

Proposed Motorway Rest Area
M4 Junction 16, Swindon, Wiltshire

October 2023

TRANSPORT ASSESSMENT



Eddisons

REPORT

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CONTENTS

1	INTRODUCTION	1
1.1	Introduction.....	1
1.2	Report Structure	1
2	THE NEED FOR A MOTORWAY REST AREA	2
2.1	Introduction.....	2
2.2	Department for Transport (DfT) Circular 01/2022.....	2
2.3	Electric Vehicle (EV) Revolution	4
2.4	Department for Transport - The Future of Freight – a Long-Term Plan.....	5
2.5	Department for Transport – National Survey of Lorry Parking 2022 (Part one and two)...	6
2.6	Existing Motorway Service Areas and Capacity	8
2.7	HGV Layby Surveys	10
3	DEVELOPMENT SITE AND PROPOSALS	13
3.1	Existing Site	13
3.2	Existing Highway Network	13
3.3	Development Proposals	13
3.4	Proposed Vehicular Access	14
3.5	Parking Provision	14
3.6	Access by Non Car Modes	16
3.7	Signage Proposals	17
3.8	Servicing and Deliveries	17
4	TRANSPORT PLANNING POLICY	18
4.1	Introduction.....	18
4.2	National Planning Policy	18
4.3	Local Planning Policy	24
5	ACCESSIBILITY BY NON CAR MODES	26
5.1	Introduction.....	26
5.2	Access on Foot.....	26
5.3	Access by Cycle	29
5.4	Access by Bus	30
5.5	Accessibility by Rail.....	31
5.6	Accessibility Summary	32
6	PROMOTING SMARTER CHOICES VIA TRAVEL PLANS	33
6.1	Introduction.....	33
6.2	Travel Plan	33
7	TRAFFIC IMPACT ANALYSIS	34
7.1	Introduction.....	34
7.2	Scope of Assessment	34

7.3	Reference Case Traffic Flows	34
7.4	Assessment Periods	35
7.5	Committed Development	36
7.6	Base Flows	38
7.7	Trip Distribution.....	39
7.8	Proposed Development	39
7.9	Trip Types	44
7.10	Capacity Assessments	46
7.11	Slip Road Assessments.....	48
7.12	Traffic Impact Summary	49
8	ACCIDENT ANALYSIS.....	50
9	CONCLUSIONS	53

PLANS

Plan 1 – Site Location

Plan 2 – Proposed Site Layout

Plan 3 – Proposed Site Access

Plan 4 – Potential New Footway Link

Plan 5 - 7 – Swept Path Analysis

FIGURES – 1 to 28

APPENDICES

Appendix 1 – HGV Parking Survey Data

Appendix 2 – Parking Calculations

Appendix 3 - Framework Travel Plan

Appendix 4 – Local Model Validation Report

Appendix 5 – Automatic Traffic Count Data

Appendix 6 – TEMPRO Outputs

Appendix 7 – ARCADY Output – B4005 / Proposed Site Access

Appendix 8 – M4 Junction 16 – VISSIM Model Results and Forecasting Report

Appendix 9 – Merge / Diverge Diagrams

Appendix 10 – Accident Data

1 INTRODUCTION

1.1 Introduction

1.1.1 Eddisons have been instructed by Moto Hospitality Ltd to advise on the traffic and transport issues relating to an outline planning application for a new motorway rest area (MRA) on land adjacent to Junction 16 of the M4 in Swindon, Wiltshire.

1.1.2 Moto Hospitality Ltd is bringing forward plans to extend the electric vehicle charging network and address the critical local need for new HGV parking, through a new market-leading, low-carbon motorway rest area in this strategic location at Junction 16 of the M4.

1.1.3 Junction 16 is an ideal site for a highly sustainable new rest area, midway between Bristol (c.30 miles to the west) and Reading (c.40 miles to the east).

1.1.4 The report provides information on the traffic and transport planning aspects of the development proposals to assist the local planning authority in the positive determination of the forthcoming planning application.

1.2 Report Structure

1.2.1 Following this introduction, Section 2 provides a consideration of the need for the Motorway Service Area.

1.2.2 Section 3 provides a description of the existing site and the development proposals, whilst Section 4 considers relevant planning policy.

1.2.3 Section 5 provides an assessment of the accessibility of the site by non-car modes whilst Section 6 presents details of the Travel Plan Framework.

1.2.4 Section 7 discusses the traffic impact of the proposed development, whilst Section 8 provides an analysis of Road Accident Data. Lastly, Section 9 draws together the conclusions to this report.

2 THE NEED FOR A MOTORWAY REST AREA

2.1 Introduction

2.1.1 Before considering the details of the planning application, consideration has first been given to the need to provide a new facility in this location.

2.2 Department for Transport (DfT) Circular 01/2022

2.2.1 Guidance on the provision of roadside facilities for road users on motorways and all-purpose trunks roads in England is set out in the Department for Transport Circular 01/2022 'Strategic Road Network and the Delivery of Sustainable Development'. The document replaced the policies in the Department for Transport circular 02/2013 of the same title in December 2022.

2.2.2 On the matter of spacing, the document states at paras 74 and 75 that:

'74. Roadside facilities perform an important safety function by providing opportunities for the travelling public to stop and take a break during their journey. Government advice is that motorists should stop and take a break of at least 15 minutes every 2 hours.'

'75. The network of signed roadside facilities on the SRN is intended to provide opportunities to stop at intervals of approximately half an hour. However, the timing is not prescriptive as travel between services may take longer on congested parts of the SRN.'

2.2.3 Para 80 goes on to state that:

'80. It is recognised that on certain parts of the SRN and at certain times a shortage of parking facilities for HGVs can make it difficult for drivers to find safe space to stop and adhere to requirements for mandatory breaks and rests. To alleviate the shortage, the expansion of existing facilities on the SRN is likely to be needed alongside the creation of new parking sites.'

2.2.4 The document continues to provide additional guidance on freight facilities in paras 81 and 82, as below:

'81. In areas where there is an identified need ^{footnote 26}, the Company will work with relevant local planning authorities to ensure that local plan allocations and planning application decisions address the shortage of HGV parking on or near to the SRN. In these circumstances, local planning authorities should have regard to the following spacing requirements:

(i) the maximum distance between motorway facilities providing HGV parking (being service areas, rest areas or truckstops) should be no more than 14 miles; and

(ii) the maximum distance between APTR facilities providing HGV parking (being service areas or truckstops) should be the equivalent of 20 minutes driving time for HGVs.

82. Where the general spacing distances above are met but a need for HGV parking still arises, the company will support the case to address unmet demand, subject to an assessment of the safety of the proposed access or egress arrangements.'

2.2.5 As will be discussed later in this report, a critical level of need for HGV parking has been identified and the maximum distance between facilities should be no more than 14 miles. Given the current spacing on this section of the M4 between Leigh Delamere and Membury is currently 28 miles, and there is no minimum distance, the need to reduce this gap to meet HGV parking demands is paramount.

2.2.6 In relation to location, paras 86 and 87, goes on to state:

'86. However, where an on-line service area cannot be delivered due to planning, safety, operational or environmental constraints, the development of a site that shares a common boundary with the highway at a junction with the SRN, and which provides the mandatory requirements to be eligible for signing as set out in Table 1 of Annex A, is to be preferred to the continued absence of facilities.

87. The company will not support proposals for roadside facilities adjacent to a junction with a motorway that would not meet the minimum requirements for signing as shown in Table 1, as these can prevent or reduce the provision of more appropriate facilities.'

2.2.7 In this regard, the proposals will meet the minimum requirements for signing, whilst the site shares a common boundary with the Strategic Road Network (SRN).

2.3 Electric Vehicle (EV) Revolution

2.3.1 Moto Hospitality Limited are looking to bring forward an industry leading rest area which will provide 50 new EV charging spaces from Day 1, with the remaining spaces EV-ready with infrastructure in place to expand provision as demand and grid capacity grows. All HGV spaces have also been designed to accommodate electric charging infrastructure, should electric HGVs be rolled out in the future.

2.3.2 Paragraph 109 of the Circular states:

'The Rapid Charging Fund was announced in the March 2020 Budget as part of the government's commitment to roll out EV charging infrastructure. By 2035, government expects around 6,000 high-powered, open-access charge points (150-350 kW capable) to be installed across the SRN^[footnote 28]. The purpose of this programme is to ensure that there is a high-powered and open-access charging network ready to meet consumer demand for EVs ahead of need, and to enable the phase out of new conventional petrol and diesel cars/vans by 2030 and HGVs by 2040.'

2.3.3 Under current Government plans, the ban on the sale of new petrol and diesel cars has been moved back to 2035 with an aim to reach Net Zero by 2050.

2.3.4 The development proposals will provide an industry leading provision of EV charging points, fulfilling a key need on this section of the SRN. The site lies at a strategic midpoint between Bristol (c.30 miles to the west) and Reading (c.40 miles to the east) so it is considered that this site will be a particularly effective location for EV provision and will assist in reducing EV vehicle 'range anxiety' for motorists travelling on the M4 and, subsequently, fast tracking peoples transition to EV vehicles and assist with decarbonisation and net zero ambitions within Wiltshire.

2.4 Department for Transport - The Future of Freight – a Long-Term Plan

2.4.1 This document was published in June 2022 and sets out a starting point for government-industry collaboration going forward and states their shared vision for the sector. The plan establishes government and the sectors joint ambition and commitment to a long-term, cross-government and cross-modal approach to delivering the vision of the UK's freight sector.

2.4.2 Paragraph 5.10 of the document states the following in terms of overnight parking facilities:

'Planning policies should also provide for large scale transport facilities, located in areas of need, which include interchanges for rail freight. The NPPF also makes clear we already expect planning policies and decisions to recognise the importance of providing adequate overnight lorry parking facilities, taking into account any local shortages.'

2.4.3 Paragraph 5.16 of the document continues on the theme of HGV parking as follows:

'As set out in our response to the National Infrastructure Commission and in the 'Lorry Parking' joint Written Ministerial Statement published in 2021, government will take forward work to review and where appropriate amend planning practice guidance to better support freight and logistics.'

- 2.4.4** The document continues in Paragraph 5.24 to cover a number of elements which includes a 'programme of changes to the planning system'. This include the following:

'Options to ensure sufficient land is allocated to service the needs of freight and logistics including ensuring we deliver a resilient network of lorry parking facilities and ensure planning authorities recognise the land use requirements to support each stage of the supply chain.'

2.5 Department for Transport – National Survey of Lorry Parking 2022 (Part one and two)

- 2.5.1** In March 2022, DfT commissioned AECOM to undertake an audit of lorry parking within five kilometres of the strategic road network (SRN) in England. The study aims to help DfT and other public bodies understand user experience to inform and provide an evidence base for policy development on HGV parking and welfare needs of drivers.
- 2.5.2** The headline figures presented in Part one of the Study on Page 1 of the document confirms that lorry parking at on-site facilities is nearly at critical level, having reached 83 per cent utilisation level across the network.
- 2.5.3** Differences in utilisation rates from 2017 to 2022 show a 21% increase in truck stop HGV parking demand and 27% increase in demand within industrial estates. In that time the Truck Stop parking capacity has increased by 12% with an increase in utilisation from 2017 (76%) and 2022 (83%).
- 2.5.4** Page 9 sets out a utilisation categorisations, agreed with DfT in 2017, which states that an acceptable level of utilisations is less than 69%, critical is more than 85%, and serious is 70% to 84%.
- 2.5.5** The document shows that on-site truck stop capacity in the south-west is currently operating with a 64% utilisation rate, however, there is also a high amount of observed lay-by parking in the south-west. In fact, the south-west is listed as the region with the highest amount of lay-by parking, as shown in the below extract.



Figure 2.1 – National Lorry Parking Survey Extract (Figure 5.1) – Number of sites by parking site type by region

2.5.6 Nationwide there is a shortage of over 4,500 HGV parking spaces each night, forcing drivers to park in lay-bys or industrial estates with no access to proper facilities or food and drink. This shortage is also seen locally, with sites such as, Leigh Delamere, Swindon Truck Stop, Chippenham Pit Stop and Membury seeing HGV parking either at or approaching full capacity. Local HGV capacity is discussed further Section 2.6 of this report.

2.5.7 In addition to capacity shortages, the National Lorry Parking Study confirms that 55% of truck stops in the south-west are rated as 2 stars or below in terms of standards of on-site parking facilities (where 5 is excellent and 0 is basic).

2.5.8 How this compares nationally can be seen in Figure 2.2 below.

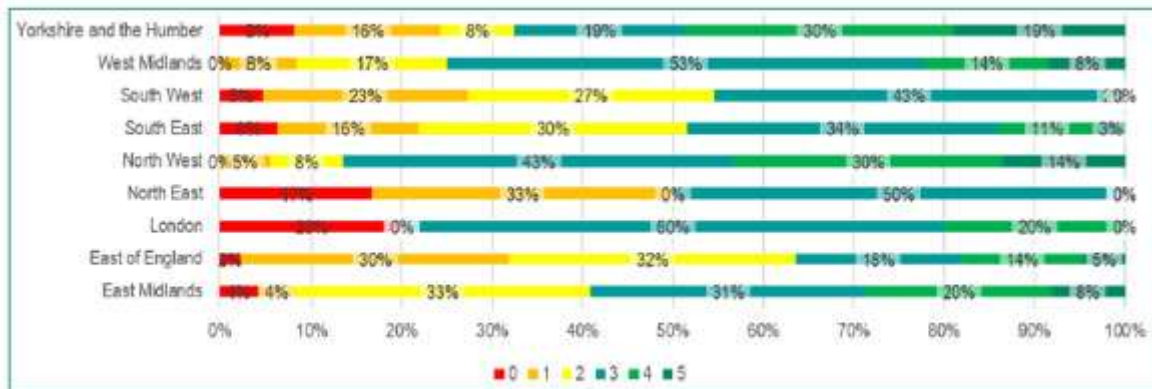


Figure 2.2 – National Lorry Parking Survey Extract (Figure 5.5) – Proportional split of on-site parking facilities by ratings by region

2.5.9 The extract shows that the south-west region is the second worst region in the country for the provision of on-site facilities rated 3 stars or above. This points to a critical need for higher quality services in the region.

2.5.10 Page 15 of the report goes on to state that:

‘the overall net effect over the last five years is that the demand for lorry parking spaces has grown faster than the supply of additional spaces’ and ‘it is clear from the engagement part of the study that poor quality facilities at parking locations, sub-standard security, and the cost of parking are all areas of great concern for the drivers’.

2.6 Existing Motorway Service Areas and Capacity

2.6.1 The proposed site is located at Junction 16 of the M4. The spacing between existing motorway services on the M4 is given in Table 2.1 below.

Existing Service Areas	Leigh Delamere	Membury
Leigh Delamere		28
Membury	28	

Table 2.1 – Location to Existing M4 Services

- 2.6.2** As can be seen from the above, the distance between the Leigh Delamere and Membury exceeds the maximum 14-mile distance set out in Circular 01/2022.
- 2.6.3** This spacing would suggest that the proposed motorway rest area is particularly well sited in relation to the surrounding highway network and in relation to existing motorway service areas. The proposed motorway rest area will fill a critical gap on the Strategic Highway Network, reducing range anxiety for EV vehicle drivers and providing much needed driver welfare opportunities for HGV drivers.
- 2.6.4** To further support the need case, survey data has been obtained from various sources to determine existing parking capacity at nearby MSA's, namely, Chippenham, Swindon Truck Stop, Leigh Delamere, Membury, Chieveley and Sutton Scotney. The full survey data is presented in **Appendix 1**.
- 2.6.5** An analysis of the data obtained from the National Lorry Parking Survey 2022 shows the following observed HGV parking capacities. These surveys were undertaken in March 2022.
- Moto Leigh Delamere Eastbound – 36/40 = 90% (Critical Capacity).
 - Moto Leigh Delamere Westbound – 45/77 = 58% (Acceptable Capacity).
 - Chippenham Pitstop – 91/95 = 96% (Critical Capacity).
 - Swindon Truck Stop – 72/72 = 100% (Critical Capacity).

2.6.6 In addition, independent HGV parking surveys were undertaken at the following sites. These surveys were undertaken in June 2022.

- Membury Westbound = 98% (Critical Capacity).
- Membury Eastbound = 74% (Serious Capacity).
- Chieveley = 83% (Serious Capacity).
- Sutton Scotney Southbound = 100% (Critical Capacity).
- Sutton Scotney Northbound = 103% (Critical Capacity).

2.6.7 As can be seen above, there are a number of motorway services in the area which are operating at serious or critical levels of capacity for HGV parking. Importantly, both Leigh Delamere eastbound and Membury Westbound, which are closest services on the approaches to the proposed site, were both observed as operating at critical capacity during the survey. This poses a significant threat to driver welfare, with drivers being unable to find a parking space when they need one.

2.6.8 Swindon Truck Stop and Chippenham Pitstop also provide HGV parking opportunities in the area. These offline services were observed as operating at critical levels of capacity during surveys carried out as part of the National Lorry Parking Survey.

2.6.9 These survey results suggest a significant need for more HGV parking in the local area and could also indicate why there is a high amount of layby and indiscriminate HGV parking in the Swindon area, as discussed in the following section.

2.7 HGV Layby Surveys

2.7.1 In order to further identify if there is a need for suitable HGV parking facilities in the vicinity of the site, Eddisons have commissioned a number of HGV parking surveys within the Swindon and Chippenham area. These surveys establish the extent of unofficial HGV parking (layby and indiscriminate industrial estate parking) occurring in the area, within circa 15km of the proposed MRA.

- 2.7.2** The HGV parking surveys were undertaken in the months of March, April, May and September 2023. The locations of surveys and the full results are provided in Appendix 1.
- 2.7.3** The aim of the surveys was to identify the current level of unofficial HGV parking currently occurring on the local and strategic highway network in the immediate catchment of the proposed site.
- 2.7.4** Known HGV parking hotspots were identified based on local knowledge, via a desktop study of the National Lorry Parking Survey, and from available online truck parking applications. Associated parking beat surveys were then undertaken at these locations between 7pm and midnight on the respective survey dates. It is considered the results provide a snap shot of unofficial overnight parking which occurs in the vicinity of the proposed site.
- 2.7.5** The survey data shows significant amounts of unmanaged and inappropriate HGV parking occurring on roads, within business parks, industrial areas and within various laybys. These parking areas do not offer appropriate welfare facilities for HGV drivers and can cause a nuisance and hazard on local roads. The results are shown in Figure 2.3 below:



Figure 2.3 – Swindon Laybys 2023 – HGV Parking Study Results

- 2.7.6** As can be seen from the graph in Figure 2.3, there is a consistently high number of HGV's (circa 72 – 92 vehicles) parking indiscriminately within the Swindon and Chippenham areas on a typical night.
- 2.7.7** As such, it can be considered there is an immediate need for up to 92 HGV parking spaces in the vicinity of the proposed truck stop on a typical night.
- 2.7.8** The surveys have shown that HGV drivers are currently forced to park in areas which aren't suitable for overnight parking, and in areas which offer little to no driver welfare facilities, such as, in laybys or on industrial estates.

