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## Proposed Drive Thru Unit

### Mellor Street, Rochdale

LB/210733/TN01 – 17 November 2022

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#### Introduction

1. SCP have been instructed to provide highway, traffic and transport advice in connection with a planning application for a proposed drive thru unit on a site located to the north-east of the A6060 Mellor Street, Rochdale.
2. A planning application for the proposals was submitted to Rochdale Metropolitan Borough Council (RMBC) under Local Planning Application (LPA) ref 22/00370/FUL. The application was supported by a Transport Statement (TS) dated February 2022 (doc ref LB/210733/TS/0).
3. RMBC, as the Local Highway Authority reviewed the TS and provided a response in an email dated 12<sup>th</sup> August 2022. A copy of the response is provided in [Appendix A](#).
4. The Technical Note (TN) has been prepared in order to address the comments raised by RMBC and demonstrate the proposals can be accessed and serviced without detriment to the surrounding highway network. At the request of RMBC, additional assessments have been undertaken at the A6060 Mellor Street / College Road junction in combination with the proposed access along Mellor Street.

#### Proposed Development

5. The application is for a proposed drive thru unit, which would have a gross floor area (GFA) of 170m<sup>2</sup>.
6. Further details of the proposals, including details on the proposed access and parking arrangement, are provided in the supporting TS (doc ref LB/210733/TS/0).
7. At the request of RMBC, swept path analysis has been undertaken of a 16.5m arctic and a refuse vehicle entering and leaving the site, as shown on Drawing Numbers SCP/210733/ATR04 and SCP/210733/ATR03 presented in [Appendix B](#).

## Highway Impact

### Traffic Survey Data

8. In order to establish existing traffic flow demand at the A6060 Mellor Street / College Road and Mellor Street / site access junction, a full turning count survey was undertaken between the hours of 16:00 to 18:00 on Thursday 29<sup>th</sup> September and between the hours of 12:00 to 14:00 on Saturday 1<sup>st</sup> October 2022, as the peak periods for the proposed use.
9. The raw traffic surveys are presented in **Appendix C** and presented diagrammatically on **Traffic Flow Figure 1**. From this data, the weekday PM peak hour has been established as being 16:00 to 17:15 and the Saturday peak hour as being 12:00 to 13:00.

### Traffic Growth

10. In order to quantify the level of background traffic growth that could occur on the local network between the date of the traffic surveys and the five year future assessment year (2027), National Traffic Model (NTM) growth factors, modified by TEMPRO local growth factors, have been used as summarised in **Table 1** below:-

**Table 1 – Traffic Growth Factors**

| Period       | Weekday PM Peak | Sat Peak |
|--------------|-----------------|----------|
| 2022 to 2027 | 1.0373          | 1.0397   |

11. The 2027 growthed traffic flows are presented diagrammatically in **Traffic Flow Figure 2**.

### Trip Distribution

12. The trip distribution has been based on the observed turning proportions at the existing shared site access with Aldi and the A6060 Mellor Street / College Road junction, as shown diagrammatically on **Traffic Flow Figures 3-4**.

### Trip Generation

13. As mentioned previously, the proposed development features a drive thru unit with a GFA of 170m<sup>2</sup>. Full details of the proposed development and trip generation analysis is provided in the previously submitted TS. Trip rates have been based on a TRICS analysis with the trip rates provided below:-

**Table 2 - Estimated Trip Rates (Per 170m<sup>2</sup>) Associated With The Proposed Drive Thru Restaurant**

| Mode                                                          | Weekday PM Peak Hour<br>(17:00 to 18:00) |            | Saturday Peak Hour<br>(12:00 to 13:00) |            |
|---------------------------------------------------------------|------------------------------------------|------------|----------------------------------------|------------|
|                                                               | Arrivals                                 | Departures | Arrivals                               | Departures |
| <b>Trip Rate</b>                                              | 15.437                                   | 15.623     | 27.35                                  | 24.217     |
| <b>Trip Generation<br/>(Based on GEA of 170m<sup>2</sup>)</b> | 26                                       | 27         | 46                                     | 41         |

14. As detailed in the previously submitted TS, the above trip assessment for a drive thru unit is based on the gross anticipated trip generation expected from the proposed development and is purely the in and out movements to the site access. It does not however take into account the type of trip i.e. primary /secondary and if the movements, are in fact, already on the local highway network.
15. Therefore to consider the actual traffic likely to be generated the sites location must be considered. The proposed development is in an area where the highway network is already well utilised by passing vehicular traffic including that associated with the adjacent Aldi and is located near to a number of other land-uses contained in and on the edge of Rochdale Town Centre.
16. Based on published research into primary / secondary trips 'new' trips on the local highway network accessing the drive through are estimated to be approximately 10% of total trips. It is considered that the majority of trips accessing the site will be 'pass-by' trips already routing along Mellor Street or will be 'diverted' trips which are already on the highway network in the vicinity of the site but not passing the site access. A figure of 90% has been applied for the 'pass-by' and 'diverted' trips.
17. These trips are considered robust as linked trips with the adjacent Aldi or other nearby uses have not been taken into consideration and no allowance has been made for diverted trips from College Road
18. The total peak hour trip generating potential of the scheme, separated into primary / secondary trips is summarised in **Table 3** below:

**Table 3 – Total Peak Hour Trip Generation**

|                                                  | Weekday PM Peak Hour<br>(17:00 to 18:00) |      | Saturday Peak Hour<br>(12:00 to 13:00) |      |
|--------------------------------------------------|------------------------------------------|------|----------------------------------------|------|
|                                                  | Arrs                                     | Deps | Arrs                                   | Deps |
| Proposed Drive Through<br>(Pass-by and Diverted) | 24                                       | 24   | 42                                     | 37   |
| Proposed Drive Through<br>(New Trips)            | 3                                        | 3    | 5                                      | 4    |

19. The traffic assignment flows are illustrated in **Traffic Flow Figures 5-7**.
20. Based on the proposed trip generation the proposed development will result an increase of 6 two-way new vehicle trips during the weekday PM peak hour and an increase of 9 two-way new vehicle trips during the Saturday peak hour. Volumetrically, this equates to one additional vehicle movement once every 10 minutes during the weekday PM peak hour and one additional vehicle movement once every 6-7 minutes during the PM peak hour. The effect of this additional traffic on the wider highway network will not be perceptible during the peak hours.
21. Given the proposals are for a drive thru unit it is anticipated that non-vehicular modes of travel to the site will be minimal, as is suggested by no multi-modal surveys being available for this use type in the TRICS database.

### **Assessment Methodology**

22. Notwithstanding the above generation analysis, at the request of RMBC, assessments have been undertaken of the A6060 Mellor Street / College Road junction and proposed site access using LINSIG software to assess any effect on the operation of the site access from queuing at the signalised junction.
23. LINSIG software presents results as a percentage Degree of Saturation (DoS) and corresponding likely traffic queues for each modelled link at the junction. For Traffic Signals it is generally accepted that DoS of 90% or less on individual links represents satisfactory signal operation. DoS of between 90% and 100% represent variable operation which warrants further investigation and values in excess of 100% represent overloaded conditions.
24. Assessments have been undertaken in the future assessment year (2027) in the 'with' and 'without' development scenarios. The 2027 'with development' assessment traffic flows are the sum of the growthed traffic flows and the proposed development traffic flows, as shown on **Traffic Flow Figure 8**.

A6060 Mellor Street / College Road and Proposed Site Access LINSIG Assessment

25. The LINSIG results are presented in **Appendix D**, with the results summarised in **Table 4** below:-

**Table 4: A5080 / A557 Slip Roads LinSig Results**

| Arm                             | Weekday AM Peak |             | Weekday PM Peak |             |
|---------------------------------|-----------------|-------------|-----------------|-------------|
|                                 | DoS (%)         | Queue (PCU) | DoS (%)         | Queue (PCU) |
| Base 2027                       |                 |             |                 |             |
| Junction 1                      |                 |             |                 |             |
| Mellor St (WB) Ahead Right Left | 88.2%           | 18.6        | 65.2%           | 11.1        |
| Bury Rd Left Ahead Right        | 61.4%           | 9.3         | 56.0%           | 8.0         |
| Mellor St (EB) Left Ahead Right | 39.2%           | 5.2         | 33.6%           | 4.6         |
| College Rd Right Left Ahead     | 86.4%           | 15.9        | 66.6%           | 9.1         |
| Junction 2                      |                 |             |                 |             |
| Site Access Right Left          | 1.8%            | 0.0         | 1.0%            | 0.0         |
| Mellor St (WB) Ahead Right      | 36.8%           | 0.3         | 27.6%           | 0.2         |
| Overall PRC                     | 2.0%            |             | 35.1%           |             |
|                                 |                 |             |                 |             |
| Assess 2027                     |                 |             |                 |             |
| Junction 1                      |                 |             |                 |             |
| Mellor St Ahead Right Left      | 87.6%           | 18.5        | 66.9%           | 11.6        |
| Bury Rd Left Ahead Right        | 62.7%           | 9.5         | 56.0%           | 8.0         |
| Mellor St Left Ahead Right      | 38.2%           | 5.1         | 33.7%           | 4.7         |
| College Rd Right Left Ahead     | 88.8%           | 16.7        | 66.8%           | 9.1         |
| Junction 2                      |                 |             |                 |             |
| Site Access Right Left          | 7.8%            | 0.1         | 5.8%            | 0.1         |
| Mellor St (WB) Ahead Right      | 38.3%           | 0.3         | 27.6%           | 0.2         |
| Overall PRC                     | 1.3%            |             | 34.6%           |             |

26. The above results show that the A6060 Mellor Street / College Road junction and proposed access along Mellor Street will operate within their practical capacity in the future assessment year of 2027. When compared to the 'with' and 'without development scenarios, the largest increase in queues is less than 1 PCU which occurs along College Road during the PM peak hour which cannot be considered a material increase.
27. With regard to queuing along Mellor Street, the capacity model identifies that this extends beyond the site access in both the base and proposed scenarios, however this clears every cycle providing opportunities for vehicles to turn right into the site access.

28. This is demonstrated by the modelling results, which show that there will be minimal queueing directly associated with right turners into the site access.

### **Summary**

29. A planning application for a drive thru unit with a gross floor area (GFA) of 170m<sup>2</sup> was submitted to Rochdale Metropolitan Borough Council (RMBC) under Local Planning Application (LPA) ref 22/00370/FUL. The application was supported by a Transport Statement (TS) dated February 2022 (doc ref LB/210733/TS/0).
30. RMBC, as the acting Highway Authority reviewed the TS and provided a response in an email dated 12<sup>th</sup> August 2022. This Technical Note (TN) has been prepared in order to address the comments raised by RMBC and demonstrate the proposals can be accessed and serviced without detriment to the surrounding highway network. At the request of RMBC, additional assessments have been undertaken at the A6060 Mellor Street / College Road junction in combination with the proposed access along Mellor Street.
31. The above results show that the A6060 Mellor Street / College Road junction and proposed access along Mellor Street will operate within their practical capacity in the future assessment year of 2027. When compared to the 'with' and 'without development scenarios, the largest increase in queues is less than 1 PCU which occurs along College Road during the PM peak hour which cannot be considered a material increase.
32. With regard to queueing along Mellor Street, the capacity model identifies that this extends beyond the site access in both the base and proposed scenarios, however this clears every cycle providing opportunities for vehicles to turn right into the site access.
33. This is demonstrated by the modelling results, which show that there will be minimal queueing directly associated with right turners into the site access. The conclusion of the Transport Statement therefore remains unchanged and the application proposals are considered acceptable with regard to transport.

**S|C|P**

## **APPENDIX A**

----- Original message -----

From: Ryan Killeen

Date: 12/08/2022 11:35 (GMT-05:00)

To: Ian Wareham

Subject: 22/00370/FUL - College Rd, Rochdale

Hi Ian,

Please see attached responses from TFGM, United Utilities and the Council's Drainage Engineer.

Further to this, the Council's Highways Engineer has provided the following response:

*This application is supported by a Transport Assessment(TA) prepared by SCP and will be the main focus of Highways response to this application.*

*The applicant previously sought pre-application advice (PREAPP/00114/20) and at that stage Highways advised the applicant that we had some concerns about the impact of the development of the signalised junction of the two classified road, Mellor Street and College Road. We advised that any future planning application and supporting TA should discuss turning movements into the development and in particular right turns and our comments at pre-application stage were "The numbers of right turners at the junction is low but this could prevent people turning right into the Drive Through. This queue must be assessed as we don't think there is room to get in a dedicated right turn onto the site without widening the carriageway slightly. If deemed necessary the applicant may need to use the site to increase the width of the highway".*

*Nowhere in the submitted TA or application is this issue addressed which raises concerns regarding the overall impact on road safety and highway capacity.*

*With regards to the TA itself we have some general comments on its content.*

*The TA indicates that service vehicles will be limited to 3.5T panel vans which will be difficult to control via planning conditions. In addition the submitted swept path analysis does not show that vehicles such as a refuse collection vehicle can safely enter and leave the site safely. The application does not specify an end user of the development and states it could be fast food or coffee operator. Some of the larger fast food restaurateurs use 16.5m service vehicles to service their outlets and we would expect that the development would be able to accommodate those type of vehicle movement. The lack of adequate internal turning facilities for larger vehicles would lead to those vehicles reversing in or out of the proposed development onto the busy junction of two classified roads which is not acceptable.*

*The TA promotes the sustainable location of the site which the TA uses to justify the fact that that parking provision does not meet current Council parking standards. Whilst we could agree that the site is relatively sustainable we have some concerns regarding pedestrian and cycle movements into the site. The increase in pedestrian movements promoted within the TA causes some concern as the development is on a busy signalised junction which does not have the benefit of pedestrian or cycle phases.*

*In terms of traffic generation we would agree that a percentage of vehicular trips to the site will come from passing trade and we would accept that the proposed development is unlikely to have an impact on the wider highway network. However our concerns both now and at pre-application stage were related to the increased turning movements into the site which will come from both primary trips and passing trade.*

*Until the issues raised above are addressed Highways cannot support this application.*

I note that within these responses, there are a number of issues which need to be addressed in order to make the impacts of the development acceptable.

If you have any questions or concerns, please do not hesitate to let me know.

Kind regards,

**Ryan Killeen**

Senior Planning Officer (Devt Mgt)

