

Technical Note

Project: Land North of Penkridge

Subject: Strategic Road Network Impact Assessment Summary

Client:	St Philips & Bloor Homes	Version:	A
Project No:	6161	Author:	BS
Date:	24th June 2022	Approved:	SB

I Introduction

1.1.1 PJA, DTA Transportation and Capricorn Transport Planning have been appointed on behalf of St Philips, Bloor Homes and Taylor Wimpey to support the four proposed site strategic allocations within the South Staffordshire Local Plan Review.

1.1.2 Initial scoping discussions have been undertaken by each of the developers and their consultants, Staffordshire County Council Highways (SCC), City of Wolverhampton Council (CWC) and National Highways (NH). During these discussions, NH identified the need for a cumulative assessment of the Strategic Road Network (SRN) and a consistent approach to be taken between each of the allocations.

1.1.3 The purpose of this note to summarise the method and results of the Strategic Road Network (SRN) assessment that has been undertaken.

I.1 Structure of Note

1.1.1 The remainder of this note is structured as follows:

- Section 2: Methodology;
- Section 3: Results; and
- Section 4: Summary and Conclusion.

2 Methodology

2.1.1 In order to provide a consistent approach for assessment of the SRN between all allocations, a methodology was developed and agreed between PJA, DTA Transportation and Capricorn Transport Planning. A technical note setting out the proposed methodology was issued to NH, and has been included in **Appendix A**.

2.1.2 The assessment is considered to provide a sufficient level of detail within the timescales available to support the Local Plan evidence base and is considered to be commensurate to this stage of work. Further, more detailed modelling and assessment work can be undertaken following this stage as required to support the Local Plan Review through submission and examination.

2.2 Development Trips

2.2.1 The proposed methodology identified that detailed capacity assessments would be undertaken at four junctions on the SRN. The number of development trips associated with each site allocation has been quantified for each of junction in Table 1.

Table 1: Development Trips at SRN Junctions

SRN Junctions	Cross Green		Linthouse Lane		Bilbrook		Penkridge		Total	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
M54 J2	423	445	4	5	131	125	67	60	625	635
M6 J13	6	7	1	1	0	0	180	169	187	177
A449/ Brewood Roundabout	42	54	1	2	37	40	69	62	150	158
Gailey Roundabout	16	17	2	2	25	27	87	75	131	122

2.2.2 In addition to the above junctions, DTA Transportation has reviewed the impact of the proposed allocations on the new A449/Link Road roundabout associated with the consented Logic 54 development.

2.3 Assessment Scenarios

2.3.1 The junctions have been assessed for the following scenarios:

- **2038 Future Year** (end of Local Plan); and
 - Includes committed developments as agreed during scoping discussions per the site undertaking the assessment (see Section 4.4 of earlier Technical Note at **Appendix A**), the M54/M6 link road, and the Logic 54 A449/Link Road scheme where appropriate.
- **2038 Future Year + Cumulative Development**.
 - As above scenario with all site allocations.

2.4 Split of Assessment

2.4.1 The detailed assessments have been undertaken by the consultant for the development with the greatest impact at each junction, or where existing models are available. As such, the detailed assessments have been undertaken as follows:

- M54 J2 – DTA (on behalf of Cross Green & Linthouse Lane)
- A449/ Brewood Roundabouts – Capricorn (on behalf of Bilbrook)
- M6 J13 – PJA (on behalf of Penkridge); and
- Gailey Roundabout – PJA (on behalf of Penkridge).

2.4.2 Whilst not previously included within the proposed method, an assessment of the A449/New Link Road roundabout has also been undertaken by DTA as this junction forms a primary access to the Land at Cross Green site.

3 Results

1.1.4 Detailed capacity results are presented within the individual technical notes produced by each consultant, as follows:

- DTA – **Appendix B** – M54 J2 and A449/New Link Road;
- Capricorn – **Appendix C** – A449/Brewood Roundabouts; and
- PJA – **Appendix D** – M6 J13 and Gailey Roundabout.

1.1.5 To summarise, the operation of the junctions has been given a RAG rating, based on the following parameters:

- Green – RFC of below 0.85 or DoS of below 85%– The junction operates with reserve capacity;
- Amber – RFC between 0.85 and 1.00 or DoS between 85% and 100% – The junction is approaching theoretical capacity; and
- Red – RFC of greater than 1.00 or DoS greater than 100% – The junction is at or above theoretical capacity and mitigation is likely to be needed.

Table 3-1: RAG Rating Results

	2022 Base		2038 Future Year		2038 Future Year + Cumulative Development	
	AM	PM	AM	PM	AM	PM
M54 J2						
A449/New Link Road						
A449/Brewood Roundabouts						

	2022 Base		2038 Future Year		2038 Future Year + Cumulative Development	
	AM	PM	AM	PM	AM	PM
M6 J13						
A5/A449 Gailey Roundabout						

4 Summary and Conclusion

1.1.6 This technical note summarises the results of the Strategic Road Network assessments undertaken in order to assess the cumulative impact of four proposed strategic site allocations. The assessment demonstrates that mitigation would not be required at any junction to accommodate the proposed site allocations.



Appendix A Cumulative Methodology Note

Technical Note

Project: Land at A449, Penkridge

Subject: SRN Cumulative Assessment Method

Client:	St Philips & Bloor Homes	Version:	A
Project No:	6161	Author:	BS
Date:	11th May 2022	Approved:	SB

I Introduction

I.1 Context and Purpose

- 1.1.1 PJA, DTA Transportation and Capricorn Transport Planning have been appointed on behalf of St Philips, Bloor Homes and Taylor Wimpey to support the four proposed site strategic allocations within the South Staffordshire Local Plan Review.
- 1.1.2 Initial scoping discussions have been undertaken by each of the developers and their consultants, Staffordshire County Council Highways (SCC) and National Highways (NH). During these discussions, NH identified the need for a cumulative assessment of the Strategic Road Network (SRN) and a consistent approach to be taken between each of the allocations.
- 1.1.3 The purpose of this note to set out the scope and method of the cumulative assessment that will be undertaken.
- 1.1.4 This assessment is intended as a high-level exercise in order to identify any improvements required to the strategic road network such that these improvements can be costed and included in the IDP.
- 1.1.5 Further, more detailed modelling and assessment work can be undertaken following this stage as required to support the Local Plan Review through submission and examination.

I.2 Structure of Note

- 1.2.1 The remainder of this note is structured as follows:

- Section 2: Development Trips at Junctions;
- Section 3: Scope of Assessment;
- Section 4: Model Parameters;
- Section 5: Outputs; and
- Section 6: Summary and Conclusion.

2 Development Trips at Junctions

2.1.1 Development vehicle trips have been provided for each of the junctions on the SRN within our combined extents. It is understood that the trip generation/distribution and assignment assumptions underpinning these values have been discussed (and agreed where possible) with NH during initial scoping discussions.

2.1.2 It should be noted that:

- M6 Junction 14 is not within the scope of assessment for Cross Green, Linthouse Lane and Bilbrooks. Trips at this junction for these sites have been assumed to be 0.
- M6 J10, M6 J13 and M6 J14 are not within the scope of assessment for the Bilbrook site. It is not anticipated that the development will result in a significant number of trips at these junctions, and therefore it has been assumed that there are 0 trips at these junctions.
- M54 J1, M54 J2, M54 J3, M6 J10 and A449/Brewood Roundabouts are not within the scope of assessment for the Penkridge site. For the purpose of the cumulative assessment, the distribution has been extended to identify the likely development trips at these junctions.

2.1.3 The total vehicle trips at each junction for each development, and when combined are summarised in the table below.

Table 1: Development Trips at SRN Junctions

SRN Junctions	Cross Green		Linthouse Lane		Bilbrook		Penkridge		Total	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
M54 J1	66	53	73	125	15	17	6	5	161	199
M54 J2	423	445	4	5	131	125	67	60	625	635
M54 J3	8	8	2	1	29	31	0	0	39	40
M6 J10	50	62	29	2	0	0	18	13	97	77
M6 J11	152	136	62	56	15	17	28	21	258	230
M6 J12	10	19	1	1	11	12	18	13	40	45
M6 J13	6	7	1	1	0	0	180	169	187	177
A449/ Brewood Rdbts	42	54	1	2	37	40	69	62	150	158
Gailey Roundabout	16	17	2	2	25	27	87	75	131	122
M6 J14	0	0	0	0	0	0	43	32	43	32

3 Scope of Assessment

3.1.1 During initial discussions, NH noted that all junctions with more than 50 cumulative development trips would require assessment. Based on the above, junctions with more than 50 two-way cumulative development trips are as follows:

- M54 J1 – 166 AM/199 PM trips;
- M54 J2 – 625 AM/635 PM trips;
- M6 J10 – 97 AM/77 PM trips;
- M6 J11 – 258 AM/230 PM trips;
- M6 J13 – 187 AM/177 PM trips;
- A449/ Brewood Roundabouts – 150 AM/158 PM trips; and
- Gailey Roundabout – 131 AM/122 PM trips.

3.1.2 Of the above, three junctions will be excluded from the assessment as follows:

- M54 J1;
- M6 J10; and
- M6 J11.

3.1.3 The DCO application for a new link road between M54 Junction 1 and M6 Junction 11 was granted planning consent in April 2022. The application was accompanied by a Transport Assessment and associated modelling of the link road and connecting junctions. Whilst this work did not explicitly include the proposed strategic allocations, it did confirm that both M54 Junction 1 and M6 Junction 11 would operate within capacity in 2039 with growth resulting from changes in employment levels, population & housing levels, and changes in car ownership. Given the significant nature of the works being implemented by the DCO application and changes to both M54 Junction 1 and M6 Junction 11 to accommodate it, further improvements to mitigate the proposed allocations are unlikely to be warranted within the context of the change in traffic flows forecast.

3.1.4 In terms of M6 Junction 10, this junction is currently undergoing significant improvement works which will reduce delays and increase highway capacity. Within this context, the impact of the additional traffic generated by the cumulative developments is not significant equating to a circa 1% uplift in peak demand and further mitigation is therefore unlikely to be warranted

3.1.5 On this basis, detailed capacity assessments will be undertaken at the following SRN junctions only.

- M54 J2;
- M6 J13;
- A449/ Brewood Roundabouts; and
- Gailey Roundabout.

3.2 Split of Assessment

3.2.1 The detailed assessments will be undertaken by the consultant for the development with the greatest impact at each junction, or where existing models are available. As such, the detailed assessments will be undertaken as follows:

- M54 J2 – DTA (on behalf of Cross Green & Linthouse Lane)
- A449/ Brewood Roundabouts – Capricorn (on behalf of Bilbrook)
- M6 J13 – PJA (on behalf of Penkridge); and
- Gailey Roundabout – PJA (on behalf of Penkridge).

4 Model Parameters

4.1.1 In order to ensure a consistent approach between the assessments, the following parameters will be followed by all consultants.

4.2 Modelling Software

4.2.1 The junctions will be assessed using standalone modelling software as follows:

- M54 J2 - Linsig
- M6 J13 – Junctions 10
- A449/ Brewood Roundabouts – Junctions 10/Arcady
- Gailey Roundabout – Junctions 10

4.3 Assessment Scenarios

4.3.1 The junctions will be assessed for the following scenarios:

- **2038 Future Year** (end of Local Plan); and
 - Derived using 2022 survey data and TEMPRO growth factors.
 - Will include committed developments as agreed during scoping discussions per the site undertaking the assessment (see Section 4.4), and the M54/M6 link road.
- **2038 Future Year + Cumulative Development.**

- As above scenario with all site allocations.

4.4 Baseline Data

4.4.1 Baseline data has been collected at each of the junctions by Manual Classified Count (MCC) surveys undertaken as follows. Full survey data will be included within the STA document.

- M54 Junction 2 – MCC survey undertaken on Wednesday 16th March 2022;
- M6 Junction 13 – MCC survey undertaken on Thursday 31st March 2022;
- A449/Brewood Roundabouts – MCC survey undertaken on Wednesday 16th March 2022; and
- Gailey Roundabout – MCC survey undertaken on Thursday 31st March 2022.

4.5 Committed Development and Infrastructure

4.5.1 The committed developments and infrastructure accounted for within the assessments are summarised in Table 2 below. Further detail is provided below.

Table 2: Committed Developments

Consultant	Junction	Committed Infrastructure Included	Committed Development Included
DTA	M54 J2	M54/M6 Link Road Logic 54 Featherstone Link Road	<ul style="list-style-type: none"> - Logic 54 Featherstone (20/01131/OUT) and the included committed developments within the consented TA: <ul style="list-style-type: none"> o Wolverhampton Business Park (11/00100/OUT) o Four Ashes (16/00498/FUL) o i54 unoccupied and i54 Western Extension (18/00637/OUT) o Pendeford Mill Lane Bilbrook (18/00710/FUL) o Hobnock Road (18/00450/REM) o Unit 1 Innovation Drive, Pendeford (16/001057/REM) o West Midland Interchange (WMI) (DCO Ref TR050005)
Capricorn	A449/ Brewood Roundabouts		
PJA	M6 J13	M54/M6 Link Road	<ul style="list-style-type: none"> - Bloor Phase 1 (17/01022/OUT) – 200 dwellings - Land at Cherry Brook (Site Allocation 005) – 88 dwellings - West Midlands Interchange (WMI) (DCO Ref TR050005)
	Gailey Roundabout		

Committed Developments

M54 Junction 2 and A449/Brewood Roundabouts

4.5.2 The committed developments included within the M54 J2 and A449/Brewood Roundabouts assessment have been based on and inclusive of the ROF Featherstone application (20/01131/OUT). Turning flows will be extracted from the relevant TA's.

M6 J13 and Gailey Roundabout

4.5.3 Committed developments for the M6 J13 and Gailey Roundabout assessment were agreed during scoping discussions in relation to Land at A449, Penkridge site. Turning flows will be extracted from the relevant TA's where possible. Traffic flows for the Cherry Brook 005 Site Allocation have been estimated, and more detail will be provided within the STA.

M54/M6 Link Road

4.5.4 Given the recent consent for the M54/M6 Link Road, the scheme will be treated as committed infrastructure within the assessment, and the impact of the scheme on the strategic road network accounted for where appropriate.

4.5.5 The Transport Assessment submitted as part of the schemes DCO provides peak hour traffic flows on bypassed roads including the A449 (at A5 Gailey) and A5 (West of A449 Gailey). The values in Table 4.5 of the TA, suggest that the scheme will result in a significant reduction in vehicles on the A449 and A5, as set out in Table 3 below.

Table 3: DCO TA - Peak Hour Impact of M54/M6 Link Road

		AM Peak			PM Peak			Difference (%)	
		2024 DM	2024 DS	Difference	2024 DM	2024 DS	Difference	AM	PM
A449 (at A5 Gailey)	Northbound	507	312	-195	871	600	-271	-38%	-31%
	Southbound	831	436	-395	475	313	-162	-48%	-34%
A5 (West of A449 Gailey)	Eastbound	890	692	-198	851	593	-258	-22%	-30%
	Westbound	833	534	-299	902	765	-137	-36%	-15%

4.5.6 The DCO TA does not provide specific traffic flow diagrams or turning counts. Therefore, in order to investigate in more detail, information has been extracted from the TA that accompanied the consented Logic 54 Featherstone application (20/01131/OUT). The TA provides turning count information associated with the M54/M6 Link Road (sourced from National Highways (Highways England at the time)), for the following junctions and scenarios:

Junctions:

- A449/A5 Gailey Roundabout;
- A449/Brewood Roundabouts; and
- M54 Junction 2.

Scenarios:

- 2024 Do Minimum; and
- 2024 Do Something (includes the M54/M6 Link Road).

4.5.7 In order to account for the impact of the M54/M6 Link Road within the cumulative assessment, the following methodology will be applied:

- 2024 Do Minimum (DM) and 2024 Do Something (DS) turning counts extracted from the Featherstone TA for each of the junctions;
- The DM flows will be subtracted from the DS flows to identify the difference.
- The difference will then be calculated as a percentage of the DM flows.
- The percentage difference will then be applied to the 2038 baseline data for each turning movement.

4.5.8 Given that no data is available for the M6 Junction 13, no changes will be made to account for the M54/M6 Link Road.

Logic 54 Featherstone Link Road

4.5.9 Alongside the M54/M6 Link Road impact, the reassignment of traffic associated with the committed Logic 54 Featherstone Link Road will be taken into account. The consented TA sets out reassignment in 2031 across the network, although reassignment is only identified for M54 J2 within the scope of this assessment. As a result, the reassignment of traffic associated with the Link Road will be taken into account in the modelling of M54 J2 only.

5 Outputs

5.1.1 It is intended that at this stage headline results will be presented within the STA. The operation of each junction will be given a Red Amber Green (RAG) rating for both assessment scenarios, as follows:

- Green – The junction operates with reserve capacity;
- Amber – The junction is approaching capacity; and
- Red – Mitigation is likely to be needed at the junction.

5.1.2 For those junctions whereby mitigation is considered necessary, high-level designs will be produced to allow for a costing exercise to be undertaken to inform the IDP.

6 Summary and Conclusion

6.1.1 This technical note sets out the method of the cumulative assessment to be undertaken in support of the four proposed strategic site allocations within the South Staffordshire Local Plan Review. It is intended that this provide an initial assessment of the strategic road network that can be refined during the Local Plan submission and examination period if required.

Appendix B DTA SRN Impact Assessment

**Land at Cross Green & Land North of Linthouse
Lane**

Strategic Road Network Impact Assessment



Transport Planning Consultants

**Land at Cross Green & Land
North of Linthouse Lane**
*Strategic Road Network Impact
Assessment*

23rd June 2022

SJT/TM 23199-03 Strategic Road Network Impact
Assessment

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1.0 INTRODUCTION

1.1 DTA Transportation Limited has been commissioned on behalf of Taylor Wimpey to provide transport advice in relation to the proposed allocations of Land at Cross Green and Land North of Linthouse Lane for residential development within the emerging South Staffordshire Local Plan.

1.2 A Strategic Transport Assessment (TA) has been prepared following discussions with South Staffordshire Council (SSC), Staffordshire County Council (SCC), the City of Wolverhampton Council (CWC) and National Highways (NH). It provides a high level strategic review of the impact of the proposed site allocation within the emerging Local Plan and focusses on deliverability. A more detailed TA would be required at the planning application stage.

1.3 This technical note presents the results of the modelling work undertaken in relation to the Strategic Road Network (SRN), which takes into account the cumulative impact of the four proposed strategic site allocations, including:

- Land at Cross Green;
- Land North of Linthouse Lane;
- Land at A449, Penkrige; and
- Land East of Bilbrook.

1.4 The locations of these sites are shown on **Figure 1**.

1.5 This note specifically focusses on M54 Junction 2 and also the A449/ New Link Road roundabout. The methodology adopted in relation to trip generation, distribution and assignment is set out in the TA.



2.0 M54 JUNCTION 2 ASSESSMENT

2.1 Traffic Surveys

2.1.1 The assessment of M54 Junction 2 relies on traffic surveys undertaken on Wednesday 16th March 2022. The survey data is attached as **Appendix A**.

2.2 Trip Generation, Distribution and Assignment

2.2.1 The trip generation, distribution and assignment methodologies for the four strategic sites are set out within the respective Strategic TAs.

2.3 Background Growth

Committed Development

2.3.1 The traffic flows from the following committed developments have been taken into account when assessing the operation of M54 Junction 2:

- Logic 54 Featherstone (20/01131/OUT);
- Wolverhampton Business Park (11/00100/OUT);
- Four Ashes (16/00498/FUL);
- i54 unoccupied and i54 Western Extension (18/00637/OUT);
- Pendeford Mill Lane Bilbrook (18/00710/FUL);
- Hobnock Road (18/00450/REM);
- Unit 1 Innovation Drive, Pendeford (16/001057/REM); and
- West Midland Interchange (WMI) (DCO Ref TR050005).

2.3.2 In total, these committed developments are forecast to generate an additional circa 2,500 two-way vehicle trips through M54 Junction 2 in the respective peaks. This equates to around a 60-65% increase in vehicle movements through the junction above the surveyed 2022 levels, which is well in excess of the circa 14% increase forecast by TEMPRO.



2.3.3 Matrices showing the forecast committed development flows through M54 Junction 2 are attached as **Appendix B**. To avoid double counting, TEMPRO growth has not been applied in addition to the committed development traffic.

Infrastructure

2.3.4 Given the recent consent for the M54/M6 Link Road, the scheme has been treated as committed infrastructure within the assessment, and its impact has been accounted for when assessing M54 Junction 2 in accordance with the methodology set out in PJA Technical Note dated 11th May 2022. Matrices showing the resulting change in flows through M54 Junction 2 are attached as **Appendix B**.

2.3.5 Alongside the M54/M6 Link Road impact, the reassignment of traffic associated with the committed Logic 54 Featherstone Link Road has been taken into account. Matrices showing the resulting change in flows through M54 Junction 2 are also attached as **Appendix B**.

2.4 **2038 Baseline**

2.4.1 The 2038 baseline flows are a combination of 2022 traffic surveys, committed development flows and reassignment resulting from the M54/M6 Link Road and the Logic 54 Featherstone Link Road. Turning matrices showing the resulting 2038 baseline movements through M54 Junction 2 are attached as **Appendix B**.

2.5 **Cumulative Impact**

2.5.1 The combined additional traffic generated through M54 Junction 2 resulting from the four strategic site allocations has been assessed. Matrices showing these movements are attached as **Appendix B**. The cumulative development traffic was added to the 2038 baseline flows and the 2038 with cumulative development flows are attached as **Appendix B**.



2.6 Junction Assessment

2.6.1 The operation of M54 Junction 2 was assessed using LinSig. The results of the assessment are summarised below in **Table 1**, which shows the links with the highest Degree of Saturation (DoS) and the corresponding queue. The full LinSig outputs are attached as **Appendix C**.

Table 1 – M54 Junction 2 Assessment Results

Arm	AM Peak		PM Peak	
	DoS	Queue	DoS	Queue
2022 Existing				
Stafford Road (North)	54.4	7	50.6	5
M54 (East)	54.8	6	43.5	5
Stafford Road (South)	50.8	5	50.5	4
M54 (West)	52.1	6	48.2	5
2038 without Development				
Stafford Road (North)	66.0	9	86.2	12
M54 (East)	84.7	14	62.1	7
Stafford Road (South)	86.2	17	89.0	17
M54 (West)	70.5	9	83.4	12
2038 with Development (Cumulative)				
Stafford Road (North)	82.0	13	91.5	15
M54 (East)	90.3	17	63.0	8
Stafford Road (South)	89.7	18	91.0	21
M54 (West)	80.1	10	87.4	14

2.6.2 The analysis demonstrates that M54 Junction 2 would be approaching capacity in the future in the baseline position and that this would continue to be the case with the cumulative development traffic. Consequently, it is concluded that the impact of the strategic allocations is not significant and that mitigation is not required.

2.7 Merge/ Diverge Assessment

2.7.1 The impacts of the traffic generated by the proposed development on the existing eastbound merge and westbound diverge at M54 Junction 2 have been assessed with reference to DMRB CD122 'Geometric Design of Grade Separated Junctions'.

2.7.2 The existing slip road provision has been compared to the theoretical requirements derived using CD122 and the provision for the: 2022 traffic survey year, 2038 baseline, and 2038 baseline + cumulative development. The traffic flows are presented on the CD122 merge/diverge diagrams and are attached as **Appendix D**.



M54 Junction 2 – Eastbound Merge

2.7.3 The impacts of the development upon the M54 Junction 2 eastbound merge are summarised in **Table 2**.

Table 2 – M54 Junction 2 Eastbound Merge Assessment

Scenario	Merge Type		No. of Lanes on Connector		Upstream Mainline Lanes		Downstream Mainline Lanes	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Current Layout	D		1		2		3	
2022 Existing	D	D	1	1	1	1	2	2
2038 Baseline	D	E	1	2	1	2	2	3
2038 Baseline + Cumulative	D	E	1	2	1	2	3	3

2.7.4 The existing eastbound merge currently provides a single lane on the connector road. In the future years, a two lane connector is shown to be required in the evening peak. However, this is theoretically required in the baseline scenario and therefore mitigation as a result of the proposed allocations is concluded not to be necessary.

M54 Junction 2 – Westbound Diverge

2.7.5 The impacts of the development upon the M54 Junction 2 westbound merge are summarised in **Table 3**.

Table 3 – M54 Junction 2 Westbound Diverge Assessment

Scenario	Diverge Type		No. of Lanes on Connector		Upstream Mainline Lanes		Downstream Mainline Lanes	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Current Layout	C		1		3		2	
2022 Existing	A	A	1	1	2	2	2	2
2038 Baseline	D	D	2	2	3	3	2	2
2038 Baseline + Cumulative	D	D	2	2	3	3	2	2



2.7.6 The existing westbound diverge currently provides a single lane on the connector road. In the future years, a two lane connector is shown to be required. However, this is theoretically required in the baseline scenario and therefore mitigation as a result of the proposed allocations is concluded not to be necessary.

3.0 A449 \ NEW LINK ROAD ROUNDABOUT ASSESSMENT

3.1.1 The operation of the A449 \ New Link Road roundabout has been assessed in line with the methodology set out above for M54 Junction 2. Turning flows matrices are attached as Appendix E and the results of the assessment undertaken using ARCADY are copied below in **Table 4**. The full outputs are attached as **Appendix E**.

Table 4 – A449 \ New Link Road Roundabout Assessment Results

	AM							PM						
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
2038 + Com Dev														
1 - A449 (N)	D3	1.8	4.46	0.65	A	4.33	40 % [1 - A449 (N)]	D4	1.3	3.35	0.66	A	3.95	44 % [3 - A449 (S)]
2 - New Link Road		0.3	3.78	0.23	A				0.6	4.51	0.38	A		
3 - A449 (S)		1.8	4.30	0.65	A				1.8	4.33	0.65	A		
2038 + Cumulative														
1 - A449 (N)	D5	3.2	7.22	0.76	A	6.70	19 % [1 - A449 (N)]	D6	1.8	4.47	0.64	A	5.82	22 % [3 - A449 (S)]
2 - New Link Road		0.7	5.35	0.42	A				1.0	6.10	0.51	A		
3 - A449 (S)		3.3	6.61	0.77	A				3.4	6.79	0.78	A		





3.1.2 The analysis demonstrates that the junction would operate within capacity in the future with the cumulative development traffic and that mitigation is not required.

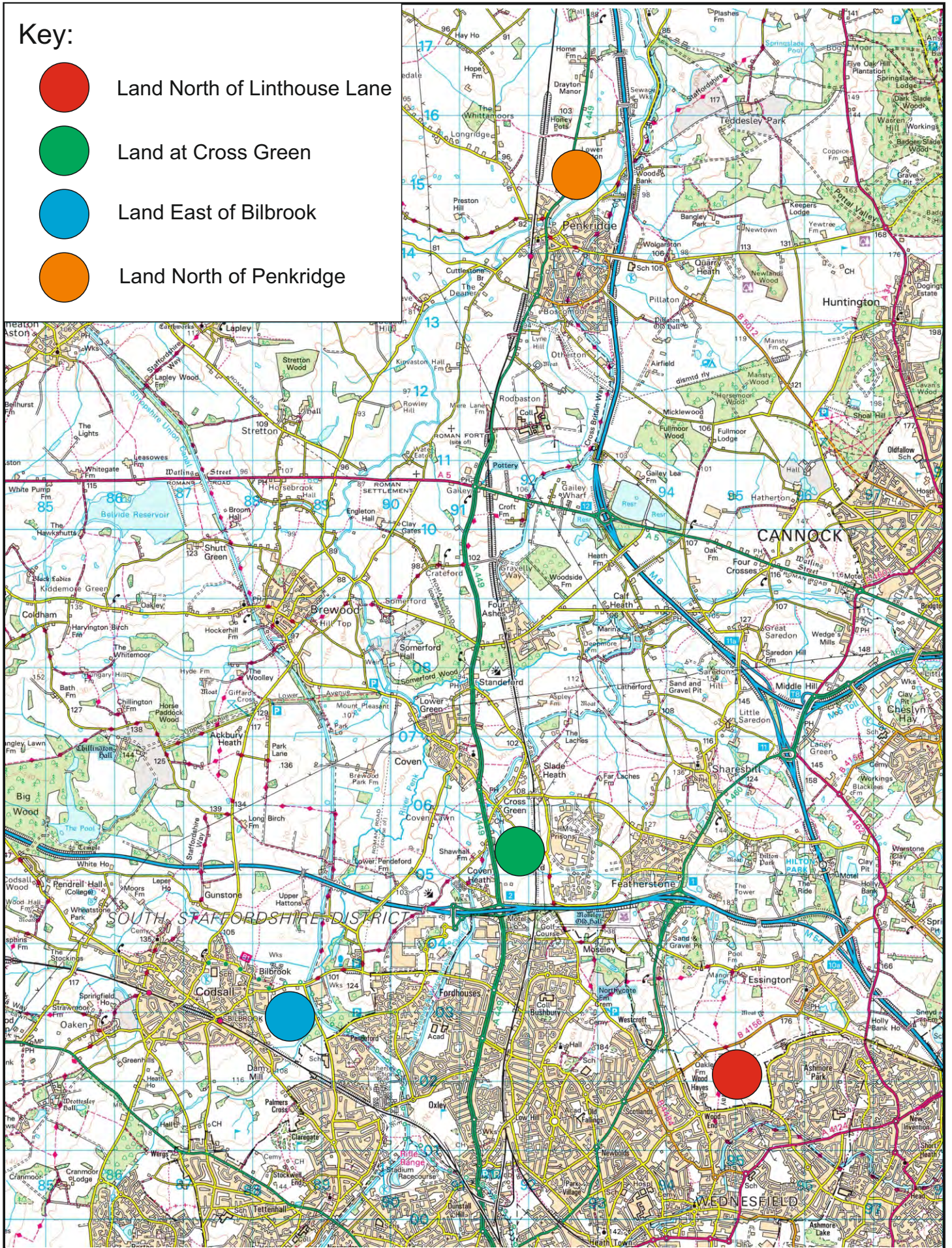
4.0 CONCLUSIONS

4.1.1 This technical note presents the results of the modelling work undertaken in relation to the Strategic Road Network, which takes into account the cumulative impact of the four proposed strategic site allocations. The analysis focusses on M54 Junction 2 and the A449 \ New Link Road roundabout, and demonstrates that mitigation would not be required at either location to accommodate the proposed site allocations.

FIGURES

Key:

-  Land North of Linthouse Lane
-  Land at Cross Green
-  Land East of Bilbrook
-  Land North of Penkrige



Forester House, Doctors Lane,
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B95 5AW
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Figure 1
Drawing Title
Job Title
Client

Strategic Site Allocation Locations
Land at Cross Green/ North of Linthouse Lane
Taylor Wimpey

Scale : NTS

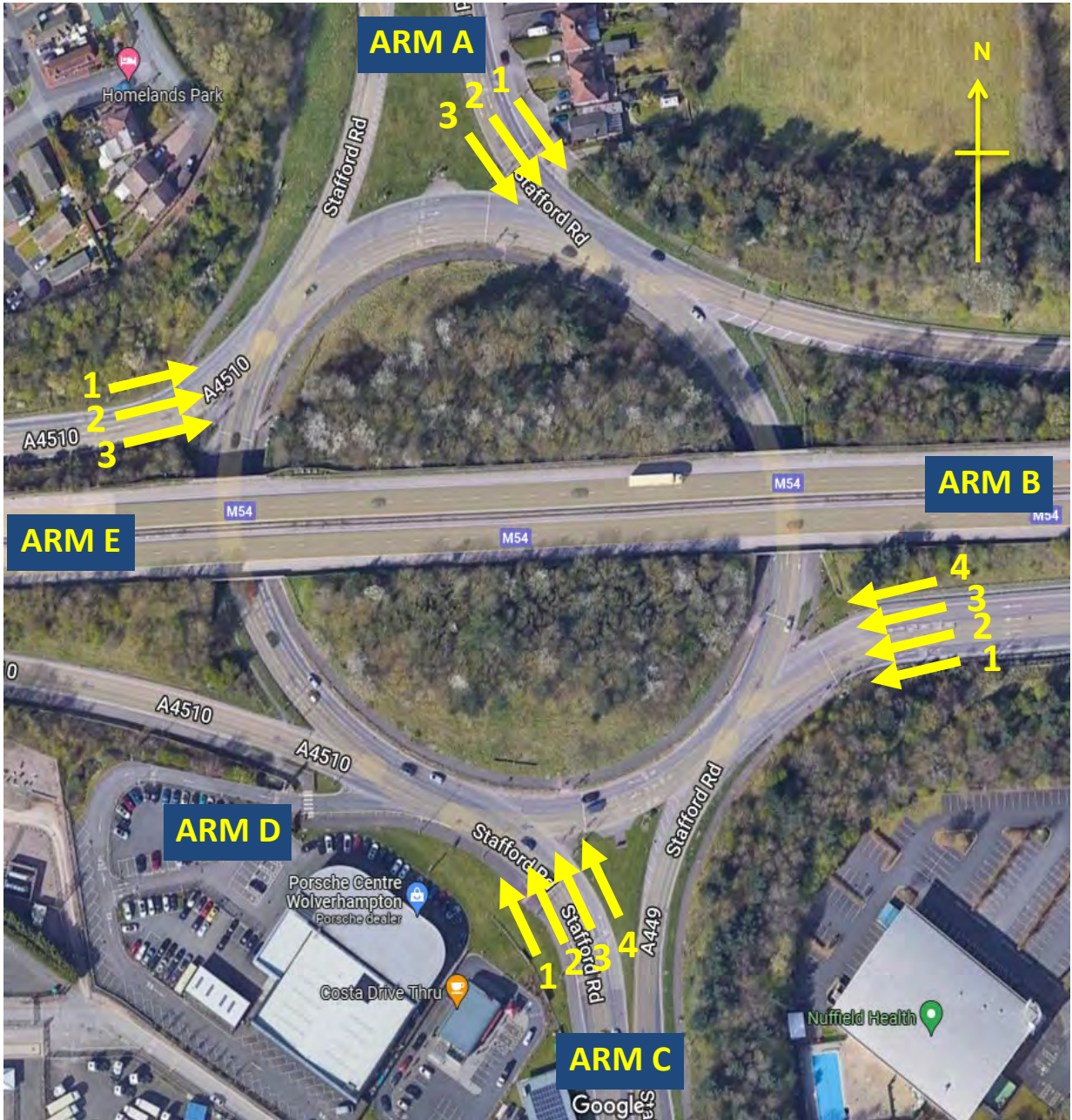


Transport Planning Consultants

APPENDIX A

Traffic Survey Data

<p>SITE: 4</p>		<p>DATE: 16TH MARCH 2022</p>
<p>LOCATION: A449 STAFFORD RD / M54 / PORSCHE ACCESS</p>		<p>DAY: WEDNESDAY</p>



JOB TITLE:
WOLVERHAMPTON AREA 1

JOB NUMBER: 11176

MANUAL CLASSIFIED COUNTS



JOB REF: 11176

JOB NAME: WOLVERHAMPTON AREA 1

SITE: 4

DATE: 16/03/2022

LOCATION: A449 STAFFORD RD (N) / M54 (E) / A449 STAFFORD RD (S) / ACCESS TO PORSCHE / M54 (W)

DAY: WEDNESDAY

TIME	A TO A FROM A449 STAFFORD RD (N) TO A449 STAFFORD RD (N)								A TO B FROM A449 STAFFORD RD (N) TO M54 (E)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	0	1	0	0	1	38	0	1	2	0	0	0	41
07:15	1	0	0	0	0	0	0	1	28	6	4	0	0	0	0	38
07:30	2	0	0	0	0	0	0	2	30	5	2	3	0	1	0	41
07:45	0	0	0	0	0	0	0	0	34	8	3	0	0	0	0	45
H/TOT	3	0	0	0	1	0	0	4	130	19	10	5	0	1	0	165
08:00	1	0	0	0	0	0	0	1	25	8	0	0	0	0	0	33
08:15	2	0	0	0	2	0	0	4	32	4	3	1	0	0	0	40
08:30	0	0	0	0	0	0	0	0	31	13	1	1	0	0	0	46
08:45	3	0	0	0	0	0	0	3	33	3	2	1	5	0	0	44
H/TOT	6	0	0	0	2	0	0	8	121	28	6	3	5	0	0	163
09:00	1	0	0	0	0	0	0	1	20	4	4	0	0	0	0	28
09:15	1	0	0	0	0	0	0	1	20	2	0	0	0	0	0	22
09:30	0	0	0	0	0	0	0	0	24	6	2	1	0	0	0	33
09:45	0	0	0	0	0	0	0	0	17	3	1	0	0	0	0	21
H/TOT	2	0	0	0	0	0	0	2	81	15	7	1	0	0	0	104
P/TOT	11	0	0	0	3	0	0	14	332	62	23	9	5	1	0	432

TIME	A TO A FROM A449 STAFFORD RD (N) TO A449 STAFFORD RD (N)								A TO B FROM A449 STAFFORD RD (N) TO M54 (E)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	0	0	0	1	0	0	0	1	23	3	2	0	0	0	0	28
16:15	1	0	0	0	0	0	0	1	29	6	1	3	2	0	0	41
16:30	2	2	0	0	0	0	0	4	31	2	1	0	0	0	0	34
16:45	3	0	0	0	0	0	0	3	18	1	0	0	0	0	0	19
H/TOT	6	2	0	1	0	0	0	9	101	12	4	3	2	0	0	122
17:00	0	0	0	0	0	0	0	0	35	4	1	1	0	0	0	41
17:15	0	1	0	0	0	0	0	1	21	3	0	0	0	0	0	24
17:30	2	0	0	0	0	0	0	2	24	1	1	0	0	0	0	26
17:45	2	0	0	0	0	0	0	2	18	2	0	0	0	0	0	20
H/TOT	4	1	0	0	0	0	0	5	98	10	2	1	0	0	0	111
18:00	2	0	0	0	0	0	0	2	11	0	1	0	0	0	0	12
18:15	1	0	0	0	0	0	0	1	18	1	0	1	0	0	0	20
18:30	0	0	0	1	0	0	0	1	14	3	0	0	1	0	0	18
18:45	0	0	0	0	0	0	0	0	8	1	1	0	0	0	0	10
H/TOT	3	0	0	1	0	0	0	4	51	5	2	1	1	0	0	60
P/TOT	13	3	0	2	0	0	0	18	250	27	8	5	3	0	0	293

MANUAL CLASSIFIED COUNTS



JOB REF: 11176

JOB NAME: WOLVERHAMPTON AREA 1

SITE: 4

DATE: 16/03/2022

LOCATION: A449 STAFFORD RD (N) / M54 (E) / A449 STAFFORD RD (S) / ACCESS TO PORSCHE / M54 (W)

DAY: WEDNESDAY

TIME	A TO E FROM A449 STAFFORD RD (N) TO M54 (W)								B TO A FROM M54 (E) TO A449 STAFFORD RD (N)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	33	13	3	6	0	0	0	55	12	8	2	0	1	0	0	23
07:15	66	15	0	4	0	0	0	85	13	7	3	1	1	0	0	25
07:30	47	18	4	7	0	0	0	76	20	4	4	1	2	0	0	31
07:45	48	11	3	2	0	0	0	64	22	7	0	0	0	0	0	29
H/TOT	194	57	10	19	0	0	0	280	67	26	9	2	4	0	0	108
08:00	48	13	6	5	0	0	0	72	22	6	2	1	1	0	0	32
08:15	29	13	4	5	0	0	0	51	18	6	4	0	2	0	0	30
08:30	32	15	3	3	0	0	0	53	21	8	0	1	0	0	0	30
08:45	23	8	1	3	0	0	0	35	13	5	1	1	0	0	0	20
H/TOT	132	49	14	16	0	0	0	211	74	25	7	3	3	0	0	112
09:00	40	6	2	8	0	0	0	56	24	6	2	1	1	0	0	34
09:15	20	6	7	7	0	0	0	40	12	5	2	1	0	0	0	20
09:30	22	11	2	4	1	0	0	40	11	3	6	2	0	0	0	22
09:45	25	8	1	5	1	0	0	40	4	2	2	1	0	0	0	9
H/TOT	107	31	12	24	2	0	0	176	51	16	12	5	1	0	0	85
P/TOT	433	137	36	59	2	0	0	667	192	67	28	10	8	0	0	305

TIME	A TO E FROM A449 STAFFORD RD (N) TO M54 (W)								B TO A FROM M54 (E) TO A449 STAFFORD RD (N)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	35	13	4	5	1	0	0	58	17	5	0	1	1	0	0	24
16:15	34	7	1	6	0	0	0	48	26	14	0	2	1	0	0	43
16:30	45	9	0	1	0	0	0	55	27	6	0	3	0	0	0	36
16:45	36	9	1	1	0	0	0	47	30	5	0	3	0	0	0	38
H/TOT	150	38	6	13	1	0	0	208	100	30	0	9	2	0	0	141
17:00	53	5	1	1	0	0	0	60	41	5	0	1	0	0	0	47
17:15	50	12	3	5	0	0	0	70	30	4	1	0	0	0	0	35
17:30	29	11	1	1	0	0	0	42	39	8	0	3	0	0	0	50
17:45	35	4	0	1	0	0	0	40	32	5	1	1	0	0	0	39
H/TOT	167	32	5	8	0	0	0	212	142	22	2	5	0	0	0	171
18:00	30	4	0	2	0	0	0	36	25	6	2	0	0	0	0	33
18:15	22	1	1	0	0	0	0	24	28	3	0	1	0	0	0	32
18:30	14	2	0	1	0	0	0	17	28	2	1	1	0	0	0	32
18:45	24	1	0	0	1	0	0	26	21	0	0	0	0	0	0	21
H/TOT	90	8	1	3	1	0	0	103	102	11	3	2	0	0	0	118
P/TOT	407	78	12	24	2	0	0	523	344	63	5	16	2	0	0	430

MANUAL CLASSIFIED COUNTS



JOB REF: 11176

JOB NAME: WOLVERHAMPTON AREA 1

SITE: 4

DATE: 16/03/2022

LOCATION: A449 STAFFORD RD (N) / M54 (E) / A449 STAFFORD RD (S) / ACCESS TO PORSCHE / M54 (W)

DAY: WEDNESDAY

TIME	B TO B FROM M54 (E) TO M54 (E)								B TO C FROM M54 (E) TO A449 STAFFORD RD (S)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	0	0	0	0	0	0	0	0	82	15	5	2	0	0	0	104
07:15	0	0	0	0	0	0	0	0	96	33	7	4	0	0	0	140
07:30	0	0	0	0	0	0	0	0	99	31	10	5	0	0	0	145
07:45	0	0	0	0	0	0	0	0	144	39	15	4	0	0	0	202
H/TOT	0	0	0	0	0	0	0	0	421	118	37	15	0	0	0	591
08:00	0	0	0	0	0	0	0	0	157	21	7	4	0	0	0	189
08:15	0	0	0	0	0	0	0	0	140	22	10	13	0	0	0	185
08:30	0	0	0	0	0	0	0	0	130	13	2	3	0	0	0	148
08:45	0	0	0	0	0	0	0	0	143	32	7	6	0	0	0	188
H/TOT	0	0	0	0	0	0	0	0	570	88	26	26	0	0	0	710
09:00	0	0	0	0	0	0	0	0	101	23	8	6	2	0	0	140
09:15	0	0	0	0	0	0	0	0	68	18	3	6	0	0	0	95
09:30	0	0	0	0	0	0	0	0	89	30	11	6	1	0	0	137
09:45	0	0	0	0	0	0	0	0	35	9	9	5	0	1	0	59
H/TOT	0	0	0	0	0	0	0	0	293	80	31	23	3	1	0	431
P/TOT	0	0	0	0	0	0	0	0	1284	286	94	64	3	1	0	1732

TIME	B TO B FROM M54 (E) TO M54 (E)								B TO C FROM M54 (E) TO A449 STAFFORD RD (S)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	0	0	0	0	0	0	0	0	102	26	3	2	0	0	0	133
16:15	0	0	0	0	0	0	0	0	114	36	6	1	1	0	0	158
16:30	0	0	0	0	0	0	0	0	105	30	1	1	0	0	0	137
16:45	0	0	0	0	0	0	0	0	131	25	3	2	0	1	0	162
H/TOT	0	0	0	0	0	0	0	0	452	117	13	6	1	1	0	590
17:00	0	0	0	0	0	0	0	0	149	30	3	2	1	0	0	185
17:15	0	0	0	0	0	0	0	0	137	27	2	3	0	1	0	170
17:30	0	0	0	0	0	0	0	0	127	25	1	5	0	0	0	158
17:45	0	0	0	0	0	0	0	0	135	19	4	2	1	0	0	161
H/TOT	0	0	0	0	0	0	0	0	548	101	10	12	2	1	0	674
18:00	0	0	0	0	0	0	0	0	107	19	3	7	0	0	0	136
18:15	0	0	0	0	0	0	0	0	144	16	3	3	0	0	0	166
18:30	0	0	0	0	0	0	0	0	133	11	0	2	0	0	0	146
18:45	0	0	0	0	0	0	0	0	133	13	3	1	0	0	0	150
H/TOT	0	0	0	0	0	0	0	0	517	59	9	13	0	0	0	598
P/TOT	0	0	0	0	0	0	0	0	1517	277	32	31	3	2	0	1862

MANUAL CLASSIFIED COUNTS



JOB REF: 11176

JOB NAME: WOLVERHAMPTON AREA 1

SITE: 4

DATE: 16/03/2022

LOCATION: A449 STAFFORD RD (N) / M54 (E) / A449 STAFFORD RD (S) / ACCESS TO PORSCHE / M54 (W)

DAY: WEDNESDAY

TIME	B TO D FROM M54 (E) TO ACCESS TO PORSCHE								B TO E FROM M54 (E) TO M54 (W)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	3	0	0	1	0	0	0	4	23	6	0	0	0	0	0	29
07:15	5	2	0	0	0	0	0	7	20	1	2	3	0	0	0	26
07:30	5	0	0	2	0	0	0	7	28	2	1	2	0	0	0	33
07:45	5	5	0	0	0	0	0	10	15	0	1	1	0	0	0	17
H/TOT	18	7	0	3	0	0	0	28	86	9	4	6	0	0	0	105
08:00	5	1	0	0	0	0	0	6	9	1	0	3	0	0	0	13
08:15	5	0	0	0	0	0	0	5	17	0	1	0	0	0	0	18
08:30	9	1	0	0	0	0	0	10	10	4	0	1	0	0	0	15
08:45	4	2	1	0	0	0	0	7	9	0	1	0	0	0	0	10
H/TOT	23	4	1	0	0	0	0	28	45	5	2	4	0	0	0	56
09:00	0	0	0	0	0	0	0	0	1	0	0	3	0	0	0	4
09:15	5	0	1	0	0	0	0	6	0	1	0	0	0	0	0	1
09:30	3	1	1	0	0	0	0	5	5	2	3	3	0	0	0	13
09:45	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	1
H/TOT	8	1	3	0	0	0	0	12	7	3	3	6	0	0	0	19
P/TOT	49	12	4	3	0	0	0	68	138	17	9	16	0	0	0	180

TIME	B TO D FROM M54 (E) TO ACCESS TO PORSCHE								B TO E FROM M54 (E) TO M54 (W)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
16:15	2	0	0	0	0	0	0	2	1	2	0	1	0	0	0	4
16:30	5	0	0	0	0	0	0	5	0	1	0	3	0	0	0	4
16:45	2	0	0	0	0	0	0	2	2	1	0	0	0	0	0	3
H/TOT	14	0	0	0	0	0	0	14	3	4	0	4	0	0	0	11
17:00	4	0	0	0	0	0	0	4	0	1	0	0	0	0	0	1
17:15	4	0	1	0	0	0	0	5	1	0	0	2	0	0	0	3
17:30	0	1	0	0	0	0	0	1	5	0	0	0	0	0	0	5
17:45	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1
H/TOT	9	1	1	0	0	0	0	11	7	1	0	2	0	0	0	10
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	2	1	0	0	0	0	0	3	2	1	0	3	0	0	0	6
18:30	2	0	0	0	0	0	0	2	1	0	2	0	0	0	0	3
18:45	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	3
H/TOT	4	1	0	0	0	0	0	5	5	1	2	4	0	0	0	12
P/TOT	27	2	1	0	0	0	0	30	15	6	2	10	0	0	0	33

MANUAL CLASSIFIED COUNTS



JOB REF: 11176

JOB NAME: WOLVERHAMPTON AREA 1

SITE: 4

DATE: 16/03/2022

LOCATION: A449 STAFFORD RD (N) / M54 (E) / A449 STAFFORD RD (S) / ACCESS TO PORSCHE / M54 (W)

DAY: WEDNESDAY

TIME	C TO A								C TO B							
	FROM A449 STAFFORD RD (S) TO A449 STAFFORD RD (N)								FROM A449 STAFFORD RD (S) TO M54 (E)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	75	23	9	3	0	1	0	111	117	23	4	9	0	0	0	153
07:15	105	21	5	5	1	2	0	139	96	30	4	2	0	0	0	132
07:30	113	18	13	3	0	0	0	147	96	18	5	3	0	0	0	122
07:45	118	11	6	2	0	0	0	137	97	24	6	3	0	0	0	130
H/TOT	411	73	33	13	1	3	0	534	406	95	19	17	0	0	0	537
08:00	99	8	10	2	1	0	0	120	105	20	2	3	1	0	0	131
08:15	85	10	3	1	0	1	0	100	95	20	7	4	0	0	0	126
08:30	98	16	10	2	0	0	0	126	78	12	6	6	0	0	0	102
08:45	80	13	7	5	0	0	0	105	100	15	4	3	0	0	0	122
H/TOT	362	47	30	10	1	1	0	451	378	67	19	16	1	0	0	481
09:00	53	11	11	5	0	0	0	80	94	19	9	5	0	0	0	127
09:15	70	15	3	4	0	0	0	92	88	25	6	4	1	0	0	124
09:30	70	16	7	1	0	0	0	94	86	21	4	11	2	0	0	124
09:45	81	14	6	8	0	0	0	109	54	27	9	6	0	1	0	97
H/TOT	274	56	27	18	0	0	0	375	322	92	28	26	3	1	0	472
P/TOT	1047	176	90	41	2	4	0	1360	1106	254	66	59	4	1	0	1490

TIME	C TO A								C TO B							
	FROM A449 STAFFORD RD (S) TO A449 STAFFORD RD (N)								FROM A449 STAFFORD RD (S) TO M54 (E)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	118	16	5	3	1	0	0	143	120	24	9	4	0	1	0	158
16:15	127	11	2	0	0	0	0	140	119	24	5	4	0	1	0	153
16:30	162	11	1	2	0	0	0	176	132	21	5	2	0	0	0	160
16:45	158	8	4	0	0	0	0	170	135	24	4	0	1	1	0	165
H/TOT	565	46	12	5	1	0	0	629	506	93	23	10	1	3	0	636
17:00	125	12	3	1	0	0	0	141	179	10	3	0	0	0	0	192
17:15	145	15	1	4	1	2	0	168	145	10	5	2	0	0	0	162
17:30	125	8	2	4	0	1	0	140	114	12	2	1	1	0	0	130
17:45	109	5	3	0	0	0	0	117	121	12	0	3	0	0	0	136
H/TOT	504	40	9	9	1	3	0	566	559	44	10	6	1	0	0	620
18:00	100	8	2	2	0	0	0	112	124	8	1	1	0	0	0	134
18:15	83	4	4	0	1	0	0	92	91	6	0	1	0	0	0	98
18:30	79	3	1	0	0	0	0	83	92	13	1	0	0	0	0	106
18:45	73	5	1	2	0	0	0	81	72	3	1	1	0	0	0	77
H/TOT	335	20	8	4	1	0	0	368	379	30	3	3	0	0	0	415
P/TOT	1404	106	29	18	3	3	0	1563	1444	167	36	19	2	3	0	1671

MANUAL CLASSIFIED COUNTS



JOB REF: 11176

JOB NAME: WOLVERHAMPTON AREA 1

SITE: 4

DATE: 16/03/2022

LOCATION: A449 STAFFORD RD (N) / M54 (E) / A449 STAFFORD RD (S) / ACCESS TO PORSCHE / M54 (W)

DAY: WEDNESDAY

TIME	E TO A FROM M54 (W) TO A449 STAFFORD RD (N)								E TO B FROM M54 (W) TO M54 (E)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	26	6	1	4	0	0	0	37	3	0	0	0	0	0	0	3
07:15	48	8	2	4	0	0	0	62	4	1	0	1	0	0	0	6
07:30	42	8	4	3	0	0	0	57	2	0	0	0	0	0	0	2
07:45	30	8	4	2	0	0	0	44	0	1	0	1	0	0	0	2
H/TOT	146	30	11	13	0	0	0	200	9	2	0	2	0	0	0	13
08:00	40	14	2	5	0	0	0	61	5	0	0	1	0	1	0	7
08:15	31	11	3	8	0	0	0	53	2	1	1	0	0	0	0	4
08:30	39	4	3	9	0	0	0	55	1	0	0	3	0	0	0	4
08:45	25	9	3	3	0	0	0	40	1	0	0	2	0	0	0	3
H/TOT	135	38	11	25	0	0	0	209	9	1	1	6	0	1	0	18
09:00	34	7	1	4	0	1	0	47	6	0	0	2	0	0	0	8
09:15	23	5	5	5	0	0	0	38	8	0	1	1	0	0	0	10
09:30	14	3	5	4	0	0	0	26	0	0	2	3	0	0	0	5
09:45	6	1	2	5	0	0	0	14	2	2	4	7	0	0	0	15
H/TOT	77	16	13	18	0	1	0	125	16	2	7	13	0	0	0	38
P/TOT	358	84	35	56	0	1	0	534	34	5	8	21	0	1	0	69

TIME	E TO A FROM M54 (W) TO A449 STAFFORD RD (N)								E TO B FROM M54 (W) TO M54 (E)							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	34	8	4	5	0	1	0	52	21	8	2	2	0	0	0	33
16:15	56	16	1	5	1	0	0	79	34	2	0	2	0	0	0	38
16:30	42	18	2	4	0	0	0	66	22	1	0	1	0	0	0	24
16:45	33	4	1	4	0	0	0	42	11	2	0	0	1	0	0	14
H/TOT	165	46	8	18	1	1	0	239	88	13	2	5	1	0	0	109
17:00	42	6	1	5	0	0	0	54	19	1	0	1	0	0	0	21
17:15	32	2	3	0	0	0	0	37	9	1	0	0	0	0	0	10
17:30	37	1	3	0	0	0	0	41	4	2	0	5	0	0	0	11
17:45	24	5	1	3	0	0	0	33	5	0	0	2	0	0	0	7
H/TOT	135	14	8	8	0	0	0	165	37	4	0	8	0	0	0	49
18:00	15	2	1	2	0	0	0	20	3	0	0	3	0	0	0	6
18:15	18	3	0	1	0	0	0	22	3	0	1	1	0	0	0	5
18:30	8	1	1	3	0	0	0	13	0	0	0	1	0	0	0	1
18:45	16	0	0	0	0	0	0	16	1	0	0	0	0	0	0	1
H/TOT	57	6	2	6	0	0	0	71	7	0	1	5	0	0	0	13
P/TOT	357	66	18	32	1	1	0	475	132	17	3	18	1	0	0	171

MANUAL CLASSIFIED COUNTS



JOB REF: 11176

JOB NAME: WOLVERHAMPTON AREA 1

SITE: 4

DATE: 16/03/2022

LOCATION: A449 STAFFORD RD (N) / M54 (E) / A449 STAFFORD RD (S) / ACCESS TO PORSCHE / M54 (W)

DAY: WEDNESDAY

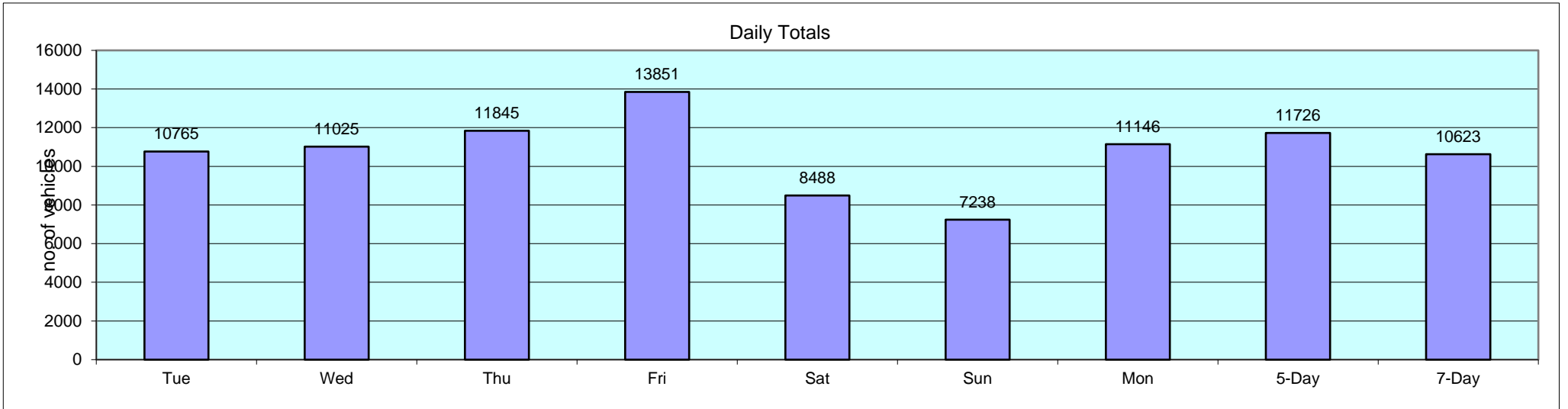
TIME	E TO C								E TO D							
	FROM M54 (W) TO A449 STAFFORD RD (S)								FROM M54 (W) TO ACCESS TO PORSCHE							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
07:00	34	7	2	2	1	0	0	46	1	0	0	0	0	0	0	1
07:15	65	8	2	2	0	0	0	77	3	1	0	0	0	0	0	4
07:30	71	13	1	0	0	0	0	85	3	1	0	0	0	0	0	4
07:45	100	6	2	1	0	0	0	109	6	0	0	0	0	0	0	6
H/TOT	270	34	7	5	1	0	0	317	13	2	0	0	0	0	0	15
08:00	99	13	1	1	1	0	0	115	7	1	1	0	0	0	0	9
08:15	87	10	5	1	0	1	0	104	5	2	0	0	0	0	0	7
08:30	70	7	5	1	0	0	0	83	4	0	0	0	0	0	0	4
08:45	75	7	2	0	0	0	0	84	4	0	0	0	0	0	0	4
H/TOT	331	37	13	3	1	1	0	386	20	3	1	0	0	0	0	24
09:00	56	14	1	4	0	0	0	75	1	0	0	0	0	0	0	1
09:15	27	7	3	3	1	0	0	41	2	1	0	0	0	0	0	3
09:30	28	6	6	4	0	0	0	44	5	0	0	0	0	0	0	5
09:45	18	8	0	0	0	0	0	26	3	0	0	0	0	0	0	3
H/TOT	129	35	10	11	1	0	0	186	11	1	0	0	0	0	0	12
P/TOT	730	106	30	19	3	1	0	889	44	6	1	0	0	0	0	51

TIME	E TO C								E TO D							
	FROM M54 (W) TO A449 STAFFORD RD (S)								FROM M54 (W) TO ACCESS TO PORSCHE							
	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT
16:00	70	7	3	2	0	0	0	82	0	0	1	0	0	0	0	1
16:15	61	8	4	1	1	0	0	75	0	0	1	0	0	0	0	1
16:30	61	12	3	1	1	0	0	78	2	0	0	0	0	0	0	2
16:45	39	5	4	0	0	0	0	48	2	0	0	0	0	0	0	2
H/TOT	231	32	14	4	2	0	0	283	4	0	2	0	0	0	0	6
17:00	83	2	2	0	0	0	0	87	2	0	0	0	0	0	0	2
17:15	58	2	1	1	2	0	0	64	2	0	0	0	0	0	0	2
17:30	48	7	1	0	0	0	0	56	0	0	0	0	0	0	0	0
17:45	44	6	2	2	0	0	0	54	0	0	0	0	0	0	0	0
H/TOT	233	17	6	3	2	0	0	261	4	0	0	0	0	0	0	4
18:00	49	3	0	0	0	0	0	52	1	0	0	0	0	0	0	1
18:15	39	2	0	0	1	0	0	42	0	0	0	0	0	0	0	0
18:30	35	4	0	0	0	0	0	39	1	0	0	0	0	0	0	1
18:45	26	1	0	0	0	0	0	27	0	0	0	0	0	0	0	0
H/TOT	149	10	0	0	1	0	0	160	2	0	0	0	0	0	0	2
P/TOT	613	59	20	7	5	0	0	704	10	0	2	0	0	0	0	12

11176 WOLVERHAMPTON AREA 1										
MARCH 2022										
Site	Location	Direction	Start Date	End Date	Posted Speed Limit (PSL)	Total Vehicles	5 Day Ave.	7 Day Ave.	Average 85%ile Speed	Average Mean Speed
Site No: 11176002	Site 2 - A449 Wolverhampton (N of Shaw Hall Ln) 52.647690, -2.128191	Channel: Northbound	Tue 15-Mar-22	Mon 21-Mar-22	NSL	74358	11726	10623	54.4	46.7

11176	WOLVERHAMPTON AREA 1			Site No: 11176002	Location	Site 2 - A449 Wolverhampton (N of Shaw Hall Ln)			
	Channel: Northbound								
TIME PERIOD	Tue 15/03/2022	Wed 16/03/2022	Thu 17/03/2022	Fri 18/03/2022	Sat 19/03/2022	Sun 20/03/2022	Mon 21/03/2022	5-Day Av	7-Day Av
Week Begin: 15-Mar-22									
00:00	41	28	34	30	70	63	17	30	40
01:00	24	27	24	22	35	39	14	22	26
02:00	23	17	18	31	29	35	17	21	24
03:00	23	25	28	28	39	21	11	23	25
04:00	58	64	60	58	39	25	70	62	53
05:00	231	245	262	249	102	82	245	246	202
06:00	482	531	543	481	208	150	525	512	417
07:00	1019	873	1152	921	310	212	1028	999	788
08:00	852	828	1006	886	413	292	937	902	745
09:00	581	608	767	839	580	463	623	684	637
10:00	513	514	539	864	666	527	571	600	599
11:00	497	555	603	905	715	607	596	631	640
12:00	549	630	639	1022	724	683	642	696	698
13:00	645	811	757	1023	685	649	667	781	748
14:00	679	767	789	1164	684	549	736	827	767
15:00	904	854	873	1034	564	514	835	900	797
16:00	1070	1125	1086	1015	568	539	1056	1070	923
17:00	1011	965	990	766	519	481	1043	955	825
18:00	590	603	560	620	499	456	584	591	559
19:00	353	338	368	419	371	328	345	365	360
20:00	228	225	281	236	238	215	222	238	235
21:00	197	193	223	206	189	153	187	201	193
22:00	125	135	160	815	149	108	112	269	229
23:00	70	64	83	217	92	47	63	99	91
12H,7-19	8910	9133	9761	11059	6927	5972	9318	9636	8726
16H,6-22	10170	10420	11176	12401	7933	6818	10597	10953	9931
18H,6-24	10365	10619	11419	13433	8174	6973	10772	11322	10251
24H,0-24	10765	11025	11845	13851	8488	7238	11146	11726	10623
Am	07:00	07:00	07:00	07:00	11:00	11:00	07:00		
Peak	1019	873	1152	921	715	607	1028		
Pm	16:00	16:00	16:00	14:00	12:00	12:00	16:00		
Peak	1070	1125	1086	1164	724	683	1056		

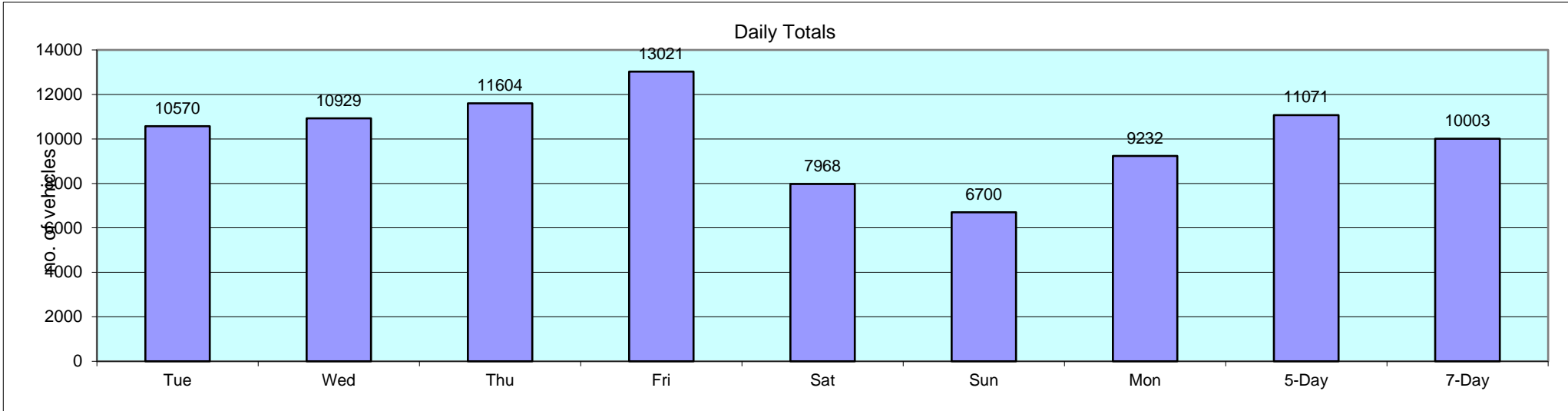
11176	WOLVERHAMPTON AREA 1		Site No: 11176002	Location	Site 2 - A449 Wolverhampton (N of Shaw Hall Ln)				
			Channel: Northbound						
	Tue	Wed	Thu	Fri	Sat	Sun	Mon	5-Day	7-Day
TIME PERIOD	15/03/2022	16/03/2022	17/03/2022	18/03/2022	19/03/2022	20/03/2022	21/03/2022	Av	Av



11176		WOLVERHAMPTON AREA 1								
MARCH 2022										
Site	Location	Direction	Start Date	End Date	Posted Speed Limit (PSL)	Total Vehicles	5 Day Ave.	7 Day Ave.	Average 85%ile Speed	Average Mean Speed
Site No: 11176003	Site 3 - A449 Wolverhampton (N of Shaw Hall Ln) 52.647690, -2.128191	Channel: Southbound	Tue 15-Mar-22	Mon 21-Mar-22	NSL	70024	11071	10003	54.5	46.5

11176	WOLVERHAMPTON AREA 1			Site No: 11176003	Location	Site 3 - A449 Wolverhampton (N of Shaw Hall Ln)			
	Channel: Southbound								
TIME PERIOD	Tue 15/03/2022	Wed 16/03/2022	Thu 17/03/2022	Fri 18/03/2022	Sat 19/03/2022	Sun 20/03/2022	Mon 21/03/2022	5-Day Av	7-Day Av
Week Begin: 15-Mar-22									
00:00	36	84	46	63	94	75	33	52	62
01:00	31	39	20	39	50	49	25	31	36
02:00	20	23	26	31	56	36	21	24	30
03:00	16	18	20	32	37	25	18	21	24
04:00	84	87	84	74	71	30	72	80	72
05:00	215	229	256	212	89	58	223	227	183
06:00	594	587	583	621	166	107	564	590	460
07:00	1172	1159	1162	1061	307	204	1066	1124	876
08:00	1090	1053	1212	992	417	258	167	903	741
09:00	674	715	793	710	467	359	544	687	609
10:00	513	551	551	646	576	466	552	563	551
11:00	529	577	600	702	604	481	533	588	575
12:00	543	638	592	791	642	632	594	632	633
13:00	520	640	652	758	635	518	589	632	616
14:00	627	695	674	820	599	522	623	688	651
15:00	670	683	714	934	586	508	601	720	671
16:00	835	820	818	1071	594	542	823	873	786
17:00	823	797	907	1132	524	539	754	883	782
18:00	483	508	747	1067	433	422	473	656	590
19:00	366	340	404	442	348	337	291	369	361
20:00	269	253	266	275	236	245	247	262	256
21:00	187	160	180	208	172	129	199	187	176
22:00	179	194	210	210	150	90	137	186	167
23:00	94	79	87	130	115	68	83	95	94
12H,7-19	8479	8836	9422	10684	6384	5451	7319	8948	8082
16H,6-22	9895	10176	10855	12230	7306	6269	8620	10355	9336
18H,6-24	10168	10449	11152	12570	7571	6427	8840	10636	9597
24H,0-24	10570	10929	11604	13021	7968	6700	9232	11071	10003
Am	07:00	07:00	08:00	07:00	11:00	11:00	07:00		
Peak	1172	1159	1212	1061	604	481	1066		
Pm	16:00	16:00	17:00	17:00	12:00	12:00	16:00		
Peak	835	820	907	1132	642	632	823		

11176	WOLVERHAMPTON AREA 1		Site No: 11176003	Location	Site 3 - A449 Wolverhampton (N of Shaw Hall Ln)				
			Channel: Southbound						
	Tue	Wed	Thu	Fri	Sat	Sun	Mon	5-Day	7-Day
TIME PERIOD	15/03/2022	16/03/2022	17/03/2022	18/03/2022	19/03/2022	20/03/2022	21/03/2022	Av	Av

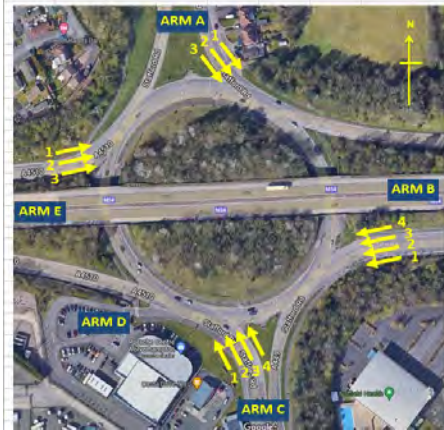


APPENDIX B

Traffic Flow Matrices

M54 Junction 2

SITE: 4		DATE:
LOCATION: A449 STAFFORD RD / M54 / PORSCHE ACCESS		16TH MARCH 2022
		DAYS: WEDNESDAY



2022 Observed Flows (PCUs)											
AM						PM					
	A	B	C	D	E		A	B	C	D	E
A	4	168	643	24	328	A	8	144	468	14	222
B	133	0	732	32	102	B	174	0	662	13	16
C	589	544	47	70	361	C	640	692	64	43	363
D	0	0	0	0	0	D	0	0	0	0	0
E	250	19	397	24	0	E	265	102	305	8	0

Committed Development Flows (PCUs)											
AM						PM					
	A	B	C	D	E		A	B	C	D	E
A	0	90	198	0	118	A	0	167	321	0	179
B	200	0	131	0	507	B	87	0	23	0	202
C	308	26	0	0	252	C	292	110	0	0	123
D	0	0	0	0	0	D	0	0	0	0	0
E	153	246	147	0	0	E	174	579	285	0	0

M54 J1 - M6 J11 Link Road Re-Assignment (PCUs)											
AM						PM					
	A	B	C	D	E		A	B	C	D	E
A	0	344	-248	0	-116	A	0	330	-258	0	-128
B	327	0	211	0	103	B	105	0	264	0	31
C	-353	474	0	0	-17	C	-299	606	0	0	-12
D	0	0	0	0	0	D	0	0	0	0	0
E	-165	23	10	0	0	E	-244	-64	30	0	0

Logic 54 Featherstone Link Road Re-Assignment (PCUs)											
AM						PM					
	A	B	C	D	E		A	B	C	D	E
A	-1	-11	-16	0	2	A	1	-4	-1	0	-1
B	-1	0	-94	0	0	B	9	0	-104	0	0
C	-45	4	6	0	1	C	-13	42	0	0	1
D	0	0	0	0	0	D	0	0	0	0	0
E	93	-1	-77	0	0	E	53	4	-56	0	0

2038 Baseline Flows (PCUs)											
AM						PM					
	A	B	C	D	E		A	B	C	D	E
A	3	591	577	24	332	A	9	637	530	14	272
B	659	0	980	32	712	B	375	0	845	13	249
C	499	1048	53	70	597	C	620	1450	64	43	475
D	0	0	0	0	0	D	0	0	0	0	0
E	331	287	477	24	0	E	248	621	564	8	0

Cumulative (PCUs)											
AM						PM					
	A	B	C	D	E		A	B	C	D	E
A	0	129	161	0	22	A	0	99	107	0	17
B	79	0	18	0	0	B	127	0	55	0	0
C	93	57	0	0	44	C	145	26	0	0	21
D	0	0	0	0	0	D	0	0	0	0	0
E	14	0	14	0	0	E	22	0	43	0	0

2038 Baseline + Cumulative Dev (PCUs)											
AM						PM					
	A	B	C	D	E		A	B	C	D	E
A	3	720	738	24	354	A	9	736	637	14	289
B	738	0	998	32	712	B	502	0	900	13	249
C	592	1105	53	70	641	C	765	1476	64	43	496
D	0	0	0	0	0	D	0	0	0	0	0
E	345	287	491	24	0	E	270	621	607	8	0

APPENDIX C

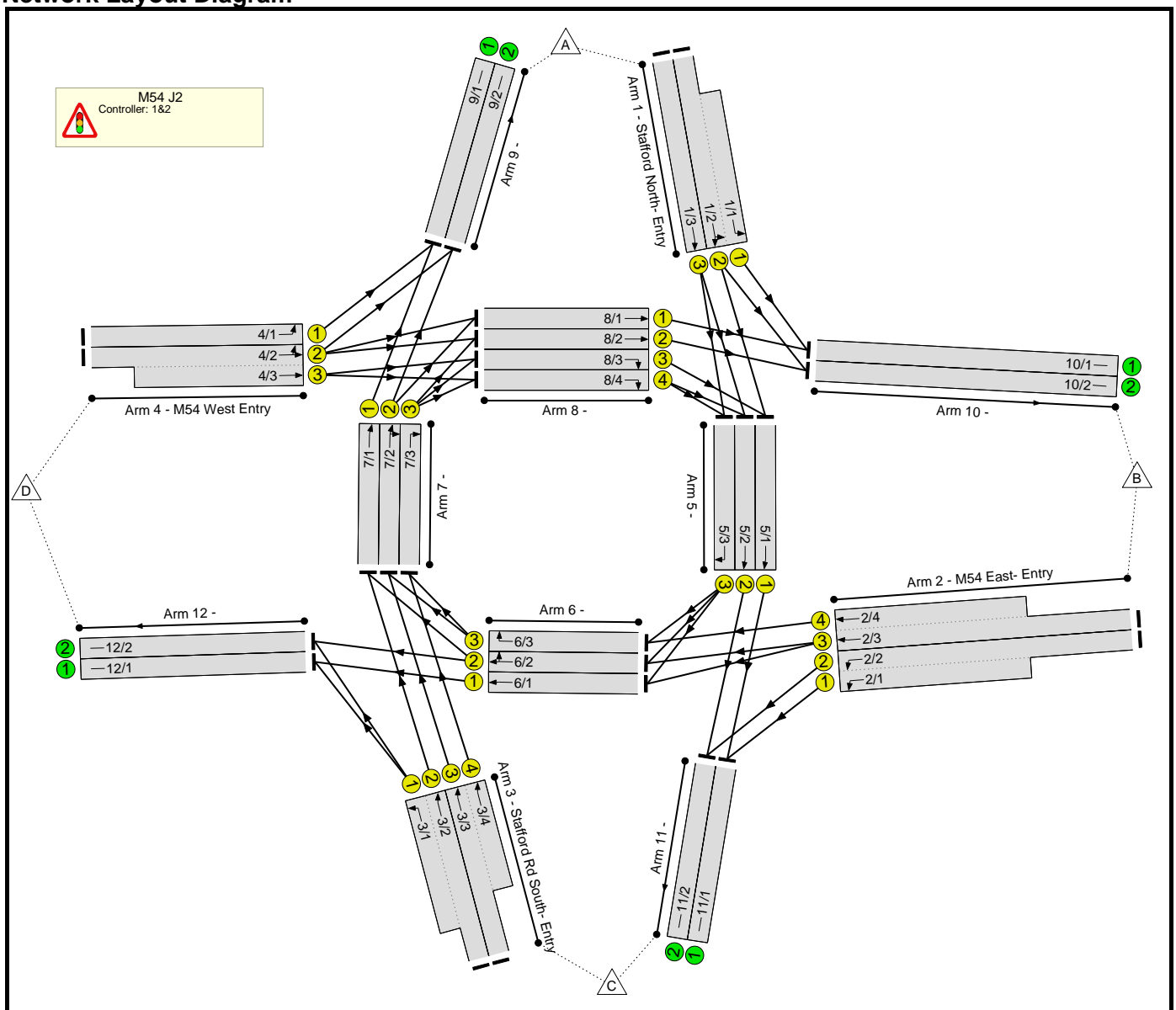
M54 Junction 2 Assessment Outputs

Full Input Data And Results
Full Input Data And Results

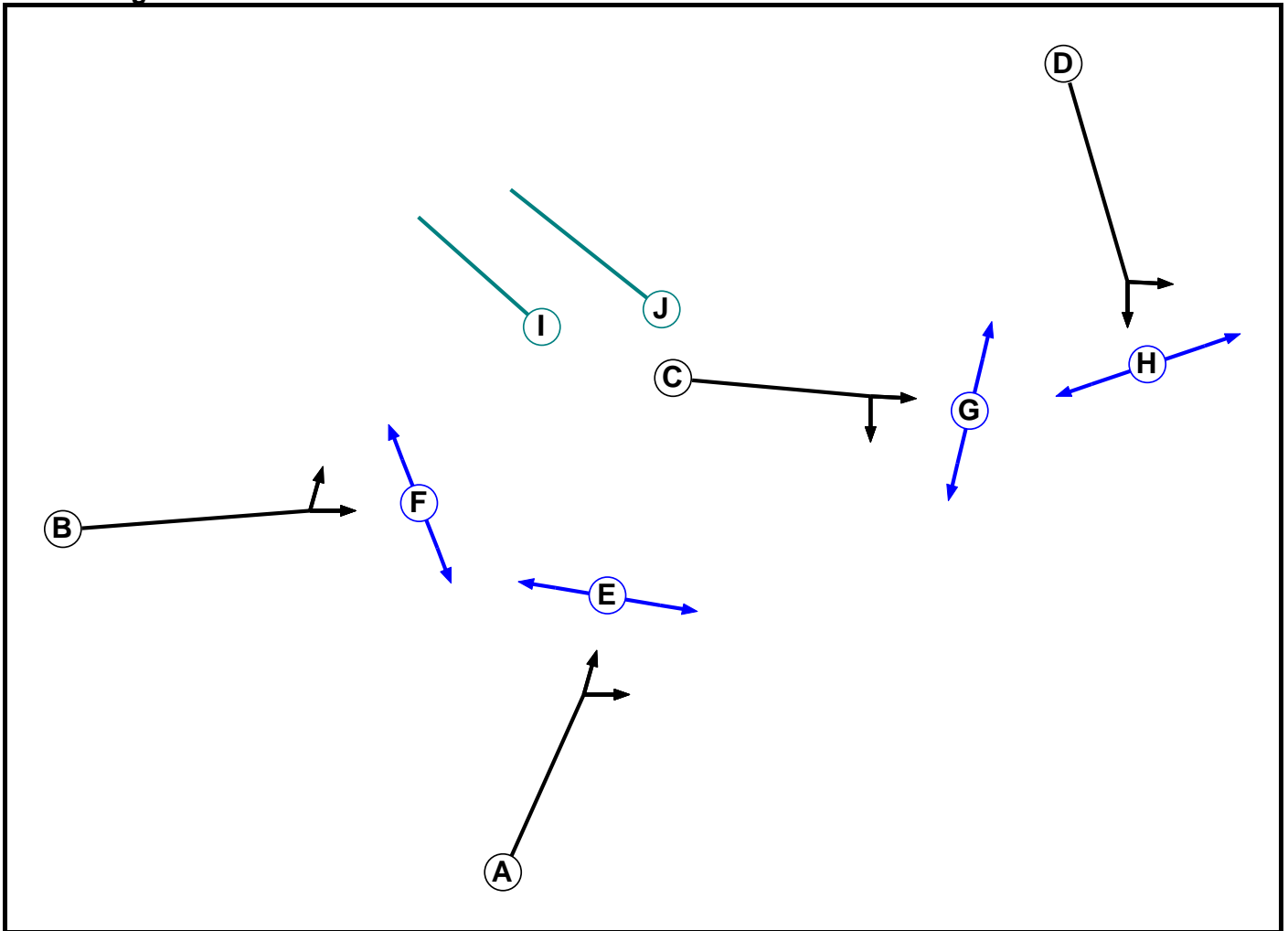
User and Project Details

Project:	M54 Junction 2
Title:	
Location:	
Additional detail:	
File name:	M54 J2 RevC.lsg3x
Author:	
Company:	DTA
Address:	

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
E	Pedestrian	1		5	5
F	Pedestrian	1		5	5
G	Pedestrian	2		5	5
H	Pedestrian	2		5	5
I	Dummy	1		1	1
J	Dummy	2		1	1

Full Input Data And Results

Phase Intergrens Matrix

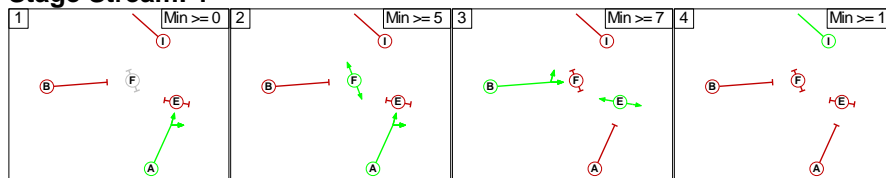
		Starting Phase									
		A	B	C	D	E	F	G	H	I	J
Terminating Phase	A		6	-	-	6	-	-	-	3	-
	B	5		-	-	-	6	-	-	3	-
	C	-	-		6	-	-	6	-	-	3
	D	-	-	5		-	-	-	6	-	3
	E	5	-	-	-		-	-	-	3	-
	F	-	5	-	-	-		-	-	3	-
	G	-	-	5	-	-	-		-	-	3
	H	-	-	-	5	-	-	-		-	3
	I	2	2	-	-	2	2	-	-		-
	J	-	-	2	2	-	-	2	2	-	

Phases in Stage

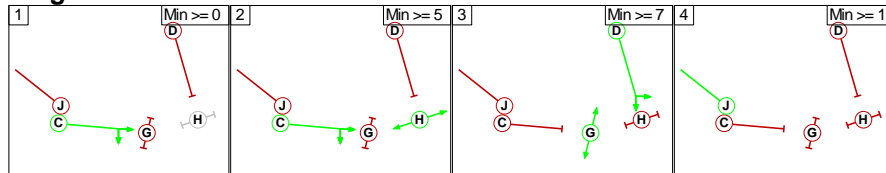
Stream	Stage No.	Phases in Stage
1	1	A
1	2	A F
1	3	B E
1	4	I
2	1	C
2	2	C H
2	3	D G
2	4	J

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
2	3	A	Losing	1	1
2	3	F	Losing	2	2

Full Input Data And Results

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
2	3	H	Losing	1	1

Prohibited Stage Change

Stage Stream: 1

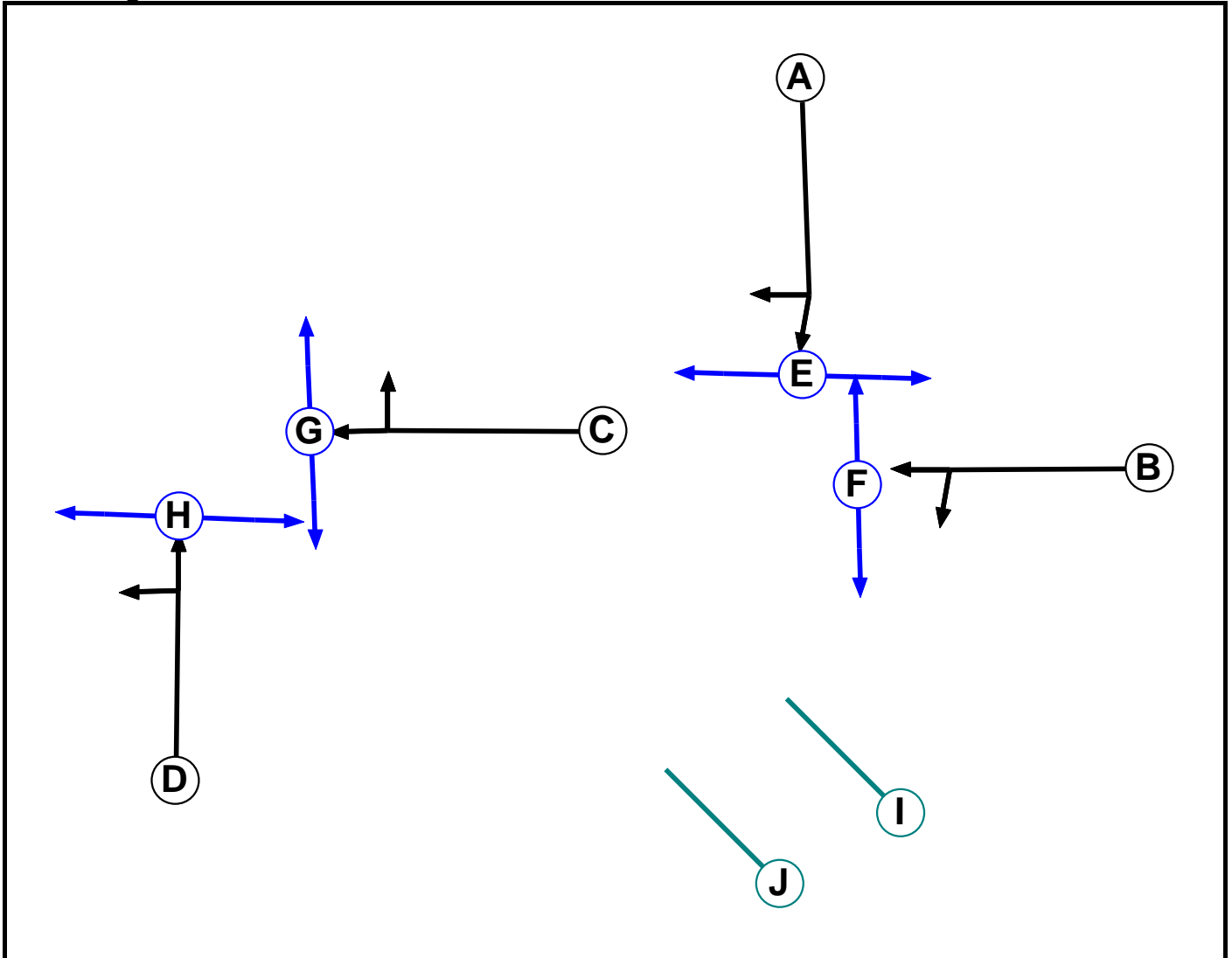
		To Stage			
		1	2	3	4
From Stage	1	0	6	3	
	2	0	7	3	
	3	5	6	3	
	4	2	2	2	

Stage Stream: 2

		To Stage			
		1	2	3	4
From Stage	1	0	6	3	
	2	0	6	3	
	3	5	6	3	
	4	2	2	2	

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
E	Pedestrian	1		5	5
F	Pedestrian	1		5	5
G	Pedestrian	2		5	5
H	Pedestrian	2		5	5
I	Dummy	1		1	1
J	Dummy	2		5	5