3 DEVELOPMENT SITE AND PROPOSALS

3.1 Existing Site

- 3.1.1** The site is located on the outskirts of Swindon, approximately 5 kilometres to the southwest of the town centre.
- 3.1.2** The site is bound to the north by the M4 Motorway, to the south by the B4005, to the west Junction 16 of the M4 and to the east by undeveloped land.
- 3.1.3** The location of the site in relation to the surrounding area is shown on **Plan 1**.

3.2 Existing Highway Network

- 3.2.1** The site is located in close proximity to the primary route network, namely Junction 16 of the M4.
- 3.2.2** To the northwest of the site, the B4005 provides direct access to the M4 motorway at Junction 16 via a five-arm signalised roundabout. The B4005 is subject to a 40mph speed limit where it passes the site and is street lit on the approach to Junction 16 only.
- 3.2.3** Junction 16 links the M4 to the nearby towns of Swindon (to the north of the site via the A3102) and to Royal Wooten Bassett (to the southwest via the A3102 Swindon Road).
- 3.2.4** A small layby is located on the B4005 site frontage. This layby will be retained as part of the Proposed Development.

3.3 Development Proposals

- 3.3.1** The proposals would provide motorway rest area with associated amenities for up to 242 cars and 62 HGV drivers. Amenities will include showers and toilets, hot food franchises, a lounge area and retail space.
- 3.3.2** The proposed site layout is shown in **Plan 2**.

3.4 Proposed Vehicular Access

3.4.1 Vehicular access to the site would be gained via the creation of a new 55 metre ICD roundabout on the B4005.

3.4.2 The proposed site access arrangement is shown at **Plan 3**.

3.4.3 A Stage 1/2 Road Safety Audit for the proposed site access will be commissioned once the principle of the site access has been agreed with Highways Officers at Wiltshire Council. This can be subject to an appropriately worded condition.

3.5 Parking Provision

3.5.1 The DfT Circular 01/2022 states that:

‘The parking requirements for a motorway service area (MSA) are set out in Table 2 of Annex A. In calculating this, the most recent complete year data should be used to identify the peak monthly traffic flow, which should then be averaged to find the daily flow for the number of cars and light goods vehicles (A) and number of HGVs and coaches (B). The Company can advise on obtaining and interpreting traffic flows.’

3.5.2 In relation to a motorway rest area, the Circular goes on to state:

‘The parking requirements for a motorway rest area are half of those required for a MSA as set out in table 2 of Annex A, rounded up to a whole number, as necessary.’

3.5.3 In reference, to HGV parking, Table 2 of Circular 01/2022 Annex A states that HGV parking provision should be:

‘0.5% of B (total HGV’s and coaches), or 1% in areas where there is an identified need. This will be informed by regular updates to the Department for Transport’s National Lorry Parking Survey and demand assessments undertaken by the Company to ensure that appropriate evidence is available on the national picture.’

- 3.5.4 In order to calculate the parking requirements, traffic count data for M4 has been obtained from Highways England Traffic Information System (WebTRIS) database for 2022 (the most recent complete year of date).
- 3.5.5 August 2022 was identified as the peak month of 2022 and the respective total 2-way average ADT mainline flow on the M4 for August was 89,003 vehicles (78,555 light vehicles and 10,448 HGV's). The full parking provision calculations and raw data is presented in **Appendix 2**.
- 3.5.6 To ensure a robust approach to car parking requirement and to ensure that the proposed parking provision is fit for the future, the M4 mainline flows have been factored to a future assessment year of 2033 (10 years post submission in line with National Highways future year assessment). It should be noted that within Circular 01/2022, there is no requirement to make an allowance for a future year assessment to establish parking requirements, however, it is considered good practice to ensure that service area are appropriately future proofed, particularly when considering the growing demand for electric vehicle charging points and HGV .
- 3.5.7 As will be detailed in the subsequent section of this TA, a need has been identified in the Swindon area and, therefore, a minimum of 1% of the total HGV's and Coaches has been applied.
- 3.5.8 Table 3.1 below summarises the minimum parking requirements based on the parking requirements contained within in the Circular 01/2022 and the proposed parking provision on the site. The proposals allow for an increase in traffic to provide for future traffic growth.

Parking Type	MRA Parking Requirements	Proposals
Cars - 0.5% of A	226	241
HGV – 1.0% of B	60	62
Abnormal Loads – Minimum of 1	1	1
Coach – 0.1% of B	6	6
Caravan/Motorhome – 0.015% of A	7	7
Motorcycle – 0.015% of A (minimum of 10)	7	12
Disabled car users – 5% of car spaces (minimum of 5)	11	11
Disabled Caravan – 5% of spaces (minimum of 1)	1	1

Table 3.1 – Parking Requirements

3.5.9 As can be seen, the proposals provide parking provision equal to, or in excess of the minimum parking requirements contained within Circular 01/2022.

3.5.10 In addition, the proposals include up to 50 electric vehicle charging spaces for cars from day one and there is potential to increase this EV charging provision in the future, including the provision of EV charging spaces for HGV's in the near future. The future provision will be subject to demand and electricity grid capacity.

3.6 Access by Non Car Modes

3.6.1 It is not considered that a development of this type will offer significant local customer demand to warrant a dedicated public transport service, cycle lanes or footpaths on the local road network upon opening.

3.6.2 Nevertheless, the connectivity of the site by other modes of travel should be considered to ensure that unnecessary staff related trips are not induced via the strategic road network.

- 3.6.3** Indeed, as will be detailed in section 5 of the report, the site is accessible by non-car modes and will cater for the needs of the development's staff in promoting a choice of travel modes other than the private car.

3.7 Signage Proposals

- 3.7.1** The signing of the MSA from the motorway will be provided as stated within the Highways Agency document entitled 'Guide to the Signing of Roadside Facilities for Motorists on the Strategic Road Network in England'.
- 3.7.2** The location of signage internally will be provided in accordance with the standards laid down within the Traffic Signs Manual and Traffic Signs Regulations and General Directions (TSRGD) current at the time of detailed design.

3.8 Servicing and Deliveries

- 3.8.1** The site layout has been designed to safely accommodate servicing vehicles as per the good practice guidance contained within the Freight Transport Association Ltd document entitled 'Designing for Deliveries, August 1998).
- 3.8.2** Internal roads, servicing and parking areas for all vehicle types have been tested with vehicle tracking software to ensure adequacy. The tracking diagrams can be seen at **Plans 5 to 7**.
- 3.8.3** Heavy Goods Vehicle bays have been designed at 45° angles with 11 metre aisle widths. The bays measure 3.5 metres in width and 19 metres in length in accordance with the guidance stipulated within Designing for Deliveries. In addition, a circa 1.8 metre wide strip has been provided adjacent to the HGV spaces in order to cater for future electric vehicle charging infrastructure. The proposed 19 metre bay lengths and the 1.8m infrastructure strip ensures that the spaces are appropriately future proofed as they can accommodate both an increase in HGV vehicle sizes, following recent changes to Government guidance with reference to the max length of HGV's, and the provision of future fuelling infrastructure.

4 TRANSPORT PLANNING POLICY

4.1 Introduction

4.1.1 This section of the report reviews the relevant national and local transport planning policy and guidance documents in the context of the proposed development.

4.1.2 The national policy presented in this document focuses on the National Planning Policy Framework ('Framework'), which was first published in March 2012 and updated in July 2021 setting out the Government's planning policies for achieving sustainable development.

4.1.3 Consideration has also been given to the Department for Transport (DfT) Circular 01/2022 'Strategic Road Network and the Delivery of Sustainable Development (23 December 2022) and the 'The strategic road network, Planning for the future: A guide to working with Highways England on planning matters (September 2015)'.

4.1.4 Local transport planning policy has been taken from the Wiltshire Core Strategy (January 2015) and the Wiltshire Local Transport Plan (February 2011). This section will briefly outline the pertinent policies relating to the proposed development.

4.2 National Planning Policy

National Planning Policy Framework

4.2.1 The Ministry of Housing, Communities and Local Government (MHCLG) updated its National Planning Policy Framework (NPPF) in July 2021.

4.2.2 The updated version of the NPPF continues to provide guidance on the same key themes for Local Authorities when preparing Development Plans and associated Policies, with a presumption in favour of sustainable development unless any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in the framework taken as a whole.

- 4.2.3 The same principles are also emphasised in order to ensure new developments are brought forward with minimal delay through the planning process.
- 4.2.4 At the heart of NPPF is ‘a presumption in favour of sustainable development’ (Paragraph 11).
- 4.2.5 Regarding sustainable transport, the NPPF states in paragraph 105 that:
- ‘Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making.’*
- 4.2.6 In determining planning proposals, paragraph 110 of the NPPF states:
- ‘In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:*
- a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
 - b) safe and suitable access to the site can be achieved for all users;*
 - c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and*
 - d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.’*
- 4.2.7 Developments should be located and designed where practical to:

- a) *give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitate access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;*
- b) *address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*
- c) *create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;*
- d) *allow for the efficient delivery of goods, and access by service and emergency vehicles; and*
- e) *be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.*

4.2.8 Paragraph 113 of the NPPF states:

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

4.2.9 In order to satisfy this policy requirement, the application provides a Transport Assessment (TA) and Travel Plan (TP).

4.2.10 The proposed development therefore accords with the aims and objectives of the Framework.

National Planning Practice Guidelines

4.2.11 The National Planning Practice Guidance (NPPG) web-based resource was published on 6 March 2014 by the Department for Communities and Local Government, now MHCLG.

4.2.12 This resource collates relevant planning practice guidance and provides links between the NPPG and relevant legislation and guidance.

4.2.13 In terms of transportation, the guidance on 'Travel Plans, Transport Assessments and Statements in Decision-Taking' is relevant to the proposals.

4.2.14 It essentially replaces the DFT's 'Guidance on Transport Assessment' (2007) and states in Paragraph 005 that:

'Transport Assessments and Transport Statements primarily focus on evaluating the potential transport impacts of a development proposal. (They may consider those impacts net of any reductions likely to arise from the implementation of a Travel Plan, though producing a Travel Plan is not always required). The Transport Assessment or Transport Statement may propose mitigation measures where these are necessary to avoid unacceptable or "severe" impacts. Travel Plans can play an effective role in taking forward those mitigation measures which relate to on-going occupation and operation of the development.'

4.2.15 Transport Assessments and Statements can be used to establish whether the residual transport impacts of a proposed development are likely to be "severe", which may be grounds for refusal, in accordance with the National Planning Policy Framework.'

4.2.16 Paragraph 014 provides guidance on establishing the need and scope of a Transport Assessment or Statements. It states that:

'The need for, scale, scope and level of detail required of a Transport Assessment or Statement should be established as early in the development management process as possible as this may positively influence the overall nature or the detailed design of the development.'

4.2.17 Paragraph 014 goes on to state that the key issues to consider at the start of preparing a Transport Assessment are as follows:

- The planning context of the development proposal;
- Appropriate study parameters (i.e. area, scope and duration of study);
- Assessment of public transport capacity, walking / cycling capacity and road network capacity;
- Road trip generation and trip distribution methodologies and/or assumptions about the development proposal;
- Measures to promote sustainable travel;
- Safety implications of development; and
- Mitigation measures (where applicable) – including scope and implementation strategy.

4.2.18 Regarding treatment of cumulative impact of development, the NPPG also states in Paragraph 014 that:

‘It is important to give appropriate consideration to the cumulative impacts arising from other committed development (i.e. development that is consented or allocated where there is a reasonable degree of certainty will proceed within the next three years).

At the decision-taking stage this may require the developer to carry out an assessment of the impact of those adopted Local Plan allocations which have the potential to impact on the same sections of transport network as well as other relevant local sites benefitting from yet unimplemented planning approval.’

4.2.19 The analysis is in line with current guidance and conforms to the principles outlined in the NPPG.

DfT Circular 01/2022

4.2.20 The DfT Circular 01/2022 ‘The Strategic Road Network and the Delivery of Sustainable Development’ also provides advice on the assessment of development proposals, stating:

4.2.21 '47.... Development promoters are strongly encouraged to engage with the company to resolve any potential issues and maximise opportunities for walking, wheeling, cycling, public transport and shared travel, as early as possible.

48. Where a transport assessment is required, this should start with a vision of what the development is seeking to achieve and then test a set of scenarios to determine the optimum design and transport infrastructure to realise this vision....'

49. A transport assessment for consideration by the company must also consider existing and forecast levels of traffic on the SRN, alongside any additional trips from committed developments^[footnote 21] that would impact on the same sections (link or junction) as the proposed development. Assumptions underpinning projected levels of traffic should be clearly stated to avoid the default factoring up of baseline traffic. The scenario(s) to be assessed, which depending on the development and local circumstances may include sensitivity testing, should be agreed with the company; where a scenario with particularly high or low growth is proposed, this should be supported by appropriate evidence. Planned improvements to the SRN or local road network should also be considered in any assessment where there is a high degree of certainty that this will be delivered^[footnote 22].

50. An opening year assessment to include trips generated by the proposed development, forecasted growth and committed development shall be carried out to establish the residual transport impacts of a proposed development...

51. Where a transport assessment indicates that a development would have an unacceptable safety impact or the residual cumulative impacts on the SRN would be severe, the developer must identify when, in relation to the occupation of the development, transport improvements become necessary.'

4.2.22 In addition to the consideration of traffic impact from a development, DfT Circular 01/2022 also provides specific policy on roadside facilities for road users on motorways, including parking and signage requirements. This has also been fully considered in the preparation of this TA.

Highways England 'The Strategic Road Network – Planning for the Future'

4.2.23 The Highways England document 'The Strategic Road Network – Planning for the Future' sets out a guide to working with Highways England on planning matters.

4.2.24 In assessing the impact of the proposals on the strategic highway network, paragraph 101 of the document confirms the assessments that should be carried out if a full assessment of the development is required. This confirms the following:

'- the opening year, assuming full build out and occupation, and

either a date ten years after the date of registration of the associated planning application or the end of the Local Plan period (whichever is the greater).

The assessment at opening will be used for the determination of impact mitigation needs whilst the latter is necessary to determine the risk which will transfer to us.'

4.2.25 This approach has been applied to the traffic impact assessments contained within this TA.

4.3 Local Planning Policy

Wiltshire Core Strategy (January 2015)

4.3.1 The Wiltshire Core Strategy (Adopted January 2015) sets out the spatial vision, key objectives and overall principles for development in the County for a period up to 2026. The aim of the Core Strategy is to deliver new jobs and homes, whilst providing high quality design, infrastructure, environmental and community benefits.

4.3.2 The pertinent policies to consider with regards to highways and transportation are Policies CP60, CP61, CP62, CP63, CP64 and CP65.

4.3.3 The Proposed Development and associated infrastructure will provide a development that is accessible by non-car modes and the implementation of a Travel Plan will further maximise the use of alternative modes of travel to the private car for staff at the development. Given the nature of the proposals, the development will also promote sustainable travel for existing road users by meeting the growing demand for electric vehicle charging stations.

4.3.4 The location of the site is ideal for a Motorway Rest Area, with its close proximity to the M4, and it has potential to provide a high quality of design, as well as assisting in meeting the growing demands for heavy goods vehicles (HGV) parking and electric vehicle charging stations.

Wiltshire Local Transport Plan

4.3.5 As with the Core Strategy, climate change and sustainable transport are key drivers within the Wiltshire Local Transport Plan. To this extent, the Plan is based around the following overarching vision:

‘To develop a transport system which helps support economic growth across Wiltshire’s communities, giving choice and opportunity for people to safely access essential services. Transport solutions will be sensitive to the built and natural environment, with a particular emphasis on the need to reduce carbon emissions.’

4.3.6 The development proposals are considered particularly pertinent to this vision due to the opportunities it provides to assist with the decarbonisation of the Transport Network.

5 ACCESSIBILITY BY NON CAR MODES

5.1 Introduction

5.1.1 In order to accord with the aspirations of the NPPF and Local Planning Policy, any new proposals should extend the choice in transport and secure mobility in a way that supports sustainable development.

5.1.2 New proposals should therefore attempt to influence the mode of travel to the development in terms of gaining a shift in modal split towards non-car modes, thus assisting in meeting the aspirations of current national and local planning policy.

5.1.3 It is not considered that a development of this type will offer significant local customer demand to warrant a dedicated public transport service, or footpaths and cycle lanes at Junction 16 of the M4.

5.1.4 Nevertheless, the connectivity of the site by other modes of travel should be considered to ensure that unnecessary staff related trips are not induced via the strategic road network.

5.1.5 The accessibility of the proposed site has been considered by the following modes of transport:

- accessibility on foot;
- accessibility by cycle;
- accessibility by bus; and
- accessibility by rail.

5.2 Access on Foot

5.2.1 It is important to create a choice of direct, safe and attractive routes between where people live and where they need to travel in their day-to-day life. This philosophy clearly encourages the opportunity to walk whatever the journey purpose and also helps to create more active streets and a more vibrant neighbourhood.

- 5.2.2** The pedestrian infrastructure in the vicinity of the site is currently very limited, however, given the nature of the proposed land use, there will be minimal demand to warrant travel to the site by foot.
- 5.2.3** The applicant is content to explore the provision of a new footway along the site frontage on the B4005. The proposed footway is shown indicatively at **Plan 4** and will be agreed with Highways Officers during the planning application process.
- 5.2.4** This potential new footway will link the site to the existing controlled pedestrian crossing facilities at Junction 16, thus, facilitating pedestrians crossing the B4005 to reach the A3102. The existing pedestrian crossing facilities can be seen in Figure 5.1 below:



Figure 5.1 – Existing Pedestrian Crossing at Junction 16

- 5.2.5** Once on the A3102 Swindon Road, pedestrians can utilise the existing footway to access the local bus stops and the local public right of way network.

- 5.2.6** For Swindon bound bus services, pedestrians can utilise the existing pedestrian crossing on the A3102. This pedestrian crossing consists of a pedestrian refuge with associated tactile paving. The existing pedestrian refuge can be seen in Figure 5.2 below:



Figure 5.2 – Existing Pedestrian Crossing on the A3102

- 5.2.7** These links and crossing facilities provide access to the local bus stops on the A3102 and the wider footway and Public Right of Way (PRoW) network.
- 5.2.8** The surrounding PRoW network can be seen in Figure 5.3 below.



Figure 5.3 – Existing Public Right of Way Network

5.2.9 As can be seen, a number of PRoW can be accessed from the A3102. In turn, these footpaths provide links to Royal Wootton Bassett and to Swindon. It should be noted that there are no PRoW on the site itself.

5.2.10 Appropriate pedestrian crossing facilities will be provided internally within the site to link the car parking areas to the proposed amenity building.

5.3 Access by Cycle

5.3.1 An alternative mode of travel to the site could be achieved by bicycle.

5.3.2 Clearly, the new advice contained within the Highway Code, which was updated on 29th January 2022, will improve the safety of vulnerable road users including cyclists, pedestrians, and horse-riders. Most of the new advice relates to where cyclists should position themselves within the lane in various traffic conditions and motorists being required to give cyclists priority in slow moving traffic and locations where there is insufficient room for vehicles to overtake cyclists safely, allowing 1.5-metres for cyclists when overtaking them.