Planning



Rochdale Borough Council

Floor 3, Number One Riverside

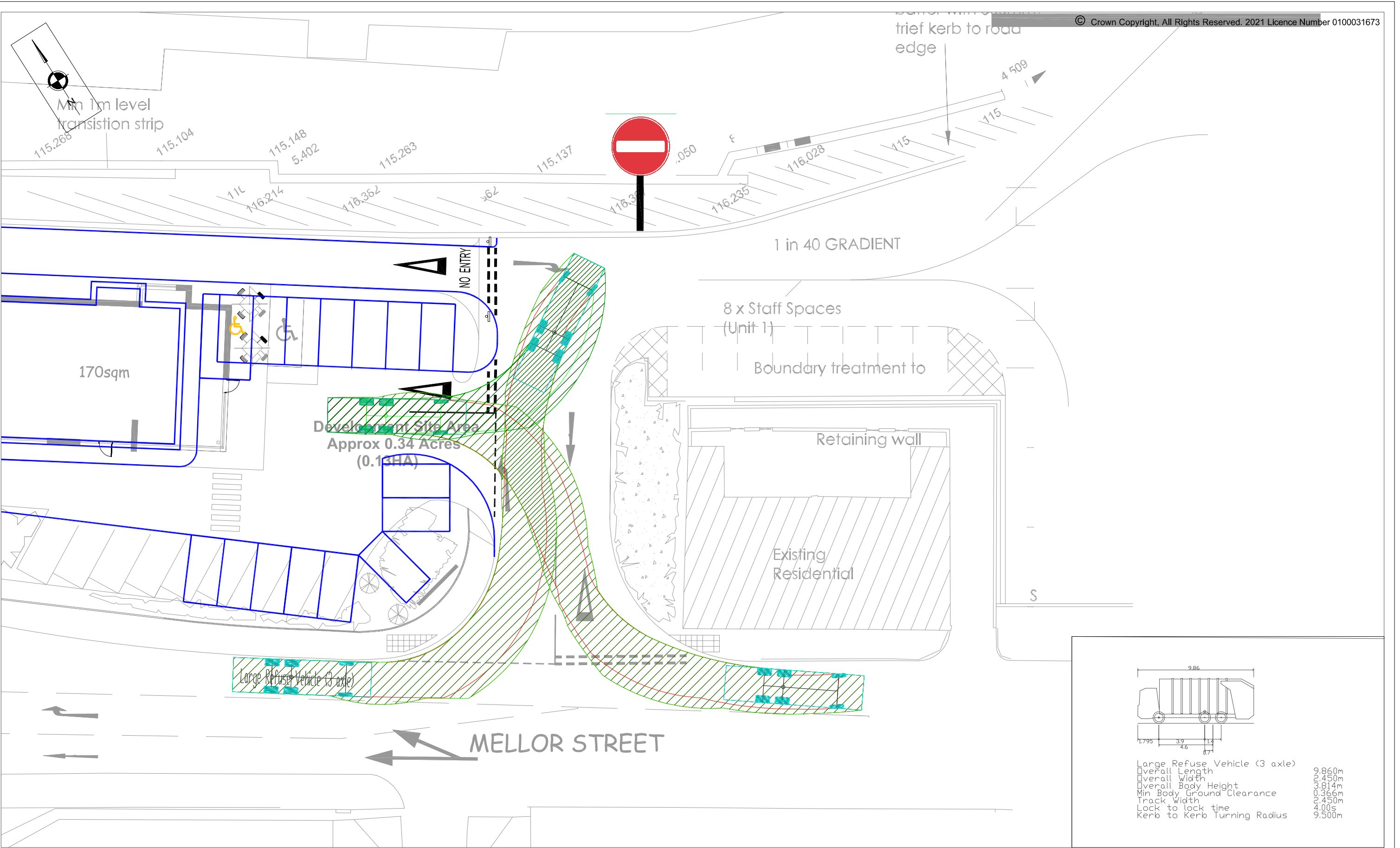
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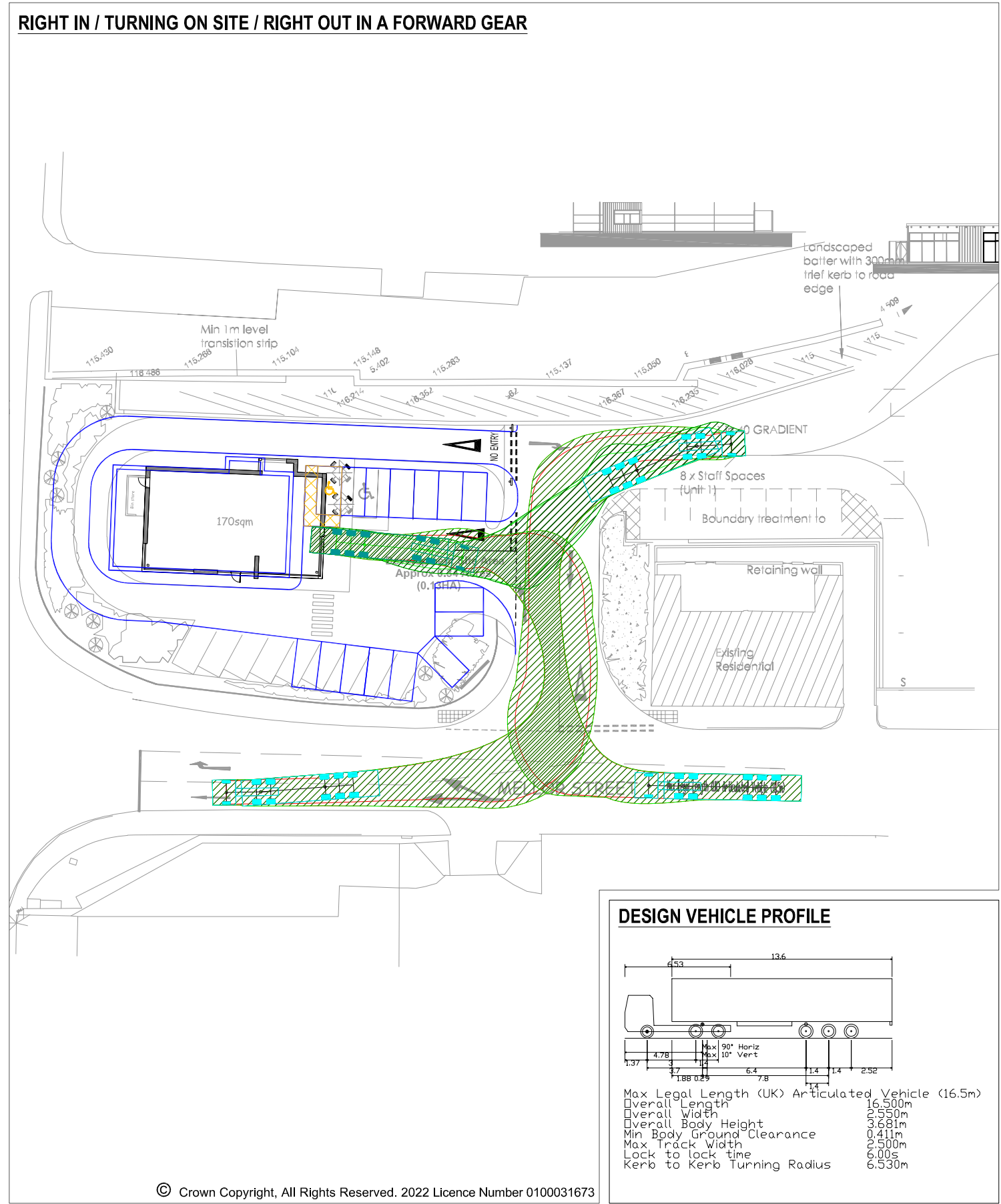
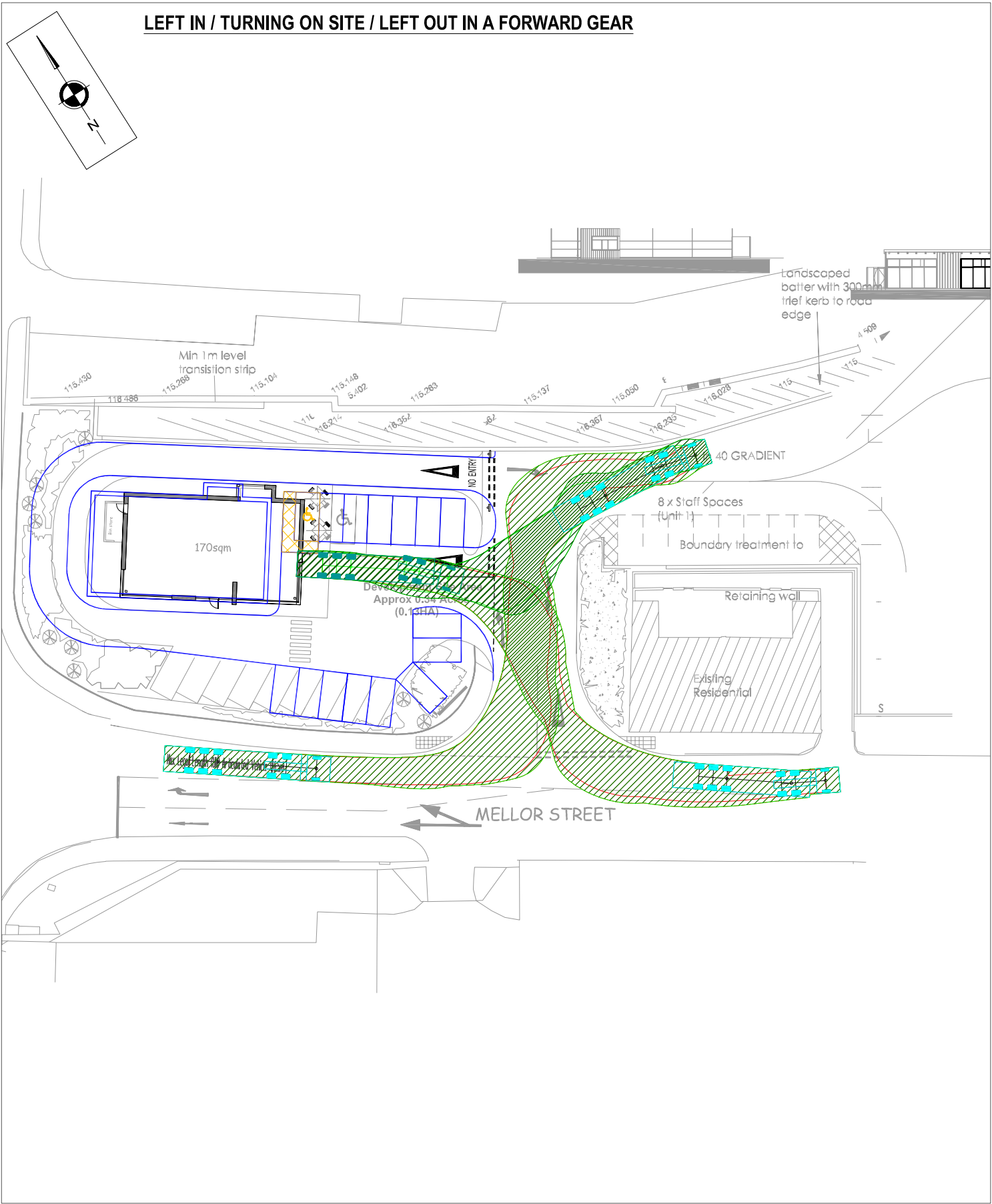
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**S|C|P**

## **APPENDIX B**





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## **APPENDIX C**

**SURVEY CONTROL**

**Client:** SCP Transport

**Client Contact:** Abbie Moore

**Survey Location:** Mellor Road, Rochdale

**Date(s) of Survey:** Friday 30th September 2022  
Saturday 1st October 2022

**Notes:**

**On Site Supervisor:** Neil Harley

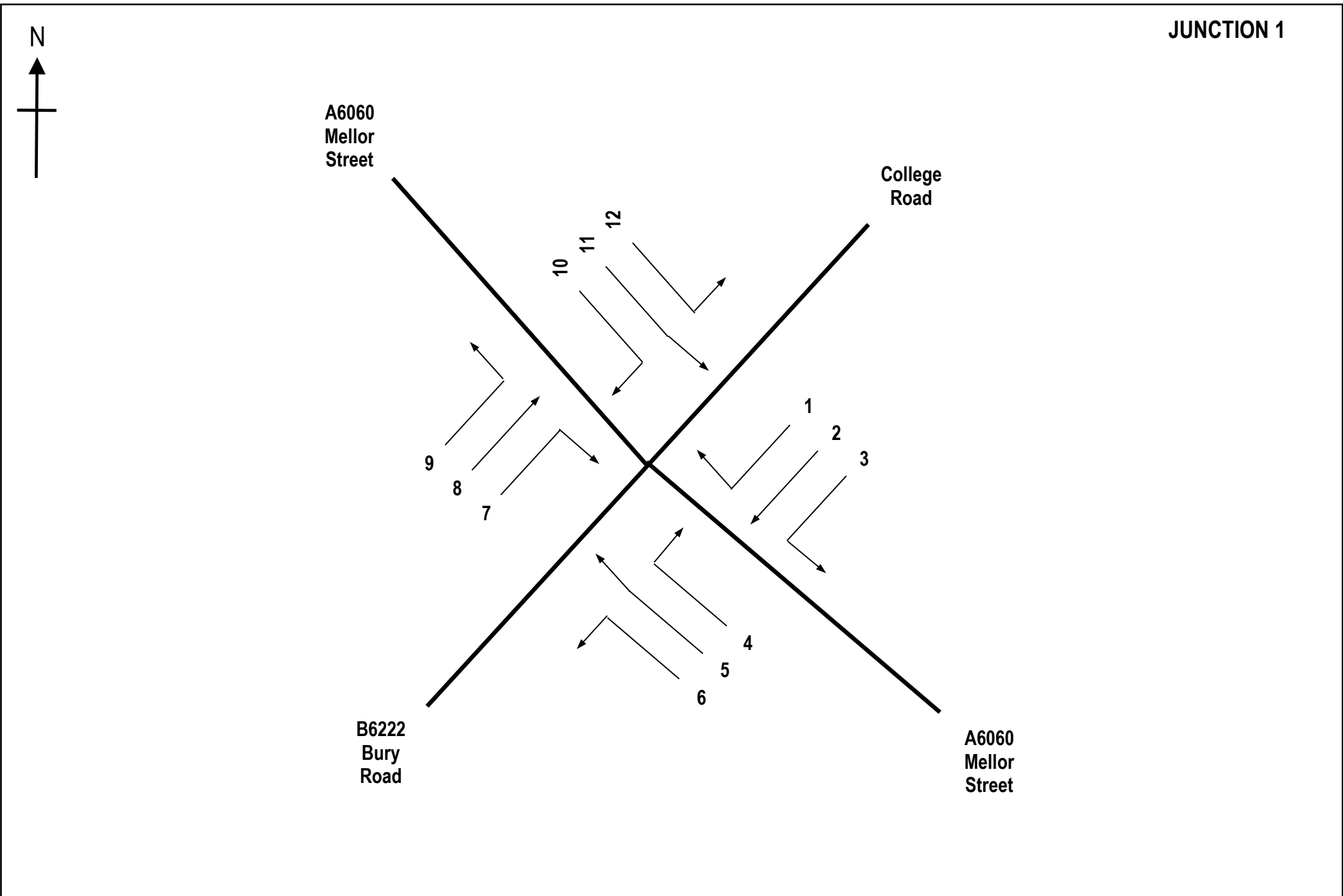
**Data Checking:** David Cheng

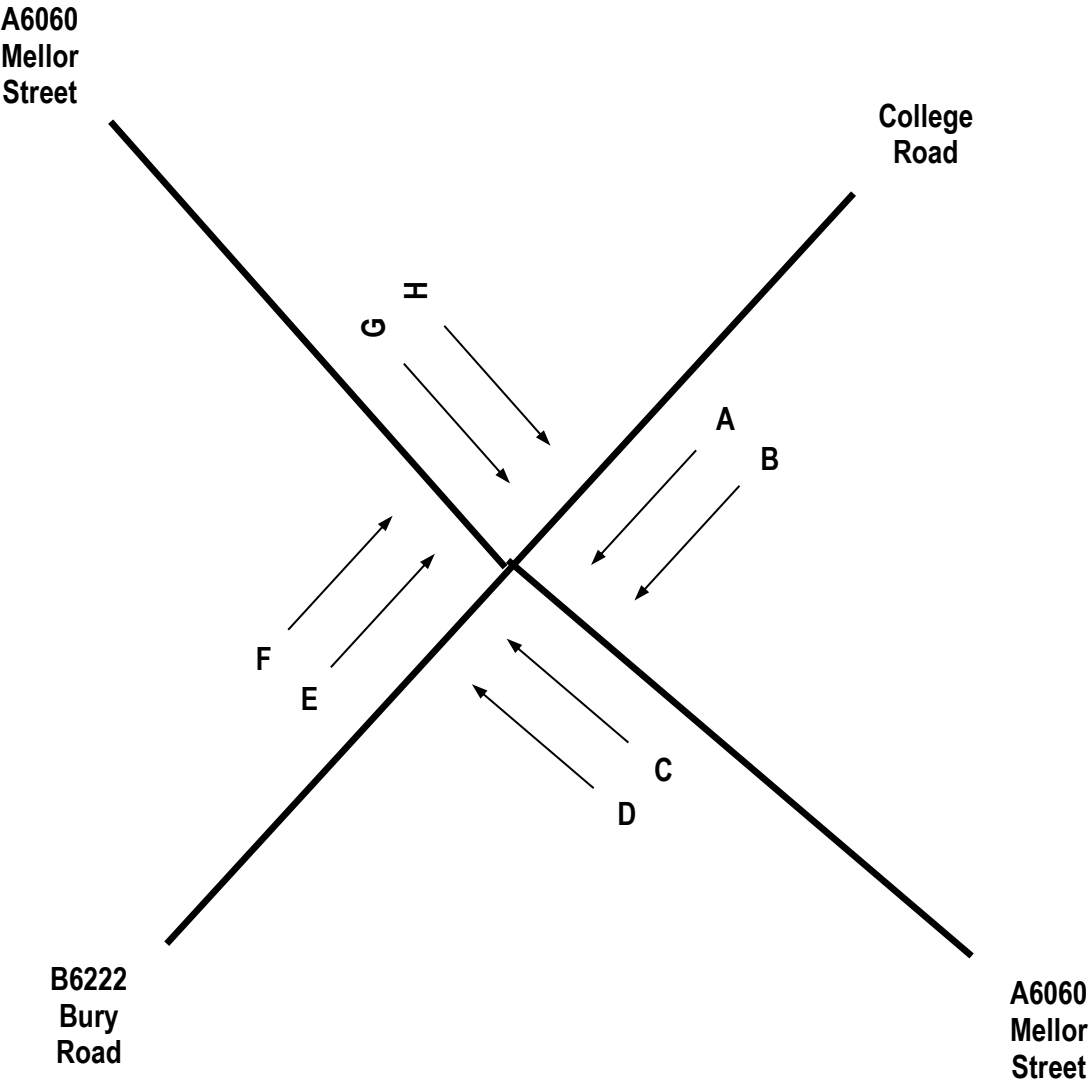
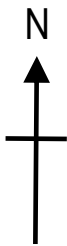
  

