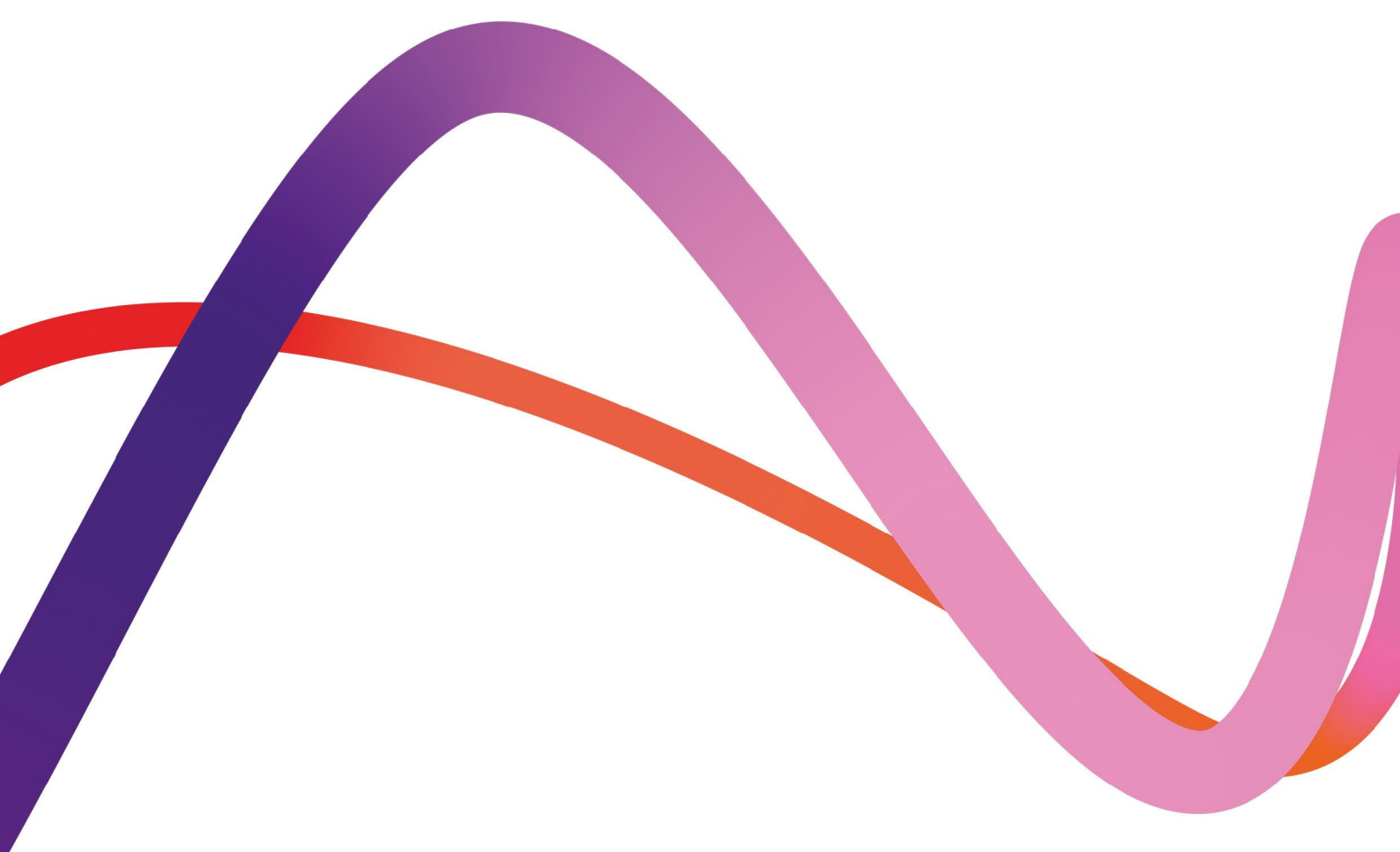


# Medworth Energy from Waste Combined Heat and Power Facility



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## Environmental Statement Chapter 6 Appendix 6B Transport Assessment Addendum

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with energy.**

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# 1. Introduction

## 1.1 Background

1.1.1 The Medworth Energy from Waste Combined Heat and Power Facility (the Proposed Development) is the subject of an application for development consent (the Application) that was submitted by Medworth CHP Limited (the Applicant) to the Secretary of State for Energy Security and Net Zero (hereafter referred to as the Secretary of State) via the Planning Inspectorate (the Inspectorate) in July 2022. The Application was accepted by the Inspectorate on 2 August 2022 and the Examination commenced on 21 February 2023.

1.1.2 The Applicant is making a request for non-material changes to the Application. The changes have been identified as a result of recent technical discussions with highways officers from Cambridgeshire County Council (CCC) on the specification of Work No. 4A following written and oral submissions at Issue Specific Hearing (ISH) 2 and Compulsory Acquisition Hearing 2 by CCC as part of the Examination. As CCC has only recently engaged with the Applicant on the design of Work No. 4A, the Applicant does not consider that it would have been possible to identify and make these changes at an earlier stage in the process.

1.1.3 The Applicant submitted a Change Notification Letter on 18 May 2023 (the Applicant's Letter). The Examining Authority (ExA) issued a procedural decision in respect of the Applicant's Letter on 26 May 2023 (the ExA's Procedural Decision).

## 1.2 Proposed Changes

1.2.1 Two changes are proposed to the Application:

- Change 1: Minor amendments to the Order limits within the boundary of the existing public highway at the junction of Cromwell Road and New Bridge Lane to facilitate the carrying out of the Access Improvements to the public highway forming part of Work No. 4A (the "Cromwell Road Junction Signal Scheme").
- Change 2: Minor amendments to the Order limits within the boundary of the existing public highway at the junction of New Bridge Lane and Salters Way to install proposed drop kerbs to the existing pavement forming part of Work No. 4A (the "Salters Way Junction Pavement Works").

1.2.2 These changes are proposed following extensive discussions with highways officers at Cambridgeshire County Council (CCC).

1.2.3 Further information on the need for the Proposed Change is provided in the **Change Application Report (Volume 13.2)**.

## 1.3 Summary of Consultation with CCC Highways

1.3.1 Considerable consultation with CCC highways officers regarding the proposed changes has been undertaken and is ongoing. Consultation activities have included:

- Online meeting on 13 April 2023;
- Site meeting in person on 27 April 2023; and
- Online meeting on 01 June 2023.

1.3.2 The Applicant has prepared the Cromwell Road Junction Signal Scheme and the Salters Way Junction Pavement Works in consultation with CCC. The signal scheme was discussed with CCC at the meeting on 27 April 2023 at which the Applicant's earlier proposal for signalisation was reviewed and amendments discussed. Updated drawings (to include the pavement works), the LinSig model and Road Safety Audit were then submitted to CCC on 25 May 2023. Subsequent to this submission, a meeting was held with CCC to discuss the design on 01 June 2023 and it was at this meeting that, whilst subject to technical confirmation, the CCC highways officers stated they had no in principle objections to the Applicant's proposals. The Applicant and CCC continue to work together constructively.

## 1.4 Purpose of the Transport Assessment Addendum

1.4.1 This document, the **ES Chapter 6 Traffic and Transport Appendix 6B Transport Assessment Addendum (Volume 3.11) (the TA Addendum)**, has been produced to present the design schemes and results assessment and auditing carried out in relation to the Proposed Changes.

## 1.5 Content of the Transport Assessment Addendum

1.5.1 The TA Addendum includes the following:

- **Section 1: Introduction;** setting out details of the Change Request Application and the purpose of the TA Addendum;
- **Section 2: Proposed Changes;** outlining the approach adopted in the design development of the proposed signalisation of Cromwell Road/New Bridge Lane junction, New Bridge Lane widening and Salters Way junction pavement works;
- **Section 3: Junction Assessment;** outlining the proposed design of the signal scheme and operational assessment;
- **Section 4: Safety Audit:** a stage one safety audit of the junction; and
- **Section 5: Conclusion;** provides a summary of the TA Addendum.

## 2. Proposed Changes

### 2.1 Background

- 2.1.1 The B198 Cromwell Road/New Bridge Lane junction is currently a four-arm priority junction in which the New Bridge Lane East and West arms are the minor arms, and Cromwell Road is the major arm. Access from the Cromwell Road is provided into the New Bridge Lane arms by way of ghost right turn lanes.
- 2.1.2 **Volume 6.4 ES Chapter 6 Traffic and Transport Appendix 6B Transport Assessment [APP-073]** included a minor improvement design scheme at the junction comprising an informal pedestrian crossing. A junction capacity assessment concluded that there was sufficient capacity to accommodate the operational traffic generated by the Proposed Development. **Draft DCO (Volume 3.1) [REP3-007]** includes a section of widening of New Bridge Lane in order to accommodate HGVs.
- 2.1.3 Consultation with highways officers at CCC post submission of the DCO application and during a meeting on 27 April 2023 identified that, in their opinion, the Cromwell Road/New Bridge Lane junction would need to be signalised for road safety reasons. CCC highways officers cited site observations of slow-moving HGVs turning right into New Bridge Lane from the Cromwell Road southern arm which impeded the flow of traffic on the Cromwell Road northern arm. Control of traffic movements at the junction in the form of signalisation was identified by CCC officers as the solution to ensure that the junction would provide safe and efficient access to New Bridge Lane for HGV traffic during the construction and operational phases of the Proposed Development.
- 2.1.4 The proposed improvement scheme is signalisation of all arms of the junction, including a pedestrian crossing on the New Bridge Lane (East) arm.
- 2.1.5 Existing access arrangements to adjacent properties, land uses and highways boundary have been considered within the design process. New Bridge Lane West arm provides servicing access into the adjacent Tesco supermarket and New Bridge Lane East provides access to a number of existing industrial properties. The design has therefore included adequate provision for HGV vehicles and maintained existing access arrangements.
- 2.1.6 In addition to the Cromwell Road/New Bridge Lane junction, changes to the design of the New Bridge Lane widening proposals have been discussed with CCC officers based on the need to improve the road safety environment for non-motorised users (NMUs) which include pedestrians and cyclists.
- 2.1.7 The design approach for the junction is set out in **Section 2.2** below and proposed changes to the New Bridge Lane widening is set out in **Sections 2.3** and **2.4**.

## 2.2 Proposed Cromwell Road Junction Signal Scheme

2.2.1 The signal junction design has been developed using both national and local design guidance, including the following documents:

- Chapter 5 Road Markings (2018) of the Traffic Signs Manual (TSM), Department for Transport (DfT);
- Chapter 6 Traffic Control (2019) of the TSM; and
- Standard Specification for Traffic Signals and Systems, CCC, April 2021.

2.2.2 The proposed layout of the signal scheme is shown in **Figure 10.1iv Rev1A Cromwell Road/New Bridge Lane Signal Scheme – General Arrangement** in the **Outline CTMP Rev 4A**. The proposed scheme comprises the following components:

- Provision of stop lines and primary and secondary traffic signal columns on all arms of the junction;
- Realignment of the kerbs throughout the junction to accommodate additional lanes and the swept path of anticipated HGV movements.
- Provision of islands within the junction to accommodate the new traffic signal equipment.
- Provision of signalised right turns on the B198 North and South arms with right turn only lanes and right turn road markings mid junction.
- Provision of a signalised pedestrian crossing over New Bridge Lane East arm.
- Provision of all necessary road markings to ensure clear guidance to vehicles.

2.2.3 The design has been tested for its suitability to accommodate HGV vehicles by undertaking swept path assessments of junction turning movements using Autodesk Vehicle Tracking software. **Figure 9.2i and ii AIL SPA - Cromwell Road / New Bridge Lane** in the **Outline CTMP Rev 4A** shows the swept path of an articulated HGV and it demonstrates that anticipated HGV movements can be accommodated within the proposed junction layout.

## 2.3 New Bridge Lane Widening Scheme

2.3.1 The New Bridge Lane widening seeks to widen New Bridge Lane carriageway to 6.8m wide to accommodate HGV movements generated by the Medworth EfW CHP Facility Site.

2.3.2 Included in the DCO application is a proposal to reopen New Bridge Lane across the disused March to Wisbech Railway, with the agreement of Network Rail, and to enable the Applicant to take access from Cromwell Road into the proposed EfW CHP Facility Site.

2.3.3 New Bridge Lane will be closed east of the proposed site access and that as such it will not operate as a through route for vehicular traffic.

## **Salters Way Junction Pavement Works**

- 2.3.4 The Salters Way Junction Pavement Works comprise an element of the New Bridge Lane Widening Scheme and consist of improvement works in the form of a dropped kerb crossing and tactile paving planned for the southern end of Salters Way for the benefit of pedestrians and other NMUs.



## 3. Junction Assessment

### 3.1 Introduction

- 3.1.1 Agreed in advance with CCC, the proposed signalisation of Cromwell Road/New Bridge Lane junction was tested for capacity using industry standard Linsig software. As there is an existing Cromwell Road/Tesco traffic signal junction located less than 100 metres to the north, the LinSig model linked both junctions in order to optimise the signal design to minimise delays in the internal links between these two junctions and therefore the risk of tailback queues.
- 3.1.2 The following sections summarise the modelling approach and the junction capacity appraisal results.

### 3.2 Traffic Flows

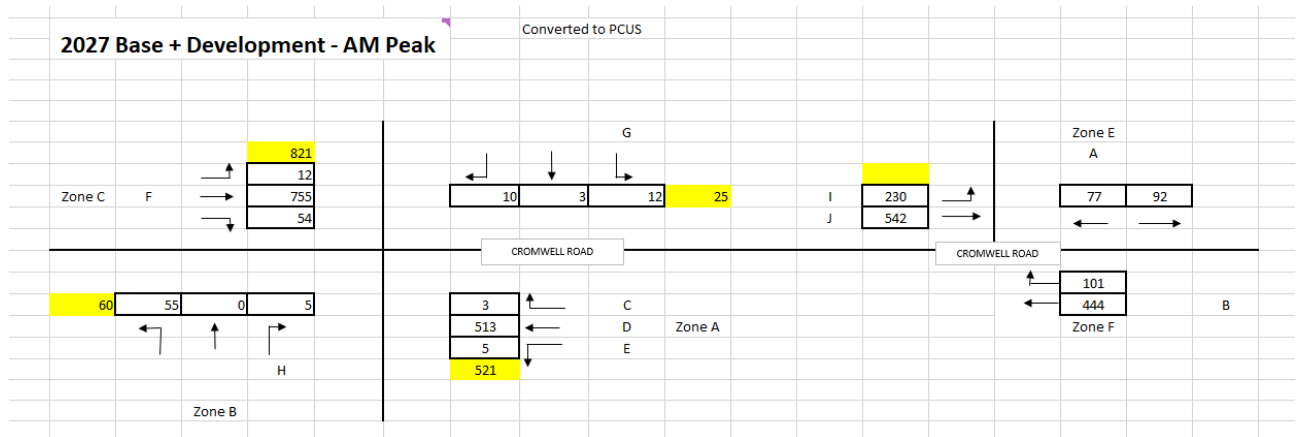
- 3.2.1 The traffic turning data at the Cromwell Road/New Bridge Lane junction has been based on the traffic data provided in **Volume 6.4 ES Chapter 6 Traffic and Transport Appendix 6B Transport Assessment [APP-073]**.
- 3.2.2 Traffic data for Tesco junction has been derived from the LinSig model provided by CCC highways officers. These traffic flows have been used to calculate the turning movements of the Tesco junction for the future scenarios based on the traffic growth rates includes in **Volume 6.4 ES Chapter 6 Traffic and Transport Appendix 6B Transport Assessment [APP-073]**, as set out in **Table 3.1** below. It is noted that the Tesco LinSig model was calibrated against the traffic surveys undertaken by Tesco in 2016.

**Table 3.1 TEMPro Growth Rates: 2021- 2027**

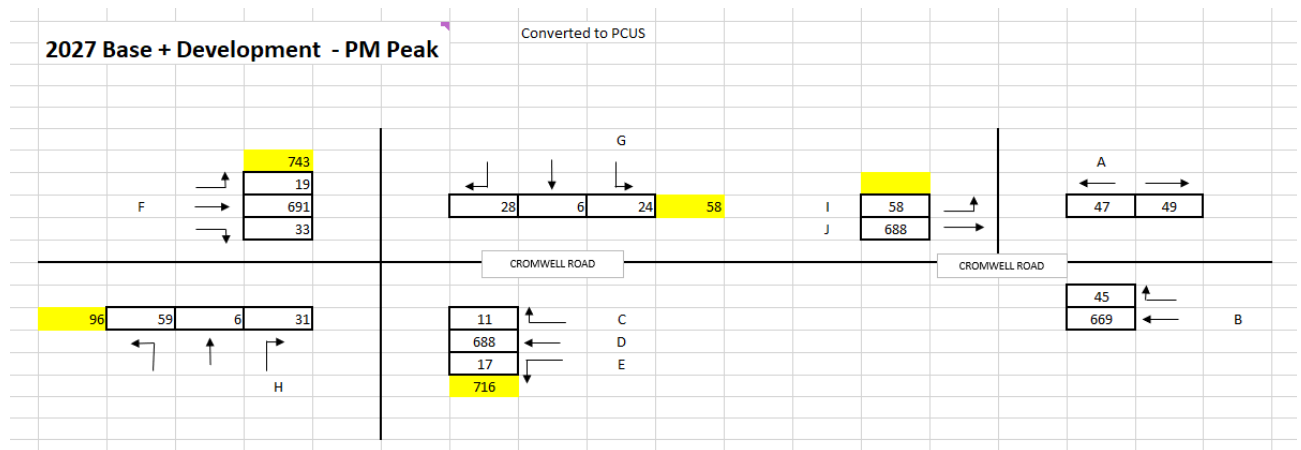
Time Period	Light Vehicles	HGVs
Weekday AM Peak	1.0599	1.0946
Weekday PM Peak	1.0606	1.0953

- 3.2.3 The above growth rates have been applied to the 2021 survey data to derive future year baseline traffic flows for year 2027 for the Tesco junction when the Proposed Development is expected to operate.
- 3.2.4 The operational traffic flows generated by the Proposed Development for the AM Peak and PM Peak have been derived from Figure 7.3 and Figure 7.4 of **Volume 6.4 ES Chapter 6 Traffic and Transport Appendix 6B Transport Assessment [APP-073]**.
- 3.2.5 The 2027 baseline with development flows for AM Peak and PM Peak are summarised in **Figure 3.1** and **Figure 3.2** below.

**Figure 3.1 2027 Future Flows + Development Flows AM Peak**



**Figure 3.2 2027 Future Flows + Development Flows PM Peak**



### 3.3 Modelling Approach

3.3.1 The linked LinSig model has been constructed using the following data sources:

- The geometric data of Cromwell Road/New Bridge Lane junction have been based on **Figure 10.1iv Rev1A Cromwell Road/New Bridge Lane Signal Scheme – General Arrangement** in the **Outline CTMP Rev 4A**. Geometric data for the existing Cromwell Road/Tesco junction has been from the Ordnance Survey Master Map.
- The signal timings, phases and cycle times for the Tesco junction have been based on the controller spec dated 14-01-2014 version 114/02/2014MM provided by CCC.
- The proposed signal timing, phases and intergreen times of the proposed Cromwell Road/New Bridge Lane traffic signal have been developed in accordance with TSM Chapter 6 and CCC traffic signal standard specification.

3.3.2 The junction capacity assessment has been carried out for the following:

- Scenario 1 - 2027 Future Baseline +Development.

3.3.3 In addition, two sensitivity scenarios have been modelled:

- Scenario 2 - 2027 Future Baseline +Development, traffic flows increased by 10%.
- Scenario 3 - 2027 Future Baseline +Development, traffic flows increased by 20%.

### 3.4 Analysis and Results

3.4.1 LinSig modelling results are presented as the Degree of Saturation (DoS) and the Mean Maximum Queue (MMQ) which is shown in Passenger Car Units (PCUs) for each lane of the junction.

3.4.2 A DoS of 100% indicates that the lane in question is operating at its absolute capacity (point of saturation), whilst a DoS of 90% or less indicates that the lane is operating within its practical capacity. LinSig also refers to the Practical Reserve Capacity (PRC) of which a positive value indicates that the junction is operating within capacity and a negative value means the junction is over capacity.

3.4.3 The LinSig model outputs are presented in **Appendix A**.

#### Scenario 1: 2027 Future Baseline Flows + Development Traffic

3.4.4 The future year baseline flows along with development traffic have been modelled and the results obtained for AM Peak and PM Peak are shown in **Table 3.2** and **Table 3.3** below.

**Table 3.2 2027 Scenario 1: AM Peak Results**

Junctions	Lane	Sat (%)	Delay (s/PCU)	Queue (PCU)
<b>Cromwell Road/ New Bridge Lane Junction</b>	Cromwell Road (SB) - internal link	42.8.	9.7	<b>5.4</b>
	New Bridge Lane (WB)	38.4	57.3	1.7
	Cromwell Road (NB)	68.3	15.4	14.1
	New Bridge Lane (EB)	16.1	52.9	0.7
<b>Tesco Junction</b>	Cromwell Road (SB)	47.9	12.9	7.1
	Tesco Exit Left: Right	21.4: 25.6	31.7: 40.7	1.9:1.8
	Tesco Entrance	17.1	1.1	1.2
	Cromwell Road (NB) – internal link	62.5	4.6	1.5
	<b>Cycle Time (s)</b>	90		

Junctions	Lane	Sat (%)	Delay (s/PCU)	Queue (PCU)
	PRC (%)	31.8		
	Delay (PCU/Hr)	10.98		

**Table 3.3 2027 Scenario 1: PM Peak Results**

Junctions	Lane	Sat (%)	Delay (s/PCU)	Queue (PCU)
<b>Cromwell Road/ New Bridge Lane Junction</b>	Cromwell Road (SB) - internal link	59.9	6.6	2.5
	New Bridge Lane (WB)	53.3	59.7	2.8
	Cromwell Road (NB)	63.0	15.0	12.1
	New Bridge Lane (EB)	33.1	54.4	1.6
<b>Tesco Junction</b>	Cromwell Road (SB)	63.1	16.1	12.1
	Tesco Exit Left: Right	11.4:15.3	30.4:39.1	1.0:1.1
	Tesco Entrance	13.8	1.1	0.1
	Cromwell Road (NB) – internal link	60.4	9.3	4.3
	<b>Cycle Time (s)</b>	90		
	<b>PRC (%)</b>	42.5		
	<b>Delay (PCU/Hr)</b>	12.99		

3.4.5 The junction capacity modelling results indicate that the junction would operate within capacity during both the AM Peak and PM Peak with the Proposed Development traffic flows. A queue of approximately five vehicles over two lanes is predicted on Cromwell Road southbound arm between the two junctions (internal link) during the AM Peak. This can be accommodated within the lane length between the two junctions as there is stacking space for around three PCU per lane (therefore six PCU) which will accommodate the predicted queue length, thereby avoiding a tailback issue.

3.4.6 PRC values are high for both peak periods, 31.8% in the AM peak and 42.5% in the PM peak, indicating that there is ample capacity at both traffic junctions.

### Sensitivity Testing

3.4.7 Given the queue length, in order to determine the sensitivity level of the LinSig model to the increase in traffic flows, the model has been tested with total traffic flows (baseline and Proposed Development) being increased by 10% (Scenario 2) and by 20% (Scenario 3) as described below.

**Scenario 2: 2027 Future Baseline Flow + Development Traffic, Traffic flows increased by 10%**

3.4.8 The results of this scenario are summarised in **Table 3.4** and **Table 3.5**.

**Table 3.4 2027 Scenario 2: AM Peak Results**

Junction	Lane	Sat (%)	Delay (s/PCU)	Queue (PCU)
<b>Cromwell Road/ New Bridge Lane Junction</b>	Cromwell Road (SB) - internal link	47.1	10.1	6.0
	New Bridge Lane (WB)	42.9	58.8	2.0
	Cromwell Road (NB)	75.1	17.6	16.8
	New Bridge Lane (EB)	17.4	58.1	0.7
<b>Tesco Junction</b>	Cromwell Road (SB)	52.7	13.6	8.3
	Tesco Exit Left : Right	23.5: 28.0	32.0:41.1	2.1:2.0
	Tesco Entrance	18.8	1.2	1.2
	Cromwell Road (NB) – internal link	68.8	5.4	1.8
	<b>Cycle Time (s)</b>	90		
	<b>PRC (%)</b>	19.9		
	<b>Delay (PCU/Hr)</b>	13.04		

**Table 3.5 2027 Scenario 2 : PM Peak Results**

Junction	Lane	Sat (%)	Delay (s/PCU)	Queue (PCU)
<b>Cromwell Road/ New Bridge Lane Junction</b>	Cromwell Road (SB) - internal link	65.8	7.5	3.0
	New Bridge Lane (WB)	58.8	62.6	3.2
	Cromwell Road (NB)	69.3	16.6	14.4
	New Bridge Lane (EB)	37.0	55.7	1.8
<b>Tesco Junction</b>	Cromwell Road (SB)	69.5	17.8	14.4
	Tesco Exit Left : Right	12.6:16.6	30.6:39.3	1.1:1.2
	Tesco Entrance	15.2	1.1	0.1
	Cromwell Road (NB) – internal link	66.5	9.9	4.8
	<b>Cycle Time (s)</b>	90		

Junction	Lane	Sat (%)	Delay (s/PCU)	Queue (PCU)
	PRC (%)	29.5		
	Delay (PCU/Hr)	15.5		

3.4.9 The results summarised in **Table 3.4** and **3.5** shows that the junction is predicted to operate well with spare capacity. The queue on Cromwell Road can be accommodated within the available stacking space.

**Scenario 3: 2027 Future Baseline Flow + Development Traffic, Traffic flows increased by 20%**

3.4.10 The results of this scenario are summarised in **Table 3.6** and **Table 3.7**.

**Table 3.6 2027 Scenario 3: AM Peak Results**

Junction	Lane	Sat (%)	Delay (s/PCU)	Queue (PCU)
<b>Cromwell Road/ New Bridge Lane Junction</b>	Cromwell Road (SB) - internal link	51.5	10.5	6.6
	New Bridge Lane (WB)	46.1	60.1	2.1
	Cromwell Road (NB)	81.9	20.9	20.6
	New Bridge Lane (EB)	19.3	53.6	0.8
<b>Tesco Junction</b>	Cromwell Road (SB)	57.5	14.4	9.7
	Tesco Exit Left: Right	25.9: 31.0	32.4:41.6	2.4:2.3
	Tesco Entrance	20.5	1.2	1.2
	Cromwell Road (NB) – internal link	75.0	6.5	2.3
	<b>Cycle Time (s)</b>	90		
	<b>PRC (%)</b>	9.9		
	<b>Delay (PCU/Hr)</b>	15.70		

**Table 3.7 2027 Scenario 3: PM Peak Results**

Junction	Lane	Sat (%)	Delay (s/PCU)	Queue (PCU)
<b>Cromwell Road/ New Bridge Lane Junction</b>	Cromwell Road (SB) - internal link	72.0	8.6	3.6
	New Bridge Lane (WB)	63.9	66.0	3.6
	Cromwell Road (NB)	75.7	18.9	17.3
	New Bridge Lane (EB)	39.9	56.8	2.0
<b>Tesco Junction</b>	Cromwell Road (SB)	75.9	20.0	17.0
	Tesco Exit Left: Right	13.5:18.6	30.7:39.7	1.2:1.3
	Tesco Entrance	16.5	1.1	0.1
	Cromwell Road (NB) – internal link	72.4	11.4	5.6
	<b>Cycle Time (s)</b>	90		
	<b>PRC (%)</b>	18.6		
	<b>Delay (PCU/Hr)</b>	18.67		

3.4.11 The results in **Table 3.6** and **Table 3.7** indicate that both junctions are anticipated to operate with spare capacity even when the future baseline and development flows are increased to 20%. A queue may occasionally develop on the Cromwell Road (SB) at the New Bridge Lane junction that affects the Tesco junction in the AM peak. It is noted that this is a robust approach as the 20% growth is applied both baseline and Proposed Development traffic.

### 3.5 Conclusion

3.5.1 In all the three scenarios, the traffic model results indicate similar results for the proposed signalisation of the Cromwell Road/New Bridge Lane and the Tesco junctions. Therefore, it can be concluded that the traffic model is robust and there are no junction capacity issues anticipated and the development traffic would have no significant effect on the operation of the junction.

## 4. Safety Audit

### 4.1 Stage 1 Road Safety Audit (RSA)

- 4.1.1 A Stage 1 RSA was undertaken on Friday 12 May 2023 for the proposed Cromwell Road/New Bridge Lane traffic signal layout and the alterations proposed along New Bridge Lane to widen it to 6.8m wide to accommodate HGV movements generated by the proposed EfW CHP Facility.
- 4.1.2 The RSA examined the documents and drawings provided in the RSA brief and supplied to the RSA team, and the RSA has been conducted in accordance with the Design Manual for Roads and Bridges (DMRB) Standard GG 119 Road Safety Audit, Revision 2.
- 4.1.3 Fourteen potential road safety matters were identified and recommendations for potential mitigation measures to be considered by the design team are also included in the RSA report. The RSA report has not highlighted any major road safety issues.
- 4.1.4 A copy of the Stage 1 RSA Brief and Stage 1 RSA Report is included as **Appendix B** and **Appendix C** respectively.

### 4.2 Stage 1 RSA Response Report

- 4.2.1 A response report has been prepared by the design team and submitted to the Overseeing Organisation (CCC) for approval. A copy of the Stage 1 RSA Response Report is included as **Appendix D**.
- 4.2.2 The response report addresses the road safety matters raised in the RSA, and includes the following:
- The recommended action to provide maintenance access for the relocated existing compact sub-station on New Bridge Lane (East) has been rejected by the design team as the maintenance work would be done by a small team under a temporary traffic management therefore a dedicated access would not be required.
  - Four recommended actions will be discussed and developed in the detailed design stage. These are:
    - ▶ Relocation of the existing Copart traffic sign on New Bridge Lane;
    - ▶ Proposed signal staging at New Bridge Lane / Cromwell Road junction. The LinSig traffic signal model has been submitted to CCC for review and approval;
    - ▶ Limited restrictions along New Bridge Lane (East); and
    - ▶ Traffic signal ‘see through effect’ on Cromwell Road.



## 4.3 Consultation Response

- 4.3.1 The Response Report has responded to all of the matters highlighted in the Stage 1 RSA and whilst subject to confirmation, the Applicant understands there are no in principle objections to the conceptual layout. CCC and the Applicant continue to work constructively and will provide updates to the ExA during the Examination. Concerning the Proposed Changes.

## 5. Conclusion

- 5.1.1 On going consultation has been undertaken with CCC for the proposed traffic signal junction layout and the proposed traffic signal operation is predicted to have no detrimental impacts on the highway capacity along Cromwell Road, New Bridge Lane and the existing Cromwell Road / Tesco traffic signal junction.
- 5.1.2 A Stage 1 Road Safety Audit has not identified any major issues with the proposed signalisation of the Cromwell Road / New Bridge Lane junction and the changes along New Bridge Lane.
- 5.1.3 While one action recommended by the RSA was deemed not required, the remaining recommendations were accepted and have been addressed in the proposed layout submitted by the Applicant.
- 5.1.4 The Applicant and CCC agreed position statement has been included in the Change Report and is summarised below:

### Change 1

- 5.1.5 CCC has undertaken an initial review of the Applicant's proposed signalised junction arrangements. The modelling, signal staging, and phasing, along with the Stage 1 Safety Audit will be reviewed by CCC in due course. Whilst subject to confirmation, the Applicant understands there are no in principle objections to the conceptual layout.
- 5.1.6 The land subject to the change application is within the public highway (subject to CCC's general caveats regarding highway boundaries), except for an area that CCC intends to adopt once a Provisional Certificate is issued to Tesco Stores Ltd under an existing S278 agreement (13 December 2013). CCC are actively pursuing this matter and a Provisional Certificate might be secured within the Examination timeframe, however there is no guarantee. Other options are being explored. Therefore, CCC understands that the Applicant will proceed with a change application to secure temporary possession of the land. CCC raise no objection to this approach.

### Change 2

- 5.1.7 CCC raise no objection to extending the Order limits to encompass all areas of highway that will be required to enable delivery of the scheme.