5.3.3 The Cycling England document 'Integrating Cycling Into Development Proposals' advises that 'For short trips, [cycle links] can give cyclists significant advantages over car users in terms of convenience and journey time... Most cycle journeys for non-work purposes and those to rail stations are between 0.5 and 2 miles, but many cyclists are willing to cycle much further. For work, a distance of 5 miles should be assumed.'

5.3.4 This distance equates to a journey of around 40 minutes based on a leisurely cycle speed of 12 kilometres per hour and would encompass Royal Wootton Bassett, Common Platt, Hook, Lydiard Millicent and Swindon.

5.3.5 National Cycle Route 45 is located approximately 2 kilometres to the north of the site in Blagrove off Franklands Road. This route links to Swindon town centre and many of its surrounding suburbs providing an opportunity to assist with commuting trips to and from the site.

5.3.6 The development proposals will provide cycle parking facilities along with lockers and changing facilities for staff.

5.3.7 The site can, therefore, be considered as being accessible by cycle.

5.4 Access by Bus

5.4.1 An effective public transport system is essential for providing large parts of the population with access to work, education, shopping, leisure and healthcare opportunities.

5.4.2 The nearest bus stops to the site are located along the A3102 Swindon Road, immediately to the west of the development site. This stops consists of a bus stop layby and pole with service information.

5.4.3 A summary of the services available from the nearest bus stops from the development site is provided in Table 5.1 below.

Service No.	Route	Monday - Friday			Saturday			Sun
		Pre 08:00	08:00-17:00	Post 17:00	Pre 08:00	08:00-17:00	Post 17:00	
55	Chippenham - Swindon	9 services	10 minutes	18 services	5 services	20 minutes	10 services	30 minutes
99	Chippenham - Malmesbury - Wootton Bassett -	2 services	60 minutes	3 services	-	60 minutes	2 services	-

Table 5.1 Existing Bus Services Operating in the Vicinity of the Site

5.4.4 As can be seen from Table 5.1, the nearest bus stops to the site provides various services throughout the day to destinations such as Chippenham, Swindon and Royal Wooten Bassett.

5.4.5 The above services operate from around 4:45am to around 23:45pm, making travel by public transport a real alternative to travelling by car for commuting trips.

5.4.6 It is therefore concluded that the site is accessible by bus for locally employed staff.

5.5 Accessibility by Rail

5.5.1 The nearest railway station to the site is Swindon station. This station can be accessed by a 15-minute bus journey on service 55 or by a 26-minute cycle. The station is managed by Great Western Railway and has 4 platforms, offering 13 services per hour to destinations such as London and Swansea.

5.5.2 This provides commuting opportunities to and from the site as part of a multi-model trip.

5.6 Accessibility Summary

5.6.1 The proposals have been considered in terms of accessibility by non-car modes for the proposed development.

5.6.2 The following conclusions can be drawn from this section of the report:

- The applicant is content to explore the provision of a new footway link on the B4005 frontage. This footway will provide links to the existing pedestrian crossing facilities at Junction 16 and the wider footway and PRow network. This will ensure that the site is accessible by foot and by public transport by linking the site to nearby bus stops.
- The site is accessible by cycle for locally employed staff.
- The bus and rail services available in the area will help to encourage employees to travel to and from the site by public transport.

5.6.3 In light of the above, it is considered that the site is accessible and will cater for needs of the development's staff and assist in promoting a choice of travel modes other than the private car.

6 PROMOTING SMARTER CHOICES VIA TRAVEL PLANS

6.1 Introduction

6.1.1 In order to encourage employee travel to the site by non-car modes, a Staff Travel Plan is proposed.

6.2 Travel Plan

6.2.1 A Framework Travel Plan is included at **Appendix 3**. The objective of the Travel Plan is the delivery of the objectives of the Framework, i.e. to encourage staff to travel to work by non-car modes of travel. The Travel Plan outlines physical and management measures that are designed to achieve this objective.

6.2.2 The effectiveness of Travel Plans in assisting the use of non-car modes for journeys to work is intrinsically linked to the accessibility of a given site by means other than the private car.

7 TRAFFIC IMPACT ANALYSIS

7.1 Introduction

7.1.1 Having established that the proposed development site is accessible by modes of travel other than the private car and would be in general accordance with transport policies, the following section considers the traffic impact of the development proposals on the local and strategic highway network.

7.2 Scope of Assessment

7.2.1 The methodology and scope of the Transport Assessment has been subject to initial scoping discussions with National Highways (NH), Wiltshire Council (WC) and Swindon Borough Council (SBC), the three highway authorities.

7.2.2 As agreed with the three authorities, the assessments will consider the traffic impact of the development proposals on the following junctions on the local highway network:

- Proposed site access / B4005 roundabout junction; and
- Junction 16 of the M4.

7.2.3 Given the proposed land use and levels of baseline traffic, it is assumed reasonable to consider the AM and PM weekday peak hours as being those with the greatest impact on the local highway network.

7.3 Reference Case Traffic Flows

7.3.1 Before considering the potential changes in traffic that would occur on the highway network as a result of the potential development, the existing levels of traffic that occur in the vicinity of the site must first be established.

7.3.2 A VISSIM model has been prepared by WSP, on behalf of NH, for Junction 16 of the M4 which will be used as the basis for the assessment of the impact of the proposals. This approach has been agreed with the three highway authorities.

- 7.3.3** The VISSIM model includes M4 Junction 16 – 2023 Reference Case flows, which will form the basis of the assessment. The model accounts for March 2023 WebTRIS data for the four slip roads, and applies pro-rata adjustments to the 2021 base model flows to reflect recent flow changes observed in February 2023.
- 7.3.4** The Local Model Validation Report (LMVR) prepared by WSP and dated April 2023 is provided within **Appendix 4** and has confirmed that the peak hours at the junction are between 7.30am and 8.30am and between 4.30pm and 5.30pm.
- 7.3.5** In addition, as requested by NH, a 14 day automatic traffic count (ATC) survey has been undertaken on the B4005 close to the proposed Site Access which will assist in the assessment of the Site Access junction. The 14 day ATC was undertaken from the 18th November 2022 to Thursday 1st December 2022 and raw data is presented in **Appendix 5**.
- 7.3.6** To determine the mainline M4 flows in the vicinity of the site, the Department for Transport WebTRIS system has been utilised. The WebTRIS system provides links to recent traffic data from MIDAS, TMU and TAME sensors on the Strategic Road Network. For the purposes of the mainline WebTRIS flows, average March 2023 data has been utilised to correspond with the latest traffic flows used to inform the VISSIM model reference case flows.
- 7.3.7** The subsequent 2023 Reference Case Flows are presented in **Figures 1** and **2** for the AM and PM peak periods respectively.

7.4 Assessment Periods

- 7.4.1** For the purpose of this TA, 2027 has been assessed as the baseline 'year of opening' along with a future year of 2033. 2033 is 10 years post application registration which considered a robust future assessment year.
- 7.4.2** These years of assessment are consistent with NH guidance which is provided in Paragraph 101 of the document *'The strategic road network Planning for the future A guide to working with Highways England on planning matters, published September 2015*.

7.4.3 Paragraph 101 advises that assessments should be undertaken for the following:

*‘ - the opening year, assuming full build out and occupation, and
either a date ten years after the date of registration of the associated planning application or the end of the Local Plan period (whichever is the greater).*

The assessment at opening will be used for the determination of impact mitigation needs whilst the latter is necessary to determine the risk which will transfer to us.’

7.4.4 The Wiltshire Local Plan has a final year of 2026. As such, the ‘ten years after the date of registration’, or a 2033 future year assessment is appropriate.

7.4.5 In order to factor the 2023 reference case traffic flows to the future assessment years of 2027 and 2033, a National Road Traffic Model growth factor was used.

7.4.6 The full TEMPRO outputs are provided within **Appendix 6**.

7.4.7 **Figures 3** and **4** show the 2027 Growthed Flows for the weekday AM and weekday PM peak periods respectively, whilst **Figures 5** and **6** show the 2033 Growthed Flows for the weekday and weekday pm periods respectively.

7.5 Committed Development

7.5.1 As part of the analysis, it is important to consider any ‘committed’ developments in the vicinity of the site which will need to be accounted for within the operational assessments.

7.5.2 The following list of committed development sites have been considered but have been found to have a negligible impact on the highway network under assessment.

#	Application reference	Address	Description of development	Status	Traffic Impact
1	19/02146 (Wiltshire)	Hay Lane, Wroughton	Demolition of 328m canopy, infill extensions of a) 39m and b) 553m, erection of building for relocated indoor play centre 598m, siting of Portakabin sales office (35m), change	Partially developed	No material impact at Junction 16

#	Application reference	Address	Description of development	Status	Traffic Impact
			of use of open sales area to outdoor play area, change of use of car park to ancillary landscape materials yard, change of use of retail area to car park and formation of coach parking area, all for use as garden centre, craft centre and family leisure attraction.		
2	S/OUT/20/0556	Land at Swindon Road in Wroughton	Erection of 104no. dwellings, traffic roundabout, roads and associated works - Means of Access, Layout and Scale not reserved - (without compliance with condition 29 of permission S/15/1750 regarding substitute drawings).	Decision: Granted Permission Wed 10 Feb 2021	No material impact at Junction 16
3	PL/2023/02129	Land to the South of A3102 and East of Royal Wootton Bassett	Outline planning application with all matters reserved except access for up to 410 dwellings, land for a primary school and pitches, public open space, landscaping and associated infrastructure.	Awaiting decision	No material impact at Junction 16

Table 7.1 Committed Development Sites Considered

7.5.3 Following a review of the traffic impact of each of the above sites, it is considered that these developments will have a minimal impact on the assessments contained within this report. It can, therefore, be robustly concluded that the application of traffic growth, with no adjustments, will ensure a robust approach to account for any minor impacts from the above sites which are generally considered to be within the limits of typical daily traffic fluctuations.

7.5.4 In addition, the Swindon Southern Town Expansion development proposals, detailed below, have also been considered. The Southern Town Expansion has approval for up to 4,500 dwellings and there have been a number of subsequent reserved matters applications.

#	Application reference	Address	Description of development	Status	Traffic Impact
4	S/13/1524	Wichelstowe Development Area	Southern Town Expansion including up to 4500 dwellings, employment, commercial, shopping, schools, open space, park and ride, roads, sewers and associated works (Variation of extent of infrastructure, phasing and affordable housing, upon S/TIME/13/1521 by the Local Planning Authority, conditions 1, 62, 66 & 67, 73, 76 - 79, 82, 85, 88 - 90, 93 and 95 - 97).	Decision: Granted Permission Fri 28 Feb 2014 – Partially developed	Yes

Table 7.2 Committed Development Sites Included

7.5.5 It is understood that currently 1090 dwellings out of the proposed 4500 dwellings have already been delivered on the Wichelstowe site and have been accounted for in the 2023 Reference Case flows. As such, an adjustment factor of -0.24 (1090/4500) has been applied to the committed development flows to account for the built out development and the level of trips which are considered to already be on network in the 2023 Reference Case scenario. It is considered that this is a robust consideration of the committed development position as it is understood that full 4500 dwellings may never be realised on the site due to changes which have occurred during subsequent reserved matters applications.

7.5.6 The corresponding committed development traffic flows are shown in **Figure 7** and **Figure 8**.

7.5.7 The committed development trips contained within Figures 7 and 8 have been added to the 2027 and 2033 Growthed flows to produce the 2027 and 2033 Base flows.

7.6 Base Flows

7.6.1 **Figures 9** and **10** show the 2027 Base flows for the weekday AM and PM peak periods, whilst **Figures 11** and **12** show the 2033 Base Flows for the AM and PM peak flows respectively.

7.7 Trip Distribution

7.7.1 The vast majority of the traffic generated by the proposed MRA will come directly from the M4 via Junction 16. The proposed distribution for motorway (M4) trips has been calculated based on a proportional split of the mainline traffic flows.

7.7.2 The resultant motorway trip distribution is shown in **Figure 13** and **14** for the AM and PM peak periods respectively.

7.7.3 During initial scoping discussions, a 5% allowance for traffic travelling along the B4005 was recommended. Subsequently officers at Wiltshire considered this to be slightly high, however, they also suggested an allowance should also be made for local traffic travelling to and from Royal Wootton Bassett on the A3012. As such, a 7% allowance has been made for Local Road Trips and this has been distributed to both the B4005 and the A3012 based on the current patterns of traffic on the local road network.

7.7.4 Therefore, the proposed distribution for local road trips, based on the current pattern of traffic on the local road network, is shown in **Figures 15** and **16** for the AM and PM peak periods respectively.

7.8 Proposed Development

7.8.1 As previously stated, the development proposals will provide motorway rest area with associated amenities.

7.8.2 MRA's are typically not considered to be a trip generator but primarily an attractor of a proportion of existing passing traffic.

7.8.3 During pre-application discussions, it was agreed that the trip generation is established by reference to traffic flows from two Motorway Service Areas (MSA) located either side of the site on the M4 .

7.8.4 These are as follows:

- Membury – located east of the site between Junctions 14 and 15 of the M4.

- Leigh Delamere – located west of the site between Junctions 17 and 18 of the M4.

7.8.5 Both of these sites are ‘online’ MSAs and, as such, would exhibit much higher turn-in rates than off-line facilities, such as, the proposed MRA.

7.8.6 In order to establish the traffic generation and trip rates for Membury and Leigh Delamere, arrival and departure data at the services has been utilised. This approach has been agreed with the three highway authorities as part of pre-application discussions.

7.8.7 The trip rates for cars and HGV/coaches has been established from Webtris to calculate a trip rate per car and HGV/coach parking space. These trip rates have then been averaged and applied to the MRA proposals. This will be robust on two counts, firstly these are on line MSAs and generate higher levels of traffic and secondly, the Webtris data will include traffic that enters the MSAs and then leaves without staying or parking which will increase the trip rates.

7.8.8 Webtris data was analysed for Membury and Leigh Delamere Services and August 2019 was found to be the month with the highest average annual daily traffic in the most recently available pre-Covid 19 period.

7.8.9 The arrival and departure data for a typical weekday was then established from the August data for both Light vehicles (Cars and LGV’s) and HGV’s:

7.8.10 Table 7.3 below presents the observed vehicle movements for the AM and PM peak hours associated with Membury services.

Period	Existing Trips for Membury Services					
	Arrivals			Departures		
	Cars	HGV's	Total PCU's	Cars	HGV's	Total
AM Peak	447	146	738	447	146	738
PM Peak	593	194	981	593	194	981

Table 7.3 Existing Vehicle Movements – Membury Services

7.8.11 Membury services currently offers 583 parking spaces for car users and 132 parking spaces for HGVs. Table 7.4 summarises the associated Trip Rates.

Period	Trips Rate per Parking Space – Membury Services			
	Arrivals		Departures	
	Cars	HGV's	Cars	HGV's
AM Peak	0.766	1.104	0.766	1.104
PM Peak	1.018	1.467	1.018	1.467

Table 7.4 Observed Trip Rates – Membury Services

7.8.12 Table 7.4 below presents the observed vehicle movements for the AM and PM peak hours associated with Leigh Delamere services.

Period	Existing Trips for Leigh Delamere Services					
	Arrivals			Departures		
	Cars	HGV's	Total PCU's	Cars	HGV's	Total
AM Peak	478	105	688	478	105	688
PM Peak	623	137	897	623	137	897

Table 7.5 Existing Vehicle Movements – Leigh Delamere Services

7.8.13 Leigh Delamere services currently offers 620 parking spaces for car users and 158 parking spaces for HGVs. Table 7.6 summarises the associated Trip Rates.

Period	Trips Rate per Parking Space – Leigh Delamere Services			
	Arrivals		Departures	
	Cars	HGV's	Cars	HGV's
AM Peak	0.771	0.664	0.771	0.664
PM Peak	1.005	0.866	1.005	0.866

Table 7.6 Observed Trip Rates – Leigh Delamere Services

7.8.14 An average trip rate was then established from the Membury and Leigh Delamere trip rates. Table 7.7 below presents the proposed average trip rates for the AM and PM peak hours associated with Membury and Leigh Delamere services.

Period	Trips Rate per Parking Space			
	Arrivals		Departures	
	Cars	HGV's	Cars	HGV's
AM Peak	0.769	0.844	0.769	0.844
PM Peak	1.011	1.166	1.011	1.166

Table 7.7 Proposed Trip Rates per Parking Space

7.8.15 As previously stated, the proposed services will provide 241 parking spaces for car users, 62 parking spaces for HGVs, 6 spaces for coaches and 7 for caravans. For the purposes of the establishing a trip generation, coaches have been counted as HGV spaces and caravans as light vehicles as this corresponds with WebTris vehicle classification. Table 7.8 summarises the associated Trip Rates based on a total of 248 light vehicle spaces (including caravans) and 68 HGV spaces (including coaches).

7.8.16 A summary of these trip rates and the likely level of trips that would occur as a result of the proposed development is included in Table 7.8, below.

Period	Proposed Services Trips					
	Arrivals			Departures		
	Cars	HGV's	Total	Cars	HGV's	Total
AM Peak	191	60	251	191	60	251
PM Peak	251	79	330	251	79	330

Table 7.8 Proposed Development Trip Rates and Trips

7.8.17 As can be seen from the above table, the proposed development is predicted to result in 502 two-way total vehicle trips during the weekday AM peak and 660 two-way trips total vehicle trips during the weekday PM peak period.

7.9 Trip Types

7.9.1 The proposed service area will be a facility predominantly for vehicles travelling along the M4, with drivers diverting into the services before resuming their journey.

7.9.2 However, whilst the levels of local trips are likely to be small, these have been considered as part of the analysis.

7.9.3 In this regard, reference has been made to recent questionnaire surveys undertaken at the Ferrybridge MSA (Moto), which included the following questions to establish MSA customer's origin and destination:

- 'Where have you just come from? (Town or City of last stop)' and;
- 'Where are you going to? (Town or City of next stop)'.

7.9.4 For the purpose of the analysis, it is assumed that an origin or destination within 3 miles of the MSA would represent a local trip, i.e. at the start of a journey or at the end of a journey. In the case of Ferrybridge, this includes the built-up areas of Knottingley, Pontefract and parts of Castleford.

7.9.5 Table 7.9 below summarises the questionnaire results in this regard.

Ferrybridge Total Interviewees	No. of Interviewees with Origin within 3 miles	No. of Interviewees with Destination within 3 miles	% of Interviewees with 3 miles
567	12	10	3.8%

Table 7.9 Ferrybridge Survey Results

7.9.6 As can be seen from the above, 3.8% of the interviewees can be considered to be carrying out local trips. As such, and in light of the above questionnaire results, it is considered that a figure of 7% represents a robust figure for local trips to the MRA.

7.9.7 For the avoidance of doubt, the local trips would form part of the total number of trips to the MRA, not over and above; therefore, Table 7.10 and 7.11 provide the proportion of the M4 / local road trips for the AM and PM peak hours respectively.