**Survey Reference:** 22.097 Mellor Street, Rochdale

**Status:** Final

**Date of Issue:** 4th October 2022





DRAWING TITLE

QUEUE REFERENCE

JOB TITLE

22.097 MELLOR STREET, MANCHESTER

DRAWN BY

DC

DATE

SEP 2022

SCALE

NTS

REF

FIGURE 2

**Transport Data Specialists Ltd**  
W: [www.transportds.co.uk](http://www.transportds.co.uk)  
E: [enquiries@transportds.co.uk](mailto:enquiries@transportds.co.uk)  
T: 0777 625 2475 T: 0794 007 1260

signal surveys

| Time Beginning | College Road/A6060 Mellor Street/B6222 Bury Road - Friday 30th September 2022 |    |     |     |      |      |     |    |    |     |     |      |      |     |    |    |     |     |      |      |     |    |    |     |     |      |      |     |    |    |     |    |
|----------------|-------------------------------------------------------------------------------|----|-----|-----|------|------|-----|----|----|-----|-----|------|------|-----|----|----|-----|-----|------|------|-----|----|----|-----|-----|------|------|-----|----|----|-----|----|
|                | 1                                                                             |    |     |     |      |      |     | 2  |    |     |     |      |      |     | 3  |    |     |     |      |      |     | 4  |    |     |     |      |      |     |    |    |     |    |
|                | PC                                                                            | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR |    |
| 1600           | 0                                                                             | 0  | 15  | 0   | 0    | 0    | 0   | 0  | 0  | 81  | 8   | 1    | 0    | 1   | 0  | 0  | 29  | 2   | 0    | 0    | 0   | 0  | 0  | 0   | 50  | 6    | 1    | 0   | 1  | 0  | 0   | 43 |
| 1615           | 1                                                                             | 0  | 20  | 1   | 0    | 0    | 0   | 0  | 0  | 97  | 7   | 0    | 1    | 2   | 0  | 0  | 20  | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 64  | 8    | 0    | 0   | 0  | 0  | 0   | 51 |
| 1630           | 0                                                                             | 0  | 25  | 0   | 0    | 0    | 0   | 0  | 0  | 79  | 5   | 0    | 0    | 0   | 0  | 0  | 26  | 2   | 0    | 0    | 1   | 0  | 0  | 0   | 59  | 9    | 0    | 0   | 0  | 0  | 0   | 60 |
| 1645           | 0                                                                             | 0  | 20  | 2   | 0    | 0    | 0   | 0  | 0  | 88  | 12  | 0    | 0    | 2   | 0  | 0  | 25  | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 47  | 6    | 0    | 0   | 0  | 0  | 0   | 70 |
| 1700           | 0                                                                             | 0  | 26  | 2   | 0    | 0    | 0   | 0  | 0  | 89  | 8   | 0    | 0    | 0   | 0  | 0  | 35  | 3   | 0    | 0    | 1   | 0  | 1  | 48  | 4   | 1    | 0    | 0   | 0  | 0  | 0   | 64 |
| 1715           | 0                                                                             | 0  | 19  | 1   | 0    | 0    | 0   | 1  | 1  | 79  | 4   | 1    | 0    | 2   | 0  | 0  | 20  | 1   | 0    | 0    | 0   | 0  | 0  | 0   | 31  | 6    | 0    | 0   | 0  | 0  | 0   | 69 |
| 1730           | 1                                                                             | 0  | 18  | 1   | 0    | 0    | 0   | 0  | 0  | 87  | 10  | 0    | 1    | 1   | 0  | 0  | 14  | 2   | 1    | 0    | 2   | 0  | 0  | 14  | 2   | 0    | 0    | 0   | 0  | 0  | 0   | 80 |
| 1745           | 0                                                                             | 0  | 5   | 1   | 0    | 0    | 0   | 0  | 1  | 54  | 7   | 0    | 0    | 1   | 0  | 0  | 17  | 4   | 0    | 0    | 1   | 0  | 0  | 16  | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 89 |
| Time Beginning | College Road/A6060 Mellor Street/B6222 Bury Road - Saturday 1st October 2022  |    |     |     |      |      |     |    |    |     |     |      |      |     |    |    |     |     |      |      |     |    |    |     |     |      |      |     |    |    |     |    |
|                | 1                                                                             |    |     |     |      |      |     | 2  |    |     |     |      |      |     | 3  |    |     |     |      |      |     | 4  |    |     |     |      |      |     |    |    |     |    |
|                | PC                                                                            | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR |    |
| 1200           | 0                                                                             | 0  | 6   | 1   | 0    | 0    | 0   | 0  | 0  | 74  | 6   | 0    | 0    | 0   | 0  | 0  | 27  | 1   | 0    | 0    | 0   | 0  | 0  | 0   | 12  | 0    | 0    | 0   | 0  | 0  | 4   | 74 |
| 1215           | 0                                                                             | 0  | 9   | 2   | 0    | 0    | 0   | 0  | 0  | 70  | 5   | 1    | 0    | 1   | 0  | 0  | 21  | 5   | 0    | 0    | 0   | 0  | 0  | 0   | 21  | 0    | 0    | 0   | 0  | 0  | 0   | 60 |
| 1230           | 0                                                                             | 0  | 14  | 1   | 0    | 0    | 0   | 0  | 0  | 64  | 9   | 0    | 0    | 1   | 0  | 0  | 27  | 1   | 0    | 0    | 0   | 0  | 0  | 0   | 23  | 4    | 0    | 0   | 0  | 0  | 0   | 70 |
| 1245           | 0                                                                             | 0  | 5   | 0   | 0    | 0    | 0   | 0  | 0  | 69  | 7   | 0    | 0    | 1   | 0  | 0  | 27  | 2   | 0    | 0    | 0   | 0  | 0  | 0   | 12  | 1    | 0    | 0   | 0  | 1  | 0   | 66 |
| 1300           | 0                                                                             | 0  | 7   | 0   | 0    | 0    | 0   | 0  | 0  | 58  | 6   | 0    | 0    | 0   | 0  | 0  | 28  | 3   | 0    | 0    | 0   | 0  | 0  | 0   | 18  | 3    | 0    | 0   | 0  | 0  | 0   | 64 |
| 1315           | 0                                                                             | 0  | 14  | 3   | 0    | 0    | 0   | 0  | 0  | 50  | 2   | 0    | 0    | 1   | 0  | 0  | 23  | 1   | 0    | 0    | 0   | 0  | 0  | 0   | 23  | 1    | 0    | 0   | 0  | 0  | 0   | 72 |
| 1330           | 0                                                                             | 0  | 17  | 1   | 0    | 0    | 0   | 0  | 0  | 82  | 4   | 0    | 0    | 0   | 0  | 0  | 20  | 1   | 0    | 0    | 1   | 0  | 0  | 16  | 2   | 0    | 0    | 0   | 0  | 0  | 0   | 70 |
| 1345           | 0                                                                             | 0  | 8   | 2   | 0    | 0    | 0   | 0  | 0  | 57  | 2   | 0    | 0    | 0   | 0  | 0  | 26  | 1   | 0    | 0    | 0   | 0  | 0  | 21  | 1   | 0    | 0    | 0   | 0  | 0  | 0   | 70 |

signal surveys

|     |      |      |     |    |    |     |     |      |      |     | College Road/A6060 Mellor Street |      |    |     |     |      |      |     |    |    |     |     |      |      |     |    |    |     |     |      |      |
|-----|------|------|-----|----|----|-----|-----|------|------|-----|----------------------------------|------|----|-----|-----|------|------|-----|----|----|-----|-----|------|------|-----|----|----|-----|-----|------|------|
| 5   |      |      |     | 6  |    |     |     |      |      |     | Time Beginning                   | 7    |    |     |     |      |      |     | 8  |    |     |     |      |      |     | 9  |    |     |     |      |      |
| LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV |                                  | PC   | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 |
| 1   | 0    | 0    | 0   | 0  | 0  | 24  | 1   | 0    | 0    | 0   |                                  | 1600 | 0  | 1   | 39  | 9    | 0    | 0   | 1  | 1  | 0   | 101 | 24   | 0    | 1   | 1  | 0  | 0   | 7   | 2    | 0    |
| 11  | 0    | 0    | 1   | 0  | 0  | 34  | 5   | 0    | 0    | 1   | 1615                             | 0    | 0  | 34  | 4   | 0    | 0    | 0   | 0  | 0  | 90  | 9   | 1    | 1    | 2   | 0  | 0  | 11  | 3   | 0    | 0    |
| 10  | 0    | 1    | 0   | 0  | 2  | 36  | 5   | 0    | 0    | 0   | 1630                             | 0    | 0  | 28  | 4   | 0    | 0    | 1   | 0  | 0  | 79  | 4   | 2    | 0    | 0   | 0  | 0  | 7   | 4   | 0    | 1    |
| 10  | 1    | 1    | 0   | 0  | 0  | 46  | 6   | 0    | 0    | 0   | 1645                             | 0    | 1  | 33  | 3   | 0    | 0    | 1   | 0  | 0  | 107 | 4   | 1    | 0    | 0   | 0  | 0  | 12  | 1   | 1    | 0    |
| 11  | 0    | 0    | 0   | 0  | 0  | 29  | 2   | 1    | 0    | 0   | 1700                             | 0    | 0  | 25  | 4   | 0    | 0    | 0   | 1  | 0  | 83  | 15  | 0    | 1    | 0   | 0  | 0  | 7   | 0   | 0    | 0    |
| 12  | 1    | 0    | 0   | 0  | 0  | 39  | 2   | 0    | 0    | 0   | 1715                             | 0    | 0  | 18  | 1   | 0    | 0    | 1   | 1  | 0  | 94  | 8   | 0    | 0    | 0   | 0  | 0  | 4   | 1   | 0    | 0    |
| 7   | 0    | 0    | 0   | 0  | 0  | 36  | 3   | 1    | 0    | 1   | 1730                             | 0    | 0  | 22  | 1   | 0    | 0    | 0   | 0  | 0  | 64  | 7   | 0    | 0    | 0   | 0  | 0  | 5   | 1   | 0    | 0    |
| 6   | 0    | 0    | 0   | 0  | 0  | 62  | 3   | 0    | 0    | 0   | 1745                             | 0    | 0  | 26  | 1   | 0    | 0    | 0   | 0  | 0  | 66  | 4   | 0    | 0    | 0   | 0  | 0  | 10  | 0   | 0    | 0    |
|     |      |      |     |    |    |     |     |      |      |     | College Road/A6060 Mellor Street |      |    |     |     |      |      |     |    |    |     |     |      |      |     |    |    |     |     |      |      |
| 5   |      |      |     | 6  |    |     |     |      |      |     | Time Beginning                   | 7    |    |     |     |      |      |     | 8  |    |     |     |      |      |     | 9  |    |     |     |      |      |
| LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV |                                  | PC   | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 |
| 6   | 0    | 0    | 0   | 0  | 0  | 32  | 0   | 0    | 0    | 0   |                                  | 1200 | 0  | 0   | 20  | 4    | 0    | 0   | 0  | 1  | 0   | 54  | 3    | 0    | 0   | 0  | 0  | 0   | 4   | 1    | 0    |
| 6   | 1    | 0    | 1   | 0  | 0  | 41  | 3   | 0    | 0    | 0   | 1215                             | 0    | 0  | 28  | 2   | 0    | 0    | 0   | 0  | 0  | 65  | 6   | 0    | 0    | 1   | 0  | 0  | 2   | 2   | 0    | 0    |
| 1   | 0    | 0    | 0   | 0  | 0  | 44  | 1   | 0    | 0    | 0   | 1230                             | 1    | 0  | 25  | 2   | 0    | 0    | 0   | 0  | 0  | 77  | 2   | 1    | 0    | 0   | 0  | 0  | 7   | 2   | 0    | 0    |
| 4   | 0    | 0    | 0   | 0  | 0  | 35  | 1   | 0    | 0    | 0   | 1245                             | 0    | 0  | 31  | 3   | 0    | 0    | 0   | 0  | 0  | 69  | 6   | 1    | 1    | 2   | 0  | 0  | 4   | 1   | 0    | 0    |
| 4   | 0    | 0    | 0   | 0  | 0  | 40  | 2   | 0    | 0    | 0   | 1300                             | 0    | 0  | 37  | 1   | 0    | 0    | 0   | 0  | 0  | 90  | 5   | 1    | 0    | 0   | 0  | 0  | 6   | 2   | 1    | 0    |
| 3   | 0    | 0    | 0   | 0  | 0  | 47  | 2   | 0    | 0    | 0   | 1315                             | 0    | 0  | 24  | 4   | 0    | 0    | 0   | 0  | 0  | 73  | 2   | 1    | 0    | 0   | 0  | 0  | 10  | 1   | 0    | 0    |
| 5   | 0    | 0    | 0   | 0  | 3  | 27  | 3   | 0    | 0    | 0   | 1330                             | 0    | 0  | 28  | 3   | 0    | 0    | 0   | 0  | 0  | 69  | 13  | 1    | 0    | 2   | 0  | 0  | 6   | 0   | 0    | 0    |
| 8   | 0    | 0    | 3   | 0  | 0  | 29  | 3   | 0    | 0    | 0   | 1345                             | 0    | 0  | 28  | 3   | 0    | 0    | 0   | 0  | 0  | 69  | 9   | 1    | 0    | 2   | 0  | 0  | 9   | 0   | 1    | 0    |

| t/B6222 Bury Road - Friday 30th September 2022 |    |    |     |     |      |      |     |    |    |     |     |      |      |     |    |    |     |     |      |      |     |
|------------------------------------------------|----|----|-----|-----|------|------|-----|----|----|-----|-----|------|------|-----|----|----|-----|-----|------|------|-----|
|                                                | 10 |    |     |     |      |      |     | 11 |    |     |     |      |      |     | 12 |    |     |     |      |      |     |
| PSV                                            | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV |
| 0                                              | 0  | 0  | 12  | 3   | 0    | 0    | 0   | 0  | 0  | 34  | 4   | 0    | 2    | 0   | 0  | 0  | 23  | 2   | 0    | 0    | 0   |
| 0                                              | 0  | 0  | 10  | 2   | 1    | 0    | 0   | 0  | 0  | 38  | 4   | 0    | 0    | 0   | 0  | 0  | 21  | 3   | 0    | 0    | 0   |
| 0                                              | 0  | 0  | 4   | 1   | 0    | 0    | 0   | 0  | 0  | 42  | 2   | 1    | 0    | 1   | 0  | 0  | 28  | 4   | 0    | 0    | 0   |
| 0                                              | 0  | 0  | 7   | 1   | 0    | 0    | 0   | 0  | 0  | 39  | 7   | 0    | 0    | 0   | 0  | 0  | 16  | 3   | 0    | 0    | 0   |
| 0                                              | 0  | 0  | 7   | 1   | 0    | 0    | 0   | 0  | 0  | 44  | 6   | 0    | 0    | 0   | 0  | 0  | 14  | 1   | 0    | 0    | 0   |
| 0                                              | 0  | 0  | 7   | 1   | 0    | 0    | 0   | 0  | 0  | 45  | 3   | 0    | 1    | 0   | 0  | 0  | 8   | 0   | 0    | 0    | 0   |
| 0                                              | 0  | 1  | 8   | 3   | 0    | 0    | 0   | 0  | 0  | 55  | 4   | 0    | 0    | 0   | 0  | 0  | 13  | 1   | 0    | 0    | 0   |
| 0                                              | 0  | 0  | 8   | 0   | 0    | 0    | 0   | 0  | 0  | 44  | 3   | 0    | 0    | 0   | 0  | 0  | 12  | 1   | 0    | 0    | 0   |
| t/B6222 Bury Road - Saturday 1st October 2022  |    |    |     |     |      |      |     |    |    |     |     |      |      |     |    |    |     |     |      |      |     |
|                                                | 10 |    |     |     |      |      |     | 11 |    |     |     |      |      |     | 12 |    |     |     |      |      |     |
| PSV                                            | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV |
| 0                                              | 0  | 0  | 8   | 1   | 0    | 0    | 0   | 0  | 0  | 61  | 4   | 0    | 0    | 0   | 0  | 0  | 6   | 1   | 0    | 0    | 0   |
| 0                                              | 0  | 0  | 9   | 1   | 1    | 0    | 0   | 0  | 0  | 57  | 3   | 0    | 0    | 0   | 0  | 0  | 15  | 3   | 0    | 0    | 0   |
| 0                                              | 0  | 1  | 9   | 1   | 0    | 0    | 0   | 0  | 2  | 49  | 3   | 0    | 0    | 0   | 0  | 0  | 4   | 1   | 0    | 0    | 0   |
| 0                                              | 0  | 0  | 6   | 0   | 0    | 0    | 0   | 0  | 1  | 46  | 3   | 1    | 0    | 0   | 0  | 5  | 2   | 1   | 0    | 0    | 0   |
| 0                                              | 0  | 0  | 3   | 1   | 0    | 0    | 0   | 0  | 0  | 54  | 5   | 0    | 0    | 0   | 0  | 0  | 9   | 0   | 0    | 0    | 0   |
| 0                                              | 0  | 0  | 7   | 0   | 0    | 0    | 0   | 0  | 0  | 53  | 5   | 1    | 0    | 0   | 0  | 0  | 4   | 1   | 0    | 0    | 0   |
| 2                                              | 0  | 0  | 7   | 0   | 0    | 0    | 0   | 0  | 0  | 51  | 3   | 0    | 0    | 0   | 0  | 0  | 7   | 0   | 0    | 0    | 0   |
| 0                                              | 0  | 0  | 7   | 1   | 0    | 0    | 0   | 0  | 0  | 50  | 3   | 0    | 0    | 0   | 0  | 0  | 14  | 0   | 1    | 0    | 0   |