# Appendix A

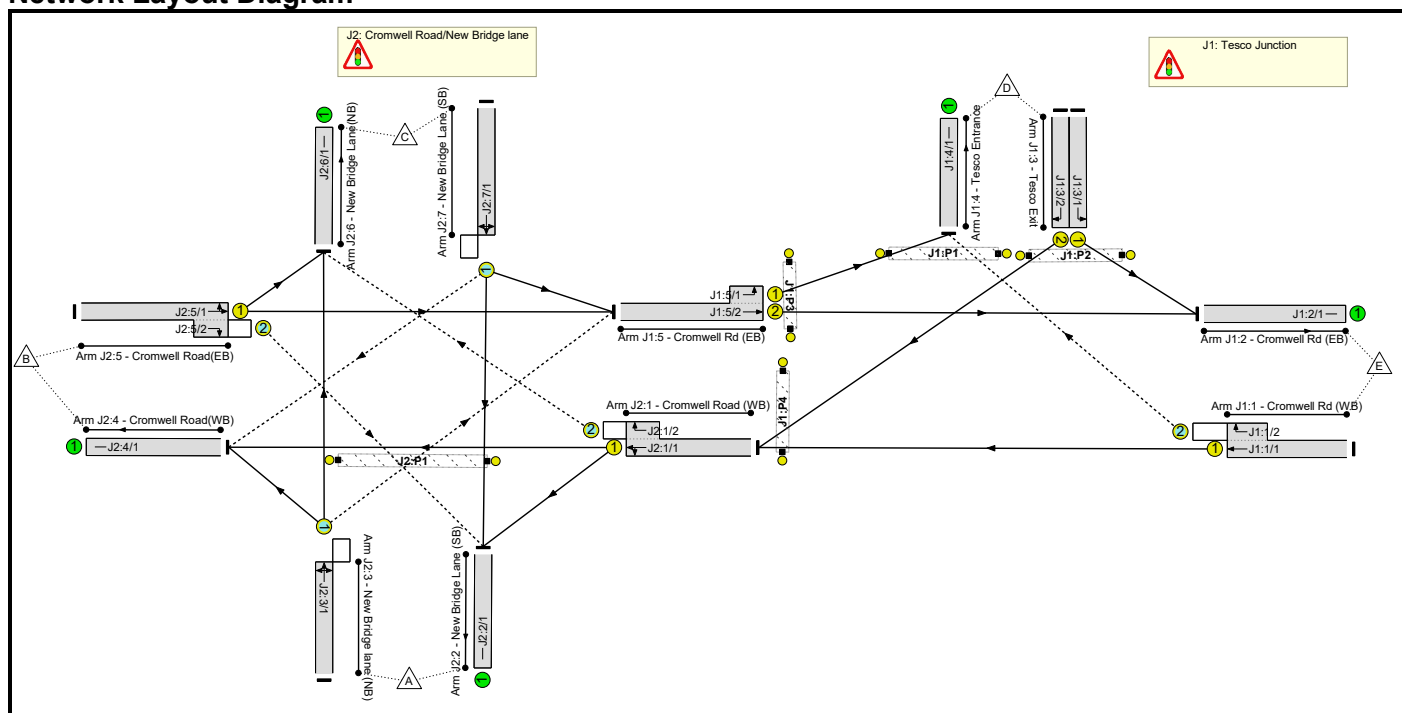
## LinSig Results

Full Input Data And Results  
**Full Input Data And Results**

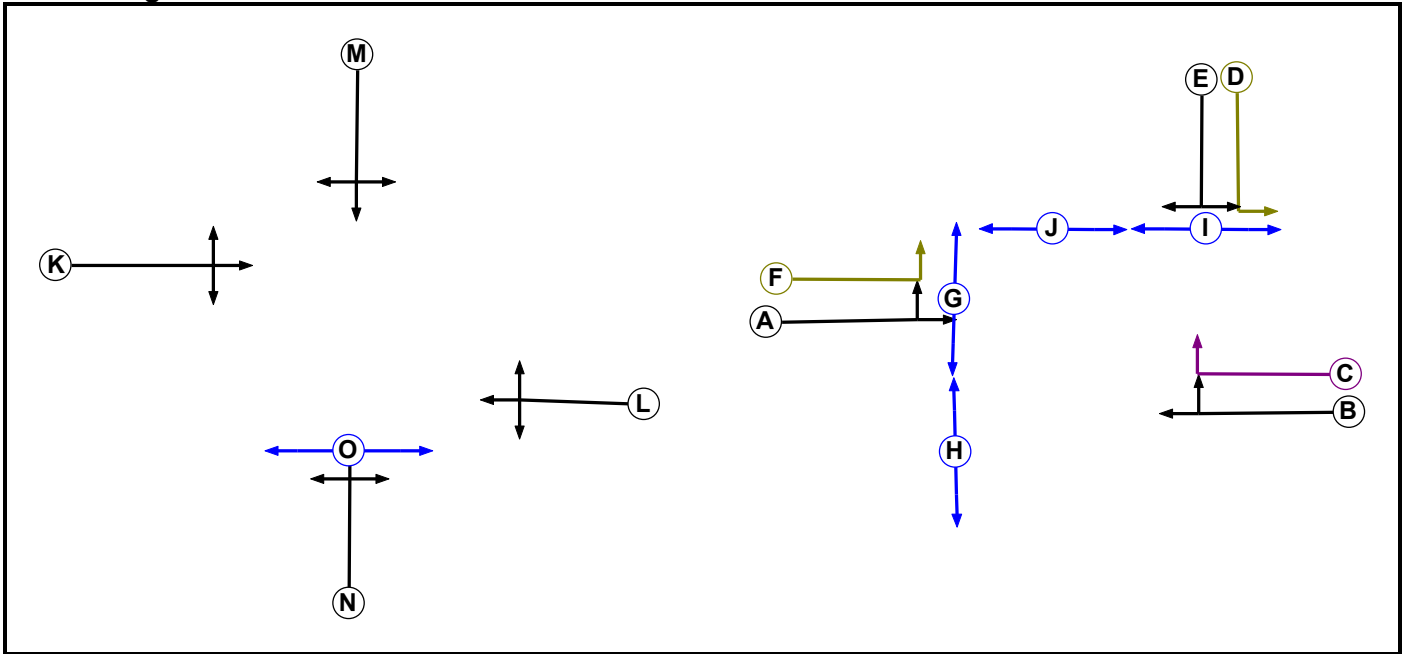
**User and Project Details**

<b>Project:</b>	<b>Medworth Energy from Waste Combined Heat and Power Facility DCO</b>
<b>Title:</b>	<b>Junction Upgrading</b>
<b>Location:</b>	Cromwell Road/New Bridge lane Medworth
<b>Client:</b>	Medworth Energy Limited
<b>Date Started:</b>	09/05/23
<b>Date Completed:</b>	18/05/23
<b>Model Purpose:</b>	Scheme Design Only
<b>Flow Details:</b>	The flow data for Cromwell Road/New Bridge Lane has been calculated based on 2027 Baseline flow data.(Please refer the flow calculation spreadsheet)
<b>Safety Considerations:</b>	None
<b>Checked By:</b>	Amber Elkin
<b>Checked By Date:</b>	18/05/23
<b>Additional detail:</b>	Signal information for Tesco junction are taken from Controller Spec(14/01/2014)
<b>File name:</b>	Medworth Cromwell RoadNew Bridge Lane V2- Scenario tested.lsg3x
<b>Author:</b>	Varsha Suresh
<b>Company:</b>	WSP UK Limited
<b>Address:</b>	Amber CourtWilliam Armstrong DriveNewcastle upon Tyne NE4 7YQUnited KingdomTel +44 (0)191 226 2000

**Network Layout Diagram**



**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	Ind. Arrow	1	B	4	4
D	Filter	1	E	4	0
E	Traffic	1		7	7
F	Filter	1	A	4	0
G	Pedestrian	1		5	5
H	Pedestrian	1		4	4
I	Pedestrian	1		5	5
J	Pedestrian	1		4	4
K	Traffic	2		7	7
L	Traffic	2		7	7
M	Traffic	2		7	7
N	Traffic	2		7	7
O	Pedestrian	2		5	5

**Phase Intergrens Matrix**

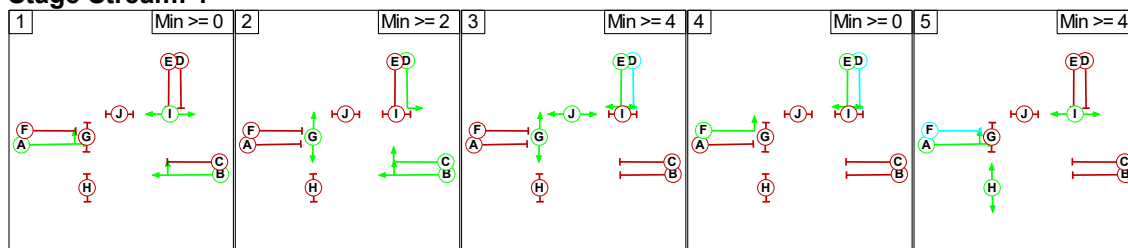
		Starting Phase														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Terminating Phase	A	-	-	5	6	6	-	6	-	-	7	-	-	-	-	-
	B	-	-	-	-	6	6	-	9	-	8	-	-	-	-	-
	C	6	-	-	-	6	6	-	-	-	8	-	-	-	-	-
	D	5	-	-	-	-	-	-	-	5	-	-	-	-	-	-
	E	5	5	5	-	-	-	-	9	5	-	-	-	-	-	-
	F	-	0	5	-	-	-	6	-	-	7	-	-	-	-	-
	G	8	-	-	-	-	8	-	-	-	-	-	-	-	-	-
	H	-	5	-	-	5	-	-	-	-	-	-	-	-	-	-
	I	-	-	-	7	7	-	-	-	-	-	-	-	-	-	-
	J	7	7	7	-	-	7	-	-	-	-	-	-	-	-	-
	K	-	-	-	-	-	-	-	-	-	-	-	6	5	8	-
	L	-	-	-	-	-	-	-	-	-	-	-	5	5	7	-
	M	-	-	-	-	-	-	-	-	-	-	5	6	-	-	8
	N	-	-	-	-	-	-	-	-	-	-	5	6	-	-	5
	O	-	-	-	-	-	-	-	-	-	-	9	9	9	9	-

**Phases in Stage**

Stream	Stage No.	Phases in Stage
1	1	A B I
1	2	B C D G
1	3	E G J
1	4	E F
1	5	A H I
2	1	K L
2	2	O
2	3	M N

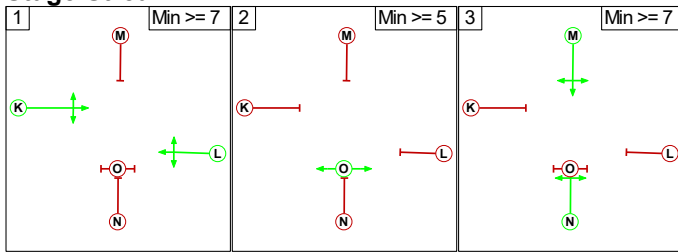
**Stage Diagram**

Stage Stream: 1



Full Input Data And Results

**Stage Stream: 2**



**Phase Delays**

**Stage Stream: 1**

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

**Stage Stream: 2**

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

**Prohibited Stage Change**

**Stage Stream: 1**

		To Stage				
		1	2	3	4	5
From Stage	1		7	8	7	9
	2	X		8	8	X
	3	8	7		8	9
	4	5	X	X		9
	5	5	7	7	7	

**Stage Stream: 2**

		To Stage		
		1	2	3
From Stage	1		8	6
	2	9		9
	3	6	8	

Full Input Data And Results

**Give-Way Lane Input Data**

Junction: J1: Tesco Junction											
Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
J1:1/2 (Cromwell Rd (WB))	J1:4/1 (Right)	1439	0	J1:4/1	1.09	All	3.00	-	0.50	3	3.00

Junction: J2: Cromwell Road/New Bridge lane												
Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)	
J2:1/2 (Cromwell Road (WB))	J2:6/1 (Right)	1439	0	J2:5/1	1.09	All	2.00	-	0.50	2	2.00	
J2:3/1 (New Bridge lane (NB))	J1:5/2 (Right)	1439	0	J2:7/1	1.09	To J1:5/2 (Left) To J2:2/1 (Ahead)	2.00	2.00	0.50	2	2.00	
J2:5/2 (Cromwell Road(EB))	J2:2/1 (Right)	1439	0	J2:1/1	1.09	All	2.00	-	0.50	2	2.00	
J2:7/1 (New Bridge Lane (SB))	J2:4/1 (Right)	1439	0	J2:3/1	1.09	To J2:4/1 (Left) To J2:6/1 (Ahead)	2.00	2.00	0.50	2	2.00	



## Full Input Data And Results

**Lane Input Data**

Junction: J1: Tesco Junction												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
J1:1/1 (Cromwell Rd (WB))	U	B	2	3	60.0	Geom	-	3.00	0.00	Y	Arm J2:1 Ahead	Inf
J1:1/2 (Cromwell Rd (WB))	O	B C	2	3	3.5	Geom	-	3.00	0.00	Y	Arm J1:4 Right	11.11
J1:2/1 (Cromwell Rd (EB))	U		2	3	60.0	Inf	-	-	-	-	-	-
J1:3/1 (Tesco Exit)	U	E D	2	3	4.2	Geom	-	3.25	0.00	Y	Arm J1:2 Left	9.66
J1:3/2 (Tesco Exit)	U	E	2	3	4.2	Geom	-	3.25	0.00	Y	Arm J2:1 Right	19.52
J1:4/1 (Tesco Entrance)	U		2	3	60.0	Geom	-	3.25	0.00	Y		
J1:5/1 (Cromwell Rd (EB))	U	A F	2	3	2.9	Geom	-	3.00	0.00	Y	Arm J1:4 Left	12.19
J1:5/2 (Cromwell Rd (EB))	U	A	2	3	8.6	Geom	-	3.00	0.00	Y	Arm J1:2 Ahead	Inf

Full Input Data And Results

Junction: J2: Cromwell Road/New Bridge lane												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
J2:1/1 (Cromwell Road (WB))	U	L	2	3	4.9	Geom	-	3.25	0.00	Y	Arm J2:2 Left	5.44
											Arm J2:4 Ahead	Inf
J2:1/2 (Cromwell Road (WB))	O	L	2	3	2.9	Geom	-	3.25	0.00	Y	Arm J2:6 Right	15.50
J2:2/1 (New Bridge Lane (SB))	U		2	3	60.0	Inf	-	-	-	-	-	-
J2:3/1 (New Bridge lane (NB))	O	N	2	3	4.9	Geom	-	3.77	0.00	Y	Arm J1:5 Right	23.70
											Arm J2:4 Left	10.77
											Arm J2:6 Ahead	Inf
J2:4/1 (Cromwell Road(WB))	U		2	3	60.0	Inf	-	-	-	-	-	-
J2:5/1 (Cromwell Road(EB))	U	K	2	3	60.0	Geom	-	3.00	0.00	Y	Arm J1:5 Ahead	Inf
											Arm J2:6 Left	8.10
J2:5/2 (Cromwell Road(EB))	O	K	2	3	3.0	Geom	-	3.00	0.00	Y	Arm J2:2 Right	13.03
J2:6/1 (New Bridge Lane(NB))	U		2	3	60.0	Inf	-	-	-	-	-	-
J2:7/1 (New Bridge Lane (SB))	O	M	2	3	6.5	Geom	-	3.74	0.00	Y	Arm J1:5 Left	6.78
											Arm J2:2 Ahead	Inf
											Arm J2:4 Right	17.14

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2027 Development flows- AM Peak'	08:00	09:00	01:00	
2: '2027 Development flows PM Peak'	17:00	18:00	01:00	
3: '2027 Forecast Flows AM Peak'	08:00	09:00	01:00	
4: '2027 Forecast Flow PM Peak'	17:00	18:00	01:00	
5: '2027 Baseline +20%-AM Peak'	08:00	09:00	01:00	

Full Input Data And Results

6: '2027 Baseline +20%- PM Peak'	17:00	18:00	01:00	
7: '2027 Baseline +10%- AM Peak'	08:00	09:00	01:00	
8: '2027 Baseline+10%- PM Peak'	17:00	18:00	01:00	

**Scenario 1: '2027 Base+Development AM Peak'** (FG1: '2027 Development flows- AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	55	0	1	4	60
	B	54	0	12	225	530	821
	C	3	10	0	4	8	25
	D	0	76	1	0	92	169
	E	3	437	4	101	0	545
	Tot.	60	578	17	331	634	1620

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 1: 2027 Base+Development AM Peak
<b>Junction: J1: Tesco Junction</b>	
J1:1/1 (with short)	545(In) 444(Out)
J1:1/2 (short)	101
J1:2/1	634
J1:3/1	92
J1:3/2	77
J1:4/1	331
J1:5/1 (short)	230
J1:5/2 (with short)	772(In) 542(Out)
<b>Junction: J2: Cromwell Road/New Bridge lane</b>	
J2:1/1 (with short)	521(In) 516(Out)
J2:1/2 (short)	5
J2:2/1	60
J2:3/1	60
J2:4/1	578
J2:5/1 (with short)	821(In) 767(Out)
J2:5/2 (short)	54
J2:6/1	17
J2:7/1	25

Full Input Data And Results

**Lane Saturation Flows**

Junction: J1: Tesco Junction								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J1:1/1 (Cromwell Rd (WB))	3.00	0.00	Y	Arm J2:1 Ahead	Inf	100.0 %	1915	1915
J1:1/2 (Cromwell Rd (WB))	3.00	0.00	Y	Arm J1:4 Right	11.11	100.0 %	1687	1687
J1:2/1 (Cromwell Rd (EB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:3/1 (Tesco Exit)	3.25	0.00	Y	Arm J1:2 Left	9.66	100.0 %	1679	1679
J1:3/2 (Tesco Exit)	3.25	0.00	Y	Arm J2:1 Right	19.52	100.0 %	1802	1802
J1:4/1 (Tesco Entrance)	3.25	0.00	Y				1940	1940
J1:5/1 (Cromwell Rd (EB))	3.00	0.00	Y	Arm J1:4 Left	12.19	100.0 %	1705	1705
J1:5/2 (Cromwell Rd (EB))	3.00	0.00	Y	Arm J1:2 Ahead	Inf	100.0 %	1915	1915

Full Input Data And Results

Junction: J2: Cromwell Road/New Bridge lane								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J2:1/1 (Cromwell Road (WB))	3.25	0.00	Y	Arm J2:2 Left	5.44	0.6 %	1937	1937
				Arm J2:4 Ahead	Inf	99.4 %		
J2:1/2 (Cromwell Road (WB))	3.25	0.00	Y	Arm J2:6 Right	15.50	100.0 %	1769	1769
J2:2/1 (New Bridge Lane (SB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:3/1 (New Bridge lane (NB))	3.77	0.00	Y	Arm J1:5 Right	23.70	8.3 %	1758	1758
				Arm J2:4 Left	10.77	91.7 %		
				Arm J2:6 Ahead	Inf	0.0 %		
J2:4/1 (Cromwell Road(WB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:5/1 (Cromwell Road(EB))	3.00	0.00	Y	Arm J1:5 Ahead	Inf	98.4 %	1909	1909
				Arm J2:6 Left	8.10	1.6 %		
J2:5/2 (Cromwell Road(EB))	3.00	0.00	Y	Arm J2:2 Right	13.03	100.0 %	1717	1717
J2:6/1 (New Bridge Lane(NB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:7/1 (New Bridge Lane (SB))	3.74	0.00	Y	Arm J1:5 Left	6.78	48.0 %	1743	1743
				Arm J2:2 Ahead	Inf	12.0 %		
				Arm J2:4 Right	17.14	40.0 %		

**Scenario 2: '2027 Base+Development PM Peak'** (FG2: '2027 Development flows PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination						
	A	B	C	D	E	Tot.	
Origin	A	0	59	6	9	22	96
	B	33	0	19	206	485	743
	C	6	28	0	7	17	58
	D	0	46	0	0	49	95
	E	4	659	6	45	0	714
	Tot.	43	792	31	267	573	1706

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 2: 2027 Base+Development PM Peak
<b>Junction: J1: Tesco Junction</b>	
J1:1/1 (with short)	714(In) 669(Out)
J1:1/2 (short)	45
J1:2/1	573
J1:3/1	49
J1:3/2	46
J1:4/1	267
J1:5/1 (short)	222
J1:5/2 (with short)	746(In) 524(Out)
<b>Junction: J2: Cromwell Road/New Bridge lane</b>	
J2:1/1 (with short)	715(In) 709(Out)
J2:1/2 (short)	6
J2:2/1	43
J2:3/1	96
J2:4/1	792
J2:5/1 (with short)	743(In) 710(Out)
J2:5/2 (short)	33
J2:6/1	31
J2:7/1	58

Full Input Data And Results

**Lane Saturation Flows**

Junction: J1: Tesco Junction								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J1:1/1 (Cromwell Rd (WB))	3.00	0.00	Y	Arm J2:1 Ahead	Inf	100.0 %	1915	1915
J1:1/2 (Cromwell Rd (WB))	3.00	0.00	Y	Arm J1:4 Right	11.11	100.0 %	1687	1687
J1:2/1 (Cromwell Rd (EB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:3/1 (Tesco Exit)	3.25	0.00	Y	Arm J1:2 Left	9.66	100.0 %	1679	1679
J1:3/2 (Tesco Exit)	3.25	0.00	Y	Arm J2:1 Right	19.52	100.0 %	1802	1802
J1:4/1 (Tesco Entrance)	3.25	0.00	Y				1940	1940
J1:5/1 (Cromwell Rd (EB))	3.00	0.00	Y	Arm J1:4 Left	12.19	100.0 %	1705	1705
J1:5/2 (Cromwell Rd (EB))	3.00	0.00	Y	Arm J1:2 Ahead	Inf	100.0 %	1915	1915



Full Input Data And Results

Junction: J2: Cromwell Road/New Bridge lane								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J2:1/1 (Cromwell Road (WB))	3.25	0.00	Y	Arm J2:2 Left	5.44	0.6 %	1937	1937
				Arm J2:4 Ahead	Inf	99.4 %		
J2:1/2 (Cromwell Road (WB))	3.25	0.00	Y	Arm J2:6 Right	15.50	100.0 %	1769	1769
J2:2/1 (New Bridge Lane (SB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:3/1 (New Bridge lane (NB))	3.77	0.00	Y	Arm J1:5 Right	23.70	32.3 %	1801	1801
				Arm J2:4 Left	10.77	61.5 %		
				Arm J2:6 Ahead	Inf	6.3 %		
J2:4/1 (Cromwell Road(WB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:5/1 (Cromwell Road(EB))	3.00	0.00	Y	Arm J1:5 Ahead	Inf	97.3 %	1906	1906
				Arm J2:6 Left	8.10	2.7 %		
J2:5/2 (Cromwell Road(EB))	3.00	0.00	Y	Arm J2:2 Right	13.03	100.0 %	1717	1717
J2:6/1 (New Bridge Lane(NB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:7/1 (New Bridge Lane (SB))	3.74	0.00	Y	Arm J1:5 Left	6.78	41.4 %	1754	1754
				Arm J2:2 Ahead	Inf	10.3 %		
				Arm J2:4 Right	17.14	48.3 %		

**Scenario 3: '2027 Baseline Increased by 20% AM Peak'** (FG5: '2027 Baseline +20%-AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination						
	A	B	C	D	E	Tot.	
Origin	A	0	66	0	2	4	72
	B	65	0	14	270	636	985
	C	4	12	0	4	10	30
	D	1	91	1	0	111	204
	E	3	525	5	122	0	655
	Tot.	73	694	20	398	761	1946

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 3: 2027 Baseline Increased by 20% AM Peak
<b>Junction: J1: Tesco Junction</b>	
J1:1/1 (with short)	655(In) 533(Out)
J1:1/2 (short)	122
J1:2/1	761
J1:3/1	111
J1:3/2	93
J1:4/1	398
J1:5/1 (short)	276
J1:5/2 (with short)	926(In) 650(Out)
<b>Junction: J2: Cromwell Road/New Bridge lane</b>	
J2:1/1 (with short)	626(In) 620(Out)
J2:1/2 (short)	6
J2:2/1	73
J2:3/1	72
J2:4/1	694
J2:5/1 (with short)	985(In) 920(Out)
J2:5/2 (short)	65
J2:6/1	20
J2:7/1	30

Full Input Data And Results

**Lane Saturation Flows**

Junction: J1: Tesco Junction								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J1:1/1 (Cromwell Rd (WB))	3.00	0.00	Y	Arm J2:1 Ahead	Inf	100.0 %	1915	1915
J1:1/2 (Cromwell Rd (WB))	3.00	0.00	Y	Arm J1:4 Right	11.11	100.0 %	1687	1687
J1:2/1 (Cromwell Rd (EB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:3/1 (Tesco Exit)	3.25	0.00	Y	Arm J1:2 Left	9.66	100.0 %	1679	1679
J1:3/2 (Tesco Exit)	3.25	0.00	Y	Arm J2:1 Right	19.52	100.0 %	1802	1802
J1:4/1 (Tesco Entrance)	3.25	0.00	Y				1940	1940
J1:5/1 (Cromwell Rd (EB))	3.00	0.00	Y	Arm J1:4 Left	12.19	100.0 %	1705	1705
J1:5/2 (Cromwell Rd (EB))	3.00	0.00	Y	Arm J1:2 Ahead	Inf	100.0 %	1915	1915

Full Input Data And Results

Junction: J2: Cromwell Road/New Bridge lane								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J2:1/1 (Cromwell Road (WB))	3.25	0.00	Y	Arm J2:2 Left	5.44	0.6 %	1937	1937
				Arm J2:4 Ahead	Inf	99.4 %		
J2:1/2 (Cromwell Road (WB))	3.25	0.00	Y	Arm J2:6 Right	15.50	100.0 %	1769	1769
J2:2/1 (New Bridge Lane (SB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:3/1 (New Bridge lane (NB))	3.77	0.00	Y	Arm J1:5 Right	23.70	8.3 %	1758	1758
				Arm J2:4 Left	10.77	91.7 %		
				Arm J2:6 Ahead	Inf	0.0 %		
J2:4/1 (Cromwell Road(WB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:5/1 (Cromwell Road(EB))	3.00	0.00	Y	Arm J1:5 Ahead	Inf	98.5 %	1910	1910
				Arm J2:6 Left	8.10	1.5 %		
J2:5/2 (Cromwell Road(EB))	3.00	0.00	Y	Arm J2:2 Right	13.03	100.0 %	1717	1717
J2:6/1 (New Bridge Lane(NB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:7/1 (New Bridge Lane (SB))	3.74	0.00	Y	Arm J1:5 Left	6.78	46.7 %	1747	1747
				Arm J2:2 Ahead	Inf	13.3 %		
				Arm J2:4 Right	17.14	40.0 %		

Scenario 4: ' 2027 Baseline Increased by 20% PM Peak' (FG6: '2027 Baseline +20%- PM Peak', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination						
	A	B	C	D	E	Tot.	
Origin	A	0	71	7	11	26	115
	B	40	0	23	247	582	892
	C	7	34	0	9	20	70
	D	0	55	1	0	58	114
	E	5	791	8	54	0	858
	Tot.	52	951	39	321	686	2049

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 4: 2027 Baseline Increased by 20% PM Peak
<b>Junction: J1: Tesco Junction</b>	
J1:1/1 (with short)	858(In) 804(Out)
J1:1/2 (short)	54
J1:2/1	686
J1:3/1	58
J1:3/2	56
J1:4/1	321
J1:5/1 (short)	267
J1:5/2 (with short)	895(In) 628(Out)
<b>Junction: J2: Cromwell Road/New Bridge lane</b>	
J2:1/1 (with short)	860(In) 851(Out)
J2:1/2 (short)	9
J2:2/1	52
J2:3/1	115
J2:4/1	951
J2:5/1 (with short)	892(In) 852(Out)
J2:5/2 (short)	40
J2:6/1	39
J2:7/1	70

Full Input Data And Results

**Lane Saturation Flows**

Junction: J1: Tesco Junction								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J1:1/1 (Cromwell Rd (WB))	3.00	0.00	Y	Arm J2:1 Ahead	Inf	100.0 %	1915	1915
J1:1/2 (Cromwell Rd (WB))	3.00	0.00	Y	Arm J1:4 Right	11.11	100.0 %	1687	1687
J1:2/1 (Cromwell Rd (EB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:3/1 (Tesco Exit)	3.25	0.00	Y	Arm J1:2 Left	9.66	100.0 %	1679	1679
J1:3/2 (Tesco Exit)	3.25	0.00	Y	Arm J2:1 Right	19.52	100.0 %	1802	1802
J1:4/1 (Tesco Entrance)	3.25	0.00	Y				1940	1940
J1:5/1 (Cromwell Rd (EB))	3.00	0.00	Y	Arm J1:4 Left	12.19	100.0 %	1705	1705
J1:5/2 (Cromwell Rd (EB))	3.00	0.00	Y	Arm J1:2 Ahead	Inf	100.0 %	1915	1915

Full Input Data And Results

Junction: J2: Cromwell Road/New Bridge lane								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J2:1/1 (Cromwell Road (WB))	3.25	0.00	Y	Arm J2:2 Left	5.44	0.6 %	1937	1937
				Arm J2:4 Ahead	Inf	99.4 %		
J2:1/2 (Cromwell Road (WB))	3.25	0.00	Y	Arm J2:6 Right	15.50	100.0 %	1769	1769
J2:2/1 (New Bridge Lane (SB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:3/1 (New Bridge lane (NB))	3.77	0.00	Y	Arm J1:5 Right	23.70	32.2 %	1801	1801
				Arm J2:4 Left	10.77	61.7 %		
				Arm J2:6 Ahead	Inf	6.1 %		
J2:4/1 (Cromwell Road(WB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:5/1 (Cromwell Road(EB))	3.00	0.00	Y	Arm J1:5 Ahead	Inf	97.3 %	1905	1905
				Arm J2:6 Left	8.10	2.7 %		
J2:5/2 (Cromwell Road(EB))	3.00	0.00	Y	Arm J2:2 Right	13.03	100.0 %	1717	1717
J2:6/1 (New Bridge Lane(NB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:7/1 (New Bridge Lane (SB))	3.74	0.00	Y	Arm J1:5 Left	6.78	41.4 %	1754	1754
				Arm J2:2 Ahead	Inf	10.0 %		
				Arm J2:4 Right	17.14	48.6 %		

**Scenario 5: '2027 Baseline increased by 10% AM Peak'** (FG7: '2027 Baseline +10%- AM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination						
	A	B	C	D	E	Tot.	
Origin	A	0	61	0	2	4	67
	B	59	0	13	248	583	903
	C	3	11	0	4	9	27
	D	0	83	1	0	101	185
	E	3	481	5	111	0	600
	Tot.	65	636	19	365	697	1782

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 5: 2027 Baseline increased by 10% AM Peak
<b>Junction: J1: Tesco Junction</b>	
J1:1/1 (with short)	600(In) 489(Out)
J1:1/2 (short)	111
J1:2/1	697
J1:3/1	101
J1:3/2	84
J1:4/1	365
J1:5/1 (short)	254
J1:5/2 (with short)	850(In) 596(Out)
<b>Junction: J2: Cromwell Road/New Bridge lane</b>	
J2:1/1 (with short)	573(In) 567(Out)
J2:1/2 (short)	6
J2:2/1	65
J2:3/1	67
J2:4/1	636
J2:5/1 (with short)	903(In) 844(Out)
J2:5/2 (short)	59
J2:6/1	19
J2:7/1	27



Full Input Data And Results

**Lane Saturation Flows**

Junction: J1: Tesco Junction								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J1:1/1 (Cromwell Rd (WB))	3.00	0.00	Y	Arm J2:1 Ahead	Inf	100.0 %	1915	1915
J1:1/2 (Cromwell Rd (WB))	3.00	0.00	Y	Arm J1:4 Right	11.11	100.0 %	1687	1687
J1:2/1 (Cromwell Rd (EB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:3/1 (Tesco Exit)	3.25	0.00	Y	Arm J1:2 Left	9.66	100.0 %	1679	1679
J1:3/2 (Tesco Exit)	3.25	0.00	Y	Arm J2:1 Right	19.52	100.0 %	1802	1802
J1:4/1 (Tesco Entrance)	3.25	0.00	Y				1940	1940
J1:5/1 (Cromwell Rd (EB))	3.00	0.00	Y	Arm J1:4 Left	12.19	100.0 %	1705	1705
J1:5/2 (Cromwell Rd (EB))	3.00	0.00	Y	Arm J1:2 Ahead	Inf	100.0 %	1915	1915

Full Input Data And Results

Junction: J2: Cromwell Road/New Bridge lane								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J2:1/1 (Cromwell Road (WB))	3.25	0.00	Y	Arm J2:2 Left	5.44	0.5 %	1937	1937
				Arm J2:4 Ahead	Inf	99.5 %		
J2:1/2 (Cromwell Road (WB))	3.25	0.00	Y	Arm J2:6 Right	15.50	100.0 %	1769	1769
J2:2/1 (New Bridge Lane (SB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:3/1 (New Bridge lane (NB))	3.77	0.00	Y	Arm J1:5 Right	23.70	9.0 %	1759	1759
				Arm J2:4 Left	10.77	91.0 %		
				Arm J2:6 Ahead	Inf	0.0 %		
J2:4/1 (Cromwell Road(WB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:5/1 (Cromwell Road(EB))	3.00	0.00	Y	Arm J1:5 Ahead	Inf	98.5 %	1910	1910
				Arm J2:6 Left	8.10	1.5 %		
J2:5/2 (Cromwell Road(EB))	3.00	0.00	Y	Arm J2:2 Right	13.03	100.0 %	1717	1717
J2:6/1 (New Bridge Lane(NB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J2:7/1 (New Bridge Lane (SB))	3.74	0.00	Y	Arm J1:5 Left	6.78	48.1 %	1741	1741
				Arm J2:2 Ahead	Inf	11.1 %		
				Arm J2:4 Right	17.14	40.7 %		