Period	Proposed Services Trips – AM Peak					
	Arrivals			Departures		
	Cars	HGV's	Total	Cars	HGV's	Total
M4 Trips (93%)	177	56	233	177	56	233
Local Road Trips (7%)	13	4	18	13	4	18
Total	191	60	251	191	60	251

Table 7.10 Proposed Development Vehicle Trips – AM Peak

Period	Proposed Services Trips – PM Peak					
	Arrivals			Departures		
	Cars	HGV's	Total	Cars	HGV's	Total
M4 Trips (93%)	233	74	307	233	74	307
Local Road Trips (7%)	18	6	23	18	6	23
Total	251	79	330	251	79	330

Table 7.11 Proposed Development Vehicle Trips – PM Peak

7.9.8 The methodology used to calculate the increase in trips provides a robust estimate of the likely peak hour trips that would occur on the highway network as a result of the proposed development.

7.9.9 Based on the distributions shown on Figures 13 to 16, Figures 17 to 24 show the proposed development trips for the AM and PM Peak periods respectively.

- 7.9.10** The proposed development trips shown in Figures 17 to 24 are split as follows:
- **Figures 17 and 18** – Motorway light vehicle trips calculated at 93% of the total trips.
 - **Figures 19 and 20** – Local road trips calculated at 7% of the total trips.
 - **Figures 21 and 22** – Total vehicle trips calculated at 100%. The number of HGV's have been converted to PCU's, the unit of assessment (HGV PCU Value of 2.3), for use in traffic impact assessments.
- 7.9.11** The total proposed development trips shown in Figures 21 and 22 have been added to the 2027 Baseline Flows to derive 2027 'With Development' Flows shown in **Figures 23 and 34**.
- 7.9.12** Similarly, **Figures 25 and 26** show the 2033 'With Development' Flows for the AM and PM Peak periods respectively.
- 7.9.13** Capacity assessments of Junction 16 and the B4005/Proposed Site Access roundabout have been undertaken using the derived 2027 and 2033 traffic flows.

7.10 Capacity Assessments

B4005 / Proposed Site Access

- 7.10.1** In order to carry out capacity assessments of the B4005/Proposed Site Access roundabout, reference has been made to the ARCADY module of the industry standard Junctions 9 software.
- 7.10.2** When interpreting ARCADY results, a Ratio of Flow to Capacity (RFC) of 0.85 is the perceived theoretical capacity of the junction, although a value of 1.00 represents the point of saturation where no actual available capacity remains. Maximum Queue Lengths (Max Q, in vehicle numbers) are also presented for the 2033 'With Development' scenarios.

7.10.3 Table 7.12, below, summarises the results of the 2033 'With Development' scenario, based on the proposed roundabout layout. The ARCADY output is provided in full at **Appendix 7**.

Arm	2033 With Development Flows			
	Weekday AM		Weekday PM	
	RFC	Max Q	RFC	Max Q
B4005 (W)	0.84	6	0.51	1
Proposed Site Access	0.37	1	0.34	1
Farm Access	0.00	0	0.00	0
B4005 (E)	0.53	1	0.84	5

Table 7.12 Summary of ARCADY Results for A6055/Proposed Site Access Roundabout

7.10.4 As can be seen in the above table, even with the robust assumptions set out earlier in this Chapter, the proposed site access junction is forecast to operate within its theoretical capacity in the AM and PM 'With Development' scenarios and can therefore adequately accommodate the traffic forecast to be generated by the proposed development and potential future increase in traffic at the junction.

M4 Junction 16

7.10.5 In order to consider the operation and impact upon Junction 16 of the M4, a VISSIM microsimulation model has been developed. The VISSIM model has been prepared by WSP, on behalf of NH, for Junction 16 of the M4. This model will be used as the basis for the assessment of the impact of the proposals.

7.10.6 The VISSIM model was developed by WSP for the year of 2021 and revised in 2023. Details relating to the refinement of the model can be found in the Local Model Validation Report (LMVR) contained in Appendix 4.

- 7.10.7** Subsequently, the validated model has been used to test the impact of prospective development proposals in the 2027 and 2033 assessment scenarios presented in this report. The modelling has been undertaken by Vectos Microsim, a firm of expert traffic modellers. The assessments considers the traffic flows, growth factors, trip generation and distribution as detailed earlier in this report.
- 7.10.8** Micro-simulation is especially powerful in congested urban networks with junctions located in close proximity as it reflects the impact of queues blocking back through several junctions of various types. Traditional individual junction modelling approaches (e.g. LINSIG, Arcady, Transyt) struggle to replicate these effects over a wide network area.
- 7.10.9** The Junction 16 VISSIM results and the corresponding forecasting report is provided within **Appendix 8**.
- 7.10.10** The results revealed that the forecast impact of the development proposals on average delay per vehicle at Junction 16 of the M4 is negligible at around 4-5 seconds in the AM peak and 3-4 seconds in the PM peak.
- 7.10.11** The forecast impact of the development proposals on journey times is also considered minor, with minor journey time increases observed on the A3102 travelling southbound through the junction in the AM peak and on the B4005 approach during the PM peak.
- 7.10.12** The overall summary of VISSIM modelling concluded that the development is forecast to have a negligible impact on the highway network.

7.11 Slip Road Assessments

- 7.11.1** In order to inform NH of the likely effect on the operation of the M4 Junction 16, assessments have been prepared for the merge and diverge operation compared to the design standard for motorways set in TD22/06 of the Design Manual for Roads and Bridges (DMRB).
- 7.11.2** The merging/diverging and mainline traffic flows have been plotted onto the figures using a CAD based layout for accuracy. These are provided at **Appendix 9**.

7.11.3 The analysis does not identify any material locations in either the weekday AM, weekday PM peak periods when the addition of traffic would detrimentally affect the level of service which the M4 slip roads would otherwise provide.

7.11.4 Accordingly, it should properly be concluded that there is no material impact from the proposed development on the Junction 16 slip roads.

7.12 Traffic Impact Summary

7.12.1 In summary, the capacity assessment undertaken as part of this traffic impact analysis have demonstrated the following:

- The proposed site access junction off the B4005 has been designed to accord with highway design standards and will be the subject of a formal Stage 1 /2 Road Safety Audit once the geometric elements of the design have been agreed to the three authorities' satisfaction. This can be subject to an appropriate planning condition.
- The proposed site access is forecast to operate within its theoretical capacity in the future year assessments and will have sufficient capacity to accommodate the proposed development traffic.
- It is considered that Junction 16 VISSIM model has been robustly validated against queue survey data and against journey time data.
- The forecast impact of the development proposals on average delay per vehicle at Junction 16 of the M4 is negligible at around 4-5 seconds in the AM peak and 3-4 seconds in the PM peak.
- The forecast impact of the development proposals on journey times is considered minor, with minor journey time increases observed on the A3102 travelling southbound through the junction in the AM peak and on the B4005 approach during the PM peak.
- There are no forecast issues with the M4 slip roads and no slip road queues exceed the available slip road lengths.

7.12.2 It is therefore concluded that the development proposals will result in a minimal impact on the local highway network.

8 ACCIDENT ANALYSIS

8.1.1 Accident statistics confirm that numerous accidents have occurred along the motorway mainline sections of the M4 in the vicinity of the development site. The proposed MRA is not predicted to generate any additional traffic on the motorway network, rather its purpose is to provide safety and welfare opportunities for those already travelling on the motorway network. As such, the provision of the proposed MRA will assist in reducing accidents on the M4 mainline.

8.1.2 It is, however, acknowledged that the proposals will increase turning movements at Junction 16 of the M4. As such, Stats19 accident data has been obtained from NH for the most recent 5 year data period (2017 – 2021). The accident data covers Junction 16 of the M4, along with the M4 mainline and its associated slip roads.

8.1.3 A summary of the accident statistics at the area under consideration is provided below. The full accident data is contained within **Appendix 10**.

B4005 in the vicinity of the Proposed Site Access

8.1.4 The data supplied by National Highways shows that no accidents have occurred along the B4005 within the 5-year study period.

M4 Junction 16

8.1.5 The data provided confirms that eleven accidents have occurred at the M4 Junction 16 roundabout within the 5 year study period. Ten of these accidents were classed as slight in severity and one was classified serious. The causality assessment of these accidents is detailed below in Table 8.1.

Date	Severity	Light Conditions	Weather	Road Conditions	Manoeuvre
30/08/2019	Slight	Daylight	Unknown	Dry	Both vehicles moved off at the lights, V1 (Van) collided nearside of V2 and then drove off.
25/01/2020	Slight	Darkness, Streetlights lit	Fine, without high winds	Dry	Vehicle slowed down for traffic lights, vehicle behind collided into the rear.

26/04/2019	Serious	Daylight	Raining, With high winds	Wet or Damp	Vehicle moved off at the lights in the wrong lane, resulting in a collision with another vehicle.
22/09/2021	Slight	Daylight	Fine, without high winds	Dry	Vehicle slowed down for traffic lights, vehicle behind failed to notice and collided into the rear.
27/03/2020	Slight	Daylight	Fine, without high winds	Dry	Vehicle runs a red light and collides on the offside of another vehicle.
15/09/2021	Slight	Daylight	Fine, without high winds	Dry	Vehicle disobeyed red traffic light causing another vehicle to collide into the front nearside.
15/09/2021	Slight	Darkness, Streetlights lit	Fine, without high winds	Dry	Vehicle has entered roundabout on green light when another vehicle has collided front causing the vehicle to spin and impact crash barrier.
05/05/2017	Slight	Darkness, Streetlights lit	Fine, without high winds	Dry	Vehicle (V1) cut across front of another vehicle to leave roundabout, hitting the vehicle (V2). V2 was then pushed into another vehicle, before leaving road across island and back into C/Way, hitting another vehicle.
10/12/2018	Slight	Darkness, Streetlights lit	Fine, without high winds	Dry	Motorcyclist looked at the wrong traffic light and thought they had the green light and moved off, before colliding into another vehicle.
14/02/2018	Slight	Darkness, Streetlights Unlit	Raining, Without high winds	Wet or Damp	Vehicle crossed junction where traffic lights and streetlights were not functioning before colliding with another vehicle mid junction.
14/06/2020	Slight	Daylight	Fine, without high winds	Dry	Vehicle goes through traffic lights to beat the green light and collides into the rear of a pedal cycle.

Table 8.1 Accident Summary at the M4 Junction 16 Roundabout

8.1.6 Considering the volume of traffic at Junction 16 and the severity of the accidents that have occurred, it is considered that Junction 16 does not have an unduly poor safety record. A review of the causal factors reveal that the majority of the accidents can be attributed to driver error.

- 8.1.7** It should also be noted that the signal arrangement to the south of Junction 16 is relatively new, with construction completed on the highway works in circa 2019. As such, there would be an expected bedding down period where accidents are likely to increase due to drivers not being familiar with the new junction arrangement. This could account for some of accidents which have occurred at the junction post 2019.
- 8.1.8** Overall, the accidents statistics do not point to any particular highway safety issues and there is no reason why this would change as a result of the Proposed Development.

9 CONCLUSIONS

9.1.1 Eddisons have been instructed by Moto Hospitality Ltd to advise on the traffic and transport issues relating to an outline planning application for a new motorway rest area on land adjacent to Junction 16 of the M4 in Swindon, Wiltshire.

9.1.2 Moto Hospitality Ltd is bringing forward plans to extend the electric vehicle charging network and address the critical local need for new HGV parking, through a new market-leading, low-carbon rest area in this strategic location at Junction 16 of the M4.

9.1.3 The proposals will provide a motorway rest area comprising a new amenity building with parking for up to 242 light vehicles, 62 HGV's, 6 coaches and 7 caravans in accordance with Circular 01/2022. 50 EV charging spaces will be provided from day 1, with the remaining spaces EV-ready. A private petrol filling station and HGV petrol filling station facilities are also proposed to cater for traditional fuelling. All HGV spaces have been designed to accommodate electric charging infrastructure, should electric HGVs become more common in the future.

9.1.4 A number of conclusions can be drawn from the report, namely:

- The proposed development will be accessed by safe and efficient vehicular access arrangements;
- The report has demonstrated that the proposed development would be sufficiently accessible for staff to travel to the site by non-car travel modes of travel, such as, walking, cycling and public transport;
- The development will be supported by a Staff Travel Plan;
- The traffic impact of the proposals is not considered severe and can be accommodated on the local highway network and at Junction 16 of the M4.

- The analysis does not identify any material locations where the addition of traffic related to the development would detrimentally affect the level of service that the M4 would otherwise provide.

9.1.5 It can therefore be concluded that the proposals are acceptable in highway terms.

PLANS



SITE LOCATION

CLIENT:

MOTO

DRAWING TITLE:

**MOTO SWINDON
SITE LOCATION**

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340 Deansgate
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Email: info@crofts.co.uk
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Web: www.eddisons.com/services/transport-planning

DRAWING NUMBER:

3728-01

REVISION:

-

DRAWN:

LG

DATE:

24.08.23

CHECKED:

MTC

DATE:

24.08.23

SCALES:

NTS @ A4

Eddisons

GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED
2. ALL LEVELS ARE IN METRES UNLESS OTHERWISE STATED
3. DIMENSIONS ARE NOT TO BE SCALED FROM THE DRAWING
4. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT EDITION OF THE BUILDING REGULATIONS 1991 (INCLUDING AMENDMENTS) AND ALL RELEVANT BRITISH STANDARDS/CODES OF PRACTICE
5. CONTRACTOR IS RESPONSIBLE FOR THE CORRECT SETTING OUT OF THE WORKS ON SITE, ALL DIMENSIONS TO BE CHECKED PRIOR TO FABRICATION OF MATERIALS
6. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS AND SPECIFICATIONS

PARKING NUMBERS

Cars - 241 spaces*
HGV Spaces - 62 spaces
HGV AL - 1 spaces
Coach - 6 spaces
Caravan - 7 spaces
Motorcycles - 12 spaces

* all spaces sized for EV provision

Landscaping

 Hard standing

 Biodiversity Enhancements

G	Drainage works	06/09/23	EC	TS	TS
F	Biodiversity Enhancements	04/09/23	EC	TS	TS
E	Tractor access and red line updated	30/08/23	EC	TS	TS
D	Red line amended to include roadworks	25/07/23	TS	TS	TS
C	Red line boundary amended	18/07/23	EC	TS	TS
B	Issue for information	17/07/23	EC	TS	TS
A	Issue for EIA screening	June 2023	EC	TS	TS
REV	DESCRIPTION	DATE	BY	CHK	APRV



MOTO HOSPITALITY

SWINDON SERVICES
PROPOSED LAYOUT PLAN
(ILLUSTRATIVE)

PLANNING

DRAWING STATUS

DRAWN EC | CHECKED EC

APPROVED TS | DATE MAY 2023

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SCALE

M49_101

DRAWING NUMBER

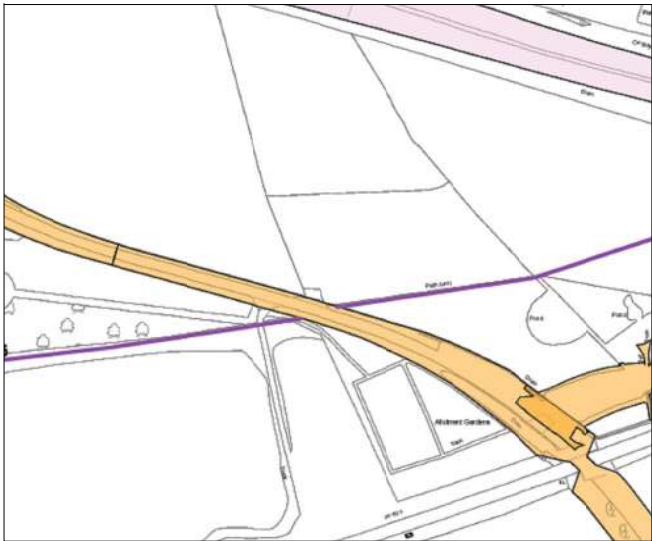
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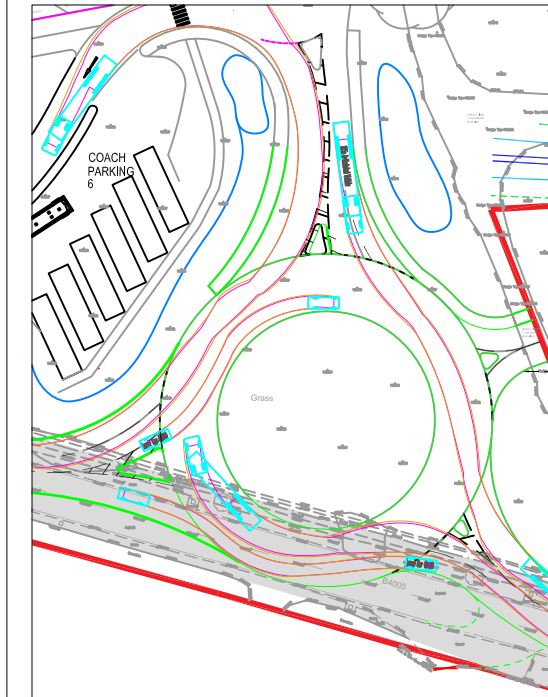
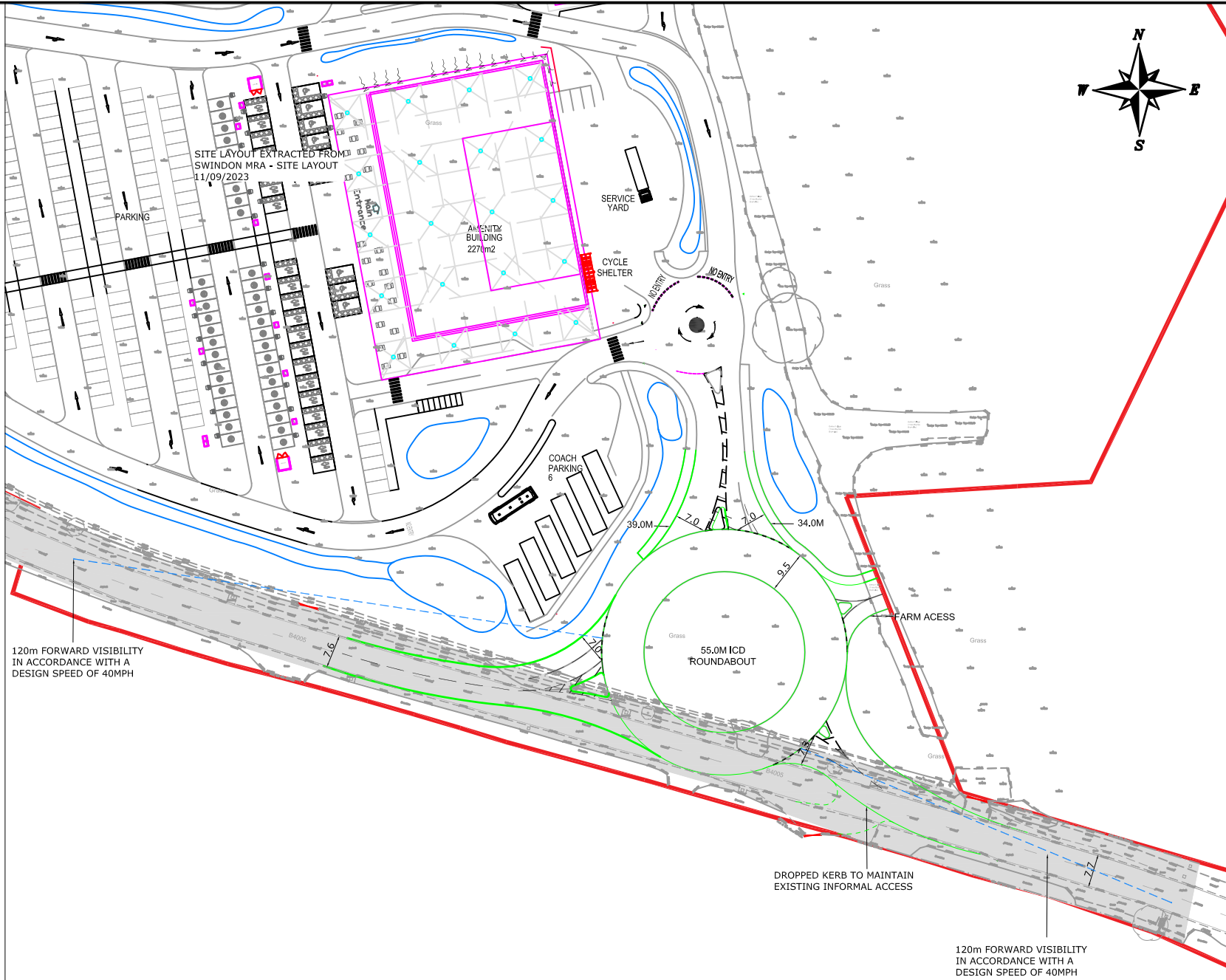
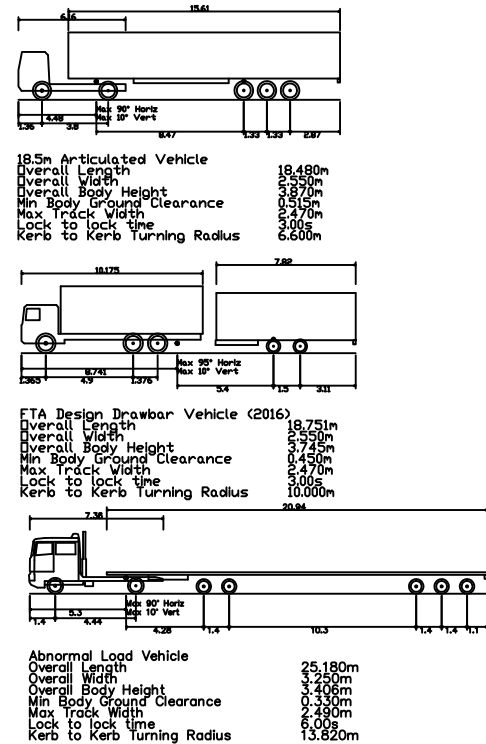
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IN ACCORDANCE WITH A
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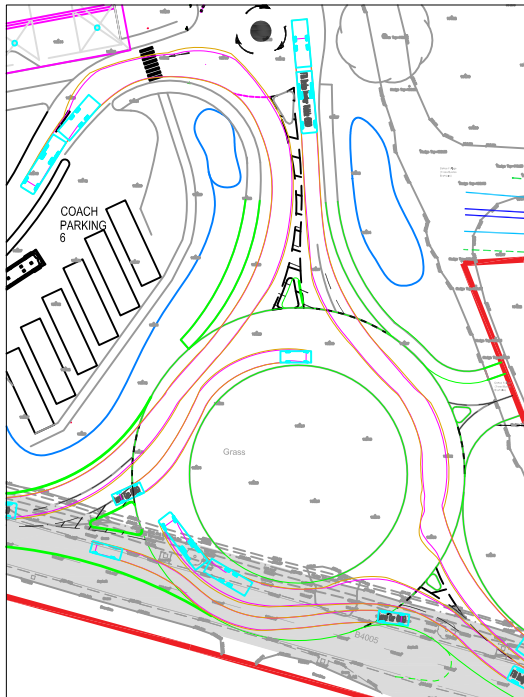
NORTH SOUTH AERIAL VIEW



