	08:00	09:00	01:00	
2: 'DS1 PM'	17:00	18:00	01:00	
3: 'DS2 AM'	08:00	09:00	01:00	
4: 'DS2 PM'	17:00	18:00	01:00	
5: 'DS3 AM'	08:00	09:00	01:00	
6: 'DS3 PM'	17:00	18:00	01:00	

Scenario 1: '2031 do something 1 - AM ' (FG1: 'DS1 AM', Plan 1: 'DS3 AM')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	11	848	859
	B	12	0	698	710
	C	807	674	0	1481
	Tot.	819	685	1546	3050

Traffic Lane Flows

Lane	Scenario 1: 2031 do something 1 - AM
Junction: Hayford Park Link Road Junction	
1/1	11
1/2 (with short)	848(In) 424(Out)
1/3 (short)	424
2/1	685
3/1	1122
3/2	424
4/1	698
4/2 (with short)	12(In) 6(Out)
4/3 (short)	6
5/1 (short)	404
5/2 (with short)	807(In) 403(Out)
5/3	674
6/1	410
6/2	409

Lane Saturation Flows

Junction: Hayford Park Link Road Junction								
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 (B430 south)	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
1/2 (B430 south)	3.50	0.00	Y	Arm 3 Right	40.00	100.0 %	1894	1894
1/3 (B430 south)	3.50	0.00	Y	Arm 3 Right	40.00	100.0 %	1894	1894
2/1	Infinite Saturation Flow						Inf	Inf
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Hayford Park Link Road)	3.50	0.00	Y	Arm 3 Left	15.00	100.0 %	1786	1786
4/2 (Hayford Park Link Road)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
4/3 (Hayford Park Link Road)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
5/1 (B430 north)	3.50	0.00	Y	Arm 6 Left	40.00	100.0 %	1894	1894
5/2 (B430 north)	3.50	0.00	Y	Arm 6 Left	40.00	100.0 %	1894	1894
5/3 (B430 north)	3.50	0.00	Y	Arm 2 Right	25.00	100.0 %	1854	1854
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2031 do something 1 - PM ' (FG2: 'DS1 PM', Plan 1: 'DS3 AM')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	5	723	728
	B	16	0	603	619
	C	885	543	0	1428
	Tot.	901	548	1326	2775

Traffic Lane Flows

Lane	Scenario 2: 2031 do something 1 - PM
Junction: Hayford Park Link Road Junction	
1/1	5
1/2 (with short)	723(In) 405(Out)
1/3 (short)	318
2/1	548
3/1	1008
3/2	318
4/1	603
4/2 (with short)	16(In) 8(Out)
4/3 (short)	8
5/1 (short)	443
5/2 (with short)	885(In) 442(Out)
5/3	543
6/1	451
6/2	450

Lane Saturation Flows

Junction: Hayford Park Link Road Junction								
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 (B430 south)	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
1/2 (B430 south)	3.50	0.00	Y	Arm 3 Right	40.00	100.0 %	1894	1894
1/3 (B430 south)	3.50	0.00	Y	Arm 3 Right	40.00	100.0 %	1894	1894
2/1	Infinite Saturation Flow						Inf	Inf
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Hayford Park Link Road)	3.50	0.00	Y	Arm 3 Left	15.00	100.0 %	1786	1786
4/2 (Hayford Park Link Road)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
4/3 (Hayford Park Link Road)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
5/1 (B430 north)	3.50	0.00	Y	Arm 6 Left	40.00	100.0 %	1894	1894
5/2 (B430 north)	3.50	0.00	Y	Arm 6 Left	40.00	100.0 %	1894	1894
5/3 (B430 north)	3.50	0.00	Y	Arm 2 Right	25.00	100.0 %	1854	1854
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf

Scenario 3: '2031 do something 2 - AM ' (FG3: 'DS2 AM', Plan 1: 'DS3 AM')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	142	848	990
	B	203	0	698	901
	C	807	674	0	1481
	Tot.	1010	816	1546	3372

Traffic Lane Flows

Lane	Scenario 3: 2031 do something 2 - AM
Junction: Hayford Park Link Road Junction	
1/1	142
1/2 (with short)	848(In) 424(Out)
1/3 (short)	424
2/1	816
3/1	1122
3/2	424
4/1	698
4/2 (with short)	203(In) 101(Out)
4/3 (short)	102
5/1 (short)	404
5/2 (with short)	807(In) 403(Out)
5/3	674
6/1	505
6/2	505

Lane Saturation Flows

Junction: Hayford Park Link Road Junction								
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 (B430 south)	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
1/2 (B430 south)	3.50	0.00	Y	Arm 3 Right	40.00	100.0 %	1894	1894
1/3 (B430 south)	3.50	0.00	Y	Arm 3 Right	40.00	100.0 %	1894	1894
2/1	Infinite Saturation Flow						Inf	Inf
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Hayford Park Link Road)	3.50	0.00	Y	Arm 3 Left	15.00	100.0 %	1786	1786
4/2 (Hayford Park Link Road)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
4/3 (Hayford Park Link Road)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
5/1 (B430 north)	3.50	0.00	Y	Arm 6 Left	40.00	100.0 %	1894	1894
5/2 (B430 north)	3.50	0.00	Y	Arm 6 Left	40.00	100.0 %	1894	1894
5/3 (B430 north)	3.50	0.00	Y	Arm 2 Right	25.00	100.0 %	1854	1854
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2031 do something 2 - PM ' (FG4: 'DS2 PM', Plan 1: 'DS3 AM')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	140	723	863
	B	148	0	603	751
	C	885	543	0	1428
	Tot.	1033	683	1326	3042

Traffic Lane Flows

Lane	Scenario 4: 2031 do something 2 - PM
Junction: Hayford Park Link Road Junction	
1/1	140
1/2 (with short)	723(In) 405(Out)
1/3 (short)	318
2/1	683
3/1	1008
3/2	318
4/1	603
4/2 (with short)	148(In) 74(Out)
4/3 (short)	74
5/1 (short)	443
5/2 (with short)	885(In) 442(Out)
5/3	543
6/1	517
6/2	516

Lane Saturation Flows

Junction: Hayford Park Link Road Junction								
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 (B430 south)	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
1/2 (B430 south)	3.50	0.00	Y	Arm 3 Right	40.00	100.0 %	1894	1894
1/3 (B430 south)	3.50	0.00	Y	Arm 3 Right	40.00	100.0 %	1894	1894
2/1	Infinite Saturation Flow						Inf	Inf
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Hayford Park Link Road)	3.50	0.00	Y	Arm 3 Left	15.00	100.0 %	1786	1786
4/2 (Hayford Park Link Road)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
4/3 (Hayford Park Link Road)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
5/1 (B430 north)	3.50	0.00	Y	Arm 6 Left	40.00	100.0 %	1894	1894
5/2 (B430 north)	3.50	0.00	Y	Arm 6 Left	40.00	100.0 %	1894	1894
5/3 (B430 north)	3.50	0.00	Y	Arm 2 Right	25.00	100.0 %	1854	1854
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf

Scenario 5: '2031 do something 3 - AM ' (FG5: 'DS3 AM', Plan 1: 'DS3 AM')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	476	921	1397
	B	487	0	404	891
	C	806	310	0	1116
	Tot.	1293	786	1325	3404

Traffic Lane Flows

Lane	Scenario 5: 2031 do something 3 - AM
Junction: Hayford Park Link Road Junction	
1/1	476
1/2 (with short)	921(In) 515(Out)
1/3 (short)	406
2/1	786
3/1	919
3/2	406
4/1	404
4/2 (with short)	487(In) 243(Out)
4/3 (short)	244
5/1 (short)	403
5/2 (with short)	806(In) 403(Out)
5/3	310
6/1	646
6/2	647

Lane Saturation Flows

Junction: Hayford Park Link Road Junction								
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 (B430 south)	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
1/2 (B430 south)	3.50	0.00	Y	Arm 3 Right	40.00	100.0 %	1894	1894
1/3 (B430 south)	3.50	0.00	Y	Arm 3 Right	40.00	100.0 %	1894	1894
2/1	Infinite Saturation Flow						Inf	Inf
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Hayford Park Link Road)	3.50	0.00	Y	Arm 3 Left	15.00	100.0 %	1786	1786
4/2 (Hayford Park Link Road)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
4/3 (Hayford Park Link Road)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
5/1 (B430 north)	3.50	0.00	Y	Arm 6 Left	40.00	100.0 %	1894	1894
5/2 (B430 north)	3.50	0.00	Y	Arm 6 Left	40.00	100.0 %	1894	1894
5/3 (B430 north)	3.50	0.00	Y	Arm 2 Right	25.00	100.0 %	1854	1854
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf

Scenario 6: '2031 do something 3 - PM ' (FG6: 'DS3 PM', Plan 1: 'DS3 AM')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	354	926	1280
	B	384	0	395	779
	C	1051	304	0	1355
	Tot.	1435	658	1321	3414

Traffic Lane Flows

Lane	Scenario 6: 2031 do something 3 - PM
Junction: Hayford Park Link Road Junction	
1/1	354
1/2 (with short)	926(In) 520(Out)
1/3 (short)	406
2/1	658
3/1	915
3/2	406
4/1	395
4/2 (with short)	384(In) 192(Out)
4/3 (short)	192
5/1 (short)	526
5/2 (with short)	1051(In) 525(Out)
5/3	304
6/1	718
6/2	717

Lane Saturation Flows

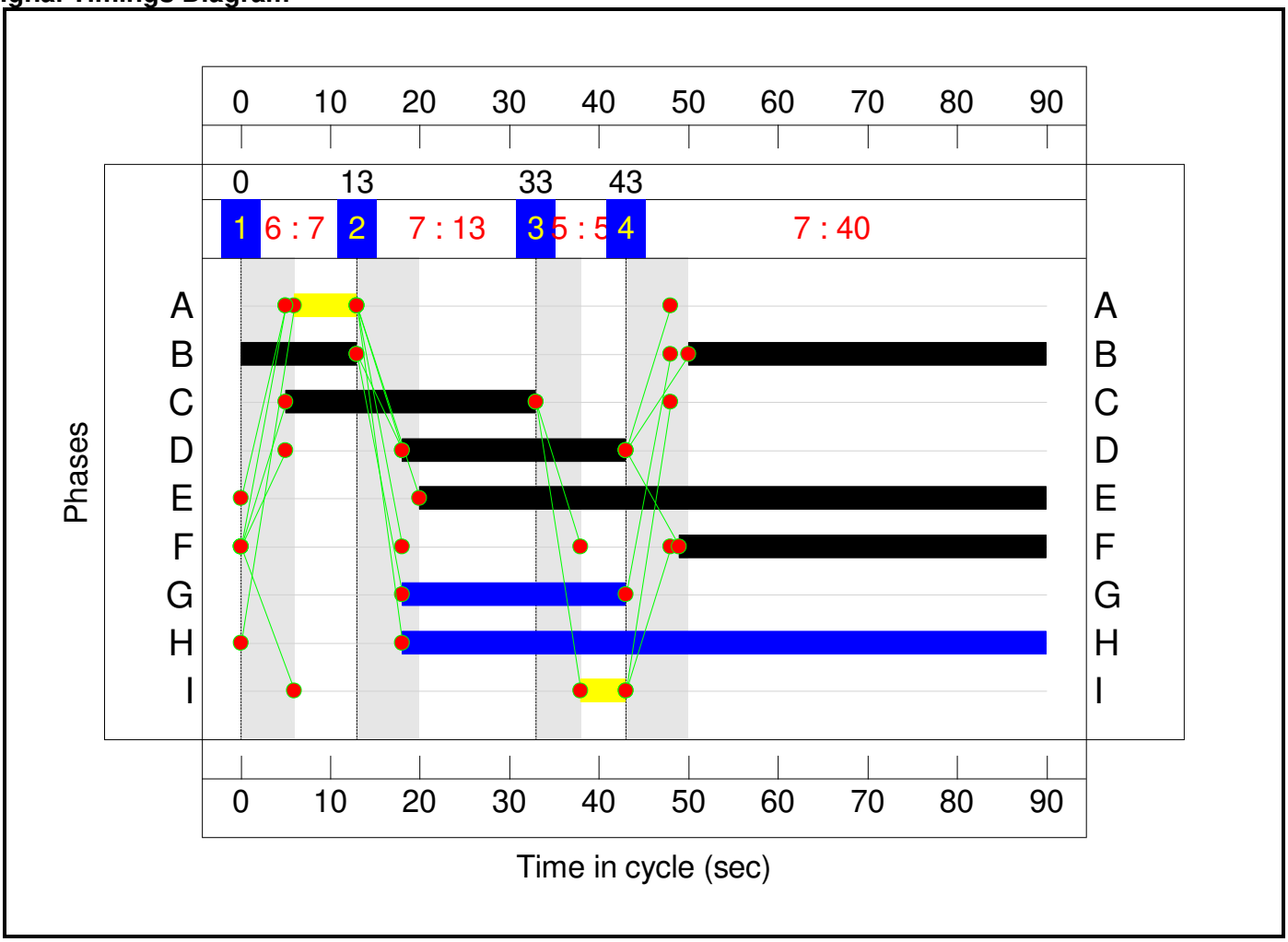
Junction: Hayford Park Link Road Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (B430 south)	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
1/2 (B430 south)	3.50	0.00	Y	Arm 3 Right	40.00	100.0 %	1894	1894
1/3 (B430 south)	3.50	0.00	Y	Arm 3 Right	40.00	100.0 %	1894	1894
2/1	Infinite Saturation Flow						Inf	Inf
3/1	Infinite Saturation Flow						Inf	Inf
3/2	Infinite Saturation Flow						Inf	Inf
4/1 (Hayford Park Link Road)	3.50	0.00	Y	Arm 3 Left	15.00	100.0 %	1786	1786
4/2 (Hayford Park Link Road)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
4/3 (Hayford Park Link Road)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
5/1 (B430 north)	3.50	0.00	Y	Arm 6 Left	40.00	100.0 %	1894	1894
5/2 (B430 north)	3.50	0.00	Y	Arm 6 Left	40.00	100.0 %	1894	1894
5/3 (B430 north)	3.50	0.00	Y	Arm 2 Right	25.00	100.0 %	1854	1854
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf

Scenario 1: '2031 do something 1 - AM ' (FG1: 'DS1 AM', Plan 1: 'DS3 AM')

Stage Timings

Stage	1	2	3	4
Duration	7	13	5	40
Change Point	0	13	33	43

Signal Timings Diagram



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: HPLR junction with B430	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.9%**
Hayford Park Link Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.9%**
1/1	B430 south Ahead	U	N/A	N/A	C		1	28	-	11	1965	633	1.7%
1/2+1/3	B430 south Right	U	N/A	N/A	D		1	25	-	848	1894:1894	547+547	77.5 : 77.5%
4/1	Hayford Park Link Road Left	U	N/A	N/A	B		1	53	-	698	1786	1072	65.1%
4/2+4/3	Hayford Park Link Road Ahead	U	N/A	N/A	A		1	7	-	12	1965:1965	175+175	3.4 : 3.4%
5/2+5/1	B430 north Left	U	N/A	N/A	E		1	70	-	807	1894:1894	928+930	43.4 : 43.4%
5/3	B430 north Right	U	N/A	N/A	F		1	41	-	674	1854	865	77.9%

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: HPLR junction with B430	**-**	**-**	**0**	**0**	**0**	**13.7**	**4.8**	**0.0**	**18.5**	**-**	**-**	**-**	**-**
Hayford Park Link Road Junction	**-**	**-**	**0**	**0**	**0**	**13.7**	**4.8**	**0.0**	**18.5**	**-**	**-**	**-**	**-**
1/1	11	11	-	-	-	0.1	0.0	-	0.1	23.9	0.2	0.0	0.2
1/2+1/3	848	848	-	-	-	6.9	1.7	-	8.6	36.5	9.7	1.7	11.4
4/1	698	698	-	-	-	2.3	0.9	-	3.2	16.6	11.4	0.9	12.4
4/2+4/3	12	12	-	-	-	0.1	0.0	-	0.1	43.1	0.1	0.0	0.2
5/2+5/1	807	807	-	-	-	0.6	0.4	-	1.0	4.3	2.7	0.4	3.1
5/3	674	674	-	-	-	3.8	1.7	-	5.5	29.4	14.0	1.7	15.8

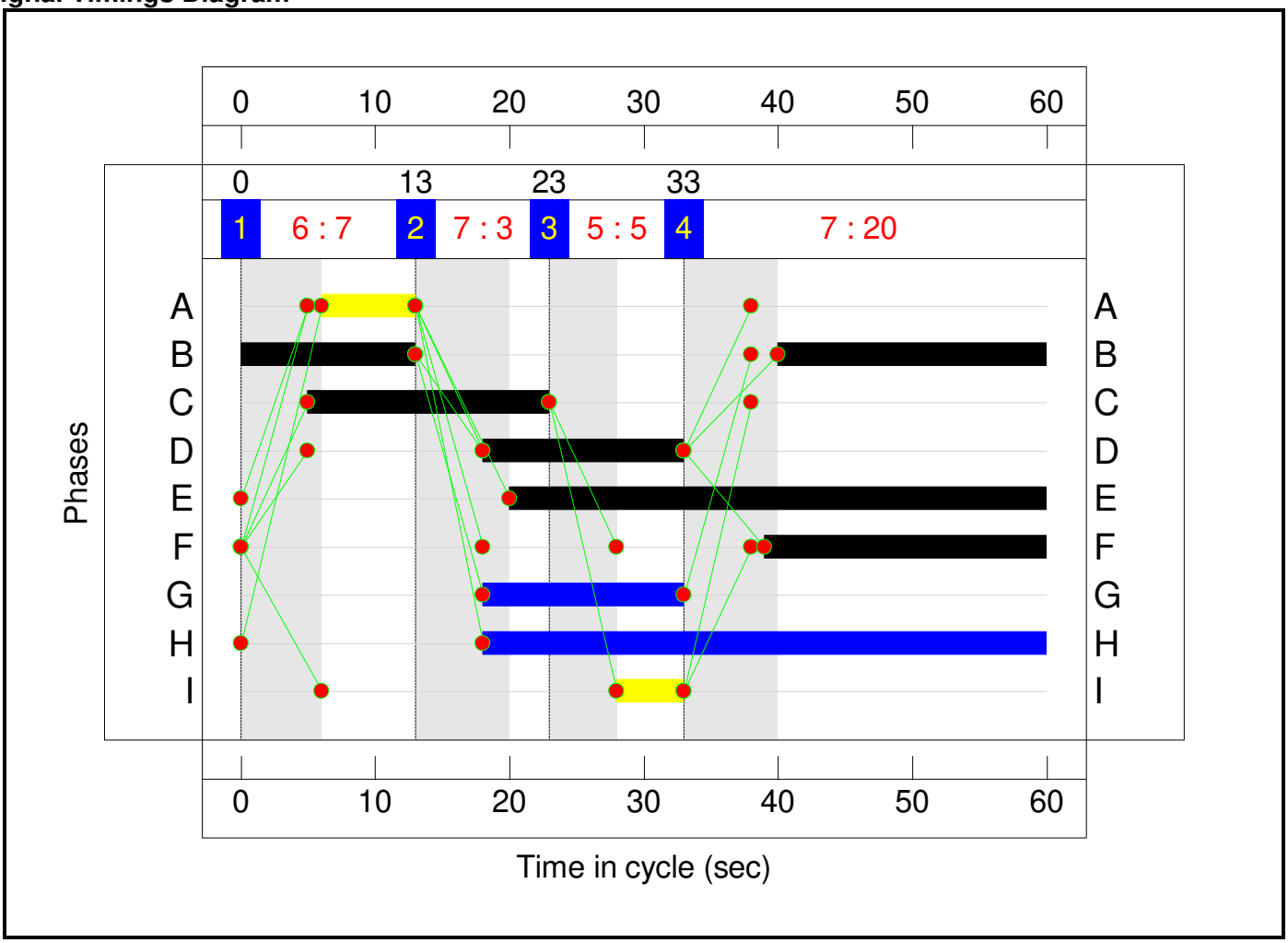
C1 PRC for Signalled Lanes (%): 15.5 Total Delay for Signalled Lanes (pcuHr): 18.50 Cycle Time (s): 90
PRC Over All Lanes (%): 15.5 Total Delay Over All Lanes(pcuHr): 18.50

Scenario 2: '2031 do something 1 - PM ' (FG2: 'DS1 PM', Plan 1: 'DS3 AM')

Stage Timings

Stage	1	2	3	4
Duration	7	3	5	20
Change Point	0	13	23	33

Signal Timings Diagram



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: HPLR junction with B430	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.2%**
Hayford Park Link Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.2%**
1/1	B430 south Ahead	U	N/A	N/A	C		1	18	-	5	1965	622	0.8%
1/2+1/3	B430 south Right	U	N/A	N/A	D		1	15	-	723	1894:1894	505+505	80.2 : 63.0%
4/1	Hayford Park Link Road Left	U	N/A	N/A	B		1	33	-	603	1786	1012	59.6%
4/2+4/3	Hayford Park Link Road Ahead	U	N/A	N/A	A		1	7	-	16	1965:1965	262+262	3.1 : 3.1%
5/2+5/1	B430 north Left	U	N/A	N/A	E		1	40	-	885	1894:1894	919+921	48.1 : 48.1%
5/3	B430 north Right	U	N/A	N/A	F		1	21	-	543	1854	680	79.9%

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: HPLR junction with B430	**-**	**-**	**0**	**0**	**0**	**9.1**	**4.4**	**0.0**	**13.5**	**-**	**-**	**-**	**-**
Hayford Park Link Road Junction	**-**	**-**	**0**	**0**	**0**	**9.1**	**4.4**	**0.0**	**13.5**	**-**	**-**	**-**	**-**
1/1	5	5	-	-	-	0.0	0.0	-	0.0	17.3	0.1	0.0	0.1
1/2+1/3	723	723	-	-	-	4.0	1.2	-	5.3	26.2	6.2	1.2	7.4
4/1	603	603	-	-	-	1.4	0.7	-	2.2	12.9	6.5	0.7	7.3
4/2+4/3	16	16	-	-	-	0.1	0.0	-	0.1	26.5	0.1	0.0	0.1
5/2+5/1	885	885	-	-	-	1.0	0.5	-	1.4	5.8	3.0	0.5	3.4
5/3	543	543	-	-	-	2.6	1.9	-	4.5	29.8	8.0	1.9	9.9

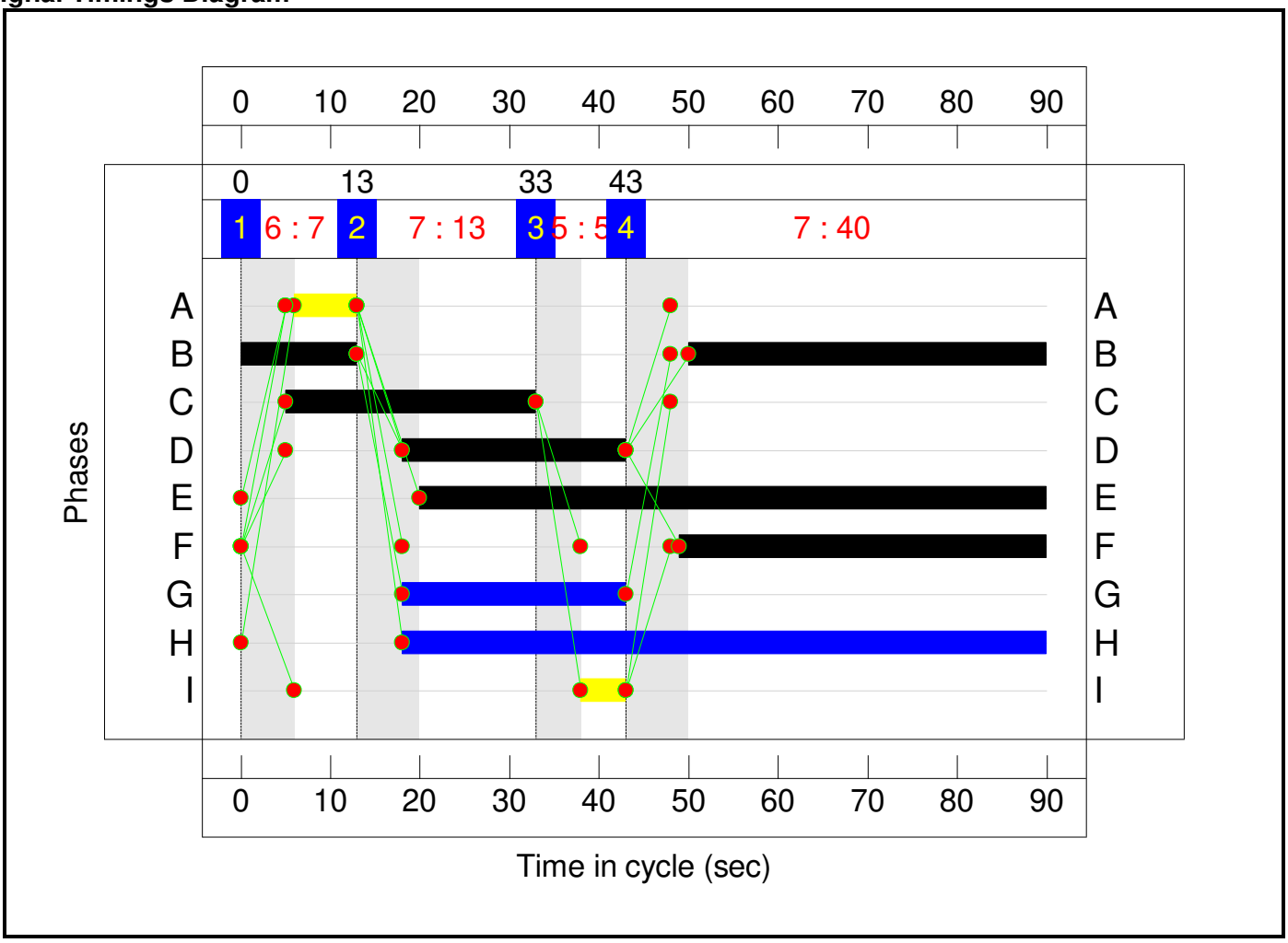
C1 PRC for Signalled Lanes (%): 12.2 Total Delay for Signalled Lanes (pcuHr): 13.50 Cycle Time (s): 60
PRC Over All Lanes (%): 12.2 Total Delay Over All Lanes(pcuHr): 13.50

Scenario 3: '2031 do something 2 - AM ' (FG3: 'DS2 AM', Plan 1: 'DS3 AM')

Stage Timings

Stage	1	2	3	4
Duration	7	13	5	40
Change Point	0	13	33	43

Signal Timings Diagram



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: HPLR junction with B430	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.9%**
Hayford Park Link Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.9%**
1/1	B430 south Ahead	U	N/A	N/A	C		1	28	-	142	1965	633	22.4%
1/2+1/3	B430 south Right	U	N/A	N/A	D		1	25	-	848	1894:1894	547+547	77.5 : 77.5%
4/1	Hayford Park Link Road Left	U	N/A	N/A	B		1	53	-	698	1786	1072	65.1%
4/2+4/3	Hayford Park Link Road Ahead	U	N/A	N/A	A		1	7	-	203	1965:1965	175+175	57.8 : 58.4%
5/2+5/1	B430 north Left	U	N/A	N/A	E		1	70	-	807	1894:1894	928+930	43.4 : 43.4%
5/3	B430 north Right	U	N/A	N/A	F		1	41	-	674	1854	865	77.9%

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: HPLR junction with B430	**-**	**-**	**0**	**0**	**0**	**16.6**	**5.6**	**0.0**	**22.2**	**-**	**-**	**-**	**-**
Hayford Park Link Road Junction	**-**	**-**	**0**	**0**	**0**	**16.6**	**5.6**	**0.0**	**22.2**	**-**	**-**	**-**	**-**
1/1	142	142	-	-	-	0.9	0.1	-	1.0	26.0	2.6	0.1	2.7
1/2+1/3	848	848	-	-	-	6.9	1.7	-	8.6	36.5	9.7	1.7	11.4
4/1	698	698	-	-	-	2.3	0.9	-	3.2	16.6	11.4	0.9	12.4
4/2+4/3	203	203	-	-	-	2.2	0.7	-	2.9	51.6	2.4	0.7	3.1
5/2+5/1	807	807	-	-	-	0.6	0.4	-	1.0	4.3	2.7	0.4	3.1
5/3	674	674	-	-	-	3.8	1.7	-	5.5	29.4	14.0	1.7	15.8

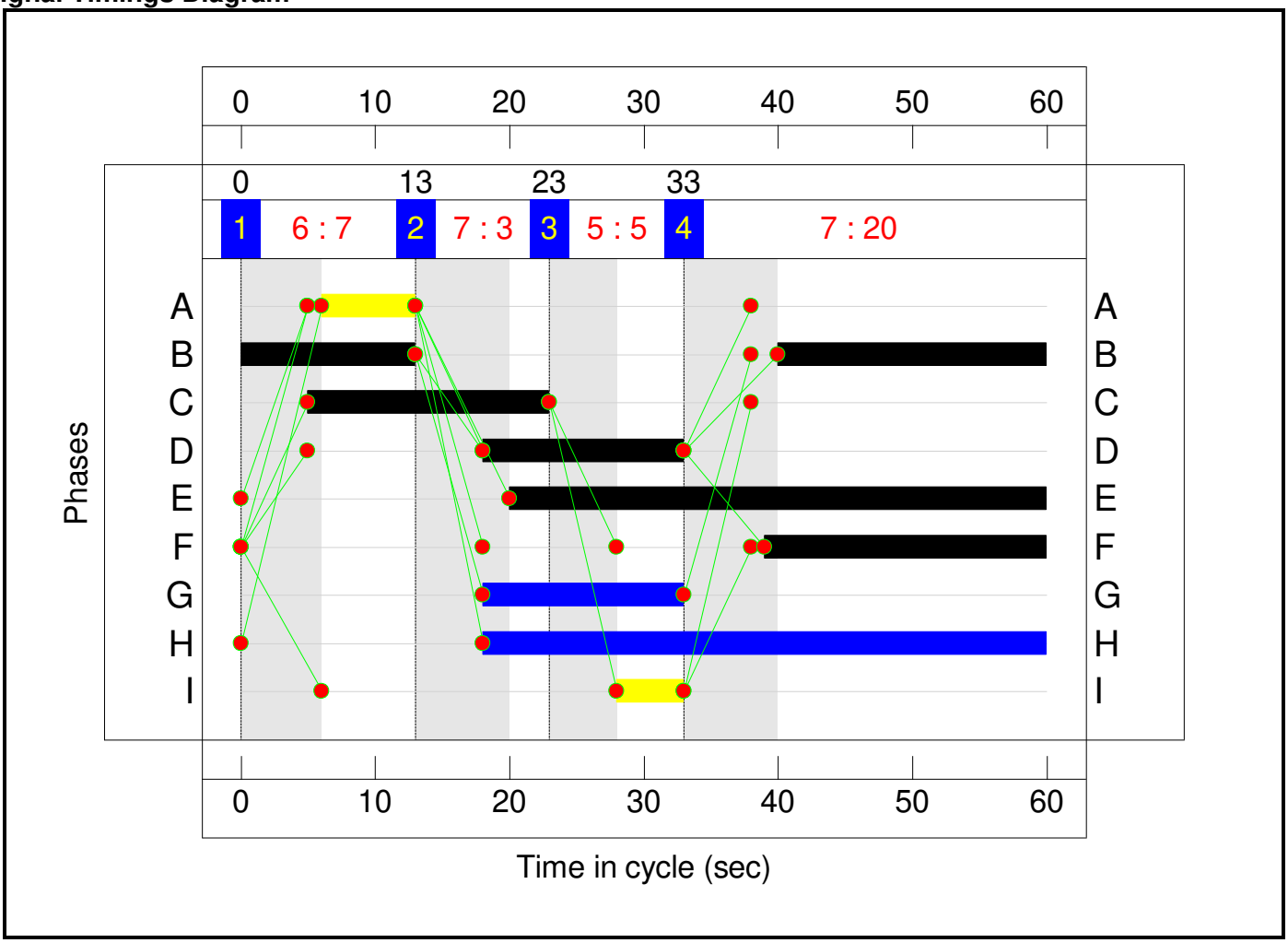
C1 PRC for Signalled Lanes (%): 15.5 Total Delay for Signalled Lanes (pcuHr): 22.21 Cycle Time (s): 90
PRC Over All Lanes (%): 15.5 Total Delay Over All Lanes(pcuHr): 22.21

Scenario 4: '2031 do something 2 - PM ' (FG4: 'DS2 PM', Plan 1: 'DS3 AM')

Stage Timings

Stage	1	2	3	4
Duration	7	3	5	20
Change Point	0	13	23	33

Signal Timings Diagram



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: HPLR junction with B430	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.2%**
Hayford Park Link Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.2%**
1/1	B430 south Ahead	U	N/A	N/A	C		1	18	-	140	1965	622	22.5%
1/2+1/3	B430 south Right	U	N/A	N/A	D		1	15	-	723	1894:1894	505+505	80.2 : 63.0%
4/1	Hayford Park Link Road Left	U	N/A	N/A	B		1	33	-	603	1786	1012	59.6%
4/2+4/3	Hayford Park Link Road Ahead	U	N/A	N/A	A		1	7	-	148	1965:1965	262+262	28.2 : 28.2%
5/2+5/1	B430 north Left	U	N/A	N/A	E		1	40	-	885	1894:1894	919+921	48.1 : 48.1%
5/3	B430 north Right	U	N/A	N/A	F		1	21	-	543	1854	680	79.9%

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: HPLR junction with B430	**-**	**-**	**0**	**0**	**0**	**10.5**	**4.7**	**0.0**	**15.2**	**-**	**-**	**-**	**-**
Hayford Park Link Road Junction	**-**	**-**	**0**	**0**	**0**	**10.5**	**4.7**	**0.0**	**15.2**	**-**	**-**	**-**	**-**
1/1	140	140	-	-	-	0.6	0.1	-	0.7	18.8	1.7	0.1	1.9
1/2+1/3	723	723	-	-	-	4.0	1.2	-	5.3	26.2	6.2	1.2	7.4
4/1	603	603	-	-	-	1.4	0.7	-	2.2	12.9	6.5	0.7	7.3
4/2+4/3	148	148	-	-	-	1.0	0.2	-	1.2	28.2	1.1	0.2	1.3
5/2+5/1	885	885	-	-	-	1.0	0.5	-	1.4	5.8	3.0	0.5	3.4
5/3	543	543	-	-	-	2.6	1.9	-	4.5	29.8	8.0	1.9	9.9

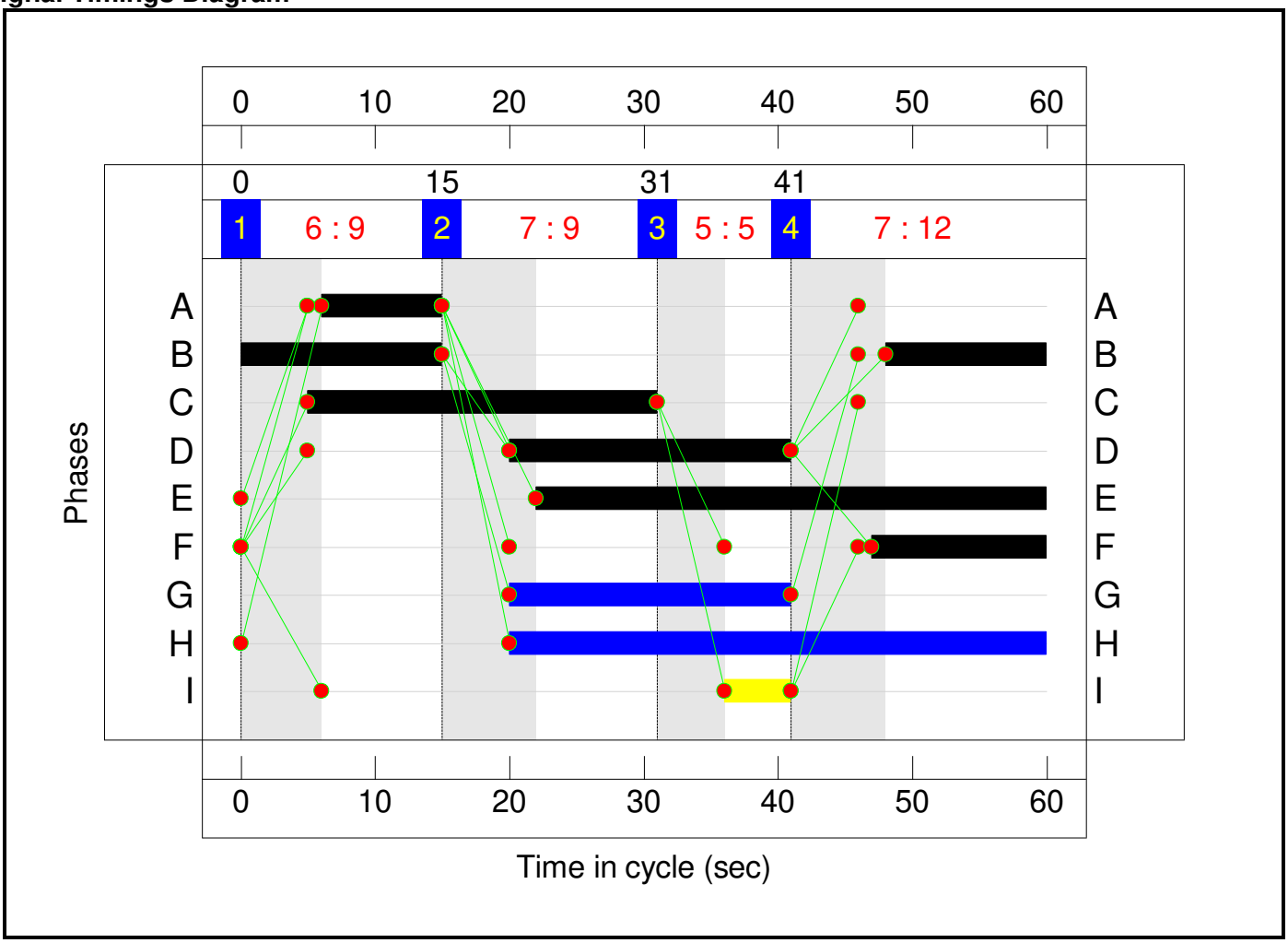
C1 PRC for Signalled Lanes (%): 12.2 Total Delay for Signalled Lanes (pcuHr): 15.25 Cycle Time (s): 60
PRC Over All Lanes (%): 12.2 Total Delay Over All Lanes(pcuHr): 15.25

Scenario 5: '2031 do something 3 - AM ' (FG5: 'DS3 AM', Plan 1: 'DS3 AM')

Stage Timings

Stage	1	2	3	4
Duration	9	9	5	12
Change Point	0	15	31	41

Signal Timings Diagram



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: HPLR junction with B430	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**74.5%**
Hayford Park Link Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**74.5%**
1/1	B430 south Ahead	U	N/A	N/A	C		1	26	-	476	1965	884	53.8%
1/2+1/3	B430 south Right	U	N/A	N/A	D		1	21	-	921	1894:1894	694+676	74.2 : 60.1%
4/1	Hayford Park Link Road Left	U	N/A	N/A	B		1	27	-	404	1786	833	48.5%
4/2+4/3	Hayford Park Link Road Ahead	U	N/A	N/A	A		1	9	-	487	1965:1965	327+327	74.2 : 74.5%
5/2+5/1	B430 north Left	U	N/A	N/A	E		1	38	-	806	1894:1894	890+890	45.3 : 45.3%
5/3	B430 north Right	U	N/A	N/A	F		1	13	-	310	1854	433	71.7%

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: HPLR junction with B430	**-**	**-**	**0**	**0**	**0**	**13.0**	**5.1**	**0.0**	**18.2**	**-**	**-**	**-**	**-**
Hayford Park Link Road Junction	**-**	**-**	**0**	**0**	**0**	**13.0**	**5.1**	**0.0**	**18.2**	**-**	**-**	**-**	**-**
1/1	476	476	-	-	-	1.6	0.6	-	2.2	16.4	5.7	0.6	6.3
1/2+1/3	921	921	-	-	-	4.1	1.0	-	5.1	20.0	7.4	1.0	8.5
4/1	404	404	-	-	-	1.2	0.5	-	1.7	15.2	4.6	0.5	5.1
4/2+4/3	487	487	-	-	-	3.2	1.4	-	4.6	34.3	3.9	1.4	5.3
5/2+5/1	806	806	-	-	-	1.0	0.4	-	1.5	6.5	2.9	0.4	3.3
5/3	310	310	-	-	-	1.8	1.2	-	3.1	35.6	4.7	1.2	6.0

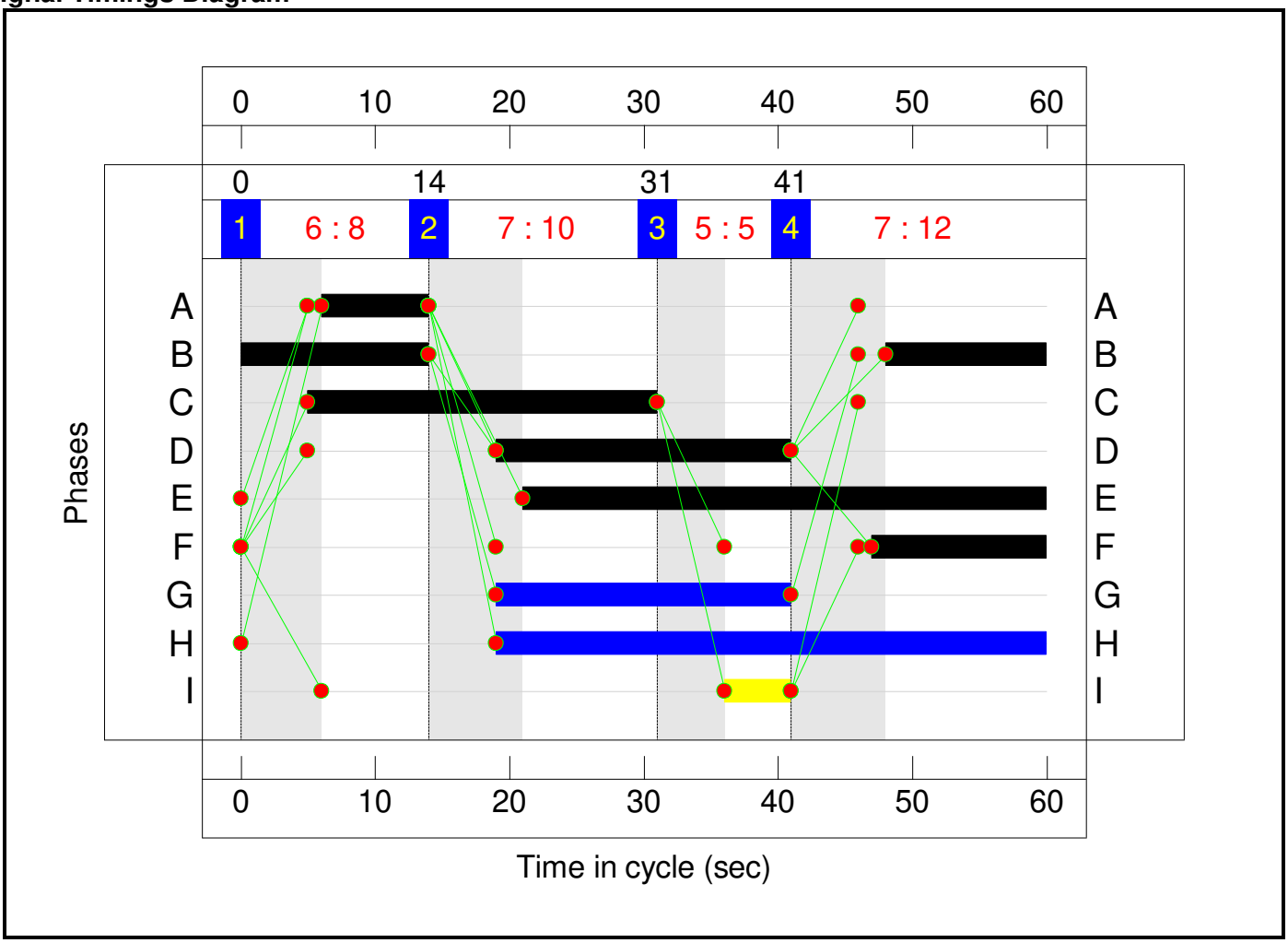
C1 PRC for Signalled Lanes (%): 20.8 Total Delay for Signalled Lanes (pcuHr): 18.15 Cycle Time (s): 60
PRC Over All Lanes (%): 20.8 Total Delay Over All Lanes(pcuHr): 18.15

Scenario 6: '2031 do something 3 - PM ' (FG6: 'DS3 PM', Plan 1: 'DS3 AM')

Stage Timings

Stage	1	2	3	4
Duration	8	10	5	12
Change Point	0	14	31	41

Signal Timings Diagram



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: HPLR junction with B430	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**71.6%**
Hayford Park Link Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**71.6%**
1/1	B430 south Ahead	U	N/A	N/A	C		1	26	-	354	1965	884	40.0%
1/2+1/3	B430 south Right	U	N/A	N/A	D		1	22	-	926	1894:1894	726+656	71.6 : 61.9%
4/1	Hayford Park Link Road Left	U	N/A	N/A	B		1	26	-	395	1786	804	49.1%
4/2+4/3	Hayford Park Link Road Ahead	U	N/A	N/A	A		1	8	-	384	1965:1965	295+295	65.1 : 65.1%
5/2+5/1	B430 north Left	U	N/A	N/A	E		1	39	-	1051	1894:1894	904+906	58.1 : 58.1%
5/3	B430 north Right	U	N/A	N/A	F		1	13	-	304	1854	433	70.3%

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: HPLR junction with B430	**-**	**-**	**0**	**0**	**0**	**12.0**	**4.6**	**0.0**	**16.6**	**-**	**-**	**-**	**-**
Hayford Park Link Road Junction	**-**	**-**	**0**	**0**	**0**	**12.0**	**4.6**	**0.0**	**16.6**	**-**	**-**	**-**	**-**
1/1	354	354	-	-	-	1.1	0.3	-	1.4	14.5	3.9	0.3	4.3
1/2+1/3	926	926	-	-	-	3.9	1.0	-	4.9	19.1	7.4	1.0	8.4
4/1	395	395	-	-	-	1.3	0.5	-	1.8	16.1	4.6	0.5	5.1
4/2+4/3	384	384	-	-	-	2.6	0.9	-	3.5	32.7	3.0	0.9	3.9
5/2+5/1	1051	1051	-	-	-	1.3	0.7	-	2.0	7.0	3.9	0.7	4.6
5/3	304	304	-	-	-	1.8	1.2	-	2.9	34.8	4.6	1.2	5.8

C1 PRC for Signalled Lanes (%): 25.7 Total Delay for Signalled Lanes (pcuHr): 16.58 Cycle Time (s): 60
PRC Over All Lanes (%): 25.7 Total Delay Over All Lanes(pcuHr): 16.58

APPENDIX J

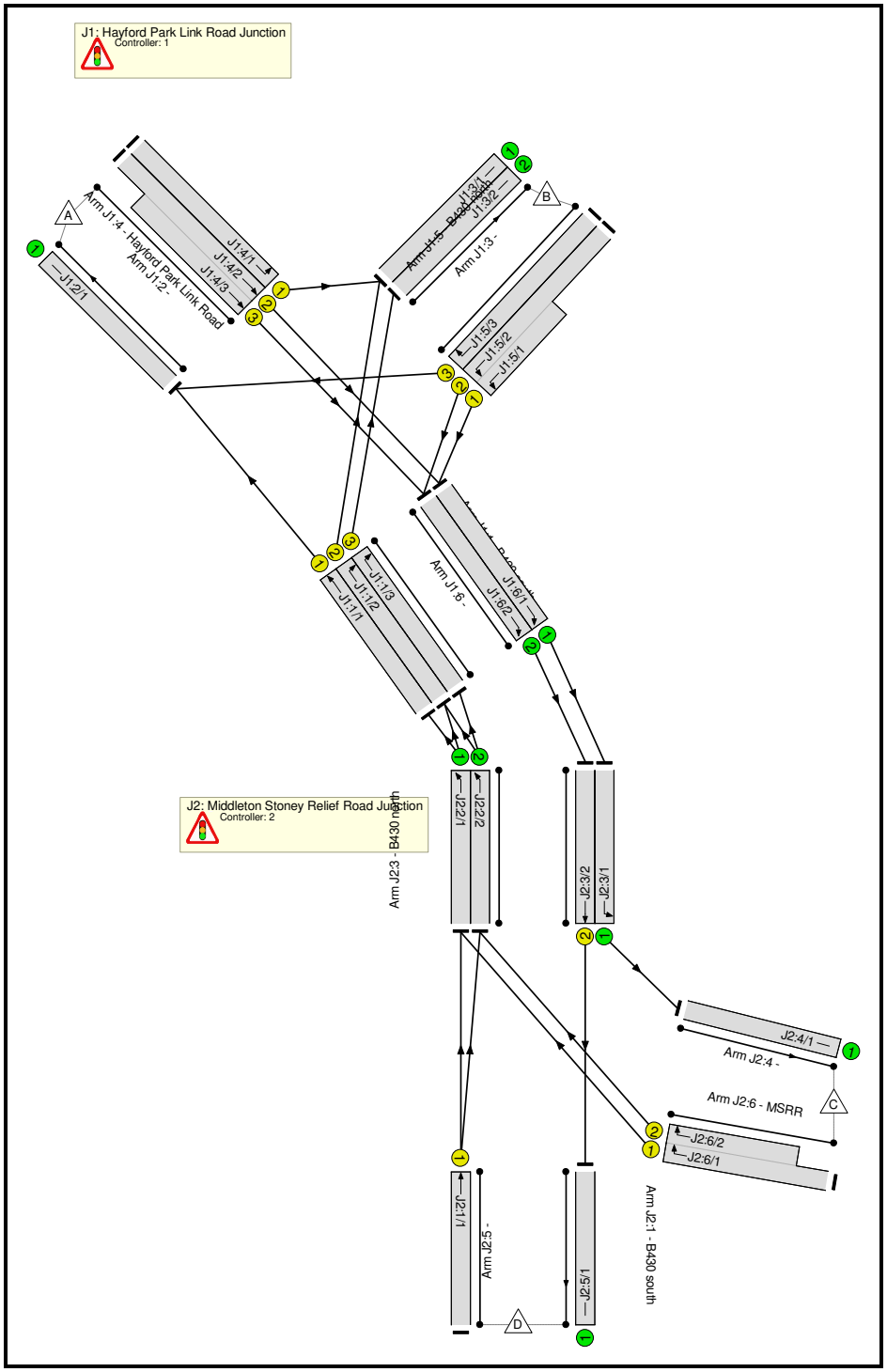
LINGSIG ASSESSMENT (B430/MSRR AND B430/HPLR NETWORK MODEL)

Full Input Data And Results

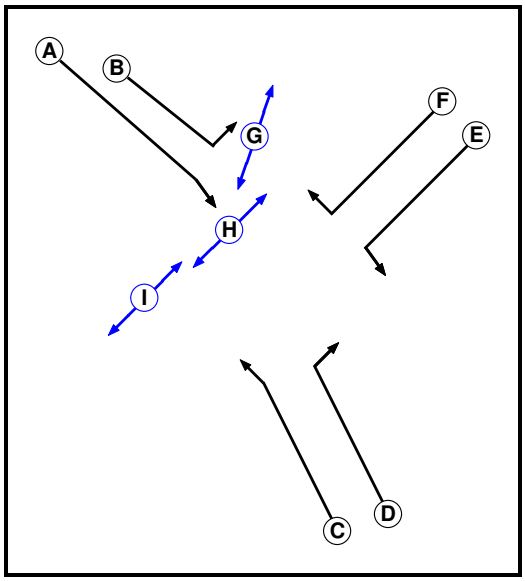
User and Project Details

Project:	**OxSRFI**
Title:	**Proposed HPLR to MSRR Network Model**
Location:	
Additional detail:	Network Model
File name:	211005 network model.lsg3x
Author:	Mark Higgins
Company:	ADC Infrastructure
Address:	Nottingham

Network Layout Diagram



C1
Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		7	7
F	Traffic		7	7
G	Pedestrian		5	5
H	Pedestrian		6	6
I	Pedestrian		5	5

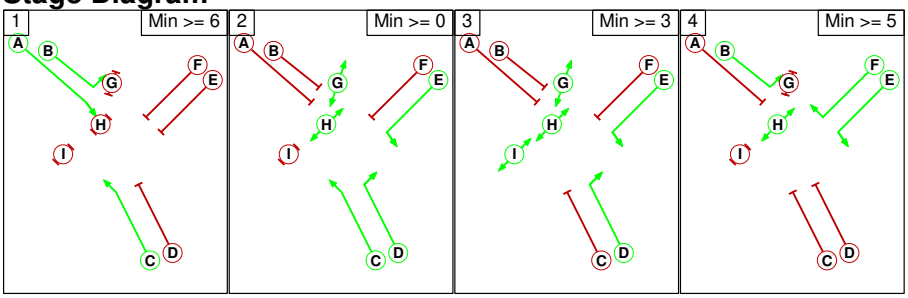
Phase Intergreens Matrix

		Starting Phase								
		A	B	C	D	E	F	G	H	I
Terminating Phase	A		-	-	5	7	5	-	5	-
	B	-		-	5	-	-	5	-	-
	C	-	-		-	-	5	-	-	5
	D	5	7	-		-	6	-	-	-
	E	5	-	-	-		-	-	-	-
	F	5	-	5	5	-		-	-	6
	G	-	5	-	-	-	-		-	-
	H	6	-	-	-	-	-	-		-
	I	-	-	5	-	-	5	-	-	

Phases in Stage

Stage No.	Phases in Stage
1	A B C
2	C D E G H
3	D E G H I
4	B E F H

Stage Diagram

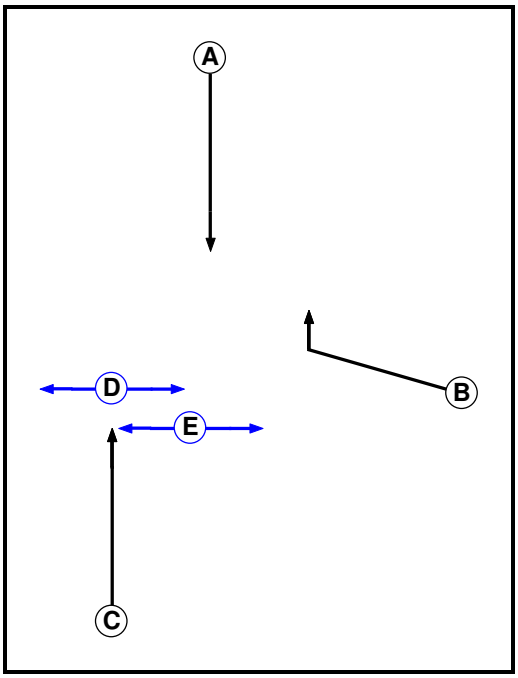


Prohibited Stage Change

		To Stage			
		1	2	3	4
From Stage	1		7	7	7
	2	7		5	7
	3	7	5		7
	4	6	5	6	

C2

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	6
D	Pedestrian		5	5
E	Pedestrian		5	5

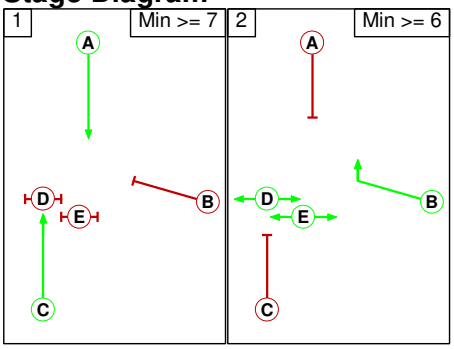
Phase Intergreens Matrix

		Starting Phase				
		A	B	C	D	E
Terminating Phase	A		6	-	-	7
	B	5		5	-	-
	C	-	5		5	-
	D	-	-	5		-
	E	5	-	-	-	

Phases in Stage

Stage No.	Phases in Stage
1	A C
2	B D E

Stage Diagram



Prohibited Stage Change

From Stage	To Stage 1	To Stage 2
1		7
2	5	

Lane Input Data

Junction: J1: Hayford Park Link Road Junction

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)
J1:1/1 (B430 south)	U	C	2	3	31.3	Geom	-	3.50	0.00	Y	Arm J1:2 Ahead	Inf
J1:1/2 (B430 south)	U	D	2	3	31.3	Geom	-	3.50	0.00	Y	Arm J1:3 Right	40.00
J1:1/3 (B430 south)	U	D	2	3	31.3	Geom	-	3.50	0.00	Y	Arm J1:3 Right	40.00
J1:2/1	U		2	3	60.0	Inf	-	-	-	-	-	-
J1:3/1	U		2	3	60.0	Inf	-	-	-	-	-	-
J1:3/2	U		2	3	60.0	User	1900	-	-	-	-	-
J1:4/1 (Hayford Park Link Road)	U	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm J1:3 Left	15.00
J1:4/2 (Hayford Park Link Road)	U	A	2	3	60.0	Geom	-	3.65	0.00	Y	Arm J1:6 Ahead	Inf
J1:4/3 (Hayford Park Link Road)	U	A	2	3	87.5	Geom	-	3.65	0.00	Y	Arm J1:6 Ahead	Inf
J1:5/1 (B430 north)	U	E	2	3	8.7	Geom	-	3.65	0.00	Y	Arm J1:6 Left	40.00
J1:5/2 (B430 north)	U	E	2	3	60.0	Geom	-	3.65	0.00	Y	Arm J1:6 Left	40.00
J1:5/3 (B430 north)	U	F	2	3	60.0	Geom	-	3.65	0.00	Y	Arm J1:2 Right	25.00
J1:6/1	U		2	3	3.5	Inf	-	-	-	-	-	-
J1:6/2	U		2	3	3.5	Inf	-	-	-	-	-	-

Junction: J2: Middleton Stoney Relief Road Junction												
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)**
J2:1/1 (B430 south)	U	C	2	3	60.0	Geom	-	4.00	0.00	Y	Arm J2:2 Ahead	Inf
J2:2/1	U		2	3	3.5	Inf	-	-	-	-	-	-
J2:2/2	U		2	3	3.5	Inf	-	-	-	-	-	-
J2:3/1 (B430 north)	U		2	3	31.3	Inf	-	-	-	-	-	-
J2:3/2 (B430 north)	U	A	2	3	31.3	Geom	-	4.00	0.00	Y	Arm J2:5 Ahead	Inf
J2:4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
J2:5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
J2:6/1 (MSRR)	U	B	2	3	60.0	Geom	-	3.65	0.00	Y	Arm J2:2 Right	30.00
J2:6/2 (MSRR)	U	B	2	3	17.4	Geom	-	3.65	0.00	Y	Arm J2:2 Right	30.00

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'DS3 AM'	08:00	09:00	01:00	
2: 'DS3 PM'	17:00	18:00	01:00	

Scenario 1: '2031 do something 3 - AM peak hour' (FG1: 'DS3 AM', Plan 1: 'DS3 AM')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	411	182	296	889
	B	316	0	315	484	1115
	C	278	529	0	0	807
	D	192	386	0	0	578
	Tot.	786	1326	497	780	3389

Traffic Lane Flows

Lane	Scenario 1: 2031 do something 3 - AM peak hour
Junction: J1: Hayford Park Link Road Junction	
J1:1/1	470
J1:1/2	456
J1:1/3	459
J1:2/1	786
J1:3/1	867
J1:3/2	459
J1:4/1	411
J1:4/2 (with short)	478(In) 182(Out)
J1:4/3 (short)	296
J1:5/1 (short)	315
J1:5/2 (with short)	799(In) 484(Out)
J1:5/3	316
J1:6/1	497
J1:6/2	780
Junction: J2: Middleton Stoney Relief Road Junction	
J2:1/1	578
J2:2/1	594
J2:2/2	791
J2:3/1	497
J2:3/2	780
J2:4/1	497
J2:5/1	780
J2:6/1 (with short)	807(In) 402(Out)
J2:6/2 (short)	405

Lane Saturation Flows

Junction: J1: Hayford Park Link Road Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J1:1/1 (B430 south)	3.50	0.00	Y	Arm J1:2 Ahead	Inf	100.0 %	1965	1965
J1:1/2 (B430 south)	3.50	0.00	Y	Arm J1:3 Right	40.00	100.0 %	1894	1894
J1:1/3 (B430 south)	3.50	0.00	Y	Arm J1:3 Right	40.00	100.0 %	1894	1894
J1:2/1	Infinite Saturation Flow						Inf	Inf
J1:3/1	Infinite Saturation Flow						Inf	Inf
J1:3/2	This lane uses a directly entered Saturation Flow						1900	1900
J1:4/1 (Hayford Park Link Road)	3.50	0.00	Y	Arm J1:3 Left	15.00	100.0 %	1786	1786
J1:4/2 (Hayford Park Link Road)	3.65	0.00	Y	Arm J1:6 Ahead	Inf	100.0 %	1980	1980
J1:4/3 (Hayford Park Link Road)	3.65	0.00	Y	Arm J1:6 Ahead	Inf	100.0 %	1980	1980
J1:5/1 (B430 north)	3.65	0.00	Y	Arm J1:6 Left	40.00	100.0 %	1908	1908
J1:5/2 (B430 north)	3.65	0.00	Y	Arm J1:6 Left	40.00	100.0 %	1908	1908
J1:5/3 (B430 north)	3.65	0.00	Y	Arm J1:2 Right	25.00	100.0 %	1868	1868
J1:6/1	Infinite Saturation Flow						Inf	Inf
J1:6/2	Infinite Saturation Flow						Inf	Inf

Junction: J2: Middleton Stoney Relief Road Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J2:1/1 (B430 south)	4.00	0.00	Y	Arm J2:2 Ahead	Inf	100.0 %	2015	2015
J2:2/1	Infinite Saturation Flow						Inf	Inf
J2:2/2	Infinite Saturation Flow						Inf	Inf
J2:3/1 (B430 north Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:3/2 (B430 north)	4.00	0.00	Y	Arm J2:5 Ahead	Inf	100.0 %	2015	2015
J2:4/1	Infinite Saturation Flow						Inf	Inf
J2:5/1	Infinite Saturation Flow						Inf	Inf
J2:6/1 (MSRR)	3.65	0.00	Y	Arm J2:2 Right	30.00	100.0 %	1886	1886
J2:6/2 (MSRR)	3.65	0.00	Y	Arm J2:2 Right	30.00	100.0 %	1886	1886

Scenario 2: '2031 do something 3 - PM peak hour' (FG2: 'DS3 PM', Plan 1: 'DS3 AM')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	399	240	139	778
	B	308	0	633	412	1353
	C	153	414	0	0	567
	D	197	507	0	0	704
	Tot.	658	1320	873	551	3402

Traffic Lane Flows

Lane	Scenario 2: 2031 do something 3 - PM peak hour
Junction: J1: Hayford Park Link Road Junction	
J1:1/1	350
J1:1/2	480
J1:1/3	441
J1:2/1	658
J1:3/1	879
J1:3/2	441
J1:4/1	399
J1:4/2 (with short)	379(In) 240(Out)
J1:4/3 (short)	139
J1:5/1 (short)	633
J1:5/2 (with short)	1045(In) 412(Out)
J1:5/3	308
J1:6/1	873
J1:6/2	551
Junction: J2: Middleton Stoney Relief Road Junction	
J2:1/1	704
J2:2/1	472
J2:2/2	799
J2:3/1	873
J2:3/2	551
J2:4/1	873
J2:5/1	551
J2:6/1 (with short)	567(In) 275(Out)
J2:6/2 (short)	292

Lane Saturation Flows

Junction: J1: Hayford Park Link Road Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J1:1/1 (B430 south)	3.50	0.00	Y	Arm J1:2 Ahead	Inf	100.0 %	1965	1965
J1:1/2 (B430 south)	3.50	0.00	Y	Arm J1:3 Right	40.00	100.0 %	1894	1894
J1:1/3 (B430 south)	3.50	0.00	Y	Arm J1:3 Right	40.00	100.0 %	1894	1894
J1:2/1	Infinite Saturation Flow						Inf	Inf
J1:3/1	Infinite Saturation Flow						Inf	Inf
J1:3/2	This lane uses a directly entered Saturation Flow						1900	1900
J1:4/1 (Hayford Park Link Road)	3.50	0.00	Y	Arm J1:3 Left	15.00	100.0 %	1786	1786
J1:4/2 (Hayford Park Link Road)	3.65	0.00	Y	Arm J1:6 Ahead	Inf	100.0 %	1980	1980
J1:4/3 (Hayford Park Link Road)	3.65	0.00	Y	Arm J1:6 Ahead	Inf	100.0 %	1980	1980
J1:5/1 (B430 north)	3.65	0.00	Y	Arm J1:6 Left	40.00	100.0 %	1908	1908
J1:5/2 (B430 north)	3.65	0.00	Y	Arm J1:6 Left	40.00	100.0 %	1908	1908
J1:5/3 (B430 north)	3.65	0.00	Y	Arm J1:2 Right	25.00	100.0 %	1868	1868
J1:6/1	Infinite Saturation Flow						Inf	Inf
J1:6/2	Infinite Saturation Flow						Inf	Inf

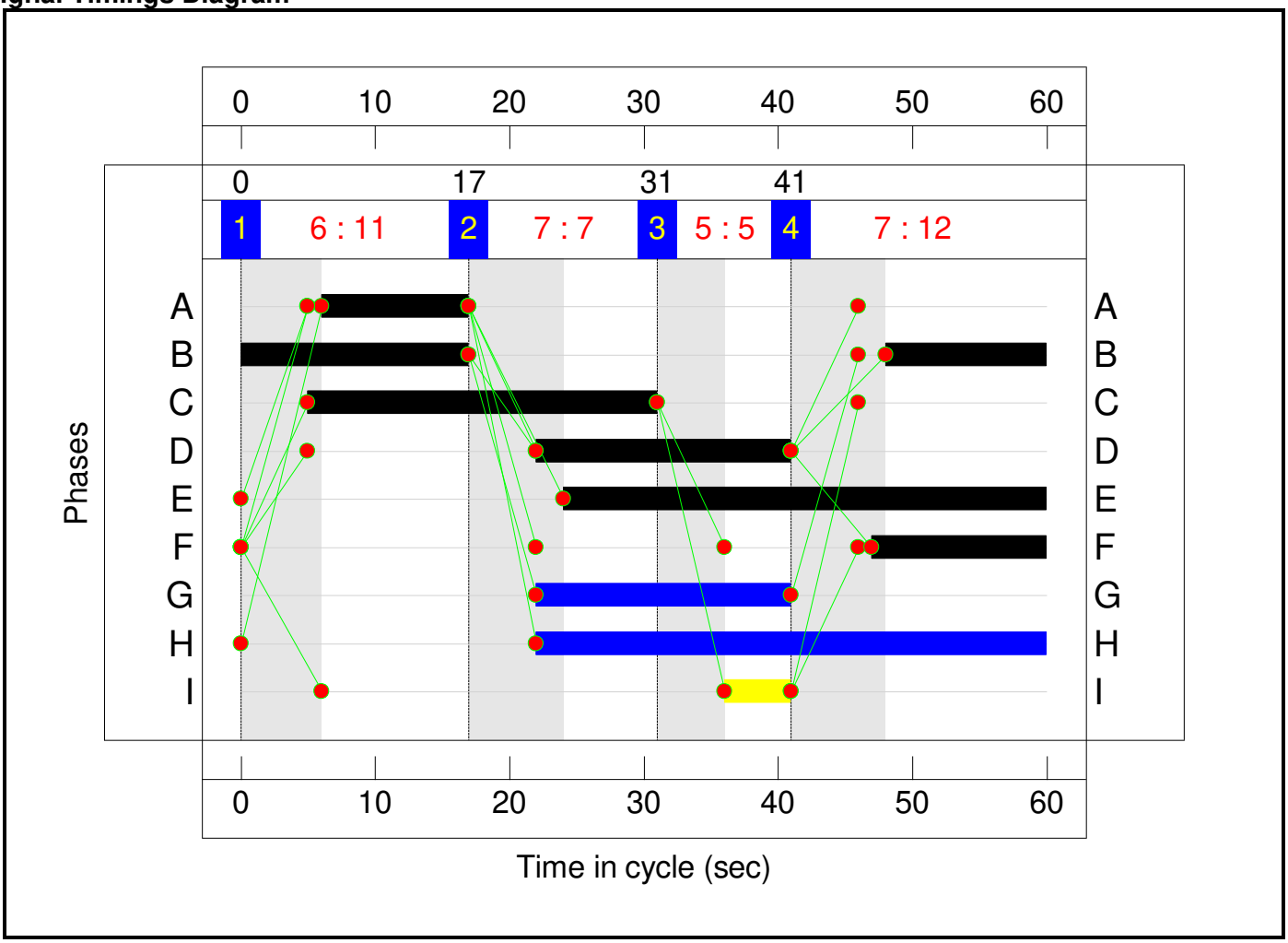
Junction: J2: Middleton Stoney Relief Road Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J2:1/1 (B430 south)	4.00	0.00	Y	Arm J2:2 Ahead	Inf	100.0 %	2015	2015
J2:2/1	Infinite Saturation Flow						Inf	Inf
J2:2/2	Infinite Saturation Flow						Inf	Inf
J2:3/1 (B430 north Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:3/2 (B430 north)	4.00	0.00	Y	Arm J2:5 Ahead	Inf	100.0 %	2015	2015
J2:4/1	Infinite Saturation Flow						Inf	Inf
J2:5/1	Infinite Saturation Flow						Inf	Inf
J2:6/1 (MSRR)	3.65	0.00	Y	Arm J2:2 Right	30.00	100.0 %	1886	1886
J2:6/2 (MSRR)	3.65	0.00	Y	Arm J2:2 Right	30.00	100.0 %	1886	1886