Phase Intergrens Matrix

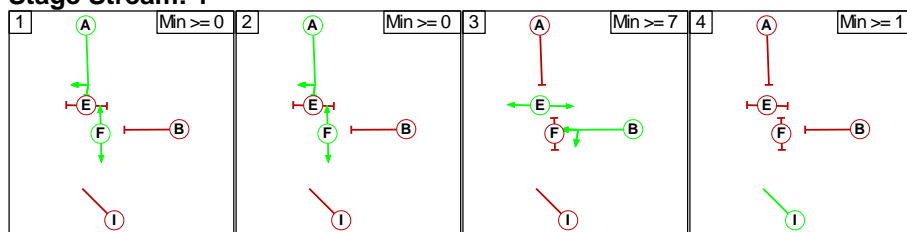
		Starting Phase									
		A	B	C	D	E	F	G	H	I	J
Terminating Phase	A		6	-	-	6	-	-	-	3	-
	B	5		-	-	-	6	-	-	3	-
	C	-	-		6	-	-	6	-	-	3
	D	-	-	5		-	-	-	6	-	3
	E	5	-	-		-	-	-	-	3	-
	F	-	5	-	-		-	-	-	3	-
	G	-	-	5	-		-	-	-	-	3
	H	-	-	-	5		-	-	-	-	3
	I	2	2	-	-		2	-	-	-	-
	J	-	-	2	2		-	2	2	-	-

Phases in Stage

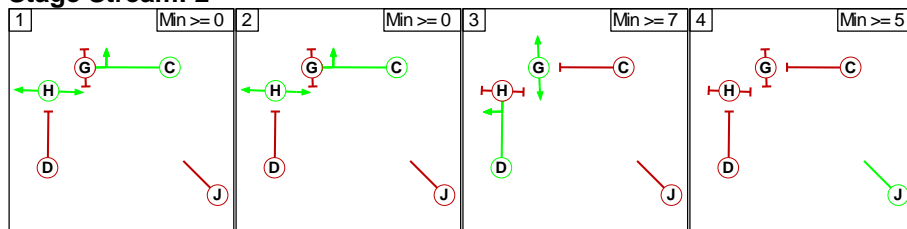
Stream	Stage No.	Phases in Stage
1	1	A F
1	2	A F
1	3	B E
1	4	I
2	1	C H
2	2	C H
2	3	D G
2	4	J

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

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

Full Input Data And Results

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
2	3	H	Losing	1	1

Prohibited Stage Change

Stage Stream: 1

		To Stage			
		1	2	3	4
From Stage	1	0	6	3	0
	2	0	0	6	3
	3	6	6	0	3
	4	2	2	2	0

Stage Stream: 2

		To Stage			
		1	2	3	4
From Stage	1	0	6	3	0
	2	0	0	6	3
	3	6	6	0	3
	4	2	2	2	0

Full Input Data And Results

Give-Way Lane Input Data

Junction: M54 J2

There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: M54 J2												
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 (Stafford North-Entry)	U	D	2	3	17.0	User	2013	-	-	-	-	-
1/2 (Stafford North-Entry)	U	D	2	3	60.0	User	2187	-	-	-	-	-
1/3 (Stafford North-Entry)	U	D	2	3	60.0	User	2166	-	-	-	-	-
2/1 (M54 East-Entry)	U	B	2	3	14.0	User	1989	-	-	-	-	-
2/2 (M54 East-Entry)	U	B	2	3	60.0	User	2166	-	-	-	-	-
2/3 (M54 East-Entry)	U	B	2	3	60.0	User	2176	-	-	-	-	-
2/4 (M54 East-Entry)	U	B	2	3	14.0	User	2176	-	-	-	-	-
3/1 (Stafford Rd South-Entry)	U	D	2	3	19.0	User	2012	-	-	-	-	-
3/2 (Stafford Rd South-Entry)	U	D	2	3	60.0	User	2176	-	-	-	-	-
3/3 (Stafford Rd South-Entry)	U	D	2	3	60.0	User	2176	-	-	-	-	-
3/4 (Stafford Rd South-Entry)	U	D	2	3	8.0	User	2176	-	-	-	-	-
4/1 (M54 West Entry)	U	B	2	3	60.0	User	2009	-	-	-	-	-
4/2 (M54 West Entry)	U	B	2	3	60.0	User	2166	-	-	-	-	-
4/3 (M54 West Entry)	U	B	2	3	18.0	User	2166	-	-	-	-	-
5/1	U	A	2	3	29.2	User	2032	-	-	-	-	-
5/2	U	A	2	3	28.3	User	2176	-	-	-	-	-
5/3	U	A	2	3	27.1	User	2134	-	-	-	-	-
6/1	U	C	2	3	15.3	User	2022	-	-	-	-	-
6/2	U	C	2	3	15.1	User	2187	-	-	-	-	-
6/3	U	C	2	3	14.3	User	2134	-	-	-	-	-
7/1	U	A	2	3	31.7	User	2022	-	-	-	-	-

Full Input Data And Results

7/2	U	A	2	3	30.1	User	2162	-	-	-	-	-
7/3	U	A	2	3	29.4	User	2124	-	-	-	-	-
8/1	U	C	2	3	19.3	User	2134	-	-	-	-	-
8/2	U	C	2	3	19.3	User	2134	-	-	-	-	-
8/3	U	C	2	3	18.6	User	2134	-	-	-	-	-
8/4	U	C	2	3	17.9	User	2134	-	-	-	-	-
9/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2022 AM'	08:00	09:00	01:00	
2: '2022 PM'	17:00	18:00	01:00	
3: '2038 AM'	08:00	09:00	01:00	
4: '2038 PM'	17:00	18:00	01:00	
5: '2038 + Dev AM'	08:00	09:00	01:00	
6: '2038 + Dev PM'	17:00	18:00	01:00	
7: '2038 + Dev + ROF Link Reassignment AM'	08:00	09:00	01:00	
8: '2038 + Dev + ROF Link Reassignment PM'	17:00	18:00	01:00	
11: '2038 Cumulative AM'	08:00	09:00	01:00	F5 + F9 + F15
12: '2038 Cumulative PM'	17:00	18:00	01:00	F6 + F10 + F16
13: '2038 Cumulative + Reassignment AM'	08:00	09:00	01:00	F7 + F9 + F15
14: '2038 Cumulative + Reassignment PM'	17:00	18:00	01:00	F8 + F10 + F16
17: '2038 Base + ROF Link and M54-M6 Link AM'	08:00	09:00	01:00	
18: '2038 Base + ROF Link and M54-M6 Link PM'	17:00	18:00	01:00	
22: 'DEV PM'	17:00	18:00	01:00	
23: '2038 + Reassignment + Cumulative AM'	08:00	09:00	01:00	F17 + F9 + F15 + F21
24: '2038 + Reassignment + Cumulative PM'	17:00	18:00	01:00	F18 + F10 + F16 + F22
25: '2038 + Reassignment + DEV ONLY AM'	08:00	09:00	01:00	F17 + F21
26: '2038 + Reassignment + DEV ONLY PM'	17:00	18:00	01:00	F18 + F22

Full Input Data And Results

Scenario 1: '2022 AM' (FG1: '2022 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
	A	B	C	D	Tot.	
Origin	A	4	168	643	352	1167
	B	133	0	732	134	999
	C	589	544	47	431	1611
	D	250	19	397	24	690
	Tot.	976	731	1819	941	4467

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2022 AM
Junction: M54 J2	
1/1 (short)	168
1/2 (with short)	668(In) 500(Out)
1/3	499
2/1 (short)	350
2/2 (with short)	732(In) 382(Out)
2/3 (with short)	267(In) 136(Out)
2/4 (short)	131
3/1 (short)	431
3/2 (with short)	834(In) 403(Out)
3/3 (with short)	777(In) 339(Out)
3/4 (short)	438
4/1	200
4/2 (with short)	490(In) 69(Out)
4/3 (short)	421
5/1	632
5/2	455
5/3	380
6/1	235
6/2	277
6/3	135
7/1	405
7/2	474
7/3	438
8/1	153
8/2	410
8/3	132
8/4	336
9/1	605
9/2	371
10/1	321
10/2	410
11/1	982
11/2	837
12/1	450

Full Input Data And Results

12/2

491

Full Input Data And Results

Lane Saturation Flows

Junction: M54 J2								
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 (Stafford North- Entry Lane 1)							2013	2013
1/2 (Stafford North- Entry Lane 2)							2187	2187
1/3 (Stafford North- Entry Lane 3)							2166	2166
2/1 (M54 East- Entry Lane 1)							1989	1989
2/2 (M54 East- Entry Lane 2)							2166	2166
2/3 (M54 East- Entry Lane 3)							2176	2176
2/4 (M54 East- Entry Lane 4)							2176	2176
3/1 (Stafford Rd South- Entry Lane 1)							2012	2012
3/2 (Stafford Rd South- Entry Lane 2)							2176	2176
3/3 (Stafford Rd South- Entry Lane 3)							2176	2176
3/4 (Stafford Rd South- Entry Lane 4)							2176	2176
4/1 (M54 West Entry Lane 1)							2009	2009
4/2 (M54 West Entry Lane 2)							2166	2166
4/3 (M54 West Entry Lane 3)							2166	2166
5/1							2166	2166
5/2							2176	2176
5/3							2134	2134
6/1							2022	2022
6/2							2187	2187
6/3							2134	2134
7/1							2022	2022
7/2							2022	2022
7/3							2162	2162
8/1							2134	2134
8/2							2134	2134
8/3							2134	2134
8/4							2134	2134
9/1							Inf	Inf
9/2							Inf	Inf

Full Input Data And Results

10/1	Infinite Saturation Flow	Inf	Inf
10/2	Infinite Saturation Flow	Inf	Inf
11/1	Infinite Saturation Flow	Inf	Inf
11/2	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf

Scenario 2: '2022 PM' (FG2: '2022 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	8	144	468	236	856
	B	174	0	662	29	865
	C	640	692	64	406	1802
	D	265	102	305	8	680
	Tot.	1087	938	1499	679	4203

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2022 PM
Junction: M54 J2	
1/1 (short)	144
1/2 (with short)	513(In) 369(Out)
1/3	343
2/1 (short)	317
2/2 (with short)	662(In) 345(Out)
2/3 (with short)	203(In) 70(Out)
2/4 (short)	133
3/1 (short)	406
3/2 (with short)	852(In) 446(Out)
3/3 (with short)	950(In) 445(Out)
3/4 (short)	505
4/1	107
4/2 (with short)	573(In) 260(Out)
4/3 (short)	313
5/1	468
5/2	369
5/3	252
6/1	143
6/2	172
6/3	140
7/1	488
7/2	585
7/3	505
8/1	251
8/2	543
8/3	99
8/4	278
9/1	595
9/2	492
10/1	395
10/2	543
11/1	785
11/2	714
12/1	346

Full Input Data And Results

12/2	333
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Full Input Data And Results

Lane Saturation Flows

Junction: M54 J2								
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 (Stafford North- Entry Lane 1)							2013	2013
1/2 (Stafford North- Entry Lane 2)							2187	2187
1/3 (Stafford North- Entry Lane 3)							2166	2166
2/1 (M54 East- Entry Lane 1)							1989	1989
2/2 (M54 East- Entry Lane 2)							2166	2166
2/3 (M54 East- Entry Lane 3)							2176	2176
2/4 (M54 East- Entry Lane 4)							2176	2176
3/1 (Stafford Rd South- Entry Lane 1)							2012	2012
3/2 (Stafford Rd South- Entry Lane 2)							2176	2176
3/3 (Stafford Rd South- Entry Lane 3)							2176	2176
3/4 (Stafford Rd South- Entry Lane 4)							2176	2176
4/1 (M54 West Entry Lane 1)							2009	2009
4/2 (M54 West Entry Lane 2)							2166	2166
4/3 (M54 West Entry Lane 3)							2166	2166
5/1							2032	2032
5/2							2176	2176
5/3							2134	2134
6/1							2022	2022
6/2							2187	2187
6/3							2134	2134
7/1							2022	2022
7/2							2162	2162
7/3							2124	2124
8/1							2134	2134
8/2							2134	2134
8/3							2134	2134
8/4							2134	2134
9/1							Inf	Inf
9/2							Inf	Inf

Full Input Data And Results

10/1	Infinite Saturation Flow	Inf	Inf
10/2	Infinite Saturation Flow	Inf	Inf
11/1	Infinite Saturation Flow	Inf	Inf
11/2	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf

Scenario 3: '2038 + New Link Roads' (FG17: '2038 Base + ROF Link and M54-M6 Link AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
	A	B	C	D	Tot.	
Origin	A	3	591	577	356	1527
	B	659	0	980	744	2383
	C	499	1048	53	667	2267
	D	331	287	477	24	1119
	Tot.	1492	1926	2087	1791	7296

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2038 + New Link Roads
Junction: M54 J2	
1/1 (short)	497
1/2 (with short)	1038(In) 541(Out)
1/3	489
2/1 (short)	469
2/2 (with short)	980(In) 511(Out)
2/3 (with short)	1403(In) 798(Out)
2/4 (short)	605
3/1 (short)	667
3/2 (with short)	1166(In) 499(Out)
3/3 (with short)	1101(In) 271(Out)
3/4 (short)	830
4/1	294
4/2 (with short)	825(In) 324(Out)
4/3 (short)	501
5/1	630
5/2	477
5/3	383
6/1	558
6/2	620
6/3	608
7/1	553
7/2	879
7/3	830
8/1	474
8/2	861
8/3	183
8/4	371
9/1	847
9/2	645
10/1	971
10/2	955
11/1	1099
11/2	988

Full Input Data And Results

12/1	891
12/2	900

Full Input Data And Results

Lane Saturation Flows

Junction: M54 J2								
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 (Stafford North- Entry Lane 1)							2013	2013
1/2 (Stafford North- Entry Lane 2)							2187	2187
1/3 (Stafford North- Entry Lane 3)							2166	2166
2/1 (M54 East- Entry Lane 1)							1989	1989
2/2 (M54 East- Entry Lane 2)							2166	2166
2/3 (M54 East- Entry Lane 3)							2176	2176
2/4 (M54 East- Entry Lane 4)							2176	2176
3/1 (Stafford Rd South- Entry Lane 1)							2012	2012
3/2 (Stafford Rd South- Entry Lane 2)							2176	2176
3/3 (Stafford Rd South- Entry Lane 3)							2176	2176
3/4 (Stafford Rd South- Entry Lane 4)							2176	2176
4/1 (M54 West Entry Lane 1)							2009	2009
4/2 (M54 West Entry Lane 2)							2166	2166
4/3 (M54 West Entry Lane 3)							2166	2166
5/1							2032	2032
5/2							2176	2176
5/3							2134	2134
6/1							2022	2022
6/2							2187	2187
6/3							2134	2134
7/1							2022	2022
7/2							2162	2162
7/3							2124	2124
8/1							2134	2134
8/2							2134	2134
8/3							2134	2134
8/4							2134	2134
9/1							Inf	Inf
9/2							Inf	Inf

Full Input Data And Results

10/1	Infinite Saturation Flow	Inf	Inf
10/2	Infinite Saturation Flow	Inf	Inf
11/1	Infinite Saturation Flow	Inf	Inf
11/2	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf

Scenario 4: '2038 + New Link Roads' (FG18: '2038 Base + ROF Link and M54-M6 Link PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
	A	B	C	D	Tot.	
Origin	A	9	637	530	286	1462
	B	375	0	845	262	1482
	C	620	1450	64	518	2652
	D	248	621	564	8	1441
	Tot.	1252	2708	2003	1074	7037

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2038 + New Link Roads
Junction: M54 J2	
1/1 (short)	488
1/2 (with short)	1017(In) 529(Out)
1/3	445
2/1 (short)	405
2/2 (with short)	845(In) 440(Out)
2/3 (with short)	637(In) 391(Out)
2/4 (short)	246
3/1 (short)	518
3/2 (with short)	1138(In) 620(Out)
3/3 (with short)	1514(In) 644(Out)
3/4 (short)	870
4/1	248
4/2 (with short)	1193(In) 621(Out)
4/3 (short)	572
5/1	626
5/2	532
5/3	303
6/1	323
6/2	369
6/3	248
7/1	756
7/2	892
7/3	870
8/1	965
8/2	1106
8/3	246
8/4	390
9/1	1004
9/2	248
10/1	1453
10/2	1255
11/1	1031
11/2	972

Full Input Data And Results

12/1	582
12/2	492

Full Input Data And Results

Lane Saturation Flows

Junction: M54 J2								
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 (Stafford North- Entry Lane 1)							2013	2013
1/2 (Stafford North- Entry Lane 2)							2187	2187
1/3 (Stafford North- Entry Lane 3)							2166	2166
2/1 (M54 East- Entry Lane 1)							1989	1989
2/2 (M54 East- Entry Lane 2)							2166	2166
2/3 (M54 East- Entry Lane 3)							2176	2176
2/4 (M54 East- Entry Lane 4)							2176	2176
3/1 (Stafford Rd South- Entry Lane 1)							2012	2012
3/2 (Stafford Rd South- Entry Lane 2)							2176	2176
3/3 (Stafford Rd South- Entry Lane 3)							2176	2176
3/4 (Stafford Rd South- Entry Lane 4)							2176	2176
4/1 (M54 West Entry Lane 1)							2009	2009
4/2 (M54 West Entry Lane 2)							2166	2166
4/3 (M54 West Entry Lane 3)							2166	2166
5/1							2032	2032
5/2							2176	2176
5/3							2134	2134
6/1							2022	2022
6/2							2187	2187
6/3							2134	2134
7/1							2022	2022
7/2							2162	2162
7/3							2124	2124
8/1							2134	2134
8/2							2134	2134
8/3							2134	2134
8/4							2134	2134
9/1							Inf	Inf
9/2							Inf	Inf

Full Input Data And Results

10/1	Infinite Saturation Flow	Inf	Inf
10/2	Infinite Saturation Flow	Inf	Inf
11/1	Infinite Saturation Flow	Inf	Inf
11/2	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf

Scenario 5: '2038 + New Link Roads + Cumulative Dev' (FG23: '2038 + Reassignment + Cumulative AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
	A	B	C	D	Tot.	
Origin	A	3	720	738	378	1839
B	738	0	998	744	2480	
C	592	1105	53	711	2461	
D	345	287	491	24	1147	
Tot.	1678	2112	2280	1857	7927	

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2038 + New Link Roads + Cumulative Dev
Junction: M54 J2	
1/1 (short)	556
1/2 (with short)	1173(In) 617(Out)
1/3	666
2/1 (short)	478
2/2 (with short)	998(In) 520(Out)
2/3 (with short)	1482(In) 874(Out)
2/4 (short)	608
3/1 (short)	711
3/2 (with short)	1303(In) 592(Out)
3/3 (with short)	1158(In) 350(Out)
3/4 (short)	808
4/1	345
4/2 (with short)	802(In) 287(Out)
4/3 (short)	515
5/1	650
5/2	632
5/3	405
6/1	608
6/2	669
6/3	610
7/1	723
7/2	960
7/3	808
8/1	463
8/2	929
8/3	197
8/4	371
9/1	1068
9/2	610
10/1	1019
10/2	1093

Full Input Data And Results

11/1	1128
11/2	1152
12/1	963
12/2	894

Full Input Data And Results

Lane Saturation Flows

Junction: M54 J2								
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 (Stafford North- Entry Lane 1)							2013	2013
1/2 (Stafford North- Entry Lane 2)							2187	2187
1/3 (Stafford North- Entry Lane 3)							2166	2166
2/1 (M54 East- Entry Lane 1)							1989	1989
2/2 (M54 East- Entry Lane 2)							2166	2166
2/3 (M54 East- Entry Lane 3)							2176	2176
2/4 (M54 East- Entry Lane 4)							2176	2176
3/1 (Stafford Rd South- Entry Lane 1)							2012	2012
3/2 (Stafford Rd South- Entry Lane 2)							2176	2176
3/3 (Stafford Rd South- Entry Lane 3)							2176	2176
3/4 (Stafford Rd South- Entry Lane 4)							2176	2176
4/1 (M54 West Entry Lane 1)							2009	2009
4/2 (M54 West Entry Lane 2)							2166	2166
4/3 (M54 West Entry Lane 3)							2166	2166
5/1							2032	2032
5/2							2176	2176
5/3							2134	2134
6/1							2022	2022
6/2							2187	2187
6/3							2134	2134
7/1							2022	2022
7/2							2162	2162
7/3							2124	2124
8/1							2134	2134
8/2							2134	2134
8/3							2134	2134
8/4							2134	2134
9/1							Inf	Inf
9/2							Inf	Inf

Full Input Data And Results

10/1	Infinite Saturation Flow	Inf	Inf
10/2	Infinite Saturation Flow	Inf	Inf
11/1	Infinite Saturation Flow	Inf	Inf
11/2	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf

Scenario 6: '2038 + New Link Roads + Cumulative Dev' (FG24: '2038 + Reassignment + Cumulative PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
	A	B	C	D	Tot.	
Origin	A	9	736	637	303	1685
	B	502	0	900	262	1664
	C	765	1476	64	539	2844
	D	270	621	607	8	1506
	Tot.	1546	2833	2208	1112	7699

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2038 + New Link Roads + Cumulative Dev
Junction: M54 J2	
1/1 (short)	546
1/2 (with short)	1140(In) 594(Out)
1/3	545
2/1 (short)	431
2/2 (with short)	900(In) 469(Out)
2/3 (with short)	764(In) 402(Out)
2/4 (short)	362
3/1 (short)	539
3/2 (with short)	1304(In) 765(Out)
3/3 (with short)	1540(In) 560(Out)
3/4 (short)	980
4/1	270
4/2 (with short)	1236(In) 621(Out)
4/3 (short)	615
5/1	698
5/2	610
5/3	320
6/1	337
6/2	377
6/3	370
7/1	906
7/2	930
7/3	980
8/1	1081
8/2	1016
8/3	294
8/4	385
9/1	1176
9/2	370
10/1	1627
10/2	1206

Full Input Data And Results

11/1	1129
11/2	1079
12/1	606
12/2	506

Full Input Data And Results

Lane Saturation Flows

Junction: M54 J2								
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 (Stafford North- Entry Lane 1)							2013	2013
1/2 (Stafford North- Entry Lane 2)							2187	2187
1/3 (Stafford North- Entry Lane 3)							2166	2166
2/1 (M54 East- Entry Lane 1)							1989	1989
2/2 (M54 East- Entry Lane 2)							2166	2166
2/3 (M54 East- Entry Lane 3)							2176	2176
2/4 (M54 East- Entry Lane 4)							2176	2176
3/1 (Stafford Rd South- Entry Lane 1)							2012	2012
3/2 (Stafford Rd South- Entry Lane 2)							2176	2176
3/3 (Stafford Rd South- Entry Lane 3)							2176	2176
3/4 (Stafford Rd South- Entry Lane 4)							2176	2176
4/1 (M54 West Entry Lane 1)							2009	2009
4/2 (M54 West Entry Lane 2)							2166	2166
4/3 (M54 West Entry Lane 3)							2166	2166
5/1							2032	2032
5/2							2176	2176
5/3							2134	2134
6/1							2022	2022
6/2							2187	2187
6/3							2134	2134
7/1							2022	2022
7/2							2162	2162
7/3							2124	2124
8/1							2134	2134
8/2							2134	2134
8/3							2134	2134
8/4							2134	2134
9/1							Inf	Inf
9/2							Inf	Inf

Full Input Data And Results

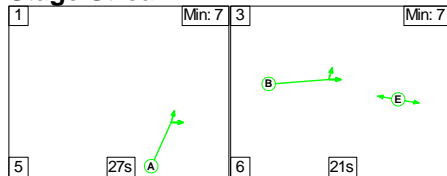
10/1	Infinite Saturation Flow	Inf	Inf
10/2	Infinite Saturation Flow	Inf	Inf
11/1	Infinite Saturation Flow	Inf	Inf
11/2	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf

Scenario 1: '2022 AM' (FG1: '2022 AM', Plan 1: 'Network Control Plan 1')

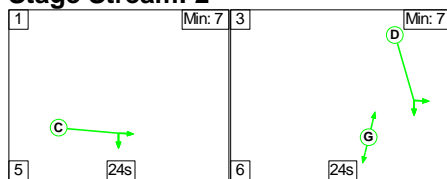
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

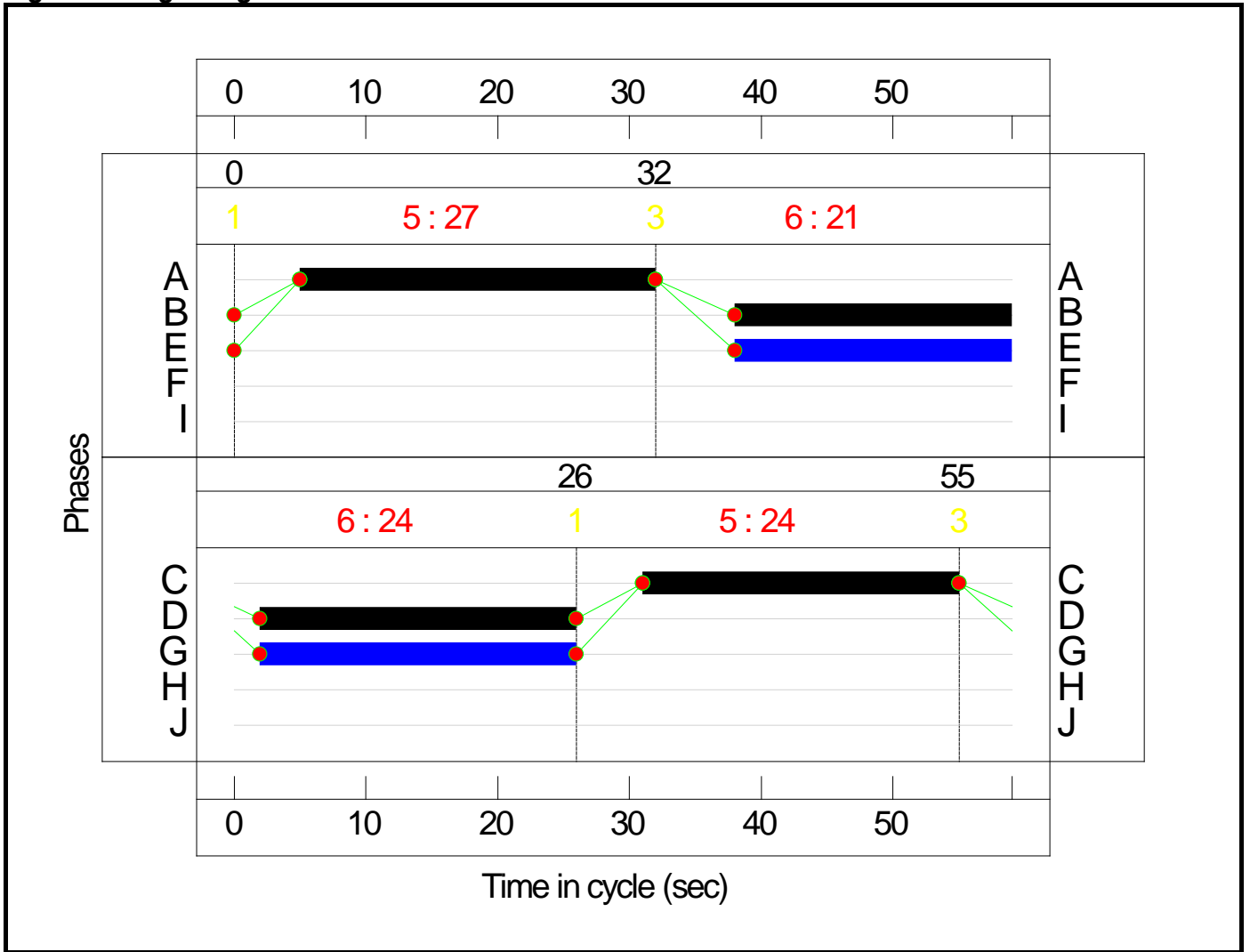
Stage Stream: 1

Stage	1	3
Duration	27	21
Change Point	0	32

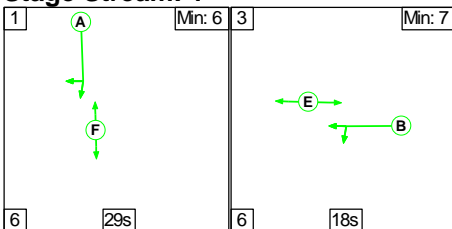
Stage Stream: 2

Stage	1	3
Duration	24	24
Change Point	26	55

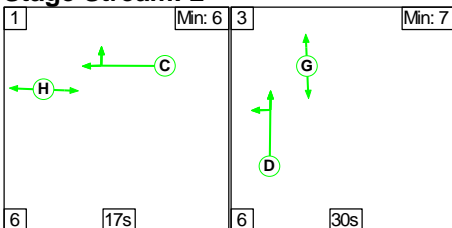
Signal Timings Diagram



C2
Stage Sequence Diagram
Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

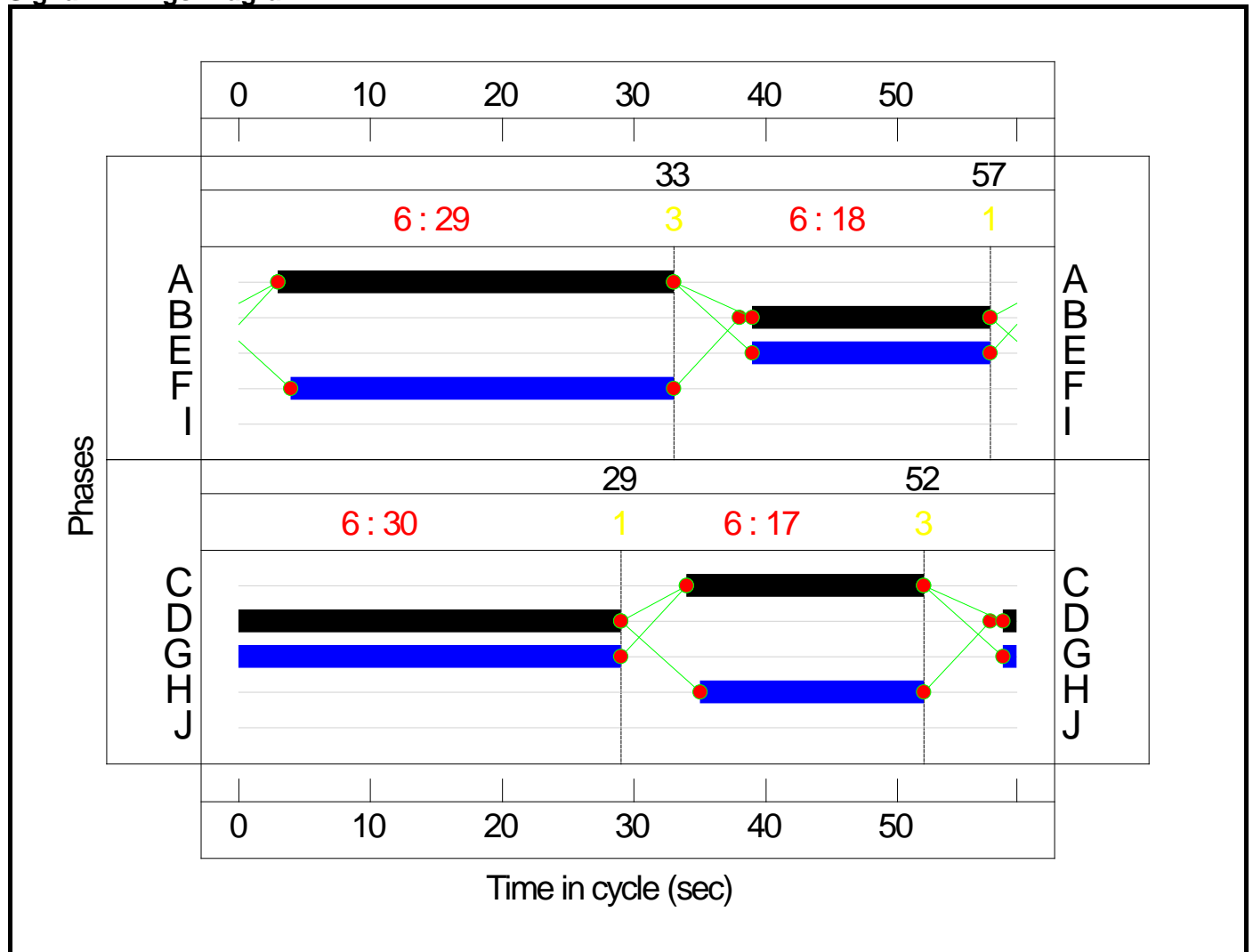
Stage Stream: 1

Stage	1	3
Duration	29	18
Change Point	57	33

Stage Stream: 2

Stage	1	3
Duration	17	30
Change Point	29	52


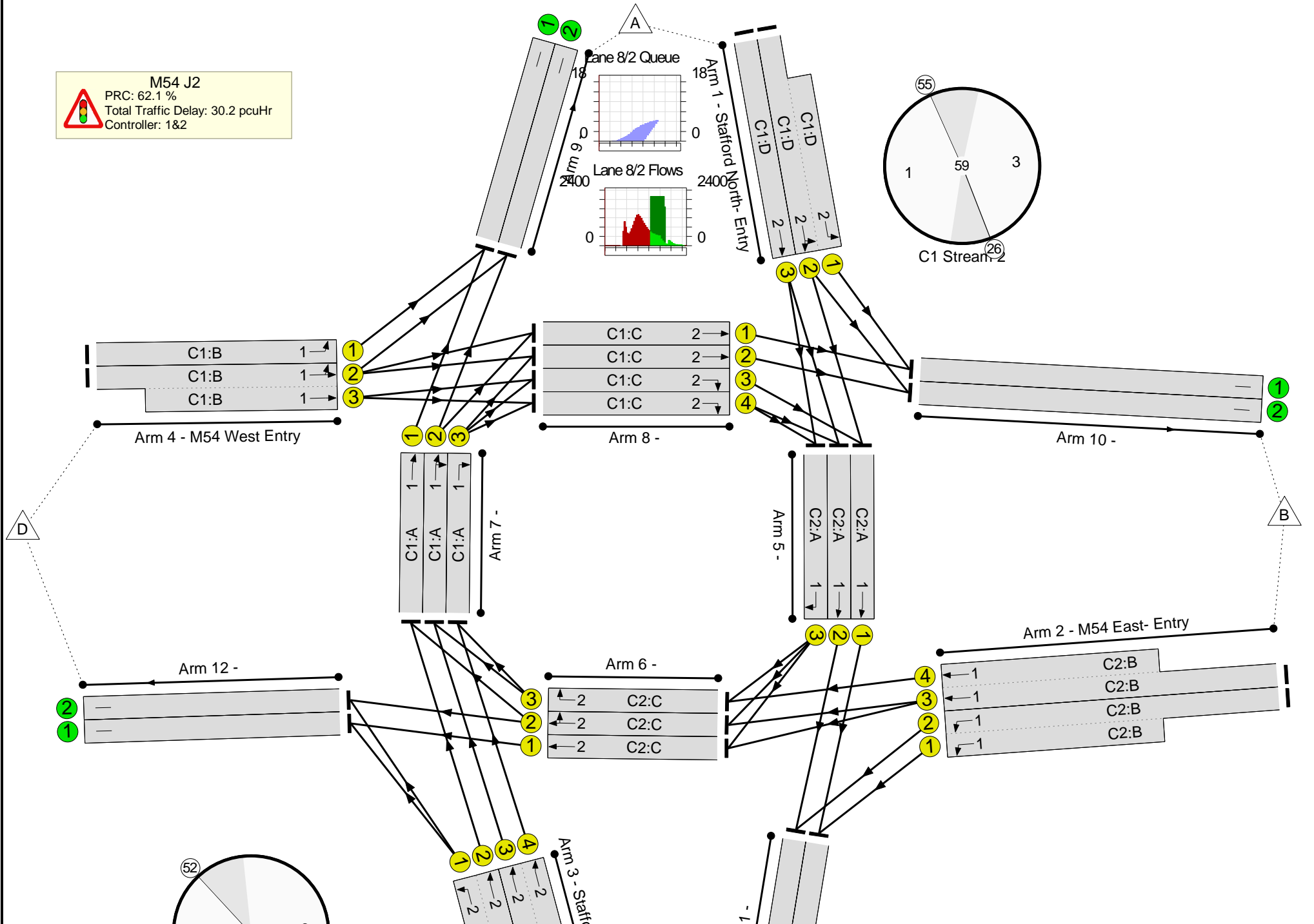
Signal Timings Diagram



Full Input Data And Results
Network Layout Diagram

Full Input Data And Results

M54 J2
 PRC: 62.1 %
 Total Traffic Delay: 30.2 pcuHr
 Controller: 1&2

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	55.5%
M54 J2	-	-	N/A	-	-		-	-	-	-	-	-	55.5%
1/2+1/1	Stafford North-Entry Ahead Left	U	1:2	N/A	C1:D		1	24	-	668	2187:2013	927+311	54.0 : 54.0%
1/3	Stafford North-Entry Ahead	U	1:2	N/A	C1:D		1	24	-	499	2166	918	54.4%
2/2+2/1	M54 East- Entry Left	U	2:1	N/A	C2:B		1	18	-	732	2166:1989	698+641	54.8 : 54.6%
2/3+2/4	M54 East- Entry Ahead	U	2:1	N/A	C2:B		1	18	-	267	2176:2176	701+701	19.4 : 18.7%
3/2+3/1	Stafford Rd South- Entry Ahead Left	U	2:2	N/A	C2:D		1	30	-	834	2176:2012	1009+1057	39.9 : 40.8%
3/3+3/4	Stafford Rd South- Entry Ahead	U	2:2	N/A	C2:D		1	30	-	777	2176:2176	667+862	50.8 : 50.8%
4/1	M54 West Entry Left	U	1:1	N/A	C1:B		1	21	-	200	2009	749	26.7%
4/2+4/3	M54 West Entry Ahead Left	U	1:1	N/A	C1:B		1	21	-	490	2166:2166	132+808	52.1 : 52.1%
5/1	Ahead	U	2:1	N/A	C2:A		1	30	-	632	2166	1138	55.5%
5/2	Ahead	U	2:1	N/A	C2:A		1	30	-	455	2176	1143	39.8%
5/3	Right	U	2:1	N/A	C2:A		1	30	-	380	2134	1121	33.9%
6/1	Ahead	U	2:2	N/A	C2:C		1	18	-	235	2022	651	36.1%
6/2	Right Ahead	U	2:2	N/A	C2:C		1	18	-	277	2187	704	39.3%
6/3	Right	U	2:2	N/A	C2:C		1	18	-	135	2134	687	19.6%
7/1	Ahead	U	1:1	N/A	C1:A		1	27	-	405	2022	960	42.2%
7/2	Right Ahead	U	1:1	N/A	C1:A		1	27	-	474	2022	960	49.4%
7/3	Right	U	1:1	N/A	C1:A		1	27	-	438	2162	1026	42.7%
8/1	Ahead	U	1:2	N/A	C1:C		1	24	-	153	2134	904	16.9%
8/2	Ahead	U	1:2	N/A	C1:C		1	24	-	410	2134	904	45.3%

Full Input Data And Results

8/3	Right	U	1:2	N/A	C1:C		1	24	-	132	2134	904	14.6%
8/4	Right	U	1:2	N/A	C1:C		1	24	-	336	2134	904	37.2%
9/1		U	N/A	N/A	-		-	-	-	605	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	371	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	321	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	410	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	982	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	837	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	450	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	491	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	0	0	0	23.1	7.1	0.0	30.2	-	-	-	-
M54 J2	-	-	0	0	0	23.1	7.1	0.0	30.2	-	-	-	-
1/2+1/1	668	668	-	-	-	2.3	0.6	-	2.8	15.3	6.1	0.6	6.7
1/3	499	499	-	-	-	1.8	0.6	-	2.4	17.0	6.1	0.6	6.7
2/2+2/1	732	732	-	-	-	3.3	0.6	-	4.0	19.4	5.1	0.6	5.7
2/3+2/4	267	267	-	-	-	1.1	0.1	-	1.2	16.1	1.6	0.1	1.7
3/2+3/1	834	834	-	-	-	1.9	0.3	-	2.3	9.8	4.2	0.3	4.5
3/3+3/4	777	777	-	-	-	1.8	0.5	-	2.3	10.5	4.3	0.5	4.8
4/1	200	200	-	-	-	0.7	0.2	-	0.9	16.2	2.3	0.2	2.5
4/2+4/3	490	490	-	-	-	1.9	0.5	-	2.5	18.1	5.3	0.5	5.8
5/1	632	632	-	-	-	0.7	0.6	-	1.3	7.4	2.7	0.6	3.4
5/2	455	455	-	-	-	0.9	0.3	-	1.2	9.9	5.1	0.3	5.4
5/3	380	380	-	-	-	0.3	0.3	-	0.5	5.0	0.8	0.3	1.1
6/1	235	235	-	-	-	0.7	0.3	-	1.0	14.9	3.0	0.3	3.3
6/2	277	277	-	-	-	0.8	0.3	-	1.2	15.2	3.4	0.3	3.7
6/3	135	135	-	-	-	0.3	0.1	-	0.4	10.8	0.5	0.1	0.6
7/1	405	405	-	-	-	0.5	0.4	-	0.9	8.0	1.2	0.4	1.6
7/2	474	474	-	-	-	0.8	0.5	-	1.3	10.0	3.5	0.5	4.0
7/3	438	438	-	-	-	0.6	0.4	-	0.9	7.8	1.3	0.4	1.7
8/1	153	153	-	-	-	0.4	0.1	-	0.5	11.8	2.2	0.1	2.3
8/2	410	410	-	-	-	1.3	0.0	-	1.3	11.8	6.4	0.0	6.4
8/3	132	132	-	-	-	0.3	0.1	-	0.3	9.5	0.6	0.1	0.7
8/4	336	336	-	-	-	0.7	0.3	-	1.0	10.7	1.8	0.3	2.1
9/1	605	605	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	371	371	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	321	321	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	410	410	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/1	982	982	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	837	837	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	450	450	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	491	491	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
			C1	Stream: 1 PRC for Signalled Lanes (%)	72.7	Total Delay for Signalled Lanes (pcuHr):			6.51	Cycle Time (s):		59	
			C1	Stream: 2 PRC for Signalled Lanes (%)	65.5	Total Delay for Signalled Lanes (pcuHr):			8.40	Cycle Time (s):		59	
			C2	Stream: 1 PRC for Signalled Lanes (%)	62.1	Total Delay for Signalled Lanes (pcuHr):			8.22	Cycle Time (s):		59	
			C2	Stream: 2 PRC for Signalled Lanes (%)	77.2	Total Delay for Signalled Lanes (pcuHr):			7.09	Cycle Time (s):		59	
			PRC Over All Lanes (%)		62.1	Total Delay Over All Lanes(pcuHr):			30.23				

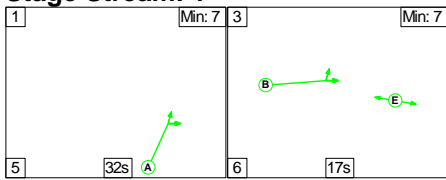
Full Input Data And Results

Scenario 2: '2022 PM' (FG2: '2022 PM', Plan 1: 'Network Control Plan 1')

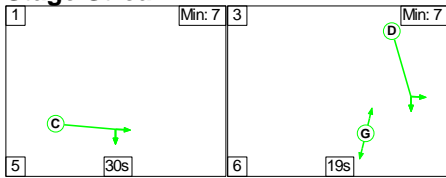
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

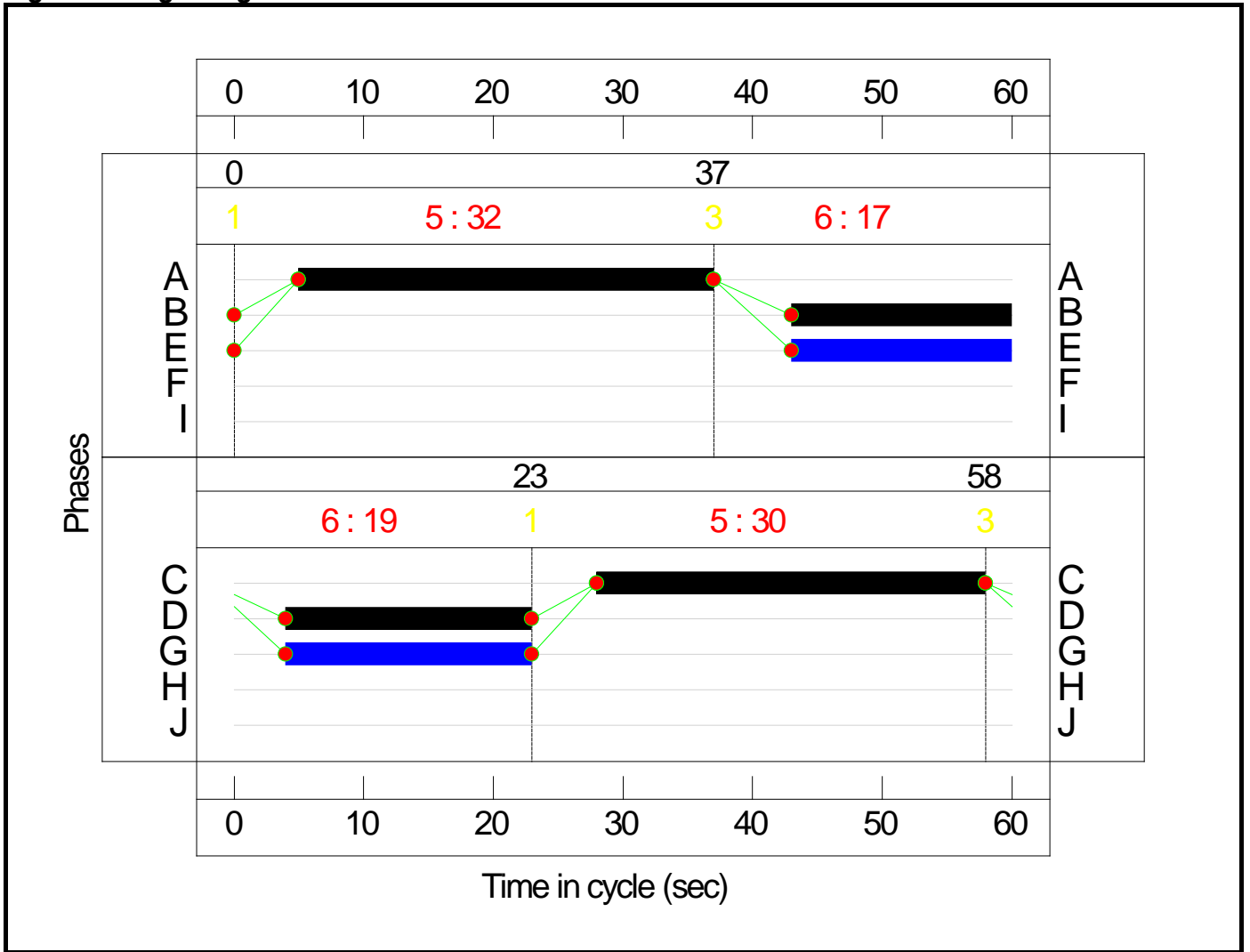
Stage Stream: 1

Stage	1	3
Duration	32	17
Change Point	0	37

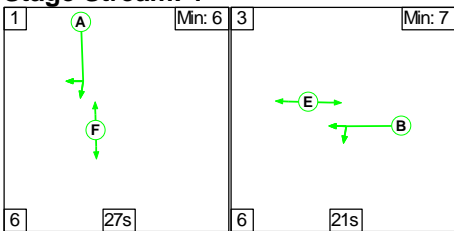
Stage Stream: 2

Stage	1	3
Duration	30	19
Change Point	23	58

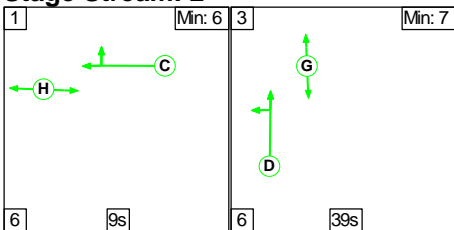
Signal Timings Diagram



C2
Stage Sequence Diagram
Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

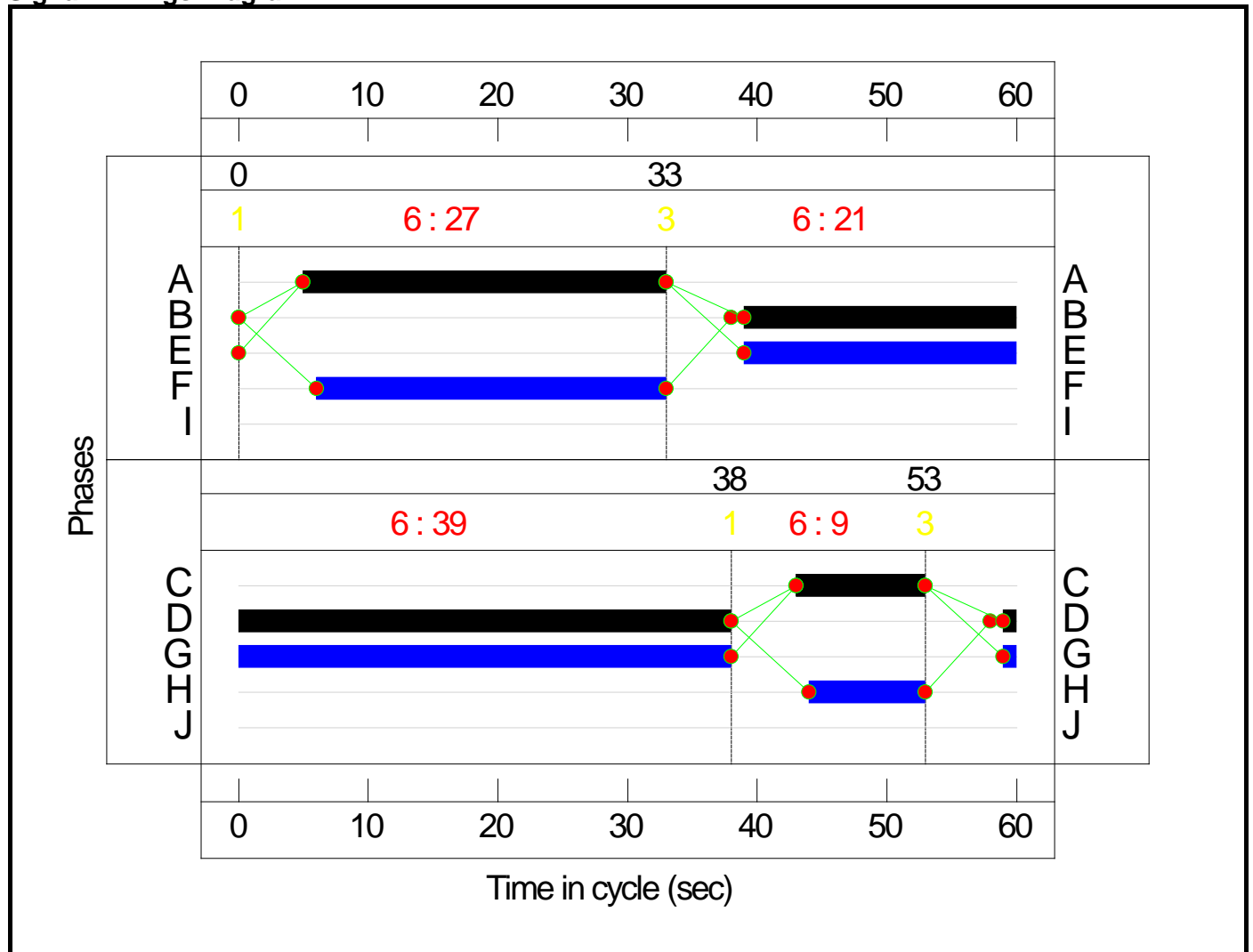
Stage Stream: 1

Stage	1	3
Duration	27	21
Change Point	0	33

Stage Stream: 2

Stage	1	3
Duration	9	39
Change Point	38	53


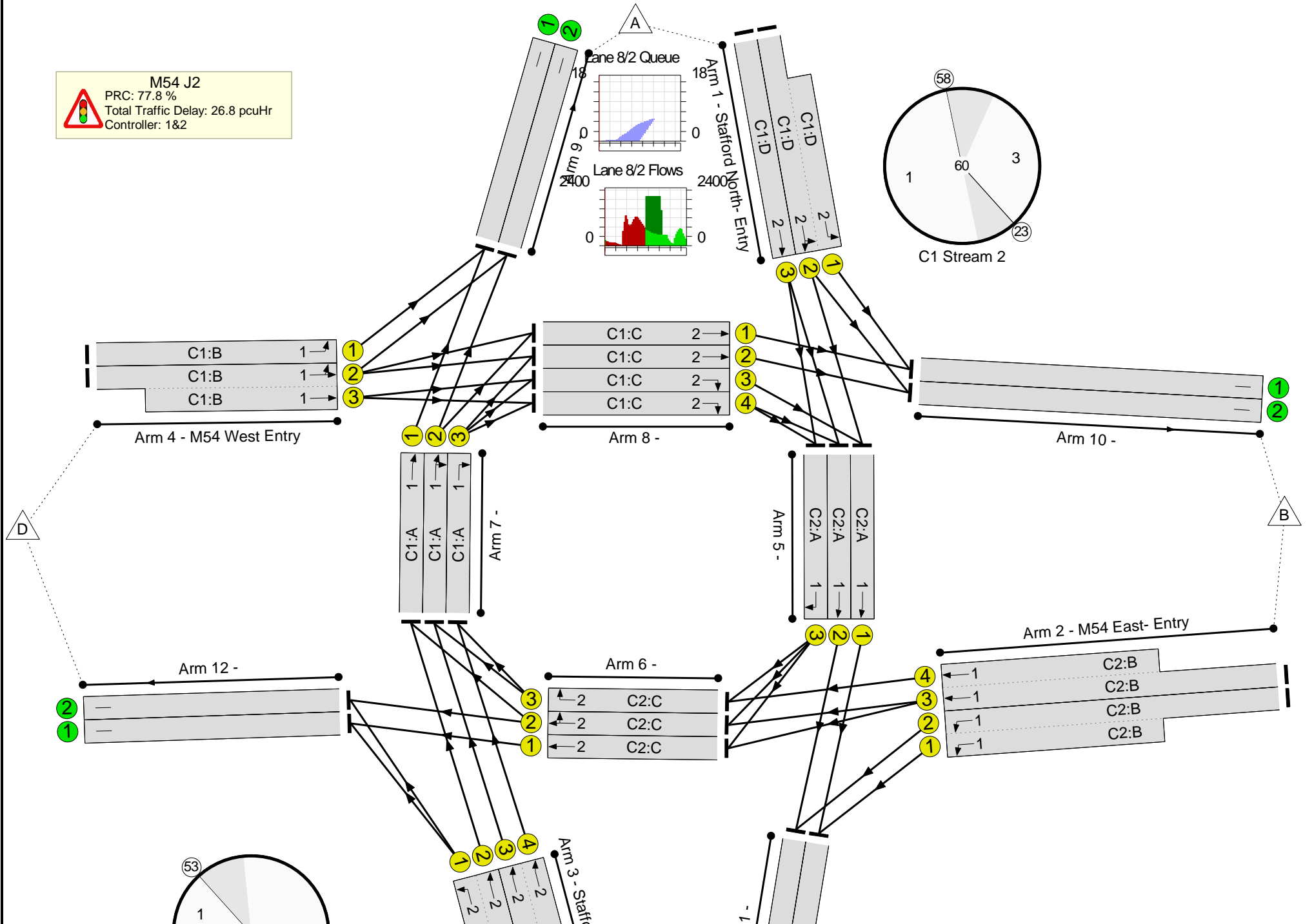
Signal Timings Diagram



Full Input Data And Results
Network Layout Diagram

Full Input Data And Results

M54 J2
 PRC: 77.8 %
 Total Traffic Delay: 26.8 pcuHr
 Controller: 1&2

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	50.6%
M54 J2	-	-	N/A	-	-		-	-	-	-	-	-	50.6%
1/2+1/1	Stafford North-Entry Ahead Left	U	1:2	N/A	C1:D		1	19	-	513	2187:2013	729+284	50.6 : 50.6%
1/3	Stafford North-Entry Ahead	U	1:2	N/A	C1:D		1	19	-	343	2166	722	47.5%
2/2+2/1	M54 East- Entry Left	U	2:1	N/A	C2:B		1	21	-	662	2166:1989	794+729	43.4 : 43.5%
2/3+2/4	M54 East- Entry Ahead	U	2:1	N/A	C2:B		1	21	-	203	2176:2176	420+798	16.7 : 16.7%
3/2+3/1	Stafford Rd South- Entry Ahead Left	U	2:2	N/A	C2:D		1	39	-	852	2176:2012	1096+998	40.7 : 40.7%
3/3+3/4	Stafford Rd South- Entry Ahead	U	2:2	N/A	C2:D		1	39	-	950	2176:2176	882+1001	50.5 : 50.5%
4/1	M54 West Entry Left	U	1:1	N/A	C1:B		1	17	-	107	2009	603	17.8%
4/2+4/3	M54 West Entry Ahead Left	U	1:1	N/A	C1:B		1	17	-	573	2166:2166	650+650	40.0 : 48.2%
5/1	Ahead	U	2:1	N/A	C2:A		1	28	-	468	2032	982	47.7%
5/2	Ahead	U	2:1	N/A	C2:A		1	28	-	369	2176	1052	35.1%
5/3	Right	U	2:1	N/A	C2:A		1	28	-	252	2134	1031	24.4%
6/1	Ahead	U	2:2	N/A	C2:C		1	10	-	143	2022	371	38.6%
6/2	Right Ahead	U	2:2	N/A	C2:C		1	10	-	172	2187	401	42.9%
6/3	Right	U	2:2	N/A	C2:C		1	10	-	140	2134	391	35.8%
7/1	Ahead	U	1:1	N/A	C1:A		1	32	-	488	2022	1112	43.9%
7/2	Right Ahead	U	1:1	N/A	C1:A		1	32	-	585	2162	1189	49.2%
7/3	Right	U	1:1	N/A	C1:A		1	32	-	505	2124	1168	43.2%
8/1	Ahead	U	1:2	N/A	C1:C		1	30	-	251	2134	1103	22.8%
8/2	Ahead	U	1:2	N/A	C1:C		1	30	-	543	2134	1103	49.2%

Full Input Data And Results

8/3	Right	U	1:2	N/A	C1:C		1	30	-	99	2134	1103	9.0%
8/4	Right	U	1:2	N/A	C1:C		1	30	-	278	2134	1103	25.2%
9/1		U	N/A	N/A	-		-	-	-	595	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	492	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	395	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	543	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	785	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	714	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	346	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	333	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	0	0	0	20.5	6.3	0.0	26.8	-	-	-	-
M54 J2	-	-	0	0	0	20.5	6.3	0.0	26.8	-	-	-	-
1/2+1/1	513	513	-	-	-	2.2	0.5	-	2.7	19.2	4.9	0.5	5.4
1/3	343	343	-	-	-	1.5	0.5	-	2.0	20.6	4.5	0.5	4.9
2/2+2/1	662	662	-	-	-	2.6	0.4	-	3.0	16.4	4.3	0.4	4.7
2/3+2/4	203	203	-	-	-	0.7	0.1	-	0.8	14.5	1.5	0.1	1.6
3/2+3/1	852	852	-	-	-	1.0	0.3	-	1.3	5.6	3.1	0.3	3.4
3/3+3/4	950	950	-	-	-	1.1	0.5	-	1.6	6.2	3.6	0.5	4.2
4/1	107	107	-	-	-	0.5	0.1	-	0.6	19.2	1.3	0.1	1.4
4/2+4/3	573	573	-	-	-	2.7	0.4	-	3.1	19.4	4.3	0.4	4.7
5/1	468	468	-	-	-	0.4	0.5	-	0.9	6.8	1.5	0.5	2.0
5/2	369	369	-	-	-	0.8	0.3	-	1.1	10.9	4.1	0.3	4.4
5/3	252	252	-	-	-	0.1	0.2	-	0.3	3.8	0.3	0.2	0.4
6/1	143	143	-	-	-	0.7	0.3	-	1.0	25.1	2.3	0.3	2.6
6/2	172	172	-	-	-	0.8	0.4	-	1.1	23.8	2.6	0.4	3.0
6/3	140	140	-	-	-	0.4	0.3	-	0.7	17.7	0.6	0.3	0.9
7/1	488	488	-	-	-	0.7	0.4	-	1.1	8.2	2.5	0.4	2.9
7/2	585	585	-	-	-	1.0	0.5	-	1.5	9.4	5.6	0.5	6.1
7/3	505	505	-	-	-	0.7	0.4	-	1.1	7.8	2.0	0.4	2.4
8/1	251	251	-	-	-	0.5	0.1	-	0.7	9.4	3.2	0.1	3.4
8/2	543	543	-	-	-	1.3	0.0	-	1.3	8.8	6.8	0.0	6.8
8/3	99	99	-	-	-	0.2	0.0	-	0.2	7.5	0.5	0.0	0.5
8/4	278	278	-	-	-	0.5	0.2	-	0.6	8.2	1.5	0.2	1.7
9/1	595	595	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	492	492	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	395	395	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	543	543	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/1	785	785	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	714	714	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	346	346	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	333	333	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
			C1	Stream: 1 PRC for Signalled Lanes (%)	82.9	Total Delay for Signalled Lanes (pcuHr):			7.40	Cycle Time (s):		60	
			C1	Stream: 2 PRC for Signalled Lanes (%)	77.8	Total Delay for Signalled Lanes (pcuHr):			7.52	Cycle Time (s):		60	
			C2	Stream: 1 PRC for Signalled Lanes (%)	88.9	Total Delay for Signalled Lanes (pcuHr):			6.10	Cycle Time (s):		60	
			C2	Stream: 2 PRC for Signalled Lanes (%)	78.3	Total Delay for Signalled Lanes (pcuHr):			5.79	Cycle Time (s):		60	
			PRC Over All Lanes (%)		77.8	Total Delay Over All Lanes(pcuHr):			26.81				

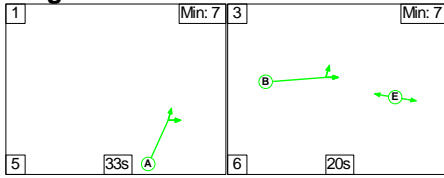
Full Input Data And Results

Scenario 3: '2038 + New Link Roads' (FG17: '2038 Base + ROF Link and M54-M6 Link AM', Plan 1: 'Network Control Plan 1')

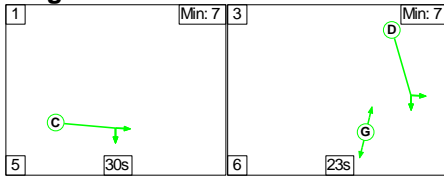
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

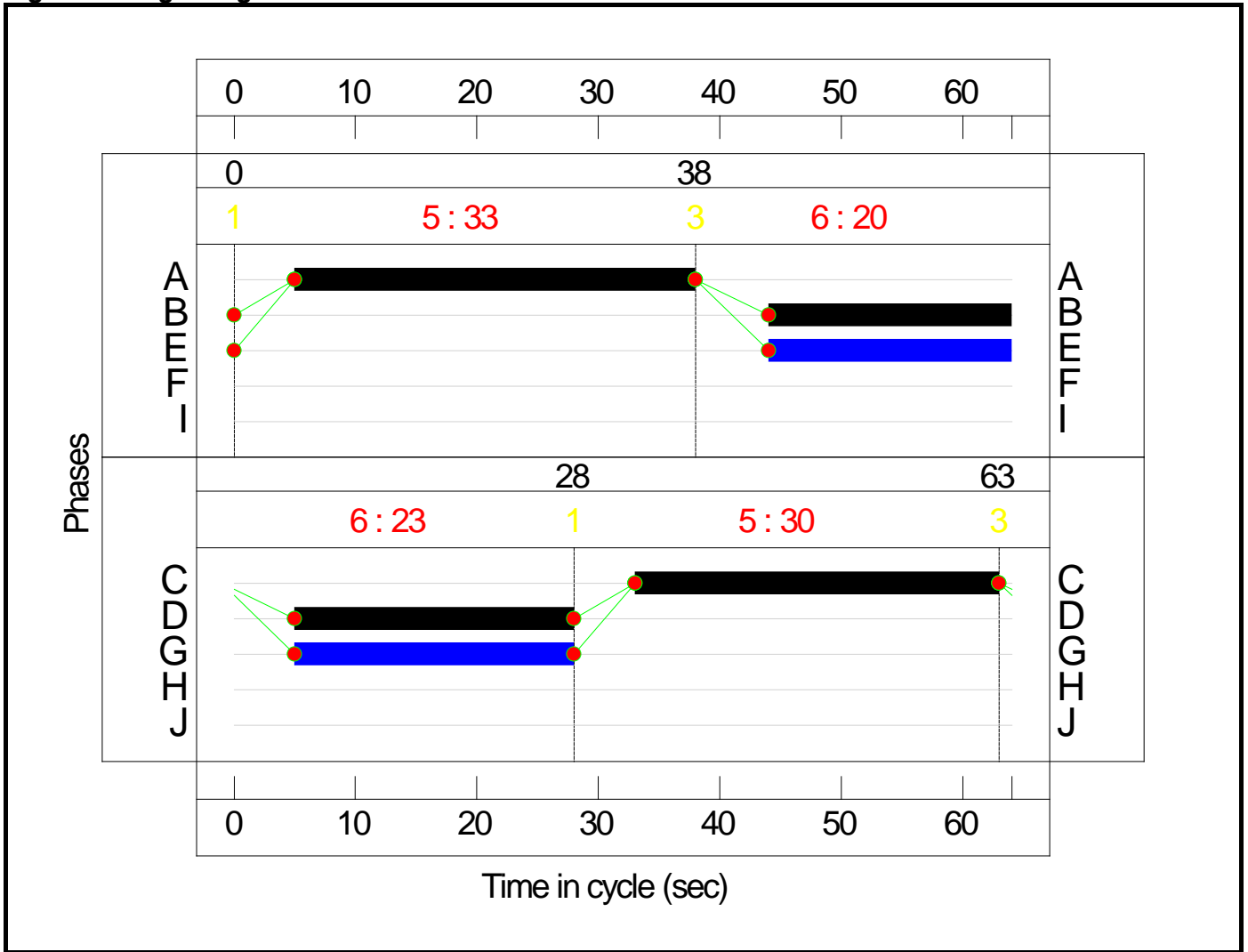
Stage Stream: 1

Stage	1	3
Duration	33	20
Change Point	0	38

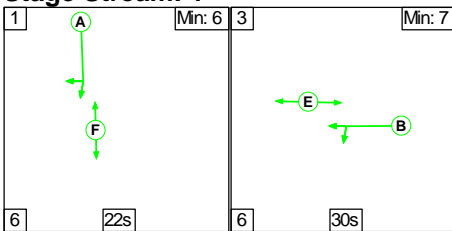
Stage Stream: 2

Stage	1	3
Duration	30	23
Change Point	28	63

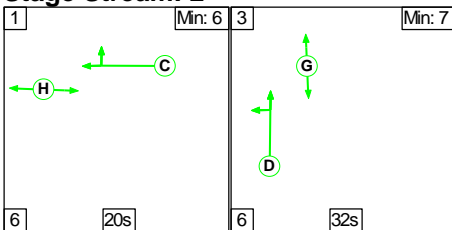
Signal Timings Diagram



C2
Stage Sequence Diagram
Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

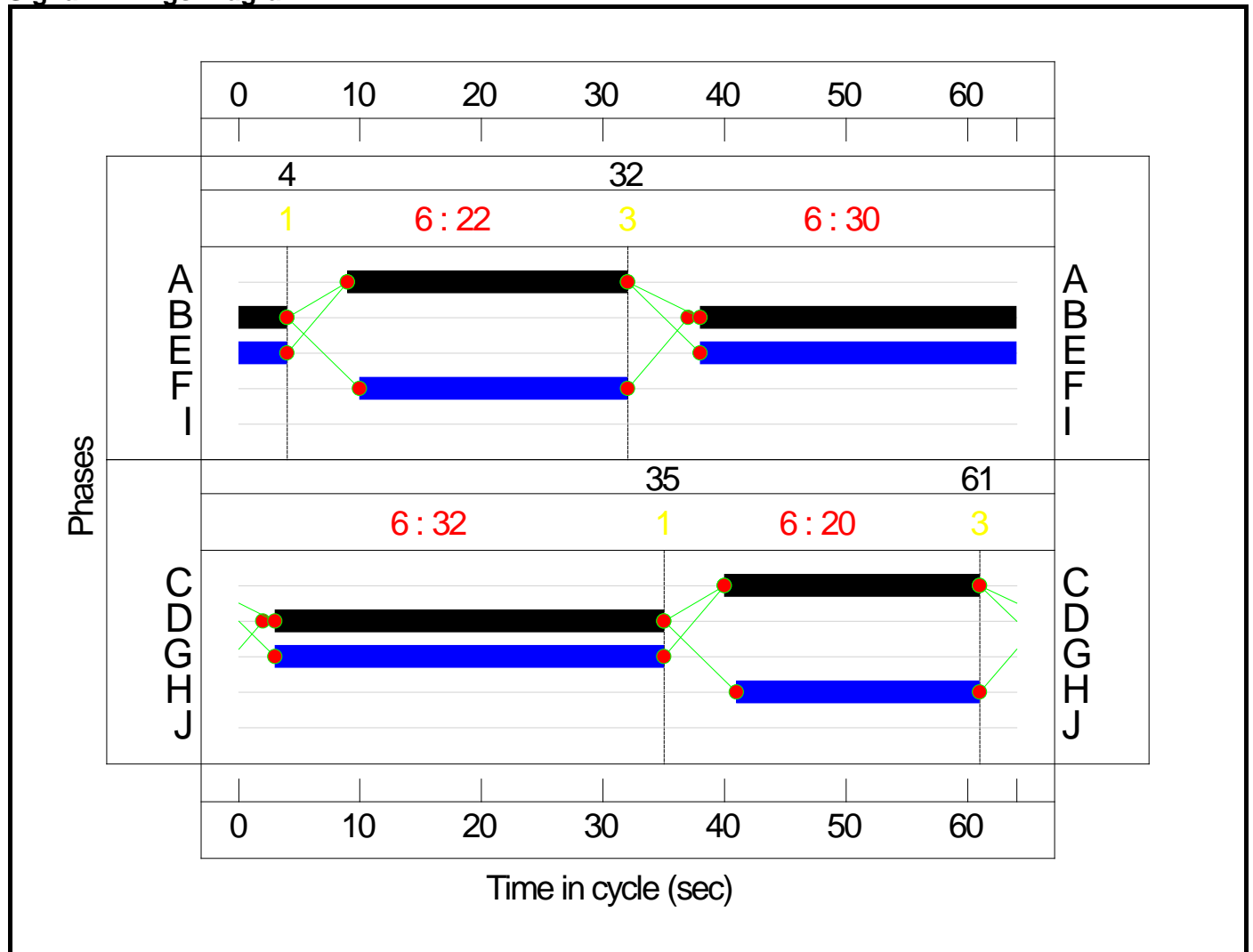
Stage Stream: 1

Stage	1	3
Duration	22	30
Change Point	4	32

Stage Stream: 2

Stage	1	3
Duration	20	32
Change Point	35	61


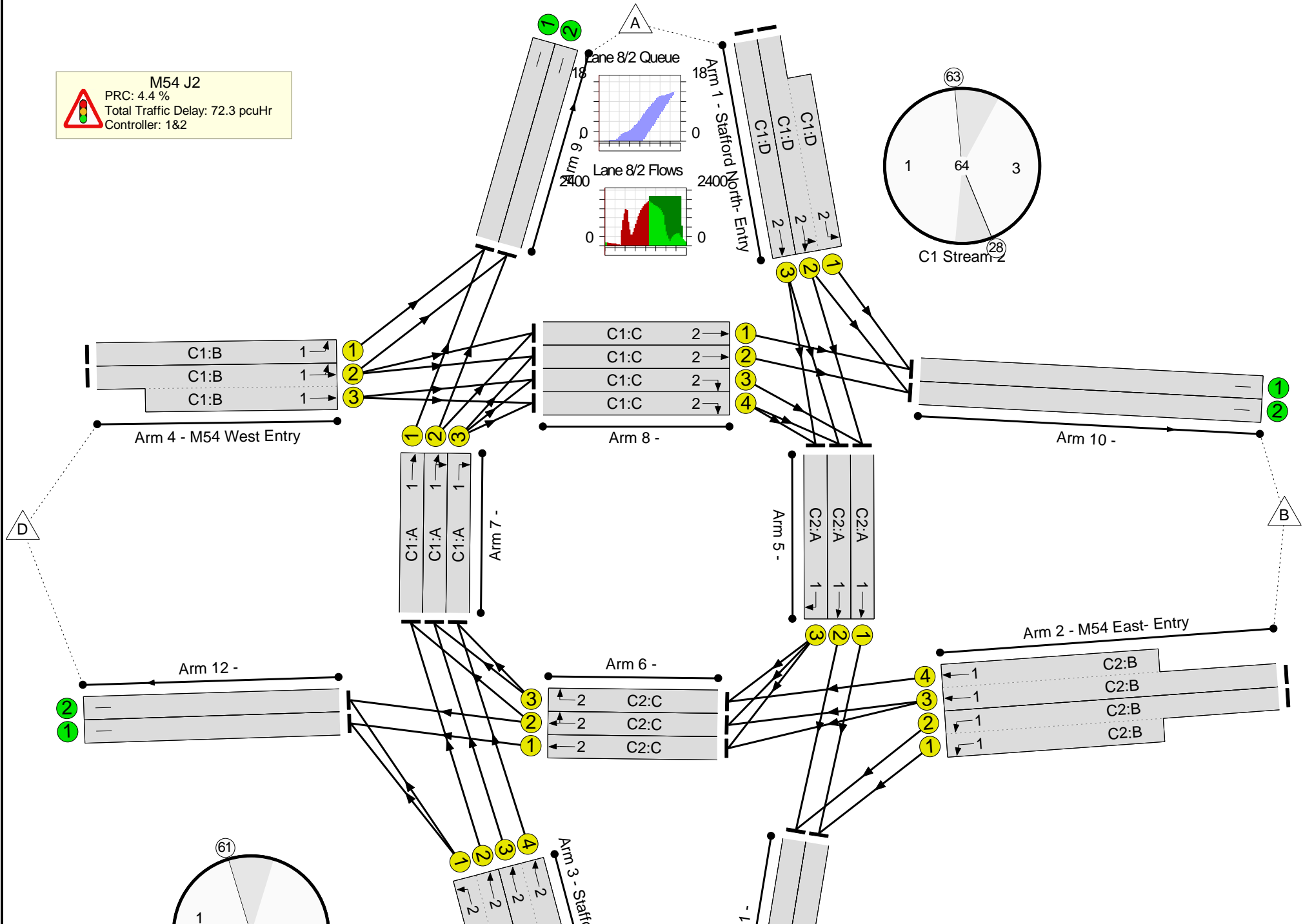
Signal Timings Diagram



Full Input Data And Results
Network Layout Diagram

Full Input Data And Results

M54 J2
 PRC: 4.4 %
 Total Traffic Delay: 72.3 pcuHr
 Controller: 1&2

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	86.2%
M54 J2	-	-	N/A	-	-		-	-	-	-	-	-	86.2%
1/2+1/1	Stafford North-Entry Ahead Left	U	1:2	N/A	C1:D		1	23	-	1038	2187:2013	820+755	66.0 : 65.8%
1/3	Stafford North-Entry Ahead	U	1:2	N/A	C1:D		1	23	-	489	2166	812	60.2%
2/2+2/1	M54 East- Entry Left	U	2:1	N/A	C2:B		1	30	-	980	2166:1989	923+847	55.4 : 55.4%
2/3+2/4	M54 East- Entry Ahead	U	2:1	N/A	C2:B		1	30	-	1403	2176:2176	942+714	84.7 : 84.7%
3/2+3/1	Stafford Rd South- Entry Ahead Left	U	2:2	N/A	C2:D		1	32	-	1166	2176:2012	776+1037	64.3 : 64.3%
3/3+3/4	Stafford Rd South- Entry Ahead	U	2:2	N/A	C2:D		1	32	-	1101	2176:2176	314+963	86.2 : 86.2%
4/1	M54 West Entry Left	U	1:1	N/A	C1:B		1	20	-	294	2009	659	44.6%
4/2+4/3	M54 West Entry Ahead Left	U	1:1	N/A	C1:B		1	20	-	825	2166:2166	460+711	70.5 : 70.5%
5/1	Ahead	U	2:1	N/A	C2:A		1	23	-	630	2032	762	82.7%
5/2	Ahead	U	2:1	N/A	C2:A		1	23	-	477	2176	816	58.5%
5/3	Right	U	2:1	N/A	C2:A		1	23	-	383	2134	800	47.9%
6/1	Ahead	U	2:2	N/A	C2:C		1	21	-	558	2022	695	80.3%
6/2	Right Ahead	U	2:2	N/A	C2:C		1	21	-	620	2187	752	82.5%
6/3	Right	U	2:2	N/A	C2:C		1	21	-	608	2134	734	82.9%
7/1	Ahead	U	1:1	N/A	C1:A		1	33	-	553	2022	1074	51.5%
7/2	Right Ahead	U	1:1	N/A	C1:A		1	33	-	879	2162	1149	76.5%
7/3	Right	U	1:1	N/A	C1:A		1	33	-	830	2124	1128	73.6%
8/1	Ahead	U	1:2	N/A	C1:C		1	30	-	474	2134	1034	45.9%
8/2	Ahead	U	1:2	N/A	C1:C		1	30	-	861	2134	1034	83.3%

Full Input Data And Results

8/3	Right	U	1:2	N/A	C1:C		1	30	-	183	2134	1034	17.7%
8/4	Right	U	1:2	N/A	C1:C		1	30	-	371	2134	1034	35.9%
9/1		U	N/A	N/A	-		-	-	-	847	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	645	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	971	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	955	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	1099	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	988	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	891	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	900	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	0	0	0	47.3	24.9	0.0	72.3	-	-	-	-
M54 J2	-	-	0	0	0	47.3	24.9	0.0	72.3	-	-	-	-
1/2+1/1	1038	1038	-	-	-	4.8	1.0	-	5.8	19.9	8.0	1.0	8.9
1/3	489	489	-	-	-	2.2	0.8	-	2.9	21.7	6.9	0.8	7.7
2/2+2/1	980	980	-	-	-	3.0	0.6	-	3.7	13.4	6.1	0.6	6.7
2/3+2/4	1403	1403	-	-	-	5.0	2.7	-	7.7	19.7	11.5	2.7	14.2
3/2+3/1	1166	1166	-	-	-	3.4	0.9	-	4.3	13.4	8.5	0.9	9.4
3/3+3/4	1101	1101	-	-	-	3.6	3.0	-	6.6	21.7	13.6	3.0	16.6
4/1	294	294	-	-	-	1.4	0.4	-	1.8	21.9	4.1	0.4	4.5
4/2+4/3	825	825	-	-	-	4.1	1.2	-	5.3	23.3	7.7	1.2	8.8
5/1	630	630	-	-	-	1.7	2.3	-	4.0	23.1	5.6	2.3	8.0
5/2	477	477	-	-	-	1.5	0.7	-	2.2	16.7	6.9	0.7	7.6
5/3	383	383	-	-	-	0.6	0.5	-	1.1	10.0	1.3	0.5	1.8
6/1	558	558	-	-	-	2.1	2.0	-	4.1	26.2	7.4	2.0	9.4
6/2	620	620	-	-	-	2.3	2.3	-	4.6	26.6	8.1	2.3	10.4
6/3	608	608	-	-	-	1.4	2.3	-	3.7	22.0	3.0	2.3	5.3
7/1	553	553	-	-	-	0.7	0.5	-	1.2	8.1	2.3	0.5	2.8
7/2	879	879	-	-	-	3.4	1.6	-	5.0	20.7	14.3	1.6	15.9
7/3	830	830	-	-	-	1.2	1.4	-	2.5	11.0	2.8	1.4	4.2
8/1	474	474	-	-	-	0.7	0.4	-	1.1	8.4	4.4	0.4	4.8
8/2	861	861	-	-	-	3.2	0.0	-	3.2	13.4	15.0	0.0	15.0
8/3	183	183	-	-	-	0.3	0.1	-	0.4	8.3	1.0	0.1	1.1
8/4	371	371	-	-	-	0.7	0.3	-	0.9	9.2	1.5	0.3	1.7
9/1	847	847	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	645	645	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	971	971	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	955	955	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/1	1099	1099	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	988	988	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	891	891	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	900	900	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
			C1	Stream: 1 PRC for Signalled Lanes (%)	17.6	Total Delay for Signalled Lanes (pcuHr):			15.94	Cycle Time (s):		64	
			C1	Stream: 2 PRC for Signalled Lanes (%)	8.0	Total Delay for Signalled Lanes (pcuHr):			14.37	Cycle Time (s):		64	
			C2	Stream: 1 PRC for Signalled Lanes (%)	6.3	Total Delay for Signalled Lanes (pcuHr):			18.64	Cycle Time (s):		64	
			C2	Stream: 2 PRC for Signalled Lanes (%)	4.4	Total Delay for Signalled Lanes (pcuHr):			23.31	Cycle Time (s):		64	
				PRC Over All Lanes (%)	4.4	Total Delay Over All Lanes(pcuHr):			72.25				

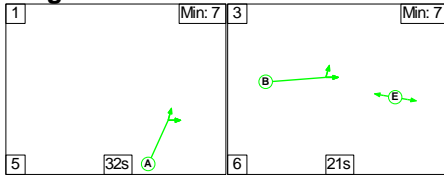
Full Input Data And Results

Scenario 4: '2038 + New Link Roads' (FG18: '2038 Base + ROF Link and M54-M6 Link PM', Plan 1: 'Network Control Plan 1')

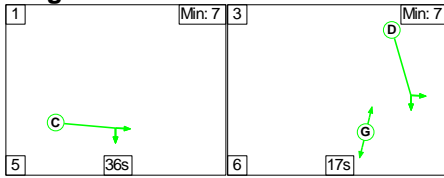
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