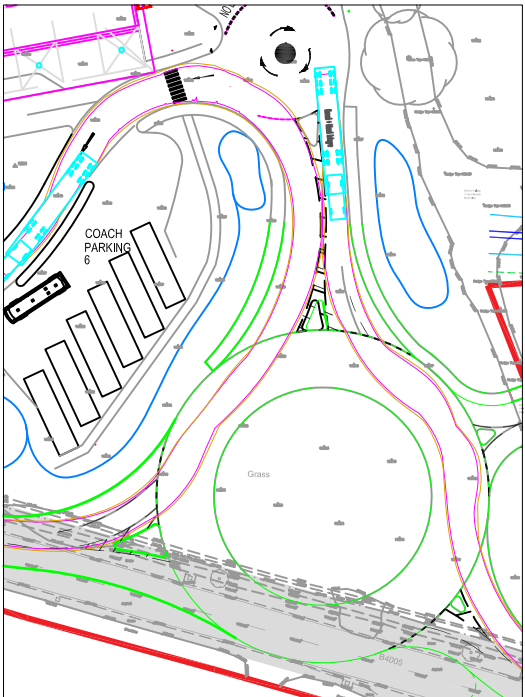
ADOPTED HIGHWAY PLAN



18.5M FTA



DRAWBAR VEHICLE



ABNORMAL LOAD VEHICLE

NOTES

PLAN 3

THIS IS NOT A CONSTRUCTION DRAWING AND IS FOR INDICATIVE PURPOSES ONLY.
THE DRAWING WILL BE SUBJECT TO CHANGE FOLLOWING LOCAL AUTHORITY REVIEW AND CONFIRMATION OF PUBLIC HIGHWAY AND THIRD PARTY LAND BOUNDARIES.

- INDICATIVE SITE BOUNDARY
- DENOTES NEW KERBS
- EXISTING ADOPTED HIGHWAY

LOCAL AUTHORITY: WILTSHIRE COUNCIL
TOTAL AREA OF SITE: 7.27Ha

E D C B	FOR SUBMISSION DROPPED KERBS AT EASTERN ARM ADDED LOCAL AUTHORITY UPDATED DRAINAGE DITCH SHOWN & SITE LAYOUT UPDATED	MTC HL HL	MTC JC MTC MC	OCT 23 SEP 23 SEP 23 SEP 23
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT:
MOTO

PROJECT:
MOTO SWINDON

DRAWING TITLE:
PROPOSED SITE ACCESS PLAN

SCALES:
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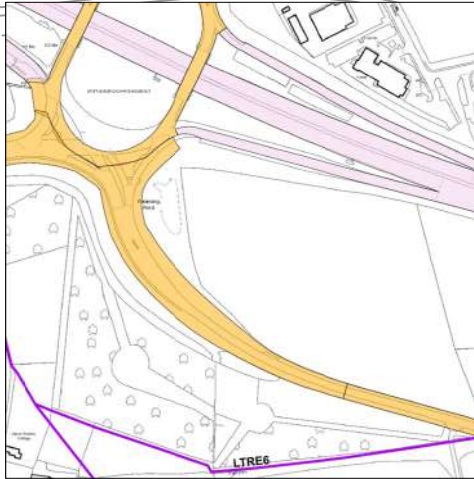
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DRAWING NUMBER:	3728-F04	REVISION:	E
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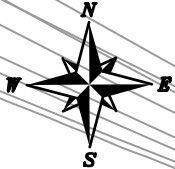


NORTH SOUTH AERIAL VIEW



ADOPTED HIGHWAY PLAN

SPITTLEBOROUGH ROUNDABOUT



NOTES

PLAN 4

THIS IS NOT A CONSTRUCTION DRAWING AND IS FOR INDICATIVE PURPOSES ONLY.
THE DRAWING WILL BE SUBJECT TO CHANGE FOLLOWING LOCAL AUTHORITY REVIEW AND CONFIRMATION OF PUBLIC HIGHWAY AND THIRD PARTY LAND BOUNDARIES.

- INDICATIVE SITE BOUNDARY
- EXISTING ADOPTED HIGHWAY

LOCAL AUTHORITY: WILTSHIRE COUNCIL
TOTAL AREA OF SITE: 7.27Ha

D	INDICATIVE FOOTWAY ADDED	MTC	MTC	OCT 23
C	LOCAL AUTHORITY UPDATED	HL	MTC	SEP 23
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT:
MOTO

PROJECT:
MOTO SWINDON

DRAWING TITLE:
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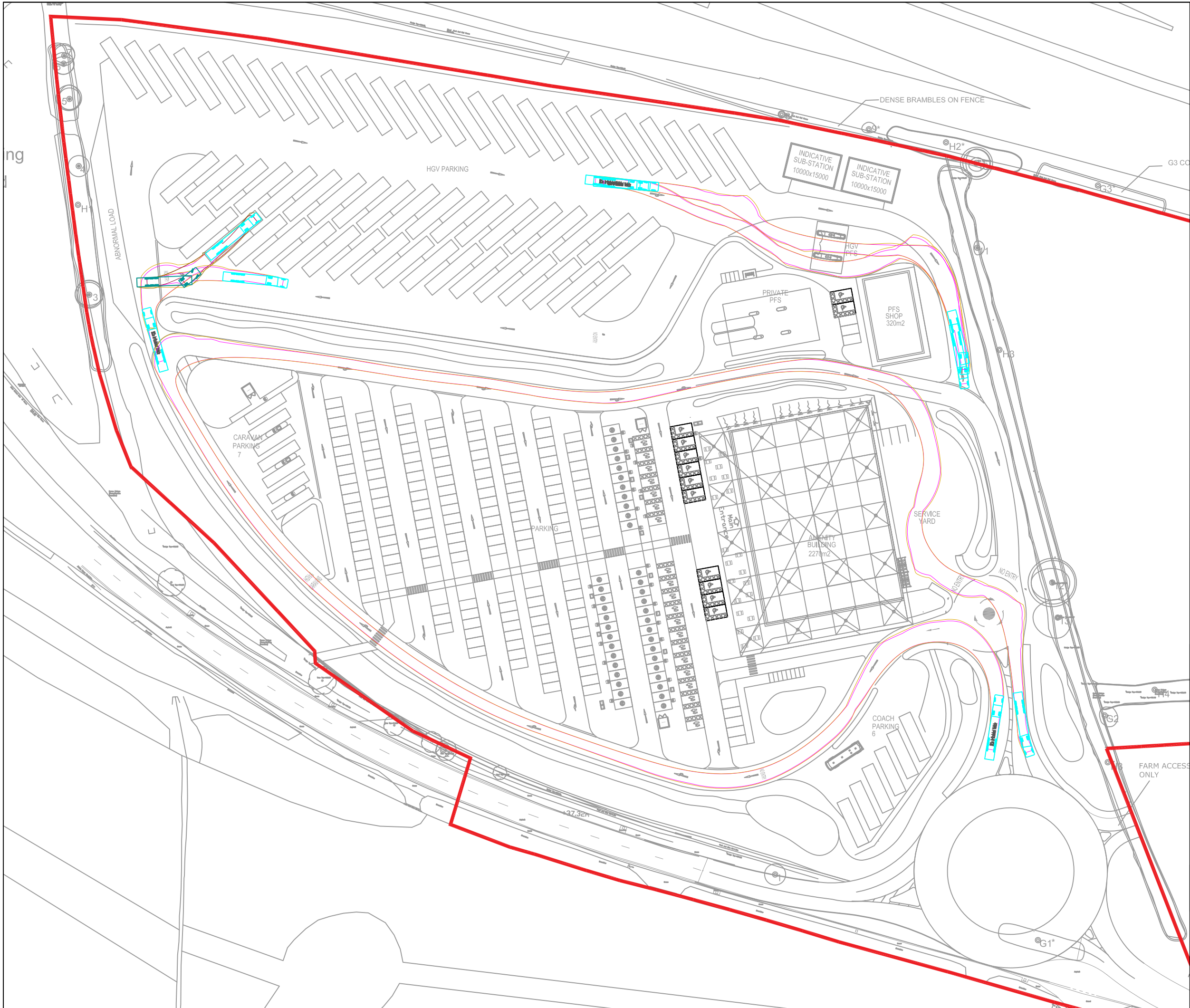
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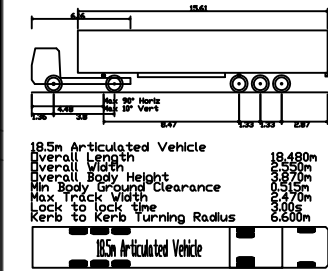
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NOTES

PLAN 5



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MOTO

PROJECT:

MOTO, SWINDON

DRAWING TITLE:

SWEPT PATH ANALYSIS

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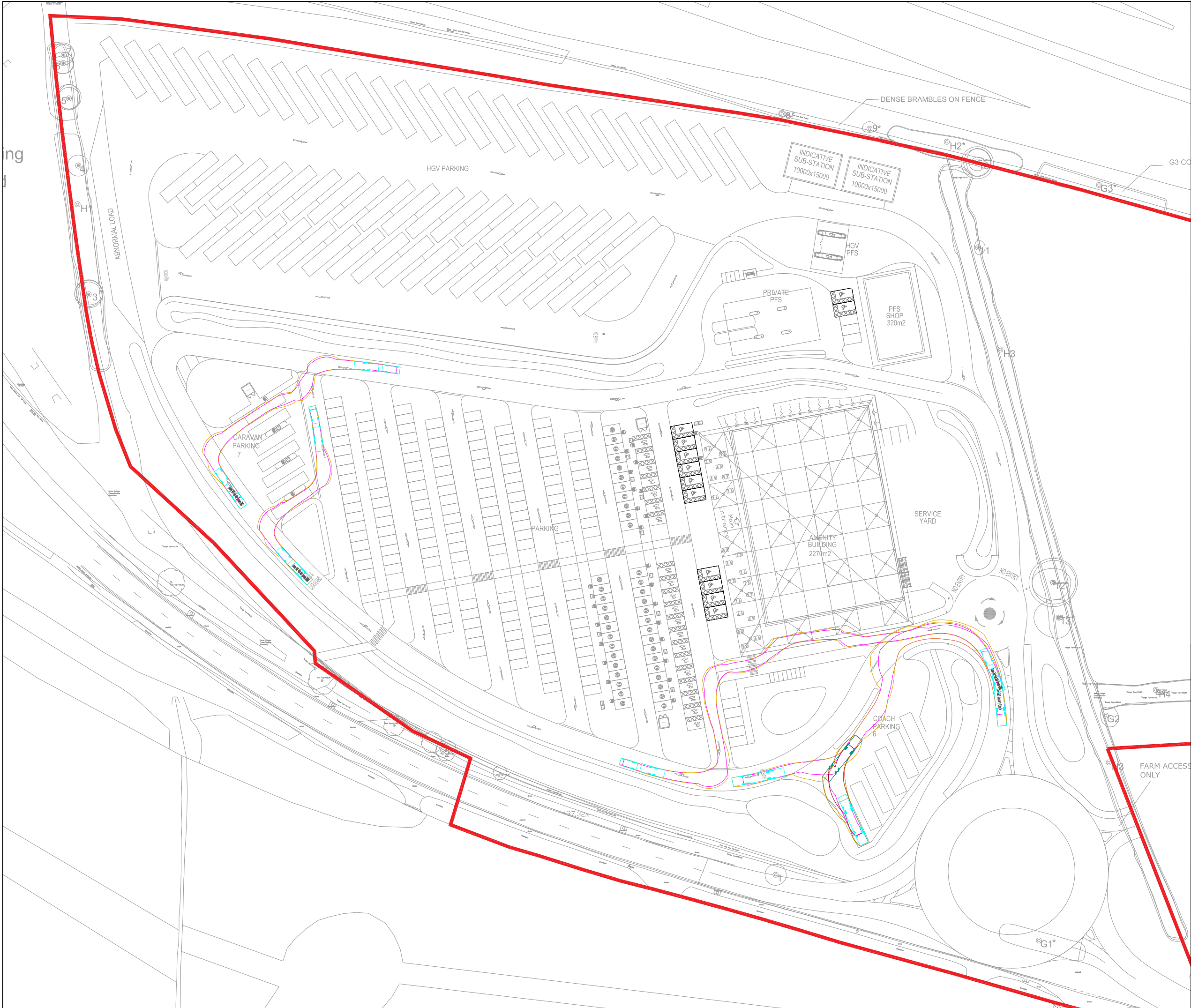
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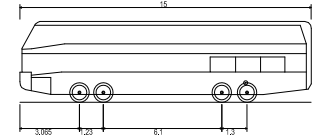
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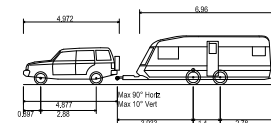


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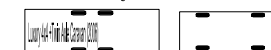
PLAN 6



15m 6WS Luxury Coach
Overall Length 15.000m
Overall Width 2.500m
Overall Body Height 4.157m
Min Body Ground Clearance 0.397m
Track Width 2.500m
Lock to lock time 5.00s
Wall to Wall Turning Radius 12.490m



Luxury 4x4 + Twin Axle Caravan (2006)
Overall Length 12.990m
Overall Width 2.286m
Overall Body Height 2.524m
Min Body Ground Clearance 0.251m
Max Track Width 2.130m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 5.800m



REV	DESCRIPTION	DATE	DRAWN	CHECKED
A	REVISED SITE BOUNDARY	MTC	MTC	OCT 23

REV	DESCRIPTION	DATE	DRAWN	CHECKED
A	DETAILS	MTC	MTC	OCT 23

CLIENT: MOTO

PROJECT: MOTO, SWINDON

DRAWING TITLE: SWEPT PATH ANALYSIS

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DRAWN: GM CHECKED: MTC DATE: OCT 23