Scenario 1: '2031 do something 3 - AM peak hour' (FG1: 'DS3 AM', Plan 1: 'DS3 AM')
C1

Stage Timings

Stage	1	2	3	4
Duration	11	7	5	12
Change Point	0	17	31	41

Signal Timings Diagram

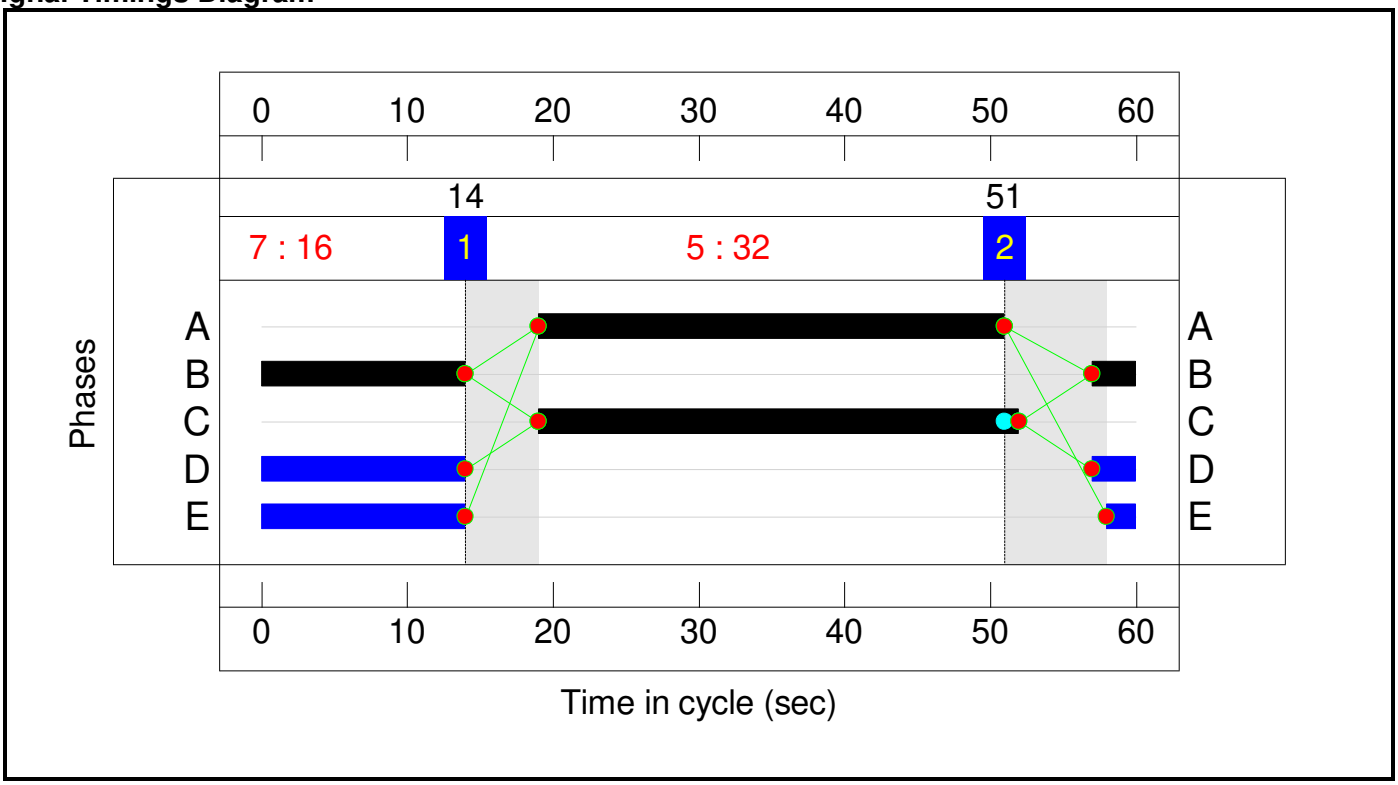


C2

Stage Timings

Stage	1	2
Duration	32	16
Change Point	14	51

Signal Timings Diagram



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: Propesed Hayford Park Link Road to Middleton Stoney Releif Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**74.7%**
J1: Hayford Park Link Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**74.7%**
1/1	B430 south Ahead	U	N/A	N/A	C1:C		1	26	-	470	1965	884	53.2%
1/2	B430 south Right	U	N/A	N/A	C1:D		1	19	-	456	1894	631	72.2%
1/3	B430 south Right	U	N/A	N/A	C1:D		1	19	-	459	1894	631	72.7%
3/2		U	N/A	N/A	-		-	-	-	459	1900	1900	24.2%
4/1	Hayford Park Link Road Left	U	N/A	N/A	C1:B		1	29	-	411	1786	893	46.0%
4/2+4/3	Hayford Park Link Road Ahead	U	N/A	N/A	C1:A		1	11	-	478	1980:1980	396+396	46.0 : 74.7%
5/2+5/1	B430 north Left	U	N/A	N/A	C1:E		1	36	-	799	1908:1908	935+608	51.8 : 51.8%
5/3	B430 north Right	U	N/A	N/A	C1:F		1	13	-	316	1868	436	72.5%
J2: Middleton Stoney Relief Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**71.6%**
1/1	B430 south Ahead	U	N/A	N/A	C2:C		1	33	-	578	2015	1142	50.6%
3/2	B430 north Ahead	U	N/A	N/A	C2:A		1	32	-	780	2015	1108	70.4%
6/1+6/2	MSRR Right	U	N/A	N/A	C2:B		1	17	-	807	1886:1886	566+566	71.0 : 71.6%

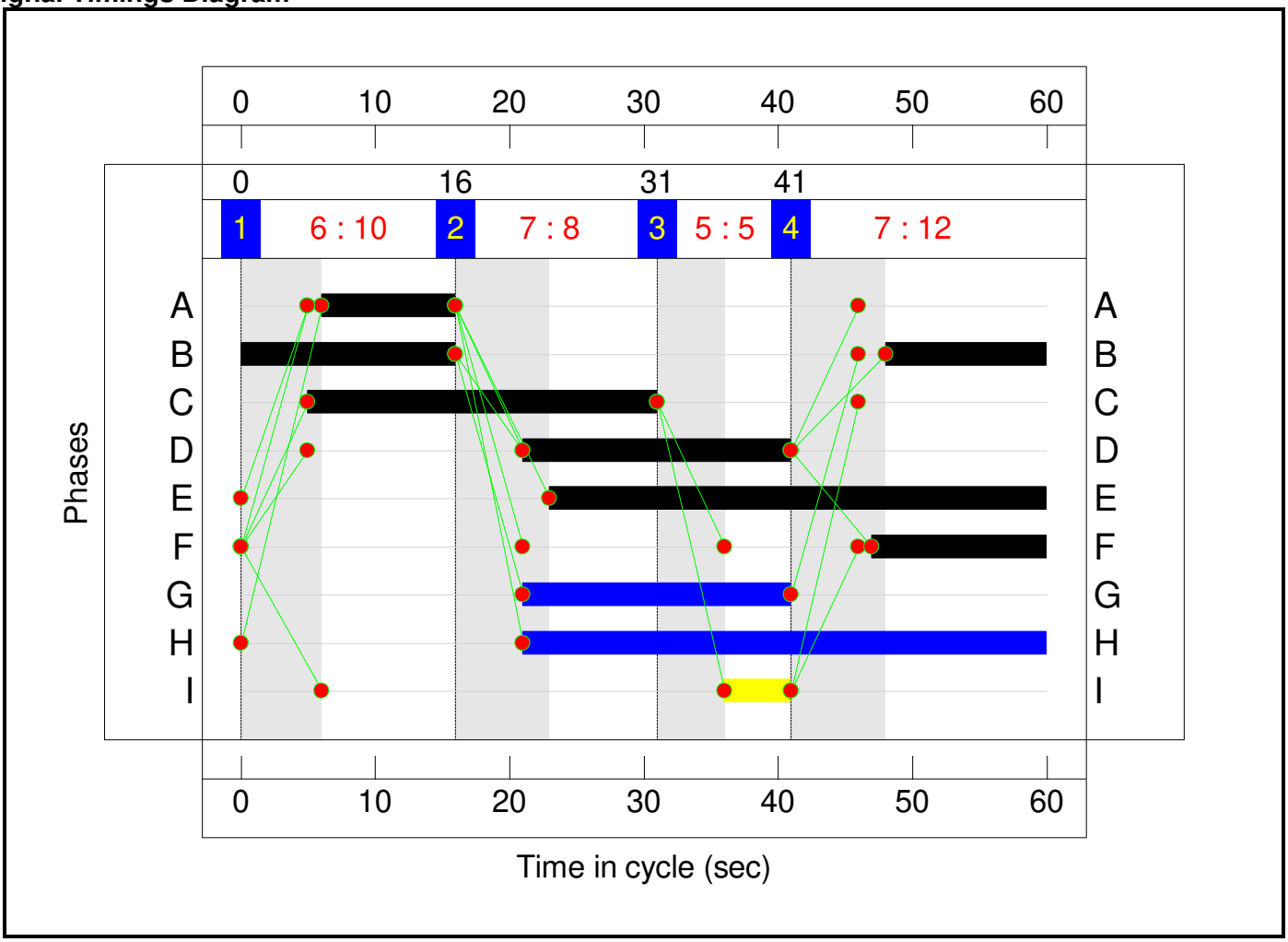
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Propesed Hayford Park Link Road to Middleton Stoney Releif Road	**-**	**-**	**0**	**0**	**0**	**18.5**	**9.3**	**0.0**	**27.8**	**-**	**-**	**-**	**-**
J1: Hayford Park Link Road Junction	**-**	**-**	**0**	**0**	**0**	**11.7**	**6.3**	**0.0**	**18.0**	**-**	**-**	**-**	**-**
1/1	470	470	-	-	-	1.2	0.6	-	1.8	13.5	3.5	0.6	4.1
1/2	456	456	-	-	-	1.8	1.3	-	3.1	24.1	5.6	1.3	6.9
1/3	459	459	-	-	-	1.6	1.3	-	2.9	22.6	6.9	1.3	8.2
3/2	459	459	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
4/1	411	411	-	-	-	1.1	0.4	-	1.5	13.5	4.3	0.4	4.8
4/2+4/3	478	478	-	-	-	2.9	0.8	-	3.7	27.7	4.6	0.8	5.4
5/2+5/1	799	799	-	-	-	1.3	0.5	-	1.8	8.1	4.0	0.5	4.6
5/3	316	316	-	-	-	1.9	1.3	-	3.2	35.9	4.8	1.3	6.1
J2: Middleton Stoney Relief Road Junction	**-**	**-**	**0**	**0**	**0**	**6.8**	**2.9**	**0.0**	**9.7**	**-**	**-**	**-**	**-**
1/1	578	578	-	-	-	1.3	0.5	-	1.8	11.1	5.8	0.5	6.3
3/2	780	780	-	-	-	1.3	1.2	-	2.5	11.7	7.9	1.2	9.1
6/1+6/2	807	807	-	-	-	4.2	1.2	-	5.4	24.2	6.0	1.2	7.2

C1	PRC for Signalled Lanes (%):	20.4	Total Delay for Signalled Lanes (pcuHr):	17.88	Cycle Time (s): 60
C2	PRC for Signalled Lanes (%):	25.7	Total Delay for Signalled Lanes (pcuHr):	9.73	Cycle Time (s): 60
	PRC Over All Lanes (%):	20.4	Total Delay Over All Lanes(pcuHr):	27.77	

Scenario 2: '2031 do something 3 - PM peak hour' (FG2: 'DS3 PM', Plan 1: 'DS3 AM')
C1
Stage Timings

Stage	1	2	3	4
Duration	10	8	5	12
Change Point	0	16	31	41

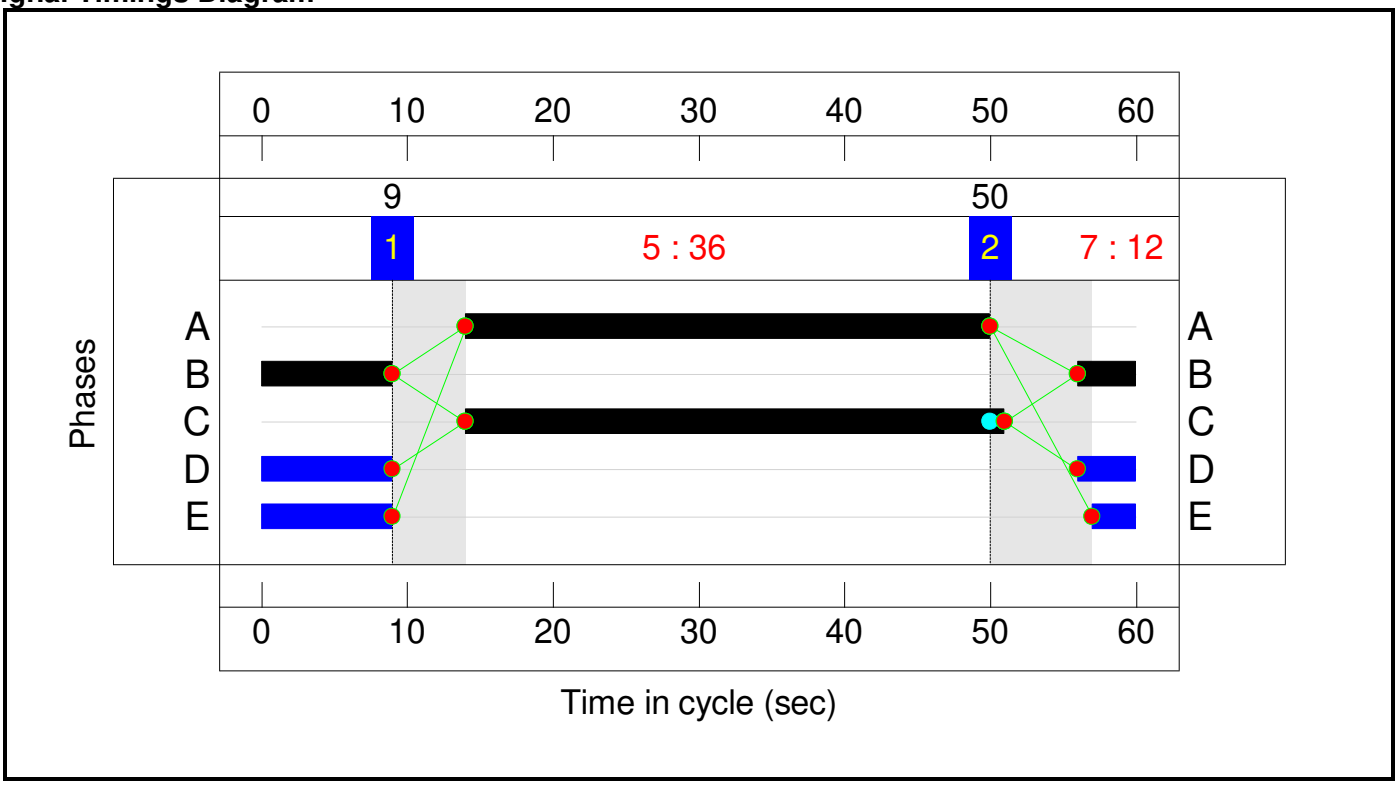
Signal Timings Diagram



C2
Stage Timings

Stage	1	2
Duration	36	12
Change Point	9	50

Signal Timings Diagram



Network Results

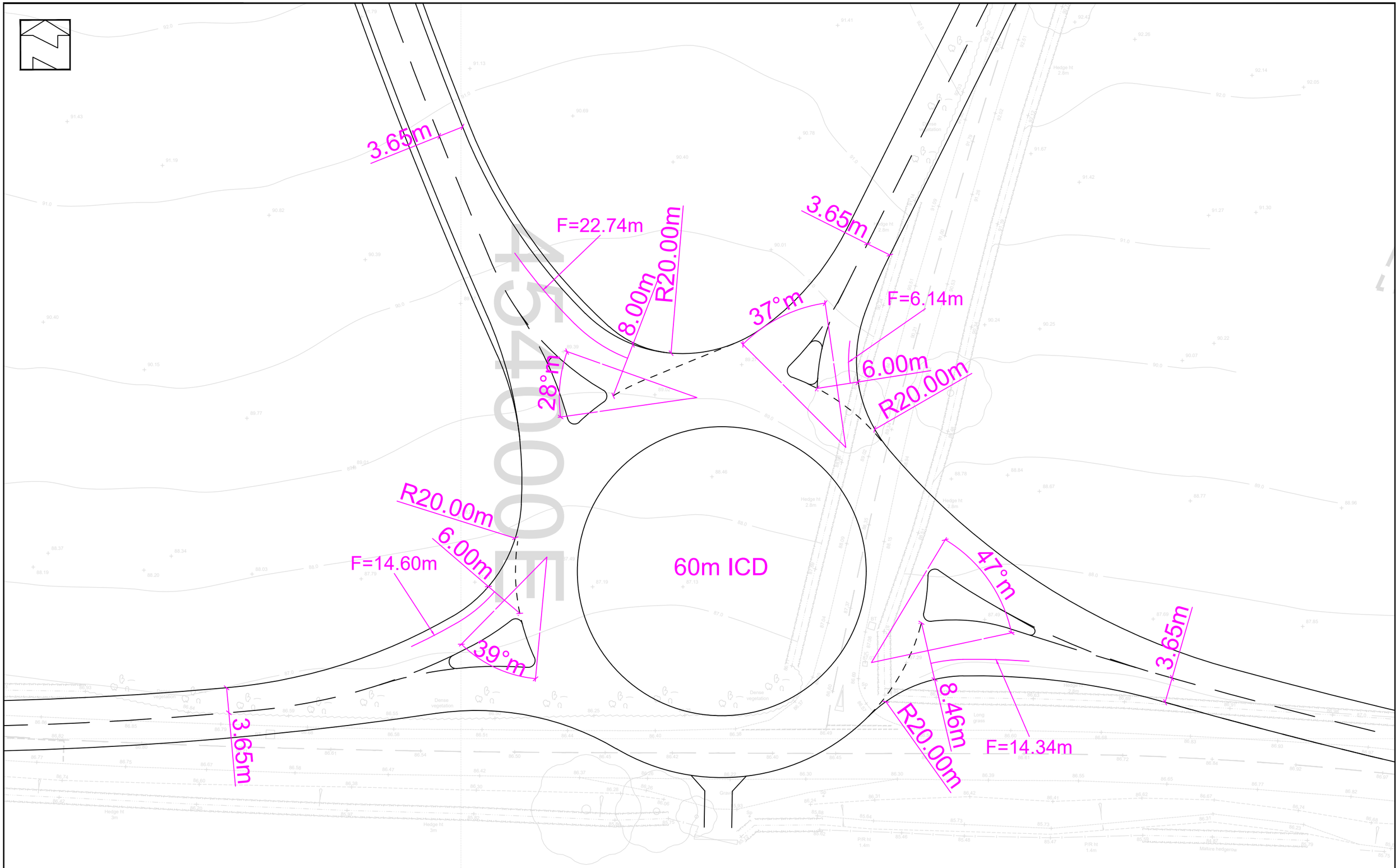
Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Propesed Hayford Park Link Road to Middleton Stoney Releif Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**72.4%**
J1: Hayford Park Link Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**72.4%**
1/1	B430 south Ahead	U	N/A	N/A	C1:C		1	26	-	350	1965	884	39.6%
1/2	B430 south Right	U	N/A	N/A	C1:D		1	20	-	480	1894	663	72.4%
1/3	B430 south Right	U	N/A	N/A	C1:D		1	20	-	441	1894	663	66.5%
3/2		U	N/A	N/A	-		-	-	-	441	1900	1900	23.2%
4/1	Hayford Park Link Road Left	U	N/A	N/A	C1:B		1	28	-	399	1786	863	46.2%
4/2+4/3	Hayford Park Link Road Ahead	U	N/A	N/A	C1:A		1	10	-	379	1980:1980	363+363	66.1 : 38.3%
5/2+5/1	B430 north Left	U	N/A	N/A	C1:E		1	37	-	1045	1908:1908	621+954	66.4 : 66.4%
5/3	B430 north Right	U	N/A	N/A	C1:F		1	13	-	308	1868	436	70.7%
J2: Middleton Stoney Relief Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**66.4%**
1/1	B430 south Ahead	U	N/A	N/A	C2:C		1	37	-	704	2015	1276	55.2%
3/2	B430 north Ahead	U	N/A	N/A	C2:A		1	36	-	551	2015	1243	44.3%
6/1+6/2	MSRR Right	U	N/A	N/A	C2:B		1	13	-	567	1886:1886	440+440	62.5 : 66.4%

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: Propesed Hayford Park Link Road to Middleton Stoney Releif Road	**-**	**-**	**0**	**0**	**0**	**16.3**	**7.8**	**0.0**	**24.1**	**-**	**-**	**-**	**-**
J1: Hayford Park Link Road Junction	**-**	**-**	**0**	**0**	**0**	**11.2**	**5.9**	**0.0**	**17.1**	**-**	**-**	**-**	**-**
1/1	350	350	-	-	-	1.0	0.3	-	1.3	13.4	3.0	0.3	3.3
1/2	480	480	-	-	-	1.7	1.3	-	3.0	22.8	6.1	1.3	7.4
1/3	441	441	-	-	-	1.5	1.0	-	2.5	20.5	6.1	1.0	7.1
3/2	441	441	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
4/1	399	399	-	-	-	1.1	0.4	-	1.6	14.2	4.3	0.4	4.8
4/2+4/3	379	379	-	-	-	2.4	0.5	-	2.9	27.5	3.7	0.5	4.2
5/2+5/1	1045	1045	-	-	-	1.7	1.0	-	2.6	9.1	5.6	1.0	6.6
5/3	308	308	-	-	-	1.8	1.2	-	3.0	34.9	4.7	1.2	5.9
J2: Middleton Stoney Relief Road Junction	**-**	**-**	**0**	**0**	**0**	**5.1**	**1.9**	**0.0**	**7.0**	**-**	**-**	**-**	**-**
1/1	704	704	-	-	-	1.2	0.6	-	1.8	9.3	6.5	0.6	7.1
3/2	551	551	-	-	-	0.6	0.4	-	1.0	6.8	3.4	0.4	3.8
6/1+6/2	567	567	-	-	-	3.3	0.9	-	4.2	26.5	4.4	0.9	5.3

C1	PRC for Signalled Lanes (%):	24.3	Total Delay for Signalled Lanes (pcuHr):	16.94	Cycle Time (s): 60
C2	PRC for Signalled Lanes (%):	35.6	Total Delay for Signalled Lanes (pcuHr):	7.04	Cycle Time (s): 60
	PRC Over All Lanes (%):	24.3	Total Delay Over All Lanes(pcuHr):	24.14	

APPENDIX K

ARCADY ASSESSMENT (MSRR/B4030/MIDDLETON ROAD FOUR ARM ROUNDABOUT)



Rev	Description	Date

Project: OxSRFI

Title: MSRR South Roundabout Geometries (BWB Design)

Client:

ADC INFRASTRUCTURE

Drg Size:	Scale:	Date:
A3	1:500	09/09/2021

Drg No:

Rev:

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.0.6896
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Filename: 210909 MSRR South Roundabout BWB Design.j9
Path: C:\Users\ADC\Dropbox (ADC Infrastructure)\!!! ADC Projects\ADC1794 Oxfordshire SRFI\Calculations\MSRR & HPLR
Report generation date: 09/09/2021 11:48:55

»proposed roundabout layout - DS1, AM
»proposed roundabout layout - DS1, PM
»proposed roundabout layout - DS2, AM
»proposed roundabout layout - DS2, PM
»proposed roundabout layout - DS3, AM
»proposed roundabout layout - DS3, PM

Summary of junction performance

	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
	proposed roundabout layout - DS1					
1 - B4030 (W)	0.8	5.22	0.45	0.6	4.30	0.39
2 - MSRR	0.2	2.80	0.18	0.5	3.52	0.36
3 - Middleton Road	0.1	3.92	0.08	0.1	4.54	0.09
4 - B4030 (E)	1.6	5.59	0.61	0.8	3.94	0.45
	proposed roundabout layout - DS2					
1 - B4030 (W)	0.6	4.88	0.39	0.5	4.10	0.34
2 - MSRR	0.3	2.88	0.23	0.6	3.62	0.39
3 - Middleton Road	0.1	3.92	0.08	0.1	4.54	0.09
4 - B4030 (E)	1.6	5.59	0.61	0.8	3.94	0.45
	proposed roundabout layout - DS3					
1 - B4030 (W)	0.1	3.78	0.05	0.1	3.62	0.12
2 - MSRR	0.6	3.13	0.39	0.4	2.85	0.31
3 - Middleton Road	0.1	3.79	0.08	0.1	3.63	0.08
4 - B4030 (E)	1.6	5.59	0.61	0.8	3.94	0.45

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

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

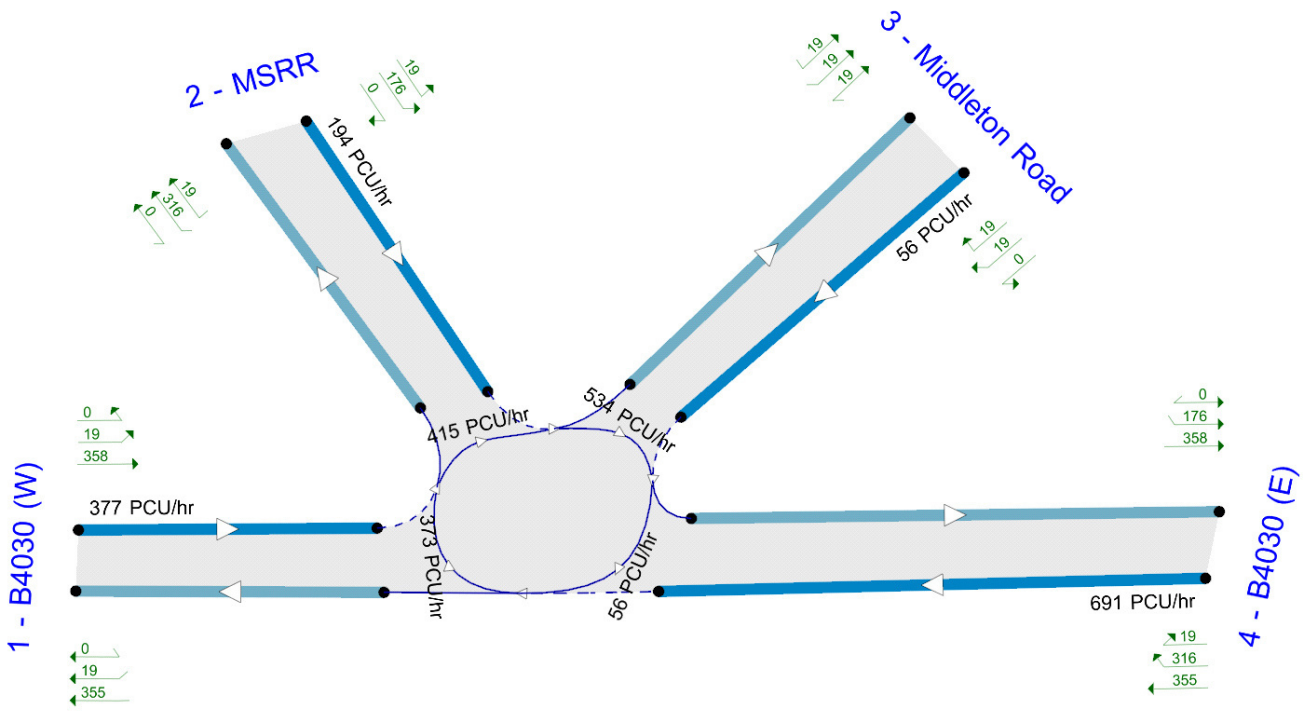
File summary

File Description

Title	(untitled)
Location	
Site number	
Date	31/08/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	ADC
Description	

Units

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



Flows show modelled flow through junction (PCU/hr).
Time Segment: 07:45-08:00

The junction diagram reflects the last run of Junctions.

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	DS1	AM	ONE HOUR	07:45	09:15	15
D2	DS1	PM	ONE HOUR	16:45	18:15	15
D3	DS2	AM	ONE HOUR	07:45	09:15	15
D4	DS2	PM	ONE HOUR	16:45	18:15	15
D5	DS3	AM	ONE HOUR	07:45	09:15	15
D6	DS3	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	proposed roundabout layout	100.000

proposed roundabout layout - DS1, AM

Data Errors and Warnings

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

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	5.00	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B4030 (W)	
2	MSRR	
3	Middleton Road	
4	B4030 (E)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - B4030 (W)	3.65	6.00	14.6	20.0	60.0	39.0	
2 - MSRR	3.65	8.00	22.7	20.0	60.0	28.0	
3 - Middleton Road	3.65	6.00	6.1	20.0	60.0	37.0	
4 - B4030 (E)	3.65	8.46	14.3	20.0	60.0	47.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - B4030 (W)	0.519	1527
2 - MSRR	0.600	1937
3 - Middleton Road	0.497	1391
4 - B4030 (E)	0.542	1702

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	DS1	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B4030 (W)		✓	503	100.000
2 - MSRR		✓	259	100.000
3 - Middleton Road		✓	75	100.000
4 - B4030 (E)		✓	921	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B4030 (W)	2 - MSRR	3 - Middleton Road	4 - B4030 (E)
From	1 - B4030 (W)	0	0	25	478
	2 - MSRR	0	0	25	234
	3 - Middleton Road	25	25	25	0
	4 - B4030 (E)	474	422	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B4030 (W)	2 - MSRR	3 - Middleton Road	4 - B4030 (E)
From	1 - B4030 (W)	0	0	0	0
	2 - MSRR	0	0	0	0
	3 - Middleton Road	0	0	0	0
	4 - B4030 (E)	0	0	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	1 - B4030 (W)	379	379
	2 - MSRR	195	195
	3 - Middleton Road	56	56
	4 - B4030 (E)	693	693
08:00-08:15	1 - B4030 (W)	452	452
	2 - MSRR	233	233
	3 - Middleton Road	67	67
	4 - B4030 (E)	828	828
08:15-08:30	1 - B4030 (W)	554	554
	2 - MSRR	285	285
	3 - Middleton Road	83	83
	4 - B4030 (E)	1014	1014
08:30-08:45	1 - B4030 (W)	554	554
	2 - MSRR	285	285
	3 - Middleton Road	83	83
	4 - B4030 (E)	1014	1014
08:45-09:00	1 - B4030 (W)	452	452
	2 - MSRR	233	233
	3 - Middleton Road	67	67
	4 - B4030 (E)	828	828
09:00-09:15	1 - B4030 (W)	379	379
	2 - MSRR	195	195
	3 - Middleton Road	56	56
	4 - B4030 (E)	693	693

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - B4030 (W)	0.45	5.22	0.8	A
2 - MSRR	0.18	2.80	0.2	A
3 - Middleton Road	0.08	3.92	0.1	A
4 - B4030 (E)	0.61	5.59	1.6	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	379	373	1333	0.284	377	0.4	3.758	A
2 - MSRR	195	415	1688	0.116	194	0.1	2.410	A
3 - Middleton Road	56	534	1126	0.050	56	0.1	3.365	A
4 - B4030 (E)	693	56	1672	0.415	691	0.7	3.658	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	452	446	1295	0.349	452	0.5	4.265	A
2 - MSRR	233	497	1639	0.142	233	0.2	2.559	A
3 - Middleton Road	67	639	1073	0.063	67	0.1	3.577	A
4 - B4030 (E)	828	67	1666	0.497	827	1.0	4.287	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	554	546	1243	0.445	553	0.8	5.205	A
2 - MSRR	285	608	1572	0.181	285	0.2	2.796	A
3 - Middleton Road	83	783	1002	0.082	82	0.1	3.914	A
4 - B4030 (E)	1014	82	1657	0.612	1012	1.6	5.555	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	554	547	1243	0.446	554	0.8	5.224	A
2 - MSRR	285	609	1572	0.181	285	0.2	2.797	A
3 - Middleton Road	83	784	1002	0.082	83	0.1	3.916	A
4 - B4030 (E)	1014	83	1657	0.612	1014	1.6	5.594	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	452	448	1294	0.349	453	0.5	4.285	A
2 - MSRR	233	498	1638	0.142	233	0.2	2.564	A
3 - Middleton Road	67	641	1073	0.063	68	0.1	3.581	A
4 - B4030 (E)	828	68	1666	0.497	830	1.0	4.322	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	379	375	1332	0.284	379	0.4	3.781	A
2 - MSRR	195	417	1687	0.116	195	0.1	2.413	A
3 - Middleton Road	56	537	1125	0.050	57	0.1	3.372	A
4 - B4030 (E)	693	57	1672	0.415	695	0.7	3.690	A

proposed roundabout layout - DS1, PM

Data Errors and Warnings

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

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	3.94	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	DS1	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B4030 (W)		✓	480	100.000
2 - MSRR		✓	512	100.000
3 - Middleton Road		✓	75	100.000
4 - B4030 (E)		✓	676	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B4030 (W)	2 - MSRR	3 - Middleton Road	4 - B4030 (E)
From	1 - B4030 (W)	0	0	25	455
	2 - MSRR	0	0	25	487
	3 - Middleton Road	25	25	25	0
	4 - B4030 (E)	444	207	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B4030 (W)	2 - MSRR	3 - Middleton Road	4 - B4030 (E)
From	1 - B4030 (W)	0	0	0	0
	2 - MSRR	0	0	0	0
	3 - Middleton Road	0	0	0	0
	4 - B4030 (E)	0	0	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	1 - B4030 (W)	361	361
	2 - MSRR	385	385
	3 - Middleton Road	56	56
	4 - B4030 (E)	509	509
17:00-17:15	1 - B4030 (W)	432	432
	2 - MSRR	460	460
	3 - Middleton Road	67	67
	4 - B4030 (E)	608	608
17:15-17:30	1 - B4030 (W)	528	528
	2 - MSRR	564	564
	3 - Middleton Road	83	83
	4 - B4030 (E)	744	744
17:30-17:45	1 - B4030 (W)	528	528
	2 - MSRR	564	564
	3 - Middleton Road	83	83
	4 - B4030 (E)	744	744
17:45-18:00	1 - B4030 (W)	432	432
	2 - MSRR	460	460
	3 - Middleton Road	67	67
	4 - B4030 (E)	608	608
18:00-18:15	1 - B4030 (W)	361	361
	2 - MSRR	385	385
	3 - Middleton Road	56	56
	4 - B4030 (E)	509	509

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - B4030 (W)	0.39	4.30	0.6	A
2 - MSRR	0.36	3.52	0.5	A
3 - Middleton Road	0.09	4.54	0.1	A
4 - B4030 (E)	0.45	3.94	0.8	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	361	212	1417	0.255	360	0.3	3.401	A
2 - MSRR	385	398	1698	0.227	384	0.3	2.737	A
3 - Middleton Road	56	707	1040	0.054	56	0.1	3.659	A
4 - B4030 (E)	509	56	1672	0.304	507	0.4	3.088	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	432	253	1395	0.309	431	0.4	3.731	A
2 - MSRR	460	476	1651	0.279	460	0.4	3.021	A
3 - Middleton Road	67	846	971	0.069	67	0.1	3.985	A
4 - B4030 (E)	608	67	1666	0.365	607	0.6	3.399	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	528	310	1366	0.387	528	0.6	4.292	A
2 - MSRR	564	583	1587	0.355	563	0.5	3.513	A
3 - Middleton Road	83	1036	876	0.094	82	0.1	4.534	A
4 - B4030 (E)	744	82	1657	0.449	743	0.8	3.934	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	528	310	1366	0.387	528	0.6	4.300	A
2 - MSRR	564	584	1587	0.355	564	0.5	3.517	A
3 - Middleton Road	83	1037	876	0.094	83	0.1	4.538	A
4 - B4030 (E)	744	83	1657	0.449	744	0.8	3.942	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	432	254	1395	0.309	432	0.5	3.741	A
2 - MSRR	460	477	1651	0.279	461	0.4	3.029	A
3 - Middleton Road	67	848	970	0.070	68	0.1	3.992	A
4 - B4030 (E)	608	68	1666	0.365	609	0.6	3.410	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	361	213	1416	0.255	362	0.3	3.416	A
2 - MSRR	385	399	1697	0.227	386	0.3	2.745	A
3 - Middleton Road	56	710	1038	0.054	57	0.1	3.668	A
4 - B4030 (E)	509	57	1672	0.304	509	0.4	3.101	A

proposed roundabout layout - DS2, AM

Data Errors and Warnings

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

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	4.83	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	DS2	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B4030 (W)		✓	424	100.000
2 - MSRR		✓	338	100.000
3 - Middleton Road		✓	75	100.000
4 - B4030 (E)		✓	921	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B4030 (W)	2 - MSRR	3 - Middleton Road	4 - B4030 (E)
From	1 - B4030 (W)	0	0	25	399
	2 - MSRR	0	0	25	313
	3 - Middleton Road	25	25	25	0
	4 - B4030 (E)	406	490	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B4030 (W)	2 - MSRR	3 - Middleton Road	4 - B4030 (E)
From	1 - B4030 (W)	0	0	0	0
	2 - MSRR	0	0	0	0
	3 - Middleton Road	0	0	0	0
	4 - B4030 (E)	0	0	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	1 - B4030 (W)	319	319
	2 - MSRR	254	254
	3 - Middleton Road	56	56
	4 - B4030 (E)	693	693
08:00-08:15	1 - B4030 (W)	381	381
	2 - MSRR	304	304
	3 - Middleton Road	67	67
	4 - B4030 (E)	828	828
08:15-08:30	1 - B4030 (W)	467	467
	2 - MSRR	372	372
	3 - Middleton Road	83	83
	4 - B4030 (E)	1014	1014
08:30-08:45	1 - B4030 (W)	467	467
	2 - MSRR	372	372
	3 - Middleton Road	83	83
	4 - B4030 (E)	1014	1014
08:45-09:00	1 - B4030 (W)	381	381
	2 - MSRR	304	304
	3 - Middleton Road	67	67
	4 - B4030 (E)	828	828
09:00-09:15	1 - B4030 (W)	319	319
	2 - MSRR	254	254
	3 - Middleton Road	56	56
	4 - B4030 (E)	693	693

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - B4030 (W)	0.39	4.88	0.6	A
2 - MSRR	0.23	2.88	0.3	A
3 - Middleton Road	0.08	3.92	0.1	A
4 - B4030 (E)	0.61	5.59	1.6	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	319	424	1307	0.244	318	0.3	3.635	A
2 - MSRR	254	355	1724	0.148	254	0.2	2.447	A
3 - Middleton Road	56	534	1126	0.050	56	0.1	3.365	A
4 - B4030 (E)	693	56	1672	0.415	691	0.7	3.658	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	381	507	1264	0.302	381	0.4	4.076	A
2 - MSRR	304	426	1682	0.181	304	0.2	2.612	A
3 - Middleton Road	67	639	1073	0.063	67	0.1	3.577	A
4 - B4030 (E)	828	67	1666	0.497	827	1.0	4.287	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	467	621	1205	0.388	466	0.6	4.869	A
2 - MSRR	372	521	1624	0.229	372	0.3	2.874	A
3 - Middleton Road	83	783	1002	0.082	82	0.1	3.914	A
4 - B4030 (E)	1014	82	1657	0.612	1012	1.6	5.555	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	467	622	1204	0.388	467	0.6	4.883	A
2 - MSRR	372	522	1624	0.229	372	0.3	2.875	A
3 - Middleton Road	83	784	1002	0.082	83	0.1	3.916	A
4 - B4030 (E)	1014	83	1657	0.612	1014	1.6	5.594	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	381	509	1262	0.302	382	0.4	4.091	A
2 - MSRR	304	427	1681	0.181	304	0.2	2.617	A
3 - Middleton Road	67	641	1073	0.063	68	0.1	3.583	A
4 - B4030 (E)	828	68	1666	0.497	830	1.0	4.320	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	319	426	1306	0.244	320	0.3	3.654	A
2 - MSRR	254	357	1723	0.148	255	0.2	2.452	A
3 - Middleton Road	56	537	1125	0.050	57	0.1	3.370	A
4 - B4030 (E)	693	57	1672	0.415	695	0.7	3.688	A

proposed roundabout layout - DS2, PM

Data Errors and Warnings

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

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	3.90	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	DS2	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B4030 (W)		✓	413	100.000
2 - MSRR		✓	579	100.000
3 - Middleton Road		✓	75	100.000
4 - B4030 (E)		✓	676	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B4030 (W)	2 - MSRR	3 - Middleton Road	4 - B4030 (E)
From	1 - B4030 (W)	0	0	25	388
	2 - MSRR	0	0	25	554
	3 - Middleton Road	25	25	25	0
	4 - B4030 (E)	388	263	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B4030 (W)	2 - MSRR	3 - Middleton Road	4 - B4030 (E)
From	1 - B4030 (W)	0	0	0	0
	2 - MSRR	0	0	0	0
	3 - Middleton Road	0	0	0	0
	4 - B4030 (E)	0	0	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	1 - B4030 (W)	311	311
	2 - MSRR	436	436
	3 - Middleton Road	56	56
	4 - B4030 (E)	509	509
17:00-17:15	1 - B4030 (W)	371	371
	2 - MSRR	521	521
	3 - Middleton Road	67	67
	4 - B4030 (E)	608	608
17:15-17:30	1 - B4030 (W)	455	455
	2 - MSRR	637	637
	3 - Middleton Road	83	83
	4 - B4030 (E)	744	744
17:30-17:45	1 - B4030 (W)	455	455
	2 - MSRR	637	637
	3 - Middleton Road	83	83
	4 - B4030 (E)	744	744
17:45-18:00	1 - B4030 (W)	371	371
	2 - MSRR	521	521
	3 - Middleton Road	67	67
	4 - B4030 (E)	608	608
18:00-18:15	1 - B4030 (W)	311	311
	2 - MSRR	436	436
	3 - Middleton Road	56	56
	4 - B4030 (E)	509	509

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - B4030 (W)	0.34	4.10	0.5	A
2 - MSRR	0.39	3.62	0.6	A
3 - Middleton Road	0.09	4.54	0.1	A
4 - B4030 (E)	0.45	3.94	0.8	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	311	254	1395	0.223	310	0.3	3.314	A
2 - MSRR	436	347	1729	0.252	435	0.3	2.780	A
3 - Middleton Road	56	707	1040	0.054	56	0.1	3.659	A
4 - B4030 (E)	509	56	1672	0.304	507	0.4	3.088	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	371	304	1369	0.271	371	0.4	3.606	A
2 - MSRR	521	416	1687	0.308	520	0.4	3.084	A
3 - Middleton Road	67	846	971	0.069	67	0.1	3.985	A
4 - B4030 (E)	608	67	1666	0.365	607	0.6	3.399	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	455	372	1334	0.341	454	0.5	4.089	A
2 - MSRR	637	509	1631	0.391	637	0.6	3.613	A
3 - Middleton Road	83	1036	876	0.094	82	0.1	4.535	A
4 - B4030 (E)	744	82	1657	0.449	743	0.8	3.934	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	455	372	1334	0.341	455	0.5	4.095	A
2 - MSRR	637	510	1631	0.391	637	0.6	3.622	A
3 - Middleton Road	83	1037	876	0.094	83	0.1	4.538	A
4 - B4030 (E)	744	83	1657	0.449	744	0.8	3.942	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	371	304	1369	0.271	372	0.4	3.614	A
2 - MSRR	521	417	1687	0.309	521	0.4	3.092	A
3 - Middleton Road	67	848	970	0.070	68	0.1	3.990	A
4 - B4030 (E)	608	68	1666	0.365	609	0.6	3.408	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	311	255	1395	0.223	311	0.3	3.323	A
2 - MSRR	436	349	1728	0.252	436	0.3	2.790	A
3 - Middleton Road	56	710	1038	0.054	57	0.1	3.668	A
4 - B4030 (E)	509	57	1672	0.304	509	0.4	3.098	A

proposed roundabout layout - DS3, AM

Data Errors and Warnings

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

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	4.51	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	DS3	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B4030 (W)		✓	48	100.000
2 - MSRR		✓	657	100.000
3 - Middleton Road		✓	75	100.000
4 - B4030 (E)		✓	921	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B4030 (W)	2 - MSRR	3 - Middleton Road	4 - B4030 (E)
From	1 - B4030 (W)	0	0	25	23
	2 - MSRR	0	0	25	632
	3 - Middleton Road	25	25	25	0
	4 - B4030 (E)	59	837	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B4030 (W)	2 - MSRR	3 - Middleton Road	4 - B4030 (E)
From	1 - B4030 (W)	0	0	0	0
	2 - MSRR	0	0	0	0
	3 - Middleton Road	0	0	0	0
	4 - B4030 (E)	0	0	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	1 - B4030 (W)	36	36
	2 - MSRR	495	495
	3 - Middleton Road	56	56
	4 - B4030 (E)	693	693
08:00-08:15	1 - B4030 (W)	43	43
	2 - MSRR	591	591
	3 - Middleton Road	67	67
	4 - B4030 (E)	828	828
08:15-08:30	1 - B4030 (W)	53	53
	2 - MSRR	723	723
	3 - Middleton Road	83	83
	4 - B4030 (E)	1014	1014
08:30-08:45	1 - B4030 (W)	53	53
	2 - MSRR	723	723
	3 - Middleton Road	83	83
	4 - B4030 (E)	1014	1014
08:45-09:00	1 - B4030 (W)	43	43
	2 - MSRR	591	591
	3 - Middleton Road	67	67
	4 - B4030 (E)	828	828
09:00-09:15	1 - B4030 (W)	36	36
	2 - MSRR	495	495
	3 - Middleton Road	56	56
	4 - B4030 (E)	693	693

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - B4030 (W)	0.05	3.78	0.1	A
2 - MSRR	0.39	3.13	0.6	A
3 - Middleton Road	0.08	3.79	0.1	A
4 - B4030 (E)	0.61	5.59	1.6	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	36	684	1172	0.031	36	0.0	3.168	A
2 - MSRR	495	74	1893	0.261	493	0.4	2.570	A
3 - Middleton Road	56	492	1147	0.049	56	0.1	3.300	A
4 - B4030 (E)	693	56	1672	0.415	691	0.7	3.658	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	43	819	1102	0.039	43	0.0	3.399	A
2 - MSRR	591	88	1884	0.313	590	0.5	2.782	A
3 - Middleton Road	67	588	1099	0.061	67	0.1	3.489	A
4 - B4030 (E)	828	67	1666	0.497	827	1.0	4.287	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	53	1002	1007	0.052	53	0.1	3.772	A
2 - MSRR	723	108	1872	0.386	723	0.6	3.130	A
3 - Middleton Road	83	720	1033	0.080	82	0.1	3.786	A
4 - B4030 (E)	1014	82	1657	0.612	1012	1.6	5.555	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	53	1004	1006	0.053	53	0.1	3.776	A
2 - MSRR	723	108	1872	0.386	723	0.6	3.133	A
3 - Middleton Road	83	721	1033	0.080	83	0.1	3.787	A
4 - B4030 (E)	1014	83	1657	0.612	1014	1.6	5.594	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	43	822	1100	0.039	43	0.0	3.405	A
2 - MSRR	591	88	1884	0.314	591	0.5	2.788	A
3 - Middleton Road	67	590	1098	0.061	68	0.1	3.494	A
4 - B4030 (E)	828	68	1666	0.497	830	1.0	4.320	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	36	688	1170	0.031	36	0.0	3.177	A
2 - MSRR	495	74	1893	0.261	495	0.4	2.578	A
3 - Middleton Road	56	494	1146	0.049	57	0.1	3.303	A
4 - B4030 (E)	693	57	1672	0.415	695	0.7	3.688	A

proposed roundabout layout - DS3, PM

Data Errors and Warnings

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

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Standard Roundabout		1, 2, 3, 4	3.49	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	DS3	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - B4030 (W)		✓	119	100.000
2 - MSRR		✓	512	100.000
3 - Middleton Road		✓	75	100.000
4 - B4030 (E)		✓	676	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - B4030 (W)	2 - MSRR	3 - Middleton Road	4 - B4030 (E)
From	1 - B4030 (W)	0	0	25	94
	2 - MSRR	0	0	25	487
	3 - Middleton Road	25	25	25	0
	4 - B4030 (E)	25	626	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - B4030 (W)	2 - MSRR	3 - Middleton Road	4 - B4030 (E)
From	1 - B4030 (W)	0	0	0	0
	2 - MSRR	0	0	0	0
	3 - Middleton Road	0	0	0	0
	4 - B4030 (E)	0	0	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:45-17:00	1 - B4030 (W)	90	90
	2 - MSRR	385	385
	3 - Middleton Road	56	56
	4 - B4030 (E)	509	509
17:00-17:15	1 - B4030 (W)	107	107
	2 - MSRR	460	460
	3 - Middleton Road	67	67
	4 - B4030 (E)	608	608
17:15-17:30	1 - B4030 (W)	131	131
	2 - MSRR	564	564
	3 - Middleton Road	83	83
	4 - B4030 (E)	744	744
17:30-17:45	1 - B4030 (W)	131	131
	2 - MSRR	564	564
	3 - Middleton Road	83	83
	4 - B4030 (E)	744	744
17:45-18:00	1 - B4030 (W)	107	107
	2 - MSRR	460	460
	3 - Middleton Road	67	67
	4 - B4030 (E)	608	608
18:00-18:15	1 - B4030 (W)	90	90
	2 - MSRR	385	385
	3 - Middleton Road	56	56
	4 - B4030 (E)	509	509

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - B4030 (W)	0.12	3.62	0.1	A
2 - MSRR	0.31	2.85	0.4	A
3 - Middleton Road	0.08	3.63	0.1	A
4 - B4030 (E)	0.45	3.94	0.8	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	90	526	1254	0.071	89	0.1	3.091	A
2 - MSRR	385	127	1861	0.207	384	0.3	2.437	A
3 - Middleton Road	56	436	1175	0.048	56	0.1	3.219	A
4 - B4030 (E)	509	56	1672	0.304	507	0.4	3.088	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	107	630	1200	0.089	107	0.1	3.292	A
2 - MSRR	460	152	1846	0.249	460	0.3	2.597	A
3 - Middleton Road	67	522	1132	0.060	67	0.1	3.381	A
4 - B4030 (E)	608	67	1666	0.365	607	0.6	3.399	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	131	771	1127	0.116	131	0.1	3.614	A
2 - MSRR	564	186	1825	0.309	563	0.4	2.852	A
3 - Middleton Road	83	639	1074	0.077	82	0.1	3.631	A
4 - B4030 (E)	744	82	1657	0.449	743	0.8	3.934	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	131	772	1126	0.116	131	0.1	3.616	A
2 - MSRR	564	186	1825	0.309	564	0.4	2.853	A
3 - Middleton Road	83	640	1073	0.077	83	0.1	3.632	A
4 - B4030 (E)	744	83	1657	0.449	744	0.8	3.942	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	107	631	1199	0.089	107	0.1	3.295	A
2 - MSRR	460	152	1846	0.249	461	0.3	2.599	A
3 - Middleton Road	67	523	1131	0.060	68	0.1	3.385	A
4 - B4030 (E)	608	68	1666	0.365	609	0.6	3.408	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B4030 (W)	90	528	1253	0.072	90	0.1	3.095	A
2 - MSRR	385	127	1860	0.207	386	0.3	2.441	A
3 - Middleton Road	56	438	1174	0.048	57	0.1	3.221	A
4 - B4030 (E)	509	57	1672	0.304	509	0.4	3.098	A

Appendix B Assessment of initial route options

Middleton Stoney Relief Road
Options Assessment Summary

Assessment Heading	Consultant	Preferred Option	Magnitude of preference	Brown (southern)		Yellow (central)		Green (northern)		Red
				Comments on Option	Potential mitigation measures	Comments on Option	Potential mitigation measures	Comments on Option	Potential mitigation measures	Comments on common elements (Middleton Road roundabout)
Air Quality	Hydrock	Green	Low	Closest receptors sensitive to air quality impacts located approximately 80m to east of Ardely Road roundabout. Based on this distance it is considered unlikely there will be significant adverse impacts at receptor location caused by development generated traffic, but this is subject to confirmation of 'with development' traffic flows and modelling of impacts still will still be required. Construction dust impacts likely at receptors within 350m of the construction works, however, mitigation will reduce any potential impacts.	Encouraging and facilitating sustainable transport options. Providing additional Electric Vehicle Charging Points. Improvements to fleet emissions (specifically for any operational commercial fleets / vehicles).	Closest receptors sensitive to air quality impacts located approximately 90m south. Based on this distance it is considered unlikely there will be significant adverse impacts at receptor location caused by development generated traffic, but this is subject to confirmation of 'with development' traffic flows and modelling of impacts still will still be required. Construction dust impacts likely at receptors within 350m of the construction works, however, mitigation will reduce any potential impacts. This option is preffered over 'Brown' based on increased distance from sensitive receptors.	See previous.	This option maximises distance from receptors sensitive to air quality impacts (closest receptor identified is approximate 200m away). Based on this is the preferred option. Modelling of impacts will still be required. Construction dust impacts likely at receptors within 350m of the construction works, however, mitigation will reduce any potential impacts.	See previous.	Middleton road roundabout is located around 160m away from closest receptor sensitive to air quality impacts. Construction dust impacts likely at receptors within 350m of the construction works, however, mitigation will reduce any potential impacts. All relief road options have potential to have positive impacts at receptor locations in Middleton Stoney, if existing traffic is redistributed to reduce current flows through Middleton Stoney. This will be recognised as embedded mitigation.
Agriculture and Land use	LRA	Brown	Moderate to high	Will result in the least land lost, crosses/bi-sects the fewest fields (three)	None	Second best option, will bi-sect four fields	None	Will affect the most land resulting in the division of five fields	None	None
Cultural Heritage	RPS	Green	Moderate for archaeology & Moderate for Built Heritage	No known archaeological features along this route, but runs closer to the known Roman, Saxon and Medieval settlement in Middleton Stoney. No Scheduled monument settings issues. Considered more likely to have a visual impact on the setting of built heritage assets in Middleton Stoney as it runs closer to the settlement, therefore least favoured.	Lies outside the site extent already being considered for geophysical survey, so will need to be surveyed. Will almost certainly need trial trenching along its length. Possible requirement for excavation, but need and extent as yet unknown. Visual impact on the setting of built heritage assets could be mitigated through incorporation of suitable landscaping/planting at design stage.	No known archaeological features along this route, the archaeological potential here is focussed on the Medieval period, but is likely to be restricted to park or agricultural features. No Scheduled Monument settings issues. Unlikely to impact on built heritage assets in Middleton Stoney due to being further from the village. Portion of the road to the east of Gagle brook could impact the setting of Grade II Lodge Farmhouse, but runs across lower ground and impact likely to be low. Equal preference to Green for Built Heritage.	Lies outside the site extent already being considered for geophysical survey, so will need to be surveyed. Will almost certainly need trial trenching along its length. Possible requirement for excavation, but need and extent as yet unknown. Visual impact on the setting of Grade II Lodge Farmhouse could be mitigated through incorporation of suitable landscaping/planting at design stage.	The section to the east of the B430 runs largely through the area of the earlier proposed motorway link, and has no recorded HER entries along its length. The archaeological potential here is focussed on the Medieval period, but likely to be park or agricultural features. No Scheduled Monument settings issues. Unlikely to impact on assets at Middleton Stoney due to intervening distance. But with this option, the part of road to east of Gagle Brook has most potential to impact on setting of Lodge Farmhouse, although it is likely this impact would be low.	Lies outside the site extent already being considered for geophysical survey, so will need to be surveyed. Will almost certainly need trial trenching along its length. Possible requirement for excavation, but need and extent as yet unknown. Mitigating visual impact on Lodge Farmhouse through landscaping/planting at design stage.	May need archaeological watching brief where the realignment involves stripping of agricultural land, otherewise a low potential for archaeology. No Scheduled Monument settings issues. No particular issues for built heritage.
Drainage and Water Environment	Hydrock	No Preference	-	No significant drainage or flood risk constraints apparent based on information available to date, although there will be a need to cross one open watercourse.	No significant mitigation measures anticipated beyond the requirement for a 'standard' surface water drainage system, encompassing pollution control measures; and, a suitably designed bridge/culvert crossing of the watercourse.	No significant drainage or flood risk constraints apparent based on information available to date, although there will be a need to cross one open watercourse.	No significant mitigation measures anticipated beyond the requirement for a 'standard' surface water drainage system, encompassing pollution control measures; and, a suitably designed bridge/culvert crossing of the watercourse.	No significant drainage or flood risk constraints apparent based on information available to date, although there will be a need to cross one open watercourse.	No significant mitigation measures anticipated beyond the requirement for a 'standard' surface water drainage system, encompassing pollution control measures; and, a suitably designed bridge/culvert crossing of the watercourse.	No significant drainage or flood risk constraints apparent based on information available to date. No significant mitigation measures anticipated beyond the requirement for a 'standard' surface water drainage system, encompassing pollution control measures.
Geology and Soils	Hydrock	Yellow		No comments	-	No comments	-	Crosses the Ardley Trackways SSSI. Natural England has indicated that they have significant concerns regard to crossing the SSSI.	Unknown at this stage, but likley to meet significant resistance from Natural England.	All Options cross Gagle Brook and any associated potential Alluvium on the edge of the Brook. So this does not impact decision on most appropriate route.
Landscape and Visual: Landscape	FPCR	Green	Slight	No landscape designations or particularly sensitive/ distinctive features. Principally arable fields. Allotments closest part of the settlement edge. Sits relatively closest to the settlement; though low lying and immediately south of small watercourse. Belt of mature trees alongside B430 - likely notable number of tree removals to facilitate new junction. Route also cuts through a relatively wider part of the existing tree belt alongside the watercourse mid way along the route.	Potential for mounding and a proposed tree belt along the southern side of the route - should be effective in mitigating the route from Middleton Stoney	No landscape designations or particularly sensitive/ distinctive features. Principally arable fields. Sits relatively more removed from Middleton Stoney. Relatively more limited (than brown option) existing roadside planting and trees would need to be removed to facilitate new B430 junction. Also cuts through a relatively narrower section of existing tree belt alongside the watercourse mid way along the route.	Potential for mounding and tree/ woodland belts to both sides of the route. Would also tie in with existing tree belt along the watercourse mid way along the route	No landscape designations or particularly sensitive/ distinctive features. Principally arable fields. Relatively furthest from Middleton Stoney. Existing mature trees and planting to east side of B430 would be impacted by new B430 junction. This existing planting is more extensive than at the yellow option and similar to that for the brown option. This route appears to cut through the relatively narrowest (in comparison with brown and yellow) section of the existing tree belt mid way along the route.	Potential for mounding and tree/ woodland belts to both sides of the route. Would also tie in with existing tree belt along the watercourse mid way along the route	No landscape designations or particularly sensitive/ distinctive features. Gagle Brook and associated planting to the south could potentially be impacted but should seek to minimise direct impacts. In landscape terms, relatively low lying and somewhat removed from wider landscape and separated in part from Middleton Stoney by existing trees/ planting which could be strengthened as part of a suitable mitigation strategy Any unnecessary loss of existing hedgerow planting along the existing connecting roads should be avoided.
Landscape and Visual: Visual	FPCR	Green	Slight	Despite being the relatively closest route option to Middleton Stoney, the route sits relatively low and is not readily visible from the settlement. The nature of the existing topography(route low lying) and existing mature trees/ planting, particularly along the eastern side of the B430 are effective in limiting potential views. Views from users of public footpaths at B430 junction and mid way along the route but not dissimilar to other options. Potentially significant visual effects upon Dewars Farm and two properties immediately west of B430 (close to proposed junction), small number of properties at eastern extend of village (on Bicester Rd) and from public footpaths. Not extensive views overall.	Potential for mounding and a proposed tree belt along the southern side of the route - should be effective in mitigating the route from Middleton Stoney	The route sits relatively slightly elevated (in comparison with the brown route) and to the north side of the small (east - west) watercourse (also in contrast with the brown route). The nature of the existing landform and intervening planting, plus potential mitigation should be effective in limiting any potential views from Middleton Stoney. Close and clear views from Dewars Farm and two public footpaths but other visual effects/ receptors more limited. Couple of properties on Middleton Rd (Bucknell Lodge?) may also have views but potential for effective mitigation.	Potential for mounding and tree/ woodland belts to both sides of the route. Would also tie in with existing tree belt along the watercourse mid way along the route	The nature of the existing landform and intervening planting, plus potential mitigation should be effective in limiting any potential views from Middleton Stoney. Views from Dewars Farm also relatively more distant. Close and clear views from two public footpaths but other visual effects/ receptors more limited. Couple of properties on Middleton Rd (Bucknell Lodge?) may have views (and potentially relatively yet slightly greater visual effects than the other 2 routes from these two properties - but potential for effective mitigation.	Potential for mounding and tree/ woodland belts to both sides of the route. Would also tie in with existing tree belt along the watercourse mid way along the route	Occupies a relatively visually contained position; though with a handful of properties relatively close to the west on the edge of Middleton Stoney. Other potential views/ receptors are relatively limited. Opportunity for mitigation through new woodland/ tree planting.

Assessment Heading	Consultant	Preferred Option	Magnitude of preference	Brown (southern)		Yellow (central)		Green (northern)		Red
				Comments on Option	Potential mitigation measures	Comments on Option	Potential mitigation measures	Comments on Option	Potential mitigation measures	Comments on common elements (Middleton Road roundabout)
Lighting	Design for Lighting (DFL)	Green	Low	Road lighitng likely to require mitigation measures for ecology receptors, as well as human amenity receptors. Dewars farm has potential to be affected by junction lighting specifically.	Warm colour temperature appearance, reduced / limited mounting height, dimming, sheilding.	Slightly more favourable as the alingment brings the road further away from potenitally sensitive residential amenity at Dewars Farm. There is potential for effects of lighting on ecological receptors as the road alignment cuts through the land parcels.	Warm colour temperature appearance, reduced / limited mounting height, dimming, sheilding.	Option with least potential for effects from lighitng on residential amenity, as there appears to be greater distance between the road alignment and residential receptors. Potential for ecological receptors to be adversely affected by lighting if present, but mitigation measures can be implement to help minimise the significance of this.	Warm colour temperature appearance, reduced / limited mounting height, dimming, sheilding.	Lighting will need to be carefully designed to minmise the potential for adverse effects on nearby residential recepors, such as; Gaygle Brook Cottage / Rigeletto and Gaygle Brook Farm.
Nature and Ecology	FPCR	Green	Moderate	Cuts through broadest section of tree cover bordering Gagle Brook. Also runs parallel to a tributary of the brook, and in proximity to a pond at Dewars Farm with associated potential for pollution of watercourse / pond.	Requires greater quantiy of mitigation tree planting. Road lighting design to consider how to minimise fragmentation effect. Hyrdology needs to consider pollution potential of operational road.		As per the Brown option, but appears to result in less tree loss and is routed further from the brook.	Results in the least loss of trees from the Gagle Brook corridor. Also if in combination with the Heyford Park Green option avoids the requirement for a 2nd roundabout on the B430 and therefore can minimise tree loss and habitat fragmentation here.		Gagle Brook lies to the south. Some tree loss inevitable. Design should seek to minimise associated habitat fragmentation impacts.
Noise and Vibration (operation)	Vanguardia	Green	Green, Yellow then Brown	Least favoured option. More properties likely to have a higher adverse impact than other routes, due to closer proxiity to dwellings in Middleton Stoney. The main issue is the relief road will decrease noise levels at one façade of the properties while increasing them on another. The adverse imapct at Dewars Farm, Dewars Farm Cottages and Manor Farm Cottages will be highest in magnitude under this option.	For the majority of properties that require mitigation, options include acoustic barrier/bunding and if appropriate the use of a low road noise surface if the speed of the road will be at least 50 mph. The worst affected properties may qualify for noise insulation, however this would be limited to those in closest proximity to the link road.	This route is generally at greater distance from Middleton Stoney and the residential elements of Dewars Farm, Dewars Farm Cottages and Manor Farm Cottages than the brown route. However, it is closer to these dwellings than the green route. At all properties the adverse impacts will be lower than the brown route but higher than the green route.	For the majority of properties that require mitigation, options include acoustic barrier/bunding and if appropriate the use of a low road noise surface if the speed of the road will be at least 50 mph. The worst affected properties may qualify for noise insulation, however this would be limited to those in closest proximity to the link road.	Most favoured option This route is the furthest from the majority of dwellings in Middleton Stoney, therefore it is likely to have a lower adverse impact at more properties compared to the other routes as there is greater distance between the dwellings and the new road. The adverse impact at Dewars Farm, Dewars Farm Cottages and Manor Farm Cottages would be significantly lower than the brown or yellow routes.	For the majority of properties that require mitigation, options include acoustic barrier/bunding and if appropriate use of a low road noise surface if the speed of the road will be at least 50 mph. This option should require the least amount of mitigation and it is considered unlikely any dwellings would qualify for noise insulation	No comments.
Noise and Vibration (construction)	Vanguardia	Green	Green, Yellow then Brown	Greatest advserse impact of all options due to closer proximity of the road to the residential dwellings.	Good Practice and Best Practicable Means as set out in BS 5228-1	Greater adverse impact than green route, but lower adverse impact than brown route.	Good Practice and Best Practicable Means as set out in BS 5228-1	Lowest adverse impact of all 3 options due to greater distance between construction works and the sensitive receptors.	Good Practice and Best Practicable Means as set out in BS 5228-1	No comments.
Non – motorised users	ADC / BWB	Green	Moderate	Crosses public footpath 297/3 and would impact the footpath 297/8 at the start of the route at the B430. This would be the longest alignment for a footway/cycleway route between the B4030 east of Middleton Stoney and the B430 north of Middleton Stoney.	Assessment of impact of relief road on PRoW 297/3 and provision of appropriate form of crossings. Provision of a shared use footway/cycleway alongside the Relief Road and the section of the B430 connecting the blue route with the brown route.	Crosses two public footpaths (297/8 and 297/3). This would be the middle option in terms of distance for a footway/cycleway route between the B4030 east of Middleton Stoney and the B430 north of Middleton Stoney.	Assessment of impact of relief road on the two PRoWs and provision of appropriate form of crossing. Provision of a shared use footway/cycleway alongside the Relief Road and the section of the B430 connecting the blue route with the yellow route.	Crosses two public footpaths (297/8 and 297/3). This would be the shortest alignment for an overall footway/cycleway route between the B4030 east of Middleton Stoney and the B430 north of Middleton Stoney (and Heyford Park) and would involve one less junction for users to negotiate compared to the brown and yellow routes.	Assessment of impact of road on the two PRoWs and provision of appropriate form of crossings. Provision of a shared use footway/cycleway alongside the Relief Road.	Consider how to link with the off-road 'B4030 Bicester Road Middleton Stoney to Himley Village cycleway/footway' to be provided by the Heyford Park scheme. At this location the shared facility is to be provided on the southern side of B4030. Consideration of public bridleway 297/14 to the south of the B4030 at this location, and that Middleton Road to the north is well used by cyclists.
Public Transport	ADC	Green	Moderate	Heyford Park has committed S106 funds to provide a 15 minute frequency bus service travelling between Heyford Park and Bicester (4 buses per hour). Currently, those buses would use the B4030 to the west of Middleton Stoney, for which access for buses only is proposed to be controlled by the provision of a bus gate to the south of Lower Heyford Road. The Heyford Park link and Middleton Stoney Relief Road will provdie an alternative route. OCC have indicated that potentially 2 buses per hour could use the alternative route and pass the OxSRFI site, leaving 2 buses per hour to use the B4030 and stop within Middleton Stoney. The brown route (in combination with the blue route) would be the longest overall route alignment option for buses travelling between the B4030 east of Middleton Stoney (i.e. Bicester) and Heyford Park.	-	Heyford Park has committed S106 funds to provide a 15 minute frequency bus service travelling between Heyford Park and Bicester (4 buses per hour). Currently, those buses would use the B4030 to the west of Middleton Stoney, for which access for buses only is proposed to be controlled by the provision of a bus gate to the south of Lower Heyford Road. The Heyford Park link and Middleton Stoney Relief Road will provdie an alternative route. OCC have indicated that potentially 2 buses per hour could use the alternative route and pass the OxSRFI site, leaving 2 buses per hour to use the B4030 and stop within Middleton Stoney. The Yellow route woud be the middle distance alignment option for buses travelling between the B4030 east of Middleton Stoney (i.e. Bicester) and Heyford Park.	-	Heyford Park has committed S106 funds to provide a 15 minute frequency bus service travelling between Heyford Park and Bicester (4 buses per hour). Currently, those buses would use the B4030 to the west of Middleton Stoney, for which access for buses only is proposed to be controlled by the provision of a bus gate to the south of Lower Heyford Road. The Heyford Park link and Middleton Stoney Relief Road will provdie an alternative route. OCC have indicated that potentially 2 buses per hour could use the alternative route and pass the OxSRFI site, leaving 2 buses per hour to use the B4030 and stop within Middleton Stoney. The Green route woud be the shortest overall route alignment option for buses travelling between the B4030 east of Middleton Stoney (i.e. Bicester) and Heyford Park, and removes the need to negotiate one junction as compared to the Brown and Yellow options.	-	-
Transport – motorised (HGV)	ADC	Green	Slight, on basis of only one roundabout on B430	Two new roundabouts on B430 to negotiate for traffic using the B430. One of which would replace the committed B430/Unnamed Road signal T-junction.	-	Two new roundabouts on B430 to negotiate for traffic using the B430. One of which would replace the committed B430/Unnamed Road signal T-junction.	-	One new roundabout on B430 to negotiate for drivers using the B430. This would replace the committed B430/Unnamed Road signal T-junction.	-	As part of Heyford Park Middle Stoney Package of mitgation works, an environmental weight restriction is proposed on the B4030 to the east of Middleton Stoney as part of the works to reduce HGV traffic through the village. Consideration required as to whether this would remain a requirement to the east of the new roundabout.