signal surveys

| Time Beginning | A6060 Mellor Street/Aldi Shared Access - Friday 30th September 2022 |    |     |     |      |      |     |    |    |     |     |      |      |     |    |    |     |     |      |      |     |    |    |     |     |      |      |     |    |    |     |
|----------------|---------------------------------------------------------------------|----|-----|-----|------|------|-----|----|----|-----|-----|------|------|-----|----|----|-----|-----|------|------|-----|----|----|-----|-----|------|------|-----|----|----|-----|
|                | 13                                                                  |    |     |     |      |      |     | 14 |    |     |     |      |      |     | 15 |    |     |     |      |      |     | 16 |    |     |     |      |      |     |    |    |     |
|                | PC                                                                  | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR |
| 1600           | 0                                                                   | 0  | 4   | 0   | 0    | 0    | 0   | 1  | 0  | 0   | 0   | 0    | 0    | 0   | 1  | 0  | 1   | 0   | 0    | 0    | 0   | 0  | 0  | 113 | 8   | 1    | 0    | 1   | 0  | 1  | 100 |
| 1615           | 0                                                                   | 0  | 1   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 2   | 0   | 0    | 0    | 0   | 0  | 0  | 148 | 24  | 0    | 0    | 2   | 0  | 0  | 91  |
| 1630           | 0                                                                   | 0  | 1   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 2  | 154 | 24  | 0    | 1    | 0   | 0  | 0  | 95  |
| 1645           | 0                                                                   | 0  | 1   | 1   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 1    | 0   | 0  | 0  | 162 | 21  | 1    | 1    | 0   | 0  | 1  | 97  |
| 1700           | 0                                                                   | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 1   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 1  | 141 | 17  | 2    | 0    | 0   | 0  | 0  | 104 |
| 1715           | 0                                                                   | 0  | 1   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 138 | 20  | 1    | 0    | 0   | 0  | 0  | 82  |
| 1730           | 0                                                                   | 0  | 1   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 1    | 0   | 0  | 0  | 1   | 0   | 0    | 0    | 0   | 0  | 0  | 129 | 12  | 1    | 0    | 1   | 0  | 0  | 91  |
| 1745           | 0                                                                   | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 1   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 167 | 9   | 0    | 0    | 0   | 0  | 0  | 87  |

| Time Beginning | A6060 Mellor Street/Aldi Shared Access - Saturday 1st October 2022 |    |     |     |      |      |     |    |    |     |     |      |      |     |    |    |     |     |      |      |     |    |    |     |     |      |      |     |    |    |     |
|----------------|--------------------------------------------------------------------|----|-----|-----|------|------|-----|----|----|-----|-----|------|------|-----|----|----|-----|-----|------|------|-----|----|----|-----|-----|------|------|-----|----|----|-----|
|                | 13                                                                 |    |     |     |      |      |     | 14 |    |     |     |      |      |     | 15 |    |     |     |      |      |     | 16 |    |     |     |      |      |     |    |    |     |
|                | PC                                                                 | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR | LGV | OGV1 | OGV2 | PSV | PC | MC | CAR |
| 1200           | 0                                                                  | 0  | 1   | 0   | 0    | 0    | 0   | 0  | 0  | 1   | 0   | 0    | 1    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 4  | 117 | 6   | 0    | 0    | 0   | 0  | 0  | 108 |
| 1215           | 0                                                                  | 0  | 1   | 0   | 0    | 0    | 0   | 0  | 0  | 2   | 0   | 0    | 0    | 0   | 0  | 0  | 1   | 0   | 0    | 0    | 0   | 0  | 0  | 121 | 9   | 1    | 0    | 1   | 0  | 0  | 105 |
| 1230           | 0                                                                  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 137 | 6   | 0    | 0    | 0   | 1  | 2  | 101 |
| 1245           | 0                                                                  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 1   | 0   | 0    | 0    | 0   | 0  | 0  | 1   | 0   | 0    | 0    | 0   | 1  | 0  | 113 | 6   | 0    | 0    | 0   | 0  | 1  | 104 |
| 1300           | 0                                                                  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 122 | 9   | 0    | 0    | 0   | 0  | 0  | 118 |
| 1315           | 0                                                                  | 0  | 1   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 141 | 6   | 0    | 0    | 0   | 0  | 0  | 100 |
| 1330           | 0                                                                  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 3  | 0  | 113 | 10  | 0    | 0    | 0   | 0  | 0  | 99  |
| 1345           | 0                                                                  | 0  | 2   | 0   | 0    | 0    | 0   | 0  | 0  | 1   | 0   | 0    | 0    | 0   | 0  | 0  | 0   | 0   | 0    | 0    | 0   | 0  | 0  | 118 | 12  | 0    | 0    | 3   | 0  | 0  | 104 |

## signal surveys

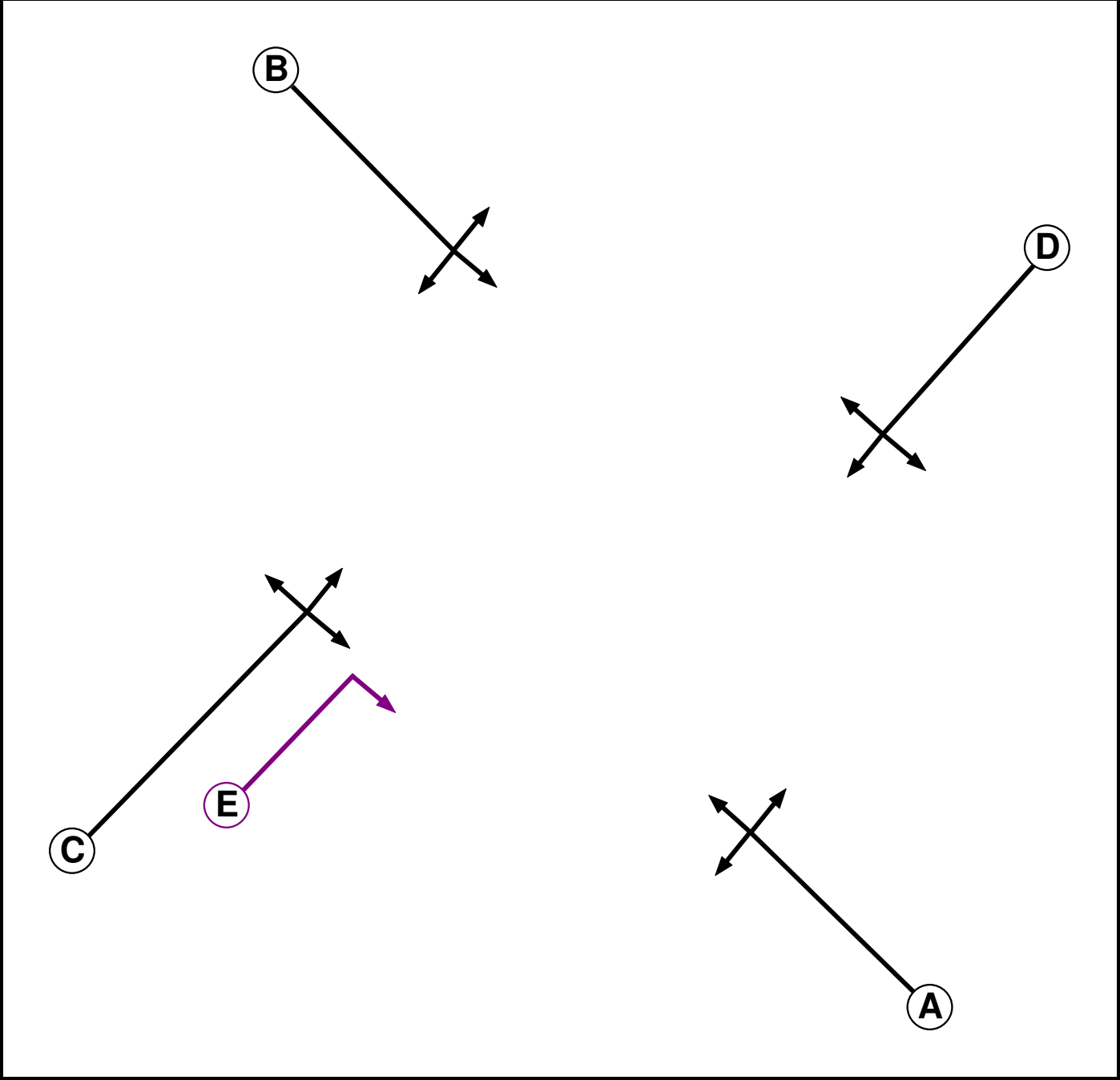
[illegible]

**S|C|P**

## **APPENDIX D**

|                           |                                                                    |
|---------------------------|--------------------------------------------------------------------|
| <b>Project:</b>           |                                                                    |
| <b>Title:</b>             |                                                                    |
| <b>Location:</b>          |                                                                    |
| <b>Additional detail:</b> |                                                                    |
| <b>File name:</b>         | 210733 Mellor Street_LINSIG_Mellor St.Bury Rd. College Rd_04.11.22 |
| <b>Author:</b>            |                                                                    |
| <b>Company:</b>           |                                                                    |
| <b>Address:</b>           |                                                                    |

Phase Diagram



Phase Input Data

| Phase Name | Phase Type | Assoc. Phase | Street Min | Cont Min |
|------------|------------|--------------|------------|----------|
| A          | Traffic    |              | 7          | 7        |
| B          | Traffic    |              | 7          | 7        |
| C          | Traffic    |              | 7          | 7        |
| D          | Traffic    |              | 7          | 7        |
| E          | Ind. Arrow | C            | 4          | 4        |

Full Input Data And Results

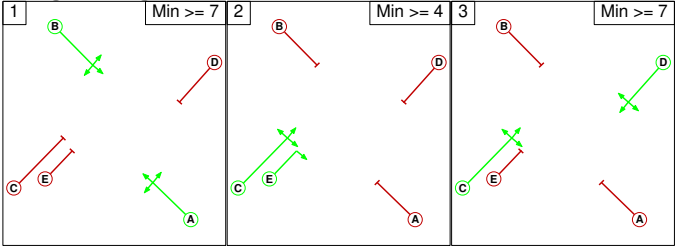
Phase Intergreens Matrix

| Terminating Phase | Starting Phase |   |   |   |   |   |
|-------------------|----------------|---|---|---|---|---|
|                   |                | A | B | C | D | E |
|                   | A              |   | - | 7 | 7 | 7 |
|                   | B              | - |   | 7 | 7 | 7 |
|                   | C              | 7 | 7 |   | - | - |
|                   | D              | 7 | 7 | - |   | 6 |
|                   | E              | 7 | 7 | - | 4 |   |

Phases in Stage

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

Stage Diagram



Phase Delays

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

Prohibited Stage Change

| From Stage | To Stage |   |   |   |
|------------|----------|---|---|---|
|            |          | 1 | 2 | 3 |
|            | 1        |   | 7 | 7 |
|            | 2        | 7 |   | 4 |
|            | 3        | 7 | 6 |   |

## Full Input Data And Results

**Give-Way Lane Input Data**

| Junction: J1: Mellor St / Bury Rd / College Rd |                |                                   |                                   |               |                  |                   |                          |                            |      |                        |                               |
|------------------------------------------------|----------------|-----------------------------------|-----------------------------------|---------------|------------------|-------------------|--------------------------|----------------------------|------|------------------------|-------------------------------|
| 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<br>(Mellor St (WB))                     | J1:6/1 (Right) | 1439                              | 0                                 | J1:3/1        | 1.09             | All               | 3.00                     | 2.00                       | 0.50 | 3                      | 2.00                          |
| J1:2/2<br>(Bury Rd)                            | J1:7/1 (Right) | 1439                              | 0                                 | J1:4/1        | 1.09             | All               | 4.00                     | -                          | 0.50 | 4                      | 2.00                          |
| J1:3/2<br>(Mellor St (EB))                     | J1:8/1 (Right) | 1439                              | 0                                 | J1:1/1        | 1.09             | All               | 4.00                     | -                          | 0.50 | 4                      | 2.00                          |
|                                                |                |                                   |                                   | J1:1/2        | 1.09             | To J1:5/1 (Ahead) |                          |                            |      |                        |                               |
| J1:4/2<br>(College Rd)                         | J1:5/1 (Right) | 1439                              | 0                                 | J1:2/1        | 1.09             | All               | 4.00                     | -                          | 0.50 | 4                      | 2.00                          |

| Junction: J2: Site Access  |                |                                   |                                   |               |                  |                   |                          |                            |     |                        |                               |
|----------------------------|----------------|-----------------------------------|-----------------------------------|---------------|------------------|-------------------|--------------------------|----------------------------|-----|------------------------|-------------------------------|
| 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) |
| J2:3/1<br>(Site Access)    | J2:2/1 (Right) | 1439                              | 0                                 | J2:1/1        | 1.09             | To J2:5/1 (Ahead) | -                        | -                          | -   | -                      | -                             |
|                            |                |                                   |                                   | J2:4/1        | 1.09             | All               |                          |                            |     |                        |                               |
|                            | J2:5/1 (Left)  | 1439                              | 0                                 | J2:1/1        | 1.09             | To J2:5/1 (Ahead) |                          |                            |     |                        |                               |
| J2:4/1<br>(Mellor St (WB)) | J2:6/1 (Right) | 1439                              | 0                                 | J2:1/1        | 1.09             | All               | -                        | -                          | -   | -                      | -                             |

**Lane Input Data**

| Junction: J1: Mellor St / Bury Rd / College Rd |           |        |             |           |                       |               |                                   |                |          |               |                |                    |
|------------------------------------------------|-----------|--------|-------------|-----------|-----------------------|---------------|-----------------------------------|----------------|----------|---------------|----------------|--------------------|
| 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<br>(Mellor St (WB))                     | U         | A      | 2           | 3         | 5.2                   | Geom          | -                                 | 3.60           | 0.00     | Y             | Arm J1:8 Left  | 15.00              |
| J1:1/2<br>(Mellor St (WB))                     | O         | A      | 2           | 3         | 6.1                   | Geom          | -                                 | 3.60           | 0.00     | Y             | Arm J1:5 Ahead | Inf                |
|                                                |           |        |             |           |                       |               |                                   |                |          |               | Arm J1:6 Right | 20.00              |
| J1:2/1<br>(Bury Rd)                            | U         | C      | 2           | 3         | 60.0                  | Geom          | -                                 | 3.00           | 0.00     | Y             | Arm J1:5 Left  | 12.00              |
|                                                |           |        |             |           |                       |               |                                   |                |          |               | Arm J1:6 Ahead | Inf                |
| J1:2/2<br>(Bury Rd)                            | O         | C E    | 2           | 3         | 11.5                  | Geom          | -                                 | 3.00           | 0.00     | Y             | Arm J1:7 Right | 15.00              |
| J1:3/1<br>(Mellor St (EB))                     | U         | B      | 2           | 3         | 60.0                  | Geom          | -                                 | 3.60           | 0.00     | Y             | Arm J1:6 Left  | 12.00              |
|                                                |           |        |             |           |                       |               |                                   |                |          |               | Arm J1:7 Ahead | Inf                |
| J1:3/2<br>(Mellor St (EB))                     | O         | B      | 2           | 3         | 5.2                   | Geom          | -                                 | 3.60           | 0.00     | Y             | Arm J1:8 Right | 22.00              |
| J1:4/1<br>(College Rd)                         | U         | D      | 2           | 3         | 60.0                  | Geom          | -                                 | 2.60           | 0.00     | Y             | Arm J1:7 Left  | 13.00              |
|                                                |           |        |             |           |                       |               |                                   |                |          |               | Arm J1:8 Ahead | Inf                |
| J1:4/2<br>(College Rd)                         | O         | D      | 2           | 3         | 7.5                   | Geom          | -                                 | 2.60           | 0.00     | Y             | Arm J1:5 Right | 13.00              |
| J1:5/1                                         | U         |        | 2           | 3         | 60.0                  | Inf           | -                                 | -              | -        | -             | -              | -                  |
| J1:6/1                                         | U         |        | 2           | 3         | 60.0                  | Inf           | -                                 | -              | -        | -             | -              | -                  |
| J1:7/1                                         | U         |        | 2           | 3         | 60.0                  | Inf           | -                                 | -              | -        | -             | -              | -                  |
| J1:8/1                                         | U         |        | 2           | 3         | 60.0                  | Inf           | -                                 | -              | -        | -             | -              | -                  |