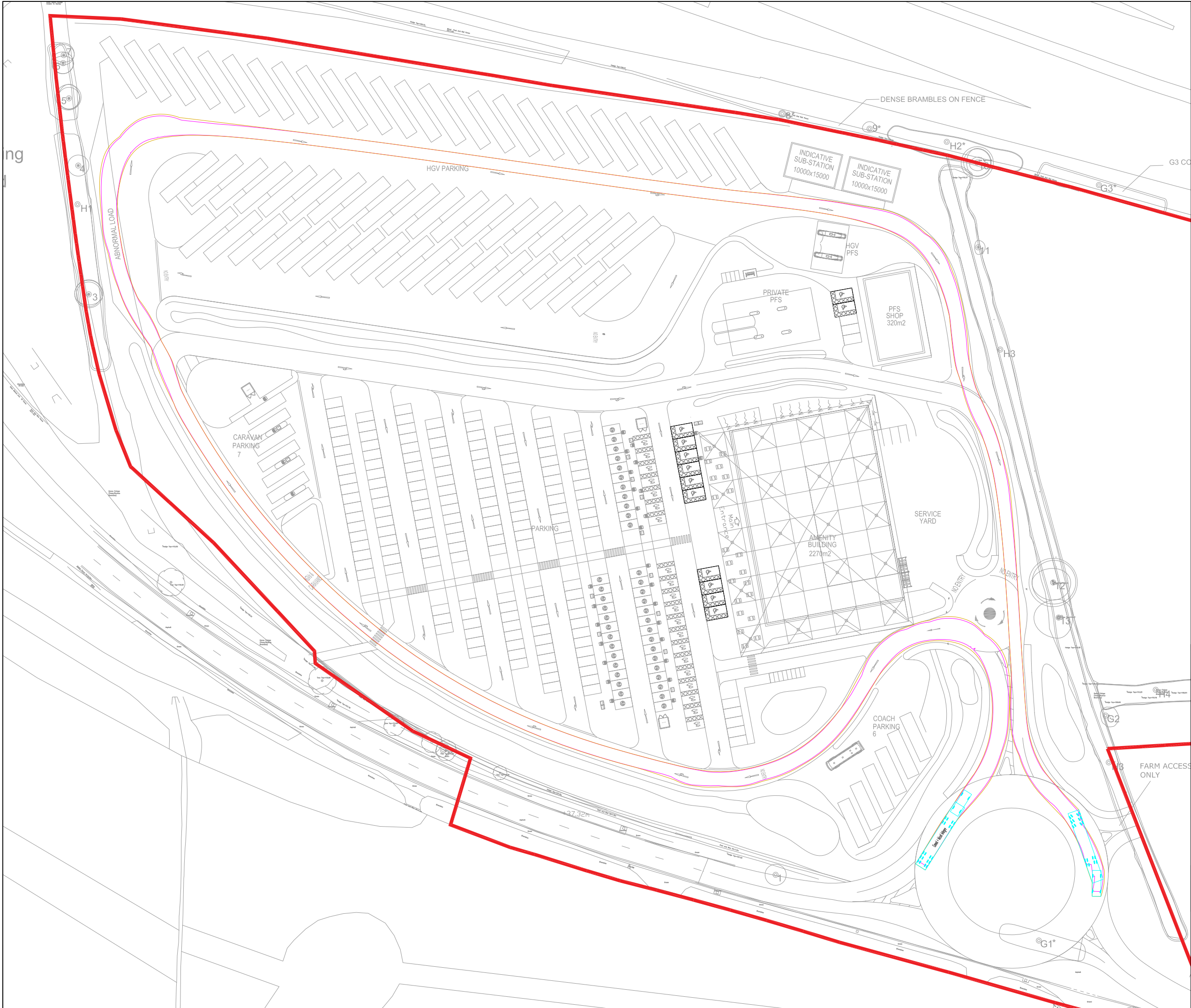
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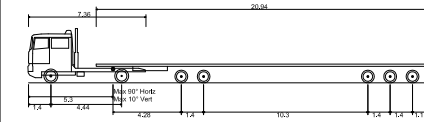
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NOTES

PLAN 7



Convoy + blissel Integre
Overall Length 25.180m
Overall Width 3.250m
Overall Body Height 3.408m
Min Body Ground Clearance 0.350m
Max Track Width 2.490m
Lock to lock time 6.00s
Kerb to Kerb Turning Radius 13.820m



A	REVISED SITE BOUNDARY	MTG	MTG	OCT 23
REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT:

MOTO

PROJECT:

MOTO, SWINDON

DRAWING TITLE:

SWEPT PATH ANALYSIS

SCALES:

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DRAWN: GM CHECKED: MTC DATE: OCT 23

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Tel: 0161 837 7380
Web: www.eddisons.com/services/transport-planning

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FIGURES

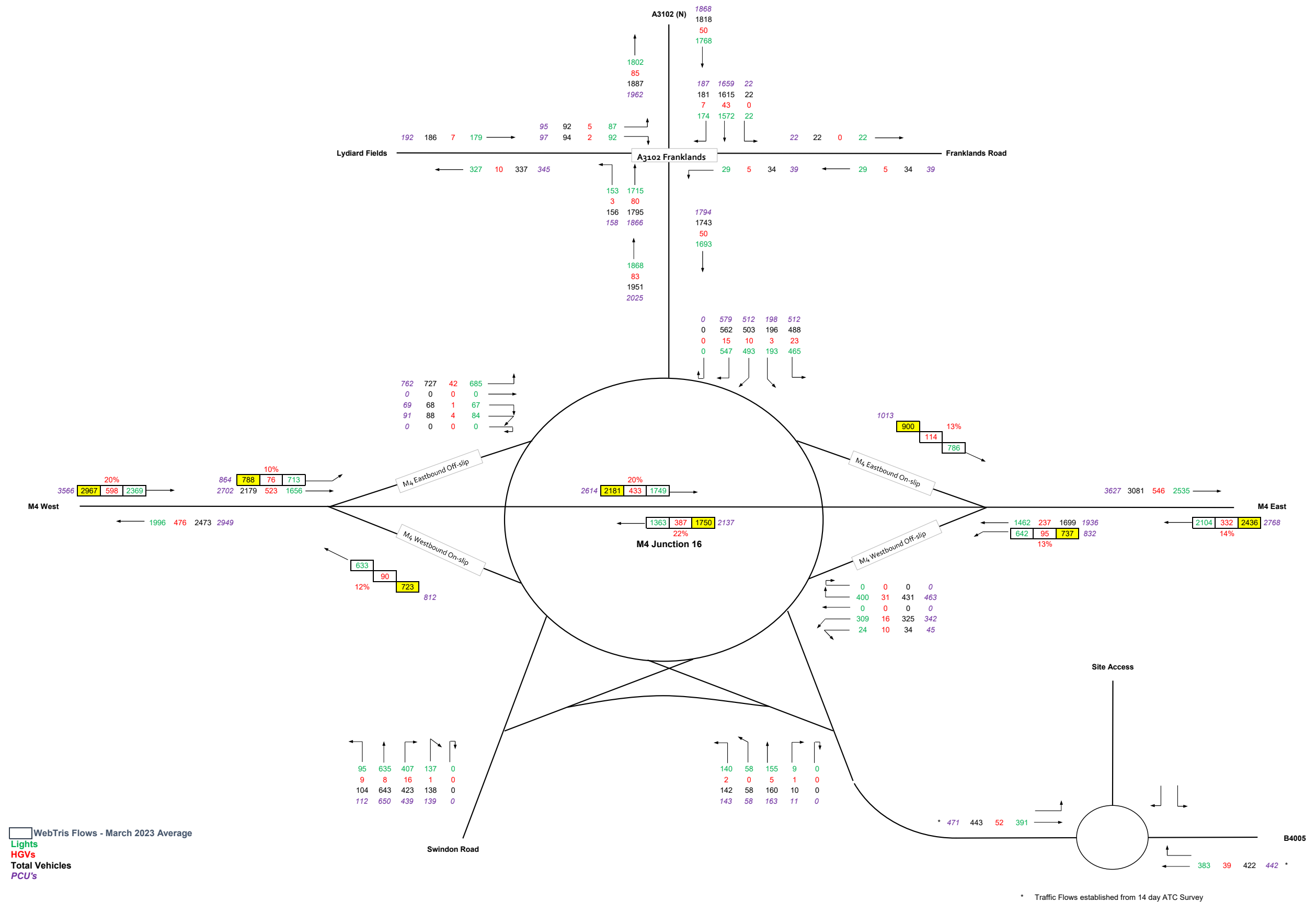


Figure 1 2023 Reference Case Flows - Weekday AM Peak (0730-0830)

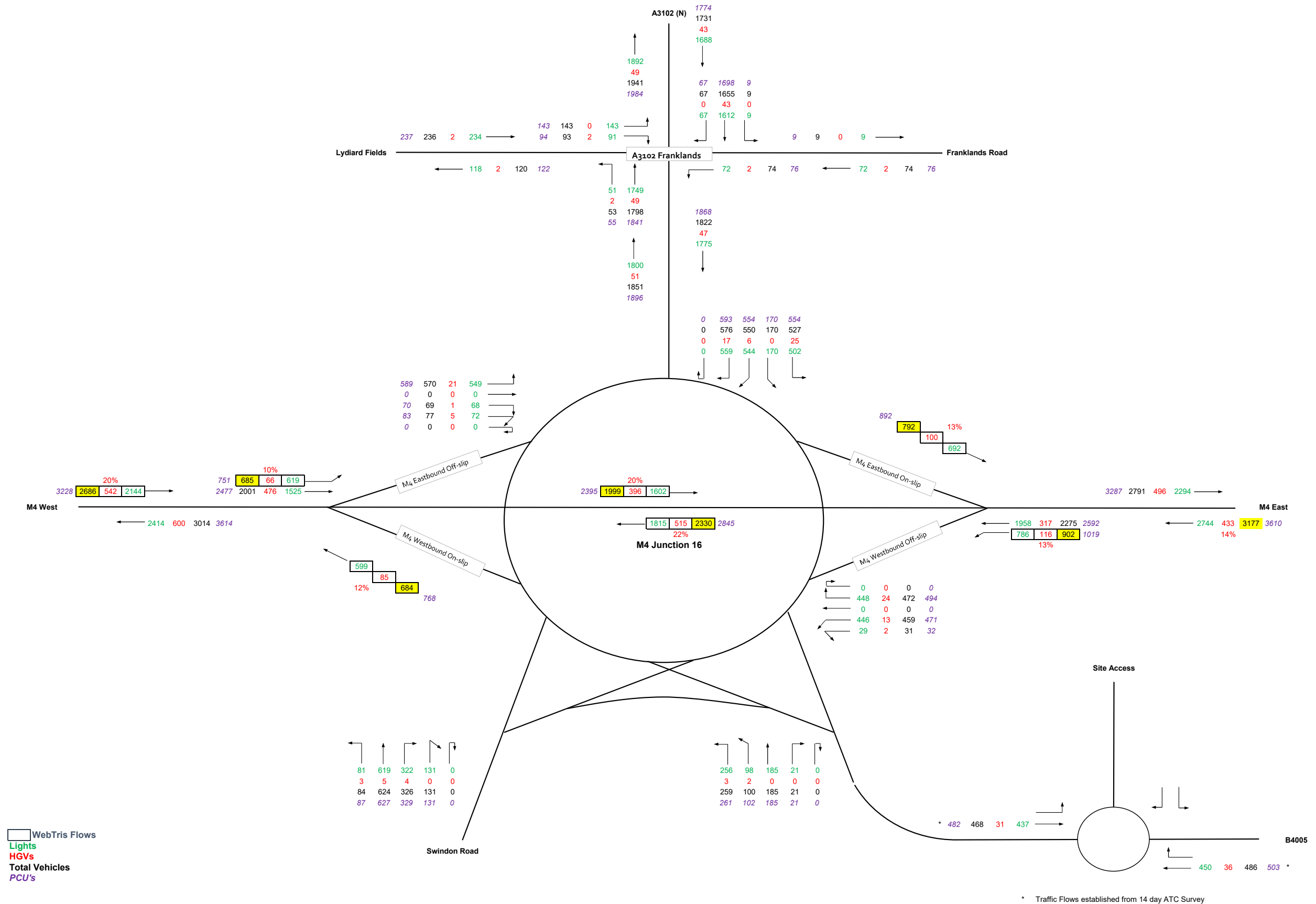


Figure 2 2023 Reference Case Flows - Weekday PM Peak (1630-1730)

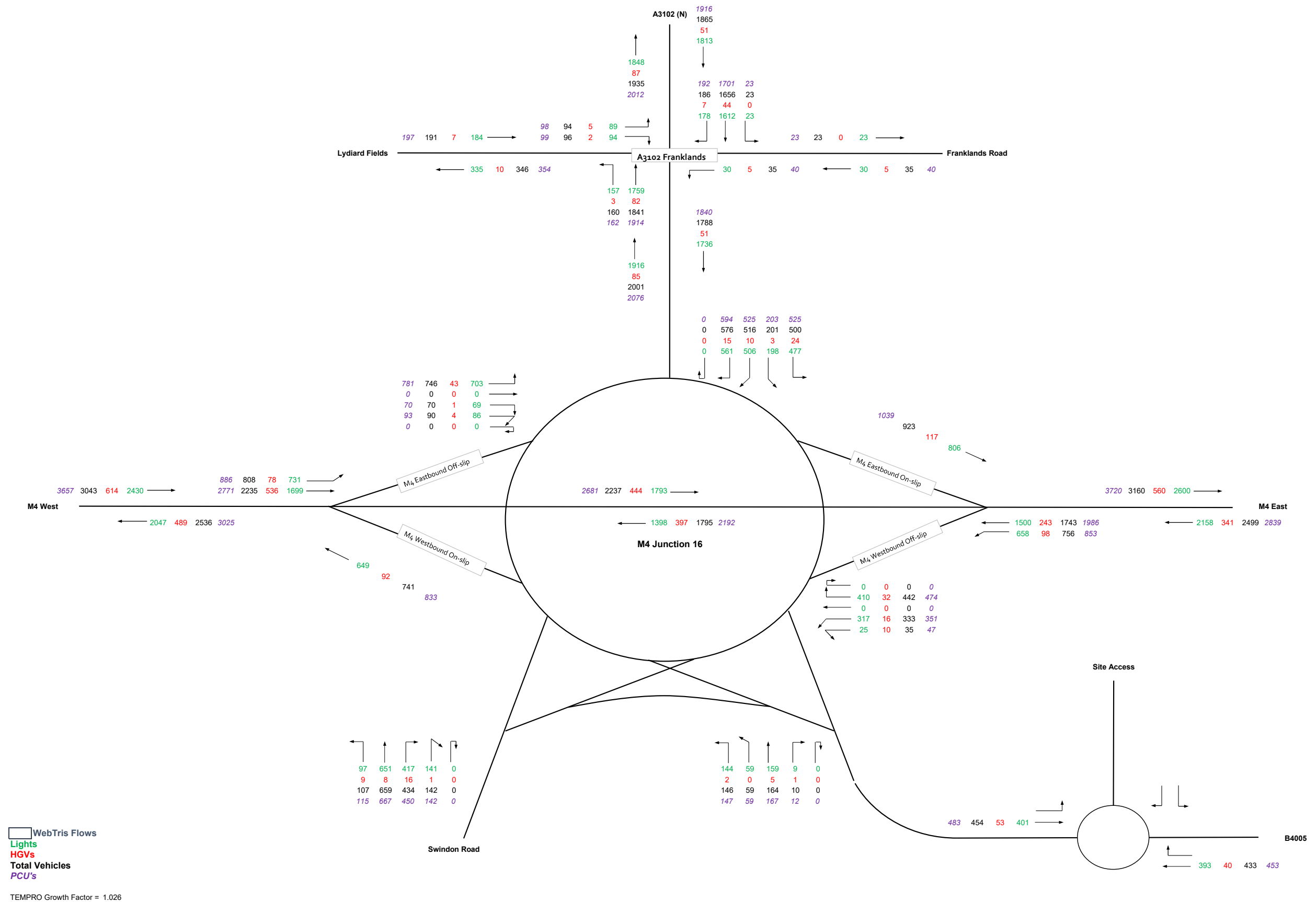


Figure 3 2027 Growthed Flows - Weekday AM Peak (0730-0830)

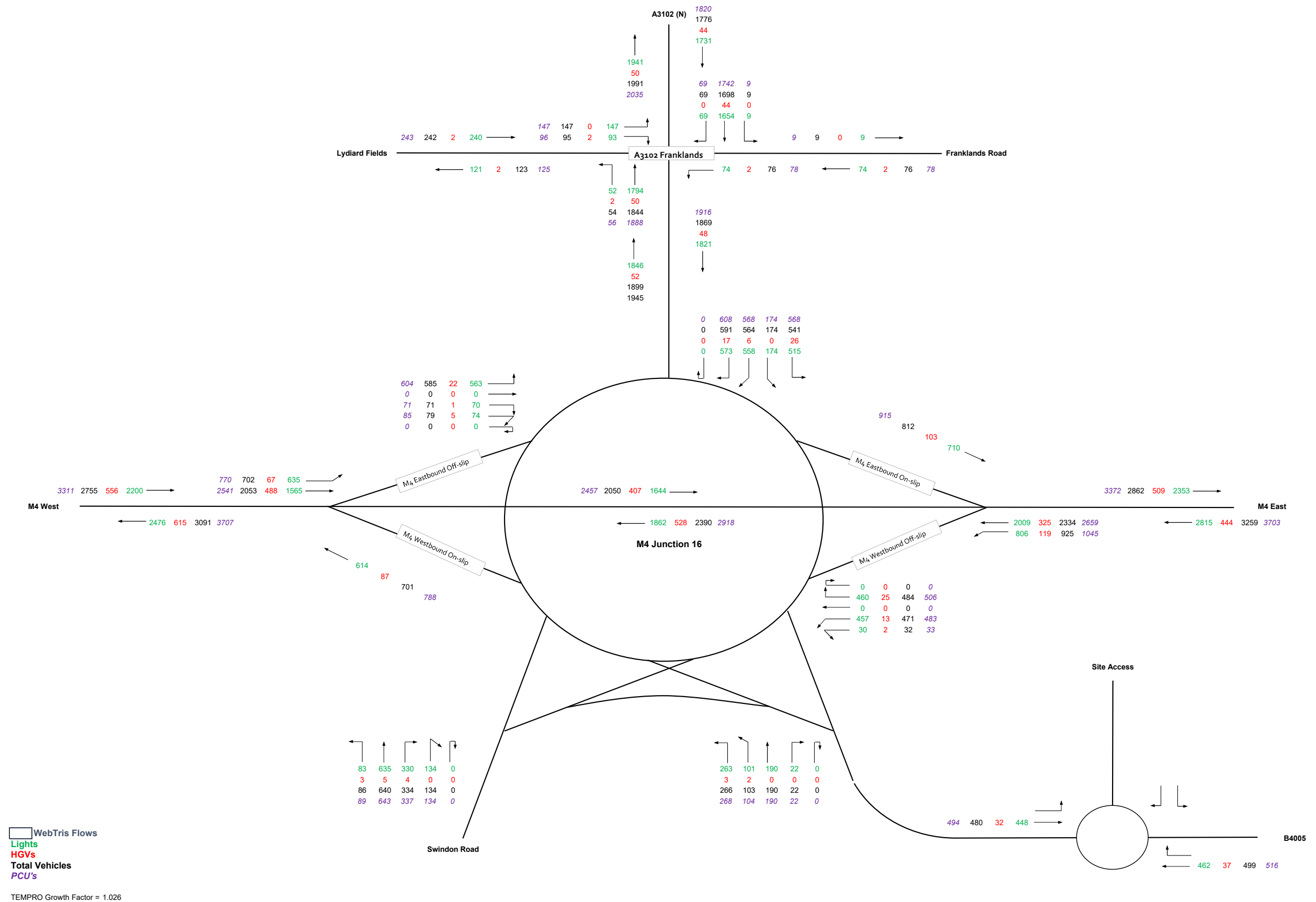


Figure 4 2027 Growthed Flows - Weekday PM Peak (1630-1730)