Assessment Heading	Consultant	Preferred Option	Magnitude of preference	Brown (southern)		Yellow (central)		Green (northern)		Red
				Comments on Option	Potential mitigation measures	Comments on Option	Potential mitigation measures	Comments on Option	Potential mitigation measures	Comments on common elements (Middleton Road roundabout)
Transport – motorised (non HGV)	ADC	Green	Moderate	Longest overall route alignment option between the B4030 to the east of Middleton Stoney and the B430 to the north on Middleton Stoney. Two new roundabouts on B430 to negotiate for traffic using the B430. As part of the Heyford Park development, the B430/Unnamed Road priority controlled ghost island junction is to be upgraded to a signal controlled T-junction. The proposed scheme would negate the requirement for that scheme. The new road would provide traffic relief within Middleton Stoney and would be compatible with Heyford Park proposal to introduce a bus gate ont he B4030 to the west of the village.	-	Middle distance overall route alignment option between the B4030 to the east of Middleton Stoney and the B430 to the north on Middleton Stoney. Two new roundabouts on B430 to negotiate for traffic using the B430. As part of the Heyford Park development, the B430/Unnamed Road priority controlled ghost island junction is to be upgraded to a signal controlled T-junction. The proposed scheme would negate the requirement for that scheme. The new road would provide traffic relief within Middleton Stoney and would be compatible with Heyford Park proposal to introduce a bus gate ont he B4030 to the west of the village.	-	Shortest overall route alignment option between the B4030 to the east of Middleton Stoney and the B430 to the north on Middleton Stoney. With one roundabout to negotiate on B430. As the shortest route, it is likely to be more attractive than the Brown and Yellow routes for drivers travelling between Bicester and Heyford Park, the OxSRFI site, and M40 J10. As part of the Heyford Park development, the B430/Unnamed Road priority controlled ghost island junction is to be upgraded to a signal controlled T-junction. This proposed scheme would negate the requirement for that scheme. One roundabout on B430 to negotiate for traffic using the B430 instead of the signal controlled junction. The new road would provide traffic relief within Middleton Stoney and would be compatible with Heyford Park proposal to introduce a bus gate on the B4030 to the west of the village.	-	Roundabout will act as a gateway to Middleton Stoney,

Heyford Park Link Road
Options Assessment Summary

Assessment Heading	Consultant	Preferred Option	Magnitude of preference	Blue (northern)		Green (southern)		Red
				Comments on Option	Potential mitigation measures	Comments on Option	Potential mitigation measures	Comments on common elements (OxSRFI secondary access roundabout)
Air Quality	Hydrock	Green	Low	No receptors sensitive to air quality impacts are located in close proximity to this option (closest approximatly 350m to south west). Based on this distance it is considered unlikely additional adverse impacts will occur from development generated traffic on this road in immediate area. Modelling of impacts may still be required. Construction dust impacts likely at receptors within 350m of the construction works, however, mitigation will reduce any potential impacts.	Encouraging and facilitating sustainable transport options. Providing additional Electric Vehicle Charging Points. Improvements to fleet emissions (specifically for any operational commercial fleets / vehicles).	No sensentive receptors to air quality impacts located in close proximity. Based on this distance it is considered unlikely additional adverse impacts will occur from development generated traffic on this road in immediate area. Modelling of impacts may still be required.Construction dust impacts likely at receptors within 350m of the construction works, however, mitigation will reduce any potential impacts. Preferred option as maximises distance of relief road from sensitive receptors in both Middleton Stoney and off B430.	See previous.	OxSRFI secondary access roundabout is located around away from exisitng receptors sensitive to air quality impacts, based on this distance it is considered unlikely additional adverse impacts will occur from development generated traffic on this road in immediate area. Construction dust impacts likely at receptors within 350m of the construction works, however, mitigation will reduce any potential impacts.
Agriculture and Land use	LRA	No Preference	N/A	Two fields the route crosses west of the quarry appear to currently be used as one parcel, route will split it into two manageable parcels	None	As blue route, will divide the land parcel currently managed as one into two useable plots	None	None
Construction (materials, buildability, cost and programme)	Cuvette / Mountpark							
Cultural Heritage	RPS	Green	Moderate for archaeology & Weak for Built Heritage	Archaeology: runs through a part of the site with recorded Prehistoric and Saxon archaeology, therfore has a medium to high potential for encountering buried archaeological remains from these periods. One enclosure recorded along this route. No Scheduled Monument settings issues. Built Heritage: this aspect of the proposals is considered to have a low potential for impact on built heritage assets, as none lie in close proximity.	Lies within the site extent already being considered for geophysical survey. Will almost certainly need trial trenching along its length. Possible requirement for excavation, but need and extent as yet unknown. Built Heritage: landscaping/planting to be incorporated at design stage	The section west of the B430 lies just outside of the area covered in the archaeological assessment, but is still close to the part of the site with recorded Prehistoric and Saxon archaeology. Therefore has a moderate to high potential for encountering buried archaeological remains from these periods. No HER entries actually recorded along this part of the route. No Scheduled Monument settings issues. The section to the east of the B430 is dealt with under the Middleton Stoney tab. Built Heritage: again, low potential for impact on built heritage assets for this aspect of the proposals. See Middleton Stoney tab for comments on section of road to east of Gagle Brook.	Lies outside the site extent already being considered for geophysical survey, so will need to be surveyed. Will almost certainly need trial trenching along its length. Possible requirement for excavation, but need and extent as yet unknown. Built Heritage: landscaping/planting to be incorporated at design stage	Archaeology: runs through a part of the site with recorded Prehistoric and Saxon archaeology, therfore has a high potential for encountering buried archaeological remains from these periods. Likely mitigation as per Green and Blue routes. No Scheduled Monument settings issues. No built heritage issues anticipated.
Drainage and Water Environment	Hydrock	No Preference	-	No significant drainage or flood risk constraints apparent based on information available to date.	No significant mitigation measures anticipated beyond the requirement for a 'standard' surface water drainage system, encompassing pollution control measures.	No significant drainage or flood risk constraints apparent based on information available to date.	No significant mitigation measures anticipated beyond the requirement for a 'standard' surface water drainage system, encompassing pollution control measures.	No significant drainage or flood risk constraints apparent based on information available to date, although there will be a need to cross one open watercourse. No significant mitigation measures anticipated beyond the requirement for a 'standard' surface water drainage system, encompassing pollution control measures; and, a suitably designed bridge/culvert crossing of the watercourse.
Geology and Soils	Hydrock	No Preference	No significant difference between the two Heyford Park Link Road Options.	-	-	-	-	-

Assessment Heading	Consultant	Preferred Option	Magnitude of preference	Blue (northern)		Green (southern)		Red
				Comments on Option	Potential mitigation measures	Comments on Option	Potential mitigation measures	Comments on common elements (OxSRFI secondary access roundabout)
Landscape and Visual: Landscape	FPCR	Green	Minimal and only on the basis that it would reduce the number of new roundabout junctions on the B430 from 2 to 1.	No landscape designations or particularly sensitive/ distinctive features. Principally arable fields. Some direct impact upon existing trees/ planting at the proposed B430 junction. Route avoids existing small woodlands/ copses to west of route. Appears to be potentially (yet only slightly) greater roadside hedgerow/ tree loss from this route than green option. Should this option result in 2 new roundabouts on the B430, this would be less desirable than the single roundabout option with the green route. Otherwise limited differences between the 2 route options.	Potential for mounding and tree/ woodland belt to the south west of the route. Would also tie in with the existing copses and trees.	No landscape designations or particularly sensitive/ distinctive features. Principally arable fields. Little difference to the blue route, though the route connects to the B430 slightly further south and may be slightly less beneficial in terms of accommodating mounding and woodland planting to mitigate the route. This is not however a notable issue, just a marginal consideration in terms of the merits of the 2 route options.	Potential for mounding and tree/ woodland belt to the south west of the route. Would also tie in with the existing copses and trees.	No landscape designations or particularly sensitive/ distinctive features. Occupies a location with potential to suitably mitigate landscape and visual effects, providing sufficient space provided.
Landscape and Visual: Visual	FPCR	Green	Minimal and only on the basis that it would reduce the number of new roundabout junctions on the B430 from 2 to 1.	Limited potential visual receptors. Potential for restricted views towards traffic on this route from the north west edge of Middleton Stoney and Heyford Rd (B4030) leading north west out of the settlement. Any potential views from the settlement edge/ road likely to be limited and restricted. and potentially mitigated effectively. Other visual receptors limited. Existing farm close to the west yet with some existing woodland/ trees to limit available views. Minimal difference in visual terms from the 2 options.	Potential for mounding and tree/ woodland belt to the south west of the route. Would also tie in with the existing copses and trees. This potential mitigation should be effective in restricting views.	Limited potential visual receptors. Potential for restricted views towards traffic on this route from the north west edge of Middleton Stoney and Heyford Rd (B4030) leading north west out of the settlement. Any potential views from the settlement edge/ road likely to be limited and restricted. and potentially mitigated effectively. Other visual receptors limited. Existing farm close to the west yet with some existing woodland/ trees to limit available views. Minimal difference in visual terms from the 2 options.	Potential for mounding and tree/ woodland belt to the south west of the route. Would also tie in with the existing copses and trees. This potential mitigation should be effective in restricting views.	Not particularly sensitive in visual terms. Limited potential visual receptors. Occupies a location with potential to suitably mitigate landscape and visual effects, providing sufficient space provided.
Lighting	Design for Lighting (DFL)	No Preference		Road lighting would potentially tie in with existing lighting on site at Dewars Farm Quarry. Potential effects on ecology could be mitigated.	Warm colour temperature appearance, reduced / limited mounting height, dimming, sheilding.	Road lighting has potential to affect ecological receptors, but this could be effectively managed by mitigation measures.	Warm colour temperature appearance, reduced / limited mounting height, dimming, sheilding.	Residential amenity would need to be carefully considered from a lighitng perspective, although adverse effects could be effectively mitigated.
Nature and Ecology	FPCR	Green	Moderate	Cuts through a thick hedgerow/treeline resulting in fragmentation.	Minimse fragmentation impacts with sensitive lighting scheme, mitigation tree planting etc.	Looks to be within 50m of Birch Spring woods, potetnial for lighting and other disturbance. If in conjunction with the green Middleton Stoney option minimises the need for >1 roundabout off the B430 and associated fragmentation of roadside hedgerow/treeline.		Crosses a brook. Some associated treeloss but losses appear to be minor
Noise and Vibration (operation)	Vanguardia	Blue		Likely to have a lower adverse impact on Manor Farm than the green route due to increased distance. However, given the distance from the road to the nearest dwellings it is unlikely to make a significant difference.	For the majority of properties that require mitigation, options include acoustic barrier/bunding and if appropriate the use of a low road noise surface if the speed of the road will be at least 50 mph.	Likely to have slightly higher adverse impact on Manor Farm. However, given the distance between the road and the nearest dwellings it is unlikely to make a significant difference.	For the majority of properties that require mitigation, options include acoustic barrier/bunding and if appropriate the use of a low road noise surface if the speed of the road will be at least 50 mph.	No comment
Noise and Vibration (construction)	Vanguardia	Blue		Likely to have lower adverse impact than green route but given relative difference in distance, unlikely to make a material difference.	Good Practice and Best Practicable Means as set out in BS 5228-1	Likely to have higher adverse impact than blue route but given relative difference in distance, unlikely to make a material difference.	Good Practice and Best Practicable Means as set out in BS 5228-1	No comment

Assessment Heading	Consultant	Preferred Option	Magnitude of preference	Blue (northern)		Green (southern)		Red
				Comments on Option	Potential mitigation measures	Comments on Option	Potential mitigation measures	Comments on common elements (OxSRFI secondary access roundabout)
Non – motorised users	ADC / BWB	Green	Moderate	There are currently no NMU facilitates along this section of the B430 or the unnamed road. However, the unnamed road connecting the B430 with Camp Road forms part of the Claude Duval Bridle Route, a 90 mile route for riders, walkers and cyclist cross Buckinghamshire and North Oxfordshire. This route is currently on road along the unnamed road, although OCC have committed S106 funds as part of the Heyford Park development to provide a new section of off-road facility connecting from the junction with the B430 to existing bridleway 109/29. This would be the longest alignment for an overall footway/cycleway route between the B4030 east of Middleton Stoney and Heyford Park.	Opportunity to provide a new off-road bridleway route within landscaping area connecting with the existing bridleway to the south of Ardley ERF and the committed NMU facilities at the Camp Road/Chilgrove Drive/unnamed Road junction. Provision of a shared use footway/cycleway alongside the new section road and the section of the B430 connecting the Blue route with the Yellow or Brown routes.	There are currently no NMU facilitates along this section of the B430 or the unnamed road. However, the unnamed road connecting the B430 with Camp Road forms part of the Claude Duval Bridle Route, a 90 mile route for riders, walkers and cyclist cross Buckinghamshire and North Oxfordshire. This route is currently on road along the unnamed road, although OCC have committed S106 funds as part of the Heyford Park development to provide a new section of off-road facility connecting from the junction with the B430 to existing bridleway 109/29. This would be the shortest alignment for an overall footway/cycleway route between the B4030 east of Middleton Stoney and Heyford Park and would involve on less junction for users to negotiate compared to the blue route.	Opportunity to provide a new off-road bridleway route within landscaping area connecting with the existing bridleway to the south of Ardley ERF and the committed NMU facilities at the Camp Road/Chilgrove Drive/unnamed Road junction. Provision of a shared use footway/cycleway alongside the new section road.	Roundabout will assist with lowering vehicle speeds in the vicinity of the site access junction.
Public Transport	ADC	Green	Moderate	Heyford Park has committed S106 funds to provide a 15 minute frequency bus service travelling between Heyford Park and Bicester (4 buses per hour). Currently, those buses would use the B4030 to the west of Middleton Stoney, for which access for buses only is proposed to be controlled by the provision of a bus gate to the south of Lower Heyford Road. The Heyford Park link and Middleton Stoney Relief Road will provdie an alternative route. OCC have indicated that potentially 2 buses per hour could use the alternative route and pass the OxSRFI site, leaving 2 buses per hour to use the B4030 and stop within Middleton Stoney. The blue route (in combination with either the yellow or brown route) would be the longest overall route alignment option for buses travelling between the B4030 east of Middleton Stoney (i.e. Bicester) and Heyford Park.	-	Heyford Park has committed S106 funds to provide a 15 minute frequency bus service travelling between Heyford Park and Bicester (4 buses per hour). Currently, those buses would use the B4030 to the west of Middleton Stoney, for which access for buses only is proposed to be controlled by the provision of a bus gate to the south of Lower Heyford Road. The Heyford Park link and Middleton Stoney Relief Road will provdie an alternative route. OCC have indicated that potentially 2 buses per hour could use the alternative route and pass the OxSRFI site, leaving 2 buses per hour to use the B4030 and stop within Middleton Stoney. The Green route woud be the shortest overall route alignment option for buses travelling between the B4030 east of Middleton Stoney (i.e. Bicester) and Heyford Park, and removes the need to negotiate one junction.	-	Secondary access (bus gate) will allow a bus route to provided as a loop through the OxSRFI site (by also using the Primary access). This will be preferrable to a cul-de-sac route and may allow some of the non-peak hour Heyford Park bus services to be routed via the OxSRFI site.
Transport – motorised (HGV)	ADC	Blue	Slight	Shortest alignment option for the link road for Heyford Park HGV traffic accessing M40 J10 (the signed route), although the length of the route will still be increased from existing situation. Two new roundabouts on B430 to negotiate for traffic using the B430.	Signage to direct Heyford Park traffic via M40 J10.	Longest alignment option for the link road for Heyford Park HGV traffic accessing M40 J10 (the signed route), increasing the length of the route from compared to the blue option and from the existing situation. One new roundabout on B430 to negotiate for traffic using the B430.	Signage to direct Heyford Park traffic via M40 J10.	Allowing traffic to use the secondary access, rather than as currently envisaged providing access for only pedestrains/cyclists and buses, could reduce the impact of realigned unnamed road for Heyford Park traffic accessing M40 J10.
Transport – motorised (non HGV)	ADC	Green	Slight	Longest overall route alignment for drivers travelling between the B4030 east of Middleton Stoney (i.e. Bicester) and Heyford Park. Shortest route option between Heyford Park and M40 J10, although the length of the route will still be increased from existing situation. Two new roundabouts on B430 to negotiate for traffic using the B430. As part of the Heyford Park development, the B430/Unnamed Road priority controlled ghost island junction is to be upgraded to a signal controlled T-junction. The proposed scheme would negate the requirement for that scheme.	-	Shortest overall route alignment for drivers travelling between the B4030 east of Middleton Stoney (i.e. Bicester) and Heyford Park, and removes the need to negotiate one junction as compared to Blue route in combination with either the Yellow or Brown routes. Longest route option between Heyford Park and M40 J10. As part of the Heyford Park development, the B430/Unnamed Road priority controlled ghost island junction is to be upgraded to a signal controlled T-junction. This proposed scheme would negate the requirement for that scheme. One roundabout on B430 to negotiate for traffic using the B430 instead of the signal controlled junction.	-	Allowing traffic to use the secondary access, rather than as currently envisaged providing access for only pedestrains/cyclists and buses, could reduce the impact of realigned unnamed road for Heyford Park traffic accessing M40 J10.

APPENDIX 26

TN12: M40 JUNCTION 9

OXFORDSHIRE RAILFREIGHT INTERCHANGE LIMITED

TECHNICAL NOTE 12: M40 JUNCTION 9

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CONTENTS PAGE

1.0 INTRODUCTION 4

2.0 BICESTER TRANSPORT MODEL 6

Introduction 6
OxSRFI BTM status 6
2031 morning peak hour 'do-something' 6
2031 evening peak hour 10

3.0 PROPOSED MITIGATION OPTIONS 15

Existing arrangement 15
Sustainable transport interventions 15
Segregated left-turn lane 15
Carriageway widening 16
Junction 9 LinSig model 17
LinSig modelling results 17
Junction performance - BTM 18

4.0 SUMMARY AND CONCLUSION 22

DRAWINGS

OxSRFI-BWB-GEN-ZZ-SK-CH-SK041-S1-P05 Highway works overview
OxSRFI-BWB-GEN-XX-SK-CH-SK053-S1-P02 Proposed M40 Junction 9 improvement

APPENDICES

Appendix A Morning peak hour BTM plots
Appendix B Evening peak hour BTM plots
Appendix C M40 Junction 9 BTM traffic flows
Appendix D M40 Junction 9 existing layout LinSig model results
Appendix E M40 Junction 9 proposed layout LinSig model results
Appendix F 2031 'do something' (with M40 Junction 9) BTM plots

1.0 INTRODUCTION

1.1 ADC Infrastructure Ltd are appointed by Oxfordshire Railfreight Ltd (the Applicant) to assess and design the transport and infrastructure requirements of a Nationally Significant Infrastructure Project (NSIP), that being a proposed Strategic Rail Freight Interchange in Oxfordshire, to be known as Oxfordshire Strategic Rail Freight Interchange (OxSRFI).

1.2 The access strategy has evolved through extensive option testing and consultation with the Transport Working Group[1] (TWG). It is centred on significant improvements to M40 Junction 10, in combination with the provision of a new bypass for the village of Ardley. Additionally, the access strategy would also introduce a new relief road around the north-east quadrant of the village of Middleton Stoney, referred to as the Middleton Stoney Relief Road (MSRR). Upper Heyford Road (often referred to as the unnamed road) that passes through the Main Site would be removed, to be replaced with a new road link to the south of the Main Site, termed the Heyford Park Link Road (HPLR).

1.3 Collectively termed the 'Highway Works' these changes to the highway network are embedded into the design of the Proposed Development. The embedded highway works are shown on the highway overview drawing **OxSRFI-BWB-GEN-ZZ-SK-C-SK041-S2-P05** provided at **Appendix A**, and comprise the following components:

Element	Description
M40 Junction 10 highway improvements	the highway works to be carried out in connection with the improvement of M40 J10, including works at the A43 Baynard's Green Roundabout
Ardley Bypass	a bypass to the east of the village of Ardley
Principal Access and HGV routing strategy	the principal access to the Main Site from the Ardley Bypass/B430 and HGV routing strategy requiring all OxSRFI HGV traffic to travel to and from the Main Site via the Ardley Bypass and M40 Junction 10
Middleton Stoney Relief Road (MSRR)	a relief road around the north-eastern side of the village of Middleton Stoney
Heyford Park Link Road (HPLR)	the length of new road between the new junction of the B430 with the MSRR and Camp Road
Secondary access	the secondary access to the Main Site for buses, emergency vehicles and NMUs only from the HPLR

1.4 The objectives of the embedded highway works are to accommodate the required access to the strategic road network (SRN), whilst delivering appropriate new site access infrastructure, and contributing to the overall mitigation of potential adverse environmental impacts of the Proposed Development.

1.5 The initial 2031 'do something' runs of the Bicester Transport Model (BTM), including the proposed OxSRFI development and the embedded highway works, suggest that a capacity constraint at the A34 approach to M40 Junction 9 in the evening peak hour has potential to cause undesirable reassignment of traffic from the SRN to the B430 northbound towards M40 Junction 10.

[1] Transport Working Group (TWG) comprising representatives from National Highways, Aecom (National Highways' term consultant), and Oxfordshire County Council. In addition, Cherwell District Council, the local planning authority, attend the TWG meetings as appropriate.

1.6 Hence, this Technical Note provides an examination of the effects of the embedded highway works in the vicinity of M40 Junction 9 and proposes an improvement scheme at the A34 approach to M40 Junction 9 to reduce delay on this approach and strengthen the overall access strategy for the OxSRFI development.

2.0 BICESTER TRANSPORT MODEL

Introduction

2.1 It was agreed with the TWG that the transport impacts of the OxSRFI development would be modelled using the BTM, developed in Saturn, and which is maintained on Oxfordshire County Council's (OCC's) behalf by Tetra Tech.

2.2 The ADC Infrastructure report titled 'Decide and Provide and Modelling Scenario Summary'[2] presents the agreed scenario testing to support the Transport Assessment for OxSRFI.

OxSRFI BTM status

2.3 The 2031 reference case modelling has been completed. Whilst the 2031 'do something' modelling is well advanced, at the time of writing the model runs are yet to be finalised. However, throughout the development of the access and mitigation strategy for the proposed development, the evolving embedded highway works have been tested in the BTM so that high-level design decisions could be made, and potential residual impacts could be understood.

2.4 The 2031 reference case model runs include the committed and allocated developments and infrastructure detailed in the agreed uncertainty log. The latest 2031 'do-something' model runs include the agreed traffic generation, the agreed HGV and light vehicle distributions and the embedded highway works detailed at paragraph 1.3 above. At this stage the impact of the Travel Plan has not be modelled in the BTM.

2.5 Hence, the initial analysis of the BTM outputs is based upon a comparison of the scenarios:

- 2031 reference case (scenario RC3 – no development and no mitigation).
- 2031 development case (do something scenario – 100% of OxSRFI, without Travel Plan, with all embedded highway works included in the table at paragraph 1.3).

2.6 The model runs of the above scenarios have been interrogated to determine the scale, location and cause of any potential residual traffic impacts due to the combination of the development traffic and/or effects associated with the embedded highway works. This analysis has been undertaken using the following Saturn data plots:

- delay plots showing the delays on individual links in the 2031 reference case and 'do something' scenarios;
- PASSQ plots showing the impact of congestion in the period preceding the peak hour on the peak hour assessed in the 2031 reference case and 'do something' scenarios;
- flow difference plots showing the change in actual traffic flows between the 2031 reference case and 'do something' scenarios.

2.7 A detailed analysis of the final BTM assessments will be provided as part of the Transport Assessment, once the final scenario testing is complete.

2031 morning peak hour 'do-something'

2.8 In the 2031 morning peak hour, analysis of the model outputs across the wider modelled area in the 'do-something' scenario shows that the additional capacity at M40 Junction 10 provided by the embedded highway works releases significant volumes of southbound background traffic, which is being held at bottlenecks at the Baynard's Green Roundabout and Cherwell

[2]ADC Infrastructure report – 'Decide and Provide and Modelling Scenario Summary', report reference ADC1794-RP-AB -V5, February 2023.

Roundabout in the 2031 reference case. As a consequence, some background traffic from the Buckinghamshire region travelling towards Oxford is drawn away from existing routes through and to the southeast of Bicester, to instead use higher category roads including the A421/A43/M40/A34. This is a positive effect of the embedded highway works.

Delay plot analysis

2.9 Analysis of the 2031 reference case and 'do something' scenarios in the morning peak hour shows that with the Proposed Development operational and the embedded highway works in place, there would be significantly less congestion at Baynard's Green and M40 Junction 10 in the 'do something' scenario when compared to the reference case. This reduced congestion can be seen at **Figure 1** below, which shows extracts of the morning peak hour Saturn delay plots for the 2031 reference case and 'do something' scenarios (**Appendix A)**.

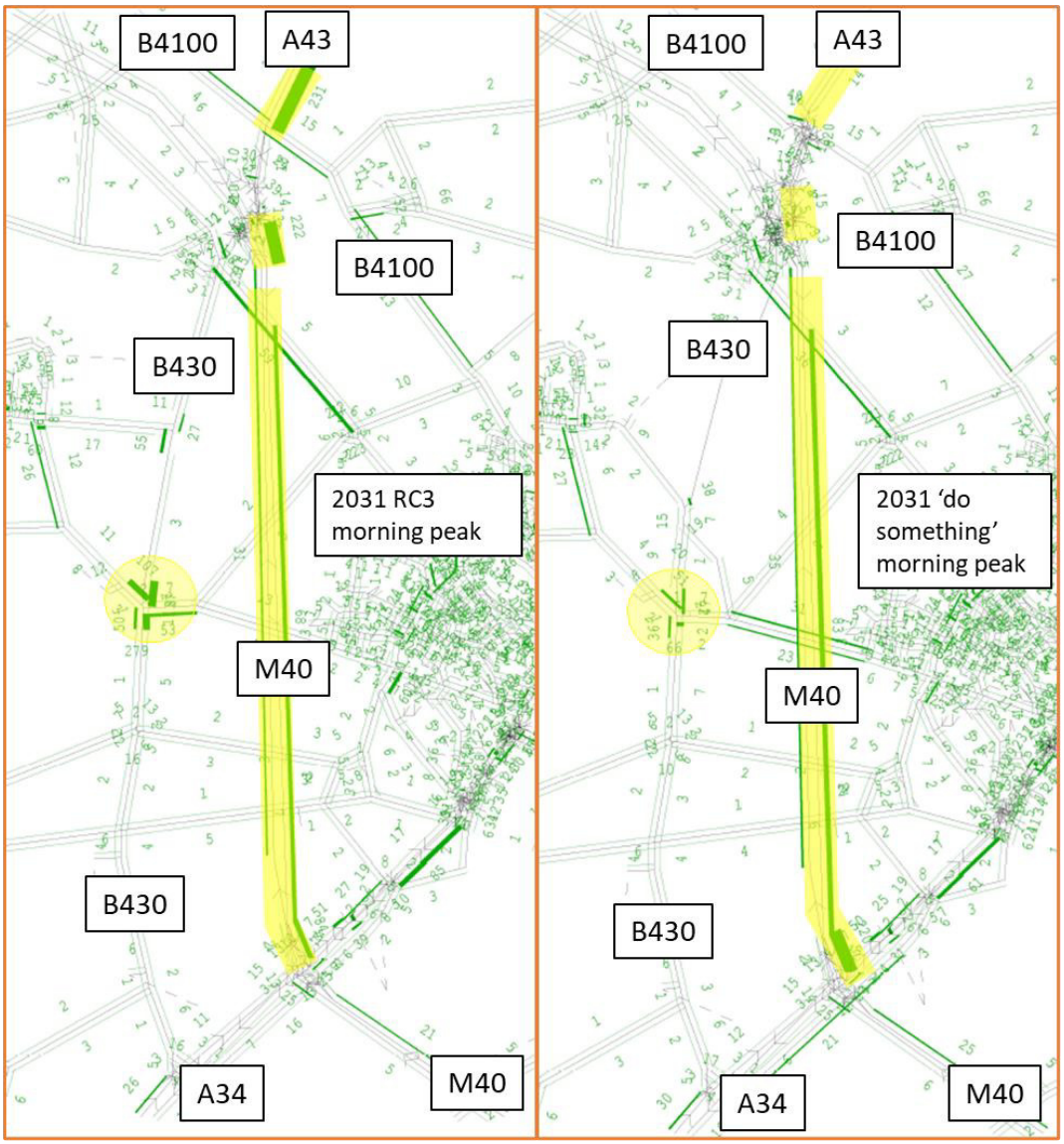


Figure 1: extracts of delay plots from the morning peak 2031 reference case scenario (RC3) on the left and 2031 'do something' scenario on the right (yellow highlight added)

2.10 **Figure 1** shows that in the 2031 reference case there would be significant delay on the A43 southbound approach to Baynard's Green, continuing through the Cherwell Roundabout at M40 Junction 10. This is eliminated in the 2031 'do something' scenario due to the proposed highway works at Baynard's Green and M40 Junction 10.

2.11 **Figure 1** also shows a material reduction in delay at the B430/B4030 crossroads in Middleton Stoney in the 2031 'do something' scenario due to the proposed MSRR and HPLR and overall impact of the embedded highway works.

2.12 At M40 Junction 9, **Figure 1** shows that there is no material delay on the M40 northbound, A41 or A34 approaches in the 2031 reference case, with no material increases in delay on these approaches in the 'do something' scenario. However, **Figure 1** shows that there would be delay on the M40 southbound approach to M40 Junction 9 in the 2031 reference case, which becomes more pronounced in the 'do something' scenario.

2.13 The capacity constraint at the southbound approach to M40 Junction 9 has been long established, due to a significant demand for the M40 southbound to A34 westbound movement. Traffic can already undertake this movement in three lanes from the M40 off-slip, around the circulating carriageway and onto the A34.

2.14 There are limited light vehicle departures from the Proposed Development during the morning peak hour and therefore development traffic increases on the M40 Junction 9 southbound off-slip would be limited to HGV departures. The initial do-something modelling suggests a development demand of around 42 HGVs in the morning peak hour. This is not, in itself, a significant demand. Hence, increases in delay at this location in the morning peak hour are largely due to the release of the southbound bottleneck at Baynard's Green and M40 Junction 10. This is considered below.

PASSQ plot analysis

2.15 The effect of the proposed highway works at Baynard's Green and M40 Junction 10, and the capacity constraint on the southbound approach to M40 Junction 9, can be further understood when analysing the PASSQ plots for the respective 2031 reference case and 'do something' scenarios.

2.16 Generally, Saturn traffic assignments (such as in the BTM) are based on the representation of a single modelled hour. However, where significant volumes of traffic travel in the pre peak, this can underestimate the conditions in the network during the peak hour as queues could already be present in the peak hour network. To allow sufficient traffic to be present, the 'PASSQ' function has been used in the BTM to provide a 'warm up' period to the peak. This ensures that traffic conditions on the modelled network at the start of the peak hour are realistic. If there is congestion in the period preceding the peak hour, it is dealt with in the BTM by passing residual queues on to the peak hour as additional demand. This effect is known as 'PASSQ'. The BTM models the PASSQ as fixed link and turning flows in the peak hour period.

2.17 The 2031 reference case and 'do something' PASSQ plots for the morning peak hour are provided at **Appendix A**, and extracts are provided at **Figure 2** below.

2.18 On the left hand-side, **Figure 2** shows that in the 2031 reference case, there is a significant PASSQ effect on the M40 southbound and A34 westbound due to congestion at M40 Junction 10 (predominately southbound at Baynard's Green and also at Cherwell Roundabout, as shown by the delay plot in **Figure 1**) preventing traffic from completing their journeys on these routes in the preceding period. Accordingly, the PASSQ is added to the morning peak hour period and appears on the routes downstream of these constraints (i.e. on the A43 southbound between Baynard's Green and Cherwell Roundabout, and on the M40 southbound and A34 westbound downstream of M40 Junction 10). It can be seen from the full PASSQ plot at **Appendix A** that

there are only very limit PASSQ effects elsewhere on the highway network during for the 2031 reference case scenario.

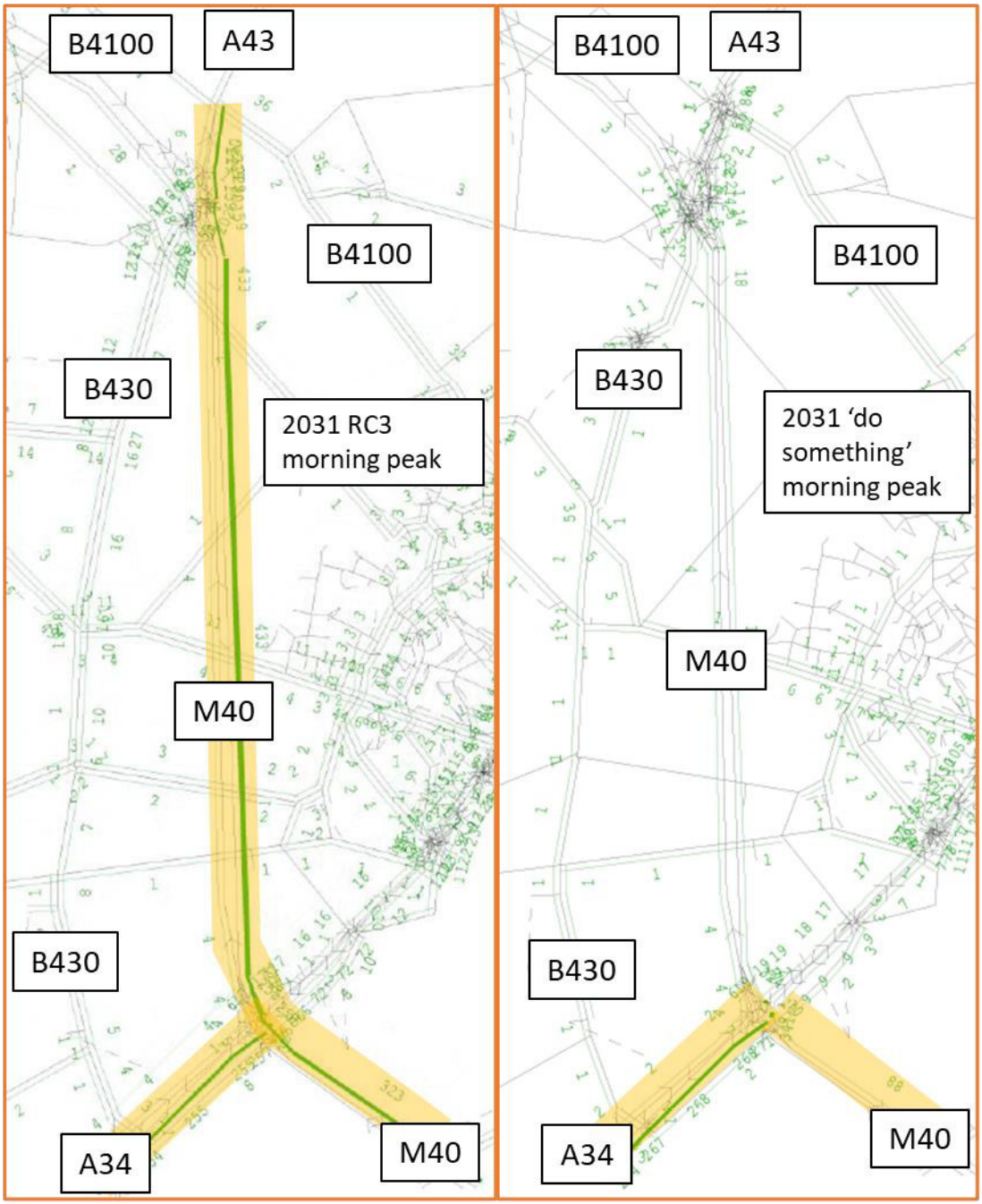


Figure 2: PASSQ plots from the morning peak 2031 reference case (RC3) on the left and 2031 'do something' scenarios on the right (yellow highlight added)

2.19 An extract of the 2031 'do something' PASSQ plot is provided on the right-hand side of **Figure 2** and shows that with the Proposed Development and embedded highway works in place, the congestion at Baynard's Green and M40 Junction 10 is eliminated and the PASSQ on the M40 southbound to M40 Junction 9 is removed, with the PASSQ south of Junction 9 reduced significantly. It is noted that PASSQ remain on the A34 westbound due to the previously described capacity constraints at the southbound approach to M40 Junction 9. However, this is an existing issue that is not materially affected by the proposed development. There is no material increase in the PASSQ on the A34 southbound compared to the reference case and as can be seen from the full PASSQ plot at **Appendix A**, there remain only very limited PASSQ effects elsewhere on the highway network during for the 2031 'do something' scenario.

Summary

2.20 **Figures 1 and 2** show that in the 2031 morning peak hour the embedded highway works would significantly reduce southbound delay at Baynard's Green and M40 Junction 10, releasing the existing bottleneck and flushing traffic through to M40 Junction 9. The M40 southbound approach to M40 Junction 9 suffers from existing congestion issues and hence, delay at this location on the network would increase with the Proposed Development and embedded highways works in place.

2.21 This is considered in Section 3, where the LinSig modelling results presented at paragraph 3.10 show that there would be no material change in the performance of M40 Junction 9 in the morning peak hour, when comparing the 2031 reference case and 'do something' scenarios.

2031 evening peak hour

2.22 In the 2031 evening peak hour, analysis of the model outputs across the wider modelled area, shows the reverse effect described for the morning peak hour. The additional capacity at M40 Junction 10 and Baynard's Green releases northbound background traffic which is held at bottlenecks at Baynard's Green Roundabout and Cherwell Roundabout in the 2031 reference case. Consequently, some background traffic from Oxford and the southwest travelling towards the Buckinghamshire region reassigns away from routes through and to the southeast of Bicester, and instead using higher category roads including the A43 and A421. Whilst this is a positive effect of the embedded highway works, the following analysis shows that the effects are being limited by constraints on the A34 approach to M40 Junction 9, which is resulting is some background traffic routing to M40 Junction and the A43 via the B430.

Delay plot analysis

2.23 Analysis of the 2031 reference case and 'do something' scenarios in the evening peak hour shows that with the Proposed Development operational and the embedded highway works in place, there would be significantly less congestion at Baynard's Green and M40 Junction 10 when compared to the reference case. This can be seen at **Figure 3**, which shows extracts of the evening peak hour delay plots for the 2031 reference case and 'do something' scenarios (**Appendix B**).

2.24 There is a strong tidal component of the traffic flows between the M40 and the A43, and hence **Figure 3** shows that in the 2031 reference case there would be significant delay on the A43 northbound approach to Cherwell Roundabout at M40 Junction 10, and also on the A43 northbound approach to the Baynard's Green Roundabout. This delay is eliminated in the 2031 'do something' scenario due to the embedded highway works. **Figure 3** also shows a reduction in delay at the B430/B4030 crossroads in Middleton Stoney in the 2031 'do something' scenario due to the proposed MSRR and HPLR.

2.25 At M40 Junction 9, **Figure 3** shows that there is forecast to be similar levels of delay on the M40 northbound, M40 southbound, or A41 approaches when comparing the 2031 reference case and 'do something' scenarios, and that there would be delay of 99 seconds on the A34 eastbound approach to M40 Junction 9 in both the reference case and 'do something' scenarios.

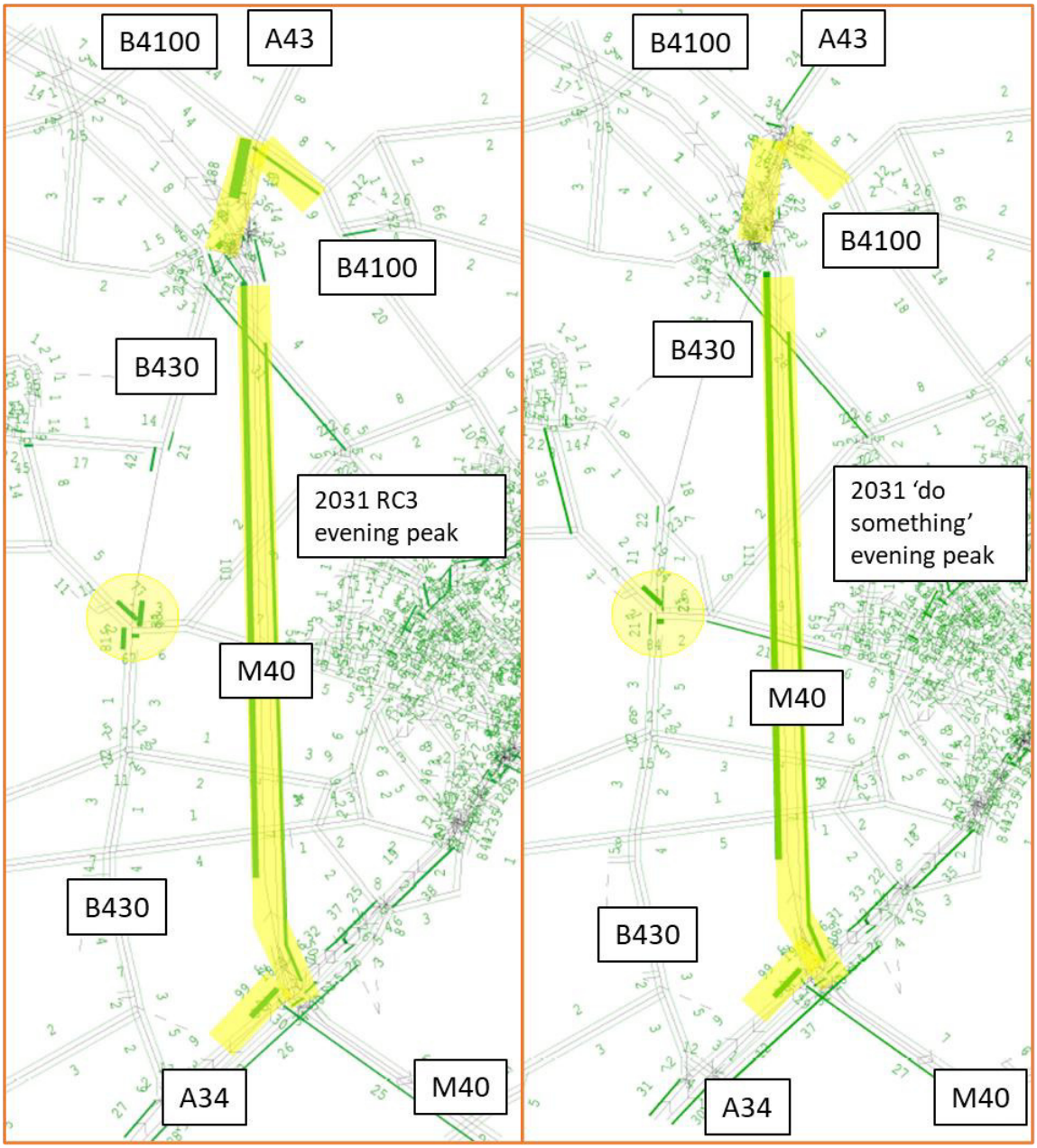


Figure 3: delay plots from the evening peak 2031 reference case (RC3) on the left and 2031 'do something' scenarios on the right (yellow highlight added)

PASSQ plot analysis

2.26 The effect of the capacity constraint on the A34 eastbound approach to M40 Junction 9 can be further understood when analysing the PASSQ plots for the respective 2031 reference case and 'do something' scenarios.

Figure 4: PASSQ plots from the evening peak 2031 reference case (RC3) on left and 2031 'do something' scenarios on right (yellow highlight added)

2.27 The 2031 reference case and 'do something' PASSQ plots for the evening peak hour are provided at **Appendix B,** and extracts are provided at **Figure 4** above. On the left hand-side, **Figure 4** shows that in the 2031 reference case, there is a significant PASSQ effect on the M40 northbound (320 pcus) and A43 northbound (249 pcus) due to congestion on the A34 eastbound approach to M40 Junction 9 preventing traffic from reaching these routes in the preceding period. The A43 northbound PASSQ is exacerbated by the congestion issues at M40 Junction 10 and Baynard's Green.

2.28 On the right hand-side, **Figure 4** shows that with the development and embedded highway works in place, the PASSQ on the M40 northbound increases (366 pcus) as more traffic attempts to use this route due to the improved performance of M40 Junction 10, especially for routes north along the A43. **Figure 4** shows that on the A43 north of Baynard's Green roundabout, the PASSQ effect is reduced to 92 pcus due to the capacity improvements at M40 Junction 10 and Baynard's Green due to the embedded highway works.

Flow difference analysis

2.29 The 2031 evening peak demand flow difference plot for the highway network in the vicinity of M40 Junction 9 is provided at **Appendix B**, and an extract is provided at **Figure 5** below.

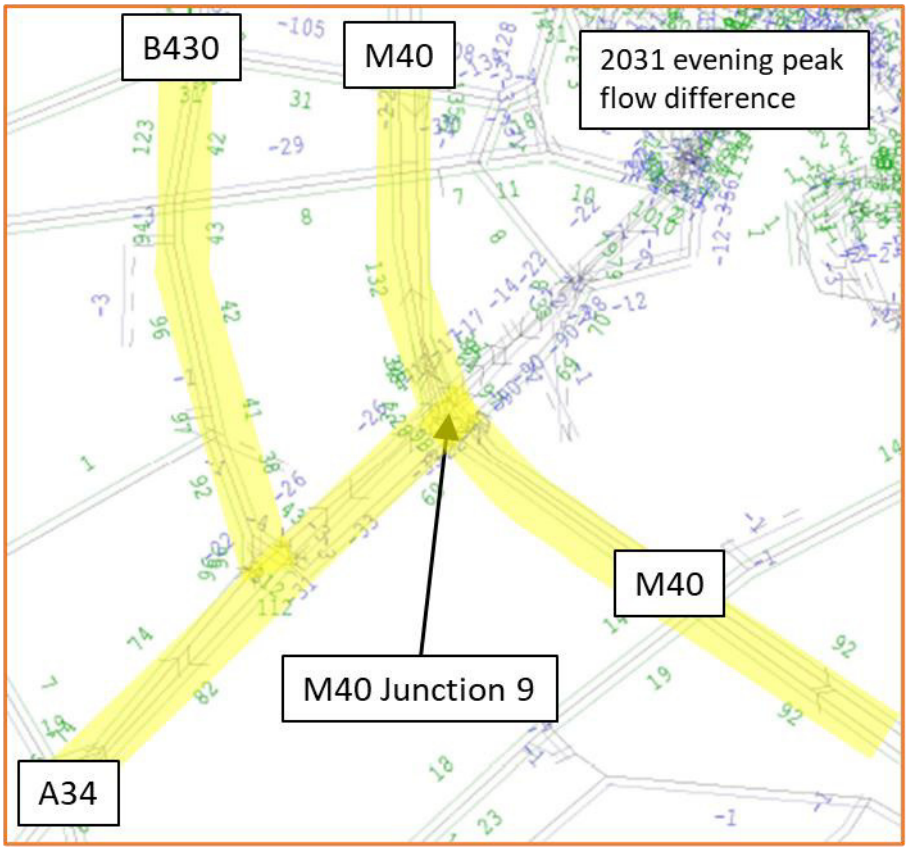


Figure 5: 2031 evening peak flow difference plot (pcus) (2031 'do-something' minus 2031 reference case)

2.30 **Figure 5** shows that in 2031 with the development and embedded highway mitigation in place, there would be a flow increase northbound on the B430 of over 100 pcus. The proposed development would generate very few light vehicle arrivals in the evening peak hour, and hence this flow is almost entirely made up of background traffic reassigning away from the A34 on approach to M40 Junction 9 due to the capacity constraint on this approach, demonstrated at **Figures 3 and 4**.

2.31 **Figure 5** also shows that there would be an increase of 132 pcus northbound on the M40. This increase is largely due to HGVs travelling towards the Proposed Development. Analysis of the flow differences across the wider area shows background traffic between the Oxford area and Buckinghamshire reassigning away from local routes through, and to the southeast, of Bicester, and now using the A43 and A421. **Figure 5** demonstrates that rather than travelling to M40 Junction 10, the A43 and the A421 via M40 Junction 9 and the M40, some of this background traffic is reassigning due to the above-described capacity constraint and travelling to M40 Junction 10 via the B430 and through Weston-on-the Green and Middleton Stoney.

2.32 The HGV routeing strategy for the Proposed Development requires that all HGVs arriving and departing OxSRFI are to be routed via the proposed B430 Ardley Bypass and M40 Junction 10. At M40 Junction 10, HGVs can then travel north or south on the M40 and northeast on the A43 from where there is access to the B4100 to Bicester. HGVs will not be permitted to use the B430 south of the OxSRFI. The HGV routing strategy would be enforced through a combination of a physical restriction at the Principal Access to prevent HGVs departing the site from being able

to travel south on the B430, paired with a signage strategy and enforcement methodology, based on Automatic Number Plate Recognition (ANPR) cameras to deter HGVs from arriving to the site from the south along the B430. A reduction in the evening peak hour delay on the A34 approach to M40 Junction 9 would therefore also support the HGV routing strategy for arrivals from the A34.

Summary

2.33 In the 2031 evening peak hour, there is congestion on the A34 eastbound approach to M40 Junction 9, preventing traffic from reaching the M40 northbound. Consequently, some background traffic on the A34 wishing to travel north is forecast to reassign away from the SRN and uses the B430, through Western-on-the-Green and Middleton Stoney towards M40 Junction 10.

2.34 Whilst residual impacts due to this reassignment would not negate the positive effects of the MSRR and HPLR in reducing overall traffic volumes in Middleton Stoney, it would be beneficial to keep this traffic on the SRN, thereby minimising traffic flow increases on the B430. Reducing congestion on the A34 approach to M40 Junction 9 in the evening peak hour would support the HGV routeing strategy.

2.35 Therefore, a mitigation scheme targeted on the A34 approach to M40 Junction 9 has been considered, as reported in Section 3 of this technical note.

3.0 PROPOSED MITIGATION OPTIONS

Existing arrangement

3.1 On approach to M40 Junction 9, the A34 has three lanes for a distance of 310m from the stopline at the gyratory. The A34 flares to four lanes for a distance of 155m, with the two nearside lanes facilitating the left-turn movement to the M40 northbound and the off-side two lanes allowing entry onto the gyratory for traffic to the A41 and the M40 southbound. The existing A34 approach is shown on **Figure 6** below.

Figure 6: existing A34 approach to M40 Junction 9

Sustainable transport interventions

3.2 The reassignment of background traffic from the A34 to the B430 has been shown to be caused by capacity constraints at the A34 approach to M40 Junction 9. These are longer distance trips through the network and hence, in this case there is no realistic opportunity to provide mitigation in the form of improved pedestrian, cycling, or public transport measures.

Segregated left-turn lane

3.3 To improve the performance of the A34 approach to M40 Junction 9 and eliminate the effect of the PASSQ reported in Section 2 of this technical note, the potential to provide a segregated left-turn lane has been investigated. Paragraph 6.1.7 of CD 116 of the Design Manual for Roads and Bridges[3] states that "*Where flows taking the first exit are greater than 1,500 vehicles per hour, alternative junction forms or methods of junction control should be used*".

[3]DMRB, CD 116 – Geometric Design of Roundabouts Revision 2, April 2020.

3.4 In the evening peak hour for the 2031 'do something' scenario, the demand flow for the left-turn movement from the A34 to the M40 northbound is 2,655 pcus. This demand flows is materially above the stipulated threshold for a segregated left-turn lane and hence this option was discounted.

Carriageway widening

3.5 To overcome the capacity issue of the A34 a carriageway widening scheme has been considered. The scheme would provide a third left-turn lane from the A34 to M40 northbound. This would be an additional flared entry lane circa. 60m long with a lane merge on the exit. The proposals include for provision of a splitter island on the entry to the gyratory to help differentiate turning movements, foster good lane discipline, and safely house traffic signal poles and heads.

3.6 The improvement scheme at M40 Junction 9 is shown at **drawing OxSRFI-BWB-GEN-XX-SK-CH-SK053-S1-P02**. An extract is shown on **Figure 7** below.

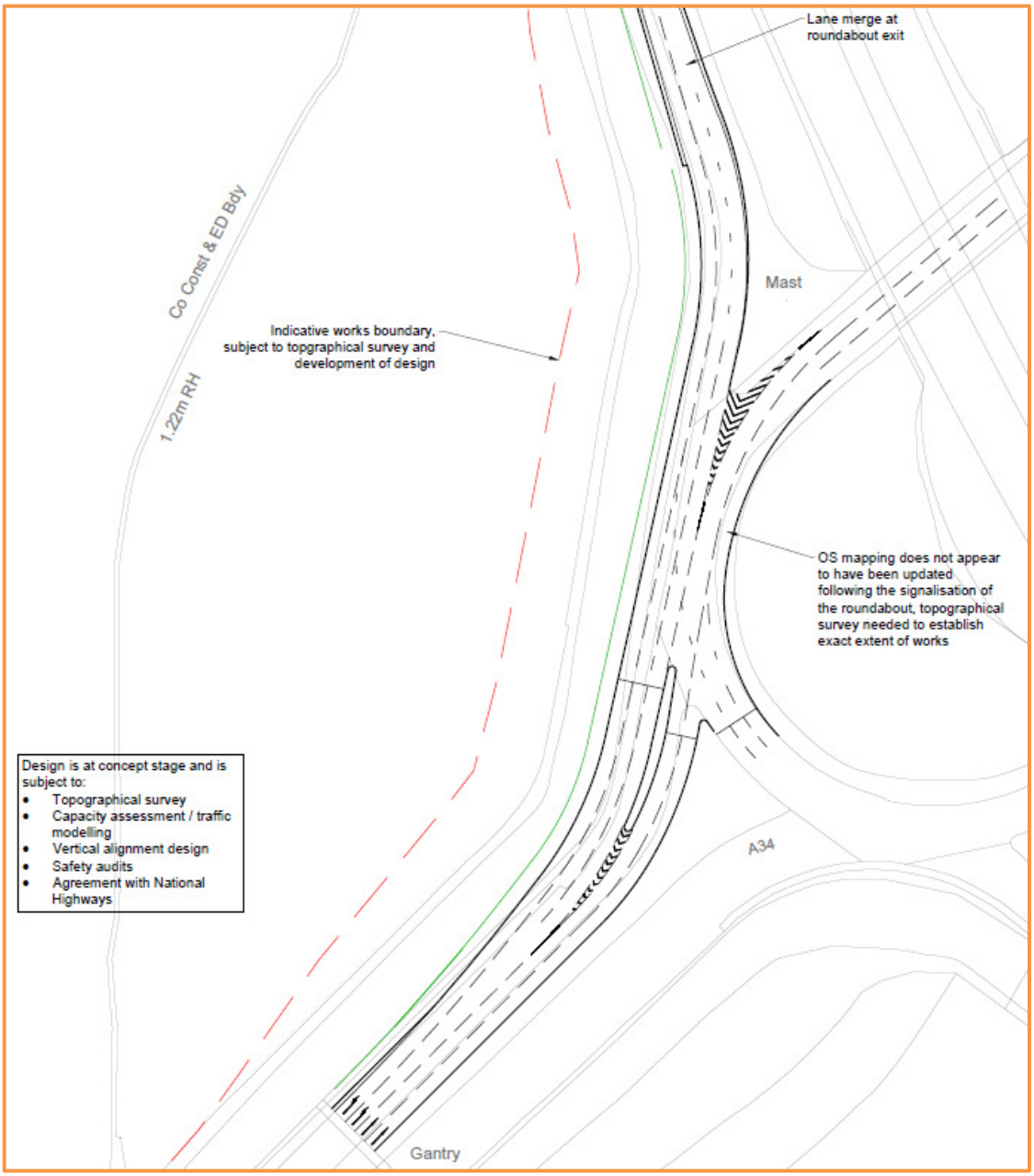


Figure 7: proposed M40 Junction 9 improvement scheme

Junction 9 LinSig model

3.7 In 2022 a full planning application[4] for the erection of a new combined research, development and production facility comprising Class B2 floorspace and ancillary office floorspace with associated infrastructure was made by Tritax Symmetry for a site north of the A41, east of M40 Junction 9. As part of the Transport Assessment work undertaken to support the planning application, Vectos prepared a LinSig model of M40 Junction 9. This LinSig model was calibrated and validated using survey data and on-site measurements of saturation flows, green-times, as detailed in Appendix R of the Transport Assessment prepared by Vectos to support that planning application.

3.8 ADC Infrastructure have reviewed the Vectos LinSig model and, following a site visit on 20 September 2022, consider the model fit for purpose as there have been no material changes to the junction or surrounding network that would require model changes. This LinSig model is therefore deemed to be an appropriate tool for undertaking detailed testing of the proposed M40 Junction 9 improvement scheme.

LinSig modelling results

3.9 The Vectos LinSig model of the existing junction arrangement has been recreated and run with traffic flows extracted from the BTM for the 2031 reference case and 2031 'do something' (no M40 Junction 9 mitigation) scenarios[5]. The traffic flows are provided at **Appendix C**. Notably, the evening peak hour turning flows for the 2031 reference case and 'do something' scenarios show that a proportion of the left-turn flow from the A34 to the M40 northbound (10%-12%) uses the offside lanes and the circulating carriageway to avoid the delay on the A34 approach. This further confirms the detrimental effect of the capacity constraint on the A34 approach.

3.10 The cycle times from the Vectos model have been retained and only minor changes to the green times have been made to account for variance in the traffic data. The LinSig model results for the existing junction with the 2031 reference case and 2031 'do something' (no M40 Junction 9 mitigation) traffic flow scenarios are provided in **Appendix D** and summarised in the table below.

M40 Junction 9 performance in 2031						
Metric	RC3		'do something' – no M40J9 mitigation		'do something' - with M40J9 mitigation	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
PRC	-9.6%	-17.4%	-11.4%	-16.4%	-10.8%	-8.8%
Total delay (pcuHr)	75.27	165.52	82.58	150.04	79.50	75.95
A34 DoS	91.3%	105.7%	92.4%	104.8%	81.1%	90.7%
A34 MMQ (pcu)	22.8	70.8	24.0	65.3	11.5	17.4
M40 SB MMQ (pcu)	28.0	28.4	34.6	26.8	33.4	27.2
A41 MMQ (pcu)	7.2	6.1	6.0	6.4	6.0	6.2
M40 NB MMQ (pcu)	4.7	9.1	4.7	9.1	4.6	10.5

* MMQ – mean maximum queue
* DoS – degree of saturation

[4]Planning reference 22/01144/F.
[5]Appendix R of the Vectos TA notes a concern with the BTM right-turn flow from the A34 to the M40 southbound in the morning peak hour. Vectos adjusted this flow in their analysis to better represent their 2021 classified turning count data. For consistency, this adjustment has also been applied to the RC3 and DS5 morning peak hour scenarios.

3.11 This proposed M40 Junction 9 mitigation scheme was coded into the BTM and traffic flows extracted for the 2031 'do something' (with M40 Junction 9 mitigation) scenario (**Appendix C**). The LinSig model has been modified to represent the proposed improvement scheme and modelled with the 2031 'do something' (with M40 Junction 9 mitigation) flows. The LinSig model results for the proposed improvement scheme are provided in **Appendix E** and also summarised in the table above.

3.12 As shown in the table above, the PRC is negative in all modelled scenarios indicating that one or more links are operating above 90% saturated. Comparing the 2031 reference case and 'do something' (no M40 Junction 9 mitigation) scenarios shows that there is no material change in performance at the junction in the morning peak hour, and a slight improvement in the evening peak hour in the 2031 'do something' (no M40 Junction 9 mitigation) scenario due to traffic reassigning away from the A34 eastbound approach, as described in the previous section of this report.

3.13 With the proposed M40 Junction 9 improvement in place, there is no material change in the PRC performance of the junction in the morning peak hour, though the degree of saturation and MMQ on the A34 approach markedly improves. In the evening peak hour, the overall performance of the junction is improved when compared to the other scenarios in terms of both PRC and total delay. Importantly, there are material improvements to the degree of saturation and MMQ on the A34 approach, even accounting for the increased flow now turning left onto the M40 northbound.

Junction performance - BTM

Delay plot analysis

3.14 Delay plots for the 2031 'do something' (with M40 Junction 9) scenario are provided at **Appendix F** and show that in the morning peak hour there would be no material change in delay across the network when compared to the 2031 'do something' (without M40 Junction 9) scenario. For the evening peak hour, **Figure 8** below compares the 2031 'do something' with and without the M40 Junction 9 improvement and shows that the 99 second delay on the A34 approach to M40 Junction 9 would reduce to 3 seconds with the improvement in place.

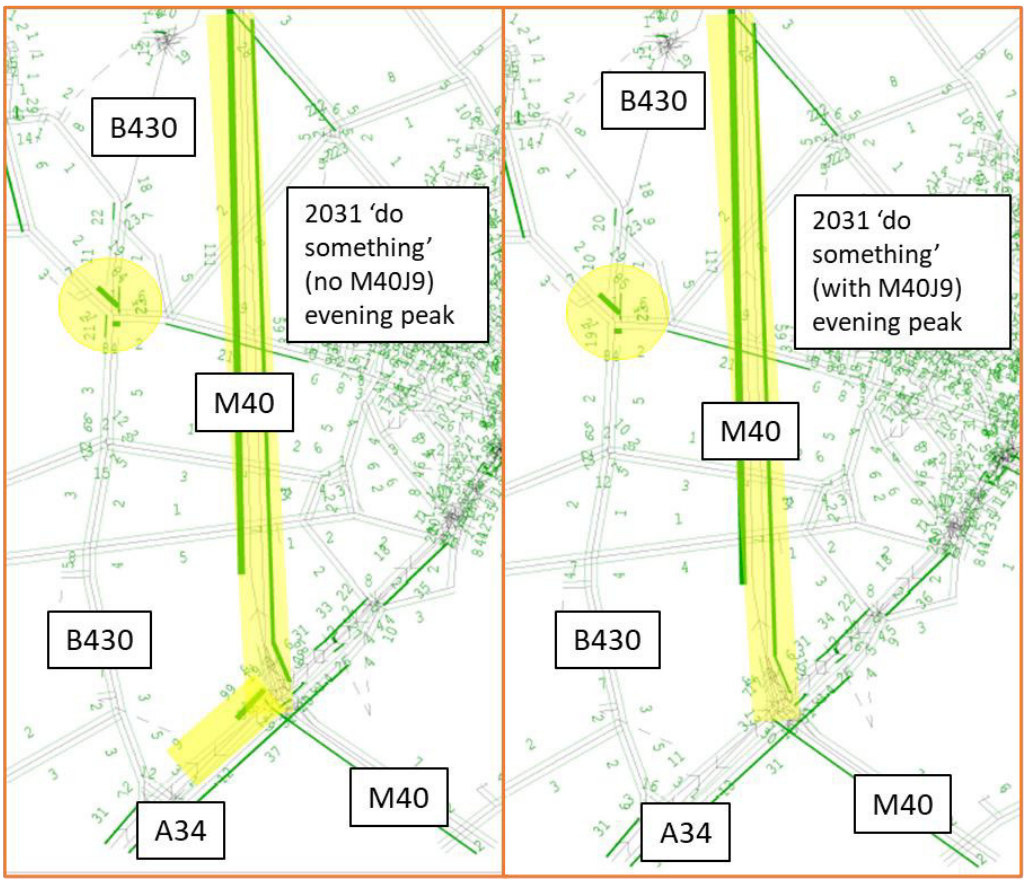


Figure 8: delay plots from the evening peak 2031 'do something' without M40J9 improvement (on the left) and with M40J9 improvement on the right (yellow highlight added)

3.15 The plots in **Appendix F** shows that there would be no other material changes to delay across the wider network when compared to the 2031 'do something' (no M40 Junction 9) scenario.

PASSQ analysis

3.16 PASSQ plots for the 2031 'do something' (with M40 Junction 9) scenario are provided at **Appendix F.**

3.17 In the morning peak hour the plots at **Appendix F** show that there would be no material change to the PASSQs across the network when compared to the 2031 'do something' (without M40 Junction 9) scenario.

3.18 **Figure 9** compares the 2031 'do something' with and without the M40 Junction 9 improvement for the evening peak hour and shows that PASSQ on the M40 northbound is completely eliminated due to the proposed improvement to the A34 eastbound approach.