Full Input Data And Results

| Junction: J2: Site Access |           |        |             |           |                       |               |                                   |                |          |               |                |                    |
|---------------------------|-----------|--------|-------------|-----------|-----------------------|---------------|-----------------------------------|----------------|----------|---------------|----------------|--------------------|
| Lane                      | Lane Type | Phases | Start Disp. | End Disp. | Physical Length (PCU) | Sat Flow Type | Def User Saturation Flow (PCU/Hr) | Lane Width (m) | Gradient | Nearside Lane | Turns          | Turning Radius (m) |
| J2:1/1 (Mellor St (EB))   | U         |        | 2           | 3         | 6.1                   | Inf           | -                                 | -              | -        | -             | -              | -                  |
| J2:2/1                    | U         |        | 2           | 3         | 60.0                  | Inf           | -                                 | -              | -        | -             | -              | -                  |
| J2:3/1 (Site Access)      | O         |        | 2           | 3         | 60.0                  | Geom          | -                                 | 3.80           | 0.00     | Y             | Arm J2:2 Right | Inf                |
|                           |           |        |             |           |                       |               |                                   |                |          |               | Arm J2:5 Left  | Inf                |
| J2:4/1 (Mellor St (WB))   | O         |        | 2           | 3         | 60.0                  | Geom          | -                                 | 4.00           | 0.00     | Y             | Arm J2:2 Ahead | Inf                |
|                           |           |        |             |           |                       |               |                                   |                |          |               | Arm J2:6 Right | Inf                |
| J2:5/1                    | U         |        | 2           | 3         | 60.0                  | Inf           | -                                 | -              | -        | -             | -              | -                  |
| J2:6/1                    | U         |        | 2           | 3         | 60.0                  | Inf           | -                                 | -              | -        | -             | -              | -                  |

Traffic Flow Groups

| Flow Group                  | Start Time | End Time | Duration | Formula |
|-----------------------------|------------|----------|----------|---------|
| 1: '2027 Base Weekday AM'   | 16:00      | 17:00    | 01:00    |         |
| 2: '2027 Base SAT'          | 12:00      | 13:00    | 01:00    |         |
| 3: '2027 Assess Weekday AM' | 16:00      | 17:00    | 01:00    |         |
| 4: '2027 Assess SAT'        | 12:00      | 13:00    | 01:00    |         |

Scenario 1: '2027 Base Weekday AM' (FG1: '2027 Base Weekday AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

|        | Destination |     |     |     |   |     |      |
|--------|-------------|-----|-----|-----|---|-----|------|
| Origin | A           | A   | B   | C   | D | E   | Tot. |
|        | A           | 0   | 51  | 421 | 1 | 143 | 616  |
|        | B           | 36  | 0   | 93  | 1 | 191 | 321  |
|        | C           | 410 | 100 | 0   | 1 | 118 | 629  |
|        | D           | 1   | 2   | 1   | 0 | 1   | 5    |
|        | E           | 172 | 304 | 254 | 4 | 0   | 734  |
|        | Tot.        | 619 | 457 | 769 | 7 | 453 | 2305 |

**Traffic Lane Flows**

| Lane                                                  | Scenario 1:<br>2027 Base Weekday AM |
|-------------------------------------------------------|-------------------------------------|
| <b>Junction: J1: Mellor St / Bury Rd / College Rd</b> |                                     |
| J1:1/1<br>(short)                                     | 173                                 |
| J1:1/2<br>(with short)                                | 734(In)<br>561(Out)                 |
| J1:2/1<br>(with short)                                | 616(In)<br>472(Out)                 |
| J1:2/2<br>(short)                                     | 144                                 |
| J1:3/1<br>(with short)                                | 321(In)<br>285(Out)                 |
| J1:3/2<br>(short)                                     | 36                                  |
| J1:4/1<br>(with short)                                | 629(In)<br>529(Out)                 |
| J1:4/2<br>(short)                                     | 100                                 |
| J1:5/1                                                | 457                                 |
| J1:6/1                                                | 769                                 |
| J1:7/1                                                | 455                                 |
| J1:8/1                                                | 619                                 |
| <b>Junction: J2: Site Access</b>                      |                                     |
| J2:1/1                                                | 455                                 |
| J2:2/1                                                | 734                                 |
| J2:3/1                                                | 5                                   |
| J2:4/1                                                | 734                                 |
| J2:5/1                                                | 453                                 |
| J2:6/1                                                | 7                                   |

## Lane Saturation Flows

| Junction: J2: Site Access         |                          |          |               |                |                    |               |                   |                          |
|-----------------------------------|--------------------------|----------|---------------|----------------|--------------------|---------------|-------------------|--------------------------|
| Lane                              | Lane Width (m)           | Gradient | Nearside Lane | Allowed Turns  | Turning Radius (m) | Turning Prop. | Sat Flow (PCU/Hr) | Flared Sat Flow (PCU/Hr) |
| J2:1/1<br>(Mellor St (EB) Lane 1) | Infinite Saturation Flow |          |               |                |                    |               | Inf               | Inf                      |
| J2:2/1                            | Infinite Saturation Flow |          |               |                |                    |               | Inf               | Inf                      |
| J2:3/1<br>(Site Access)           | 3.80                     | 0.00     | Y             | Arm J2:2 Right | Inf                | 80.0 %        | 1995              | 1995                     |
|                                   |                          |          |               | Arm J2:5 Left  | Inf                | 20.0 %        |                   |                          |
| J2:4/1<br>(Mellor St (WB))        | 4.00                     | 0.00     | Y             | Arm J2:2 Ahead | Inf                | 99.5 %        | 2015              | 2015                     |
|                                   |                          |          |               | Arm J2:6 Right | Inf                | 0.5 %         |                   |                          |
| J2:5/1                            | Infinite Saturation Flow |          |               |                |                    |               | Inf               | Inf                      |
| J2:6/1                            | Infinite Saturation Flow |          |               |                |                    |               | Inf               | Inf                      |

## Full Input Data And Results

**Scenario 2: '2027 Base Sat'** (FG2: '2027 Base SAT', Plan 1: 'Network Control Plan 1')

### Traffic Flows, Desired

**Desired Flow :**

|        | Destination |     |     |     |   |     |      |
|--------|-------------|-----|-----|-----|---|-----|------|
| Origin |             | A   | B   | C   | D | E   | Tot. |
|        | A           | 0   | 43  | 358 | 0 | 132 | 533  |
|        | B           | 27  | 0   | 38  | 1 | 233 | 299  |
|        | C           | 273 | 54  | 0   | 0 | 108 | 435  |
|        | D           | 1   | 2   | 0   | 0 | 2   | 5    |
|        | E           | 158 | 312 | 87  | 0 | 0   | 557  |
|        | Tot.        | 459 | 411 | 483 | 1 | 475 | 1829 |

### Traffic Lane Flows

| Lane                                                  | Scenario 2:<br>2027 Base Sat |
|-------------------------------------------------------|------------------------------|
| <b>Junction: J1: Mellor St / Bury Rd / College Rd</b> |                              |
| J1:1/1<br>(short)                                     | 159                          |
| J1:1/2<br>(with short)                                | 560(In)<br>401(Out)          |
| J1:2/1<br>(with short)                                | 533(In)<br>401(Out)          |
| J1:2/2<br>(short)                                     | 132                          |
| J1:3/1<br>(with short)                                | 299(In)<br>272(Out)          |
| J1:3/2<br>(short)                                     | 27                           |
| J1:4/1<br>(with short)                                | 435(In)<br>381(Out)          |
| J1:4/2<br>(short)                                     | 54                           |
| J1:5/1                                                | 411                          |
| J1:6/1                                                | 483                          |
| J1:7/1                                                | 474                          |
| J1:8/1                                                | 459                          |
| <b>Junction: J2: Site Access</b>                      |                              |
| J2:1/1                                                | 474                          |
| J2:2/1                                                | 560                          |
| J2:3/1                                                | 5                            |
| J2:4/1                                                | 557                          |
| J2:5/1                                                | 475                          |
| J2:6/1                                                | 1                            |

## Lane Saturation Flows

| Junction: J2: Site Access         |                          |          |               |                |                    |               |                   |                          |
|-----------------------------------|--------------------------|----------|---------------|----------------|--------------------|---------------|-------------------|--------------------------|
| Lane                              | Lane Width (m)           | Gradient | Nearside Lane | Allowed Turns  | Turning Radius (m) | Turning Prop. | Sat Flow (PCU/Hr) | Flared Sat Flow (PCU/Hr) |
| J2:1/1<br>(Mellor St (EB) Lane 1) | Infinite Saturation Flow |          |               |                |                    |               | Inf               | Inf                      |
| J2:2/1                            | Infinite Saturation Flow |          |               |                |                    |               | Inf               | Inf                      |
| J2:3/1<br>(Site Access)           | 3.80                     | 0.00     | Y             | Arm J2:2 Right | Inf                | 60.0 %        | 1995              | 1995                     |
|                                   |                          |          |               | Arm J2:5 Left  | Inf                | 40.0 %        |                   |                          |
| J2:4/1<br>(Mellor St (WB))        | 4.00                     | 0.00     | Y             | Arm J2:2 Ahead | Inf                | 100.0 %       | 2015              | 2015                     |
|                                   |                          |          |               | Arm J2:6 Right | Inf                | 0.0 %         |                   |                          |
| J2:5/1                            | Infinite Saturation Flow |          |               |                |                    |               | Inf               | Inf                      |
| J2:6/1                            | Infinite Saturation Flow |          |               |                |                    |               | Inf               | Inf                      |

Scenario 3: '2027 Assess Weekday AM' (FG3: '2027 Assess Weekday AM', Plan 1: 'Network Control Plan 1')  
Traffic Flows, Desired  
Desired Flow :

|        | Destination |     |     |     |    |     |      |
|--------|-------------|-----|-----|-----|----|-----|------|
|        |             | A   | B   | C   | D  | E   | Tot. |
| Origin | A           | 0   | 51  | 421 | 2  | 142 | 616  |
|        | B           | 36  | 0   | 93  | 3  | 189 | 321  |
|        | C           | 410 | 100 | 0   | 2  | 117 | 629  |
|        | D           | 4   | 7   | 6   | 0  | 4   | 21   |
|        | E           | 172 | 304 | 254 | 14 | 0   | 744  |
|        | Tot.        | 622 | 462 | 774 | 21 | 452 | 2331 |
|        |             |     |     |     |    |     |      |

Traffic Lane Flows

| Lane                                           | Scenario 3:<br>2027 Assess Weekday<br>AM |
|------------------------------------------------|------------------------------------------|
| Junction: J1: Mellor St / Bury Rd / College Rd |                                          |
| J1:1/1<br>(short)                              | 176                                      |
| J1:1/2<br>(with short)                         | 747(In)<br>571(Out)                      |
| J1:2/1<br>(with short)                         | 616(In)<br>472(Out)                      |
| J1:2/2<br>(short)                              | 144                                      |
| J1:3/1<br>(with short)                         | 321(In)<br>285(Out)                      |
| J1:3/2<br>(short)                              | 36                                       |
| J1:4/1<br>(with short)                         | 629(In)<br>529(Out)                      |
| J1:4/2<br>(short)                              | 100                                      |
| J1:5/1                                         | 462                                      |
| J1:6/1                                         | 774                                      |
| J1:7/1                                         | 455                                      |
| J1:8/1                                         | 622                                      |
| Junction: J2: Site Access                      |                                          |
| J2:1/1                                         | 455                                      |
| J2:2/1                                         | 747                                      |
| J2:3/1                                         | 21                                       |
| J2:4/1                                         | 744                                      |
| J2:5/1                                         | 452                                      |
| J2:6/1                                         | 21                                       |

## Lane Saturation Flows

| Junction: J2: Site Access         |                          |          |               |                |                    |               |                   |                          |
|-----------------------------------|--------------------------|----------|---------------|----------------|--------------------|---------------|-------------------|--------------------------|
| Lane                              | Lane Width (m)           | Gradient | Nearside Lane | Allowed Turns  | Turning Radius (m) | Turning Prop. | Sat Flow (PCU/Hr) | Flared Sat Flow (PCU/Hr) |
| J2:1/1<br>(Mellor St (EB) Lane 1) | Infinite Saturation Flow |          |               |                |                    |               | Inf               | Inf                      |
| J2:2/1                            | Infinite Saturation Flow |          |               |                |                    |               | Inf               | Inf                      |
| J2:3/1<br>(Site Access)           | 3.80                     | 0.00     | Y             | Arm J2:2 Right | Inf                | 81.0 %        | 1995              | 1995                     |
|                                   |                          |          |               | Arm J2:5 Left  | Inf                | 19.0 %        |                   |                          |
| J2:4/1<br>(Mellor St (WB))        | 4.00                     | 0.00     | Y             | Arm J2:2 Ahead | Inf                | 98.1 %        | 2015              | 2015                     |
|                                   |                          |          |               | Arm J2:6 Right | Inf                | 1.9 %         |                   |                          |
| J2:5/1                            | Infinite Saturation Flow |          |               |                |                    |               | Inf               | Inf                      |
| J2:6/1                            | Infinite Saturation Flow |          |               |                |                    |               | Inf               | Inf                      |

Full Input Data And Results

Scenario 4: '2027 Assess Sat' (FG4: '2027 Assess SAT', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

|        | Destination |     |     |     |    |     |      |
|--------|-------------|-----|-----|-----|----|-----|------|
|        |             | A   | B   | C   | D  | E   | Tot. |
| Origin | A           | 0   | 43  | 358 | 8  | 126 | 535  |
|        | B           | 27  | 0   | 38  | 13 | 222 | 300  |
|        | C           | 273 | 54  | 0   | 6  | 103 | 436  |
|        | D           | 5   | 10  | 3   | 0  | 11  | 29   |
|        | E           | 158 | 312 | 87  | 0  | 0   | 557  |
|        | Tot.        | 463 | 419 | 486 | 27 | 462 | 1857 |
|        |             |     |     |     |    |     |      |

Traffic Lane Flows

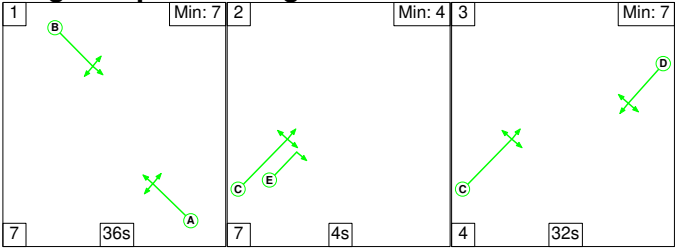
| Lane                                           | Scenario 4:<br>2027 Assess Sat |
|------------------------------------------------|--------------------------------|
| Junction: J1: Mellor St / Bury Rd / College Rd |                                |
| J1:1/1<br>(short)                              | 163                            |
| J1:1/2<br>(with short)                         | 575(In)<br>412(Out)            |
| J1:2/1<br>(with short)                         | 535(In)<br>401(Out)            |
| J1:2/2<br>(short)                              | 134                            |
| J1:3/1<br>(with short)                         | 300(In)<br>273(Out)            |
| J1:3/2<br>(short)                              | 27                             |
| J1:4/1<br>(with short)                         | 436(In)<br>382(Out)            |
| J1:4/2<br>(short)                              | 54                             |
| J1:5/1                                         | 419                            |
| J1:6/1                                         | 486                            |
| J1:7/1                                         | 478                            |
| J1:8/1                                         | 463                            |
| Junction: J2: Site Access                      |                                |
| J2:1/1                                         | 478                            |
| J2:2/1                                         | 575                            |
| J2:3/1                                         | 29                             |
| J2:4/1                                         | 557                            |
| J2:5/1                                         | 462                            |
| J2:6/1                                         | 27                             |

## Lane Saturation Flows

| Junction: J2: Site Access         |                          |          |               |                |                    |               |                   |                          |
|-----------------------------------|--------------------------|----------|---------------|----------------|--------------------|---------------|-------------------|--------------------------|
| Lane                              | Lane Width (m)           | Gradient | Nearside Lane | Allowed Turns  | Turning Radius (m) | Turning Prop. | Sat Flow (PCU/Hr) | Flared Sat Flow (PCU/Hr) |
| J2:1/1<br>(Mellor St (EB) Lane 1) | Infinite Saturation Flow |          |               |                |                    |               | Inf               | Inf                      |
| J2:2/1                            | Infinite Saturation Flow |          |               |                |                    |               | Inf               | Inf                      |
| J2:3/1<br>(Site Access)           | 3.80                     | 0.00     | Y             | Arm J2:2 Right | Inf                | 62.1 %        | 1995              | 1995                     |
|                                   |                          |          |               | Arm J2:5 Left  | Inf                | 37.9 %        |                   |                          |
| J2:4/1<br>(Mellor St (WB))        | 4.00                     | 0.00     | Y             | Arm J2:2 Ahead | Inf                | 100.0 %       | 2015              | 2015                     |
|                                   |                          |          |               | Arm J2:6 Right | Inf                | 0.0 %         |                   |                          |
| J2:5/1                            | Infinite Saturation Flow |          |               |                |                    |               | Inf               | Inf                      |
| J2:6/1                            | Infinite Saturation Flow |          |               |                |                    |               | Inf               | Inf                      |