**Scenario 6: '2027 Baseline increased by 10% PM Peak'** (FG8: '2027 Baseline+10%- PM Peak', Plan 1: 'Network Control Plan 1')

**Traffic Flows, Desired**

**Desired Flow :**

	Destination						
	A	B	C	D	E	Tot.	
Origin	A	0	65	7	10	24	106
	B	36	0	21	227	533	817
	C	7	31	0	8	19	65
	D	0	50	0	0	54	104
	E	4	725	7	50	0	786
	Tot.	47	871	35	295	630	1878

Full Input Data And Results

**Traffic Lane Flows**

Lane	Scenario 6: 2027 Baseline increased by 10% PM Peak
<b>Junction: J1: Tesco Junction</b>	
J1:1/1 (with short)	786(In) 736(Out)
J1:1/2 (short)	50
J1:2/1	630
J1:3/1	54
J1:3/2	50
J1:4/1	295
J1:5/1 (short)	245
J1:5/2 (with short)	821(In) 576(Out)
<b>Junction: J2: Cromwell Road/New Bridge lane</b>	
J2:1/1 (with short)	786(In) 779(Out)
J2:1/2 (short)	7
J2:2/1	47
J2:3/1	106
J2:4/1	871
J2:5/1 (with short)	817(In) 781(Out)
J2:5/2 (short)	36
J2:6/1	35
J2:7/1	65

Full Input Data And Results

**Lane Saturation Flows**

Junction: J1: Tesco Junction								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J1:1/1 (Cromwell Rd (WB))	3.00	0.00	Y	Arm J2:1 Ahead	Inf	100.0 %	1915	1915
J1:1/2 (Cromwell Rd (WB))	3.00	0.00	Y	Arm J1:4 Right	11.11	100.0 %	1687	1687
J1:2/1 (Cromwell Rd (EB) Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:3/1 (Tesco Exit)	3.25	0.00	Y	Arm J1:2 Left	9.66	100.0 %	1679	1679
J1:3/2 (Tesco Exit)	3.25	0.00	Y	Arm J2:1 Right	19.52	100.0 %	1802	1802
J1:4/1 (Tesco Entrance)	3.25	0.00	Y				1940	1940
J1:5/1 (Cromwell Rd (EB))	3.00	0.00	Y	Arm J1:4 Left	12.19	100.0 %	1705	1705
J1:5/2 (Cromwell Rd (EB))	3.00	0.00	Y	Arm J1:2 Ahead	Inf	100.0 %	1915	1915

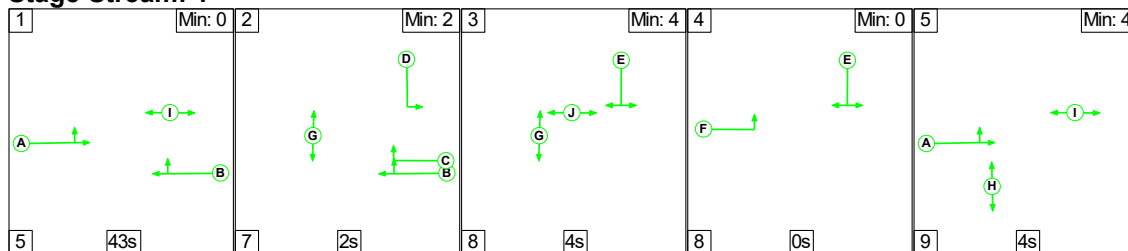
Full Input Data And Results

Junction: J2: Cromwell Road/New Bridge lane								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J2:1/1 (Cromwell Road (WB))	3.25	0.00	Y	Arm J2:2 Left	5.44	0.5 %	1937	1937
J2:1/2 (Cromwell Road (WB))	3.25	0.00	Y	Arm J2:4 Ahead	Inf	99.5 %		
J2:2/1 (New Bridge Lane (SB) Lane 1)				Infinite Saturation Flow			Inf	Inf
J2:3/1 (New Bridge lane (NB))	3.77	0.00	Y	Arm J1:5 Right	23.70	32.1 %	1802	1802
				Arm J2:4 Left	10.77	61.3 %		
				Arm J2:6 Ahead	Inf	6.6 %		
J2:4/1 (Cromwell Road(WB) Lane 1)				Infinite Saturation Flow			Inf	Inf
J2:5/1 (Cromwell Road(EB))	3.00	0.00	Y	Arm J1:5 Ahead	Inf	97.3 %	1906	1906
				Arm J2:6 Left	8.10	2.7 %		
J2:5/2 (Cromwell Road(EB))	3.00	0.00	Y	Arm J2:2 Right	13.03	100.0 %	1717	1717
J2:6/1 (New Bridge Lane(NB) Lane 1)				Infinite Saturation Flow			Inf	Inf
J2:7/1 (New Bridge Lane (SB))	3.74	0.00	Y	Arm J1:5 Left	6.78	41.5 %	1755	1755
				Arm J2:2 Ahead	Inf	10.8 %		
				Arm J2:4 Right	17.14	47.7 %		

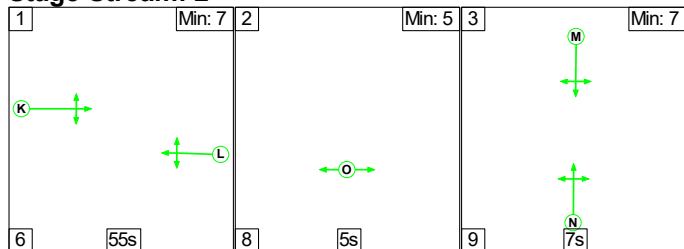
Scenario 1: '2027 Base+Development AM Peak' (FG1: '2027 Development flows- AM Peak', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

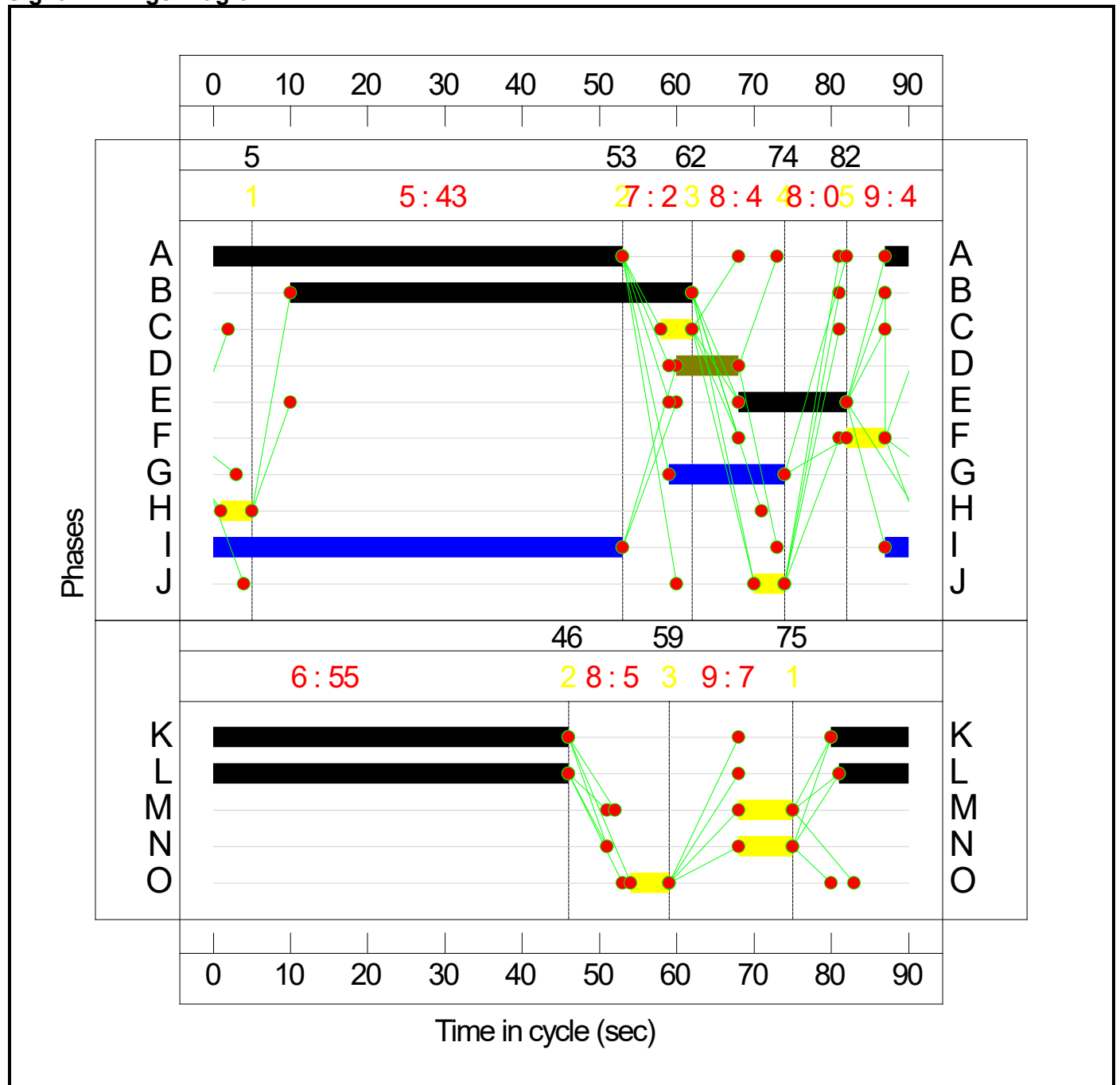
Stage Stream: 1

Stage	1	2	3	4	5
Duration	43	2	4	0	4
Change Point	5	53	62	74	82

Stage Stream: 2

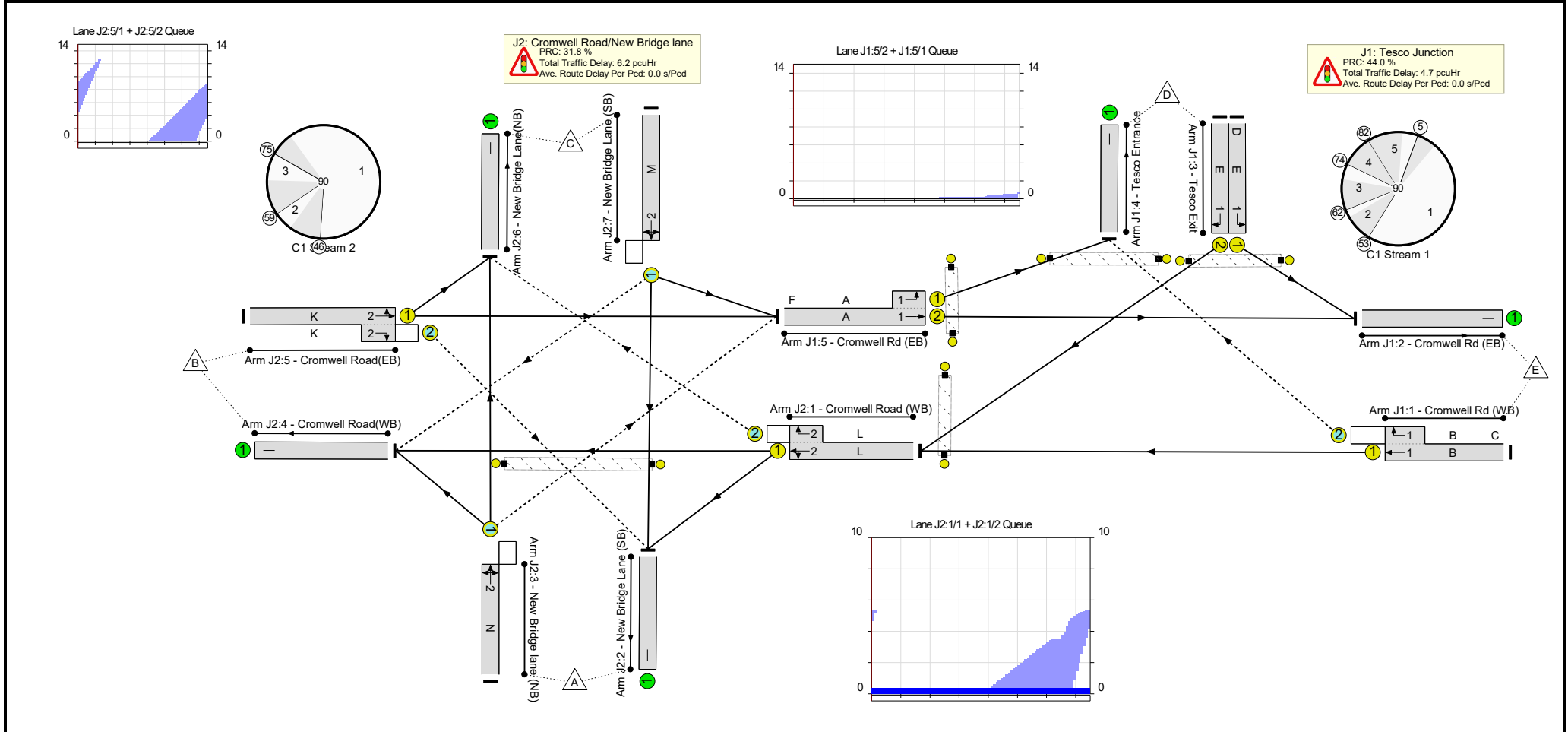
Stage	1	2	3
Duration	55	5	7
Change Point	75	46	59

Signal Timings Diagram



# Full Input Data And Results

## Network Layout Diagram



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 (%)
<b>Network: Junction Upgrading</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>68.3%</b>
<b>J1: Tesco Junction</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>62.5%</b>
1/1+1/2	Cromwell Rd (WB) Right Ahead	U+O	1	N/A	B	C	1	52	4	545	1915:1687	927+211	47.9 : 47.9%
2/1	Cromwell Rd (EB)	U	N/A	N/A	-		-	-	-	634	Inf	Inf	0.0%
3/1	Tesco Exit Left	U	1	N/A	E	D	1	22	8	92	1679	429	21.4%
3/2	Tesco Exit Right	U	1	N/A	E		1	14	-	77	1802	300	25.6%
4/1	Tesco Entrance	U	N/A	N/A	-		-	-	-	331	1940	1940	17.1%
5/2+5/1	Cromwell Rd (EB) Ahead Left	U	1	N/A	A	F	1	56:61	5	772	1915:1705	867+368	62.5 : 62.5%
Ped Link: P1	Tesco Entrance	-	1	-	J		1	4	-	0	-	0	0.0%
Ped Link: P2	Tesco Exit	-	1	-	I		1	56	-	0	-	0	0.0%
Ped Link: P3	Cromwell Road EB	-	-	-			0	0	-	0	-	0	0.0%
Ped Link: P4	Cromwell Road NB	-	1	-	H		1	4	-	0	-	0	0.0%
<b>J2: Cromwell Road/New Bridge lane</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>68.3%</b>
1/1+1/2	Cromwell Road (WB) Left Ahead Right	U+O	2	N/A	L		1	55	-	521	1937:1769	1204+12	42.8 : 42.8%
2/1	New Bridge Lane (SB)	U	N/A	N/A	-		-	-	-	60	Inf	Inf	0.0%
3/1	New Bridge lane (NB) Right Left Ahead	O	2	N/A	N		1	7	-	60	1758	156	38.4%
4/1	Cromwell Road(WB)	U	N/A	N/A	-		-	-	-	578	Inf	Inf	0.0%



Full Input Data And Results

5/1+5/2	Cromwell Road(EB) Ahead Right Left	U+O	2	N/A	K		1	56	-	821	1909:1717	1123+79	68.3 : 68.3%
6/1	New Bridge Lane(NB)	U	N/A	N/A	-		-	-	-	17	Inf	Inf	0.0%
7/1	New Bridge Lane (SB) Left Ahead Right	O	2	N/A	M		1	7	-	25	1743	155	16.1%
Ped Link: P1	New Bridge Lane Crossing	-	2	-	O		1	5	-	0	-	0	0.0%

Full Input Data And Results

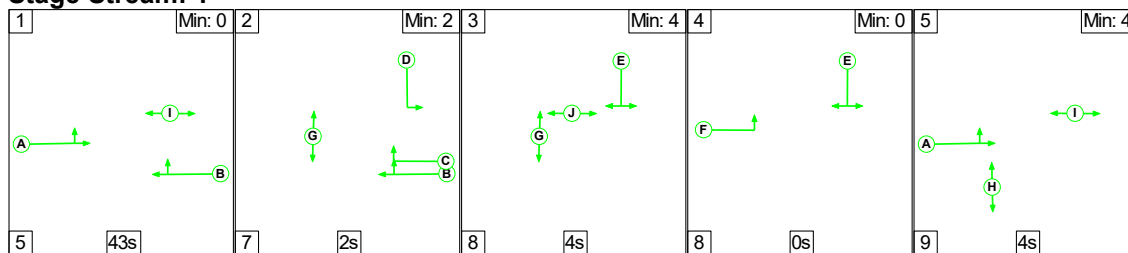
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: Junction Upgrading</b>	-	-	<b>74</b>	<b>98</b>	<b>3</b>	<b>7.4</b>	<b>3.6</b>	<b>0.1</b>	<b>11.0</b>	-	-	-	-
<b>J1: Tesco Junction</b>	-	-	<b>0</b>	<b>98</b>	<b>3</b>	<b>3.0</b>	<b>1.7</b>	<b>0.0</b>	<b>4.7</b>	-	-	-	-
1/1+1/2	545	545	0	98	3	1.5	0.5	0.0	2.0	12.9	6.6	0.5	7.1
2/1	634	634	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	92	92	-	-	-	0.7	0.1	-	0.8	31.7	1.8	0.1	1.9
3/2	77	77	-	-	-	0.7	0.2	-	0.9	40.7	1.7	0.2	1.8
4/1	331	331	-	-	-	0.0	0.1	-	0.1	1.1	1.1	0.1	1.2
5/2+5/1	772	772	-	-	-	0.2	0.8	-	1.0	4.6	0.7	0.8	1.5
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
<b>J2: Cromwell Road/New Bridge lane</b>	-	-	<b>74</b>	<b>0</b>	<b>0</b>	<b>4.3</b>	<b>1.9</b>	<b>0.1</b>	<b>6.2</b>	-	-	-	-
1/1+1/2	521	521	5	0	0	1.0	0.4	0.0	1.4	9.7	5.0	0.4	5.4
2/1	60	60	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	60	60	5	0	0	0.6	0.3	0.0	1.0	57.3	1.4	0.3	1.7
4/1	578	578	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1+5/2	821	821	54	0	0	2.4	1.1	0.0	3.5	15.4	13.0	1.1	14.1
6/1	17	17	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	25	25	10	0	0	0.3	0.1	0.0	0.4	52.9	0.6	0.1	0.7
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
			C1 Stream: 1 PRC for Signalled Lanes (%):	44.0	Total Delay for Signalled Lanes (pcuHr):			4.63	Cycle Time (s):		90		
			C1 Stream: 2 PRC for Signalled Lanes (%):	31.8	Total Delay for Signalled Lanes (pcuHr):			6.25	Cycle Time (s):		90		
			PRC Over All Lanes (%):	31.8	Total Delay Over All Lanes (pcuHr):			10.98					

Full Input Data And Results

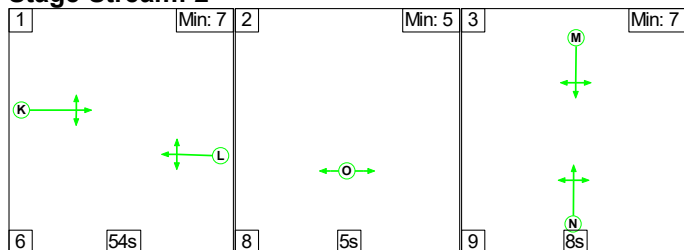
**Scenario 2: '2027 Base+Development PM Peak'** (FG2: '2027 Development flows PM Peak', Plan 1: 'Network Control Plan 1')

**Stage Sequence Diagram**

**Stage Stream: 1**



**Stage Stream: 2**



**Stage Timings**

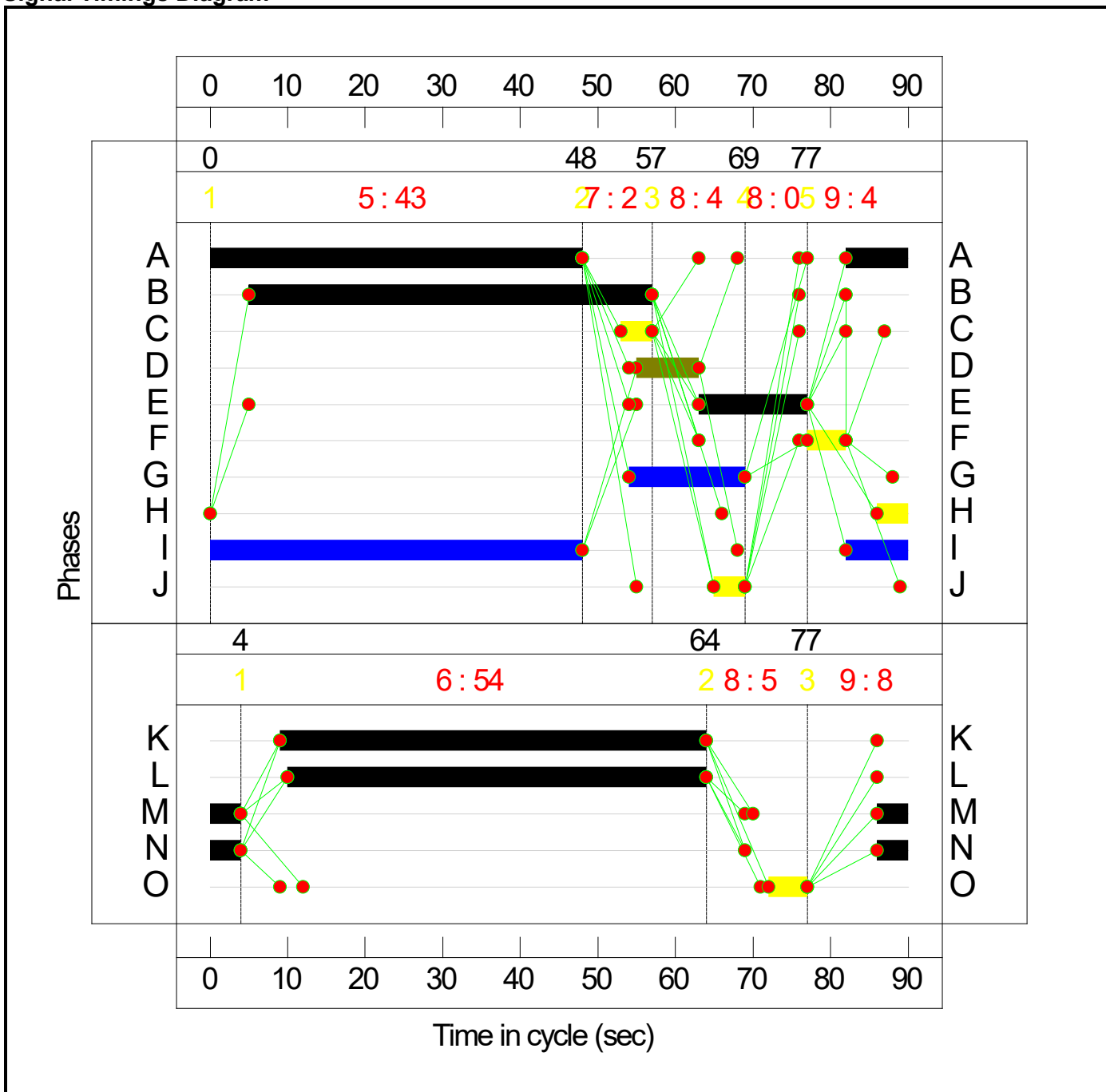
**Stage Stream: 1**

Stage	1	2	3	4	5
Duration	43	2	4	0	4
Change Point	0	48	57	69	77

**Stage Stream: 2**

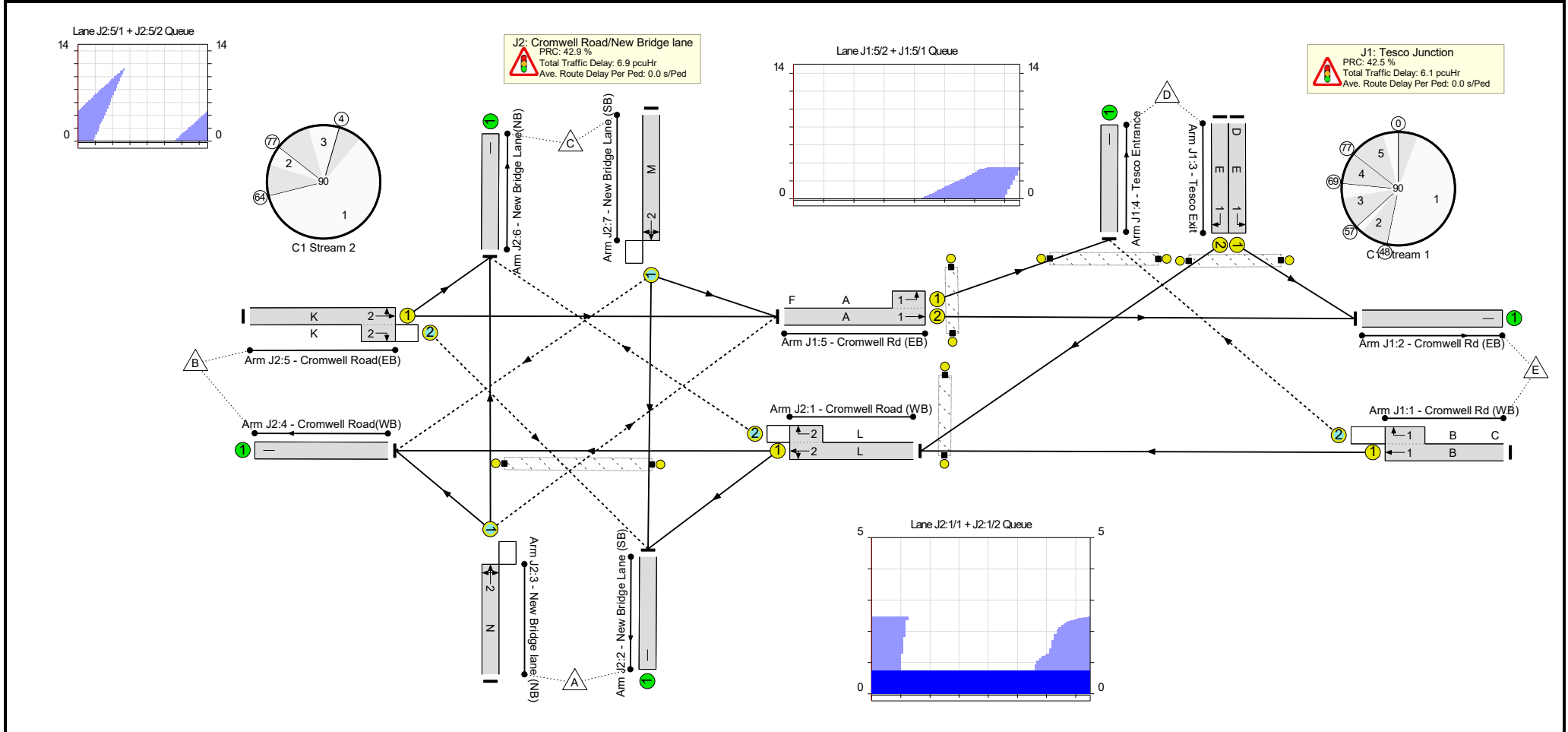
Stage	1	2	3
Duration	54	5	8
Change Point	4	64	77

Signal Timings Diagram



# Full Input Data And Results

## Network Layout Diagram



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 (%)
<b>Network: Junction Upgrading</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>63.1%</b>
<b>J1: Tesco Junction</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>63.1%</b>
1/1+1/2	Cromwell Rd (WB) Right Ahead	U+O	1	N/A	B	C	1	52	4	714	1915:1687	1060+71	63.1 : 63.1%
2/1	Cromwell Rd (EB)	U	N/A	N/A	-		-	-	-	573	Inf	Inf	0.0%
3/1	Tesco Exit Left	U	1	N/A	E	D	1	22	8	49	1679	429	11.4%
3/2	Tesco Exit Right	U	1	N/A	E		1	14	-	46	1802	300	15.3%
4/1	Tesco Entrance	U	N/A	N/A	-		-	-	-	267	1940	1940	13.8%
5/2+5/1	Cromwell Rd (EB) Ahead Left	U	1	N/A	A	F	1	56:61	5	746	1915:1705	868+368	60.4 : 60.4%
Ped Link: P1	Tesco Entrance	-	1	-	J		1	4	-	0	-	0	0.0%
Ped Link: P2	Tesco Exit	-	1	-	I		1	56	-	0	-	0	0.0%
Ped Link: P3	Cromwell Road EB	-	-	-			0	0	-	0	-	0	0.0%
Ped Link: P4	Cromwell Road NB	-	1	-	H		1	4	-	0	-	0	0.0%
<b>J2: Cromwell Road/New Bridge lane</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>63.0%</b>
1/1+1/2	Cromwell Road (WB) Left Ahead Right	U+O	2	N/A	L		1	54	-	715	1937:1769	1184+10	59.9 : 59.9%
2/1	New Bridge Lane (SB)	U	N/A	N/A	-		-	-	-	43	Inf	Inf	0.0%
3/1	New Bridge lane (NB) Right Left Ahead	O	2	N/A	N		1	8	-	96	1801	180	53.3%
4/1	Cromwell Road(WB)	U	N/A	N/A	-		-	-	-	792	Inf	Inf	0.0%

Full Input Data And Results

5/1+5/2	Cromwell Road(EB) Ahead Right Left	U+O	2	N/A	K		1	55	-	743	1906:1717	1127+52	63.0 : 63.0%
6/1	New Bridge Lane(NB)	U	N/A	N/A	-		-	-	-	31	Inf	Inf	0.0%
7/1	New Bridge Lane (SB) Left Ahead Right	O	2	N/A	M		1	8	-	58	1754	175	33.1%
Ped Link: P1	New Bridge Lane Crossing	-	2	-	O		1	5	-	0	-	0	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)
<b>Network: Junction Upgrading</b>	-	-	<b>98</b>	<b>44</b>	<b>2</b>	<b>8.6</b>	<b>4.2</b>	<b>0.1</b>	<b>13.0</b>	-	-	-	-
<b>J1: Tesco Junction</b>	-	-	<b>0</b>	<b>44</b>	<b>2</b>	<b>4.3</b>	<b>1.8</b>	<b>0.0</b>	<b>6.1</b>	-	-	-	-
1/1+1/2	714	714	0	44	2	2.3	0.9	0.0	3.2	16.1	11.3	0.9	12.1
2/1	573	573	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	49	49	-	-	-	0.3	0.1	-	0.4	30.4	0.9	0.1	1.0
3/2	46	46	-	-	-	0.4	0.1	-	0.5	39.1	1.0	0.1	1.1
4/1	267	267	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/2+5/1	746	746	-	-	-	1.2	0.8	-	1.9	9.3	3.5	0.8	4.3
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
<b>J2: Cromwell Road/New Bridge lane</b>	-	-	<b>98</b>	<b>0</b>	<b>0</b>	<b>4.4</b>	<b>2.4</b>	<b>0.1</b>	<b>6.9</b>	-	-	-	-
1/1+1/2	715	715	6	0	0	0.6	0.7	0.0	1.3	6.6	1.7	0.7	2.5
2/1	43	43	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	96	96	31	0	0	1.0	0.6	0.0	1.6	59.7	2.3	0.6	2.8
4/1	792	792	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1+5/2	743	743	33	0	0	2.2	0.8	0.1	3.1	15.0	11.2	0.8	12.1
6/1	31	31	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	58	58	28	0	0	0.6	0.2	0.0	0.9	54.4	1.3	0.2	1.6
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
			C1 Stream: 1 PRC for Signalled Lanes (%):	42.5	Total Delay for Signalled Lanes (pcuHr):			6.04	Cycle Time (s):		90		
			C1 Stream: 2 PRC for Signalled Lanes (%):	42.9	Total Delay for Signalled Lanes (pcuHr):			6.87	Cycle Time (s):		90		
			PRC Over All Lanes (%):	42.5	Total Delay Over All Lanes (pcuHr):			12.99					