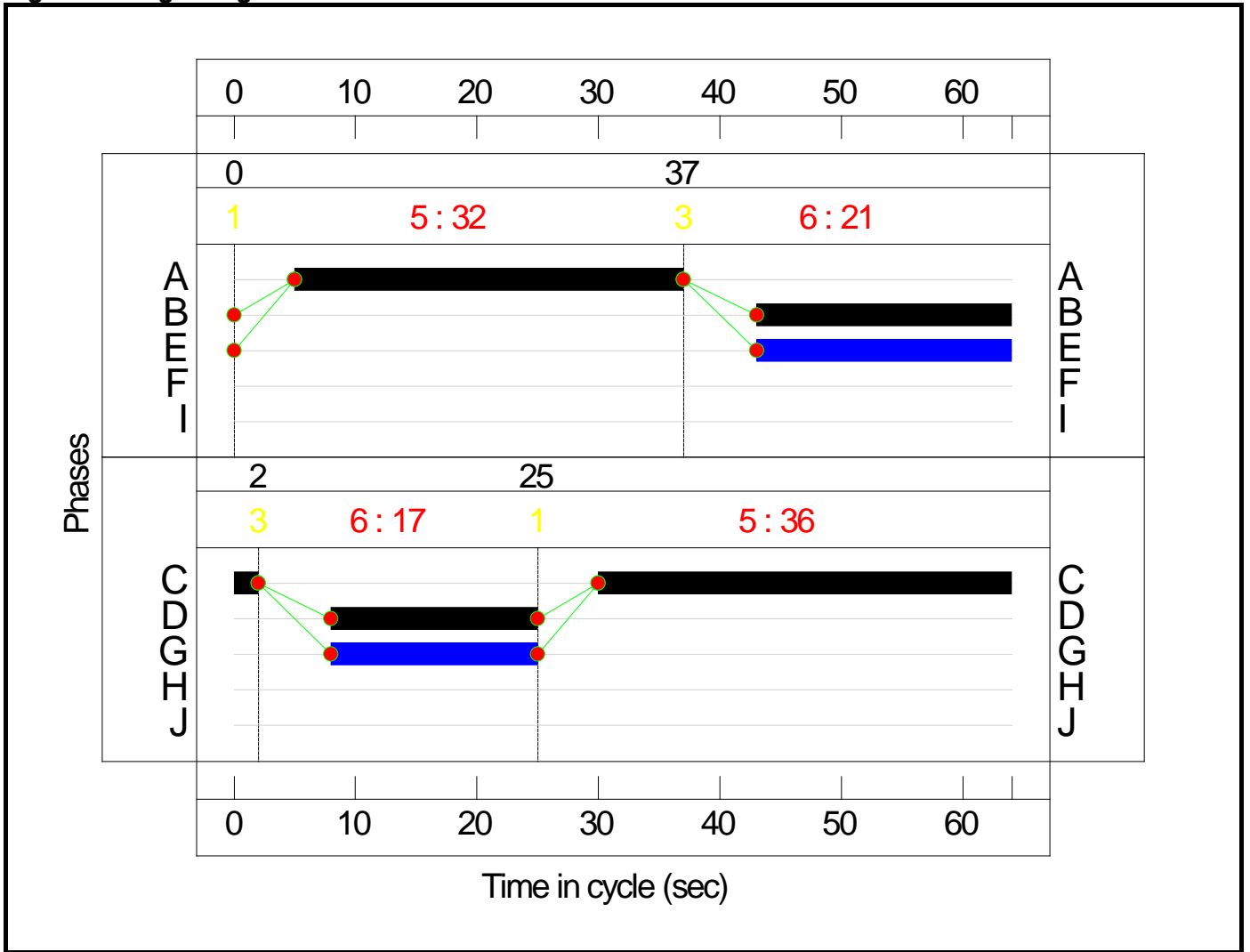
Stage Stream: 1

Stage	1	3
Duration	32	21
Change Point	0	37

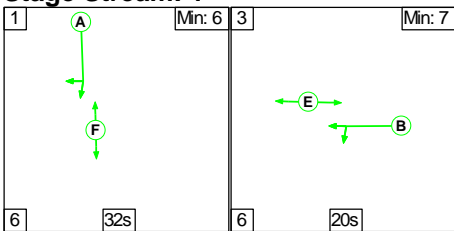
Stage Stream: 2

Stage	1	3
Duration	36	17
Change Point	25	2

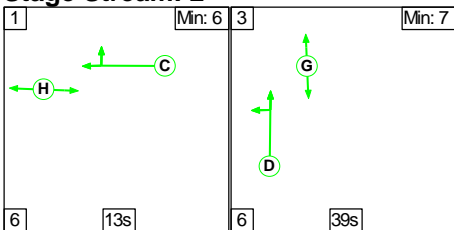
Signal Timings Diagram



C2
Stage Sequence Diagram
Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

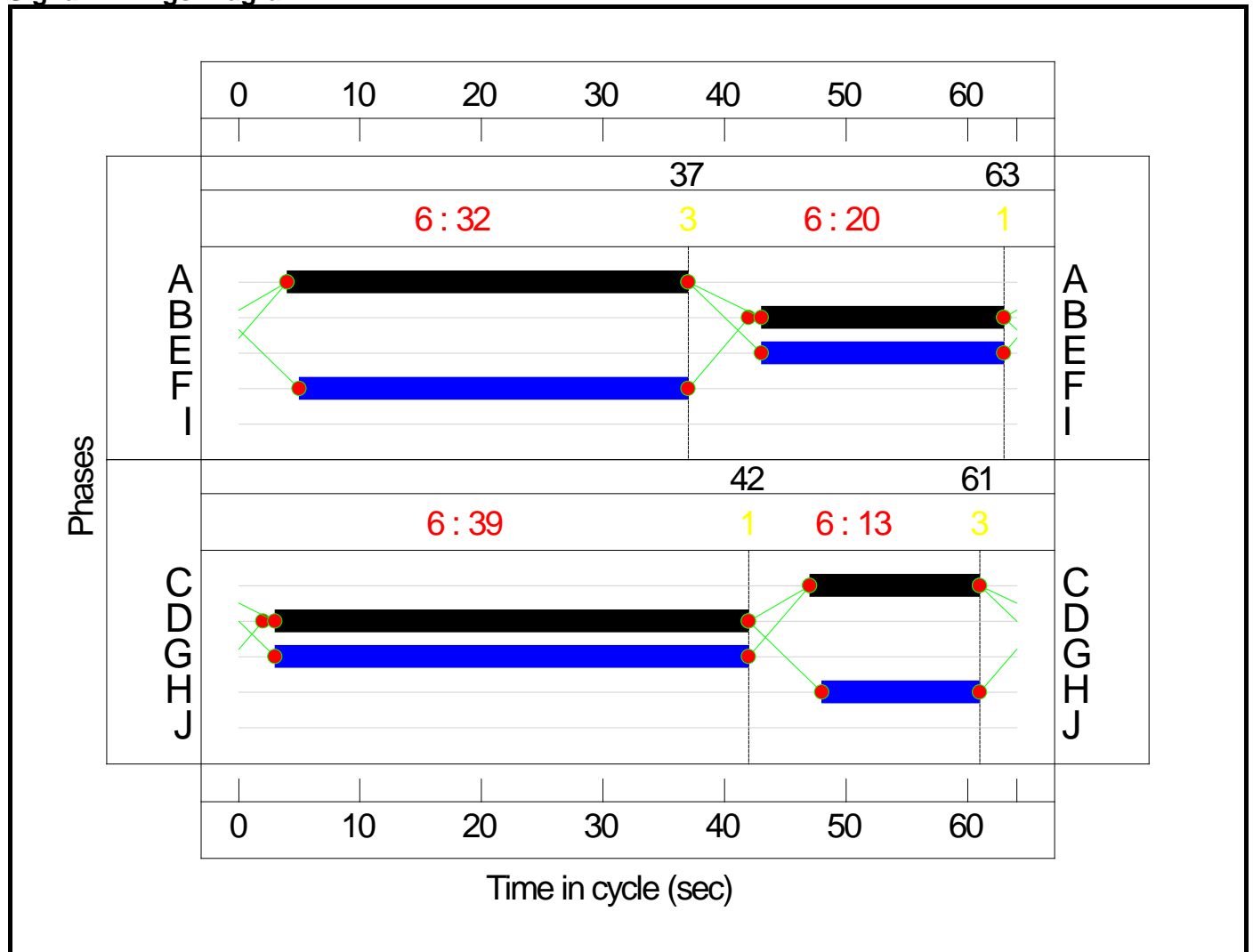
Stage Stream: 1

Stage	1	3
Duration	32	20
Change Point	63	37

Stage Stream: 2

Stage	1	3
Duration	13	39
Change Point	42	61


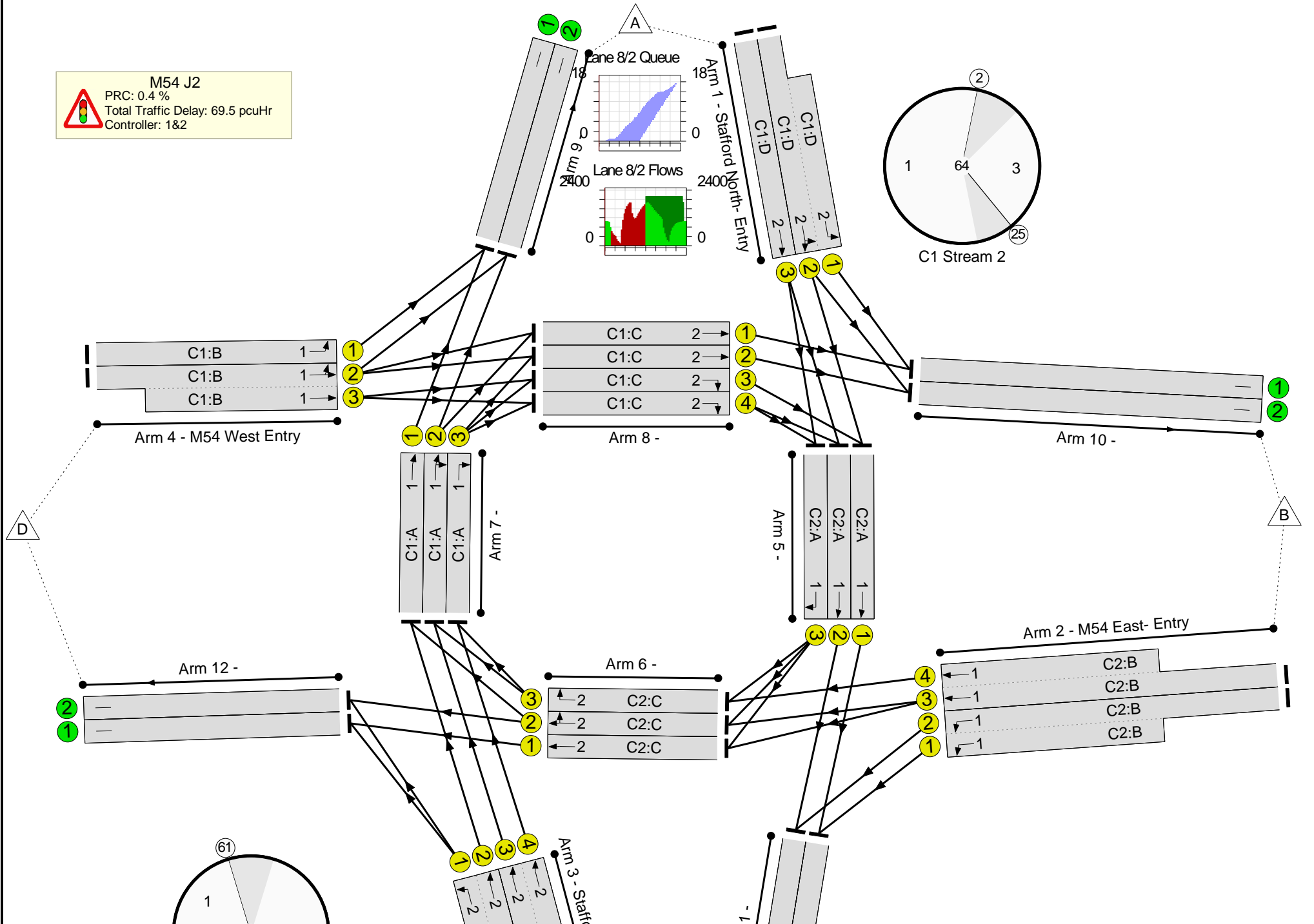
Signal Timings Diagram



Full Input Data And Results
Network Layout Diagram

Full Input Data And Results

M54 J2
 PRC: 0.4 %
 Total Traffic Delay: 69.5 pcuHr
 Controller: 1&2

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	89.6%
M54 J2	-	-	N/A	-	-		-	-	-	-	-	-	89.6%
1/2+1/1	Stafford North-Entry Ahead Left	U	1:2	N/A	C1:D		1	17	-	1017	2187:2013	615+566	86.0 : 86.2%
1/3	Stafford North-Entry Ahead	U	1:2	N/A	C1:D		1	17	-	445	2166	609	73.0%
2/2+2/1	M54 East- Entry Left	U	2:1	N/A	C2:B		1	20	-	845	2166:1989	711+653	61.9 : 62.1%
2/3+2/4	M54 East- Entry Ahead	U	2:1	N/A	C2:B		1	20	-	637	2176:2176	714+449	54.8 : 54.8%
3/2+3/1	Stafford Rd South- Entry Ahead Left	U	2:2	N/A	C2:D		1	39	-	1138	2176:2012	1143+955	54.2 : 54.2%
3/3+3/4	Stafford Rd South- Entry Ahead	U	2:2	N/A	C2:D		1	39	-	1514	2176:2176	724+978	89.0 : 89.0%
4/1	M54 West Entry Left	U	1:1	N/A	C1:B		1	21	-	248	2009	691	35.9%
4/2+4/3	M54 West Entry Ahead Left	U	1:1	N/A	C1:B		1	21	-	1193	2166:2166	745+745	83.4 : 76.8%
5/1	Ahead	U	2:1	N/A	C2:A		1	33	-	626	2032	1079	58.0%
5/2	Ahead	U	2:1	N/A	C2:A		1	33	-	532	2176	1156	46.0%
5/3	Right	U	2:1	N/A	C2:A		1	33	-	303	2134	1134	26.7%
6/1	Ahead	U	2:2	N/A	C2:C		1	14	-	323	2022	474	68.2%
6/2	Right Ahead	U	2:2	N/A	C2:C		1	14	-	369	2187	513	72.0%
6/3	Right	U	2:2	N/A	C2:C		1	14	-	248	2134	500	49.6%
7/1	Ahead	U	1:1	N/A	C1:A		1	32	-	756	2022	1043	72.5%
7/2	Right Ahead	U	1:1	N/A	C1:A		1	32	-	892	2162	1115	80.0%
7/3	Right	U	1:1	N/A	C1:A		1	32	-	870	2124	1095	79.4%
8/1	Ahead	U	1:2	N/A	C1:C		1	36	-	965	2134	1234	78.2%
8/2	Ahead	U	1:2	N/A	C1:C		1	36	-	1106	2134	1234	89.6%

Full Input Data And Results

8/3	Right	U	1:2	N/A	C1:C		1	36	-	246	2134	1234	19.9%
8/4	Right	U	1:2	N/A	C1:C		1	36	-	390	2134	1234	31.6%
9/1		U	N/A	N/A	-		-	-	-	1004	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	248	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1453	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1255	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	1031	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	972	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	582	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	492	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	0	0	0	45.6	23.9	0.0	69.5	-	-	-	-
M54 J2	-	-	0	0	0	45.6	23.9	0.0	69.5	-	-	-	-
1/2+1/1	1017	1017	-	-	-	6.2	3.0	-	9.2	32.4	8.8	3.0	11.8
1/3	445	445	-	-	-	2.6	1.3	-	3.9	31.6	7.0	1.3	8.4
2/2+2/1	845	845	-	-	-	4.3	0.8	-	5.1	21.6	6.5	0.8	7.3
2/3+2/4	637	637	-	-	-	3.0	0.6	-	3.6	20.5	5.6	0.6	6.3
3/2+3/1	1138	1138	-	-	-	2.0	0.6	-	2.5	8.1	5.7	0.6	6.3
3/3+3/4	1514	1514	-	-	-	3.1	3.9	-	6.9	16.5	13.5	3.9	17.4
4/1	248	248	-	-	-	1.1	0.3	-	1.4	19.8	3.2	0.3	3.5
4/2+4/3	1193	1193	-	-	-	6.3	2.0	-	8.3	25.0	10.0	2.0	12.0
5/1	626	626	-	-	-	0.6	0.7	-	1.3	7.6	3.6	0.7	4.3
5/2	532	532	-	-	-	1.0	0.4	-	1.4	9.6	6.2	0.4	6.7
5/3	303	303	-	-	-	0.1	0.2	-	0.3	3.2	0.3	0.2	0.4
6/1	323	323	-	-	-	1.1	1.1	-	2.2	24.5	4.6	1.1	5.6
6/2	369	369	-	-	-	1.2	1.3	-	2.5	24.3	5.1	1.3	6.3
6/3	248	248	-	-	-	0.4	0.5	-	0.9	13.5	0.7	0.5	1.1
7/1	756	756	-	-	-	1.6	1.3	-	2.9	13.7	6.3	1.3	7.6
7/2	892	892	-	-	-	2.4	2.0	-	4.3	17.4	12.9	2.0	14.9
7/3	870	870	-	-	-	1.9	1.9	-	3.8	15.6	4.7	1.9	6.6
8/1	965	965	-	-	-	2.6	1.8	-	4.3	16.2	12.5	1.8	14.3
8/2	1106	1106	-	-	-	3.7	0.0	-	3.7	12.1	17.4	0.0	17.4
8/3	246	246	-	-	-	0.2	0.1	-	0.3	4.9	0.6	0.1	0.7
8/4	390	390	-	-	-	0.4	0.2	-	0.6	5.6	1.3	0.2	1.6
9/1	1004	1004	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	248	248	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1453	1453	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1255	1255	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/1	1031	1031	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	972	972	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	582	582	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	492	492	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
			C1	Stream: 1 PRC for Signalled Lanes (%)	7.9	Total Delay for Signalled Lanes (pcuHr):			20.64	Cycle Time (s):		64	
			C1	Stream: 2 PRC for Signalled Lanes (%)	0.4	Total Delay for Signalled Lanes (pcuHr):			22.06	Cycle Time (s):		64	
			C2	Stream: 1 PRC for Signalled Lanes (%)	45.0	Total Delay for Signalled Lanes (pcuHr):			11.71	Cycle Time (s):		64	
			C2	Stream: 2 PRC for Signalled Lanes (%)	1.1	Total Delay for Signalled Lanes (pcuHr):			15.12	Cycle Time (s):		64	
			PRC Over All Lanes (%)		0.4	Total Delay Over All Lanes(pcuHr):			69.52				

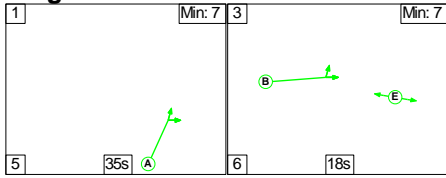
Full Input Data And Results

Scenario 5: '2038 + New Link Roads + Cumulative Dev' (FG23: '2038 + Reassignment + Cumulative AM', Plan 1: 'Network Control Plan 1')

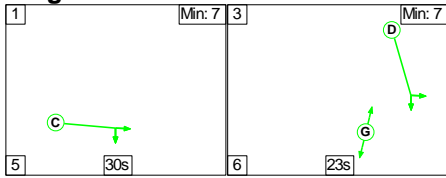
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

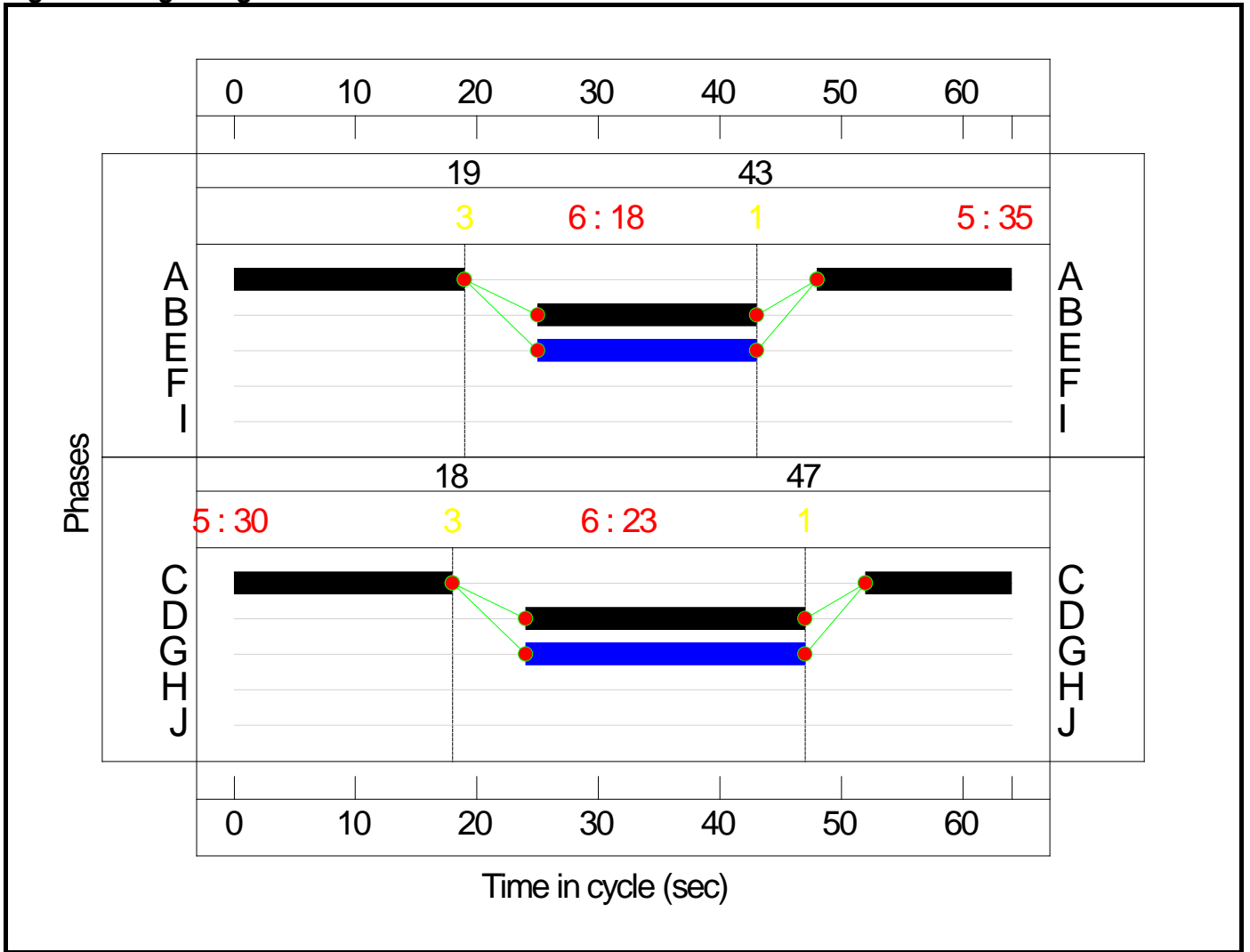
Stage Stream: 1

Stage	1	3
Duration	35	18
Change Point	43	19

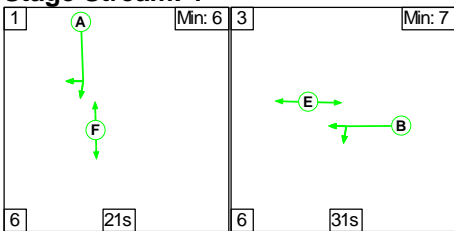
Stage Stream: 2

Stage	1	3
Duration	30	23
Change Point	47	18

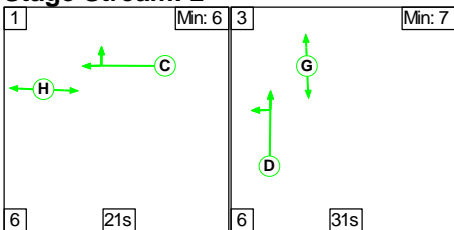
Signal Timings Diagram



C2
Stage Sequence Diagram
Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

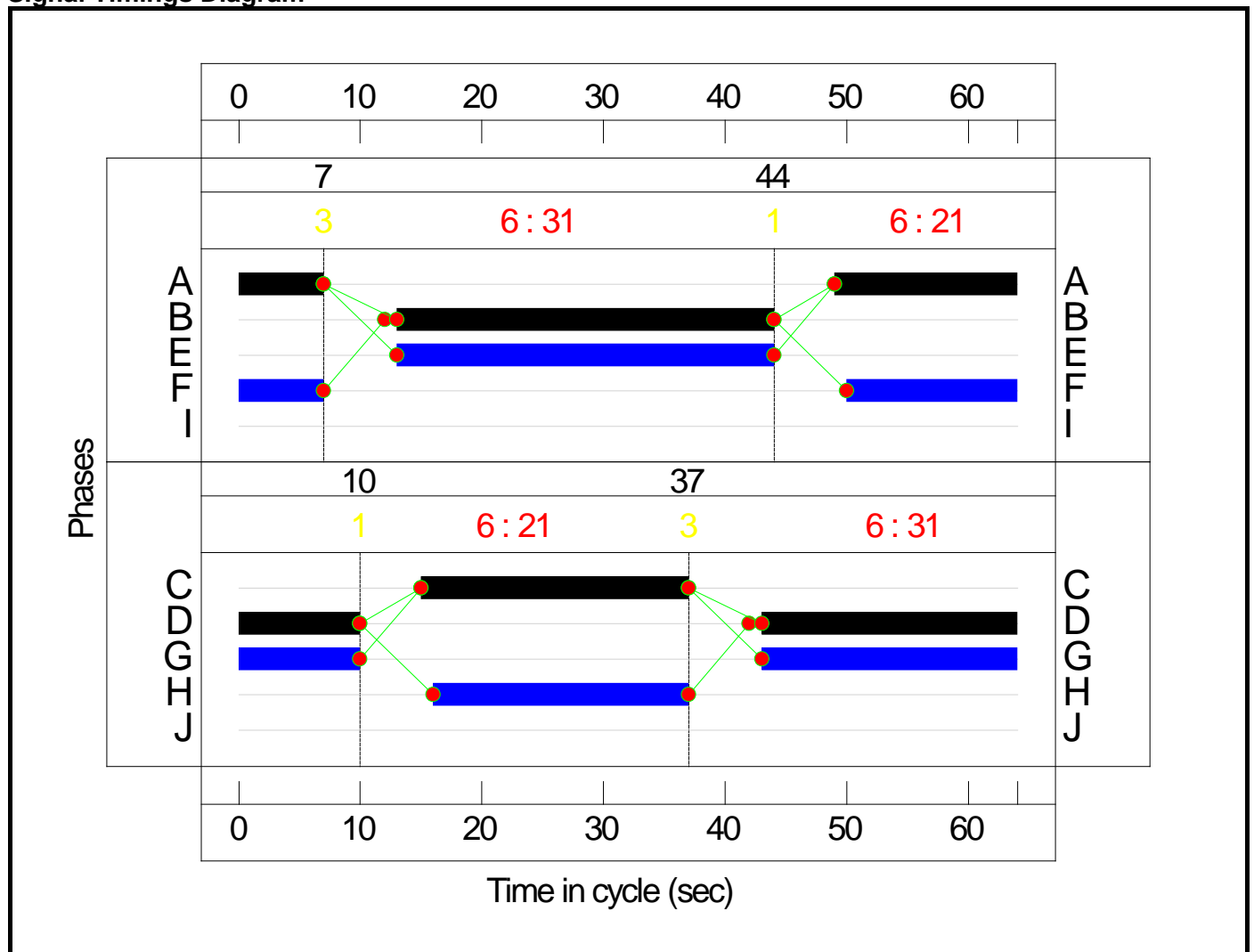
Stage Stream: 1

Stage	1	3
Duration	21	31
Change Point	44	7

Stage Stream: 2

Stage	1	3
Duration	21	31
Change Point	10	37


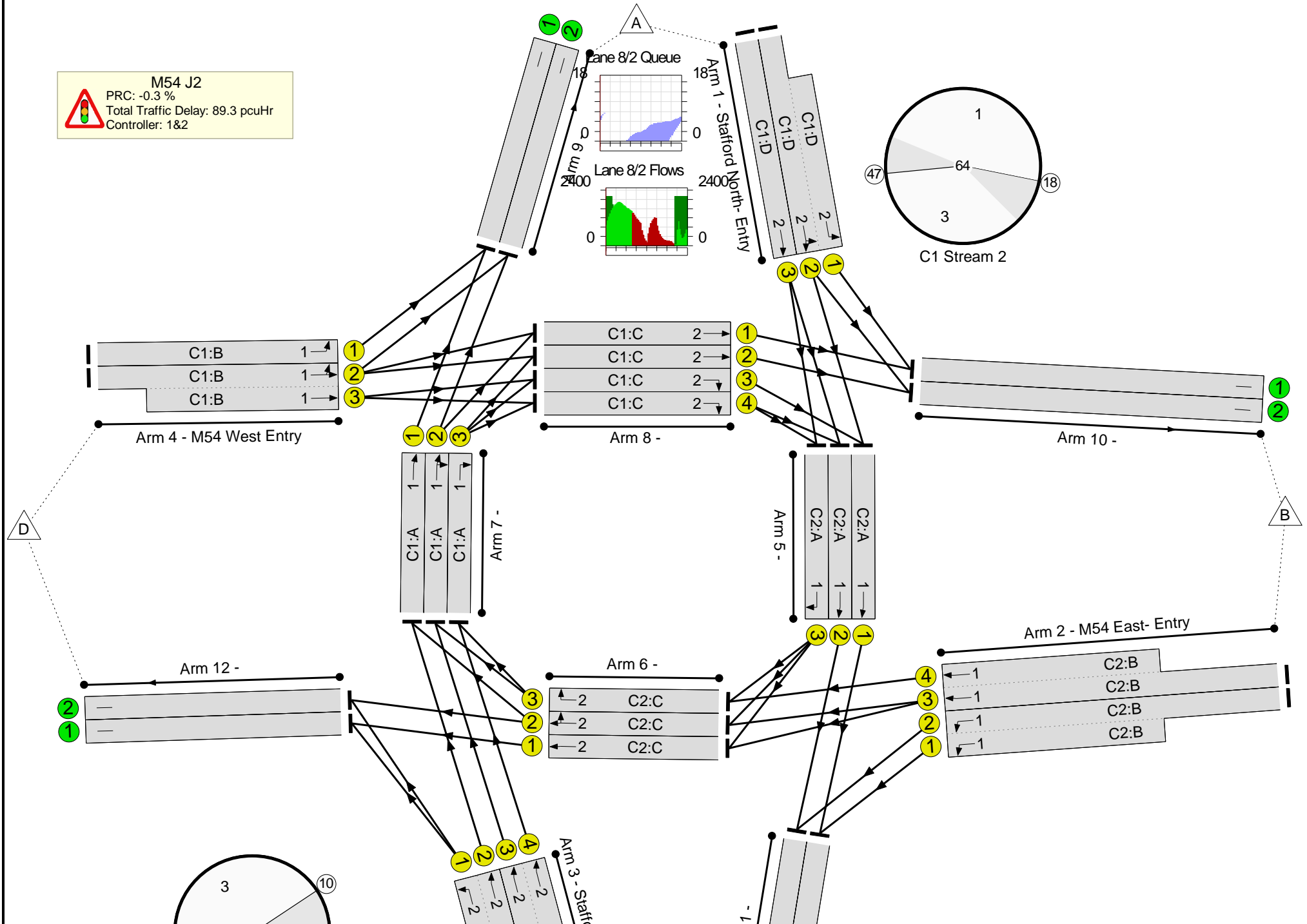
Signal Timings Diagram



Full Input Data And Results
Network Layout Diagram

Full Input Data And Results

M54 J2
 PRC: -0.3 %
 Total Traffic Delay: 89.3 pcuHr
 Controller: 1&2

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	90.3%
M54 J2	-	-	N/A	-	-		-	-	-	-	-	-	90.3%
1/2+1/1	Stafford North-Entry Ahead Left	U	1:2	N/A	C1:D		1	23	-	1173	2187:2013	820+755	75.2 : 73.7%
1/3	Stafford North-Entry Ahead	U	1:2	N/A	C1:D		1	23	-	666	2166	812	82.0%
2/2+2/1	M54 East- Entry Left	U	2:1	N/A	C2:B		1	31	-	998	2166:1989	940+864	55.3 : 55.3%
2/3+2/4	M54 East- Entry Ahead	U	2:1	N/A	C2:B		1	31	-	1482	2176:2176	968+673	90.3 : 90.3%
3/2+3/1	Stafford Rd South- Entry Ahead Left	U	2:2	N/A	C2:D		1	31	-	1303	2176:2012	838+1006	70.7 : 70.7%
3/3+3/4	Stafford Rd South- Entry Ahead	U	2:2	N/A	C2:D		1	31	-	1158	2176:2176	390+901	89.7 : 89.7%
4/1	M54 West Entry Left	U	1:1	N/A	C1:B		1	18	-	345	2009	596	57.8%
4/2+4/3	M54 West Entry Ahead Left	U	1:1	N/A	C1:B		1	18	-	802	2166:2166	358+643	80.1 : 80.1%
5/1	Ahead	U	2:1	N/A	C2:A		1	22	-	650	2032	730	89.0%
5/2	Ahead	U	2:1	N/A	C2:A		1	22	-	632	2176	782	80.8%
5/3	Right	U	2:1	N/A	C2:A		1	22	-	405	2134	767	52.8%
6/1	Ahead	U	2:2	N/A	C2:C		1	22	-	608	2022	727	83.7%
6/2	Right Ahead	U	2:2	N/A	C2:C		1	22	-	669	2187	786	85.1%
6/3	Right	U	2:2	N/A	C2:C		1	22	-	610	2134	767	79.5%
7/1	Ahead	U	1:1	N/A	C1:A		1	35	-	723	2022	1137	63.6%
7/2	Right Ahead	U	1:1	N/A	C1:A		1	35	-	960	2162	1216	78.9%
7/3	Right	U	1:1	N/A	C1:A		1	35	-	808	2124	1195	67.6%
8/1	Ahead	U	1:2	N/A	C1:C		1	30	-	463	2134	1034	44.8%
8/2	Ahead	U	1:2	N/A	C1:C		1	30	-	929	2134	1034	89.9%

Full Input Data And Results

8/3	Right	U	1:2	N/A	C1:C		1	30	-	197	2134	1034	19.1%
8/4	Right	U	1:2	N/A	C1:C		1	30	-	371	2134	1034	35.9%
9/1		U	N/A	N/A	-		-	-	-	1068	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	610	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1019	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1093	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	1128	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	1152	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	963	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	894	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	0	0	0	54.7	34.6	0.0	89.3	-	-	-	-
M54 J2	-	-	0	0	0	54.7	34.6	0.0	89.3	-	-	-	-
1/2+1/1	1173	1173	-	-	-	5.7	1.4	-	7.1	21.8	9.4	1.4	10.9
1/3	666	666	-	-	-	3.3	2.2	-	5.5	30.0	10.5	2.2	12.8
2/2+2/1	998	998	-	-	-	2.9	0.6	-	3.5	12.8	6.1	0.6	6.7
2/3+2/4	1482	1482	-	-	-	5.1	4.4	-	9.5	23.1	12.9	4.4	17.3
3/2+3/1	1303	1303	-	-	-	4.3	1.2	-	5.5	15.1	9.7	1.2	10.9
3/3+3/4	1158	1158	-	-	-	4.0	4.1	-	8.1	25.2	14.2	4.1	18.3
4/1	345	345	-	-	-	1.8	0.7	-	2.5	26.2	5.2	0.7	5.9
4/2+4/3	802	802	-	-	-	4.4	2.0	-	6.4	28.7	8.4	2.0	10.4
5/1	650	650	-	-	-	1.7	3.7	-	5.4	30.0	9.7	3.7	13.4
5/2	632	632	-	-	-	2.2	2.1	-	4.2	24.1	7.3	2.1	9.4
5/3	405	405	-	-	-	1.0	0.6	-	1.6	13.8	6.7	0.6	7.2
6/1	608	608	-	-	-	2.7	2.5	-	5.1	30.4	8.6	2.5	11.0
6/2	669	669	-	-	-	2.9	2.7	-	5.6	30.2	9.3	2.7	12.0
6/3	610	610	-	-	-	1.3	1.9	-	3.2	19.1	2.6	1.9	4.5
7/1	723	723	-	-	-	0.7	0.9	-	1.6	7.9	3.0	0.9	3.9
7/2	960	960	-	-	-	4.1	1.8	-	5.9	22.3	15.7	1.8	17.5
7/3	808	808	-	-	-	0.4	1.0	-	1.5	6.6	1.1	1.0	2.2
8/1	463	463	-	-	-	1.3	0.4	-	1.7	13.2	3.9	0.4	4.3
8/2	929	929	-	-	-	2.5	0.0	-	2.5	9.8	8.9	0.0	8.9
8/3	197	197	-	-	-	0.8	0.1	-	0.9	15.9	3.4	0.1	3.5
8/4	371	371	-	-	-	1.6	0.3	-	1.8	17.9	6.0	0.3	6.3
9/1	1068	1068	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	610	610	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1019	1019	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1093	1093	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/1	1128	1128	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1152	1152	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	963	963	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	894	894	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
			C1	Stream: 1 PRC for Signalled Lanes (%)	12.4	Total Delay for Signalled Lanes (pcuHr):			17.91	Cycle Time (s):		64	
			C1	Stream: 2 PRC for Signalled Lanes (%)	0.1	Total Delay for Signalled Lanes (pcuHr):			19.59	Cycle Time (s):		64	
			C2	Stream: 1 PRC for Signalled Lanes (%)	-0.3	Total Delay for Signalled Lanes (pcuHr):			24.26	Cycle Time (s):		64	
			C2	Stream: 2 PRC for Signalled Lanes (%)	0.3	Total Delay for Signalled Lanes (pcuHr):			27.53	Cycle Time (s):		64	
				PRC Over All Lanes (%)	-0.3	Total Delay Over All Lanes(pcuHr):			89.30				

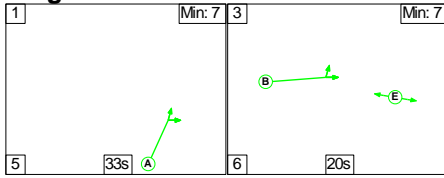
Full Input Data And Results

Scenario 6: '2038 + New Link Roads + Cumulative Dev' (FG24: '2038 + Reassignment + Cumulative PM', Plan 1: 'Network Control Plan 1')

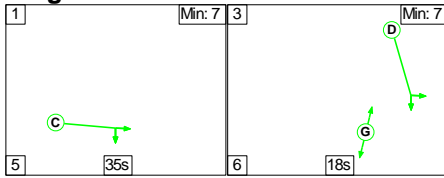
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

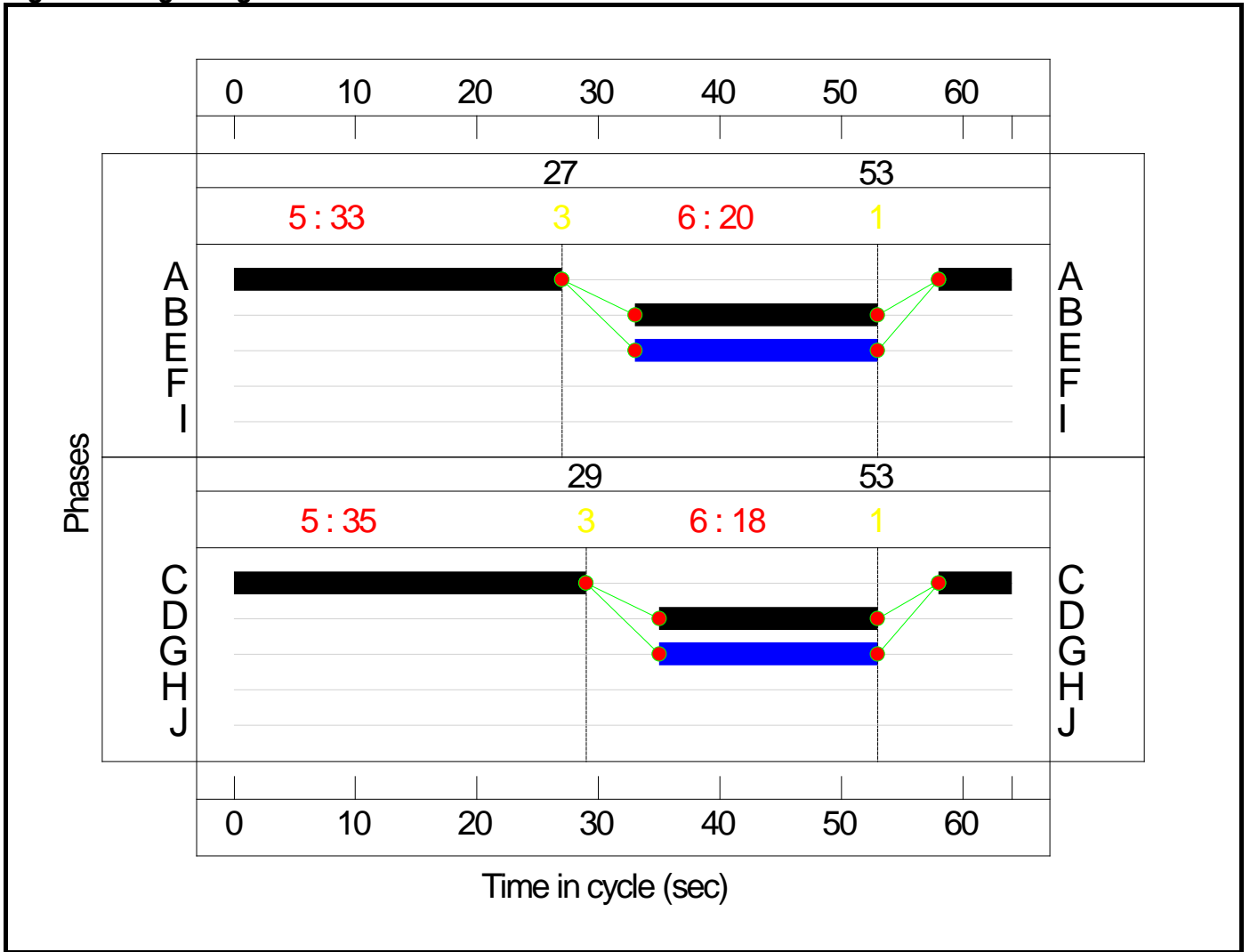
Stage Stream: 1

Stage	1	3
Duration	33	20
Change Point	53	27

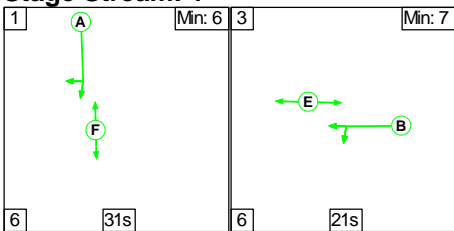
Stage Stream: 2

Stage	1	3
Duration	35	18
Change Point	53	29

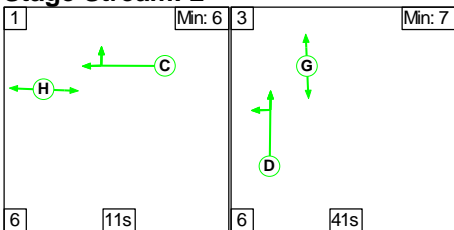
Signal Timings Diagram



C2
Stage Sequence Diagram
Stage Stream: 1



Stage Stream: 2



Stage Timings

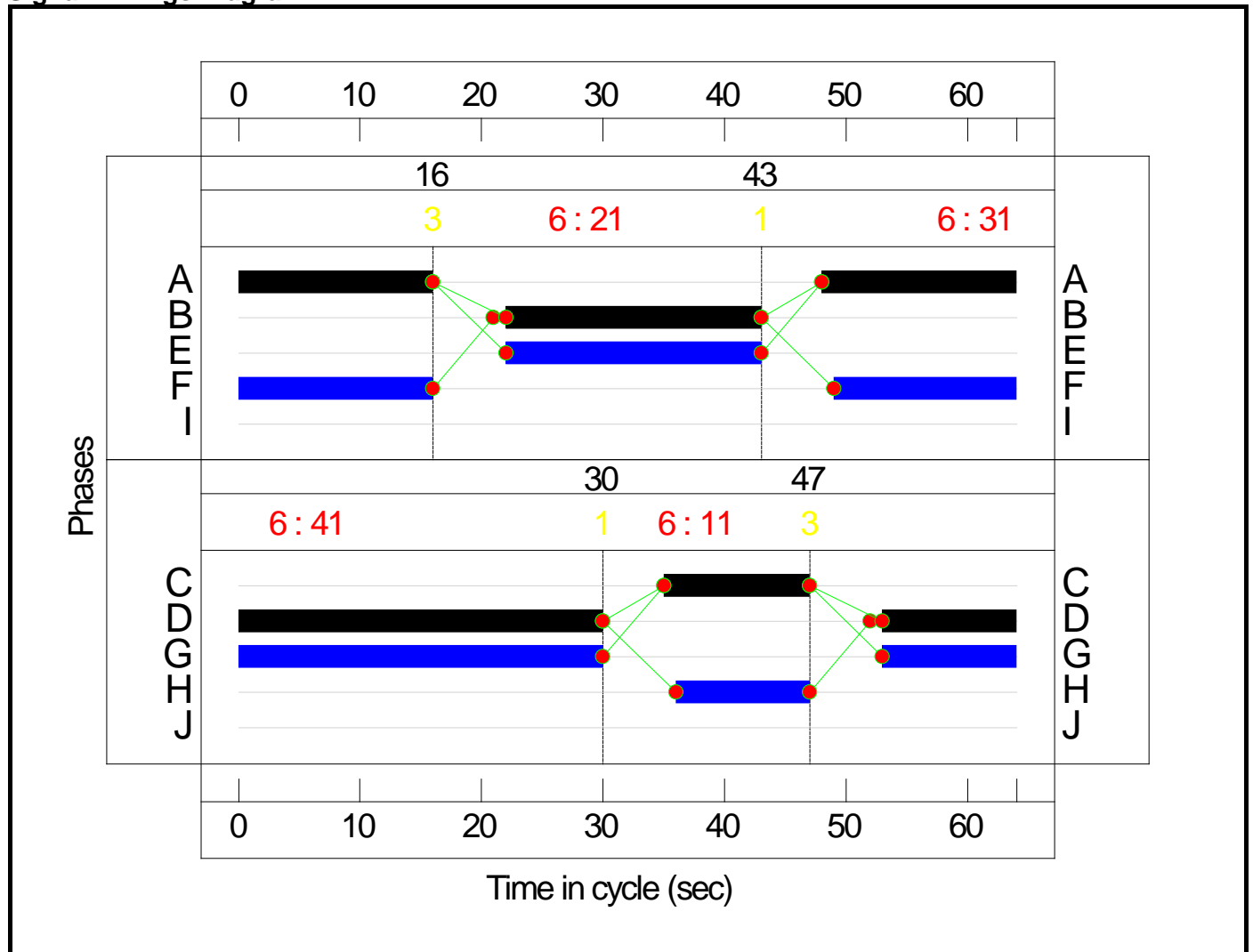
Stage Stream: 1

Stage	1	3
Duration	31	21
Change Point	43	16

Stage Stream: 2

Stage	1	3
Duration	11	41
Change Point	30	47


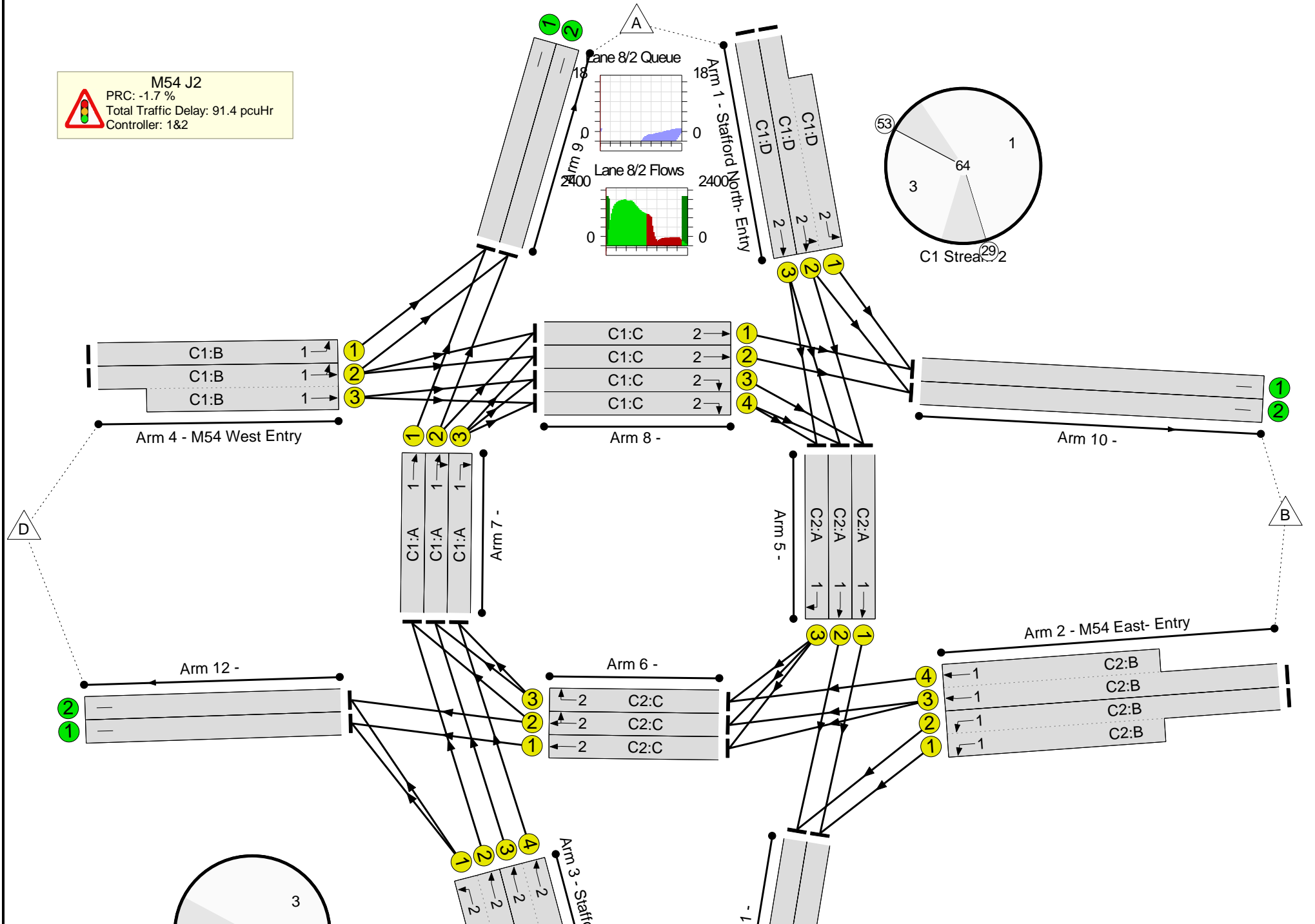
Signal Timings Diagram



Full Input Data And Results
Network Layout Diagram

Full Input Data And Results

M54 J2
 PRC: -1.7 %
 Total Traffic Delay: 91.4 pcuHr
 Controller: 1&2

Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	91.5%
M54 J2	-	-	N/A	-	-		-	-	-	-	-	-	91.5%
1/2+1/1	Stafford North-Entry Ahead Left	U	1:2	N/A	C1:D		1	18	-	1140	2187:2013	649+598	91.5 : 91.4%
1/3	Stafford North-Entry Ahead	U	1:2	N/A	C1:D		1	18	-	545	2166	643	84.8%
2/2+2/1	M54 East- Entry Left	U	2:1	N/A	C2:B		1	21	-	900	2166:1989	745+684	63.0 : 63.0%
2/3+2/4	M54 East- Entry Ahead	U	2:1	N/A	C2:B		1	21	-	764	2176:2176	748+674	53.7 : 53.7%
3/2+3/1	Stafford Rd South- Entry Ahead Left	U	2:2	N/A	C2:D		1	41	-	1304	2176:2012	1235+870	61.9 : 61.9%
3/3+3/4	Stafford Rd South- Entry Ahead	U	2:2	N/A	C2:D		1	41	-	1540	2176:2176	616+1077	91.0 : 91.0%
4/1	M54 West Entry Left	U	1:1	N/A	C1:B		1	20	-	270	2009	659	41.0%
4/2+4/3	M54 West Entry Ahead Left	U	1:1	N/A	C1:B		1	20	-	1236	2166:2166	711+711	87.4 : 86.5%
5/1	Ahead	U	2:1	N/A	C2:A		1	32	-	698	2032	1048	66.6%
5/2	Ahead	U	2:1	N/A	C2:A		1	32	-	610	2176	1122	54.4%
5/3	Right	U	2:1	N/A	C2:A		1	32	-	320	2134	1100	29.1%
6/1	Ahead	U	2:2	N/A	C2:C		1	12	-	337	2022	411	82.1%
6/2	Right Ahead	U	2:2	N/A	C2:C		1	12	-	377	2187	444	84.9%
6/3	Right	U	2:2	N/A	C2:C		1	12	-	370	2134	433	85.4%
7/1	Ahead	U	1:1	N/A	C1:A		1	33	-	906	2022	1074	84.3%
7/2	Right Ahead	U	1:1	N/A	C1:A		1	33	-	930	2162	1149	81.0%
7/3	Right	U	1:1	N/A	C1:A		1	33	-	980	2124	1128	86.9%
8/1	Ahead	U	1:2	N/A	C1:C		1	35	-	1081	2134	1200	90.1%
8/2	Ahead	U	1:2	N/A	C1:C		1	35	-	1016	2134	1200	84.6%

Full Input Data And Results

8/3	Right	U	1:2	N/A	C1:C		1	35	-	294	2134	1200	24.5%
8/4	Right	U	1:2	N/A	C1:C		1	35	-	385	2134	1200	32.1%
9/1		U	N/A	N/A	-		-	-	-	1176	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	370	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1627	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1206	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	1129	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	1079	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	606	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	506	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	0	0	0	51.6	39.8	0.0	91.4	-	-	-	-
M54 J2	-	-	0	0	0	51.6	39.8	0.0	91.4	-	-	-	-
1/2+1/1	1140	1140	-	-	-	6.9	4.9	-	11.8	37.1	10.1	4.9	15.0
1/3	545	545	-	-	-	3.2	2.6	-	5.8	38.6	9.1	2.6	11.7
2/2+2/1	900	900	-	-	-	4.4	0.8	-	5.2	21.0	6.9	0.8	7.8
2/3+2/4	764	764	-	-	-	3.6	0.6	-	4.1	19.5	5.7	0.6	6.3
3/2+3/1	1304	1304	-	-	-	2.0	0.8	-	2.8	7.8	7.0	0.8	7.8
3/3+3/4	1540	1540	-	-	-	2.9	4.7	-	7.6	17.8	16.1	4.7	20.9
4/1	270	270	-	-	-	1.3	0.3	-	1.6	21.3	3.7	0.3	4.0
4/2+4/3	1236	1236	-	-	-	6.9	3.2	-	10.2	29.6	10.4	3.2	13.6
5/1	698	698	-	-	-	0.4	1.0	-	1.4	7.1	2.9	1.0	3.9
5/2	610	610	-	-	-	0.7	0.6	-	1.3	7.4	2.7	0.6	3.3
5/3	320	320	-	-	-	0.0	0.2	-	0.2	2.7	1.2	0.2	1.4
6/1	337	337	-	-	-	2.7	2.2	-	4.9	52.0	5.9	2.2	8.0
6/2	377	377	-	-	-	1.8	2.6	-	4.4	41.6	6.5	2.6	9.1
6/3	370	370	-	-	-	0.9	2.7	-	3.6	35.0	6.3	2.7	9.0
7/1	906	906	-	-	-	2.1	2.6	-	4.8	18.9	14.0	2.6	16.7
7/2	930	930	-	-	-	2.9	2.1	-	5.0	19.5	14.4	2.1	16.5
7/3	980	980	-	-	-	1.9	3.2	-	5.1	18.7	8.3	3.2	11.4
8/1	1081	1081	-	-	-	3.5	4.2	-	7.7	25.8	13.7	4.2	18.0
8/2	1016	1016	-	-	-	1.3	0.0	-	1.3	4.4	3.9	0.0	3.9
8/3	294	294	-	-	-	0.9	0.2	-	1.1	13.3	4.9	0.2	5.1
8/4	385	385	-	-	-	1.3	0.2	-	1.5	14.2	6.2	0.2	6.5
9/1	1176	1176	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	370	370	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1627	1627	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1206	1206	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/1	1129	1129	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1079	1079	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	606	606	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	506	506	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
			C1	Stream: 1 PRC for Signalled Lanes (%)	3.0	Total Delay for Signalled Lanes (pcuHr):			26.64	Cycle Time (s):		64	
			C1	Stream: 2 PRC for Signalled Lanes (%)	-1.7	Total Delay for Signalled Lanes (pcuHr):			29.20	Cycle Time (s):		64	
			C2	Stream: 1 PRC for Signalled Lanes (%)	35.1	Total Delay for Signalled Lanes (pcuHr):			12.26	Cycle Time (s):		64	
			C2	Stream: 2 PRC for Signalled Lanes (%)	-1.1	Total Delay for Signalled Lanes (pcuHr):			23.27	Cycle Time (s):		64	
			PRC Over All Lanes (%)		-1.7	Total Delay Over All Lanes(pcuHr):			91.37				

APPENDIX D

M54 Junction 2 Merge/ Diverge Assessment

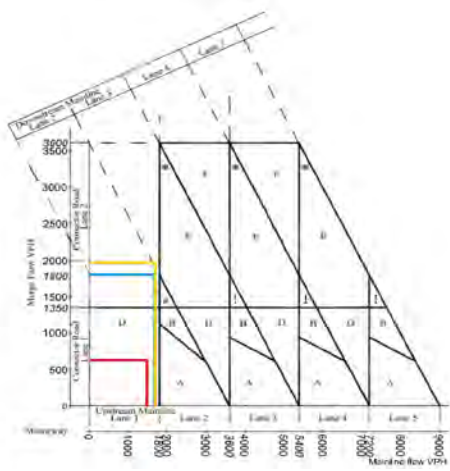
M54 Junction 2 EB Merge

2022	AM	PM
EB Merge	687	900
Upstream Mainline	1499	1585

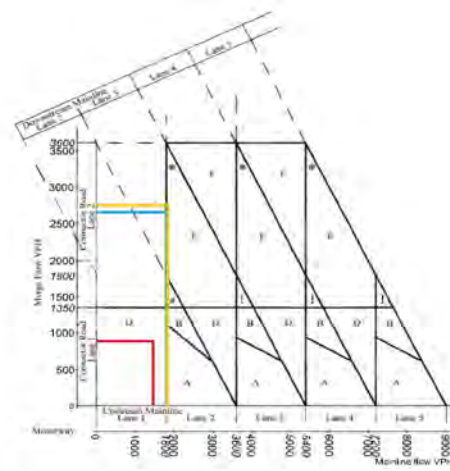
2038 Baseline	AM	PM
EB Merge	1791	2600
Upstream Mainline	1708	1802

2038 Baseline + DEV	AM	PM
EB Merge	1964	2720
Upstream Mainline	1708	1802

AM Peak



PM Peak



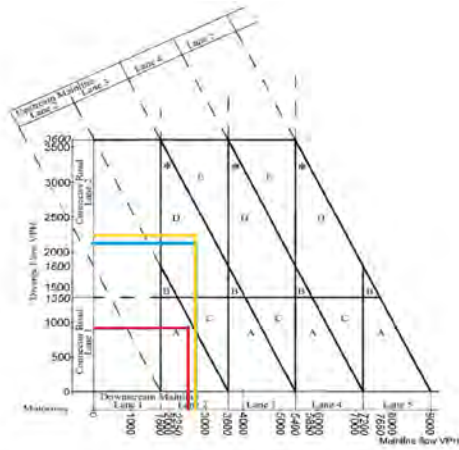
M54 Junction 2 WB Diverge

2022	AM	PM
WB Diverge	929	830
Upstream Mainline	2514	2785

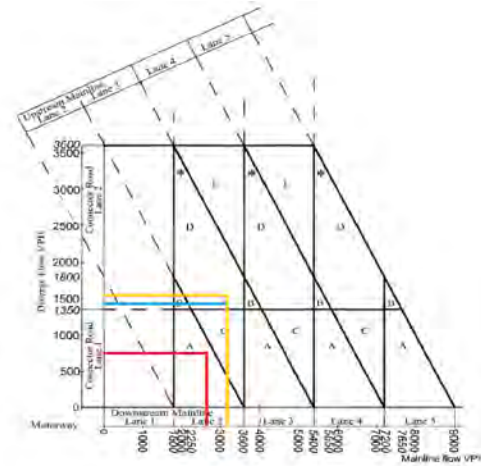
2038 Baseline	AM	PM
WB Diverge	2216	1423
Upstream Mainline	2864	3166

2038 Baseline + DEV	AM	PM
WB Diverge	2306	
Upstream Mainline	2864	3166

AM Peak



PM Peak



APPENDIX E

A449 / New Link Road Roundabout Assessment Outputs

Junctions 10
ARCADY 10 - Roundabout Module
Version: 10.0.4.1693 © Copyright TRL Software Limited, 2021
For sales and distribution information, program advice and maintenance, contact TRL Software: +44 (0)1344 379777 software@trl.co.uk trlsoftware.com
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: A449 - New Access Roundabout.j10
 Path: P:\23000's\23199\Junction Modelling
 Report generation date: 24/05/2022 12:09:11

- »2038 + Com Dev, AM
- »2038 + Com Dev, PM
- »2038 + Cumulative, AM
- »2038 + Cumulative, PM

Summary of junction performance

	AM							PM						
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Network Residual Capacity
2038 + Com Dev														
1 - A449 (N)	D3	1.8	4.46	0.65	A	4.33	40 % [1 - A449 (N)]	D4	1.3	3.35	0.56	A	3.95	44 % [3 - A449 (S)]
2 - New Link Road		0.3	3.78	0.23	A				0.6	4.51	0.36	A		
3 - A449 (S)		1.8	4.30	0.65	A				1.8	4.33	0.65	A		
2038 + Cumulative														
1 - A449 (N)	D5	3.2	7.22	0.76	A	6.70	19 % [1 - A449 (N)]	D6	1.8	4.47	0.64	A	5.82	22 % [3 - A449 (S)]
2 - New Link Road		0.7	5.35	0.42	A				1.0	6.10	0.51	A		
3 - A449 (S)		3.3	6.61	0.77	A				3.4	6.79	0.78	A		

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

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	
Location	
Site number	
Date	20/05/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	DTA\arcady
Description	

Units

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

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D3	2038 + Com Dev	AM	FLAT	08:00	09:00	60	15	✓
D4	2038 + Com Dev	PM	FLAT	17:00	18:00	60	15	✓
D5	2038 + Cumulative	AM	FLAT	08:00	09:00	60	15	✓
D6	2038 + Cumulative	PM	FLAT	17:00	18:00	60	15	✓

Analysis Set Details

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

2038 + Com Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A449 (N) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	3 - A449 (S) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
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	4.33	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	40	1 - A449 (N)	4.33	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A449 (N)		
2	New Link Road		
3	A449 (S)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A449 (N)	7.00	9.00	59.0	25.0	55.0	40.0		
2 - New Link Road	3.65	9.00	22.1	30.0	55.0	36.0		
3 - A449 (S)	7.00	9.00	35.0	21.0	55.0	45.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A449 (N)	0.741	2601
2 - New Link Road	0.639	2010
3 - A449 (S)	0.716	2502

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 period length (min)	Time segment length (min)	Run automatically
D3	2038 + Com Dev	AM	FLAT	08:00	09:00	60	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 - A449 (N)		FLAT	✓	1483	100.000
2 - New Link Road		FLAT	✓	283	100.000
3 - A449 (S)		FLAT	✓	1552	100.000

Origin-Destination Data

Demand (PCU/hr)

From	To		
	1 - A449 (N)	2 - New Link Road	3 - A449 (S)
1 - A449 (N)	0	271	1212
2 - New Link Road	159	0	124
3 - A449 (S)	1132	420	0

Vehicle Mix

Heavy Vehicle Percentages

From	To		
	1 - A449 (N)	2 - New Link Road	3 - A449 (S)
1 - A449 (N)	0	0	0
2 - New Link Road	0	0	0
3 - A449 (S)	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A449 (N)	0.65	4.46	1.8	A	1483	1483
2 - New Link Road	0.23	3.78	0.3	A	283	283
3 - A449 (S)	0.65	4.30	1.8	A	1552	1552

Main Results for each time segment

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 - A449 (N)	1483	371	418	2291	0.647	1476	1285	0.0	1.8	4.376	A
2 - New Link Road	283	71	1206	1239	0.228	282	688	0.0	0.3	3.755	A
3 - A449 (S)	1552	388	158	2389	0.650	1545	1330	0.0	1.8	4.228	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 - A449 (N)	1483	371	420	2290	0.648	1483	1291	1.8	1.8	4.461	A
2 - New Link Road	283	71	1212	1235	0.229	283	691	0.3	0.3	3.779	A
3 - A449 (S)	1552	388	159	2388	0.650	1552	1336	1.8	1.8	4.303	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 - A449 (N)	1483	371	420	2290	0.648	1483	1291	1.8	1.8	4.461	A
2 - New Link Road	283	71	1212	1235	0.229	283	691	0.3	0.3	3.779	A
3 - A449 (S)	1552	388	159	2388	0.650	1552	1336	1.8	1.8	4.303	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 - A449 (N)	1483	371	420	2290	0.648	1483	1291	1.8	1.8	4.461	A
2 - New Link Road	283	71	1212	1235	0.229	283	691	0.3	0.3	3.779	A
3 - A449 (S)	1552	388	159	2388	0.650	1552	1336	1.8	1.8	4.303	A

2038 + Com Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A449 (N) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	3 - A449 (S) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
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	3.95	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	44	3 - A449 (S)	3.95	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D4	2038 + Com Dev	PM	FLAT	17:00	18:00	60	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 - A449 (N)		FLAT	✓	1355	100.000
2 - New Link Road		FLAT	✓	445	100.000
3 - A449 (S)		FLAT	✓	1532	100.000

Origin-Destination Data

Demand (PCU/hr)

From	To		
	1 - A449 (N)	2 - New Link Road	3 - A449 (S)
1 - A449 (N)	0	155	1200
2 - New Link Road	193	0	252
3 - A449 (S)	1300	232	0

Vehicle Mix

Heavy Vehicle Percentages

From	To		
	1 - A449 (N)	2 - New Link Road	3 - A449 (S)
1 - A449 (N)	0	0	0
2 - New Link Road	0	0	0
3 - A449 (S)	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A449 (N)	0.56	3.35	1.3	A	1355	1355
2 - New Link Road	0.36	4.51	0.6	A	445	445
3 - A449 (S)	0.65	4.33	1.8	A	1532	1532

Main Results for each time segment

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 - A449 (N)	1355	339	231	2430	0.558	1350	1486	0.0	1.2	3.319	A
2 - New Link Road	445	111	1196	1246	0.357	443	385	0.0	0.6	4.472	A
3 - A449 (S)	1532	383	192	2365	0.648	1525	1446	0.0	1.8	4.249	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 - A449 (N)	1355	339	232	2429	0.558	1355	1493	1.2	1.3	3.350	A
2 - New Link Road	445	111	1200	1243	0.358	445	387	0.6	0.6	4.511	A
3 - A449 (S)	1532	383	193	2364	0.648	1532	1452	1.8	1.8	4.326	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 - A449 (N)	1355	339	232	2429	0.558	1355	1493	1.3	1.3	3.350	A
2 - New Link Road	445	111	1200	1243	0.358	445	387	0.6	0.6	4.511	A
3 - A449 (S)	1532	383	193	2364	0.648	1532	1452	1.8	1.8	4.326	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 - A449 (N)	1355	339	232	2429	0.558	1355	1493	1.3	1.3	3.350	A
2 - New Link Road	445	111	1200	1243	0.358	445	387	0.6	0.6	4.511	A
3 - A449 (S)	1532	383	193	2364	0.648	1532	1452	1.8	1.8	4.326	A

2038 + Cumulative, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A449 (N) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	3 - A449 (S) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
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	6.70	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	19	1 - A449 (N)	6.70	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D5	2038 + Cumulative	AM	FLAT	08:00	09:00	60	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 - A449 (N)		FLAT	✓	1599	100.000
2 - New Link Road		FLAT	✓	491	100.000
3 - A449 (S)		FLAT	✓	1835	100.000

Origin-Destination Data

Demand (PCU/hr)

From	To		
	1 - A449 (N)	2 - New Link Road	3 - A449 (S)
1 - A449 (N)	0	275	1324
2 - New Link Road	172	0	319
3 - A449 (S)	1155	680	0

Vehicle Mix

Heavy Vehicle Percentages

From	To		
	1 - A449 (N)	2 - New Link Road	3 - A449 (S)
1 - A449 (N)	0	0	0
2 - New Link Road	0	0	0
3 - A449 (S)	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A449 (N)	0.76	7.22	3.2	A	1599	1599
2 - New Link Road	0.42	5.35	0.7	A	491	491
3 - A449 (S)	0.77	6.61	3.3	A	1835	1835

Main Results for each time segment

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 - A449 (N)	1599	400	675	2101	0.761	1587	1318	0.0	3.1	6.849	A
2 - New Link Road	491	123	1314	1170	0.420	488	948	0.0	0.7	5.256	A
3 - A449 (S)	1835	459	171	2380	0.771	1822	1631	0.0	3.3	6.314	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 - A449 (N)	1599	400	680	2097	0.762	1599	1327	3.1	3.2	7.213	A
2 - New Link Road	491	123	1324	1164	0.422	491	955	0.7	0.7	5.350	A
3 - A449 (S)	1835	459	172	2379	0.771	1835	1643	3.3	3.3	6.607	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 - A449 (N)	1599	400	680	2097	0.762	1599	1327	3.2	3.2	7.219	A
2 - New Link Road	491	123	1324	1164	0.422	491	955	0.7	0.7	5.351	A
3 - A449 (S)	1835	459	172	2379	0.771	1835	1643	3.3	3.3	6.612	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 - A449 (N)	1599	400	680	2097	0.762	1599	1327	3.2	3.2	7.222	A
2 - New Link Road	491	123	1324	1164	0.422	491	955	0.7	0.7	5.351	A
3 - A449 (S)	1835	459	172	2379	0.771	1835	1643	3.3	3.3	6.612	A

2038 + Cumulative, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	1 - A449 (N) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	3 - A449 (S) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
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	5.82	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	22	3 - A449 (S)	5.82	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D6	2038 + Cumulative	PM	FLAT	17:00	18:00	60	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 - A449 (N)		FLAT	✓	1438	100.000
2 - New Link Road		FLAT	✓	605	100.000
3 - A449 (S)		FLAT	✓	1826	100.000

Origin-Destination Data

Demand (PCU/hr)

From	To		
	1 - A449 (N)	2 - New Link Road	3 - A449 (S)
1 - A449 (N)	0	163	1275
2 - New Link Road	205	0	400
3 - A449 (S)	1344	482	0

Vehicle Mix

Heavy Vehicle Percentages

From	To		
	1 - A449 (N)	2 - New Link Road	3 - A449 (S)
1 - A449 (N)	0	0	0
2 - New Link Road	0	0	0
3 - A449 (S)	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A449 (N)	0.64	4.47	1.8	A	1438	1438
2 - New Link Road	0.51	6.10	1.0	A	605	605
3 - A449 (S)	0.78	6.79	3.4	A	1826	1826

Main Results for each time segment

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 - A449 (N)	1438	360	478	2247	0.640	1431	1538	0.0	1.8	4.377	A
2 - New Link Road	605	151	1269	1199	0.505	601	641	0.0	1.0	5.982	A
3 - A449 (S)	1826	457	204	2356	0.775	1813	1666	0.0	3.3	6.470	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 - A449 (N)	1438	360	482	2244	0.641	1438	1549	1.8	1.8	4.466	A
2 - New Link Road	605	151	1275	1195	0.506	605	645	1.0	1.0	6.101	A
3 - A449 (S)	1826	457	205	2356	0.775	1826	1675	3.3	3.4	6.787	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 - A449 (N)	1438	360	482	2244	0.641	1438	1549	1.8	1.8	4.466	A
2 - New Link Road	605	151	1275	1195	0.506	605	645	1.0	1.0	6.101	A
3 - A449 (S)	1826	457	205	2356	0.775	1826	1675	3.4	3.4	6.792	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 - A449 (N)	1438	360	482	2244	0.641	1438	1549	1.8	1.8	4.466	A
2 - New Link Road	605	151	1275	1195	0.506	605	645	1.0	1.0	6.101	A
3 - A449 (S)	1826	457	205	2356	0.775	1826	1675	3.4	3.4	6.795	A



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Appendix C Capricorn SRN Impact Assessment

Capricorn Transport Planning



BLOOR HOMES

LAND EAST OF BILBROOK, STAFFORDSHIRE

**TECHNICAL NOTE 1:
CUMULATIVE IMPACT ON STRATEGIC ROAD NETWORK**

A449/BREWOD ROAD ROUNDABOUTS

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*Transport Planning
Traffic Engineering
Sustainable Travel
Road Safety*

BLOOR HOMES

LAND EAST OF BILBROOK, STAFFORDSHIRE

TECHNICAL NOTE 1: CUMULATIVE IMPACT ON STRATEGIC ROAD NETWORK

A449/BREWOOD ROAD ROUNDABOUTS

Date	Revision	Description	Prepared	Checked	Approved
20.06.2022	-	First issue (internal)	SM	SM	SM
21.06.2022	A	External issue	SM	SM	SM

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Appendices

A	PJA Technical Note (SRN Cumulative Assessment Method)
B	Traffic Survey Data (Summary)
C	TEMPRO Growth Factors
D	Traffic Flow Diagrams
E	JUNCTIONS 10 Outputs

1.0 INTRODUCTION

1.1 Background

- 1.1.1 Capricorn Transport Planning Ltd (CTP) is appointed by Bloor Homes to advise on the highways and transport issues affecting a proposed residential development on land to the east of Bilbrook, within the South Staffordshire District Council (SSDC) local authority area.
- 1.1.2 The land is proposed for allocation in the SSDC's emerging Local Plan to provide 848 dwellings, a primary school, local centre with retail facilities and public open space.
- 1.1.3 A *Strategic Transport Assessment* (STA) has been prepared to support the proposed allocation. The STA considers the impact of the development on the local highway network within the SSDC area, as managed by Staffordshire County Council (SCC), and the adjacent City of Wolverhampton Council (CWC) area.
- 1.1.4 National Highways (NH) is responsible for the Strategic Road Network (SRN), which provides access to the SSDC area at several locations. The requirements of NH have been the subject of separate discussions involving promoters of all of the proposed strategic sites within South Staffordshire that would also affect the SRN.
- 1.1.5 Further to these discussions, it was agreed that a separate assessment would be prepared to identify the cumulative impact of all proposed Local Plan sites on the SRN. This work is being undertaken jointly by the transport consultants engaged by the various site promoters, namely:
- CTP for land east of Bilbrook (Bloor Homes);
 - Phil Jones Associates (PJA) for land north of Penkridge (Bloor Homes);
 - DTA Transportation (DTA) for land at Cross Green and Linthouse Lane (Taylor Wimpey).

1.2 Scope

- 1.2.1 The methodology and scope of the cumulative impact assessment is set out in a Technical Note produced by PJA and dated 11/05/21 (reproduced in **Appendix A**). Paragraph 3.2.1 of PJA's Technical Note identifies the locations to be assessed by each consultant and that CTP is to consider the A449/Brewood Road roundabouts.
- 1.2.2 This report (TN1) presents the findings of the A449/Brewood Road roundabout assessments. It is structured as follows:
-

- The location of the junctions is identified (Section 2);
- The overall approach to the assessment is outlined (Section 3);
- The agreed forecasts of cumulative development traffic generation at the junctions are summarised (Section 4);
- Traffic survey data used in the assessment is identified (Section 5);
- The assessment scenarios are confirmed and background traffic growth forecasts are presented (Section 6);
- Planned and committed developments taken into account are confirmed (Section 6);
- Capacity assessments are presented and the need for mitigation is considered (Section 7);
- The findings of TN1 are summarised and conclusions are presented (Section 8).

1.2.3 TN1 forms part of the SRN cumulative assessment and should be read in conjunction with the submissions by other consultants and the various individual site STAs. It is intended to form part of the evidence base required for the Local Plan process and for further consideration by SSSC and NH.

2.0 EXISTING CONDITIONS

2.1 Location

2.1.1 The location to be assessed comprises a pair of closely spaced roundabout junctions of the A449 with Brewood Road, to the south-east and north-west, near Coven and approximately 1.6km north of M54 Junction 2 as shown below.

Figure TN1.1: Location of A449/Brewood Road Roundabouts



2.1.2 This section of the A449 is a part of the SRN that connects the A5 to the north and the M54 to the south. Junctions along its length are at-grade and of various forms, including roundabouts, priority junctions and traffic signals.

2.1.3 The layout of the two roundabout junctions with Brewood Road is shown in greater detail below.

Figure TN1.2: Existing Layout of A449/Brewood Road Roundabouts



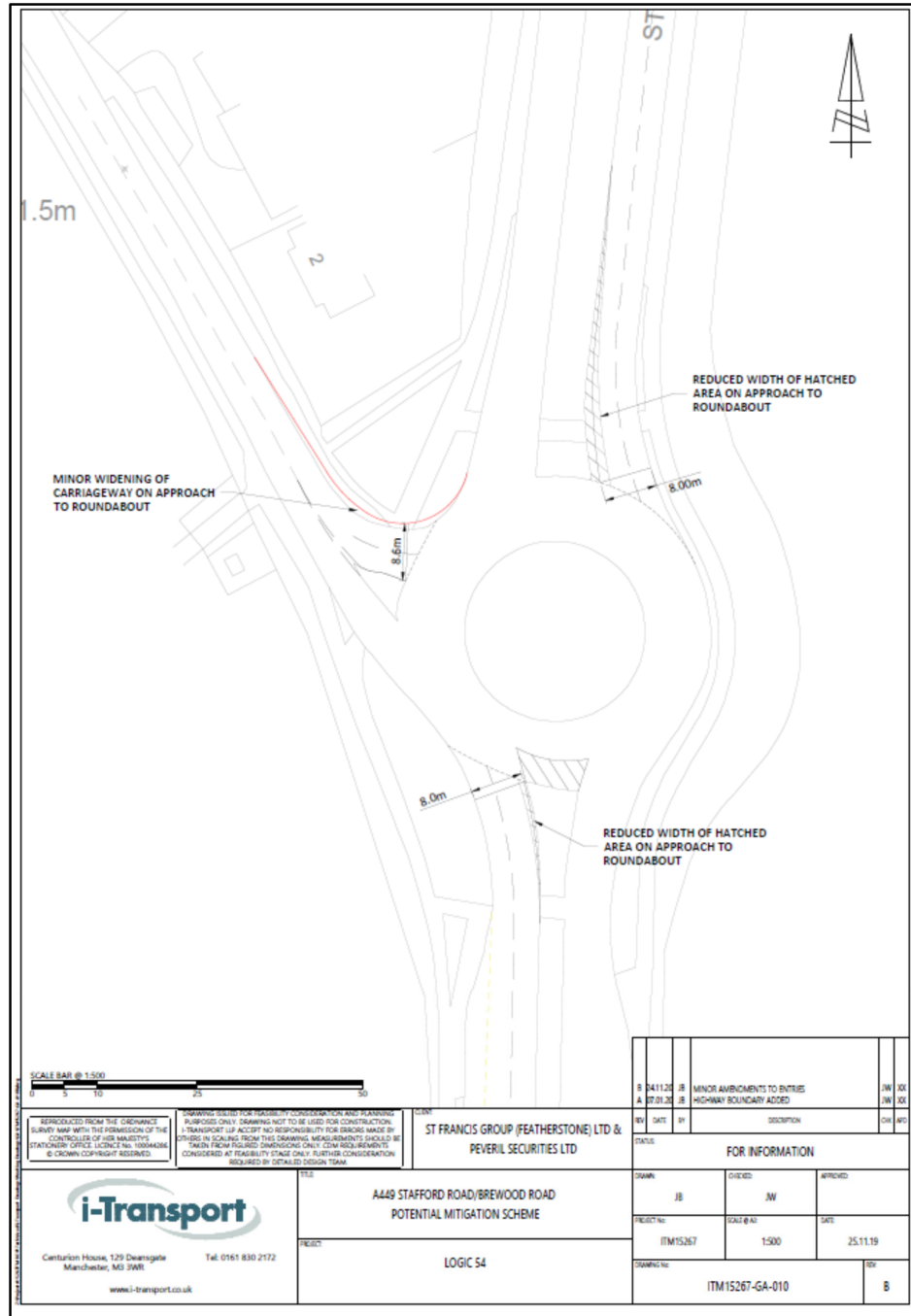
- 2.1.4 The A449 approaches to the north and south are of dual two-lane carriageway standard and are subject to a speed limit of 60mph. The central link between the two junctions is of a similar standard, with bus laybys adjacent to each carriageway. The Brewood Road approaches are of single carriageway standard and are subject to a speed limit of 30mph. They serve the village of Coven to the north-west; and the Cross Green and Brinsford area to the south-east.

3.0 METHODOLOGY

3.1 Overall Approach

- 3.1.1 The assessment has been undertaken in accordance with the approach set out in PJA's earlier Technical Note (**Appendix A**).
- 3.1.2 The junctions lie close to the proposed *Logic 54* employment development at the former Royal Ordnance Factory (ROF), Cat and Kittens Lane, Brinsford. The Logic 54 development has been granted outline planning consent by SSSC (ref: 20/01131/OUT). The proposal was supported by a comprehensive Transport Assessment (TA) prepared by i-Transport and dated 14/12/20.
- 3.1.3 The Logic 54 TA considered the A449/Brewood Road roundabouts in detail and proposed mitigation works for the northern roundabout. These are reproduced from the TA below.

Figure TN1.3: Proposed Logic 54 Mitigation Works at A449/Brewood Road



3.1.4 The findings of the Logic 54 TA are assumed to have been accepted by NH and the mitigation works approved in-principle by virtue of the outline planning consent. The assessments that follow take these proposals into account and adopt relevant information and assumptions from the Logic 54 TA, as detailed in subsequent sections of TN1.

4.0 DEVELOPMENT TRAFFIC

4.1 Trip Generation Forecasts

4.1.1 The agreed development traffic forecasts for each SRN junction of interest are identified in PJA's Technical Note. The resulting traffic flows generated by each proposed Local Plan development at the A449/Brewood Road roundabouts are summarised below.

Table TN1.1: Development Trips at A449/Brewood Road Roundabouts

DEVELOPMENT	TRAFFIC FLOW (VEHICLES)	
	AM PEAK HOUR	PM PEAK HOUR
Cross Green	42	54
Linthouse Lane	1	2
Bilbrook	37	40
Penkridge	69	62
TOTAL	149	158

4.1.2 The cumulative total flow through the combined junctions exceeds 50 vehicles, which is the threshold set by NH above which detailed assessment is required.

4.2 Turning Movements

4.2.1 The trip generation forecasts summarised above reflect trip distribution and assignment models for each development that are also understood to have been accepted by NH. The resulting cumulative development traffic turning movements have been applied in the "With Development" scenario described in Section 6.

5.0 BASE DATA

5.1 Traffic Survey

5.1.1 A traffic survey at the two roundabouts was undertaken on behalf DTA Transportation by Auto Surveys Ltd. The survey was undertaken on Wednesday 16 March 2022 and covered the morning and evening peak periods 07:00-10:00 and 16:00-19:00. All turning movements were recorded in standard vehicle classifications. Queues were also recorded by lane on each approach, at 5-minute intervals. The traffic survey results are summarised in **Appendix B**.

5.2 Data Analysis

5.2.1 To provide a standard basis for the capacity assessments, surveyed traffic flows have been converted from vehicles to Passenger Car Units (PCUs), in a manner consistent with the approach stated in the Logic 54 TA.

5.2.2 The peak hours were identified as those during which the highest total throughput at the junctions (in PCUs) occurred. These were:

- AM Peak Hour: 07:15 to 08:15
- PM Peak Hour: 16:30 to 17:30

5.2.3 Queue data collected during the traffic survey indicates that the average queues on each junction approach during the peak hours are as summarised below.

Table TN1.2: Average Surveyed Queues (Vehicles)

APPROACH		AVERAGE QUEUE (VEHICLES)	
		07:15-09:15	16:30-17:30
A449 N	LANE 1	5	3
	LANE 2	6	3
BREWOD ROAD SE	LANE 1	2	3
A449 S	LANE 1	1	3
	LANE 2	1	2
BREWOD ROAD NW	LANE 1	5	3
	LANE 2	3	2

5.2.4 Queues on each approach are generally modest. The highest values occurred during the AM peak hours on the A449 North and Brewood Road North-West arms but are still relatively modest and reflect considerable variation throughout the peak hour, with higher levels occurring only sporadically. These observed queues are therefore not considered sufficient to warrant specific calibration of the capacity assessment models.

6.0 ASSESSMENT SCENARIOS

6.1 Assessment Year

- 6.1.1 An assessment year of 2038 has been adopted, consistent with the Local Plan Review period.
- 6.1.2 To obtain base traffic flows at the assessment year, the surveyed peak hour flows were factored using TEMPRO-base traffic growth forecasts. Committed development traffic flows were then added to provide a set of "No Development" traffic flows. This process is described below.

6.2 Background Traffic Growth

- 6.2.1 Growth in background traffic to assessment year levels has been assessed using the TEMPRO 7.2 system and datasets. In accordance with current DfT guidance, the TEMPRO growth forecasts are based on the 2018 Road Traffic Forecasts (RTF) "Scenario 1" central assumptions with respect to economic growth and fuel costs.
- 6.2.2 Traffic growth factors for the "car driver" travel mode were obtained from TEMPRO in accordance with the above approach. For consistency with the Bilbrook STA, and following discussions with SCC, local factors for the South Staffordshire 008 MSOA have been used. These are slightly higher than the corresponding district-wide forecasts (see below), thus providing a more robust assessment.

Table TN1.3: Background Traffic Growth Factors (2022 to 2038)

Local Authority Area	Peak Period	2022-2038
South Staffordshire 008	AM	1.105
	PM	1.105
South Staffordshire District	AM	1.091
	PM	1.088

- 6.2.3 The average growth rate between 2022 and 2038 is therefore approximately 0.65% per annum.
- 6.2.4 For comparison, the SRN growth factors adopted in the Logic 54 TA are reproduced below.

Table TN1.4: Logic 54 TA Traffic Growth Factors

Area	Growth Factor			
	AM Peak		PM Peak	
	2017 to 2022	2017 to 2031	2017 to 2022	2017 to 2031
M54 Junctions	1.032	1.064	1.030	1.060
M54 Mainline	1.059	1.037	1.057	1.135
	2016 to 2022	2016 to 2031	2016 to 2022	2016 to 2031
A449 Ahead	1.041	1.073	1.038	1.068
A449 Turns	1.039	1.067	1.035	1.061

Source: NTM/TEMPro

6.2.5 The highest growth factor for the A449 is 1.073 from 2016 to 2031 (AM peak hour), equivalent to a growth rate of approximately 0.4% per annum.

6.2.6 The equivalent adjusted growth factor (2016 to 2031) obtained from TEMPRO for the South Staffordshire 008 MSOA is 1.115. The equivalent growth rate of 0.76% per annum is significantly higher than that adopted in the Logic 54 TA. The use of background traffic growth factors for the South Staffordshire 008 MSOA is therefore considered robust compared with previously accepted assumptions for this part of the SRN.

6.2.7 The TEMPRO outputs that support the above factors are provided in **Appendix C**.

6.3 Committed Development

6.3.1 The list of committed developments to be taken into account is identified in the earlier PJA Technical Note (Appendix A) and includes all schemes previously considered in the Logic 54 TA as follows:

1. Wolverhampton Business Park (ref: 11/0100/OUT)
2. Four Ashes (ref: 16/00498/OUT)
3. i54 unoccupied unit and western extension (ref:18/00637/OUT)
4. Pendeford Mill Lane, Bilbrook ("*Bilbrook Mill*" development by Bloor Homes, ref: 18/00710/FUL)
5. Hobnock Road (ref: 18/00450/REM)
6. West Midlands Interchange (WMI, DCO ref: TR050005)
7. The Logic 54 development (ref: (20/01131/OUT)

- 6.3.2 An additional development at Unit 1 Innovation Drive, i54 Business Park (ref: 16/01057/REM) was also listed in PJA's Technical Note. However, the Transport Statement that supported this approved development showed no additional traffic generation on the highway network of interest to this assessment. No further allowance for this scheme is therefore required.
- 6.3.3 At the request of SCC, the Bilbrook STA also takes into account the impact of the following developments on the local road network:
- Proposed residential development at Station Road, Codsall (70 dwellings plus new station car park);
 - Safeguarded land at Keepers Lane and Wergs Hall Road, Codsall (317 dwellings on SAD sites 406 and 419).
- 6.3.4 Neither of these sites was taken into account in the Logic 54 TA and they are not expected to give rise to significant additional traffic generation through the SRN junctions of interest to the cumulative assessments.
- 6.3.5 The Station Road site would generate a maximum of 13 vehicles through the nearest SRN junction of interest (M54 Junction 2), based on the trip generation rates agreed for the Bilbrook site. This level of increase is negligible relative to existing traffic flows and would not be distinguishable from day-to-day variation in traffic levels.
- 6.3.6 The Keepers Lane site is included in the current SSDC Local Plan and its traffic effects are therefore considered to be allowed for in the TEMPRO-based growth forecasts derived above. No adjustments to the TEMPRO trip end data have been made to account for this or any other current Local Plan developments in the area, thus providing for a robust assessment.
- 6.3.7 No further allowances for the Keepers Lane or Station Road developments have therefore been made within the SRN cumulative assessments.
- 6.3.8 Although partly occupied, traffic associated with the full *Bilbrook Mill* development (Committed Development No. 4 from the above list) has been added to the background traffic flows. This will result in an element of double counting of trips but again provides a robust approach.

6.4 M54/M6 Link Road

6.4.1 The M54/M6 Link Road scheme has been approved and it has been agreed with NH that it should be taken into account within the SRN forecasts. The methodology for adjusting base 2038 traffic flows to take into account the effects of the Link Road is described in PJA's Technical Note.

6.5 Featherstone Link Road

6.5.1 This scheme will connect the A449 with Cat and Kittens Lane south of the Brewood Road roundabouts and will provide the main access to the Logic 54 development. The traffic reassignment effects of the Featherstone Link Road are also to be taken into account in the SRN cumulative assessments. However, the Link Road is predicted to have no effect on turning movements at the Brewood Road roundabouts and it therefore does not need to be considered further in TN1.

6.6 Assessment Scenarios

6.6.1 The capacity of the A449/Brewood Road roundabouts has been assessed under the following scenarios:

- **2038 No Development:** 2038 Base + M54/M6 Link Road adjustments + Committed Developments
- **2038 With Development:** 2038 No Development + Local Plan cumulative development flows (see Section 4).

6.6.2 Traffic flow diagrams for these scenarios and their elements are presented in **Appendix D**.

7.0 CAPACITY ASSESSMENTS

7.1 Overview

- 7.1.1 The capacity of the two roundabout junctions has been assessed using TRL Software's JUNCTIONS 10 modelling suite. The Logic 54 presented individual models of each roundabout. For consistency, these approved models have been reproduced and used to assess the cumulative impact of the proposed Local Plan sites.
- 7.1.2 The JUNCTIONS 10 model of the northern roundabout includes the indicative Logic 54 mitigation work shown on Figure TN1.3, which is assumed to be a committed scheme.
- 7.1.3 For consistency with the modelling undertaken at other SRN junctions, a "FLAT" traffic arrival profile has been adopted for all future year assessments.
- 7.1.4 JUNCTIONS 10 provides Ratio of Flow to Capacity (RFC) values, which indicate how close to capacity each approach or traffic stream will operate. An RFC value of less than or equal to 1.00 indicates that the entry is operating within capacity. The desirable maximum RFC value for new junctions at the appropriate design year is 0.85, allowing some reserve capacity for daily fluctuations in traffic demand.
- 7.1.5 All modelled queues are quoted in Passenger Car Units (PCUs). For the purposes of conversion into queue lengths, a single PCU can be considered to have a length of 5.75 metres.
- 7.1.6 The full capacity assessment results are presented in **Appendix E**.

7.2 A449/Brewood Road North Roundabout

7.2.1 The JUNCTIONS 10 model outputs for this junction (with Logic 54 committed improvements) are summarised below.

Table TN1.6: Capacity Assessment Summary: A449/Brewood Road North

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)
BASE LAYOUT - 2038 NO DEV										
Arm A	A11N D1	2.8	7.40	0.72	6.16	A11N D2	1.2	4.14	0.53	4.61
Arm B		1.1	3.39	0.49			1.4	3.99	0.55	
Arm C		1.2	9.23	0.52			0.8	7.92	0.43	
BASE LAYOUT - 2038 WITH DEV										
Arm A	A11N D3	3.4	8.68	0.76	7.01	A11N D4	1.4	4.46	0.56	5.06
Arm B		1.2	3.56	0.51			1.6	4.38	0.59	
Arm C		1.4	10.42	0.56			1.0	8.89	0.48	

7.2.2 The results confirm that the junction is forecast to operate within capacity in all scenarios. The junction layout with the committed improvements shown on Figure TN1.3 would therefore accommodate traffic growth, committed development and the cumulative effects of the proposed Local Plan developments without the need for further mitigation.