Scenario 1: '2027 Base Weekday AM' (FG1: '2027 Base Weekday AM', Plan 1: 'Network Control Plan 1')

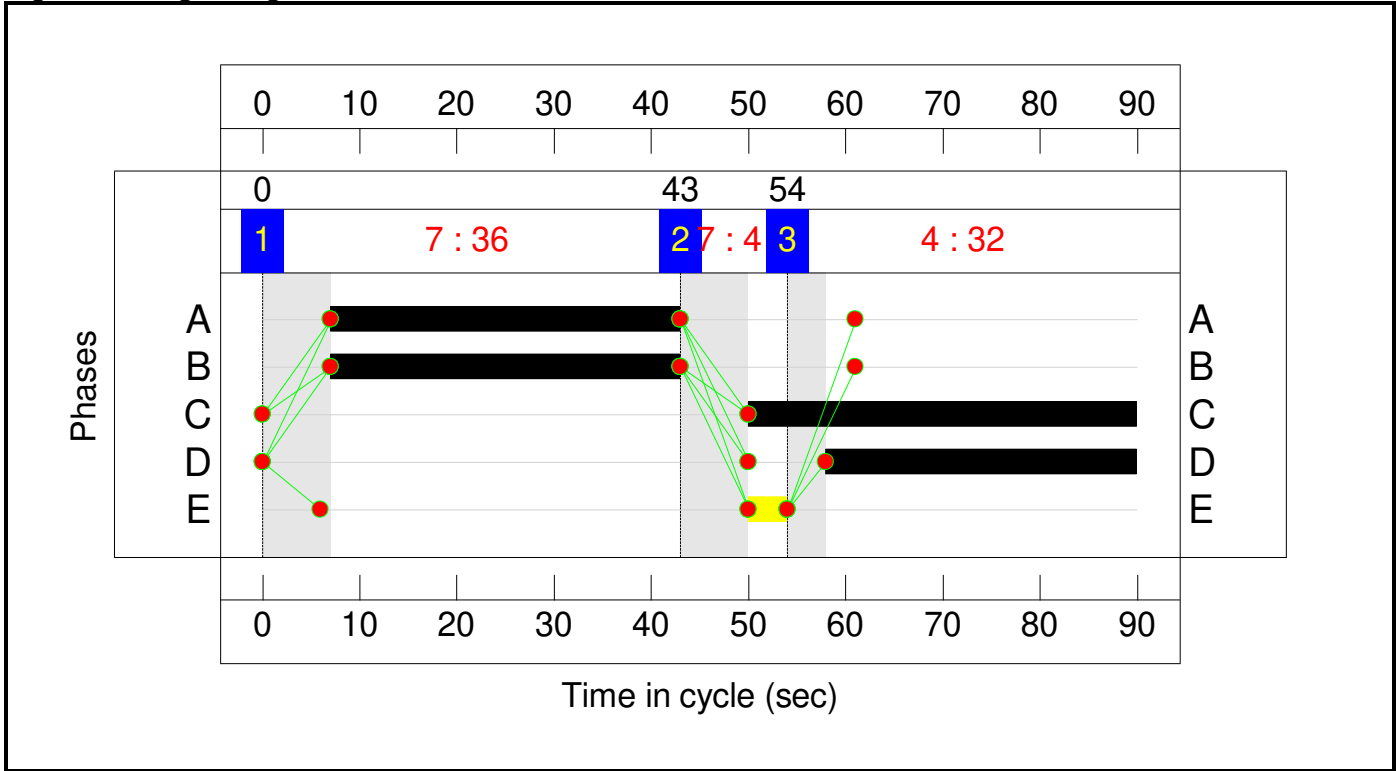
Stage Sequence Diagram



Stage Timings

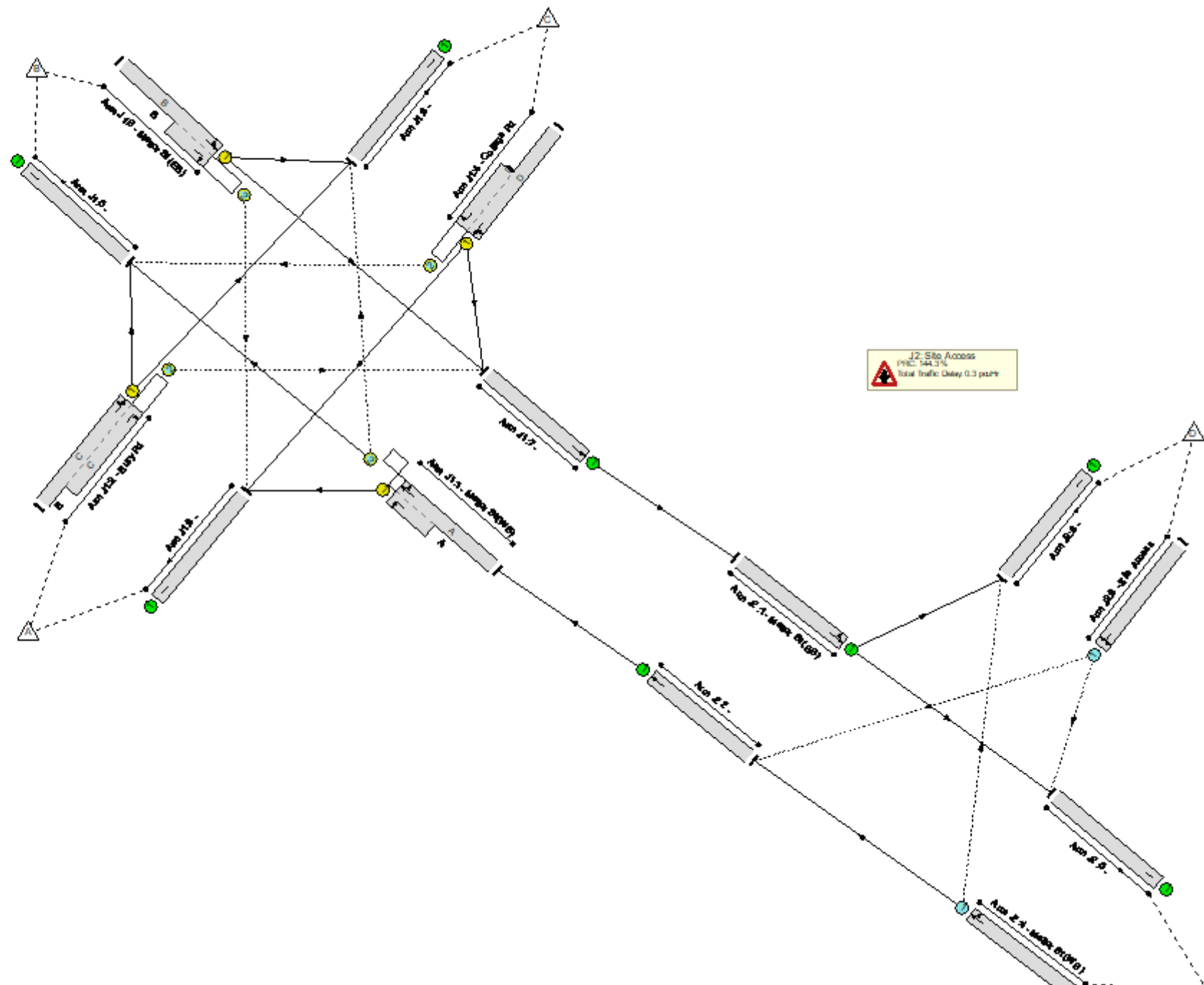
| Stage        | 1  | 2  | 3  |
|--------------|----|----|----|
| Duration     | 36 | 4  | 32 |
| Change Point | 0  | 43 | 54 |

Signal Timings Diagram





### Full Input Data And Results



## Full Input Data And Results

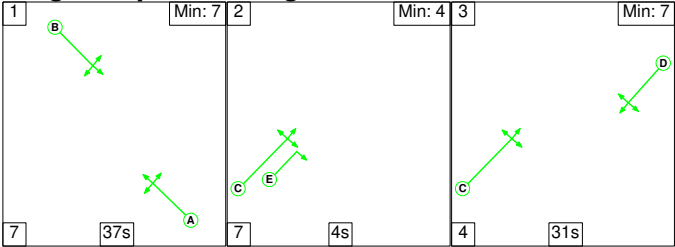
### Network Results

| Item                                        | Lane Description                | Lane Type | Controller Stream | Position In Filtered Route | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%)  |
|---------------------------------------------|---------------------------------|-----------|-------------------|----------------------------|------------|-------------|------------|-----------------|-----------------|-------------------|-------------------|----------------|--------------|
| <b>Network</b>                              | -                               | -         | <b>N/A</b>        | -                          | -          |             | -          | -               | -               | -                 | -                 | -              | <b>86.4%</b> |
| <b>J1: Mellor St / Bury Rd / College Rd</b> | -                               | -         | <b>N/A</b>        | -                          | -          |             | -          | -               | -               | -                 | -                 | -              | <b>86.4%</b> |
| 1/2+1/1                                     | Mellor St (WB) Ahead Right Left | O+U       | N/A               | N/A                        | A          |             | 1          | 36              | -               | 734               | 1910:1795         | 653+201        | 85.9 : 85.9% |
| 2/1+2/2                                     | Bury Rd Left Ahead Right        | U+O       | N/A               | N/A                        | C          | E           | 1          | 40              | 4               | 616               | 1889:1741         | 769+234        | 61.4 : 61.4% |
| 3/1+3/2                                     | Mellor St (EB) Left Ahead Right | U+O       | N/A               | N/A                        | B          |             | 1          | 36              | -               | 321               | 1898:1849         | 727+92         | 39.2 : 39.2% |
| 4/1+4/2                                     | College Rd Right Left Ahead     | U+O       | N/A               | N/A                        | D          |             | 1          | 32              | -               | 629               | 1828:1681         | 612+116        | 86.4 : 86.4% |
| 5/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 457               | Inf               | Inf            | 0.0%         |
| 6/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 769               | Inf               | Inf            | 0.0%         |
| 7/1                                         | Ahead                           | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 455               | Inf               | Inf            | 0.0%         |
| 8/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 619               | Inf               | Inf            | 0.0%         |
| <b>J2: Site Access</b>                      | -                               | -         | <b>N/A</b>        | -                          | -          |             | -          | -               | -               | -                 | -                 | -              | <b>36.8%</b> |
| 1/1                                         | Mellor St (EB) Ahead Left       | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 455               | Inf               | Inf            | 0.0%         |
| 2/1                                         | Ahead                           | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 734               | Inf               | Inf            | 0.0%         |
| 3/1                                         | Site Access Right Left          | O         | N/A               | N/A                        | -          |             | -          | -               | -               | 5                 | 1995              | 278            | 1.8%         |
| 4/1                                         | Mellor St (WB) Ahead Right      | O         | N/A               | N/A                        | -          |             | -          | -               | -               | 734               | 2015              | 1992           | 36.8%        |
| 5/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 453               | Inf               | Inf            | 0.0%         |
| 6/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 7                 | Inf               | Inf            | 0.0%         |

## Full Input Data And Results

| Item                                                                                                                                                                                              | Arriving (pcu) | Leaving (pcu) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Uniform Delay (pcuHr) | Rand + Oversat Delay (pcuHr) | Storage Area Uniform Delay (pcuHr) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Max. Back of Uniform Queue (pcu) | Rand + Oversat Queue (pcu) | Mean Max Queue (pcu) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------|-----------------------|------------------------------|-----------------------------|-----------------------|------------------------------|------------------------------------|---------------------|---------------------------|----------------------------------|----------------------------|----------------------|
| Network                                                                                                                                                                                           | -              | -             | 458                   | 77                           | 9                           | 13.6                  | 7.3                          | 0.7                                | 21.6                | -                         | -                                | -                          | -                    |
| J1: Mellor St / Bury Rd / College Rd                                                                                                                                                              | -              | -             | 449                   | 77                           | 9                           | 13.6                  | 7.0                          | 0.7                                | 21.3                | -                         | -                                | -                          | -                    |
| 1/2+1/1                                                                                                                                                                                           | 734            | 734           | 252                   | 0                            | 3                           | 4.7                   | 2.9                          | 0.3                                | 7.9                 | 38.6                      | 14.7                             | 2.9                        | 17.6                 |
| 2/1+2/2                                                                                                                                                                                           | 616            | 616           | 63                    | 77                           | 3                           | 2.9                   | 0.8                          | 0.3                                | 4.0                 | 23.2                      | 8.5                              | 0.8                        | 9.3                  |
| 3/1+3/2                                                                                                                                                                                           | 321            | 321           | 35                    | 0                            | 1                           | 1.6                   | 0.3                          | 0.0                                | 2.0                 | 22.0                      | 4.9                              | 0.3                        | 5.2                  |
| 4/1+4/2                                                                                                                                                                                           | 629            | 629           | 98                    | 0                            | 2                           | 4.4                   | 3.0                          | 0.1                                | 7.5                 | 42.9                      | 12.9                             | 3.0                        | 15.9                 |
| 5/1                                                                                                                                                                                               | 457            | 457           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 6/1                                                                                                                                                                                               | 769            | 769           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 7/1                                                                                                                                                                                               | 455            | 455           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 8/1                                                                                                                                                                                               | 619            | 619           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| J2: Site Access                                                                                                                                                                                   | -              | -             | 9                     | 0                            | 0                           | 0.0                   | 0.3                          | 0.0                                | 0.3                 | -                         | -                                | -                          | -                    |
| 1/1                                                                                                                                                                                               | 455            | 455           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 2/1                                                                                                                                                                                               | 734            | 734           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 3/1                                                                                                                                                                                               | 5              | 5             | 5                     | 0                            | 0                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 8.1                       | 0.0                              | 0.0                        | 0.0                  |
| 4/1                                                                                                                                                                                               | 734            | 734           | 4                     | 0                            | 0                           | 0.0                   | 0.3                          | -                                  | 0.3                 | 1.4                       | 0.0                              | 0.3                        | 0.3                  |
| 5/1                                                                                                                                                                                               | 453            | 453           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 6/1                                                                                                                                                                                               | 7              | 7             | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| C1      PRC for Signalled Lanes (%): 4.2      Total Delay for Signalled Lanes (pcuHr): 21.30      Cycle Time (s): 90<br>PRC Over All Lanes (%): 4.2      Total Delay Over All Lanes(pcuHr): 21.61 |                |               |                       |                              |                             |                       |                              |                                    |                     |                           |                                  |                            |                      |