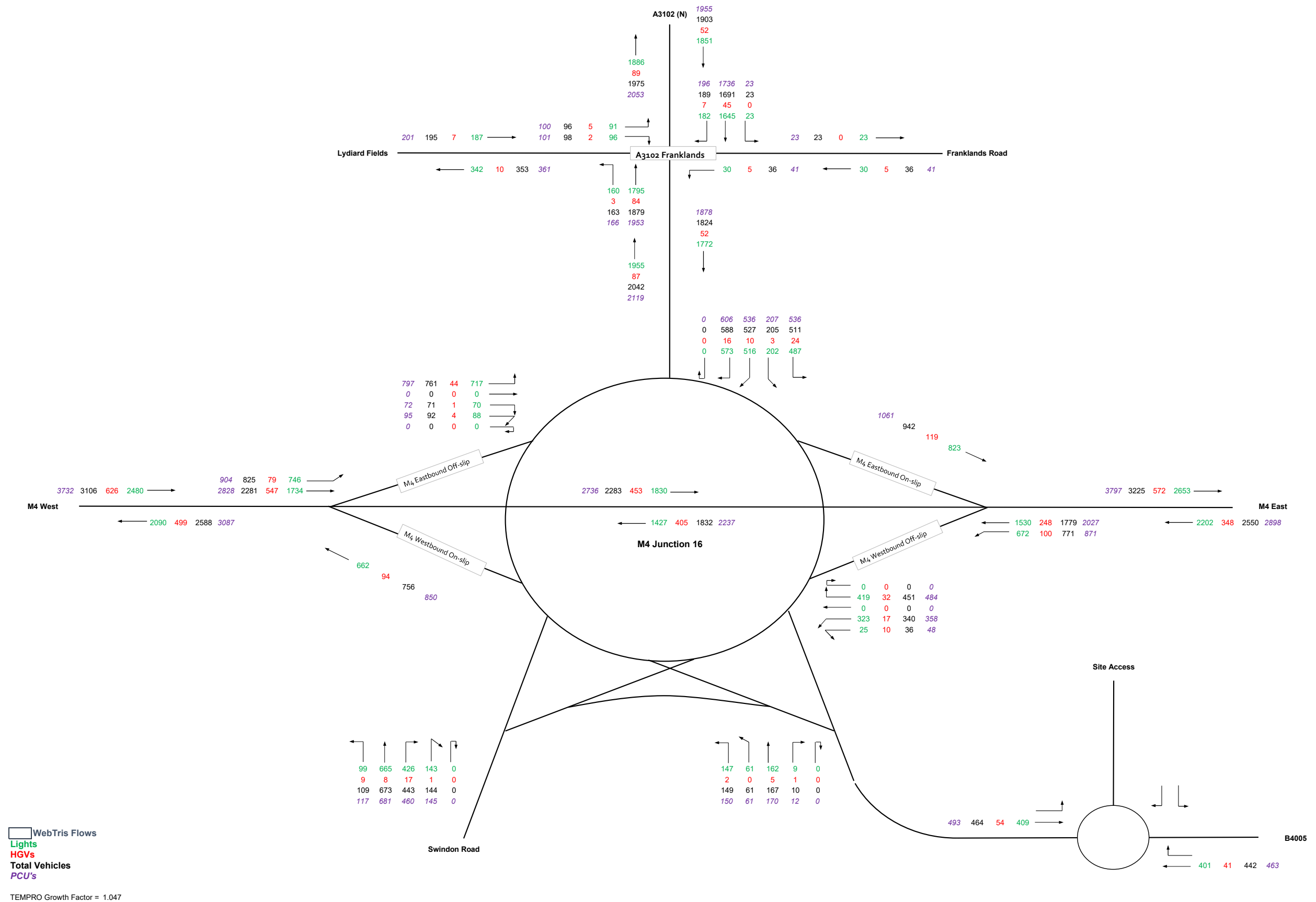


Figure 5 2033 Growthed Flows - Weekday AM Peak (0730-0830)

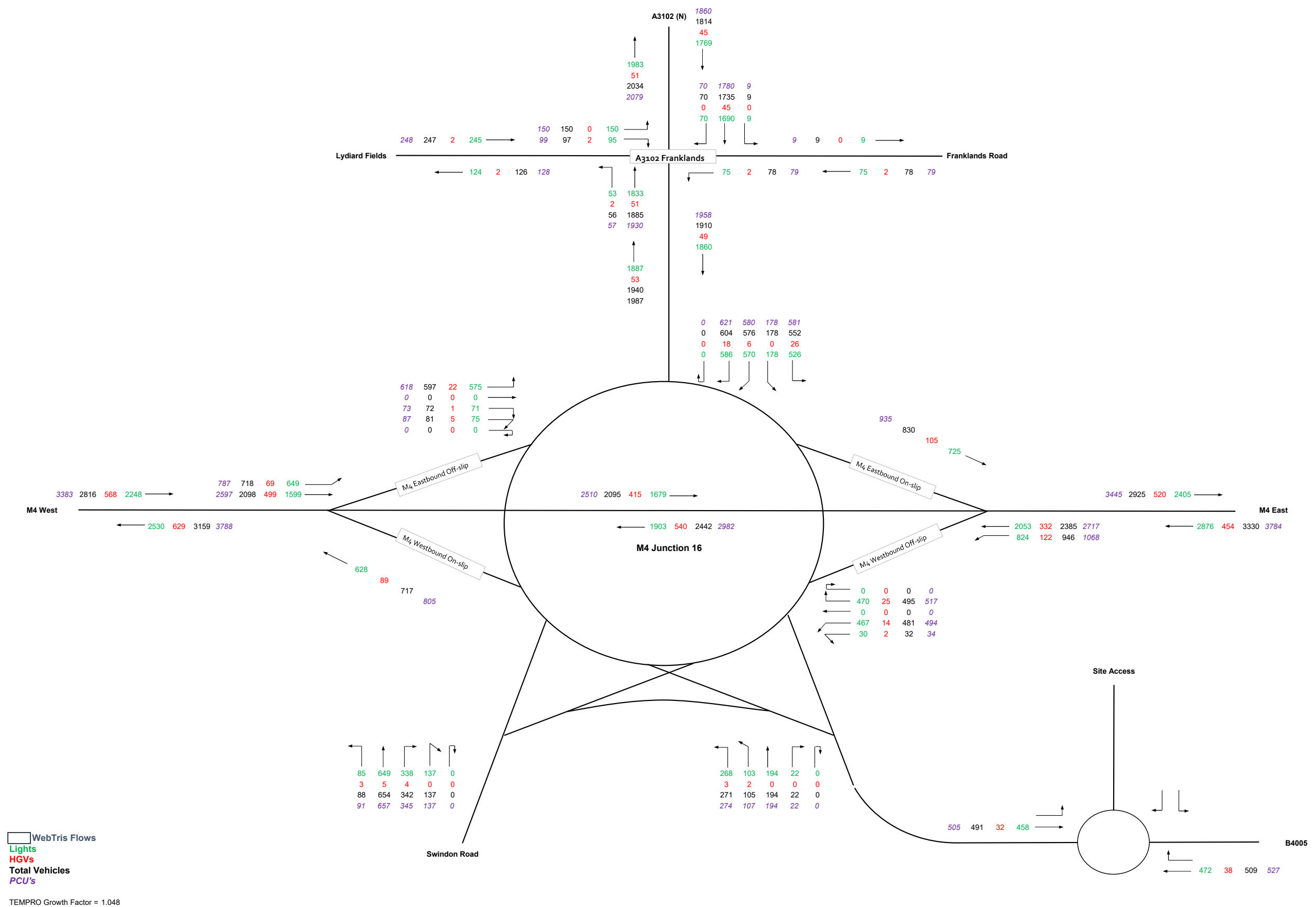


Figure 6 2033 Growthed Flows - Weekday PM Peak (1630-1730)

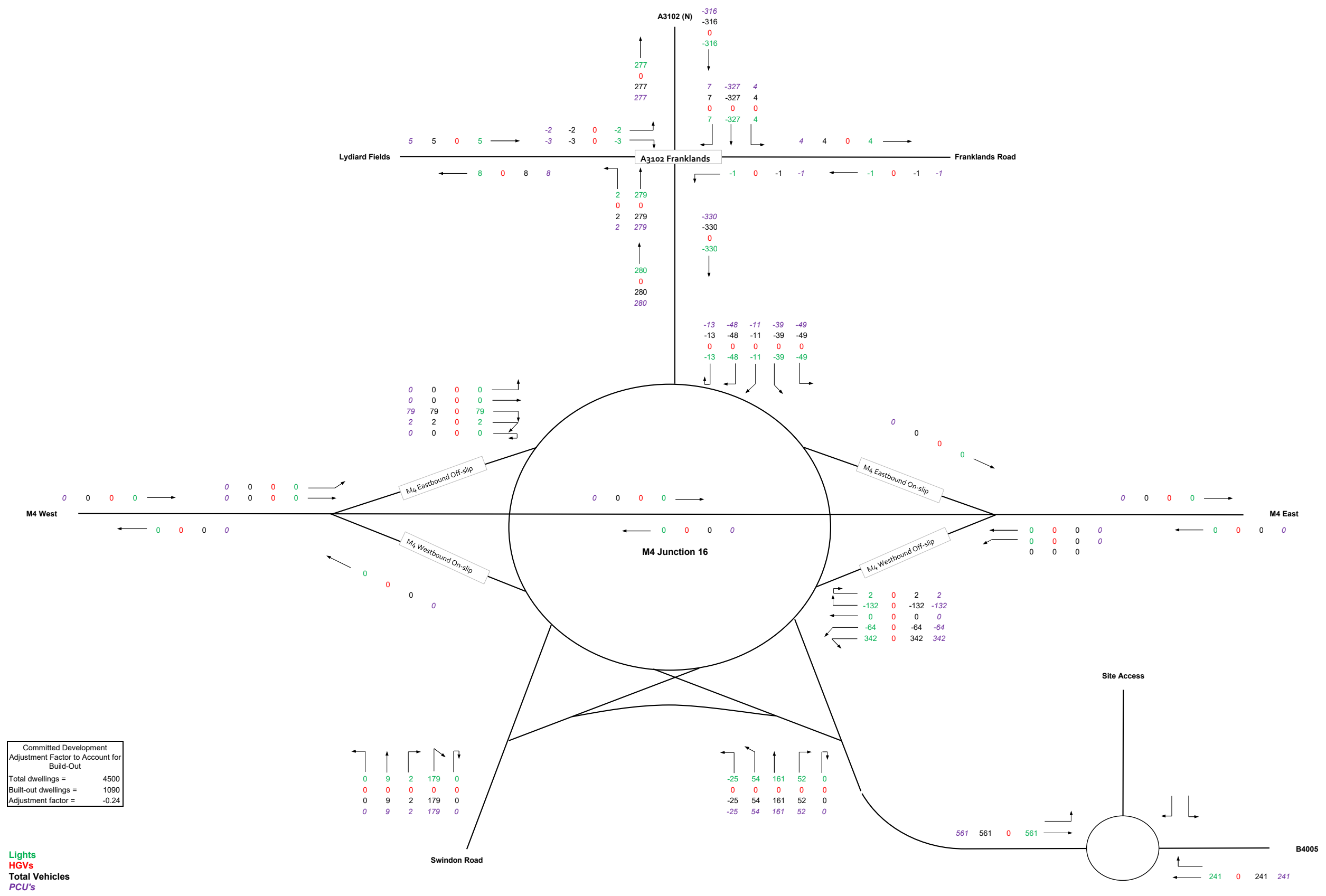


Figure 7 Committed Development Flows - Weekday AM Peak (0730-0830)

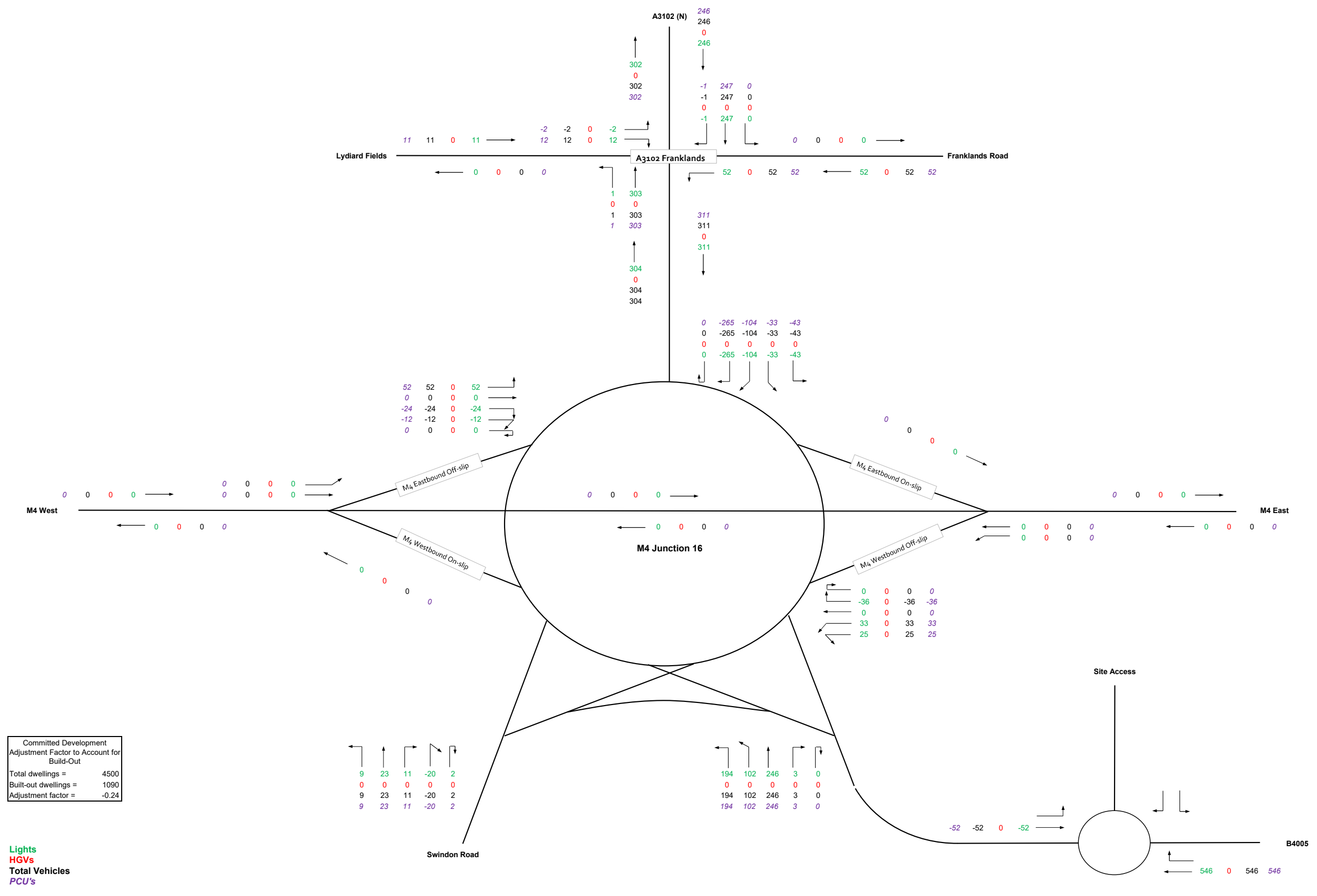


Figure 8 Committed Development Flows - Weekday PM Peak (1630-1730)

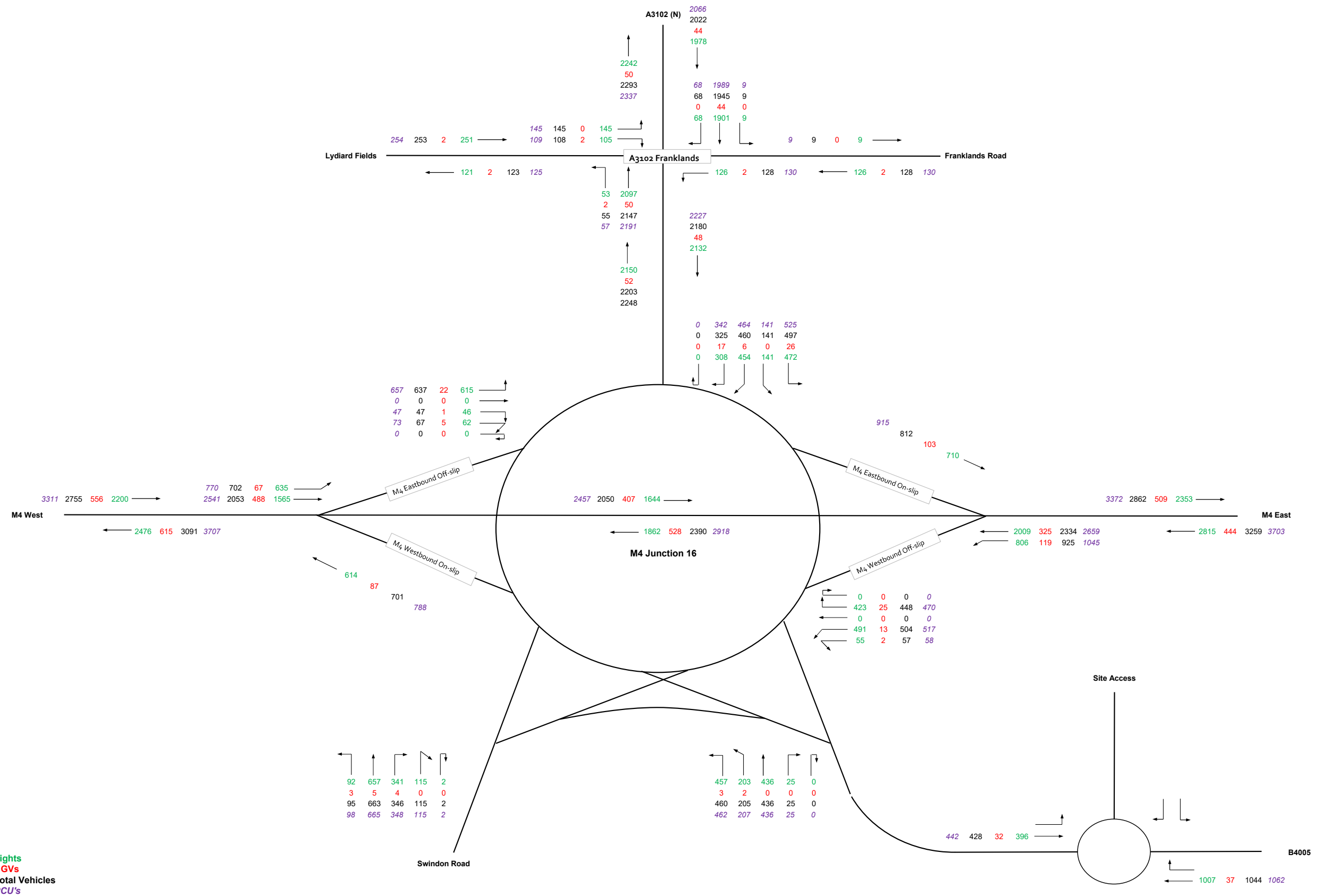


Figure 10 2027 Base Flows - Weekday PM Peak (1630-1730)