7.3 A449/Brewood Road South Roundabout

7.3.1 The JUNCTIONS 10 model outputs for this junction (existing layout) are summarised below.

Table TN1.7: Capacity Assessment Summary: A449/Brewood Road South

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)
EXISTING LAYOUT - 2038 NO DEV										
Arm A	A11S D1	2.2	4.80	0.67	4.46	A11S D2	0.8	2.75	0.44	3.45
Arm B		0.1	6.71	0.08			0.1	4.64	0.10	
Arm C		1.3	3.89	0.54			1.3	4.01	0.55	
EXISTING LAYOUT - 2038 WITH DEV										
Arm A	A11S D3	2.6	5.30	0.70	4.86	A11S D4	0.9	2.87	0.46	3.68
Arm B		0.1	7.34	0.11			0.2	4.90	0.12	
Arm C		1.4	4.09	0.56			1.5	4.33	0.58	

7.3.2 The results confirm that the junction is forecast to operate within capacity in all scenarios. The existing junction would therefore accommodate traffic growth, committed development and the cumulative effects of the proposed Local Plan developments without the need for further mitigation.

8.0 SUMMARY AND CONCLUSIONS

8.1 Summary

8.1.1 This Technical Note (TN1) forms part of an assessment of the cumulative impact of the four strategic sites proposed for allocation in the emerging South Staffordshire Local Plan on the Strategic Road Network (SRN). The SRN assessment work is being undertaken jointly by the transport consultants engaged by the various site promoters, namely:

- CTP for land east of Bilbrook (Bloor Homes);
- Phil Jones Associates (PJA) for land north of Penkridge (Bloor Homes);
- DTA Transportation (DTA) for land at Cross Green and Linthouse Lane (Taylor Wimpey).

8.1.2 TN1 deals specifically with the A449/Brewood Road roundabouts at Coven and assesses their capacity at the end of the proposed Local Plan period (2038), both with and without the traffic generated by the four strategic sites.

8.1.3 The assessments have been undertaken in accordance with the methodology set out in the Technical Note produced by PJA and dated 11/05/21, as submitted to NH.

8.1.4 TN1 should be read in conjunction with the submissions by other consultants and the various individual site Strategic Transport Assessments (STAs). It is intended to form part of the evidence base required for the Local Plan process, for further consideration by NH.

8.2 Conclusions

8.2.1 The assessment shows that the cumulative impact of the proposed Local Plan developments at the A449/Brewood Road roundabouts would not be significant and that both junctions would operate within capacity in all assessment scenarios.

8.2.2 It is therefore concluded that the proposed development could be satisfactorily accommodated on this part of the SRN without the need for further highway mitigation works.

APPENDIX A:

PJA Technical Note (SRN Cumulative Assessment Method)

Technical Note

Project: Land at A449, Penkridge

Subject: SRN Cumulative Assessment Method

Client:	St Philips & Bloor Homes	Version:	A
Project No:	6161	Author:	BS
Date:	11th May 2022	Approved:	SB

I Introduction

I.1 Context and Purpose

- 1.1.1 PJA, DTA Transportation and Capricorn Transport Planning have been appointed on behalf of St Philips, Bloor Homes and Taylor Wimpey to support the four proposed site strategic allocations within the South Staffordshire Local Plan Review.
- 1.1.2 Initial scoping discussions have been undertaken by each of the developers and their consultants, Staffordshire County Council Highways (SCC) and National Highways (NH). During these discussions, NH identified the need for a cumulative assessment of the Strategic Road Network (SRN) and a consistent approach to be taken between each of the allocations.
- 1.1.3 The purpose of this note to set out the scope and method of the cumulative assessment that will be undertaken.
- 1.1.4 This assessment is intended as a high-level exercise in order to identify any improvements required to the strategic road network such that these improvements can be costed and included in the IDP.
- 1.1.5 Further, more detailed modelling and assessment work can be undertaken following this stage as required to support the Local Plan Review through submission and examination.

I.2 Structure of Note

- 1.2.1 The remainder of this note is structured as follows:

- Section 2: Development Trips at Junctions;
- Section 3: Scope of Assessment;
- Section 4: Model Parameters;
- Section 5: Outputs; and
- Section 6: Summary and Conclusion.

2 Development Trips at Junctions

2.1.1 Development vehicle trips have been provided for each of the junctions on the SRN within our combined extents. It is understood that the trip generation/distribution and assignment assumptions underpinning these values have been discussed (and agreed where possible) with NH during initial scoping discussions.

2.1.2 It should be noted that:

- M6 Junction 14 is not within the scope of assessment for Cross Green, Linthouse Lane and Bilbrooks. Trips at this junction for these sites have been assumed to be 0.
- M6 J10, M6 J13 and M6 J14 are not within the scope of assessment for the Bilbrook site. It is not anticipated that the development will result in a significant number of trips at these junctions, and therefore it has been assumed that there are 0 trips at these junctions.
- M54 J1, M54 J2, M54 J3, M6 J10 and A449/Brewood Roundabouts are not within the scope of assessment for the Penkridge site. For the purpose of the cumulative assessment, the distribution has been extended to identify the likely development trips at these junctions.

2.1.3 The total vehicle trips at each junction for each development, and when combined are summarised in the table below.

Table 1: Development Trips at SRN Junctions

SRN Junctions	Cross Green		Linthouse Lane		Bilbrook		Penkridge		Total	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
M54 J1	66	53	73	125	15	17	6	5	161	199
M54 J2	423	445	4	5	131	125	67	60	625	635
M54 J3	8	8	2	1	29	31	0	0	39	40
M6 J10	50	62	29	2	0	0	18	13	97	77
M6 J11	152	136	62	56	15	17	28	21	258	230
M6 J12	10	19	1	1	11	12	18	13	40	45
M6 J13	6	7	1	1	0	0	180	169	187	177
A449/ Brewood Rdbts	42	54	1	2	37	40	69	62	150	158
Gailey Roundabout	16	17	2	2	25	27	87	75	131	122
M6 J14	0	0	0	0	0	0	43	32	43	32

3 Scope of Assessment

3.1.1 During initial discussions, NH noted that all junctions with more than 50 cumulative development trips would require assessment. Based on the above, junctions with more than 50 two-way cumulative development trips are as follows:

- M54 J1 – 166 AM/199 PM trips;
- M54 J2 – 625 AM/635 PM trips;
- M6 J10 – 97 AM/77 PM trips;
- M6 J11 – 258 AM/230 PM trips;
- M6 J13 – 187 AM/177 PM trips;
- A449/ Brewood Roundabouts – 150 AM/158 PM trips; and
- Gailey Roundabout – 131 AM/122 PM trips.

3.1.2 Of the above, three junctions will be excluded from the assessment as follows:

- M54 J1;
- M6 J10; and
- M6 J11.

3.1.3 The DCO application for a new link road between M54 Junction 1 and M6 Junction 11 was granted planning consent in April 2022. The application was accompanied by a Transport Assessment and associated modelling of the link road and connecting junctions. Whilst this work did not explicitly include the proposed strategic allocations, it did confirm that both M54 Junction 1 and M6 Junction 11 would operate within capacity in 2039 with growth resulting from changes in employment levels, population & housing levels, and changes in car ownership. Given the significant nature of the works being implemented by the DCO application and changes to both M54 Junction 1 and M6 Junction 11 to accommodate it, further improvements to mitigate the proposed allocations are unlikely to be warranted within the context of the change in traffic flows forecast.

3.1.4 In terms of M6 Junction 10, this junction is currently undergoing significant improvement works which will reduce delays and increase highway capacity. Within this context, the impact of the additional traffic generated by the cumulative developments is not significant equating to a circa 1% uplift in peak demand and further mitigation is therefore unlikely to be warranted

3.1.5 On this basis, detailed capacity assessments will be undertaken at the following SRN junctions only.

- M54 J2;
- M6 J13;
- A449/ Brewood Roundabouts; and
- Gailey Roundabout.

3.2 Split of Assessment

3.2.1 The detailed assessments will be undertaken by the consultant for the development with the greatest impact at each junction, or where existing models are available. As such, the detailed assessments will be undertaken as follows:

- M54 J2 – DTA (on behalf of Cross Green & Linthouse Lane)
- A449/ Brewood Roundabouts – Capricorn (on behalf of Bilbrook)
- M6 J13 – PJA (on behalf of Penkridge); and
- Gailey Roundabout – PJA (on behalf of Penkridge).

4 Model Parameters

4.1.1 In order to ensure a consistent approach between the assessments, the following parameters will be followed by all consultants.

4.2 Modelling Software

4.2.1 The junctions will be assessed using standalone modelling software as follows:

- M54 J2 - Linsig
- M6 J13 – Junctions 10
- A449/ Brewood Roundabouts – Junctions 10/Arcady
- Gailey Roundabout – Junctions 10

4.3 Assessment Scenarios

4.3.1 The junctions will be assessed for the following scenarios:

- **2038 Future Year** (end of Local Plan); and
 - Derived using 2022 survey data and TEMPRO growth factors.
 - Will include committed developments as agreed during scoping discussions per the site undertaking the assessment (see Section 4.4), and the M54/M6 link road.
- **2038 Future Year + Cumulative Development.**

- As above scenario with all site allocations.

4.4 Baseline Data

4.4.1 Baseline data has been collected at each of the junctions by Manual Classified Count (MCC) surveys undertaken as follows. Full survey data will be included within the STA document.

- M54 Junction 2 – MCC survey undertaken on Wednesday 16th March 2022;
- M6 Junction 13 – MCC survey undertaken on Thursday 31st March 2022;
- A449/Brewood Roundabouts – MCC survey undertaken on Wednesday 16th March 2022; and
- Gailey Roundabout – MCC survey undertaken on Thursday 31st March 2022.

4.5 Committed Development and Infrastructure

4.5.1 The committed developments and infrastructure accounted for within the assessments are summarised in Table 2 below. Further detail is provided below.

Table 2: Committed Developments

Consultant	Junction	Committed Infrastructure Included	Committed Development Included
DTA	M54 J2	M54/M6 Link Road Logic 54 Featherstone Link Road	- Logic 54 Featherstone (20/01131/OUT) and the included committed developments within the consented TA: <ul style="list-style-type: none"> ○ Wolverhampton Business Park (11/00100/OUT) ○ Four Ashes (16/00498/FUL) ○ i54 unoccupied and i54 Western Extension (18/00637/OUT) ○ Pendeford Mill Lane Bilbrook (18/00710/FUL) ○ Hobnock Road (18/00450/REM) ○ Unit 1 Innovation Drive, Pendeford (16/001057/REM) ○ West Midland Interchange (WMI) (DCO Ref TR050005)
Capricorn	A449/ Brewood Roundabouts		
PJA	M6 J13	M54/M6 Link Road	- Bloor Phase 1 (17/01022/OUT) – 200 dwellings - Land at Cherry Brook (Site Allocation 005) – 88 dwellings - West Midlands Interchange (WMI) (DCO Ref TR050005)
	Gailey Roundabout		

Committed Developments

M54 Junction 2 and A449/Brewood Roundabouts

4.5.2 The committed developments included within the M54 J2 and A449/Brewood Roundabouts assessment have been based on and inclusive of the ROF Featherstone application (20/01131/OUT). Turning flows will be extracted from the relevant TA's.

M6 J13 and Gailey Roundabout

4.5.3 Committed developments for the M6 J13 and Gailey Roundabout assessment were agreed during scoping discussions in relation to Land at A449, Penkridge site. Turning flows will be extracted from the relevant TA's where possible. Traffic flows for the Cherry Brook 005 Site Allocation have been estimated, and more detail will be provided within the STA.

M54/M6 Link Road

4.5.4 Given the recent consent for the M54/M6 Link Road, the scheme will be treated as committed infrastructure within the assessment, and the impact of the scheme on the strategic road network accounted for where appropriate.

4.5.5 The Transport Assessment submitted as part of the schemes DCO provides peak hour traffic flows on bypassed roads including the A449 (at A5 Gailey) and A5 (West of A449 Gailey). The values in Table 4.5 of the TA, suggest that the scheme will result in a significant reduction in vehicles on the A449 and A5, as set out in Table 3 below.

Table 3: DCO TA - Peak Hour Impact of M54/M6 Link Road

		AM Peak			PM Peak			Difference (%)	
		2024 DM	2024 DS	Difference	2024 DM	2024 DS	Difference	AM	PM
A449 (at A5 Gailey)	Northbound	507	312	-195	871	600	-271	-38%	-31%
	Southbound	831	436	-395	475	313	-162	-48%	-34%
A5 (West of A449 Gailey)	Eastbound	890	692	-198	851	593	-258	-22%	-30%
	Westbound	833	534	-299	902	765	-137	-36%	-15%

4.5.6 The DCO TA does not provide specific traffic flow diagrams or turning counts. Therefore, in order to investigate in more detail, information has been extracted from the TA that accompanied the consented Logic 54 Featherstone application (20/01131/OUT). The TA provides turning count information associated with the M54/M6 Link Road (sourced from National Highways (Highways England at the time)), for the following junctions and scenarios:

Junctions:

- A449/A5 Gailey Roundabout;
- A449/Brewood Roundabouts; and
- M54 Junction 2.

Scenarios:

- 2024 Do Minimum; and
- 2024 Do Something (includes the M54/M6 Link Road).

4.5.7 In order to account for the impact of the M54/M6 Link Road within the cumulative assessment, the following methodology will be applied:

- 2024 Do Minimum (DM) and 2024 Do Something (DS) turning counts extracted from the Featherstone TA for each of the junctions;
- The DM flows will be subtracted from the DS flows to identify the difference.
- The difference will then be calculated as a percentage of the DM flows.
- The percentage difference will then be applied to the 2038 baseline data for each turning movement.

4.5.8 Given that no data is available for the M6 Junction 13, no changes will be made to account for the M54/M6 Link Road.

Logic 54 Featherstone Link Road

4.5.9 Alongside the M54/M6 Link Road impact, the reassignment of traffic associated with the committed Logic 54 Featherstone Link Road will be taken into account. The consented TA sets out reassignment in 2031 across the network, although reassignment is only identified for M54 J2 within the scope of this assessment. As a result, the reassignment of traffic associated with the Link Road will be taken into account in the modelling of M54 J2 only.

5 Outputs

5.1.1 It is intended that at this stage headline results will be presented within the STA. The operation of each junction will be given a Red Amber Green (RAG) rating for both assessment scenarios, as follows:

- Green – The junction operates with reserve capacity;
- Amber – The junction is approaching capacity; and
- Red – Mitigation is likely to be needed at the junction.

5.1.2 For those junctions whereby mitigation is considered necessary, high-level designs will be produced to allow for a costing exercise to be undertaken to inform the IDP.

6 Summary and Conclusion

6.1.1 This technical note sets out the method of the cumulative assessment to be undertaken in support of the four proposed strategic site allocations within the South Staffordshire Local Plan Review. It is intended that this provide an initial assessment of the strategic road network that can be refined during the Local Plan submission and examination period if required.

APPENDIX B:

Traffic Survey Data (Summary)

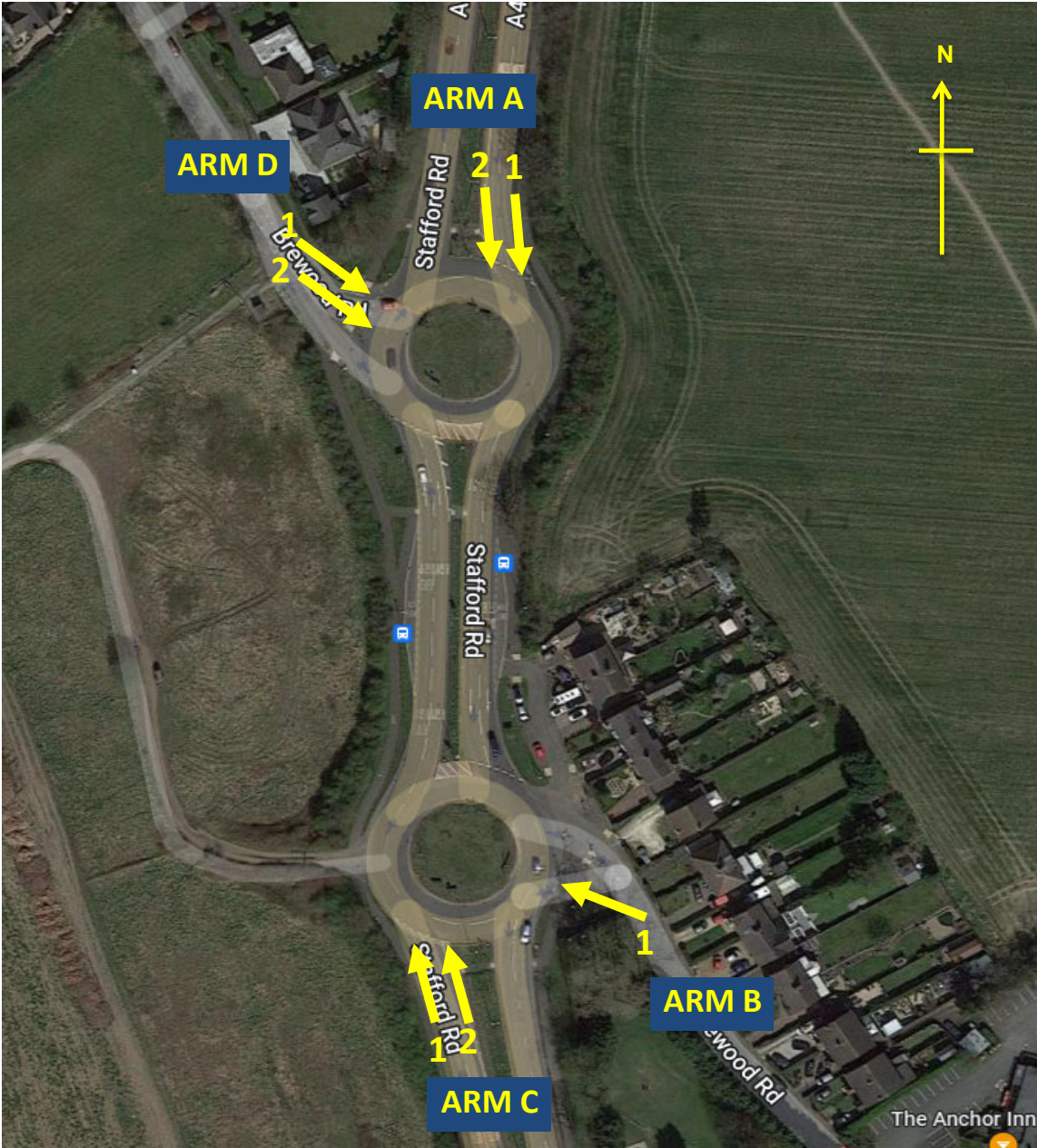
SITE: 2



DATE:
16TH MARCH 2022

LOCATION:
STAFFORD RD / BREWOOD RD

DAY:
WEDNESDAY



JOB TITLE:
WOLVERHAMPTON AREA 1

JOB NUMBER: 11176

QUEUE LENGTHS

JOB REF: 11176



JOB NAME: WOLVERHAMPTON AREA 1

SITE: 2

DATE: 16/03/2022

LOCATION: A449 STAFFORD RD (N) / BREWOOD RD (SE) / A449 STAFFORD RD (S) / BREWOOD RD (NW)

DAY: WEDNESDAY

NOTE: Queue Lengths recorded by the number of vehicles queuing at each 5-minute interval, by lane

TIME	ARM A		ARM B		ARM C		ARM D		TIME	ARM A		ARM B		ARM C		ARM D	
	A449 STAFFORD RD (N)		BREWOOD RD (SE)		A449 STAFFORD RD (S)		BREWOOD RD (NW)			A449 STAFFORD RD (N)		BREWOOD RD (SE)		A449 STAFFORD RD (S)		BREWOOD RD (NW)	
	LANE 1	LANE 2	LANE 1	LANE 2	LANE 1	LANE 2	LANE 1	LANE 2		LANE 1	LANE 2	LANE 1	LANE 2	LANE 1	LANE 2	LANE 1	LANE 2
07:00	1	0	1	0	0	0	5	2	16:00	2	1	3	1	1	2	2	
07:05	3	2	3	0	0	0	3	1	16:05	2	2	1	4	1	5	10	
07:10	4	6	1	0	0	0	4	1	16:10	4	7	2	3	1	4	4	
07:15	5	4	1	0	0	0	3	2	16:15	2	2	2	1	2	2	1	
07:20	6	4	2	2	1	1	9	2	16:20	2	2	4	5	2	5	3	
07:25	6	6	1	1	0	0	7	3	16:25	1	2	2	4	1	2	3	
07:30	7	8	2	1	2	3	3	3	16:30	0	3	1	3	1	3	1	
07:35	2	3	2	0	0	0	7	6	16:35	5	3	2	3	4	4	2	
07:40	3	4	4	1	2	4	2	2	16:40	6	1	4	2	2	2	4	
07:45	8	10	2	2	2	3	3	3	16:45	3	4	5	4	1	5	1	
07:50	3	4	1	3	1	6	1	1	16:50	2	4	2	6	2	3	2	
07:55	9	7	3	0	0	5	2	2	16:55	1	2	3	4	3	4	3	
08:00	4	8	2	5	5	6	2	3	17:00	2	3	2	2	1	3	2	
08:05	7	2	2	0	1	5	4	4	17:05	6	7	6	2	1	3	2	
08:10	5	6	1	1	0	7	2	2	17:10	3	3	2	1	2	6	2	
08:15	3	5	6	3	3	3	1	3	17:15	5	3	4	2	2	3	1	
08:20	7	3	2	1	1	2	2	2	17:20	3	2	2	2	4	2	4	
08:25	4	2	1	2	0	2	1	1	17:25	2	1	4	3	1	2	2	
08:30	5	6	7	2	1	3	3	3	17:30	2	3	4	1	3	1	1	
08:35	4	5	5	3	2	3	1	1	17:35	2	3	1	1	2	4	1	
08:40	5	4	2	1	1	6	2	2	17:40	2	2	2	2	2	1	2	
08:45	4	3	2	0	0	8	2	2	17:45	1	2	2	2	0	1	3	
08:50	5	2	2	1	1	9	2	2	17:50	2	2	2	1	1	1	3	
08:55	6	4	1	2	1	4	3	3	17:55	1	3	3	5	1	2	1	
09:00	4	3	2	0	1	5	4	4	18:00	0	1	1	4	1	3	1	
09:05	2	4	1	2	2	3	3	3	18:05	1	2	2	1	0	1	1	
09:10	4	0	1	3	0	2	2	2	18:10	4	2	1	2	1	3	1	
09:15	3	3	3	1	0	3	1	1	18:15	3	1	1	0	0	5	1	
09:20	2	1	1	0	1	3	2	2	18:20	1	1	1	1	0	3	0	
09:25	3	0	1	1	0	0	1	1	18:25	0	0	1	0	0	1	2	
09:30	2	0	1	0	1	2	1	1	18:30	1	1	3	0	1	1	1	
09:35	1	0	1	0	0	2	1	1	18:35	4	3	1	0	1	2	1	
09:40	3	1	1	2	0	4	3	3	18:40	1	1	1	1	0	1	3	
09:45	3	1	2	1	0	1	1	1	18:45	1	1	2	2	2	1	1	
09:50	2	1	1	0	0	2	1	1	18:50	2	1	0	2	0	4	0	
09:55	2	0	1	0	0	2	2	2	18:55	1	0	2	1	0	1	0	

AVERAGE QUEUES BY HOUR COMMENCING								AVERAGE QUEUES BY HOUR COMMENCING							
07:15	5	6	2	1	1	5	3	16:30	3	3	3	3	2	3	2
08:00	5	4	3	2	1	5	2	17:00	3	3	3	2	2	2	2

DTA OUTPUT

AM PEAK 07:15 - 08:15
 PM PEAK 17:30 - 18:30

SITE: 2
 LOCATION: A449 STAFFORD RD (N) / BREWOOD RD (SE) / A449 STAFFORD RD (S) / BREWOOD RD (NW)

Existing

AM ALL VEHICLES

	A	B	C	D	Total
A	0	17	960	127	1104
B	19	1	2	68	90
C	706	83	17	86	892
D	214	85	230	0	529
Total	939	186	1209	281	2615

A A449 STAFFORD RD (N)
 B BREWOOD RD (SE)
 C A449 STAFFORD RD (S)
 D BREWOOD RD (NW)

PM ALL VEHICLES

	A	B	C	D	Total
A	1	20	460	186	667
B	15	0	4	97	116
C	495	39	19	181	734
D	90	44	106	0	240
Total	601	103	589	464	1757

ACTUAL PEAK HOUR

AM PEAK 07:15 - 08:15
 PM PEAK 16:30 - 17:30

AM HGVS

	A	B	C	D	Total
A	0	0	87	5	92
B	2	0	0	4	6
C	78	1	3	5	87
D	4	11	4	0	19
Total	84	12	94	14	204

PM HGVS

	A	B	C	D	Total
A	0	1	16	1	18
B	0	0	0	1	1
C	36	2	0	0	38
D	1	1	2	0	4
Total	37	4	18	2	61

1 HV = 2.3 PCU

AM PCU

	A	B	C	D	Total
A	0	17	1073	134	1224
B	22	1	2	73	98
C	807	84	21	93	1005
D	219	99	235	0	554
Total	1048	202	1331	299	2880

PM PCU

	A	B	C	D	Total
A	1	21	481	187	690
B	15	0	4	98	117
C	542	42	19	181	783
D	91	45	109	0	245
Total	649	108	612	467	1836

APPENDIX C:

TEMPRO Growth Factors



1: Select NTM Dataset:

NTM Dataset Description	From	To
▶ RTF 2018 Scenario 1 - Reference	2015	2050
NTM AF15 Dataset	2010	2040

2: Select Areas to make up the geographic region:

- South Staffordshire
- South Staffordshire 008 (E02006181)
- Wolverhampton

3. Select area type:

- Urban
- Rural
- All

4. Select road type:

- Motorway
- Trunk
- Principal
- Minor
- All

5. Select which area it serves:

- Region
- England

Calculate the adjusted local growth figure

Results

Level	Area	Local Growth Figure
Authority	South Staffordshire	1.0909
E02006181	South Staffordshire 008	1.1051
Authority	Wolverhampton	1.1390





1: Select NTM Dataset:

NTM Dataset Description	From	To
▶ RTF 2018 Scenario 1 - Reference	2015	2050
NTM AF15 Dataset	2010	2040

2: Select Areas to make up the geographic region:

- South Staffordshire
- South Staffordshire 008 (E02006181)
- Wolverhampton

3. Select area type:

- Urban
- Rural
- All

4. Select road type:

- Motorway
- Trunk
- Principal
- Minor
- All

5. Select which area it serves:

- Region
- England

Calculate the adjusted local growth figure

Results

Level	Area	Local Growth Figure
Authority	South Staffordshire	1.0881
E02006181	South Staffordshire 008	1.1045
Authority	Wolverhampton	1.1383



Dataset Version:	72
Result Type:	Trip ends by time period
Base Year:	2016
Future Year:	2031
Trip Purpose Group:	All purposes
Time Period:	Weekday AM peak period (0700 - 0959)
Trip End Type:	Origin/Destination
Alternative Assumptions Applied:	No

Growth Factor

Area Description		All purposes	
Level	Name	Origin	Destination
E02006195	Stafford 008	1.0728	1.1014

Future Year - Base Year

Area Description		All purposes	
Level	Name	Origin	Destination
E02006195	Stafford 008	176	195

Base Year

Area Description		All purposes	
Level	Name	Origin	Destination
E02006195	Stafford 008	2,414	1,925

Future Year

Area Description		All purposes	
Level	Name	Origin	Destination
E02006195	Stafford 008	2,590	2,121

Level	Area	Local Growth Figure
E02006195	Stafford 008	1.115

APPENDIX D:

Traffic Flow Diagrams

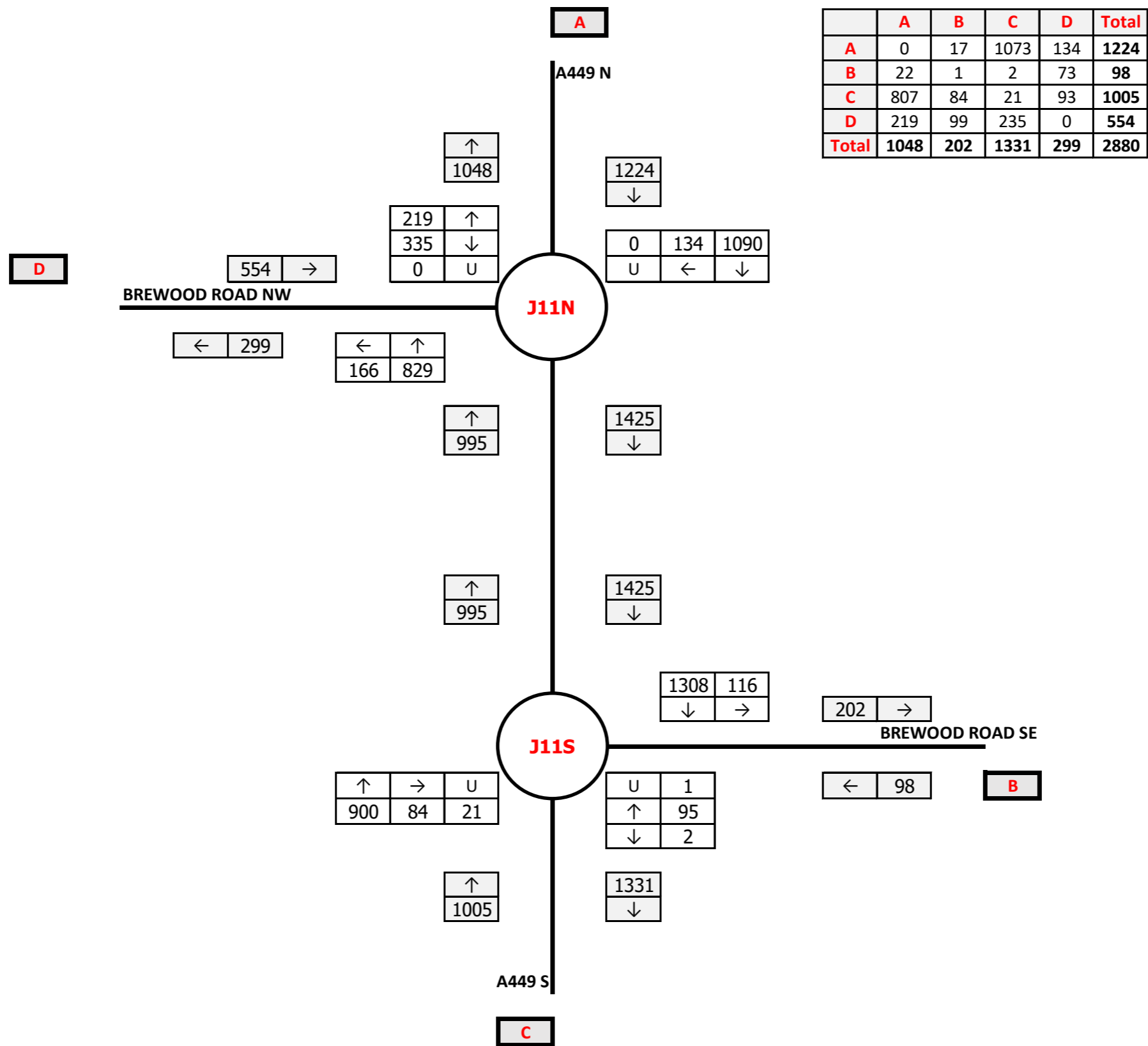
C22001 LAND EAST OF BILBROOK

STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2022 SURVEYED FLOWS AM PEAK HOUR PCUs
07:15 TO 08:15

SURVEY DATE: WEDNESDAY 16 MARCH 2022



C22001 LAND EAST OF BILBROOK

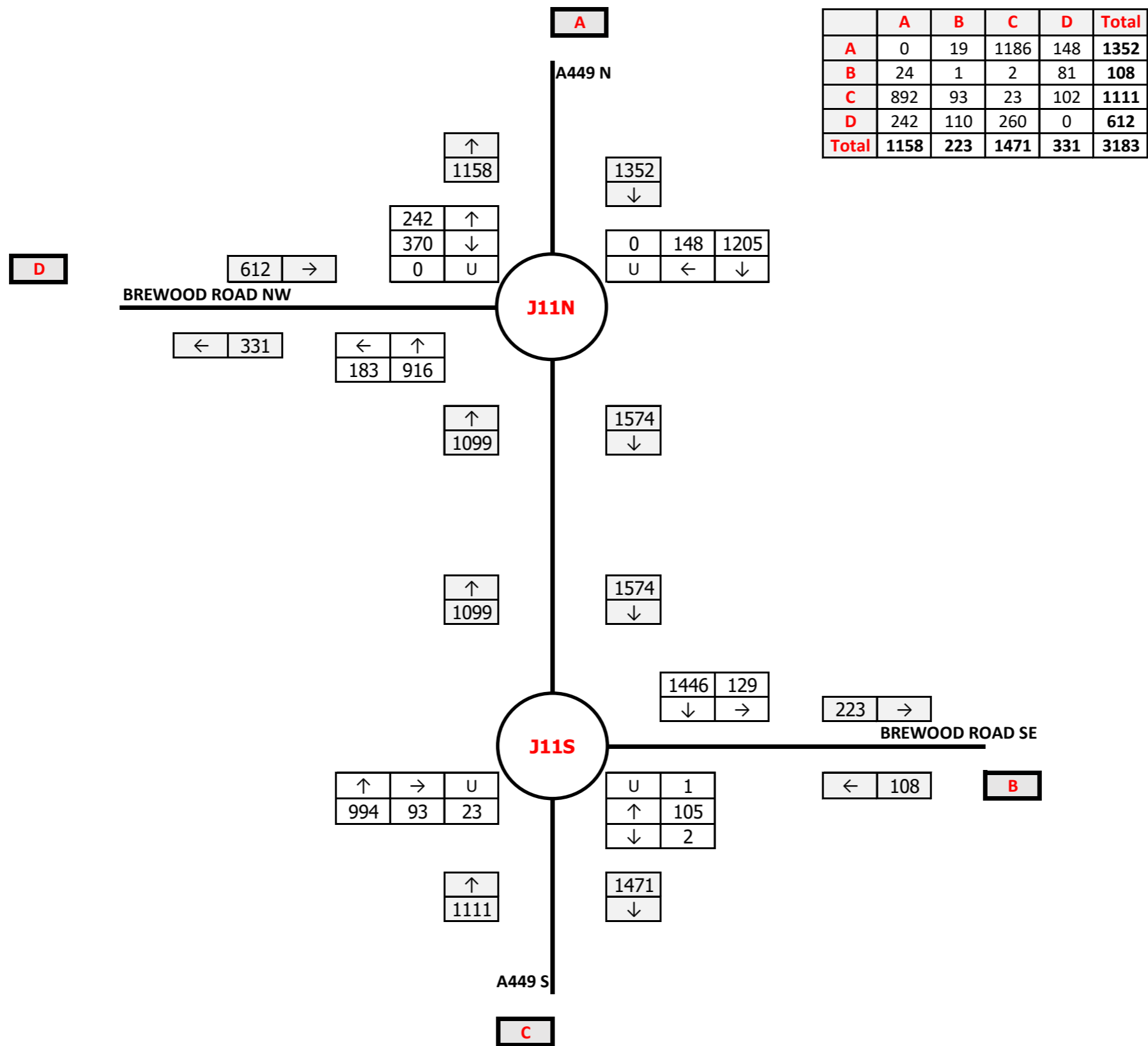
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 BASE FLOWS AM PEAK HOUR PCUs
07:15 TO 08:15

TEMPO FACTOR: 1.105

SOUTH STAFFORDSHIRE 008 MSOA
2022 TO 2038



C22001 LAND EAST OF BILBROOK

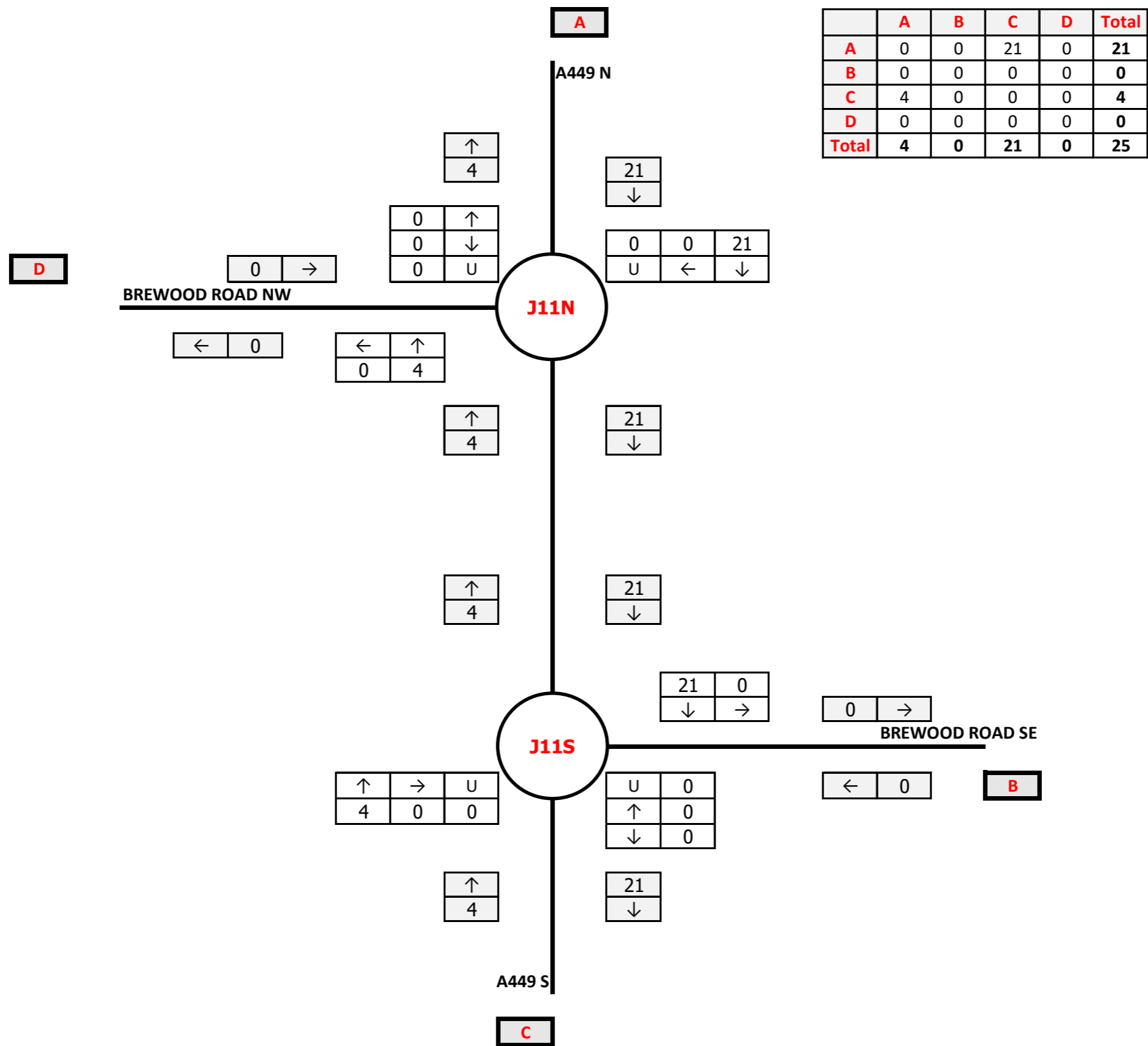
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENT 1 AM PEAK HOUR PCUs
08:00 TO 09:00 Assumed

WOLVERHAMPTON BUSINESS PARK
(SSDC REF: 11/00100/OUT)

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2031 FLOWS FROM APPENDIX 6.B



C22001 LAND EAST OF BILBROOK

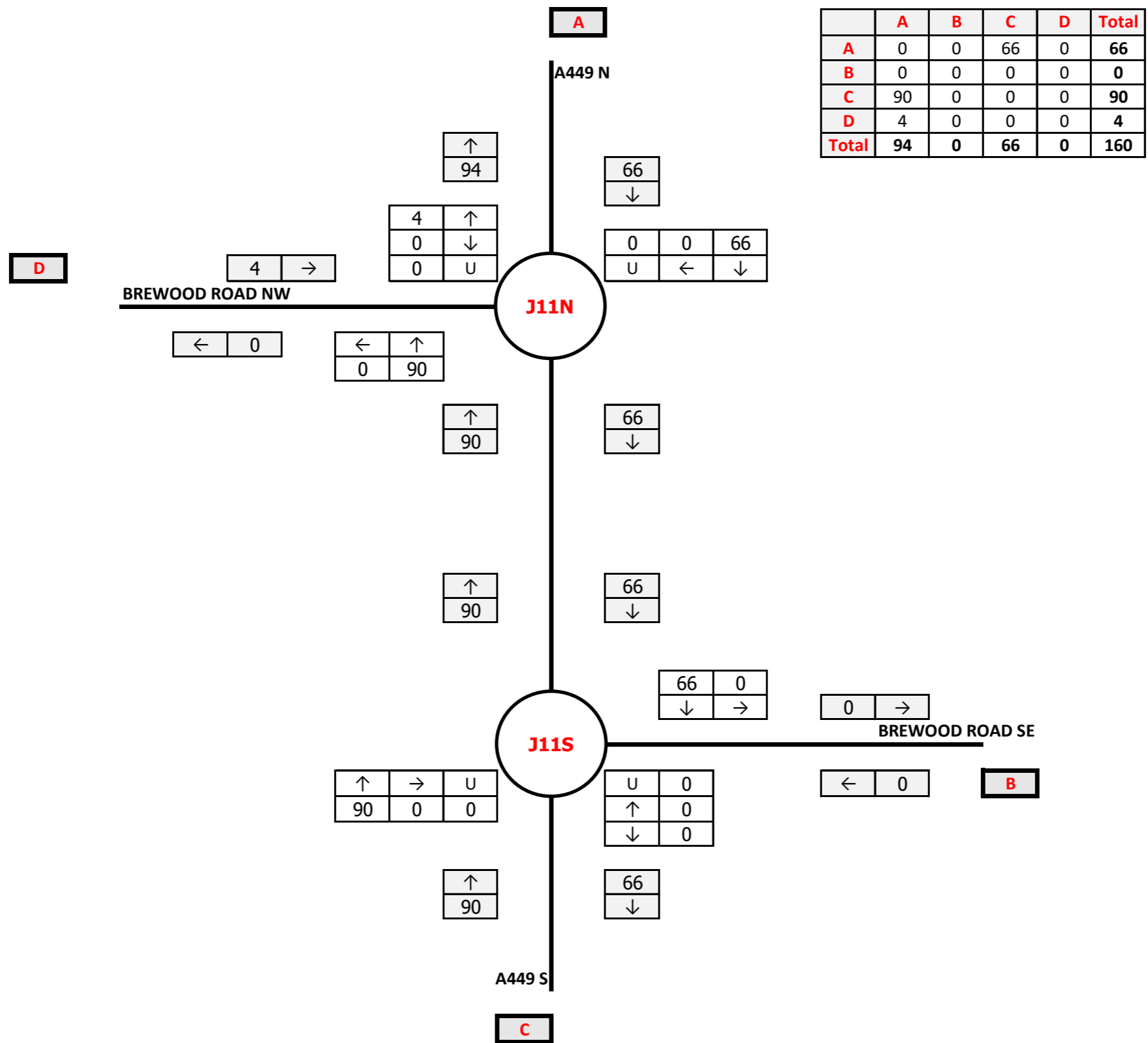
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENT 2 AM PEAK HOUR PCUs
08:00 TO 09:00 Assumed

FOUR ASHES
(SSDC REF: 16/00498/FUL)

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2031 FLOWS FROM APPENDIX 6.B



C22001 LAND EAST OF BILBROOK

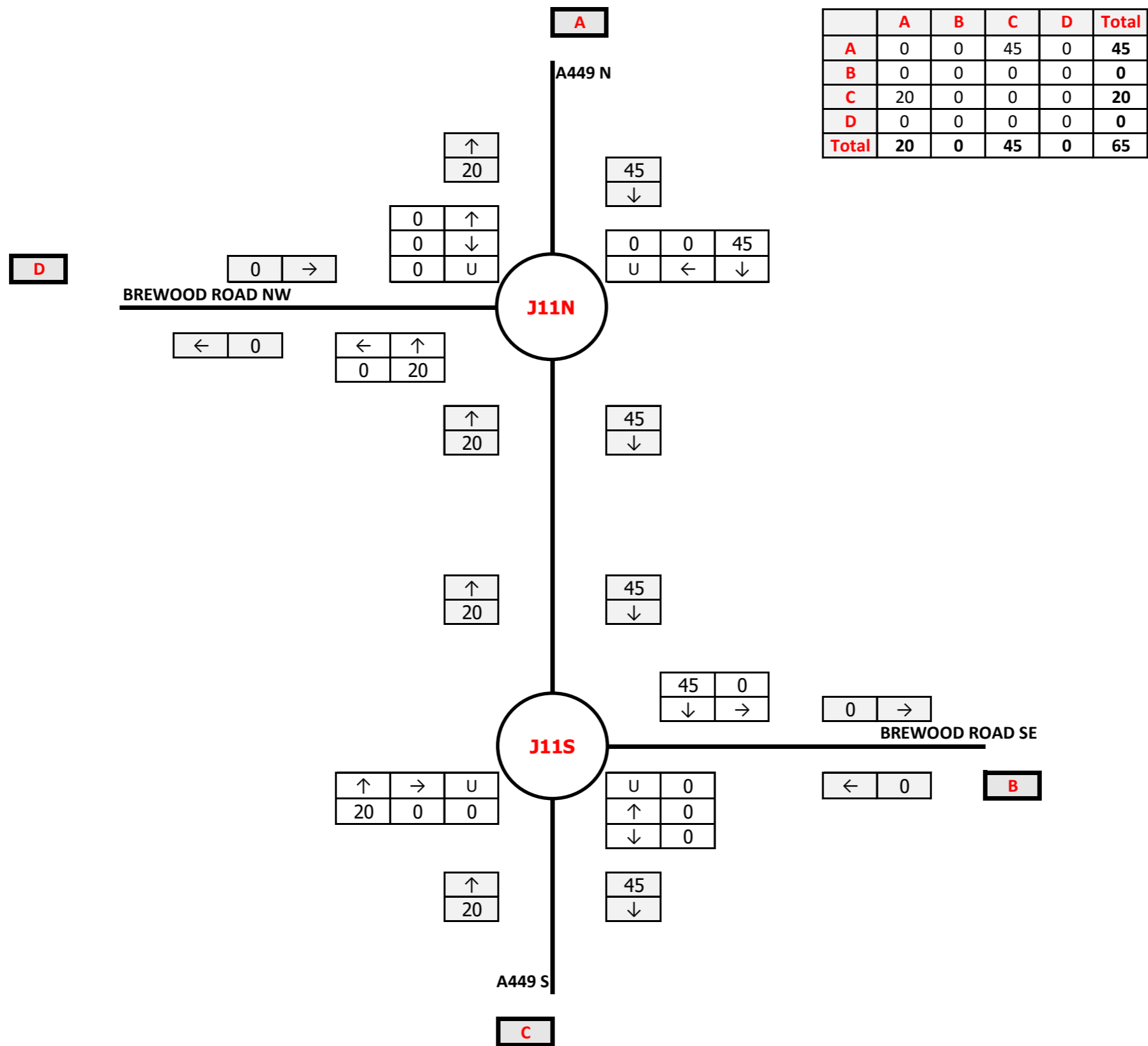
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENT 3A AM PEAK HOUR PCUs
08:00 TO 09:00 Assumed

i54 UNOCCUPIED/NOT CONSTRUCTED

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2031 FLOWS FROM APPENDIX 6.B



C22001 LAND EAST OF BILBROOK

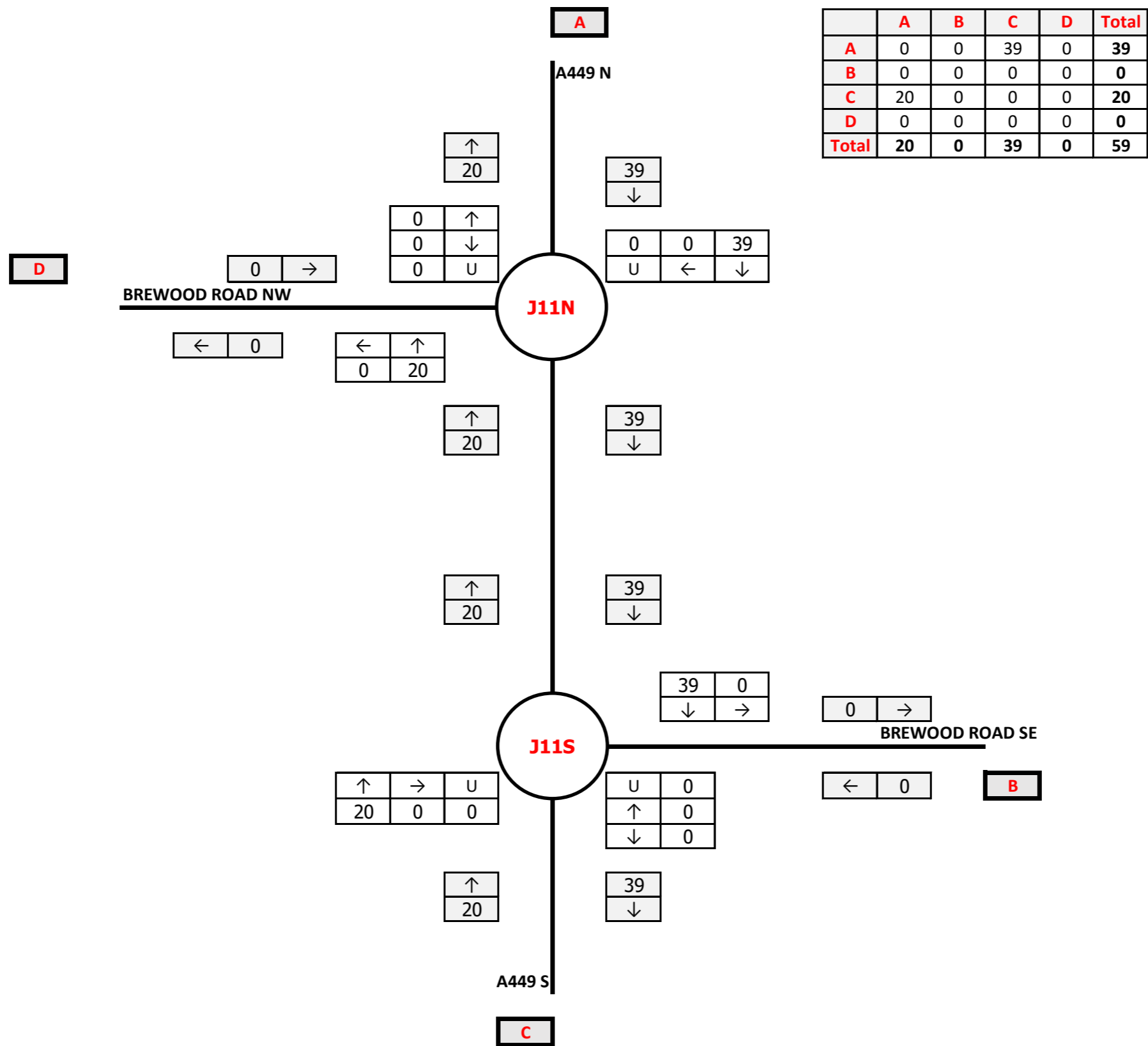
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TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENT 3B AM PEAK HOUR PCUs
08:00 TO 09:00 Assumed

i54 WESTERN EXTENSION
(SSDC REF: 18/00637/OUT)

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2031 FLOWS FROM APPENDIX 6.B



C22001 LAND EAST OF BILBROOK

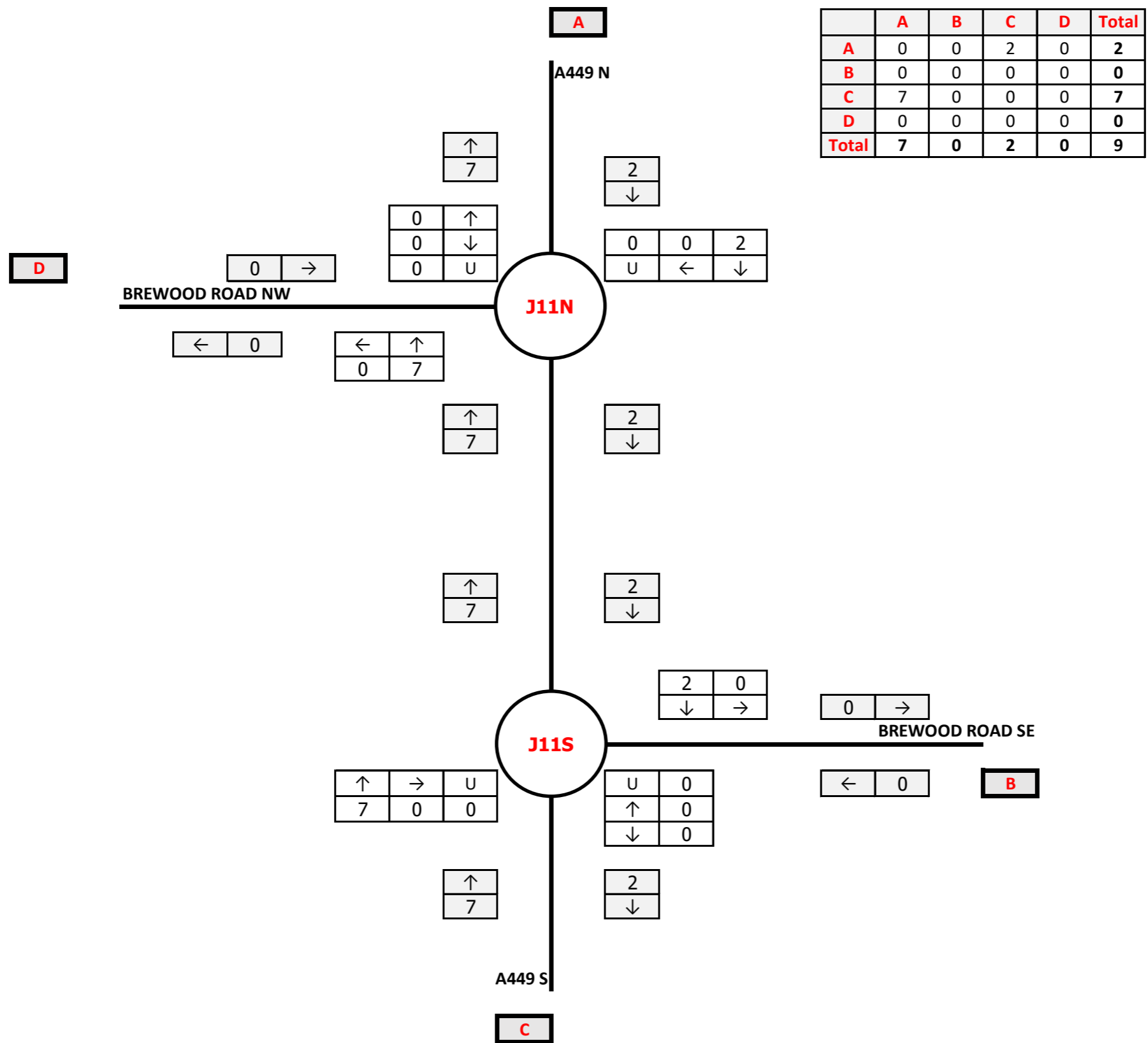
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENT 4 AM PEAK HOUR PCUs
08:00 TO 09:00 Assumed

PENDEFORD MILL LANE, BILBROOK (BILBROOK MILL)
(SSDC REF: 18/00710/FUL)

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2031 FLOWS FROM APPENDIX 6.B



C22001 LAND EAST OF BILBROOK

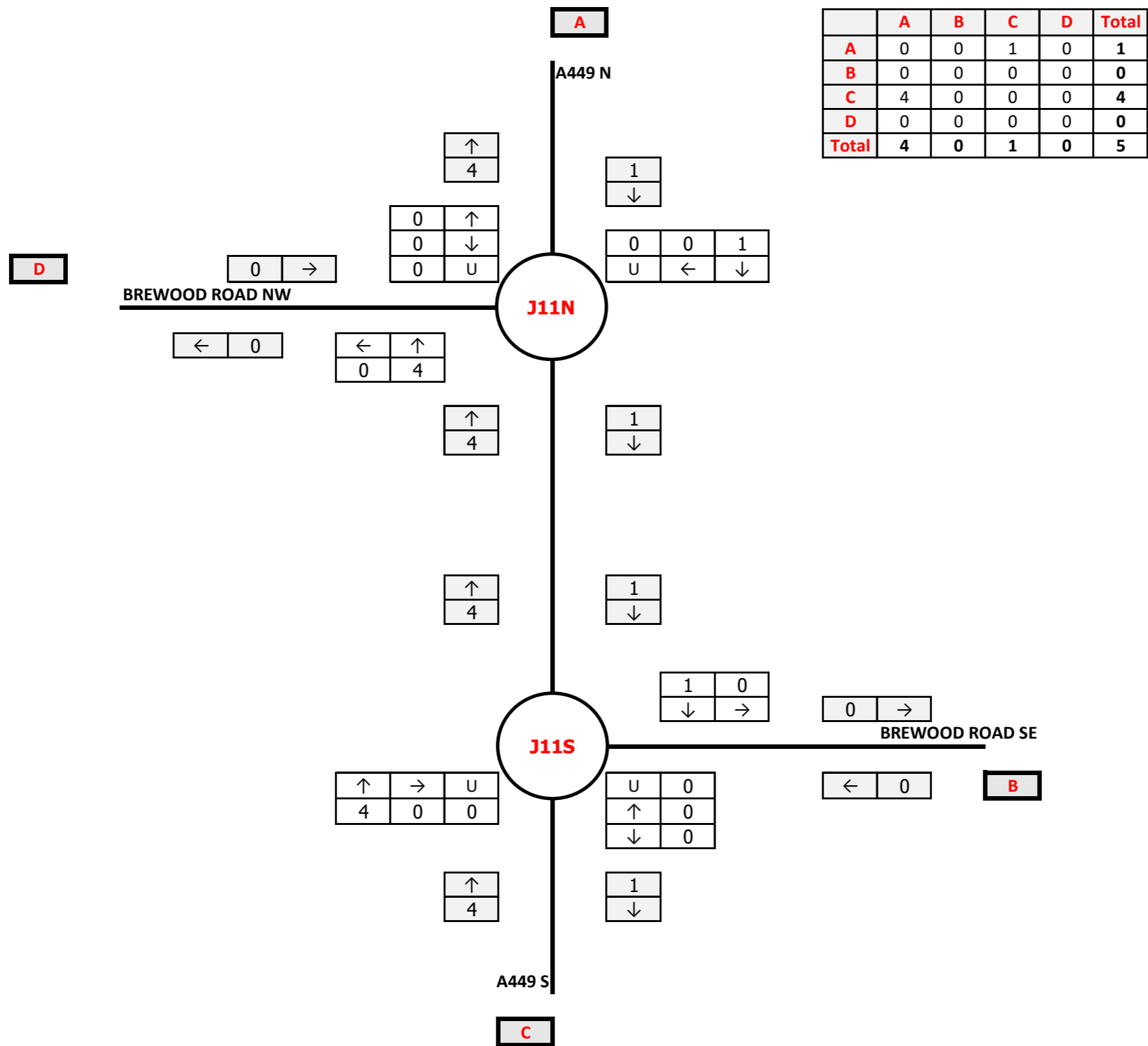
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENT 5 AM PEAK HOUR PCUs
08:00 TO 09:00 Assumed

HOBNOCK ROAD
(SSDC REF: 18/00450/REM)

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2031 FLOWS FROM APPENDIX 6.B



C22001 LAND EAST OF BILBROOK

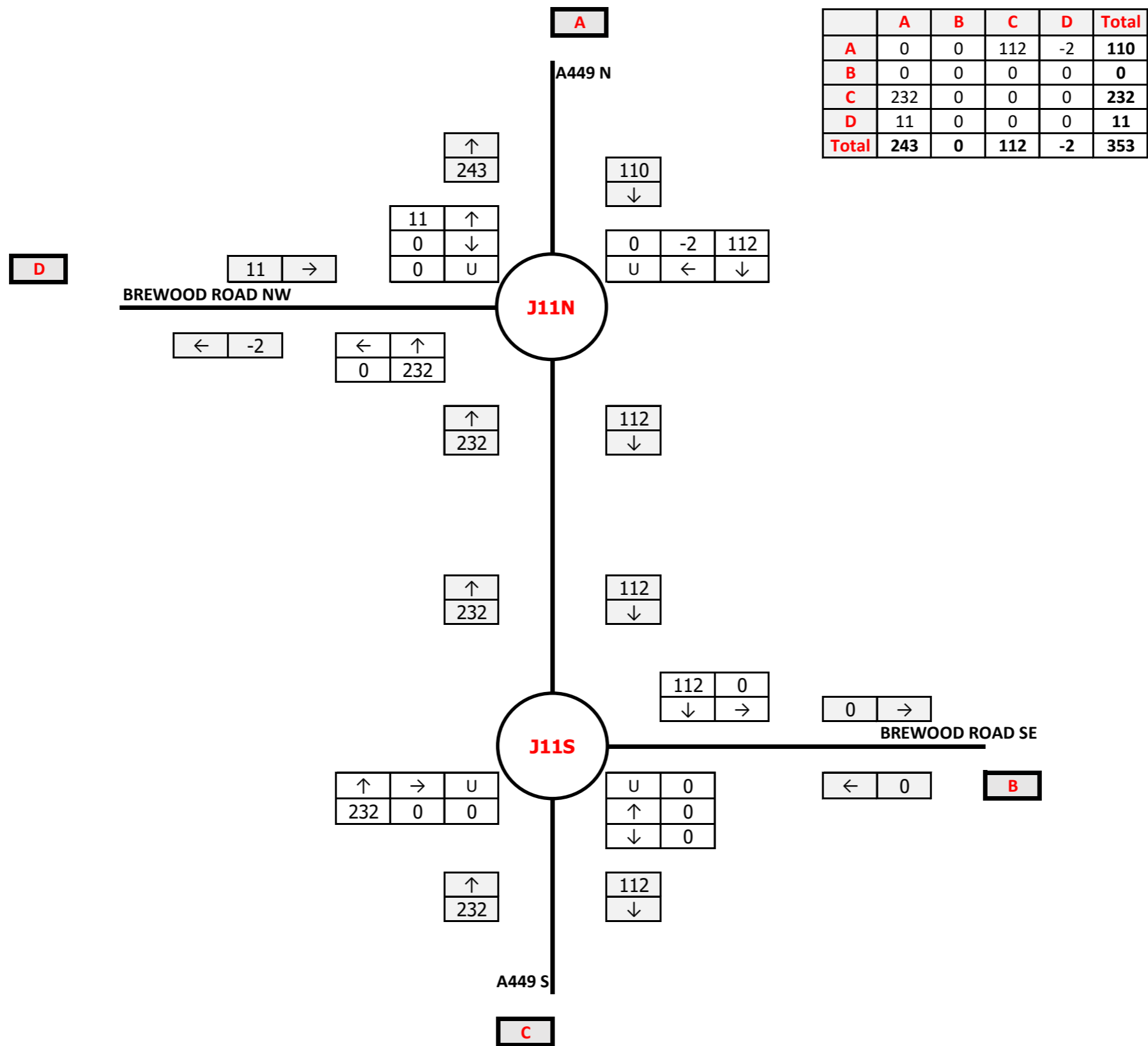
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENT 6 AM PEAK HOUR PCUs
08:00 TO 09:00 Assumed

WEST MIDLANDS INTERCHANGE (WMI)
(DCO REF: TR050005)

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2031 FLOWS FROM APPENDIX 6.B



C22001 LAND EAST OF BILBROOK

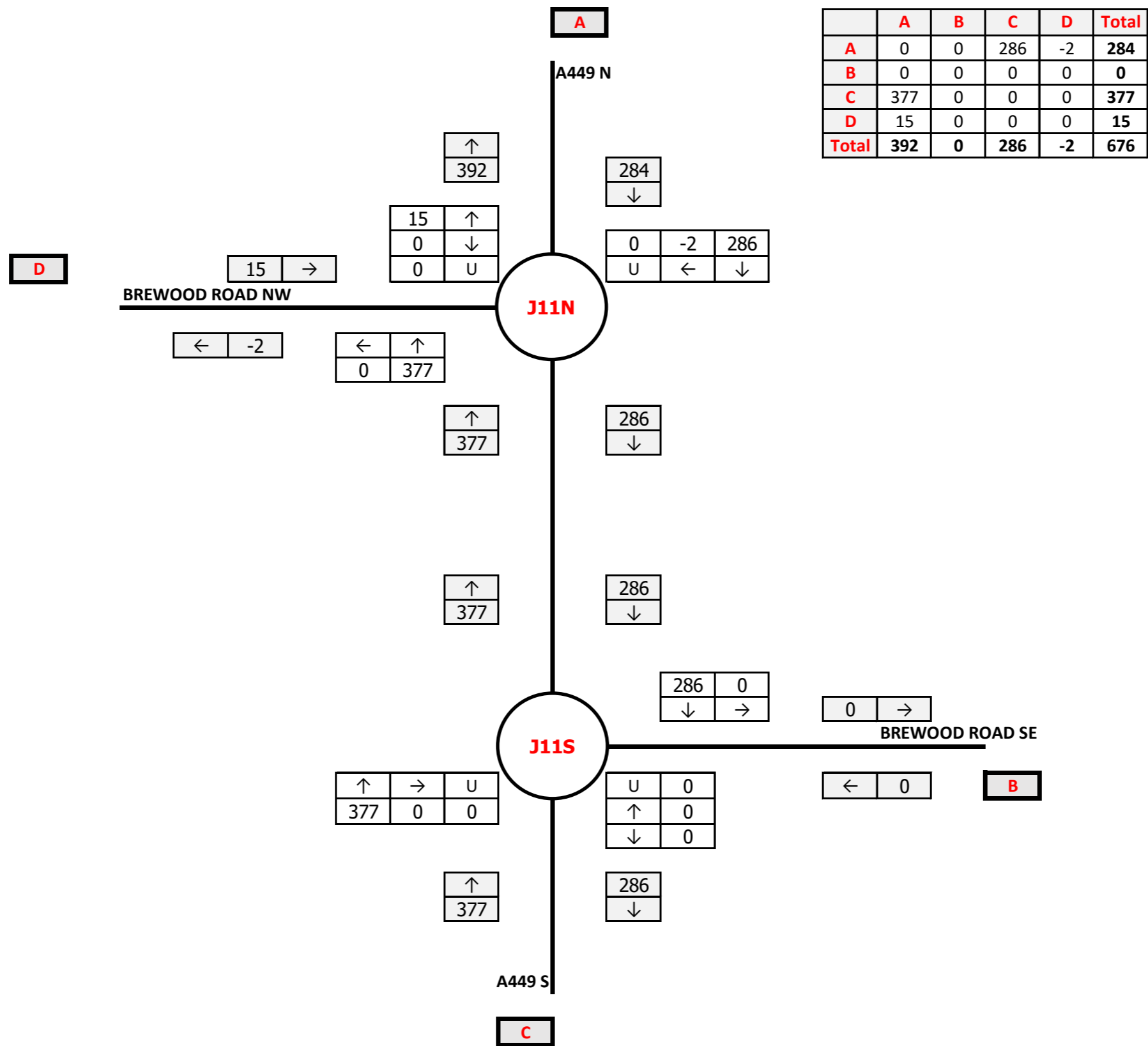
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENTS 1-6 AM PEAK HOUR PCUs
08:00 TO 09:00 Assumed

SUB-TOTAL OF SITES INCLUDED IN LOGIC 54 TA

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2031 FLOWS FROM APPENDIX 6.B



C22001 LAND EAST OF BILBROOK

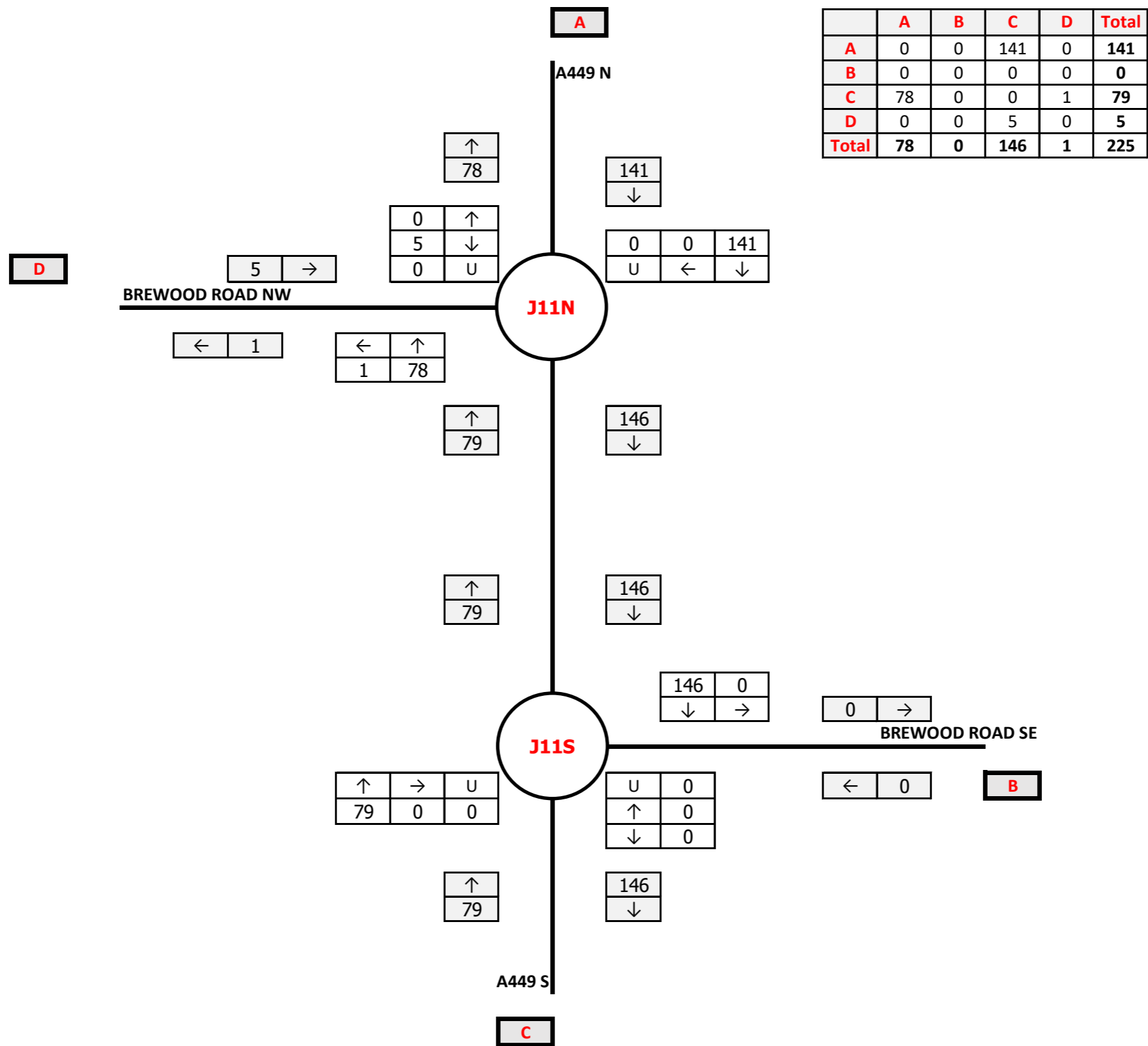
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENT 7 AM PEAK HOUR PCUs
08:00 TO 09:00 Assumed

LOGIC 54 FEATHERSTONE
(SSDC REF: 20/01131/OUT)

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
TOTAL DEVELOPMENT TRAFFIC FLOWS FROM APPENDIX 6.I



C22001 LAND EAST OF BILBROOK

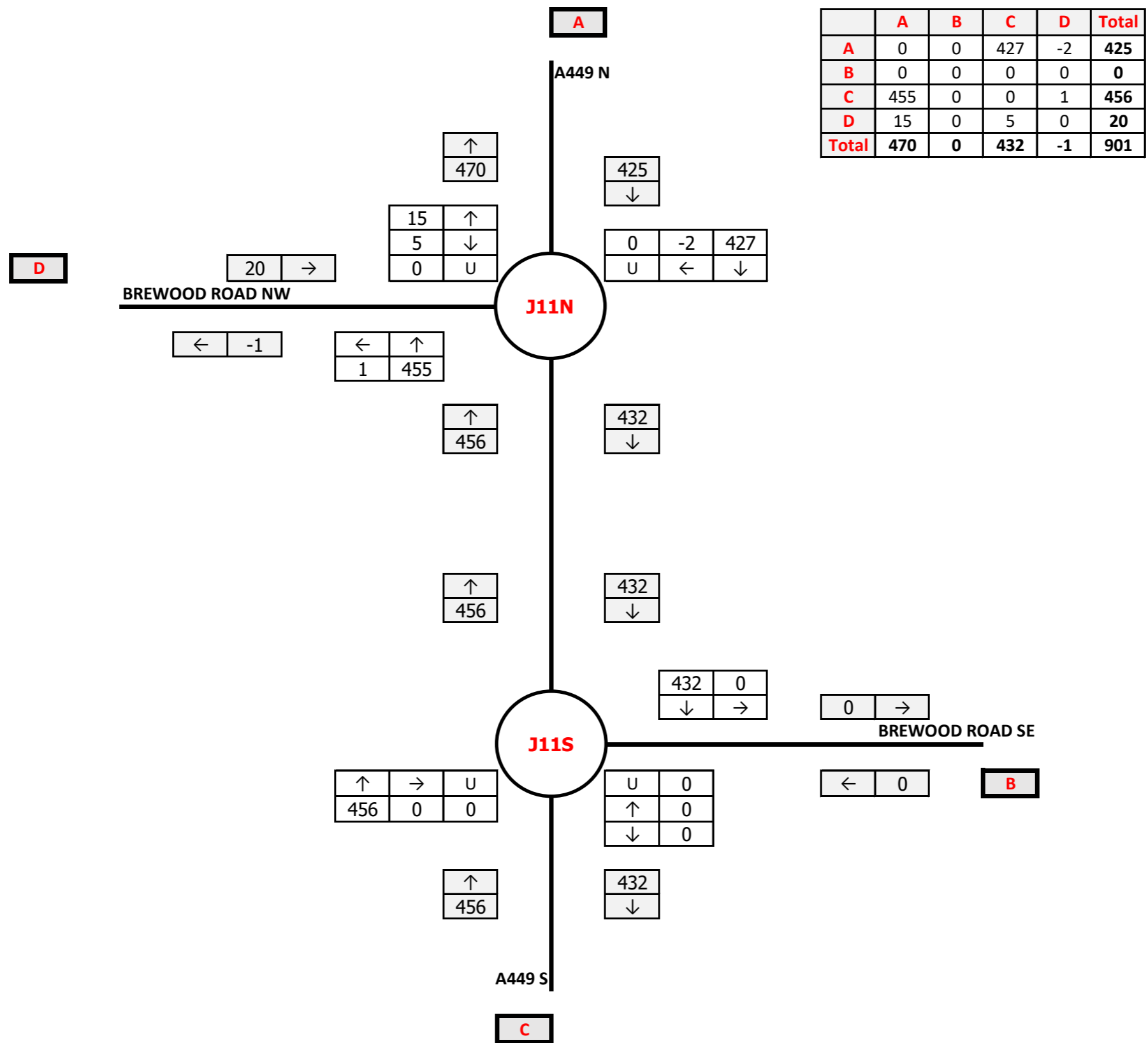
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENTS 1-7 AM PEAK HOUR PCUs
08:00 TO 09:00 Assumed

GRAND TOTAL

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)



C22001 LAND EAST OF BILBROOK

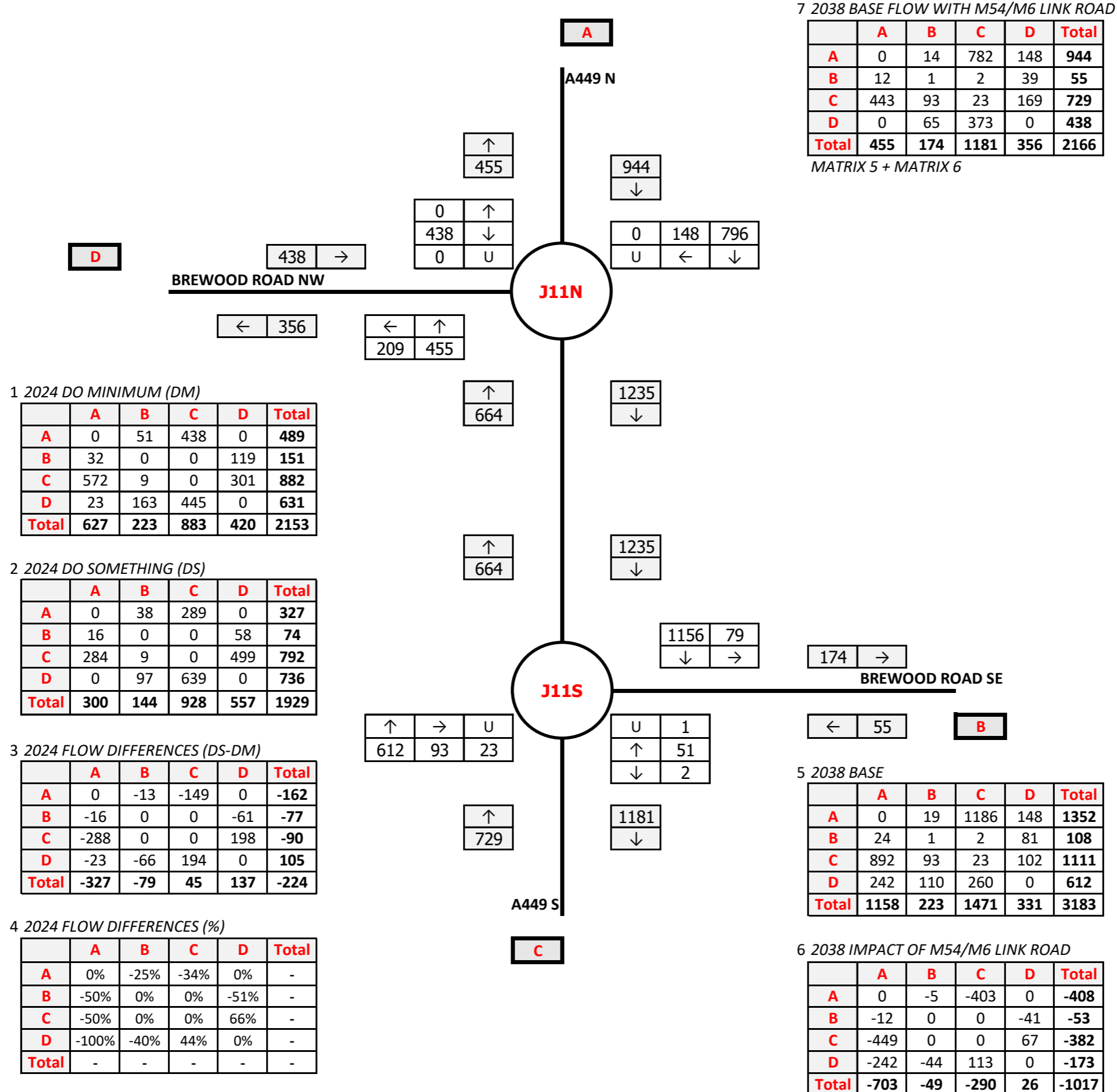
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 M54/M6 LINK ROAD EFFECTS AM PEAK HOUR PCUs
08:00 TO 09:00 Assumed

ADJUSTED BASE FLOWS

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2024 FLOWS TAKEN FROM APPENDIX 6.J



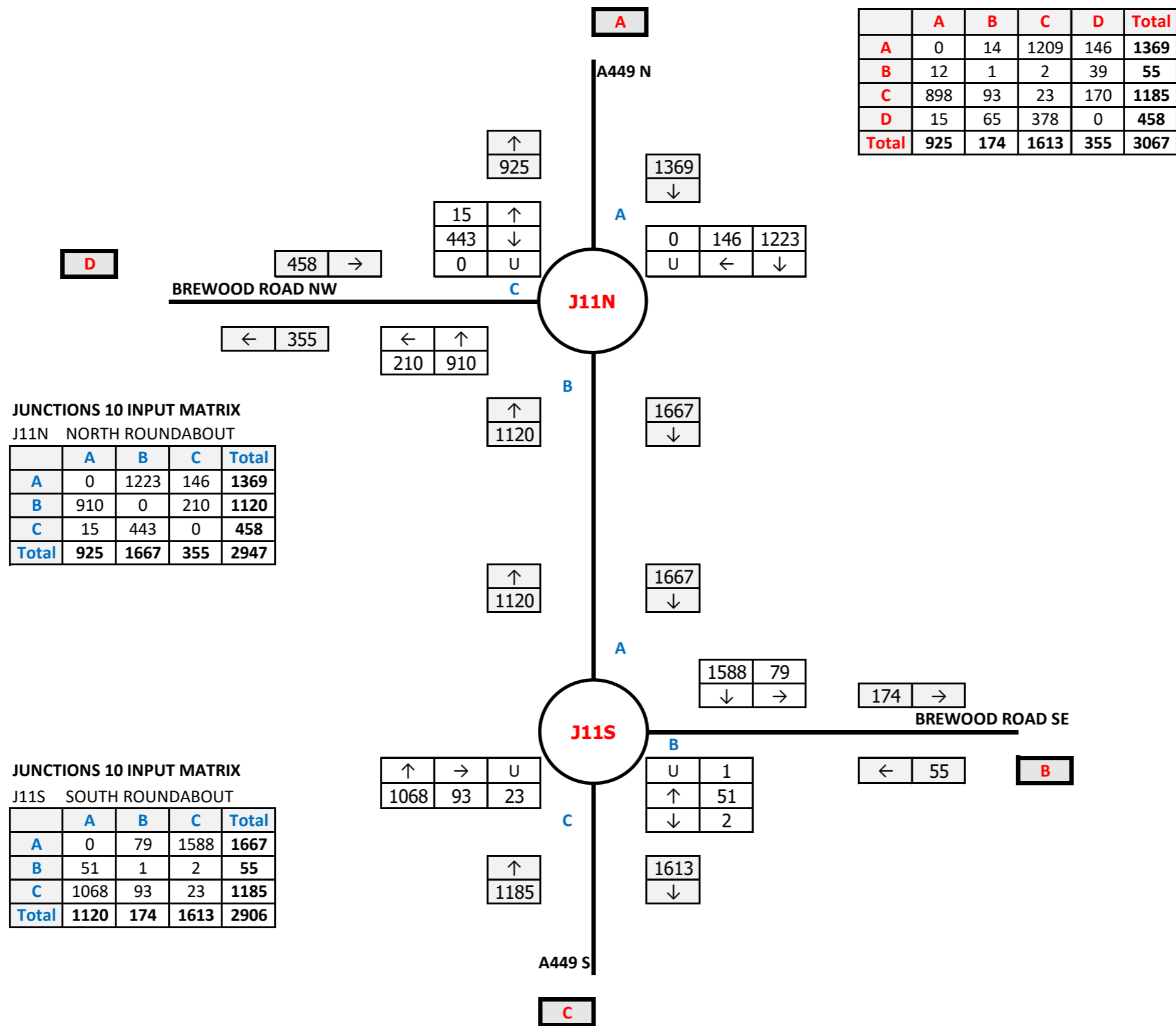
C22001 LAND EAST OF BILBROOK

STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 NO DEVELOPMENT SCENARIO AM PEAK HOUR PCUs
07:15 TO 08:15

2038 ADJUSTED BASE FLOWS (WITH M54/M6 LINK) + COMMITTED DEVELOPMENT (GRAND TOTAL)



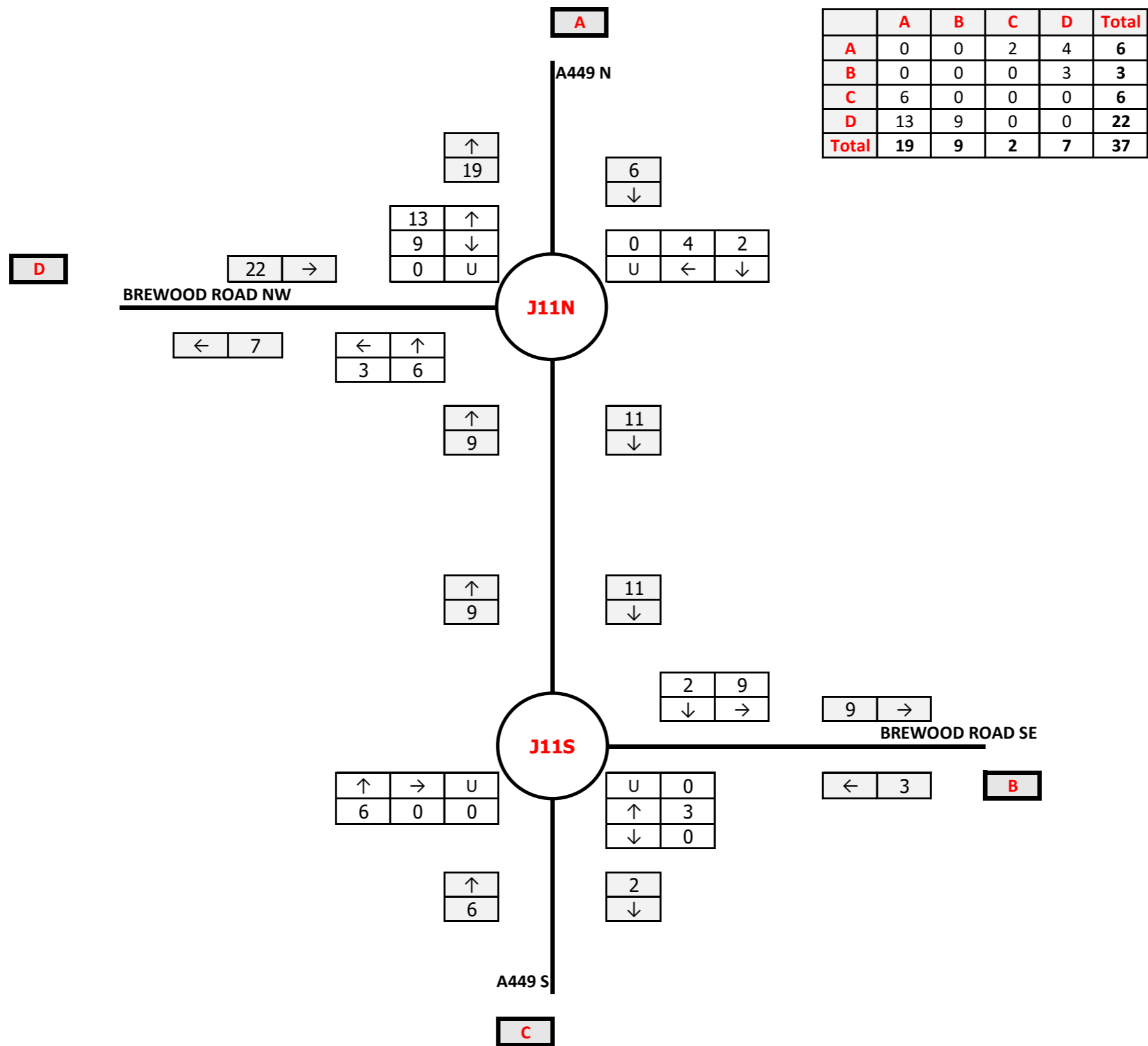
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STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 DEVELOPMENT SA1 AM PEAK HOUR PCUs
08:00 TO 09:00