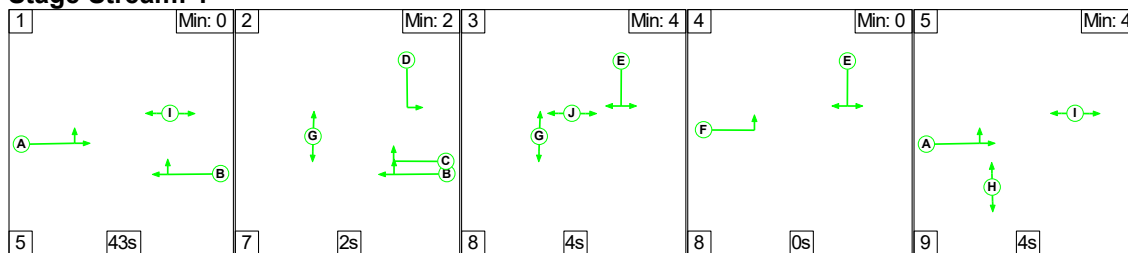


Full Input Data And Results

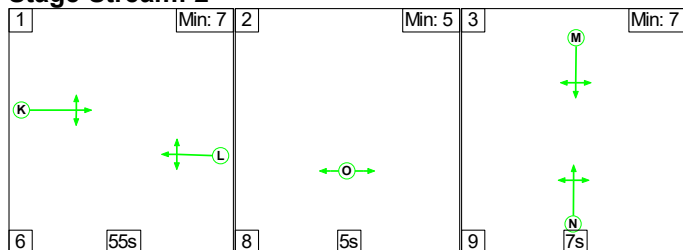
Scenario 3: '2027 Baseline Increased by 20% AM Peak' (FG5: '2027 Baseline +20%-AM Peak', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

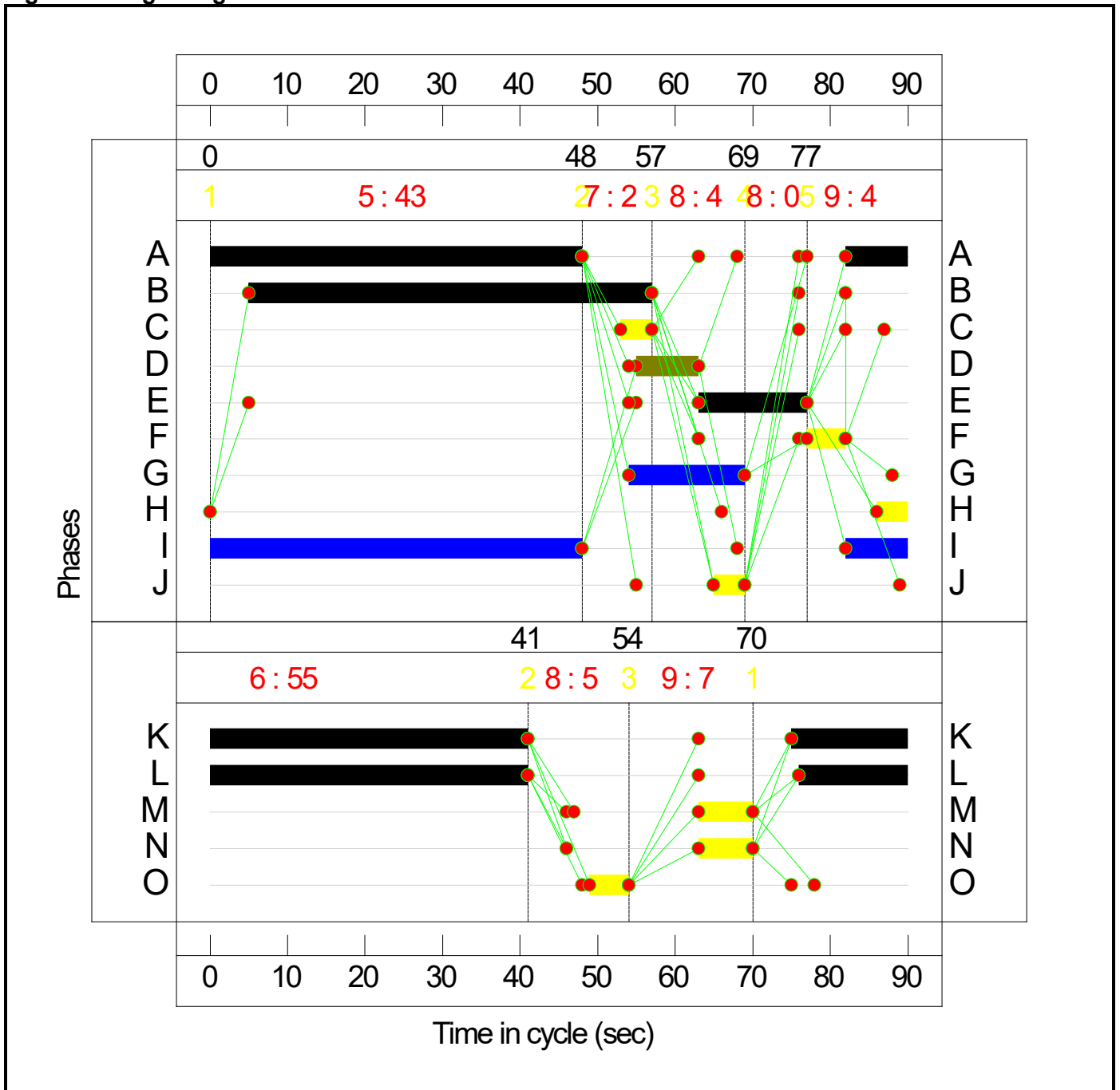
Stage Stream: 1

Stage	1	2	3	4	5
Duration	43	2	4	0	4
Change Point	0	48	57	69	77

Stage Stream: 2

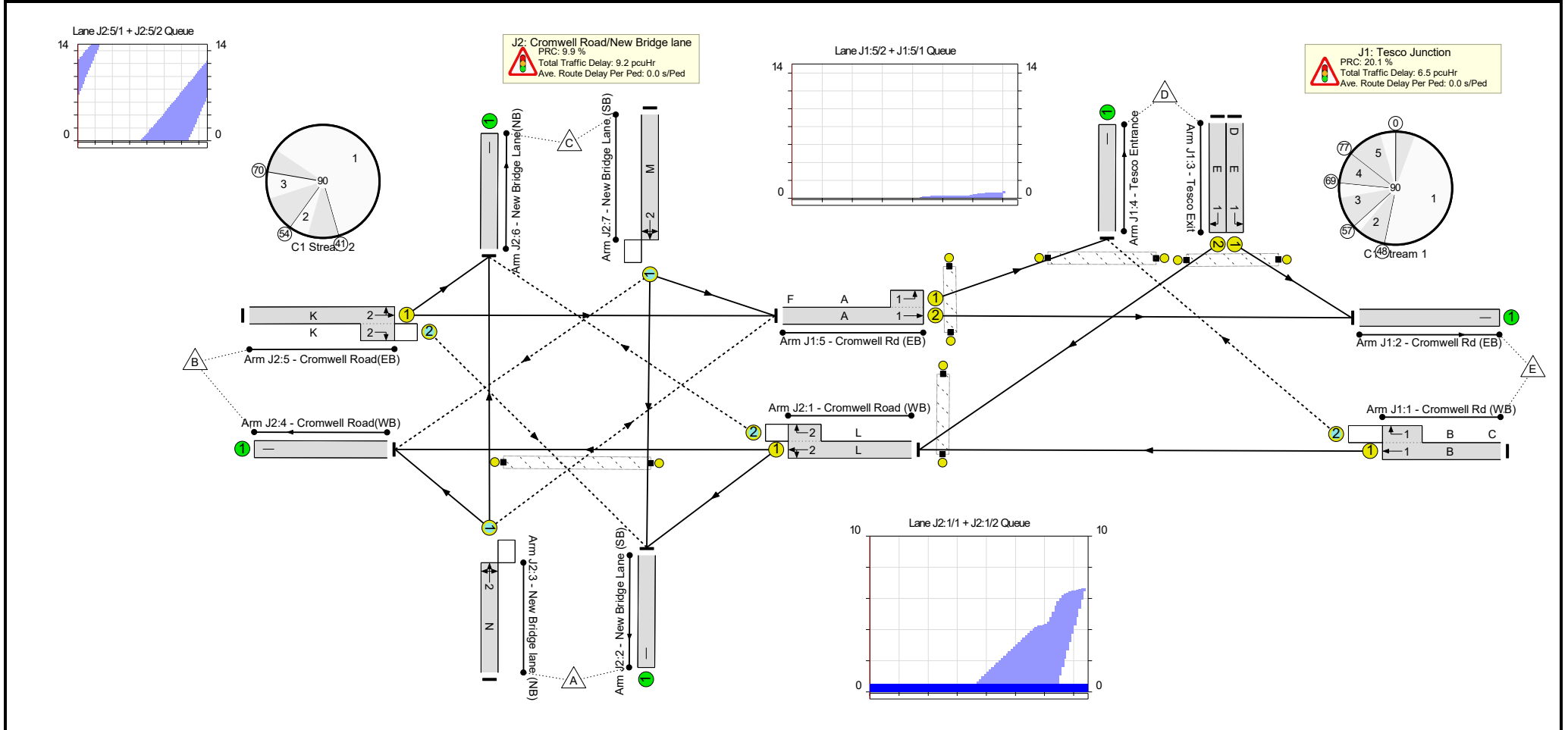
Stage	1	2	3
Duration	55	5	7
Change Point	70	41	54

Signal Timings Diagram



# Full Input Data And Results

## Network Layout Diagram



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 (%)
<b>Network: Junction Upgrading</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>81.9%</b>
<b>J1: Tesco Junction</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>75.0%</b>
1/1+1/2	Cromwell Rd (WB) Right Ahead	U+O	1	N/A	B	C	1	52	4	655	1915:1687	926+212	57.5 : 57.5%
2/1	Cromwell Rd (EB)	U	N/A	N/A	-		-	-	-	761	Inf	Inf	0.0%
3/1	Tesco Exit Left	U	1	N/A	E	D	1	22	8	111	1679	429	25.9%
3/2	Tesco Exit Right	U	1	N/A	E		1	14	-	93	1802	300	31.0%
4/1	Tesco Entrance	U	N/A	N/A	-		-	-	-	398	1940	1940	20.5%
5/2+5/1	Cromwell Rd (EB) Ahead Left	U	1	N/A	A	F	1	56:61	5	926	1915:1705	867+368	75.0 : 75.0%
Ped Link: P1	Tesco Entrance	-	1	-	J		1	4	-	0	-	0	0.0%
Ped Link: P2	Tesco Exit	-	1	-	I		1	56	-	0	-	0	0.0%
Ped Link: P3	Cromwell Road EB	-	-	-			0	0	-	0	-	0	0.0%
Ped Link: P4	Cromwell Road NB	-	1	-	H		1	4	-	0	-	0	0.0%
<b>J2: Cromwell Road/New Bridge lane</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>81.9%</b>
1/1+1/2	Cromwell Road (WB) Left Ahead Right	U+O	2	N/A	L		1	55	-	626	1937:1769	1204+12	51.5 : 51.5%
2/1	New Bridge Lane (SB)	U	N/A	N/A	-		-	-	-	73	Inf	Inf	0.0%
3/1	New Bridge lane (NB) Right Left Ahead	O	2	N/A	N		1	7	-	72	1758	156	46.1%
4/1	Cromwell Road(WB)	U	N/A	N/A	-		-	-	-	694	Inf	Inf	0.0%

Full Input Data And Results

5/1+5/2	Cromwell Road(EB) Ahead Right Left	U+O	2	N/A	K		1	56	-	985	1910:1717	1123+79	81.9 : 81.9%
6/1	New Bridge Lane(NB)	U	N/A	N/A	-		-	-	-	20	Inf	Inf	0.0%
7/1	New Bridge Lane (SB) Left Ahead Right	O	2	N/A	M		1	7	-	30	1747	155	19.3%
Ped Link: P1	New Bridge Lane Crossing	-	2	-	O		1	5	-	0	-	0	0.0%

Full Input Data And Results

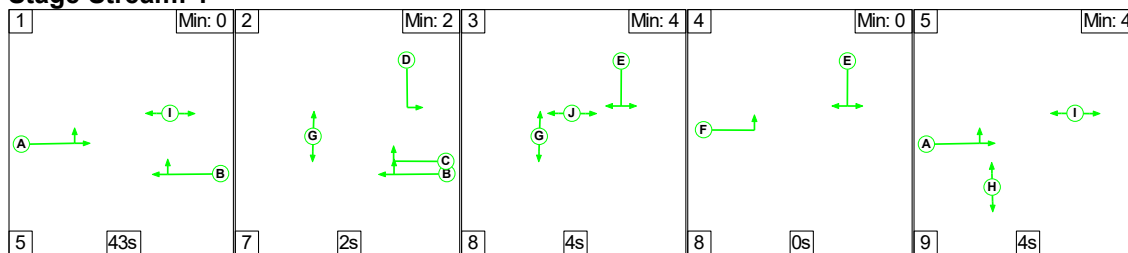
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: Junction Upgrading</b>	-	-	<b>89</b>	<b>118</b>	<b>4</b>	<b>9.6</b>	<b>6.0</b>	<b>0.1</b>	<b>15.7</b>	-	-	-	-
<b>J1: Tesco Junction</b>	-	-	<b>0</b>	<b>118</b>	<b>4</b>	<b>3.8</b>	<b>2.7</b>	<b>0.0</b>	<b>6.5</b>	-	-	-	-
1/1+1/2	655	655	0	118	4	2.0	0.7	0.0	2.6	14.4	9.0	0.7	9.7
2/1	761	761	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	111	111	-	-	-	0.8	0.2	-	1.0	32.4	2.2	0.2	2.4
3/2	93	93	-	-	-	0.9	0.2	-	1.1	41.6	2.0	0.2	2.3
4/1	398	398	-	-	-	0.0	0.1	-	0.1	1.2	1.1	0.1	1.2
5/2+5/1	926	926	-	-	-	0.2	1.5	-	1.7	6.5	0.8	1.5	2.3
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
<b>J2: Cromwell Road/New Bridge lane</b>	-	-	<b>89</b>	<b>0</b>	<b>0</b>	<b>5.8</b>	<b>3.3</b>	<b>0.1</b>	<b>9.2</b>	-	-	-	-
1/1+1/2	626	626	6	0	0	1.3	0.5	0.0	1.8	10.5	6.1	0.5	6.6
2/1	73	73	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	72	72	6	0	0	0.8	0.4	0.0	1.2	60.1	1.7	0.4	2.1
4/1	694	694	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1+5/2	985	985	65	0	0	3.4	2.2	0.1	5.7	20.9	18.4	2.2	20.6
6/1	20	20	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	30	30	12	0	0	0.3	0.1	0.0	0.4	53.6	0.7	0.1	0.8
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
			C1 Stream: 1 PRC for Signalled Lanes (%):	20.1	Total Delay for Signalled Lanes (pcuHr):			6.38	Cycle Time (s):		90		
			C1 Stream: 2 PRC for Signalled Lanes (%):	9.9	Total Delay for Signalled Lanes (pcuHr):			9.20	Cycle Time (s):		90		
			PRC Over All Lanes (%):	9.9	Total Delay Over All Lanes (pcuHr):			15.70					

Full Input Data And Results

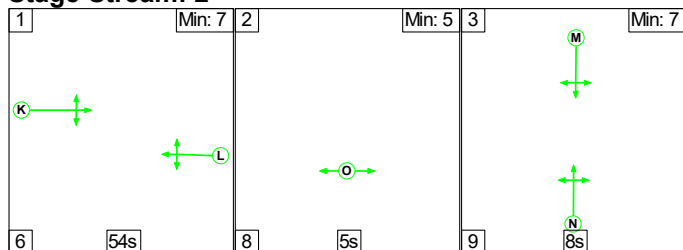
**Scenario 4: ' 2027 Baseline Increased by 20% PM Peak'** (FG6: '2027 Baseline +20%- PM Peak', Plan 1: 'Network Control Plan 1')

**Stage Sequence Diagram**

**Stage Stream: 1**



**Stage Stream: 2**



**Stage Timings**

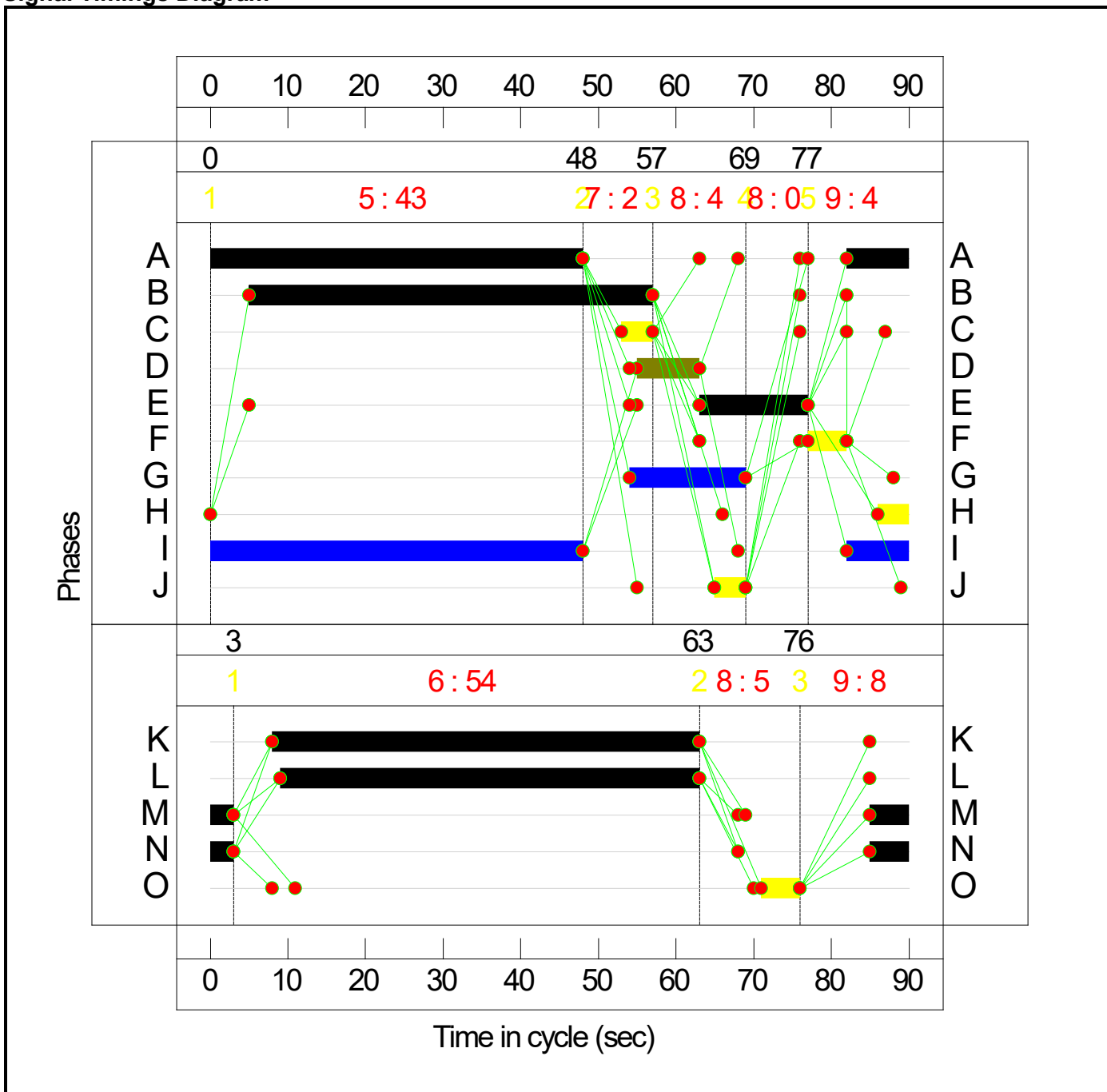
**Stage Stream: 1**

Stage	1	2	3	4	5
Duration	43	2	4	0	4
Change Point	0	48	57	69	77

**Stage Stream: 2**

Stage	1	2	3
Duration	54	5	8
Change Point	3	63	76

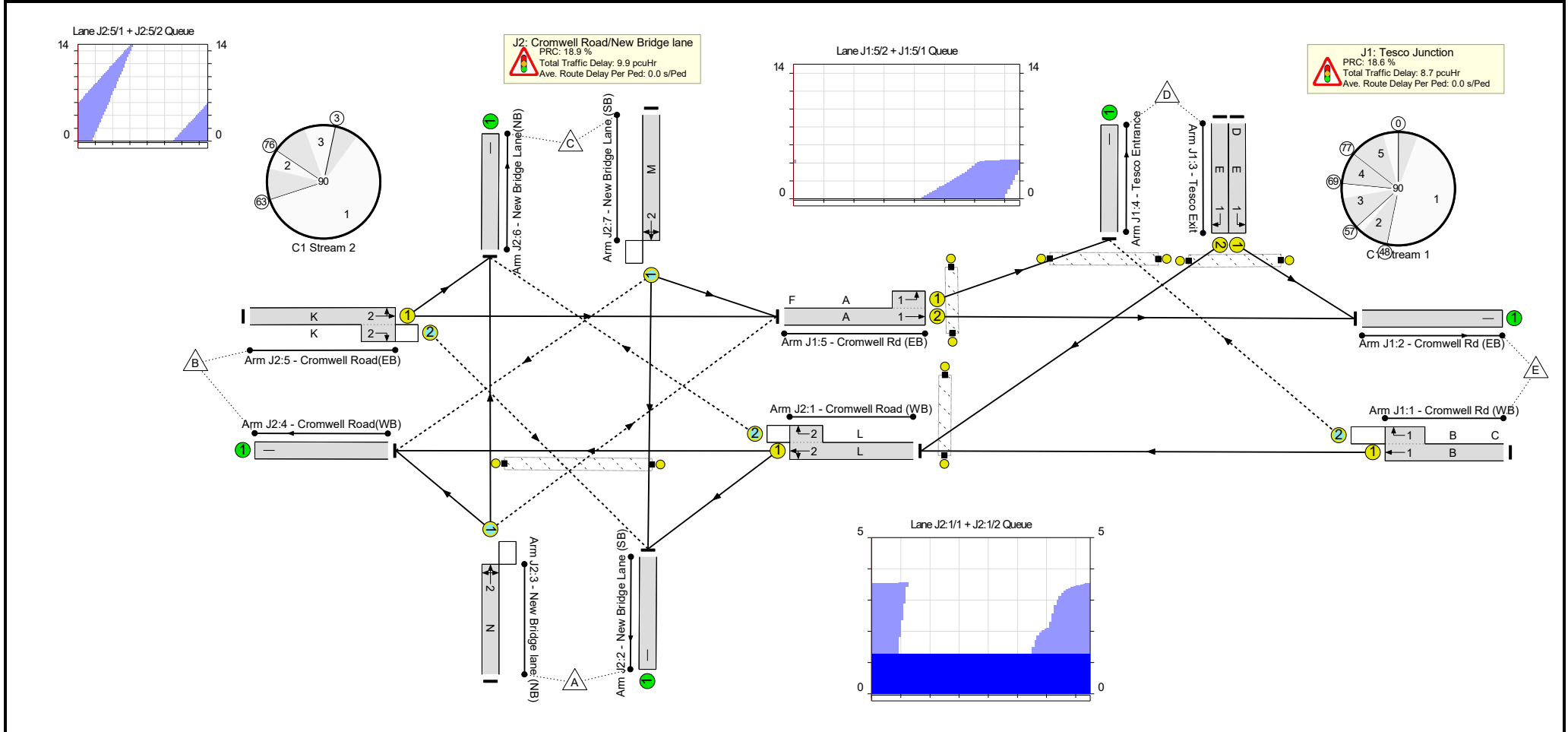
Signal Timings Diagram





# Full Input Data And Results

## Network Layout Diagram



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 (%)
<b>Network: Junction Upgrading</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>75.9%</b>
<b>J1: Tesco Junction</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>75.9%</b>
1/1+1/2	Cromwell Rd (WB) Right Ahead	U+O	1	N/A	B	C	1	52	4	858	1915:1687	1060+71	75.9 : 75.9%
2/1	Cromwell Rd (EB)	U	N/A	N/A	-		-	-	-	686	Inf	Inf	0.0%
3/1	Tesco Exit Left	U	1	N/A	E	D	1	22	8	58	1679	429	13.5%
3/2	Tesco Exit Right	U	1	N/A	E		1	14	-	56	1802	300	18.6%
4/1	Tesco Entrance	U	N/A	N/A	-		-	-	-	321	1940	1940	16.5%
5/2+5/1	Cromwell Rd (EB) Ahead Left	U	1	N/A	A	F	1	56:61	5	895	1915:1705	867+369	72.4 : 72.4%
Ped Link: P1	Tesco Entrance	-	1	-	J		1	4	-	0	-	0	0.0%
Ped Link: P2	Tesco Exit	-	1	-	I		1	56	-	0	-	0	0.0%
Ped Link: P3	Cromwell Road EB	-	-	-			0	0	-	0	-	0	0.0%
Ped Link: P4	Cromwell Road NB	-	1	-	H		1	4	-	0	-	0	0.0%
<b>J2: Cromwell Road/New Bridge lane</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>75.7%</b>
1/1+1/2	Cromwell Road (WB) Left Ahead Right	U+O	2	N/A	L		1	54	-	860	1937:1769	1182+12	72.0 : 72.0%
2/1	New Bridge Lane (SB)	U	N/A	N/A	-		-	-	-	52	Inf	Inf	0.0%
3/1	New Bridge lane (NB) Right Left Ahead	O	2	N/A	N		1	8	-	115	1801	180	63.9%
4/1	Cromwell Road(WB)	U	N/A	N/A	-		-	-	-	951	Inf	Inf	0.0%

Full Input Data And Results

5/1+5/2	Cromwell Road(EB) Ahead Right Left	U+O	2	N/A	K		1	55	-	892	1905:1717	1126+53	75.7 : 75.7%
6/1	New Bridge Lane(NB)	U	N/A	N/A	-		-	-	-	39	Inf	Inf	0.0%
7/1	New Bridge Lane (SB) Left Ahead Right	O	2	N/A	M		1	8	-	70	1754	175	39.9%
Ped Link: P1	New Bridge Lane Crossing	-	2	-	O		1	5	-	0	-	0	0.0%

Full Input Data And Results

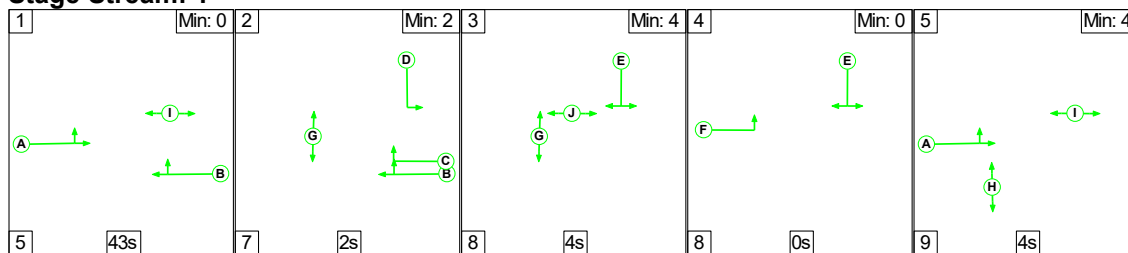
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: Junction Upgrading</b>	-	-	<b>120</b>	<b>52</b>	<b>2</b>	<b>11.3</b>	<b>7.2</b>	<b>0.2</b>	<b>18.7</b>	-	-	-	-
<b>J1: Tesco Junction</b>	-	-	<b>0</b>	<b>52</b>	<b>2</b>	<b>5.6</b>	<b>3.2</b>	<b>0.0</b>	<b>8.7</b>	-	-	-	-
1/1+1/2	858	858	0	52	2	3.2	1.6	0.0	4.8	20.0	15.5	1.6	17.0
2/1	686	686	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	58	58	-	-	-	0.4	0.1	-	0.5	30.7	1.1	0.1	1.2
3/2	56	56	-	-	-	0.5	0.1	-	0.6	39.7	1.2	0.1	1.3
4/1	321	321	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/2+5/1	895	895	-	-	-	1.4	1.3	-	2.8	11.1	4.3	1.3	5.6
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
<b>J2: Cromwell Road/New Bridge lane</b>	-	-	<b>120</b>	<b>0</b>	<b>0</b>	<b>5.7</b>	<b>4.0</b>	<b>0.2</b>	<b>9.9</b>	-	-	-	-
1/1+1/2	860	860	9	0	0	0.7	1.3	0.0	2.0	8.6	2.3	1.3	3.6
2/1	52	52	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	115	115	37	0	0	1.2	0.9	0.0	2.1	66.0	2.7	0.9	3.6
4/1	951	951	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1+5/2	892	892	40	0	0	3.0	1.5	0.1	4.7	18.9	15.7	1.5	17.3
6/1	39	39	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	70	70	34	0	0	0.7	0.3	0.0	1.1	56.8	1.6	0.3	2.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
			C1 Stream: 1 PRC for Signalled Lanes (%):	18.6				Total Delay for Signalled Lanes (pcuHr):	8.63	Cycle Time (s):	90		
			C1 Stream: 2 PRC for Signalled Lanes (%):	18.9				Total Delay for Signalled Lanes (pcuHr):	9.94	Cycle Time (s):	90		
			PRC Over All Lanes (%):	18.6				Total Delay Over All Lanes (pcuHr):	18.67				

Full Input Data And Results

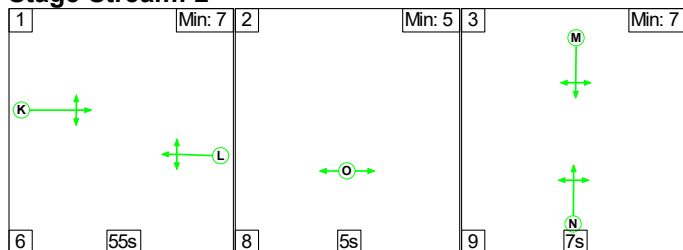
**Scenario 5: '2027 Baseline increased by 10% AM Peak'** (FG7: '2027 Baseline +10%- AM Peak', Plan 1: 'Network Control Plan 1')