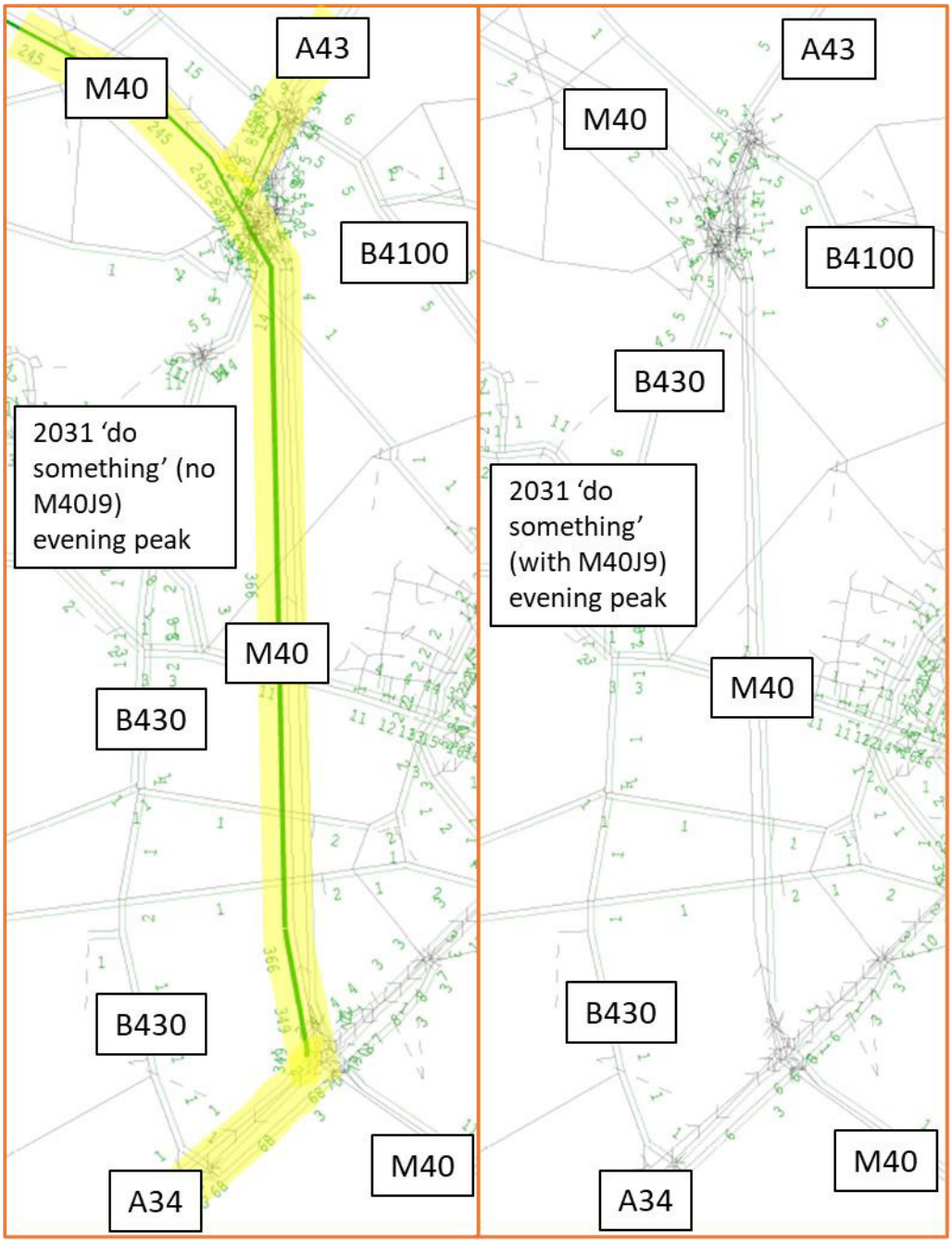


Figure 9: PASSQ plots from the evening peak 2031 'do something' without M40J9 improvement (on the left) and with M40J9 improvement (on the right) scenarios (yellow highlight added)

Flow difference analysis

3.19 The 2031 'do something' (with M40 Junction 9) scenario actual flow difference plots for the morning and evening peak hours are also provided at **Appendix F**.

3.20 The flow difference plot for the morning peak hour shows that there would be no material change due to the proposed improvement scheme when compared to the 2031 'do something' (without M40 Junction 9) scenario show at **Figure 5**.

3.21 However, in the evening peak hour, **Figure 10** shows that there is a material reduction of circa 55 pcus on the B430 northbound compared to the 2031 reference case indicating that the proposed improvement at M40 Junction 9 is eliminating the reassignment effect shown on **Figure 5**. Further, the proposed improvement results in additional traffic reassigning away from

the B430 northbound to the M40 northbound via the A34, indicating that there are already vehicles using the B430 to travel north, avoiding M40 Junction 9, in the 2031 reference case.

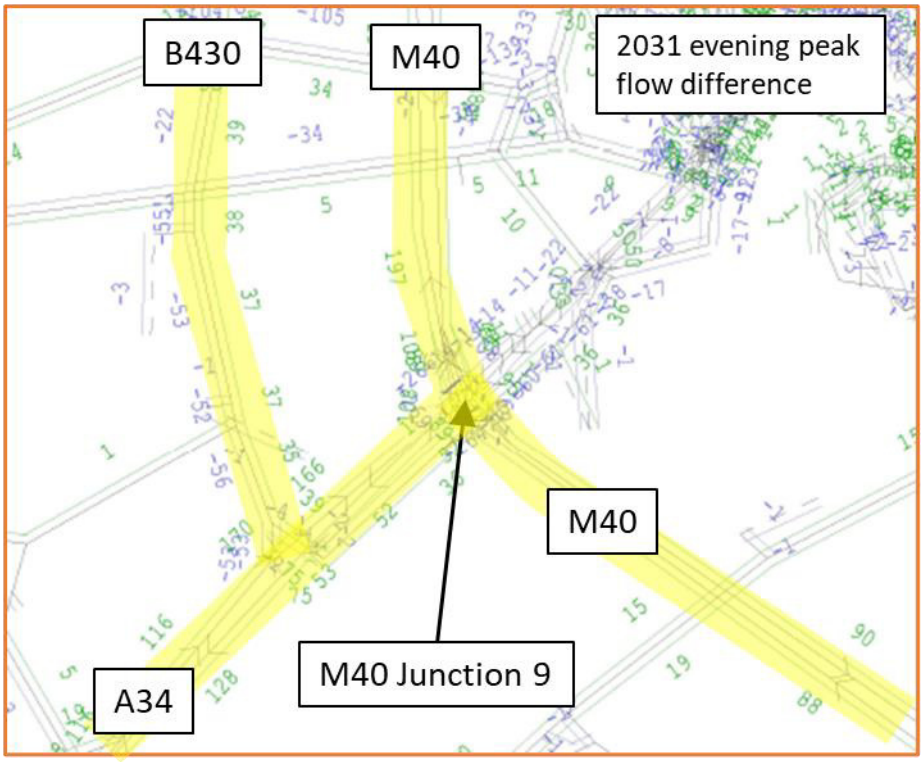


Figure 10: 2031 'do something' (with M40 Junction 9) evening peak flow difference plot (pcus) compared to Reference Case (do something – reference case) (yellow highlight added)

4.0 SUMMARY AND CONCLUSION

4.1 Analysis of the 2031 reference case and 2031 'do something' BTM scenarios show that, with the Proposed Development operational and the embedded highway works in place in 2031, significant volumes of background traffic, held at bottlenecks at Baynard's Green Roundabout and Cherwell Roundabout in the 2031 reference case, are released. As a consequence, some background traffic between the Buckinghamshire and Oxford regions reassigns away from routes through and to the southeast of Bicester, to instead use higher category roads including the A421/A43/M40/A34. This is a positive effect of the embedded highway works.

4.2 The BTM indicates that there are no severe residual impacts at M40 Junction 9 and the B430 due to the reassignment affects in the morning peak hour and hence this can be viewed as a positive effect of the embedded highway works, as longer distance trips would be made on higher category roads away from minor rural roads, villages, and urban areas.

4.3 In the 2031 evening peak hour, there is congestion on the A34 eastbound approach to M40 Junction 9, preventing traffic from reaching the M40 northbound. Consequently, some background traffic on the A34 wishing to travel north reassigns away from the SRN and uses the B430, through Middleton Stoney and Weston-on-the-Green towards M40 Junction 10.

4.4 Whilst residual impacts due to this reassignment would not negate the positive effects of the MSRR and HPLR in reducing overall traffic volumes in Middleton Stoney, it would be beneficial to keep this traffic on the SRN thereby minimising traffic flow increases on the B430. Further, reducing congestion on the A34 approach to M40 Junction 9 in the evening peak hour would support the HGV routeing strategy. Therefore, a targeted mitigation scheme on the A34 approach to M40 Junction 9 has been considered.

4.5 To reduce congestion on the A34 approach to M40 Junction 9, a proposed improvement scheme which would provide a third left-turn lane between the A34 and the M40 has been designed. LinSig modelling demonstrates that the proposed improvement scheme would improve capacity and reduce queueing on the A34 approach to the junction.

4.6 The results of BTM modelling show that the proposed improvement would remove the delay on the A34 approach to M40 Junction 9 in the evening peak hour and therefore, the reassignment of traffic from the A34 to the B430 northbound would not occur.

4.7 Therefore, it is concluded that the proposed mitigation on the A34 approach to M40 Junction 9 would help facilitate the positive effects of the embedded highway works.

DRAWINGS

M40 J10

Cherwell Valley Services

Fewcott

Minor amendments to Cherwell roundabout

Ardley roundabout enlarged

Existing J10 northbound entry slip stopped up

Existing J10 northbound exit slip realigned

Existing J10 southbound entry slip realigned

Ardley

See inset for M40 J10

Quarry cottages lane stopped up over railway, replaced by bridleway

Ardley Road diverted over new bypass

Upper Heyford Airfield

B430 Ardley bypass and OxSRFI link road (Single 2+1)

Segregated left turn lane on exit to direct all HGVs to J10

Existing B430 stopped up south of Ardley, replaced with footway/cycleway/bridleway link

Principal OxSRFI access

Bridge over Chiltern Mainline

Roundabout on existing B430 (partially signalised)

Heyford Park works at Camp Road / Chilgrove Drive signalised junction (smaller scale scheme to be included in OxSRFI works if Heyford Park works do not proceed)

Existing road to Heyford Park stopped up, replaced by the Heyford Park Link Road

Heyford Park

B430

Secondary OxSRFI access (buses and cyclists only)

Junction closed and removed

Bucknell

Access to in-vessel composting facility

Heyford Park Link Road

Signal junctions with existing B430

No right turn from Middleton Stoney onto Relief Road

No left turn from Relief Road into Middleton Stoney

B4030

Bridleway underpass

Gagle brook crossing

M40

B4030

Village gateway

Middleton Road roundabout

Middleton Stoney

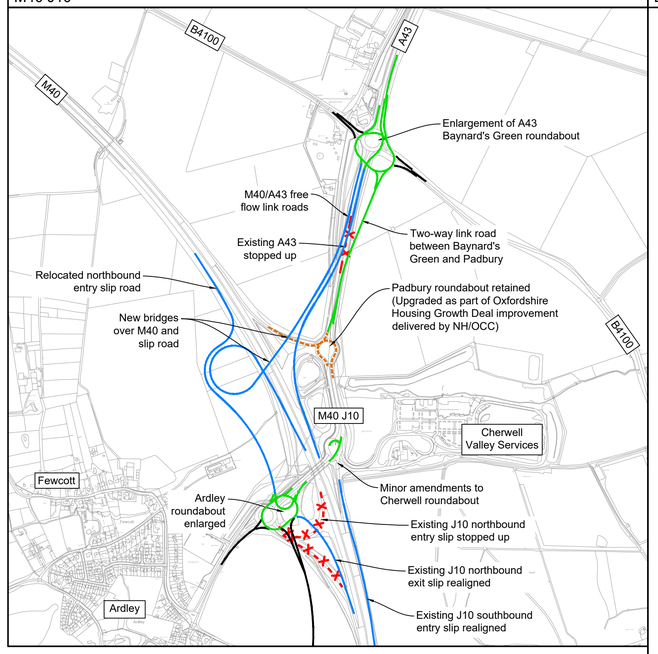
Potential for 7.5T environmental weight restriction in the east side of Middleton Stoney, subject to further review.

except for access

B4030

B430

M40 J10



Legend

- Upgraded / new motorway (National Highways)
- Upgraded / new all-purpose trunk road (National Highways)
- NH/OCC works as part of growth deal
- Upgraded / new local roads (OCC)
- Local road works by Heyford Park
- Private SRFI access roads
- Existing highway stopped up

GRID NORTH

0 250 500 750 1000

SCALE: METRES

Rev	Date	Details of issue / revision	Drw	Rev
P05	15.12.22	J10 amendments	SRH	SRH
P04	04.10.22	Updates following Stage 1 consultation	SRH	SRH
P03	30.03.22	Minor text amendment	SRH	SRH
P02	29.03.22	Updated following comments	SRH	SRH
P01	22.03.22	Preliminary Issue	SRH	SRH

Issues & Revisions

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Client

OXFORDSHIRE RAILFREIGHT LTD.

Project Title

OxSRFI
OXFORDSHIRE
STRATEGIC RAIL FREIGHT INTERCHANGE

Drawing Title

HIGHWAY WORKS OVERVIEW

Drawn:	S. Hilditch		Reviewed:	S. Hilditch	
BWB Ref:	NTH2479	Date:	22.03.22	Scale@A1:	1:10,000

Drawing Status

PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
OxSRFI-BWB-GEN-ZZ-SK-CH-SK041	S1	P05

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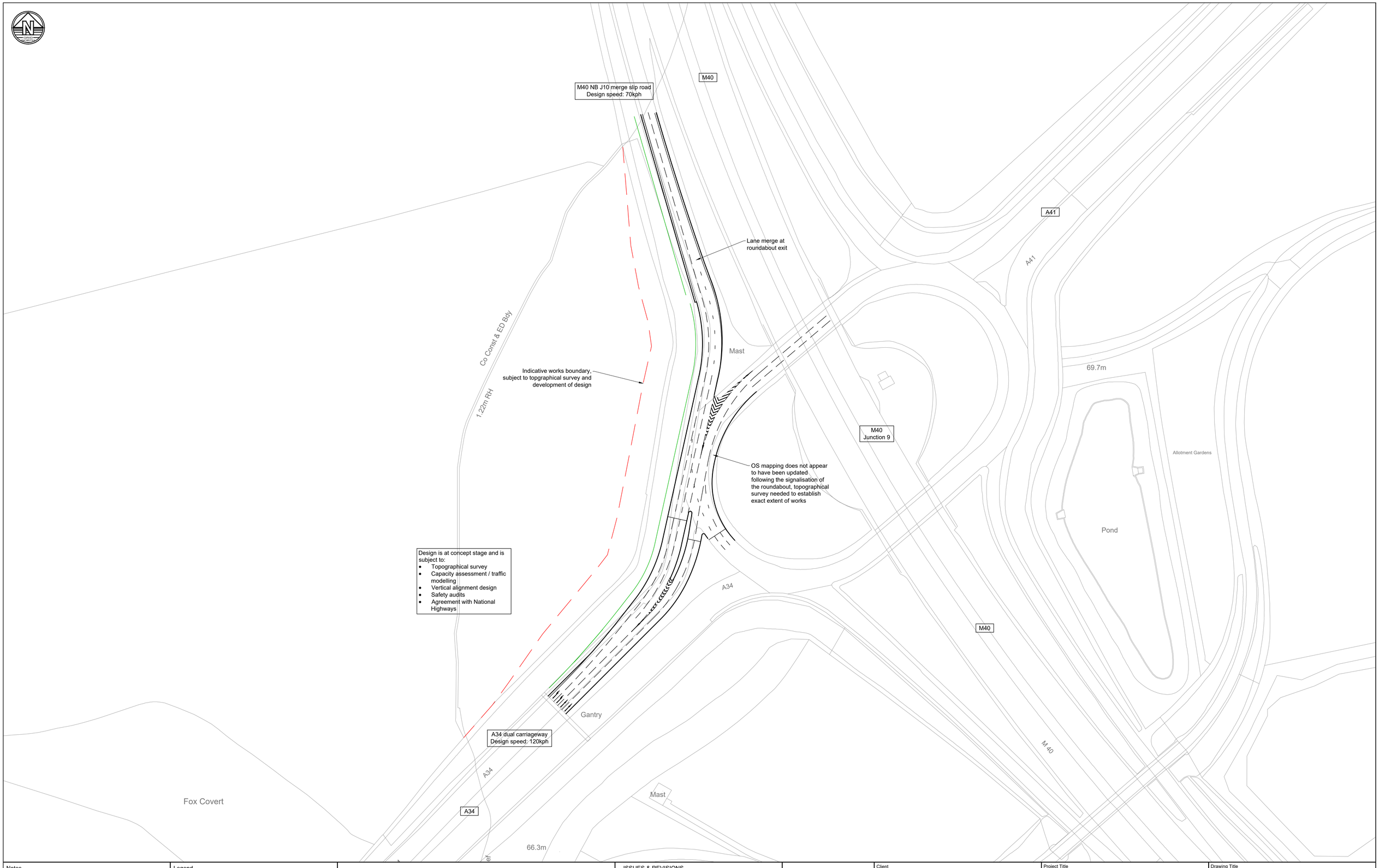

Notes	Legend
1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask. 2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications. 3. All dimensions in metres unless noted otherwise. All levels in metres unless noted otherwise. 4. Any discrepancies noted on site are to be reported to the engineer immediately.	

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ISSUES & REVISIONS

Rev	Date	Details of issue / revision	Drw	Rev
P01	25.10.22	Preliminary Issue	SRH	SRH
P02	05.01.22	Layout amended to 3 lanes from A34 to M40 NB	SRH	SRH

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Client
OXFORDSHIRE RAILFREIGHT LTD.

Project Title
OxSRFI OXFORDSHIRE STRATEGIC RAIL FREIGHT INTERCHANGE

Drawing Title
M40 JUNCTION 9 GENERAL ARRANGEMENT

Drawn:	S. Hilditch		Reviewed:	S. Hilditch	
BWB Ref:	NTH2479	Date:	25.10.22	Scale@A1:	1:1,000

Drawing Status
PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number
OxSRFI-BWB-GEN-XX-SK-CH-SK053

Status **S1** Rev **P02**

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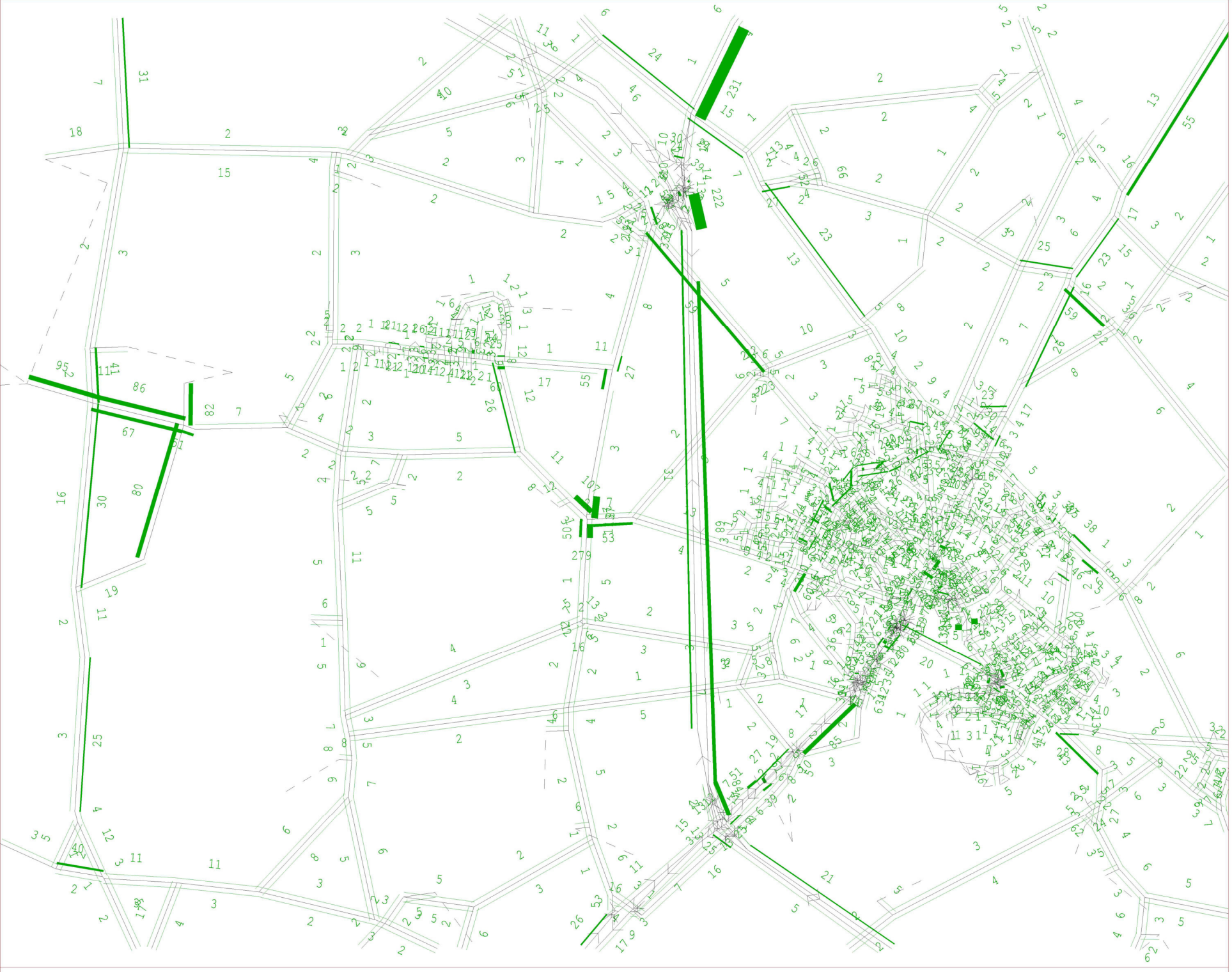
APPENDIX A

MORNING PEAK HOUR BTM PLOTS

MORNING PEAK HOUR REFERENCE CASE DELAY PLOTS



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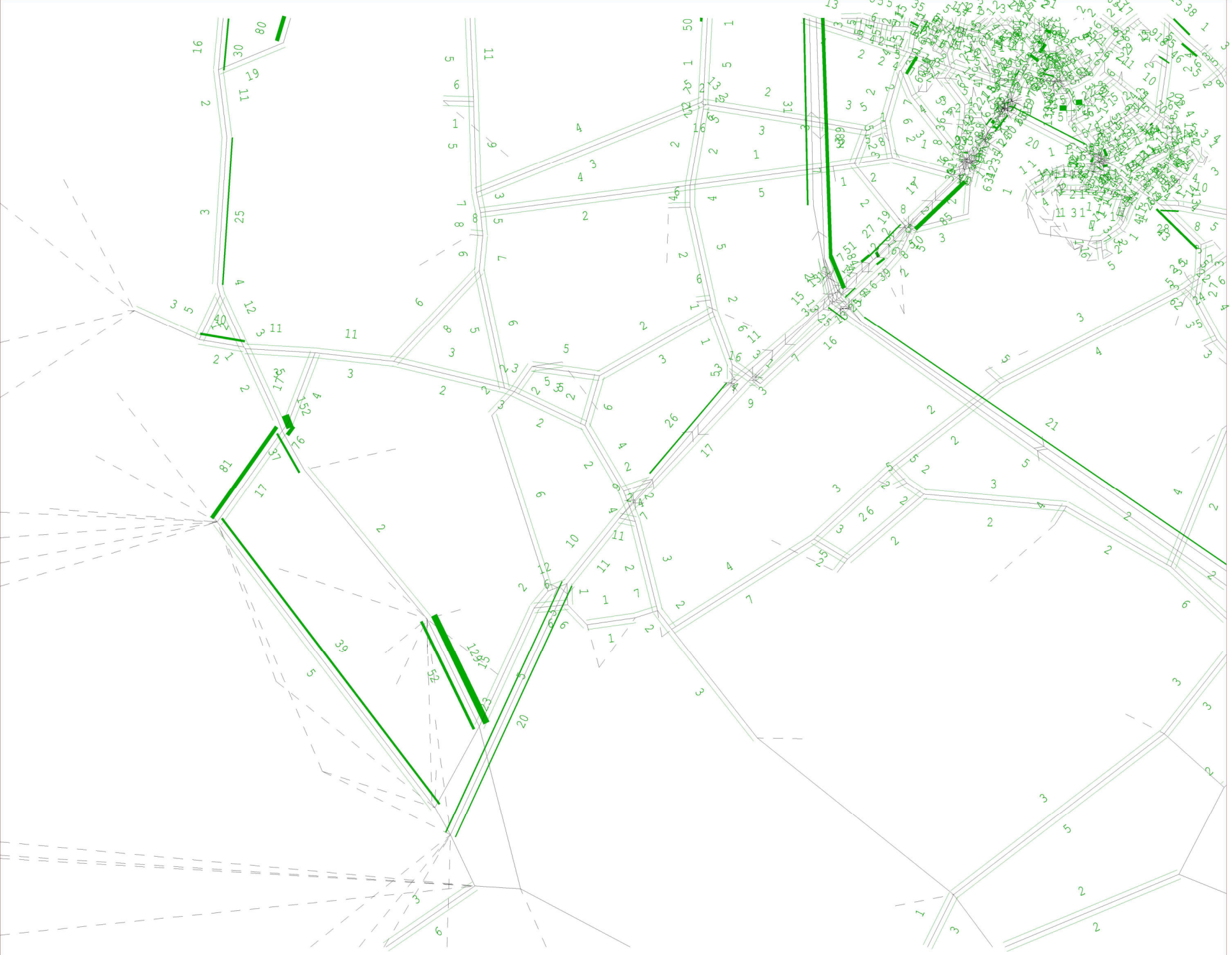
WHITE YOUNG

Bicester Network - 2031 OxSRFI Reference Case 3 AM Peak 30- 3-23



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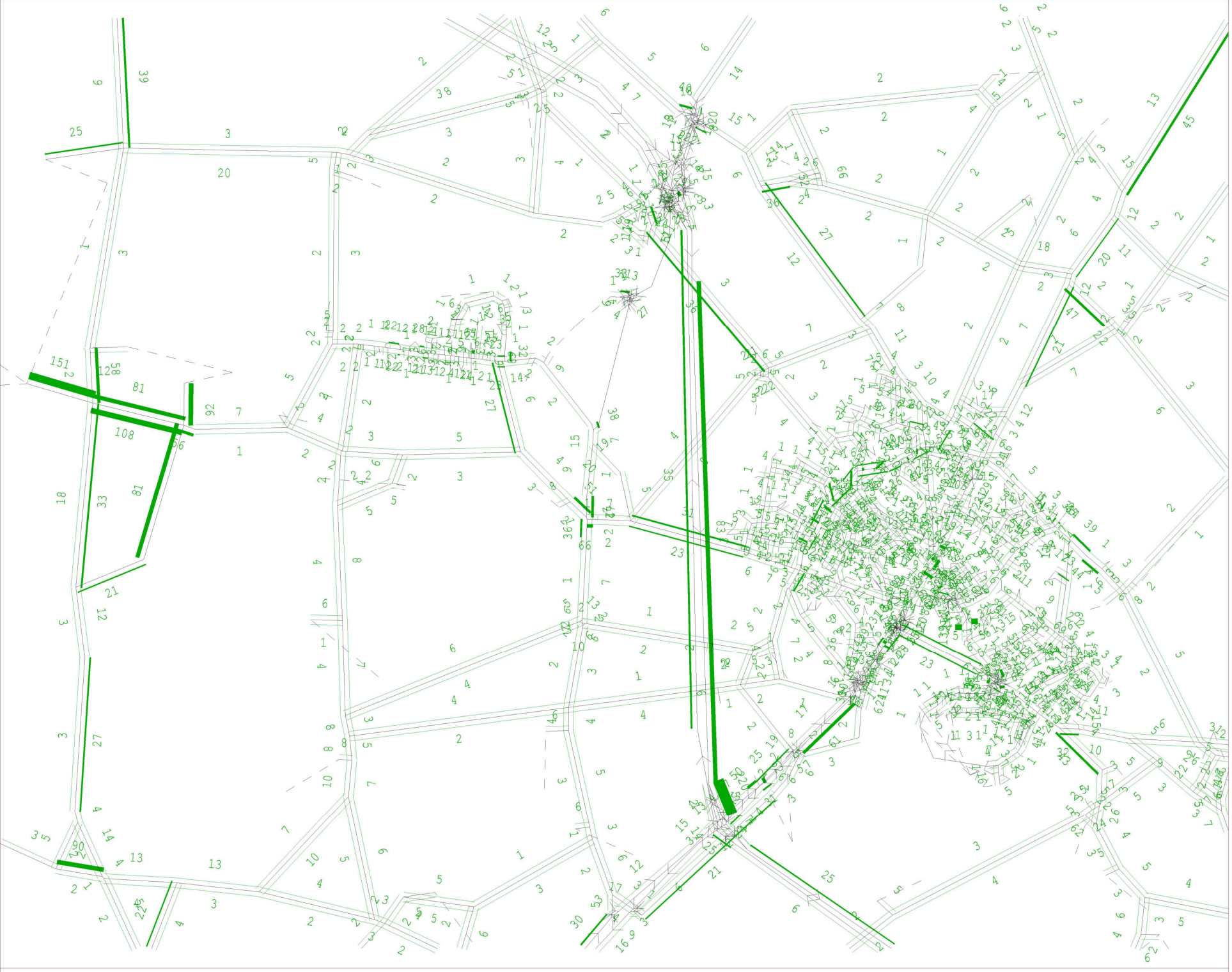
MORNING PEAK HOUR 'DO SOMETHING' DELAY PLOTS



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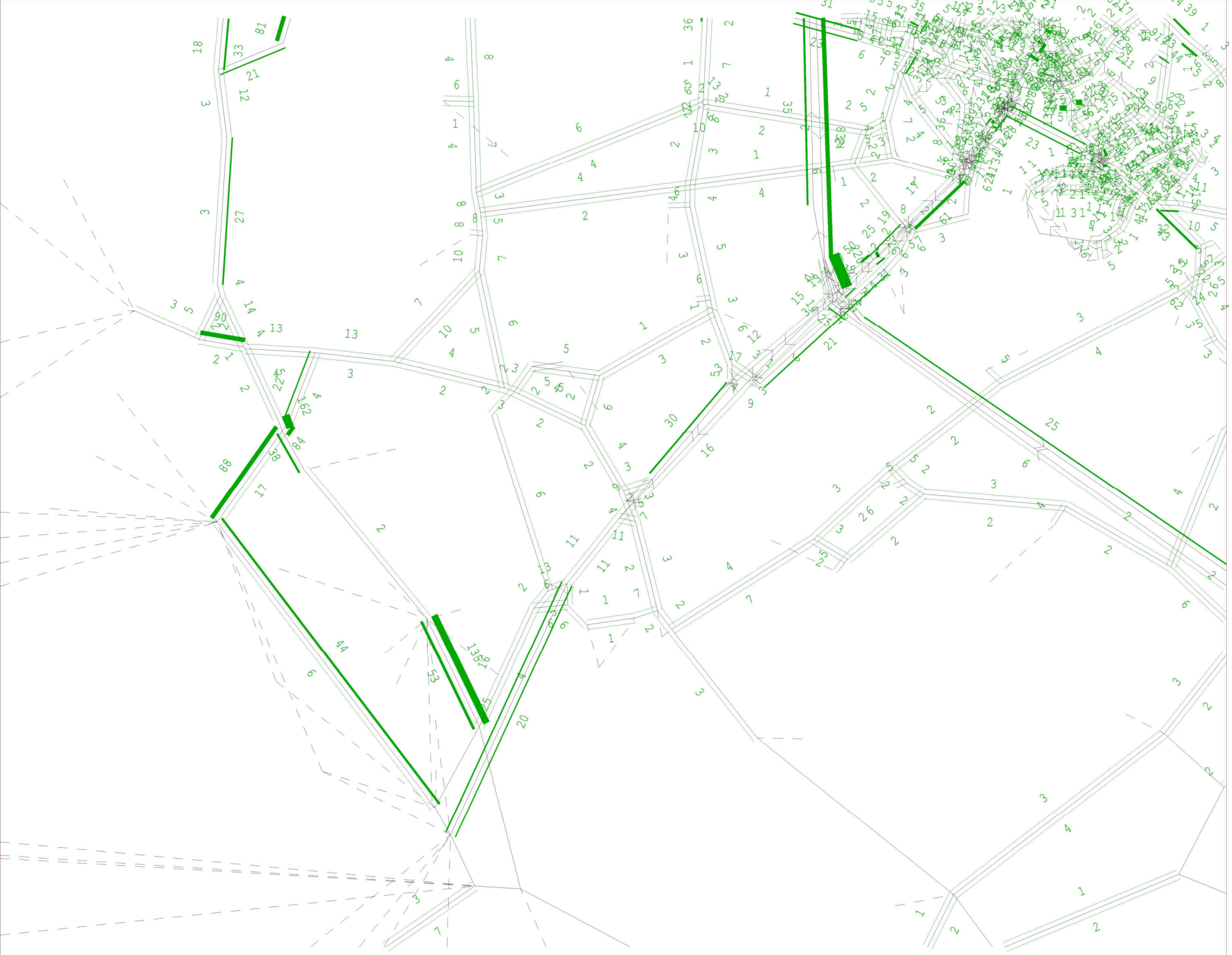

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MORNING PEAK HOUR REFERENCE CASE PASSQ PLOTS

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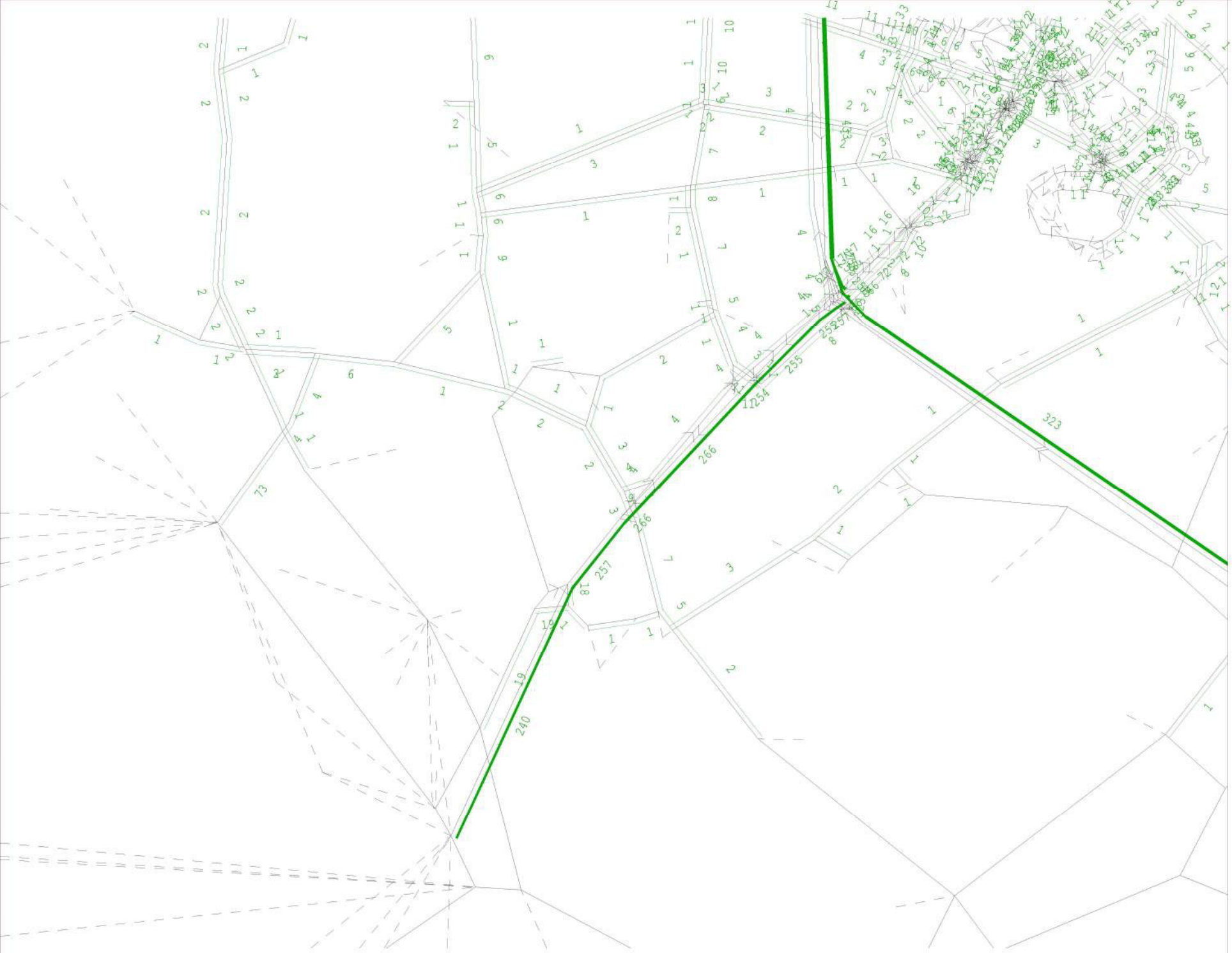

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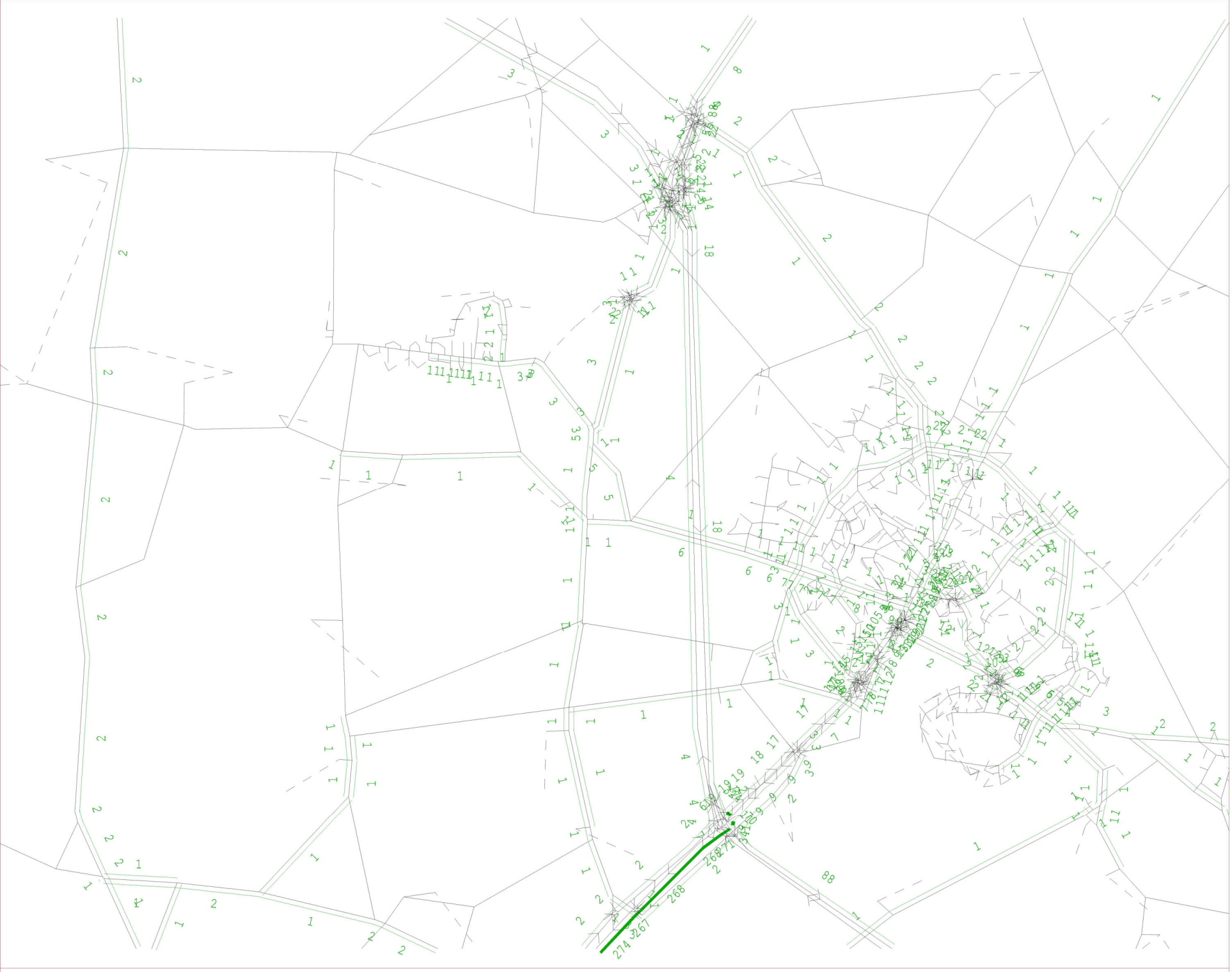

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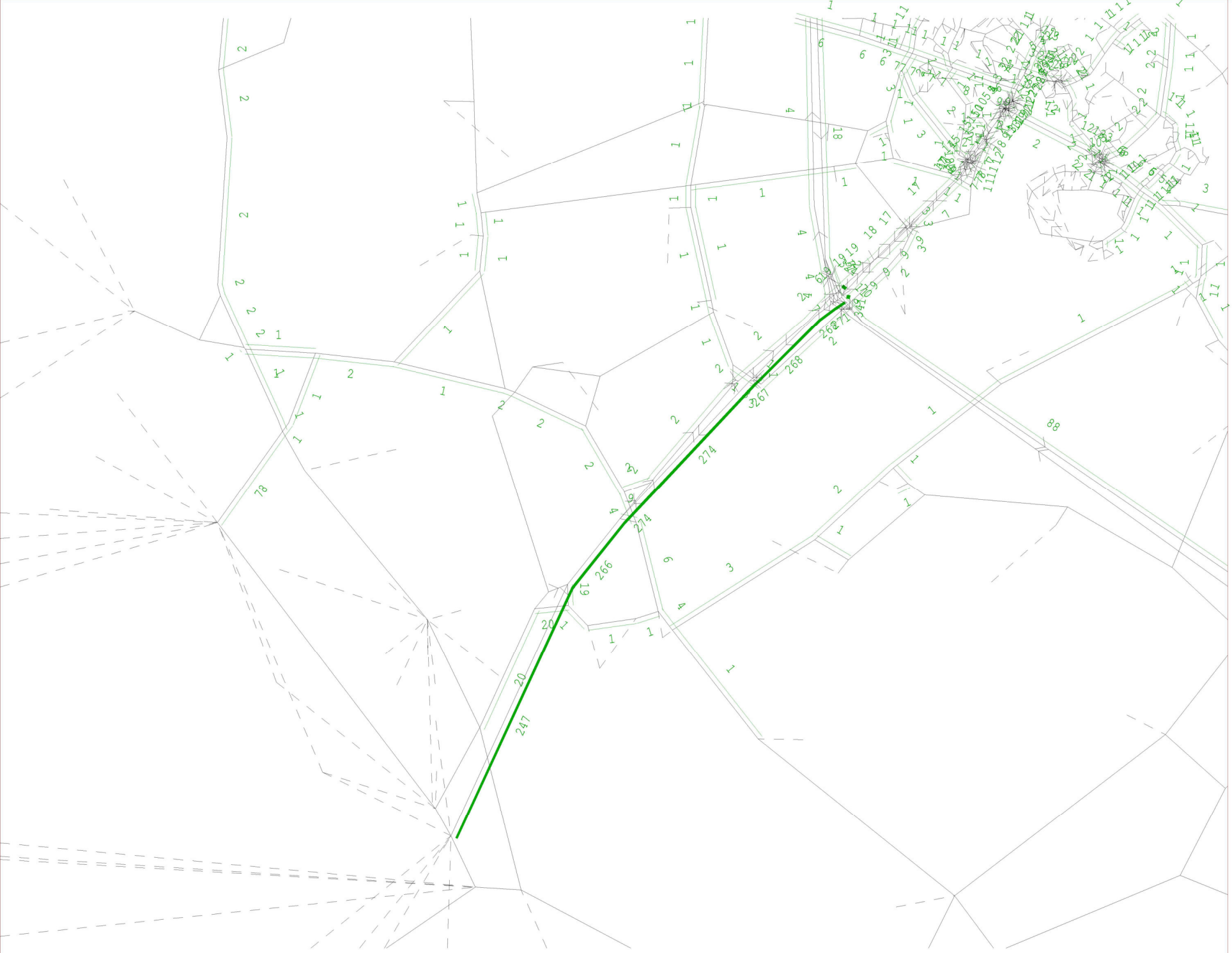

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PASSQ flows

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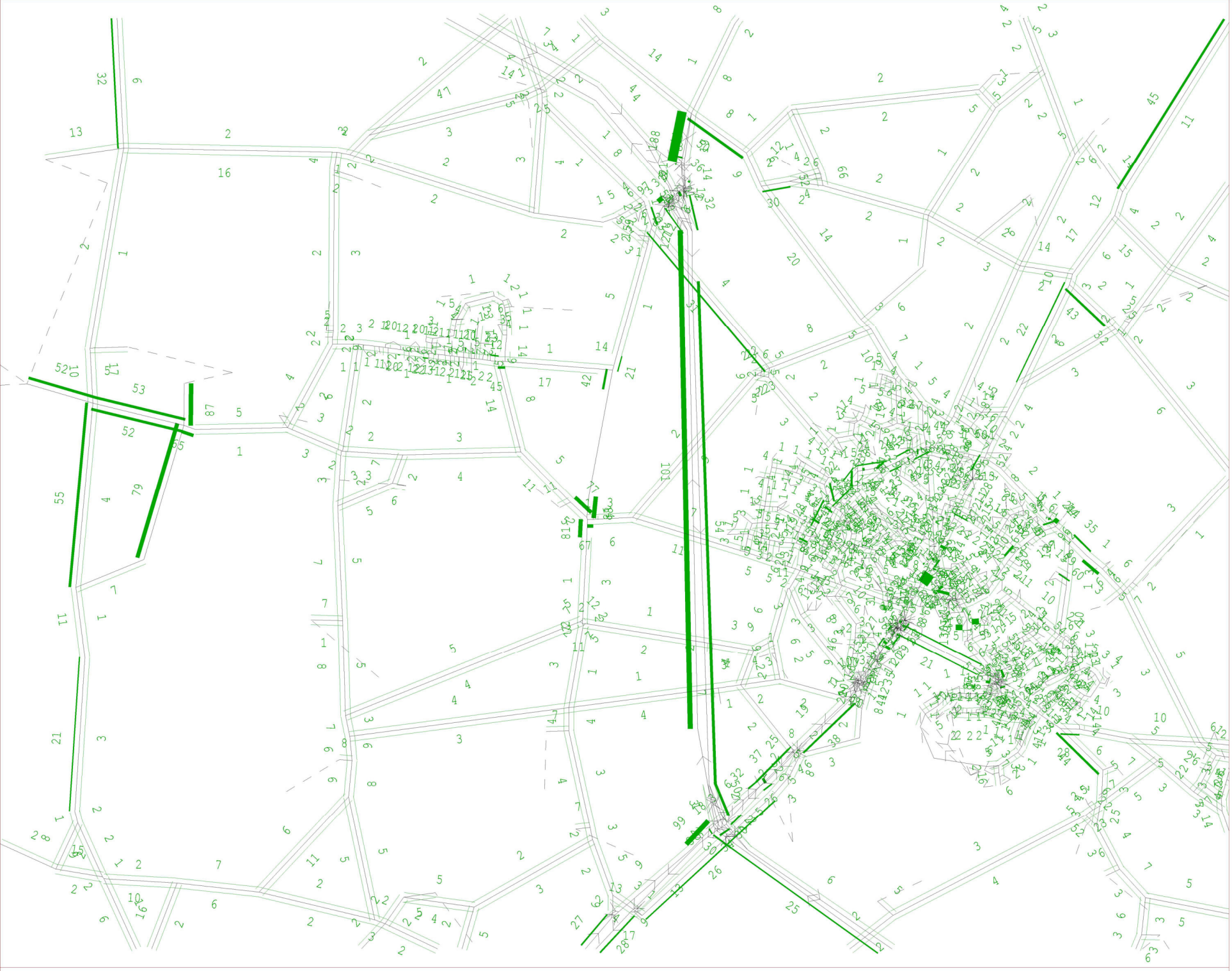
APPENDIX B

EVENING PEAK HOUR BTM PLOTS

EVENING PEAK HOUR REFERENCE CASE DELAY PLOTS



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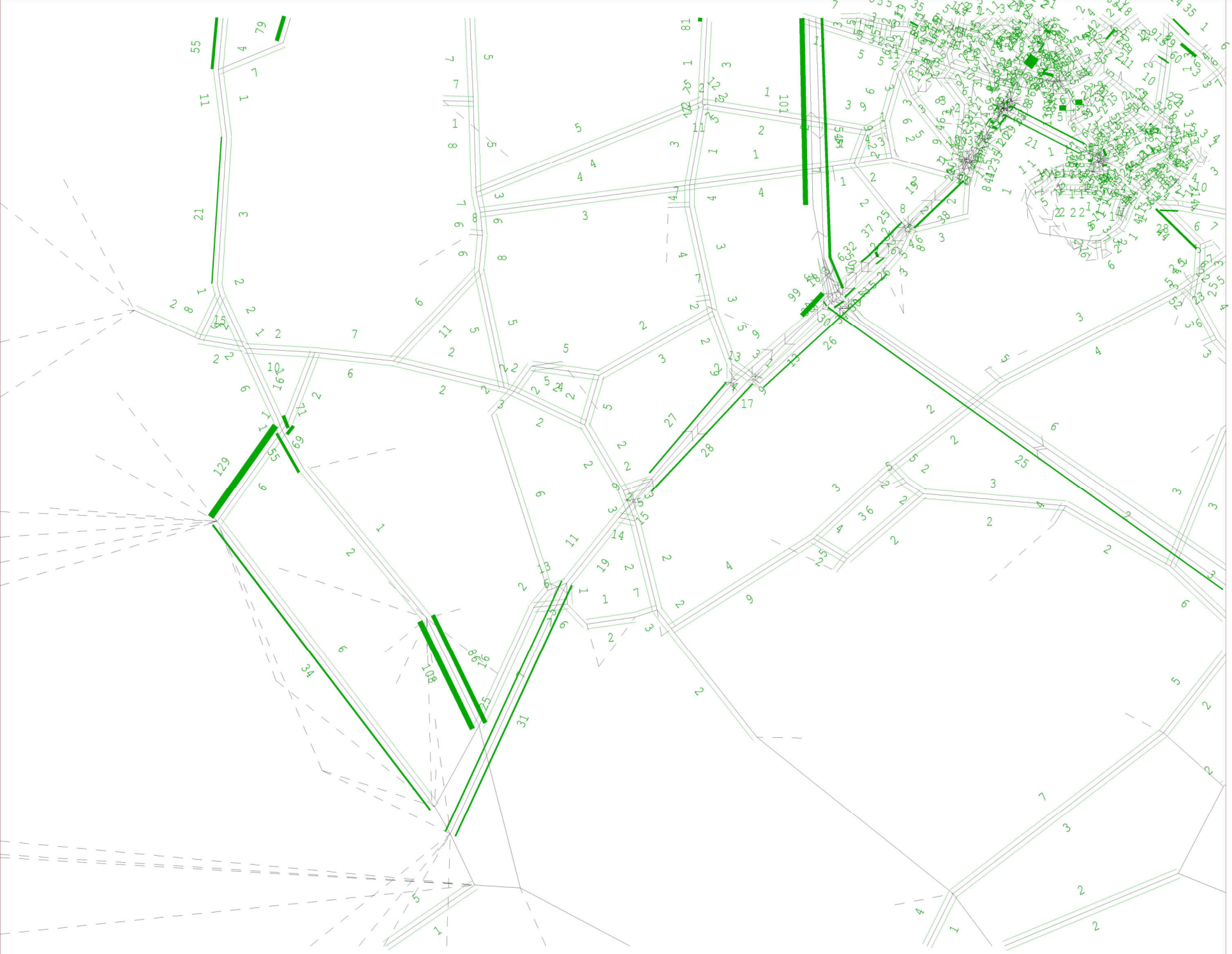

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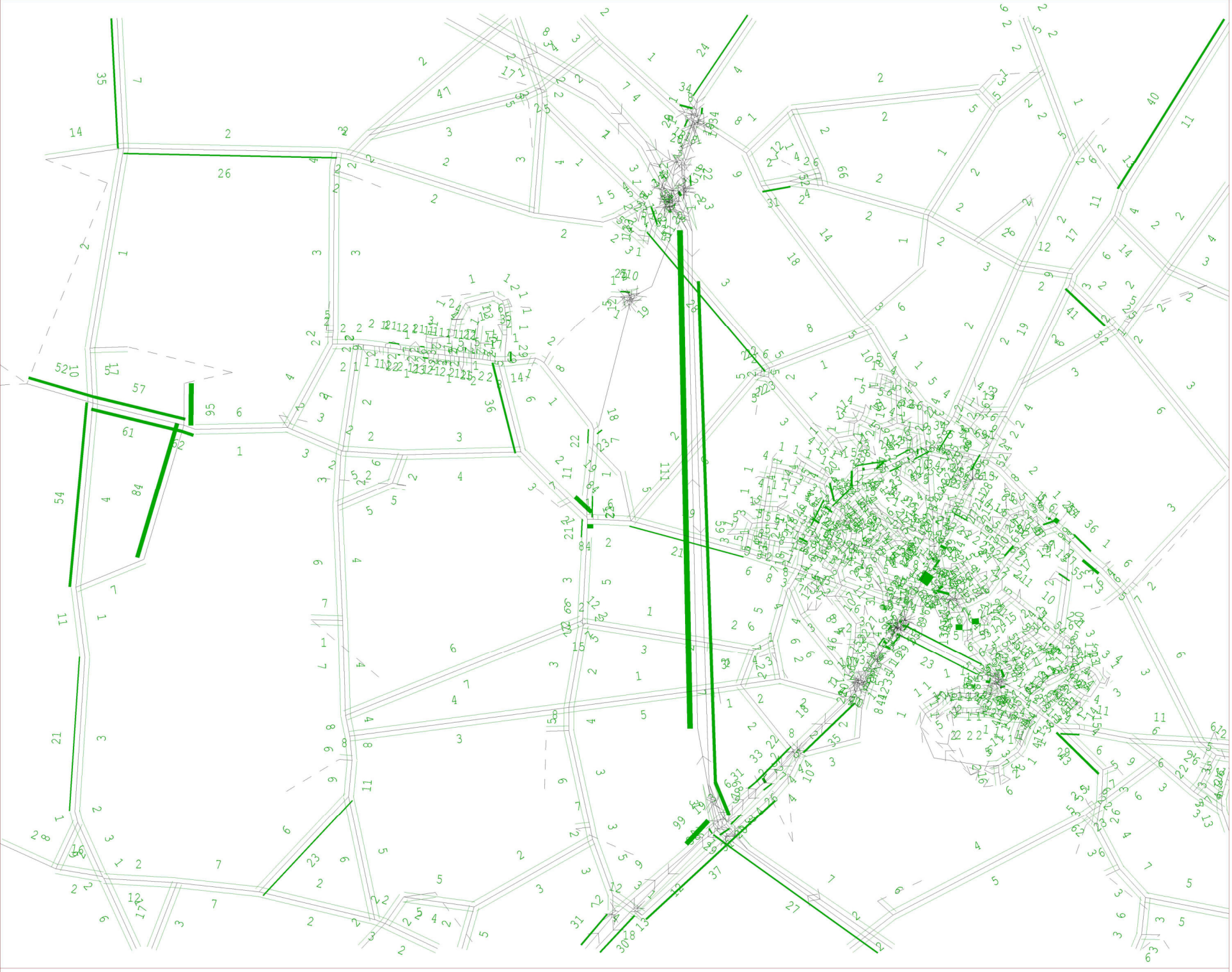

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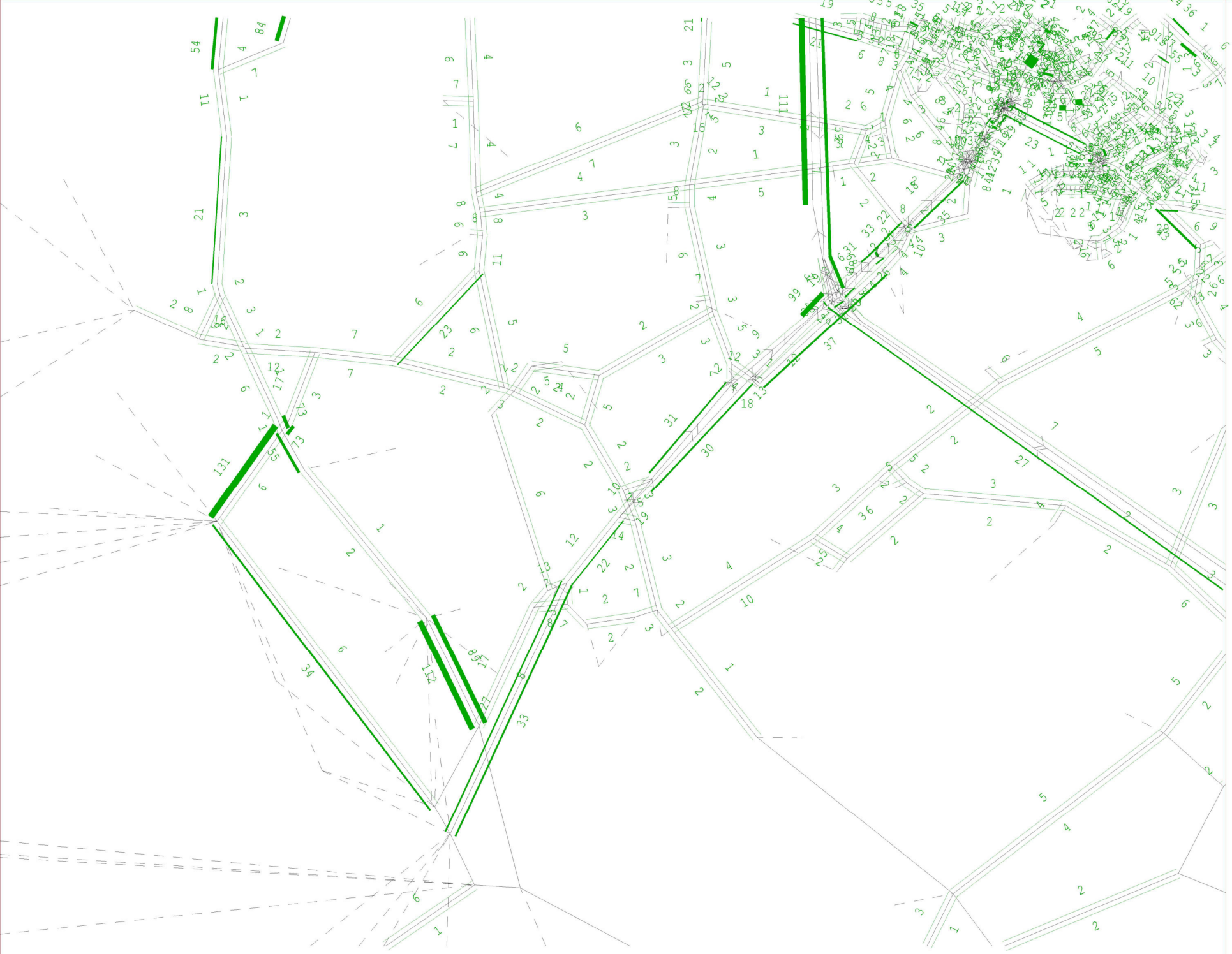

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EVENING PEAK HOUR REFERENCE CASE PASSQ PLOTS

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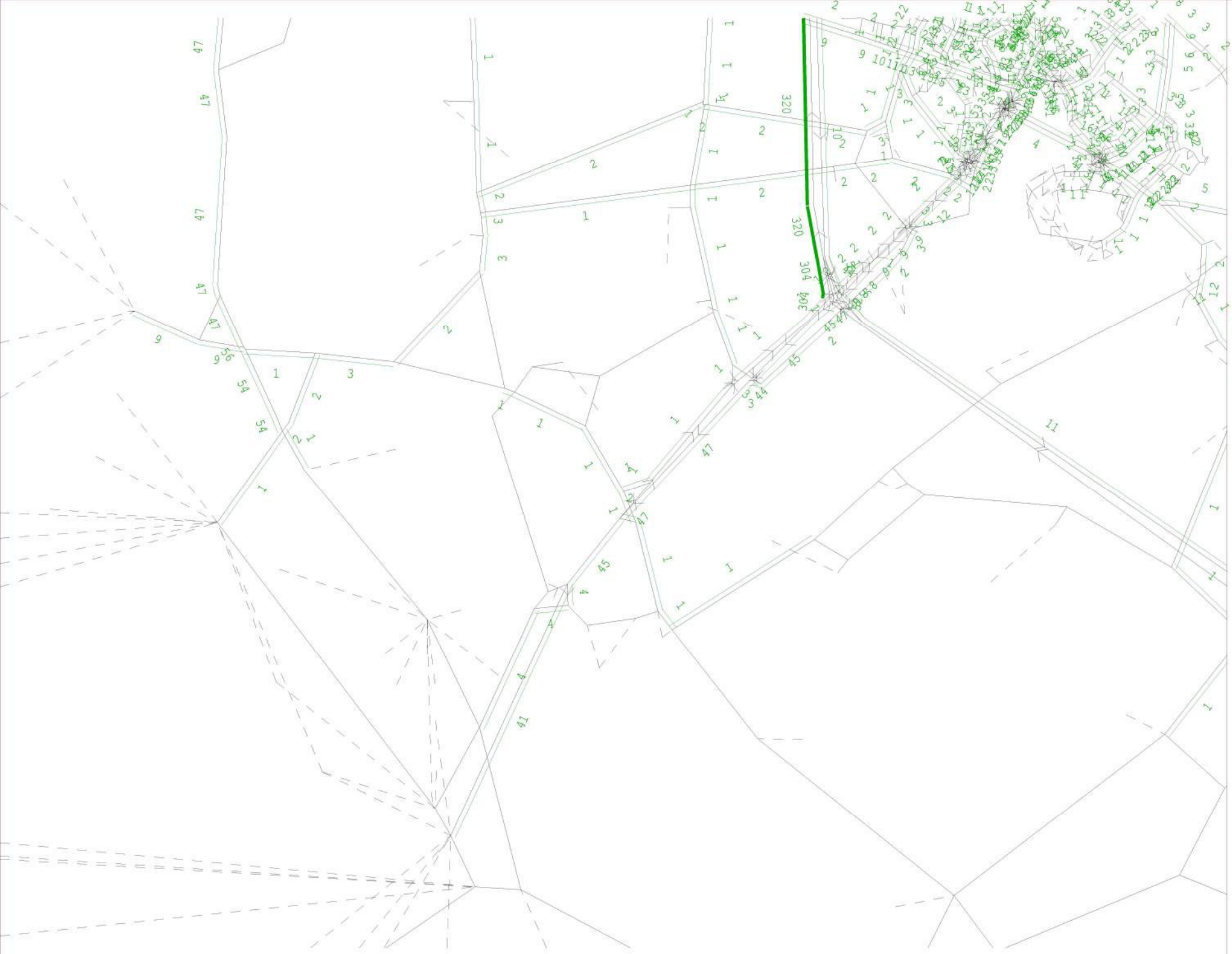

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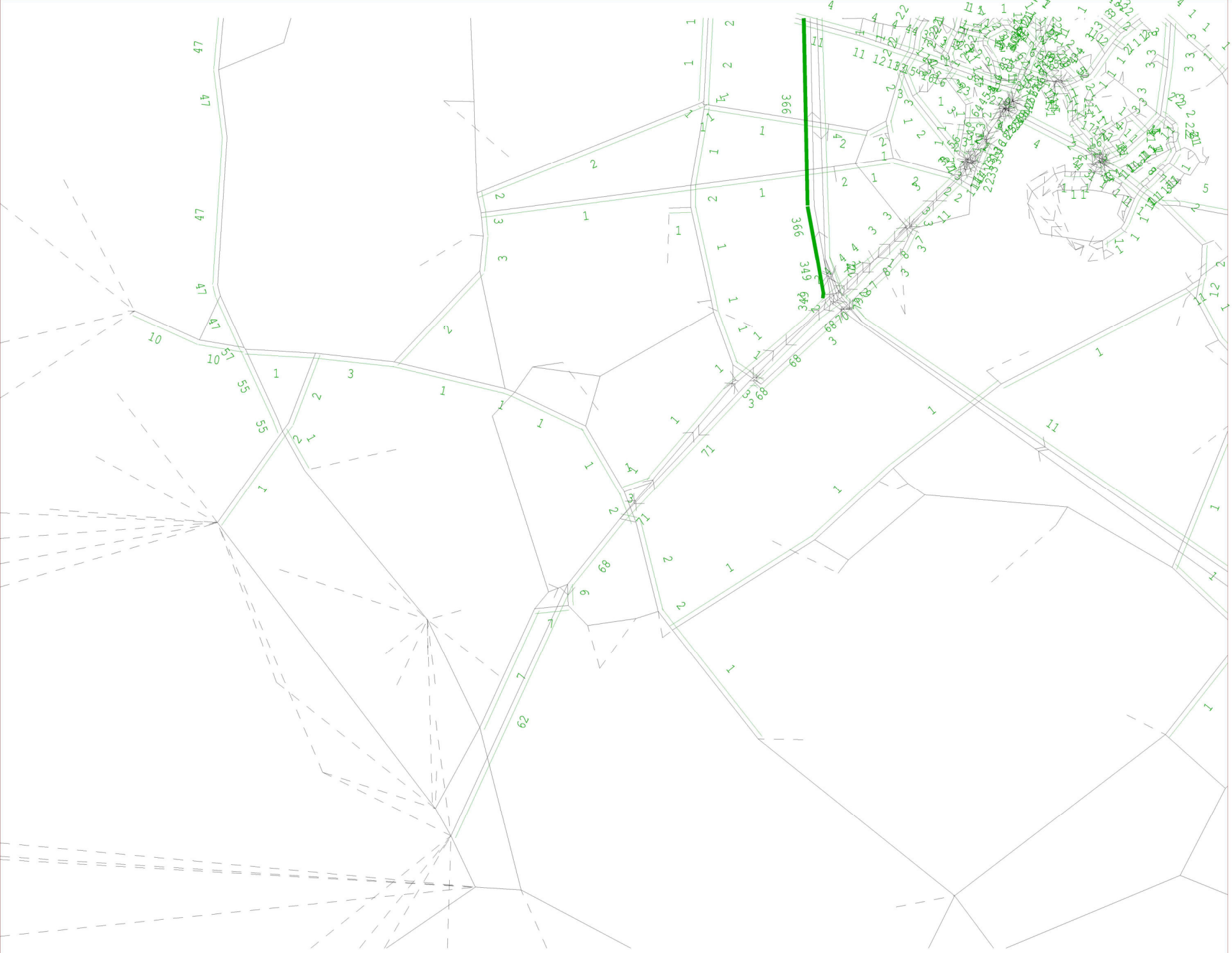

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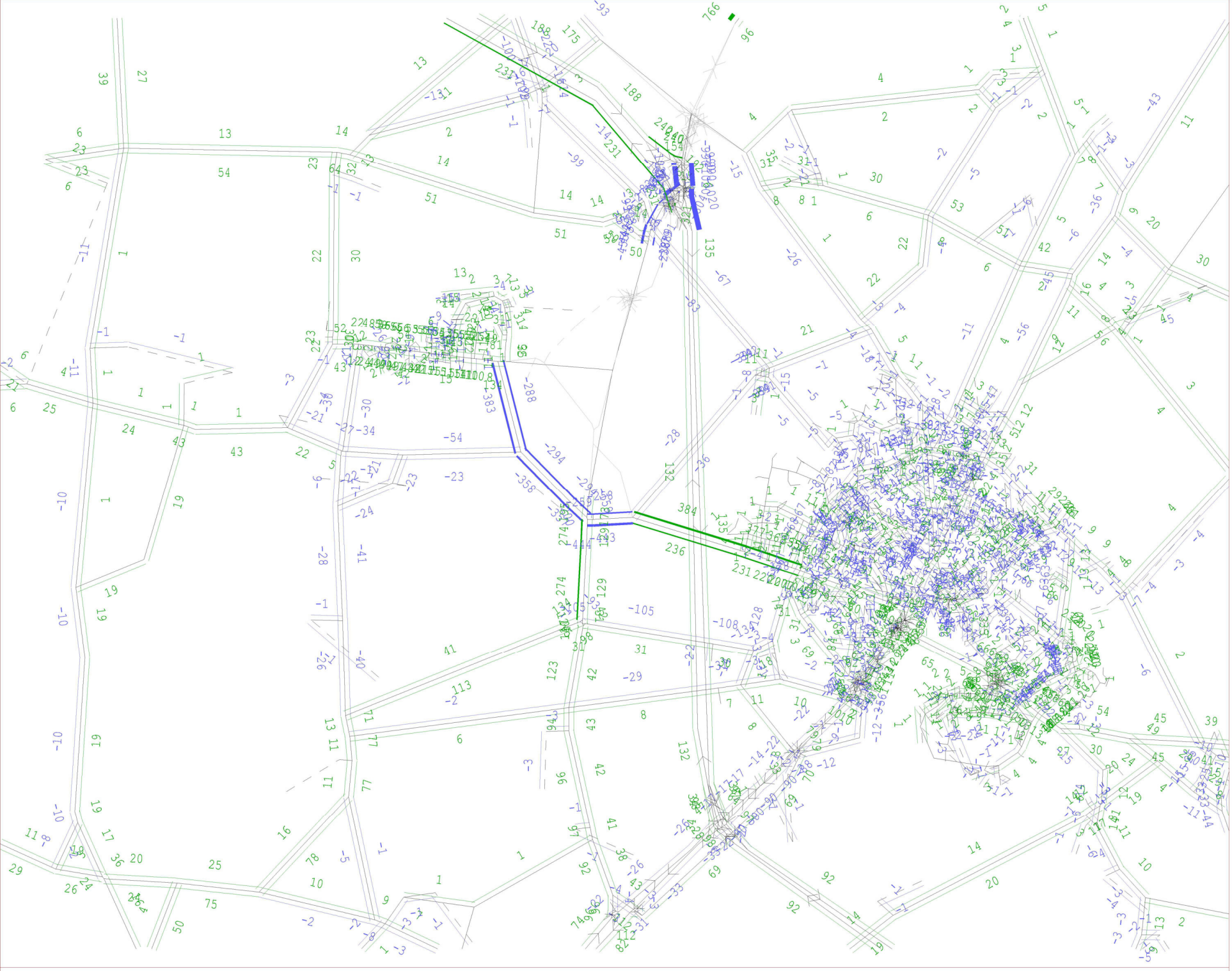
EVENING PEAK HOUR FLOW DIFFERENCE PLOTS