LAND EAST OF BILBROOK



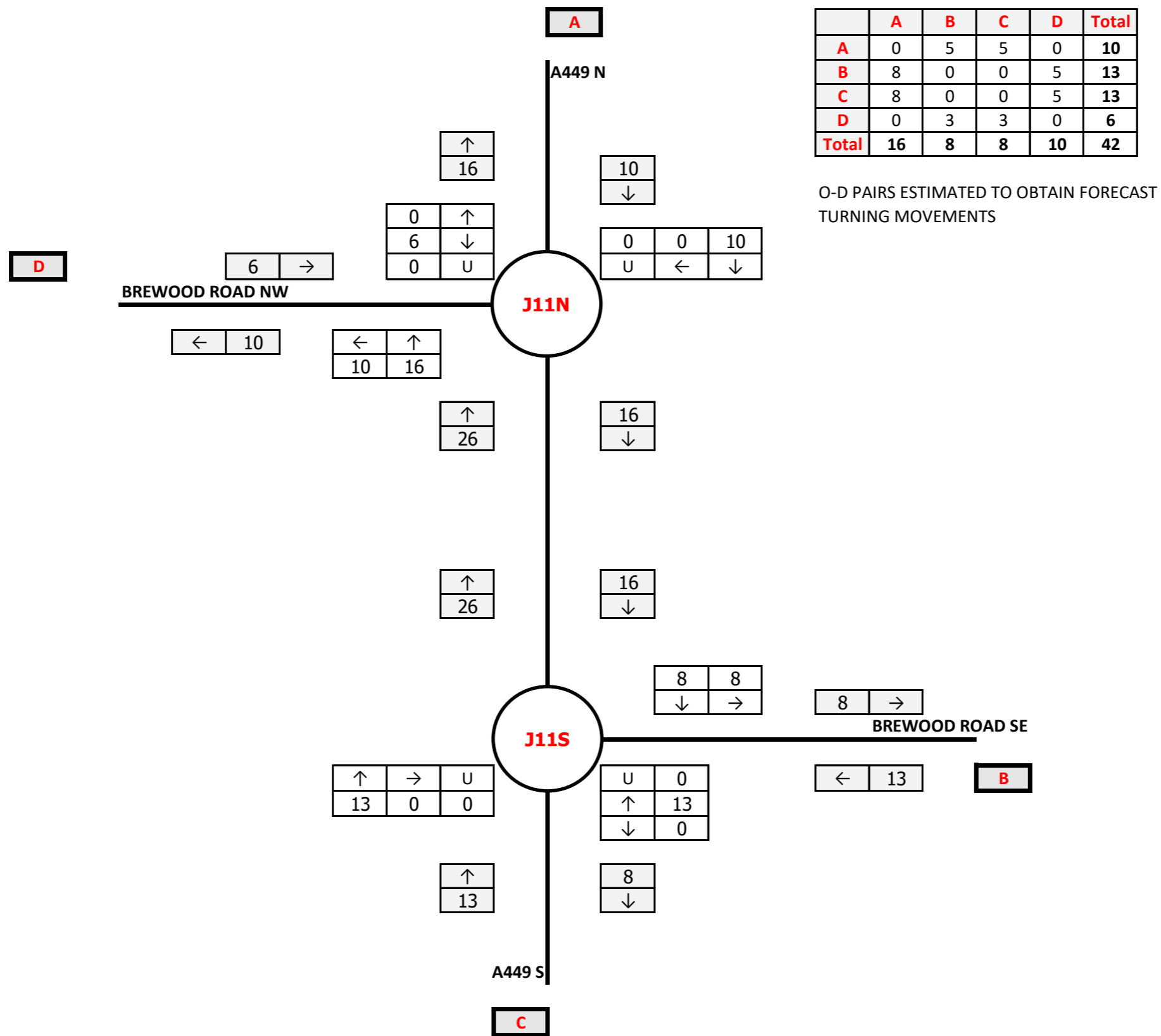
C22001 LAND EAST OF BILBROOK

STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 DEVELOPMENTS SA2 AND SA3 AM PEAK HOUR PCUs
08:00 TO 09:00

LAND AT CROSS GREEN AND LINTHOUSE LANE



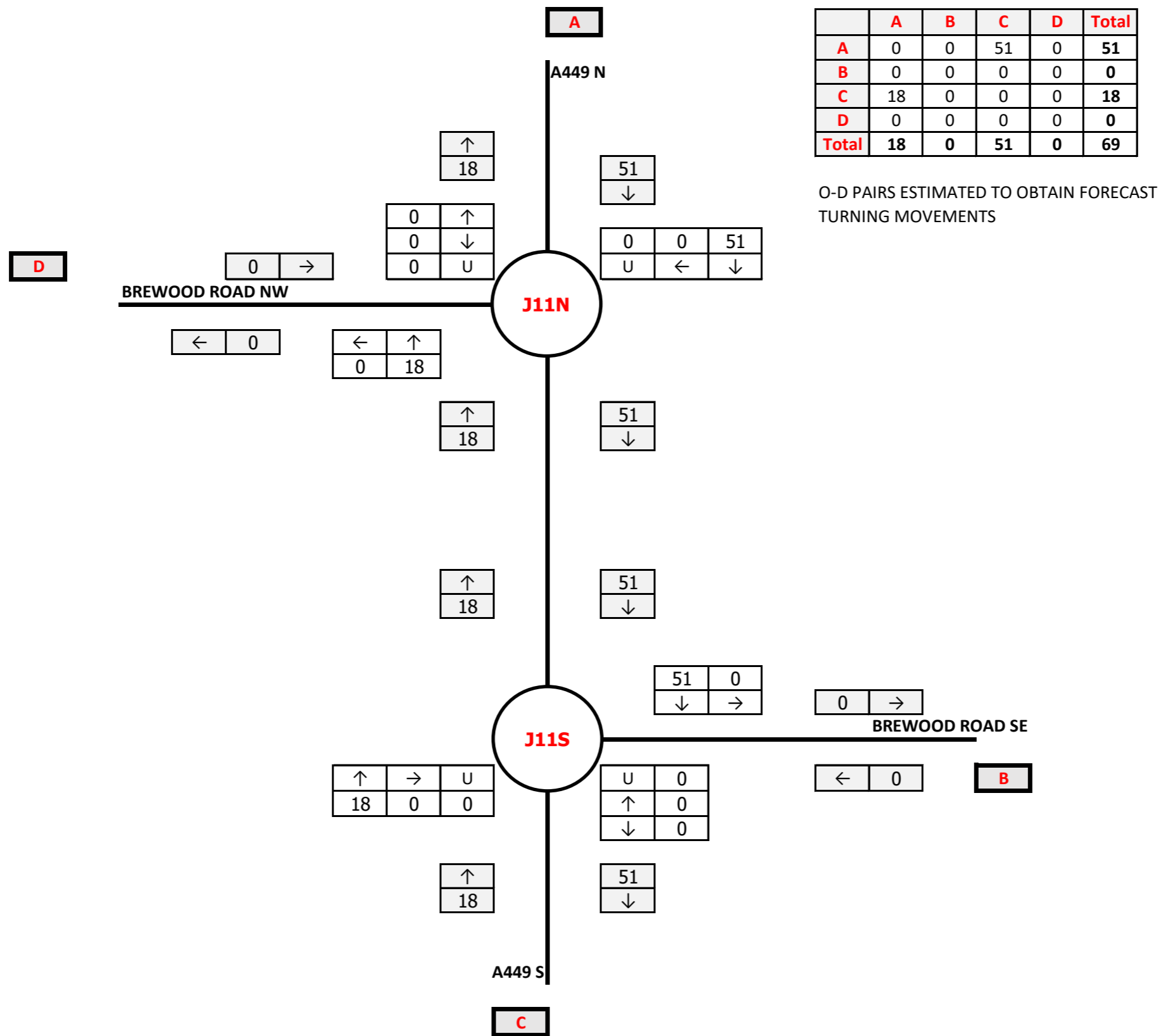
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STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 DEVELOPMENT SA4 AM PEAK HOUR PCUs
08:00 TO 09:00

LAND NORTH OF PENKRIDGE



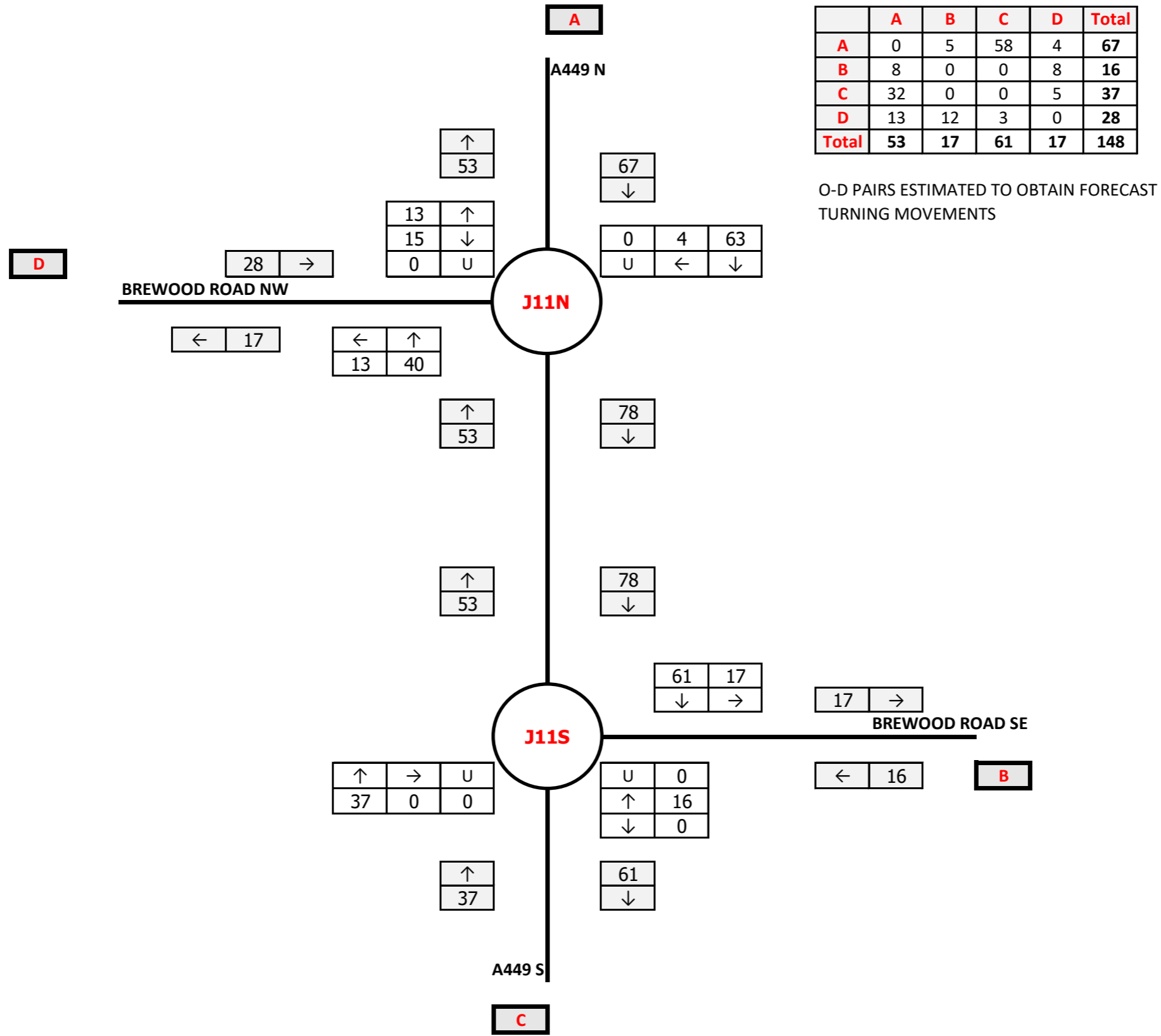
C22001 LAND EAST OF BILBROOK

STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 CUMULATIVE DEVELOPMENT AM PEAK HOUR PCUs
08:00 TO 09:00

SITES SA1 TO SA4



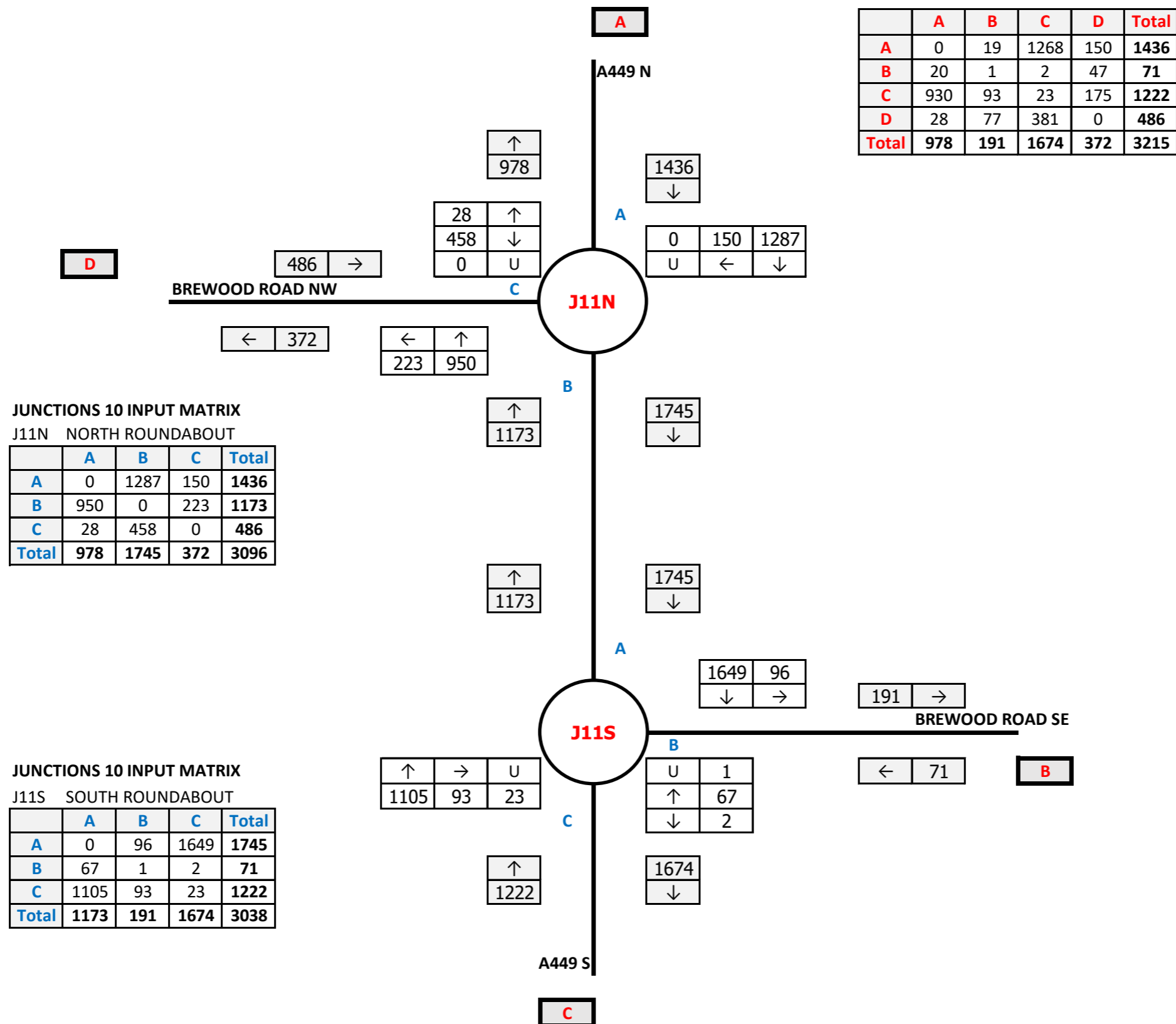
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STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 WITH DEVELOPMENT SCENARIO AM PEAK HOUR PCUs
07:15 TO 08:15

2038 ADJUSTED BASE FLOWS (WITH M54/M6 LINK) + COMMITTED DEVELOPMENT (GRAND TOTAL) + CUMULATIVE DEVELOPMENT TOTAL



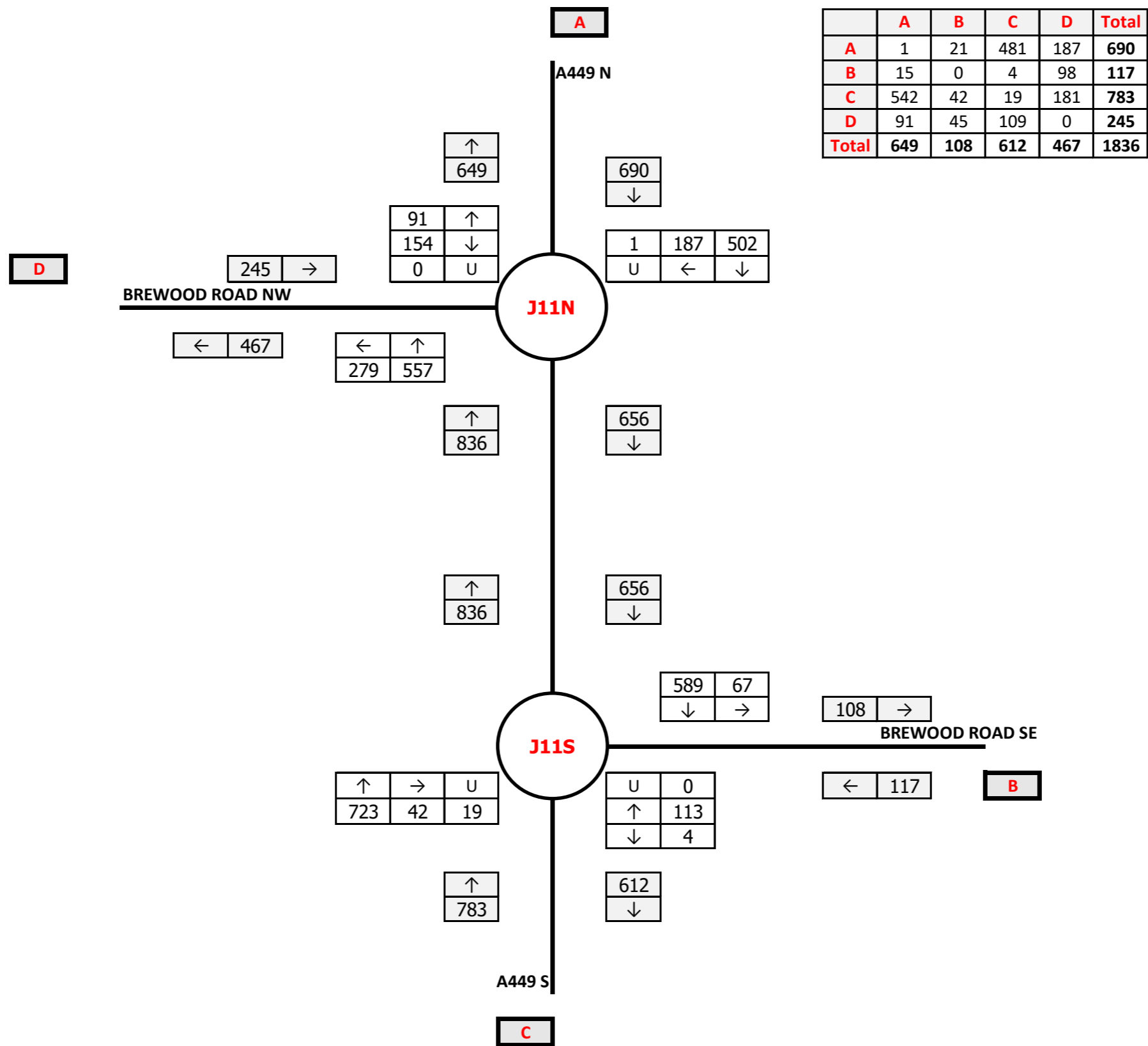
C22001 LAND EAST OF BILBROOK

STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2022 SURVEYED FLOWS PM PEAK HOUR PCUs
16:30 TO 17:30

SURVEY DATE: WEDNESDAY 16 MARCH 2022



C22001 LAND EAST OF BILBROOK

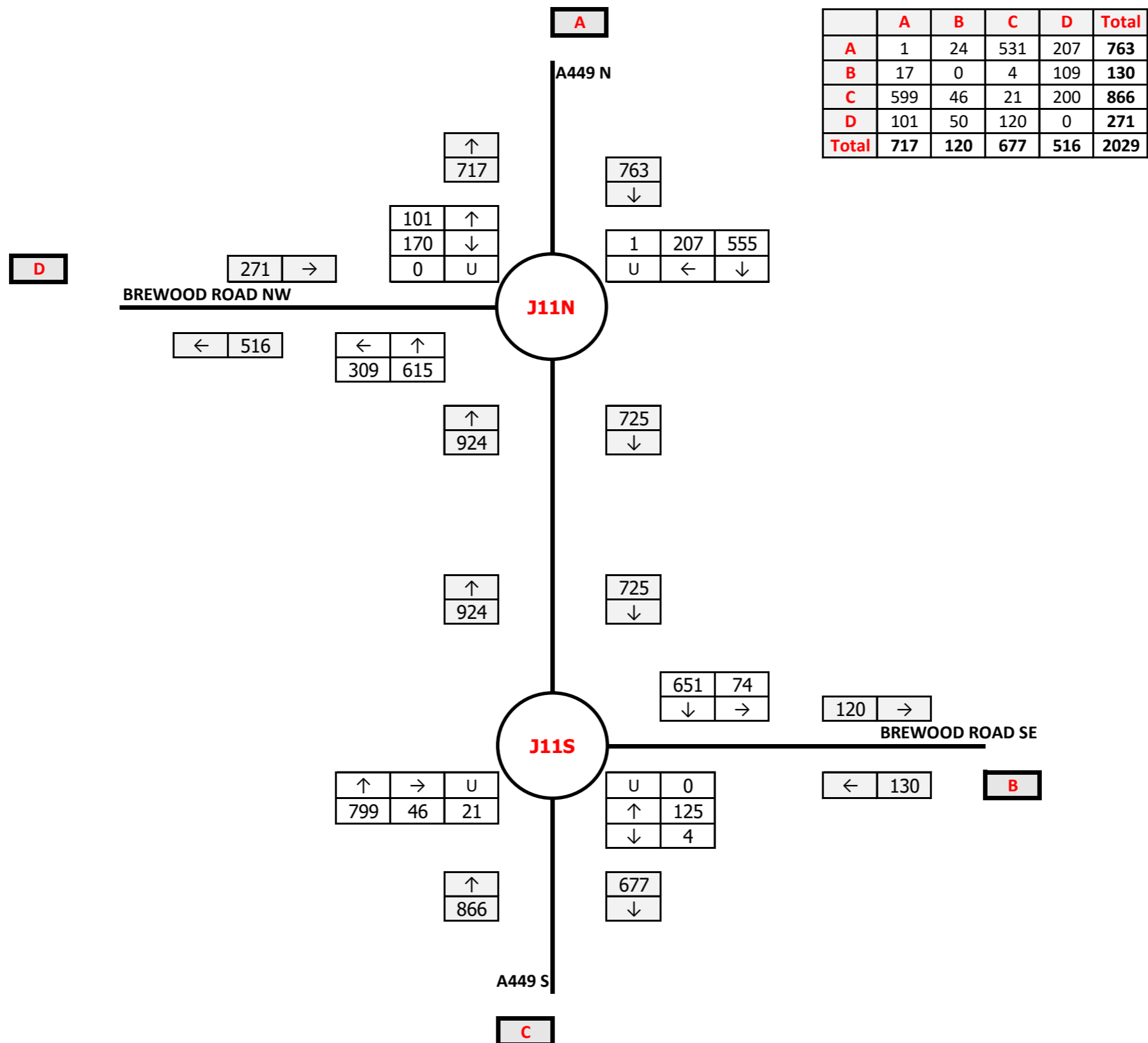
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 BASE FLOWS PM PEAK HOUR PCUs
16:30 TO 17:30

TEMPO FACTOR: 1.105

SOUTH STAFFORDSHIRE 008 MSOA
2022 TO 2038



C22001 LAND EAST OF BILBROOK

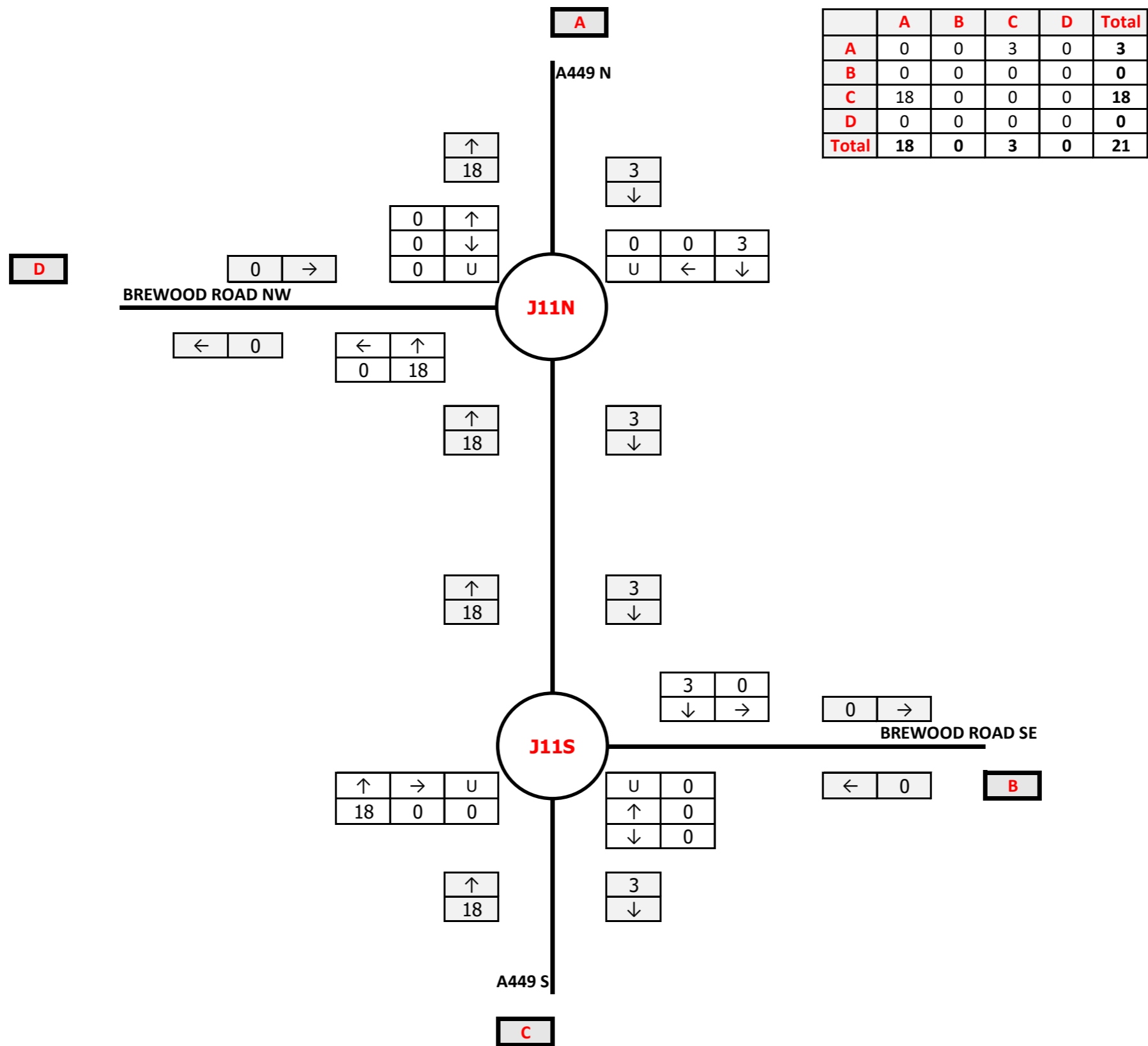
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENT 1 AM PEAK HOUR PCUs
17:00 TO 18:00 Assumed

WOLVERHAMPTON BUSINESS PARK
(SSDC REF: 11/00100/OUT)

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2031 FLOWS FROM APPENDIX 6.B



C22001 LAND EAST OF BILBROOK

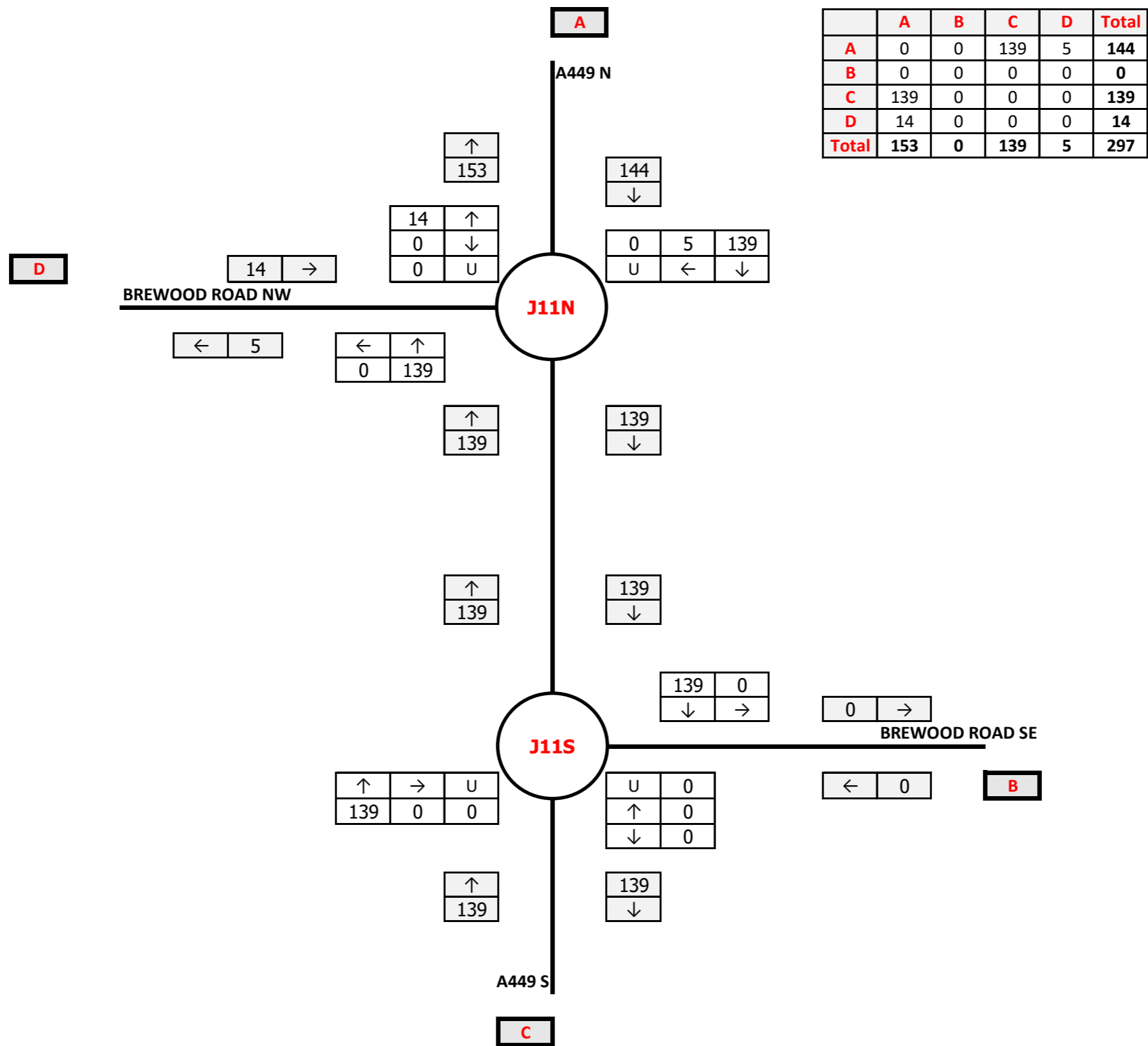
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENT 2 AM PEAK HOUR PCUs
17:00 TO 18:00 Assumed

FOUR ASHES
(SSDC REF: 16/00498/FUL)

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2031 FLOWS FROM APPENDIX 6.B



C22001 LAND EAST OF BILBROOK

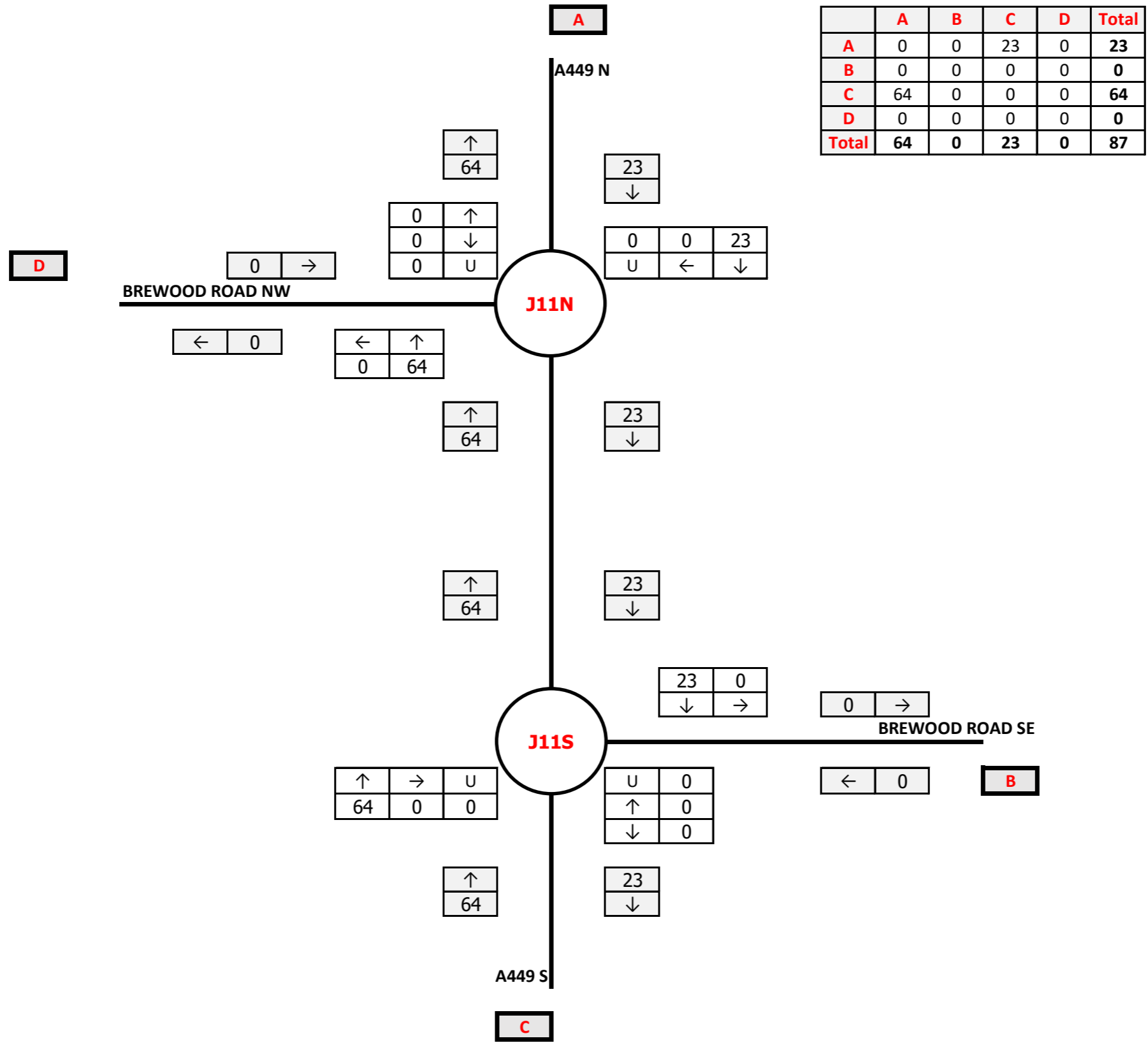
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENT 3A AM PEAK HOUR PCUs
17:00 TO 18:00 Assumed

i54 UNOCCUPIED/NOT CONSTRUCTED

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2031 FLOWS FROM APPENDIX 6.B



C22001 LAND EAST OF BILBROOK

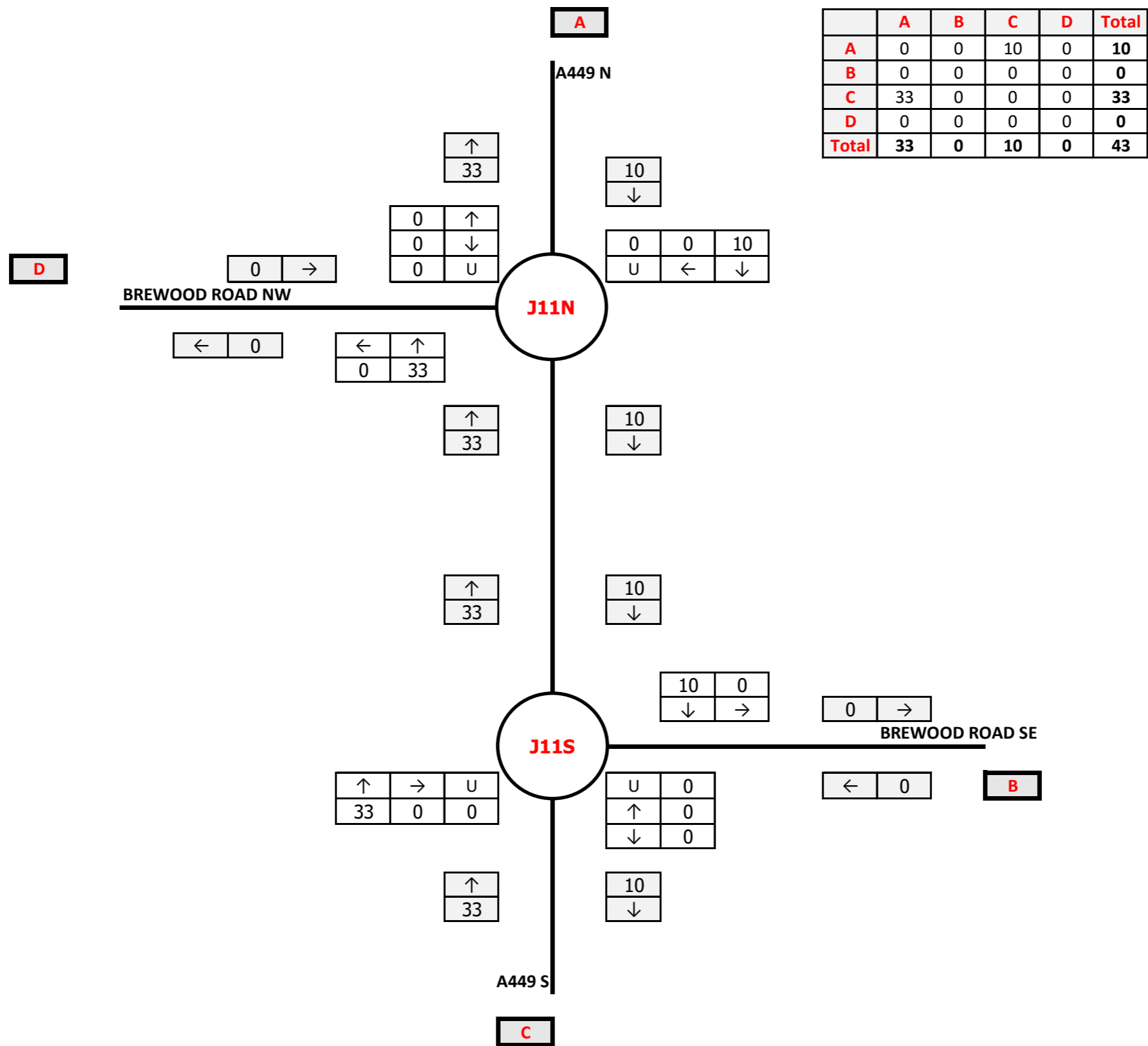
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENT 3B AM PEAK HOUR PCUs
17:00 TO 18:00 Assumed

i54 WESTERN EXTENSION
(SSDC REF: 18/00637/OUT)

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2031 FLOWS FROM APPENDIX 6.B



C22001 LAND EAST OF BILBROOK

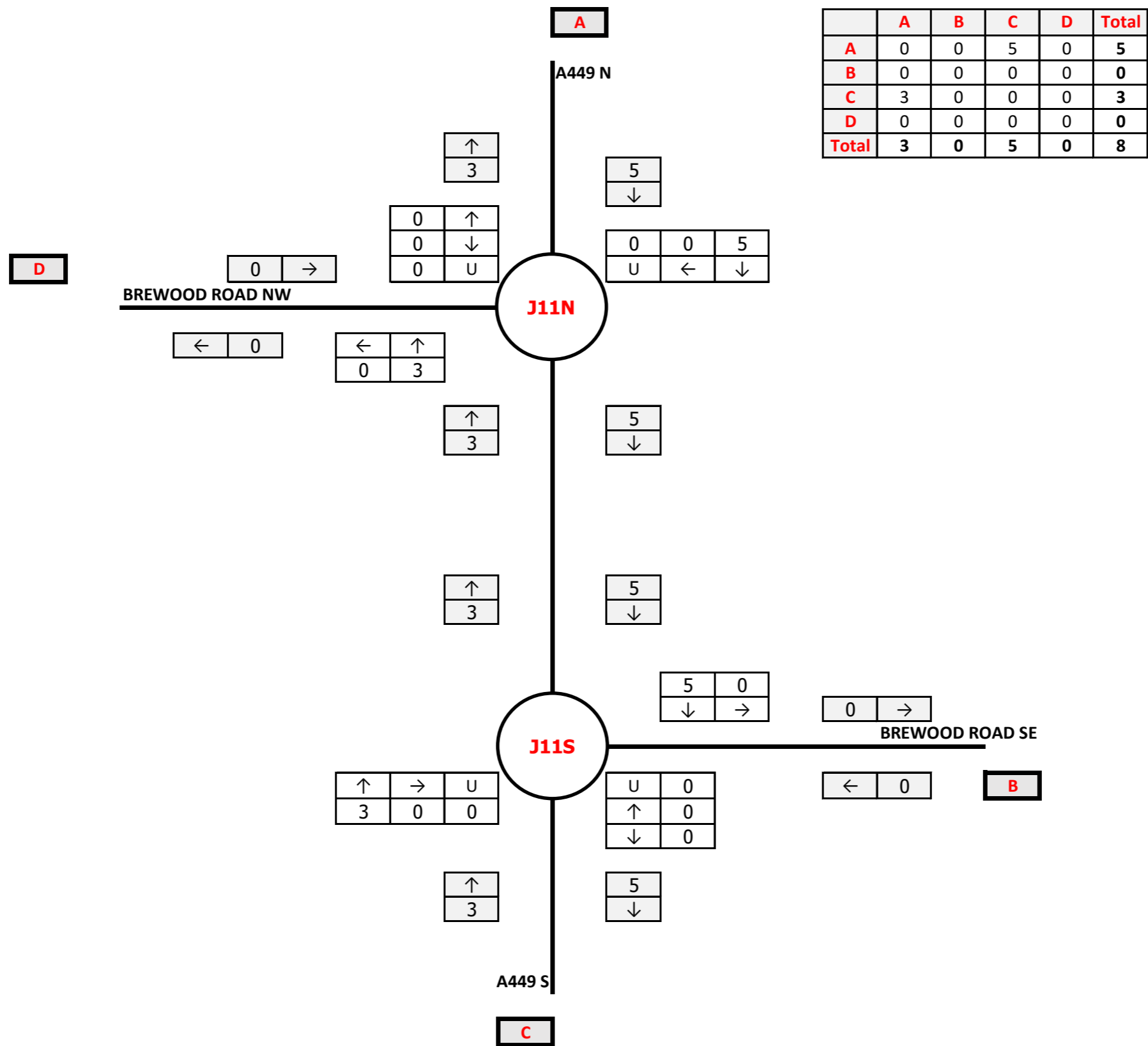
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENT 4 AM PEAK HOUR PCUs
17:00 TO 18:00 Assumed

PENDEFORD MILL LANE, BILBROOK (BILBROOK MILL)
(SSDC REF: 18/00710/FUL)

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2031 FLOWS FROM APPENDIX 6.B



C22001 LAND EAST OF BILBROOK

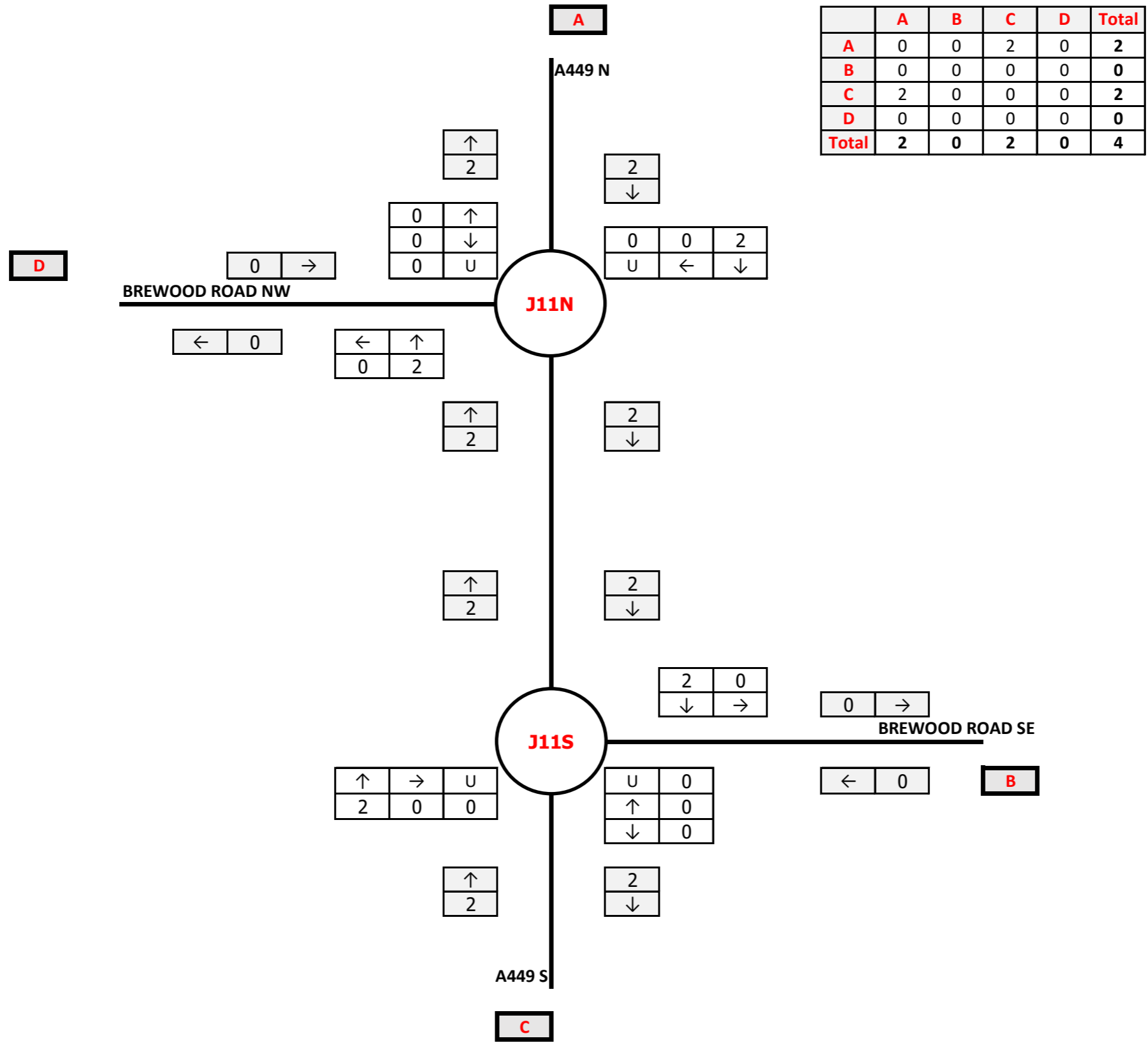
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENT 5 AM PEAK HOUR PCUs
17:00 TO 18:00 Assumed

HOBNOCK ROAD
(SSDC REF: 18/00450/REM)

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2031 FLOWS FROM APPENDIX 6.B



C22001 LAND EAST OF BILBROOK

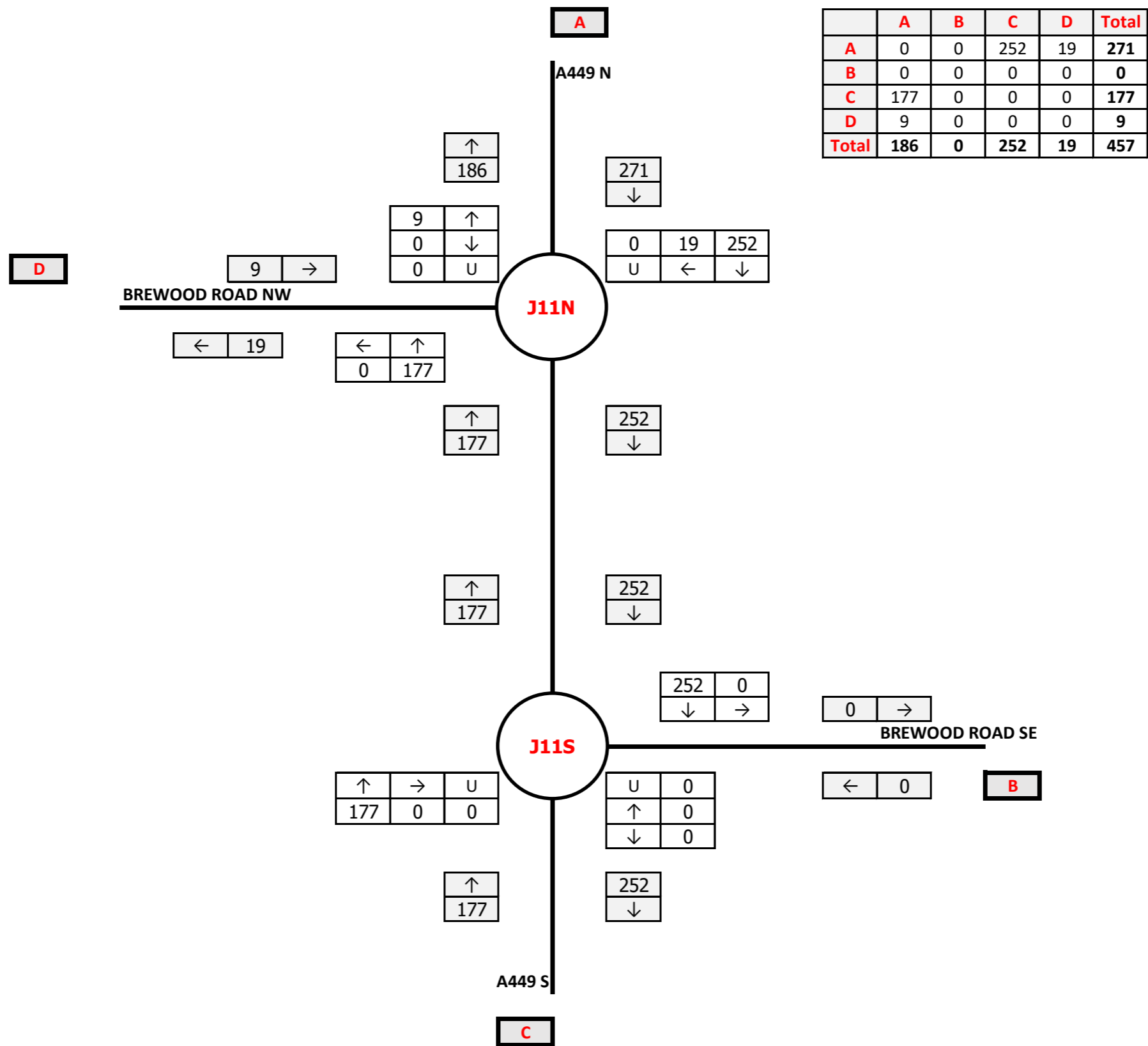
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENT 6 AM PEAK HOUR PCUs
17:00 TO 18:00 Assumed

WEST MIDLANDS INTERCHANGE (WMI)
(DCO REF: TR050005)

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2031 FLOWS FROM APPENDIX 6.B



C22001 LAND EAST OF BILBROOK

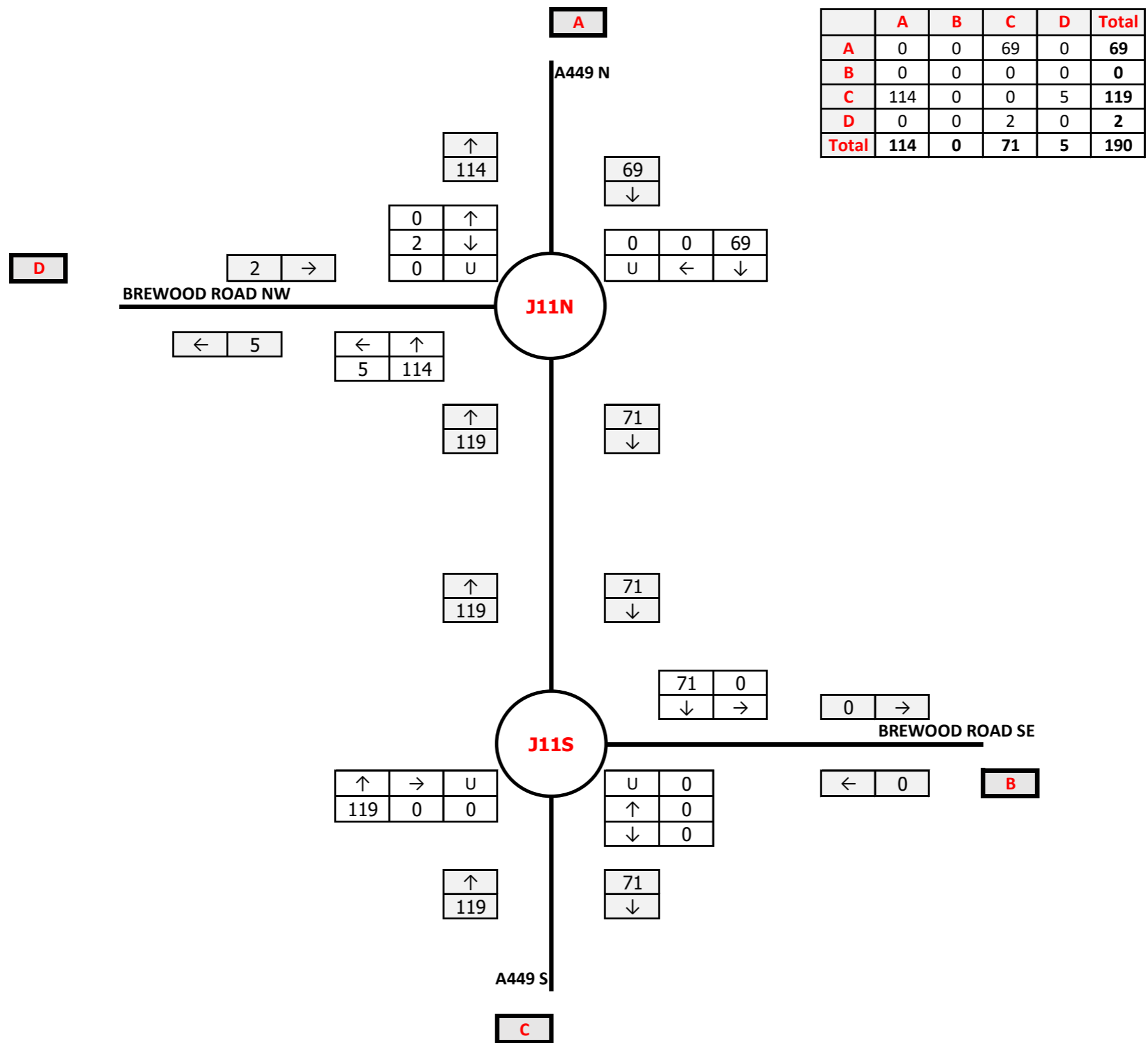
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENT 7 AM PEAK HOUR PCUs
17:00 TO 18:00 Assumed

LOGIC 54 FEATHERSTONE
(SSDC REF: 20/01131/OUT)

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
TOTAL DEVELOPMENT TRAFFIC FLOWS FROM APPENDIX 6.I



C22001 LAND EAST OF BILBROOK

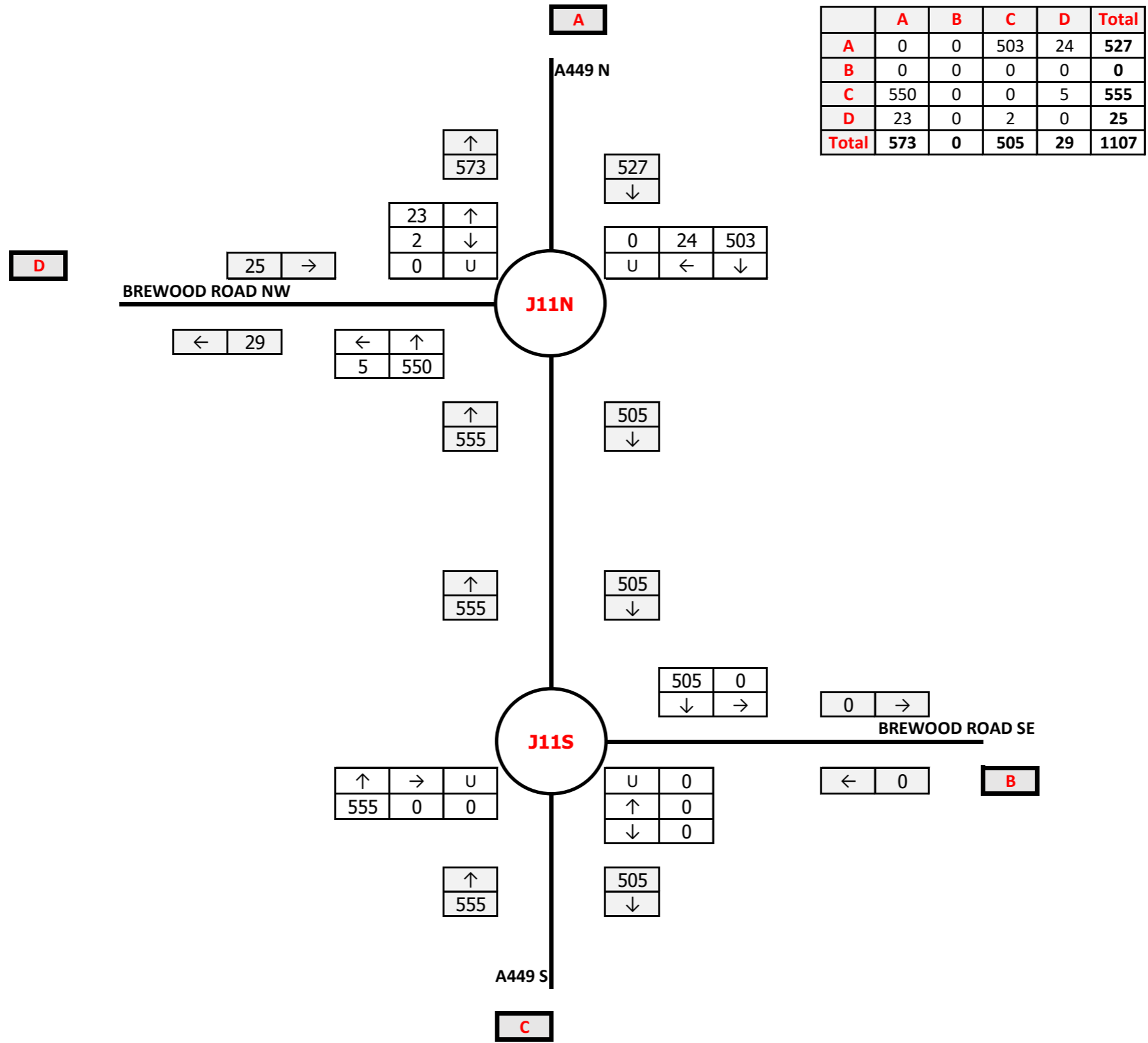
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 COMMITTED DEVELOPMENTS 1-7 PM PEAK HOUR PCUs
17:00 TO 18:00 Assumed

GRAND TOTAL

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)



C22001 LAND EAST OF BILBROOK

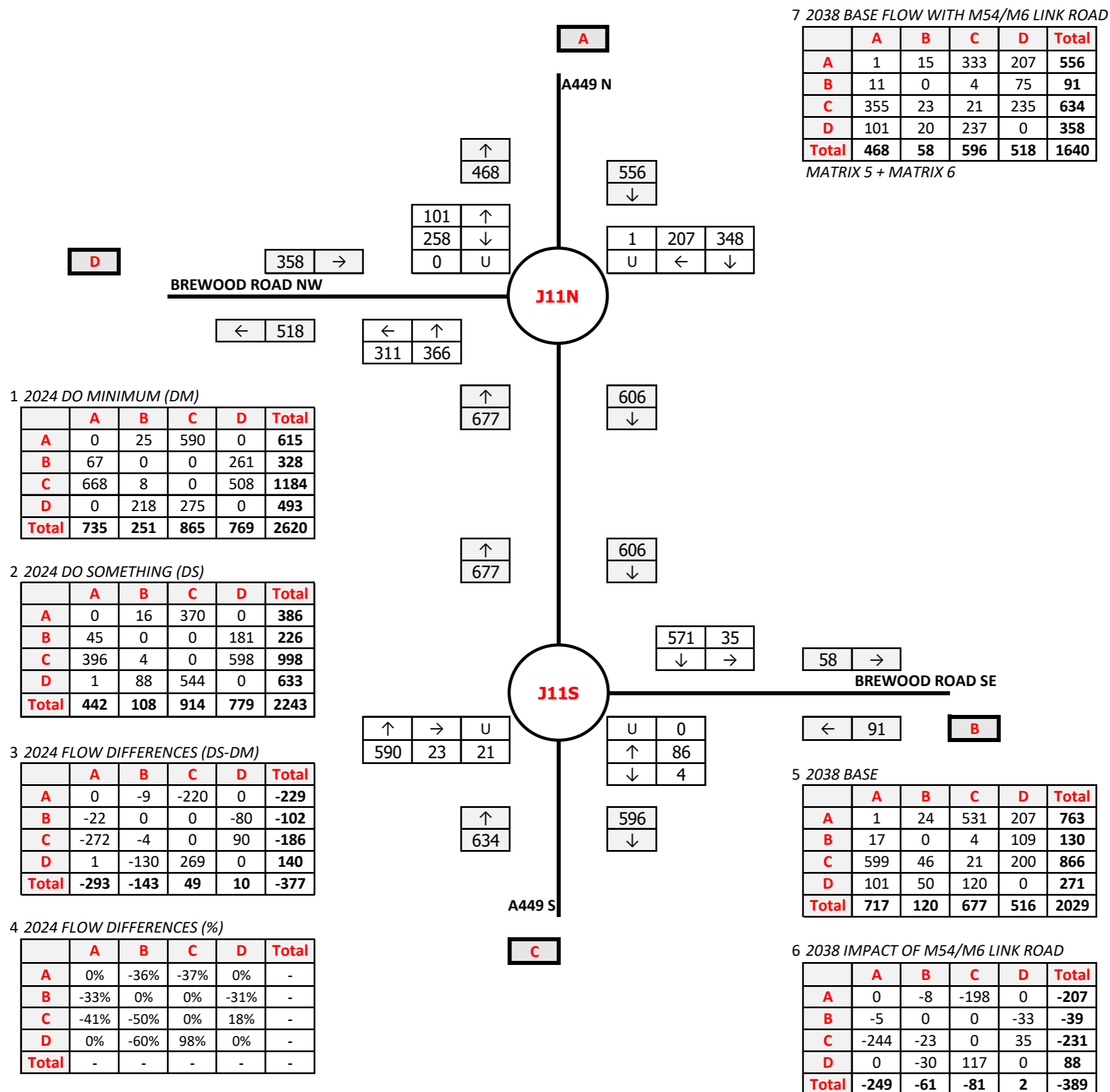
STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 M54/M6 LINK ROAD EFFECTS PM PEAK HOUR PCUs
17:00 TO 18:00 Assumed

ADJUSTED BASE FLOWS

SOURCE: APPROVED TA FOR LOGIC 54, FEATHERSTONE (SSDC REF: 20/01131/OUT)
2024 FLOWS TAKEN FROM APPENDIX 6.J



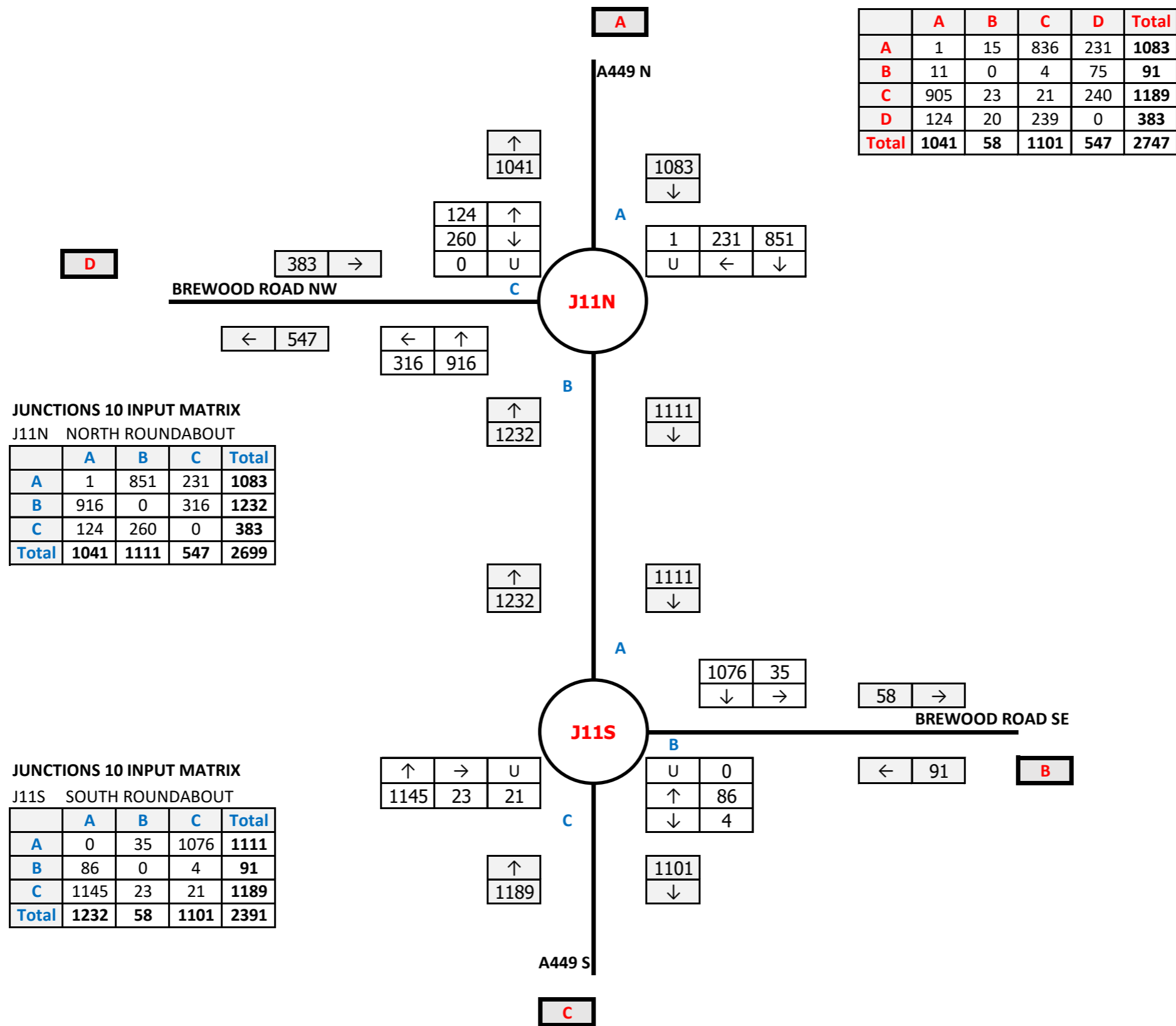
C22001 LAND EAST OF BILBROOK

STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 NO DEVELOPMENT SCENARIO PM PEAK HOUR PCUs
16:30 TO 17:30

2038 ADJUSTED BASE FLOWS (WITH M54/M6 LINK) + COMMITTED DEVELOPMENT (GRAND TOTAL)



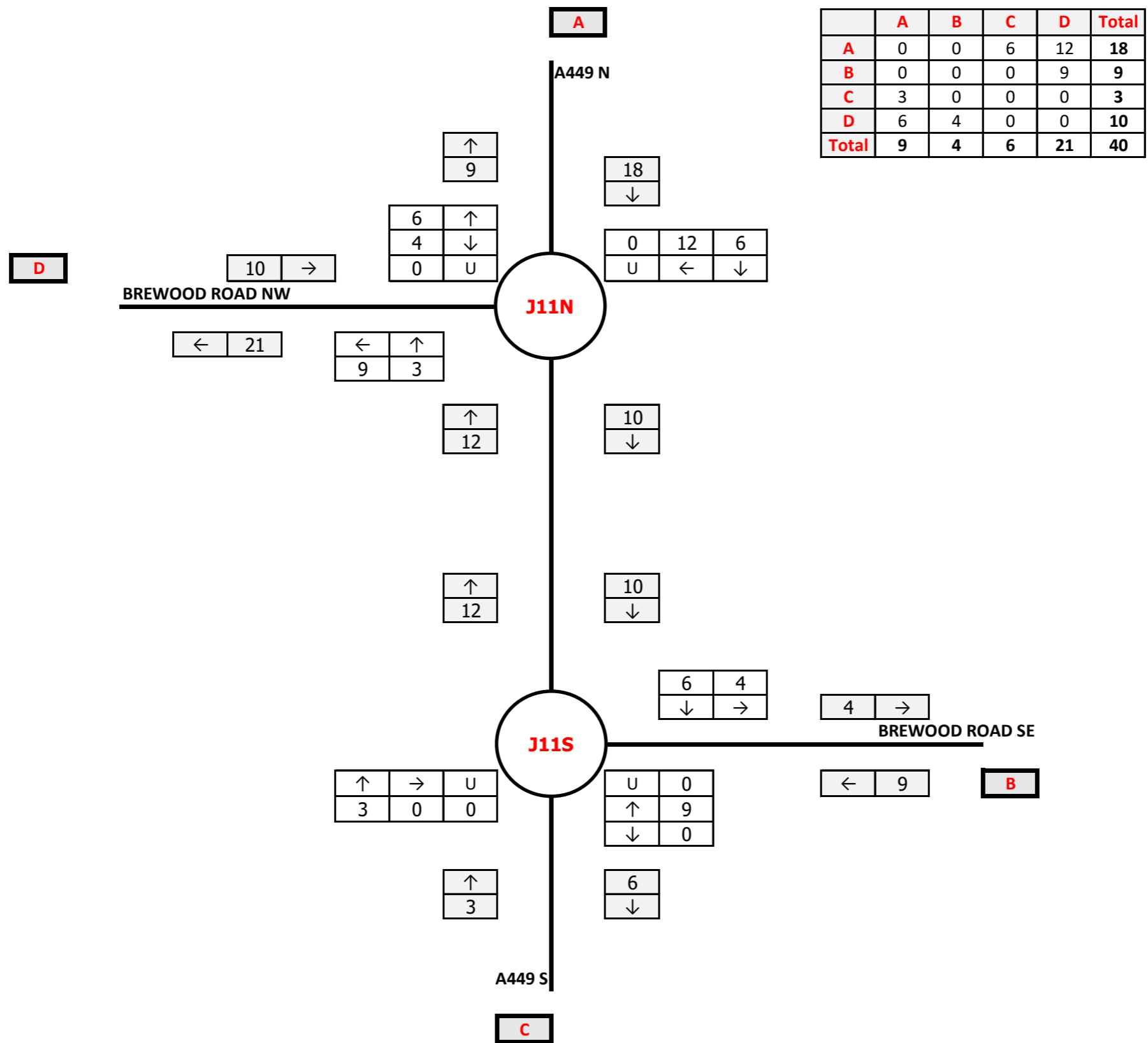
C22001 LAND EAST OF BILBROOK

STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 DEVELOPMENT SA1 PM PEAK HOUR PCUs
17:00 TO 18:00

LAND EAST OF BILBROOK



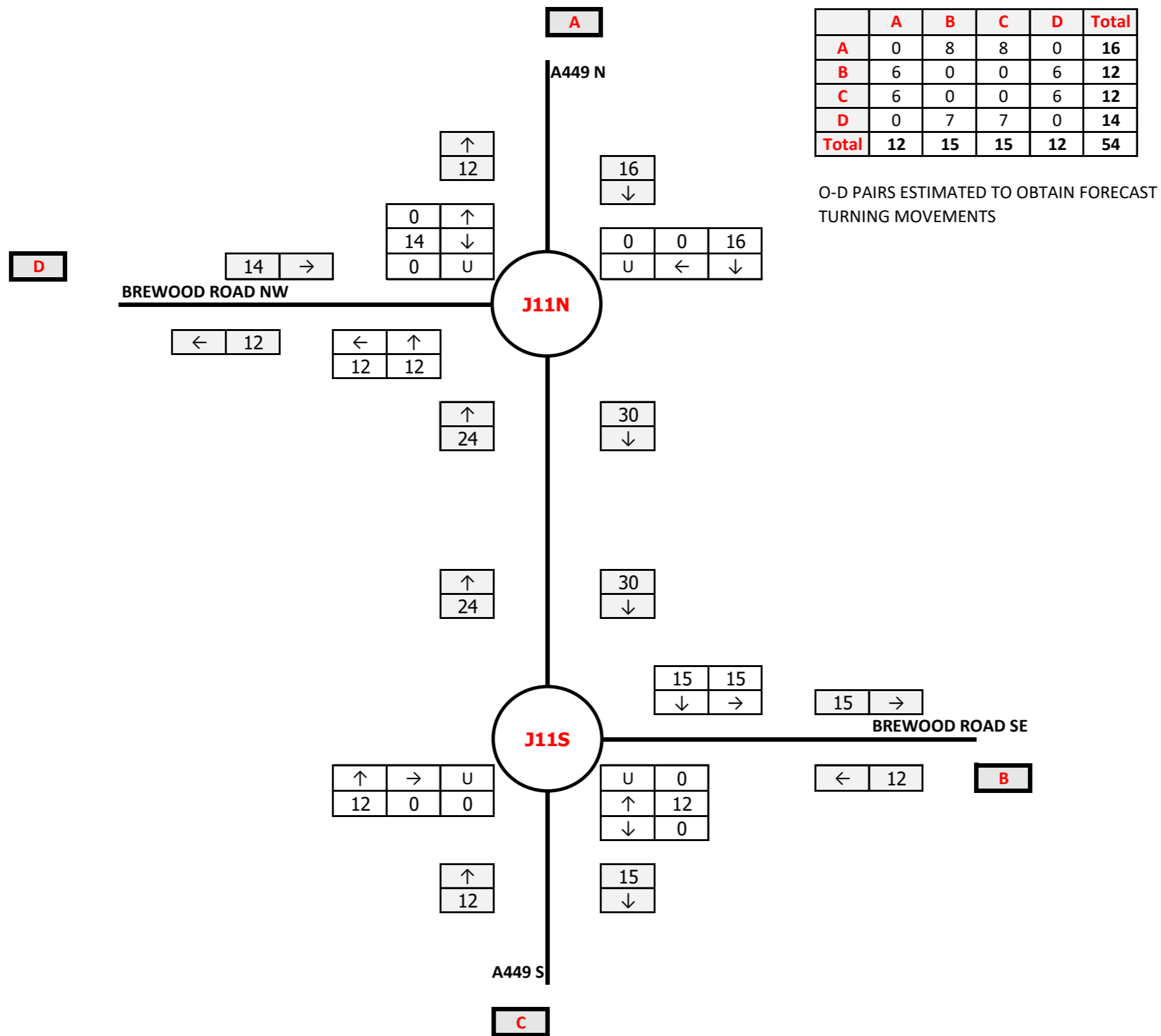
C22001 LAND EAST OF BILBROOK

STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 DEVELOPMENTS SA2 AND SA3 PM PEAK HOUR PCUs
17:00 TO 18:00

LAND AT CROSS GREEN AND LINTHOUSE LANE



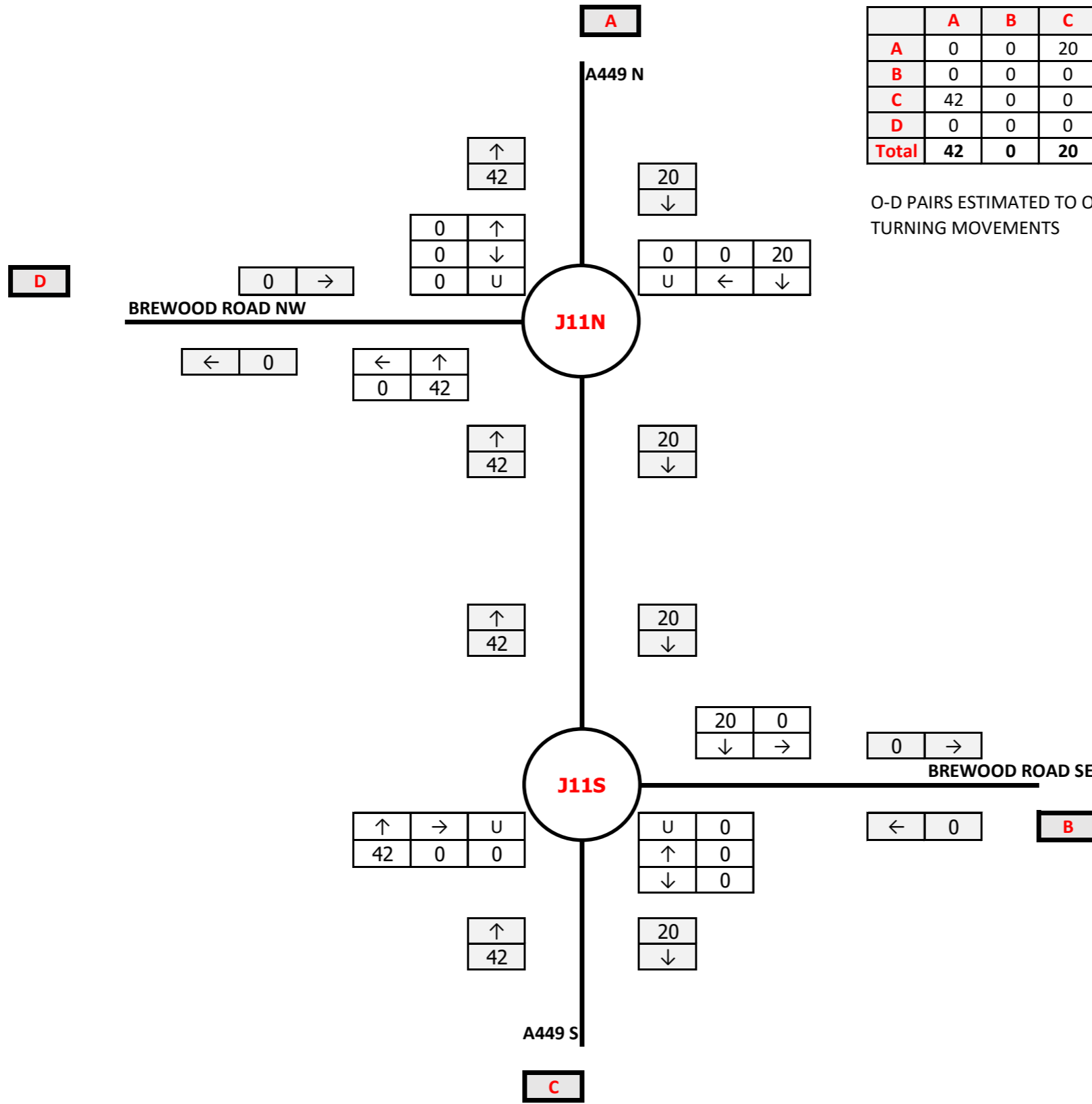
C22001 LAND EAST OF BILBROOK

STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 DEVELOPMENT SA4 PM PEAK HOUR PCUs
17:00 TO 18:00

LAND NORTH OF PENKRIDGE



	A	B	C	D	Total
A	0	0	20	0	20
B	0	0	0	0	0
C	42	0	0	0	42
D	0	0	0	0	0
Total	42	0	20	0	62

O-D PAIRS ESTIMATED TO OBTAIN FORECAST TURNING MOVEMENTS

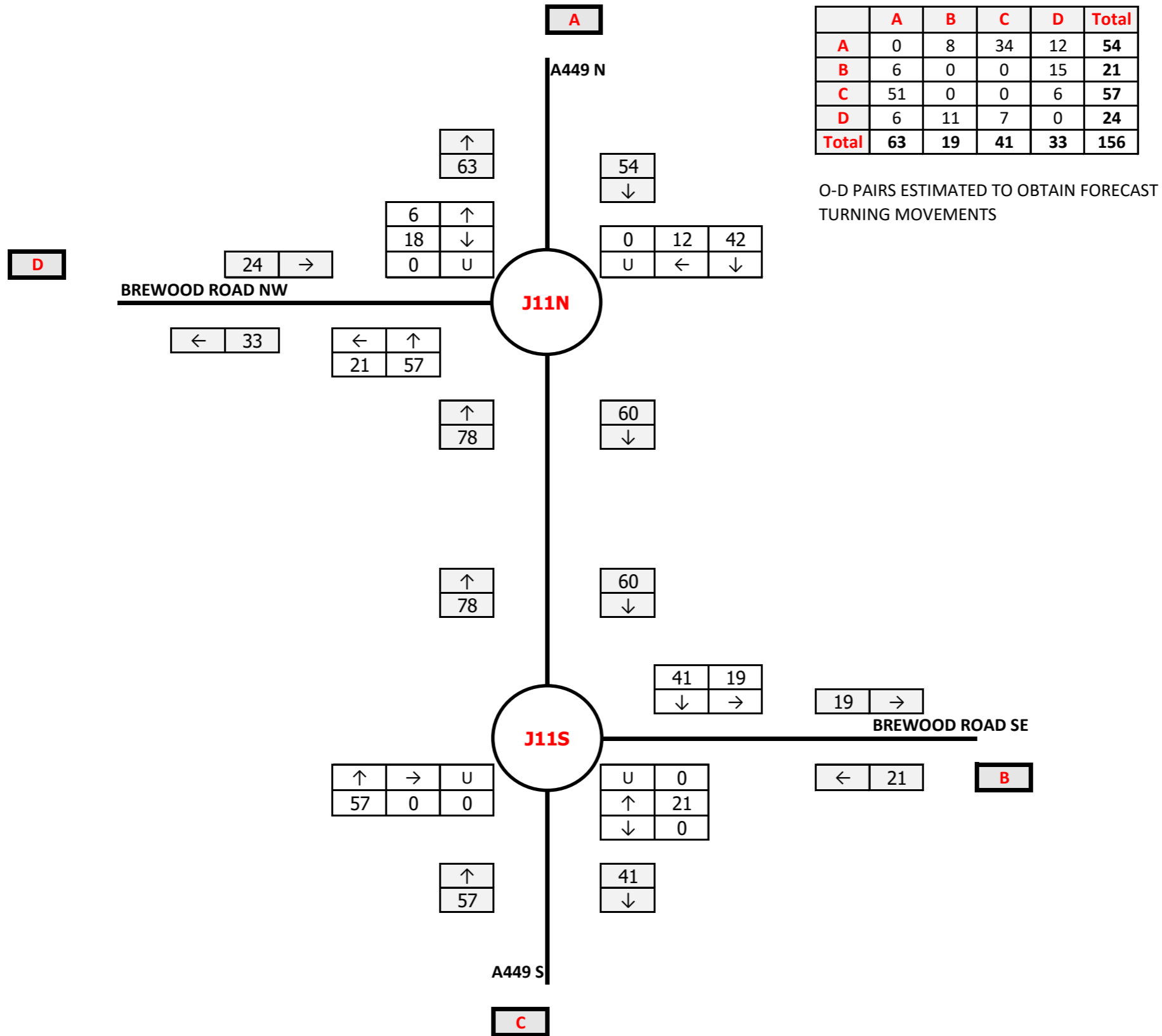
C22001 LAND EAST OF BILBROOK

STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 CUMULATIVE DEVELOPMENT PM PEAK HOUR PCUs
17:00 TO 18:00

SITES SA1 TO SA4



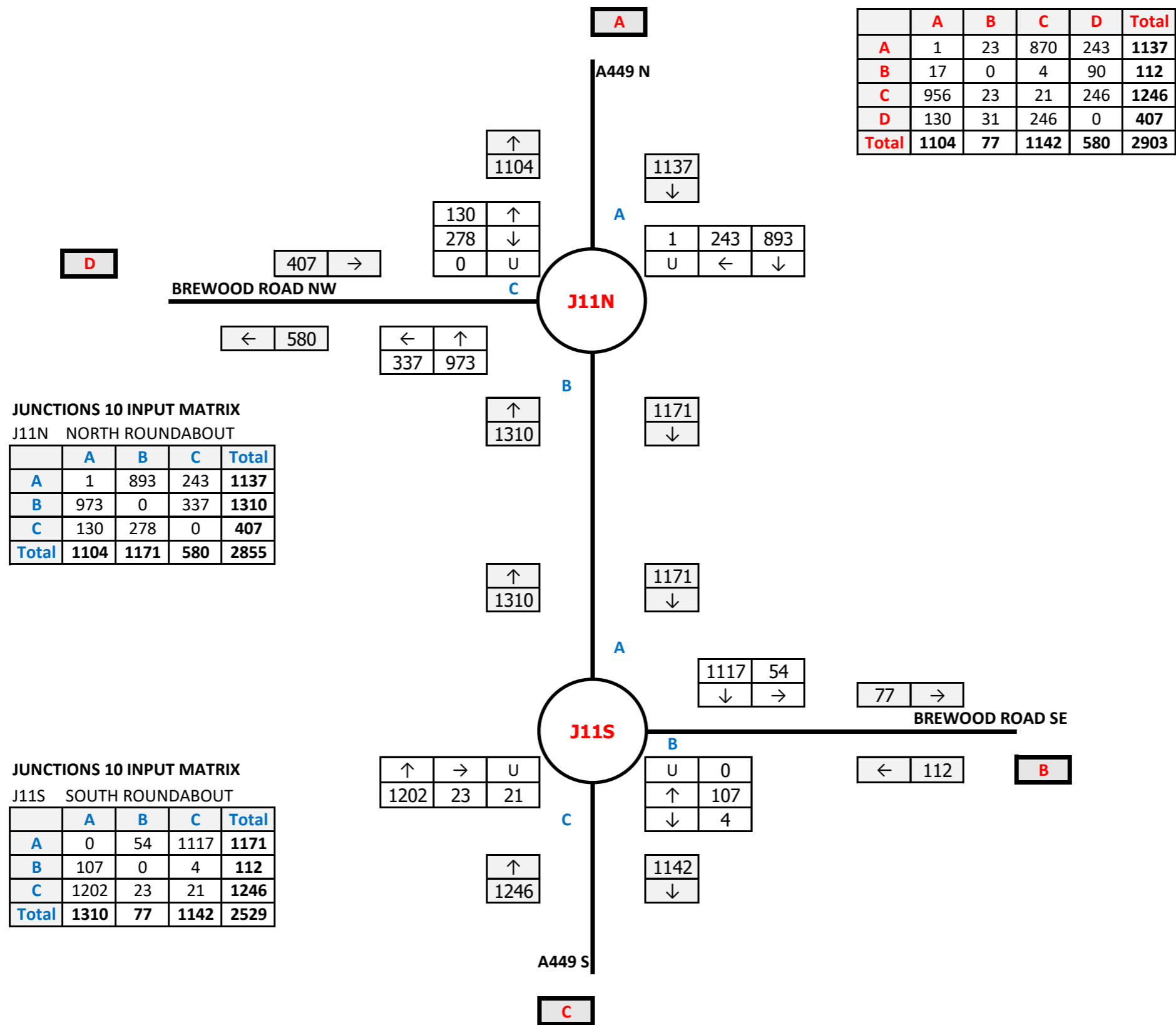
C22001 LAND EAST OF BILBROOK

STRATEGIC TRANSPORT ASSESSMENT SRN CUMULATIVE IMPACT ASSESSMENT

TRAFFIC FLOWS J11: A449/BREWOD ROAD ROUNDABOUTS

2038 WITH DEVELOPMENT SCENARIO PM PEAK HOUR PCUs
16:30 TO 17:30

2038 ADJUSTED BASE FLOWS (WITH M54/M6 LINK) + COMMITTED DEVELOPMENT (GRAND TOTAL) + CUMULATIVE DEVELOPMENT TOTAL



APPENDIX E:

JUNCTIONS 10 Outputs

Junctions 10
ARCADY 10 - Roundabout Module
Version: 10.0.4.1693 © Copyright TRL Software Limited, 2021
For sales and distribution information, program advice and maintenance, contact TRL Software: +44 (0)1344 379777 software@trl.co.uk trlsoftware.com
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: C22001-J11N_01.j10
 Path: D:\OneDrive - Capricorn Transport Planning Ltd\PROJECTS\C22001 Bilbrook\WORK\Calculations\SRN-JUN_22\J11
 Report generation date: 13/06/2022 19:23:39

- »BASE LAYOUT - 2038 NO DEV, AM
- »BASE LAYOUT - 2038 NO DEV, PM
- »BASE LAYOUT - 2038 WITH DEV, AM
- »BASE LAYOUT - 2038 WITH DEV, PM
- »BASE LAYOUT (VALIDATION) - 2022 LOGIC 54 TA, AM
- »BASE LAYOUT (VALIDATION) - 2022 LOGIC 54 TA, PM

Summary of junction performance

		AM				PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)
BASE LAYOUT - 2038 NO DEV										
Arm A	A11N D1	2.8	7.40	0.72	6.16	A11N D2	1.2	4.14	0.53	4.61
Arm B		1.1	3.39	0.49			1.4	3.99	0.55	
Arm C		1.2	9.23	0.52			0.8	7.92	0.43	
BASE LAYOUT - 2038 WITH DEV										
Arm A	A11N D3	3.4	8.68	0.76	7.01	A11N D4	1.4	4.46	0.56	5.06
Arm B		1.2	3.56	0.51			1.6	4.38	0.59	
Arm C		1.4	10.42	0.56			1.0	8.89	0.48	

		AM				PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)
BASE LAYOUT (VALIDATION) - 2022 LOGIC 54 TA										
Arm A	A11N-1 D5	88.8	137.53	1.08	82.10	A11N-1 D6	2.3	5.93	0.69	22.19
Arm B		2.5	5.85	0.70			16.9	30.50	0.96	
Arm C		16.2	86.98	0.99			3.9	34.55	0.81	

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

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

File summary

File Description

Title	SRN CUMULATIVE IMPACT ASSESSMENT
Location	A449/BREWOD ROAD NORTH
Site number	11N
Date	07/06/2022
Version	
Status	(new file)
Identifier	
Client	BLOOR HOMES
Jobnumber	C22001
Enumerator	PC-CAPRICORN-01\seanm
Description	

Units

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

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2038 NO DEV	AM		FLAT	07:45	09:15	90	15	✓
D2	2038 NO DEV	PM		FLAT	16:45	18:15	90	15	✓
D3	2038 WITH DEV	AM		FLAT	07:45	09:15	90	15	✓
D4	2038 WITH DEV	PM		FLAT	16:45	18:15	90	15	✓
D5	2022 LOGIC 54 TA	AM	FOR VALIDATION ONLY	ONE HOUR	07:45	09:15		15	✓
D6	2022 LOGIC 54 TA	PM	FOR VALIDATION ONLY	ONE HOUR	16:45	18:15		15	✓

BASE LAYOUT - 2038 NO DEV, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Description	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A11N	BASE LAYOUT	WITH IMPROVEMENTS TO ACCOMMODATE LOGIC 54 DEVELOPMENT	✓	✓	D1,D2,D3,D4	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
11N	A449/BREWOD ROAD NORTH	Standard Roundabout		A, B, C	6.16	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.16	A

Arms

Arms

Arm	Name	Description	No give-way line
A	A449 N		
B	A449 S		
C	BREWOD ROAD NW		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	6.53	8.00	3.0	46.7	47.8	28.0		
B	6.90	8.00	7.0	66.7	47.8	29.0		
C	2.95	8.60	10.5	12.5	47.8	52.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.729	2227
B	0.763	2400
C	0.522	1362

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 period length (min)	Time segment length (min)	Run automatically
D1	2038 NO DEV	AM	FLAT	07:45	09:15	90	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		FLAT	✓	1369	100.000
B		FLAT	✓	1120	100.000
C		FLAT	✓	458	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
	A	B	C	
From	A	0	1223	146
	B	910	0	210
	C	15	443	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A	B	C	
From	A	10	10	10
	B	10	10	10
	C	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	0.72	7.40	2.8	?	A	1369	2054
B	0.49	3.39	1.1	?	A	1120	1680
C	0.52	9.23	1.2	?	A	458	687

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
A	1369	342	439	1907	0.718	1358	921	0.0	2.7	7.078	A
B	1120	280	145	2289	0.489	1116	1652	0.0	1.0	3.362	A
C	458	115	907	889	0.515	453	354	0.0	1.1	9.007	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
A	1369	342	443	1904	0.719	1369	925	2.7	2.8	7.389	A
B	1120	280	146	2288	0.489	1120	1666	1.0	1.1	3.388	A
C	458	115	910	887	0.516	458	356	1.1	1.2	9.228	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
A	1369	342	443	1904	0.719	1369	925	2.8	2.8	7.395	A
B	1120	280	146	2288	0.489	1120	1666	1.1	1.1	3.388	A
C	458	115	910	887	0.516	458	356	1.2	1.2	9.230	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
A	1369	342	443	1904	0.719	1369	925	2.8	2.8	7.395	A
B	1120	280	146	2288	0.489	1120	1666	1.1	1.1	3.388	A
C	458	115	910	887	0.516	458	356	1.2	1.2	9.232	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
A	1369	342	443	1904	0.719	1369	925	2.8	2.8	7.398	A
B	1120	280	146	2288	0.489	1120	1666	1.1	1.1	3.388	A
C	458	115	910	887	0.516	458	356	1.2	1.2	9.232	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
A	1369	342	443	1904	0.719	1369	925	2.8	2.8	7.398	A
B	1120	280	146	2288	0.489	1120	1666	1.1	1.1	3.388	A
C	458	115	910	887	0.516	458	356	1.2	1.2	9.232	A

Queue Variation Results for each time segment

07:45 - 08:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.72	?	?	?	?			N/A	N/A
B	1.05	?	?	?	?			N/A	N/A
C	1.15	?	?	?	?			N/A	N/A

08:00 - 08:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.77	?	?	?	?			N/A	N/A
B	1.05	?	?	?	?			N/A	N/A
C	1.16	?	?	?	?			N/A	N/A

08:15 - 08:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.79	?	?	?	?			N/A	N/A
B	1.05	?	?	?	?			N/A	N/A
C	1.17	?	?	?	?			N/A	N/A

08:30 - 08:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.79	?	?	?	?			N/A	N/A
B	1.05	?	?	?	?			N/A	N/A
C	1.17	?	?	?	?			N/A	N/A

08:45 - 09:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.80	?	?	?	?			N/A	N/A
B	1.05	?	?	?	?			N/A	N/A
C	1.17	?	?	?	?			N/A	N/A

09:00 - 09:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.80	?	?	?	?			N/A	N/A
B	1.05	?	?	?	?			N/A	N/A
C	1.17	?	?	?	?			N/A	N/A

BASE LAYOUT - 2038 NO DEV, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Description	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A11N	BASE LAYOUT	WITH IMPROVEMENTS TO ACCOMMODATE LOGIC 54 DEVELOPMENT	✓	✓	D1,D2,D3,D4	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
11N	A449/BREWOD ROAD NORTH	Standard Roundabout		A, B, C	4.61	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.61	A

Arms

Arms

Arm	Name	Description	No give-way line
A	A449 N		
B	A449 S		
C	BREWOD ROAD NW		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	6.53	8.00	3.0	46.7	47.8	28.0		
B	6.90	8.00	7.0	66.7	47.8	29.0		
C	2.95	8.60	10.5	12.5	47.8	52.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.729	2227
B	0.763	2400
C	0.522	1362

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 period length (min)	Time segment length (min)	Run automatically
D2	2038 NO DEV	PM	FLAT	16:45	18:15	90	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		FLAT	✓	1082	100.000
B		FLAT	✓	1232	100.000
C		FLAT	✓	384	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
	A	B	C	
From	A	0	851	231
	B	916	0	316
	C	124	260	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A	B	C	
From	A	10	10	10
	B	10	10	10
	C	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	0.53	4.14	1.2	?	A	1082	1623
B	0.55	3.99	1.4	?	A	1232	1848
C	0.43	7.92	0.8	~1	A	384	576

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
A	1082	271	258	2039	0.531	1077	1035	0.0	1.2	4.096	A
B	1232	308	230	2224	0.554	1227	1105	0.0	1.4	3.948	A
C	384	96	912	886	0.433	381	545	0.0	0.8	7.790	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
A	1082	271	260	2038	0.531	1082	1040	1.2	1.2	4.143	A
B	1232	308	231	2223	0.554	1232	1111	1.4	1.4	3.994	A
C	384	96	916	884	0.435	384	547	0.8	0.8	7.921	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
A	1082	271	260	2038	0.531	1082	1040	1.2	1.2	4.143	A
B	1232	308	231	2223	0.554	1232	1111	1.4	1.4	3.994	A
C	384	96	916	884	0.435	384	547	0.8	0.8	7.923	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
A	1082	271	260	2038	0.531	1082	1040	1.2	1.2	4.143	A
B	1232	308	231	2223	0.554	1232	1111	1.4	1.4	3.994	A
C	384	96	916	884	0.435	384	547	0.8	0.8	7.923	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
A	1082	271	260	2038	0.531	1082	1040	1.2	1.2	4.143	A
B	1232	308	231	2223	0.554	1232	1111	1.4	1.4	3.994	A
C	384	96	916	884	0.435	384	547	0.8	0.8	7.923	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
A	1082	271	260	2038	0.531	1082	1040	1.2	1.2	4.143	A
B	1232	308	231	2223	0.554	1232	1111	1.4	1.4	3.994	A
C	384	96	916	884	0.435	384	547	0.8	0.8	7.923	A

Queue Variation Results for each time segment

16:45 - 17:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.23	?	?	?	?			N/A	N/A
B	1.35	?	?	?	?			N/A	N/A
C	0.83	~1	~1	~1	~1			N/A	N/A

17:00 - 17:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.24	?	?	?	?			N/A	N/A
B	1.36	?	?	?	?			N/A	N/A
C	0.84	~1	~1	~1	~1			N/A	N/A

17:15 - 17:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.24	?	?	?	?			N/A	N/A
B	1.36	?	?	?	?			N/A	N/A
C	0.84	~1	~1	~1	~1			N/A	N/A

17:30 - 17:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.24	?	?	?	?			N/A	N/A
B	1.36	?	?	?	?			N/A	N/A
C	0.84	~1	~1	~1	~1			N/A	N/A

17:45 - 18:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.24	?	?	?	?			N/A	N/A
B	1.36	?	?	?	?			N/A	N/A
C	0.84	~1	~1	~1	~1			N/A	N/A

18:00 - 18:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.24	?	?	?	?			N/A	N/A
B	1.36	?	?	?	?			N/A	N/A
C	0.84	~1	~1	~1	~1			N/A	N/A

BASE LAYOUT - 2038 WITH DEV, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Description	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A11N	BASE LAYOUT	WITH IMPROVEMENTS TO ACCOMMODATE LOGIC 54 DEVELOPMENT	✓	✓	D1,D2,D3,D4	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
11N	A449/BREWOD ROAD NORTH	Standard Roundabout		A, B, C	7.01	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.01	A

Arms

Arms

Arm	Name	Description	No give-way line
A	A449 N		
B	A449 S		
C	BREWOD ROAD NW		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	6.53	8.00	3.0	46.7	47.8	28.0		
B	6.90	8.00	7.0	66.7	47.8	29.0		
C	2.95	8.60	10.5	12.5	47.8	52.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.729	2227
B	0.763	2400
C	0.522	1362

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 period length (min)	Time segment length (min)	Run automatically
D3	2038 WITH DEV	AM	FLAT	07:45	09:15	90	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		FLAT	✓	1437	100.000
B		FLAT	✓	1173	100.000
C		FLAT	✓	486	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
	A	B	C	
From	A	0	1287	150
	B	950	0	223
	C	28	458	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A	B	C	
From	A	10	10	10
	B	10	10	10
	C	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	0.76	8.68	3.4	?	A	1437	2156
B	0.51	3.56	1.2	?	A	1173	1760
C	0.56	10.42	1.4	?	B	486	729

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
A	1437	359	453	1897	0.758	1424	974	0.0	3.3	8.156	A
B	1173	293	149	2286	0.513	1168	1728	0.0	1.1	3.528	A
C	486	122	946	868	0.560	481	371	0.0	1.4	10.087	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
A	1437	359	458	1893	0.759	1437	978	3.3	3.4	8.658	A
B	1173	293	150	2285	0.513	1173	1745	1.1	1.2	3.559	A
C	486	122	950	866	0.561	486	373	1.4	1.4	10.411	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
A	1437	359	458	1893	0.759	1437	978	3.4	3.4	8.669	A
B	1173	293	150	2285	0.513	1173	1745	1.2	1.2	3.559	A
C	486	122	950	866	0.561	486	373	1.4	1.4	10.414	B

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
A	1437	359	458	1893	0.759	1437	978	3.4	3.4	8.677	A
B	1173	293	150	2285	0.513	1173	1745	1.2	1.2	3.559	A
C	486	122	950	866	0.561	486	373	1.4	1.4	10.417	B

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
A	1437	359	458	1893	0.759	1437	978	3.4	3.4	8.676	A
B	1173	293	150	2285	0.513	1173	1745	1.2	1.2	3.559	A
C	486	122	950	866	0.561	486	373	1.4	1.4	10.419	B

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
A	1437	359	458	1893	0.759	1437	978	3.4	3.4	8.676	A
B	1173	293	150	2285	0.513	1173	1745	1.2	1.2	3.559	A
C	486	122	950	866	0.561	486	373	1.4	1.4	10.419	B

Queue Variation Results for each time segment

07:45 - 08:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.31	?	?	?	?			N/A	N/A
B	1.15	?	?	?	?			N/A	N/A
C	1.36	?	?	?	?			N/A	N/A

08:00 - 08:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.39	?	?	?	?			N/A	N/A
B	1.16	?	?	?	?			N/A	N/A
C	1.39	?	?	?	?			N/A	N/A

08:15 - 08:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.42	?	?	?	?			N/A	N/A
B	1.16	?	?	?	?			N/A	N/A
C	1.39	?	?	?	?			N/A	N/A

08:30 - 08:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.43	?	?	?	?			N/A	N/A
B	1.16	?	?	?	?			N/A	N/A
C	1.40	?	?	?	?			N/A	N/A

08:45 - 09:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.44	?	?	?	?			N/A	N/A
B	1.16	?	?	?	?			N/A	N/A
C	1.40	?	?	?	?			N/A	N/A

09:00 - 09:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	3.44	?	?	?	?			N/A	N/A
B	1.16	?	?	?	?			N/A	N/A
C	1.40	?	?	?	?			N/A	N/A

BASE LAYOUT - 2038 WITH DEV, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Description	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A11N	BASE LAYOUT	WITH IMPROVEMENTS TO ACCOMMODATE LOGIC 54 DEVELOPMENT	✓	✓	D1,D2,D3,D4	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
11N	A449/BREWOD ROAD NORTH	Standard Roundabout		A, B, C	5.06	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.06	A

Arms

Arms

Arm	Name	Description	No give-way line
A	A449 N		
B	A449 S		
C	BREWOD ROAD NW		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	6.53	8.00	3.0	46.7	47.8	28.0		
B	6.90	8.00	7.0	66.7	47.8	29.0		
C	2.95	8.60	10.5	12.5	47.8	52.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.729	2227
B	0.763	2400
C	0.522	1362

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 period length (min)	Time segment length (min)	Run automatically
D4	2038 WITH DEV	PM	FLAT	16:45	18:15	90	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		FLAT	✓	1137	100.000
B		FLAT	✓	1310	100.000
C		FLAT	✓	408	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
	A	B	C	
From	A	1	893	243
	B	973	0	337
	C	130	278	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A	B	C	
From	A	10	10	10
	B	10	10	10
	C	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	0.56	4.46	1.4	?	A	1137	1706
B	0.59	4.38	1.6	?	A	1310	1965
C	0.48	8.89	1.0	?	A	408	612

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
A	1137	284	275	2026	0.561	1131	1098	0.0	1.4	4.398	A
B	1310	328	243	2214	0.592	1304	1164	0.0	1.6	4.320	A
C	408	102	969	856	0.477	404	577	0.0	1.0	8.691	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
A	1137	284	278	2024	0.562	1137	1104	1.4	1.4	4.461	A
B	1310	328	244	2213	0.592	1310	1171	1.6	1.6	4.382	A
C	408	102	974	854	0.478	408	580	1.0	1.0	8.884	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
A	1137	284	278	2024	0.562	1137	1104	1.4	1.4	4.461	A
B	1310	328	244	2213	0.592	1310	1171	1.6	1.6	4.382	A
C	408	102	974	853	0.478	408	580	1.0	1.0	8.888	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
A	1137	284	278	2024	0.562	1137	1104	1.4	1.4	4.461	A
B	1310	328	244	2213	0.592	1310	1171	1.6	1.6	4.382	A
C	408	102	974	853	0.478	408	580	1.0	1.0	8.888	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
A	1137	284	278	2024	0.562	1137	1104	1.4	1.4	4.461	A
B	1310	328	244	2213	0.592	1310	1171	1.6	1.6	4.382	A
C	408	102	974	853	0.478	408	580	1.0	1.0	8.888	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
A	1137	284	278	2024	0.562	1137	1104	1.4	1.4	4.461	A
B	1310	328	244	2213	0.592	1310	1171	1.6	1.6	4.382	A
C	408	102	974	853	0.478	408	580	1.0	1.0	8.888	A

Queue Variation Results for each time segment

16:45 - 17:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.39	?	?	?	?			N/A	N/A
B	1.57	?	?	?	?			N/A	N/A
C	0.98	~1	~1	~1	~1			N/A	N/A

17:00 - 17:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.40	?	?	?	?			N/A	N/A
B	1.59	?	?	?	?			N/A	N/A
C	1.00	~1	~1	~1	~1			N/A	N/A

17:15 - 17:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.40	?	?	?	?			N/A	N/A
B	1.59	?	?	?	?			N/A	N/A
C	1.00	?	?	?	?			N/A	N/A

17:30 - 17:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.41	?	?	?	?			N/A	N/A
B	1.59	?	?	?	?			N/A	N/A
C	1.00	?	?	?	?			N/A	N/A

17:45 - 18:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.41	?	?	?	?			N/A	N/A
B	1.59	?	?	?	?			N/A	N/A
C	1.00	?	?	?	?			N/A	N/A

18:00 - 18:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.41	?	?	?	?			N/A	N/A
B	1.59	?	?	?	?			N/A	N/A
C	1.00	?	?	?	?			N/A	N/A

BASE LAYOUT (VALIDATION) - 2022 LOGIC 54 TA, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Description	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A11N-1	BASE LAYOUT (VALIDATION)	WITH IMPROVEMENTS TO ACCOMMODATE LOGIC 54 DEVELOPMENT	✓	✓	D5,D6	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
11N	A449/BREWOD ROAD NORTH	Standard Roundabout		A, B, C	82.10	F

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	82.10	F

Arms

Arms

Arm	Name	Description	No give-way line
A	A449 N		
B	A449 S		
C	BREWOD ROAD NW		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	6.53	8.00	3.0	46.7	47.8	28.0		
B	6.90	8.00	7.0	66.7	47.8	29.0		
C	2.95	8.60	10.5	12.5	47.8	52.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.729	2227
B	0.763	2400
C	0.522	1362

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2022 LOGIC 54 TA	AM	FOR VALIDATION ONLY	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 (%)
A		ONE HOUR	✓	1874	100.000
B		ONE HOUR	✓	1402	100.000
C		ONE HOUR	✓	622	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
From		A	B	C
	A	2	1638	234
	B	1154	7	241
	C	223	399	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
From		A	B	C
	A	0	11	6
	B	10	50	6
	C	1	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	1.08	137.53	88.8	171.6	F	1720	2579
B	0.70	5.85	2.5	5.0	A	1286	1930
C	0.99	86.98	16.2	60.6	F	571	856

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
A	1411	353	303	2006	0.703	1401	1034	0.0	2.6	6.456	A
B	1055	264	176	2265	0.466	1052	1527	0.0	0.9	3.238	A
C	468	117	872	907	0.517	464	356	0.0	1.1	8.243	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
A	1685	421	362	1963	0.858	1671	1237	2.6	6.1	12.992	B
B	1260	315	210	2239	0.563	1259	1823	0.9	1.4	4.010	A
C	559	140	1044	817	0.684	555	425	1.1	2.1	13.835	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
A	2063	516	422	1919	1.075	1891	1501	6.1	49.1	62.242	F
B	1544	386	238	2218	0.696	1539	2075	1.4	2.5	5.771	A
C	685	171	1277	695	0.985	646	501	2.1	11.7	53.737	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
A	2063	516	436	1910	1.081	1905	1512	49.1	88.8	137.529	F
B	1544	386	240	2217	0.696	1544	2100	2.5	2.5	5.850	A
C	685	171	1280	694	0.987	667	503	11.7	16.2	86.983	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
A	1685	421	400	1935	0.871	1911	1263	88.8	32.1	116.797	F
B	1260	315	241	2216	0.569	1264	2071	2.5	1.5	4.159	A
C	559	140	1049	814	0.687	614	456	16.2	2.4	23.134	C

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
A	1411	353	309	2002	0.705	1528	1042	32.1	2.7	10.655	B
B	1055	264	192	2253	0.469	1057	1645	1.5	1.0	3.300	A
C	468	117	877	904	0.518	473	373	2.4	1.1	8.645	A

Queue Variation Results for each time segment

07:45 - 08:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.55	0.17	1.35	5.18	6.74			N/A	N/A
B	0.95	0.60	1.09	1.53	1.59			N/A	N/A
C	1.07	0.45	1.07	1.28	1.67			N/A	N/A

08:00 - 08:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	6.07	0.07	1.56	17.14	26.63			N/A	N/A
B	1.40	0.06	0.62	3.26	4.96			N/A	N/A
C	2.12	0.05	0.62	5.63	8.79			N/A	N/A

08:15 - 08:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	49.14	12.25	42.98	87.60	104.10			N/A	N/A
B	2.45	0.03	0.29	2.45	2.45			N/A	N/A
C	11.73	0.27	6.32	28.94	39.41			N/A	N/A

08:30 - 08:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	88.78	29.76	80.95	147.77	171.60			N/A	N/A
B	2.48	0.03	0.29	2.48	2.48			N/A	N/A
C	16.20	0.20	7.19	42.87	60.64			N/A	N/A

08:45 - 09:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	32.11	8.10	28.04	56.59	67.12			N/A	N/A
B	1.46	0.14	1.27	2.45	3.13			N/A	N/A
C	2.38	0.04	0.37	5.95	12.48			N/A	N/A

09:00 - 09:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.71	0.03	0.32	2.71	10.30			N/A	N/A
B	0.97	0.06	0.73	1.85	2.50			N/A	N/A
C	1.12	0.03	0.29	1.12	4.15			N/A	N/A

BASE LAYOUT (VALIDATION) - 2022 LOGIC 54 TA, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Description	Include in report	Use specific Demand Set(s)	Specific Demand Set(s)	Network flow scaling factor (%)	Network capacity scaling factor (%)
A11N-1	BASE LAYOUT (VALIDATION)	WITH IMPROVEMENTS TO ACCOMMODATE LOGIC 54 DEVELOPMENT	✓	✓	D5,D6	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
11N	A449/BREWOD ROAD NORTH	Standard Roundabout		A, B, C	22.19	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	22.19	C

Arms

Arms

Arm	Name	Description	No give-way line
A	A449 N		
B	A449 S		
C	BREWOD ROAD NW		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	6.53	8.00	3.0	46.7	47.8	28.0		
B	6.90	8.00	7.0	66.7	47.8	29.0		
C	2.95	8.60	10.5	12.5	47.8	52.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.729	2227
B	0.763	2400
C	0.522	1362

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2022 LOGIC 54 TA	PM	FOR VALIDATION ONLY	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1286	100.000
B		ONE HOUR	✓	1930	100.000
C		ONE HOUR	✓	393	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
	A	B	C	
From	A	0	1073	213
	B	1450	1	479
	C	188	205	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A	B	C	
From	A	0	8	0
	B	6	0	1
	C	1	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	0.69	5.93	2.3	4.4	A	1180	1770
B	0.96	30.50	16.9	89.2	D	1771	2657
C	0.81	34.55	3.9	21.1	D	361	541

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
A	968	242	154	2115	0.458	965	1227	0.0	0.9	3.326	A
B	1453	363	160	2278	0.638	1446	959	0.0	1.8	4.493	A
C	296	74	1087	795	0.372	294	519	0.0	0.6	7.224	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
A	1156	289	184	2093	0.552	1154	1467	0.9	1.3	4.081	A
B	1735	434	191	2254	0.770	1729	1147	1.8	3.4	7.095	A
C	353	88	1300	683	0.517	351	620	0.6	1.1	10.888	B

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
A	1416	354	222	2065	0.686	1412	1766	1.3	2.3	5.838	A
B	2125	531	234	2221	0.957	2081	1400	3.4	14.3	22.157	C
C	433	108	1565	545	0.794	423	750	1.1	3.4	28.006	D

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
A	1416	354	226	2063	0.686	1416	1794	2.3	2.3	5.930	A
B	2125	531	234	2221	0.957	2114	1407	14.3	16.9	30.501	D
C	433	108	1590	532	0.813	431	759	3.4	3.9	34.545	D

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
A	1156	289	191	2088	0.554	1160	1518	2.3	1.3	4.153	A
B	1735	434	192	2253	0.770	1788	1159	16.9	3.6	8.993	A
C	353	88	1344	660	0.535	364	636	3.9	1.2	12.708	B

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	968	242	156	2113	0.458	970	1240	1.3	0.9	3.363	A
B	1453	363	161	2277	0.638	1460	966	3.6	1.9	4.652	A
C	296	74	1098	789	0.375	298	523	1.2	0.6	7.445	A

Queue Variation Results for each time segment

16:45 - 17:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.89	0.59	1.07	1.49	1.55			N/A	N/A
B	1.82	0.52	1.13	2.80	3.29			N/A	N/A
C	0.59	0.56	1.01	1.41	1.46			N/A	N/A

17:00 - 17:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.30	0.06	0.67	2.99	4.35			N/A	N/A
B	3.39	0.05	0.47	9.48	16.63			N/A	N/A
C	1.05	0.06	0.75	2.06	2.93			N/A	N/A

17:15 - 17:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.28	0.03	0.29	2.28	2.28			N/A	N/A
B	14.29	0.08	2.54	41.65	65.72			N/A	N/A
C	3.37	0.04	0.38	8.56	18.03			N/A	N/A

17:30 - 17:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.31	0.03	0.28	2.31	2.31			N/A	N/A
B	16.94	0.06	0.91	48.84	89.18			N/A	N/A
C	3.91	0.03	0.34	8.08	21.08			N/A	N/A

17:45 - 18:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.34	0.13	1.19	2.11	2.84			N/A	N/A
B	3.64	0.04	0.45	10.07	18.48			N/A	N/A
C	1.20	0.04	0.45	2.95	4.72			N/A	N/A

18:00 - 18:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.91	0.06	0.71	1.68	2.13			N/A	N/A
B	1.87	0.03	0.32	2.80	9.34			N/A	N/A
C	0.61	0.03	0.31	1.15	2.87			N/A	N/A

Junctions 10
ARCADY 10 - Roundabout Module
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Filename: C22001-J11S_01.j10
Path: D:\OneDrive - Capricorn Transport Planning Ltd\PROJECTS\C22001 Bilbrook\WORK\Calculations\SRN-JUN_22\J11
Report generation date: 13/06/2022 19:25:56

- » EXISTING LAYOUT - 2038 NO DEV, AM
- » EXISTING LAYOUT - 2038 NO DEV, PM
- » EXISTING LAYOUT - 2038 WITH DEV, AM
- » EXISTING LAYOUT - 2038 WITH DEV, PM
- » EXISTING LAYOUT - VALIDATION - 2022 LOGIC 54 TA, AM
- » EXISTING LAYOUT - VALIDATION - 2022 LOGIC 54 TA, PM

Summary of junction performance

		AM				PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)
EXISTING LAYOUT - 2038 NO DEV										
Arm A	A11S D1	2.2	4.80	0.67	4.46	A11S D2	0.8	2.75	0.44	3.45
Arm B		0.1	6.71	0.08			0.1	4.64	0.10	
Arm C		1.3	3.89	0.54			1.3	4.01	0.55	
EXISTING LAYOUT - 2038 WITH DEV										
Arm A	A11S D3	2.6	5.30	0.70	4.86	A11S D4	0.9	2.87	0.46	3.68
Arm B		0.1	7.34	0.11			0.2	4.90	0.12	
Arm C		1.4	4.09	0.56			1.5	4.33	0.58	

		AM				PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)
EXISTING LAYOUT - VALIDATION - 2022 LOGIC 54 TA										
Arm A	A11S-1 D5	5.4	9.47	0.83	8.10	A11S-1 D6	1.2	3.24	0.53	12.39
Arm B		0.6	12.80	0.36			0.4	5.95	0.31	
Arm C		2.1	5.52	0.67			9.7	19.78	0.91	

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

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

File summary

File Description

Title	SRN CUMULATIVE IMPACT ASSESSMENT
Location	A449/BREWOD ROAD SOUTH
Site number	11S
Date	07/06/2022
Version	
Status	(new file)
Identifier	
Client	BLOOR HOMES
Jobnumber	C22001
Enumerator	PC-CAPRICORN-01\seanm
Description	

Units

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

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2038 NO DEV	AM		FLAT	07:45	09:15	90	15	✓
D2	2038 NO DEV	PM		FLAT	16:45	18:15	90	15	✓
D3	2038 WITH DEV	AM		FLAT	07:45	09:15	90	15	✓
D4	2038 WITH DEV	PM		FLAT	16:45	18:15	90	15	✓
D5	2022 LOGIC 54 TA	AM	FOR VALIDATION ONLY (2022 BASE SCENARIO)	ONE HOUR	07:45	09:15		15	✓
D6	2022 LOGIC 54 TA	PM	FOR VALIDATION ONLY (2022 BASE SCENARIO)	ONE HOUR	16:45	18:15		15	✓

EXISTING LAYOUT - 2038 NO DEV, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

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 (%)
A11S	EXISTING LAYOUT	✓	✓	D1,D2,D3,D4	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
11S	A449/BREWOD ROAD SOUTH	Standard Roundabout		A, B, C	4.46	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.46	A

Arms

Arms

Arm	Name	Description	No give-way line
A	A449 N		
B	BREWOD ROAD SE		
C	A449 S		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	7.51	9.28	8.9	40.6	47.1	39.2		
B	3.55	7.15	14.0	12.4	47.1	37.5		
C	6.64	7.20	13.5	49.8	47.1	28.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.789	2585
B	0.581	1580
C	0.735	2240

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 period length (min)	Time segment length (min)	Run automatically
D1	2038 NO DEV	AM	FLAT	07:45	09:15	90	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		FLAT	✓	1667	100.000
B		FLAT	✓	54	100.000
C		FLAT	✓	1184	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
	A	B	C	
From	A	0	79	1588
	B	51	1	2
	C	1068	93	23

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A	B	C	
From	A	10	10	10
	B	10	10	10
	C	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	0.67	4.80	2.2	?	A	1667	2501
B	0.08	6.71	0.1	~1	A	54	81
C	0.54	3.89	1.3	?	A	1184	1776

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
A	1667	417	116	2493	0.669	1658	1114	0.0	2.2	4.697	A
B	54	14	1603	649	0.083	54	172	0.0	0.1	6.642	A
C	1184	296	52	2202	0.538	1179	1605	0.0	1.3	3.851	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
A	1667	417	117	2492	0.669	1667	1119	2.2	2.2	4.797	A
B	54	14	1611	645	0.084	54	173	0.1	0.1	6.705	A
C	1184	296	52	2202	0.538	1184	1613	1.3	1.3	3.890	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
A	1667	417	117	2492	0.669	1667	1119	2.2	2.2	4.797	A
B	54	14	1611	644	0.084	54	173	0.1	0.1	6.705	A
C	1184	296	52	2202	0.538	1184	1613	1.3	1.3	3.890	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
A	1667	417	117	2492	0.669	1667	1119	2.2	2.2	4.797	A
B	54	14	1611	644	0.084	54	173	0.1	0.1	6.705	A
C	1184	296	52	2202	0.538	1184	1613	1.3	1.3	3.890	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
A	1667	417	117	2492	0.669	1667	1119	2.2	2.2	4.797	A
B	54	14	1611	644	0.084	54	173	0.1	0.1	6.705	A
C	1184	296	52	2202	0.538	1184	1613	1.3	1.3	3.890	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
A	1667	417	117	2492	0.669	1667	1119	2.2	2.2	4.797	A
B	54	14	1611	644	0.084	54	173	0.1	0.1	6.705	A
C	1184	296	52	2202	0.538	1184	1613	1.3	1.3	3.890	A

Queue Variation Results for each time segment

07:45 - 08:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.19	?	?	?	?			N/A	N/A
B	0.10	~1	~1	~1	~1			N/A	N/A
C	1.27	?	?	?	?			N/A	N/A

08:00 - 08:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.20	?	?	?	?			N/A	N/A
B	0.10	~1	~1	~1	~1			N/A	N/A
C	1.27	?	?	?	?			N/A	N/A

08:15 - 08:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.21	?	?	?	?			N/A	N/A
B	0.10	~1	~1	~1	~1			N/A	N/A
C	1.28	?	?	?	?			N/A	N/A

08:30 - 08:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.21	?	?	?	?			N/A	N/A
B	0.10	~1	~1	~1	~1			N/A	N/A
C	1.28	?	?	?	?			N/A	N/A

08:45 - 09:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.21	?	?	?	?			N/A	N/A
B	0.10	~1	~1	~1	~1			N/A	N/A
C	1.28	?	?	?	?			N/A	N/A

09:00 - 09:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.22	?	?	?	?			N/A	N/A
B	0.10	~1	~1	~1	~1			N/A	N/A
C	1.28	?	?	?	?			N/A	N/A

EXISTING LAYOUT - 2038 NO DEV, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

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 (%)
A11S	EXISTING LAYOUT	✓	✓	D1,D2,D3,D4	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
11S	A449/BREWOD ROAD SOUTH	Standard Roundabout		A, B, C	3.45	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.45	A

Arms

Arms

Arm	Name	Description	No give-way line
A	A449 N		
B	BREWOD ROAD SE		
C	A449 S		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	7.51	9.28	8.9	40.6	47.1	39.2		
B	3.55	7.15	14.0	12.4	47.1	37.5		
C	6.64	7.20	13.5	49.8	47.1	28.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.789	2585
B	0.581	1580
C	0.735	2240

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 period length (min)	Time segment length (min)	Run automatically
D2	2038 NO DEV	PM	FLAT	16:45	18:15	90	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		FLAT	✓	1111	100.000
B		FLAT	✓	90	100.000
C		FLAT	✓	1189	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
	A	B	C	
From	A	0	35	1076
	B	86	0	4
	C	1145	23	21

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A	B	C	
From	A	10	10	10
	B	10	10	10
	C	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	0.44	2.75	0.8	~1	A	1111	1667
B	0.10	4.64	0.1	~1	A	90	135
C	0.55	4.01	1.3	?	A	1189	1784

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
A	1111	278	44	2550	0.436	1108	1226	0.0	0.8	2.740	A
B	90	23	1094	945	0.095	90	58	0.0	0.1	4.627	A
C	1189	297	86	2177	0.546	1184	1098	0.0	1.3	3.966	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
A	1111	278	44	2550	0.436	1111	1231	0.8	0.8	2.751	A
B	90	23	1097	943	0.095	90	58	0.1	0.1	4.641	A
C	1189	297	86	2177	0.546	1189	1101	1.3	1.3	4.008	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
A	1111	278	44	2550	0.436	1111	1231	0.8	0.8	2.751	A
B	90	23	1097	943	0.095	90	58	0.1	0.1	4.641	A
C	1189	297	86	2177	0.546	1189	1101	1.3	1.3	4.008	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
A	1111	278	44	2550	0.436	1111	1231	0.8	0.8	2.751	A
B	90	23	1097	943	0.095	90	58	0.1	0.1	4.641	A
C	1189	297	86	2177	0.546	1189	1101	1.3	1.3	4.008	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
A	1111	278	44	2550	0.436	1111	1231	0.8	0.8	2.751	A
B	90	23	1097	943	0.095	90	58	0.1	0.1	4.641	A
C	1189	297	86	2177	0.546	1189	1101	1.3	1.3	4.008	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
A	1111	278	44	2550	0.436	1111	1231	0.8	0.8	2.751	A
B	90	23	1097	943	0.095	90	58	0.1	0.1	4.641	A
C	1189	297	86	2177	0.546	1189	1101	1.3	1.3	4.008	A

Queue Variation Results for each time segment

16:45 - 17:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.84	~1	~1	~1	~1			N/A	N/A
B	0.12	~1	~1	~1	~1			N/A	N/A
C	1.31	?	?	?	?			N/A	N/A

17:00 - 17:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.85	~1	~1	~1	~1			N/A	N/A
B	0.12	~1	~1	~1	~1			N/A	N/A
C	1.32	?	?	?	?			N/A	N/A

17:15 - 17:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.85	~1	~1	~1	~1			N/A	N/A
B	0.12	~1	~1	~1	~1			N/A	N/A
C	1.32	?	?	?	?			N/A	N/A

17:30 - 17:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.85	~1	~1	~1	~1			N/A	N/A
B	0.12	~1	~1	~1	~1			N/A	N/A
C	1.32	?	?	?	?			N/A	N/A

17:45 - 18:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.85	~1	~1	~1	~1			N/A	N/A
B	0.12	~1	~1	~1	~1			N/A	N/A
C	1.32	?	?	?	?			N/A	N/A

18:00 - 18:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.85	~1	~1	~1	~1			N/A	N/A
B	0.12	~1	~1	~1	~1			N/A	N/A
C	1.32	?	?	?	?			N/A	N/A

EXISTING LAYOUT - 2038 WITH DEV, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

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 (%)
A11S	EXISTING LAYOUT	✓	✓	D1,D2,D3,D4	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
11S	A449/BREWOD ROAD SOUTH	Standard Roundabout		A, B, C	4.86	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.86	A

Arms

Arms

Arm	Name	Description	No give-way line
A	A449 N		
B	BREWOD ROAD SE		
C	A449 S		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	7.51	9.28	8.9	40.6	47.1	39.2		
B	3.55	7.15	14.0	12.4	47.1	37.5		
C	6.64	7.20	13.5	49.8	47.1	28.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.789	2585
B	0.581	1580
C	0.735	2240

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 period length (min)	Time segment length (min)	Run automatically
D3	2038 WITH DEV	AM	FLAT	07:45	09:15	90	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		FLAT	✓	1745	100.000
B		FLAT	✓	70	100.000
C		FLAT	✓	1221	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	96	1649
	B	67	1	2
	C	1105	93	23

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	10	10	10
	B	10	10	10
	C	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	0.70	5.30	2.6	?	A	1745	2618
B	0.11	7.34	0.1	~1	A	70	105
C	0.56	4.09	1.4	?	A	1221	1832

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
A	1745	436	116	2493	0.700	1735	1166	0.0	2.5	5.160	A
B	70	18	1662	615	0.114	69	189	0.0	0.1	7.255	A
C	1221	305	67	2190	0.557	1216	1664	0.0	1.4	4.040	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
A	1745	436	117	2492	0.700	1745	1172	2.5	2.5	5.295	A
B	70	18	1672	609	0.115	70	190	0.1	0.1	7.344	A
C	1221	305	68	2190	0.558	1221	1674	1.4	1.4	4.086	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
A	1745	436	117	2492	0.700	1745	1172	2.5	2.6	5.297	A
B	70	18	1672	609	0.115	70	190	0.1	0.1	7.345	A
C	1221	305	68	2190	0.558	1221	1674	1.4	1.4	4.086	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
A	1745	436	117	2492	0.700	1745	1172	2.6	2.6	5.297	A
B	70	18	1672	609	0.115	70	190	0.1	0.1	7.345	A
C	1221	305	68	2190	0.558	1221	1674	1.4	1.4	4.086	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
A	1745	436	117	2492	0.700	1745	1172	2.6	2.6	5.297	A
B	70	18	1672	609	0.115	70	190	0.1	0.1	7.345	A
C	1221	305	68	2190	0.558	1221	1674	1.4	1.4	4.086	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
A	1745	436	117	2492	0.700	1745	1172	2.6	2.6	5.297	A
B	70	18	1672	609	0.115	70	190	0.1	0.1	7.345	A
C	1221	305	68	2190	0.558	1221	1674	1.4	1.4	4.086	A

Queue Variation Results for each time segment

07:45 - 08:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.52	?	?	?	?			N/A	N/A
B	0.14	~1	~1	~1	~1			N/A	N/A
C	1.37	?	?	?	?			N/A	N/A

08:00 - 08:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.54	?	?	?	?			N/A	N/A
B	0.14	~1	~1	~1	~1			N/A	N/A
C	1.38	?	?	?	?			N/A	N/A

08:15 - 08:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.55	?	?	?	?			N/A	N/A
B	0.14	~1	~1	~1	~1			N/A	N/A
C	1.38	?	?	?	?			N/A	N/A

08:30 - 08:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.56	?	?	?	?			N/A	N/A
B	0.14	~1	~1	~1	~1			N/A	N/A
C	1.38	?	?	?	?			N/A	N/A

08:45 - 09:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.56	?	?	?	?			N/A	N/A
B	0.14	~1	~1	~1	~1			N/A	N/A
C	1.38	?	?	?	?			N/A	N/A

09:00 - 09:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.56	?	?	?	?			N/A	N/A
B	0.14	~1	~1	~1	~1			N/A	N/A
C	1.38	?	?	?	?			N/A	N/A

EXISTING LAYOUT - 2038 WITH DEV, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Flow Arm A	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Flow Arm B	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Flow Arm C	Analysis Options	Queue percentiles cannot be calculated for the selected traffic profile type.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

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 (%)
A11S	EXISTING LAYOUT	✓	✓	D1,D2,D3,D4	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
11S	A449/BREWOD ROAD SOUTH	Standard Roundabout		A, B, C	3.68	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.68	A

Arms

Arms

Arm	Name	Description	No give-way line
A	A449 N		
B	BREWOD ROAD SE		
C	A449 S		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	7.51	9.28	8.9	40.6	47.1	39.2		
B	3.55	7.15	14.0	12.4	47.1	37.5		
C	6.64	7.20	13.5	49.8	47.1	28.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.789	2585
B	0.581	1580
C	0.735	2240

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 period length (min)	Time segment length (min)	Run automatically
D4	2038 WITH DEV	PM	FLAT	16:45	18:15	90	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		FLAT	✓	1171	100.000
B		FLAT	✓	111	100.000
C		FLAT	✓	1246	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
	A	B	C	
From	A	0	54	1117
	B	107	0	4
	C	1202	23	21

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A	B	C	
From	A	10	10	10
	B	10	10	10
	C	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	0.46	2.87	0.9	~1	A	1171	1757
B	0.12	4.90	0.2	~1	A	111	167
C	0.58	4.33	1.5	?	A	1246	1869

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
A	1171	293	44	2550	0.459	1167	1303	0.0	0.9	2.857	A
B	111	28	1134	921	0.120	110	77	0.0	0.1	4.880	A
C	1246	312	106	2162	0.576	1240	1138	0.0	1.5	4.269	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
A	1171	293	44	2550	0.459	1171	1309	0.9	0.9	2.870	A
B	111	28	1138	919	0.121	111	77	0.1	0.2	4.899	A
C	1246	312	107	2161	0.577	1246	1142	1.5	1.5	4.326	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
A	1171	293	44	2550	0.459	1171	1309	0.9	0.9	2.870	A
B	111	28	1138	919	0.121	111	77	0.2	0.2	4.899	A
C	1246	312	107	2161	0.577	1246	1142	1.5	1.5	4.326	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
A	1171	293	44	2550	0.459	1171	1309	0.9	0.9	2.870	A
B	111	28	1138	919	0.121	111	77	0.2	0.2	4.899	A
C	1246	312	107	2161	0.577	1246	1142	1.5	1.5	4.326	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
A	1171	293	44	2550	0.459	1171	1309	0.9	0.9	2.870	A
B	111	28	1138	919	0.121	111	77	0.2	0.2	4.899	A
C	1246	312	107	2161	0.577	1246	1142	1.5	1.5	4.326	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
A	1171	293	44	2550	0.459	1171	1309	0.9	0.9	2.870	A
B	111	28	1138	919	0.121	111	77	0.2	0.2	4.899	A
C	1246	312	107	2161	0.577	1246	1142	1.5	1.5	4.326	A

Queue Variation Results for each time segment

16:45 - 17:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.93	~1	~1	~1	~1			N/A	N/A
B	0.15	~1	~1	~1	~1			N/A	N/A
C	1.48	?	?	?	?			N/A	N/A

17:00 - 17:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.93	~1	~1	~1	~1			N/A	N/A
B	0.15	~1	~1	~1	~1			N/A	N/A
C	1.49	?	?	?	?			N/A	N/A

17:15 - 17:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.93	~1	~1	~1	~1			N/A	N/A
B	0.15	~1	~1	~1	~1			N/A	N/A
C	1.49	?	?	?	?			N/A	N/A

17:30 - 17:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.93	~1	~1	~1	~1			N/A	N/A
B	0.15	~1	~1	~1	~1			N/A	N/A
C	1.49	?	?	?	?			N/A	N/A

17:45 - 18:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.93	~1	~1	~1	~1			N/A	N/A
B	0.15	~1	~1	~1	~1			N/A	N/A
C	1.49	?	?	?	?			N/A	N/A

18:00 - 18:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.93	~1	~1	~1	~1			N/A	N/A
B	0.15	~1	~1	~1	~1			N/A	N/A
C	1.49	?	?	?	?			N/A	N/A

EXISTING LAYOUT - VALIDATION - 2022 LOGIC 54 TA, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

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 (%)
A11S-1	EXISTING LAYOUT - VALIDATION	✓	✓	D5,D6	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
11S	A449/BREWOD ROAD SOUTH	Standard Roundabout		A, B, C	8.10	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	8.10	A

Arms

Arms

Arm	Name	Description	No give-way line
A	A449 N		
B	BREWOD ROAD SE		
C	A449 S		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	7.51	9.28	8.9	40.6	47.1	39.2		
B	3.55	7.15	14.0	12.4	47.1	37.5		
C	6.64	7.20	13.5	49.8	47.1	28.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.789	2585
B	0.581	1580
C	0.735	2240

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2022 LOGIC 54 TA	AM	FOR VALIDATION ONLY (2022 BASE SCENARIO)	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 (%)
A		ONE HOUR	✓	1900	100.000
B		ONE HOUR	✓	146	100.000
C		ONE HOUR	✓	1280	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	6	143	1751
	B	144	0	2
	C	1189	76	15

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	67	2	10
	B	2	0	0
	C	9	6	8

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	0.83	9.47	5.4	23.4	A	1743	2615
B	0.36	12.80	0.6	2.3	B	134	201
C	0.67	5.52	2.1	3.9	A	1175	1762

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
A	1430	358	68	2531	0.565	1425	1004	0.0	1.4	3.546	A
B	110	27	1329	808	0.136	109	164	0.0	0.2	5.246	A
C	964	241	112	2157	0.447	960	1326	0.0	0.9	3.262	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
A	1708	427	82	2520	0.678	1705	1202	1.4	2.3	4.811	A
B	131	33	1590	657	0.200	131	197	0.2	0.3	6.976	A
C	1151	288	134	2141	0.537	1149	1586	0.9	1.3	3.943	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
A	2092	523	100	2506	0.835	2080	1470	2.3	5.2	9.014	A
B	161	40	1940	453	0.355	160	240	0.3	0.5	12.445	B
C	1409	352	164	2119	0.665	1406	1936	1.3	2.1	5.463	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
A	2092	523	100	2506	0.835	2091	1474	5.2	5.4	9.474	A
B	161	40	1950	447	0.359	161	241	0.5	0.6	12.803	B
C	1409	352	165	2119	0.665	1409	1946	2.1	2.1	5.519	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
A	1708	427	82	2520	0.678	1720	1208	5.4	2.3	4.999	A
B	131	33	1604	648	0.202	132	198	0.6	0.3	7.133	A
C	1151	288	136	2140	0.538	1154	1601	2.1	1.3	3.988	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
A	1430	358	69	2531	0.565	1434	1010	2.3	1.4	3.607	A
B	110	27	1337	803	0.137	110	165	0.3	0.2	5.299	A
C	964	241	113	2157	0.447	965	1334	1.3	0.9	3.291	A

Queue Variation Results for each time segment

07:45 - 08:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.41	0.62	1.24	1.68	1.93			N/A	N/A
B	0.16	0.00	0.00	0.16	0.16			N/A	N/A
C	0.87	0.60	1.09	1.52	1.58			N/A	N/A

08:00 - 08:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.27	0.05	0.46	6.15	10.71			N/A	N/A
B	0.25	0.00	0.00	0.25	0.25			N/A	N/A
C	1.25	0.06	0.75	2.76	3.95			N/A	N/A

08:15 - 08:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.22	0.03	0.33	5.22	23.42			N/A	N/A
B	0.55	0.03	0.26	0.55	0.55			N/A	N/A
C	2.12	0.03	0.29	2.12	2.12			N/A	N/A

08:30 - 08:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	5.37	0.03	0.30	5.37	8.97			N/A	N/A
B	0.56	0.03	0.34	1.19	2.30			N/A	N/A
C	2.14	0.03	0.29	2.14	2.14			N/A	N/A

08:45 - 09:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	2.34	0.06	0.86	6.13	9.35			N/A	N/A
B	0.26	0.00	0.00	0.26	0.26			N/A	N/A
C	1.28	0.17	1.19	1.96	2.34			N/A	N/A

09:00 - 09:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.44	0.04	0.41	3.70	6.80			N/A	N/A
B	0.16	0.00	0.00	0.16	0.16			N/A	N/A
C	0.88	0.07	0.79	1.45	1.94			N/A	N/A

EXISTING LAYOUT - VALIDATION - 2022 LOGIC 54 TA, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

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 (%)
A11S-1	EXISTING LAYOUT - VALIDATION	✓	✓	D5,D6	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
11S	A449/BREWOD ROAD SOUTH	Standard Roundabout		A, B, C	12.39	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	12.39	B

Arms

Arms

Arm	Name	Description	No give-way line
A	A449 N		
B	BREWOD ROAD SE		
C	A449 S		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A	7.51	9.28	8.9	40.6	47.1	39.2		
B	3.55	7.15	14.0	12.4	47.1	37.5		
C	6.64	7.20	13.5	49.8	47.1	28.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.789	2585
B	0.581	1580
C	0.735	2240

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2022 LOGIC 54 TA	PM	FOR VALIDATION ONLY (2022 BASE SCENARIO)	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1200	100.000
B		ONE HOUR	✓	241	100.000
C		ONE HOUR	✓	1694	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	2	118	1080
	B	238	0	3
	C	1586	79	29

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	6
	B	0	0	0
	C	5	3	4

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A	0.53	3.24	1.2	1.5	A	1101	1652
B	0.31	5.95	0.4	1.7	A	221	332
C	0.91	19.78	9.7	51.4	C	1554	2332

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
A	903	226	81	2521	0.358	901	1368	0.0	0.6	2.339	A
B	181	45	834	1096	0.166	181	148	0.0	0.2	3.931	A
C	1275	319	180	2108	0.605	1269	835	0.0	1.6	4.471	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
A	1079	270	97	2508	0.430	1078	1637	0.6	0.8	2.650	A
B	217	54	998	1001	0.217	216	177	0.2	0.3	4.587	A
C	1523	381	215	2082	0.732	1518	999	1.6	2.8	6.643	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
A	1321	330	117	2492	0.530	1320	1987	0.8	1.2	3.231	A
B	265	66	1221	871	0.305	265	216	0.3	0.4	5.933	A
C	1865	466	264	2046	0.912	1841	1223	2.8	8.9	16.688	C

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1321	330	119	2491	0.530	1321	2008	1.2	1.2	3.241	A
B	265	66	1223	870	0.305	265	217	0.4	0.4	5.955	A
C	1865	466	264	2046	0.912	1862	1224	8.9	9.7	19.781	C

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A	1079	270	99	2507	0.430	1080	1667	1.2	0.8	2.661	A
B	217	54	1001	999	0.217	217	179	0.4	0.3	4.608	A
C	1523	381	216	2081	0.732	1550	1002	9.7	2.9	7.455	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
A	903	226	82	2520	0.358	904	1380	0.8	0.6	2.348	A
B	181	45	837	1094	0.166	182	149	0.3	0.2	3.949	A
C	1275	319	181	2107	0.605	1281	838	2.9	1.6	4.597	A

Queue Variation Results for each time segment

16:45 - 17:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.59	0.58	1.05	1.48	1.53			N/A	N/A
B	0.20	0.00	0.00	0.20	0.20			N/A	N/A
C	1.59	0.60	1.49	2.00	2.35			N/A	N/A

17:00 - 17:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.79	0.08	0.83	1.30	1.30			N/A	N/A
B	0.27	0.00	0.00	0.27	0.27			N/A	N/A
C	2.78	0.05	0.47	7.71	13.32			N/A	N/A

17:15 - 17:30

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.18	0.03	0.27	1.18	1.18			N/A	N/A
B	0.43	0.03	0.25	0.46	0.48			N/A	N/A
C	8.90	0.05	0.46	24.55	47.92			N/A	N/A

17:30 - 17:45

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	1.19	0.03	0.28	1.19	1.19			N/A	N/A
B	0.44	0.03	0.32	1.37	1.69			N/A	N/A
C	9.69	0.04	0.36	17.28	51.36			N/A	N/A

17:45 - 18:00

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.80	0.58	1.05	1.48	1.53			N/A	N/A
B	0.28	0.00	0.00	0.28	0.28			N/A	N/A
C	2.94	0.05	0.46	8.17	14.25			N/A	N/A

18:00 - 18:15

Arm	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
A	0.59	0.58	1.05	1.48	1.53			N/A	N/A
B	0.20	0.00	0.00	0.20	0.20			N/A	N/A
C	1.63	0.03	0.34	3.18	8.47			N/A	N/A

Appendix D PJA SRN Impact Assessment

Technical Note

Project: Land North of Penkridge

Subject: Strategic Road Network Impact Assessment

Client:	St Philips & Bloor Homes	Version:	A
Project No:	6161	Author:	BS
Date:	17th June 2022	Approved:	SB

I Introduction

- 1.1.1 PJA has been commissioned by St Philips and Bloor Homes to provide transport advice in relation to the proposed allocation at Land at A449, Penkridge, within the emerging South Staffordshire Local Plan.
- 1.1.2 A Strategic Transport Assessment (STA) has been prepared following discussions with South Staffordshire Council, Staffordshire County Council (SCC) and National Highways (NH). It provides a high-level strategic review of the impact of the proposed site allocation.
- 1.1.3 This technical note sets out the detailed capacity assessments undertaken for junctions on the Strategic Road Network (SRN).

I.2 Scope of Assessment

- 1.2.1 During scoping discussions with NH, it was requested that, in addition to the assessment of each allocation in isolation, a cumulative assessment should be undertaken for junctions on the SRN that assesses the cumulative impact of the four allocation sites (Land North of Penkridge, Land East of Bilbrook, Land at Cross Green and Land at Linthouse Lane).
- 1.2.2 A joint methodology has been developed and agreed between consultants, and is set out within a technical note, included in **Appendix A**. This note has been issued to NH and sets out a proposed methodology, assessment parameters and divides up the junctions to be modelled between the allocations based on the respective impacts.

1.2.3 This report presents the findings of the M6 Junction 13 and A449/A5 Gailey Roundabout assessments.

1.3 Structure of Note

1.3.1 Following this section, the remainder of this note is structured as follows:

- Section 2: Methodology;
- Section 3: Results; and
- Section 4: Summary.

2 Methodology

2.1 Overall Approach

2.1.1 The assessment has been undertaken in accordance with the approach set out within the proposed methodology note, contained within **Appendix A**.

2.2 Assessment Scenarios

2.2.1 Each of the junctions have been assessed for the following scenarios:

- 2022 Base;
- 2038 Future Year – includes committed development and TEMPro growth; and
- 2038 Future Year + Cumulative Development – as above, with the cumulative development.

2.2.2 Traffic flow diagrams for each scenario have been included in **Appendix B**. Further information on the elements within these scenarios are given below.

2.3 Baseline Data

2.3.1 Baseline data collected from MCC and queue length surveys undertaken on Thursday 31st March 2022 at the following junctions. Baseline surveys were undertaken on a neutral weekday for the AM (07:00-10:00) and PM (16:00-19:00) peak periods. Full survey data has been included in **Appendix C**.

- M6 Junction 13 Roundabout; and
- A5 / A449 Gailey Roundabout.

2.3.2 Each junction has been assessed for the AM and PM peak periods comprising 07:30-08:30 and 16:15-17:15 which were identified by the 2022 survey data.

Traffic Profile

2.3.3 Analysis of the baseline surveys identify that traffic at these junctions typically has a flat profile across the peak hours. The 15-minute proportions are summarised in Table 11-2 below, and as a result each junction been assessed using a flat profile.

Table 2-1: Peak Hour Traffic Profiles

	A449/A5 Gailey Roundabout	M6 Junction 13	Average
AM Peak			
07:30-07:45	26%	25%	25%
07:45-08:00	24%	26%	26%
08:00-08:15	24%	24%	24%
08:15-08:30	26%	25%	25%
Total	100%	100%	100%
PM Peak			
16:15-16:30	25%	25%	25%
16:30-16:45	24%	26%	25%
16:45-17:00	25%	24%	24%
17:00-17:15	26%	25%	26%
Total	100%	100%	100%

2.4 Traffic Growth

2.4.1 Consistent with the local network assessments, growth factors have been applied to the 2022 survey data.

2.5 Committed Development

2.5.1 The same committed developments included within the local network assessments have been including in the SRN assessments. These are set out in Section 10.5 and summarised below for reference:

- Bloor Homes Phase 1 – 17/01022/OUT – 200 dwellings;
- Land at Cherry Brook – Site Allocation 005 – 88 dwellings; and
- West Midlands Interchange.

2.6 Committed Infrastructure

M54/M6 Link Road

- 2.6.1 Given the recent consent for the M54/M6 Link Road, the scheme will be treated as committed infrastructure within the assessment, and the impact of the scheme on the strategic road network accounted for where appropriate.
- 2.6.2 The Transport Assessment submitted as part of the schemes DCO provides suggests that the scheme will result in a significant reduction in vehicles on the A449 and A5, and as such would offer significant benefit to the A449/A5 Gailey roundabout.
- 2.6.3 As set out in the Cumulative Assessment Method Technical Note, the DCO TA does not provide specific traffic flow diagrams or turning counts. Therefore, in order to investigate in more detail, information has been extracted from the TA that accompanied the consented Logic 54 Featherstone application (20/01131/OUT). The TA provides turning count information associated with the M54/M6 Link Road (sourced from National Highways (Highways England at the time)).
- 2.6.4 In order to account for the impact of the M54/M6 Link Road within the cumulative assessment, the following methodology has been applied:
- 2024 Do Minimum (DM) and 2024 Do Something (DS) turning counts extracted from the Featherstone TA for each of the junctions;
 - The DM flows will be subtracted from the DS flows to identify the difference.
 - The difference will then be calculated as a percentage of the DM flows.
 - The percentage difference will then be applied to the 2038 baseline data for each turning movement.
- 2.6.5 Given that no data is available for the M6 Junction 13, no changes have been made to account for the M54/M6 Link Road at this junction.
- 2.6.6 Traffic flow diagrams illustrating the difference in trips as a result of the M54/M6 Link Road have been included in **Appendix B**.

West Midlands Interchange Link Road

- 2.6.7 No account has been made within the assessment for WMI link road between the A5 and A449. This is on the basis that the modelling undertaken within the WMI TA did not identify a substantial benefit on the local highway network as a result of the link road. Instead, it was

considered to provide resilience to the network, by providing a choice of routes for trunk road traffic travelling between A5 and A449 in times of congestion.

2.7 Cumulative Development

2.7.1 Development vehicle trips have been shared between developers/consultants for each of the four allocation sites. It is understood that the trip generation/distribution and assignment assumptions underpinning these values have been discussed (and agreed where possible) with NH during initial scoping discussions.

2.7.2 Traffic flow diagrams illustrating the cumulative development sites vehicle trips, individually and combined, have been included in **Appendix B**.

3 Results

3.1 M6 Junction 13

3.1.1 The M6 Junction 13 has been assessed using Junctions 10 software. The results are summarised below, and full outputs have been included in **Appendix D**.

Arm	AM Peak (07:30 – 08:30)			PM Peak (16:15 – 17:15)		
	RFC	Queue	Delay (s)	RFC	Queue	Delay (s)
<i>2022 Base</i>						
A449 North	0.34	1	2	0.28	0	2
M6 South	0.19	0	2	0.18	0	2
A449 South	0.21	0	2	0.45	1	3
M6 North	0.12	0	2	0.16	0	2
<i>2038 Future Year</i>						
A449 North	0.39	1	2	0.33	1	2
M6 South	0.23	0	3	0.24	0	3
A449 South	0.26	0	2	0.53	1	3
M6 North	0.17	0	2	0.21	0	3
<i>2038 Future Year + Cumulative Development</i>						
A449 North	0.41	1	3	0.36	1	2
M6 South	0.25	0	3	0.27	0	3
A449 South	0.32	1	2	0.55	2	4
M6 North	0.19	0	3	0.23	0	4

3.1.2 The results indicate that the junction would operate with significant reserve capacity in both the AM and PM peaks for all scenarios.

3.2 A5/A449 Gailey Roundabout

3.2.1 The A5/A449 Gailey Roundabout has been assessed using Junctions 10 software. The results are summarised below, and full outputs have been included in **Appendix D**.

Arm	AM Peak (07:30 – 08:30)			PM Peak (16:15 – 17:15)		
	RFC	Queue	Delay (s)	RFC	Queue	Delay (s)
<i>2022 Base</i>						
A5 East	0.51	1	5	0.63	2	6
A449 Stafford Road South	0.47	1	4	0.58	2	7
A5 West	0.73	3	14	0.68	2	13
A449 Stafford Road North	0.62	2	5	0.49	1	4
<i>2038 Future Year</i>						
A5 East	0.41	1	4	0.67	2	7
A449 Stafford Road South	0.30	1	3	0.54	1	7
A5 West	0.58	2	7	0.67	2	13
A449 Stafford Road North	0.59	1	4	0.50	1	3
<i>2038 Future Year + Cumulative Development</i>						
A5 East	0.43	1	5	0.69	3	8
A449 Stafford Road South	0.32	1	4	0.58	2	7
A5 West	0.60	2	8	0.70	3	15
A449 Stafford Road North	0.62	2	5	0.52	1	4

3.2.2 The results indicate that the junction would operate with significant reserve capacity in both the AM and PM peaks for all scenarios.

3.3 RAG Summary

3.3.1 Consistent with the local network assessments, the operation of the junctions have been given a RAG rating, based on the following parameters:

- Green – RFC of below 0.85 – The junction operates with reserve capacity;
- Amber – RFC between 0.85 and 1.00 – The junction is approaching theoretical capacity; and
- Red – RFC of greater than 1.00 – The junction is at or above theoretical capacity and mitigation is likely to be needed.

Table 3-1: RAG Rating Results

	2022 Base		2038 Future Year		2038 Future Year + Cumulative Development	
	AM	PM	AM	PM	AM	PM
M6 J13						
A5/A449 Gailey Roundabout						

4 Summary

4.1.1 This technical note presents the results of the modelling work undertaken in relation to the Strategic Road Network. The modelling has identified that:

- Both the M6 J13 and Gailey Roundabout would operate with reserve capacity in all scenarios;
- The existing junctions are sufficient to accommodate demand associated with the development in isolation, and the demand associated with cumulative site allocation developments.

Appendix A Methodology Note

Technical Note

Project: Land at A449, Penkridge

Subject: SRN Cumulative Assessment Method

Client:	St Philips & Bloor Homes	Version:	A
Project No:	6161	Author:	BS
Date:	11th May 2022	Approved:	SB

I Introduction

I.1 Context and Purpose

- 1.1.1 PJA, DTA Transportation and Capricorn Transport Planning have been appointed on behalf of St Philips, Bloor Homes and Taylor Wimpey to support the four proposed site strategic allocations within the South Staffordshire Local Plan Review.
- 1.1.2 Initial scoping discussions have been undertaken by each of the developers and their consultants, Staffordshire County Council Highways (SCC) and National Highways (NH). During these discussions, NH identified the need for a cumulative assessment of the Strategic Road Network (SRN) and a consistent approach to be taken between each of the allocations.
- 1.1.3 The purpose of this note to set out the scope and method of the cumulative assessment that will be undertaken.
- 1.1.4 This assessment is intended as a high-level exercise in order to identify any improvements required to the strategic road network such that these improvements can be costed and included in the IDP.
- 1.1.5 Further, more detailed modelling and assessment work can be undertaken following this stage as required to support the Local Plan Review through submission and examination.

I.2 Structure of Note

- 1.2.1 The remainder of this note is structured as follows:

- Section 2: Development Trips at Junctions;
- Section 3: Scope of Assessment;
- Section 4: Model Parameters;
- Section 5: Outputs; and
- Section 6: Summary and Conclusion.

2 Development Trips at Junctions

2.1.1 Development vehicle trips have been provided for each of the junctions on the SRN within our combined extents. It is understood that the trip generation/distribution and assignment assumptions underpinning these values have been discussed (and agreed where possible) with NH during initial scoping discussions.

2.1.2 It should be noted that:

- M6 Junction 14 is not within the scope of assessment for Cross Green, Linthouse Lane and Bilbrooks. Trips at this junction for these sites have been assumed to be 0.
- M6 J10, M6 J13 and M6 J14 are not within the scope of assessment for the Bilbrook site. It is not anticipated that the development will result in a significant number of trips at these junctions, and therefore it has been assumed that there are 0 trips at these junctions.
- M54 J1, M54 J2, M54 J3, M6 J10 and A449/Brewood Roundabouts are not within the scope of assessment for the Penkridge site. For the purpose of the cumulative assessment, the distribution has been extended to identify the likely development trips at these junctions.

2.1.3 The total vehicle trips at each junction for each development, and when combined are summarised in the table below.

Table 1: Development Trips at SRN Junctions

SRN Junctions	Cross Green		Linthouse Lane		Bilbrook		Penkridge		Total	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
M54 J1	66	53	73	125	15	17	6	5	161	199
M54 J2	423	445	4	5	131	125	67	60	625	635
M54 J3	8	8	2	1	29	31	0	0	39	40
M6 J10	50	62	29	2	0	0	18	13	97	77
M6 J11	152	136	62	56	15	17	28	21	258	230
M6 J12	10	19	1	1	11	12	18	13	40	45
M6 J13	6	7	1	1	0	0	180	169	187	177
A449/ Brewood Rdbts	42	54	1	2	37	40	69	62	150	158
Gailey Roundabout	16	17	2	2	25	27	87	75	131	122
M6 J14	0	0	0	0	0	0	43	32	43	32

3 Scope of Assessment

3.1.1 During initial discussions, NH noted that all junctions with more than 50 cumulative development trips would require assessment. Based on the above, junctions with more than 50 two-way cumulative development trips are as follows:

- M54 J1 – 166 AM/199 PM trips;
- M54 J2 – 625 AM/635 PM trips;
- M6 J10 – 97 AM/77 PM trips;
- M6 J11 – 258 AM/230 PM trips;
- M6 J13 – 187 AM/177 PM trips;
- A449/ Brewood Roundabouts – 150 AM/158 PM trips; and
- Gailey Roundabout – 131 AM/122 PM trips.

3.1.2 Of the above, three junctions will be excluded from the assessment as follows:

- M54 J1;
- M6 J10; and
- M6 J11.

3.1.3 The DCO application for a new link road between M54 Junction 1 and M6 Junction 11 was granted planning consent in April 2022. The application was accompanied by a Transport Assessment and associated modelling of the link road and connecting junctions. Whilst this work did not explicitly include the proposed strategic allocations, it did confirm that both M54 Junction 1 and M6 Junction 11 would operate within capacity in 2039 with growth resulting from changes in employment levels, population & housing levels, and changes in car ownership. Given the significant nature of the works being implemented by the DCO application and changes to both M54 Junction 1 and M6 Junction 11 to accommodate it, further improvements to mitigate the proposed allocations are unlikely to be warranted within the context of the change in traffic flows forecast.

3.1.4 In terms of M6 Junction 10, this junction is currently undergoing significant improvement works which will reduce delays and increase highway capacity. Within this context, the impact of the additional traffic generated by the cumulative developments is not significant equating to a circa 1% uplift in peak demand and further mitigation is therefore unlikely to be warranted

3.1.5 On this basis, detailed capacity assessments will be undertaken at the following SRN junctions only.

- M54 J2;
- M6 J13;
- A449/ Brewood Roundabouts; and
- Gailey Roundabout.

3.2 Split of Assessment

3.2.1 The detailed assessments will be undertaken by the consultant for the development with the greatest impact at each junction, or where existing models are available. As such, the detailed assessments will be undertaken as follows:

- M54 J2 – DTA (on behalf of Cross Green & Linthouse Lane)
- A449/ Brewood Roundabouts – Capricorn (on behalf of Bilbrook)
- M6 J13 – PJA (on behalf of Penkridge); and
- Gailey Roundabout – PJA (on behalf of Penkridge).

4 Model Parameters

4.1.1 In order to ensure a consistent approach between the assessments, the following parameters will be followed by all consultants.

4.2 Modelling Software

4.2.1 The junctions will be assessed using standalone modelling software as follows:

- M54 J2 - Linsig
- M6 J13 – Junctions 10
- A449/ Brewood Roundabouts – Junctions 10/Arcady
- Gailey Roundabout – Junctions 10

4.3 Assessment Scenarios

4.3.1 The junctions will be assessed for the following scenarios:

- **2038 Future Year** (end of Local Plan); and
 - Derived using 2022 survey data and TEMPRO growth factors.
 - Will include committed developments as agreed during scoping discussions per the site undertaking the assessment (see Section 4.4), and the M54/M6 link road.
- **2038 Future Year + Cumulative Development.**

- As above scenario with all site allocations.

4.4 Baseline Data

4.4.1 Baseline data has been collected at each of the junctions by Manual Classified Count (MCC) surveys undertaken as follows. Full survey data will be included within the STA document.

- M54 Junction 2 – MCC survey undertaken on Wednesday 16th March 2022;
- M6 Junction 13 – MCC survey undertaken on Thursday 31st March 2022;
- A449/Brewood Roundabouts – MCC survey undertaken on Wednesday 16th March 2022; and
- Gailey Roundabout – MCC survey undertaken on Thursday 31st March 2022.

4.5 Committed Development and Infrastructure

4.5.1 The committed developments and infrastructure accounted for within the assessments are summarised in Table 2 below. Further detail is provided below.

Table 2: Committed Developments

Consultant	Junction	Committed Infrastructure Included	Committed Development Included
DTA	M54 J2	M54/M6 Link Road Logic 54 Featherstone Link Road	<ul style="list-style-type: none"> - Logic 54 Featherstone (20/01131/OUT) and the included committed developments within the consented TA: <ul style="list-style-type: none"> o Wolverhampton Business Park (11/00100/OUT) o Four Ashes (16/00498/FUL) o i54 unoccupied and i54 Western Extension (18/00637/OUT) o Pendeford Mill Lane Bilbrook (18/00710/FUL) o Hobnock Road (18/00450/REM) o Unit 1 Innovation Drive, Pendeford (16/001057/REM) o West Midland Interchange (WMI) (DCO Ref TR050005)
Capricorn	A449/ Brewood Roundabouts		
PJA	M6 J13	M54/M6 Link Road	<ul style="list-style-type: none"> - Bloor Phase 1 (17/01022/OUT) – 200 dwellings - Land at Cherry Brook (Site Allocation 005) – 88 dwellings - West Midlands Interchange (WMI) (DCO Ref TR050005)
	Gailey Roundabout		

Committed Developments

M54 Junction 2 and A449/Brewood Roundabouts

4.5.2 The committed developments included within the M54 J2 and A449/Brewood Roundabouts assessment have been based on and inclusive of the ROF Featherstone application (20/01131/OUT). Turning flows will be extracted from the relevant TA's.

M6 J13 and Gailey Roundabout

4.5.3 Committed developments for the M6 J13 and Gailey Roundabout assessment were agreed during scoping discussions in relation to Land at A449, Penkridge site. Turning flows will be extracted from the relevant TA's where possible. Traffic flows for the Cherry Brook 005 Site Allocation have been estimated, and more detail will be provided within the STA.

M54/M6 Link Road

4.5.4 Given the recent consent for the M54/M6 Link Road, the scheme will be treated as committed infrastructure within the assessment, and the impact of the scheme on the strategic road network accounted for where appropriate.

4.5.5 The Transport Assessment submitted as part of the schemes DCO provides peak hour traffic flows on bypassed roads including the A449 (at A5 Gailey) and A5 (West of A449 Gailey). The values in Table 4.5 of the TA, suggest that the scheme will result in a significant reduction in vehicles on the A449 and A5, as set out in Table 3 below.

Table 3: DCO TA - Peak Hour Impact of M54/M6 Link Road

		AM Peak			PM Peak			Difference (%)	
		2024 DM	2024 DS	Difference	2024 DM	2024 DS	Difference	AM	PM
A449 (at A5 Gailey)	Northbound	507	312	-195	871	600	-271	-38%	-31%
	Southbound	831	436	-395	475	313	-162	-48%	-34%
A5 (West of A449 Gailey)	Eastbound	890	692	-198	851	593	-258	-22%	-30%
	Westbound	833	534	-299	902	765	-137	-36%	-15%

4.5.6 The DCO TA does not provide specific traffic flow diagrams or turning counts. Therefore, in order to investigate in more detail, information has been extracted from the TA that accompanied the consented Logic 54 Featherstone application (20/01131/OUT). The TA provides turning count information associated with the M54/M6 Link Road (sourced from National Highways (Highways England at the time)), for the following junctions and scenarios:

Junctions:

- A449/A5 Gailey Roundabout;
- A449/Brewood Roundabouts; and
- M54 Junction 2.

Scenarios:

- 2024 Do Minimum; and
- 2024 Do Something (includes the M54/M6 Link Road).

4.5.7 In order to account for the impact of the M54/M6 Link Road within the cumulative assessment, the following methodology will be applied:

- 2024 Do Minimum (DM) and 2024 Do Something (DS) turning counts extracted from the Featherstone TA for each of the junctions;
- The DM flows will be subtracted from the DS flows to identify the difference.
- The difference will then be calculated as a percentage of the DM flows.
- The percentage difference will then be applied to the 2038 baseline data for each turning movement.

4.5.8 Given that no data is available for the M6 Junction 13, no changes will be made to account for the M54/M6 Link Road.

Logic 54 Featherstone Link Road

4.5.9 Alongside the M54/M6 Link Road impact, the reassignment of traffic associated with the committed Logic 54 Featherstone Link Road will be taken into account. The consented TA sets out reassignment in 2031 across the network, although reassignment is only identified for M54 J2 within the scope of this assessment. As a result, the reassignment of traffic associated with the Link Road will be taken into account in the modelling of M54 J2 only.

5 Outputs

5.1.1 It is intended that at this stage headline results will be presented within the STA. The operation of each junction will be given a Red Amber Green (RAG) rating for both assessment scenarios, as follows:

- Green – The junction operates with reserve capacity;
- Amber – The junction is approaching capacity; and
- Red – Mitigation is likely to be needed at the junction.

5.1.2 For those junctions whereby mitigation is considered necessary, high-level designs will be produced to allow for a costing exercise to be undertaken to inform the IDP.

6 Summary and Conclusion

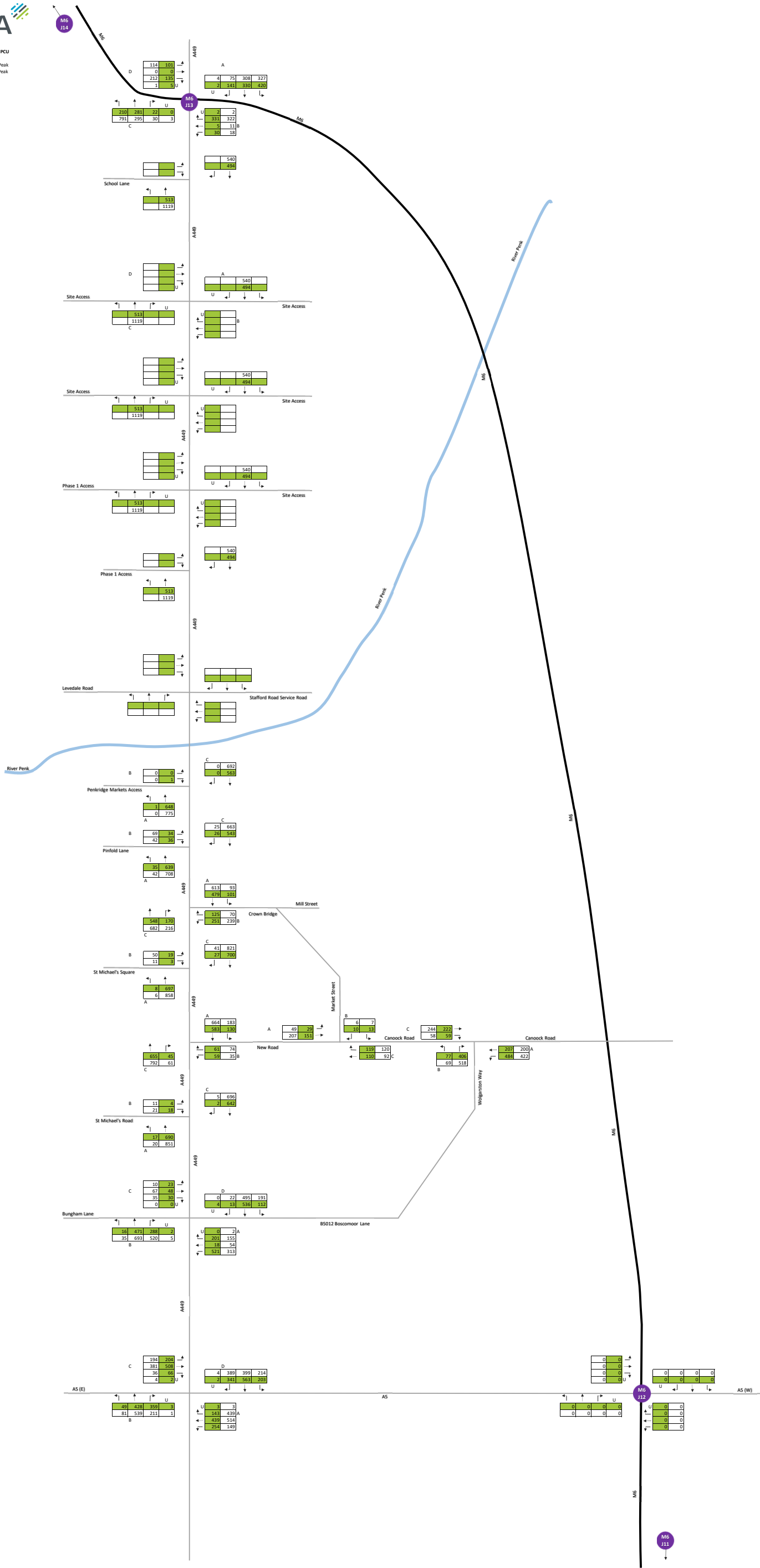
6.1.1 This technical note sets out the method of the cumulative assessment to be undertaken in support of the four proposed strategic site allocations within the South Staffordshire Local Plan Review. It is intended that this provide an initial assessment of the strategic road network that can be refined during the Local Plan submission and examination period if required.