**Stage Sequence Diagram**

**Stage Stream: 1**



**Stage Stream: 2**



**Stage Timings**

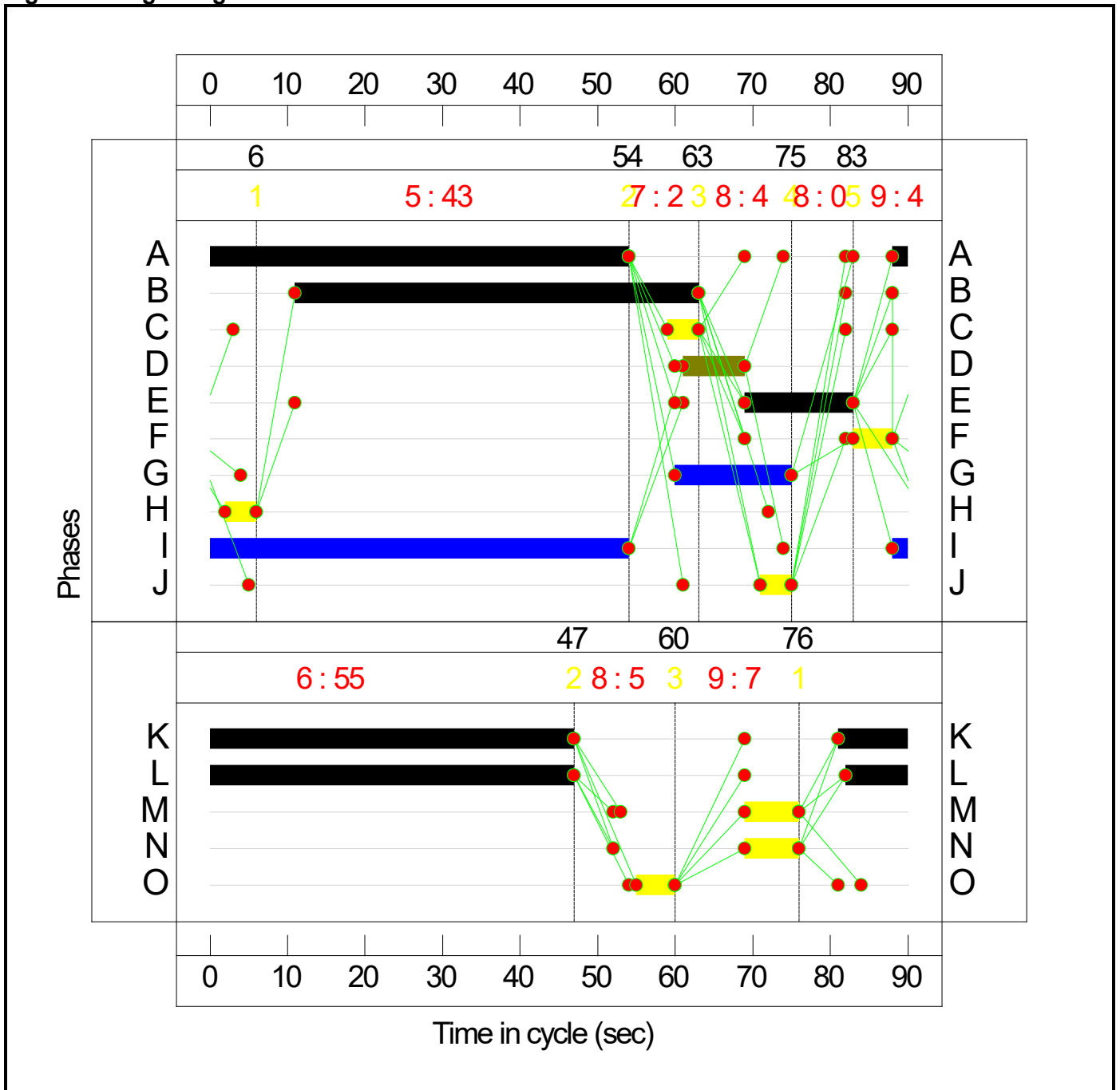
**Stage Stream: 1**

Stage	1	2	3	4	5
Duration	43	2	4	0	4
Change Point	6	54	63	75	83

**Stage Stream: 2**

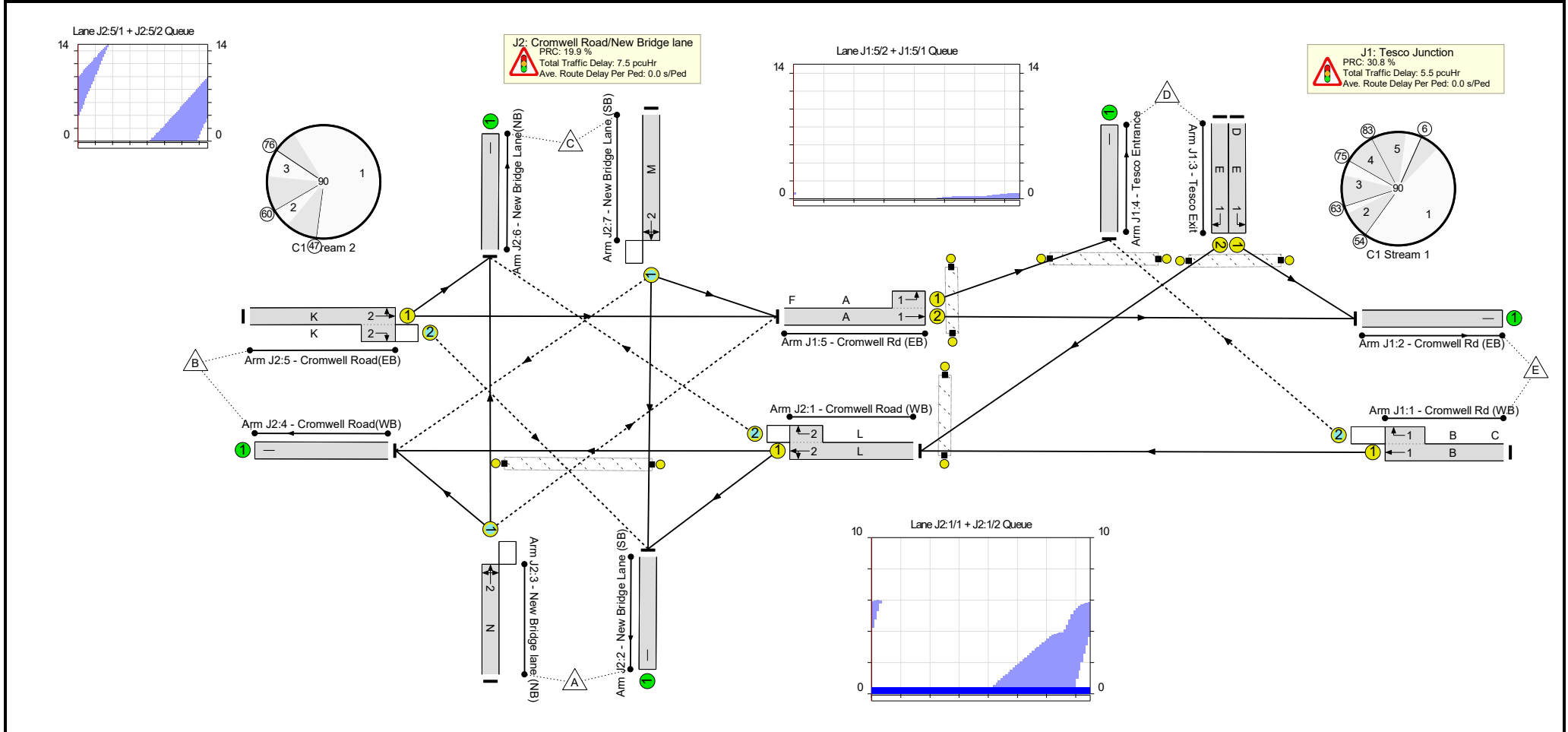
Stage	1	2	3
Duration	55	5	7
Change Point	76	47	60

Signal Timings Diagram



# Full Input Data And Results

## Network Layout Diagram



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 (%)
<b>Network: Junction Upgrading</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>75.1%</b>
<b>J1: Tesco Junction</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>68.8%</b>
1/1+1/2	Cromwell Rd (WB) Right Ahead	U+O	1	N/A	B	C	1	52	4	600	1915:1687	928+211	52.7 : 52.7%
2/1	Cromwell Rd (EB)	U	N/A	N/A	-		-	-	-	697	Inf	Inf	0.0%
3/1	Tesco Exit Left	U	1	N/A	E	D	1	22	8	101	1679	429	23.5%
3/2	Tesco Exit Right	U	1	N/A	E		1	14	-	84	1802	300	28.0%
4/1	Tesco Entrance	U	N/A	N/A	-		-	-	-	365	1940	1940	18.8%
5/2+5/1	Cromwell Rd (EB) Ahead Left	U	1	N/A	A	F	1	56:61	5	850	1915:1705	866+369	68.8 : 68.8%
Ped Link: P1	Tesco Entrance	-	1	-	J		1	4	-	0	-	0	0.0%
Ped Link: P2	Tesco Exit	-	1	-	I		1	56	-	0	-	0	0.0%
Ped Link: P3	Cromwell Road EB	-	-	-			0	0	-	0	-	0	0.0%
Ped Link: P4	Cromwell Road NB	-	1	-	H		1	4	-	0	-	0	0.0%
<b>J2: Cromwell Road/New Bridge lane</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>75.1%</b>
1/1+1/2	Cromwell Road (WB) Left Ahead Right	U+O	2	N/A	L		1	55	-	573	1937:1769	1203+13	47.1 : 47.1%
2/1	New Bridge Lane (SB)	U	N/A	N/A	-		-	-	-	65	Inf	Inf	0.0%
3/1	New Bridge lane (NB) Right Left Ahead	O	2	N/A	N		1	7	-	67	1759	156	42.9%
4/1	Cromwell Road(WB)	U	N/A	N/A	-		-	-	-	636	Inf	Inf	0.0%



Full Input Data And Results

5/1+5/2	Cromwell Road(EB) Ahead Right Left	U+O	2	N/A	K		1	56	-	903	1910:1717	1124+79	75.1 : 75.1%
6/1	New Bridge Lane(NB)	U	N/A	N/A	-		-	-	-	19	Inf	Inf	0.0%
7/1	New Bridge Lane (SB) Left Ahead Right	O	2	N/A	M		1	7	-	27	1741	155	17.4%
Ped Link: P1	New Bridge Lane Crossing	-	2	-	O		1	5	-	0	-	0	0.0%

Full Input Data And Results

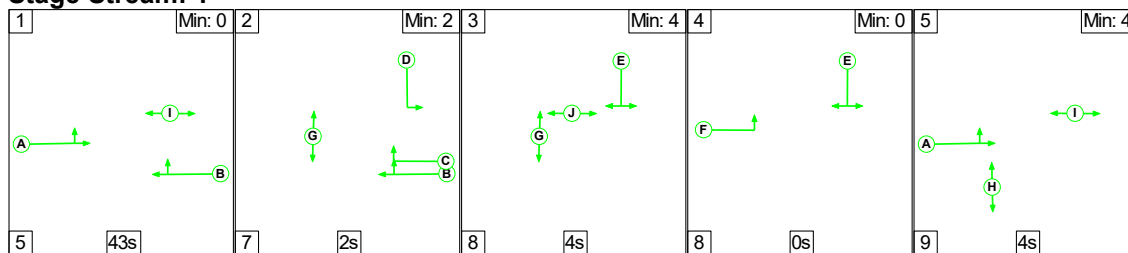
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
<b>Network: Junction Upgrading</b>	-	-	<b>82</b>	<b>107</b>	<b>4</b>	<b>8.4</b>	<b>4.5</b>	<b>0.1</b>	<b>13.0</b>	-	-	-	-
<b>J1: Tesco Junction</b>	-	-	<b>0</b>	<b>107</b>	<b>4</b>	<b>3.4</b>	<b>2.1</b>	<b>0.0</b>	<b>5.5</b>	-	-	-	-
1/1+1/2	600	600	0	107	4	1.7	0.6	0.0	2.3	13.6	7.7	0.6	8.3
2/1	697	697	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	101	101	-	-	-	0.7	0.2	-	0.9	32.0	2.0	0.2	2.1
3/2	84	84	-	-	-	0.8	0.2	-	1.0	41.1	1.8	0.2	2.0
4/1	365	365	-	-	-	0.0	0.1	-	0.1	1.2	1.1	0.1	1.2
5/2+5/1	850	850	-	-	-	0.2	1.1	-	1.3	5.4	0.7	1.1	1.8
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
<b>J2: Cromwell Road/New Bridge lane</b>	-	-	<b>82</b>	<b>0</b>	<b>0</b>	<b>5.0</b>	<b>2.4</b>	<b>0.1</b>	<b>7.5</b>	-	-	-	-
1/1+1/2	573	573	6	0	0	1.2	0.4	0.0	1.6	10.1	5.5	0.4	6.0
2/1	65	65	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	67	67	6	0	0	0.7	0.4	0.0	1.1	58.8	1.6	0.4	2.0
4/1	636	636	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1+5/2	903	903	59	0	0	2.9	1.5	0.1	4.4	17.6	15.3	1.5	16.8
6/1	19	19	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	27	27	11	0	0	0.3	0.1	0.0	0.4	53.1	0.6	0.1	0.7
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
			C1 Stream: 1 PRC for Signalled Lanes (%):	30.8	Total Delay for Signalled Lanes (pcuHr):			5.40	Cycle Time (s):		90		
			C1 Stream: 2 PRC for Signalled Lanes (%):	19.9	Total Delay for Signalled Lanes (pcuHr):			7.52	Cycle Time (s):		90		
			PRC Over All Lanes (%):	19.9	Total Delay Over All Lanes (pcuHr):			13.04					

Full Input Data And Results

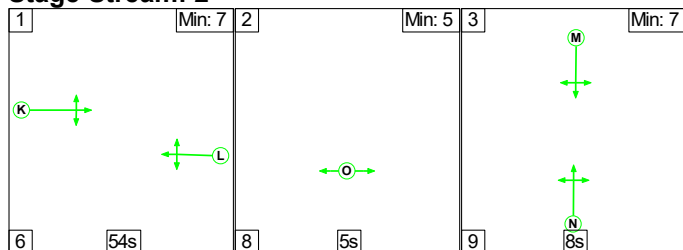
**Scenario 6: '2027 Baseline increased by 10% PM Peak'** (FG8: '2027 Baseline+10%- PM Peak', Plan 1: 'Network Control Plan 1')

**Stage Sequence Diagram**

**Stage Stream: 1**



**Stage Stream: 2**



**Stage Timings**

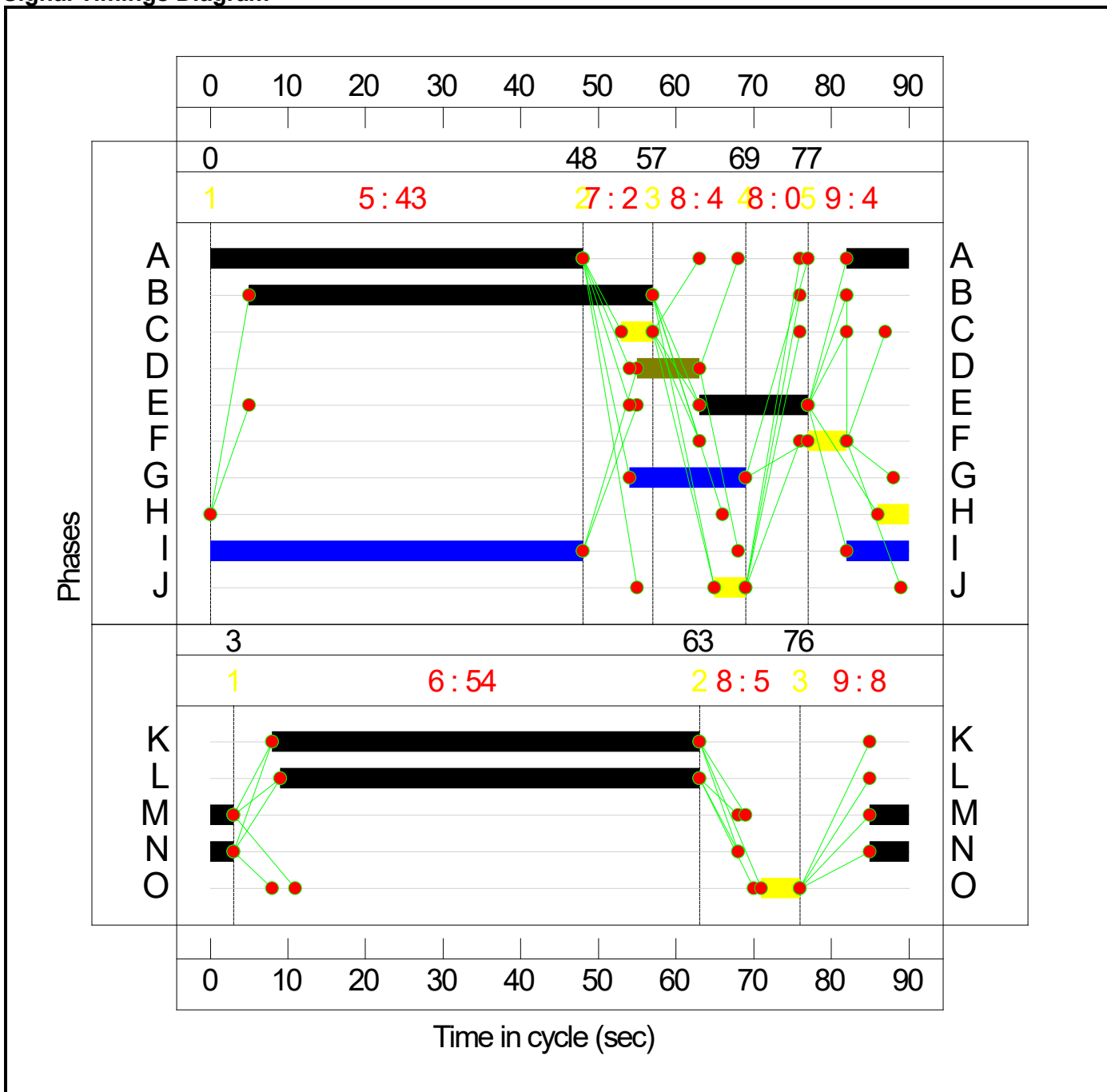
**Stage Stream: 1**

Stage	1	2	3	4	5
Duration	43	2	4	0	4
Change Point	0	48	57	69	77

**Stage Stream: 2**

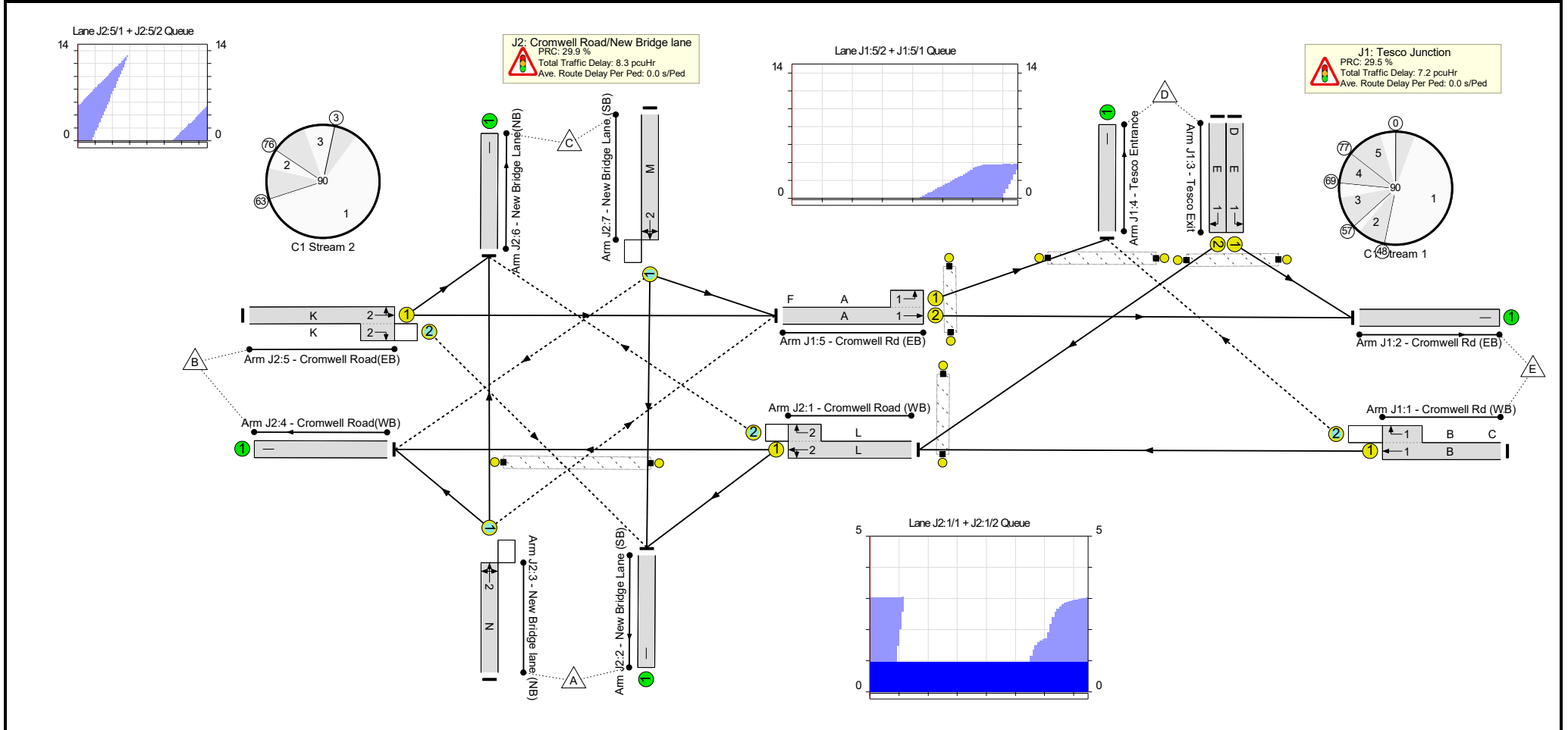
Stage	1	2	3
Duration	54	5	8
Change Point	3	63	76

Signal Timings Diagram



# Full Input Data And Results

## Network Layout Diagram



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 (%)
<b>Network: Junction Upgrading</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>69.5%</b>
<b>J1: Tesco Junction</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>69.5%</b>
1/1+1/2	Cromwell Rd (WB) Right Ahead	U+O	1	N/A	B	C	1	52	4	786	1915:1687	1059+72	69.5 : 69.5%
2/1	Cromwell Rd (EB)	U	N/A	N/A	-		-	-	-	630	Inf	Inf	0.0%
3/1	Tesco Exit Left	U	1	N/A	E	D	1	22	8	54	1679	429	12.6%
3/2	Tesco Exit Right	U	1	N/A	E		1	14	-	50	1802	300	16.6%
4/1	Tesco Entrance	U	N/A	N/A	-		-	-	-	295	1940	1940	15.2%
5/2+5/1	Cromwell Rd (EB) Ahead Left	U	1	N/A	A	F	1	56:61	5	821	1915:1705	867+369	66.5 : 66.5%
Ped Link: P1	Tesco Entrance	-	1	-	J		1	4	-	0	-	0	0.0%
Ped Link: P2	Tesco Exit	-	1	-	I		1	56	-	0	-	0	0.0%
Ped Link: P3	Cromwell Road EB	-	-	-			0	0	-	0	-	0	0.0%
Ped Link: P4	Cromwell Road NB	-	1	-	H		1	4	-	0	-	0	0.0%
<b>J2: Cromwell Road/New Bridge lane</b>	-	-	<b>N/A</b>	-	-		-	-	-	-	-	-	<b>69.3%</b>
1/1+1/2	Cromwell Road (WB) Left Ahead Right	U+O	2	N/A	L		1	54	-	786	1937:1769	1184+11	65.8 : 65.8%
2/1	New Bridge Lane (SB)	U	N/A	N/A	-		-	-	-	47	Inf	Inf	0.0%
3/1	New Bridge lane (NB) Right Left Ahead	O	2	N/A	N		1	8	-	106	1802	180	58.8%
4/1	Cromwell Road(WB)	U	N/A	N/A	-		-	-	-	871	Inf	Inf	0.0%

Full Input Data And Results

5/1+5/2	Cromwell Road(EB) Ahead Right Left	U+O	2	N/A	K		1	55	-	817	1906:1717	1127+52	69.3 : 69.3%
6/1	New Bridge Lane(NB)	U	N/A	N/A	-		-	-	-	35	Inf	Inf	0.0%
7/1	New Bridge Lane (SB) Left Ahead Right	O	2	N/A	M		1	8	-	65	1755	176	37.0%
Ped Link: P1	New Bridge Lane Crossing	-	2	-	O		1	5	-	0	-	0	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)
<b>Network: Junction Upgrading</b>	-	-	<b>108</b>	<b>48</b>	<b>2</b>	<b>9.9</b>	<b>5.5</b>	<b>0.1</b>	<b>15.5</b>	-	-	-	-
<b>J1: Tesco Junction</b>	-	-	<b>0</b>	<b>48</b>	<b>2</b>	<b>4.9</b>	<b>2.4</b>	<b>0.0</b>	<b>7.2</b>	-	-	-	-
1/1+1/2	786	786	0	48	2	2.7	1.1	0.0	3.9	17.8	13.3	1.1	14.4
2/1	630	630	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	54	54	-	-	-	0.4	0.1	-	0.5	30.6	1.0	0.1	1.1
3/2	50	50	-	-	-	0.4	0.1	-	0.5	39.3	1.1	0.1	1.2
4/1	295	295	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/2+5/1	821	821	-	-	-	1.3	1.0	-	2.3	9.9	3.8	1.0	4.8
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	Inf	Inf	-	-	Inf
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-
<b>J2: Cromwell Road/New Bridge lane</b>	-	-	<b>108</b>	<b>0</b>	<b>0</b>	<b>5.1</b>	<b>3.1</b>	<b>0.1</b>	<b>8.3</b>	-	-	-	-
1/1+1/2	786	786	7	0	0	0.7	1.0	0.0	1.6	7.5	2.1	1.0	3.0
2/1	47	47	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	106	106	34	0	0	1.1	0.7	0.0	1.8	62.6	2.5	0.7	3.2
4/1	871	871	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1+5/2	817	817	36	0	0	2.6	1.1	0.1	3.8	16.6	13.3	1.1	14.4
6/1	35	35	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	65	65	31	0	0	0.7	0.3	0.0	1.0	55.7	1.5	0.3	1.8
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
			C1 Stream: 1 PRC for Signalled Lanes (%):	29.5	Total Delay for Signalled Lanes (pcuHr):			7.15	Cycle Time (s):		90		
			C1 Stream: 2 PRC for Signalled Lanes (%):	29.9	Total Delay for Signalled Lanes (pcuHr):			8.27	Cycle Time (s):		90		
			PRC Over All Lanes (%):	29.5	Total Delay Over All Lanes (pcuHr):			15.50					



# Appendix B

## Stage 1 RSA Brief



# Medworth Energy from Waste Combined Heat and Power Facility DCO

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## **Stage 1 - RSA brief**

# 1. Project Summary

<b>Date:</b>	<b>04/05/23</b>
<b>Document reference:</b>	41310-WOOD-XX-XX-RP-OT-0003_S0_P01
<b>Prepared by:</b>	WSP
<b>On behalf of:</b>	Medworth CHP Limited
<b>AUTHORISATION SHEET</b>	
<b>Project:</b>	Medworth Energy from Waste Combined Heat and Power Facility DCO
<b>Report title:</b>	RSA brief- Stage 1
<b>PREPARED BY:</b>	
<b>Name:</b>	Varsha Suresh
<b>Signed:</b>	
<b>Organisation:</b>	WSP
<b>Date:</b>	04/05/23
<b>I APPROVE THE RSA BRIEF AND INSTRUCT THE RSA TO TAKE PLACE ON BEHALF OF THE OVERSEEING ORGANISATION:</b>	
<b>Name:</b>	Nigel Eggar
<b>Signed:</b>	
<b>Organisation:</b>	Cambridgeshire County Council
<b>Date:</b>	10/05/23

## 1.1 General Details

<b>Highway scheme name and road number:</b>		Medworth Energy from Waste Combined Heat and Power Facility DCO			
<b>Type of scheme:</b>		Upgrading Junction from priority junction to signalised junction.			
<b>RSA stage tick as appropriate.</b>	1- ✓	2	3	4	
	Interim				
<b>Overseeing Organisation details</b>		<b>Design organisation details</b>			
Cambridgeshire County Council  West Highway Division Stanton Way Ermine Street Huntingdon PE29 6PY		WSP (UK)  Amber Court William Armstrong Dr, Newcastle upon Tyne NE4 7YA			
		<b>Maintaining agent contact details</b>			
<b>(Required for stage 3 RSAs)</b>		N/A			
<b>RSA team membership</b>					
<b>Insert details of the approved RSA team and any specialist advisors and observers where appropriate.</b>					
<b>Terms of reference</b>					

## 2. Analysis

### Scheme description/objective

#### General

#### Scheme Description

During the Development Consent Order process for the Medworth Energy from Waste (EfW) and Combined Heat and Power (CHP) facility, Cambridgeshire County Council has requested that the B198 Cromwell Road/New Bridge Lane junction – located within Wisbech – is upgraded to a four arm signalised junction to ensure that additional HGV traffic which is expected to be generated by the development is sufficiently accommodated within the B198/New Bridge Lane junction and protected from conflicting traffic movements.

The B198/New Bridge Lane junction is located in the south-west of the town of Wisbech. South of the junction the B198 routes to the A47, north of the junction the B198 routes into the commercial centre of Wisbech town. The New Bridge Lane west arm provides access to a small number of residential properties and access for deliveries into the Tesco supermarket. The New Bridge Lane east arm currently provides access to residential and industrial land uses and will be upgraded as part of the development to provide access into the proposed site.

Currently the B198 Cromwell Road/New Bridge Lane junction is a four-arm priority junction where the New Bridge Lane East and West arms are the minor arms of the junction which give way to the major arm the B198 Cromwell Road. Right turn bays are provided mid junction to facilitate movement from B198 into the New Bridge Lane east and west arms.

The proposed scheme will upgrade the junction into a four arm signalised junction where all necessary infrastructure and works will be undertaken to accommodate traffic signal infrastructure and anticipated movements. This will include the following:

- Provision of stop lines and primary and secondary traffic signal columns on all arms of the junction;
- Realignment of the kerbs throughout the junction to accommodate additional lanes and the swept path of anticipated HGV movements;
- Provision of islands within the junction to accommodate traffic signal columns and protect movements;
- Provision of signalised right turns with right turn only lanes and right turn road markings mid junction;
- Provision of a signalised pedestrian crossing over New Bridge Lane east arm; and
- Provision of all necessary road markings to ensure clear guidance to vehicles.

The proposed New Bridge Lane traffic signal junction is proposed to be linked to the existing Tesco traffic signal junction.

**The Scheme** also proposes alterations along New Bridge Lane to widen it to 6.8m wide to accommodate HGV movements generated by the proposed Medworth Site.

Included in the **DCO application** is a proposal to reopen New Bridge Lane across the disused March to Wisbech Railway, with the agreement of Network Rail, and that it is this reopening which enables the Applicant to take access from Cromwell Road into the proposed

site access. Also that New Bridge Lane will be closed east of the proposed site access and that as such it will not operate as a through route.

**Design standards applied to the scheme design**

1. Standard Specification for Traffic Systems and Signals – Cambridgeshire County Council.
2. Traffic Signs Manual -Chapter 6.
3. Traffic Signs Manual Chapter 5.

**Design speeds**

70kph/40mph

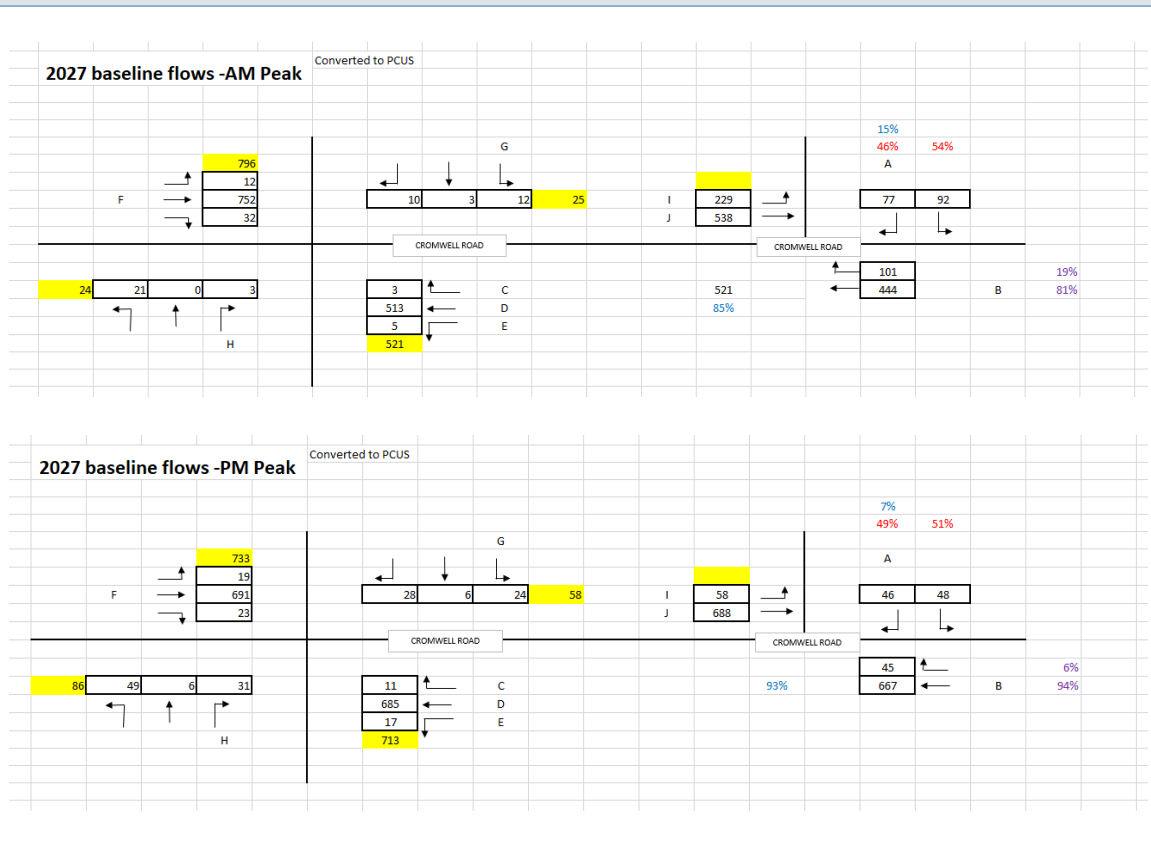
**Speed limits** – Existing speed limit of the Cromwell Road is 40mph.

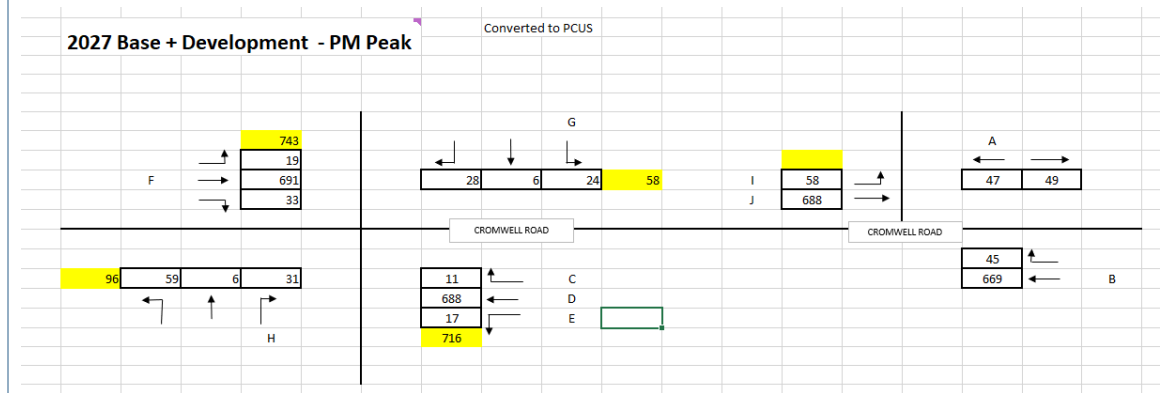
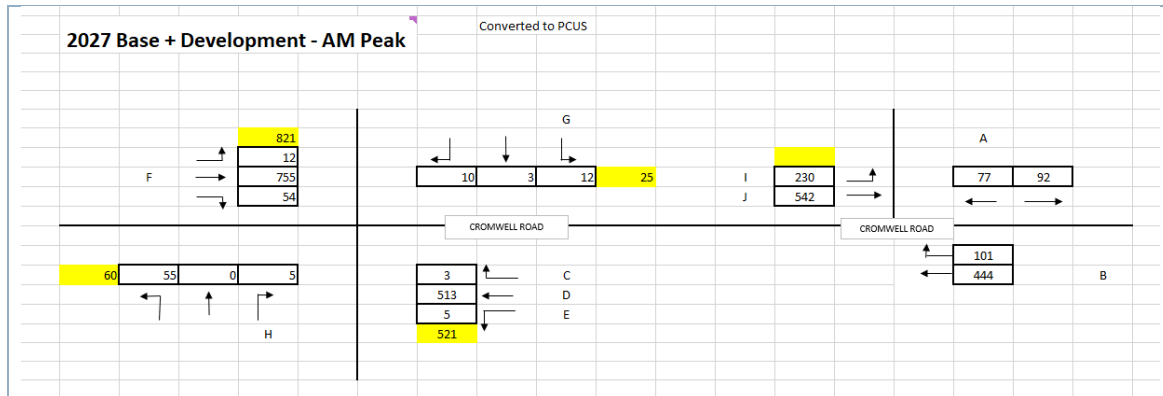
No speed data is available

**Existing traffic flows/queues**

N/A

**Forecast traffic flows**





### Pedestrians, cyclists, and equestrians desire lines

There is an existing footway along the eastern side of Cromwell Road which continues to New Bridge Lane until it stops approximately at the junction with Salters Way. There is also an existing footway along the northern side of New Bridge Lane connects New Bridge Lane with the existing signalised crossings at the Tesco traffic signal junction.