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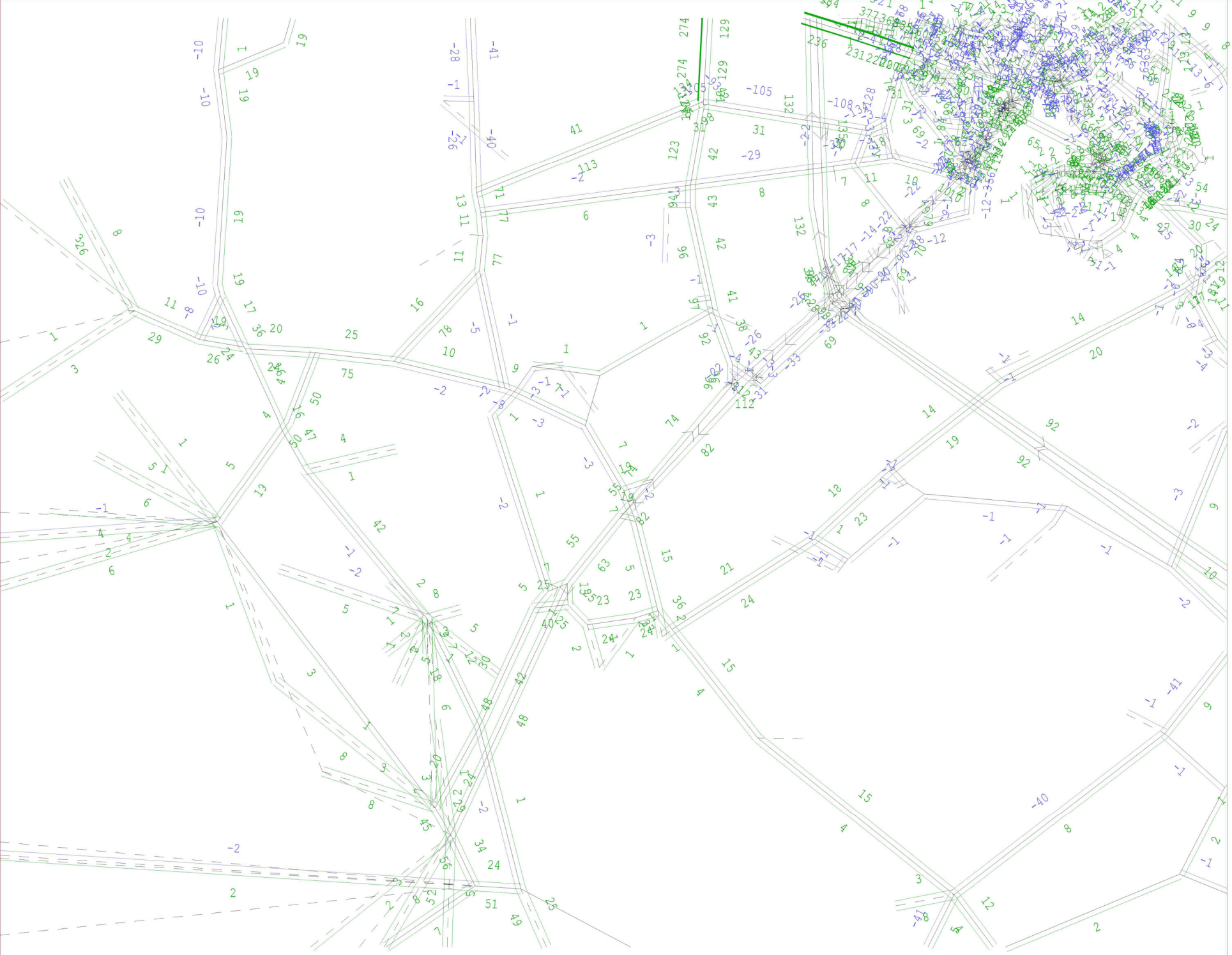

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Bicester Network - 2031 OxSRFI Reference Case 3 PM Peak 30- 3-23

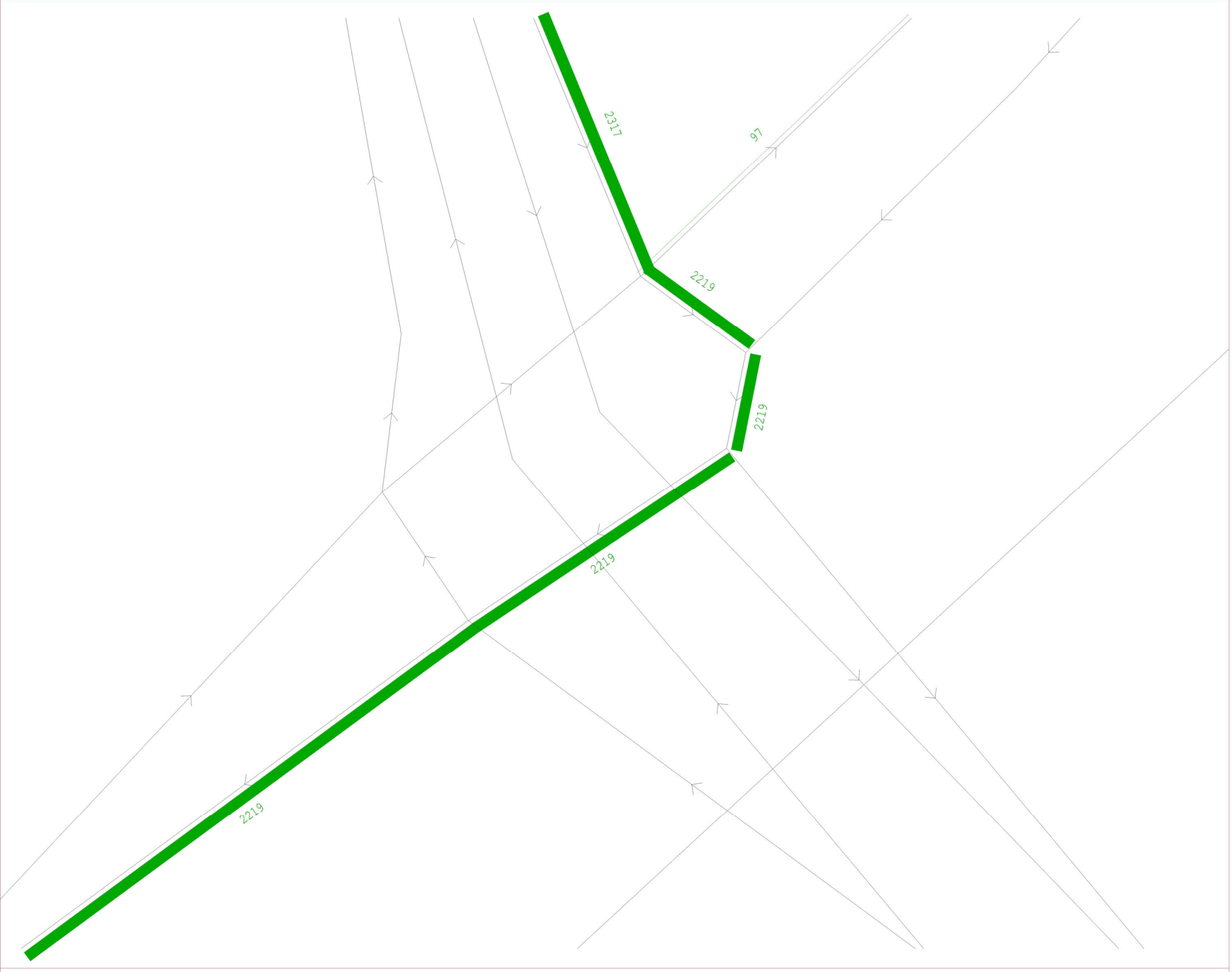
APPENDIX C

M40 JUNCTION 9 BTM TRAFFIC FLOWS

MORNING PEAK HOUR REFERENCE CASE TRAFFIC FLOWS

EVENING PEAK HOUR REFERENCE CASE TRAFFIC FLOWS

MORNING PEAK HOUR 'DO SOMETHING' (NO M40J9 IMPROVEMENT) TRAFFIC FLOWS



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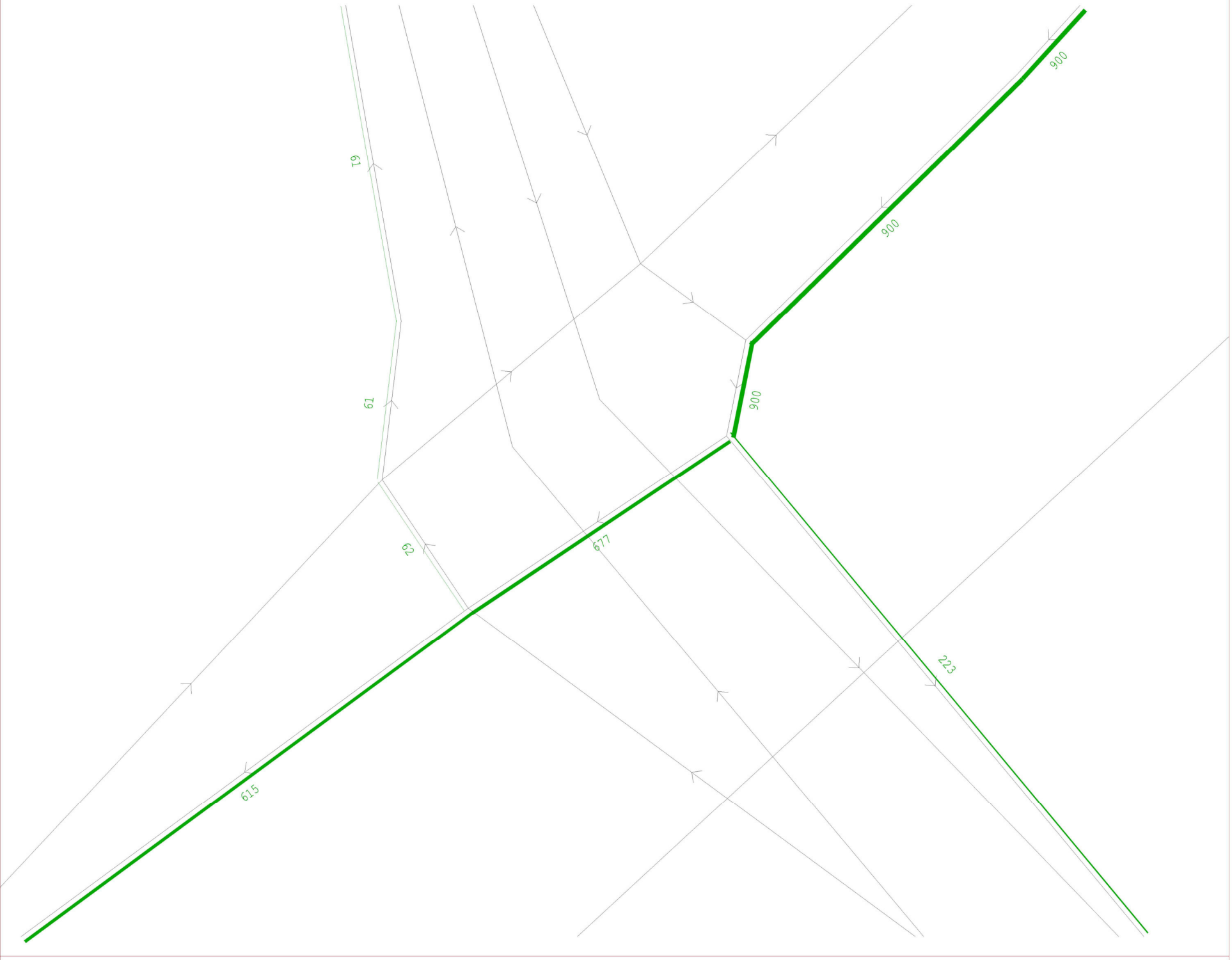

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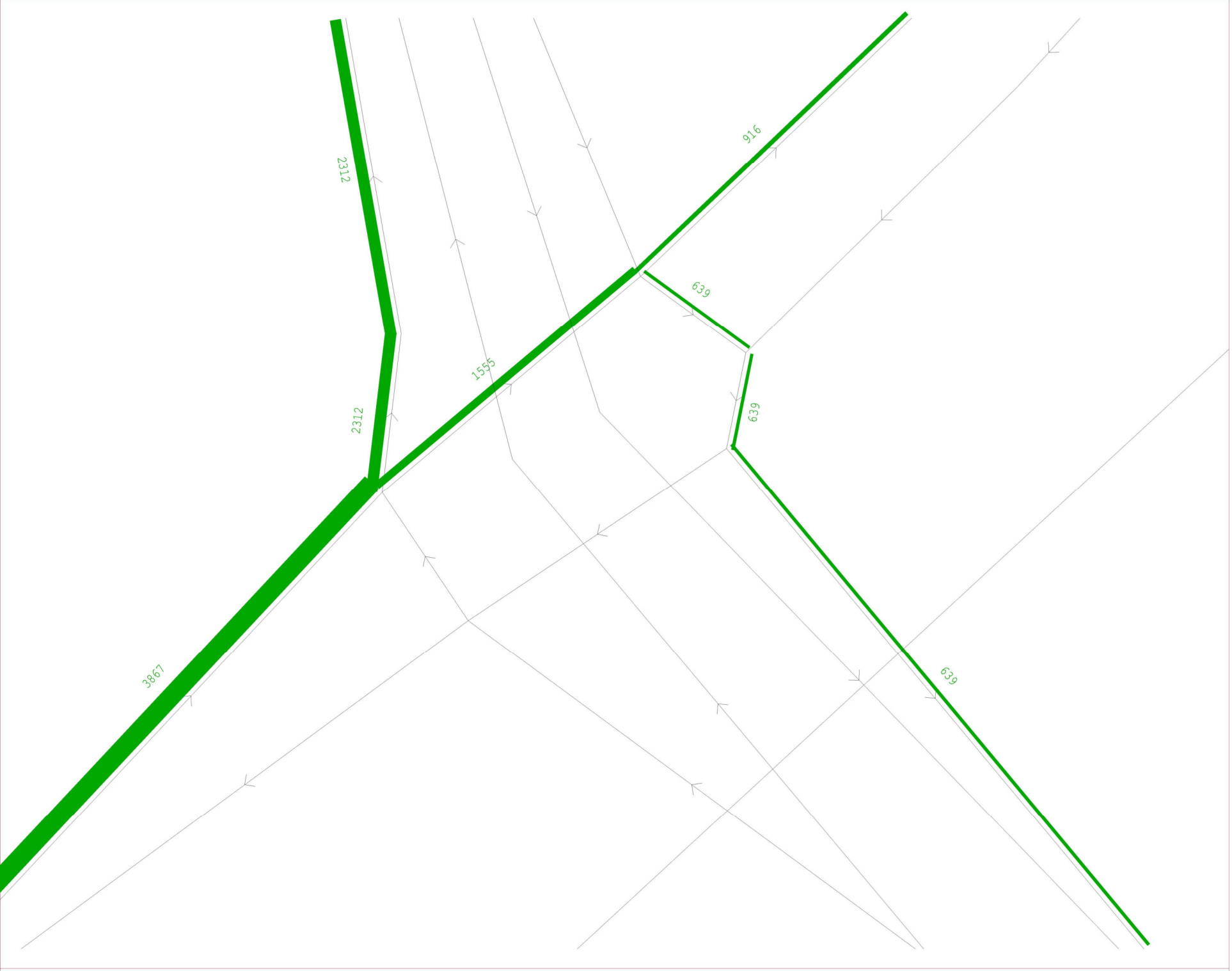

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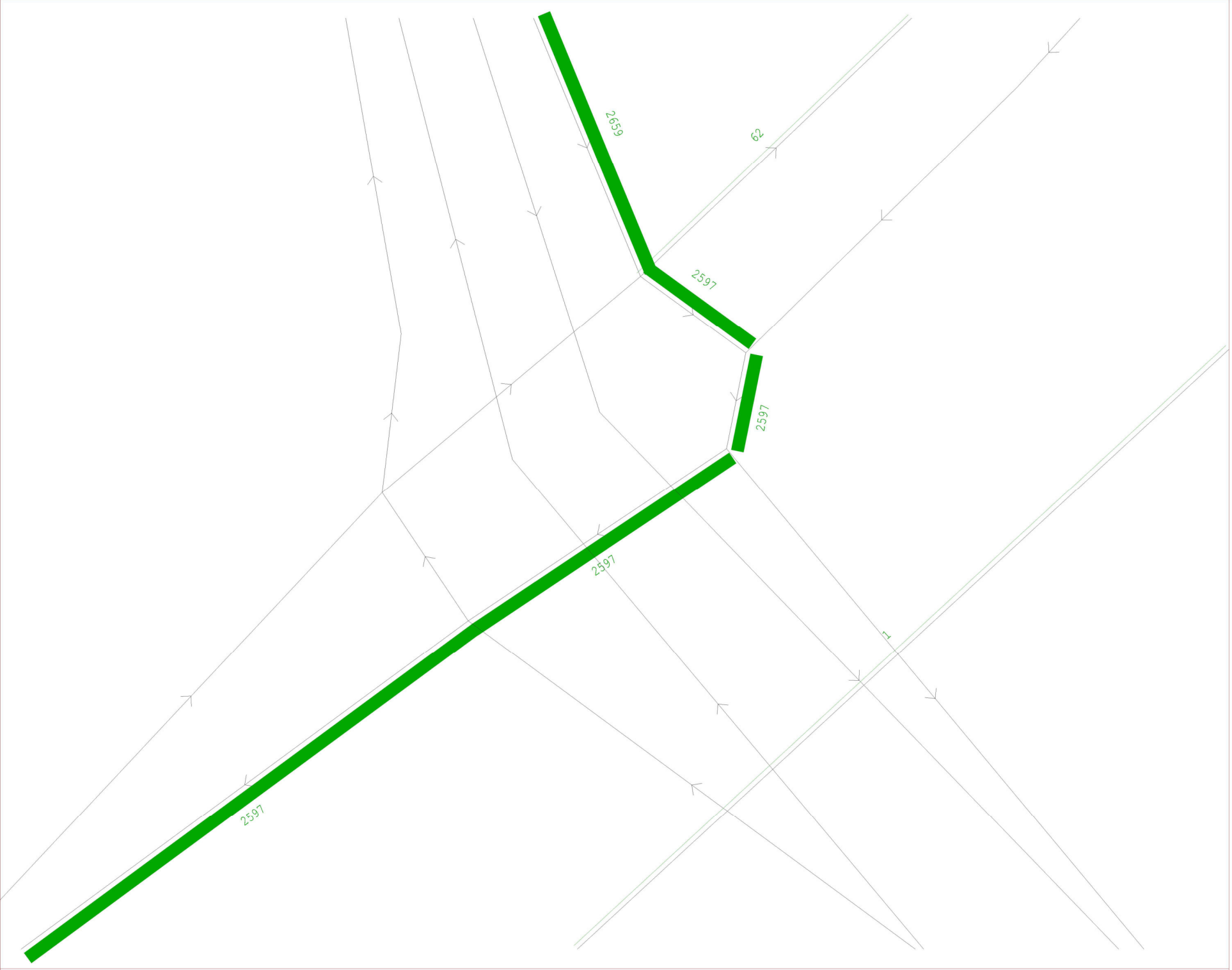
EVENING PEAK HOUR 'DO SOMETHING' (NO M40J9 IMPROVEMENT) TRAFFIC FLOWS



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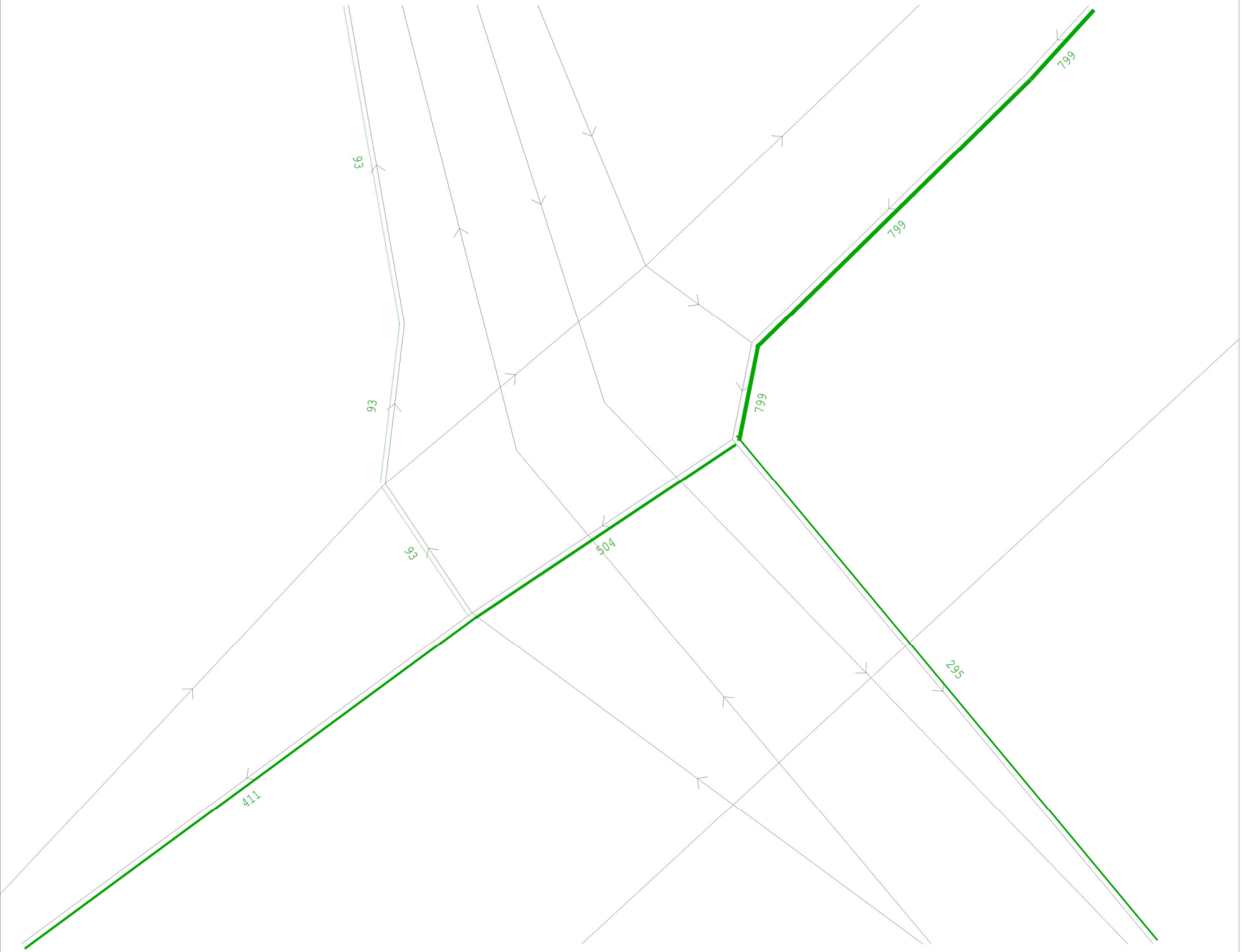

SATURN

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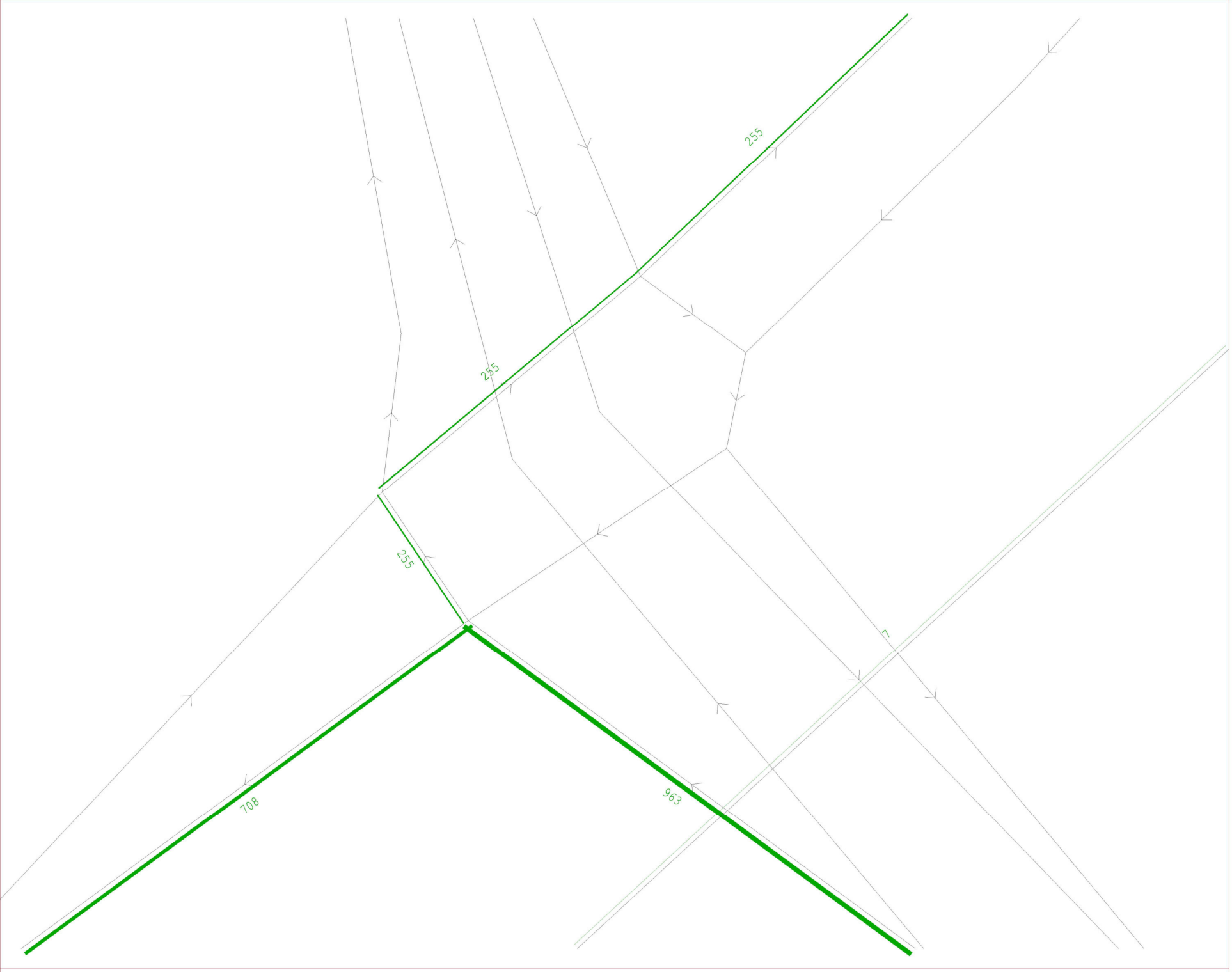

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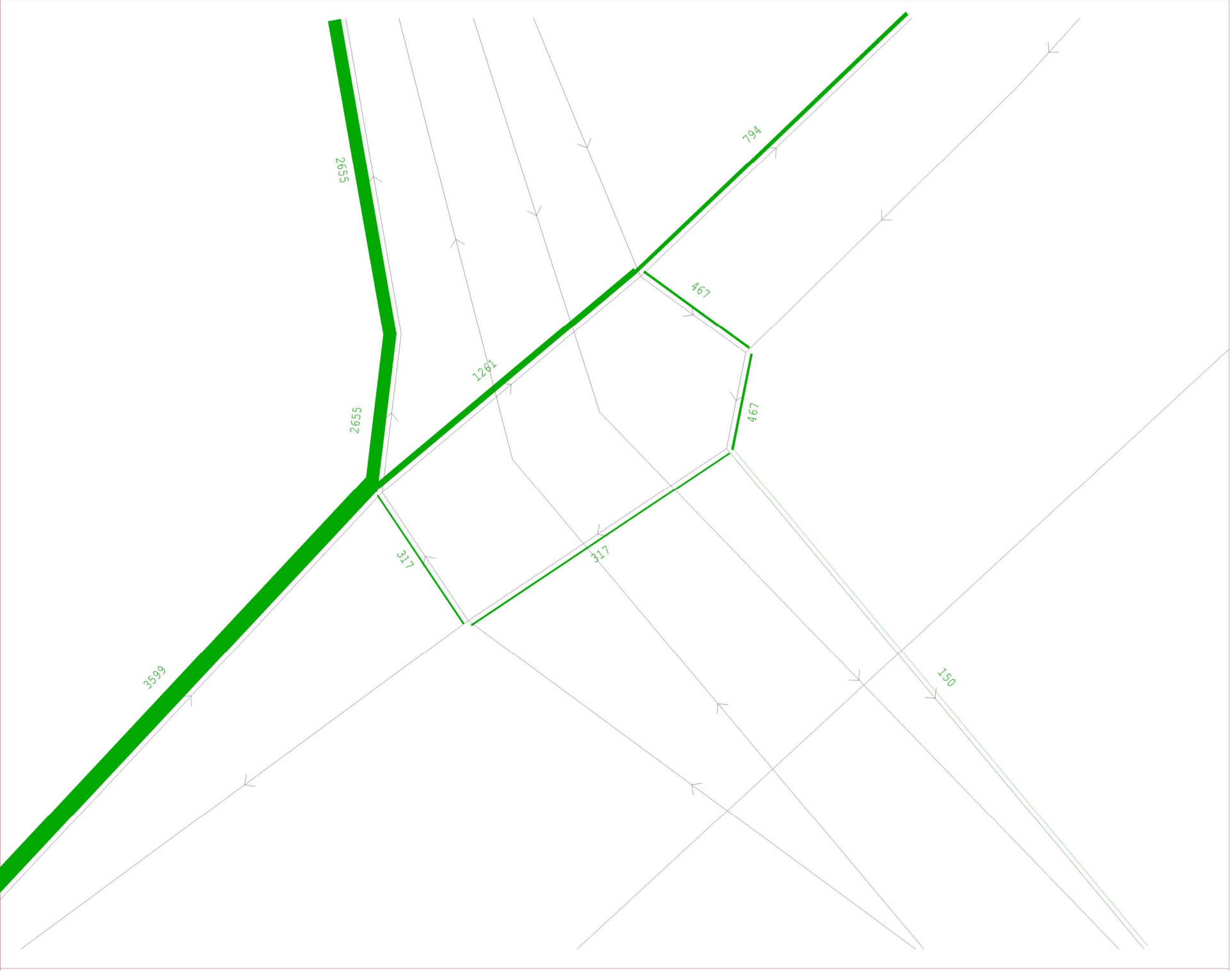

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xSRFI_DS5_PM
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Scale 2529

Link Annot:

S.L.A.

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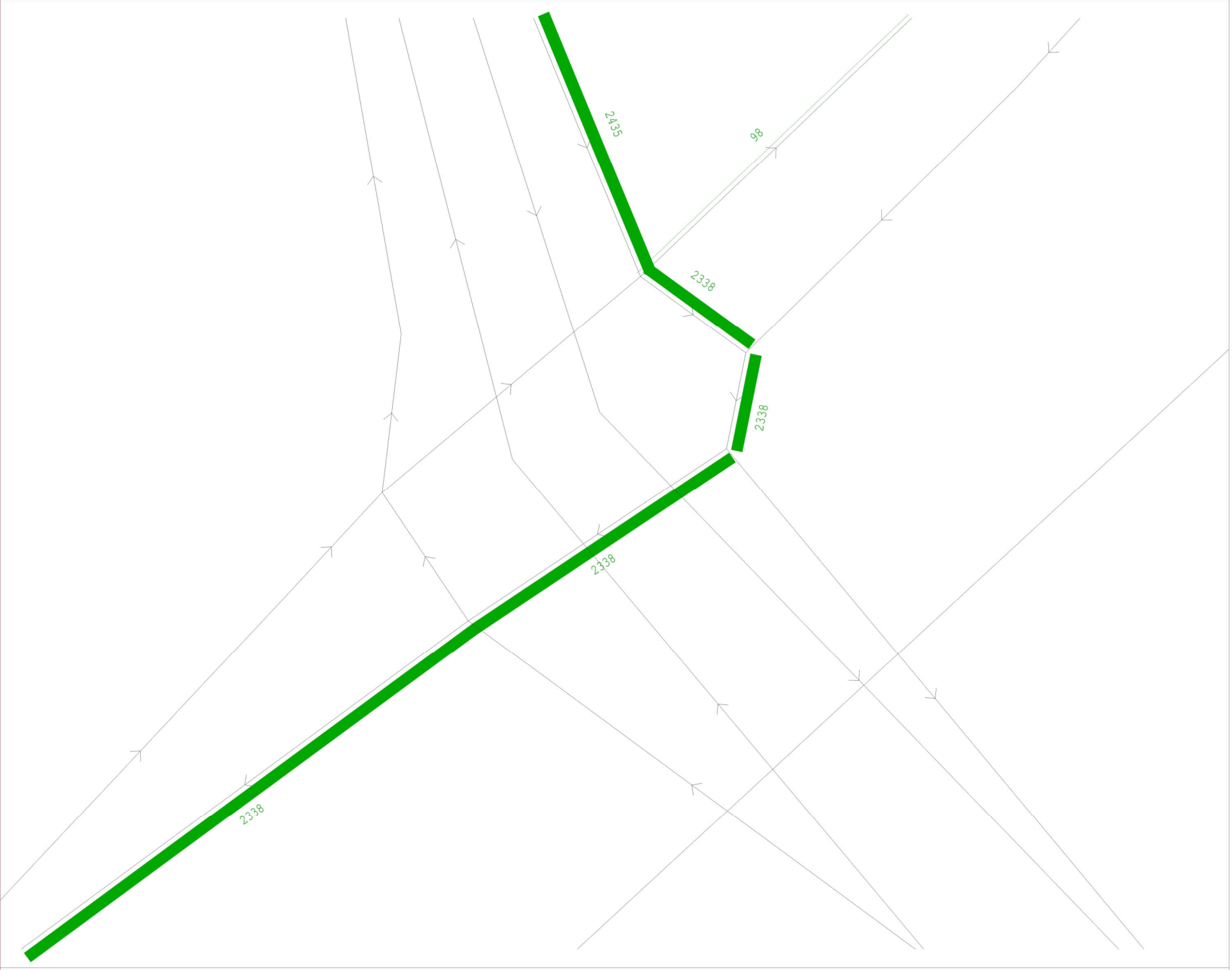
WHITE YOUNG

MORNING PEAK HOUR 'DO SOMETHING' (WITH M40J9 IMPROVEMENT) TRAFFIC FLOWS



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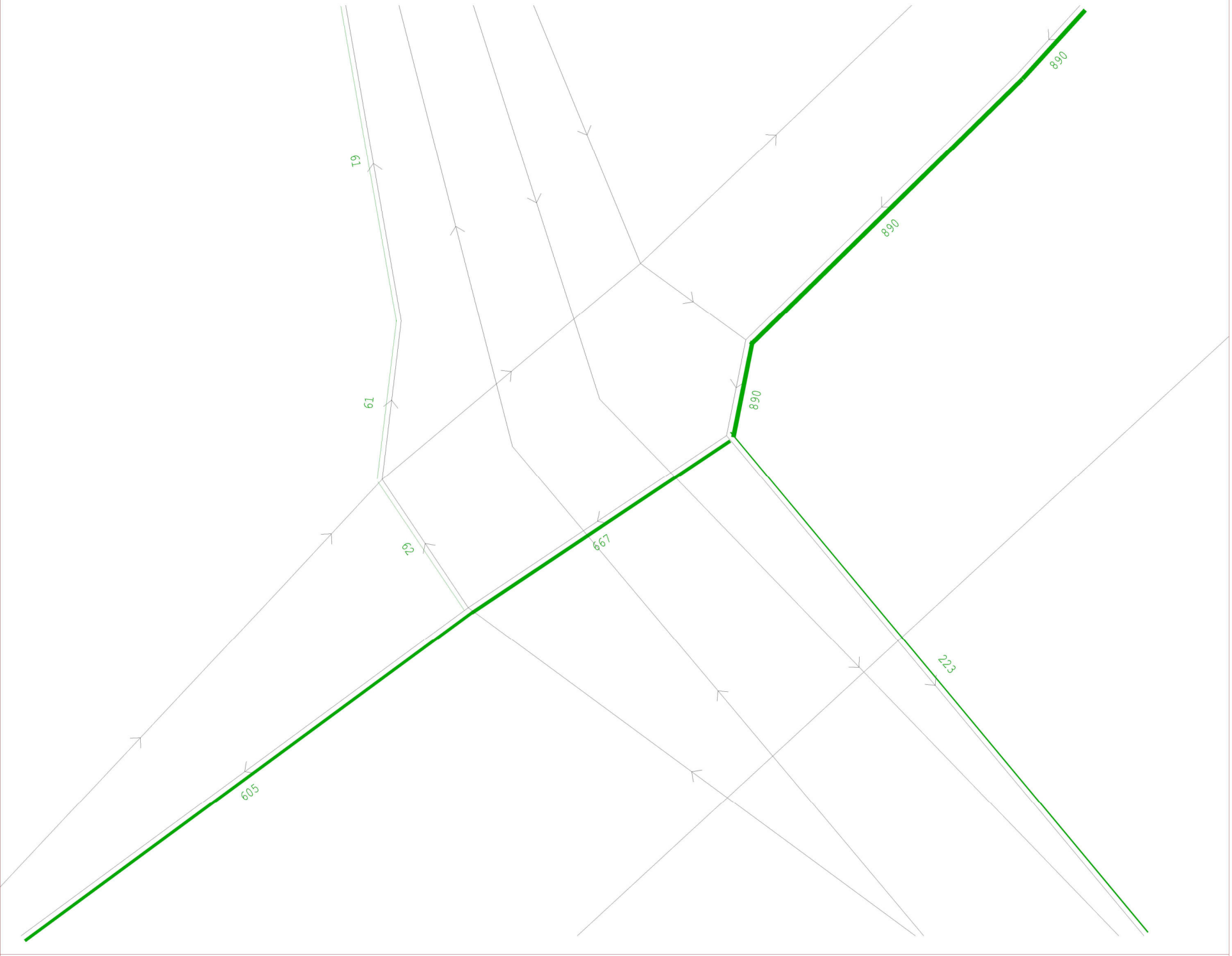

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WHITE YOUNG

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Atkins Ltd /
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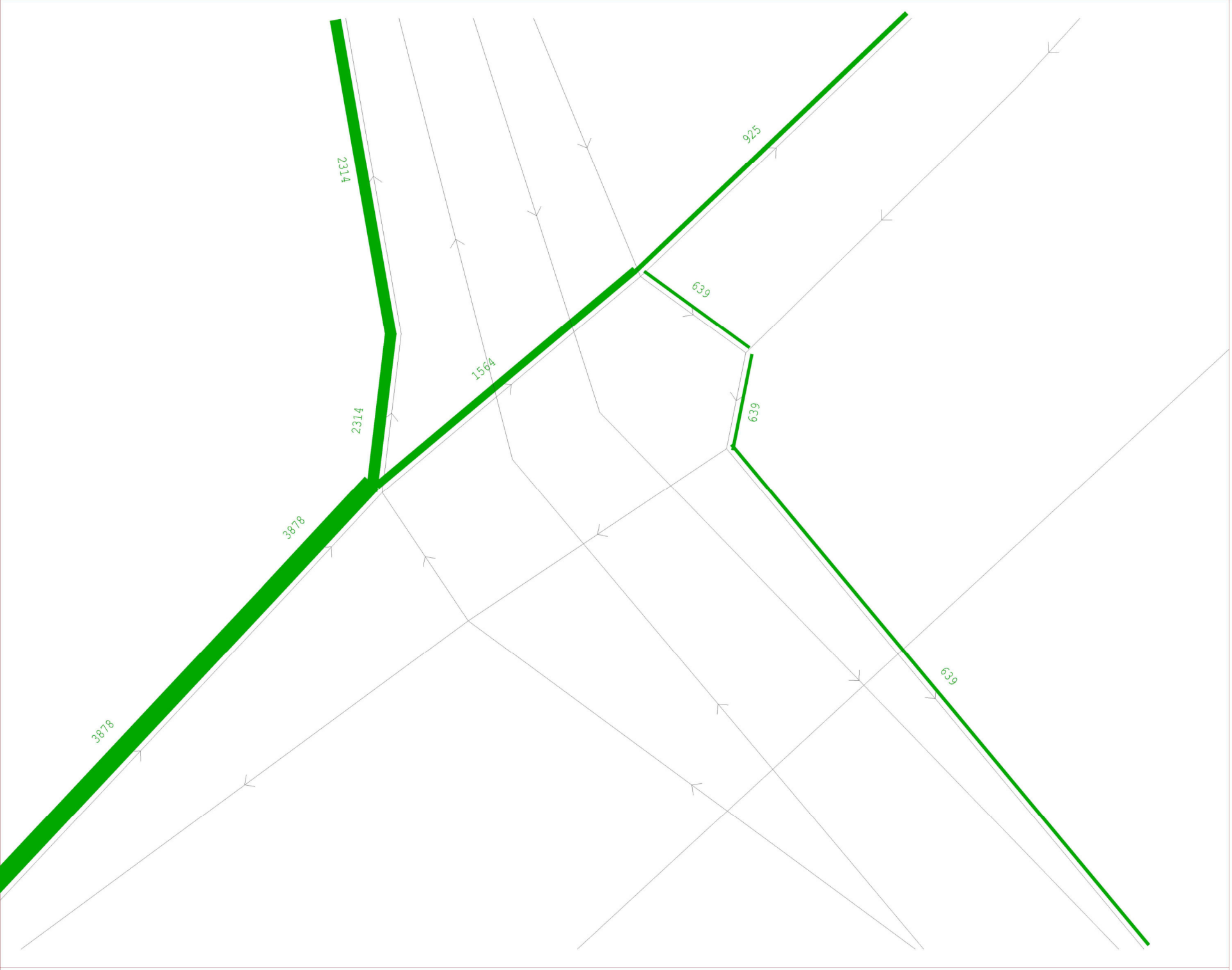
29- 3-23
WHITE YOUNG



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_DS5_AM
_Network.UFS

Scale 2529

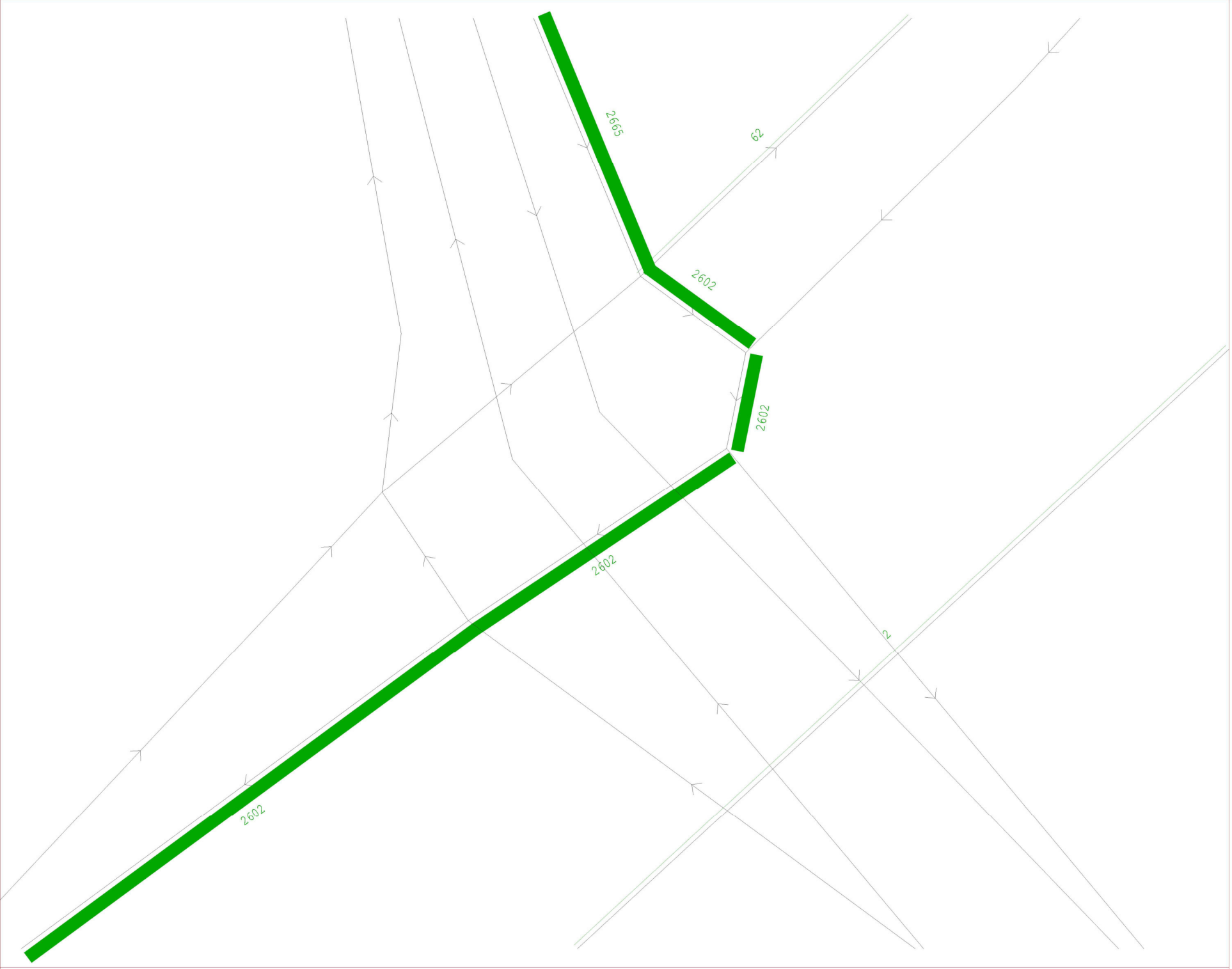
Link Annot:

S.L.A.

Bandwidths =
1000./mm

29- 3-23
WHITE YOUNG

EVENING PEAK HOUR 'DO SOMETHING' (WITH M40J9 IMPROVEMENT) TRAFFIC FLOWS



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_DS5_PM
_Network.UFS

Scale 2529

Link Annot:

S.L.A.

Bandwidths =
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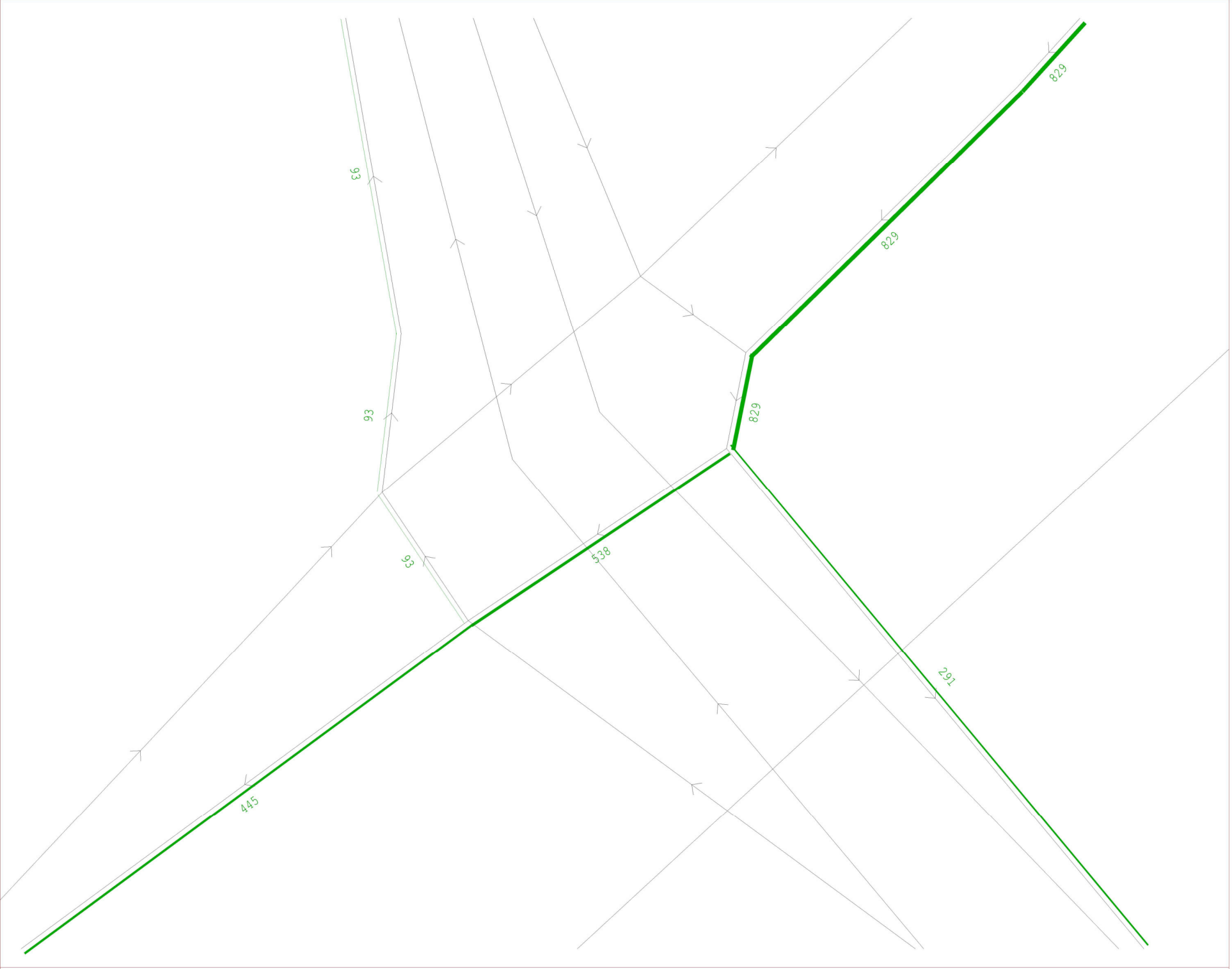
30- 3-23
WHITE YOUNG



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_DS5_PM
_Network.UFS

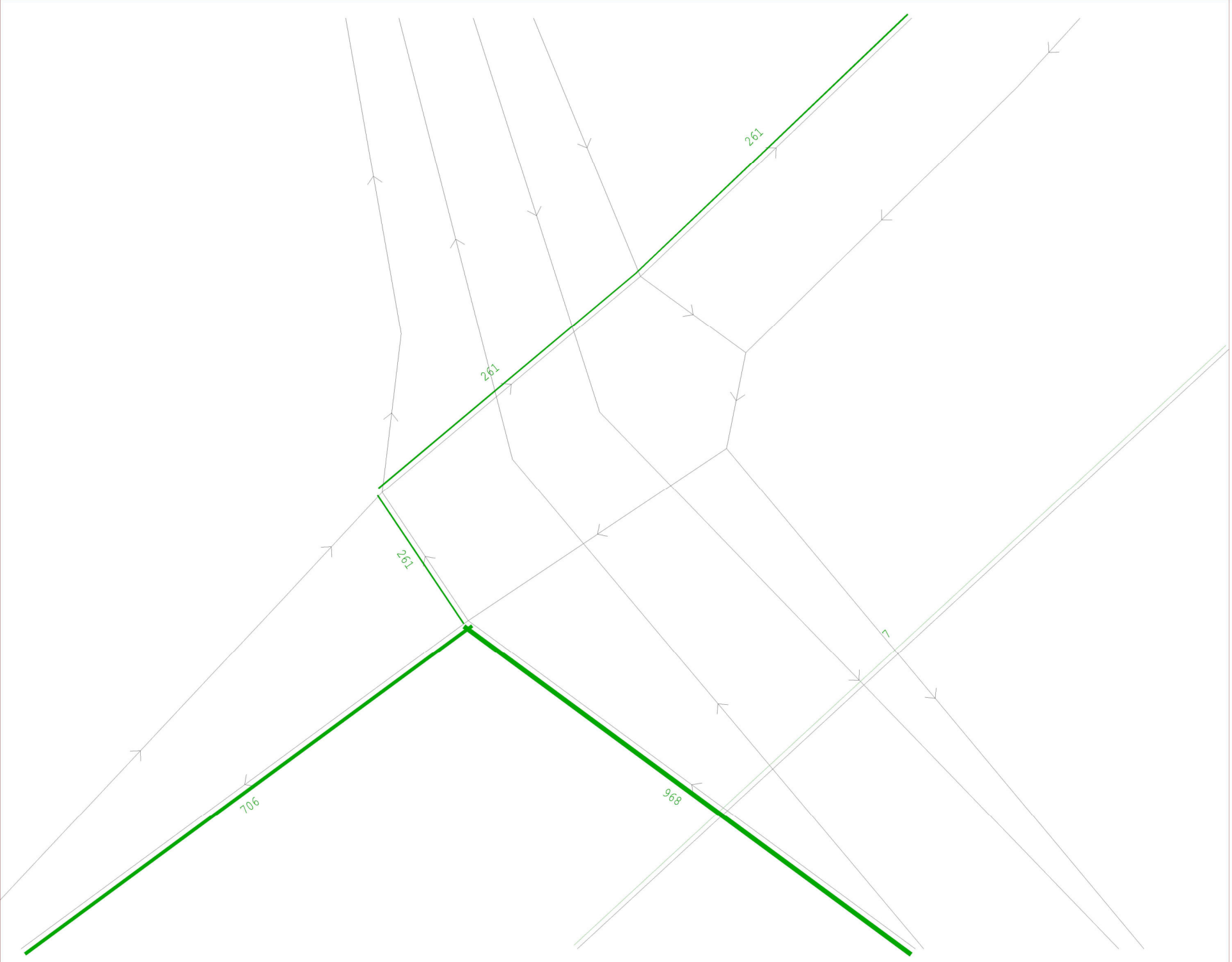
Scale 2529

Link Annot:

S.L.A.

Bandwidths =
1000./mm

30- 3-23
WHITE YOUNG



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_DS5_PM
_Network.UFS

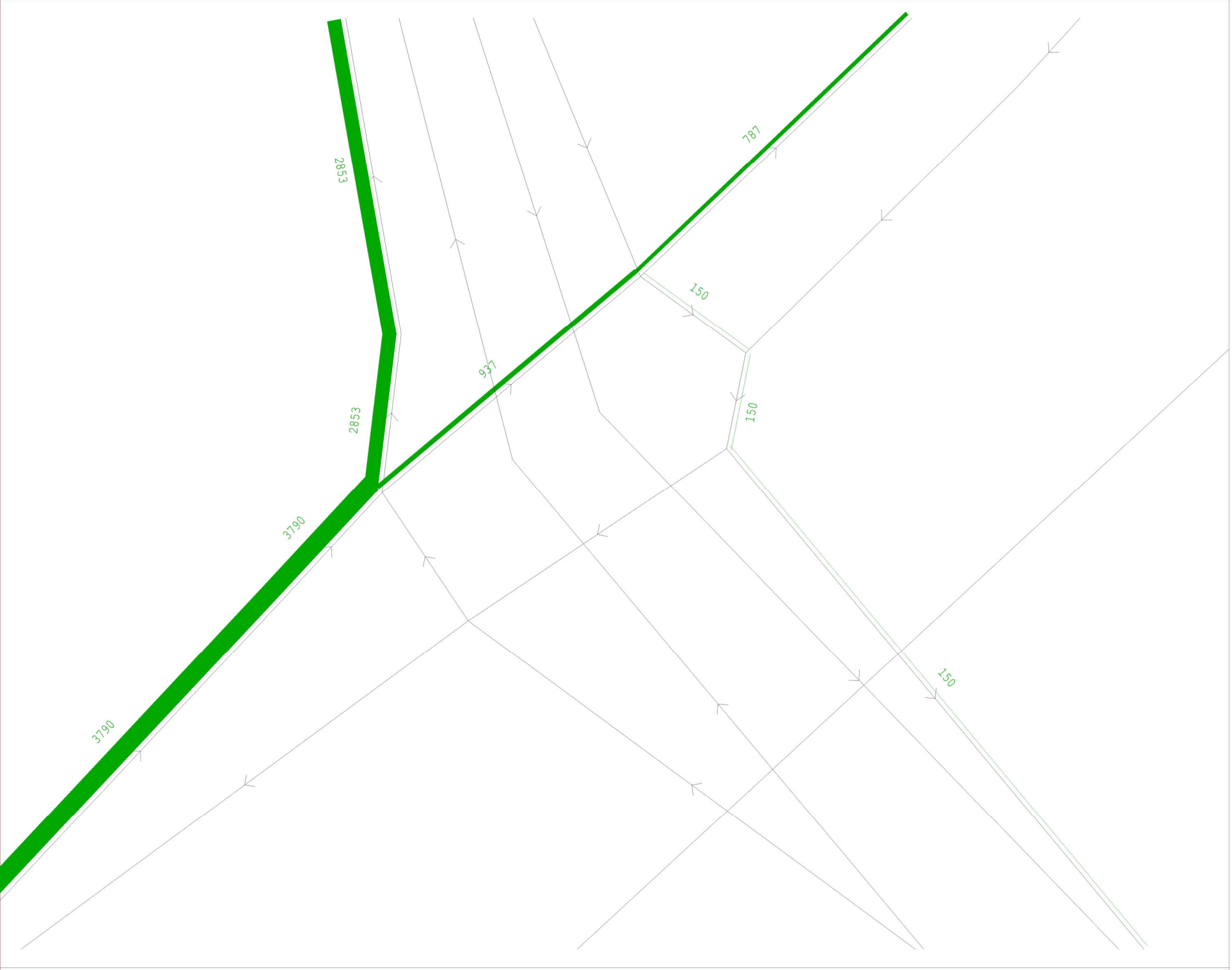
Scale 2529

Link Annot:

S.L.A.

Bandwidths =
1000./mm

30- 3-23
WHITE YOUNG



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_DS5_PM
_Network.UFS

Scale 2529

Link Annot:

S.L.A.