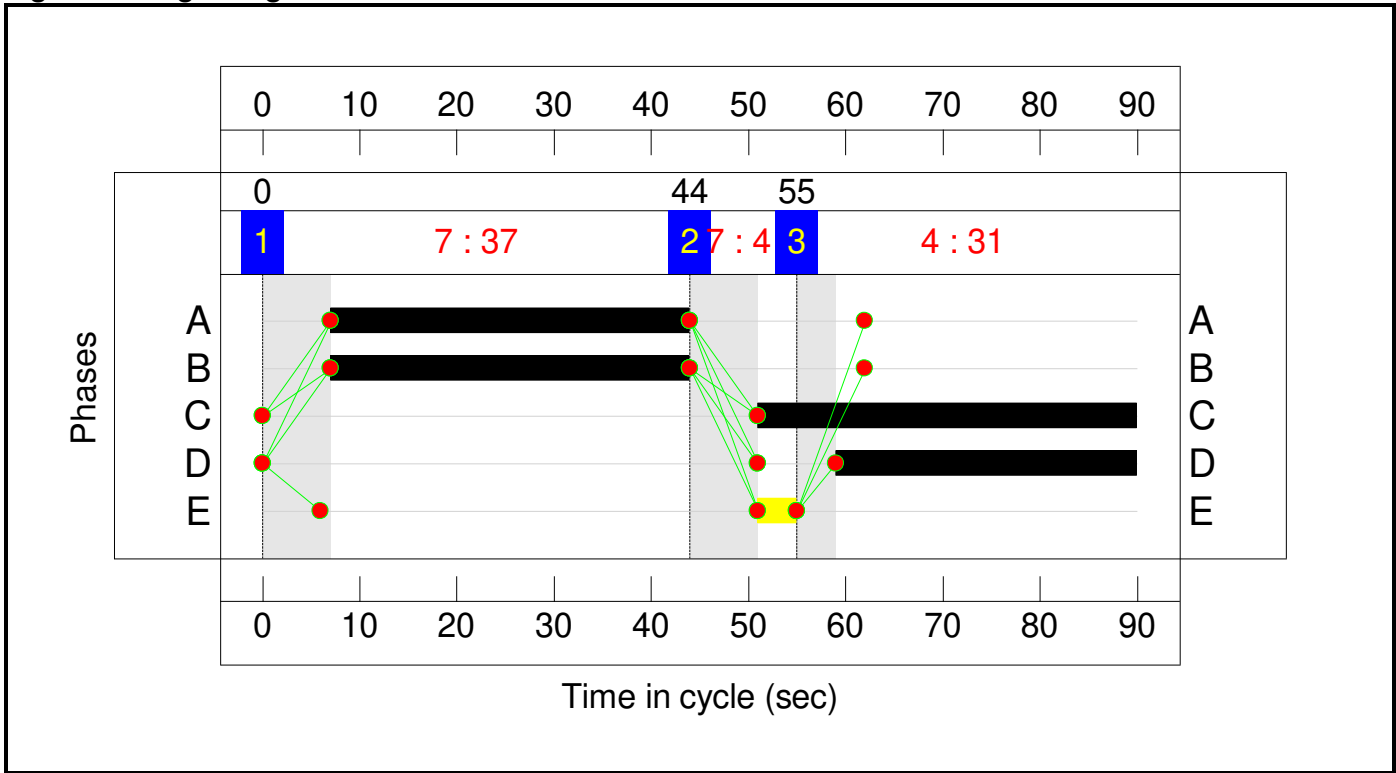
**Stage Sequence Diagram**



**Stage Timings**

| Stage        | 1  | 2  | 3  |
|--------------|----|----|----|
| Duration     | 37 | 4  | 31 |
| Change Point | 0  | 44 | 55 |

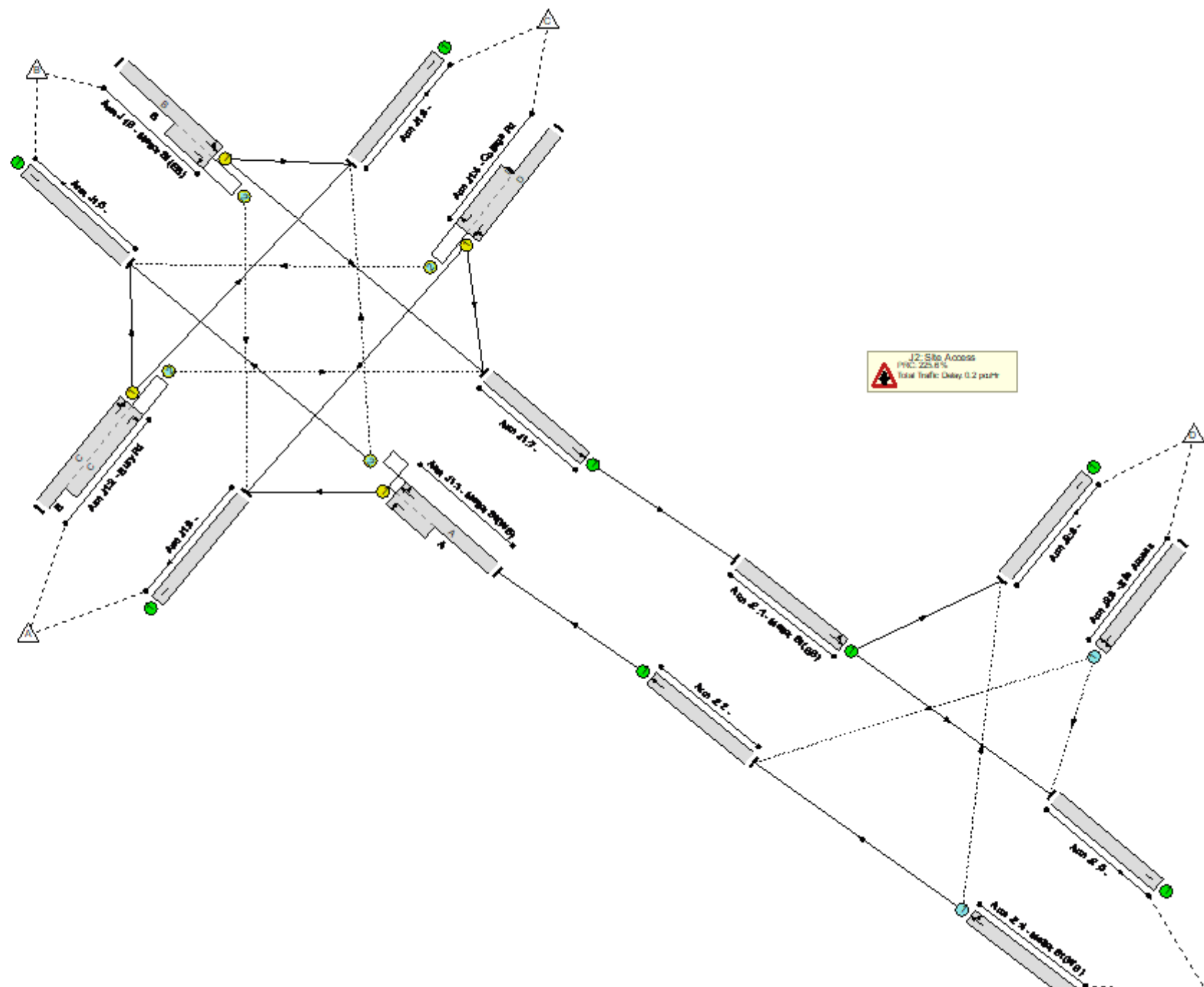
**Signal Timings Diagram**





# Full Input Data And Results

J1: Motor St / Bury Rd / College Rd  
PNC: 43.3%  
Total Traffic Delay: 12.4 points



## 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</b>                              | -                               | -         | <b>N/A</b>        | -                          | -          |             | -          | -               | -               | -                 | -                 | -              | <b>62.8%</b> |
| <b>J1: Mellor St / Bury Rd / College Rd</b> | -                               | -         | <b>N/A</b>        | -                          | -          |             | -          | -               | -               | -                 | -                 | -              | <b>62.8%</b> |
| 1/2+1/1                                     | Mellor St (WB) Ahead Right Left | O+U       | N/A               | N/A                        | A          |             | 1          | 37              | -               | 560               | 1943:1795         | 644+255        | 62.3 : 62.3% |
| 2/1+2/2                                     | Bury Rd Left Ahead Right        | U+O       | N/A               | N/A                        | C          | E           | 1          | 39              | 4               | 533               | 1890:1741         | 747+246        | 53.7 : 53.7% |
| 3/1+3/2                                     | Mellor St (EB) Left Ahead Right | U+O       | N/A               | N/A                        | B          |             | 1          | 37              | -               | 299               | 1941:1849         | 771+77         | 35.3 : 35.3% |
| 4/1+4/2                                     | College Rd Right Left Ahead     | U+O       | N/A               | N/A                        | D          |             | 1          | 31              | -               | 435               | 1816:1681         | 607+86         | 62.8 : 62.8% |
| 5/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 411               | Inf               | Inf            | 0.0%         |
| 6/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 483               | Inf               | Inf            | 0.0%         |
| 7/1                                         | Ahead                           | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 474               | Inf               | Inf            | 0.0%         |
| 8/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 459               | Inf               | Inf            | 0.0%         |
| <b>J2: Site Access</b>                      | -                               | -         | <b>N/A</b>        | -                          | -          |             | -          | -               | -               | -                 | -                 | -              | <b>27.6%</b> |
| 1/1                                         | Mellor St (EB) Ahead Left       | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 474               | Inf               | Inf            | 0.0%         |
| 2/1                                         | Ahead                           | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 560               | Inf               | Inf            | 0.0%         |
| 3/1                                         | Site Access Right Left          | O         | N/A               | N/A                        | -          |             | -          | -               | -               | 5                 | 1995              | 499            | 1.0%         |
| 4/1                                         | Mellor St (WB) Ahead Right      | O         | N/A               | N/A                        | -          |             | -          | -               | -               | 557               | 2015              | 2015           | 27.6%        |
| 5/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 475               | Inf               | Inf            | 0.0%         |
| 6/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 1                 | Inf               | Inf            | 0.0%         |

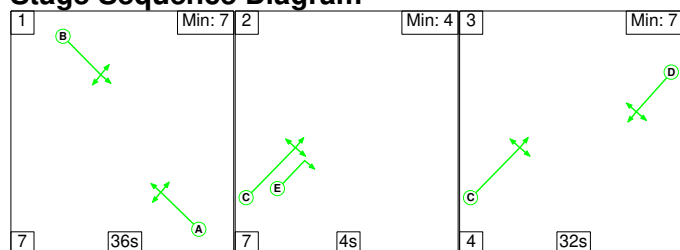
## Full Input Data And Results

[illegible]

# Full Input Data And Results

**Scenario 3: '2027 Assess Weekday AM'** (FG3: '2027 Assess Weekday AM', Plan 1: 'Network Control Plan 1')

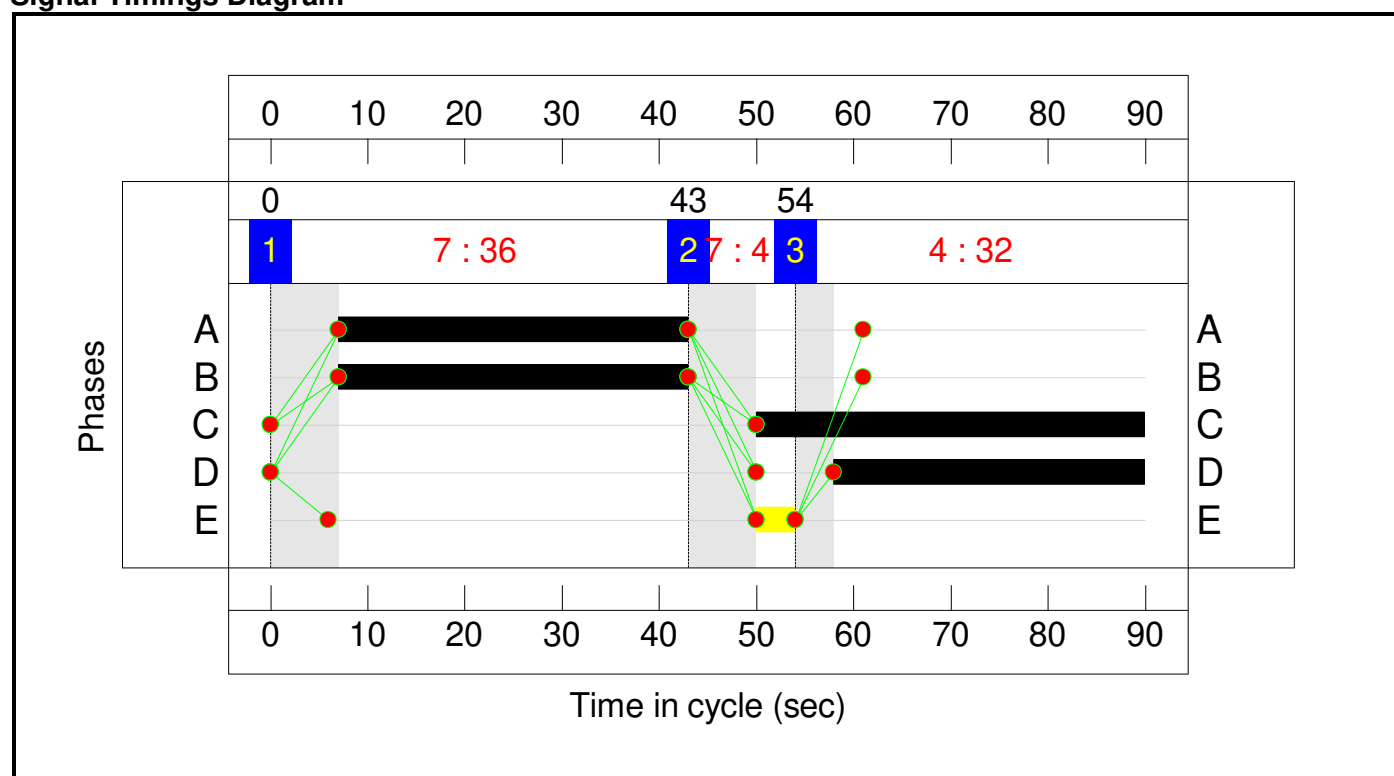
## Stage Sequence Diagram



## Stage Timings

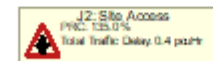
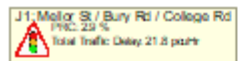
| Stage        | 1  | 2  | 3  |
|--------------|----|----|----|
| Duration     | 36 | 4  | 32 |
| Change Point | 0  | 43 | 54 |

## Signal Timings Diagram





### Full Input Data And Results



## Full Input Data And Results

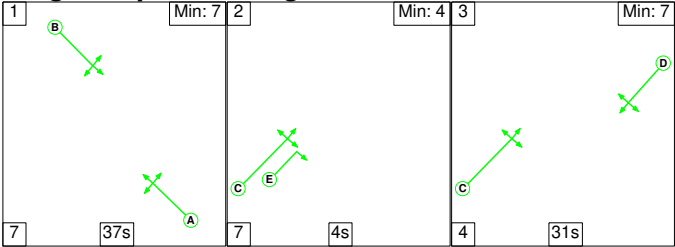
## Network Results

| Item                                        | Lane Description                | Lane Type | Controller Stream | Position In Filtered Route | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%)  |
|---------------------------------------------|---------------------------------|-----------|-------------------|----------------------------|------------|-------------|------------|-----------------|-----------------|-------------------|-------------------|----------------|--------------|
| <b>Network</b>                              | -                               | -         | <b>N/A</b>        | -                          | -          |             | -          | -               | -               | -                 | -                 | -              | <b>87.5%</b> |
| <b>J1: Mellor St / Bury Rd / College Rd</b> | -                               | -         | <b>N/A</b>        | -                          | -          |             | -          | -               | -               | -                 | -                 | -              | <b>87.5%</b> |
| 1/2+1/1                                     | Mellor St (WB) Ahead Right Left | O+U       | N/A               | N/A                        | A          |             | 1          | 36              | -               | 747               | 1910:1795         | 653+201        | 87.5 : 87.5% |
| 2/1+2/2                                     | Bury Rd Left Ahead Right        | U+O       | N/A               | N/A                        | C          | E           | 1          | 40              | 4               | 616               | 1889:1741         | 769+234        | 61.4 : 61.4% |
| 3/1+3/2                                     | Mellor St (EB) Left Ahead Right | U+O       | N/A               | N/A                        | B          |             | 1          | 36              | -               | 321               | 1898:1849         | 727+92         | 39.2 : 39.2% |
| 4/1+4/2                                     | College Rd Right Left Ahead     | U+O       | N/A               | N/A                        | D          |             | 1          | 32              | -               | 629               | 1828:1681         | 612+116        | 86.4 : 86.4% |
| 5/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 462               | Inf               | Inf            | 0.0%         |
| 6/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 774               | Inf               | Inf            | 0.0%         |
| 7/1                                         | Ahead                           | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 455               | Inf               | Inf            | 0.0%         |
| 8/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 622               | Inf               | Inf            | 0.0%         |
| <b>J2: Site Access</b>                      | -                               | -         | <b>N/A</b>        | -                          | -          |             | -          | -               | -               | -                 | -                 | -              | <b>38.3%</b> |
| 1/1                                         | Mellor St (EB) Ahead Left       | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 455               | Inf               | Inf            | 0.0%         |
| 2/1                                         | Ahead                           | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 747               | Inf               | Inf            | 0.0%         |
| 3/1                                         | Site Access Right Left          | O         | N/A               | N/A                        | -          |             | -          | -               | -               | 21                | 1995              | 270            | 7.8%         |
| 4/1                                         | Mellor St (WB) Ahead Right      | O         | N/A               | N/A                        | -          |             | -          | -               | -               | 744               | 2015              | 1943           | 38.3%        |
| 5/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 452               | Inf               | Inf            | 0.0%         |
| 6/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 21                | Inf               | Inf            | 0.0%         |