There is no existing footway on the western side of Cromwell Road .

The current speed limit of New Bridge Lane is proposed to be reduced to 30mph. New Bridge Lane is subject to a national speed limit currently. The proposal for New Bridge Lane also includes new footway along the northern side of New Bridge Lane to provide a continuous walking route between the Site and the proposed new pedestrian crossing at the New Bridge Lane junction. Dropped kerbs and tactile paving will be provided for the proposed new uncontrolled crossing on Salters Way, the site access and the controlled crossing on New Bridge Lane approach.

### Environmental constraints

N/A

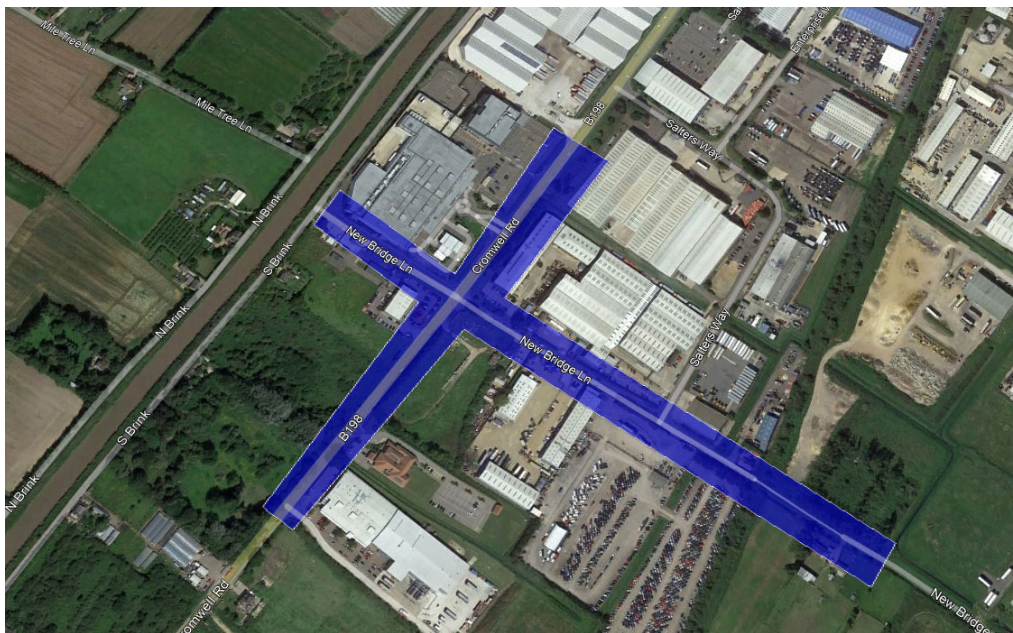
## 3. Collision Data Analysis

### Collision data analysis

#### Accident Data for last 4 years

- 3.1.1 Accident data has been extracted from the Cambridgeshire Insight Open Data website for the last four years (2019-2023).
- 3.1.2 The area of the study is indicated by the blue hatching in Figure 3.1 which includes a section of New Bridge Lane and the B198 Cromwell Road.

**Figure 3.1 Illustration of accident study boundary**



Source: [Google Maps](#)

- 3.1.3 Accident data obtained shows that there were both slight and serious accidents within the search area. No fatal accidents were recorded. The accident data is summarised below and shown in Figure 3.2.
- 3.1.4 Over the four-year period there were 7 accidents recorded. Of the 7 accidents that are recorded within in the assessment area, five were of slight severity and the remaining two were serious.



**Figure 1.2 Accident data illustration**



Source: [Cambridgeshire Road Traffic Collision Data](#) | [Cambridgeshire Insight Open Data](#)

**Departures from standards**

N/A

**Previous road safety audit stage reports, road safety audit response reports and evidence of agreed actions**

N/A

**Strategic decisions**

N/A

**List of included documents and drawings**

- New Bridge Lane Access Proposal, Sheet 1 : 41310-WOOD-XX-XX-DR-OT-0026\_S0\_P03
- New Bridge Lane Access Proposal, Sheet 2 : 41310-WOOD-XX-XX-DR-OT-0026\_S0\_P03
- Cromwell Road/ New Bridge Lane General Arrangement : 41310-WOOD-XX-XX-DR-OT-0029\_S0\_P01
- Cromwell Road/ New Bridge Lane Swept Path : 41310-WOOD-XX-XX-DR-OT-0030\_S0\_P01
- New Supermarket Access Cromwell Road Proposed Traffic Signals: AT13012-01 Rev B

### 3.2 Checklist of Information Provided

Tick all that are provided			
Site location plan	✓	Scale layout plans	✓
Departures and relaxations from standards		Construction/ typical details	✓
Previous RSA reports		Previous RSA response reports and evidence of agreed actions	
Collision data and collision data analysis	✓	Road traffic collision plot	✓
Traffic signal staging (Tesco junction)	✓	Traffic counts	✓
Speed surveys		Pedestrians, cyclist and horse-riding desire lines and volumes	
Walking, cycling and horse-riding assessment and reviews		Items outside the scope of the RSA/ strategic decisions	
Other factors that may impact on road safety	✓	Design speeds/ speed limits	✓
Design standards used	✓	Adjacent land uses	✓

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**Issued by**

*Varsha Suresh*

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Varsha Suresh  
Adam Guy

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**Approved by**

*Grace Smith*

.....  
Grace Smith

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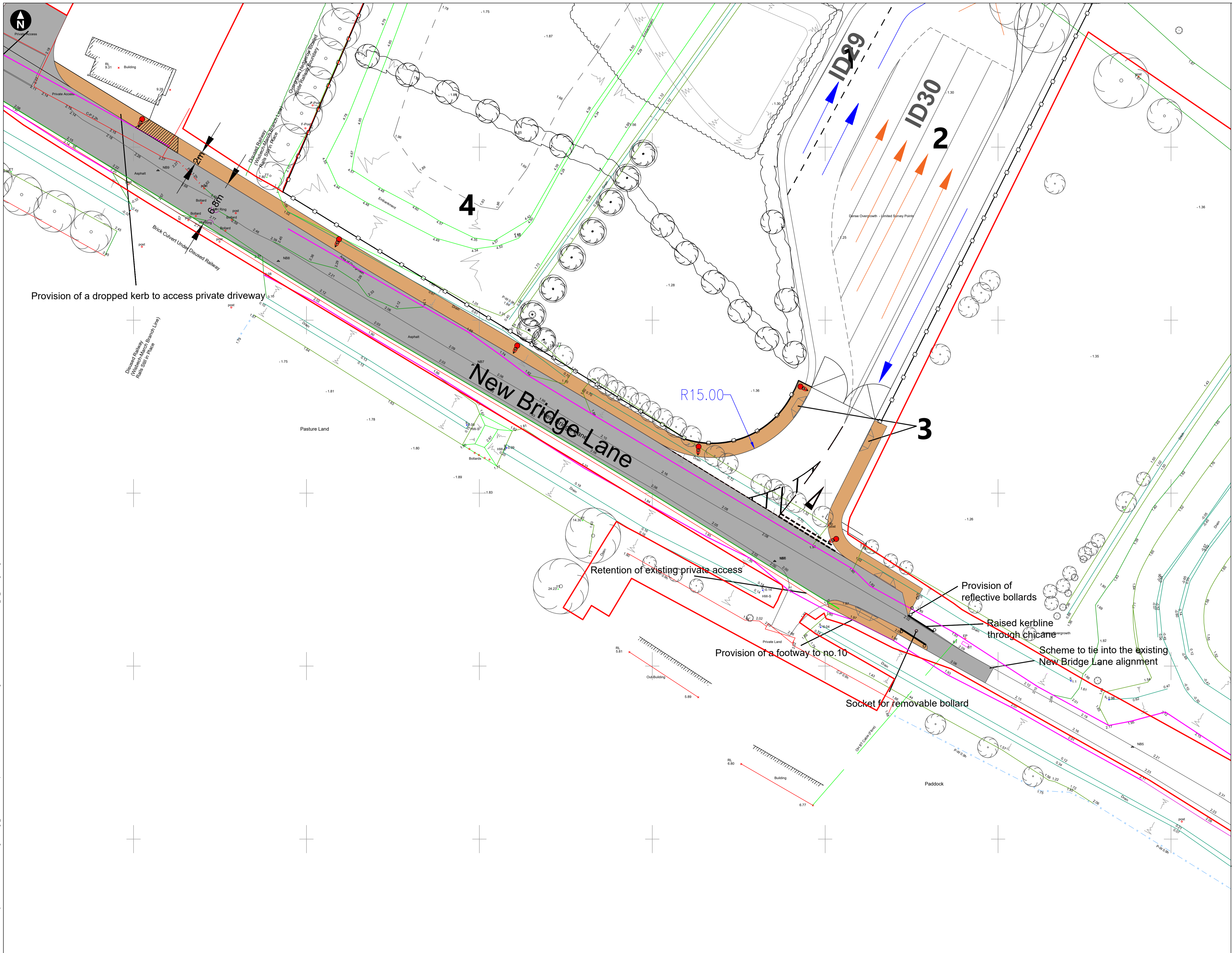
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This document has been produced by WSP Environment & Infrastructure Solutions UK Limited in full compliance with our management systems, which have been certified to ISO 9001, ISO 14001 and ISO 45001 by Lloyd's Register.

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**Document revisions**

No.	Details	Date
P01	RSA Stage 1 brief	09/05/23



**Key**

- Order limits
- Proposed access scheme
- Highways boundary
- Indicative new street lighting
- 1 Layby
- 2 Vehicle queuing area
- 3 Dropped kerb crossing
- 4 Rail embankment (by others) reservation area

- Notes:**
1. Proposed visibility based on New Bridge Lane being subject to a revised 30mph speed limit.
  2. Visibility requirements 2.4m x 70m, desirable minimum.
  3. New street lighting has been provided on an indicative basis (at 30m intervals and at conflict areas) and will require detailed design and assessment.
  4. Access for No.10 New Bridge Lane through a chicane; subject to the agreement of the Highways Authority. Socket for removable bollard provided and if experienced, a bollard may be installed by the highways authority to prevent through traffic.
  5. Topographical Survey undertaken by MFM Land Surveys and Engineering Services Ltd between 6-9 November 2019.

Provision of a dropped kerb to access private driveway

Disused Railway  
Railway Station Branch Line

Pasture Land

New Bridge Lane

Retention of existing private access

Provision of a footway to no.10

Socket for removable bollard

Provision of reflective bollards

Raised kerblines through chicanes

Scheme to tie into the existing New Bridge Lane alignment

Paddock

R15.00

0m 15m  
Scale 1:250 @ A1

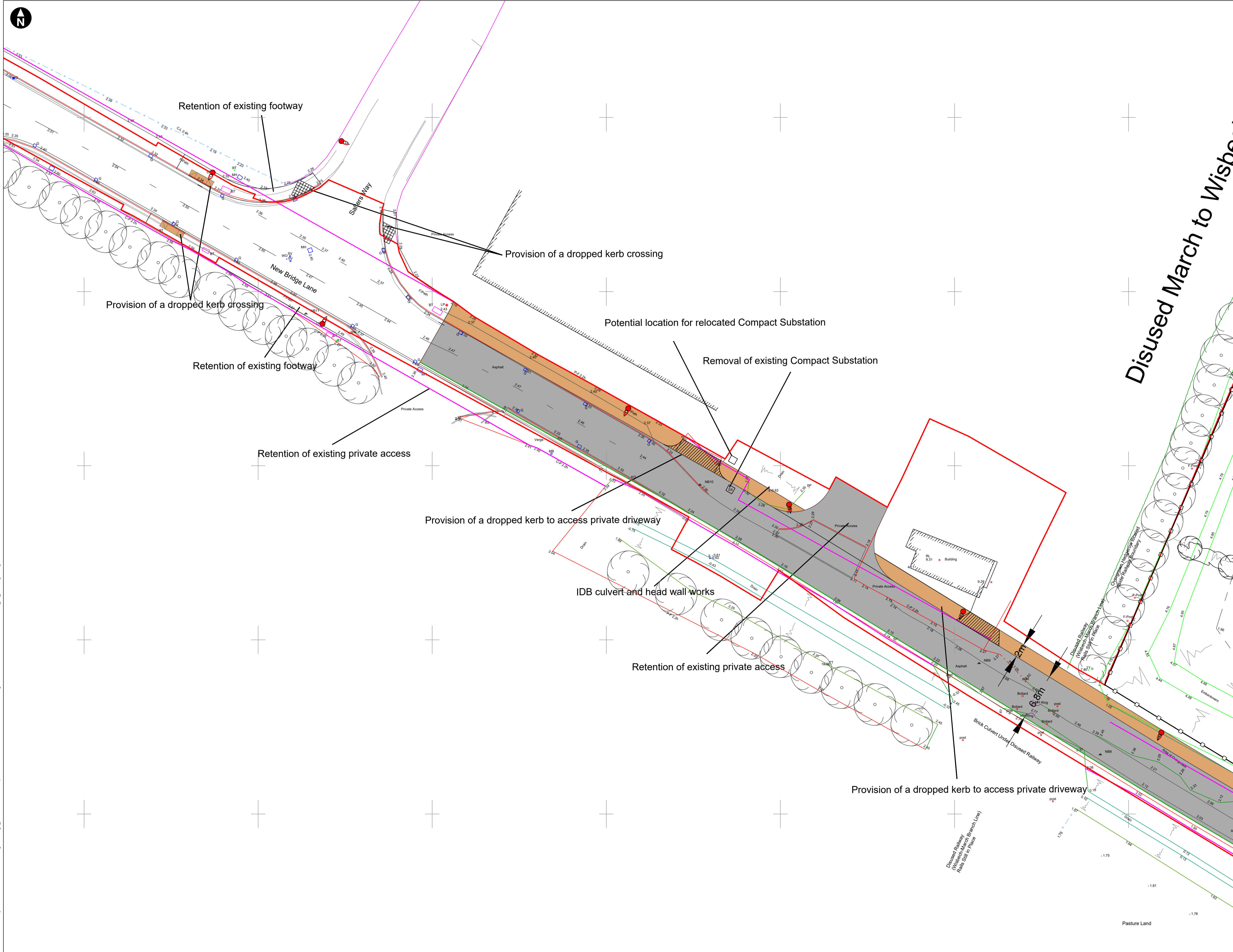
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Medworth CHP Limited  
Medworth Energy from Waste Combined Heat and Power Facility DCO

**New Bridge Lane access proposal with Topographical Survey**  
Sheet 1 of 2

April 2023

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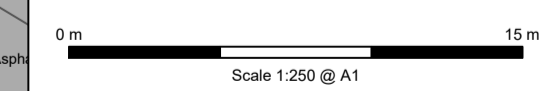


Key

	Order limits
	Proposed access scheme
	Highways boundary
	Indicative new street lighting
	Layby
	Vehicle queuing area
	Dropped kerb crossing
	Rail embankment (by others) reservation area

- Notes:
- Proposed visibility based on New Bridge Lane being subject to a revised 30mph speed limit.
  - Visibility requirements 2.4m x 70m, desirable minimum.
  - New street lighting has been provided on an indicative basis (at 30m intervals and at conflict areas) and will require detailed design and assessment.
  - Access for No.10 New Bridge Lane through a chicane; subject to the agreement of the Highways Authority. Socket for removable bollard provided and if experienced, a bollard may be installed by the highways authority to prevent through traffic.
  - Topographical Survey undertaken by MFM Land Surveys and Engineering Services Ltd between 6-9 November 2019.

Disused March to Wisbech



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**New Bridge Lane access proposal with Topographical Survey**  
 Sheet 2 of 2

April 2023

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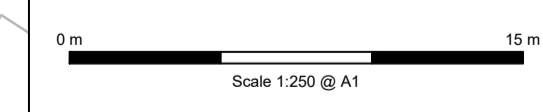


Key

	Order limits
	Highways boundary
	Primary signal head
	Secondary signal head
	Pedestrian push button signal
	Indicative road marking scheme

- Notes:
1. Newbridge lane Topographical Survey undertaken by MFM Land Surveys and Engineering Services Ltd between 6-9 November 2019.
  2. Outside the extents of the topographical survey this scheme has been developed using OS basemapping.
  3. Road markings are based on guidance within chapters 5 and 6 of the Traffic Signs Manual, 2019.

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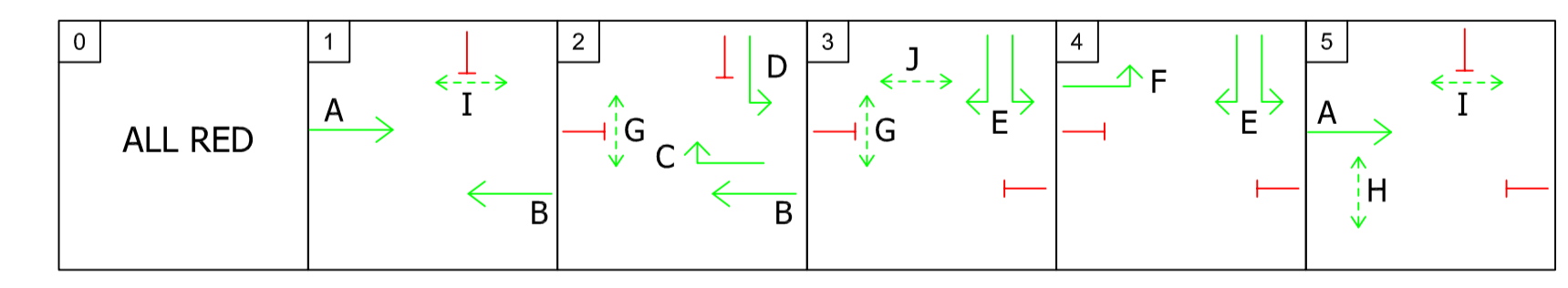
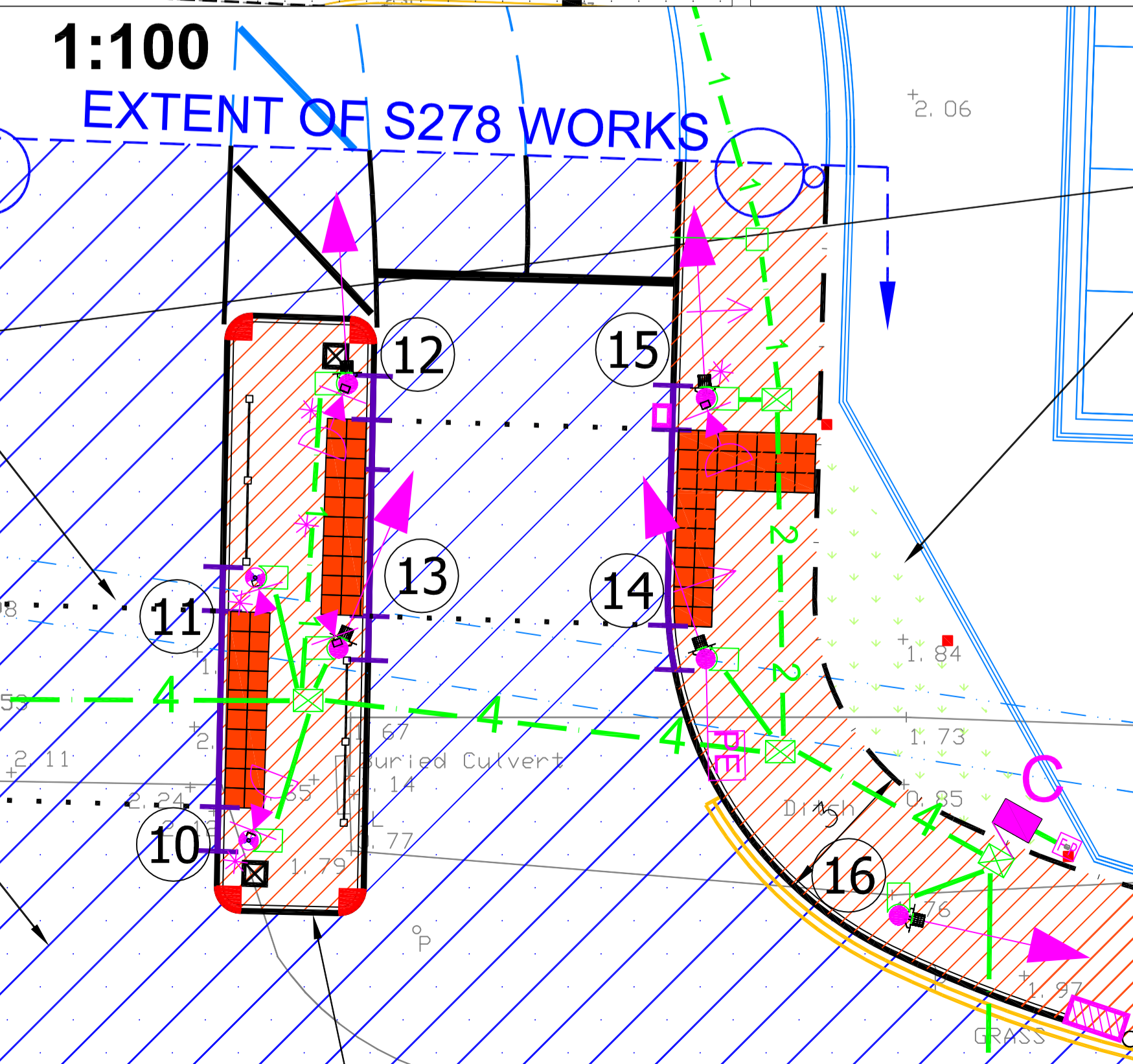
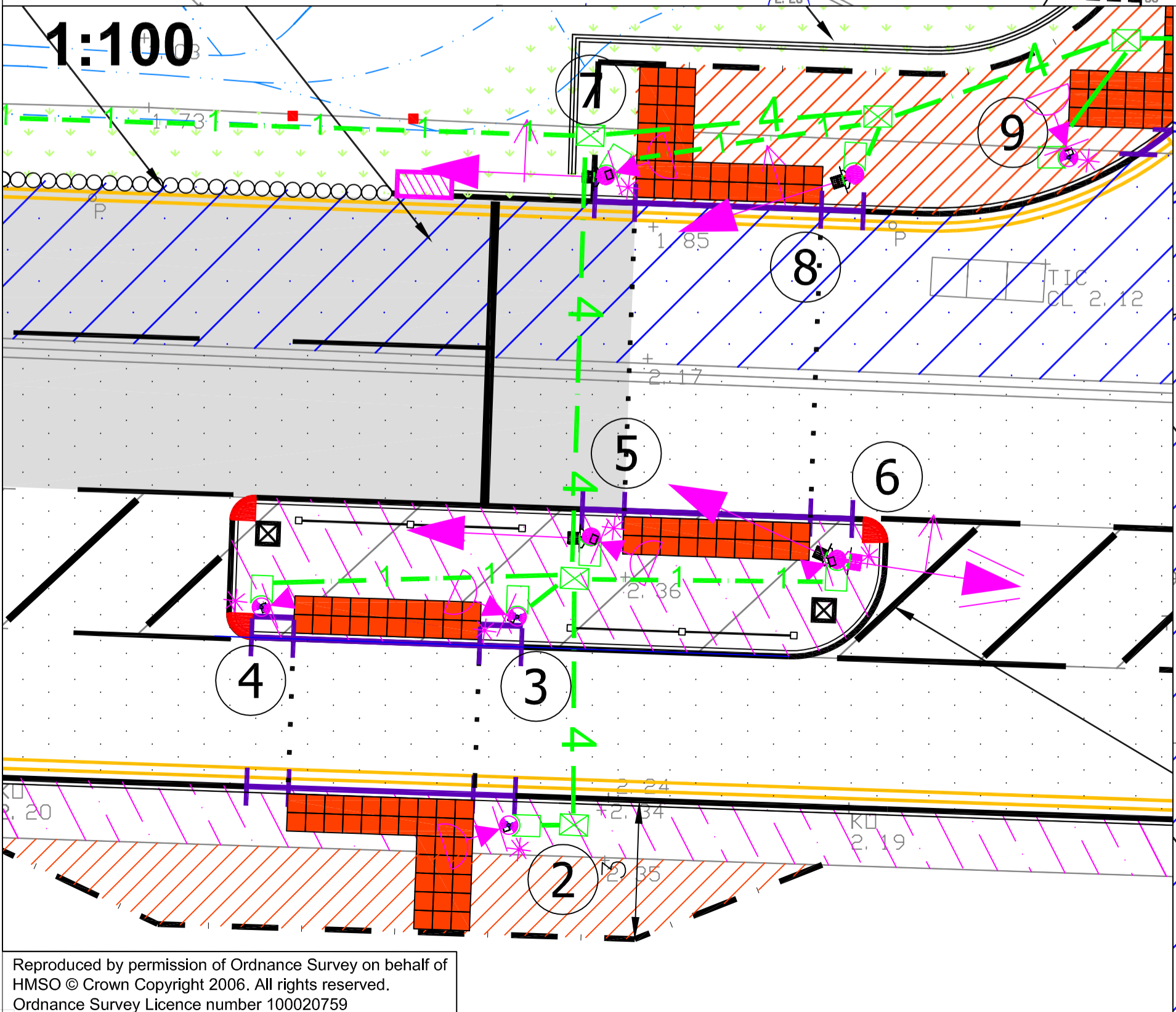
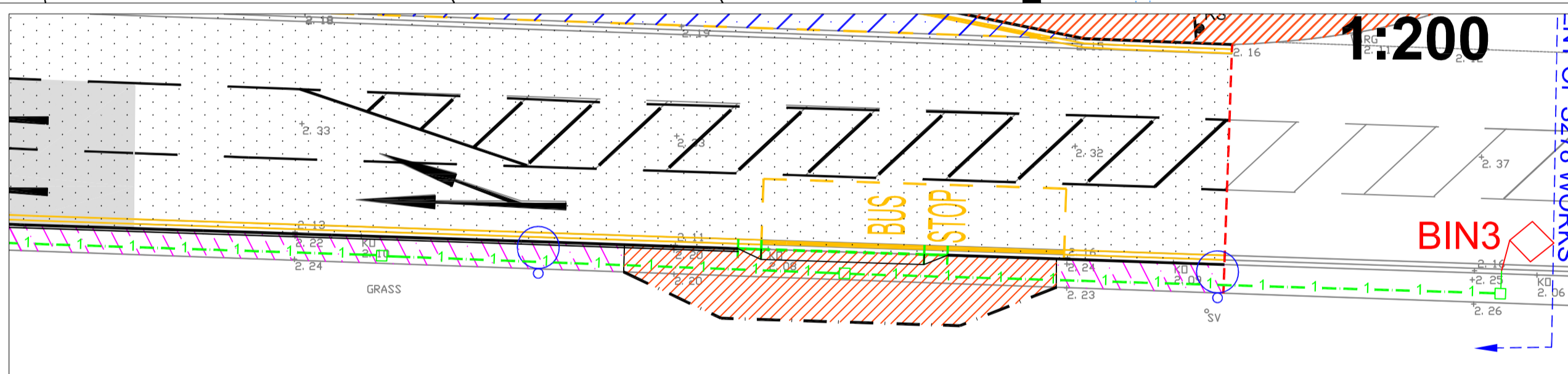
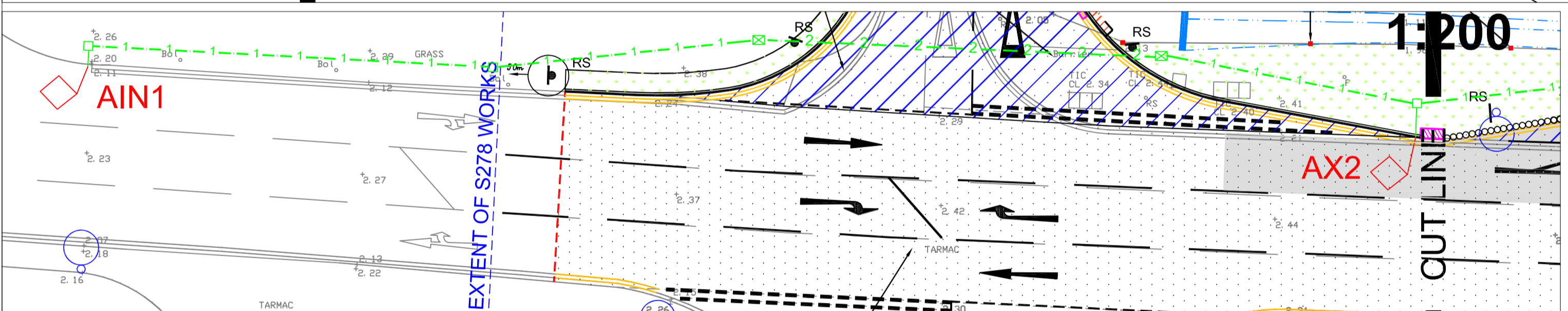
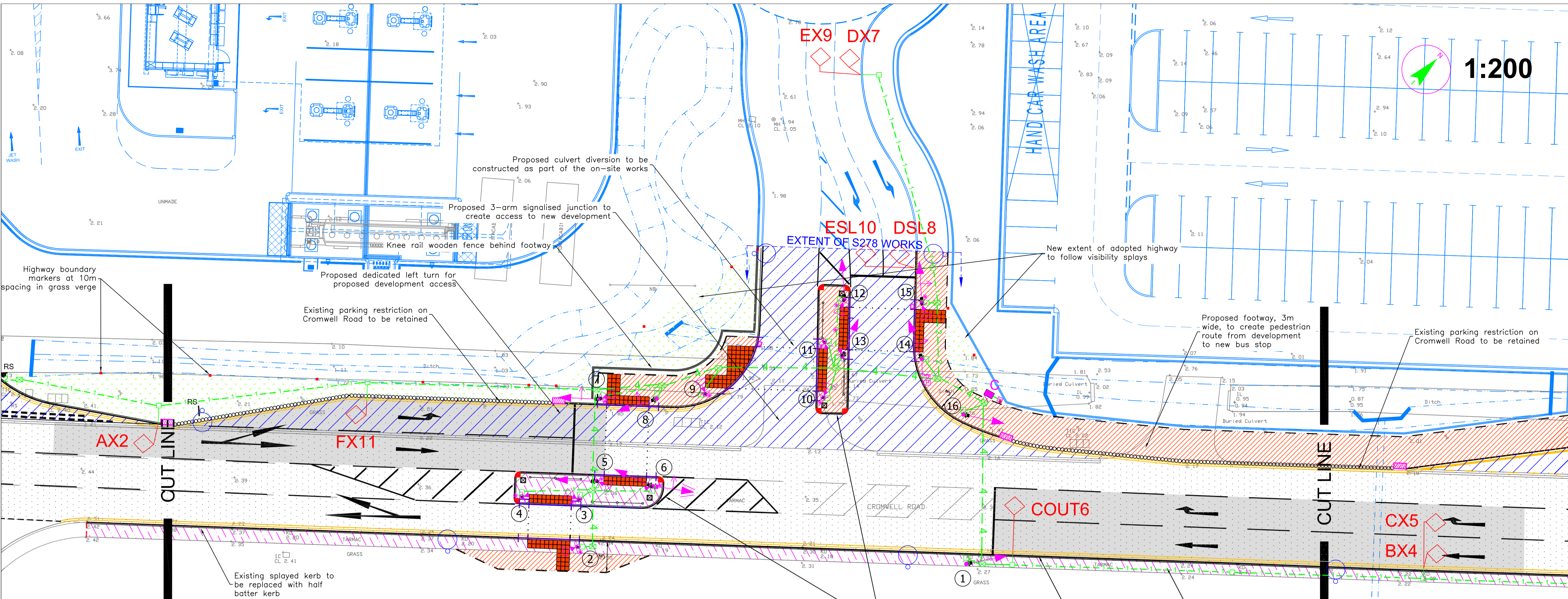
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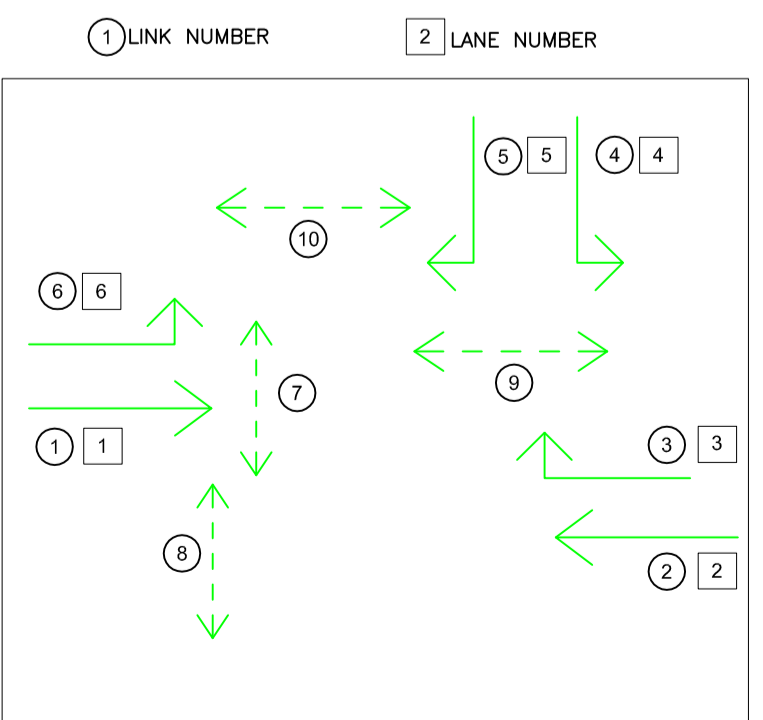
**Cromwell Road/New Bridge Lane Signal Scheme - Swept path analysis**

April 2023

- Notes:
- 1.) New installation to be Extra Low Voltage (ELV). All signal heads to be LED CLS type
  - 2.) MOVA will be the primary method of control. Final positions for the inductive loops shall be agreed with the engineer, using the drawing as a guide.
  - 3.) Feeder pillar to be supplied with lockable isolator and space for a meter.
  - 4.) GSM Outstation Monitoring & Control Unit compatible with Cambs CC Remote Monitoring System to be supplied, installed and commissioned (including instation configuration) by signals contractor.
  - 5.) Raised controller plinth to be utilised in lieu of traditional controller base.
  - 6.) Pole retention sockets are to be used with all poles. Standard "ducks foot" units are to be used. All units are to be installed using manufacturers installation guidelines.
  - 7.) Poles 2, 3, 9 & 10 to be 2.4m stub poles.
  - 8.) Poles 4 & 11 are to be 2.1m stub poles
  - 9.) Skid resistant surfacing (grey in colour) should be provided from crossing studs to a point 50m from the stop line on both Cromwell Road approaches
  - 10.) All ducting (except underkerbs for loops) should be 100mm ID PVCU smooth bore, orange in colour and provided with draw string.
  - 11.) Chambers should be fitted with pedestrian friendly anti-slip lids
  - 12.) This drawing is to be read in conjunction with the associated Appendix 12/5 documentation.