Bandwidths =
1000./mm

30- 3-23
WHITE YOUNG

APPENDIX D

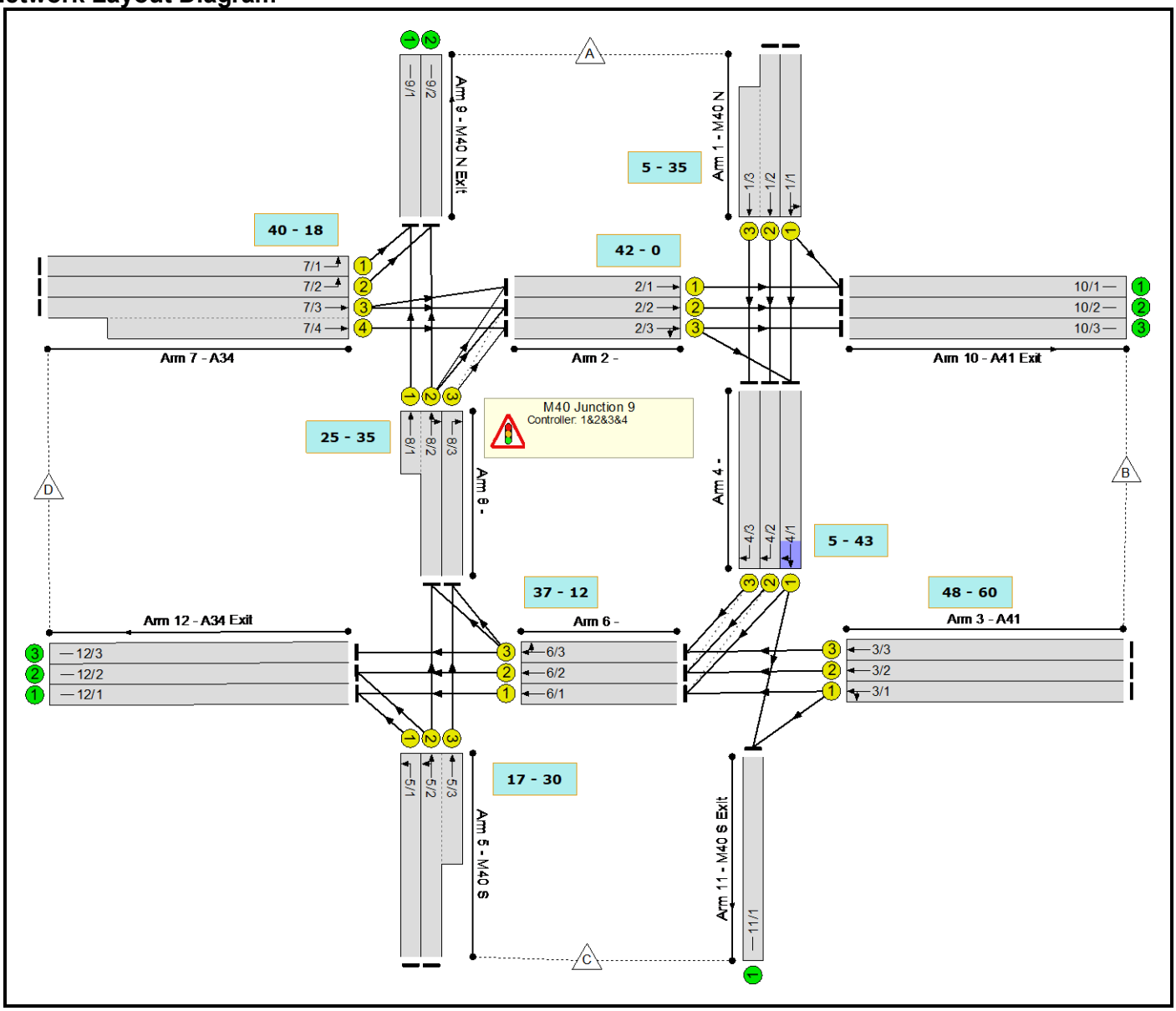
M40 JUNCTION 9 EXISTING LAYOUT LINSIG MODEL RESULTS

Full Input Data And Results

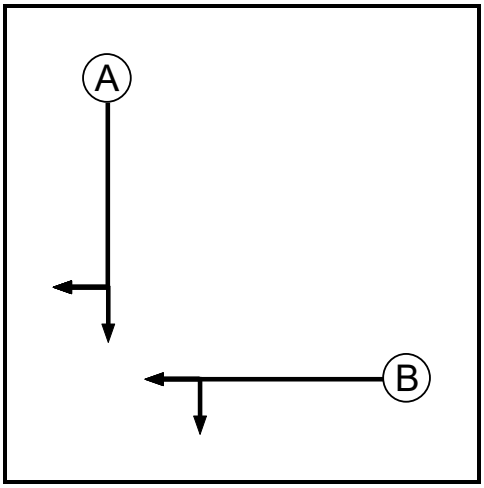
User and Project Details

Project:	**OxSRFI**
Title:	**M40 Junction 9**
Location:	M40 Junction 9, Wendlebury
Additional detail:	Base model with 2031 reference case and 'do something' flows
File name:	230411 M40 Junction 9 - existing.lsg3x
Author:	Mark Higgins
Company:	ADC Infrastructure
Address:	Nottingham

Network Layout Diagram



C1
Phase Diagram



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

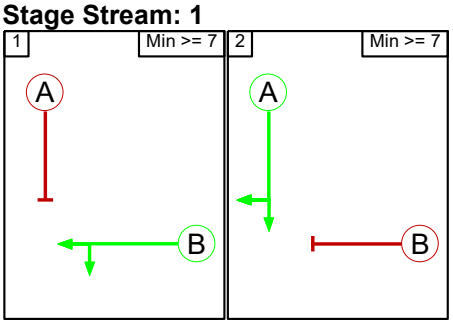
Phase Intergreens Matrix

Terminating Phase	Starting Phase		
		A	B
	A		5
	B	7	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	B
1	2	A

Stage Diagram
Stage Stream: 1

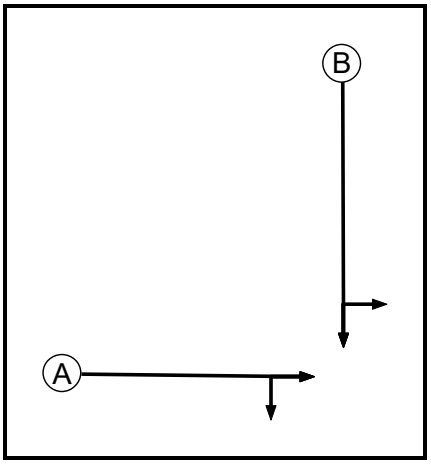


Prohibited Stage Change
Stage Stream: 1

From Stage	To Stage		
		1	2
	1		7
	2	5	

C2

Phase Diagram



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

Phase Intergreens Matrix

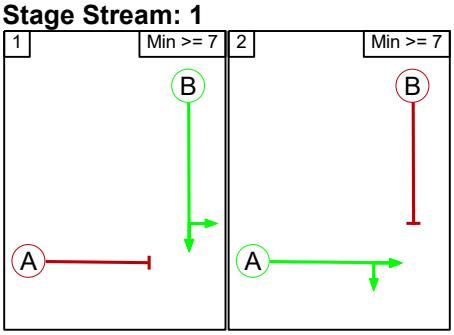
		Starting Phase	
		A	B
Terminating Phase	A		5
	B	7	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	B
1	2	A

Stage Diagram

Stage Stream: 1



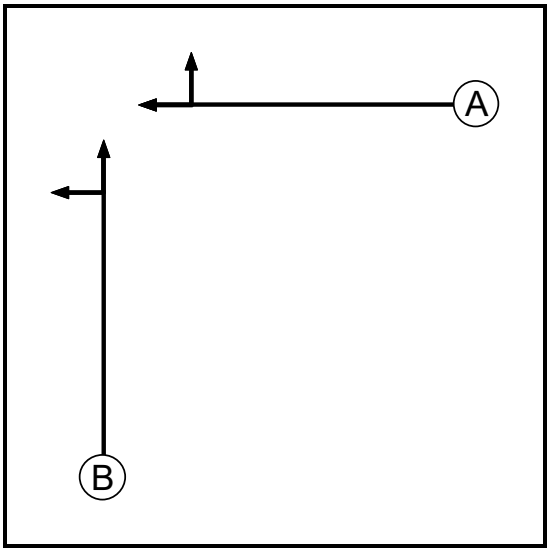
Prohibited Stage Change

Stage Stream: 1

		To Stage	
		1	2
From Stage	1		7
	2	5	

C3

Phase Diagram



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

Phase Intergreens Matrix

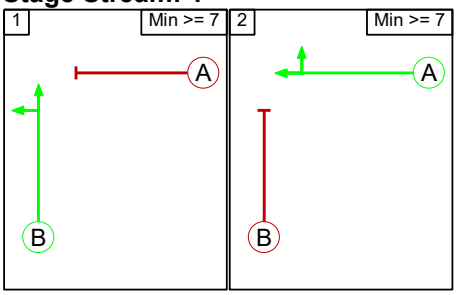
	Starting Phase		
Terminating Phase		A	B
	A		5
	B	7	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	B
1	2	A

Stage Diagram

Stage Stream: 1



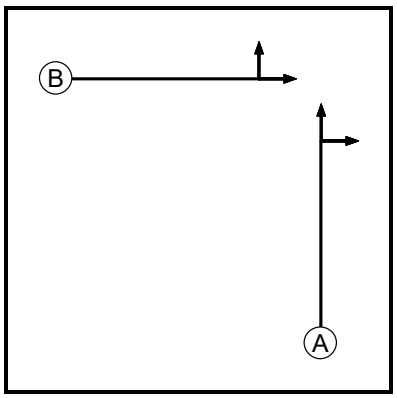
Prohibited Stage Change

Stage Stream: 1

	To Stage		
From Stage		1	2
	1		7
	2	5	

C4

Phase Diagram



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

Phase Intergreens Matrix

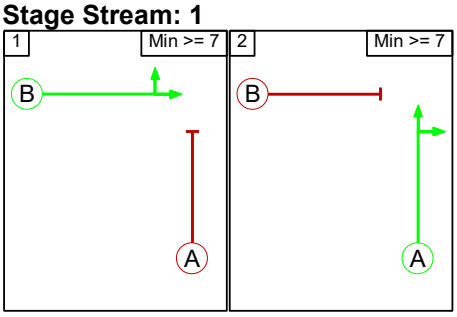
		Starting Phase	
		A	B
Terminating Phase	A		5
	B	7	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	B
1	2	A

Stage Diagram

Stage Stream: 1



Prohibited Stage Change

Stage Stream: 1

		To Stage	
		1	2
From Stage	1		7
	2	5	

Lane Input Data

Junction: M40 Junction 9												
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 (M40 N)	U	B	2	3	60.0	User	1828	-	-	-	-	-
1/2 (M40 N)	U	B	2	3	60.0	User	1868	-	-	-	-	-
1/3 (M40 N)	U	B	2	3	29.6	User	1908	-	-	-	-	-
2/1	U	A	2	3	26.0	User	1945	-	-	-	-	-
2/2	U	A	2	3	26.0	User	1977	-	-	-	-	-
2/3	U	A	2	3	26.0	User	1869	-	-	-	-	-
3/1 (A41)	U	B	2	3	60.0	User	1824	-	-	-	-	-
3/2 (A41)	U	B	2	3	60.0	User	1876	-	-	-	-	-
3/3 (A41)	U	B	2	3	60.0	User	1887	-	-	-	-	-
4/1	U	A	2	3	4.0	User	1869	-	-	-	-	-
4/2	U	A	2	3	5.0	User	1868	-	-	-	-	-
4/3	U	A	2	3	6.0	User	1951	-	-	-	-	-
5/1 (M40 S)	U	B	2	3	60.0	User	1932	-	-	-	-	-
5/2 (M40 S)	U	B	2	3	60.0	User	1888	-	-	-	-	-
5/3 (M40 S)	U	B	2	3	8.0	User	1888	-	-	-	-	-
6/1	U	A	2	3	20.0	User	1866	-	-	-	-	-
6/2	U	A	2	3	31.0	User	1904	-	-	-	-	-
6/3	U	A	2	3	31.0	User	1887	-	-	-	-	-
7/1 (A34)	U	B	2	3	60.0	User	1830	-	-	-	-	-
7/2 (A34)	U	B	2	3	60.0	User	2003	-	-	-	-	-
7/3 (A34)	U	B	2	3	60.0	User	1973	-	-	-	-	-
7/4 (A34)	U	B	2	3	30.0	User	1869	-	-	-	-	-
8/1	U	A	2	3	4.5	User	1942	-	-	-	-	-
8/2	U	A	2	3	4.0	User	1942	-	-	-	-	-
8/3	U	A	2	3	4.0	User	2078	-	-	-	-	-
9/1 (M40 N Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-
9/2 (M40 N Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-
10/1 (A41 Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-

10/2 (A41 Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-
10/3 (A41 Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-
11/1 (M40 S Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-
12/1 (A34 Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-
12/2 (A34 Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-
12/3 (A34 Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2031 Ref Case - AM'	08:00	09:00	01:00	
2: '2031 Ref Case - PM'	17:00	18:00	01:00	
3: '2031 DS - AM'	08:00	09:00	01:00	
4: '2031 DS - PM'	17:00	18:00	01:00	
5: 'Adj 2031 Ref Case - AM'	08:00	09:00	01:00	
6: 'Adj 2031 DS - AM'	08:00	09:00	01:00	

Scenario 1: '2031 Ref Case - AM' (FG5: 'Adj 2031 Ref Case - AM', Plan 1: 'Staging Plan No. 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	162	0	2118	2280
	B	54	0	220	725	999
	C	0	227	0	286	513
	D	2286	886	300	0	3472
	Tot.	2340	1275	520	3129	7264

Traffic Lane Flows

Lane	Scenario 1: 2031 Ref Case - AM
Junction: M40 Junction 9	
1/1	714
1/2 (with short)	1566(In) 777(Out)
1/3 (short)	789
2/1	446
2/2	448
2/3	519
3/1	346
3/2	321
3/3	332
4/1	852
4/2	777
4/3	789
5/1	190
5/2 (with short)	323(In) 230(Out)
5/3 (short)	93
6/1	754
6/2	1041
6/3	1102
7/1	1086
7/2	1200
7/3 (with short)	1186(In) 667(Out)
7/4 (short)	519
8/1 (short)	27
8/2 (with short)	188(In) 161(Out)
8/3	93
9/1	1113
9/2	1227
10/1	608
10/2	448
10/3	219
11/1	520
12/1	944
12/2	1137
12/3	1048

Lane Saturation Flows

Junction: M40 Junction 9								
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 (M40 N Lane 1)	This lane uses a directly entered Saturation Flow						1828	1828
1/2 (M40 N Lane 2)	This lane uses a directly entered Saturation Flow						1868	1868
1/3 (M40 N Lane 3)	This lane uses a directly entered Saturation Flow						1908	1908
2/1	This lane uses a directly entered Saturation Flow						1945	1945
2/2	This lane uses a directly entered Saturation Flow						1977	1977
2/3	This lane uses a directly entered Saturation Flow						1869	1869
3/1 (A41 Lane 1)	This lane uses a directly entered Saturation Flow						1824	1824
3/2 (A41 Lane 2)	This lane uses a directly entered Saturation Flow						1876	1876
3/3 (A41 Lane 3)	This lane uses a directly entered Saturation Flow						1887	1887
4/1	This lane uses a directly entered Saturation Flow						1869	1869
4/2	This lane uses a directly entered Saturation Flow						1868	1868
4/3	This lane uses a directly entered Saturation Flow						1951	1951
5/1 (M40 S Lane 1)	This lane uses a directly entered Saturation Flow						1932	1932
5/2 (M40 S Lane 2)	This lane uses a directly entered Saturation Flow						1888	1888
5/3 (M40 S Lane 3)	This lane uses a directly entered Saturation Flow						1888	1888
6/1	This lane uses a directly entered Saturation Flow						1866	1866
6/2	This lane uses a directly entered Saturation Flow						1904	1904
6/3	This lane uses a directly entered Saturation Flow						1887	1887
7/1 (A34 Lane 1)	This lane uses a directly entered Saturation Flow						1830	1830
7/2 (A34 Lane 2)	This lane uses a directly entered Saturation Flow						2003	2003
7/3 (A34 Lane 3)	This lane uses a directly entered Saturation Flow						1973	1973
7/4 (A34 Lane 4)	This lane uses a directly entered Saturation Flow						1869	1869
8/1	This lane uses a directly entered Saturation Flow						1942	1942
8/2	This lane uses a directly entered Saturation Flow						1942	1942
8/3	This lane uses a directly entered Saturation Flow						2078	2078
9/1 (M40 N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (M40 N Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A41 Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A41 Exit Lane 2)	Infinite Saturation Flow						Inf	Inf

10/3 (A41 Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
11/1 (M40 S Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
12/1 (A34 Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (A34 Exit Lane 2)	Infinite Saturation Flow	Inf	Inf
12/3 (A34 Exit Lane 3)	Infinite Saturation Flow	Inf	Inf

Scenario 2: '2031 WD - AM' (FG6: 'Adj 2031 DS - AM', Plan 1: 'Staging Plan No. 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	97	0	2219	2316
	B	61	0	223	615	899
	C	0	227	0	288	515
	D	2312	916	300	0	3528
	Tot.	2373	1240	523	3122	7258

Traffic Lane Flows

Lane	Scenario 2: 2031 WD - AM
Junction: M40 Junction 9	
1/1	726
1/2 (with short)	1590(In) 783(Out)
1/3 (short)	807
2/1	464
2/2	459
2/3	520
3/1	311
3/2	290
3/3	298
4/1	929
4/2	783
4/3	807
5/1	187
5/2 (with short)	328(In) 231(Out)
5/3 (short)	97
6/1	938
6/2	935
6/3	1022
7/1	1098
7/2	1214
7/3 (with short)	1216(In) 712(Out)
7/4 (short)	504
8/1 (short)	31
8/2 (with short)	191(In) 160(Out)
8/3	97
9/1	1129
9/2	1244
10/1	561
10/2	459
10/3	220
11/1	523
12/1	1125
12/2	1036
12/3	961

Lane Saturation Flows

Junction: M40 Junction 9								
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 (M40 N Lane 1)	This lane uses a directly entered Saturation Flow						1828	1828
1/2 (M40 N Lane 2)	This lane uses a directly entered Saturation Flow						1868	1868
1/3 (M40 N Lane 3)	This lane uses a directly entered Saturation Flow						1908	1908
2/1	This lane uses a directly entered Saturation Flow						1945	1945
2/2	This lane uses a directly entered Saturation Flow						1977	1977
2/3	This lane uses a directly entered Saturation Flow						1869	1869
3/1 (A41 Lane 1)	This lane uses a directly entered Saturation Flow						1824	1824
3/2 (A41 Lane 2)	This lane uses a directly entered Saturation Flow						1876	1876
3/3 (A41 Lane 3)	This lane uses a directly entered Saturation Flow						1887	1887
4/1	This lane uses a directly entered Saturation Flow						1869	1869
4/2	This lane uses a directly entered Saturation Flow						1868	1868
4/3	This lane uses a directly entered Saturation Flow						1951	1951
5/1 (M40 S Lane 1)	This lane uses a directly entered Saturation Flow						1932	1932
5/2 (M40 S Lane 2)	This lane uses a directly entered Saturation Flow						1888	1888
5/3 (M40 S Lane 3)	This lane uses a directly entered Saturation Flow						1888	1888
6/1	This lane uses a directly entered Saturation Flow						1866	1866
6/2	This lane uses a directly entered Saturation Flow						1904	1904
6/3	This lane uses a directly entered Saturation Flow						1887	1887
7/1 (A34 Lane 1)	This lane uses a directly entered Saturation Flow						1830	1830
7/2 (A34 Lane 2)	This lane uses a directly entered Saturation Flow						2003	2003
7/3 (A34 Lane 3)	This lane uses a directly entered Saturation Flow						1973	1973
7/4 (A34 Lane 4)	This lane uses a directly entered Saturation Flow						1869	1869
8/1	This lane uses a directly entered Saturation Flow						1942	1942
8/2	This lane uses a directly entered Saturation Flow						1942	1942
8/3	This lane uses a directly entered Saturation Flow						2078	2078
9/1 (M40 N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (M40 N Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A41 Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A41 Exit Lane 2)	Infinite Saturation Flow						Inf	Inf

10/3 (A41 Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
11/1 (M40 S Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
12/1 (A34 Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (A34 Exit Lane 2)	Infinite Saturation Flow	Inf	Inf
12/3 (A34 Exit Lane 3)	Infinite Saturation Flow	Inf	Inf

Scenario 3: '2031 Ref Case - PM' (FG2: '2031 Ref Case - PM', Plan 1: 'Staging Plan No. 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	66	0	2557	2623
	B	112	0	300	478	890
	C	0	261	0	708	969
	D	2678	800	147	0	3625
	Tot.	2790	1127	447	3743	8107

Traffic Lane Flows

Lane	Scenario 3: 2031 Ref Case - PM
Junction: M40 Junction 9	
1/1	836
1/2 (with short)	1787(In) 888(Out)
1/3 (short)	899
2/1	276
2/2	512
2/3	420
3/1	302
3/2	293
3/3	295
4/1	917
4/2	888
4/3	899
5/1	339
5/2 (with short)	630(In) 369(Out)
5/3 (short)	261
6/1	974
6/2	1117
6/3	1056
7/1	1278
7/2	1400
7/3 (with short)	947(In) 530(Out)
7/4 (short)	417
8/1 (short)	56
8/2 (with short)	112(In) 56(Out)
8/3	261
9/1	1334
9/2	1456
10/1	342
10/2	512
10/3	273
11/1	447
12/1	1313
12/2	1486
12/3	944

Lane Saturation Flows

Junction: M40 Junction 9								
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 (M40 N Lane 1)	This lane uses a directly entered Saturation Flow						1828	1828
1/2 (M40 N Lane 2)	This lane uses a directly entered Saturation Flow						1868	1868
1/3 (M40 N Lane 3)	This lane uses a directly entered Saturation Flow						1908	1908
2/1	This lane uses a directly entered Saturation Flow						1945	1945
2/2	This lane uses a directly entered Saturation Flow						1977	1977
2/3	This lane uses a directly entered Saturation Flow						1869	1869
3/1 (A41 Lane 1)	This lane uses a directly entered Saturation Flow						1824	1824
3/2 (A41 Lane 2)	This lane uses a directly entered Saturation Flow						1876	1876
3/3 (A41 Lane 3)	This lane uses a directly entered Saturation Flow						1887	1887
4/1	This lane uses a directly entered Saturation Flow						1869	1869
4/2	This lane uses a directly entered Saturation Flow						1868	1868
4/3	This lane uses a directly entered Saturation Flow						1951	1951
5/1 (M40 S Lane 1)	This lane uses a directly entered Saturation Flow						1932	1932
5/2 (M40 S Lane 2)	This lane uses a directly entered Saturation Flow						1888	1888
5/3 (M40 S Lane 3)	This lane uses a directly entered Saturation Flow						1888	1888
6/1	This lane uses a directly entered Saturation Flow						1866	1866
6/2	This lane uses a directly entered Saturation Flow						1904	1904
6/3	This lane uses a directly entered Saturation Flow						1887	1887
7/1 (A34 Lane 1)	This lane uses a directly entered Saturation Flow						1830	1830
7/2 (A34 Lane 2)	This lane uses a directly entered Saturation Flow						2003	2003
7/3 (A34 Lane 3)	This lane uses a directly entered Saturation Flow						1973	1973
7/4 (A34 Lane 4)	This lane uses a directly entered Saturation Flow						1869	1869
8/1	This lane uses a directly entered Saturation Flow						1942	1942
8/2	This lane uses a directly entered Saturation Flow						1942	1942
8/3	This lane uses a directly entered Saturation Flow						2078	2078
9/1 (M40 N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (M40 N Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A41 Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A41 Exit Lane 2)	Infinite Saturation Flow						Inf	Inf

10/3 (A41 Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
11/1 (M40 S Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
12/1 (A34 Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (A34 Exit Lane 2)	Infinite Saturation Flow	Inf	Inf
12/3 (A34 Exit Lane 3)	Infinite Saturation Flow	Inf	Inf

Scenario 4: '2031 WD - PM' (FG4: '2031 DS - PM', Plan 1: 'Staging Plan No. 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	62	0	2597	2659
	B	93	0	295	411	799
	C	0	255	0	708	963
	D	2655	794	150	0	3599
	Tot.	2748	1111	445	3716	8020

Traffic Lane Flows

Lane	Scenario 4: 2031 WD - PM
Junction: M40 Junction 9	
1/1	844
1/2 (with short)	1815(In) 883(Out)
1/3 (short)	932
2/1	275
2/2	502
2/3	422
3/1	295
3/2	251
3/3	253
4/1	932
4/2	883
4/3	932
5/1	340
5/2 (with short)	623(In) 369(Out)
5/3 (short)	254
6/1	1016
6/2	1071
6/3	1014
7/1	1267
7/2	1388
7/3 (with short)	944(In) 527(Out)
7/4 (short)	417
8/1 (short)	47
8/2 (with short)	94(In) 47(Out)
8/3	254
9/1	1314
9/2	1434
10/1	337
10/2	502
10/3	272
11/1	445
12/1	1356
12/2	1439
12/3	921

Lane Saturation Flows

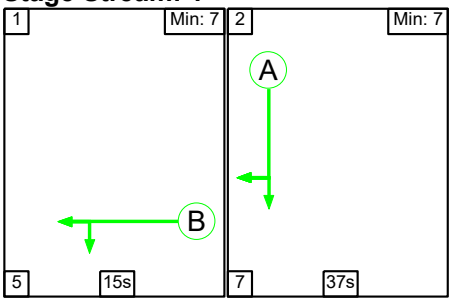
Junction: M40 Junction 9								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (M40 N Lane 1)	This lane uses a directly entered Saturation Flow						1828	1828
1/2 (M40 N Lane 2)	This lane uses a directly entered Saturation Flow						1868	1868
1/3 (M40 N Lane 3)	This lane uses a directly entered Saturation Flow						1908	1908
2/1	This lane uses a directly entered Saturation Flow						1945	1945
2/2	This lane uses a directly entered Saturation Flow						1977	1977
2/3	This lane uses a directly entered Saturation Flow						1869	1869
3/1 (A41 Lane 1)	This lane uses a directly entered Saturation Flow						1824	1824
3/2 (A41 Lane 2)	This lane uses a directly entered Saturation Flow						1876	1876
3/3 (A41 Lane 3)	This lane uses a directly entered Saturation Flow						1887	1887
4/1	This lane uses a directly entered Saturation Flow						1869	1869
4/2	This lane uses a directly entered Saturation Flow						1868	1868
4/3	This lane uses a directly entered Saturation Flow						1951	1951
5/1 (M40 S Lane 1)	This lane uses a directly entered Saturation Flow						1932	1932
5/2 (M40 S Lane 2)	This lane uses a directly entered Saturation Flow						1888	1888
5/3 (M40 S Lane 3)	This lane uses a directly entered Saturation Flow						1888	1888
6/1	This lane uses a directly entered Saturation Flow						1866	1866
6/2	This lane uses a directly entered Saturation Flow						1904	1904
6/3	This lane uses a directly entered Saturation Flow						1887	1887
7/1 (A34 Lane 1)	This lane uses a directly entered Saturation Flow						1830	1830
7/2 (A34 Lane 2)	This lane uses a directly entered Saturation Flow						2003	2003
7/3 (A34 Lane 3)	This lane uses a directly entered Saturation Flow						1973	1973
7/4 (A34 Lane 4)	This lane uses a directly entered Saturation Flow						1869	1869
8/1	This lane uses a directly entered Saturation Flow						1942	1942
8/2	This lane uses a directly entered Saturation Flow						1942	1942
8/3	This lane uses a directly entered Saturation Flow						2078	2078
9/1 (M40 N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (M40 N Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A41 Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A41 Exit Lane 2)	Infinite Saturation Flow						Inf	Inf

10/3 (A41 Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
11/1 (M40 S Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
12/1 (A34 Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (A34 Exit Lane 2)	Infinite Saturation Flow	Inf	Inf
12/3 (A34 Exit Lane 3)	Infinite Saturation Flow	Inf	Inf

Scenario 1: '2031 Ref Case - AM' (FG5: 'Adj 2031 Ref Case - AM', Plan 1: 'Staging Plan No. 1')
C1

Stage Sequence Diagram

Stage Stream: 1

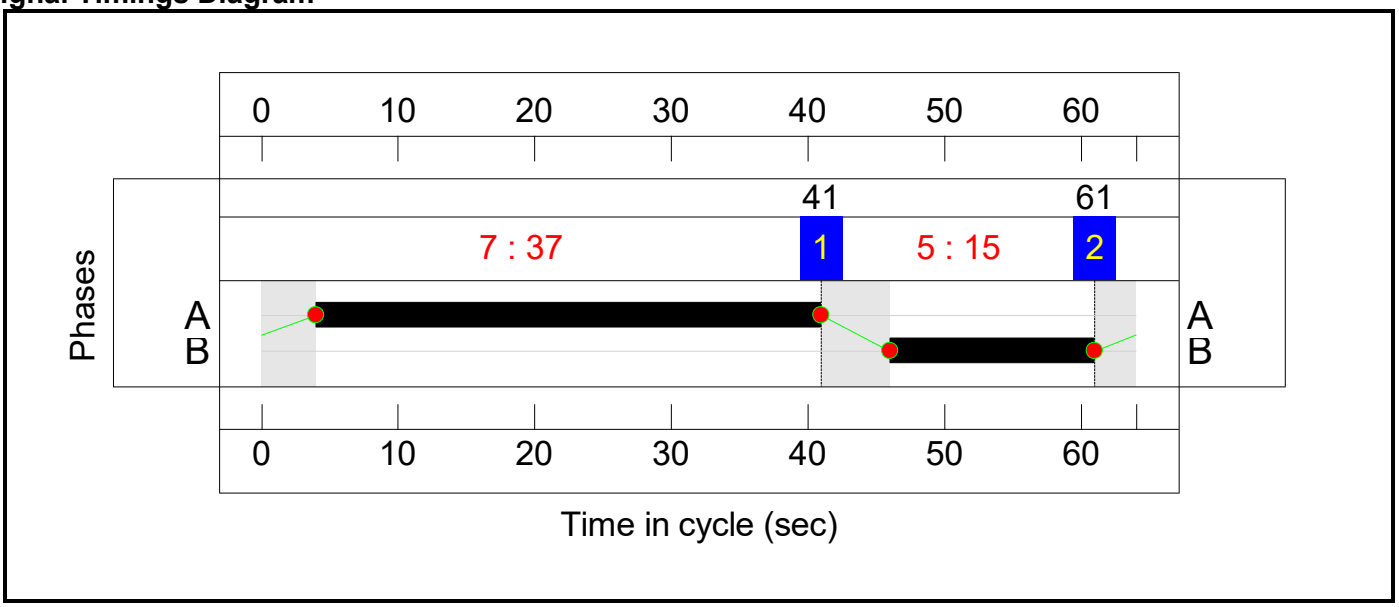


Stage Timings

Stage Stream: 1

Stage	1	2
Duration	15	37
Change Point	41	61

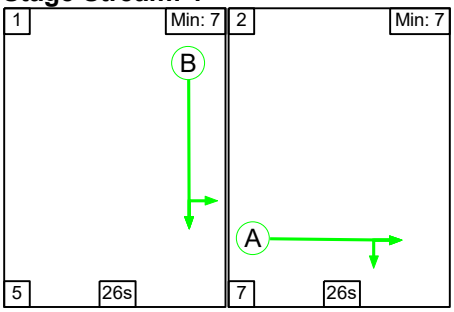
Signal Timings Diagram



C2

Stage Sequence Diagram

Stage Stream: 1

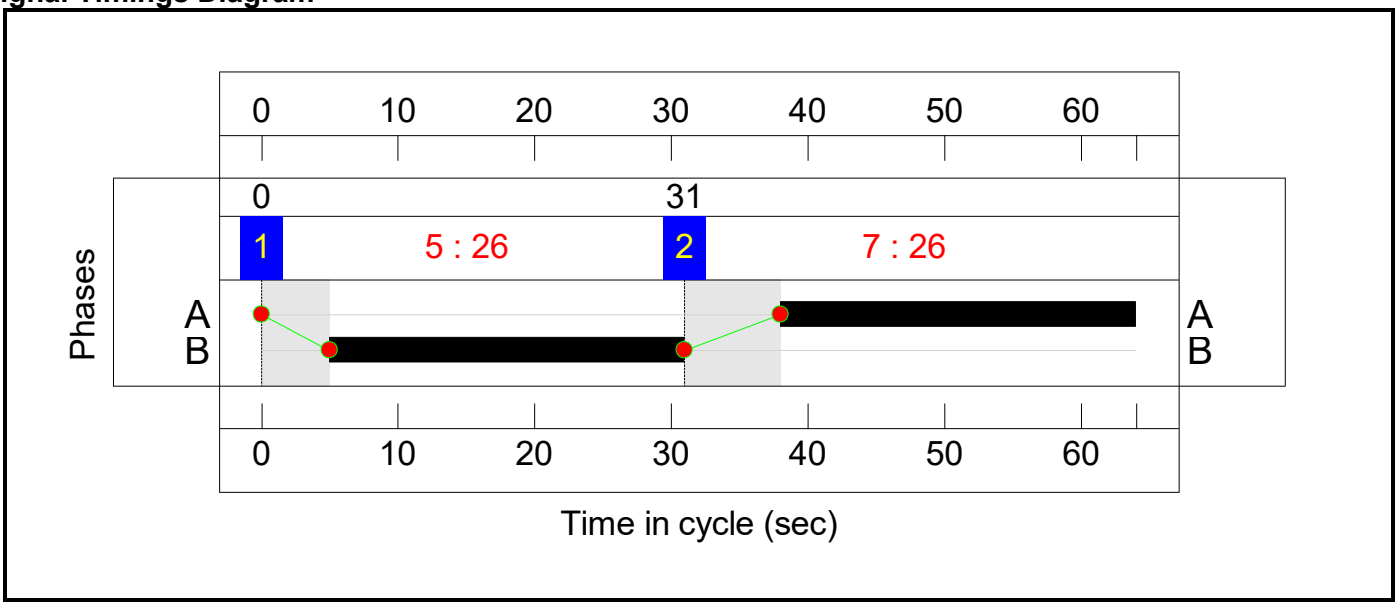


Stage Timings

Stage Stream: 1

Stage	1	2
Duration	26	26
Change Point	0	31

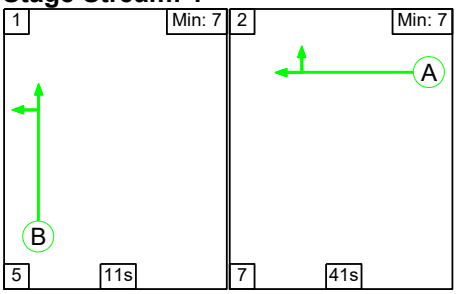
Signal Timings Diagram



C3

Stage Sequence Diagram

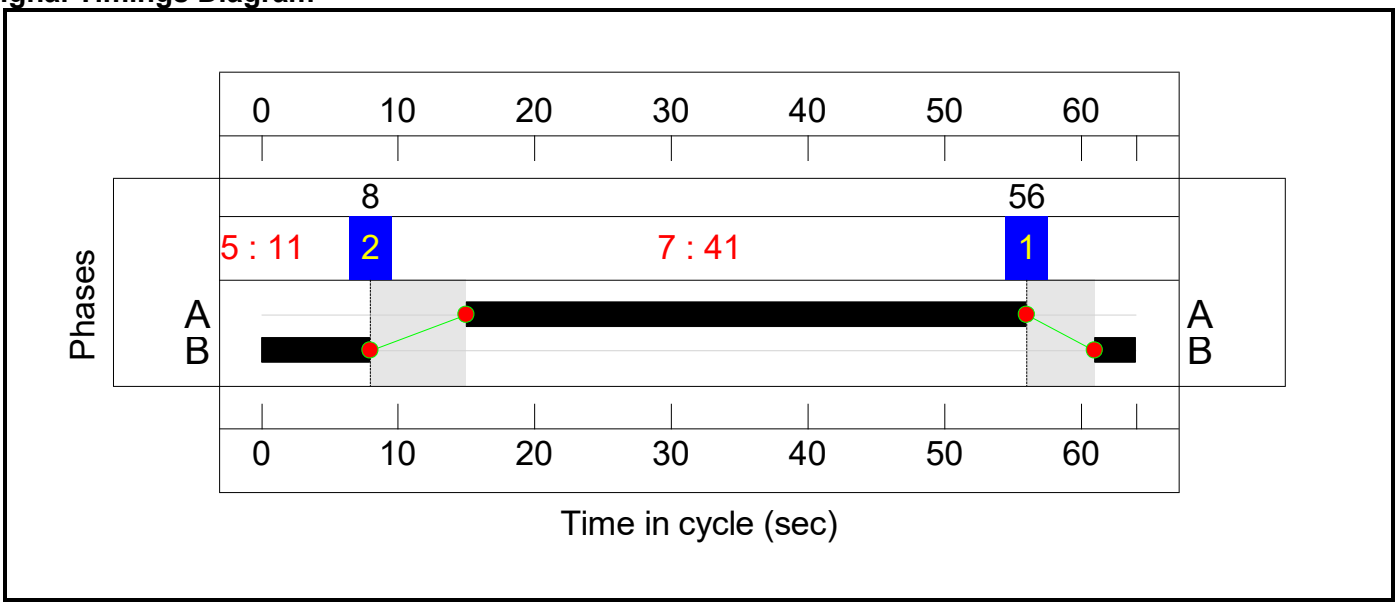
Stage Stream: 1



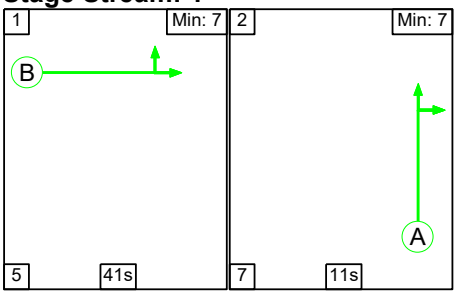
Stage Timings
Stage Stream: 1

Stage	1	2
Duration	11	41
Change Point	56	8

Signal Timings Diagram



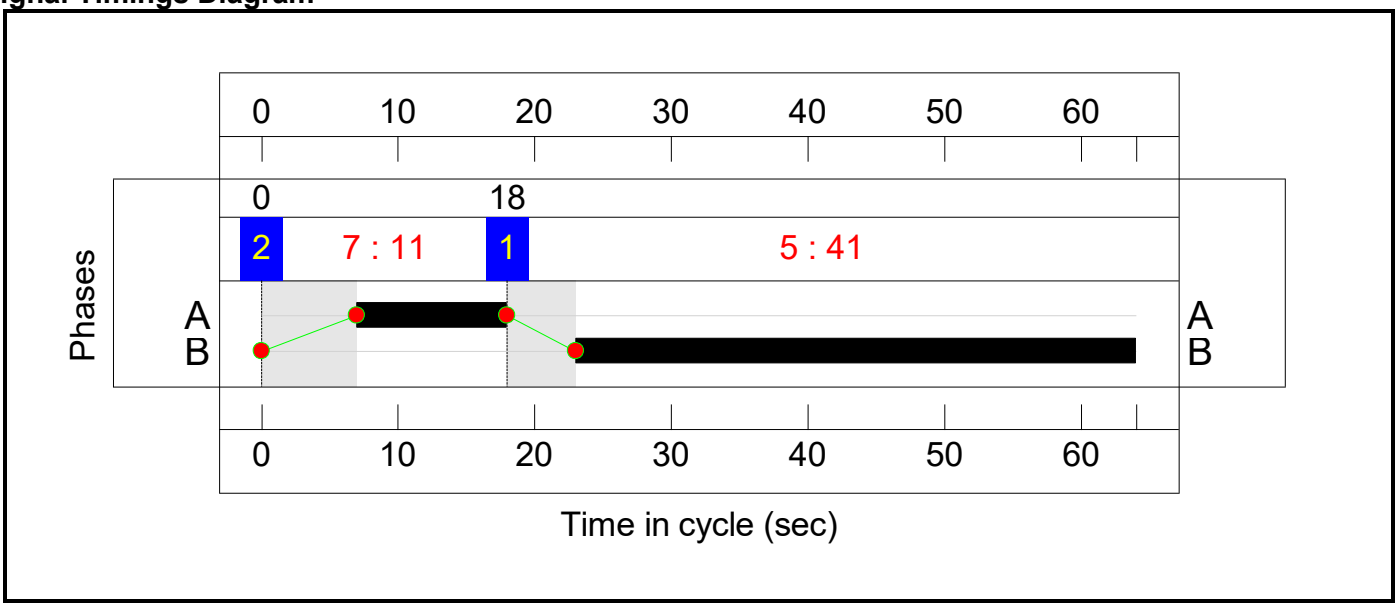
C4
Stage Sequence Diagram
Stage Stream: 1



Stage Timings
Stage Stream: 1

Stage	1	2
Duration	41	11
Change Point	18	0

Signal Timings Diagram



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: M40 Junction 9	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.6%**
M40 Junction 9	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.6%**
1/1	M40 N Ahead Left	U	2:1	N/A	C2:B		1	26	-	714	1828	771	92.6%
1/2+1/3	M40 N Ahead	U	2:1	N/A	C2:B		1	26	-	1566	1868:1908	788+805	98.6 : 98.0%
2/1	Ahead	U	2:1	N/A	C2:A		1	26	-	446	1945	821	54.4%
2/2	Ahead	U	2:1	N/A	C2:A		1	26	-	448	1977	834	53.7%
2/3	Right Ahead	U	2:1	N/A	C2:A		1	26	-	519	1869	788	65.8%
3/1	A41 Ahead Left	U	1:1	N/A	C1:B		1	15	-	346	1824	456	75.9%
3/2	A41 Ahead	U	1:1	N/A	C1:B		1	15	-	321	1876	469	68.4%
3/3	A41 Ahead	U	1:1	N/A	C1:B		1	15	-	332	1887	472	70.4%
4/1	Right Ahead	U	1:1	N/A	C1:A		1	37	-	852	1869	1110	76.8%
4/2	Right	U	1:1	N/A	C1:A		1	37	-	777	1868	1109	70.1%
4/3	Right	U	1:1	N/A	C1:A		1	37	-	789	1951	1158	68.1%
5/1	M40 S Left	U	3:1	N/A	C3:B		1	11	-	190	1932	362	52.4%
5/2+5/3	M40 S Ahead Left	U	3:1	N/A	C3:B		1	11	-	323	1888:1888	354+143	65.0 : 65.0%
6/1	Ahead	U	3:1	N/A	C3:A		1	41	-	754	1866	1195	63.1%
6/2	Ahead	U	3:1	N/A	C3:A		1	41	-	1041	1904	1220	85.3%
6/3	Right Ahead	U	3:1	N/A	C3:A		1	41	-	1102	1887	1238	89.0%
7/1	A34 Left	U	4:1	N/A	C4:B		1	41	-	1086	1830	1201	90.4%
7/2	A34 Left	U	4:1	N/A	C4:B		1	41	-	1200	2003	1314	91.3%
7/3+7/4	A34 Ahead	U	4:1	N/A	C4:B		1	41	-	1186	1973:1869	1083+843	61.6 : 61.6%
8/2+8/1	Right Ahead	U	4:1	N/A	C4:A		1	11	-	188	1942:1942	364+61	44.2 : 44.2%
8/3	Right	U	4:1	N/A	C4:A		1	11	-	93	2078	390	23.9%

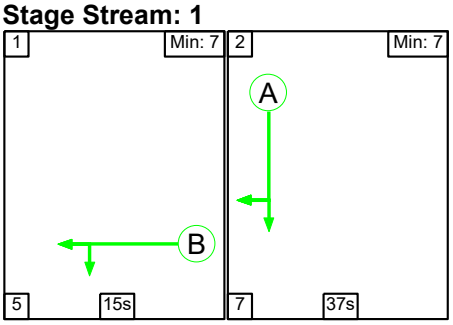
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
M40 Junction 9	**-**	**-**	**0**	**0**	**0**	**40.6**	**34.7**	**0.0**	**75.3**	**-**	**-**	**-**	**-**
1/1	714	714	-	-	-	3.5	5.3	-	8.8	44.1	11.9	5.3	17.2
1/2+1/3	1566	1566	-	-	-	8.0	14.2	-	22.1 (11.0+11.1)	50.8 (50.9:50.8)	13.8	14.2	28.0
2/1	446	446	-	-	-	1.4	0.0	-	1.4	11.0	5.4	0.0	5.4
2/2	448	448	-	-	-	1.4	0.0	-	1.4	11.0	5.0	0.0	5.0
2/3	519	519	-	-	-	1.5	0.0	-	1.5	10.4	5.9	0.0	5.9
3/1	346	346	-	-	-	2.1	1.5	-	3.7	38.1	5.7	1.5	7.2
3/2	321	321	-	-	-	1.9	1.1	-	3.0	33.7	5.1	1.1	6.2
3/3	332	332	-	-	-	2.0	1.2	-	3.2	34.5	5.3	1.2	6.5
4/1	852	852	-	-	-	1.5	0.0	-	1.5	6.3	6.3	0.0	6.3
4/2	777	777	-	-	-	0.1	0.0	-	0.1	0.3	0.2	0.0	0.2
4/3	789	789	-	-	-	0.1	0.0	-	0.1	0.3	0.2	0.0	0.2
5/1	190	190	-	-	-	1.2	0.5	-	1.8	33.8	3.0	0.5	3.6
5/2+5/3	323	323	-	-	-	2.1	0.9	-	3.0 (2.2+0.8)	33.8 (34.3:32.5)	3.8	0.9	4.7
6/1	754	754	-	-	-	1.0	0.0	-	1.0	4.7	4.2	0.0	4.2
6/2	1041	1041	-	-	-	2.2	0.0	-	2.2	7.6	8.7	0.0	8.7
6/3	1102	1102	-	-	-	2.2	0.0	-	2.2	7.2	9.0	0.0	9.0
7/1	1086	1086	-	-	-	2.8	4.4	-	7.2	23.9	16.3	4.4	20.7
7/2	1200	1200	-	-	-	3.1	4.8	-	8.0	23.9	18.0	4.8	22.8
7/3+7/4	1186	1186	-	-	-	1.8	0.8	-	2.6 (1.5+1.1)	7.9 (8.1:7.7)	6.1	0.8	6.9
8/2+8/1	188	188	-	-	-	0.6	0.0	-	0.6 (0.3+0.3)	11.9 (7.5:37.6)	2.2	0.0	2.2
8/3	93	93	-	-	-	0.1	0.0	-	0.1	2.3	1.3	0.0	1.3

C1	Stream: 1 PRC for Signalled Lanes (%):	17.2	Total Delay for Signalled Lanes (pcuHr):	11.50	Cycle Time (s): 64
C2	Stream: 1 PRC for Signalled Lanes (%):	-9.6	Total Delay for Signalled Lanes (pcuHr):	35.09	Cycle Time (s): 64
C3	Stream: 1 PRC for Signalled Lanes (%):	1.1	Total Delay for Signalled Lanes (pcuHr):	10.21	Cycle Time (s): 64
C4	Stream: 1 PRC for Signalled Lanes (%):	-1.4	Total Delay for Signalled Lanes (pcuHr):	18.47	Cycle Time (s): 64
	PRC Over All Lanes (%):	-9.6	Total Delay Over All Lanes(pcuHr):	75.27	

Scenario 2: '2031 WD - AM' (FG6: 'Adj 2031 DS - AM', Plan 1: 'Staging Plan No. 1')
C1

Stage Sequence Diagram

Stage Stream: 1

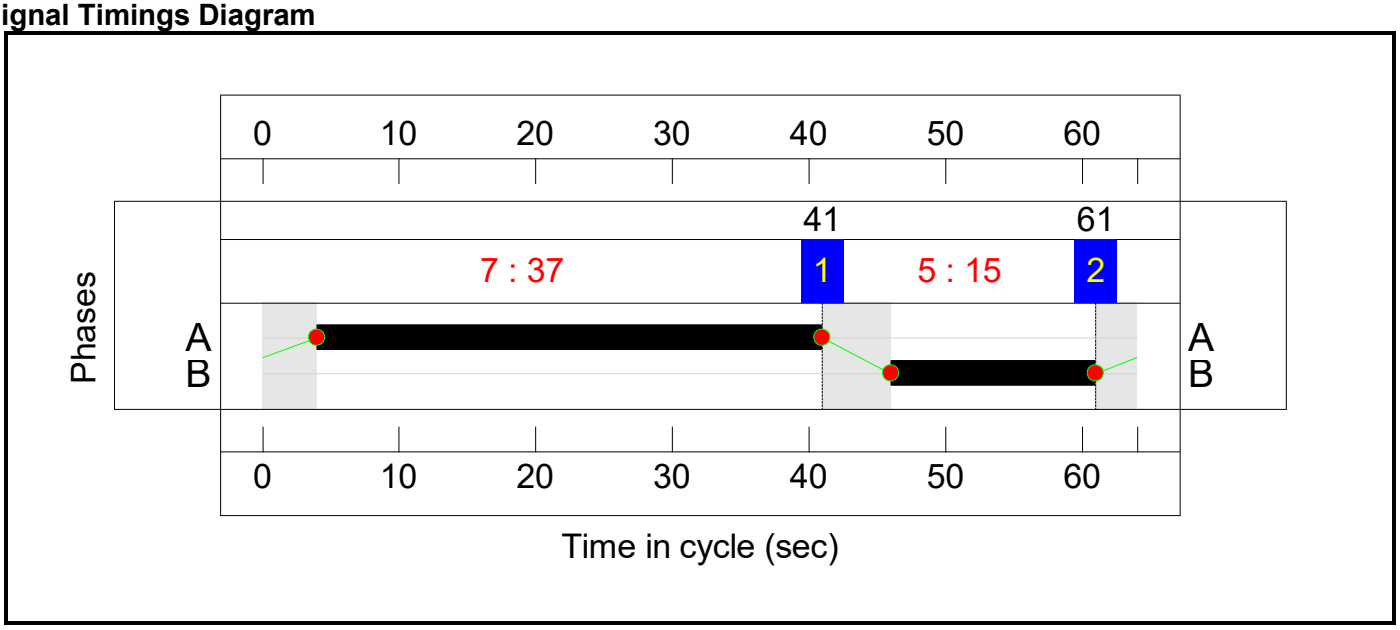


Stage Timings

Stage Stream: 1

Stage	1	2
Duration	15	37
Change Point	41	61

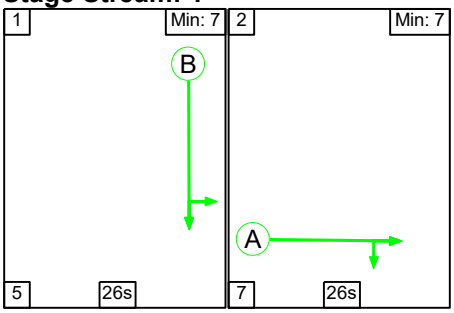
Signal Timings Diagram



C2

Stage Sequence Diagram

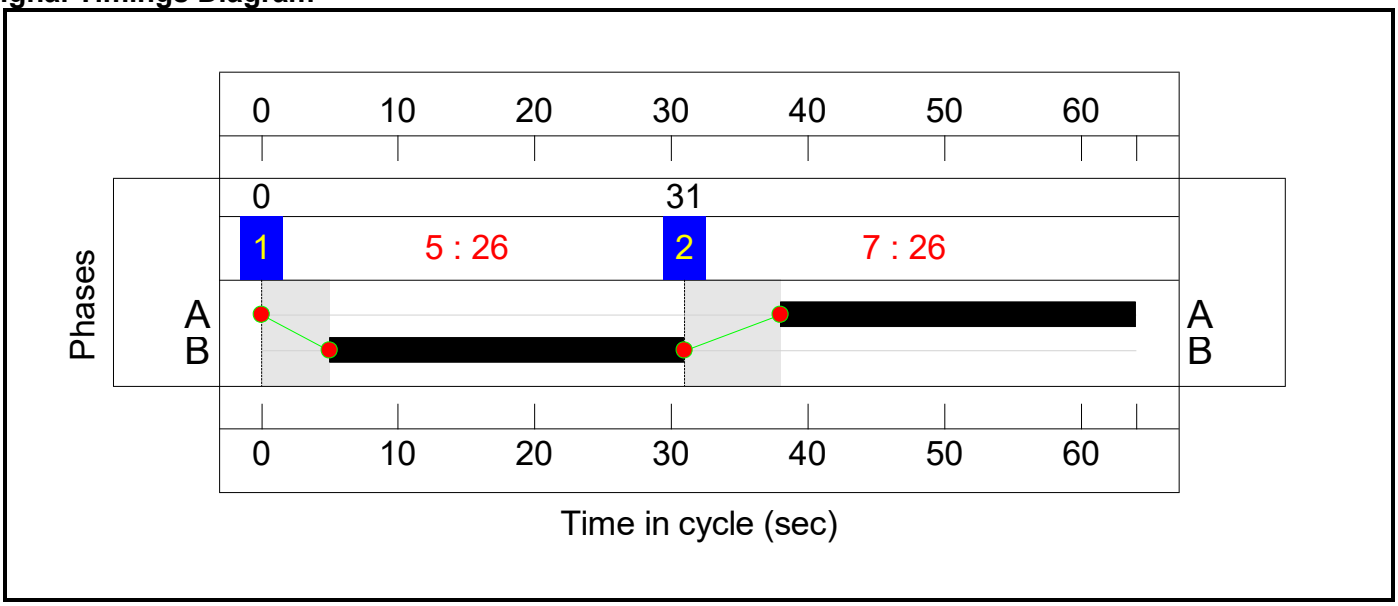
Stage Stream: 1



Stage Timings
Stage Stream: 1

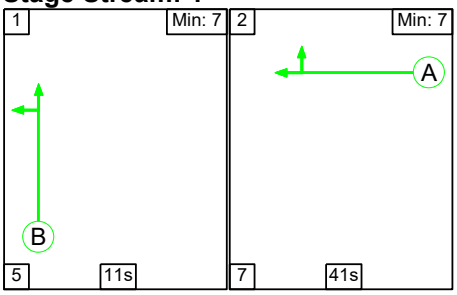
Stage	1	2
Duration	26	26
Change Point	0	31

Signal Timings Diagram



C3

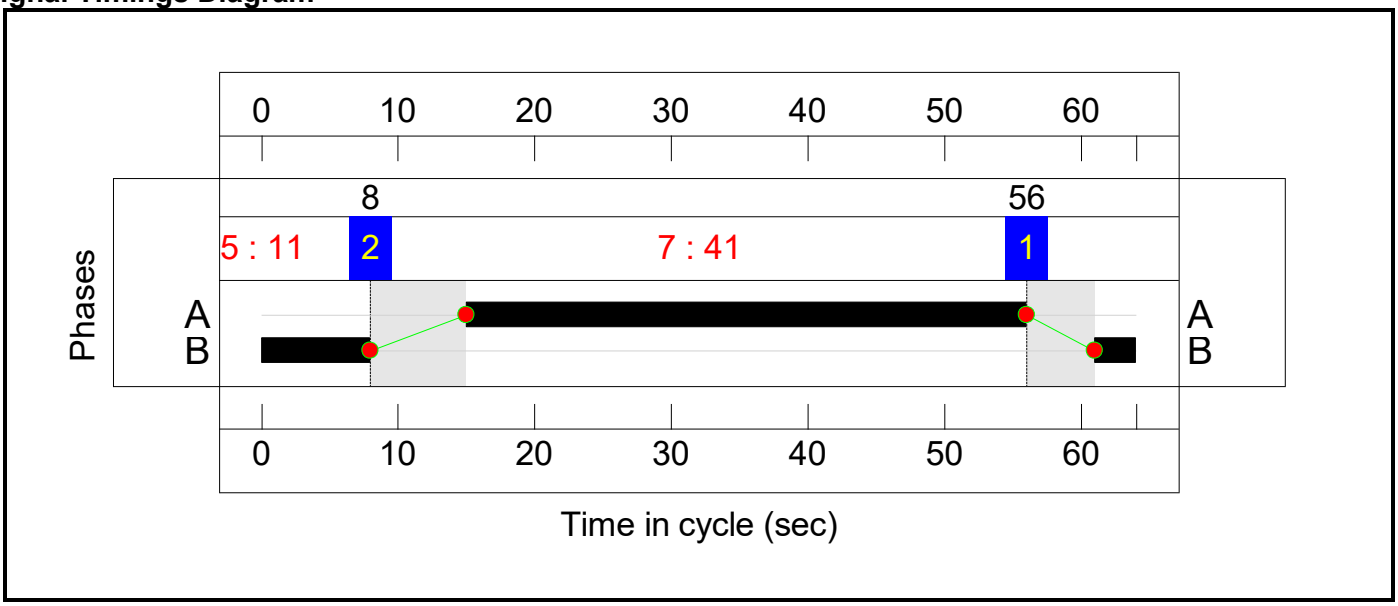
Stage Sequence Diagram
Stage Stream: 1



Stage Timings
Stage Stream: 1

Stage	1	2
Duration	11	41
Change Point	56	8

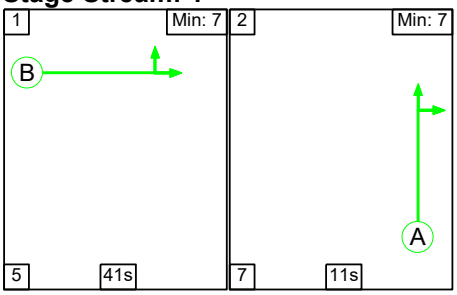
Signal Timings Diagram



C4

Stage Sequence Diagram

Stage Stream: 1

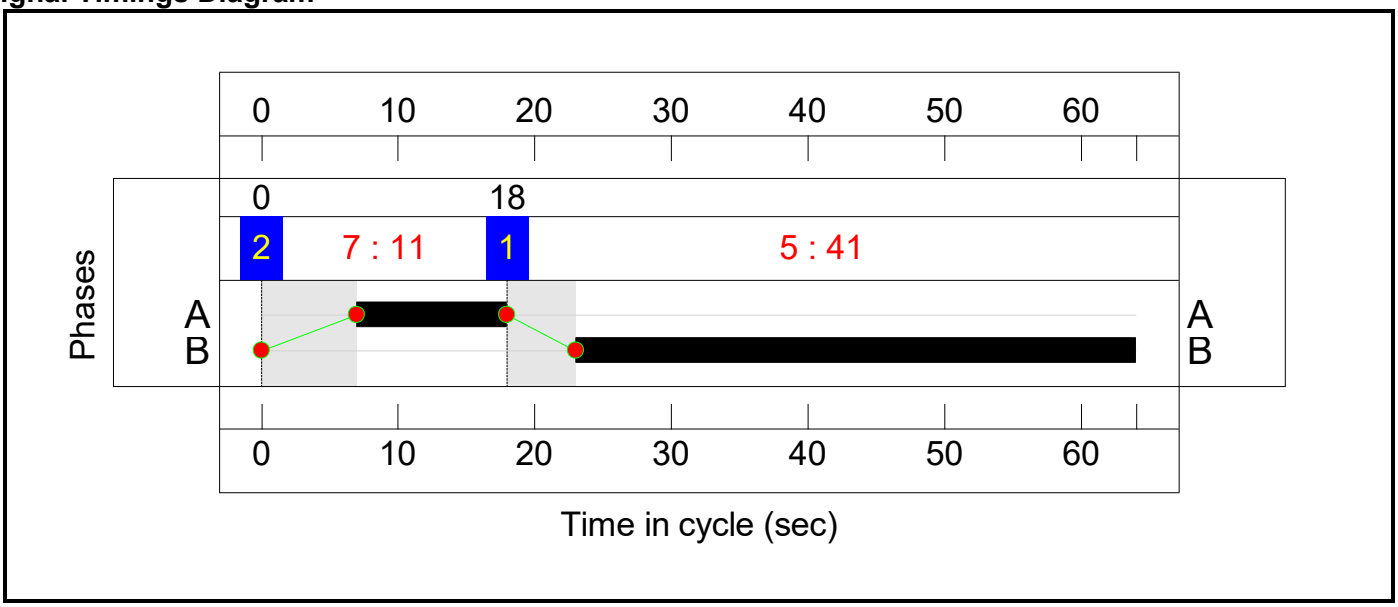


Stage Timings

Stage Stream: 1

Stage	1	2
Duration	41	11
Change Point	18	0

Signal Timings Diagram



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: M40 Junction 9	-	-	**N/A**	-	-		-	-	-	-	-	-	**100.3%**
M40 Junction 9	-	-	**N/A**	-	-		-	-	-	-	-	-	**100.3%**
1/1	M40 N Ahead Left	U	2:1	N/A	C2:B		1	26	-	726	1828	771	94.1%
1/2+1/3	M40 N Ahead	U	2:1	N/A	C2:B		1	26	-	1590	1868:1908	788+805	99.4 : 100.3%
2/1	Ahead	U	2:1	N/A	C2:A		1	26	-	464	1945	821	56.5%
2/2	Ahead	U	2:1	N/A	C2:A		1	26	-	459	1977	834	55.0%
2/3	Right Ahead	U	2:1	N/A	C2:A		1	26	-	520	1869	788	65.9%
3/1	A41 Ahead Left	U	1:1	N/A	C1:B		1	15	-	311	1824	456	68.2%
3/2	A41 Ahead	U	1:1	N/A	C1:B		1	15	-	290	1876	469	61.8%
3/3	A41 Ahead	U	1:1	N/A	C1:B		1	15	-	298	1887	472	63.2%
4/1	Right Ahead	U	1:1	N/A	C1:A		1	37	-	929	1869	1110	83.7%
4/2	Right	U	1:1	N/A	C1:A		1	37	-	783	1868	1109	70.6%
4/3	Right	U	1:1	N/A	C1:A		1	37	-	807	1951	1158	69.5%
5/1	M40 S Left	U	3:1	N/A	C3:B		1	11	-	187	1932	362	51.6%
5/2+5/3	M40 S Ahead Left	U	3:1	N/A	C3:B		1	11	-	328	1888:1888	354+149	65.3 : 65.3%
6/1	Ahead	U	3:1	N/A	C3:A		1	41	-	938	1866	1195	78.5%
6/2	Ahead	U	3:1	N/A	C3:A		1	41	-	935	1904	1220	76.6%
6/3	Right Ahead	U	3:1	N/A	C3:A		1	41	-	1022	1887	1238	82.4%
7/1	A34 Left	U	4:1	N/A	C4:B		1	41	-	1098	1830	1201	91.4%
7/2	A34 Left	U	4:1	N/A	C4:B		1	41	-	1214	2003	1314	92.4%
7/3+7/4	A34 Ahead	U	4:1	N/A	C4:B		1	41	-	1216	1973:1869	1129+799	63.1 : 63.1%
8/2+8/1	Right Ahead	U	4:1	N/A	C4:A		1	11	-	191	1942:1942	364+71	43.9 : 43.9%
8/3	Right	U	4:1	N/A	C4:A		1	11	-	97	2078	390	24.9%

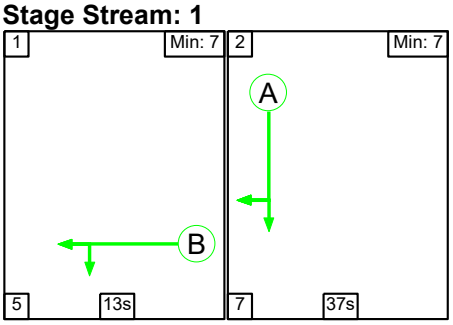
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
M40 Junction 9	**-**	**-**	**0**	**0**	**0**	**40.7**	**41.9**	**0.0**	**82.6**	**-**	**-**	**-**	**-**
1/1	726	726	-	-	-	3.6	6.3	-	9.9	48.9	12.3	6.3	18.6
1/2+1/3	1590	1588	-	-	-	8.2	20.2	-	28.4 (13.5+15.0)	64.4 (61.9:66.9)	14.4	20.2	34.6
2/1	464	464	-	-	-	1.4	0.0	-	1.4	10.8	5.1	0.0	5.1
2/2	459	459	-	-	-	1.4	0.0	-	1.4	11.1	5.1	0.0	5.1
2/3	520	520	-	-	-	1.5	0.0	-	1.5	10.7	6.4	0.0	6.4
3/1	311	311	-	-	-	1.9	1.1	-	2.9	33.9	4.9	1.1	6.0
3/2	290	290	-	-	-	1.7	0.8	-	2.5	31.3	4.5	0.8	5.3
3/3	298	298	-	-	-	1.8	0.8	-	2.6	31.6	4.7	0.8	5.6
4/1	929	929	-	-	-	1.5	0.0	-	1.5	5.9	6.5	0.0	6.5
4/2	783	783	-	-	-	0.1	0.0	-	0.1	0.4	0.2	0.0	0.2
4/3	805	805	-	-	-	0.1	0.0	-	0.1	0.4	0.2	0.0	0.2
5/1	187	187	-	-	-	1.2	0.5	-	1.7	33.6	3.0	0.5	3.5
5/2+5/3	328	328	-	-	-	2.1	0.9	-	3.1 (2.2+0.9)	33.7 (34.3:32.5)	3.8	0.9	4.7
6/1	938	938	-	-	-	1.4	0.0	-	1.4	5.4	8.1	0.0	8.1
6/2	935	935	-	-	-	1.9	0.0	-	1.9	7.5	7.6	0.0	7.6
6/3	1020	1020	-	-	-	2.0	0.0	-	2.0	7.1	8.1	0.0	8.1
7/1	1098	1098	-	-	-	2.9	4.9	-	7.8	25.4	16.8	4.9	21.6
7/2	1214	1214	-	-	-	3.2	5.5	-	8.7	25.8	18.5	5.5	24.0
7/3+7/4	1216	1216	-	-	-	1.9	0.9	-	2.7 (1.7+1.1)	8.1 (8.4:7.7)	6.7	0.9	7.6
8/2+8/1	191	191	-	-	-	0.7	0.0	-	0.7 (0.4+0.3)	13.3 (8.4:38.3)	2.2	0.0	2.2
8/3	97	97	-	-	-	0.1	0.0	-	0.1	2.3	1.3	0.0	1.3

C1	Stream: 1 PRC for Signalled Lanes (%):	7.5	Total Delay for Signalled Lanes (pcuHr):	9.77	Cycle Time (s): 64
C2	Stream: 1 PRC for Signalled Lanes (%):	-11.4	Total Delay for Signalled Lanes (pcuHr):	42.66	Cycle Time (s): 64
C3	Stream: 1 PRC for Signalled Lanes (%):	9.2	Total Delay for Signalled Lanes (pcuHr):	10.19	Cycle Time (s): 64
C4	Stream: 1 PRC for Signalled Lanes (%):	-2.6	Total Delay for Signalled Lanes (pcuHr):	19.96	Cycle Time (s): 64
	PRC Over All Lanes (%):	-11.4	Total Delay Over All Lanes(pcuHr):	82.58	

Scenario 3: '2031 Ref Case - PM' (FG2: '2031 Ref Case - PM', Plan 1: 'Staging Plan No. 1')
C1

Stage Sequence Diagram

Stage Stream: 1

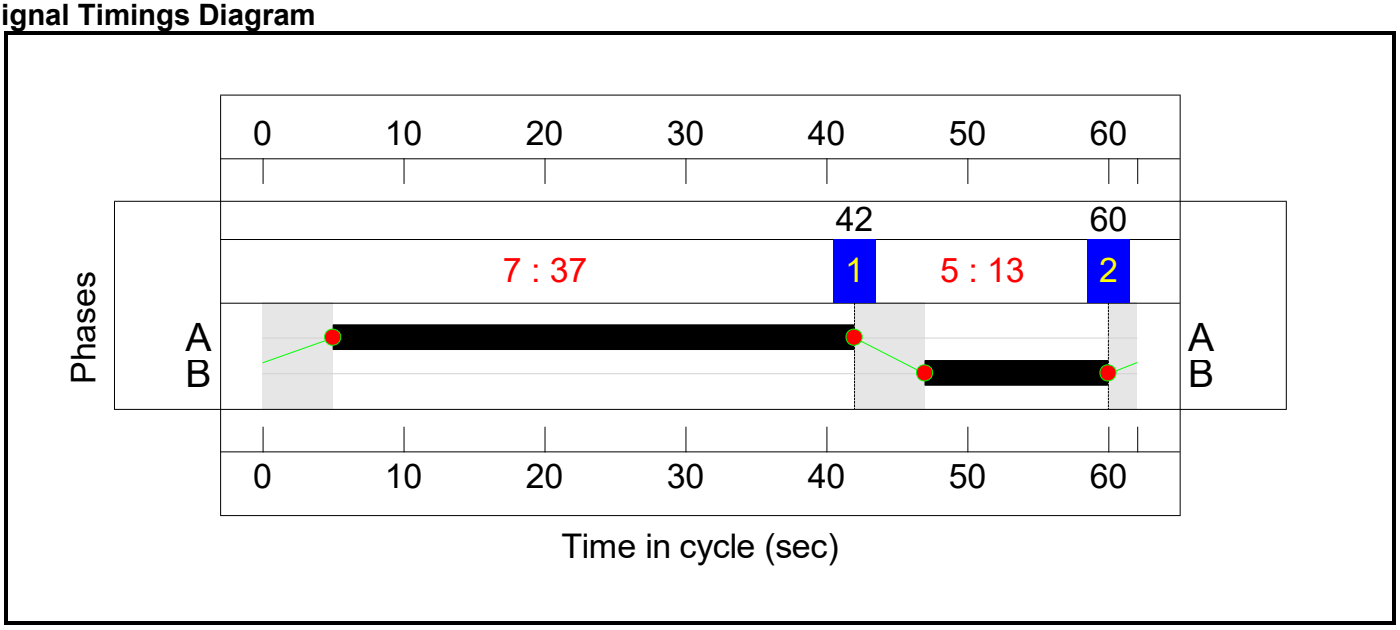


Stage Timings

Stage Stream: 1

Stage	1	2
Duration	13	37
Change Point	42	60

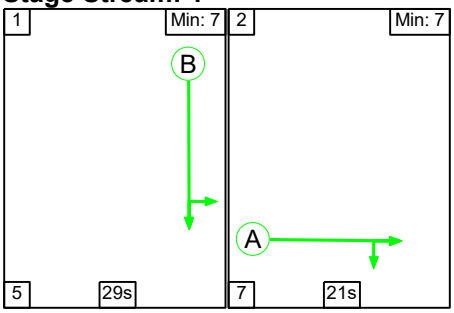
Signal Timings Diagram



C2

Stage Sequence Diagram

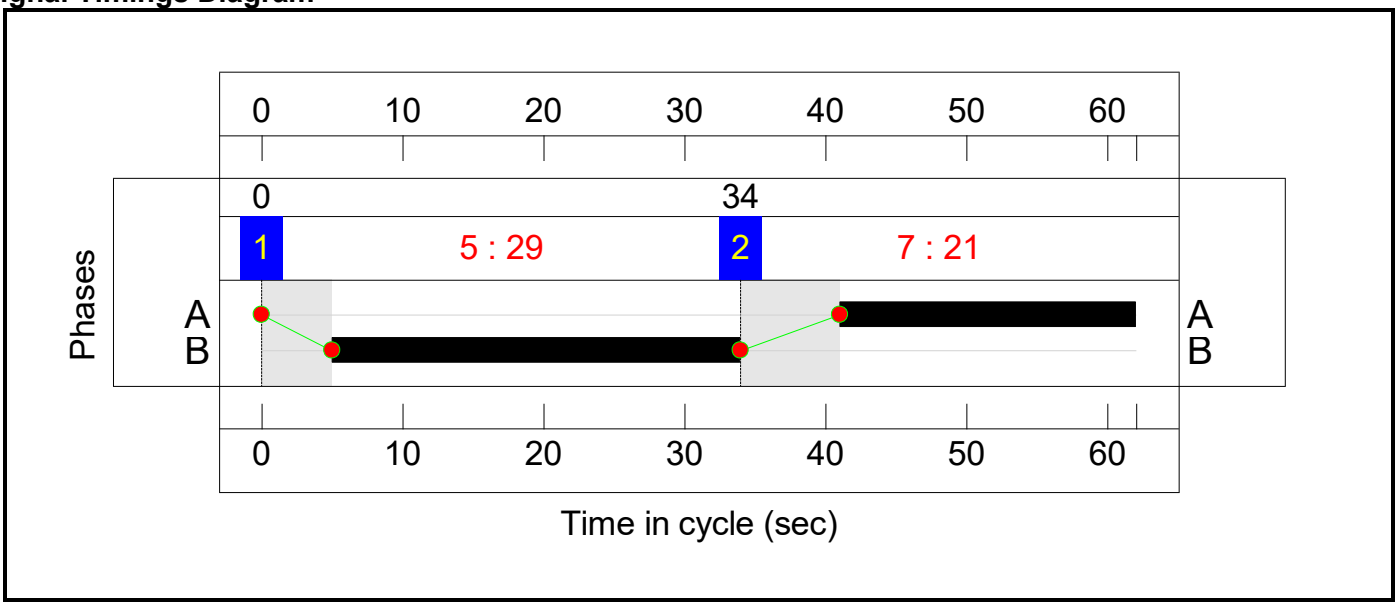
Stage Stream: 1



Stage Timings
Stage Stream: 1

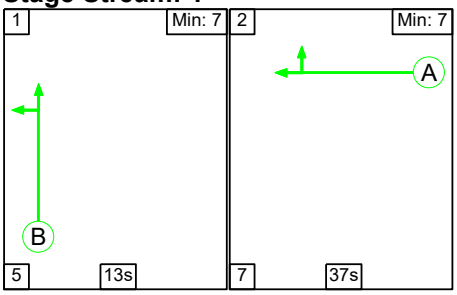
Stage	1	2
Duration	29	21
Change Point	0	34