## Full Input Data And Results

| Item                                                                                                                                                                                                                                                             | Arriving (pcu) | Leaving (pcu) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Uniform Delay (pcuHr) | Rand + Oversat Delay (pcuHr) | Storage Area Uniform Delay (pcuHr) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Max. Back of Uniform Queue (pcu) | Rand + Oversat Queue (pcu) | Mean Max Queue (pcu) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------|-----------------------|------------------------------|-----------------------------|-----------------------|------------------------------|------------------------------------|---------------------|---------------------------|----------------------------------|----------------------------|----------------------|
| Network                                                                                                                                                                                                                                                          | -              | -             | 488                   | 77                           | 9                           | 13.7                  | 7.7                          | 0.7                                | 22.2                | -                         | -                                | -                          | -                    |
| J1: Mellor St / Bury Rd / College Rd                                                                                                                                                                                                                             | -              | -             | 453                   | 77                           | 9                           | 13.7                  | 7.4                          | 0.7                                | 21.8                | -                         | -                                | -                          | -                    |
| 1/2+1/1                                                                                                                                                                                                                                                          | 747            | 747           | 257                   | 0                            | 3                           | 4.8                   | 3.3                          | 0.3                                | 8.4                 | 40.3                      | 15.2                             | 3.3                        | 18.5                 |
| 2/1+2/2                                                                                                                                                                                                                                                          | 616            | 616           | 63                    | 77                           | 3                           | 2.9                   | 0.8                          | 0.3                                | 4.0                 | 23.2                      | 8.5                              | 0.8                        | 9.3                  |
| 3/1+3/2                                                                                                                                                                                                                                                          | 321            | 321           | 35                    | 0                            | 1                           | 1.6                   | 0.3                          | 0.0                                | 2.0                 | 22.0                      | 4.9                              | 0.3                        | 5.2                  |
| 4/1+4/2                                                                                                                                                                                                                                                          | 629            | 629           | 98                    | 0                            | 2                           | 4.4                   | 3.0                          | 0.1                                | 7.5                 | 42.9                      | 12.9                             | 3.0                        | 15.9                 |
| 5/1                                                                                                                                                                                                                                                              | 462            | 462           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 6/1                                                                                                                                                                                                                                                              | 774            | 774           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 7/1                                                                                                                                                                                                                                                              | 455            | 455           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 8/1                                                                                                                                                                                                                                                              | 622            | 622           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| J2: Site Access                                                                                                                                                                                                                                                  | -              | -             | 35                    | 0                            | 0                           | 0.0                   | 0.4                          | 0.0                                | 0.4                 | -                         | -                                | -                          | -                    |
| 1/1                                                                                                                                                                                                                                                              | 455            | 455           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 2/1                                                                                                                                                                                                                                                              | 747            | 747           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 3/1                                                                                                                                                                                                                                                              | 21             | 21            | 21                    | 0                            | 0                           | 0.0                   | 0.0                          | -                                  | 0.1                 | 8.9                       | 0.1                              | 0.0                        | 0.1                  |
| 4/1                                                                                                                                                                                                                                                              | 744            | 744           | 14                    | 0                            | 0                           | 0.0                   | 0.3                          | -                                  | 0.3                 | 1.5                       | 0.0                              | 0.3                        | 0.3                  |
| 5/1                                                                                                                                                                                                                                                              | 452            | 452           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 6/1                                                                                                                                                                                                                                                              | 21             | 21            | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| C1                  PRC for Signalled Lanes (%):    2.9                  Total Delay for Signalled Lanes (pcuHr):    21.80                  Cycle Time (s):    90<br>PRC Over All Lanes (%):    2.9                  Total Delay Over All Lanes(pcuHr):    22.17 |                |               |                       |                              |                             |                       |                              |                                    |                     |                           |                                  |                            |                      |

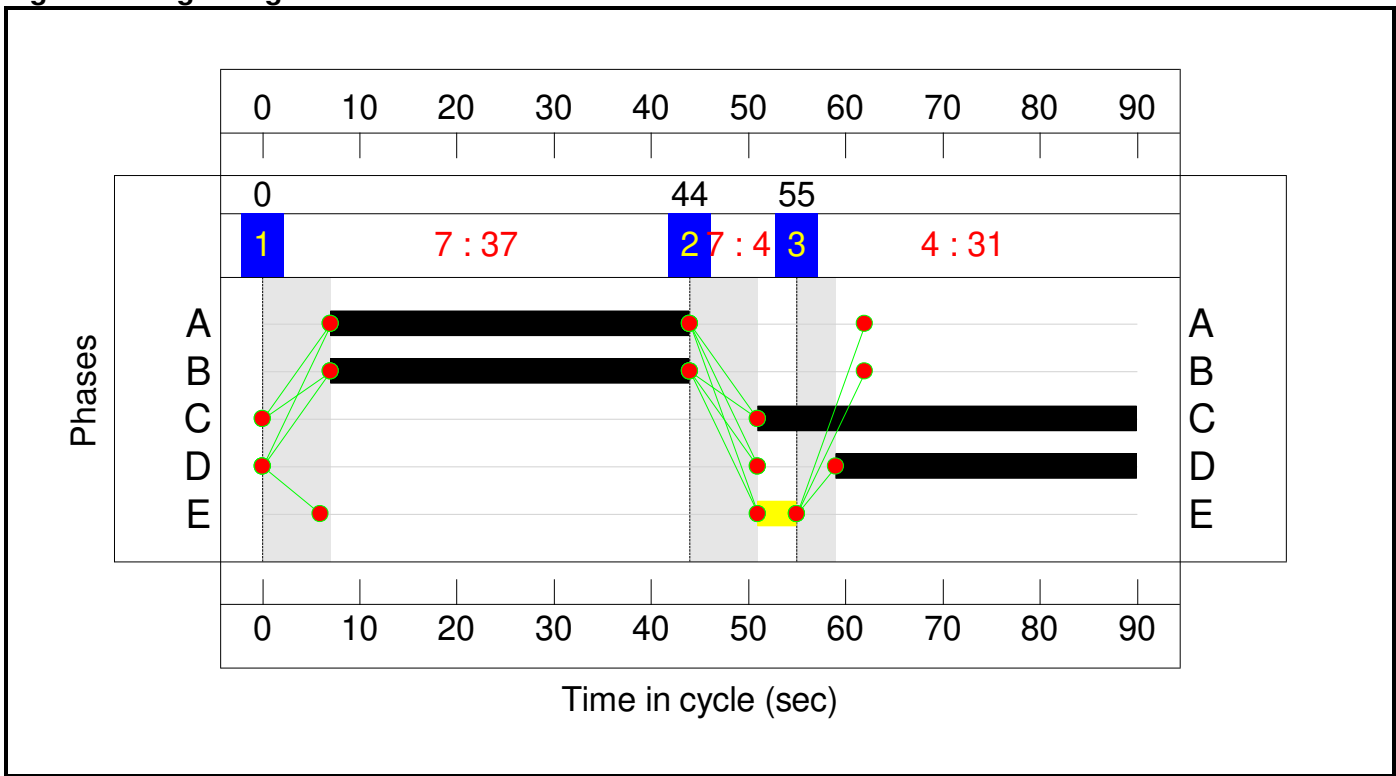
**Stage Sequence Diagram**



**Stage Timings**

| Stage        | 1  | 2  | 3  |
|--------------|----|----|----|
| Duration     | 37 | 4  | 31 |
| Change Point | 0  | 44 | 55 |

**Signal Timings Diagram**

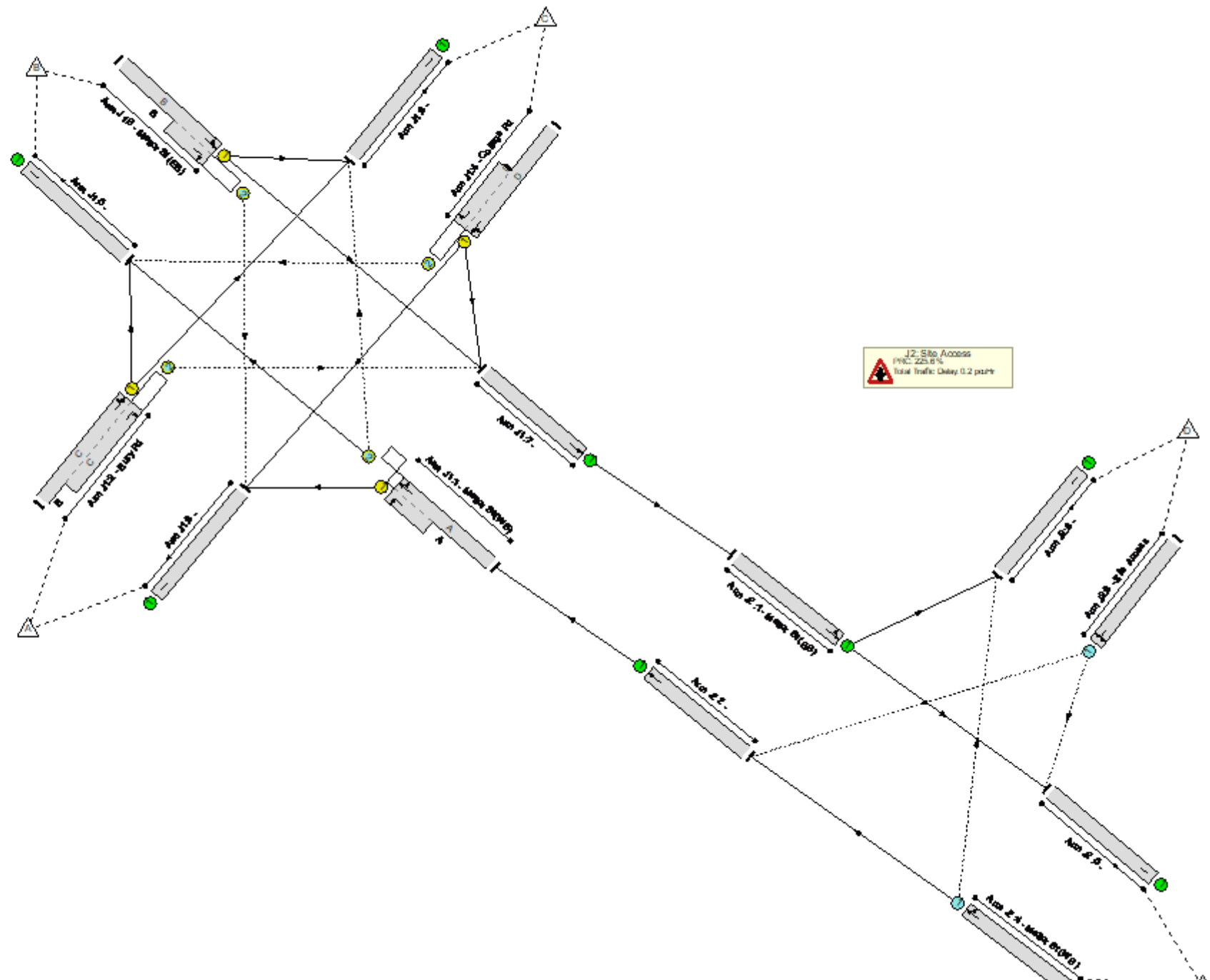




# Full Input Data And Results

J1: Motor St / Bury Rd / College Rd  
PNC: 40.7%

Total Traffic Delay: 12.8 points



## 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</b>                              | -                               | -         | <b>N/A</b>        | -                          | -          |             | -          | -               | -               | -                 | -                 | -              | <b>64.0%</b> |
| <b>J1: Mellor St / Bury Rd / College Rd</b> | -                               | -         | <b>N/A</b>        | -                          | -          |             | -          | -               | -               | -                 | -                 | -              | <b>64.0%</b> |
| 1/2+1/1                                     | Mellor St (WB) Ahead Right Left | O+U       | N/A               | N/A                        | A          |             | 1          | 37              | -               | 575               | 1943:1795         | 644+255        | 64.0 : 64.0% |
| 2/1+2/2                                     | Bury Rd Left Ahead Right        | U+O       | N/A               | N/A                        | C          | E           | 1          | 39              | 4               | 535               | 1890:1741         | 746+249        | 53.7 : 53.7% |
| 3/1+3/2                                     | Mellor St (EB) Left Ahead Right | U+O       | N/A               | N/A                        | B          |             | 1          | 37              | -               | 300               | 1941:1849         | 771+76         | 35.4 : 35.4% |
| 4/1+4/2                                     | College Rd Right Left Ahead     | U+O       | N/A               | N/A                        | D          |             | 1          | 31              | -               | 436               | 1815:1681         | 607+86         | 63.0 : 63.0% |
| 5/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 419               | Inf               | Inf            | 0.0%         |
| 6/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 486               | Inf               | Inf            | 0.0%         |
| 7/1                                         | Ahead                           | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 478               | Inf               | Inf            | 0.0%         |
| 8/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 463               | Inf               | Inf            | 0.0%         |
| <b>J2: Site Access</b>                      | -                               | -         | <b>N/A</b>        | -                          | -          |             | -          | -               | -               | -                 | -                 | -              | <b>27.6%</b> |
| 1/1                                         | Mellor St (EB) Ahead Left       | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 478               | Inf               | Inf            | 0.0%         |
| 2/1                                         | Ahead                           | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 575               | Inf               | Inf            | 0.0%         |
| 3/1                                         | Site Access Right Left          | O         | N/A               | N/A                        | -          |             | -          | -               | -               | 29                | 1995              | 508            | 5.7%         |
| 4/1                                         | Mellor St (WB) Ahead Right      | O         | N/A               | N/A                        | -          |             | -          | -               | -               | 557               | 2015              | 2015           | 27.6%        |
| 5/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 462               | Inf               | Inf            | 0.0%         |
| 6/1                                         |                                 | U         | N/A               | N/A                        | -          |             | -          | -               | -               | 27                | Inf               | Inf            | 0.0%         |

## Full Input Data And Results

| Item                                                                                                                                                                                                | Arriving (pcu) | Leaving (pcu) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Uniform Delay (pcuHr) | Rand + Oversat Delay (pcuHr) | Storage Area Uniform Delay (pcuHr) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Max. Back of Uniform Queue (pcu) | Rand + Oversat Queue (pcu) | Mean Max Queue (pcu) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------|-----------------------|------------------------------|-----------------------------|-----------------------|------------------------------|------------------------------------|---------------------|---------------------------|----------------------------------|----------------------------|----------------------|
| Network                                                                                                                                                                                             | -              | -             | 251                   | 77                           | 6                           | 9.8                   | 2.8                          | 0.3                                | 12.9                | -                         | -                                | -                          | -                    |
| J1: Mellor St / Bury Rd / College Rd                                                                                                                                                                | -              | -             | 222                   | 77                           | 6                           | 9.8                   | 2.6                          | 0.3                                | 12.6                | -                         | -                                | -                          | -                    |
| 1/2+1/1                                                                                                                                                                                             | 575            | 575           | 89                    | 0                            | 1                           | 3.0                   | 0.9                          | 0.1                                | 4.0                 | 24.7                      | 8.6                              | 0.9                        | 9.5                  |
| 2/1+2/2                                                                                                                                                                                             | 535            | 535           | 54                    | 77                           | 3                           | 2.5                   | 0.6                          | 0.1                                | 3.2                 | 21.5                      | 7.0                              | 0.6                        | 7.6                  |
| 3/1+3/2                                                                                                                                                                                             | 300            | 300           | 26                    | 0                            | 1                           | 1.4                   | 0.3                          | 0.1                                | 1.8                 | 21.5                      | 4.6                              | 0.3                        | 4.8                  |
| 4/1+4/2                                                                                                                                                                                             | 436            | 436           | 53                    | 0                            | 1                           | 2.8                   | 0.8                          | 0.0                                | 3.7                 | 30.5                      | 7.9                              | 0.8                        | 8.7                  |
| 5/1                                                                                                                                                                                                 | 419            | 419           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 6/1                                                                                                                                                                                                 | 486            | 486           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 7/1                                                                                                                                                                                                 | 478            | 478           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 8/1                                                                                                                                                                                                 | 463            | 463           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| J2: Site Access                                                                                                                                                                                     | -              | -             | 29                    | 0                            | 0                           | 0.0                   | 0.2                          | 0.0                                | 0.2                 | -                         | -                                | -                          | -                    |
| 1/1                                                                                                                                                                                                 | 478            | 478           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 2/1                                                                                                                                                                                                 | 575            | 575           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 3/1                                                                                                                                                                                                 | 29             | 29            | 29                    | 0                            | 0                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 4.6                       | 0.1                              | 0.0                        | 0.1                  |
| 4/1                                                                                                                                                                                                 | 557            | 557           | 0                     | 0                            | 0                           | 0.0                   | 0.2                          | -                                  | 0.2                 | 1.2                       | 0.0                              | 0.2                        | 0.2                  |
| 5/1                                                                                                                                                                                                 | 462            | 462           | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| 6/1                                                                                                                                                                                                 | 27             | 27            | -                     | -                            | -                           | 0.0                   | 0.0                          | -                                  | 0.0                 | 0.0                       | 0.0                              | 0.0                        | 0.0                  |
| C1      PRC for Signalled Lanes (%): 40.7      Total Delay for Signalled Lanes (pcuHr): 12.63      Cycle Time (s): 90<br>PRC Over All Lanes (%): 40.7      Total Delay Over All Lanes(pcuHr): 12.86 |                |               |                       |                              |                             |                       |                              |                                    |                     |                           |                                  |                            |                      |

**S|C|P**

**FIGURES**