Appendix B Traffic Flow Diagrams



2022 Base - PCU

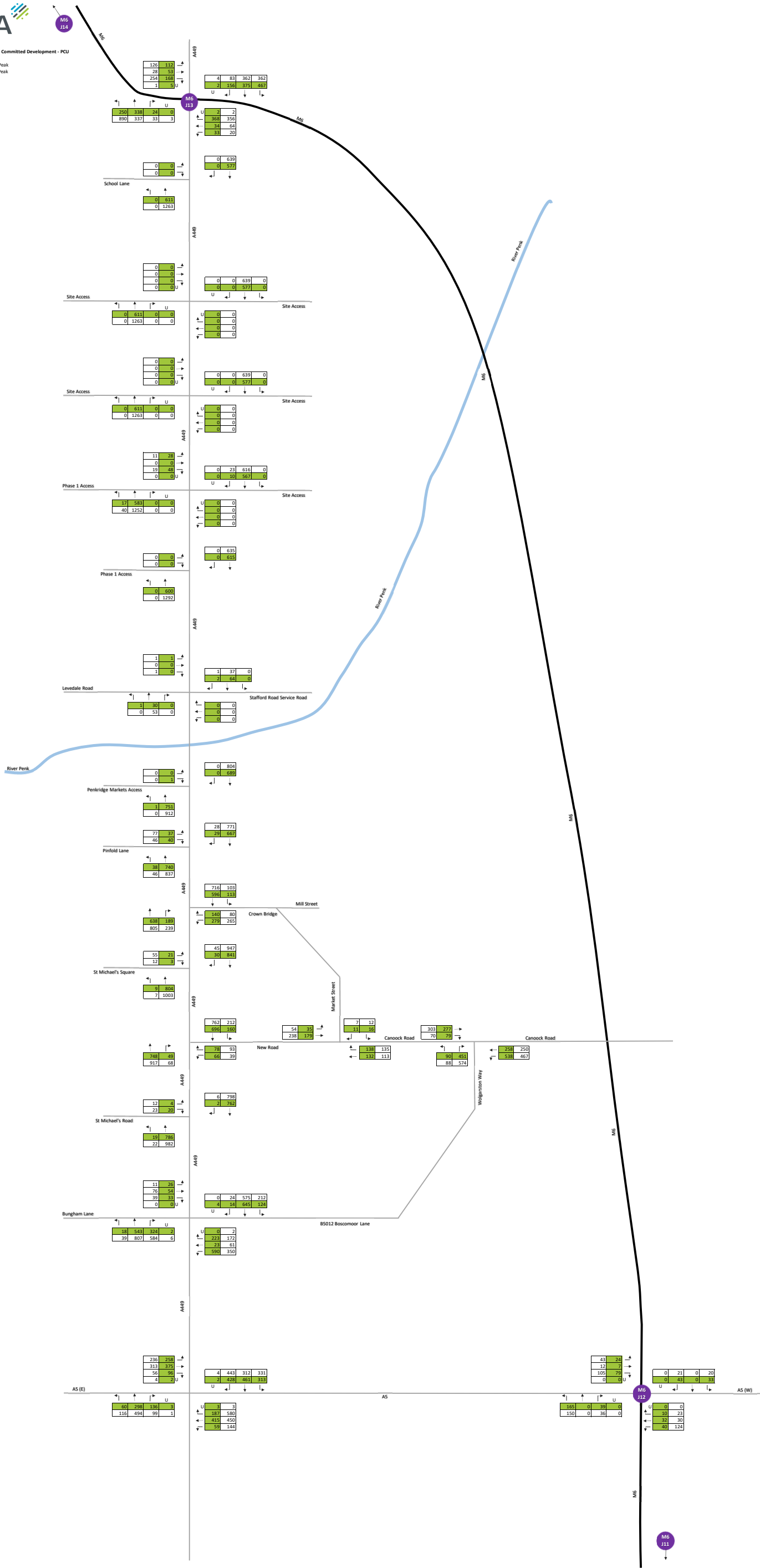
AM Peak
PM Peak





2038 Base + Committed Development - PCU

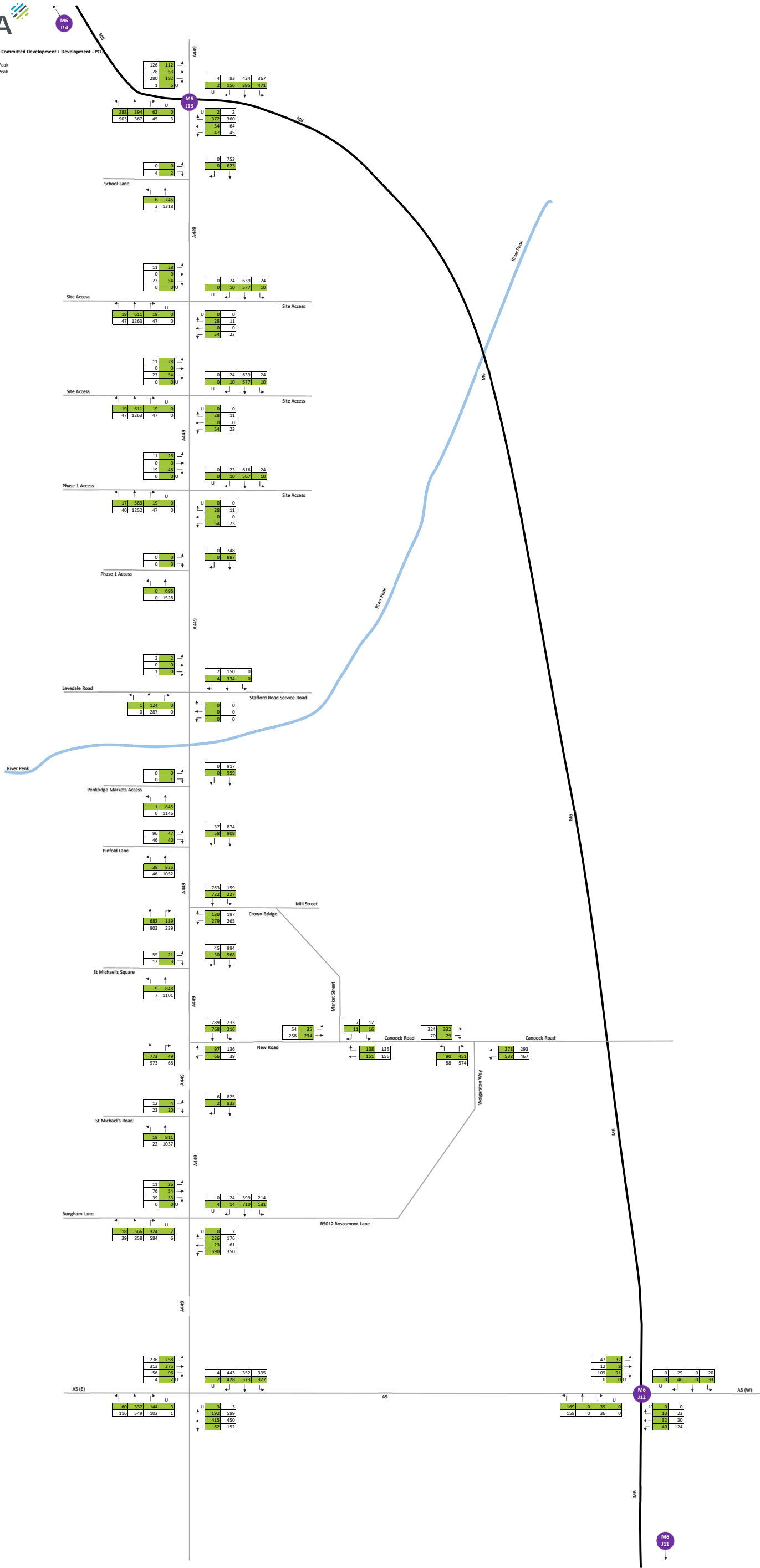
AM Peak
PM Peak





2038 Base + Committed Development + Development - PCU

AM Peak
PM Peak



Appendix C Traffic Data



Intelligent Data Collection Limited Penkrige

Client: PJA
Project Number: ID06388
Junction Number: Site 5a
Date of Survey: 31.03.2022
Junction Name: M6 Junction 13
Junction Type: 4-arm Roundabout

Quality Assurance and Issue Record



Quality Assurance

Revision	Rev A			
Date	07.04.2022			
Prepared by	Richard Collins			
Signature				
Checked by	Luke Martin			
Signature				
Project Director	Paul O'Neill			
Signature				
Project Number	ID06388			
File Ref	ID06388 Penkridge - MCC Site 5a - 31.03.2022			

Issue Record

Issued to	Date			
	11.04.2022			
Beth Street	E-mail			

Intelligent Data Collection Limited



Client: PJA
 Project Number: ID06388
 Junction Number: Site 5a

Date of Survey: 31.03.2022
 Junction Name: M6 Junction 13
 Junction Type: 4-arm Roundabout

Arm A: A449 (NE)
 Arm B: M6 (SE)

Arm C: A449 (SW)
 Arm D: M6 (NW)

Time	A to A								A to D								A to C							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	0	0	0	0	0	0	0	0	15	5	0	0	0	0	0	20	39	17	1	1	0	0	0	58
07:15	1	0	0	0	0	0	0	1	23	4	0	0	0	0	0	27	59	10	1	2	0	0	0	72
07:30	0	0	0	0	0	0	0	0	30	9	1	0	0	0	0	40	78	11	0	0	0	0	0	89
07:45	1	0	0	0	0	0	0	1	21	3	0	0	0	0	0	24	67	7	2	2	1	0	1	80
08:00	0	0	0	0	0	0	0	0	26	9	0	0	0	0	0	35	59	11	2	1	0	0	0	73
08:15	0	1	0	0	0	0	0	1	37	4	0	0	0	0	0	41	70	10	1	0	0	0	0	81
08:30	0	0	0	0	0	0	0	0	25	1	1	0	0	0	0	27	66	10	0	1	2	0	0	79
08:45	0	0	0	0	0	0	0	0	23	7	0	1	0	0	0	31	60	11	3	0	2	0	0	76
09:00	0	0	0	0	0	0	0	0	17	1	0	0	0	0	0	18	47	13	0	0	0	1	0	61
09:15	0	0	0	0	0	0	0	0	21	7	0	0	0	0	0	28	40	5	0	1	1	0	0	47
09:30	0	0	0	0	0	0	0	0	9	6	1	0	0	0	0	16	49	16	1	0	0	0	0	66
09:45	0	0	0	0	0	0	0	0	10	4	0	1	0	0	0	15	32	5	1	0	0	0	0	38
16:00	1	0	0	0	0	0	0	1	22	0	0	0	0	0	0	22	62	10	1	1	0	0	0	74
16:15	2	1	0	0	0	0	0	3	8	4	1	0	0	0	0	13	58	9	0	0	2	0	0	69
16:30	1	0	0	0	0	0	0	1	19	4	0	0	0	0	0	23	66	9	0	0	0	0	0	75
16:45	0	0	0	0	0	0	0	0	8	6	0	0	0	0	0	14	65	9	0	0	0	1	1	76
17:00	0	0	0	0	0	0	0	0	14	9	1	0	0	0	0	24	78	7	0	0	1	0	0	86
17:15	1	1	0	0	0	0	0	2	5	6	0	0	0	0	0	11	72	8	0	0	0	1	0	81
17:30	0	0	0	0	0	0	0	0	17	0	1	0	0	0	1	19	66	6	1	0	2	1	0	76
17:45	0	0	0	0	0	0	0	0	9	3	0	0	0	0	0	12	61	2	0	0	1	0	0	64
18:00	1	0	0	0	0	0	0	1	13	4	0	1	0	0	0	18	44	3	0	0	4	1	0	52
18:15	0	0	0	0	0	0	0	0	18	1	0	0	0	0	0	19	36	4	1	1	1	0	0	43
18:30	0	0	0	0	0	0	0	0	6	1	0	0	0	0	0	7	25	0	0	0	0	0	0	25
18:45	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	40	1	1	0	1	0	0	43
Start Time	Rolling Hour								Rolling Hour								Rolling Hour							
	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
07:00	2	0	0	0	0	0	0	2	89	21	1	0	0	0	0	111	243	45	4	5	1	0	1	299
07:15	2	0	0	0	0	0	0	2	100	25	1	0	0	0	0	126	263	39	5	5	1	0	1	314
07:30	1	1	0	0	0	0	0	2	114	25	1	0	0	0	0	140	274	39	5	3	1	0	1	323
07:45	1	1	0	0	0	0	0	2	109	17	1	0	0	0	0	127	262	38	5	4	3	0	1	313
08:00	0	1	0	0	0	0	0	1	111	21	1	1	0	0	0	134	255	42	6	2	4	0	0	309
08:15	0	1	0	0	0	0	0	1	102	13	1	1	0	0	0	117	243	44	4	1	4	1	0	297
08:30	0	0	0	0	0	0	0	0	86	16	1	1	0	0	0	104	213	39	3	2	5	1	0	263
08:45	0	0	0	0	0	0	0	0	70	21	1	1	0	0	0	93	196	45	4	1	3	1	0	250
09:00	0	0	0	0	0	0	0	0	57	18	1	1	0	0	0	77	168	39	2	1	1	1	0	212
16:00	4	1	0	0	0	0	0	5	57	14	1	0	0	0	0	72	251	37	1	1	2	1	1	294
16:15	3	1	0	0	0	0	0	4	49	23	2	0	0	0	0	74	267	34	0	0	3	1	1	306
16:30	2	1	0	0	0	0	0	3	46	25	1	0	0	0	0	72	281	33	0	0	1	2	1	318
16:45	1	1	0	0	0	0	0	2	44	21	2	0	0	1	0	68	281	30	1	0	3	3	1	319
17:00	1	1	0	0	0	0	0	2	45	18	2	0	0	1	0	66	277	23	1	0	4	2	0	307
17:15	2	1	0	0	0	0	0	3	44	13	1	1	0	1	0	60	243	19	1	0	7	3	0	273
17:30	1	0	0	0	0	0	0	1	57	8	1	1	0	1	0	68	207	15	2	1	8	2	0	235
17:45	1	0	0	0	0	0	0	1	46	9	0	1	0	0	0	56	166	9	1	1	6	1	0	184
18:00	1	0	0	0	0	0	0	1	41	6	0	1	0	0	0	48	145	8	2	1	6	1	0	163

Intelligent Data Collection Limited



Client: PJA
 Project Number: ID06388
 Junction Number: Site 5a
 Date of Survey: 31.03.2022
 Junction Name: M6 Junction 13
 Junction Type: 4-arm Roundabout

Arm A: A449 (NE)
 Arm B: M6 (SE)

Arm C: A449 (SW)
 Arm D: M6 (NW)

Time	A to B								B to B								B to A							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	87	30	1	0	0	0	0	118	0	0	0	0	0	0	0	0	36	14	1	1	0	0	0	52
07:15	106	25	1	0	0	0	0	133	0	0	0	0	0	0	0	0	37	17	2	0	0	0	0	56
07:30	91	17	1	0	0	0	0	109	0	0	0	0	0	0	0	0	50	18	3	3	1	0	0	75
07:45	90	21	2	1	0	0	0	114	1	0	0	0	0	0	0	1	55	21	0	3	0	0	0	79
08:00	78	16	2	0	0	0	0	96	0	1	0	0	0	0	0	1	56	19	2	4	0	0	0	81
08:15	72	16	3	2	0	0	0	93	0	0	0	0	0	0	0	0	56	21	0	1	0	0	0	78
08:30	69	13	1	0	1	1	0	85	2	0	0	0	0	0	0	2	79	19	5	0	0	1	0	104
08:45	53	10	1	3	0	0	0	67	0	0	0	0	0	0	0	0	60	20	5	2	0	0	0	87
09:00	60	15	2	1	0	1	0	79	0	0	0	0	0	0	0	0	40	22	4	3	0	1	0	70
09:15	51	10	3	4	1	0	0	69	1	0	0	0	0	0	0	1	45	13	1	3	0	0	0	62
09:30	39	12	3	0	0	0	0	54	0	0	0	0	0	0	0	0	49	11	1	1	1	0	0	63
09:45	29	9	3	1	0	0	0	42	1	0	0	0	0	0	0	1	33	12	2	1	0	1	0	49
16:00	50	17	1	4	0	1	0	73	1	0	0	0	0	0	0	1	47	18	3	0	0	0	0	68
16:15	78	17	0	0	0	0	0	95	0	1	0	0	0	0	0	1	50	13	1	1	0	0	0	65
16:30	56	11	3	1	0	0	0	71	0	0	0	0	0	0	0	0	54	11	3	2	1	0	0	71
16:45	55	15	1	2	0	0	0	73	0	0	0	0	0	0	0	0	55	14	1	4	0	0	0	74
17:00	69	8	2	1	0	0	0	80	1	0	0	0	0	0	0	1	85	12	0	1	0	0	0	98
17:15	51	6	0	0	0	0	0	57	0	0	1	0	0	0	0	1	106	22	2	1	0	0	0	131
17:30	53	7	0	2	0	0	0	62	1	0	0	0	0	0	0	1	114	18	1	2	0	1	0	136
17:45	50	7	0	3	0	0	0	60	0	0	0	0	0	0	0	0	82	17	0	2	0	0	0	101
18:00	63	5	1	0	0	0	0	69	0	0	0	2	0	0	0	2	62	12	0	0	0	0	0	74
18:15	40	5	0	0	0	0	0	45	0	0	0	0	0	0	0	0	58	12	0	2	0	0	0	72
18:30	43	7	0	1	0	0	0	51	0	0	0	0	0	0	0	0	50	9	0	0	0	0	0	59
18:45	27	7	0	0	0	0	0	34	1	0	0	0	0	0	0	1	52	7	2	0	0	0	0	61
Start Time	Rolling Hour								Rolling Hour								Rolling Hour							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	374	93	5	2	0	0	0	474	1	0	0	0	0	0	0	1	178	70	6	7	1	0	0	262
07:15	365	79	6	2	0	0	0	452	1	1	0	0	0	0	0	2	198	75	7	10	1	0	0	291
07:30	331	70	8	3	0	0	0	412	1	1	0	0	0	0	0	2	217	79	5	11	1	0	0	313
07:45	309	66	8	3	1	1	0	388	3	1	0	0	0	0	0	4	246	80	7	8	0	1	0	342
08:00	272	55	7	5	1	1	0	341	2	1	0	0	0	0	0	3	251	79	12	7	0	1	0	350
08:15	254	54	7	6	1	2	0	324	2	0	0	0	0	0	0	2	235	82	14	6	0	2	0	339
08:30	233	48	7	8	2	2	0	300	3	0	0	0	0	0	0	3	224	74	15	8	0	2	0	323
08:45	203	47	9	8	1	1	0	269	1	0	0	0	1	0	0	1	194	66	11	9	1	1	0	282
09:00	179	46	11	6	1	1	0	244	2	0	0	0	0	0	0	2	167	58	8	8	1	2	0	244
16:00	239	60	5	7	0	1	0	312	1	1	0	0	0	0	0	2	206	56	8	7	1	0	0	278
16:15	258	51	6	4	0	0	0	319	1	1	0	0	0	0	0	2	244	50	5	8	1	0	0	308
16:30	231	40	6	4	0	0	0	281	1	0	1	0	0	0	0	2	300	59	6	8	1	0	0	374
16:45	228	36	3	5	0	0	0	272	2	0	1	0	0	0	0	3	360	66	4	8	0	1	0	439
17:00	223	28	2	6	0	0	0	259	2	0	1	0	0	0	0	3	387	69	3	6	0	1	0	466
17:15	217	25	1	5	0	0	0	248	1	0	1	2	0	0	0	4	364	69	3	5	0	1	0	442
17:30	206	24	1	5	0	0	0	236	1	0	0	2	0	0	0	3	316	59	1	6	0	1	0	383
17:45	196	24	1	4	0	0	0	225	0	0	0	2	0	0	0	2	252	50	0	4	0	0	0	306
18:00	173	24	1	1	0	0	0	199	1	0	0	2	0	0	0	3	222	40	2	2	0	0	0	266

Intelligent Data Collection Limited



Client: PJA
 Project Number: ID06388
 Junction Number: Site 5a

Date of Survey: 31.03.2022
 Junction Name: M6 Junction 13
 Junction Type: 4-arm Roundabout

Arm A: A449 (NE)
 Arm B: M6 (SE)

Arm C: A449 (SW)
 Arm D: M6 (NW)

Time	B to D								B to C								C to C							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0	0	1	0	0	0	1
07:15	0	0	0	0	0	0	0	0	5	3	0	0	0	0	0	8	1	0	0	0	0	0	0	1
07:30	0	0	0	0	0	0	0	0	5	1	1	1	0	0	0	8	0	0	0	0	0	0	0	0
07:45	0	0	1	0	0	0	0	1	5	1	0	0	0	0	0	6	0	0	0	0	0	0	0	0
08:00	0	1	0	1	0	0	0	2	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	8	1	0	1	0	0	0	10	0	0	0	0	0	0	0	0
08:30	0	1	0	0	0	0	0	1	3	3	0	1	0	0	0	7	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	8	2	0	2	0	0	0	12	1	0	0	0	0	0	0	1
09:00	0	0	1	0	0	0	0	1	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
09:15	0	1	0	0	0	0	0	1	3	0	0	0	0	0	0	3	1	1	0	0	0	0	0	2
09:30	0	0	0	0	0	0	0	0	2	1	0	1	0	0	0	4	1	0	0	0	0	0	0	1
09:45	0	0	1	0	0	0	0	1	0	1	0	1	0	0	0	2	0	0	0	0	0	0	0	0
16:00	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	3	1	0	1	0	0	0	5	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1
16:30	1	0	0	0	0	0	0	1	2	3	0	1	0	0	0	6	0	0	0	0	0	0	0	0
16:45	2	1	0	0	0	0	0	3	4	0	0	0	0	0	4	1	0	0	0	0	0	0	0	1
17:00	1	0	0	0	0	0	0	1	3	1	1	0	0	0	0	5	1	0	0	0	0	0	0	1
17:15	0	0	0	0	0	0	0	0	2	2	0	1	0	0	0	5	0	0	0	0	0	0	0	0
17:30	1	0	1	0	0	0	0	2	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
18:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1
18:45	0	1	0	0	0	0	0	1	1	1	0	0	0	0	0	2	0	1	0	0	0	0	0	1
Start Time	Rolling Hour								Rolling Hour								Rolling Hour							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	0	0	1	0	0	0	0	1	17	5	1	1	0	0	0	24	1	0	0	1	0	0	0	2
07:15	0	1	1	1	0	0	0	3	18	5	1	1	0	0	0	25	1	0	0	0	0	0	0	1
07:30	0	1	1	1	0	0	0	3	21	3	1	2	0	0	0	27	0	0	0	0	0	0	0	0
07:45	0	2	1	1	0	0	0	4	19	5	0	2	0	0	0	26	0	0	0	0	0	0	0	0
08:00	0	2	0	1	0	0	0	3	22	6	0	4	0	0	0	32	1	0	0	0	0	0	0	1
08:15	0	1	1	0	0	0	0	2	22	6	0	4	0	0	0	32	1	0	0	0	0	0	0	1
08:30	0	2	1	0	0	0	0	3	17	5	0	3	0	0	0	25	2	1	0	0	0	0	0	3
08:45	0	1	1	0	0	0	0	2	16	3	0	3	0	0	0	22	3	1	0	0	0	0	0	4
09:00	0	1	2	0	0	0	0	3	8	2	0	2	0	0	0	12	2	1	0	0	0	0	0	3
16:00	7	3	0	1	0	0	0	11	7	3	0	1	0	0	0	11	2	0	0	0	0	0	0	2
16:15	7	2	0	1	0	0	0	10	10	4	1	1	0	0	0	16	3	0	0	0	0	0	0	3
16:30	4	1	0	0	0	0	0	5	11	6	1	2	0	0	0	20	2	0	0	0	0	0	0	2
16:45	4	1	1	0	0	0	0	6	13	3	1	1	0	0	0	18	2	0	0	0	0	0	0	2
17:00	2	0	1	0	0	0	0	3	10	4	1	1	0	0	0	16	1	0	0	0	0	0	0	1
17:15	1	0	1	0	0	0	0	2	7	4	0	1	0	0	0	12	0	0	0	0	0	0	0	0
17:30	2	0	1	0	0	0	0	3	5	2	0	0	0	0	0	7	0	0	0	0	0	0	0	0
17:45	1	0	0	0	0	0	0	1	2	2	0	0	0	0	0	4	1	0	0	0	0	0	0	1
18:00	1	1	0	0	0	0	0	2	2	2	0	0	0	0	0	4	1	1	0	0	0	0	0	2

Intelligent Data Collection Limited



Client: PJA
 Project Number: ID06388
 Junction Number: Site 5a
 Date of Survey: 31.03.2022
 Junction Name: M6 Junction 13
 Junction Type: 4-arm Roundabout

Arm A: A449 (NE)
 Arm B: M6 (SE)

Arm C: A449 (SW)
 Arm D: M6 (NW)

Time	C to B								C to A								C to D							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	0	0	0	0	0	0	0	0	43	10	1	0	1	0	0	55	26	12	2	2	0	0	0	42
07:15	0	2	0	0	0	0	2	2	40	3	1	1	4	0	0	49	22	19	2	0	0	0	0	43
07:30	1	0	0	2	0	0	3	3	41	14	0	1	0	1	0	57	48	15	1	1	0	0	0	65
07:45	0	0	0	2	0	0	2	2	54	12	0	0	1	0	0	67	27	13	0	0	0	0	0	40
08:00	5	0	2	0	0	0	7	7	62	5	2	0	0	1	0	70	35	12	1	1	0	0	0	49
08:15	1	0	0	1	0	0	2	2	65	15	2	0	1	0	0	83	34	10	1	3	0	0	0	48
08:30	1	0	0	0	0	0	1	1	68	6	3	0	0	0	0	77	24	14	2	2	0	0	0	42
08:45	2	1	0	0	0	0	3	3	60	5	1	0	0	1	1	68	35	7	2	2	0	0	0	46
09:00	3	0	0	0	0	0	3	3	67	13	2	1	0	0	0	83	24	7	0	5	0	0	0	36
09:15	2	2	1	1	0	0	6	6	44	14	2	0	2	0	0	62	23	7	2	1	0	0	0	33
09:30	0	0	0	0	0	0	0	0	42	14	1	2	3	0	1	63	21	7	1	2	0	0	0	31
09:45	3	2	0	0	0	0	5	5	40	11	1	2	0	0	0	54	21	8	0	1	1	0	0	31
16:00	2	1	1	0	0	0	4	4	75	12	4	0	1	0	0	92	115	30	1	14	0	1	0	161
16:15	5	0	0	1	0	0	6	6	63	9	0	3	2	2	0	79	128	49	5	11	0	0	0	193
16:30	10	1	0	1	0	0	12	12	74	8	0	0	1	1	0	84	126	40	2	7	0	0	0	175
16:45	3	1	0	1	0	0	5	5	58	3	1	0	0	0	0	62	127	38	6	9	1	0	0	181
17:00	3	0	0	0	0	0	3	3	55	5	0	1	1	0	0	62	136	38	3	9	0	0	0	186
17:15	3	0	0	0	0	0	3	3	120	9	2	4	0	0	0	135	67	15	3	8	0	0	0	93
17:30	3	1	0	0	0	0	4	4	90	10	0	0	1	0	0	101	43	11	2	1	1	0	0	58
17:45	1	0	0	0	0	0	1	1	61	5	1	2	0	2	0	71	21	4	1	1	0	0	0	27
18:00	2	0	0	0	0	0	2	2	43	6	0	1	0	0	0	50	22	2	0	2	0	0	0	26
18:15	2	0	0	0	0	0	2	2	53	6	1	0	1	0	0	61	21	4	1	0	0	0	0	26
18:30	2	0	0	0	0	0	2	2	56	7	1	0	0	0	0	64	12	1	0	1	0	0	0	14
18:45	1	0	0	0	0	0	1	1	39	1	0	0	0	0	0	40	12	2	0	1	0	0	0	15
Start Time	Rolling Hour								Rolling Hour								Rolling Hour							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	1	2	0	4	0	0	0	7	178	39	2	2	6	1	0	228	123	59	5	3	0	0	0	190
07:15	6	2	2	4	0	0	0	14	197	34	3	2	5	2	0	243	132	59	4	2	0	0	0	197
07:30	7	0	2	5	0	0	0	14	222	46	4	1	2	2	0	277	144	50	3	5	0	0	0	202
07:45	7	0	2	3	0	0	0	12	249	38	7	0	2	1	0	297	120	49	4	6	0	0	0	179
08:00	9	1	2	1	0	0	0	13	255	31	8	0	1	2	1	298	128	43	6	8	0	0	0	185
08:15	7	1	0	1	0	0	0	9	260	39	8	1	1	1	1	311	117	38	5	12	0	0	0	172
08:30	8	3	1	1	0	0	0	13	239	38	8	1	2	1	1	290	106	35	6	10	0	0	0	157
08:45	7	3	1	1	0	0	0	12	213	46	6	3	5	1	2	276	103	28	5	10	0	0	0	146
09:00	8	4	1	1	0	0	0	14	193	52	6	5	5	0	1	262	89	29	3	9	1	0	0	131
16:00	20	3	1	3	0	0	0	27	270	32	5	3	4	3	0	317	496	157	14	41	1	1	0	710
16:15	21	2	0	3	0	0	0	26	250	25	1	4	4	3	0	287	517	165	16	36	1	0	0	735
16:30	19	2	0	2	0	0	0	23	307	25	3	5	2	1	0	343	456	131	14	33	1	0	0	635
16:45	12	2	0	1	0	0	0	15	323	27	3	5	2	0	0	360	373	102	14	27	2	0	0	518
17:00	10	1	0	0	0	0	0	11	326	29	3	7	2	2	0	369	267	68	9	19	1	0	0	364
17:15	9	1	0	0	0	0	0	10	314	30	3	7	1	2	0	357	153	32	6	12	1	0	0	204
17:30	8	1	0	0	0	0	0	9	247	27	2	3	2	2	0	283	107	21	4	4	1	0	0	137
17:45	7	0	0	0	0	0	0	7	213	24	3	3	1	2	0	246	76	11	2	4	0	0	0	93
18:00	7	0	0	0	0	0	0	7	191	20	2	1	1	0	0	215	67	9	1	4	0	0	0	81

Intelligent Data Collection Limited



Client: PJA
 Project Number: ID06388
 Junction Number: Site 5a

Date of Survey: 31.03.2022
 Junction Name: M6 Junction 13
 Junction Type: 4-arm Roundabout

Arm A: A449 (NE)
 Arm B: M6 (SE)

Arm C: A449 (SW)
 Arm D: M6 (NW)

Time	D to D								D to C								D to B							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	1	0	0	0	0	0	1	19	5	0	3	0	0	0	27	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	16	6	2	1	0	0	0	25	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	25	5	0	3	0	0	0	33	0	0	0	0	0	0	0	0	0
07:45	1	0	0	0	0	0	1	22	5	0	0	0	0	0	27	0	0	0	0	0	0	0	0	0
08:00	0	1	1	0	0	0	2	23	5	1	1	0	0	0	30	0	0	0	0	0	0	0	0	0
08:15	1	0	0	0	0	0	1	30	6	2	0	0	0	0	38	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	21	7	0	1	0	0	0	29	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	16	4	0	3	0	0	0	23	1	0	0	0	0	0	0	0	1
09:00	0	0	0	0	0	0	0	14	3	0	1	0	0	0	18	0	0	0	0	0	0	0	0	0
09:15	2	0	0	0	0	0	2	12	8	0	3	0	0	0	23	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	15	9	1	0	0	0	0	25	0	0	0	0	0	0	0	0	0
09:45	1	0	0	0	0	0	1	6	3	3	3	0	0	0	15	0	0	0	0	0	0	0	0	0
16:00	0	1	0	0	0	0	1	33	13	2	1	0	0	0	49	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	31	10	2	3	0	0	0	46	0	0	0	0	0	0	0	0	0
16:30	1	0	0	0	0	0	1	30	8	0	3	0	0	0	41	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	41	15	1	7	0	0	0	64	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	29	8	2	1	0	0	0	40	0	0	0	0	0	0	0	0	0
17:15	1	0	0	0	0	0	1	37	6	1	2	1	0	0	47	0	1	0	0	0	0	0	0	1
17:30	0	0	0	0	0	0	0	30	9	0	3	0	0	0	42	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	39	5	0	0	0	0	0	44	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	21	4	0	0	0	0	0	25	0	0	0	0	0	0	0	0	0
18:15	1	0	0	0	0	0	1	22	6	0	2	0	0	0	30	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	22	1	0	2	0	0	0	25	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	17	3	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0
Start Time	Rolling Hour								Rolling Hour								Rolling Hour							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	2	0	0	0	0	0	0	2	82	21	2	7	0	0	0	112	0	0	0	0	0	0	0	0
07:15	1	1	1	0	0	0	0	3	86	21	3	5	0	0	0	115	0	0	0	0	0	0	0	0
07:30	2	1	1	0	0	0	0	4	100	21	3	4	0	0	0	128	0	0	0	0	0	0	0	0
07:45	2	1	1	0	0	0	0	4	96	23	3	2	0	0	0	124	0	0	0	0	0	0	0	0
08:00	1	1	1	0	0	0	0	3	90	22	3	5	0	0	0	120	1	0	0	0	0	0	0	1
08:15	1	0	0	0	0	0	0	1	81	20	2	5	0	0	0	108	1	0	0	0	0	0	0	1
08:30	2	0	0	0	0	0	0	2	63	22	0	8	0	0	0	93	1	0	0	0	0	0	0	1
08:45	2	0	0	0	0	0	0	2	57	24	1	7	0	0	0	89	1	0	0	0	0	0	0	1
09:00	3	0	0	0	0	0	0	3	47	23	4	7	0	0	0	81	0	0	0	0	0	0	0	0
16:00	1	1	0	0	0	0	0	2	135	46	5	14	0	0	0	200	0	0	0	0	0	0	0	0
16:15	1	0	0	0	0	0	0	1	131	41	5	14	0	0	0	191	0	0	0	0	0	0	0	0
16:30	2	0	0	0	0	0	0	2	137	37	4	13	1	0	0	192	0	1	0	0	0	0	0	1
16:45	1	0	0	0	0	0	0	1	137	38	4	13	1	0	0	193	0	1	0	0	0	0	0	1
17:00	1	0	0	0	0	0	0	1	135	28	3	6	1	0	0	173	0	1	0	0	0	0	0	1
17:15	1	0	0	0	0	0	0	1	127	24	1	5	1	0	0	158	0	1	0	0	0	0	0	1
17:30	1	0	0	0	0	0	0	1	112	24	0	5	0	0	0	141	0	0	0	0	0	0	0	0
17:45	1	0	0	0	0	0	0	1	104	16	0	4	0	0	0	124	0	0	0	0	0	0	0	0
18:00	1	0	0	0	0	0	0	1	82	14	0	4	0	0	0	100	0	0	0	0	0	0	0	0

Intelligent Data Collection Limited



Client: PJA
 Project Number: ID06388
 Junction Number: Site 5a

Date of Survey: 31.03.2022
 Junction Name: M6 Junction 13
 Junction Type: 4-arm Roundabout

Arm A: A449 (NE)
 Arm B: M6 (SE)

Arm C: A449 (SW)
 Arm D: M6 (NW)

D to A								
Time	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	3	1	1	0	0	0	0	5
07:15	4	3	1	0	0	0	0	8
07:30	17	4	0	0	0	0	0	21
07:45	26	1	2	0	0	0	0	29
08:00	17	5	1	0	0	0	0	23
08:15	25	1	0	0	0	0	0	26
08:30	29	4	2	0	0	0	0	35
08:45	21	10	0	0	0	1	0	32
09:00	15	3	1	0	0	0	0	19
09:15	8	7	1	1	0	0	0	17
09:30	11	5	0	2	0	0	0	18
09:45	3	6	0	0	0	0	0	9
16:00	6	9	1	0	0	0	0	16
16:15	12	3	1	0	0	1	0	17
16:30	14	4	0	0	0	0	0	18
16:45	29	10	2	1	0	0	0	42
17:00	28	7	0	0	0	0	0	35
17:15	18	1	0	1	0	0	0	20
17:30	28	4	0	0	0	0	0	32
17:45	24	5	1	0	0	0	0	30
18:00	13	0	1	0	0	0	0	14
18:15	22	2	0	0	0	0	0	24
18:30	12	2	0	0	0	0	0	14
18:45	20	0	0	0	0	0	0	20
Start Time	Rolling Hour							Total
07:00	50	9	4	0	0	0	0	63
07:15	64	13	4	0	0	0	0	81
07:30	85	11	3	0	0	0	0	99
07:45	97	11	5	0	0	0	0	113
08:00	92	20	3	0	0	1	0	116
08:15	90	18	3	0	0	1	0	112
08:30	73	24	4	1	0	1	0	103
08:45	55	25	2	3	0	1	0	86
09:00	37	21	2	3	0	0	0	63
16:00	61	26	4	1	0	1	0	93
16:15	83	24	3	1	0	1	0	112
16:30	89	22	2	2	0	0	0	115
16:45	103	22	2	2	0	0	0	129
17:00	98	17	1	1	0	0	0	117
17:15	83	10	2	1	0	0	0	96
17:30	87	11	2	0	0	0	0	100
17:45	71	9	2	0	0	0	0	82
18:00	67	4	1	0	0	0	0	72

Intelligent Data Collection Limited



Client: PJA
Project Number: ID06388
Junction Number: Site 5a
Date of Survey: 31.03.2022
Junction Name: M6 Junction 13
Junction Type: 4-arm Roundabout

Time	Arm A Approach							Arm A Exit								
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	141	52	2	1	0	0	0	196	82	25	3	1	1	0	0	112
07:15	189	39	2	3	0	0	0	233	82	23	4	1	4	0	0	114
07:30	199	37	2	0	0	0	0	238	108	36	3	4	1	1	0	153
07:45	179	31	4	3	1	0	1	219	136	34	2	3	1	0	0	176
08:00	163	36	4	1	0	0	0	204	135	29	5	4	0	1	0	174
08:15	179	31	4	2	0	0	0	216	146	38	2	1	1	0	0	188
08:30	160	24	2	1	3	1	0	191	176	29	10	0	0	1	0	216
08:45	136	28	4	4	2	0	0	174	141	35	6	2	0	2	1	187
09:00	124	29	2	1	0	2	0	158	122	38	7	4	0	1	0	172
09:15	112	22	3	5	2	0	0	144	97	34	4	4	2	0	0	141
09:30	97	34	5	0	0	0	0	136	102	30	2	5	4	0	1	144
09:45	71	18	4	2	0	0	0	95	76	29	3	3	0	1	0	112
16:00	135	27	2	5	0	1	0	170	129	39	8	0	1	0	0	177
16:15	146	31	1	0	2	0	0	180	127	26	2	4	2	3	0	164
16:30	142	24	3	1	0	0	0	170	143	23	3	2	2	1	0	174
16:45	128	30	1	2	0	1	1	163	142	27	4	5	0	0	0	178
17:00	161	24	3	1	1	0	0	190	168	24	0	2	1	0	0	195
17:15	129	21	0	0	0	1	0	151	245	33	4	6	0	0	0	288
17:30	136	13	2	2	2	2	0	157	232	32	1	2	1	1	0	269
17:45	120	12	0	3	1	0	0	136	167	27	2	4	0	2	0	202
18:00	121	12	1	1	4	1	0	140	119	18	1	1	0	0	0	139
18:15	94	10	1	1	1	0	0	107	133	20	1	2	1	0	0	157
18:30	74	8	0	1	0	0	0	83	118	18	1	0	0	0	0	137
18:45	71	8	1	0	1	0	0	81	111	8	2	0	0	0	0	121
Start Time	Rolling Hour							Total	Rolling Hour							Total
07:00	708	159	10	7	1	0	1	886	408	118	12	9	7	1	0	555
07:15	730	143	12	7	1	0	1	894	461	122	14	12	6	2	0	617
07:30	720	135	14	6	1	0	1	877	525	137	12	12	3	2	0	691
07:45	681	122	14	7	4	1	1	830	593	130	19	8	2	2	0	754
08:00	638	119	14	8	5	1	0	785	598	131	23	7	1	4	1	765
08:15	599	112	12	8	5	3	0	739	585	140	25	7	1	4	1	763
08:30	532	103	11	11	7	3	0	667	536	136	27	10	2	4	1	716
08:45	469	113	14	10	4	2	0	612	462	137	19	15	6	3	2	644
09:00	404	103	14	8	2	2	0	533	397	131	16	16	6	2	1	569
16:00	551	112	7	8	2	2	1	683	541	115	17	11	5	4	0	693
16:15	577	109	8	4	3	1	1	703	580	100	9	13	5	4	0	711
16:30	560	99	7	4	1	2	1	674	698	107	11	15	3	1	0	835
16:45	554	88	6	5	3	4	1	661	787	116	9	15	2	1	0	930
17:00	546	70	5	6	4	3	0	634	812	116	7	14	2	3	0	954
17:15	506	58	3	6	7	4	0	584	763	110	8	13	1	3	0	898
17:30	471	47	4	7	8	3	0	540	651	97	5	9	2	3	0	767
17:45	409	42	2	6	6	1	0	466	537	83	5	7	1	2	0	635
18:00	360	38	3	3	6	1	0	411	481	64	5	3	1	0	0	554

Intelligent Data Collection Limited



Client: PJA
Project Number: ID06388
Junction Number: Site 5a
Date of Survey: 31.03.2022
Junction Name: M6 Junction 13
Junction Type: 4-arm Roundabout

Time	Arm B Approach							Arm B Exit								
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	38	14	1	1	0	0	0	54	87	30	1	0	0	0	0	118
07:15	42	20	2	0	0	0	0	64	106	27	1	1	0	0	0	135
07:30	55	19	4	4	1	0	0	83	92	17	1	2	0	0	0	112
07:45	61	22	1	3	0	0	0	87	91	21	2	3	0	0	0	117
08:00	59	21	2	5	0	0	0	87	83	17	4	0	0	0	0	104
08:15	64	22	0	2	0	0	0	88	73	16	3	3	0	0	0	95
08:30	84	23	5	1	0	1	0	114	72	13	1	0	1	1	0	88
08:45	68	22	5	4	0	0	0	99	56	11	1	3	0	0	0	71
09:00	43	22	5	3	0	1	0	74	63	15	2	1	0	1	0	82
09:15	49	14	1	3	0	0	0	67	54	12	4	5	1	0	0	76
09:30	51	12	1	2	1	0	0	67	39	12	3	0	0	0	0	54
09:45	34	13	3	2	0	1	0	53	33	11	3	1	0	0	0	48
16:00	49	19	3	0	0	0	0	71	53	18	2	4	0	1	0	78
16:15	54	15	1	2	0	0	0	72	83	18	0	1	0	0	0	102
16:30	57	14	3	3	1	0	0	78	66	12	3	2	0	0	0	83
16:45	61	15	1	4	0	0	0	81	58	16	1	3	0	0	0	78
17:00	90	13	1	1	0	0	0	105	73	8	2	1	0	0	0	84
17:15	108	24	3	2	0	0	0	137	54	7	1	0	0	0	0	62
17:30	120	18	2	2	0	1	0	143	57	8	0	2	0	0	0	67
17:45	83	18	0	2	0	0	0	103	51	7	0	3	0	0	0	61
18:00	62	13	0	2	0	0	0	77	65	5	1	2	0	0	0	73
18:15	59	12	0	2	0	0	0	73	42	5	0	0	0	0	0	47
18:30	51	9	0	0	0	0	0	60	45	7	0	1	0	0	0	53
18:45	54	9	2	0	0	0	0	65	29	7	0	0	0	0	0	36
Start Time	Rolling Hour							Total	Rolling Hour							Total
07:00	196	75	8	8	1	0	0	288	376	95	5	6	0	0	0	482
07:15	217	82	9	12	1	0	0	321	372	82	8	6	0	0	0	468
07:30	239	84	7	14	1	0	0	345	339	71	10	8	0	0	0	428
07:45	268	88	8	11	0	1	0	376	319	67	10	6	1	1	0	404
08:00	275	88	12	12	0	1	0	388	284	57	9	6	1	1	0	358
08:15	259	89	15	10	0	2	0	375	264	55	7	7	1	2	0	336
08:30	244	81	16	11	0	2	0	354	245	51	8	9	2	2	0	317
08:45	211	70	12	12	1	1	0	307	212	50	10	9	1	1	0	283
09:00	177	61	10	10	1	2	0	261	189	50	12	7	1	1	0	260
16:00	221	63	8	9	1	0	0	302	260	64	6	10	0	1	0	341
16:15	262	57	6	10	1	0	0	336	280	54	6	7	0	0	0	347
16:30	316	66	8	10	1	0	0	401	251	43	7	6	0	0	0	307
16:45	379	70	7	9	0	1	0	466	242	39	4	6	0	0	0	291
17:00	401	73	6	7	0	1	0	488	235	30	3	6	0	0	0	274
17:15	373	73	5	8	0	1	0	460	227	27	2	7	0	0	0	263
17:30	324	61	2	8	0	1	0	396	215	25	1	7	0	0	0	248
17:45	255	52	0	6	0	0	0	313	203	24	1	6	0	0	0	234
18:00	226	43	2	4	0	0	0	275	181	24	1	3	0	0	0	209

Intelligent Data Collection Limited



Client: PJA
Project Number: ID06388
Junction Number: Site 5a
Date of Survey: 31.03.2022
Junction Name: M6 Junction 13
Junction Type: 4-arm Roundabout

Time	Arm C Approach							Arm C Exit								
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	69	22	3	3	1	0	0	98	60	22	1	5	0	0	0	88
07:15	63	24	3	1	4	0	0	95	81	19	3	3	0	0	0	106
07:30	90	29	1	4	0	1	0	125	108	17	1	4	0	0	0	130
07:45	81	25	0	2	1	0	0	109	94	13	2	2	1	0	1	113
08:00	102	17	5	1	0	1	0	126	85	16	3	2	0	0	0	106
08:15	100	25	3	4	1	0	0	133	108	17	3	1	0	0	0	129
08:30	93	20	5	2	0	0	0	120	90	20	0	3	2	0	0	115
08:45	98	13	3	2	0	1	1	118	85	17	3	5	2	0	0	112
09:00	94	20	2	6	0	0	0	122	64	16	0	1	0	1	0	82
09:15	70	24	5	2	2	0	0	103	56	14	0	4	1	0	0	75
09:30	64	21	2	4	3	0	1	95	67	26	2	1	0	0	0	96
09:45	64	21	1	3	1	0	0	90	38	9	4	4	0	0	0	55
16:00	192	43	6	14	1	1	0	257	95	23	3	2	0	0	0	123
16:15	197	58	5	15	2	2	0	279	91	19	2	3	2	0	0	117
16:30	210	49	2	8	1	1	0	271	98	20	0	4	0	0	0	122
16:45	189	42	7	10	1	0	0	249	111	24	1	7	0	1	1	145
17:00	195	43	3	10	1	0	0	252	111	16	3	1	1	0	0	132
17:15	190	24	5	12	0	0	0	231	111	16	1	3	1	1	0	133
17:30	136	22	2	1	2	0	0	163	100	15	1	3	2	1	0	122
17:45	83	9	2	3	0	2	0	99	101	8	0	0	1	0	0	110
18:00	67	8	0	3	0	0	0	78	65	8	0	0	4	1	0	78
18:15	76	10	2	0	1	0	0	89	58	10	1	3	1	0	0	73
18:30	71	8	1	1	0	0	0	81	49	1	0	2	0	0	0	52
18:45	52	4	0	1	0	0	0	57	58	6	1	0	1	0	0	66
Start Time	Rolling Hour							Total	Rolling Hour							Total
07:00	303	100	7	10	6	1	0	427	343	71	7	14	1	0	1	437
07:15	336	95	9	8	5	2	0	455	368	65	9	11	1	0	1	455
07:30	373	96	9	11	2	2	0	493	395	63	9	9	1	0	1	478
07:45	376	87	13	9	2	1	0	488	377	66	8	8	3	0	1	463
08:00	393	75	16	9	1	2	1	497	368	70	9	11	4	0	0	462
08:15	385	78	13	14	1	1	1	493	347	70	6	10	4	1	0	438
08:30	355	77	15	12	2	1	1	463	295	67	3	13	5	1	0	384
08:45	326	78	12	14	5	1	2	438	272	73	5	11	3	1	0	365
09:00	292	86	10	15	6	0	1	410	225	65	6	10	1	1	0	308
16:00	788	192	20	47	5	4	0	1056	395	86	6	16	2	1	1	507
16:15	791	192	17	43	5	3	0	1051	411	79	6	15	3	1	1	516
16:30	784	158	17	40	3	1	0	1003	431	76	5	15	2	2	1	532
16:45	710	131	17	33	4	0	0	895	433	71	6	14	4	3	1	532
17:00	604	98	12	26	3	2	0	745	423	55	5	7	5	2	0	497
17:15	476	63	9	19	2	2	0	571	377	47	2	6	8	3	0	443
17:30	362	49	6	7	3	2	0	429	324	41	2	6	8	2	0	383
17:45	297	35	5	7	1	2	0	347	273	27	1	5	6	1	0	313
18:00	266	30	3	5	1	0	0	305	230	25	2	5	6	1	0	269

Intelligent Data Collection Limited



Client: PJA
Project Number: ID06388
Junction Number: Site 5a
Date of Survey: 31.03.2022
Junction Name: M6 Junction 13
Junction Type: 4-arm Roundabout

Time	Arm D Approach							Arm D Exit								
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	23	6	1	3	0	0	0	33	42	17	2	2	0	0	0	63
07:15	20	9	3	1	0	0	0	33	45	23	2	0	0	0	0	70
07:30	42	9	0	3	0	0	0	54	78	24	2	1	0	0	0	105
07:45	49	6	2	0	0	0	0	57	49	16	1	0	0	0	0	66
08:00	40	11	3	1	0	0	0	55	61	23	2	2	0	0	0	88
08:15	56	7	2	0	0	0	0	65	72	14	1	3	0	0	0	90
08:30	50	11	2	1	0	0	0	64	49	16	3	2	0	0	0	70
08:45	38	14	0	3	0	1	0	56	58	14	2	3	0	0	0	77
09:00	29	6	1	1	0	0	0	37	41	8	1	5	0	0	0	55
09:15	22	15	1	4	0	0	0	42	46	15	2	1	0	0	0	64
09:30	26	14	1	2	0	0	0	43	30	13	2	2	0	0	0	47
09:45	10	9	3	3	0	0	0	25	32	12	1	2	1	0	0	48
16:00	39	23	3	1	0	0	0	66	138	32	1	14	0	1	0	186
16:15	43	13	3	3	0	1	0	63	139	54	6	12	0	0	0	211
16:30	45	12	0	3	0	0	0	60	147	44	2	7	0	0	0	200
16:45	70	25	3	8	0	0	0	106	137	45	6	9	1	0	0	198
17:00	57	15	2	1	0	0	0	75	151	47	4	9	0	0	0	211
17:15	56	8	1	3	1	0	0	69	73	21	3	8	0	0	0	105
17:30	58	13	0	3	0	0	0	74	61	11	4	1	1	1	0	79
17:45	63	10	1	0	0	0	0	74	30	7	1	1	0	0	0	39
18:00	34	4	1	0	0	0	0	39	35	6	0	3	0	0	0	44
18:15	45	8	0	2	0	0	0	55	41	5	1	0	0	0	0	47
18:30	34	3	0	2	0	0	0	39	18	2	0	1	0	0	0	21
18:45	37	3	0	0	0	0	0	40	16	3	0	1	0	0	0	20
Start Time	Rolling Hour							Total	Rolling Hour							Total
07:00	134	30	6	7	0	0	0	177	214	80	7	3	0	0	0	304
07:15	151	35	8	5	0	0	0	199	233	86	7	3	0	0	0	329
07:30	187	33	7	4	0	0	0	231	260	77	6	6	0	0	0	349
07:45	195	35	9	2	0	0	0	241	231	69	7	7	0	0	0	314
08:00	184	43	7	5	0	1	0	240	240	67	8	10	0	0	0	325
08:15	173	38	5	5	0	1	0	222	220	52	7	13	0	0	0	292
08:30	139	46	4	9	0	1	0	199	194	53	8	11	0	0	0	266
08:45	115	49	3	10	0	1	0	178	175	50	7	11	0	0	0	243
09:00	87	44	6	10	0	0	0	147	149	48	6	10	1	0	0	214
16:00	197	73	9	15	0	1	0	295	561	175	15	42	1	1	0	795
16:15	215	65	8	15	0	1	0	304	574	190	18	37	1	0	0	820
16:30	228	60	6	15	1	0	0	310	508	157	15	33	1	0	0	714
16:45	241	61	6	15	1	0	0	324	422	124	17	27	2	1	0	593
17:00	234	46	4	7	1	0	0	292	315	86	12	19	1	1	0	434
17:15	211	35	3	6	1	0	0	256	199	45	8	13	1	1	0	267
17:30	200	35	2	5	0	0	0	242	167	29	6	5	1	1	0	209
17:45	176	25	2	4	0	0	0	207	124	20	2	5	0	0	0	151
18:00	150	18	1	4	0	0	0	173	110	16	1	5	0	0	0	132

Intelligent Data Collection Limited



Client: PJA **Date of Survey:** 31.03.2022
Project Number: ID06388 **Junction Name:** M6 Junction 13
Junction Number: Site 5a **Junction Type:** 4-arm Roundabout

Total Junction Flow								
Time	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	271	94	7	8	1	0	0	381
07:15	314	92	10	5	4	0	0	425
07:30	386	94	7	11	1	1	0	500
07:45	370	84	7	8	2	0	1	472
08:00	364	85	14	8	0	1	0	472
08:15	399	85	9	8	1	0	0	502
08:30	387	78	14	5	3	2	0	489
08:45	340	77	12	13	2	2	1	447
09:00	290	77	10	11	0	3	0	391
09:15	253	75	10	14	4	0	0	356
09:30	238	81	9	8	4	0	1	341
09:45	179	61	11	10	1	1	0	263
16:00	415	112	14	20	1	2	0	564
16:15	440	117	10	20	4	3	0	594
16:30	454	99	8	15	2	1	0	579
16:45	448	112	12	24	1	1	1	599
17:00	503	95	9	13	2	0	0	622
17:15	483	77	9	17	1	1	0	588
17:30	450	66	6	8	4	3	0	537
17:45	349	49	3	8	1	2	0	412
18:00	284	37	2	6	4	1	0	334
18:15	274	40	3	5	2	0	0	324
18:30	230	28	1	4	0	0	0	263
18:45	214	24	3	1	1	0	0	243
Start Time	Rolling Hour							Total
07:00	1341	364	31	32	8	1	1	1778
07:15	1434	355	38	32	7	2	1	1869
07:30	1519	348	37	35	4	2	1	1946
07:45	1520	332	44	29	6	3	1	1935
08:00	1490	325	49	34	6	5	1	1910
08:15	1416	317	45	37	6	7	1	1829
08:30	1270	307	46	43	9	7	1	1683
08:45	1121	310	41	46	10	5	2	1535
09:00	960	294	40	43	9	4	1	1351
16:00	1757	440	44	79	8	7	1	2336
16:15	1845	423	39	72	9	5	1	2394
16:30	1888	383	38	69	6	3	1	2388
16:45	1884	350	36	62	8	5	1	2346
17:00	1785	287	27	46	8	6	0	2159
17:15	1566	229	20	39	10	7	0	1871
17:30	1357	192	14	27	11	6	0	1607
17:45	1137	154	9	23	7	3	0	1333
18:00	1002	129	9	16	7	1	0	1164

Intelligent Data Collection Limited



Client: PJA
 Project Number: ID06388
 Junction Number: Site 5a

Date of Survey: 31.03.2022
 Junction Name: M6 Junction 13
 Junction Type: 4-arm Roundabout

Arm A: A449 (NE)
 Arm B: M6 (SE)

Arm C: A449 (SW)
 Arm D: M6 (NW)

PCU Summary																
Time	A to A	A to D	A to C	A to B	B to B	B to A	B to D	B to C	C to C	C to B	C to A	C to D	D to D	D to C	D to B	D to A
07:00	0	20	60	119	0	54	0	2	2	0	57	46	1	31	0	6
07:15	1	27	75	135	0	57	0	8	1	2	55	44	0	27	0	9
07:30	0	41	89	110	0	81	0	10	0	6	58	67	0	37	0	21
07:45	1	24	84	116	1	83	2	6	0	5	68	40	1	27	0	30
08:00	0	35	75	97	1	87	3	3	0	8	70	51	3	32	0	24
08:15	1	41	82	97	0	79	0	11	0	3	85	52	1	39	0	26
08:30	0	28	82	86	2	106	1	8	0	1	79	46	0	30	0	36
08:45	0	32	80	71	0	92	0	15	1	3	67	50	0	27	1	31
09:00	0	18	60	81	0	75	2	3	0	3	85	43	0	19	0	20
09:15	0	28	49	77	1	66	1	3	2	8	65	35	2	27	0	19
09:30	0	17	67	56	0	66	0	5	1	0	68	34	0	26	0	21
09:45	0	16	39	45	1	51	2	3	0	5	57	33	1	20	0	9
16:00	1	22	76	78	1	70	2	0	0	5	95	179	1	51	0	17
16:15	3	14	71	95	1	67	6	1	1	7	84	210	0	51	0	17
16:30	1	23	75	74	0	76	1	7	0	13	84	185	1	45	0	18
16:45	0	14	75	76	0	80	3	4	1	6	63	197	0	74	0	44
17:00	0	25	87	82	1	99	1	6	1	3	64	199	0	42	0	35
17:15	2	11	80	57	2	133	0	6	0	3	141	105	1	51	1	21
17:30	0	19	78	65	1	139	3	4	0	4	102	61	0	46	0	32
17:45	0	12	65	64	0	104	0	2	0	1	73	29	0	44	0	31
18:00	1	19	55	70	5	74	0	1	0	2	51	29	0	25	0	15
18:15	0	19	46	45	0	75	1	0	0	2	63	27	1	33	0	24
18:30	0	7	25	52	0	59	0	1	1	2	65	15	0	28	0	14
18:45	0	4	45	34	1	62	1	2	1	1	40	16	0	20	0	20
Start Time	Rolling Hour															
07:00	2	112	308	479	1	275	2	26	3	12	237	196	2	122	0	65
07:15	2	127	323	458	2	309	5	27	1	20	251	202	4	123	0	83
07:30	2	141	330	420	2	331	5	30	0	22	281	210	5	135	0	101
07:45	2	128	323	396	4	355	6	29	0	17	302	189	5	128	0	116
08:00	1	136	319	351	3	365	4	37	1	15	301	198	4	128	1	117
08:15	1	119	304	335	2	353	3	37	1	10	316	190	1	116	1	113
08:30	0	106	272	315	3	340	4	29	3	15	296	173	2	103	1	106
08:45	0	95	256	284	1	300	3	26	4	14	286	162	2	99	1	90
09:00	0	79	215	258	2	258	4	15	3	16	276	145	3	92	0	68
16:00	5	73	296	323	2	292	12	12	2	31	326	771	2	221	0	96
16:15	4	75	308	327	2	322	11	18	3	30	295	791	1	212	0	114
16:30	3	73	317	289	3	388	5	23	2	26	352	686	2	212	1	119
16:45	2	68	320	280	4	451	7	20	2	16	370	562	1	213	1	133
17:00	2	66	310	268	4	475	4	18	1	11	380	394	1	183	1	119
17:15	3	61	279	255	7	449	3	13	0	10	367	224	1	166	1	98
17:30	1	69	244	243	6	391	4	7	0	9	289	145	1	148	0	101
17:45	1	57	191	231	5	311	1	4	1	7	251	99	1	129	0	83
18:00	1	49	171	201	6	270	2	4	2	7	218	87	1	105	0	73

Intelligent Data Collection Limited



Client: PJA
 Project Number: ID06388
 Junction Number: Site 5a

Date of Survey: 31.03.2022
 Junction Name: M6 Junction 13
 Junction Type: 4-arm Roundabout

Arm A: A449 (NE)
 Arm B: M6 (SE)

Arm C: A449 (SW)
 Arm D: M6 (NW)

Count Method: Classes Included: *Select the count method and desired user classes from the drop-downs in cells D8 and G8*

Maximum 15-minute Junction Flow:	AM Peak	from:	08:15	until:	08:30	flow:	502
	PM Peak	from:	17:00	until:	17:15	flow:	622

Period Starting: *Select the time from the drop-down in cell D15 to show the 15-minute data for that period*

Movement Counts

		To				
		A	B	C	D	Total
From	A	0	118	58	20	196
	B	52	0	2	0	54
	C	55	0	1	42	98
	D	5	0	27	1	33
Total		112	118	88	63	381

HGV Proportions

		To				
		A	B	C	D	Total
From	A	0.0%	0.8%	3.4%	0.0%	1.5%
	B	3.8%	0.0%	0.0%	0.0%	3.7%
	C	3.6%	0.0%	100.0%	9.5%	7.1%
	D	20.0%	0.0%	11.1%	0.0%	12.1%
Total		4.5%	0.8%	6.8%	6.3%	4.2%

Maximum Hourly Junction Flow:	AM Peak	from:	07:30	until:	08:30	flow:	1946
	PM Peak	from:	16:15	until:	17:15	flow:	2394

Period Starting: *Select the time from the drop-down in cell D31 to show the hourly data for that period*

Movement Counts

		To				
		A	B	C	D	Total
From	A	2	474	299	111	886
	B	262	1	24	1	288
	C	228	7	2	190	427
	D	63	0	112	2	177
Total		555	482	437	304	1778

HGV Proportions

		To				
		A	B	C	D	Total
From	A	0.0%	1.5%	3.3%	0.9%	2.0%
	B	5.3%	0.0%	8.3%	100.0%	5.9%
	C	4.4%	57.1%	50.0%	4.2%	5.4%
	D	6.3%	0.0%	8.0%	0.0%	7.3%
Total		5.0%	2.3%	5.0%	3.3%	4.0%

Bold entries in the above tables indicate the maximum movement, approach and exit flows for the selected time period, and similarly with the HGV proportions



Intelligent Data Collection Limited Penkrige

Client: PJA
Project Number: ID06388
Junction Number: Site 6
Date of Survey: 31.03.2022
Junction Name: Gailey Island
Junction Type: 4-arm Roundabout

Quality Assurance and Issue Record



Quality Assurance

Revision	Rev A			
Date	07.04.2022			
Prepared by	Richard Collins			
Signature				
Checked by	Luke Martin			
Signature				
Project Director	Paul O'Neill			
Signature				
Project Number	ID06388			
File Ref	ID06388 Penkridge - MCC Site 6 - 31.03.2022			

Issue Record

Issued to	Date			
	11.04.2022			
Beth Street	E-mail			

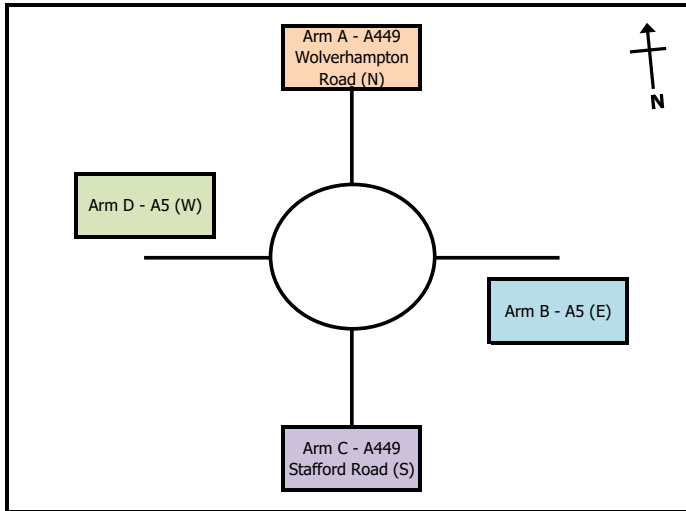
Intelligent Data Collection Limited



Client: PJA
Project Number: ID06388
Junction Number: Site 6
Date of Survey: 31.03.2022
Junction Name: Gailey Island
Junction Type: 4-arm Roundabout

X Coordinate	Y Coordinate	Google Maps Link
52.693134	-2.131486	Click Here
AM Peak Conditions	PM Peak Conditions	
Snow Showers	Showers	

Junction Layout

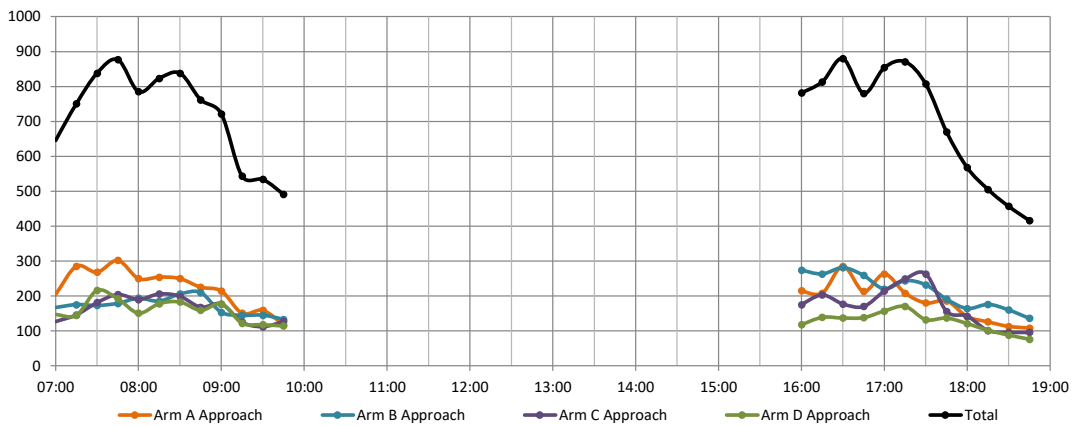


Aerial Mapping and On-site Camera View



Junction Flow Profile

Arm Approach Flows (All Vehicles)



Additional Notes (Factors which may impact on survey results such as accidents, roadworks, special events):

A minor incident occurred on Arm B between 08:54 and 09:00 - this had little/no impact on the traffic flows.

Intelligent Data Collection Limited



Client: PJA
 Project Number: ID06388
 Junction Number: Site 6
 Date of Survey: 31.03.2022
 Junction Name: Gailey Island
 Junction Type: 4-arm Roundabout

Arm A: A449 Wolverhampton Road (N)
 Arm B: A5 (E)
 Arm C: A449 Stafford Road (S)
 Arm D: A5 (W)

Time	A to A								A to D								A to C							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	0	0	0	0	0	0	0	0	36	18	3	2	0	0	0	59	83	14	0	3	1	0	0	101
07:15	0	0	0	0	0	0	0	0	54	19	0	1	0	0	0	74	125	22	2	5	0	0	0	154
07:30	0	0	0	0	0	0	0	0	60	13	0	0	0	0	0	73	130	17	1	3	3	0	0	154
07:45	1	0	0	0	0	0	0	1	84	7	0	2	0	0	0	93	126	25	0	2	1	0	1	155
08:00	0	0	0	0	0	0	0	0	64	17	1	0	0	0	0	82	104	18	2	0	1	0	0	125
08:15	0	1	0	0	0	0	0	1	73	15	0	1	0	0	0	89	92	17	2	1	1	0	0	113
08:30	1	1	0	0	0	0	0	2	72	10	1	1	0	0	0	84	94	17	1	4	1	1	0	118
08:45	2	0	0	0	0	0	0	2	48	14	0	0	2	0	0	64	82	12	0	0	1	0	0	95
09:00	1	0	0	0	0	0	0	1	54	10	0	0	1	0	0	65	69	14	2	2	1	0	0	88
09:15	0	0	0	0	0	0	0	0	34	8	0	1	0	0	0	43	64	8	2	2	0	1	0	77
09:30	1	0	0	0	0	0	0	1	32	10	2	1	1	0	0	46	52	11	2	1	0	1	0	67
09:45	2	0	0	0	0	0	0	2	28	4	0	1	0	0	0	33	42	9	0	2	0	0	0	53
16:00	1	0	0	0	0	0	0	1	54	12	2	0	0	1	0	69	74	18	2	2	0	0	0	96
16:15	0	0	0	0	0	0	0	0	62	16	2	3	0	0	0	83	64	21	2	2	0	0	0	89
16:30	2	0	0	0	0	0	0	2	76	19	1	1	1	1	0	99	77	22	3	1	1	1	0	105
16:45	0	1	0	0	0	0	0	1	70	13	0	1	1	0	0	85	64	15	1	2	1	1	0	84
17:00	1	0	0	0	0	0	0	1	92	18	0	1	0	0	0	111	79	16	3	3	2	0	0	103
17:15	0	0	0	0	0	0	0	0	71	7	0	0	0	0	0	78	82	15	1	0	0	0	0	98
17:30	2	0	0	0	0	0	0	2	61	3	1	0	0	0	0	65	84	7	0	1	1	0	0	93
17:45	0	0	0	0	0	0	0	0	63	10	0	0	1	0	0	74	78	4	1	1	0	0	0	84
18:00	0	1	0	0	0	0	0	1	49	3	0	1	0	0	0	53	59	3	1	0	0	0	0	63
18:15	1	0	0	0	0	0	0	1	41	6	2	0	0	0	0	49	53	7	1	0	0	0	0	61
18:30	0	0	0	0	0	0	0	0	37	3	0	0	0	0	0	40	50	5	0	2	0	0	0	57
18:45	0	0	0	0	0	0	0	0	32	3	0	0	0	0	0	35	43	4	0	0	0	0	0	47
Start Time	Rolling Hour								Rolling Hour								Rolling Hour							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	1	0	0	0	0	0	0	1	234	57	3	5	0	0	0	299	464	78	3	13	5	0	1	564
07:15	1	0	0	0	0	0	0	1	262	56	1	3	0	0	0	322	485	82	5	10	5	0	1	588
07:30	1	1	0	0	0	0	0	2	281	52	1	3	0	0	0	337	452	77	5	6	6	0	1	547
07:45	2	2	0	0	0	0	0	4	293	49	2	4	0	0	0	348	416	77	5	7	4	1	1	511
08:00	3	2	0	0	0	0	0	5	257	56	2	2	2	0	0	319	372	64	5	5	4	1	0	451
08:15	4	2	0	0	0	0	0	6	247	49	1	2	3	0	0	302	337	60	5	7	4	1	0	414
08:30	4	1	0	0	0	0	0	5	208	42	1	2	3	0	0	256	309	51	5	8	3	2	0	378
08:45	4	0	0	0	0	0	0	4	168	42	2	2	4	0	0	218	267	45	6	5	2	2	0	327
09:00	4	0	0	0	0	0	0	4	148	32	2	3	2	0	0	187	227	42	6	7	1	2	0	285
16:00	3	1	0	0	0	0	0	4	262	60	5	5	2	2	0	336	279	76	8	7	2	2	0	374
16:15	3	1	0	0	0	0	0	4	300	66	3	6	2	1	0	378	284	74	9	8	4	2	0	381
16:30	3	1	0	0	0	0	0	4	309	57	1	3	2	1	0	373	302	68	8	6	4	2	0	390
16:45	3	1	0	0	0	0	0	4	294	41	1	2	1	0	0	339	309	53	5	6	4	1	0	378
17:00	3	0	0	0	0	0	0	3	287	38	1	1	1	0	0	328	323	42	5	5	3	0	0	378
17:15	2	1	0	0	0	0	0	3	244	23	1	1	1	0	0	270	303	29	3	2	1	0	0	338
17:30	3	1	0	0	0	0	0	4	214	22	3	1	1	0	0	241	274	21	3	2	1	0	0	301
17:45	1	1	0	0	0	0	0	2	190	22	2	1	1	0	0	216	240	19	3	3	0	0	0	265
18:00	1	1	0	0	0	0	0	2	159	15	2	1	0	0	0	177	205	19	2	2	0	0	0	228

Intelligent Data Collection Limited



Client: PJA
 Project Number: ID06388
 Junction Number: Site 6

Date of Survey: 31.03.2022
 Junction Name: Gailey Island
 Junction Type: 4-arm Roundabout

Arm A: A449 Wolverhampton Road (N)
 Arm B: A5 (E)

Arm C: A449 Stafford Road (S)
 Arm D: A5 (W)

Time	A to B								B to B								B to A							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	33	10	0	0	2	0	0	45	0	0	0	0	0	0	0	0	17	1	2	2	0	0	0	22
07:15	40	16	0	1	0	0	0	57	1	0	1	0	0	0	0	2	16	6	2	4	0	0	0	28
07:30	31	9	0	1	0	0	0	41	0	1	0	0	0	0	0	1	10	7	2	0	0	0	19	
07:45	40	8	1	4	0	0	0	53	0	1	0	0	0	0	0	1	15	8	2	1	0	0	26	
08:00	30	8	2	3	0	0	0	43	1	0	0	0	0	0	0	1	25	16	1	4	1	0	47	
08:15	41	7	1	2	0	0	0	51	0	0	0	0	0	0	0	0	24	7	2	3	0	0	36	
08:30	40	5	0	1	0	0	0	46	1	0	0	0	0	0	0	1	41	12	1	1	3	0	58	
08:45	54	7	1	0	2	0	0	64	0	1	0	0	0	0	0	1	44	8	2	4	1	0	59	
09:00	44	12	0	2	2	0	0	60	1	0	0	0	0	0	0	1	27	11	1	3	0	0	42	
09:15	21	7	0	3	0	0	0	31	2	0	0	0	0	0	0	2	8	11	1	1	0	0	21	
09:30	35	9	0	1	0	0	0	45	0	0	0	0	0	0	0	0	13	6	1	4	0	0	24	
09:45	20	7	1	0	0	0	1	29	0	1	0	0	0	0	0	1	13	9	1	3	0	0	26	
16:00	38	9	1	1	0	0	0	49	0	0	0	0	0	0	0	0	124	37	1	10	0	0	172	
16:15	31	3	1	1	0	0	0	36	1	0	0	0	0	0	0	1	95	25	2	2	0	0	124	
16:30	66	10	0	1	1	1	0	79	1	1	0	0	0	0	0	2	100	30	2	8	1	0	141	
16:45	31	7	0	2	2	1	0	43	0	0	0	0	0	0	0	0	81	16	0	2	0	0	99	
17:00	41	7	0	0	0	0	0	48	0	0	0	0	0	0	0	0	41	9	1	2	0	0	53	
17:15	24	6	0	1	0	1	0	32	0	0	0	0	0	0	0	0	42	5	0	3	0	0	50	
17:30	15	3	1	1	0	0	0	20	0	0	0	0	0	0	0	0	56	6	2	1	0	0	65	
17:45	21	5	0	2	0	0	0	28	0	0	0	0	0	0	0	0	42	5	0	0	0	0	47	
18:00	20	4	0	0	0	0	0	24	1	0	0	0	0	0	0	1	33	6	0	2	1	0	42	
18:15	12	3	0	0	0	0	0	15	0	1	0	0	0	0	0	1	28	3	0	1	1	0	33	
18:30	12	2	0	2	0	0	0	16	1	0	0	0	0	0	0	1	27	3	0	1	1	0	32	
18:45	22	3	0	1	0	0	0	26	0	0	0	0	0	0	0	0	18	8	0	0	0	0	26	
Start Time	Rolling Hour								Rolling Hour								Rolling Hour							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	144	43	1	6	2	0	0	196	1	2	1	0	0	0	0	4	58	22	8	7	0	0	0	95
07:15	141	41	3	9	0	0	0	194	2	2	1	0	0	0	0	5	66	37	7	9	1	0	0	120
07:30	142	32	4	10	0	0	0	188	1	2	0	0	0	0	0	3	74	38	7	8	1	0	0	128
07:45	151	28	4	10	0	0	0	193	2	1	0	0	0	0	0	3	105	43	6	9	4	0	0	167
08:00	165	27	4	6	2	0	0	204	2	1	0	0	0	0	0	3	134	43	6	12	5	0	0	200
08:15	179	31	2	5	4	0	0	221	2	1	0	0	0	0	0	3	136	38	6	11	4	0	0	195
08:30	159	31	1	6	4	0	0	201	4	1	0	0	0	0	0	5	120	42	5	9	4	0	0	180
08:45	154	35	1	6	4	0	0	200	3	1	0	0	0	0	0	4	92	36	5	12	1	0	0	146
09:00	120	35	1	6	2	0	1	165	3	1	0	0	0	0	0	4	61	37	4	11	0	0	0	113
16:00	166	29	2	5	3	2	0	207	2	1	0	0	0	0	0	3	400	108	5	22	1	0	0	536
16:15	169	27	1	4	3	2	0	206	2	1	0	0	0	0	0	3	317	80	5	14	1	0	0	417
16:30	162	30	0	4	3	3	0	202	1	1	0	0	0	0	0	2	264	60	3	15	1	0	0	343
16:45	111	23	1	4	2	2	0	143	0	0	0	0	0	0	0	0	220	36	3	8	0	0	0	267
17:00	101	21	1	4	0	1	0	128	0	0	0	0	0	0	0	0	181	25	3	6	0	0	0	215
17:15	80	18	1	4	0	1	0	104	1	0	0	0	0	0	0	1	173	22	2	6	1	0	0	204
17:30	68	15	1	3	0	0	0	87	1	1	0	0	0	0	0	2	159	20	2	4	2	0	0	187
17:45	65	14	0	4	0	0	0	83	2	1	0	0	0	0	0	3	130	17	0	4	3	0	0	154
18:00	66	12	0	3	0	0	0	81	2	1	0	0	0	0	0	3	106	20	0	4	3	0	0	133

Intelligent Data Collection Limited



Client: PJA
 Project Number: ID06388
 Junction Number: Site 6
 Date of Survey: 31.03.2022
 Junction Name: Gailey Island
 Junction Type: 4-arm Roundabout

Arm A: A449 Wolverhampton Road (N)
 Arm B: A5 (E)
 Arm C: A449 Stafford Road (S)
 Arm D: A5 (W)

Time	B to D								B to C								C to C							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	51	43	2	5	0	0	0	101	22	8	3	11	0	0	0	44	0	0	0	0	0	0	0	0
07:15	47	36	3	8	0	0	0	94	30	3	5	12	1	0	0	51	0	0	0	0	0	0	0	0
07:30	61	33	3	9	0	0	0	106	25	8	5	9	0	0	0	47	0	0	0	0	0	0	0	0
07:45	58	27	5	11	0	0	0	101	29	8	6	8	0	0	0	51	1	0	0	0	0	0	0	1
08:00	59	26	1	6	0	0	0	92	35	9	2	8	0	0	0	54	0	0	1	0	0	0	0	1
08:15	67	22	2	4	0	1	0	96	30	12	5	6	0	0	0	53	0	0	0	0	0	0	0	0
08:30	49	26	3	11	1	0	0	90	29	14	5	9	0	0	0	57	0	0	0	0	0	0	0	0
08:45	68	25	4	7	1	0	0	105	30	7	5	3	0	0	0	45	0	0	0	0	0	0	0	0
09:00	44	18	2	5	0	0	0	69	20	13	3	5	0	0	0	41	2	0	0	0	0	0	0	2
09:15	42	24	5	9	0	0	0	80	25	7	2	7	1	0	0	42	0	0	0	0	0	0	0	0
09:30	48	27	2	8	0	0	0	85	14	10	4	8	0	0	0	36	0	0	0	0	0	0	0	0
09:45	34	23	2	4	0	0	0	63	19	10	2	12	0	0	0	43	1	0	0	0	0	0	0	1
16:00	51	11	3	8	0	0	0	73	16	4	0	9	0	0	0	29	0	0	0	0	0	0	0	0
16:15	84	15	0	6	0	1	0	106	21	4	0	7	0	0	0	32	0	0	0	0	0	0	0	0
16:30	80	28	1	3	0	0	0	112	18	4	1	3	0	0	0	26	1	0	0	0	0	0	0	1
16:45	98	23	2	10	0	1	0	134	18	1	0	7	0	0	0	26	0	0	0	0	0	0	0	0
17:00	105	23	0	4	0	0	0	132	25	3	2	5	0	0	0	35	0	0	0	0	0	0	0	0
17:15	119	28	1	5	0	1	0	154	22	5	1	12	0	0	0	40	0	0	0	0	0	0	0	0
17:30	97	25	1	4	0	0	0	127	26	7	2	5	0	0	0	40	1	0	0	0	0	0	0	1
17:45	95	13	0	2	0	1	0	111	25	5	1	2	0	0	0	33	2	0	0	0	0	0	0	2
18:00	69	9	0	8	0	0	0	86	26	4	0	5	0	0	0	35	0	0	0	0	0	0	0	0
18:15	93	14	0	3	0	0	0	110	23	4	2	3	0	0	0	32	0	0	0	0	0	0	0	0
18:30	73	6	1	2	0	0	0	82	38	4	0	3	0	0	0	45	0	0	0	0	0	0	0	0
18:45	68	10	0	3	0	0	0	81	25	3	0	1	0	0	0	29	1	0	0	0	0	0	0	1
Start Time	Rolling Hour								Rolling Hour								Rolling Hour							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	217	139	13	33	0	0	0	402	106	27	19	40	1	0	0	193	1	0	0	0	0	0	0	1
07:15	225	122	12	34	0	0	0	393	119	28	18	37	1	0	0	203	1	0	1	0	0	0	0	2
07:30	245	108	11	30	0	1	0	395	119	37	18	31	0	0	0	205	1	0	1	0	0	0	0	2
07:45	233	101	11	32	1	1	0	379	123	43	18	31	0	0	0	215	1	0	1	0	0	0	0	2
08:00	243	99	10	28	2	1	0	383	124	42	17	26	0	0	0	209	0	0	26	1	0	0	0	1
08:15	228	91	11	27	2	1	0	360	109	46	18	23	0	0	0	196	2	0	0	0	0	0	0	2
08:30	203	93	14	32	2	0	0	344	104	41	15	24	1	0	0	185	2	0	0	0	0	0	0	2
08:45	202	94	13	29	1	0	0	339	89	37	14	23	1	0	0	164	2	0	0	0	0	0	0	2
09:00	168	92	11	26	0	0	0	297	78	40	11	32	1	0	0	162	3	0	0	0	0	0	0	3
16:00	313	77	6	27	0	2	0	425	73	13	1	26	0	0	0	113	1	0	0	0	0	0	0	1
16:15	367	89	3	23	0	2	0	484	82	12	3	22	0	0	0	119	1	0	0	0	0	0	0	1
16:30	402	102	4	22	0	2	0	532	83	13	4	27	0	0	0	127	1	0	0	0	0	0	0	1
16:45	419	99	4	23	0	2	0	547	91	16	5	29	0	0	0	141	1	0	0	0	0	0	0	1
17:00	416	89	2	15	0	2	0	524	98	20	6	24	0	0	0	148	3	0	0	0	0	0	0	3
17:15	380	75	2	19	0	2	0	478	99	21	4	24	0	0	0	148	3	0	0	0	0	0	0	3
17:30	354	61	1	17	0	1	0	434	100	20	5	15	0	0	0	140	3	0	0	0	0	0	0	3
17:45	330	42	1	15	0	1	0	389	112	17	3	13	0	0	0	145	2	0	0	0	0	0	0	2
18:00	303	39	1	16	0	0	0	359	112	15	2	12	0	0	0	141	1	0	0	0	0	0	0	1

Intelligent Data Collection Limited



Client: PJA
 Project Number: ID06388
 Junction Number: Site 6

Date of Survey: 31.03.2022
 Junction Name: Gailey Island
 Junction Type: 4-arm Roundabout

Arm A: A449 Wolverhampton Road (N)
 Arm B: A5 (E)

Arm C: A449 Stafford Road (S)
 Arm D: A5 (W)

Time	C to B								C to A								C to D							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	33	15	5	5	0	0	0	58	43	19	1	0	1	0	0	65	4	0	0	0	0	0	0	4
07:15	39	18	2	4	0	0	0	63	50	19	1	2	0	0	0	72	6	3	1	0	1	0	0	11
07:30	53	13	0	8	0	0	0	74	66	25	0	2	0	0	0	93	10	2	1	0	1	0	0	14
07:45	52	17	1	8	0	0	0	78	84	22	3	0	0	0	0	109	12	4	0	0	0	0	0	16
08:00	57	13	5	6	0	0	0	81	74	22	3	2	0	0	0	101	4	3	0	0	0	0	0	7
08:15	55	21	0	8	0	0	0	84	93	13	4	1	1	0	0	112	7	2	1	0	0	0	0	10
08:30	44	15	5	5	0	0	0	69	89	16	3	2	3	0	0	113	12	4	1	0	0	0	0	17
08:45	49	14	3	9	1	0	0	76	65	12	2	4	0	0	0	83	5	4	0	0	0	0	0	9
09:00	47	15	6	12	0	0	0	80	67	11	3	3	0	0	0	84	9	2	0	0	0	0	0	11
09:15	35	16	5	7	0	0	0	63	42	9	1	3	0	0	0	55	3	3	1	0	0	0	0	7
09:30	27	9	5	11	0	0	0	52	42	8	2	2	0	0	0	54	3	1	2	0	0	0	0	6
09:45	30	11	5	9	0	0	0	55	50	12	2	1	1	0	0	66	3	1	1	0	0	0	0	5
16:00	19	4	3	8	1	0	0	35	106	18	2	4	0	1	0	131	9	0	0	0	0	0	0	9
16:15	35	6	0	8	0	0	0	49	109	17	5	4	2	1	0	138	15	0	1	0	0	0	0	16
16:30	24	9	1	5	0	0	0	39	85	25	2	3	1	0	0	116	19	2	0	0	0	0	0	21
16:45	34	11	3	2	0	0	0	50	71	15	4	7	2	0	0	99	19	1	0	0	0	1	0	21
17:00	28	5	3	5	1	0	0	42	123	18	2	5	1	0	0	149	23	0	0	0	0	0	0	23
17:15	42	6	0	3	0	0	0	51	161	13	2	4	0	0	0	180	17	1	0	0	0	0	0	18
17:30	30	6	3	4	0	0	0	43	185	17	2	1	0	0	0	205	14	0	0	0	0	0	0	14
17:45	29	4	0	2	0	0	0	35	96	10	0	3	0	1	0	110	8	1	0	0	0	0	0	9
18:00	27	2	0	0	0	0	0	29	91	9	2	0	1	0	0	103	8	2	0	0	0	0	0	10
18:15	16	0	1	3	0	0	0	20	65	7	1	0	0	0	1	74	7	0	0	0	0	0	0	7
18:30	18	2	2	5	0	0	0	27	52	10	0	0	0	0	0	62	6	1	0	0	0	0	0	7
18:45	22	0	1	2	0	0	0	25	47	7	0	2	0	0	0	56	10	4	0	0	0	0	0	14
Start Time	Rolling Hour								Rolling Hour								Rolling Hour							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	177	63	8	25	0	0	0	273	243	85	5	4	1	1	0	339	32	9	2	0	2	0	0	45
07:15	201	61	8	26	0	0	0	296	274	88	7	6	0	0	0	375	32	12	2	0	2	0	0	48
07:30	217	64	6	30	0	0	0	317	317	82	10	5	1	0	0	415	33	11	2	0	1	0	0	47
07:45	208	66	11	27	0	0	0	312	340	73	13	5	4	0	0	435	35	13	2	0	0	0	0	50
08:00	205	63	13	28	1	0	0	310	321	63	12	9	4	0	0	409	28	13	2	0	0	0	0	43
08:15	195	65	14	34	1	0	0	309	314	52	12	10	4	0	0	392	33	12	2	0	0	0	0	47
08:30	175	60	19	33	1	0	0	288	263	48	9	12	3	0	0	335	29	13	2	0	0	0	0	44
08:45	158	54	19	39	1	0	0	271	216	40	8	12	0	0	0	276	20	10	3	0	0	0	0	33
09:00	139	51	21	39	0	0	0	250	201	40	8	9	1	0	0	259	18	7	4	0	0	0	0	29
16:00	112	30	7	23	1	0	0	173	371	75	13	18	5	2	0	484	62	3	1	0	0	1	0	67
16:15	121	31	7	20	1	0	0	180	388	75	13	19	6	1	0	502	76	3	1	0	0	1	0	81
16:30	128	31	7	15	1	0	0	182	440	71	10	19	4	0	0	544	78	4	0	0	0	1	0	83
16:45	134	28	9	14	1	0	0	186	540	63	10	17	3	0	0	633	73	2	0	0	0	1	0	76
17:00	129	21	6	14	1	0	0	171	565	58	6	13	1	1	0	644	62	2	0	0	0	0	0	64
17:15	128	18	3	9	0	0	0	158	533	49	6	8	1	1	0	598	47	4	0	0	0	0	0	51
17:30	102	12	4	9	0	0	0	127	437	43	5	4	1	2	0	492	37	3	0	0	0	0	0	40
17:45	90	8	3	10	0	0	0	111	304	36	3	3	1	2	0	349	29	4	0	0	0	0	0	33
18:00	83	4	4	10	0	0	0	101	255	33	3	2	1	1	0	295	31	7	0	0	0	0	0	38

Intelligent Data Collection Limited



Client: PJA
 Project Number: ID06388
 Junction Name: Gailey Island
 Junction Type: 4-arm Roundabout

Date of Survey: 31.03.2022

Arm A: A449 Wolverhampton Road (N)
 Arm B: A5 (E)

Arm C: A449 Stafford Road (S)
 Arm D: A5 (W)

Time	D to D								D to C								D to B							
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	6	78	23	0	6	0	0	0	107
07:15	0	0	0	0	0	0	0	0	18	0	0	0	0	0	0	18	68	20	2	3	0	0	0	93
07:30	1	0	0	0	0	0	0	1	18	0	0	0	0	0	0	18	117	20	4	5	0	0	0	146
07:45	0	0	0	0	0	0	0	0	15	4	0	0	0	0	0	19	78	32	5	6	0	0	0	121
08:00	0	0	0	0	0	0	0	0	11	1	0	0	0	0	0	12	71	16	0	5	0	0	0	92
08:15	0	1	0	0	0	0	0	1	12	3	1	0	0	0	0	16	90	14	7	4	0	0	0	115
08:30	0	0	0	0	0	0	0	0	13	2	0	0	0	0	0	15	74	20	2	3	0	0	0	99
08:45	2	0	0	0	0	0	0	2	5	2	0	0	0	0	0	7	65	10	2	6	0	0	0	83
09:00	1	0	0	0	0	0	0	1	8	0	0	0	0	0	0	8	86	12	7	9	0	1	0	115
09:15	0	0	0	0	0	0	0	0	12	2	0	0	0	0	0	14	46	16	0	8	0	0	0	70
09:30	0	0	0	0	0	0	0	0	4	3	0	0	0	0	0	7	51	20	3	4	0	1	0	79
09:45	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	4	55	15	1	3	0	0	0	74
16:00	0	0	0	0	0	0	0	0	4	1	0	1	0	0	0	6	49	19	0	6	0	0	0	74
16:15	1	0	0	0	0	0	0	1	5	3	0	0	2	0	0	10	48	23	3	6	0	0	0	80
16:30	0	0	0	0	0	0	0	0	5	2	0	0	0	0	0	7	49	22	1	6	0	2	0	80
16:45	1	0	0	0	0	0	0	1	8	2	0	0	0	0	0	10	59	24	0	7	0	0	0	90
17:00	2	0	0	0	0	0	0	2	6	1	0	0	0	0	0	7	78	16	0	5	0	0	0	99
17:15	0	0	0	0	0	0	0	0	8	0	1	0	0	0	0	9	61	15	1	3	0	0	0	80
17:30	1	0	0	0	0	0	0	1	4	1	0	0	0	0	0	5	53	8	0	2	0	0	1	64
17:45	0	1	0	0	0	0	0	1	9	0	0	0	0	0	0	9	53	9	1	4	0	0	0	67
18:00	0	0	0	0	0	0	0	0	8	0	0	1	0	0	0	9	50	8	0	4	0	0	0	62
18:15	1	0	0	0	0	0	0	1	9	0	0	0	0	0	0	9	45	3	0	2	0	2	0	52
18:30	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	7	38	6	0	1	0	0	0	45
18:45	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5	29	6	0	5	0	0	0	40
Start Time	Rolling Hour								Rolling Hour								Rolling Hour							
	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
07:00	1	0	0	0	0	0	0	1	57	4	0	0	0	0	0	61	341	95	11	20	0	0	0	467
07:15	1	0	0	0	0	0	0	1	62	5	0	0	0	0	0	67	334	88	11	19	0	0	0	452
07:30	1	1	0	0	0	0	0	2	56	8	1	0	0	0	0	65	356	82	16	20	0	0	0	474
07:45	0	1	0	0	0	0	0	1	51	10	1	0	0	0	0	62	313	82	14	18	0	0	0	427
08:00	2	1	0	0	0	0	0	3	41	8	1	0	0	0	0	50	300	60	11	18	0	0	0	389
08:15	3	1	0	0	0	0	0	4	38	7	1	0	0	0	0	46	315	56	18	22	0	1	0	412
08:30	3	0	0	0	0	0	0	3	38	6	0	0	0	0	0	44	271	58	11	26	0	1	0	367
08:45	3	0	0	0	0	0	0	3	29	7	0	0	0	0	0	36	248	58	12	27	0	2	0	347
09:00	1	0	0	0	0	0	0	1	27	6	0	0	0	0	0	33	238	63	11	24	0	2	0	338
16:00	2	0	0	0	0	0	0	2	22	8	0	1	2	0	0	33	205	88	4	25	0	2	0	324
16:15	4	0	0	0	0	0	0	4	24	8	0	0	2	0	0	34	234	85	4	24	0	2	0	349
16:30	3	0	0	0	0	0	0	3	27	5	1	0	0	0	0	33	247	77	2	21	0	2	0	349
16:45	4	0	0	0	0	0	0	4	26	4	1	0	0	0	0	31	251	63	1	17	0	0	1	333
17:00	3	1	0	0	0	0	0	4	27	2	1	0	0	0	0	30	245	48	2	14	0	0	1	310
17:15	1	1	0	0	0	0	0	2	29	1	1	1	0	0	0	32	217	40	2	13	0	0	1	273
17:30	2	1	0	0	0	0	0	3	30	1	0	1	0	0	0	32	201	28	1	12	0	2	1	245
17:45	1	1	0	0	0	0	0	2	33	0	0	1	0	0	0	34	186	26	1	11	0	2	0	226
18:00	1	0	0	0	0	0	0	1	29	0	0	1	0	0	0	30	162	23	0	12	0	2	0	199

Intelligent Data Collection Limited



Client: PJA
 Project Number: ID06388
 Junction Number: Site 6

Date of Survey: 31.03.2022
 Junction Name: Gailey Island
 Junction Type: 4-arm Roundabout