Signal Timings Diagram



C3

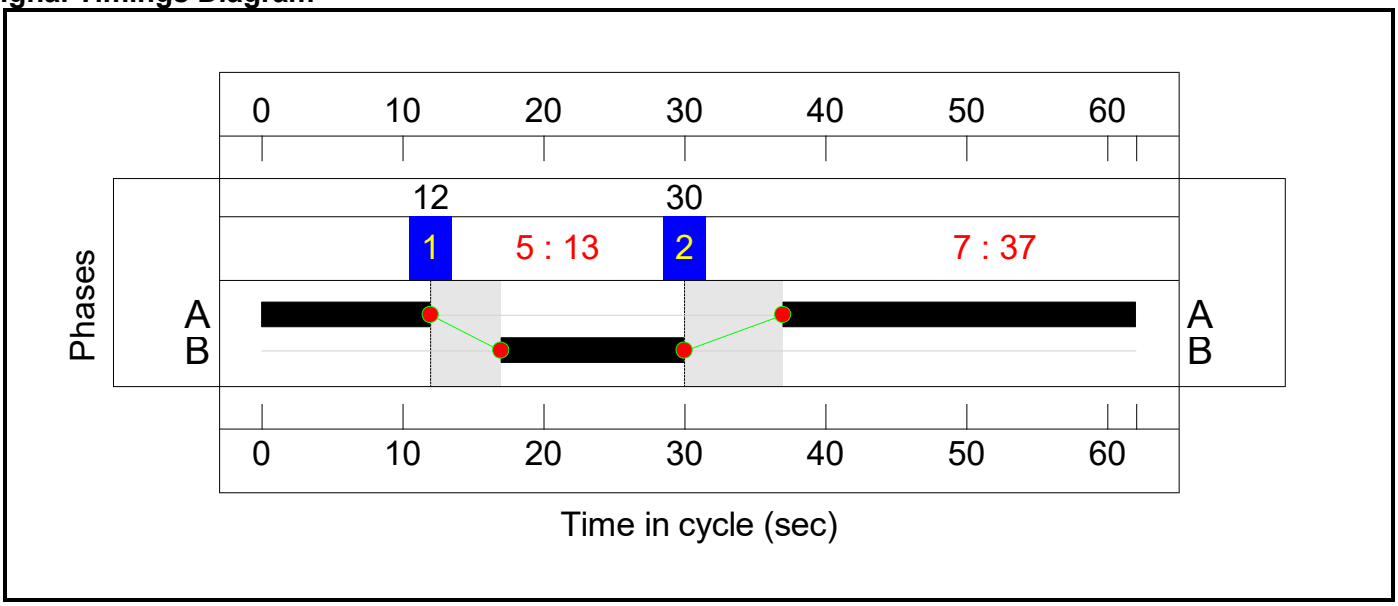
Stage Sequence Diagram
Stage Stream: 1



Stage Timings
Stage Stream: 1

Stage	1	2
Duration	13	37
Change Point	12	30

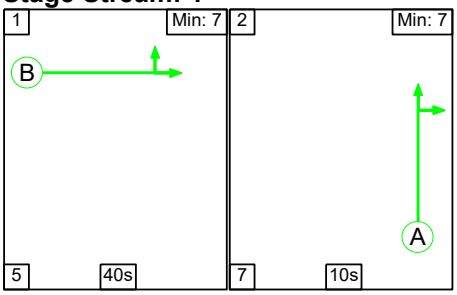
Signal Timings Diagram



C4

Stage Sequence Diagram

Stage Stream: 1

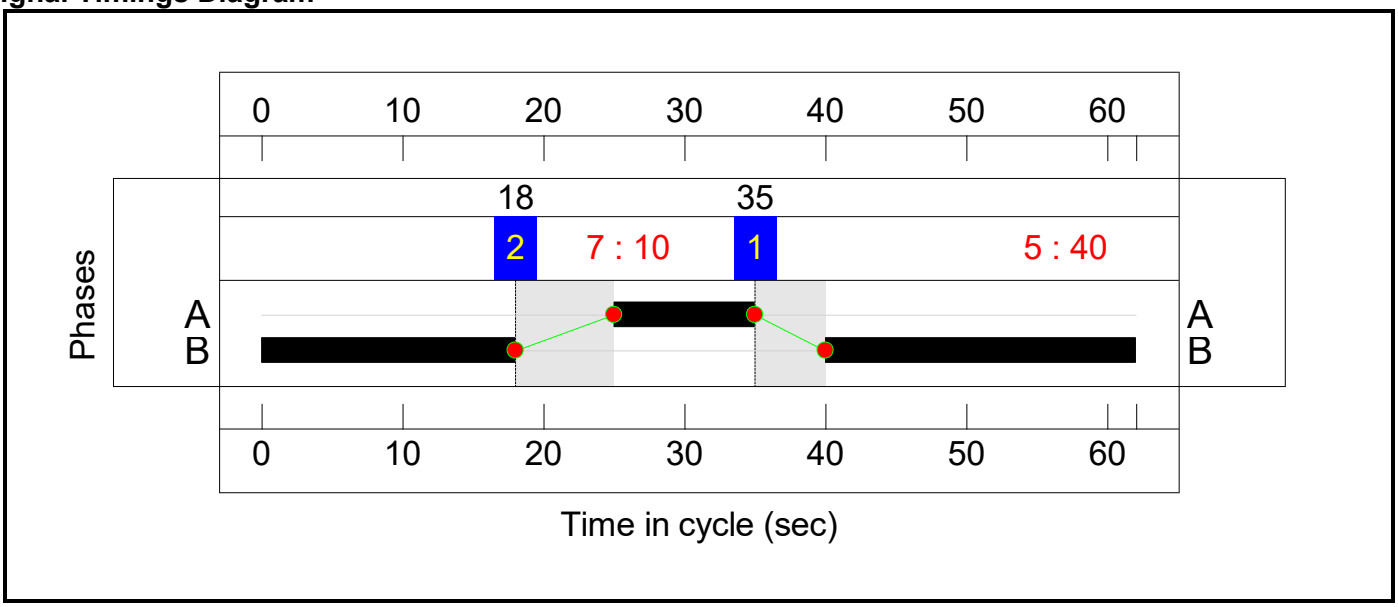


Stage Timings

Stage Stream: 1

Stage	1	2
Duration	40	10
Change Point	35	18

Signal Timings Diagram



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: M40 Junction 9	-	-	**N/A**	-	-		-	-	-	-	-	-	**105.7%**
M40 Junction 9	-	-	**N/A**	-	-		-	-	-	-	-	-	**105.7%**
1/1	M40 N Ahead Left	U	2:1	N/A	C2:B		1	29	-	836	1828	885	94.5%
1/2+1/3	M40 N Ahead	U	2:1	N/A	C2:B		1	29	-	1787	1868:1908	904+923	98.2 : 97.4%
2/1	Ahead	U	2:1	N/A	C2:A		1	21	-	276	1945	690	40.0%
2/2	Ahead	U	2:1	N/A	C2:A		1	21	-	512	1977	702	73.0%
2/3	Right Ahead	U	2:1	N/A	C2:A		1	21	-	420	1869	663	63.3%
3/1	A41 Ahead Left	U	1:1	N/A	C1:B		1	13	-	302	1824	412	73.3%
3/2	A41 Ahead	U	1:1	N/A	C1:B		1	13	-	293	1876	424	69.2%
3/3	A41 Ahead	U	1:1	N/A	C1:B		1	13	-	295	1887	426	69.2%
4/1	Right Ahead	U	1:1	N/A	C1:A		1	37	-	917	1869	1146	80.1%
4/2	Right	U	1:1	N/A	C1:A		1	37	-	888	1868	1145	77.6%
4/3	Right	U	1:1	N/A	C1:A		1	37	-	899	1951	1196	75.2%
5/1	M40 S Left	U	3:1	N/A	C3:B		1	13	-	339	1932	436	77.7%
5/2+5/3	M40 S Ahead Left	U	3:1	N/A	C3:B		1	13	-	630	1888:1888	426+302	86.6 : 86.6%
6/1	Ahead	U	3:1	N/A	C3:A		1	37	-	974	1866	1144	85.2%
6/2	Ahead	U	3:1	N/A	C3:A		1	37	-	1117	1904	1167	95.7%
6/3	Right Ahead	U	3:1	N/A	C3:A		1	37	-	1056	1887	1157	91.3%
7/1	A34 Left	U	4:1	N/A	C4:B		1	40	-	1278	1830	1210	105.6%
7/2	A34 Left	U	4:1	N/A	C4:B		1	40	-	1400	2003	1325	105.7%
7/3+7/4	A34 Ahead	U	4:1	N/A	C4:B		1	40	-	947	1973:1869	1078+848	49.2 : 49.2%
8/2+8/1	Right Ahead	U	4:1	N/A	C4:A		1	10	-	112	1942:1942	316+316	17.7 : 17.7%
8/3	Right	U	4:1	N/A	C4:A		1	10	-	261	2078	369	70.8%

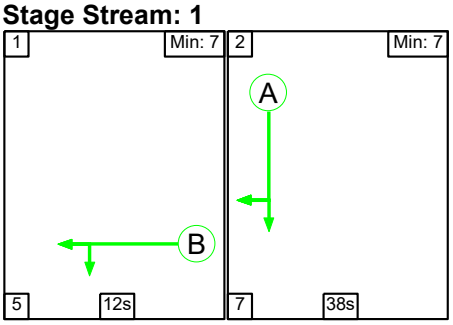
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
M40 Junction 9	**-**	**-**	**0**	**0**	**0**	**49.6**	**115.9**	**0.0**	**165.5**	**-**	**-**	**-**	**-**
1/1	836	836	-	-	-	3.5	6.7	-	10.3	44.3	13.5	6.7	20.2
1/2+1/3	1787	1787	-	-	-	7.8	13.4	-	21.2 (10.5+10.6)	42.6 (42.7:42.6)	15.0	13.4	28.4
2/1	276	276	-	-	-	1.6	0.0	-	1.6	21.4	3.8	0.0	3.8
2/2	512	512	-	-	-	1.8	0.0	-	1.8	12.9	7.3	0.0	7.3
2/3	420	420	-	-	-	2.5	0.0	-	2.5	21.5	5.6	0.0	5.6
3/1	302	302	-	-	-	1.9	1.3	-	3.2	38.3	4.8	1.3	6.1
3/2	293	293	-	-	-	1.8	1.1	-	2.9	35.6	4.6	1.1	5.7
3/3	295	295	-	-	-	1.8	1.1	-	2.9	35.5	4.6	1.1	5.7
4/1	917	917	-	-	-	0.6	0.0	-	0.6	2.4	2.8	0.0	2.8
4/2	888	888	-	-	-	0.1	0.0	-	0.1	0.6	0.4	0.0	0.4
4/3	899	899	-	-	-	0.1	0.0	-	0.1	0.6	0.4	0.0	0.4
5/1	339	339	-	-	-	2.1	1.7	-	3.8	40.4	5.5	1.7	7.1
5/2+5/3	630	630	-	-	-	3.9	3.0	-	7.0 (4.1+2.8)	39.8 (40.4:38.9)	6.0	3.0	9.1
6/1	974	974	-	-	-	1.3	0.0	-	1.3	4.7	16.3	0.0	16.3
6/2	1117	1117	-	-	-	2.0	0.0	-	2.0	6.3	16.4	0.0	16.4
6/3	1056	1056	-	-	-	1.7	0.0	-	1.7	5.8	14.2	0.0	14.2
7/1	1278	1210	-	-	-	6.1	41.6	-	47.7	134.3	23.2	41.6	64.8
7/2	1400	1325	-	-	-	6.7	45.4	-	52.1	134.0	25.4	45.4	70.8
7/3+7/4	947	947	-	-	-	1.2	0.5	-	1.7 (1.0+0.7)	6.6 (6.7:6.4)	4.1	0.5	4.6
8/2+8/1	112	112	-	-	-	0.7	0.0	-	0.7 (0.3+0.3)	21.7 (21.7:21.7)	1.0	0.0	1.0
8/3	261	261	-	-	-	0.3	0.0	-	0.3	4.2	3.0	0.0	3.0

C1	Stream: 1 PRC for Signalled Lanes (%):	12.4	Total Delay for Signalled Lanes (pcuHr):	9.91	Cycle Time (s): 62
C2	Stream: 1 PRC for Signalled Lanes (%):	-9.2	Total Delay for Signalled Lanes (pcuHr):	37.41	Cycle Time (s): 62
C3	Stream: 1 PRC for Signalled Lanes (%):	-6.4	Total Delay for Signalled Lanes (pcuHr):	15.72	Cycle Time (s): 62
C4	Stream: 1 PRC for Signalled Lanes (%):	-17.4	Total Delay for Signalled Lanes (pcuHr):	102.48	Cycle Time (s): 62
	PRC Over All Lanes (%):	-17.4	Total Delay Over All Lanes(pcuHr):	165.52	

Scenario 4: '2031 WD - PM' (FG4: '2031 DS - PM', Plan 1: 'Staging Plan No. 1')
C1

Stage Sequence Diagram

Stage Stream: 1

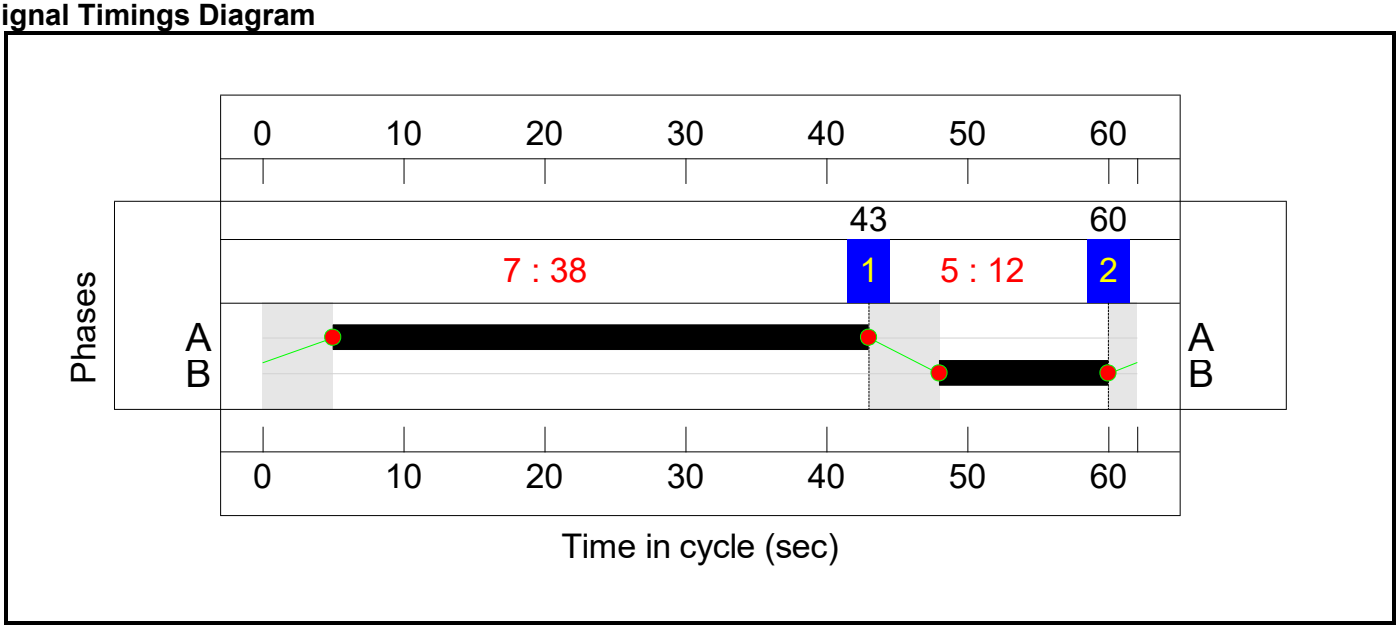


Stage Timings

Stage Stream: 1

Stage	1	2
Duration	12	38
Change Point	43	60

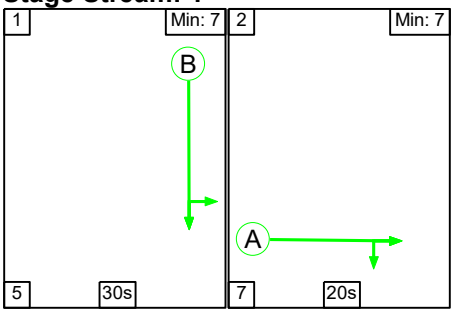
Signal Timings Diagram



C2

Stage Sequence Diagram

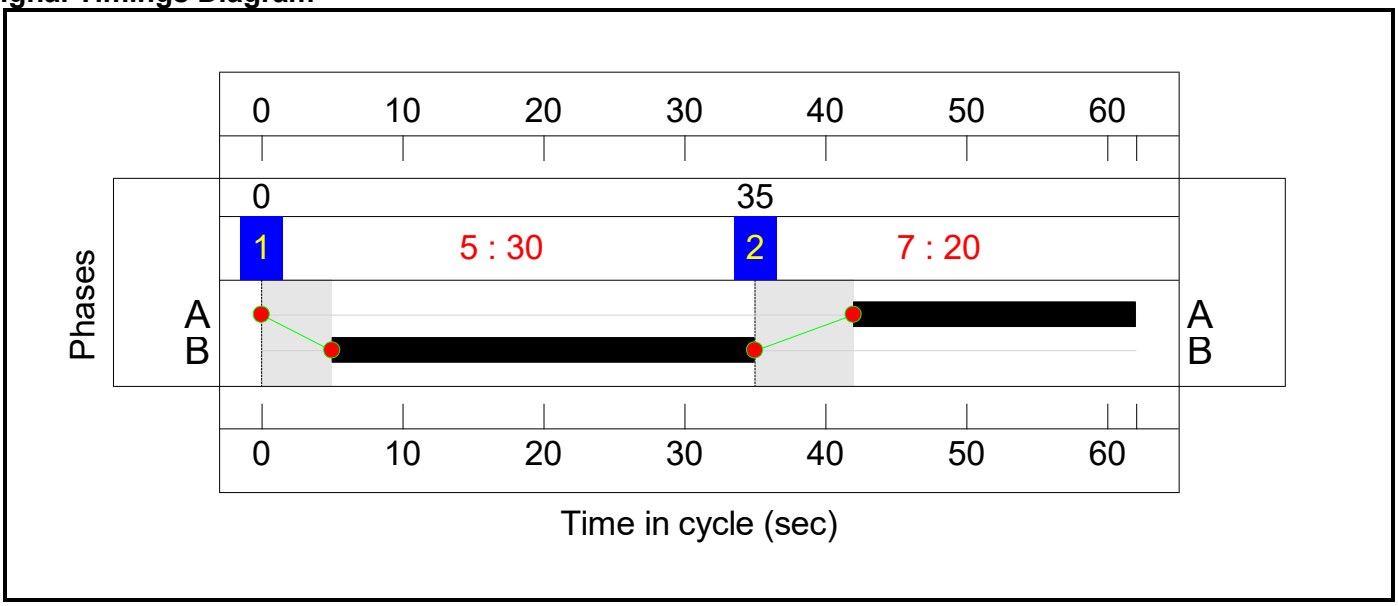
Stage Stream: 1



Stage Timings
Stage Stream: 1

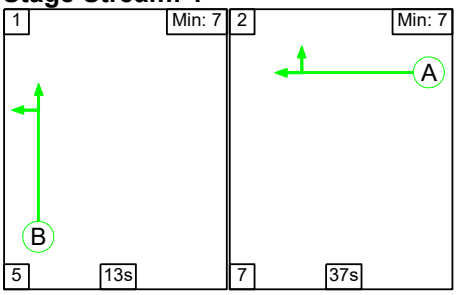
Stage	1	2
Duration	30	20
Change Point	0	35

Signal Timings Diagram



C3

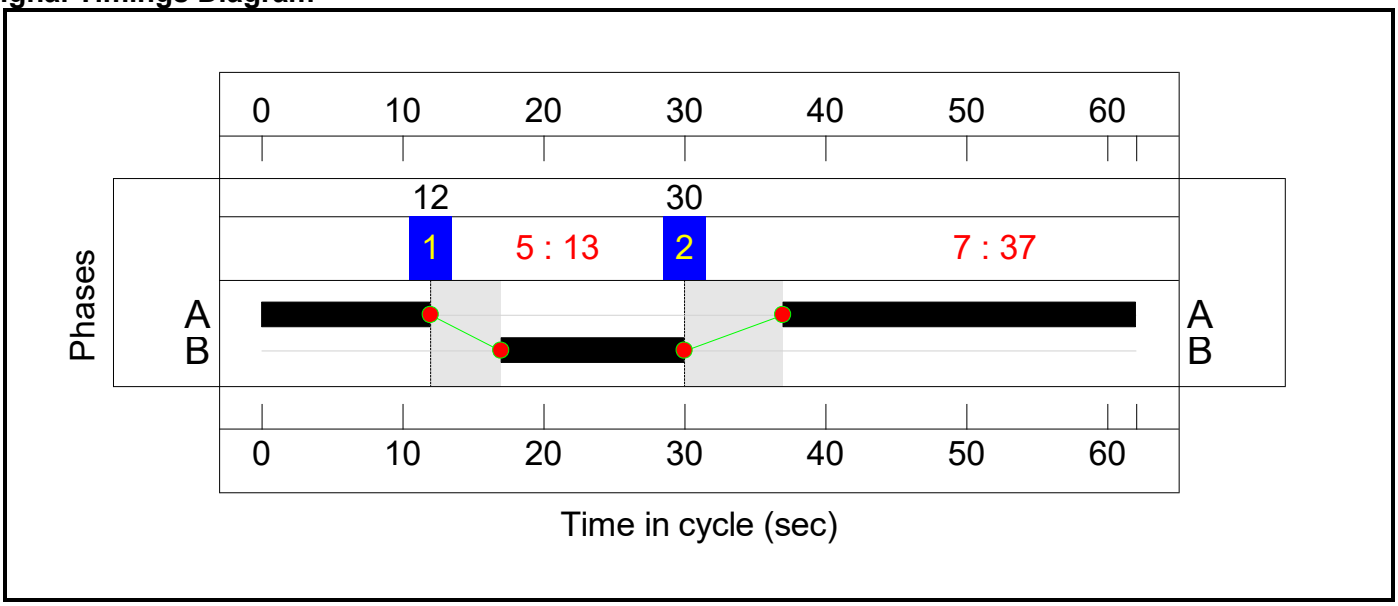
Stage Sequence Diagram
Stage Stream: 1



Stage Timings
Stage Stream: 1

Stage	1	2
Duration	13	37
Change Point	12	30

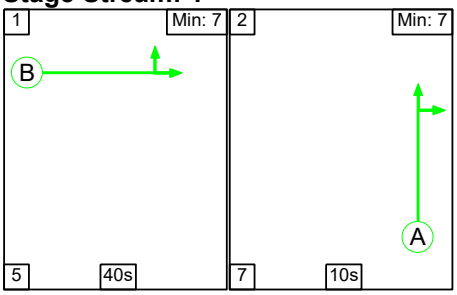
Signal Timings Diagram



C4

Stage Sequence Diagram

Stage Stream: 1

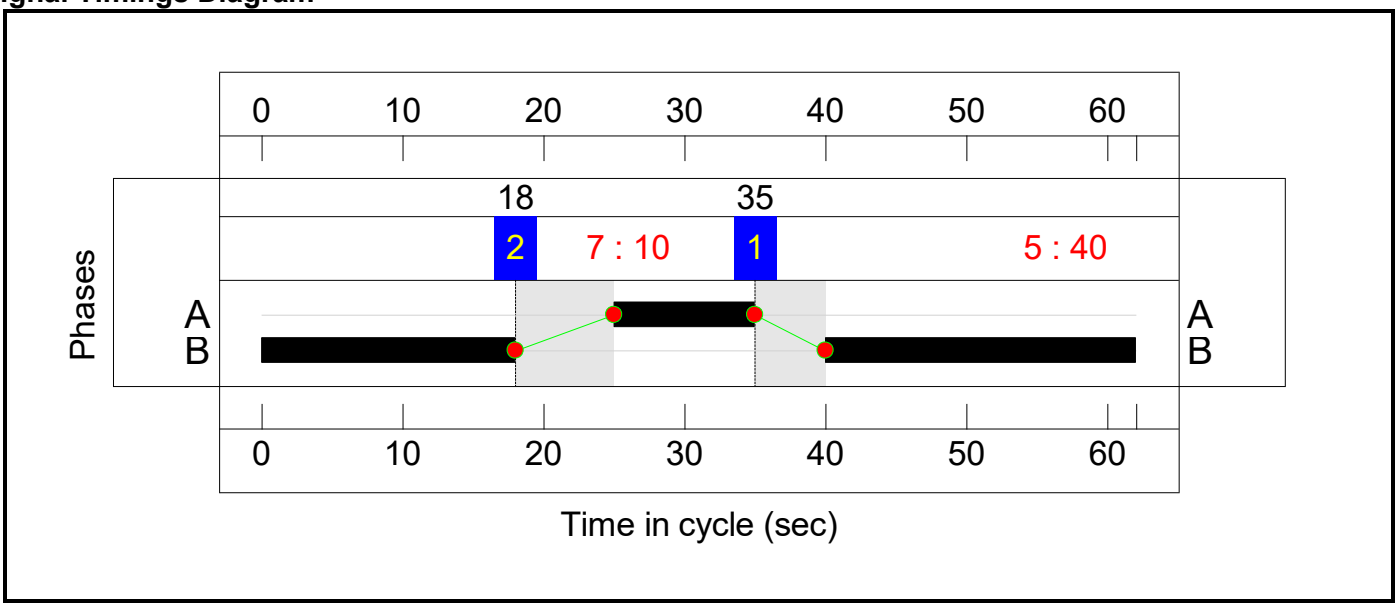


Stage Timings

Stage Stream: 1

Stage	1	2
Duration	40	10
Change Point	35	18

Signal Timings Diagram



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: M40 Junction 9	-	-	**N/A**	-	-		-	-	-	-	-	-	**104.8%**
M40 Junction 9	-	-	**N/A**	-	-		-	-	-	-	-	-	**104.8%**
1/1	M40 N Ahead Left	U	2:1	N/A	C2:B		1	30	-	844	1828	914	92.3%
1/2+1/3	M40 N Ahead	U	2:1	N/A	C2:B		1	30	-	1815	1868:1908	919+954	96.1 : 97.7%
2/1	Ahead	U	2:1	N/A	C2:A		1	20	-	275	1945	659	41.7%
2/2	Ahead	U	2:1	N/A	C2:A		1	20	-	502	1977	670	75.0%
2/3	Right Ahead	U	2:1	N/A	C2:A		1	20	-	422	1869	633	66.7%
3/1	A41 Ahead Left	U	1:1	N/A	C1:B		1	12	-	295	1824	382	77.1%
3/2	A41 Ahead	U	1:1	N/A	C1:B		1	12	-	251	1876	393	63.8%
3/3	A41 Ahead	U	1:1	N/A	C1:B		1	12	-	253	1887	396	63.9%
4/1	Right Ahead	U	1:1	N/A	C1:A		1	38	-	932	1869	1176	79.3%
4/2	Right	U	1:1	N/A	C1:A		1	38	-	883	1868	1175	75.1%
4/3	Right	U	1:1	N/A	C1:A		1	38	-	932	1951	1227	75.9%
5/1	M40 S Left	U	3:1	N/A	C3:B		1	13	-	340	1932	436	77.9%
5/2+5/3	M40 S Ahead Left	U	3:1	N/A	C3:B		1	13	-	623	1888:1888	426+293	86.6 : 86.6%
6/1	Ahead	U	3:1	N/A	C3:A		1	37	-	1016	1866	1144	88.8%
6/2	Ahead	U	3:1	N/A	C3:A		1	37	-	1071	1904	1167	91.8%
6/3	Right Ahead	U	3:1	N/A	C3:A		1	37	-	1014	1887	1157	87.7%
7/1	A34 Left	U	4:1	N/A	C4:B		1	40	-	1267	1830	1210	104.7%
7/2	A34 Left	U	4:1	N/A	C4:B		1	40	-	1388	2003	1325	104.8%
7/3+7/4	A34 Ahead	U	4:1	N/A	C4:B		1	40	-	944	1973:1869	1075+851	49.0 : 49.0%
8/2+8/1	Right Ahead	U	4:1	N/A	C4:A		1	10	-	94	1942:1942	316+316	14.9 : 14.9%
8/3	Right	U	4:1	N/A	C4:A		1	10	-	254	2078	369	68.9%

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)
M40 Junction 9	**-**	**-**	**0**	**0**	**0**	**47.6**	**102.4**	**0.0**	**150.0**	**-**	**-**	**-**	**-**
1/1	844	844	-	-	-	3.4	5.2	-	8.6	36.8	13.4	5.2	18.6
1/2+1/3	1815	1815	-	-	-	7.5	11.3	-	18.8 (9.1+9.7)	37.4 (37.1:37.6)	15.5	11.3	26.8
2/1	275	275	-	-	-	1.7	0.0	-	1.7	22.0	3.8	0.0	3.8
2/2	502	502	-	-	-	1.9	0.0	-	1.9	13.8	7.3	0.0	7.3
2/3	422	422	-	-	-	2.6	0.0	-	2.6	22.2	5.6	0.0	5.6
3/1	295	295	-	-	-	1.9	1.6	-	3.5	43.0	4.8	1.6	6.4
3/2	251	251	-	-	-	1.6	0.9	-	2.4	34.9	3.9	0.9	4.8
3/3	253	253	-	-	-	1.6	0.9	-	2.4	34.8	3.9	0.9	4.8
4/1	932	932	-	-	-	0.6	0.0	-	0.6	2.2	2.8	0.0	2.8
4/2	883	883	-	-	-	0.1	0.0	-	0.1	0.4	0.3	0.0	0.3
4/3	932	932	-	-	-	0.1	0.0	-	0.1	0.5	0.4	0.0	0.4
5/1	340	340	-	-	-	2.1	1.7	-	3.8	40.6	5.5	1.7	7.2
5/2+5/3	623	623	-	-	-	3.9	3.0	-	6.9 (4.2+2.8)	39.9 (40.6:39.0)	6.0	3.0	9.1
6/1	1016	1016	-	-	-	1.5	0.0	-	1.5	5.2	17.2	0.0	17.2
6/2	1071	1071	-	-	-	1.7	0.0	-	1.7	5.8	15.0	0.0	15.0
6/3	1014	1014	-	-	-	1.5	0.0	-	1.5	5.2	13.6	0.0	13.6
7/1	1267	1210	-	-	-	5.7	37.0	-	42.6	121.1	22.8	37.0	59.8
7/2	1388	1325	-	-	-	6.2	40.3	-	46.6	120.8	25.0	40.3	65.3
7/3+7/4	944	944	-	-	-	1.2	0.5	-	1.7 (1.0+0.7)	6.6 (6.7:6.4)	4.1	0.5	4.6
8/2+8/1	94	94	-	-	-	0.6	0.0	-	0.6 (0.3+0.3)	21.7 (21.6:21.9)	0.8	0.0	0.8
8/3	254	254	-	-	-	0.3	0.0	-	0.3	4.1	3.0	0.0	3.0

C1	Stream: 1 PRC for Signalled Lanes (%):	13.5	Total Delay for Signalled Lanes (pcuHr):	9.21	Cycle Time (s): 62
C2	Stream: 1 PRC for Signalled Lanes (%):	-8.5	Total Delay for Signalled Lanes (pcuHr):	33.66	Cycle Time (s): 62
C3	Stream: 1 PRC for Signalled Lanes (%):	-2.0	Total Delay for Signalled Lanes (pcuHr):	15.39	Cycle Time (s): 62
C4	Stream: 1 PRC for Signalled Lanes (%):	-16.4	Total Delay for Signalled Lanes (pcuHr):	91.77	Cycle Time (s): 62
	PRC Over All Lanes (%):	-16.4	Total Delay Over All Lanes(pcuHr):	150.04	

APPENDIX E

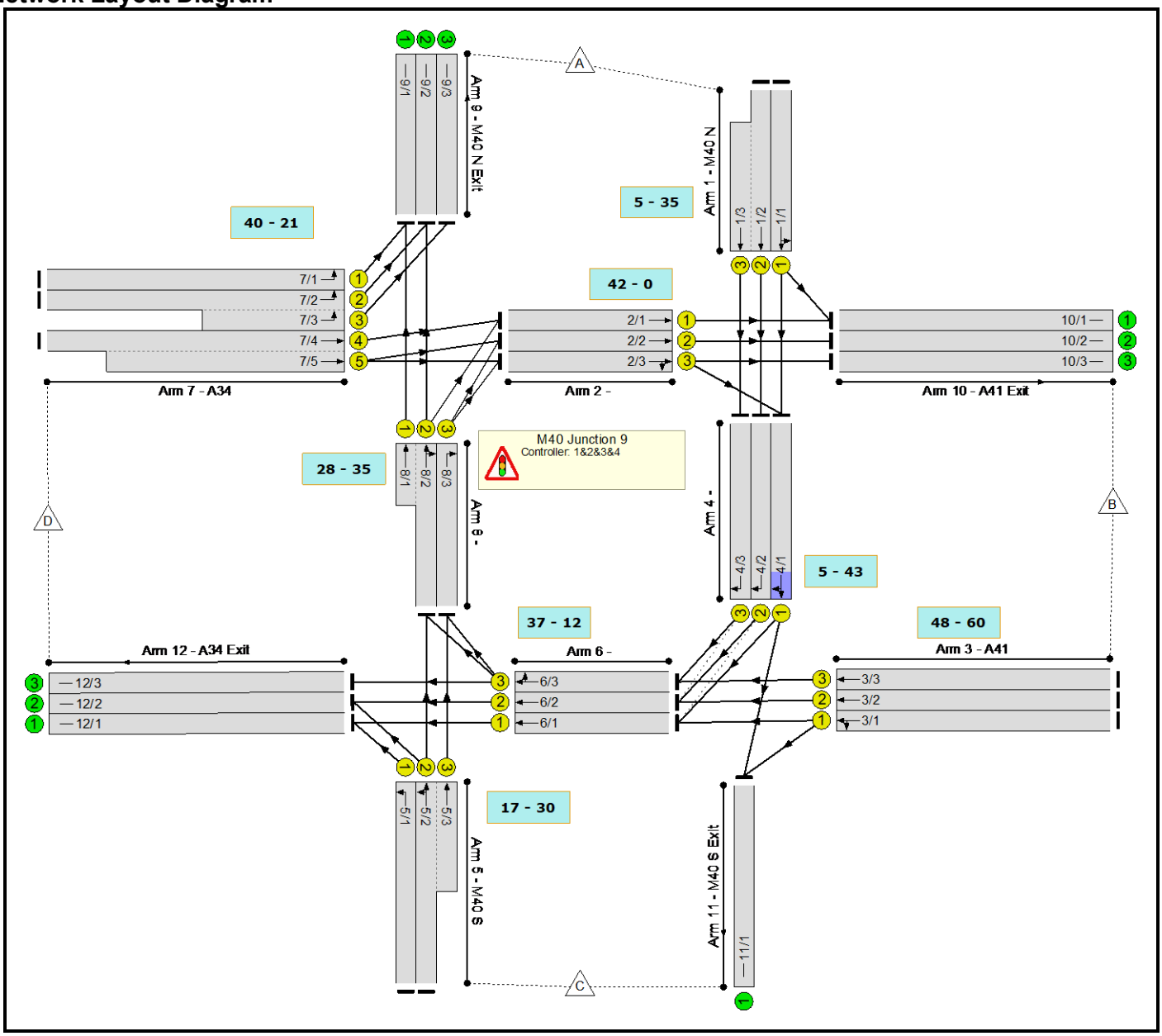
M40 JUNCTION 9 PROPOSED LAYOUT LINSIG MODEL RESULTS

Full Input Data And Results

User and Project Details

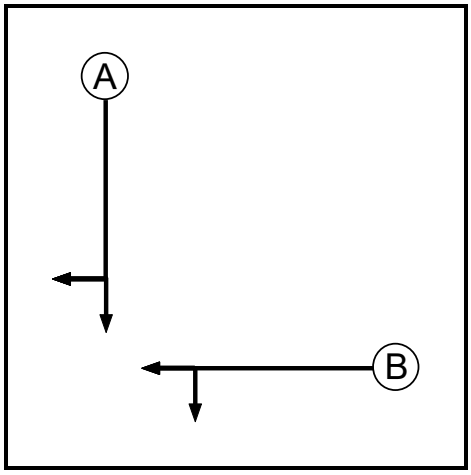
Project:	**OxSRFI**
Title:	**M40 Junction 9 - with mitigation**
Location:	M40 Junction 9, Wendlebury
Additional detail:	
File name:	230411 M40 Junction 9 - mitigation.lsg3x
Author:	Mark Higgins
Company:	ADC Infrastructure
Address:	Nottingham

Network Layout Diagram



C1

Phase Diagram



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

Phase Intergreens Matrix

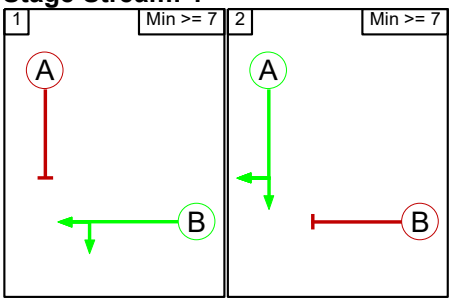
	Starting Phase		
Terminating Phase		A	B
	A		5
	B	7	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	B
1	2	A

Stage Diagram

Stage Stream: 1



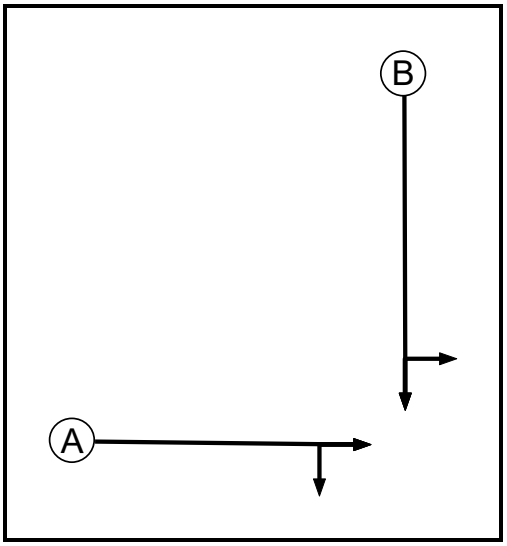
Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		7
	2	5	

C2

Phase Diagram



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

Phase Intergreens Matrix

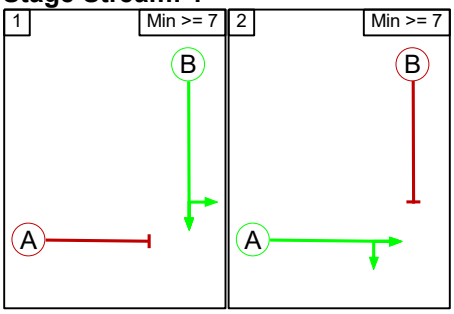
		Starting Phase	
		A	B
Terminating Phase	A		5
	B	7	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	B
1	2	A

Stage Diagram

Stage Stream: 1



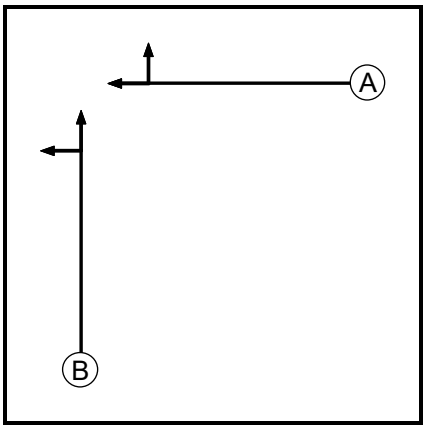
Prohibited Stage Change

Stage Stream: 1

		To Stage	
		1	2
From Stage	1		7
	2	5	

C3

Phase Diagram



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

Phase Intergreens Matrix

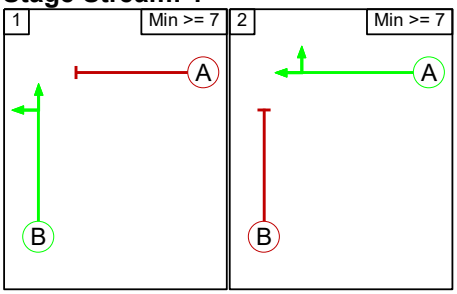
	Starting Phase		
Terminating Phase		A	B
	A		5
	B	7	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	B
1	2	A

Stage Diagram

Stage Stream: 1



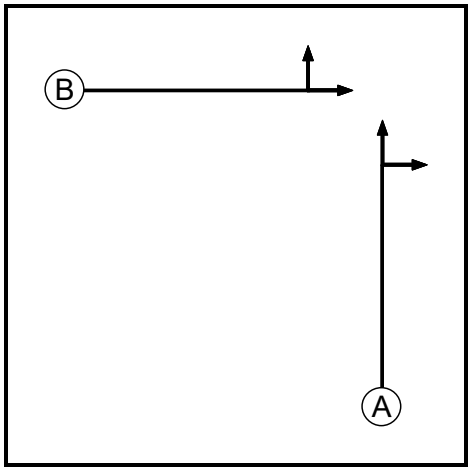
Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		7
	2	5	

C4

Phase Diagram



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

Phase Intergreens Matrix

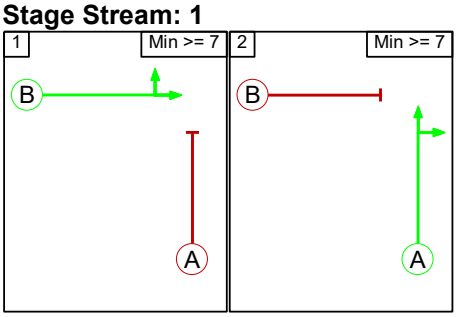
	Starting Phase		
Terminating Phase		A	B
	A		5
	B	7	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	B
1	2	A

Stage Diagram

Stage Stream: 1



Prohibited Stage Change

Stage Stream: 1

	To Stage		
From Stage		1	2
	1		7
	2	5	

Lane Input Data

Junction: M40 Junction 9												
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 (M40 N)	U	B	2	3	60.0	User	1828	-	-	-	-	-
1/2 (M40 N)	U	B	2	3	60.0	User	1868	-	-	-	-	-
1/3 (M40 N)	U	B	2	3	29.6	User	1908	-	-	-	-	-
2/1	U	A	2	3	26.0	User	1945	-	-	-	-	-
2/2	U	A	2	3	26.0	User	1977	-	-	-	-	-
2/3	U	A	2	3	26.0	User	1869	-	-	-	-	-
3/1 (A41)	U	B	2	3	60.0	User	1824	-	-	-	-	-
3/2 (A41)	U	B	2	3	60.0	User	1876	-	-	-	-	-
3/3 (A41)	U	B	2	3	60.0	User	1887	-	-	-	-	-
4/1	U	A	2	3	4.0	User	1869	-	-	-	-	-
4/2	U	A	2	3	5.0	User	1868	-	-	-	-	-
4/3	U	A	2	3	6.0	User	1951	-	-	-	-	-
5/1 (M40 S)	U	B	2	3	60.0	User	1932	-	-	-	-	-
5/2 (M40 S)	U	B	2	3	60.0	User	1888	-	-	-	-	-
5/3 (M40 S)	U	B	2	3	8.0	User	1888	-	-	-	-	-
6/1	U	A	2	3	20.0	User	1866	-	-	-	-	-
6/2	U	A	2	3	31.0	User	1904	-	-	-	-	-
6/3	U	A	2	3	31.0	User	1887	-	-	-	-	-
7/1 (A34)	U	B	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 9 Left	60.00
7/2 (A34)	U	B	2	3	60.0	Geom	-	3.80	0.00	N	Arm 9 Left	60.00
7/3 (A34)	U	B	2	3	10.4	Geom	-	3.80	0.00	N	Arm 9 Left	60.00
7/4 (A34)	U	B	2	3	60.0	User	1973	-	-	-	-	-
7/5 (A34)	U	B	2	3	30.0	User	1869	-	-	-	-	-
8/1	U	A	2	3	4.5	User	1942	-	-	-	-	-
8/2	U	A	2	3	4.0	User	1942	-	-	-	-	-
8/3	U	A	2	3	4.0	User	2078	-	-	-	-	-
9/1 (M40 N Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-
9/2 (M40 N Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-

9/3 (M40 N Exit)	U		2	3	8.7	User	1800	-	-	-	-	-
10/1 (A41 Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-
10/2 (A41 Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-
10/3 (A41 Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-
11/1 (M40 S Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-
12/1 (A34 Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-
12/2 (A34 Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-
12/3 (A34 Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Adj 2031 DS5 - AM'	08:00	09:00	01:00	
2: '2031 DS5 - PM'	17:00	18:00	01:00	

Scenario 1: '2031 DS5 - AM' (FG1: 'Adj 2031 DS5 - AM', Plan 1: 'Staging Plan No. 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	98	0	2338	2436
	B	61	0	223	605	889
	C	0	226	0	288	514
	D	2314	925	300	0	3539
	Tot.	2375	1249	523	3231	7378

Traffic Lane Flows

Lane	Scenario 1: 2031 DS5 - AM
Junction: M40 Junction 9	
1/1	790
1/2 (with short)	1646(In) 815(Out)
1/3 (short)	831
2/1	576
2/2	434
2/3	441
3/1	299
3/2	293
3/3	297
4/1	992
4/2	815
4/3	831
5/1	152
5/2 (with short)	362(In) 136(Out)
5/3 (short)	226
6/1	963
6/2	955
6/3	1086
7/1	901
7/2 (with short)	1413(In) 881(Out)
7/3 (short)	532
7/4 (with short)	1225(In) 576(Out)
7/5 (short)	649
8/1 (short)	30
8/2 (with short)	61(In) 31(Out)
8/3	226
9/1	931
9/2	912
9/3	532
10/1	674
10/2	434
10/3	141
11/1	523
12/1	1115
12/2	1091
12/3	1025

Lane Saturation Flows

Junction: M40 Junction 9								
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 (M40 N Lane 1)	This lane uses a directly entered Saturation Flow						1828	1828
1/2 (M40 N Lane 2)	This lane uses a directly entered Saturation Flow						1868	1868
1/3 (M40 N Lane 3)	This lane uses a directly entered Saturation Flow						1908	1908
2/1	This lane uses a directly entered Saturation Flow						1945	1945
2/2	This lane uses a directly entered Saturation Flow						1977	1977
2/3	This lane uses a directly entered Saturation Flow						1869	1869
3/1 (A41 Lane 1)	This lane uses a directly entered Saturation Flow						1824	1824
3/2 (A41 Lane 2)	This lane uses a directly entered Saturation Flow						1876	1876
3/3 (A41 Lane 3)	This lane uses a directly entered Saturation Flow						1887	1887
4/1	This lane uses a directly entered Saturation Flow						1869	1869
4/2	This lane uses a directly entered Saturation Flow						1868	1868
4/3	This lane uses a directly entered Saturation Flow						1951	1951
5/1 (M40 S Lane 1)	This lane uses a directly entered Saturation Flow						1932	1932
5/2 (M40 S Lane 2)	This lane uses a directly entered Saturation Flow						1888	1888
5/3 (M40 S Lane 3)	This lane uses a directly entered Saturation Flow						1888	1888
6/1	This lane uses a directly entered Saturation Flow						1866	1866
6/2	This lane uses a directly entered Saturation Flow						1904	1904
6/3	This lane uses a directly entered Saturation Flow						1887	1887
7/1 (A34)	3.65	0.00	Y	Arm 9 Left	60.00	100.0 %	1932	1932
7/2 (A34)	3.80	0.00	N	Arm 9 Left	60.00	100.0 %	2083	2083
7/3 (A34)	3.80	0.00	N	Arm 9 Left	60.00	100.0 %	2083	2083
7/4 (A34 Lane 4)	This lane uses a directly entered Saturation Flow						1973	1973
7/5 (A34 Lane 5)	This lane uses a directly entered Saturation Flow						1869	1869
8/1	This lane uses a directly entered Saturation Flow						1942	1942
8/2	This lane uses a directly entered Saturation Flow						1942	1942
8/3	This lane uses a directly entered Saturation Flow						2078	2078
9/1 (M40 N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (M40 N Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
9/3 (M40 N Exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800

10/1 (A41 Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (A41 Exit Lane 2)	Infinite Saturation Flow	Inf	Inf
10/3 (A41 Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
11/1 (M40 S Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
12/1 (A34 Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (A34 Exit Lane 2)	Infinite Saturation Flow	Inf	Inf
12/3 (A34 Exit Lane 3)	Infinite Saturation Flow	Inf	Inf

Scenario 2: '2031 DS5 - PM' (FG2: '2031 DS5 - PM', Plan 1: 'Staging Plan No. 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	62	0	2602	2664
	B	93	0	291	445	829
	C	0	261	0	706	967
	D	2853	787	150	0	3790
	Tot.	2946	1110	441	3753	8250

Traffic Lane Flows

Lane	Scenario 2: 2031 DS5 - PM
Junction: M40 Junction 9	
1/1	847
1/2 (with short)	1817(In) 883(Out)
1/3 (short)	934
2/1	468
2/2	382
2/3	348
3/1	291
3/2	268
3/3	270
4/1	935
4/2	883
4/3	934
5/1	371
5/2 (with short)	596(In) 385(Out)
5/3 (short)	211
6/1	1027
6/2	1078
6/3	1035
7/1	1168
7/2 (with short)	1685(In) 1060(Out)
7/3 (short)	625
7/4 (with short)	937(In) 418(Out)
7/5 (short)	519
8/1 (short)	53
8/2 (with short)	143(In) 90(Out)
8/3	211
9/1	1221
9/2	1100
9/3	625
10/1	530
10/2	382
10/3	198
11/1	441
12/1	1398
12/2	1413
12/3	942

Lane Saturation Flows

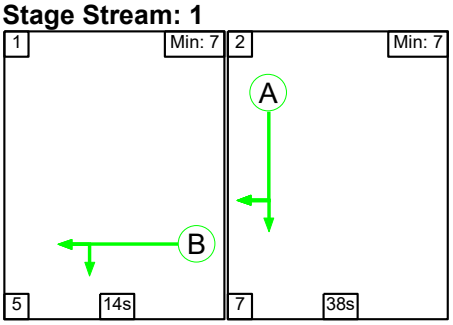
Junction: M40 Junction 9								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (M40 N Lane 1)	This lane uses a directly entered Saturation Flow						1828	1828
1/2 (M40 N Lane 2)	This lane uses a directly entered Saturation Flow						1868	1868
1/3 (M40 N Lane 3)	This lane uses a directly entered Saturation Flow						1908	1908
2/1	This lane uses a directly entered Saturation Flow						1945	1945
2/2	This lane uses a directly entered Saturation Flow						1977	1977
2/3	This lane uses a directly entered Saturation Flow						1869	1869
3/1 (A41 Lane 1)	This lane uses a directly entered Saturation Flow						1824	1824
3/2 (A41 Lane 2)	This lane uses a directly entered Saturation Flow						1876	1876
3/3 (A41 Lane 3)	This lane uses a directly entered Saturation Flow						1887	1887
4/1	This lane uses a directly entered Saturation Flow						1869	1869
4/2	This lane uses a directly entered Saturation Flow						1868	1868
4/3	This lane uses a directly entered Saturation Flow						1951	1951
5/1 (M40 S Lane 1)	This lane uses a directly entered Saturation Flow						1932	1932
5/2 (M40 S Lane 2)	This lane uses a directly entered Saturation Flow						1888	1888
5/3 (M40 S Lane 3)	This lane uses a directly entered Saturation Flow						1888	1888
6/1	This lane uses a directly entered Saturation Flow						1866	1866
6/2	This lane uses a directly entered Saturation Flow						1904	1904
6/3	This lane uses a directly entered Saturation Flow						1887	1887
7/1 (A34)	3.65	0.00	Y	Arm 9 Left	60.00	100.0 %	1932	1932
7/2 (A34)	3.80	0.00	N	Arm 9 Left	60.00	100.0 %	2083	2083
7/3 (A34)	3.80	0.00	N	Arm 9 Left	60.00	100.0 %	2083	2083
7/4 (A34 Lane 4)	This lane uses a directly entered Saturation Flow						1973	1973
7/5 (A34 Lane 5)	This lane uses a directly entered Saturation Flow						1869	1869
8/1	This lane uses a directly entered Saturation Flow						1942	1942
8/2	This lane uses a directly entered Saturation Flow						1942	1942
8/3	This lane uses a directly entered Saturation Flow						2078	2078
9/1 (M40 N Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (M40 N Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
9/3 (M40 N Exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800

10/1 (A41 Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (A41 Exit Lane 2)	Infinite Saturation Flow	Inf	Inf
10/3 (A41 Exit Lane 3)	Infinite Saturation Flow	Inf	Inf
11/1 (M40 S Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
12/1 (A34 Exit Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (A34 Exit Lane 2)	Infinite Saturation Flow	Inf	Inf
12/3 (A34 Exit Lane 3)	Infinite Saturation Flow	Inf	Inf

Scenario 1: '2031 DS5 - AM' (FG1: 'Adj 2031 DS5 - AM', Plan 1: 'Staging Plan No. 1')
C1

Stage Sequence Diagram

Stage Stream: 1

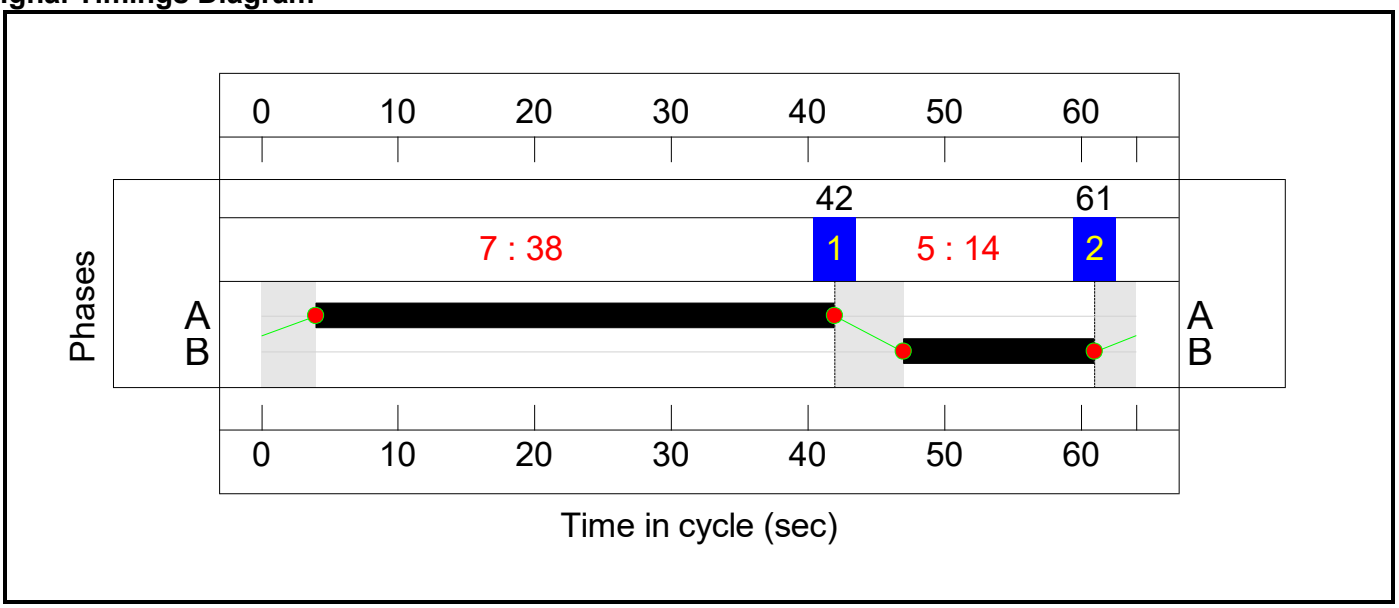


Stage Timings

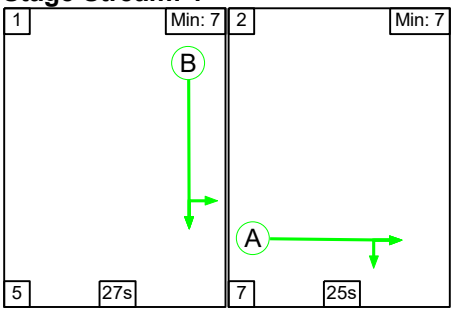
Stage Stream: 1

Stage	1	2
Duration	14	38
Change Point	42	61

Signal Timings Diagram



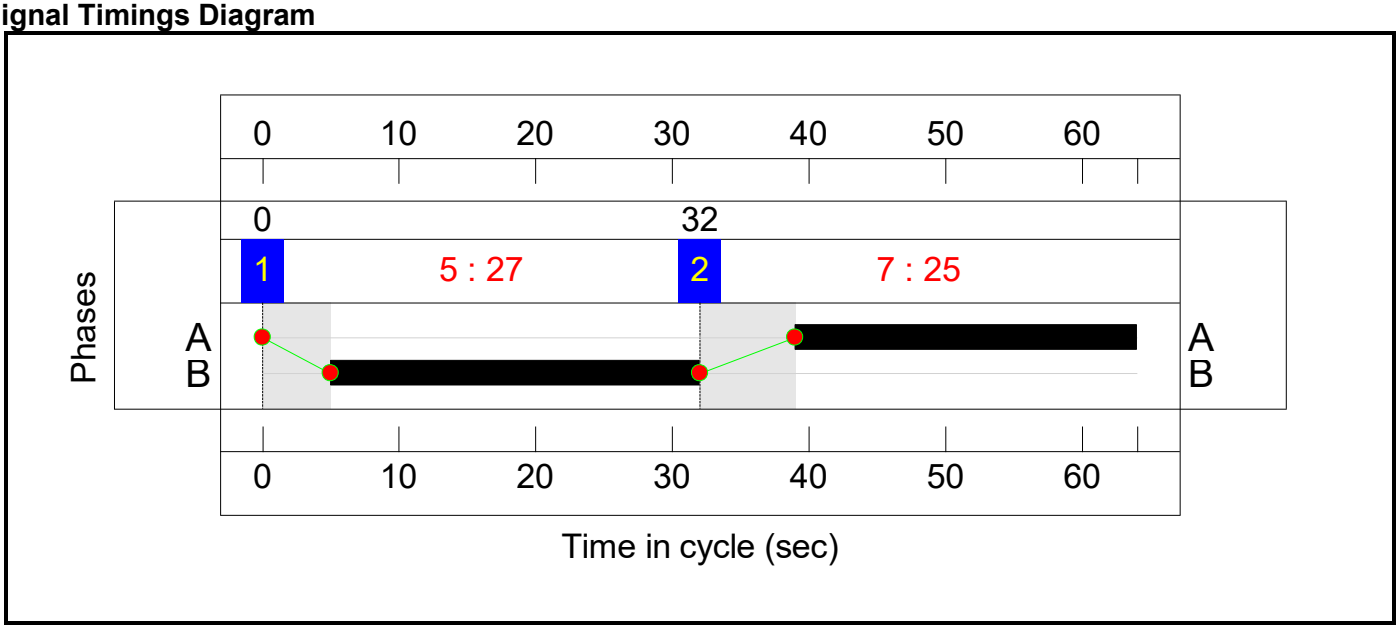
C2
Stage Sequence Diagram
Stage Stream: 1



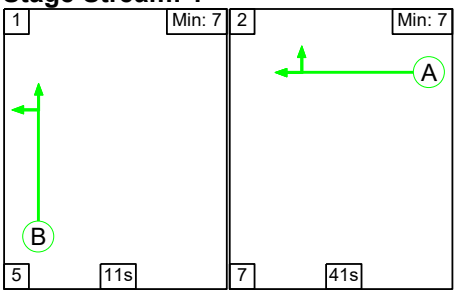
Stage Timings
Stage Stream: 1

Stage	1	2
Duration	27	25
Change Point	0	32

Signal Timings Diagram



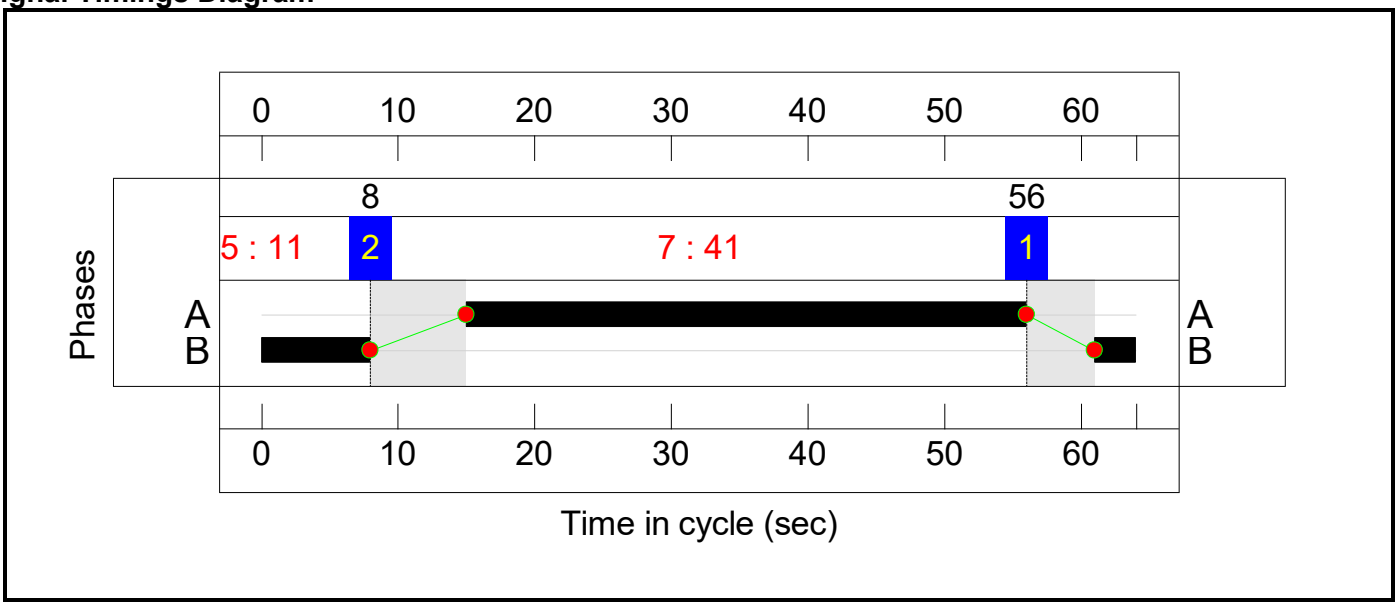
C3
Stage Sequence Diagram
Stage Stream: 1



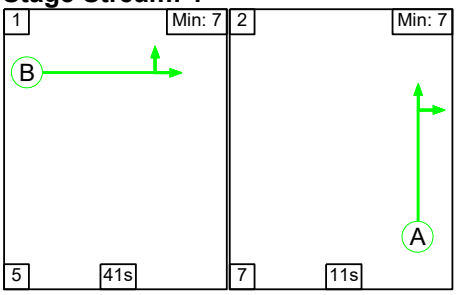
Stage Timings
Stage Stream: 1

Stage	1	2
Duration	11	41
Change Point	56	8

Signal Timings Diagram



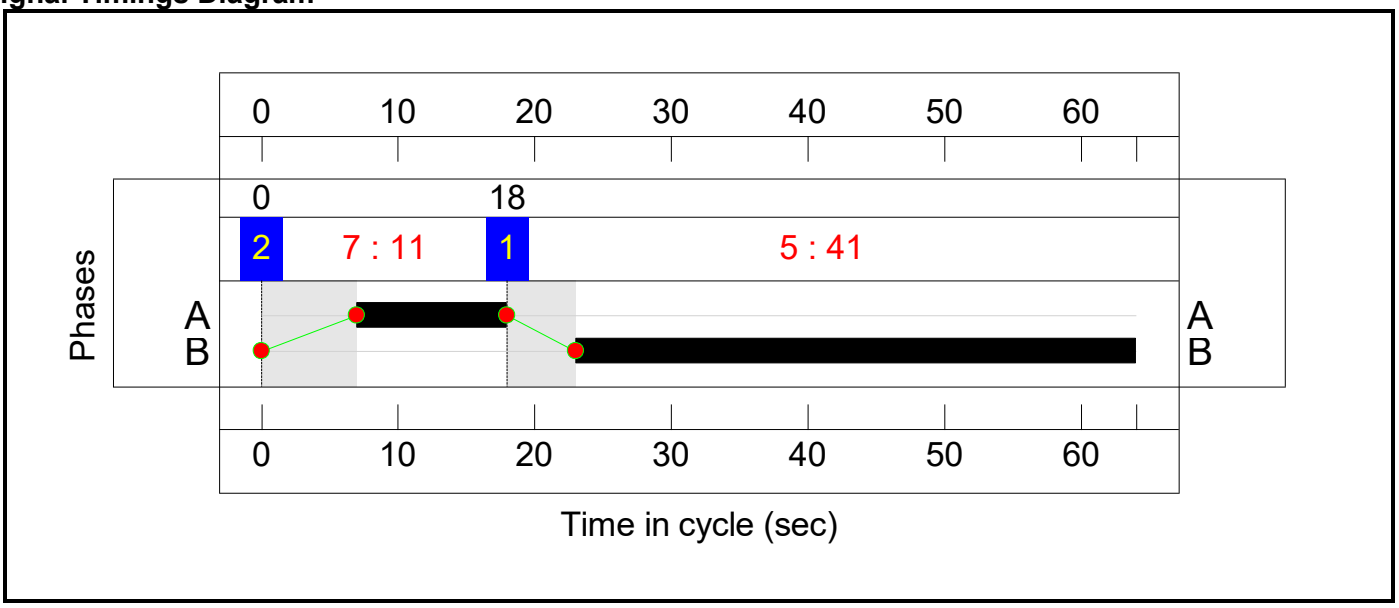
C4
Stage Sequence Diagram
Stage Stream: 1



Stage Timings
Stage Stream: 1

Stage	1	2
Duration	41	11
Change Point	18	0

Signal Timings Diagram



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: M40 Junction 9 - with mitigation	-	-	**N/A**	-	-		-	-	-	-	-	-	**99.7%**
M40 Junction 9	-	-	**N/A**	-	-		-	-	-	-	-	-	**99.7%**
1/1	M40 N Ahead Left	U	2:1	N/A	C2:B		1	27	-	790	1828	800	98.8%
1/2+1/3	M40 N Ahead	U	2:1	N/A	C2:B		1	27	-	1646	1868:1908	817+835	99.7 : 99.6%
2/1	Ahead	U	2:1	N/A	C2:A		1	25	-	576	1945	790	72.9%
2/2	Ahead	U	2:1	N/A	C2:A		1	25	-	434	1977	803	54.0%
2/3	Right Ahead	U	2:1	N/A	C2:A		1	25	-	441	1869	759	58.1%
3/1	A41 Ahead Left	U	1:1	N/A	C1:B		1	14	-	299	1824	428	69.9%
3/2	A41 Ahead	U	1:1	N/A	C1:B		1	14	-	293	1876	440	66.6%
3/3	A41 Ahead	U	1:1	N/A	C1:B		1	14	-	297	1887	442	67.2%
4/1	Right Ahead	U	1:1	N/A	C1:A		1	38	-	992	1869	1139	87.1%
4/2	Right	U	1:1	N/A	C1:A		1	38	-	815	1868	1138	71.6%
4/3	Right	U	1:1	N/A	C1:A		1	38	-	831	1951	1189	69.9%
5/1	M40 S Left	U	3:1	N/A	C3:B		1	11	-	152	1932	362	42.0%
5/2+5/3	M40 S Ahead Left	U	3:1	N/A	C3:B		1	11	-	362	1888:1888	213+354	63.8 : 63.8%
6/1	Ahead	U	3:1	N/A	C3:A		1	41	-	963	1866	1195	80.6%
6/2	Ahead	U	3:1	N/A	C3:A		1	41	-	955	1904	1220	78.3%
6/3	Right Ahead	U	3:1	N/A	C3:A		1	41	-	1086	1887	1238	87.7%
7/1	A34 Left	U	4:1	N/A	C4:B		1	41	-	901	1932	1268	71.1%
7/2+7/3	A34 Left	U	4:1	N/A	C4:B		1	41	-	1413	2083:2083	1086+656	81.1 : 81.1%
7/4+7/5	A34 Ahead	U	4:1	N/A	C4:B		1	41	-	1225	1973:1869	901+1015	63.9 : 63.9%
8/2+8/1	Right Ahead	U	4:1	N/A	C4:A		1	11	-	61	1942:1942	325+314	9.5 : 9.5%
8/3	Right	U	4:1	N/A	C4:A		1	11	-	226	2078	390	58.0%
9/3	M40 N Exit	U	N/A	N/A	-		-	-	-	532	1800	1800	29.6%

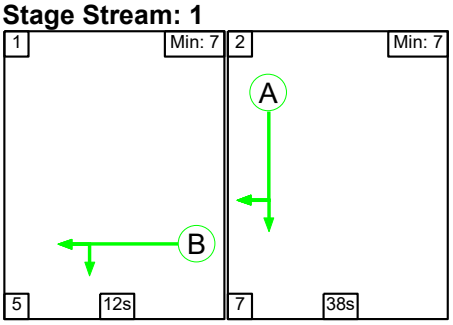
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
M40 Junction 9	**-**	**-**	**0**	**0**	**0**	**40.0**	**39.5**	**0.0**	**79.5**	**-**	**-**	**-**	**-**
1/1	790	790	-	-	-	3.9	11.8	-	15.7	71.7	13.8	11.8	25.7
1/2+1/3	1646	1646	-	-	-	8.2	18.8	-	27.0 (13.4+13.7)	59.2 (59.2:59.1)	14.5	18.8	33.4
2/1	576	576	-	-	-	1.8	0.0	-	1.8	11.4	7.7	0.0	7.7
2/2	434	434	-	-	-	1.4	0.0	-	1.4	11.8	5.7	0.0	5.7
2/3	441	441	-	-	-	1.4	0.0	-	1.4	11.1	4.9	0.0	4.9
3/1	299	299	-	-	-	1.9	1.1	-	3.0	36.2	4.8	1.1	6.0
3/2	293	293	-	-	-	1.8	1.0	-	2.8	34.3	4.7	1.0	5.7
3/3	297	297	-	-	-	1.8	1.0	-	2.8	34.5	4.8	1.0	5.8
4/1	992	992	-	-	-	1.5	0.0	-	1.5	5.6	6.5	0.0	6.5
4/2	815	815	-	-	-	0.1	0.0	-	0.1	0.4	0.2	0.0	0.2
4/3	831	831	-	-	-	0.1	0.0	-	0.1	0.3	0.2	0.0	0.2
5/1	152	152	-	-	-	1.0	0.4	-	1.3	31.5	2.4	0.4	2.7
5/2+5/3	362	362	-	-	-	2.4	0.9	-	3.2 (1.2+2.1)	32.2 (31.5:32.7)	3.7	0.9	4.6
6/1	963	963	-	-	-	1.6	0.0	-	1.6	6.2	7.6	0.0	7.6
6/2	955	955	-	-	-	2.1	0.0	-	2.1	7.8	8.1	0.0	8.1
6/3	1086	1086	-	-	-	2.2	0.0	-	2.2	7.3	8.9	0.0	8.9
7/1	901	901	-	-	-	1.8	1.2	-	3.0	12.0	10.3	1.2	11.5
7/2+7/3	1413	1413	-	-	-	2.4	2.1	-	4.5 (2.9+1.5)	11.4 (11.9:10.5)	9.3	2.1	11.4
7/4+7/5	1225	1225	-	-	-	1.9	0.9	-	2.8 (1.3+1.5)	8.2 (7.9:8.4)	5.9	0.9	6.8
8/2+8/1	61	61	-	-	-	0.6	0.0	-	0.6 (0.3+0.3)	37.3 (37.3:37.3)	0.6	0.0	0.6
8/3	226	226	-	-	-	0.2	0.0	-	0.2	2.5	3.5	0.0	3.5
9/3	532	532	-	-	-	0.0	0.2	-	0.2	1.5	3.0	0.2	3.2