PROPOSED MOVA LINK/LANE ALLOCATION



DETECTOR SCHEDULE

DETECTOR	DISTANCE FROM STOPLINE	PHASE DEMANDED	PHASE EXTENDED
AIN1	110M	—	—
AX2	42M	A	A
BIN3	110M	—	—
BX4	42M	B	B
CX5	42M	—	C
COUT6	2M	C	C
DX7	22M	E	E
DSL8	2M	D	—
EX9	22M	E	E
ESL10	2M	E	—
FX11	21M	B	B

- KEY TO SYMBOLS
- PRIMARY RAG SIGNAL HEAD WITH PHASE
  - PRIMARY RAG SIGNAL HEAD WITH FILTER ARROW
  - NEARSIDE PEDESTRIAN INDICATOR WITH SEPARATE PUSH BUTTON UNIT
  - SECONDARY RAG SIGNAL HEAD WITH RTIGA
  - 2.1M / 2.4M STUB POLE
  - STANDARD 4M POLE WITH NAL RETENTION SOCKET
  - PHOTO ELECTRIC CELL
  - ROTATING TACTILE DEVICE
  - FEEDER PILLAR
  - CONTROLLER CABINET
  - MOVA LOOP POSITION
  - 400x400MM TACTILE PAVING
  - GUARDRAIL
  - 600x450MM INSPECTION CHAMBER
  - 450x450MM LOOP CHAMBER
  - LOOP CHAMBER WITH UNDERKERB DUCT
  - 100MM ID DUCT. QUANTITY AS SHOWN

Rev	Amendment	Date	by
A	Preliminary design for local authority comment	23.04.13	AVG
B	Revised after Cambs CC design check dated 14.06.13	17.07.13	AVG

**ADVANTAGE TRAFFIC SIGNAL CONTROL & DESIGN LTD**

19 Canberra Way, Skellingthorpe, Lincoln  
 Lincolnshire, LN6 5TJ  
 Tel:- 01522 685766 Mob:- 07872 940405  
 E-Mail:- enquiries@advantagetraffic.co.uk  
 www.advantagetraffic.co.uk

Client: TRANSPORT PLANNING ASSOCIATES  
 TESCO STORES

Project Title: NEW SUPERMARKET ACCESS  
 CROMWELL ROAD, WISBECH

Drawing Title: PROPOSED TRAFFIC SIGNALS

Drawn By	Checked By	Approved By
AVG		

Date: APRIL 2013 Scale: A1 100 / 200

Purpose: PRELIMINARY DESIGN

Drawing Number: AT13012-01 Rev: B



# Appendix C

## Stage 1 Road Safety Audit



Medworth CHP Limited

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# MEDWORTH ENERGY FROM WASTE COMBINED HEAT AND POWER FACILITY DCO, NEW BRIDGE LANE, WISBECH

Stage 1 Road Safety Audit



## **Medworth CHP Limited**

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# **MEDWORTH ENERGY FROM WASTE COMBINED HEAT AND POWER FACILITY DCO, NEW BRIDGE LANE, WISBECH**

Stage 1 Road Safety Audit

**CONFIDENTIAL**

**PROJECT NO. 62280400**

**OUR REF. NO. 62280400\_RSA1\_001**

**DATE: MAY 2023**



**WSP**

**62-64 Hills Road  
Cambridge  
CB2 1LA**

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# Quality control

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Issue to Client			
Date	May 2023			
Prepared by	Chris Hodges			
Signature				
Checked by	Maamle Okutu			
Signature				
Authorised by	Maamle Okutu			
Signature				
Project number	62280400			
Report number	62280400_RSA1_001			
File reference	As above			





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## Appendices

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APPENDIX B

## 1. PROJECT DETAILS

---

<b>Report title:</b>	Medworth Energy, New Bridge Lane, Wisbech, Cambridge, Priority Junction Upgrade 62280400_RSA1_001
<b>Date:</b>	May 2023
<b>Document reference and revision:</b>	Stage 1 Road Safety Audit
<b>Prepared by:</b>	WSP
<b>On Behalf of:</b>	Cambridgeshire County Council

## 2. INTRODUCTION

---

2.1.1. This report results from a Stage 1 Road Safety Audit carried out on the New Bridge Lane / Cromwell Road, Cambridge, on behalf of Nigel Eggar, Audit Project Sponsor, Cambridgeshire County Council. The Road Safety Audit was carried out during May 2023.

2.1.2. The Road Safety Audit Team approved by Nigel Eggar, Audit Project Sponsor, was as follows:

Audit Team Leader: Maamle Okutu, BSc (Hons), MSc, CEng, MCIHT, MSoRSA

Audit Team Member Chris Hodges MCIHT

Maamle Okutu holds a Road Safety Certificate of Competence meeting the requirements of the European Directive 2008/96/EC and GG119 paragraph 3.9 and appendix G.

2.1.3. The audit took place in May 2023. The Road Safety Audit was undertaken in accordance with the Road Safety Audit brief provided by Grace Smith, WSP, on behalf of Nigel Eggar, Audit Project Sponsor, Cambridgeshire County Council and accepted by the Audit Team.

2.1.4. The Audit Team visited the site together on Friday 12<sup>th</sup> May between 12pm and 2pm. The weather was overcast with periods of rainfall. The road surface was wet during the site visit. The traffic flow was moderate. A number of pedestrians and cyclists observed during the site visit.

2.1.5. The Road Safety Audit also comprised of an examination of the documents and drawings supplied to the Road Safety Audit Team, referenced in Appendix A of this report.

2.1.6. All comments and recommendations are referenced to the design drawings and the locations have been indicated on the plan located in Appendix B.

2.1.7. The terms of reference of the Road Safety Audit are as described in the Design Manual for Roads and Bridges (DMRB) Standard GG 119 Road Safety Audit, Revision 2, with following exception.

- The Audit Report has been submitted to the design organisation and not directly to the Overseeing Organisation.

2.1.8. The Road Safety Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.

2.1.9. No Departures from Standards relating to the scheme were provided to the Audit Team.

2.1.10. Audit administration

This Audit Report has been submitted to the Cambridgeshire County Council by the design organisation to allow an RSA response report to be produced. This should be completed within 1 month of the issue of the RSA report and the Overseeing Organisation should then provide a copy to the RSA team for information.

The Overseeing Organisation is responsible for identifying any misinterpretations of the highway scheme proposals or if any problem or recommendation is not accepted.



Safety issues identified during the audit and site inspection which the Terms of Reference exclude from this report, but which the audit team wishes to draw to the attention of the Overseeing Organisation, will be set out in a separate letter. Maintenance issues should be reported directly to the maintaining agent.

## **2.2. Purpose of the Scheme (taken directly from brief)**

This Stage 1 Road Safety Audit covers the proposed signalised junction at the New Bridge Road / Cromwell Road junction and proposed alterations on New Bridge Road.

During the Development Consent Order process for the Medworth Energy from Waste (EfW) and Combined Heat and Power (CHP) facility, Cambridgeshire County Council has requested that the B198 Cromwell Road/New Bridge Lane junction – located within Wisbech – is upgraded to a four-arm signalised junction to ensure that additional HGV traffic which is expected to be generated by the development is sufficiently accommodated within the B198/New Bridge Lane junction and protected from conflicting traffic movements.

The B198/New Bridge Lane junction is located in the south-west of the town of Wisbech. South of the junction the B198 routes to the A47, north of the junction the B198 routes into the commercial centre of Wisbech town. The New Bridge Lane west arm provides access to a small number of residential properties and access for deliveries into the Tesco supermarket. The New Bridge Lane east arm currently provides access to residential and industrial land uses and will be upgraded as part of the development to provide access into the proposed site.

Currently the B198 Cromwell Road/New Bridge Lane junction is a four-arm priority junction where the New Bridge Lane East and West arms are the minor arms of the junction which give way to the major arm the B198 Cromwell Road. Right turn bays are provided mid junction to facilitate movement from B198 into the New Bridge Lane east and west arms.

The proposed scheme will upgrade the junction into a four-arm signalised junction where all necessary infrastructure and works will be undertaken to accommodate traffic signal infrastructure and anticipated movements. This will include the following:

- Provision of stop lines and primary and secondary traffic signal columns on all arms of the junction.
- Realignment of the kerbs throughout the junction to accommodate additional lanes and the swept path of anticipated HGV movements.
- Provision of islands within the junction to accommodate traffic signal columns and protect movements.
- Provision of signalised right turns with right turn only lanes and right turn road markings mid junction.
- Provision of a signalised pedestrian crossing over New Bridge Lane east arm.
- Provision of all necessary road markings to ensure clear guidance to vehicles.



The proposed New Bridge Lane traffic signal junction is proposed to be linked to the existing Tesco traffic signal junction.

The Scheme also proposes alterations along New Bridge Lane to widen it to 6.8m wide to accommodate HGV movements generated by the proposed Medworth Site. Included in the DCO application is a proposal to reopen New Bridge Lane across the disused March to Wisbech Railway, with the agreement of Network Rail, and that it is this reopening which enables the Applicant to take access from Cromwell Road into the proposed site access. New Bridge Lane will be closed (to vehicles) east of the proposed site access and that as such it will not operate as a through route.

### **3. PROBLEMS IDENTIFIED IN PREVIOUS ROAD SAFETY AUDITS**

---

The audit team have not been made aware of any previous road safety audits.

## 4. PROBLEMS IDENTIFIED AT THIS STAGE 1 ROAD SAFETY AUDIT

---

### 4.1. PROBLEM 1

**Location:** New Bridge Lane (East)

**Summary:** Lack of edge protection leading to vehicles or pedestrian/cyclists falling down ditches/brooks resulting in injury.

Drawing 41310-WOOD-XX-XX-DR-OT-0026\_S0\_P03 shows the widening of the existing carriageway on both sides into the existing verges. There are existing deep, steep sided ditches/brooks along New Bridge Lane at its eastern end resulting in a vertical drop. It is not clear from the drawings provided what proposals are in place for the existing ditches.



**Figure 1 – Existing drainage features along New Bridge Lane (east)**

Lack of a suitable edge protection may result in pedestrians falling into the ditch resulting in injury or vehicles entering the ditch increasing the risk of injury to vehicle occupants.

**RECOMMENDATION:**

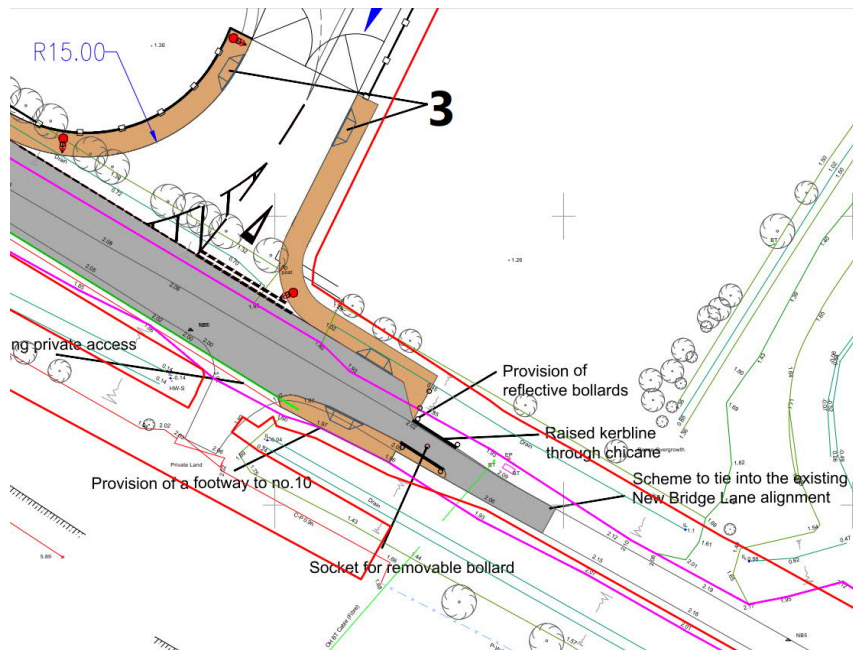
It is recommended that a suitable level of edge protection is provided.

## 4.2. PROBLEM 2

**Location:** Waste Heat Power Facility Access – New Bridge Lane (East)

**Summary:** Poor access visibility leading to collisions between cyclists/pedestrians and vehicles.

The proposed access to the Waste Heat Power Facility is located off New Bridge Lane where there is matured vegetation. No visibility splay drawings have been provided so it is unclear what visibility will be achieved at the access. The carriageway to the east of the access is restricted to non-motorised users use.



**Figure 2 - Extract from drawing 41310-WOOD-XX-XX-DR-OT-0026\_S0\_P03**

If adequate visibility is not provided from the access, drivers may fail to see pedestrians or cyclists approaching the access leading to collisions involving vehicles and pedestrians/cyclists.

### RECOMMENDATION:

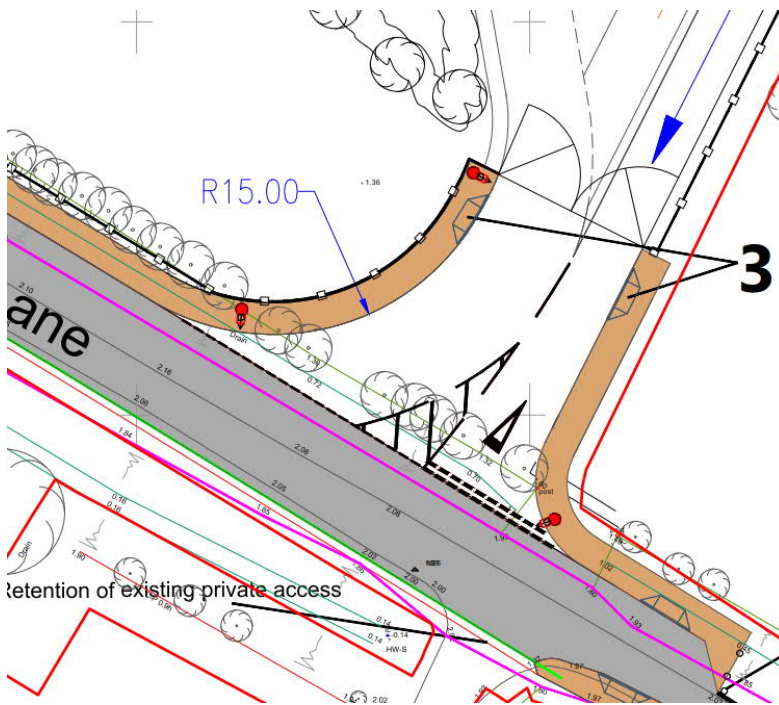
It is recommended adequate visibility is provided to and from the access.

### 4.3. PROBLEM 3

**Location:** Waste Heat Power Facility Access – New Bridge Lane (East)

**Summary:** Poor access visibility leading to collisions between vehicles and pedestrians

There is an inset uncontrolled crossing located near the gate on the proposed access into the Waste Heat Power Facility. Drawing 41310-WOOD-XX-XX-DR-OT-0026\_S0\_P03 provided shows a fence behind the footway to the west of the access, as well as a gate, and internal fence. It is unclear from the drawings what the boundary treatment would be.



**Figure 3 - Extract from drawing 41310-WOOD-XX-XX-DR-OT-0026\_S0\_P03**

Pedestrians crossing at this location may have reduced visibility of vehicles approaching from New Bridge Lane or exiting the Waste Heat Power Facility due to the boundary treatment and drivers may not see pedestrians' step into the carriageway to cross leading to collisions between vehicles and pedestrians.

Pedestrians may also choose to cross at the mouth of the access due to the proposed crossing being away from their desire line. Drivers may not anticipate pedestrians crossing at this location increasing the risk of collisions between vehicles and pedestrians.

**RECOMMENDATION:**

It is recommended that the crossing point is relocated, or adequate visibility provided to and from the crossing points.

#### 4.4. PROBLEM 4

**Location:** New Bridge Lane (East)

**Summary:** Lack of adequate drainage provision leading to ponding and loss of control incidents.

The existing carriageway on New Bridge Lane (East) drains via ditches on the eastern end and kerbs and gullies. Although it is noted that the design is preliminary at this stage, it is unclear how the carriageway is expected to drain.



**Figure 4 - Existing layouts at eastern end of New Bridge Lane (east)**

If adequate drainage is not provided, the carriageway may pond and there is a risk of loss of control incidents especially during intense periods of precipitation and/or freezing weather conditions.

**RECOMMENDATION:**

It is recommended that adequate drainage is provided.

#### 4.5. PROBLEM 5

**Location:** Private Access junction – New Bridge Lane (East)

**Summary:** Poor visibility to and from access leading to T-bone collisions or shunts

There is an existing private access on the north side of New Bridge Lane at its eastern end which is to be retained. It is however unclear what the proposals are beyond the proposed footway and whether there will be adequate visibility to and from the access.



**Figure 5 - View looking east on New Bridge Lane**

If adequate visibility to and from the access is not provided, it could lead to vehicles turning onto New Bridge Lane at unsuitable gaps in traffic flow leading to T-bone collisions or shunts.

**RECOMMENDATION:**

It is recommended adequate visibility is provided to and from the access in line with the speed of the road.

## 4.6. PROBLEM 6

**Location:** New Bridge Lane (East) Sub-Station

**Summary:** Lack of maintenance access resulting in pedestrian/vehicular collisions.

The existing compact sub-station on New Bridge Lane (East) is to be relocated behind the proposed footway as part of the scheme proposals.



**Figure 6 - Existing sub-station on New Bridge Lane**

The existing sub-station is currently accessible from the public highway with maintenance vehicles able to park on a widened section of the existing carriageway. If a suitable access is not provided, maintenance vehicles may park on footways and block the paths of pedestrians forcing pedestrians to step into the carriageway at risk of collision with vehicles.

**RECOMMENDATION:**

It is recommended that a suitable maintenance access is provided to the sub-station.



## 4.7. PROBLEM 7

**Location:** Copart Private Access – New Bridge Lane (East)

**Summary:** Traffic sign obstructing visibility to and from access leading to T-bone collisions or shunts

There is an existing private access located on the south side of New Bridge Lane, immediately east of Salters Way which provides access to Copart car salvage auctions. There is an existing sign located in the verge to the east of the access. The position and size of the sign may restrict visibility to the right of the access.



**Figure 7 - View looking northwest on New Bridge Lane**

The restricted visibility may lead to vehicles exiting the access at unsuitable gaps in traffic flow leading to T-bone collisions or shunts.

**RECOMMENDATION:**

It is recommended that the sign is relocated outside the visibility splay at the access.

## 4.8. PROBLEM 8

**Location:** New Bridge Lane (East)

**Summary:** Lack of waiting restrictions could lead to side swipe between larger vehicles and vehicles parked on New Bridge Lane (East).

There is currently no parking restriction on New Bridge Lane (East). During the site visit, it was observed that vehicles parked on both sides of the carriageway and a high percentage of vehicles accessing New Bridge Lane East were HGVs. The scheme proposal will increase the number of HGVs accessing New Bridge Lane East.



**Figure 8 - Parking on New Bridge Lane**

Without parking restrictions, drivers may continue to park on both sides of New Bridge Lane and may make it difficult for larger vehicles to access New Bridge Lane leading to side swipe collisions.

### **RECOMMENDATION:**

It is recommended that a Traffic Regulation Order (TRO) and waiting restrictions are implemented to restrict parking on New Bridge Lane (East).

## 4.9. PROBLEM 9

**Location:** Junction of New Bridge Lane with Cromwell Road

**Summary:** Existing traffic signs leading to driver confusion, sudden braking and shunts.

There are existing give ways signs at the junction of New Bridge Lane with Cromwell Road.



**Figure 9 – View looking west on New Bridge Lane (East) at Cromwell Road junction.**

With the introduction of the traffic signals at the junction, these signs will become redundant. If the existing signs are retained in their current location, it may confuse drivers as to whether to give way at the junction leading to driver hesitation, sudden braking and shunts.

**RECOMMENDATION:**

It is recommended that the existing give way signs at the junction are removed.

**4.10. PROBLEM 10**

**Location:** Junction of New Bridge Lane with Cromwell Road.

**Summary:** Existing traffic signs obscuring visibility to the traffic signals leading to shunts and T-bone collisions.

The scheme involves the signalisation of the junction of New Bridge Lane with Cromwell Road. There are existing speed limit and give ways signs at the junction. The location of the existing signs may obscure visibility to the proposed traffic signals. This could lead to drivers seeing signals late and braking suddenly resulting in shunts. Vehicles may also fail to stop at the signals resulting in T-bone collisions with vehicles travelling on Cromwell Road. (See also Problem 9)

**RECOMMENDATION:**

It is recommended that a review of the signs is undertaken and if required, signs are relocated to provide adequate visibility to the traffic signals.

**4.11. PROBLEM 11**

**Location:** New Bridge Lane / Cromwell Road junction

**Summary:** Signal staging leading to shunts and T-bone collisions.

The existing junction of New Bridge Lane with Cromwell Road is to be signalised. The northbound and southbound approaches to the junction on Cromwell Road are two lane approaches with a right turning pocket.



**Figure 10 - View looking north on Cromwell Road**

No signal staging diagrams have been provided so it is unclear how the signals will operate. If the straight ahead and right turn manoeuvres on both approaches on Cromwell Road are run together, it could lead to a gap seeking right turn increasing the risk of T-bone collisions.

If there are separate phases for the right and straight-ahead manoeuvres on both approaches on Cromwell Road, this may lead to right turning traffic blocking the straight-ahead movements increasing the risk of shunts.

**RECOMMENDATION:**

It is recommended that the signal staging is reviewed to reduce the risk of shunts and T-bone collisions.

## 4.12. PROBLEM 12

**Location:** New Bridge Lane / Cromwell Road junction

**Summary:** Insufficient road width leading to side swipes, loss of control incidents or T-bone collisions

The lane widths provided at the proposed junctions are 3m wide. The swept path drawings provided for a 16.5m articulated vehicle at some locations show a vehicle overhang on the lane markings or traffic island. During the site visit, other types of larger vehicles were observed using the junction.

If adequate lane widths are not provided these could lead to side swipe collisions. Larger vehicles may also overrun the kerbs leading to loss of control incidents.

Where swept path drawings show an overhang on the traffic island, this may reduce the lateral clearance to signal poles. Insufficient lateral clearance could result in vehicles colliding with the traffic signal damaging or rotating the signal leading to drivers not seeing the traffic signal aspect and failing to stop at the junction resulting in T-bone collisions.

**RECOMMENDATION:**

It is recommended that vehicle tracking is undertaken for the largest vehicle anticipated to access the junction and if required, the kerb lines at the junction amended to accommodate the swept path of the largest vehicle.

#### 4.13. PROBLEM 13

**Location:** New Bridge Lane / Cromwell Road junction

**Summary:** Inadequate carriageway width leading to vehicle overrunning kerbs and loss of control incidents or collisions between vehicles and pedestrians.

Vehicle tracking have been provided for a 16.5m articulated vehicle. During the site visit, a number of larger vehicles including a transporter and an HGV recovering another HGV. It was also observed that an HGV turning left out of New Bridge Lane swung into the opposing carriageway to complete the turning manoeuvre.



**Figure 11 – Car transporter with trailer were observed entering New Bridge Lane**

If adequate carriageway width is not provided at the junction, this could lead to larger vehicles overrunning the kerb resulting in loss of control incidents or collisions between vehicles and pedestrians on the footway.

**RECOMMENDATION:**

It is recommended that vehicle tracking is undertaken for the largest vehicle anticipated to access New Bridge Lane and if required, the kerb lines at the junction amended to accommodate the swept path of the largest vehicle.

#### 4.14. PROBLEM 14

**Location:** Cromwell Road, approach to New Bridge Lane, Northbound & southbound

**Summary:** Traffic signal 'see through effect' leading to red light running, shunts and T-bone collisions.

The existing junction of Tesco with Cromwell Road immediately north of the proposed junction is signalised. The signals at the Tesco junction are visible from a distance approximately 350m south of the junction of New Bridge Lane with Cromwell Road and may create a see-through effect.



**Figure 12 – View looking north on Cromwell Road, south of the New Bridge Lane junction.**



Drivers approaching the New Bridge Lane junction with Cromwell Road may still see the signals at the junction further ahead. This could result in vehicles failing to stop, or braking late, resulting in shunts on the approach or T-Bone Collisions with vehicles at the junction.

**RECOMMENDATION:**

It is recommended the phasing of the two signals are linked to have both signals running together or measures are implemented to remove the see-through effects.

**End of Problems identified and Recommendations in this Stage 1 Audit**

## 5. AUDIT TEAM STATEMENT

<b>We certify that this audit has been carried out in accordance with GG 119 with exceptions identified in Para 2.17.</b>	
<b>ROAD SAFETY AUDIT TEAM LEADER</b>	
Name:	Maamle Okutu
Signed:	
Position:	Associate Director.
Organisation:	WSP
Date:	18 <sup>th</sup> May 2023
<b>ROAD SAFETY AUDIT TEAM MEMBER(s)</b>	
Name:	Chris Hodges
Signed:	
Position:	Principal Highways Engineer
Date:	18 <sup>th</sup> May 2023

# Appendix A



## DOCUMENT LIST

### Documents

- Road Safety Audit Brief - 41310-WOOD-XX-XX-RP-OT-0003\_S0\_P01

### Drawings

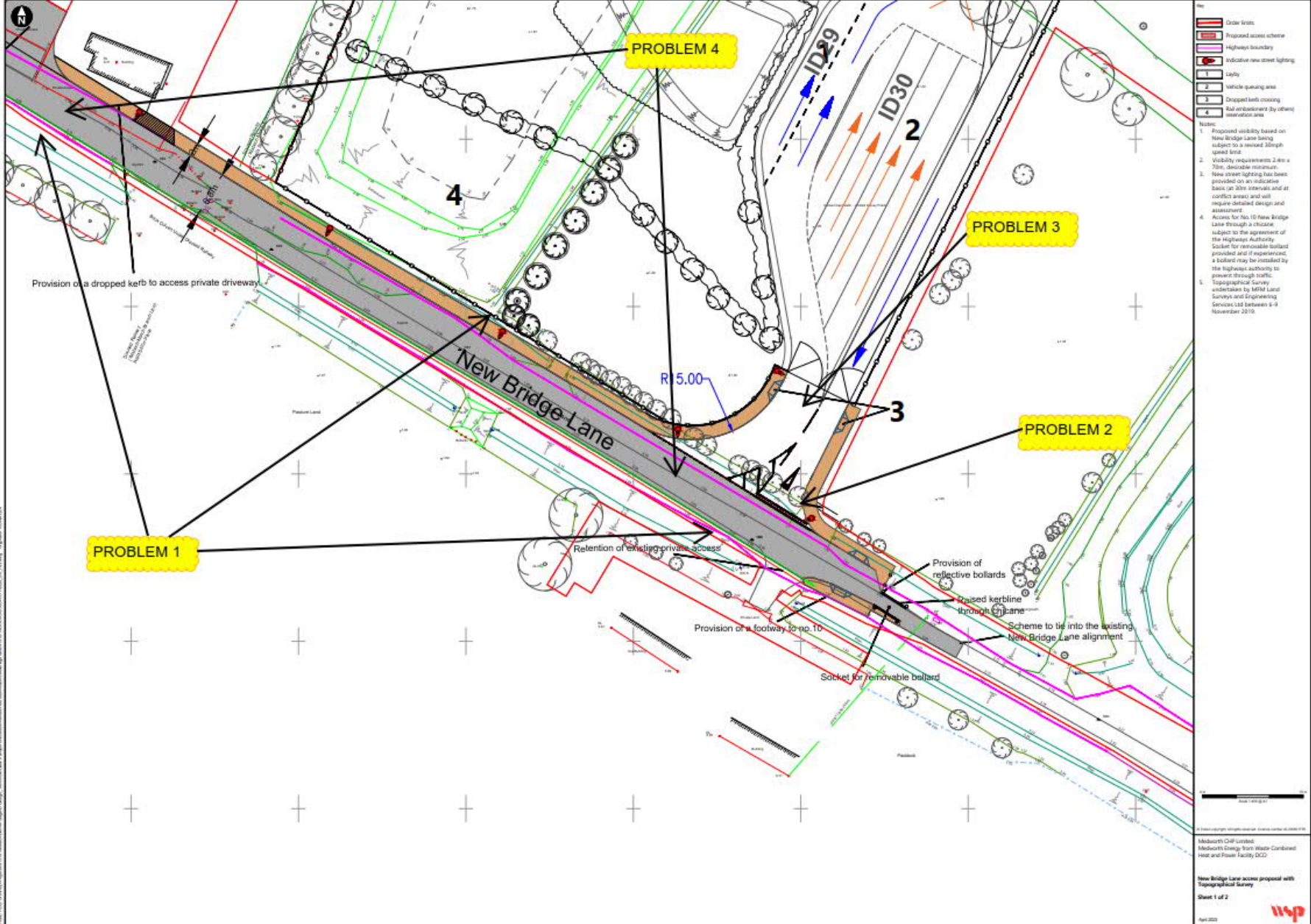
- New Bridge Lane access proposal with Topographical Survey – Sheet 1 of 2 - 41310-WOOD-XX-XX-DR-OT-0026\_S0\_P03
- New Bridge Lane access proposal with Topographical Survey – Sheet 2 of 2 - 41310-WOOD-XX-XX-DR-OT-0026\_S0\_P03
- Cromwell Road/New Bridge Lane Signal Scheme - General arrangement - 41310-WOOD-XX-XX-DR-OT-0029\_S0\_P01
- Cromwell Road/New Bridge Lane Signal Scheme - Swept path analysis - 41310-WOOD-XX-XX-DR-OT-0030\_S0\_P01
- New Supermarket Access Cromwell Road Wisbech - AT13012-1 Rev B



# Appendix B



PROBLEM LOCATION PLANS



**PROBLEM 1**

**PROBLEM 4**

**PROBLEM 3**

**PROBLEM 2**

Provision of a dropped kerb to access private driveway

Retention of existing private access

Provision of reflective bollards

Raised kerbline through lane

Scheme to tie into the existing New Bridge Lane alignment

Provision of a footway to no. 10

Socket for removable bollard

R 5.00

- Order limits
- Proposed access scheme
- Highway boundary
- Indicative new street lighting
- Lays
- Vehicle queuing area
- Dropped kerb crossing
- Rail embankment by other reservation area

- Notes:
1. Proposed visibility based on New Bridge Lane being subject to a revised 30mph speed limit.
  2. Visibility requirements 2.6m x 70m, desirable minimum.
  3. New street lighting has been provided on an indicative basis (at 30m intervals and at conflict areas) and will require detailed design and assessment.
  4. Access for No. 10 New Bridge Lane through a chicané, subject to the agreement of the Highway Authority. Socket for removable bollard provided and if experienced, a bollard may be installed by the highway authority to prevent through traffic.
  5. Topographical Survey undertaken by MFM Land Survey and Engineering Services Ltd between 8-9 November 2019.