Arm A: A449 Wolverhampton Road (N)
 Arm B: A5 (E)

Arm C: A449 Stafford Road (S)
 Arm D: A5 (W)

D to A								
Time	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	23	9	0	2	0	0	0	34
07:15	21	8	2	3	0	0	0	34
07:30	35	11	3	2	0	0	0	51
07:45	45	6	0	1	0	0	0	52
08:00	38	7	2	0	0	0	0	47
08:15	37	8	0	1	0	0	0	46
08:30	51	14	0	0	3	1	0	69
08:45	50	11	4	2	0	0	0	67
09:00	44	8	0	1	0	0	0	53
09:15	29	7	1	1	0	0	0	38
09:30	23	5	0	2	2	0	0	32
09:45	23	11	1	1	0	0	0	36
16:00	24	10	1	2	1	0	0	38
16:15	30	12	0	5	1	0	0	48
16:30	40	10	0	0	0	0	0	50
16:45	32	5	0	0	0	0	0	37
17:00	41	6	0	1	1	0	0	49
17:15	74	6	0	1	0	0	0	81
17:30	50	12	0	0	0	0	0	62
17:45	51	6	1	1	1	0	0	60
18:00	41	7	0	0	2	0	0	50
18:15	36	3	0	0	1	0	0	40
18:30	34	1	1	0	0	0	0	36
18:45	27	4	0	0	0	0	0	31
Start Time	Rolling Hour							Total
07:00	124	34	5	8	0	0	0	171
07:15	139	32	7	6	0	0	0	184
07:30	155	32	5	4	0	0	0	196
07:45	171	35	2	2	3	1	0	214
08:00	176	40	6	3	3	1	0	229
08:15	182	41	4	4	3	1	0	235
08:30	174	40	5	4	3	1	0	227
08:45	146	31	5	6	2	0	0	190
09:00	119	31	2	5	2	0	0	159
16:00	126	37	1	7	2	0	0	173
16:15	143	33	0	6	2	0	0	184
16:30	187	27	0	2	1	0	0	217
16:45	197	29	0	2	1	0	0	229
17:00	216	30	1	3	2	0	0	252
17:15	216	31	1	2	3	0	0	253
17:30	178	28	1	1	4	0	0	212
17:45	162	17	2	1	4	0	0	186
18:00	138	15	1	0	3	0	0	157

Intelligent Data Collection Limited



Client: PJA
Project Number: ID06388
Junction Number: Site 6
Date of Survey: 31.03.2022
Junction Name: Gailey Island
Junction Type: 4-arm Roundabout

Time	Arm A Approach								Arm A Exit									
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total		
07:00	152	42	3	5	3	0	0	205	83	29	3	4	1	1	0	121		
07:15	219	57	2	7	0	0	0	285	87	33	5	9	0	0	0	134		
07:30	221	39	1	4	3	0	0	268	111	43	5	4	0	0	0	163		
07:45	251	40	1	8	1	0	1	302	145	36	5	2	0	0	0	188		
08:00	198	43	5	3	1	0	0	250	137	45	6	6	1	0	0	195		
08:15	206	40	3	4	1	0	0	254	154	29	6	5	1	0	0	195		
08:30	207	33	2	6	1	1	0	250	182	43	4	3	9	1	0	242		
08:45	186	33	1	0	5	0	0	225	161	31	8	10	1	0	0	211		
09:00	168	36	2	4	4	0	0	214	139	30	4	7	0	0	0	180		
09:15	119	23	2	6	0	1	0	151	79	27	3	5	0	0	0	114		
09:30	120	30	4	3	1	1	0	159	79	19	3	8	2	0	0	111		
09:45	92	20	1	3	0	0	1	117	88	32	4	5	1	0	0	130		
16:00	167	39	5	3	0	1	0	215	255	65	4	16	1	1	0	342		
16:15	157	40	5	6	0	0	0	208	234	54	7	11	3	1	0	310		
16:30	221	51	4	3	3	3	0	285	227	65	4	11	2	0	0	309		
16:45	165	36	1	5	4	2	0	213	184	37	4	9	2	0	0	236		
17:00	213	41	3	4	2	0	0	263	206	33	3	8	2	0	0	252		
17:15	177	28	1	1	0	1	0	208	277	24	2	8	0	0	0	311		
17:30	162	13	2	2	1	0	0	180	293	35	4	2	0	0	0	334		
17:45	162	19	1	3	1	0	0	186	189	21	1	4	1	1	0	217		
18:00	128	11	1	1	0	0	0	141	165	23	2	2	4	0	0	196		
18:15	107	16	3	0	0	0	0	126	130	13	1	1	2	1	0	148		
18:30	99	10	0	4	0	0	0	113	113	14	1	1	1	0	0	130		
18:45	97	10	0	1	0	0	0	108	92	19	0	2	0	0	0	113		
Start Time	Rolling Hour								Total	Rolling Hour								Total
07:00	843	178	7	24	7	0	1	1060	426	141	18	19	1	1	0	606		
07:15	889	179	9	22	5	0	1	1105	480	157	21	21	1	0	0	680		
07:30	876	162	10	19	6	0	1	1074	547	153	22	17	2	0	0	741		
07:45	862	156	11	21	4	1	1	1056	618	153	21	16	11	1	0	820		
08:00	797	149	11	13	8	1	0	979	634	148	24	24	12	1	0	843		
08:15	767	142	8	14	11	1	0	943	636	133	22	25	11	1	0	828		
08:30	680	125	7	16	10	2	0	840	561	131	19	25	10	1	0	747		
08:45	593	122	9	13	10	2	0	749	458	107	18	30	3	0	0	616		
09:00	499	109	9	16	5	2	1	641	385	108	14	25	3	0	0	535		
16:00	710	166	15	17	7	6	0	921	900	221	19	47	8	2	0	1197		
16:15	756	168	13	18	9	5	0	969	851	189	18	39	9	1	0	1107		
16:30	776	156	9	13	9	6	0	969	894	159	13	36	6	0	0	1108		
16:45	717	118	7	12	7	3	0	864	960	129	13	27	4	0	0	1133		
17:00	714	101	7	10	4	1	0	837	965	113	10	22	3	1	0	1114		
17:15	629	71	5	7	2	1	0	715	924	103	9	16	5	1	0	1058		
17:30	559	59	7	6	2	0	0	633	777	92	8	9	7	2	0	895		
17:45	496	56	5	8	1	0	0	566	597	71	5	8	8	2	0	691		
18:00	431	47	4	6	0	0	0	488	500	69	4	6	7	1	0	587		

Intelligent Data Collection Limited



Client: PJA
Project Number: ID06388
Junction Number: Site 6
Date of Survey: 31.03.2022
Junction Name: Gailey Island
Junction Type: 4-arm Roundabout

Time	Arm B Approach							Arm B Exit								
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	90	52	7	18	0	0	0	167	144	48	5	11	2	0	0	210
07:15	94	45	11	24	1	0	0	175	148	54	5	8	0	0	0	215
07:30	96	49	10	18	0	0	0	173	201	43	4	14	0	0	0	262
07:45	102	44	13	20	0	0	0	179	170	58	7	18	0	0	0	253
08:00	120	51	4	18	1	0	0	194	159	37	7	14	0	0	0	217
08:15	121	41	9	13	0	1	0	185	186	42	8	14	0	0	0	250
08:30	120	52	9	21	4	0	0	206	159	40	7	9	0	0	0	215
08:45	142	41	11	14	2	0	0	210	168	32	6	15	3	0	0	224
09:00	92	42	6	13	0	0	0	153	178	39	13	23	2	1	0	256
09:15	77	42	8	17	1	0	0	145	104	39	5	18	0	0	0	166
09:30	75	43	7	20	0	0	0	145	113	38	8	16	0	1	0	176
09:45	66	43	5	19	0	0	0	133	105	34	7	12	0	0	1	159
16:00	191	52	4	27	0	0	0	274	106	32	4	15	1	0	0	158
16:15	201	44	2	15	0	1	0	263	115	32	4	15	0	0	0	166
16:30	199	63	4	14	1	0	0	281	140	42	2	12	1	3	0	200
16:45	197	40	2	19	0	1	0	259	124	42	3	11	2	1	0	183
17:00	171	35	3	11	0	0	0	220	147	28	3	10	1	0	0	189
17:15	183	38	2	20	0	1	0	244	127	27	1	7	0	1	0	163
17:30	179	38	5	10	0	0	0	232	98	17	4	7	0	0	1	127
17:45	162	23	1	4	0	1	0	191	103	18	1	8	0	0	0	130
18:00	129	19	0	15	1	0	0	164	98	14	0	4	0	0	0	116
18:15	144	22	2	7	1	0	0	176	73	7	1	5	0	2	0	88
18:30	139	13	1	6	1	0	0	160	69	10	2	8	0	0	0	89
18:45	111	21	0	4	0	0	0	136	73	9	1	8	0	0	0	91
Start Time	Rolling Hour							Total	Rolling Hour							Total
07:00	382	190	41	80	1	0	0	694	663	203	21	51	2	0	0	940
07:15	412	189	38	80	2	0	0	721	678	192	23	54	0	0	0	947
07:30	439	185	36	69	1	1	0	731	716	180	26	60	0	0	0	982
07:45	463	188	35	72	5	1	0	764	674	177	29	55	0	0	0	935
08:00	503	185	33	66	7	1	0	795	672	151	28	52	3	0	0	906
08:15	475	176	35	61	6	1	0	754	691	153	34	61	5	1	0	945
08:30	431	177	34	65	7	0	0	714	609	150	31	65	5	1	0	861
08:45	386	168	32	64	3	0	0	653	563	148	32	72	5	2	0	822
09:00	310	170	26	69	1	0	0	576	500	150	33	69	2	2	1	757
16:00	788	199	12	75	1	2	0	1077	485	148	13	53	4	4	0	707
16:15	768	182	11	59	1	2	0	1023	526	144	12	48	4	4	0	738
16:30	750	176	11	64	1	2	0	1004	538	139	9	40	4	5	0	735
16:45	730	151	12	60	0	2	0	955	496	114	11	35	3	2	1	662
17:00	695	134	11	45	0	2	0	887	475	90	9	32	1	1	1	609
17:15	653	118	8	49	1	2	0	831	426	76	6	26	0	1	1	536
17:30	614	102	8	36	2	1	0	763	372	56	6	24	0	2	1	461
17:45	574	77	4	32	3	1	0	691	343	49	4	25	0	2	0	423
18:00	523	75	3	32	3	0	0	636	313	40	4	25	0	2	0	384

Intelligent Data Collection Limited



Client: PJA
Project Number: ID06388
Junction Number: Site 6
Date of Survey: 31.03.2022
Junction Name: Gailey Island
Junction Type: 4-arm Roundabout

Time	Arm C Approach							Arm C Exit								
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	80	34	6	5	1	1	0	127	111	22	3	14	1	0	0	151
07:15	95	40	4	6	1	0	0	146	173	25	7	17	1	0	0	223
07:30	129	40	1	10	1	0	0	181	173	25	6	12	3	0	0	219
07:45	149	43	4	8	0	0	0	204	171	37	6	10	1	0	1	226
08:00	135	38	9	8	0	0	0	190	150	28	5	8	1	0	0	192
08:15	155	36	5	9	1	0	0	206	134	32	8	7	1	0	0	182
08:30	145	35	9	7	3	0	0	199	136	33	6	13	1	1	0	190
08:45	119	30	5	13	1	0	0	168	117	21	5	3	1	0	0	147
09:00	125	28	9	15	0	0	0	177	99	27	5	7	1	0	0	139
09:15	80	28	7	10	0	0	0	125	101	17	4	9	1	1	0	133
09:30	72	18	9	13	0	0	0	112	70	24	6	9	0	1	0	110
09:45	84	24	8	10	1	0	0	127	65	20	2	14	0	0	0	101
16:00	134	22	5	12	1	1	0	175	94	23	2	12	0	0	0	131
16:15	159	23	6	12	2	1	0	203	90	28	2	9	2	0	0	131
16:30	129	36	3	8	1	0	0	177	101	28	4	4	1	1	0	139
16:45	124	27	7	9	2	1	0	170	90	18	1	9	1	1	0	120
17:00	174	23	5	10	2	0	0	214	110	20	5	8	2	0	0	145
17:15	220	20	2	7	0	0	0	249	112	20	3	12	0	0	0	147
17:30	230	23	5	5	0	0	0	263	115	15	2	6	1	0	0	139
17:45	135	15	0	5	0	1	0	156	114	9	2	3	0	0	0	128
18:00	126	13	2	0	1	0	0	142	93	7	1	6	0	0	0	107
18:15	88	7	2	3	0	1	0	101	85	11	3	3	0	0	0	102
18:30	76	13	2	5	0	0	0	96	95	9	0	5	0	0	0	109
18:45	80	11	1	4	0	0	0	96	74	7	0	1	0	0	0	82
Start Time	Rolling Hour							Total	Rolling Hour							Total
07:00	453	157	15	29	3	1	0	658	628	109	22	53	6	0	1	819
07:15	508	161	18	32	2	0	0	721	667	115	24	47	6	0	1	860
07:30	568	157	19	35	2	0	0	781	628	122	25	37	6	0	1	819
07:45	584	152	27	32	4	0	0	799	591	130	25	38	4	1	1	790
08:00	554	139	28	37	5	0	0	763	537	114	24	31	4	1	0	711
08:15	544	129	28	44	5	0	0	750	486	113	24	30	4	1	0	658
08:30	469	121	30	45	4	0	0	669	453	98	20	32	4	2	0	609
08:45	396	104	30	51	1	0	0	582	387	89	20	28	3	2	0	529
09:00	361	98	33	48	1	0	0	541	335	88	17	39	2	2	0	483
16:00	546	108	21	41	6	3	0	725	375	97	9	34	4	2	0	521
16:15	586	109	21	39	7	2	0	764	391	94	12	30	6	2	0	535
16:30	647	106	17	34	5	1	0	810	413	86	13	33	4	2	0	551
16:45	748	93	19	31	4	1	0	896	427	73	11	35	4	1	0	551
17:00	759	81	12	27	2	1	0	882	451	64	12	29	3	0	0	559
17:15	711	71	9	17	1	1	0	810	434	51	8	27	1	0	0	521
17:30	579	58	9	13	1	2	0	662	407	42	8	18	1	0	0	476
17:45	425	48	6	13	1	2	0	495	387	36	6	17	0	0	0	446
18:00	370	44	7	12	1	1	0	435	347	34	4	15	0	0	0	400

Intelligent Data Collection Limited



Client: PJA
Project Number: ID06388
Junction Number: Site 6
Date of Survey: 31.03.2022
Junction Name: Gailey Island
Junction Type: 4-arm Roundabout

Time	Arm D Approach								Arm D Exit									
	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total		
07:00	107	32	0	8	0	0	0	147	91	61	5	7	0	0	0	164		
07:15	107	28	4	6	0	0	0	145	107	58	4	9	1	0	0	179		
07:30	171	31	7	7	0	0	0	216	132	48	4	9	1	0	0	194		
07:45	138	42	5	7	0	0	0	192	154	38	5	13	0	0	0	210		
08:00	120	24	2	5	0	0	0	151	127	46	2	6	0	0	0	181		
08:15	139	26	8	5	0	0	0	178	147	40	3	5	0	1	0	196		
08:30	138	36	2	3	3	1	0	183	133	40	5	12	1	0	0	191		
08:45	122	23	6	8	0	0	0	159	123	43	4	7	3	0	0	180		
09:00	139	20	7	10	0	1	0	177	108	30	2	5	1	0	0	146		
09:15	87	25	1	9	0	0	0	122	79	35	6	10	0	0	0	130		
09:30	78	28	3	6	2	1	0	118	83	38	6	9	1	0	0	137		
09:45	81	27	2	4	0	0	0	114	65	28	3	5	0	0	0	101		
16:00	77	30	1	9	1	0	0	118	114	23	5	8	0	1	0	151		
16:15	84	38	3	11	3	0	0	139	162	31	3	9	0	1	0	206		
16:30	94	34	1	6	0	2	0	137	175	49	2	4	1	1	0	232		
16:45	100	31	0	7	0	0	0	138	188	37	2	11	1	2	0	241		
17:00	127	23	0	6	1	0	0	157	222	41	0	5	0	0	0	268		
17:15	143	21	2	4	0	0	0	170	207	36	1	5	0	1	0	250		
17:30	108	21	0	2	0	0	1	132	173	28	2	4	0	0	0	207		
17:45	113	16	2	5	1	0	0	137	166	25	0	2	1	1	0	195		
18:00	99	15	0	5	2	0	0	121	126	14	0	9	0	0	0	149		
18:15	91	6	0	2	1	2	0	102	142	20	2	3	0	0	0	167		
18:30	79	7	1	1	0	0	0	88	116	10	1	2	0	0	0	129		
18:45	61	10	0	5	0	0	0	76	110	17	0	3	0	0	0	130		
Start Time	Rolling Hour								Total	Rolling Hour								Total
07:00	523	133	16	28	0	0	0	700	484	205	18	38	2	0	0	747		
07:15	536	125	18	25	0	0	0	704	520	190	15	37	2	0	0	764		
07:30	568	123	22	24	0	0	0	737	560	172	14	33	1	1	0	781		
07:45	535	128	17	20	3	1	0	704	561	164	15	36	1	1	0	778		
08:00	519	109	18	21	3	1	0	671	530	169	14	30	4	1	0	748		
08:15	538	105	23	26	3	2	0	697	511	153	14	29	5	1	0	713		
08:30	486	104	16	30	3	2	0	641	443	148	17	34	5	0	0	647		
08:45	426	96	17	33	2	2	0	576	393	146	18	31	5	0	0	593		
09:00	385	100	13	29	2	2	0	531	335	131	17	29	2	0	0	514		
16:00	355	133	5	33	4	2	0	532	639	140	12	32	2	5	0	830		
16:15	405	126	4	30	4	2	0	571	747	158	7	29	2	4	0	947		
16:30	464	109	3	23	1	2	0	602	792	163	5	25	2	4	0	991		
16:45	478	96	2	19	1	0	1	597	790	142	5	25	1	3	0	966		
17:00	491	81	4	17	2	0	1	596	768	130	3	16	1	2	0	920		
17:15	463	73	4	16	3	0	1	560	672	103	3	20	1	2	0	801		
17:30	411	58	2	14	4	2	1	492	607	87	4	18	1	1	0	718		
17:45	382	44	3	13	4	2	0	448	550	69	3	16	1	1	0	640		
18:00	330	38	1	13	3	2	0	387	494	61	3	17	0	0	0	575		

Intelligent Data Collection Limited



Client: PJA
Project Number: ID06388
Junction Number: Site 6
Date of Survey: 31.03.2022
Junction Name: Gailey Island
Junction Type: 4-arm Roundabout

Total Junction Flow								
Time	Cars	LGV	OGV1	OGV2	Buses	M/C	Cycle	Total
07:00	429	160	16	36	4	1	0	646
07:15	515	170	21	43	2	0	0	751
07:30	617	159	19	39	4	0	0	838
07:45	640	169	23	43	1	0	1	877
08:00	573	156	20	34	2	0	0	785
08:15	621	143	25	31	2	1	0	823
08:30	610	156	22	37	11	2	0	838
08:45	569	127	23	35	8	0	0	762
09:00	524	126	24	42	4	1	0	721
09:15	363	118	18	42	1	1	0	543
09:30	345	119	23	42	3	2	0	534
09:45	323	114	16	36	1	0	1	491
16:00	569	143	15	51	2	2	0	782
16:15	601	145	16	44	5	2	0	813
16:30	643	184	12	31	5	5	0	880
16:45	586	134	10	40	6	4	0	780
17:00	685	122	11	31	5	0	0	854
17:15	723	107	7	32	0	2	0	871
17:30	679	95	12	19	1	0	1	807
17:45	572	73	4	17	2	2	0	670
18:00	482	58	3	21	4	0	0	568
18:15	430	51	7	12	2	3	0	505
18:30	393	43	4	16	1	0	0	457
18:45	349	52	1	14	0	0	0	416
Start Time	Rolling Hour							Total
07:00	2201	658	79	161	11	1	1	3112
07:15	2345	654	83	159	9	0	1	3251
07:30	2451	627	87	147	9	1	1	3323
07:45	2444	624	90	145	16	3	1	3323
08:00	2373	582	90	137	23	3	0	3208
08:15	2324	552	94	145	25	4	0	3144
08:30	2066	527	87	156	24	4	0	2864
08:45	1801	490	88	161	16	4	0	2560
09:00	1555	477	81	162	9	4	1	2289
16:00	2399	606	53	166	18	13	0	3255
16:15	2515	585	49	146	21	11	0	3327
16:30	2637	547	40	134	16	11	0	3385
16:45	2673	458	40	122	12	6	1	3312
17:00	2659	397	34	99	8	4	1	3202
17:15	2456	333	26	89	7	4	1	2916
17:30	2163	277	26	69	9	5	1	2550
17:45	1877	225	18	66	9	5	0	2200
18:00	1654	204	15	63	7	3	0	1946

Intelligent Data Collection Limited



Client: PJA
 Project Number: ID06388
 Junction Number: Site 6

Date of Survey: 31.03.2022
 Junction Name: Gailey Island
 Junction Type: 4-arm Roundabout

Arm A: A449 Wolverhampton Road (N)
 Arm B: A5 (E)

Arm C: A449 Stafford Road (S)
 Arm D: A5 (W)

PCU Summary

Time	A to A	A to D	A to C	A to B	B to B	B to A	B to D	B to C	C to C	C to B	C to A	C to D	D to D	D to C	D to B	D to A
07:00	0	63	106	47	0	26	109	60	0	67	66	4	0	6	115	37
07:15	0	75	162	58	3	34	106	70	0	69	75	13	0	18	98	39
07:30	0	73	161	42	1	20	119	61	0	84	96	16	1	18	155	55
07:45	1	96	158	59	1	28	118	64	1	89	111	16	0	19	131	53
08:00	0	83	127	48	1	54	100	65	2	91	105	7	0	12	99	48
08:15	1	90	116	54	0	41	102	63	0	94	116	11	1	17	124	47
08:30	2	86	124	47	1	63	107	71	0	78	120	18	0	15	104	71
08:45	2	66	96	67	1	66	117	51	0	90	89	9	2	7	92	72
09:00	1	66	93	65	1	46	77	49	2	99	89	11	1	8	130	54
09:15	0	44	80	35	2	23	94	53	0	75	59	8	0	14	80	40
09:30	1	49	69	46	0	30	96	48	0	69	58	7	0	7	85	37
09:45	2	34	56	29	1	30	69	60	1	69	69	6	0	4	78	38
16:00	1	69	100	51	0	186	85	41	0	48	137	9	0	7	82	42
16:15	0	88	93	38	1	128	113	41	0	59	147	17	1	12	89	56
16:30	2	101	108	81	2	153	116	30	1	46	122	21	0	7	87	50
16:45	1	87	88	47	0	102	147	35	0	54	112	20	1	10	99	37
17:00	1	112	110	48	0	56	137	43	0	51	158	23	2	7	106	51
17:15	0	78	99	33	0	54	160	56	0	55	186	18	0	10	84	82
17:30	2	66	95	22	0	67	133	48	1	50	207	14	1	5	66	62
17:45	0	75	86	31	0	47	113	36	2	38	113	9	1	9	73	63
18:00	1	54	64	24	1	46	96	42	0	29	105	10	0	10	67	52
18:15	1	50	62	15	1	35	114	37	0	24	74	7	1	9	53	41
18:30	0	40	60	19	1	34	85	49	0	35	62	7	0	7	46	37
18:45	0	35	47	27	0	26	85	30	1	28	59	14	0	5	47	31

Start Time

Rolling Hour

Start Time	A to A	A to D	A to C	A to B	B to B	B to A	B to D	B to C	C to C	C to B	C to A	C to D	D to D	D to C	D to B	D to A
07:00	1	307	587	206	5	108	451	256	1	310	347	48	1	61	499	184
07:15	1	326	608	207	6	136	443	261	3	334	386	51	1	67	482	195
07:30	2	341	563	203	3	143	439	254	3	359	428	49	2	66	508	204
07:45	4	354	525	208	3	186	427	264	3	353	452	51	1	63	457	220
08:00	5	325	463	216	3	224	426	251	2	354	431	44	3	51	418	238
08:15	6	308	429	233	3	216	402	235	2	361	415	48	4	47	449	245
08:30	5	262	393	213	5	198	395	225	2	341	358	45	3	44	406	237
08:45	4	226	337	212	4	165	384	202	2	332	296	35	3	36	387	202
09:00	4	194	297	175	4	129	336	210	3	311	276	31	1	33	374	169
16:00	4	346	388	216	3	568	462	147	1	207	518	67	2	36	357	185
16:15	4	389	399	214	3	439	514	149	1	211	539	81	4	36	381	194
16:30	4	379	405	208	2	365	561	164	1	206	578	82	3	34	376	221
16:45	4	343	392	150	0	279	578	181	1	210	663	75	4	32	355	233
17:00	3	331	390	133	0	224	543	182	3	193	664	64	4	31	328	258
17:15	3	273	343	109	1	214	503	181	3	171	612	51	2	34	290	259
17:30	4	245	306	91	2	195	456	162	3	141	500	40	3	33	259	218
17:45	2	219	270	88	3	162	408	163	2	126	354	33	2	35	240	192
18:00	2	179	232	85	3	141	380	158	1	116	300	38	1	31	213	161

Intelligent Data Collection Limited



Client: PJA
 Project Number: ID06388
 Junction Number: Site 6

Date of Survey: 31.03.2022
 Junction Name: Gailey Island
 Junction Type: 4-arm Roundabout

Arm A: A449 Wolverhampton Road (N)
 Arm B: A5 (E)

Arm C: A449 Stafford Road (S)
 Arm D: A5 (W)

Count Method: Classes Included: *Select the count method and desired user classes from the drop-downs in cells D8 and G8*

Maximum 15-minute Junction Flow:	AM Peak	from:	07:45	until:	08:00	flow:	877
	PM Peak	from:	16:30	until:	16:45	flow:	880

Period Starting: *Select the time from the drop-down in cell D15 to show the 15-minute data for that period*

Movement Counts

		To				
		A	B	C	D	Total
From	A	0	45	101	59	205
	B	22	0	44	101	167
	C	65	58	0	4	127
	D	34	107	6	0	147
Total		121	210	151	164	646

HGV Proportions

		To				
		A	B	C	D	Total
From	A	0.0%	4.4%	4.0%	8.5%	5.4%
	B	18.2%	0.0%	31.8%	6.9%	15.0%
	C	3.1%	17.2%	0.0%	0.0%	9.4%
	D	5.9%	5.6%	0.0%	0.0%	5.4%
Total		6.6%	8.6%	11.9%	7.3%	8.7%

Maximum Hourly Junction Flow:	AM Peak	from:	07:30	until:	08:30	flow:	3323
	PM Peak	from:	16:30	until:	17:30	flow:	3385

Period Starting: *Select the time from the drop-down in cell D31 to show the hourly data for that period*

Movement Counts

		To				
		A	B	C	D	Total
From	A	1	196	564	299	1060
	B	95	4	193	402	694
	C	339	273	1	45	658
	D	171	467	61	1	700
Total		606	940	819	747	3112

HGV Proportions

		To				
		A	B	C	D	Total
From	A	0.0%	4.6%	3.7%	2.7%	3.6%
	B	15.8%	25.0%	31.1%	11.4%	17.6%
	C	2.9%	12.1%	0.0%	8.9%	7.1%
	D	7.6%	6.6%	0.0%	0.0%	6.3%
Total		6.3%	7.9%	9.9%	7.8%	8.1%

Bold entries in the above tables indicate the maximum movement, approach and exit flows for the selected time period, and similarly with the HGV proportions



Intelligent Data Collection Limited Penkridge

Client: PJA
Project Number: ID06388
Site Number: Site 5a
Date of Survey: 31.03.2022
Junction Name: M6 Junction 13
Survey Type: Queue Length Survey

Quality Assurance and Issue Record



Quality Assurance

Revision	Rev A			
Date	07.04.2022			
Prepared by	Richard Collins			
Signature				
Checked by	Luke Martin			
Signature				
Project Director	Paul O'Neill			
Signature				
Project Number	ID06388			
File Ref	ID06388 Penkridge - Queue Site 5a - 31.03.2022			

Issue Record

Issued to	Date			
	11.04.2022			
Beth Street	E-mail			

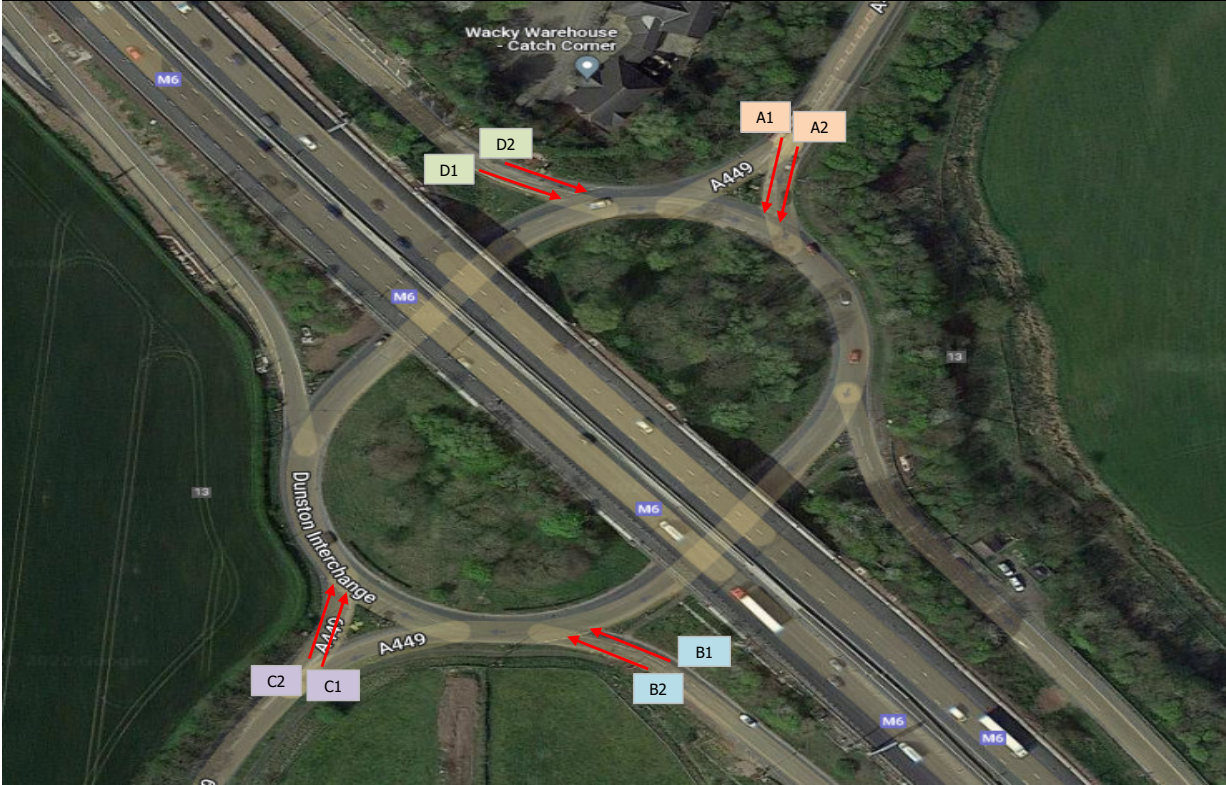
Intelligent Data Collection Limited



Client: PJA
Project Number: ID06388
Site Number: Site 5a
Date of Survey: 31.03.2022
Junction Name: M6 Junction 13
Survey Type: Queue Length Survey

X Coordinate	Y Coordinate	Google Maps Link
52.763749	-2.107943	Click Here
AM Peak Conditions	PM Peak Conditions	
Snow Showers	Showers	

Junction Layout



Queue Length Methodology

The snapshot queue length, in vehicles, is reported by lane for each five-minute period.

These are segregated into 'light' and 'heavy' vehicles, and are then presented as a snapshot queue length using the assumption that a light vehicle contributes 6m to a queue and a heavy vehicle 15m. These values can be updated by the user.

Vehicle Length Assumptions (metres)

Lights	Heavies
6	15

Additional Notes (Factors which may impact on survey results such as accidents, roadworks, special events)



Intelligent Data Collection Limited Penkridge

Client: PJA
Project Number: ID06388
Site Number: Site 6
Date of Survey: 31.03.2022
Junction Name: Gailey Island
Survey Type: Queue Length Survey

Quality Assurance and Issue Record



Quality Assurance

Revision	Rev A			
Date	07.04.2022			
Prepared by	Richard Collins			
Signature				
Checked by	Luke Martin			
Signature				
Project Director	Paul O'Neill			
Signature				
Project Number	ID06388			
File Ref	ID06388 Penkridge - Queue Site 6 - 31.03.2022			

Issue Record

Issued to	Date			
	11.04.2022			
Beth Street	E-mail			

Intelligent Data Collection Limited



Client: PJA
Project Number: ID06388
Site Number: Site 6
Date of Survey: 31.03.2022
Junction Name: Gailey Island
Survey Type: Queue Length Survey

X Coordinate	Y Coordinate	Google Maps Link
52.693134	-2.131486	Click Here
AM Peak Conditions	PM Peak Conditions	
Snow Showers	Showers	

Junction Layout



Queue Length Methodology

The snapshot queue length, in vehicles, is reported by lane for each five-minute period.

These are segregated into 'light' and 'heavy' vehicles, and are then presented as a snapshot queue length using the assumption that a light vehicle contributes 6m to a queue and a heavy vehicle 15m. These values can be updated by the user.

Vehicle Length Assumptions (metres)

Lights	Heavies
6	15

Additional Notes (Factors which may impact on survey results such as accidents, roadworks, special events)

Any shaded entries indicate where queues reach the extent of the camera view.

Appendix D Model Outputs

Junctions 10

ARCADY 10 - Roundabout Module

Version: 10.0.2.1574

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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: J10-A449_A5 Gailey - Flat- Base New AM PM Peak.j10

Path: C:\Users\Ryan Walters\Phil Jones Associates\SharedData - 06161 Penkrige - Combined Allocation\3. Technical\3.2 Modelling

Report generation date: 17/05/2022 13:20:12

- »2022 Base, AM
- »2022 Base, PM
- »2038 Base + Cmtd wM54LR, AM
- »2038 Base + Cmtd wM54LR, PM
- »2038 Base + Cmtd + Dev wM54LR, AM
- »2038 Base + Cmtd + Dev wM54LR, PM
- »2038 Base + Cmtd + Dev + Cumulative wM54LR, AM
- »2038 Base + Cmtd + Dev + Cumulative wM54LR, PM

Summary of junction performance

	AM				PM			
	Set ID	Queue (PCU)	Delay (s)	RFC	Set ID	Queue (PCU)	Delay (s)	RFC
2022 Base								
A - A5 East	D1	1.2	5.17	0.51	D2	1.9	6.27	0.63
B - A449 Stafford Road South		1.0	4.14	0.47		1.5	6.56	0.58
C - A5 West		2.9	13.58	0.73		2.3	13.46	0.68
D - A449 Stafford Road North		1.7	5.42	0.62		1.0	3.63	0.49
2038 Base + Cmtd wM54LR								
A - A5 East	D9	0.8	4.39	0.41	D10	2.3	7.12	0.67
B - A449 Stafford Road South		0.5	3.46	0.30		1.3	6.58	0.54
C - A5 West		1.5	7.42	0.58		2.2	13.08	0.67
D - A449 Stafford Road North		1.4	4.35	0.59		1.1	3.48	0.50
2038 Base + Cmtd + Dev wM54LR								
A - A5 East	D11	0.9	4.60	0.42	D12	2.4	7.43	0.68
B - A449 Stafford Road South		0.5	3.51	0.31		1.5	7.09	0.57
C - A5 West		1.5	7.63	0.59		2.4	14.63	0.69
D - A449 Stafford Road North		1.7	4.71	0.62		1.1	3.55	0.51
2038 Base + Cmtd + Dev + Cumulative wM54LR								
A - A5 East	D13	0.9	4.66	0.43	D14	2.6	7.76	0.69
B - A449 Stafford Road South		0.5	3.60	0.32		1.6	7.32	0.58
C - A5 West		1.6	7.91	0.60		2.5	15.24	0.70
D - A449 Stafford Road North		1.7	4.81	0.62		1.1	3.63	0.52

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.

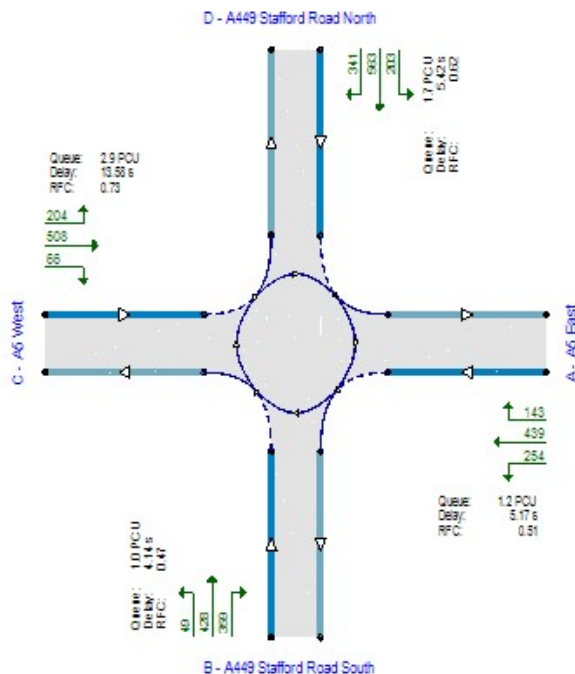
File summary

File Description

Title	T16045 Penkrige Junction 6
Location	A5 Gailey Roundabout
Site number	J6
Date	08/09/2017
Version	1
Status	(new file)
Identifier	TA
Client	Bloor Homes
Jobnumber	T16045
Enumerator	TBTP\william.harriman
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2022 Base	AM	FLAT	07:30	08:30	60	15	✓
D2	2022 Base	PM	FLAT	16:15	17:15	60	15	✓
D9	2038 Base + Cmttd wM54LR	AM	FLAT	07:30	08:30	60	15	✓
D10	2038 Base + Cmttd wM54LR	PM	FLAT	16:15	17:15	60	15	✓
D11	2038 Base + Cmttd + Dev wM54LR	AM	FLAT	07:30	08:30	60	15	✓
D12	2038 Base + Cmttd + Dev wM54LR	PM	FLAT	16:15	17:15	60	15	✓
D13	2038 Base + Cmttd + Dev + Cumulative wM54LR	AM	FLAT	07:30	08:30	60	15	✓
D14	2038 Base + Cmttd + Dev + Cumulative wM54LR	PM	FLAT	16:15	17:15	60	15	✓

Analysis Set Details

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

2022 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A5 East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J6	Gailey roundabout	Standard Roundabout		A, B, C, D	6.84	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.84	A

Arms

Arms

Arm	Name	Description	No give-way line
A	A5 East		
B	A449 Stafford Road South		
C	A5 West		
D	A449 Stafford Road North		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - A5 East	3.63	8.44	72.7	25.2	46.0	22.2		
B - A449 Stafford Road South	6.21	8.35	18.2	39.5	46.0	16.7		
C - A5 West	3.33	8.02	10.1	35.2	46.0	23.3		
D - A449 Stafford Road North	6.38	8.45	18.9	33.1	46.0	16.5		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A - A5 East	0.769	2388
B - A449 Stafford Road South	0.804	2518
C - A5 West	0.628	1651
D - A449 Stafford Road North	0.810	2556

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 period length (min)	Time segment length (min)	Run automatically
D1	2022 Base	AM	FLAT	07:30	08:30	60	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A5 East		FLAT	✓	839	100.000
B - A449 Stafford Road South		FLAT	✓	839	100.000
C - A5 West		FLAT	✓	780	100.000
D - A449 Stafford Road North		FLAT	✓	1109	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - A5 East	B - A449 Stafford Road South	C - A5 West	D - A449 Stafford Road North
From	A - A5 East	3	254	439	143
	B - A449 Stafford Road South	359	3	49	428
	C - A5 West	508	66	2	204
	D - A449 Stafford Road North	203	563	341	2

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - A5 East	B - A449 Stafford Road South	C - A5 West	D - A449 Stafford Road North
From	A - A5 East	0	24	10	14
	B - A449 Stafford Road South	11	50	6	4
	C - A5 West	8	2	0	5
	D - A449 Stafford Road North	7	3	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A5 East	0.51	5.17	1.2	A	839	839
B - A449 Stafford Road South	0.47	4.14	1.0	A	839	839
C - A5 West	0.73	13.58	2.9	B	780	780
D - A449 Stafford Road North	0.62	5.42	1.7	A	1109	1109

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A5 East	839	210	971	1642	0.511	834	1063	0.0	1.2	5.079	A
B - A449 Stafford Road South	839	210	925	1775	0.473	835	880	0.0	1.0	4.087	A
C - A5 West	780	195	934	1065	0.732	769	826	0.0	2.8	12.541	B
D - A449 Stafford Road North	1109	277	931	1802	0.615	1103	771	0.0	1.6	5.258	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A5 East	839	210	977	1637	0.513	839	1073	1.2	1.2	5.168	A
B - A449 Stafford Road South	839	210	930	1771	0.474	839	886	1.0	1.0	4.138	A
C - A5 West	780	195	938	1062	0.734	780	831	2.8	2.9	13.540	B
D - A449 Stafford Road North	1109	277	941	1794	0.618	1109	777	1.6	1.7	5.412	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
A - A5 East	839	210	977	1637	0.513	839	1073	1.2	1.2	5.168	A
B - A449 Stafford Road South	839	210	930	1771	0.474	839	886	1.0	1.0	4.139	A
C - A5 West	780	195	938	1062	0.734	780	831	2.9	2.9	13.573	B
D - A449 Stafford Road North	1109	277	941	1794	0.618	1109	777	1.7	1.7	5.416	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
A - A5 East	839	210	977	1637	0.513	839	1073	1.2	1.2	5.168	A
B - A449 Stafford Road South	839	210	930	1771	0.474	839	886	1.0	1.0	4.139	A

C - A5 West	780	195	938	1062	0.734	780	831	2.9	2.9	13.584	B
D - A449 Stafford Road North	1109	277	941	1794	0.618	1109	777	1.7	1.7	5.416	A

2022 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A5 East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J6	Gailey roundabout	Standard Roundabout		A, B, C, D	6.83	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.83	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2022 Base	PM	FLAT	16:15	17:15	60	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A5 East		FLAT	✓	1105	100.000
B - A449 Stafford Road South		FLAT	✓	832	100.000
C - A5 West		FLAT	✓	615	100.000
D - A449 Stafford Road North		FLAT	✓	1006	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - A5 East	B - A449 Stafford Road South	C - A5 West	D - A449 Stafford Road North
From	A - A5 East	3	149	514	439
	B - A449 Stafford Road South	211	1	81	539
	C - A5 West	381	36	4	194
	D - A449 Stafford Road North	214	399	389	4

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - A5 East	B - A449 Stafford Road South	C - A5 West	D - A449 Stafford Road North
From	A - A5 East	0	21	5	18
	B - A449 Stafford Road South	16	0	1	8
	C - A5 West	8	6	0	4
	D - A449 Stafford Road North	4	6	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)

A - A5 East	0.63	6.27	1.9	A	1105	1105
B - A449 Stafford Road South	0.58	6.56	1.5	A	832	832
C - A5 West	0.68	13.46	2.3	B	615	615
D - A449 Stafford Road North	0.49	3.63	1.0	A	1006	1006

Main Results for each time segment

16:15 - 16:30

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
A - A5 East	1105	276	829	1750	0.631	1097	801	0.0	1.9	6.100	A
B - A449 Stafford Road South	832	208	1345	1437	0.579	826	582	0.0	1.5	6.372	A
C - A5 West	615	154	1189	905	0.680	606	982	0.0	2.2	12.512	B
D - A449 Stafford Road North	1006	252	629	2047	0.491	1002	1166	0.0	1.0	3.582	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A5 East	1105	276	833	1748	0.632	1105	809	1.9	1.9	6.264	A
B - A449 Stafford Road South	832	208	1353	1431	0.582	832	585	1.5	1.5	6.561	A
C - A5 West	615	154	1197	900	0.684	615	988	2.2	2.2	13.423	B
D - A449 Stafford Road North	1006	252	636	2041	0.493	1006	1176	1.0	1.0	3.628	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A5 East	1105	276	833	1748	0.632	1105	809	1.9	1.9	6.267	A
B - A449 Stafford Road South	832	208	1353	1431	0.582	832	585	1.5	1.5	6.564	A
C - A5 West	615	154	1197	900	0.684	615	988	2.2	2.3	13.454	B
D - A449 Stafford Road North	1006	252	636	2041	0.493	1006	1176	1.0	1.0	3.629	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
A - A5 East	1105	276	833	1748	0.632	1105	809	1.9	1.9	6.267	A
B - A449 Stafford Road South	832	208	1353	1431	0.582	832	585	1.5	1.5	6.564	A
C - A5 West	615	154	1197	900	0.684	615	988	2.3	2.3	13.462	B
D - A449 Stafford Road North	1006	252	636	2041	0.493	1006	1176	1.0	1.0	3.629	A

2038 Base + Cmtd wM54LR, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A5 East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J6	Gailey roundabout	Standard Roundabout		A, B, C, D	4.94	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.94	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D9	2038 Base + Cmtd wM54LR	AM	FLAT	07:30	08:30	60	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A5 East		FLAT	✓	664	100.000
B - A449 Stafford Road South		FLAT	✓	497	100.000
C - A5 West		FLAT	✓	731	100.000
D - A449 Stafford Road North		FLAT	✓	1204	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - A5 East	B - A449 Stafford Road South	C - A5 West	D - A449 Stafford Road North
From	A - A5 East	3	59	415	187
	B - A449 Stafford Road South	136	3	60	298
	C - A5 West	375	96	2	258
	D - A449 Stafford Road North	313	461	428	2

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - A5 East	B - A449 Stafford Road South	C - A5 West	D - A449 Stafford Road North
From	A - A5 East	0	100	13	12
	B - A449 Stafford Road South	33	50	19	6
	C - A5 West	12	6	0	4
	D - A449 Stafford Road North	5	4	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)

A - A5 East	0.41	4.39	0.8	A	664	664
B - A449 Stafford Road South	0.30	3.46	0.5	A	497	497
C - A5 West	0.58	7.42	1.5	A	731	731
D - A449 Stafford Road North	0.59	4.35	1.4	A	1204	1204

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A5 East	664	166	987	1629	0.408	661	822	0.0	0.8	4.342	A
B - A449 Stafford Road South	497	124	1032	1689	0.294	495	616	0.0	0.5	3.433	A
C - A5 West	731	183	626	1258	0.581	725	901	0.0	1.5	7.237	A
D - A449 Stafford Road North	1204	301	611	2062	0.584	1198	741	0.0	1.4	4.274	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A5 East	664	166	992	1625	0.409	664	827	0.8	0.8	4.387	A
B - A449 Stafford Road South	497	124	1037	1685	0.295	497	619	0.5	0.5	3.455	A
C - A5 West	731	183	629	1256	0.582	731	905	1.5	1.5	7.412	A
D - A449 Stafford Road North	1204	301	615	2058	0.585	1204	745	1.4	1.4	4.347	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
A - A5 East	664	166	992	1625	0.409	664	827	0.8	0.8	4.387	A
B - A449 Stafford Road South	497	124	1037	1685	0.295	497	619	0.5	0.5	3.456	A
C - A5 West	731	183	629	1256	0.582	731	905	1.5	1.5	7.415	A
D - A449 Stafford Road North	1204	301	615	2058	0.585	1204	745	1.4	1.4	4.347	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
A - A5 East	664	166	992	1625	0.409	664	827	0.8	0.8	4.387	A
B - A449 Stafford Road South	497	124	1037	1685	0.295	497	619	0.5	0.5	3.456	A
C - A5 West	731	183	629	1256	0.582	731	905	1.5	1.5	7.415	A
D - A449 Stafford Road North	1204	301	615	2058	0.585	1204	745	1.4	1.4	4.347	A

2038 Base + Cmtd wM54LR, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A5 East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J6	Gailey roundabout	Standard Roundabout		A, B, C, D	6.92	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.92	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D10	2038 Base + Cmtd wM54LR	PM	FLAT	16:15	17:15	60	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A5 East		FLAT	✓	1177	100.000
B - A449 Stafford Road South		FLAT	✓	710	100.000
C - A5 West		FLAT	✓	609	100.000
D - A449 Stafford Road North		FLAT	✓	1090	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - A5 East	B - A449 Stafford Road South	C - A5 West	D - A449 Stafford Road North
From	A - A5 East	3	144	450	580
	B - A449 Stafford Road South	99	1	116	494
	C - A5 West	313	56	4	236
	D - A449 Stafford Road North	331	312	443	4

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - A5 East	B - A449 Stafford Road South	C - A5 West	D - A449 Stafford Road North
From	A - A5 East	0	37	9	15
	B - A449 Stafford Road South	47	0	6	9
	C - A5 West	12	20	0	4
	D - A449 Stafford Road North	3	8	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)

A - A5 East	0.67	7.12	2.3	A	1177	1177
B - A449 Stafford Road South	0.54	6.58	1.3	A	710	710
C - A5 West	0.67	13.08	2.2	B	609	609
D - A449 Stafford Road North	0.50	3.48	1.1	A	1090	1090

Main Results for each time segment

16:15 - 16:30

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
A - A5 East	1177	294	816	1760	0.669	1168	740	0.0	2.3	6.875	A
B - A449 Stafford Road South	710	178	1474	1333	0.533	705	510	0.0	1.3	6.399	A
C - A5 West	609	152	1172	915	0.666	601	1007	0.0	2.1	12.216	B
D - A449 Stafford Road North	1090	273	470	2175	0.501	1086	1303	0.0	1.0	3.436	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A5 East	1177	294	820	1758	0.670	1177	746	2.3	2.3	7.111	A
B - A449 Stafford Road South	710	178	1484	1325	0.536	710	513	1.3	1.3	6.579	A
C - A5 West	609	152	1181	910	0.669	609	1013	2.1	2.2	13.048	B
D - A449 Stafford Road North	1090	273	476	2171	0.502	1090	1314	1.0	1.0	3.475	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A5 East	1177	294	820	1758	0.670	1177	746	2.3	2.3	7.115	A
B - A449 Stafford Road South	710	178	1484	1325	0.536	710	513	1.3	1.3	6.583	A
C - A5 West	609	152	1181	910	0.669	609	1013	2.2	2.2	13.074	B
D - A449 Stafford Road North	1090	273	476	2171	0.502	1090	1314	1.0	1.0	3.475	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
A - A5 East	1177	294	820	1758	0.670	1177	746	2.3	2.3	7.117	A
B - A449 Stafford Road South	710	178	1484	1325	0.536	710	513	1.3	1.3	6.583	A
C - A5 West	609	152	1181	910	0.670	609	1013	2.2	2.2	13.080	B
D - A449 Stafford Road North	1090	273	476	2171	0.502	1090	1314	1.0	1.1	3.475	A

2038 Base + Cmtd + Dev wM54LR, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A5 East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J6	Gailey roundabout	Standard Roundabout		A, B, C, D	5.16	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.16	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D11	2038 Base + Cmtd + Dev wM54LR	AM	FLAT	07:30	08:30	60	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A5 East		FLAT	✓	669	100.000
B - A449 Stafford Road South		FLAT	✓	515	100.000
C - A5 West		FLAT	✓	731	100.000
D - A449 Stafford Road North		FLAT	✓	1270	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - A5 East	B - A449 Stafford Road South	C - A5 West	D - A449 Stafford Road North
From	A - A5 East	3	59	415	192
	B - A449 Stafford Road South	136	3	60	316
	C - A5 West	375	96	2	258
	D - A449 Stafford Road North	327	513	428	2

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - A5 East	B - A449 Stafford Road South	C - A5 West	D - A449 Stafford Road North
From	A - A5 East	0	100	13	12
	B - A449 Stafford Road South	33	50	19	6
	C - A5 West	12	6	0	4
	D - A449 Stafford Road North	5	4	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)

A - A5 East	0.42	4.60	0.9	A	669	669
B - A449 Stafford Road South	0.31	3.51	0.5	A	515	515
C - A5 West	0.59	7.63	1.5	A	731	731
D - A449 Stafford Road North	0.62	4.71	1.7	A	1270	1270

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A5 East	669	167	1038	1590	0.421	666	836	0.0	0.8	4.547	A
B - A449 Stafford Road South	515	129	1037	1685	0.306	513	667	0.0	0.5	3.488	A
C - A5 West	731	183	649	1244	0.588	725	900	0.0	1.5	7.430	A
D - A449 Stafford Road North	1270	318	611	2062	0.616	1263	764	0.0	1.6	4.617	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A5 East	669	167	1044	1585	0.422	669	841	0.8	0.9	4.601	A
B - A449 Stafford Road South	515	129	1042	1681	0.306	515	671	0.5	0.5	3.511	A
C - A5 West	731	183	652	1242	0.589	731	905	1.5	1.5	7.622	A
D - A449 Stafford Road North	1270	318	615	2058	0.617	1270	768	1.6	1.7	4.714	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
A - A5 East	669	167	1044	1585	0.422	669	841	0.9	0.9	4.601	A
B - A449 Stafford Road South	515	129	1042	1681	0.306	515	671	0.5	0.5	3.511	A
C - A5 West	731	183	652	1242	0.589	731	905	1.5	1.5	7.625	A
D - A449 Stafford Road North	1270	318	615	2058	0.617	1270	768	1.7	1.7	4.714	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
A - A5 East	669	167	1044	1585	0.422	669	841	0.9	0.9	4.601	A
B - A449 Stafford Road South	515	129	1042	1681	0.306	515	671	0.5	0.5	3.512	A
C - A5 West	731	183	652	1242	0.589	731	905	1.5	1.5	7.625	A
D - A449 Stafford Road North	1270	318	615	2058	0.617	1270	768	1.7	1.7	4.714	A

2038 Base + Cmtd + Dev wM54LR, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A5 East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J6	Gailey roundabout	Standard Roundabout		A, B, C, D	7.38	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.38	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D12	2038 Base + Cmtd + Dev wM54LR	PM	FLAT	16:15	17:15	60	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A5 East		FLAT	✓	1186	100.000
B - A449 Stafford Road South		FLAT	✓	752	100.000
C - A5 West		FLAT	✓	609	100.000
D - A449 Stafford Road North		FLAT	✓	1114	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - A5 East	B - A449 Stafford Road South	C - A5 West	D - A449 Stafford Road North
From	A - A5 East	3	144	450	589
	B - A449 Stafford Road South	99	1	116	536
	C - A5 West	313	56	4	236
	D - A449 Stafford Road North	335	332	443	4

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - A5 East	B - A449 Stafford Road South	C - A5 West	D - A449 Stafford Road North
From	A - A5 East	0	37	9	15
	B - A449 Stafford Road South	47	0	6	8
	C - A5 West	12	20	0	4
	D - A449 Stafford Road North	3	7	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)

A - A5 East	0.68	7.43	2.4	A	1186	1186
B - A449 Stafford Road South	0.57	7.09	1.5	A	752	752
C - A5 West	0.69	14.63	2.4	B	609	609
D - A449 Stafford Road North	0.51	3.55	1.1	A	1114	1114

Main Results for each time segment

16:15 - 16:30

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
A - A5 East	1186	297	836	1745	0.680	1177	743	0.0	2.4	7.153	A
B - A449 Stafford Road South	752	188	1483	1326	0.567	746	530	0.0	1.4	6.860	A
C - A5 West	609	152	1222	884	0.689	600	1007	0.0	2.3	13.465	B
D - A449 Stafford Road North	1114	279	470	2176	0.512	1110	1353	0.0	1.1	3.502	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A5 East	1186	297	840	1742	0.681	1186	750	2.4	2.4	7.423	A
B - A449 Stafford Road South	752	188	1493	1318	0.571	752	533	1.4	1.5	7.090	A
C - A5 West	609	152	1232	878	0.694	609	1013	2.3	2.4	14.580	B
D - A449 Stafford Road North	1114	279	476	2171	0.513	1114	1365	1.1	1.1	3.546	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A5 East	1186	297	840	1742	0.681	1186	750	2.4	2.4	7.427	A
B - A449 Stafford Road South	752	188	1493	1318	0.571	752	533	1.5	1.5	7.094	A
C - A5 West	609	152	1232	878	0.694	609	1013	2.4	2.4	14.622	B
D - A449 Stafford Road North	1114	279	476	2171	0.513	1114	1365	1.1	1.1	3.547	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
A - A5 East	1186	297	840	1742	0.681	1186	750	2.4	2.4	7.430	A
B - A449 Stafford Road South	752	188	1493	1318	0.571	752	533	1.5	1.5	7.094	A
C - A5 West	609	152	1232	878	0.694	609	1013	2.4	2.4	14.634	B
D - A449 Stafford Road North	1114	279	476	2171	0.513	1114	1365	1.1	1.1	3.547	A

2038 Base + Cmtd + Dev + Cumulative wM54LR , AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A5 East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J6	Gailey roundabout	Standard Roundabout		A, B, C, D	5.28	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.28	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D13	2038 Base + Cmtd + Dev + Cumulative wM54LR	AM	FLAT	07:30	08:30	60	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A5 East		FLAT	✓	672	100.000
B - A449 Stafford Road South		FLAT	✓	544	100.000
C - A5 West		FLAT	✓	731	100.000
D - A449 Stafford Road North		FLAT	✓	1280	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - A5 East	B - A449 Stafford Road South	C - A5 West	D - A449 Stafford Road North
From	A - A5 East	3	62	415	192
	B - A449 Stafford Road South	144	3	60	337
	C - A5 West	375	96	2	258
	D - A449 Stafford Road North	327	523	428	2

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - A5 East	B - A449 Stafford Road South	C - A5 West	D - A449 Stafford Road North
From	A - A5 East	0	100	13	12
	B - A449 Stafford Road South	33	50	19	6
	C - A5 West	12	6	0	4
	D - A449 Stafford Road North	5	4	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A5 East	0.43	4.66	0.9	A	672	672
B - A449 Stafford Road South	0.32	3.60	0.5	A	544	544
C - A5 West	0.60	7.91	1.6	A	731	731
D - A449 Stafford Road North	0.62	4.81	1.7	A	1280	1280

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A5 East	672	168	1048	1582	0.425	669	843	0.0	0.9	4.606	A
B - A449 Stafford Road South	544	136	1037	1685	0.323	542	680	0.0	0.5	3.574	A
C - A5 West	731	183	678	1225	0.597	725	900	0.0	1.6	7.688	A
D - A449 Stafford Road North	1280	320	618	2055	0.623	1273	784	0.0	1.7	4.711	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A5 East	672	168	1054	1578	0.426	672	849	0.9	0.9	4.664	A
B - A449 Stafford Road South	544	136	1042	1681	0.324	544	684	0.5	0.5	3.599	A
C - A5 West	731	183	681	1224	0.597	731	905	1.6	1.6	7.903	A
D - A449 Stafford Road North	1280	320	623	2052	0.624	1280	789	1.7	1.7	4.815	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
A - A5 East	672	168	1054	1578	0.426	672	849	0.9	0.9	4.664	A
B - A449 Stafford Road South	544	136	1042	1681	0.324	544	684	0.5	0.5	3.599	A
C - A5 West	731	183	681	1224	0.597	731	905	1.6	1.6	7.906	A
D - A449 Stafford Road North	1280	320	623	2052	0.624	1280	789	1.7	1.7	4.815	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
A - A5 East	672	168	1054	1578	0.426	672	849	0.9	0.9	4.664	A
B - A449 Stafford Road South	544	136	1042	1681	0.324	544	684	0.5	0.5	3.599	A
C - A5 West	731	183	681	1224	0.597	731	905	1.6	1.6	7.908	A
D - A449 Stafford Road North	1280	320	623	2052	0.624	1280	789	1.7	1.7	4.815	A

2038 Base + Cmtd + Dev + Cumulative wM54LR, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	A - A5 East - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
J6	Gailey roundabout	Standard Roundabout		A, B, C, D	7.63	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.63	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D14	2038 Base + Cmtd + Dev + Cumulative wM54LR	PM	FLAT	16:15	17:15	60	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A5 East		FLAT	✓	1194	100.000
B - A449 Stafford Road South		FLAT	✓	769	100.000
C - A5 West		FLAT	✓	609	100.000
D - A449 Stafford Road North		FLAT	✓	1134	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - A5 East	B - A449 Stafford Road South	C - A5 West	D - A449 Stafford Road North
From	A - A5 East	3	152	450	589
	B - A449 Stafford Road South	103	1	116	549
	C - A5 West	313	56	4	236
	D - A449 Stafford Road North	335	352	443	4

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - A5 East	B - A449 Stafford Road South	C - A5 West	D - A449 Stafford Road North
From	A - A5 East	0	37	9	15
	B - A449 Stafford Road South	47	0	6	8
	C - A5 West	12	20	0	4
	D - A449 Stafford Road North	3	7	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A5 East	0.69	7.76	2.6	A	1194	1194
B - A449 Stafford Road South	0.58	7.32	1.6	A	769	769
C - A5 West	0.70	15.24	2.5	C	609	609
D - A449 Stafford Road North	0.52	3.63	1.1	A	1134	1134

Main Results for each time segment

16:15 - 16:30

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
A - A5 East	1194	299	856	1730	0.690	1184	747	0.0	2.5	7.449	A
B - A449 Stafford Road South	769	192	1482	1326	0.580	763	557	0.0	1.5	7.059	A
C - A5 West	609	152	1239	873	0.697	599	1007	0.0	2.4	13.929	B
D - A449 Stafford Road North	1134	284	473	2173	0.522	1129	1365	0.0	1.1	3.581	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A5 East	1194	299	860	1727	0.691	1194	754	2.5	2.5	7.754	A
B - A449 Stafford Road South	769	192	1493	1318	0.583	769	561	1.5	1.5	7.315	A
C - A5 West	609	152	1249	867	0.702	609	1013	2.4	2.5	15.173	C
D - A449 Stafford Road North	1134	284	480	2168	0.523	1134	1378	1.1	1.1	3.628	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
A - A5 East	1194	299	860	1727	0.691	1194	754	2.5	2.6	7.762	A
B - A449 Stafford Road South	769	192	1493	1318	0.583	769	561	1.5	1.6	7.319	A
C - A5 West	609	152	1249	867	0.702	609	1013	2.5	2.5	15.224	C
D - A449 Stafford Road North	1134	284	480	2168	0.523	1134	1378	1.1	1.1	3.628	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
A - A5 East	1194	299	860	1727	0.691	1194	754	2.6	2.6	7.763	A
B - A449 Stafford Road South	769	192	1493	1318	0.583	769	561	1.6	1.6	7.319	A
C - A5 West	609	152	1249	867	0.702	609	1013	2.5	2.5	15.237	C
D - A449 Stafford Road North	1134	284	480	2167	0.523	1134	1378	1.1	1.1	3.628	A

<h1>Junctions 10</h1>
<h2>ARCADY 10 - Roundabout Module</h2>
Version: 10.0.2.1574 © Copyright TRL Software Limited, 2021
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Filename: J11-M6 J13 - Flat - Base - New AM PM Peak.j10
Path: C:\Users\Ryan Walters\Phil Jones Associates\SharedData - 06161 Penkridge - Combined Allocation\3. Technical\3.2 Modelling
Report generation date: 17/05/2022 13:15:51

- »2022 Base, AM
- »2022 Base, PM
- »2038 Base + Cmtd wM54LR, AM
- »2038 Base + Cmtd wM54LR, PM
- »2038 Base + Cmtd + Dev wM54LR, AM
- »2038 Base + Cmtd + Dev wM54LR, PM
- »2038 Base + Cmtd + Dev + Cumulative wM54LR, AM
- »2038 Base + Cmtd + Dev + Cumulative wM54LR, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
2022 Base										
1 - A449 North	D1	0.5	2.11	0.34	A	D2	0.4	1.99	0.28	A
2 - M6 South		0.2	2.28	0.19	A		0.2	2.24	0.18	A
3 - A449 South		0.3	1.97	0.21	A		0.9	2.76	0.45	A
4 - M6 North		0.1	2.05	0.12	A		0.2	2.24	0.16	A
2038 Base + Cmtd wM54LR										
1 - A449 North	D9	0.7	2.39	0.39	A	D10	0.5	2.19	0.33	A
2 - M6 South		0.3	2.59	0.23	A		0.3	2.61	0.24	A
3 - A449 South		0.4	2.20	0.26	A		1.2	3.38	0.53	A
4 - M6 North		0.2	2.43	0.17	A		0.3	2.57	0.21	A
2038 Base + Cmtd + Dev wM54LR										
1 - A449 North	D11	0.7	2.53	0.41	A	D12	0.6	2.35	0.36	A
2 - M6 South		0.3	2.78	0.25	A		0.4	2.92	0.26	A
3 - A449 South		0.5	2.31	0.32	A		1.6	4.47	0.55	A
4 - M6 North		0.2	2.49	0.19	A		0.4	3.58	0.23	A
2038 Base + Cmtd + Dev + Cumulative wM54LR										
1 - A449 North	D13	0.7	2.54	0.41	A	D14	0.6	2.36	0.36	A
2 - M6 South		0.4	2.79	0.25	A		0.4	2.93	0.27	A
3 - A449 South		0.5	2.31	0.32	A		1.6	4.48	0.55	A
4 - M6 North		0.2	2.50	0.19	A		0.4	3.59	0.23	A

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

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

File summary

File Description

Title	
Location	

Site number	
Date	27/04/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	PJA\Matthew Wykes
Description	

Units

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

Analysis Options

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 period length (min)	Time segment length (min)
D1	2022 Base	AM	FLAT	07:30	09:00	90	15
D2	2022 Base	PM	FLAT	16:15	17:15	60	15
D9	2038 Base + Cmtd wM54LR	AM	FLAT	07:30	08:30	60	15
D10	2038 Base + Cmtd wM54LR	PM	FLAT	16:15	17:15	60	15
D11	2038 Base + Cmtd + Dev wM54LR	AM	FLAT	07:30	08:30	60	15
D12	2038 Base + Cmtd + Dev wM54LR	PM	FLAT	16:15	17:15	60	15
D13	2038 Base + Cmtd + Dev + Cumulative wM54LR	AM	FLAT	07:30	08:30	60	15
D14	2038 Base + Cmtd + Dev + Cumulative wM54LR	PM	FLAT	16:15	17:15	60	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2022 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - A449 North - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	M6 J13	Large Roundabout		1, 2, 3, 4	2.10	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.10	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A449 North		
2	M6 South		
3	A449 South		
4	M6 North		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1 - A449 North	4.26	7.20	14.5	20.0	110.0	12.0		
2 - M6 South	6.00	6.00	0.0	27.0	110.0	8.0		
3 - A449 South	4.94	7.65	12.8	30.0	110.0	20.0		
4 - M6 North	5.47	6.70	26.3	45.0	110.0	14.0		

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - A449 North	0		0.00
2 - M6 South	0	✓	102.60
3 - A449 South	0		0.00
4 - M6 North	0	✓	101.50

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A449 North	1.058	2814
2 - M6 South	1.080	2627
3 - A449 South	1.095	2957
4 - M6 North	1.127	2796

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 period length (min)	Time segment length (min)
D1	2022 Base	AM	FLAT	07:30	09:00	90	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 - A449 North		✓	893	100.000
2 - M6 South		✓	368	100.000
3 - A449 South		✓	513	100.000
4 - M6 North		✓	241	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A449 North	2 - M6 South	3 - A449 South	4 - M6 North
From	1 - A449 North	2	420	330	141
	2 - M6 South	331	2	30	5
	3 - A449 South	281	22	0	210
	4 - M6 North	101	0	135	5

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A449 North	2 - M6 South	3 - A449 South	4 - M6 North
From	1 - A449 North	0	3	3	1
	2 - M6 South	0	0	7	67
	3 - A449 South	3	50	0	4
	4 - M6 North	3	0	5	25

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A449 North	0.34	2.11	0.5	A
2 - M6 South	0.19	2.28	0.2	A
3 - A449 South	0.21	1.97	0.3	A
4 - M6 North	0.12	2.05	0.1	A

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
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	(PCU/hr)							
1 - A449 North	893	164	2641	0.338	891	0.5	2.109	A
2 - M6 South	368	612	1966	0.187	367	0.2	2.274	A
3 - A449 South	513	485	2426	0.211	512	0.3	1.970	A
4 - M6 North	241	636	2079	0.116	240	0.1	2.046	A

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 - A449 North	893	164	2641	0.338	893	0.5	2.114	A
2 - M6 South	368	613	1965	0.187	368	0.2	2.278	A
3 - A449 South	513	486	2425	0.212	513	0.3	1.973	A
4 - M6 North	241	638	2077	0.116	241	0.1	2.048	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 - A449 North	893	164	2641	0.338	893	0.5	2.114	A
2 - M6 South	368	613	1965	0.187	368	0.2	2.278	A
3 - A449 South	513	486	2425	0.212	513	0.3	1.973	A
4 - M6 North	241	638	2077	0.116	241	0.1	2.048	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 - A449 North	893	164	2641	0.338	893	0.5	2.114	A
2 - M6 South	368	613	1965	0.187	368	0.2	2.278	A
3 - A449 South	513	486	2425	0.212	513	0.3	1.973	A
4 - M6 North	241	638	2077	0.116	241	0.1	2.048	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 - A449 North	893	164	2641	0.338	893	0.5	2.114	A
2 - M6 South	368	613	1965	0.187	368	0.2	2.278	A
3 - A449 South	513	486	2425	0.212	513	0.3	1.973	A
4 - M6 North	241	638	2077	0.116	241	0.1	2.048	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 - A449 North	893	164	2641	0.338	893	0.5	2.114	A
2 - M6 South	368	613	1965	0.187	368	0.2	2.278	A
3 - A449 South	513	486	2425	0.212	513	0.3	1.973	A
4 - M6 North	241	638	2077	0.116	241	0.1	2.048	A

2022 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - A449 North - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	M6 J13	Large Roundabout		1, 2, 3, 4	2.40	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.40	A

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - A449 North	0		0.00
2 - M6 South	0	✓	102.60
3 - A449 South	0		0.00
4 - M6 North	0	✓	101.50

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D2	2022 Base	PM	FLAT	16:15	17:15	60	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 - A449 North		✓	714	100.000
2 - M6 South		✓	353	100.000
3 - A449 South		✓	1119	100.000

4 - M6 North		✓	327	100.000
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Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A449 North	2 - M6 South	3 - A449 South	4 - M6 North
From	1 - A449 North	4	327	308	75
	2 - M6 South	322	2	18	11
	3 - A449 South	295	30	3	791
	4 - M6 North	114	0	212	1

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A449 North	2 - M6 South	3 - A449 South	4 - M6 North
From	1 - A449 North	0	3	0	1
	2 - M6 South	0	0	13	10
	3 - A449 South	3	12	0	7
	4 - M6 North	4	0	10	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A449 North	0.28	1.99	0.4	A
2 - M6 South	0.18	2.24	0.2	A
3 - A449 South	0.45	2.76	0.9	A
4 - M6 North	0.16	2.24	0.2	A

Main Results for each time segment

16:15 - 16:30

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 - A449 North	714	247	2552	0.280	712	0.4	1.983	A
2 - M6 South	353	602	1977	0.179	352	0.2	2.233	A
3 - A449 South	1119	414	2504	0.447	1116	0.9	2.743	A
4 - M6 North	327	654	2059	0.159	326	0.2	2.238	A

16:30 - 16:45

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 - A449 North	714	248	2552	0.280	714	0.4	1.987	A
2 - M6 South	353	603	1976	0.179	353	0.2	2.237	A
3 - A449 South	1119	415	2502	0.447	1119	0.9	2.758	A
4 - M6 North	327	656	2057	0.159	327	0.2	2.243	A

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 - A449 North	714	248	2552	0.280	714	0.4	1.987	A
2 - M6 South	353	603	1976	0.179	353	0.2	2.237	A
3 - A449 South	1119	415	2502	0.447	1119	0.9	2.758	A
4 - M6 North	327	656	2057	0.159	327	0.2	2.243	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 - A449 North	714	248	2552	0.280	714	0.4	1.987	A
2 - M6 South	353	603	1976	0.179	353	0.2	2.237	A
3 - A449 South	1119	415	2502	0.447	1119	0.9	2.758	A
4 - M6 North	327	656	2057	0.159	327	0.2	2.243	A

2038 Base + Cmtd wM54LR, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - A449 North - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	M6 J13	Large Roundabout		1, 2, 3, 4	2.38	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.38	A

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - A449 North	0		0.00
2 - M6 South	0	✓	102.60
3 - A449 South	0		0.00
4 - M6 North	0	✓	101.50

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D9	2038 Base + Cmtd wM54LR	AM	FLAT	07:30	08:30	60	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 - A449 North		✓	1000	100.000
2 - M6 South		✓	437	100.000
3 - A449 South		✓	612	100.000

4 - M6 North		✓	338	100.000
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Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A449 North	2 - M6 South	3 - A449 South	4 - M6 North
From	1 - A449 North	2	467	375	156
	2 - M6 South	368	2	33	34
	3 - A449 South	338	24	0	250
	4 - M6 North	112	53	168	5

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A449 North	2 - M6 South	3 - A449 South	4 - M6 North
From	1 - A449 North	0	3	3	1
	2 - M6 South	0	0	7	42
	3 - A449 South	2	50	0	7
	4 - M6 North	3	26	10	25

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A449 North	0.39	2.39	0.7	A
2 - M6 South	0.23	2.59	0.3	A
3 - A449 South	0.26	2.20	0.4	A
4 - M6 North	0.17	2.43	0.2	A

Main Results for each time segment

07:30 - 07:45

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 - A449 North	1000	251	2548	0.392	997	0.7	2.379	A
2 - M6 South	437	704	1866	0.234	436	0.3	2.586	A
3 - A449 South	612	565	2338	0.262	611	0.4	2.193	A
4 - M6 North	338	732	1971	0.171	337	0.2	2.420	A

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 - A449 North	1000	252	2548	0.393	1000	0.7	2.388	A
2 - M6 South	437	706	1864	0.234	437	0.3	2.593	A
3 - A449 South	612	567	2336	0.262	612	0.4	2.199	A
4 - M6 North	338	734	1969	0.172	338	0.2	2.425	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 - A449 North	1000	252	2548	0.393	1000	0.7	2.388	A
2 - M6 South	437	706	1864	0.234	437	0.3	2.593	A
3 - A449 South	612	567	2336	0.262	612	0.4	2.199	A
4 - M6 North	338	734	1969	0.172	338	0.2	2.425	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 - A449 North	1000	252	2548	0.393	1000	0.7	2.388	A
2 - M6 South	437	706	1864	0.234	437	0.3	2.593	A
3 - A449 South	612	567	2336	0.262	612	0.4	2.199	A
4 - M6 North	338	734	1969	0.172	338	0.2	2.425	A

2038 Base + Cmtd wM54LR, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - A449 North - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	M6 J13	Large Roundabout		1, 2, 3, 4	2.82	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.82	A

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - A449 North	0		0.00
2 - M6 South	0	✓	102.60
3 - A449 South	0		0.00
4 - M6 North	0	✓	101.50

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D10	2038 Base + Cmtd wM54LR	PM	FLAT	16:15	17:15	60	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 - A449 North		✓	811	100.000
2 - M6 South		✓	442	100.000
3 - A449 South		✓	1263	100.000

4 - M6 North		✓	409	100.000
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Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A449 North	2 - M6 South	3 - A449 South	4 - M6 North
From	1 - A449 North	4	362	362	83
	2 - M6 South	356	2	20	64
	3 - A449 South	337	33	3	890
	4 - M6 North	126	28	254	1

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A449 North	2 - M6 South	3 - A449 South	4 - M6 North
From	1 - A449 North	0	3	0	1
	2 - M6 South	0	0	13	21
	3 - A449 South	3	12	0	8
	4 - M6 North	4	46	12	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A449 North	0.33	2.19	0.5	A
2 - M6 South	0.24	2.61	0.3	A
3 - A449 South	0.53	3.38	1.2	A
4 - M6 North	0.21	2.57	0.3	A

Main Results for each time segment

16:15 - 16:30

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 - A449 North	811	320	2476	0.328	809	0.5	2.187	A
2 - M6 South	442	705	1865	0.237	441	0.3	2.603	A
3 - A449 South	1263	509	2400	0.526	1258	1.2	3.351	A
4 - M6 North	409	733	1970	0.208	408	0.3	2.559	A

16:30 - 16:45

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 - A449 North	811	321	2475	0.328	811	0.5	2.194	A
2 - M6 South	442	707	1863	0.237	442	0.3	2.611	A
3 - A449 South	1263	510	2398	0.527	1263	1.2	3.382	A
4 - M6 North	409	735	1968	0.208	409	0.3	2.565	A

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 - A449 North	811	321	2475	0.328	811	0.5	2.194	A
2 - M6 South	442	707	1863	0.237	442	0.3	2.611	A
3 - A449 South	1263	510	2398	0.527	1263	1.2	3.382	A
4 - M6 North	409	735	1968	0.208	409	0.3	2.565	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 - A449 North	811	321	2475	0.328	811	0.5	2.194	A
2 - M6 South	442	707	1863	0.237	442	0.3	2.611	A
3 - A449 South	1263	510	2398	0.527	1263	1.2	3.382	A
4 - M6 North	409	735	1968	0.208	409	0.3	2.565	A

2038 Base + Cmtd + Dev wM54LR, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - A449 North - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	M6 J13	Large Roundabout		1, 2, 3, 4	2.50	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.50	A

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - A449 North	0		0.00
2 - M6 South	0	✓	102.60
3 - A449 South	0		0.00
4 - M6 North	0	✓	101.50

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D11	2038 Base + Cmtd + Dev wM54LR	AM	FLAT	07:30	08:30	60	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 - A449 North		✓	1020	100.000
2 - M6 South		✓	451	100.000
3 - A449 South		✓	744	100.000

4 - M6 North		✓	352	100.000
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Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A449 North	2 - M6 South	3 - A449 South	4 - M6 North
From	1 - A449 North	2	467	395	156
	2 - M6 South	368	2	47	34
	3 - A449 South	394	62	0	288
	4 - M6 North	112	53	182	5

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A449 North	2 - M6 South	3 - A449 South	4 - M6 North
From	1 - A449 North	0	4	4	1
	2 - M6 South	5	0	0	37
	3 - A449 South	2	14	0	0
	4 - M6 North	3	26	0	33

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A449 North	0.41	2.53	0.7	A
2 - M6 South	0.25	2.78	0.3	A
3 - A449 South	0.32	2.31	0.5	A
4 - M6 North	0.19	2.49	0.2	A

Main Results for each time segment

07:30 - 07:45

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 - A449 North	1020	303	2493	0.409	1017	0.7	2.520	A
2 - M6 South	451	738	1830	0.246	450	0.3	2.770	A
3 - A449 South	744	565	2338	0.318	742	0.5	2.300	A
4 - M6 North	352	826	1865	0.189	351	0.2	2.485	A

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 - A449 North	1020	304	2493	0.409	1020	0.7	2.530	A
2 - M6 South	451	740	1828	0.247	451	0.3	2.778	A
3 - A449 South	744	567	2336	0.319	744	0.5	2.308	A
4 - M6 North	352	828	1863	0.189	352	0.2	2.491	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 - A449 North	1020	304	2493	0.409	1020	0.7	2.530	A
2 - M6 South	451	740	1828	0.247	451	0.3	2.778	A
3 - A449 South	744	567	2336	0.319	744	0.5	2.308	A
4 - M6 North	352	828	1863	0.189	352	0.2	2.491	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 - A449 North	1020	304	2493	0.409	1020	0.7	2.530	A
2 - M6 South	451	740	1828	0.247	451	0.3	2.778	A
3 - A449 South	744	567	2336	0.319	744	0.5	2.308	A
4 - M6 North	352	828	1863	0.189	352	0.2	2.491	A

2038 Base + Cmtd + Dev wM54LR, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - A449 North - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	M6 J13	Large Roundabout		1, 2, 3, 4	3.51	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.51	A

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - A449 North	0		0.00
2 - M6 South	0	✓	102.60
3 - A449 South	0		0.00
4 - M6 North	0	✓	101.50

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D12	2038 Base + Cmtd + Dev wM54LR	PM	FLAT	16:15	17:15	60	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 - A449 North		✓	873	100.000
2 - M6 South		✓	467	100.000
3 - A449 South		✓	1318	100.000

4 - M6 North		✓	435	100.000
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Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A449 North	2 - M6 South	3 - A449 South	4 - M6 North
From	1 - A449 North	4	362	424	83
	2 - M6 South	356	2	45	64
	3 - A449 South	367	45	3	903
	4 - M6 North	126	28	280	1

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A449 North	2 - M6 South	3 - A449 South	4 - M6 North
From	1 - A449 North	0	3	1	3
	2 - M6 South	2	33	11	24
	3 - A449 South	3	0	0	56
	4 - M6 North	2	45	86	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A449 North	0.36	2.35	0.6	A
2 - M6 South	0.26	2.92	0.4	A
3 - A449 South	0.55	4.47	1.6	A
4 - M6 North	0.23	3.58	0.4	A

Main Results for each time segment

16:15 - 16:30

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 - A449 North	873	358	2436	0.358	871	0.6	2.343	A
2 - M6 South	467	793	1771	0.264	465	0.4	2.907	A
3 - A449 South	1318	508	2400	0.549	1312	1.6	4.408	A
4 - M6 North	435	774	1924	0.226	433	0.4	3.566	A

16:30 - 16:45

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 - A449 North	873	359	2434	0.359	873	0.6	2.351	A
2 - M6 South	467	795	1768	0.264	467	0.4	2.917	A
3 - A449 South	1318	510	2398	0.550	1318	1.6	4.466	A
4 - M6 North	435	777	1920	0.227	435	0.4	3.580	A

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 - A449 North	873	359	2434	0.359	873	0.6	2.351	A
2 - M6 South	467	795	1768	0.264	467	0.4	2.917	A
3 - A449 South	1318	510	2398	0.550	1318	1.6	4.466	A
4 - M6 North	435	777	1920	0.227	435	0.4	3.580	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 - A449 North	873	359	2434	0.359	873	0.6	2.351	A
2 - M6 South	467	795	1768	0.264	467	0.4	2.917	A
3 - A449 South	1318	510	2398	0.550	1318	1.6	4.466	A
4 - M6 North	435	777	1920	0.227	435	0.4	3.580	A

2038 Base + Cmtd + Dev + Cumulative wM54LR, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - A449 North - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	M6 J13	Large Roundabout		1, 2, 3, 4	2.51	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.51	A

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - A449 North	0		0.00
2 - M6 South	0	✓	102.60
3 - A449 South	0		0.00
4 - M6 North	0	✓	101.50

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D13	2038 Base + Cmtd + Dev + Cumulative wM54LR	AM	FLAT	07:30	08:30	60	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 - A449 North		✓	1024	100.000

2 - M6 South		✓	455	100.000
3 - A449 South		✓	744	100.000
4 - M6 North		✓	352	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A449 North	2 - M6 South	3 - A449 South	4 - M6 North
From	1 - A449 North	2	471	395	156
	2 - M6 South	372	2	47	34
	3 - A449 South	394	62	0	288
	4 - M6 North	112	53	182	5

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A449 North	2 - M6 South	3 - A449 South	4 - M6 North
From	1 - A449 North	0	4	4	1
	2 - M6 South	5	0	0	37
	3 - A449 South	2	14	0	0
	4 - M6 North	3	26	0	33

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A449 North	0.41	2.54	0.7	A
2 - M6 South	0.25	2.79	0.4	A
3 - A449 South	0.32	2.31	0.5	A
4 - M6 North	0.19	2.50	0.2	A

Main Results for each time segment

07:30 - 07:45

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 - A449 North	1024	303	2493	0.411	1021	0.7	2.527	A
2 - M6 South	455	738	1830	0.249	454	0.4	2.777	A
3 - A449 South	744	569	2333	0.319	742	0.5	2.306	A
4 - M6 North	352	830	1861	0.189	351	0.2	2.492	A

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 - A449 North	1024	304	2493	0.411	1024	0.7	2.537	A
2 - M6 South	455	740	1828	0.249	455	0.4	2.786	A
3 - A449 South	744	571	2332	0.319	744	0.5	2.314	A
4 - M6 North	352	832	1858	0.189	352	0.2	2.499	A

08:00 - 08:15

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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 - A449 North	1024	304	2493	0.411	1024	0.7	2.537	A
2 - M6 South	455	740	1828	0.249	455	0.4	2.786	A
3 - A449 South	744	571	2332	0.319	744	0.5	2.314	A
4 - M6 North	352	832	1858	0.189	352	0.2	2.499	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 - A449 North	1024	304	2493	0.411	1024	0.7	2.537	A
2 - M6 South	455	740	1828	0.249	455	0.4	2.786	A
3 - A449 South	744	571	2332	0.319	744	0.5	2.314	A
4 - M6 North	352	832	1858	0.189	352	0.2	2.499	A

2038 Base + Cmted + Dev + Cumulative wM54LR, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Large Roundabout	1 - A449 North - Large roundabout data	Large Roundabout Circulating Flow is zero for one or more arms.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	M6 J13	Large Roundabout		1, 2, 3, 4	3.52	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.52	A

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Has entry-to-exit separation	Entry-to-exit separation (m)
1 - A449 North	0		0.00
2 - M6 South	0	✓	102.60
3 - A449 South	0		0.00
4 - M6 North	0	✓	101.50

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D14	2038 Base + Cmted + Dev + Cumulative wM54LR	PM	FLAT	16:15	17:15	60	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 - A449 North		✓	878	100.000

2 - M6 South		✓	471	100.000
3 - A449 South		✓	1318	100.000
4 - M6 North		✓	435	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - A449 North	2 - M6 South	3 - A449 South	4 - M6 North
From	1 - A449 North	4	367	424	83
	2 - M6 South	360	2	45	64
	3 - A449 South	367	45	3	903
	4 - M6 North	126	28	280	1

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - A449 North	2 - M6 South	3 - A449 South	4 - M6 North
From	1 - A449 North	0	3	1	3
	2 - M6 South	2	33	11	24
	3 - A449 South	3	0	0	56
	4 - M6 North	2	45	86	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - A449 North	0.36	2.36	0.6	A
2 - M6 South	0.27	2.93	0.4	A
3 - A449 South	0.55	4.48	1.6	A
4 - M6 North	0.23	3.59	0.4	A

Main Results for each time segment

16:15 - 16:30

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 - A449 North	878	358	2436	0.360	876	0.6	2.351	A
2 - M6 South	471	793	1771	0.266	469	0.4	2.915	A
3 - A449 South	1318	512	2396	0.550	1312	1.6	4.424	A
4 - M6 North	435	778	1919	0.227	433	0.4	3.577	A

16:30 - 16:45

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 - A449 North	878	359	2434	0.361	878	0.6	2.359	A
2 - M6 South	471	795	1768	0.266	471	0.4	2.925	A
3 - A449 South	1318	514	2394	0.551	1318	1.6	4.484	A
4 - M6 North	435	781	1916	0.227	435	0.4	3.591	A

16:45 - 17:00

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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 - A449 North	878	359	2434	0.361	878	0.6	2.359	A
2 - M6 South	471	795	1768	0.266	471	0.4	2.925	A
3 - A449 South	1318	514	2394	0.551	1318	1.6	4.484	A
4 - M6 North	435	781	1916	0.227	435	0.4	3.591	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 - A449 North	878	359	2434	0.361	878	0.6	2.359	A
2 - M6 South	471	795	1768	0.266	471	0.4	2.925	A
3 - A449 South	1318	514	2394	0.551	1318	1.6	4.484	A
4 - M6 North	435	781	1916	0.227	435	0.4	3.591	A