C1	Stream: 1 PRC for Signalled Lanes (%):	3.3	Total Delay for Signalled Lanes (pcuHr):	10.34	Cycle Time (s): 64
C2	Stream: 1 PRC for Signalled Lanes (%):	-10.8	Total Delay for Signalled Lanes (pcuHr):	47.41	Cycle Time (s): 64
C3	Stream: 1 PRC for Signalled Lanes (%):	2.6	Total Delay for Signalled Lanes (pcuHr):	10.50	Cycle Time (s): 64
C4	Stream: 1 PRC for Signalled Lanes (%):	11.0	Total Delay for Signalled Lanes (pcuHr):	11.04	Cycle Time (s): 64
	PRC Over All Lanes (%):	-10.8	Total Delay Over All Lanes(pcuHr):	79.50	

Scenario 2: '2031 DS5 - PM' (FG2: '2031 DS5 - PM', Plan 1: 'Staging Plan No. 1')
C1

Stage Sequence Diagram

Stage Stream: 1

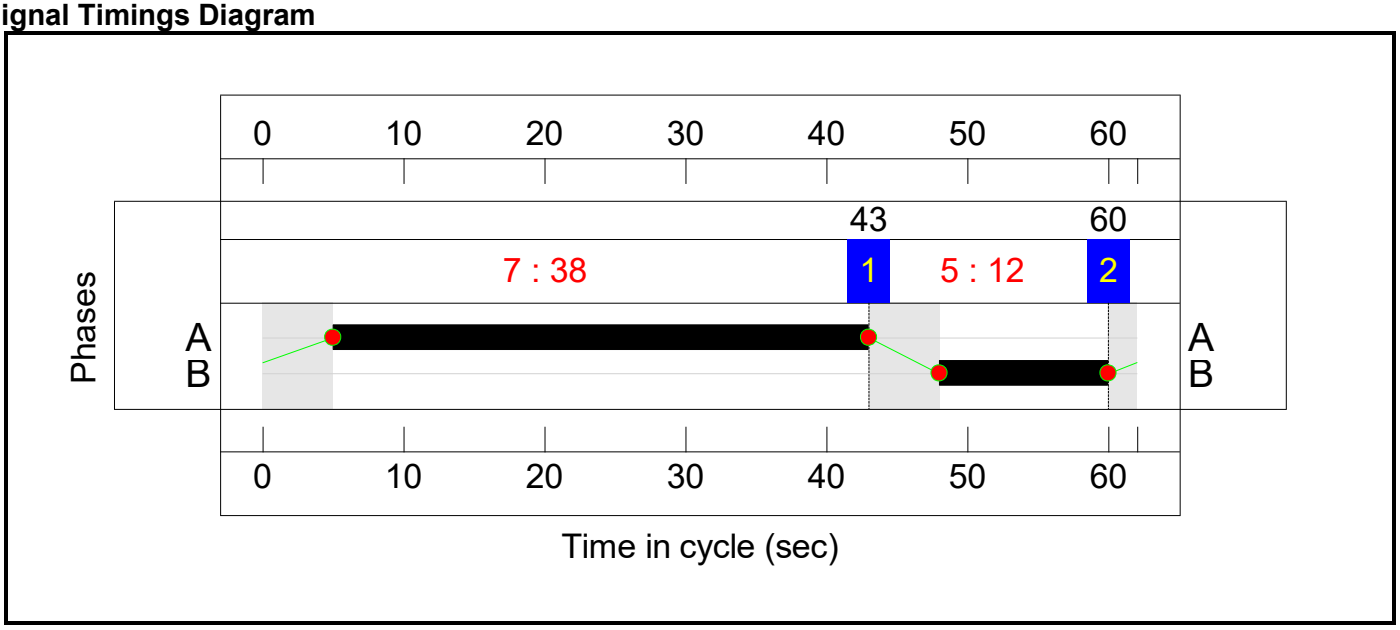


Stage Timings

Stage Stream: 1

Stage	1	2
Duration	12	38
Change Point	43	60

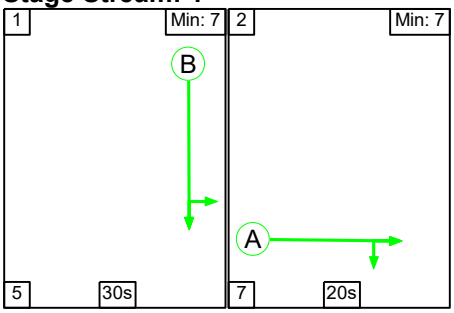
Signal Timings Diagram



C2

Stage Sequence Diagram

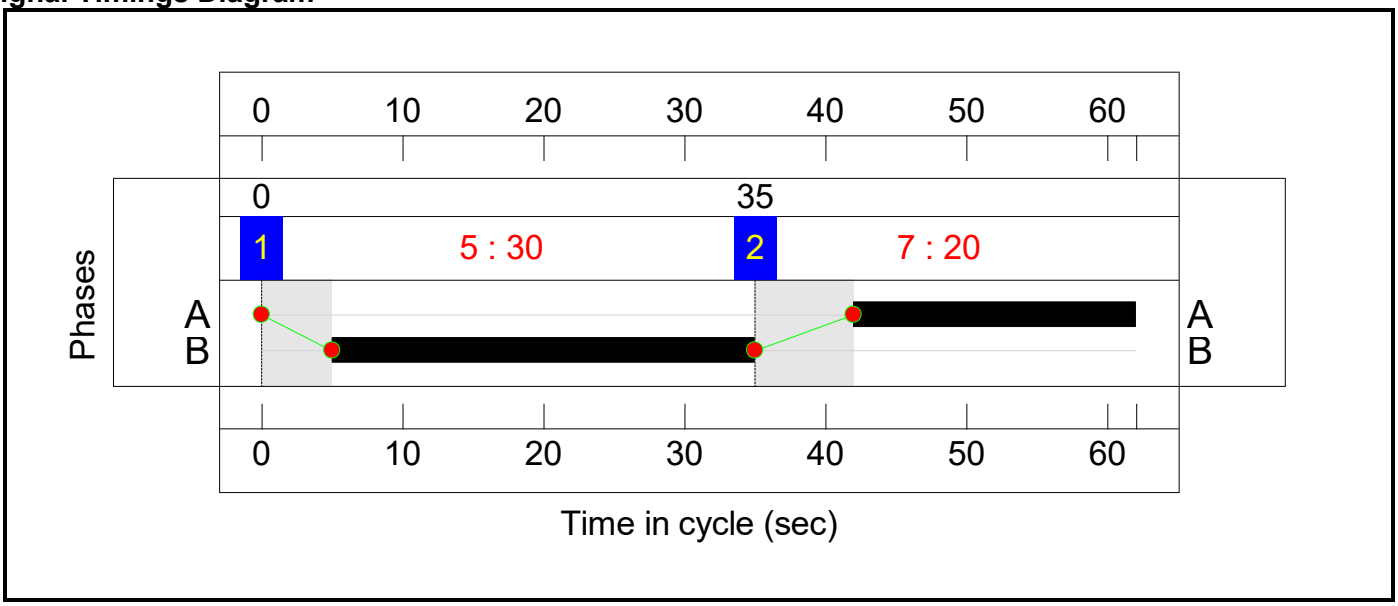
Stage Stream: 1



Stage Timings
Stage Stream: 1

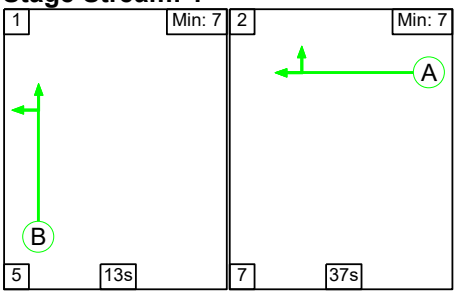
Stage	1	2
Duration	30	20
Change Point	0	35

Signal Timings Diagram



C3

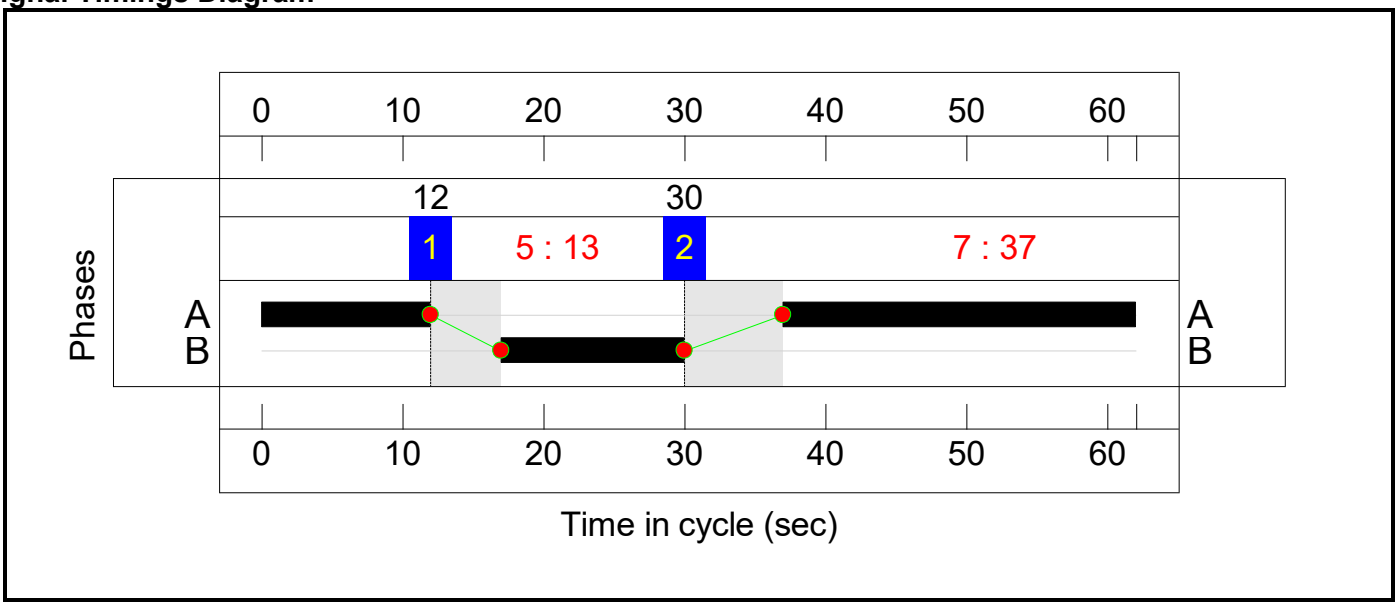
Stage Sequence Diagram
Stage Stream: 1



Stage Timings
Stage Stream: 1

Stage	1	2
Duration	13	37
Change Point	12	30

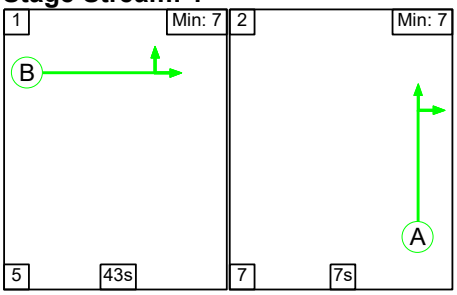
Signal Timings Diagram



C4

Stage Sequence Diagram

Stage Stream: 1

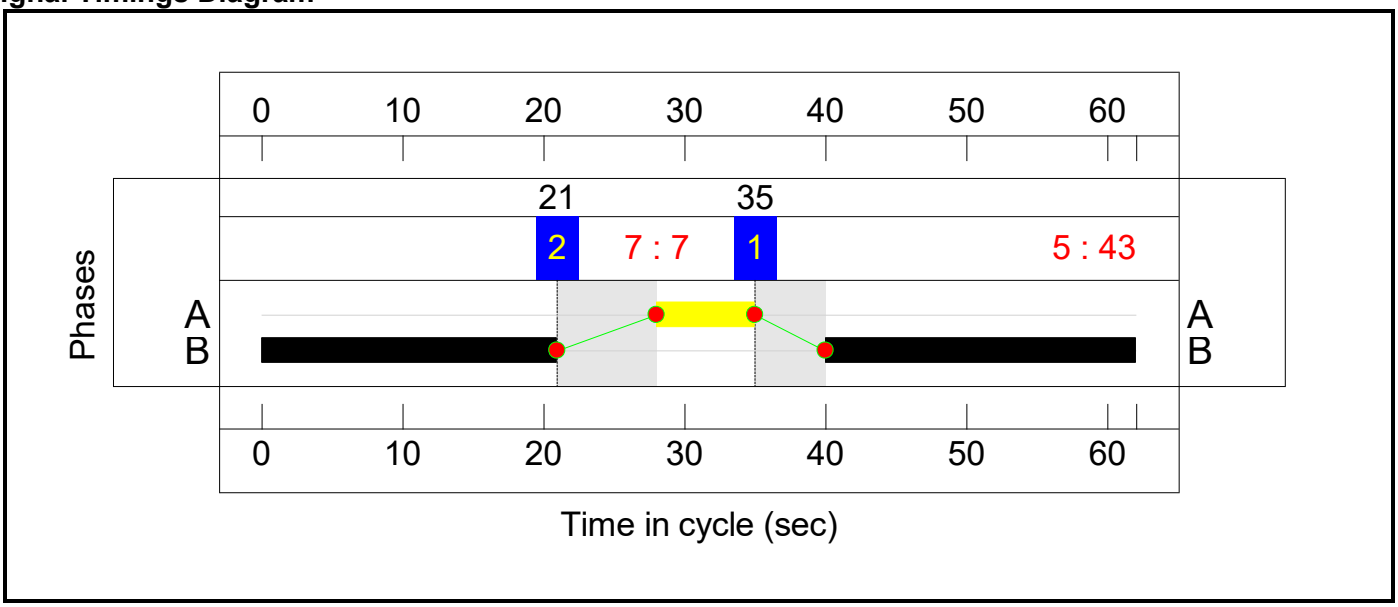


Stage Timings

Stage Stream: 1

Stage	1	2
Duration	43	7
Change Point	35	21

Signal Timings Diagram



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: M40 Junction 9 - with mitigation	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.9%**
M40 Junction 9	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.9%**
1/1	M40 N Ahead Left	U	2:1	N/A	C2:B		1	30	-	847	1828	914	92.7%
1/2+1/3	M40 N Ahead	U	2:1	N/A	C2:B		1	30	-	1817	1868:1908	918+954	96.2 : 97.9%
2/1	Ahead	U	2:1	N/A	C2:A		1	20	-	468	1945	659	71.0%
2/2	Ahead	U	2:1	N/A	C2:A		1	20	-	382	1977	670	57.0%
2/3	Right Ahead	U	2:1	N/A	C2:A		1	20	-	348	1869	633	55.0%
3/1	A41 Ahead Left	U	1:1	N/A	C1:B		1	12	-	291	1824	382	76.1%
3/2	A41 Ahead	U	1:1	N/A	C1:B		1	12	-	268	1876	393	68.1%
3/3	A41 Ahead	U	1:1	N/A	C1:B		1	12	-	270	1887	396	68.2%
4/1	Right Ahead	U	1:1	N/A	C1:A		1	38	-	935	1869	1176	79.5%
4/2	Right	U	1:1	N/A	C1:A		1	38	-	883	1868	1175	75.1%
4/3	Right	U	1:1	N/A	C1:A		1	38	-	934	1951	1227	76.1%
5/1	M40 S Left	U	3:1	N/A	C3:B		1	13	-	371	1932	436	85.0%
5/2+5/3	M40 S Ahead Left	U	3:1	N/A	C3:B		1	13	-	596	1888:1888	426+234	90.3 : 90.3%
6/1	Ahead	U	3:1	N/A	C3:A		1	37	-	1027	1866	1144	89.8%
6/2	Ahead	U	3:1	N/A	C3:A		1	37	-	1078	1904	1167	92.4%
6/3	Right Ahead	U	3:1	N/A	C3:A		1	37	-	1035	1887	1157	89.5%
7/1	A34 Left	U	4:1	N/A	C4:B		1	43	-	1168	1932	1371	85.2%
7/2+7/3	A34 Left	U	4:1	N/A	C4:B		1	43	-	1685	2083:2083	1168+689	90.7 : 90.7%
7/4+7/5	A34 Ahead	U	4:1	N/A	C4:B		1	43	-	937	1973:1869	854+1060	49.0 : 49.0%
8/2+8/1	Right Ahead	U	4:1	N/A	C4:A		1	7	-	143	1942:1942	251+148	35.9 : 35.9%
8/3	Right	U	4:1	N/A	C4:A		1	7	-	211	2078	268	78.7%
9/3	M40 N Exit	U	N/A	N/A	-		-	-	-	625	1800	1800	34.7%

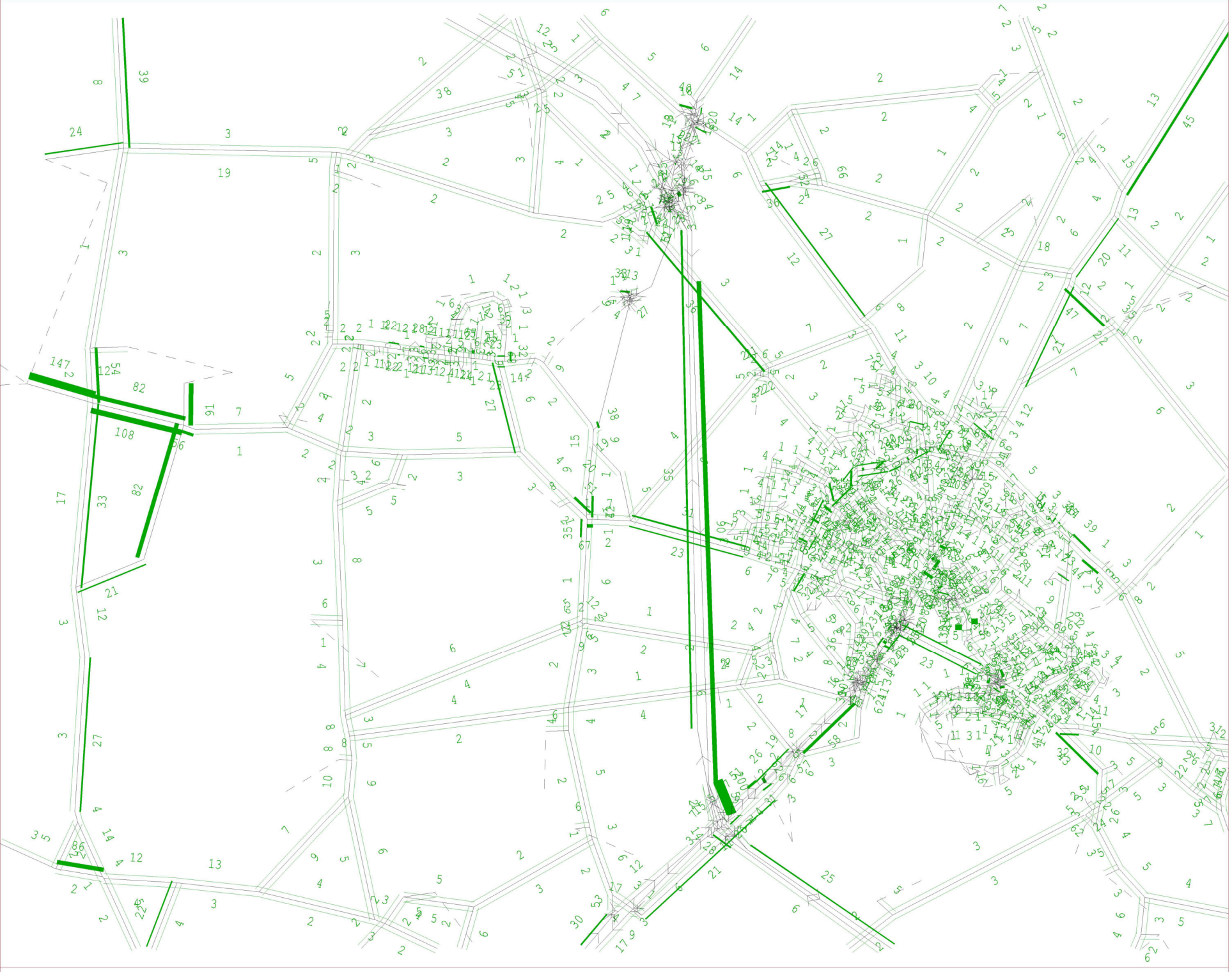
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
M40 Junction 9	**-**	**-**	**0**	**0**	**0**	**40.3**	**35.7**	**0.0**	**76.0**	**-**	**-**	**-**	**-**
1/1	847	847	-	-	-	3.4	5.4	-	8.8	37.6	13.4	5.4	18.8
1/2+1/3	1817	1817	-	-	-	7.5	11.7	-	19.2 (9.3+9.9)	38.0 (37.8:38.3)	15.6	11.7	27.2
2/1	468	468	-	-	-	2.5	0.0	-	2.5	19.4	6.3	0.0	6.3
2/2	382	382	-	-	-	1.6	0.0	-	1.6	15.4	5.0	0.0	5.0
2/3	348	348	-	-	-	1.6	0.0	-	1.6	16.1	4.4	0.0	4.4
3/1	291	291	-	-	-	1.9	1.5	-	3.4	42.1	4.7	1.5	6.2
3/2	268	268	-	-	-	1.7	1.1	-	2.7	36.7	4.2	1.1	5.3
3/3	270	270	-	-	-	1.7	1.1	-	2.8	36.7	4.3	1.1	5.3
4/1	935	935	-	-	-	0.7	0.0	-	0.7	2.5	2.8	0.0	2.8
4/2	883	883	-	-	-	0.1	0.0	-	0.1	0.4	0.3	0.0	0.3
4/3	934	934	-	-	-	0.1	0.0	-	0.1	0.5	0.4	0.0	0.4
5/1	371	371	-	-	-	2.4	2.6	-	5.0	48.5	6.1	2.6	8.7
5/2+5/3	596	596	-	-	-	3.7	4.1	-	7.8 (5.2+2.7)	47.4 (48.3:45.8)	6.4	4.1	10.5
6/1	1027	1027	-	-	-	1.5	0.0	-	1.5	5.4	17.3	0.0	17.3
6/2	1078	1078	-	-	-	1.8	0.0	-	1.8	6.0	15.1	0.0	15.1
6/3	1035	1035	-	-	-	1.6	0.0	-	1.6	5.6	13.9	0.0	13.9
7/1	1168	1168	-	-	-	2.1	2.8	-	4.9	15.2	14.6	2.8	17.4
7/2+7/3	1685	1685	-	-	-	2.2	4.6	-	6.9 (4.5+2.4)	14.7 (15.2:13.7)	10.9	4.6	15.5
7/4+7/5	937	937	-	-	-	0.9	0.5	-	1.4 (0.6+0.8)	5.3 (5.2:5.5)	3.5	0.5	3.9
8/2+8/1	143	143	-	-	-	0.8	0.0	-	0.8 (0.4+0.4)	19.7 (16.4:25.3)	1.1	0.0	1.1
8/3	211	211	-	-	-	0.4	0.0	-	0.4	6.3	3.3	0.0	3.3
9/3	625	625	-	-	-	0.0	0.3	-	0.3	1.6	3.1	0.3	3.3

C1	Stream: 1 PRC for Signalled Lanes (%):	13.2	Total Delay for Signalled Lanes (pcuHr):	9.78	Cycle Time (s): 62
C2	Stream: 1 PRC for Signalled Lanes (%):	-8.8	Total Delay for Signalled Lanes (pcuHr):	33.74	Cycle Time (s): 62
C3	Stream: 1 PRC for Signalled Lanes (%):	-2.6	Total Delay for Signalled Lanes (pcuHr):	17.81	Cycle Time (s): 62
C4	Stream: 1 PRC for Signalled Lanes (%):	-0.8	Total Delay for Signalled Lanes (pcuHr):	14.34	Cycle Time (s): 62
	PRC Over All Lanes (%):	-8.8	Total Delay Over All Lanes(pcuHr):	75.95	

APPENDIX F

2031 'DO SOMETHING' (WITH M40 JUNCTION 9) BTM PLOTS

‘DO SOMETHING’ (WITH M40J9) DELAY PLOTS



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_DS5_AM
_Network.UFS

Scale 67596

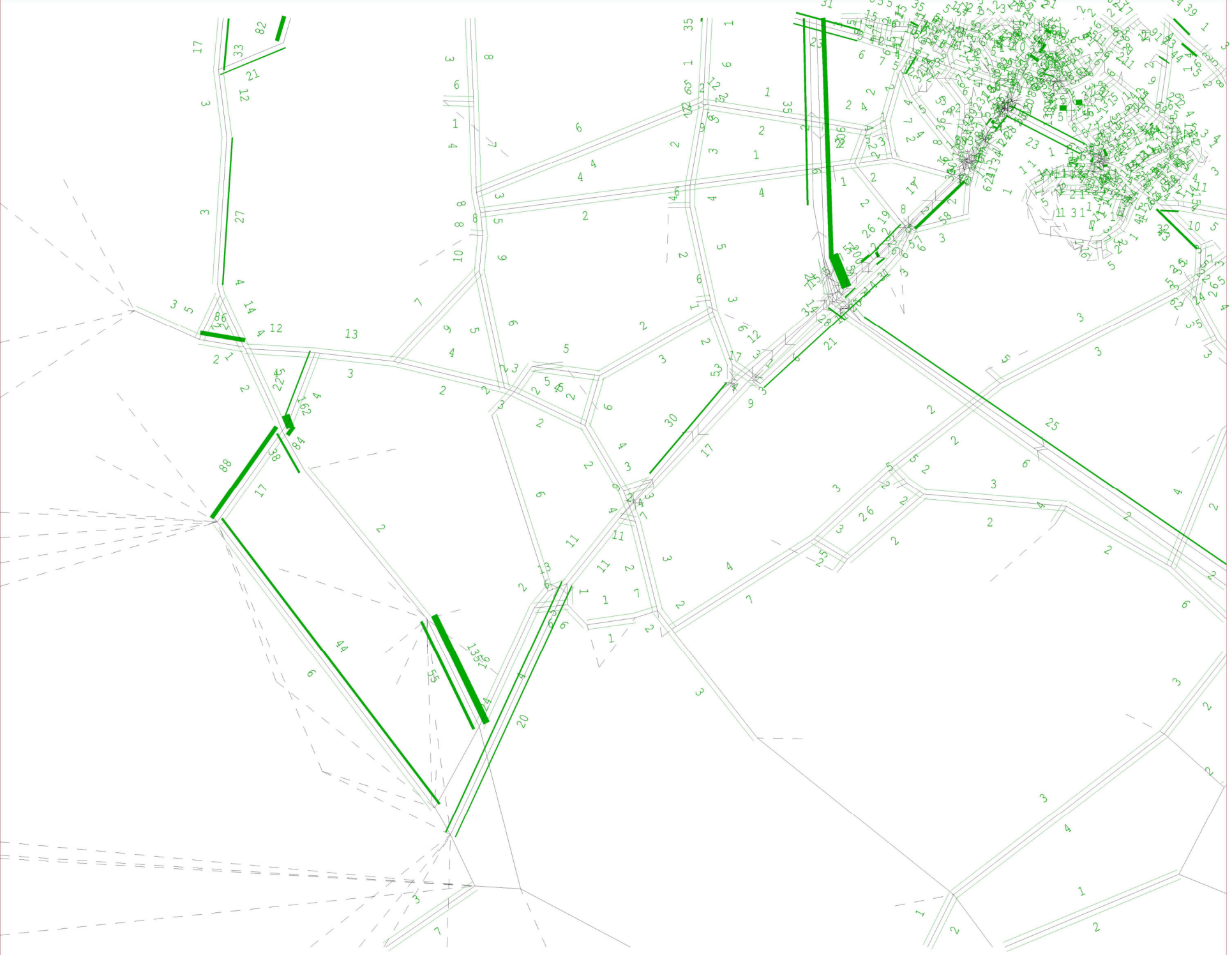
Link Annot:

Delay sec

Bandwidths =
100./mm

29- 3-23
WHITE YOUNG

Bicester Network - 2031 OxSRFI Do Something 5 AM Peak 29- 3-23



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_DS5_AM
_Network.UFS

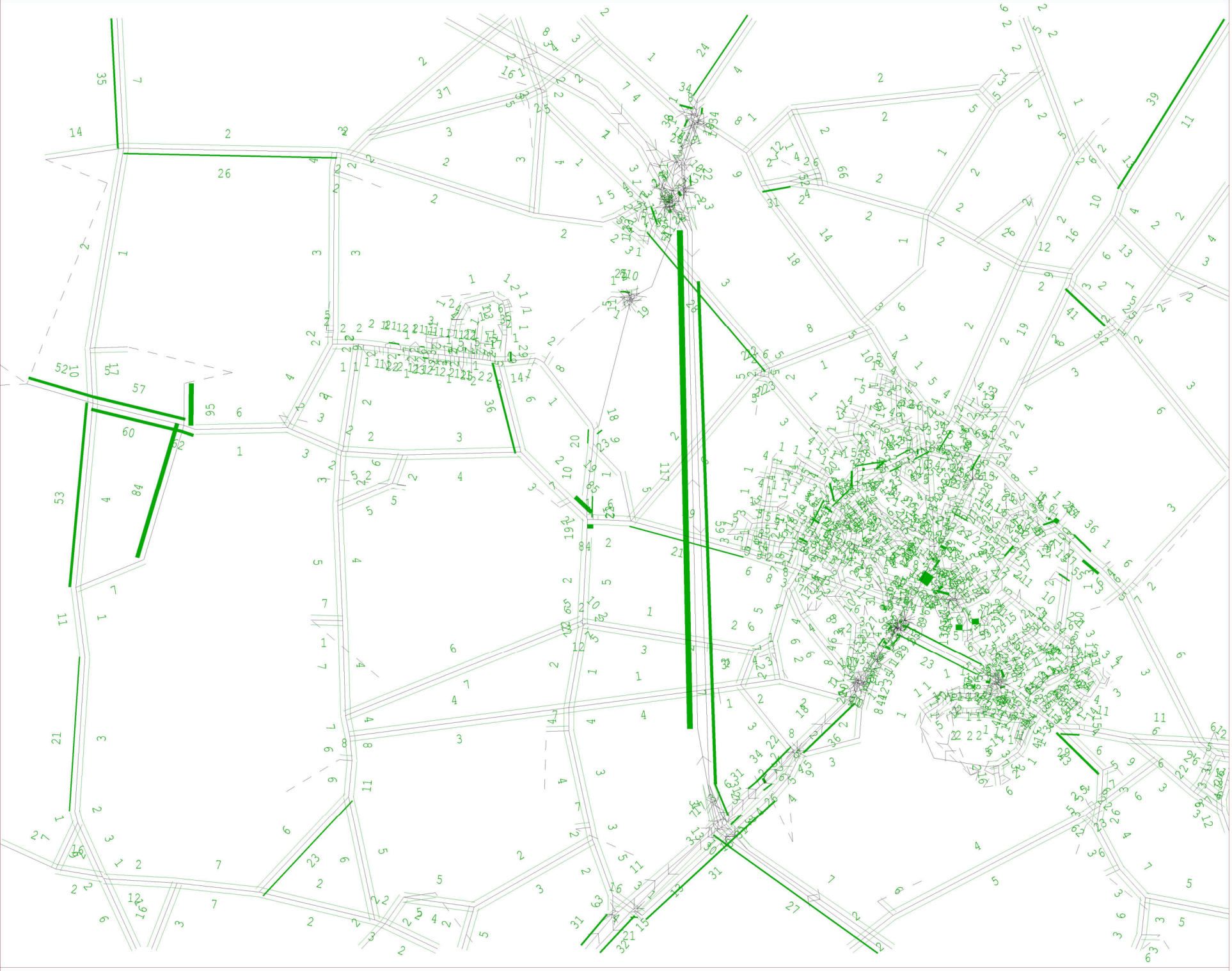
Scale 70494

Link Annot:

Delay sec

Bandwidths =
100./mm

29- 3-23
WHITE YOUNG



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_DS5_PM
_Network.UFS

Scale 67596

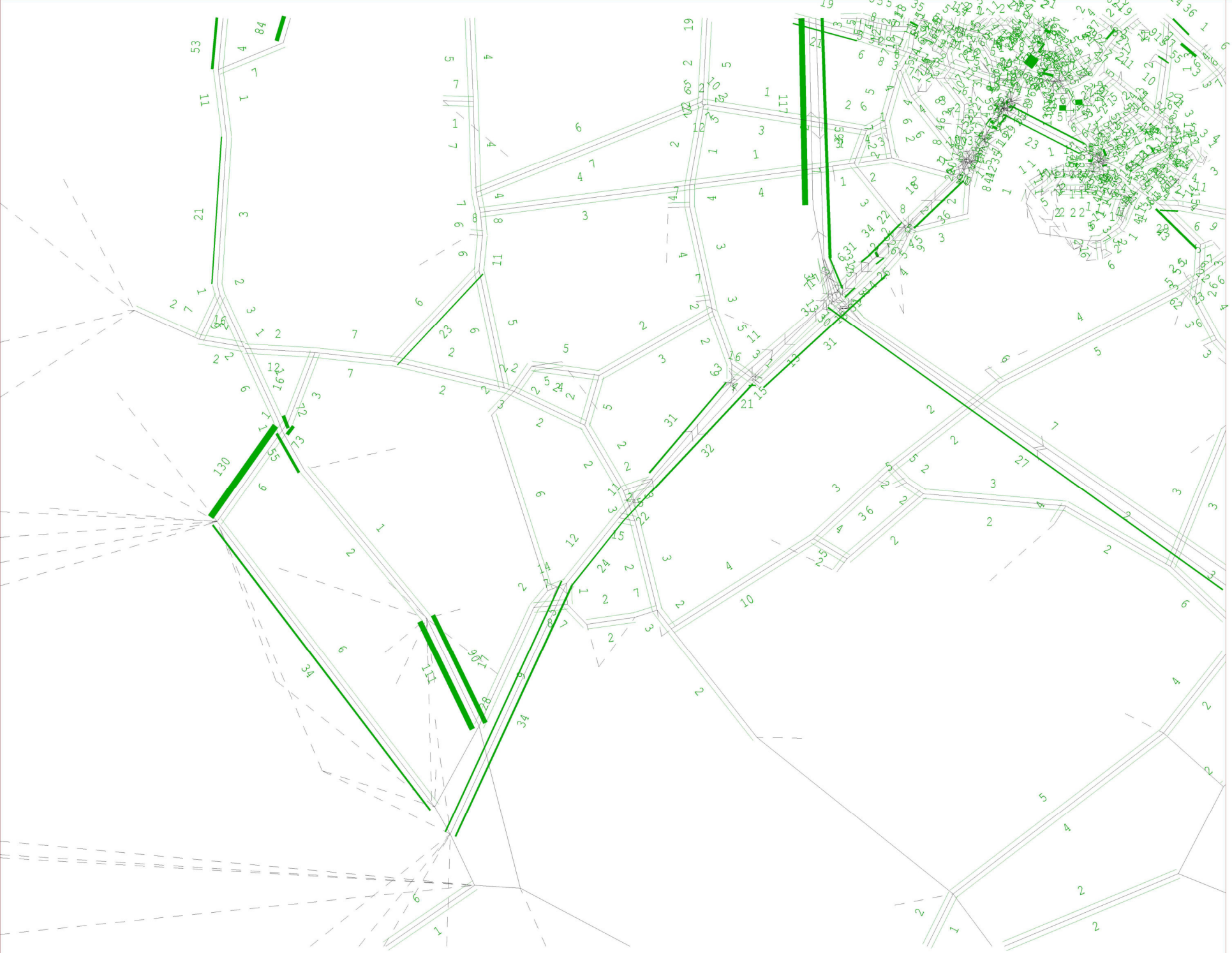
Link Annot:

Delay sec

Bandwidths =
100./mm

30- 3-23
WHITE YOUNG

Bicester Network - 2031 OxSRFI Do Something 5 PM Peak 30- 3-23



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_DS5_PM
_Network.UFS

Scale 70494

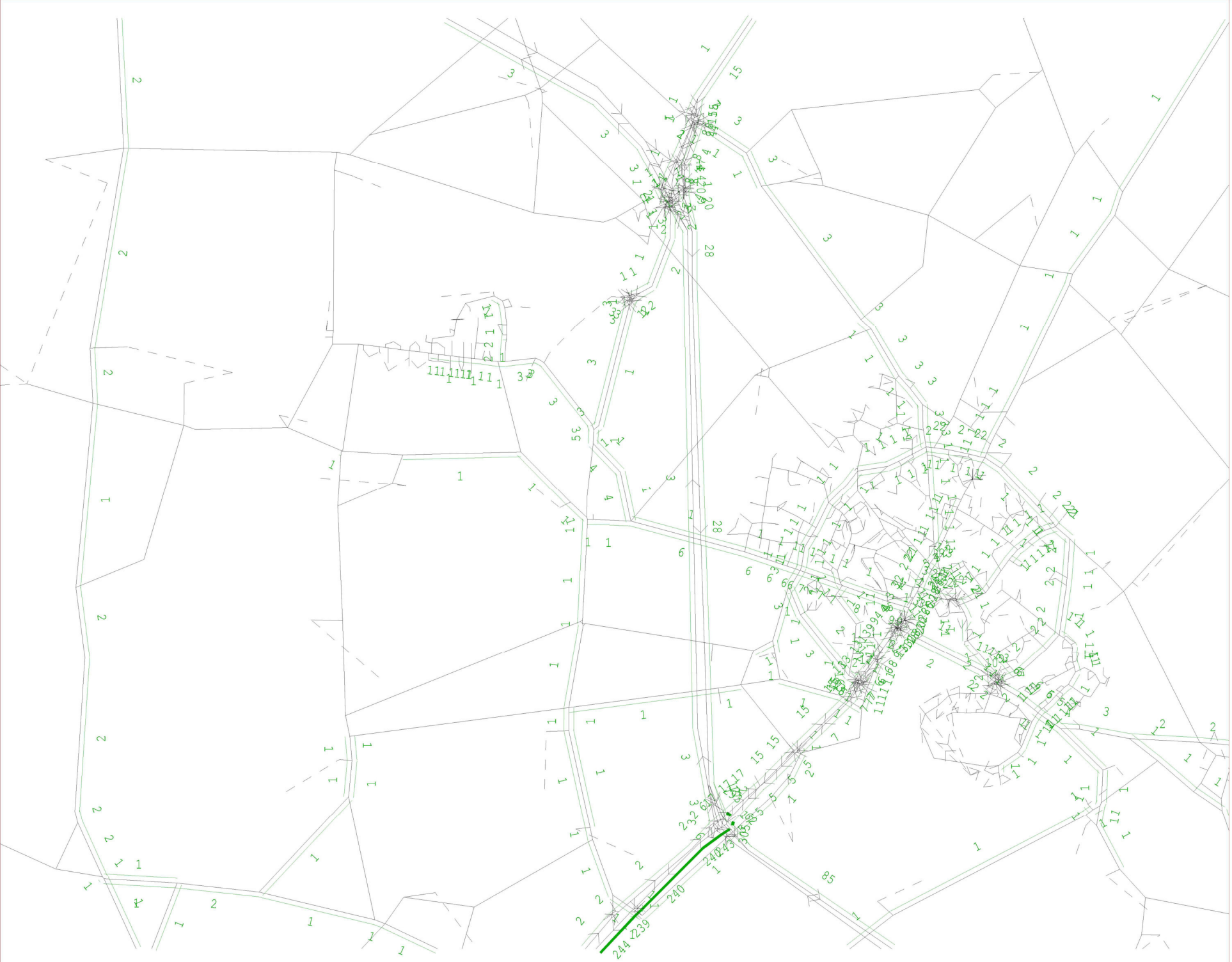
Link Annot:

Delay sec

Bandwidths =
100./mm

30- 3-23
WHITE YOUNG

‘DO SOMETHING’ (WITH M40J9) PASSQ PLOTS



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_DS5_AM
_Network.UFS

Scale 67596

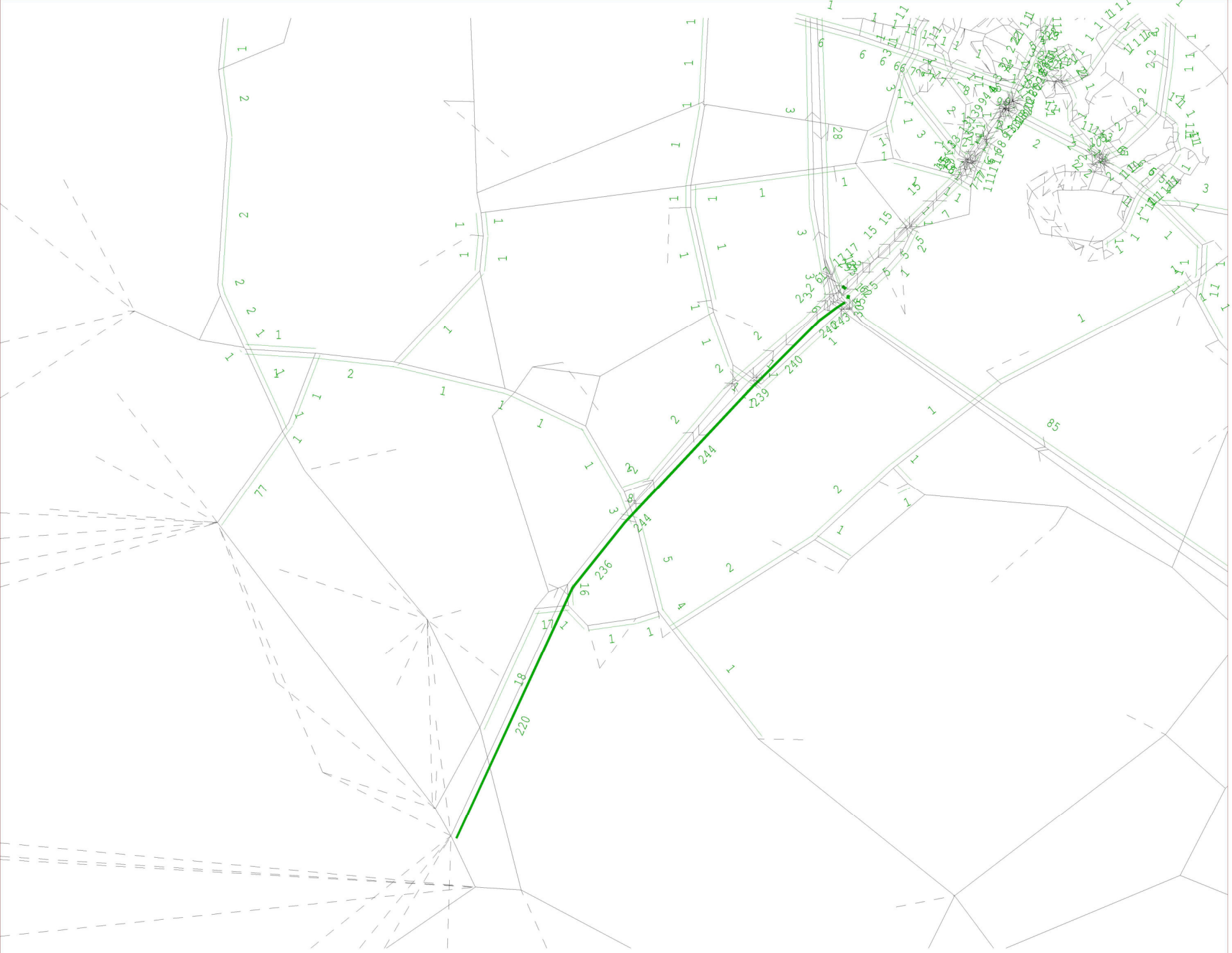
Link Annot:

PASSQ flows

Bandwidths =
500./mm

29- 3-23
WHITE YOUNG

Bicester Network - 2031 OxSRFI Do Something 5 AM Peak 29- 3-23



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_DS5_AM
_Network.UFS

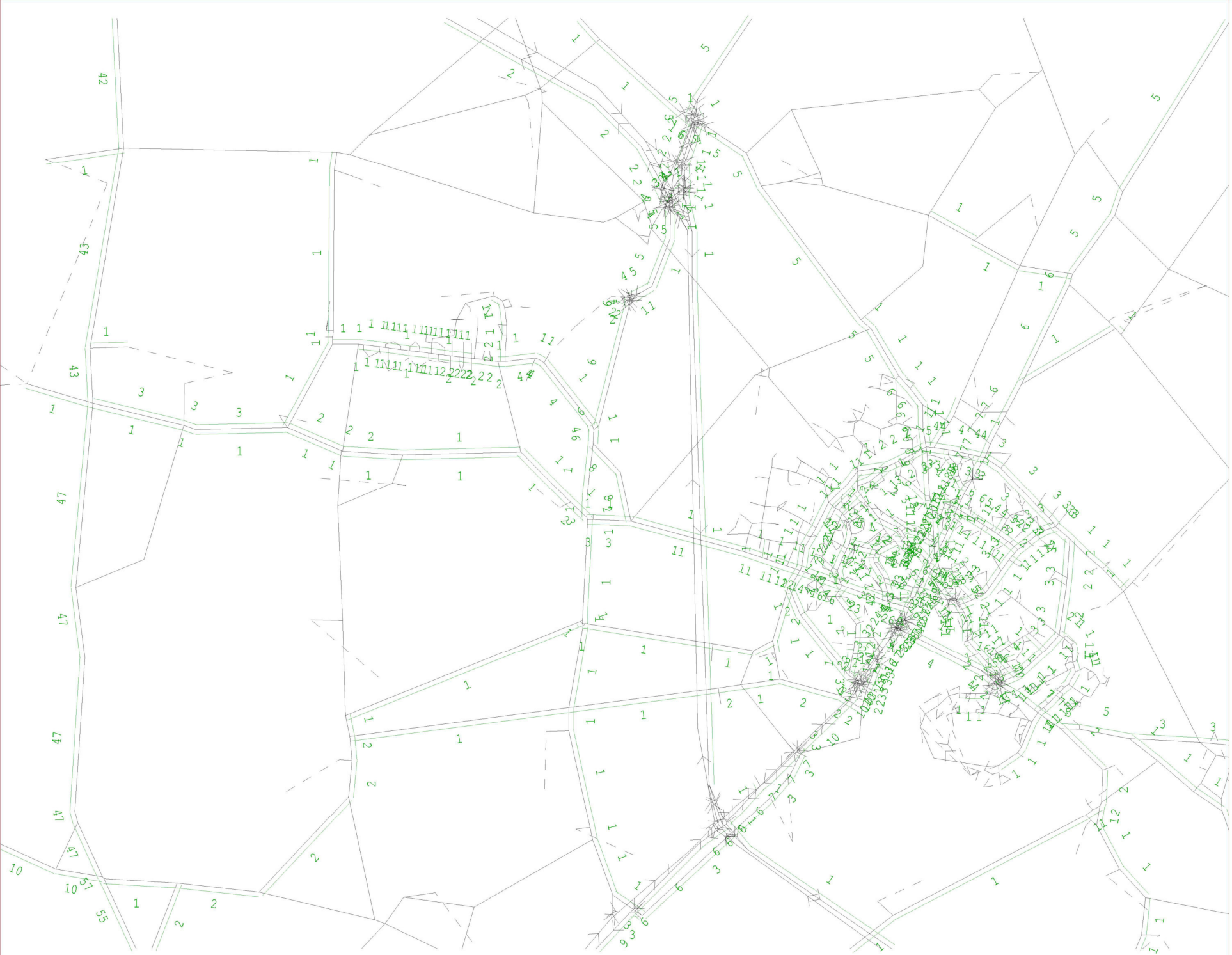
Scale 70494

Link Annot:

PASSQ flows

Bandwidths =
500./mm

29- 3-23
WHITE YOUNG



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_DS5_PM
_Network.UFS

Scale 67596

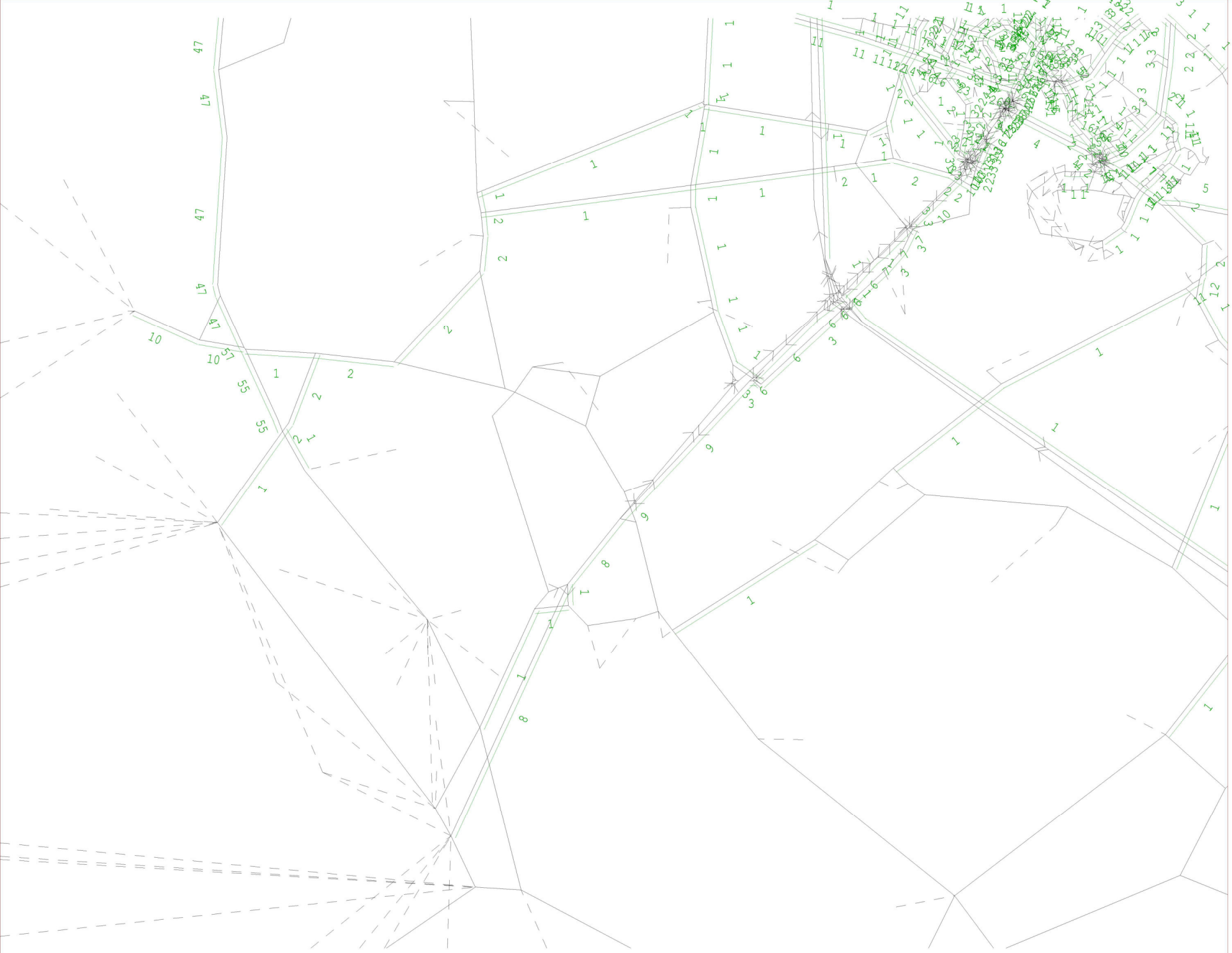
Link Annot:

PASSQ flows

Bandwidths =
500./mm

30- 3-23
WHITE YOUNG

Bicester Network - 2031 OxSRFI Do Something 5 PM Peak 30- 3-23



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_DS5_PM
_Network.UFS

Scale 70494

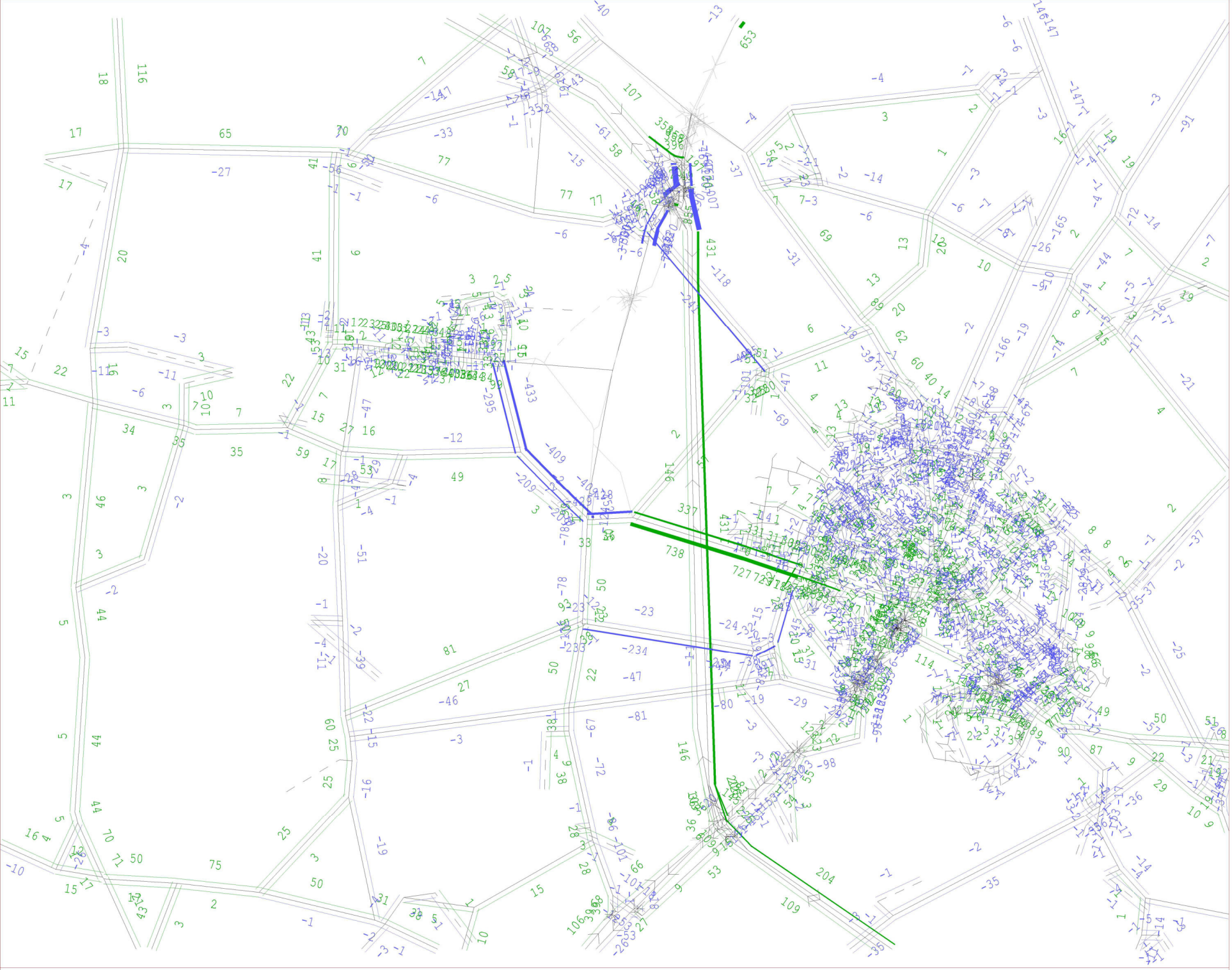
Link Annot:

PASSQ flows

Bandwidths =
500./mm

30- 3-23
WHITE YOUNG

‘DO SOMETHING’ (WITH M40J9) FLOW DIFFERENCE PLOTS



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_RC3_AM
_Network.UFS
5_AM_Network

Scale 67596

Link Annot:

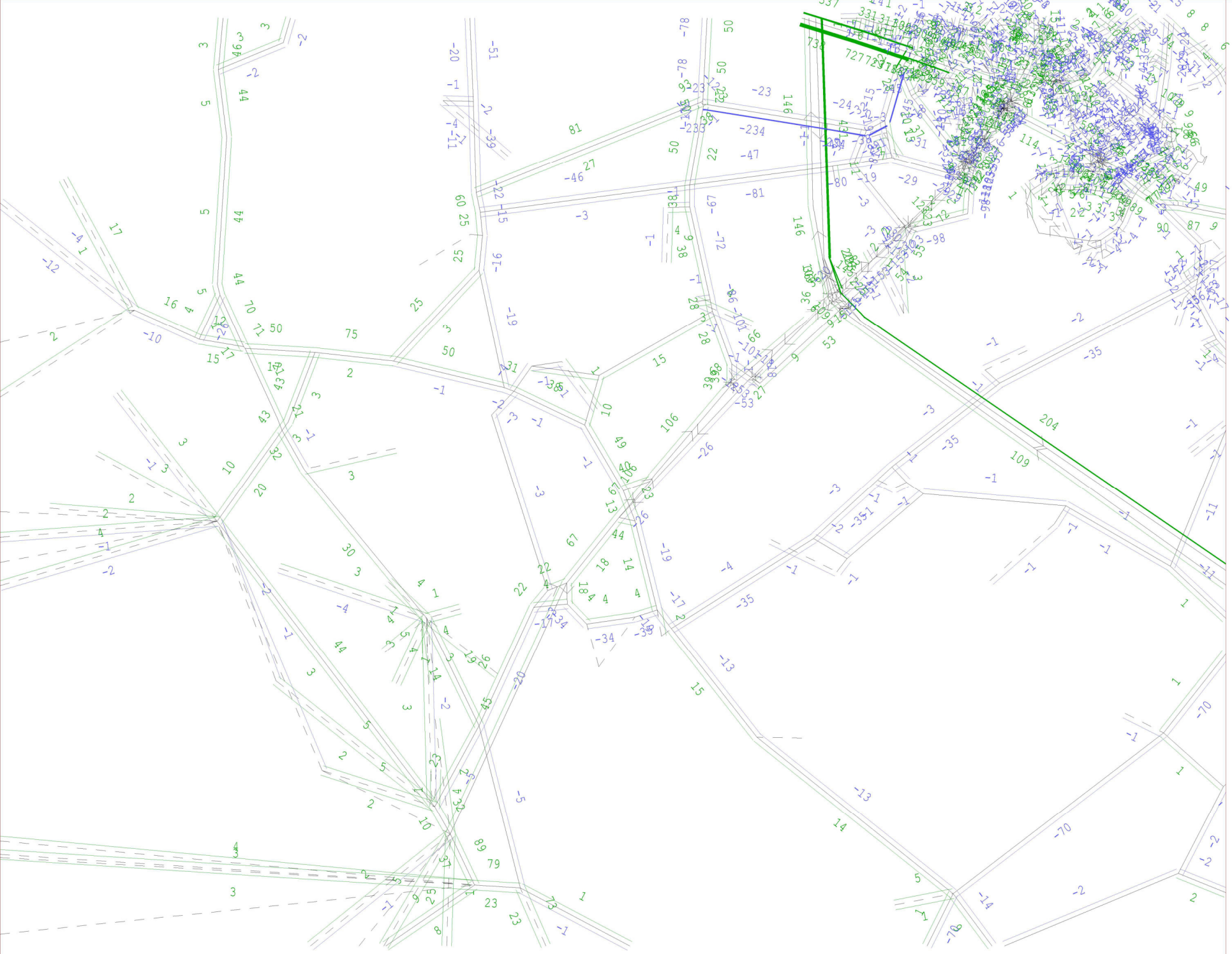
+ Actual flo
- Actual flo

Differ: 2-1

Bandwidths =
1000./mm

30- 3-23
WHITE YOUNG

Bicester Network - 2031 OxSRFI Reference Case 3 AM Peak 30- 3-23



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_RC3_AM
_Network.UFS
5_AM_Network

Scale 70494

Link Annot:

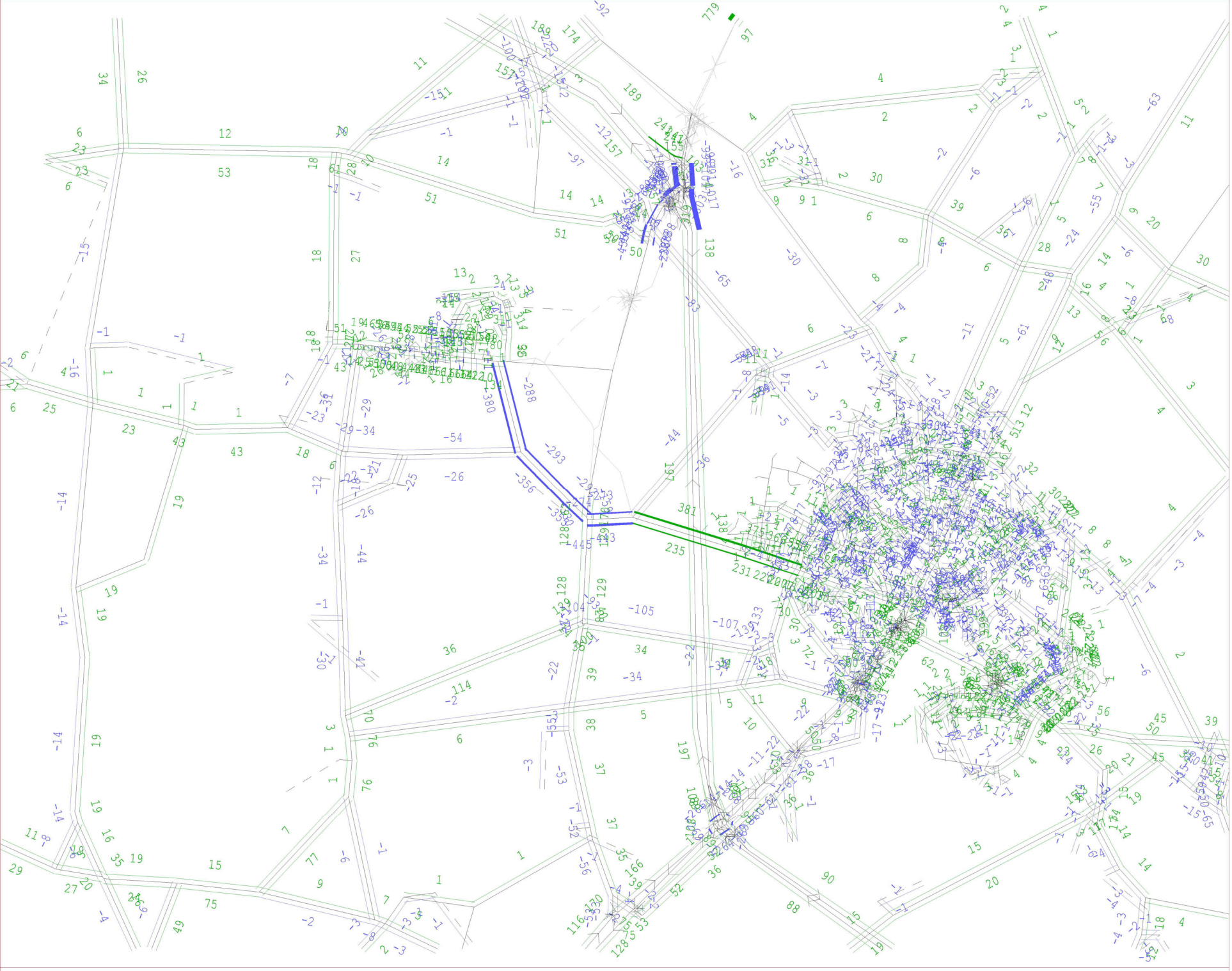
+ Actual flo
- Actual flo

Differ: 2-1

Bandwidths =
1000./mm

30- 3-23
WHITE YOUNG

Bicester Network - 2031 OxSRFI Reference Case 3 AM Peak 30- 3-23



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_RC3_PM
_Network.UFS
5_PM_Network

Scale 67596

Link Annot:

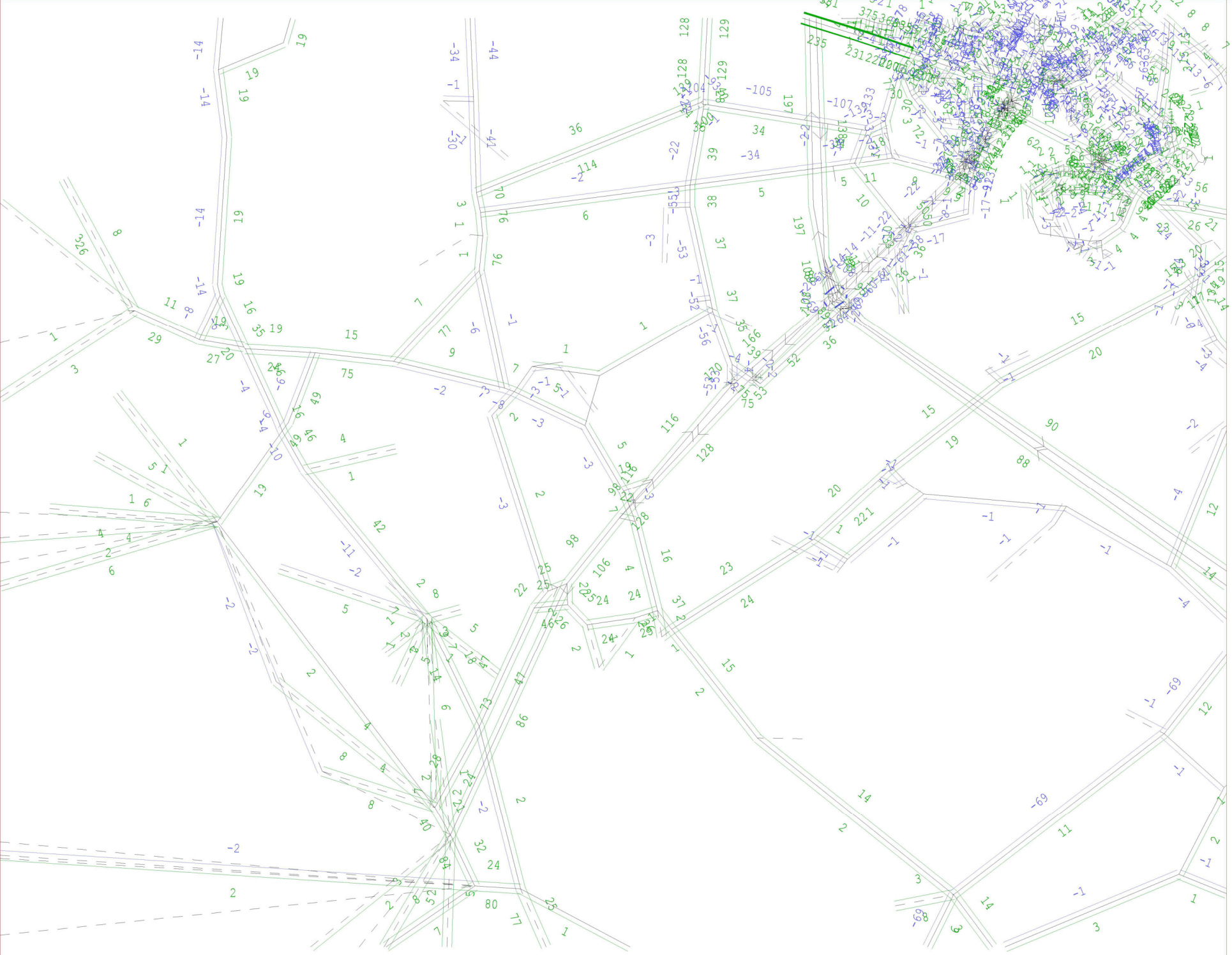
+ Actual flo
- Actual flo

Differ: 2-1

Bandwidths =
1000./mm

30- 3-23
WHITE YOUNG

Bicester Network - 2031 OxSRFI Reference Case 3 PM Peak 30- 3-23



SATURN

Atkins Ltd /
DVV / ITS

xSRFI_RC3_PM
_Network.UFS
5_PM_Network

Scale 70494

Link Annot:

+ Actual flo
- Actual flo

Differ: 2-1

Bandwidths =
1000./mm

30- 3-23
WHITE YOUNG

Bicester Network - 2031 OxSRFI Reference Case 3 PM Peak 30- 3-23