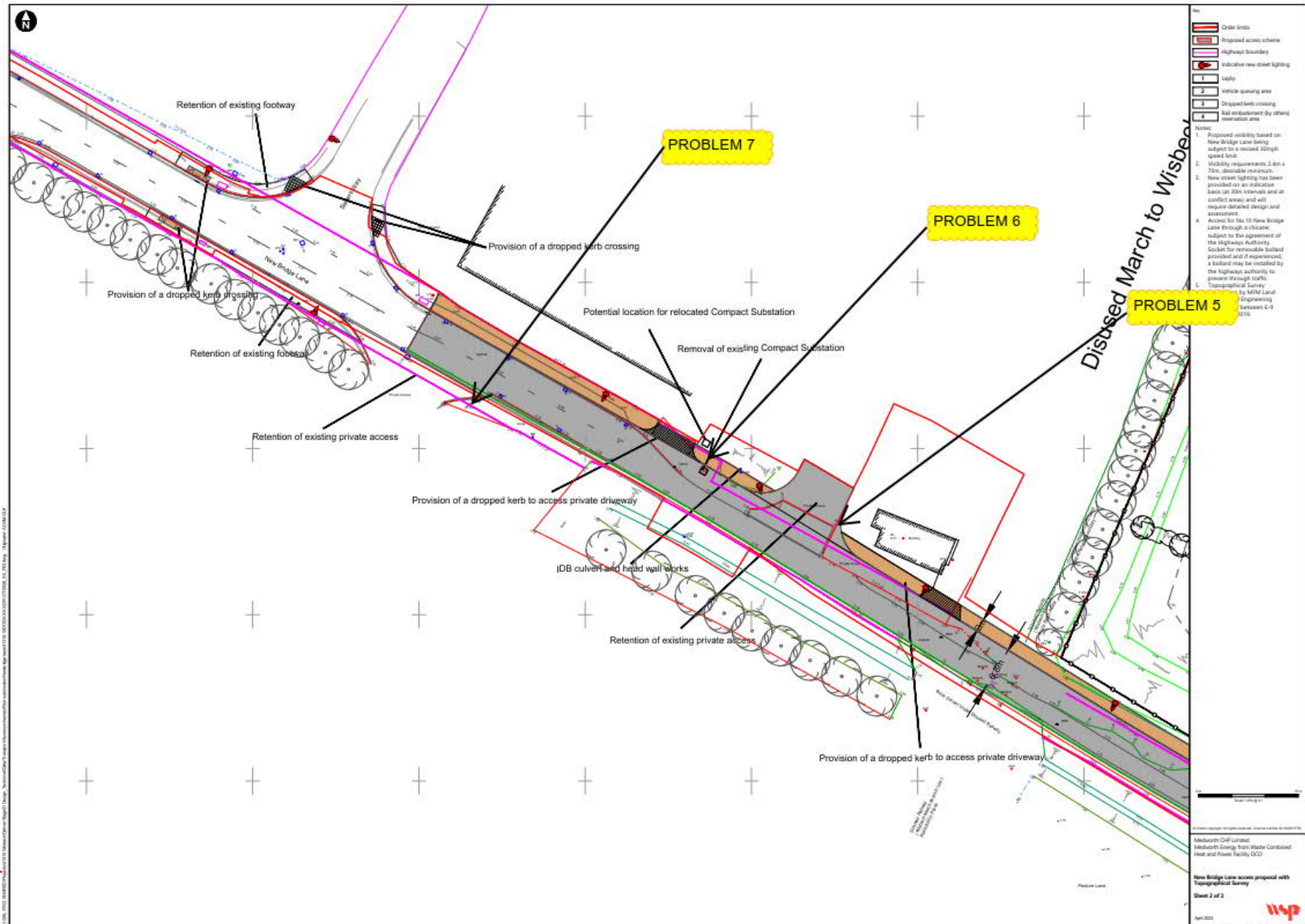
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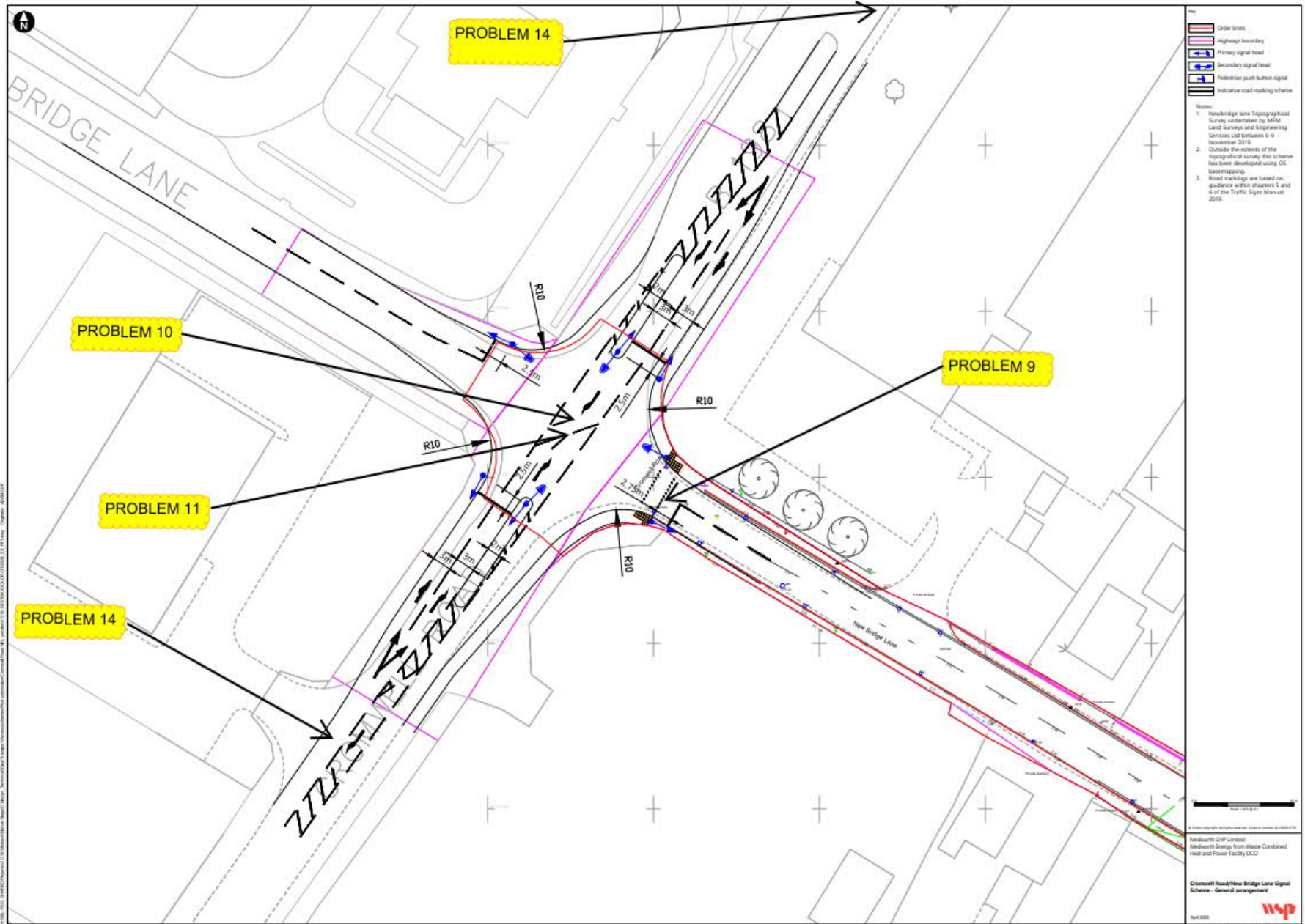
© Crown Copyright. All rights reserved. Ordnance Survey Licence No. 100019754.  
 Midasarth OAP Limited  
 Midasarth Energy Team Water Contained Heat and Power Facility O&M

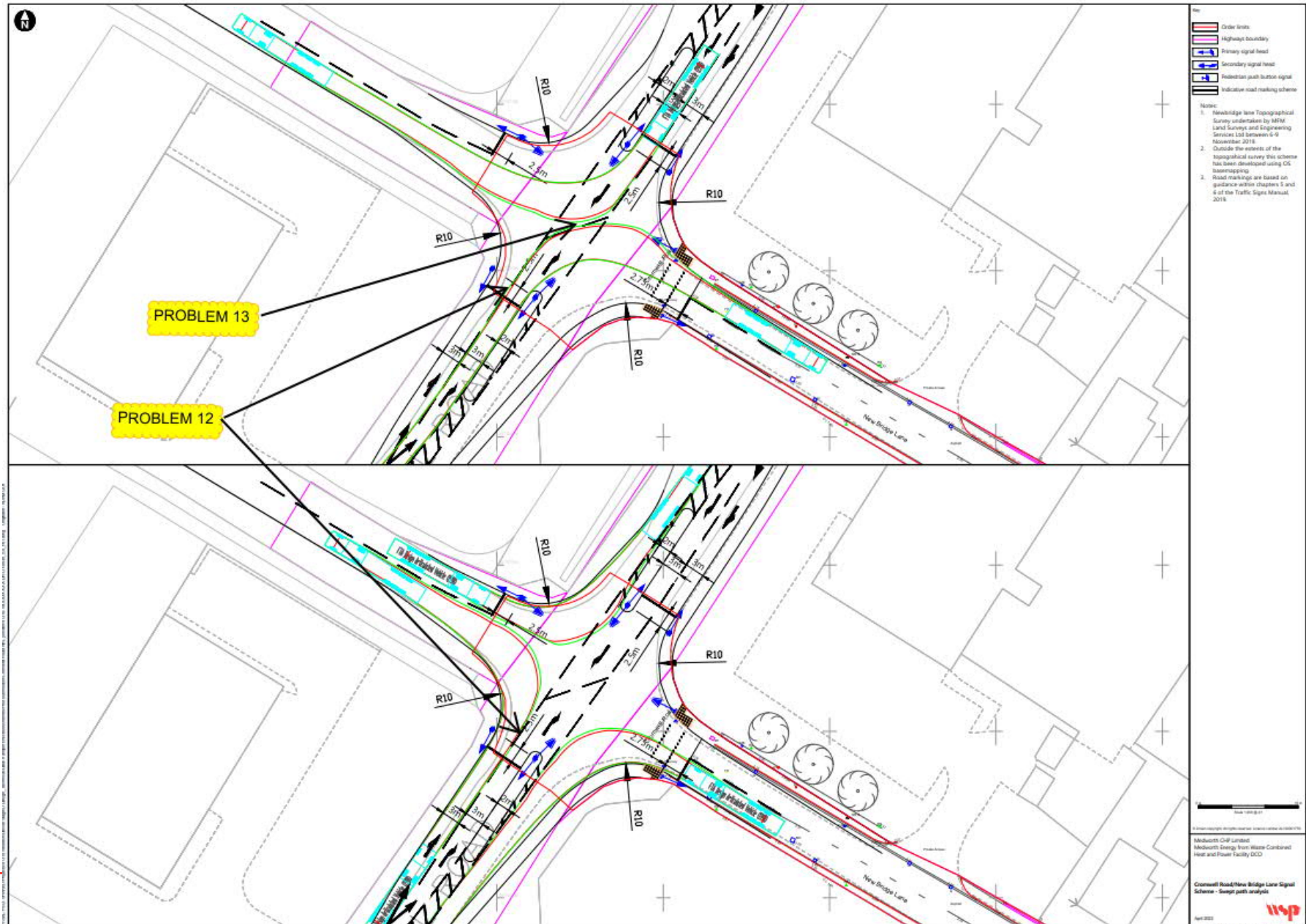
New Bridge Lane access proposal with Topographical Survey  
 Sheet 1 of 2

April 2023

41310-WOOD-05-09-08-01-02A, 52\_P01











WSP  
62-64 Hills Road  
Cambridge  
CB2 1LA  
**wsp.com**

# Appendix D

## Stage 1 Road Safety Audit Response Report



# Technical note:

## New Bridge Lane Road Safety Audit Stage 1 Response Report

### 1. Project Details

**Table 1.1 Project Details**

<b>Report title</b>	<b>New Bridge Lane Road Safety Audit Stage 1 Response Report</b>
<b>Date:</b>	23/05/2023
<b>Document reference and revision:</b>	41310-WOOD-XX-XX-TN-OT-0004_S0_P01
<b>Prepared by:</b>	WSP
<b>On behalf of</b>	MVV Environment Ltd

**Table 1.2 Authorisation Sheet**

<b>Project:</b>	<b>Medworth Energy from Waste Combined Heat and Power Facility DCO</b>
<b>Report Title:</b>	New Bridge Lane Road Safety Audit Stage 1 Response Report
<b>Prepared by:</b>	
<b>Name:</b>	Grace Smith
<b>Position:</b>	Associate Director
<b>Signed:</b>	
<b>Date:</b>	
<b>Approved by:</b>	
<b>Name:</b>	
<b>Position:</b>	
<b>Signed:</b>	
<b>Organisation:</b>	Cambridge County Council
<b>Date:</b>	

## 2. Introduction

On behalf of MVV Environment Ltd, WSP have produced preliminary designs for upgrading the New Bridge Lane/B198 Cromwell Road junction in Wisbech to a signalised junction and a scheme to upgrade New Bridge Lane between the B198 junction and the proposed access to the Medworth EfW site. The proposed upgrades to Newbridge Lane and the adjacent Newbridge Lane/ B198 Cromwell Road junction would mean that safer and more efficient access for operational HGV traffic to the Medworth EfW site can be provided.

The signalisation scheme was requested by Cambridgeshire County Council (CCC) during the Development Consent Order process for the Medworth Energy from Waste (EfW) and Combined Heat and Power (CHP) facility. The proposed scheme would see the existing four arm priority junction be upgraded to a four-arm signalised junction which would be linked to the existing traffic signal of the adjacent Cromwell Road/Tesco access junction. A traffic model has been created using ©JCT LinSig software to ensure that additional HGV traffic which is expected to be generated by the development is sufficiently accommodated within the B198/New Bridge Lane junction and protected from conflicting traffic movements, and both junctions have sufficient highway capacity with the proposed signal operations.

This report has been produced in response to the Stage 1 Road Safety Audit (RSA) undertaken in May 2023. The Audit comprised of a site visit undertaken by the CCC approved RSA team where the proposed scheme drawings and documents provided in the Stage 1 RSA brief were assessed onsite. The Stage 1 RSA identified 14 problems with the current schemes, responses to each problem are set out within this report.

## 3. Key Personnel

**Table 3.1 Key Personnel**

<b>Overseeing Organisation:</b>	Nigel Eggar  Cambridgeshire County Council
<b>RSA team:</b>	Maamle Okutu,  WSP 62-64 Hills Road Cambridge CB2 1LA
<b>Design organisation:</b>	Grace Smith  WSP Amber Court William Armstrong Drive Newcastle upon Tyne NE4 7YQ

## 4. Road Safety Audit Decision Log

**Table 4.1 Road Safety Audit Decision Log**

RSA Problem	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
<p><b>Problem 1</b></p> <p><b>Location:</b> New bridge Lane East (identified in RSA stage 1 appendix B)</p> <p><b>Summary:</b> Lack of edge protection leading to vehicles or pedestrian/cyclists falling down ditches/brooks resulting in injury. Drawing 41310-WOOD-XX-XX-DR-OT-0026_S0_P03 shows the widening of the existing carriageway on both sides into the existing verges. There are existing deep, steep sided ditches/brooks along New Bridge Lane at its eastern end resulting in a vertical drop. It is not clear from the drawings provided what proposals are in place for the existing ditches.</p>	<p>It is recommended that a suitable level of edge protection is provided.</p>	<p>Comment accepted. As per drawing 41310-WOOD-XX-XX-DR-OT-0033_S0_P01 and 41310-WOOD-XX-XX-DR-OT-0026_S0_P03 the southern edge of the carriageway is proposed to be protected by trief kerbs. Trief kerb arrangement will be agreed with the CCC as the LHA. No footway or cycle provision is proposed on the southern edge of the carriageway and as such no protection for pedestrians and cyclists is proposed.</p>		
<p><b>Problem 2</b></p> <p><b>Location:</b> Waste Heat Power Facility Access – New Bridge Lane (East)</p>	<p>It is recommended adequate visibility is provided to and from the access.</p>	<p>Visibility splay for the proposed site access is provided on drawing 41310-WOOD-XX-XX-DR-OT-0026_S0_P03. The splay provided is 2.4</p>		

RSA Problem	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
<p><b>Summary:</b> Poor access visibility leading to collisions between cyclists/pedestrians and vehicles.</p> <p>The proposed access to the Waste Heat Power Facility is located off New Bridge Lane where there is matured vegetation. No visibility splay drawings have been provided so it is unclear what visibility will be achieved at the access. The carriageway to the east of the access is restricted to non-motorised users use.</p> <p>If adequate visibility is not provided from the access, drivers may fail to see pedestrians or cyclists approaching the access leading to collisions involving vehicles and pedestrians/cyclists.</p>		<p>x 70m based on New Bridge Lane being subject to a revised 30mph speed limit and is in accordance with Table 2.10 of CD 109 and Section 3 of CD123.</p>		
<p><b>Problem 3</b></p> <p><b>Location:</b> Waste Heat Power Facility Access – New Bridge Lane (East).</p> <p><b>Summary:</b> Poor access visibility leading to collisions between vehicles and pedestrians.</p> <p>There is an inset uncontrolled crossing located near the gate on the proposed access into the Waste Heat Power Facility. Drawing 41310-WOOD-XX-XX-DR-OT-0026_S0_P03 provided shows a fence behind the footway to the west of the access, as well as a gate, and internal fence. It is unclear from the drawings what the boundary treatment would be.</p>	<p>It is recommended that the crossing point is relocated, or adequate visibility provided to and from the crossing points.</p>	<p>As per drawing 41310-WOOD-XX-XX-DR-OT-0026_S0_P03 the fence line on the western side of the access has been realigned to provide a suitable visibility splay for pedestrians crossing at the site access. Visibility splay for pedestrians is 40m for a road with a 30mph speed limit based on CCC Highways Development Management – General Principles for</p>		

RSA Problem	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
<p>Pedestrians crossing at this location may have reduced visibility of vehicles approaching from New Bridge Lane or exiting the Waste Heat Power Facility due to the boundary treatment and drivers may not see pedestrians' step into the carriageway to cross leading to collisions between vehicles and pedestrians.</p> <p>Pedestrians may also choose to cross at the mouth of the access due to the proposed crossing being away from their desire line. Drivers may not anticipate pedestrians crossing at this location increasing the risk of collisions between vehicles and pedestrians.</p>		<p>Development, Figure 5, and Section 2.2.</p> <p>The position of the dropped kerb crossings will be moved south, and a pedestrian refuge will be provided mid junction.</p> <p>The proposed location of the new crossing is shown on 41310-WOOD-XX-XX-DR-OT-0026_S0_P03.</p>		
<p><b>Problem 4</b></p> <p><b>Location:</b> New Bridge Lane (East)</p> <p><b>Summary:</b> Lack of adequate drainage provision leading to ponding and loss of control incidents.</p> <p>The existing carriageway on New Bridge Lane (East) drains via ditches on the eastern end and kerbs and gullies. Although it is noted that the design is preliminary at this stage, it is unclear how the carriageway is expected to drain.</p> <p>If adequate drainage is not provided, the carriageway may pond and there is a risk of loss of control incidents especially during</p>	<p>It is recommended that adequate drainage is provided.</p>	<p>Design provided within drawing 41310-WOOD-XX-XX-DR-OT-0026_S0_P03 is to a preliminary detail only. An appropriate drainage scheme will be developed during the detailed design stage.</p>		

RSA Problem	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
intense periods of precipitation and/or freezing weather conditions.				
<p><b>Problem 5</b></p> <p><b>Location:</b> Private Access junction – New Bridge Lane (East)</p> <p><b>Summary:</b> Poor visibility to and from access leading to T-bone collisions or shunts. There is an existing private access on the north side of New Bridge Lane at its eastern end which is to be retained. It is however unclear what the proposals are beyond the proposed footway and whether there will be adequate visibility to and from the access. If adequate visibility to and from the access is not provided, it could lead to vehicles turning onto New Bridge Lane at unsuitable gaps in traffic flow leading to T-bone collisions or shunts.</p>	<p>It is recommended adequate visibility is provided to and from the access in line with the speed of the road.</p>	<p>A new radius will be created at the corner with No.9 NBL and the existing fence line boundary of No.9 NBL will be trimmed back and can be further trimmed back if necessary so the 2.4m x 45m visibility splay can be provided.</p>		
<p><b>Problem 6</b></p> <p><b>Location:</b> New Bridge Lane (East) Sub-Station.</p> <p><b>Summary:</b> Lack of maintenance access resulting in pedestrian/vehicular collisions. The existing compact sub-station on New Bridge Lane (East) is to be relocated behind the proposed footway as part of the scheme proposals.</p>	<p>It is recommended that a suitable maintenance access is provided to the sub-station.</p>	<p>Comment rejected. Compact substation will be relocated to the verge adjacent to the widened section of New Bridge Lane. It is anticipated that any work/maintenance required to be undertaken on the compact substation will be done by a small team who will make the area around the</p>		

RSA Problem	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
<p>The existing sub-station is currently accessible from the public highway with maintenance vehicles able to park on a widened section of the existing carriageway. If a suitable access is not provided, maintenance vehicles may park on footways and block the paths of pedestrians forcing pedestrians to step into the carriageway at risk of collision with vehicles.</p>		<p>work safe for pedestrians and vehicles. It is not anticipated that a dedicated access will be required.</p>		
<p><b>Problem 7</b></p> <p><b>Location:</b> Copart Private Access – New Bridge Lane (East).</p> <p><b>Summary:</b> Traffic sign obstructing visibility to and from access leading to T-bone collisions or shunts</p> <p>There is an existing private access located on the south side of New Bridge Lane, immediately east of Salters Way which provides access to Copart car salvage auctions. There is an existing sign located in the verge to the east of the access. The position and size of the sign may restrict visibility to the right of the access. The restricted visibility may lead to vehicles exiting the access at unsuitable gaps in traffic flow leading to T-bone collisions or shunts.</p>	<p>It is recommended that the sign is relocated outside the visibility splay at the access.</p>	<p>Comment accepted. This sign however belongs to Copart and they may have obtained prior permission from CCC and incurred financial cost. The feasibility of relocating this sign will be discussed with CCC and drawing 41310-WOOD-XX-XX-DR-OT-0026_S0_P03 would be amended if necessary.</p>		
<p><b>Problem 8</b></p> <p><b>Location:</b> New Bridge Lane (East)</p>	<p>It is recommended that a Traffic Regulation Order (TRO) and waiting</p>	<p>Comment accepted. The feasibility to introduce waiting restrictions (part</p>		

RSA Problem	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
<p><b>Summary:</b> Lack of waiting restrictions could lead to side swipe between larger vehicles and vehicles parked on New Bridge Lane (East).</p> <p>There is currently no parking restriction on New Bridge Lane (East). During the site visit, it was observed that vehicles parked on both sides of the carriageway and a high percentage of vehicles accessing New Bridge Lane East were HGVs. The scheme proposal will increase the number of HGVs accessing New Bridge Lane East.</p> <p>Without parking restrictions, drivers may continue to park on both sides of New Bridge Lane and may make it difficult for larger vehicles to access New Bridge Lane leading to side swipe collisions.</p>	<p>restrictions are implemented to restrict parking on New Bridge Lane (East).</p>	<p>time or full time) along New Bridge Lane (East) will be discussed with CCC.</p> <p>If the limited waiting restrictions were considered feasible, the design can be updated accordingly in the next design stage.</p>		
<p><b>Problem 9</b></p> <p>Location: Junction of New Bridge Lane with Cromwell Road</p> <p><b>Summary:</b> Existing traffic signs leading to driver confusion, sudden braking and shunts. There are existing give ways signs at the junction of New Bridge Lane with Cromwell Road.</p> <p>With the introduction of the traffic signals at the junction, these signs will become redundant. If the existing signs are retained in their current location, it may confuse drivers</p>	<p>It is recommended that the existing give way signs at the junction are removed.</p>	<p>Comment accepted.</p> <p>Existing give way signage will be removed and will be clearly annotated in the Site Clearance drawing which will be prepared as part of the detailed design stage.</p>		



RSA Problem	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
<p>as to whether to give way at the junction leading to driver hesitation, sudden braking and shunts.</p>				
<p><b>Problem 10</b></p> <p><b>Location:</b> Junction of New Bridge Lane with Cromwell Road.</p> <p><b>Summary:</b> Existing traffic signs obscuring visibility to the traffic signals leading to shunts and T-bone collisions. The scheme involves the signalisation of the junction of New Bridge Lane with Cromwell Road. There are existing speed limit and give ways signs at the junction. The location of the existing signs may obscure visibility to the proposed traffic signals. This could lead to drivers seeing signals late and braking suddenly resulting in shunts. Vehicles may also fail to stop at the signals resulting in T-bone collisions with vehicles travelling on Cromwell Road. (See also Problem 9)</p>	<p>It is recommended that a review of the signs is undertaken and if required, signs are relocated to provide adequate visibility to the traffic signals.</p>	<p>Comment accepted. A sign audit will be undertaken to inform the Site Clearance plan which will be part of the detailed design stage. The aim of the site audit is to review existing signs within the study area and remove any redundant signs to reduce street clutter.</p>		
<p><b>Problem 11</b></p> <p><b>Location:</b> New Bridge Lane / Cromwell Road junction</p> <p><b>Summary:</b> Signal staging leading to shunts and T-bone collisions.</p>	<p>It is recommended that the signal staging is reviewed to reduce the risk of shunts and T-bone collisions.</p>	<p>Comment accepted. The LinSig traffic signal model has tested the proposed layout with separate phases for the right and straight-ahead manoeuvres. The traffic model will be submitted to</p>		

RSA Problem	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
<p>The existing junction of New Bridge Lane with Cromwell Road is to be signalised. The northbound and southbound approaches to the junction on Cromwell Road are two lane approaches with a right turning pocket.</p> <p>No signal staging diagrams have been provided so it is unclear how the signals will operate. If the straight ahead and right turn manoeuvres on both approaches on Cromwell Road are run together, it could lead to a gap seeking right turn increasing the risk of T-bone collisions.</p> <p>If there are separate phases for the right and straight-ahead manoeuvres on both approaches on Cromwell Road, this may lead to right turning traffic blocking the straight-ahead movements increasing the risk of shunts.</p>		<p>CCC for review and approval.</p>		
<p><b>Problem 12</b></p> <p><b>Location:</b> New Bridge Lane / Cromwell Road junction</p> <p><b>Summary:</b> Insufficient road width leading to side swipes, loss of control incidents or T-bone collisions</p> <p>The lane widths provided at the proposed junctions are 3m wide. The swept path drawings provided for a 16.5m articulated vehicle at some locations show a vehicle</p>	<p>It is recommended that vehicle tracking is undertaken for the largest vehicle anticipated to access the junction and if required, the kerb lines at the junction amended to accommodate the swept path of the largest vehicle.</p>	<p>The signal junction has been designed to accommodate anticipated HGV movements (B198 north and south to and from New Bridge Lane west arm and B198 south arm to and from New Bridge Lane east arm) using a 16.5m long articulated HGV, the maximum legal length of</p>		

RSA Problem	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
<p>overhang on the lane markings or traffic island. During the site visit, other types of larger vehicles were observed using the junction.</p> <p>If adequate lane widths are not provided these could lead to side swipe collisions. Larger vehicles may also overrun the kerbs leading to loss of control incidents.</p> <p>Where swept path drawings show an overhang on the traffic island, this may reduce the lateral clearance to signal poles. Insufficient lateral clearance could result in vehicles colliding with the traffic signal damaging or rotating the signal leading to drivers not seeing the traffic signal aspect and failing to stop at the junction resulting in T-bone collisions.</p>		<p>an articulated vehicle within the UK.</p> <p>The proposed kerb line on Cromwell Road Northbound north east of New Bridge Lane (North) approach has been amended to provide a straight alignment for straight ahead traffic from Cromwell Road northbound.</p> <p>The swept path of the 16.5m articulated HGV through the junction are within the proposed lanes, only a marginal overhang on Cromwell Road South approach but the likelihood of two 16.5m artic lorry side by side would be low and one of them is likely to hang back to provide enough space for the other lorry to complete its turning manoeuvre.</p>		
<b>Problem 13</b>	It is recommended that vehicle tracking is undertaken for the largest	The signal junction has been designed to accommodate anticipated		

RSA Problem	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
<p><b>Location:</b> New Bridge Lane / Cromwell Road junction</p> <p><b>Summary:</b> Inadequate carriageway width leading to vehicle overrunning kerbs and loss of control incidents or collisions between vehicles and pedestrians.</p> <p>Vehicle tracking have been provided for a 16.5m articulated vehicle. During the site visit, a number of larger vehicles including a transporter and an HGV recovering another HGV. It was also observed that an HGV turning left out of New Bridge Lane swung into the opposing carriageway to complete the turning manoeuvre.</p> <p>If adequate carriageway width is not provided at the junction, this could lead to larger vehicles overrunning the kerb resulting in loss of control incidents or collisions between vehicles and pedestrians on the footway.</p>	<p>vehicle anticipated to access New Bridge Lane and if required, the kerb lines at the junction amended to accommodate the swept path of the largest vehicle.</p>	<p>HGV movements (B198 north and south to and from New Bridge Lane west arm and B198 south arm to and from New Bridge Lane east arm) using a 16.5m long articulated HGV, the maximum legal length of an articulated vehicle within the UK. Lane widths and Kerb lines are based on the swept path of the 16.5m articulated HGV through the junction. It is noted that a vehicle transporter was witnessed accessing New Bridge Lane east during the onsite audit, this rigid HGV is likely to be an arrangement approximately 11-12m in length and would be comfortably accommodated within the junction.</p>		
<p><b>Problem 14</b></p> <p><b>Location:</b> Cromwell Road, approach to New Bridge Lane, Northbound &amp; southbound</p>	<p>It is recommended the phasing of the two signals are linked to have both signals running together or measures are implemented to remove the see-through effects.</p>	<p>Comment accepted. The New Bridge Lane/B198 Cromwell Road junction signals are proposed to be linked to the existing signals at the B198/Tesco access junction. See</p>		

RSA Problem	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
<p><b>Summary:</b> Traffic signal ‘see through effect’ leading to red light running, shunts and T-bone collisions.</p> <p>The existing junction of Tesco with Cromwell Road immediately north of the proposed junction is signalised. The signals at the Tesco junction are visible from a distance approximately 350m south of the junction of New Bridge Lane with Cromwell Road and may create a see-through effect.</p> <p>Drivers approaching the New Bridge Lane junction with Cromwell Road may still see the signals at the junction further ahead. This could result in vehicles failing to stop, or braking late, resulting in shunts on the approach or T-Bone Collisions with vehicles at the junction.</p>		<p>through effects will be mitigated with the use of louvres on the signal aspects of the junctions. The relevant details will be provided as part of detailed design stage.</p>		

---

## 5. Design Organisation and Overseeing Organisation Statement

**Table 5.1 Design Organisation Statement**

---

On behalf of the design organisation I certify that:

- 1) The RSA actions identified in response to the road safety audit problems in this road safety audit have been discussed and agreed with the Overseeing Organisation.

Name:

Signed:

Position:

Organisation:

Date:

---

**Table 5.2 Overseeing Organisation Statement**

---

On behalf of the Overseeing Organisation I certify that:

- 1) The RSA actions identified in response to the road safety audit problems in this road safety audit have been discussed and agreed with the design organisation; and
- 2) The agreed RSA actions will be progressed.

Name:

Signed:

Position:

Organisation:

Date:

---

---

**Issued by**

Adam Guy

*Adam Guy*

.....

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**Approved by**

Grace Smith

.....

---

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**Management systems**

This document has been produced by WSP Environment & Infrastructure Solutions UK Limited in full compliance with our management systems, which have been certified to ISO 9001, ISO 14001 and ISO 45001 by Lloyd's Register.

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**Document revisions**

No.	Details	Date
P01	First Issue	24.05.2023