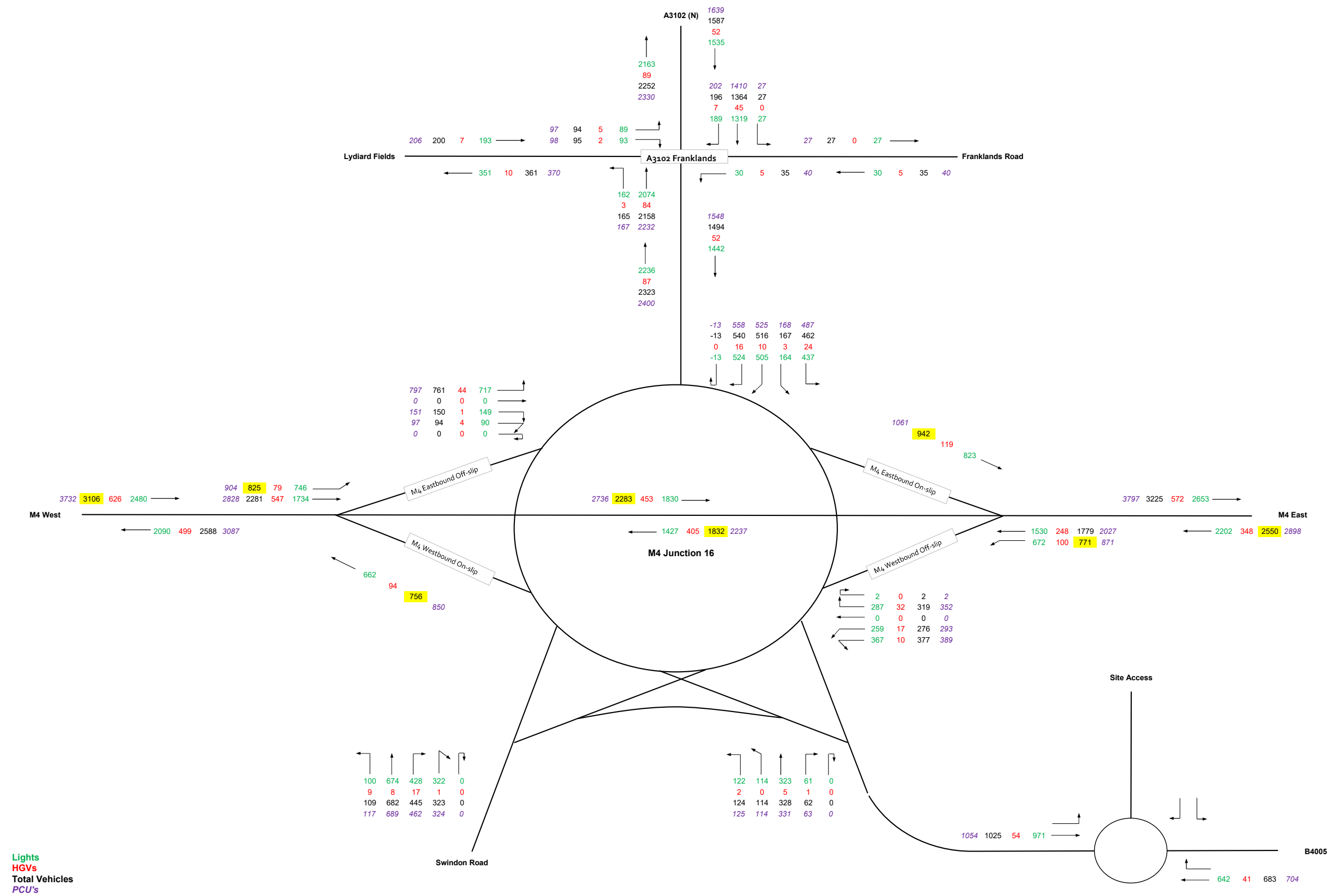


Figure 11 2033 Base Flows - Weekday AM Peak (0730-0830)

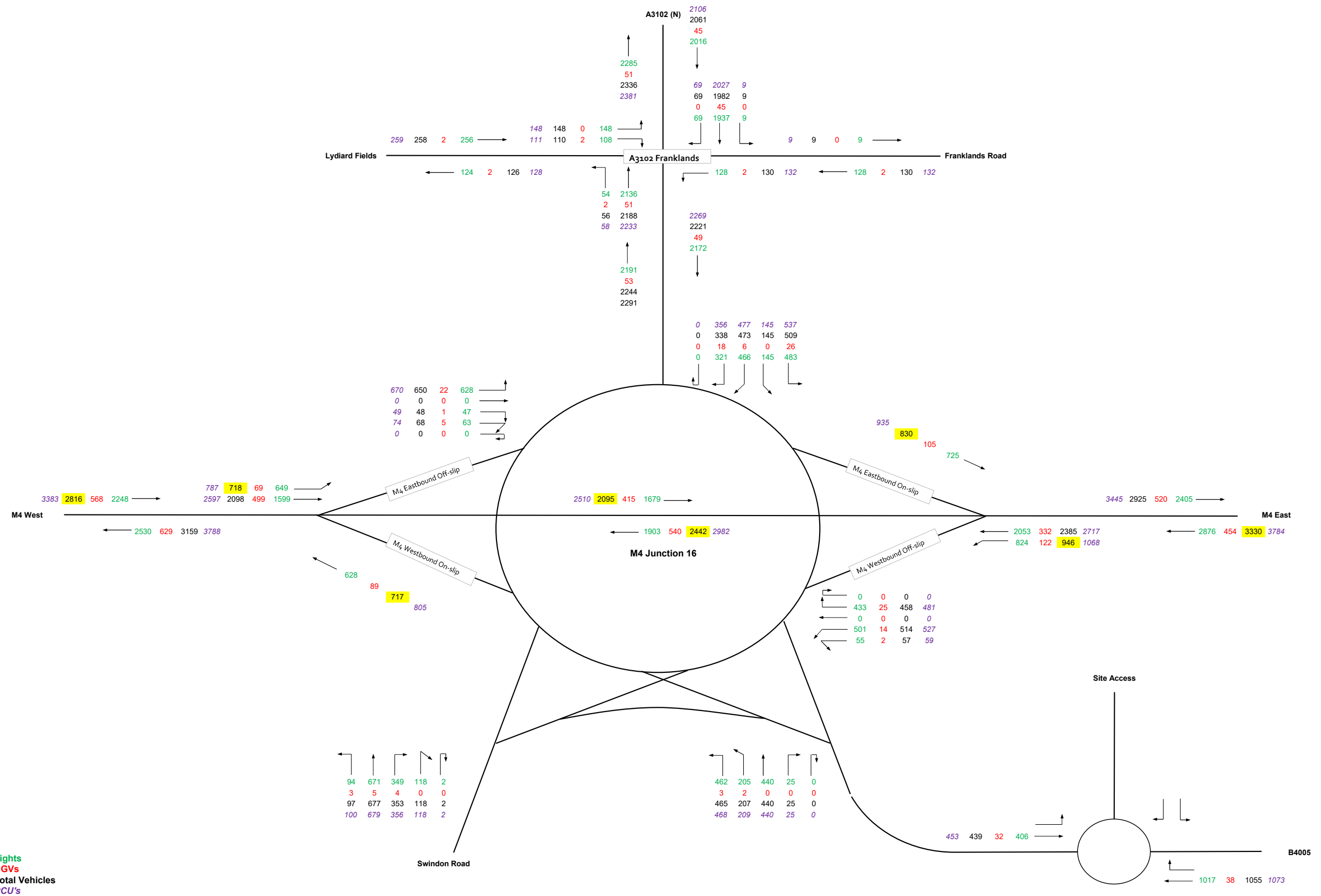


Figure 12 2033 Base Flows - Weekday PM Peak (1630-1730)

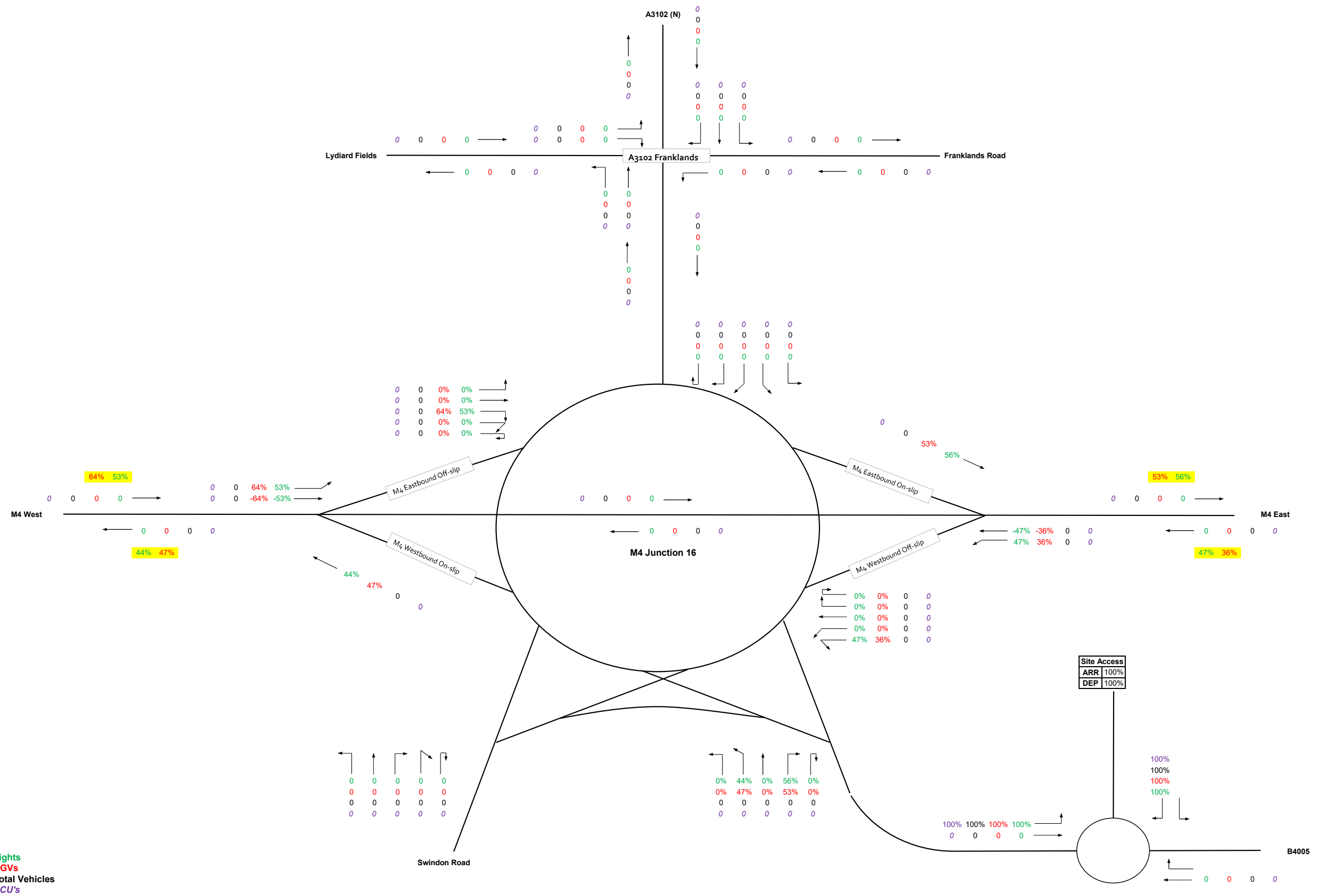


Figure 13 Motorway Trip Distribution - Weekday AM Peak (0730-0830)

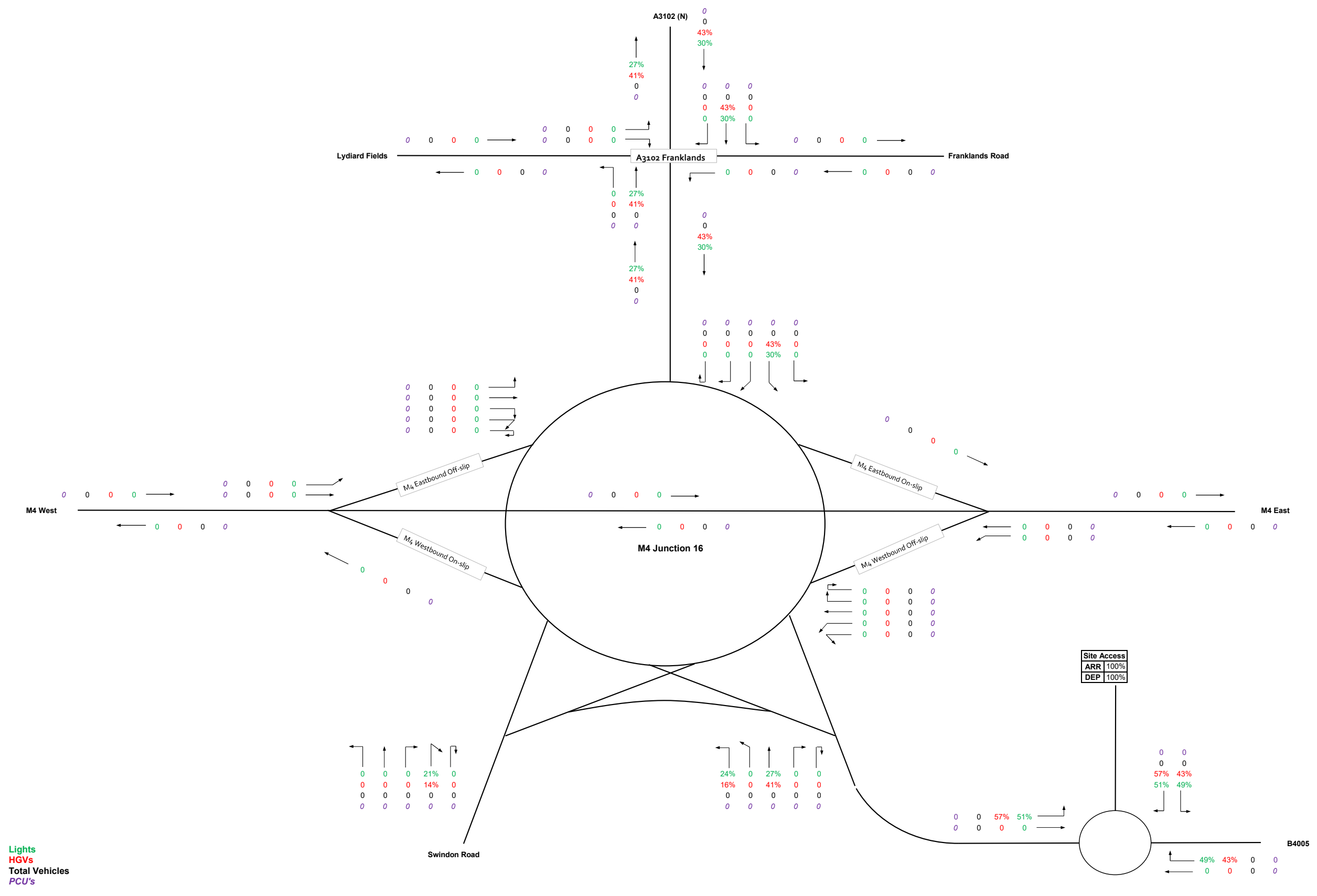


Figure 15 Local Road Trip Distribution - Weekday AM Peak (0730-0830)

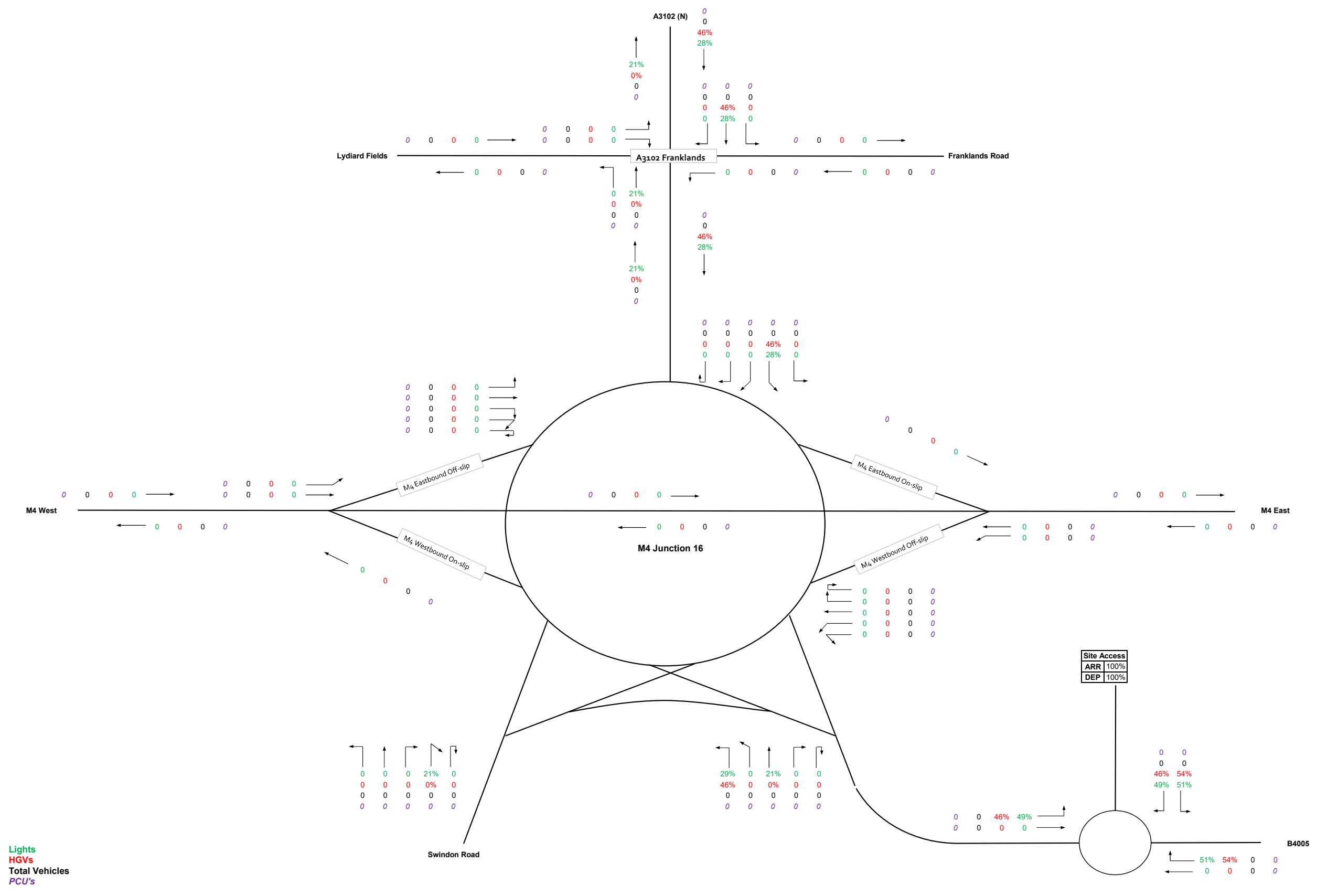


Figure 16 Local Road Trip Distribution - Weekday PM Peak (1630-1730)

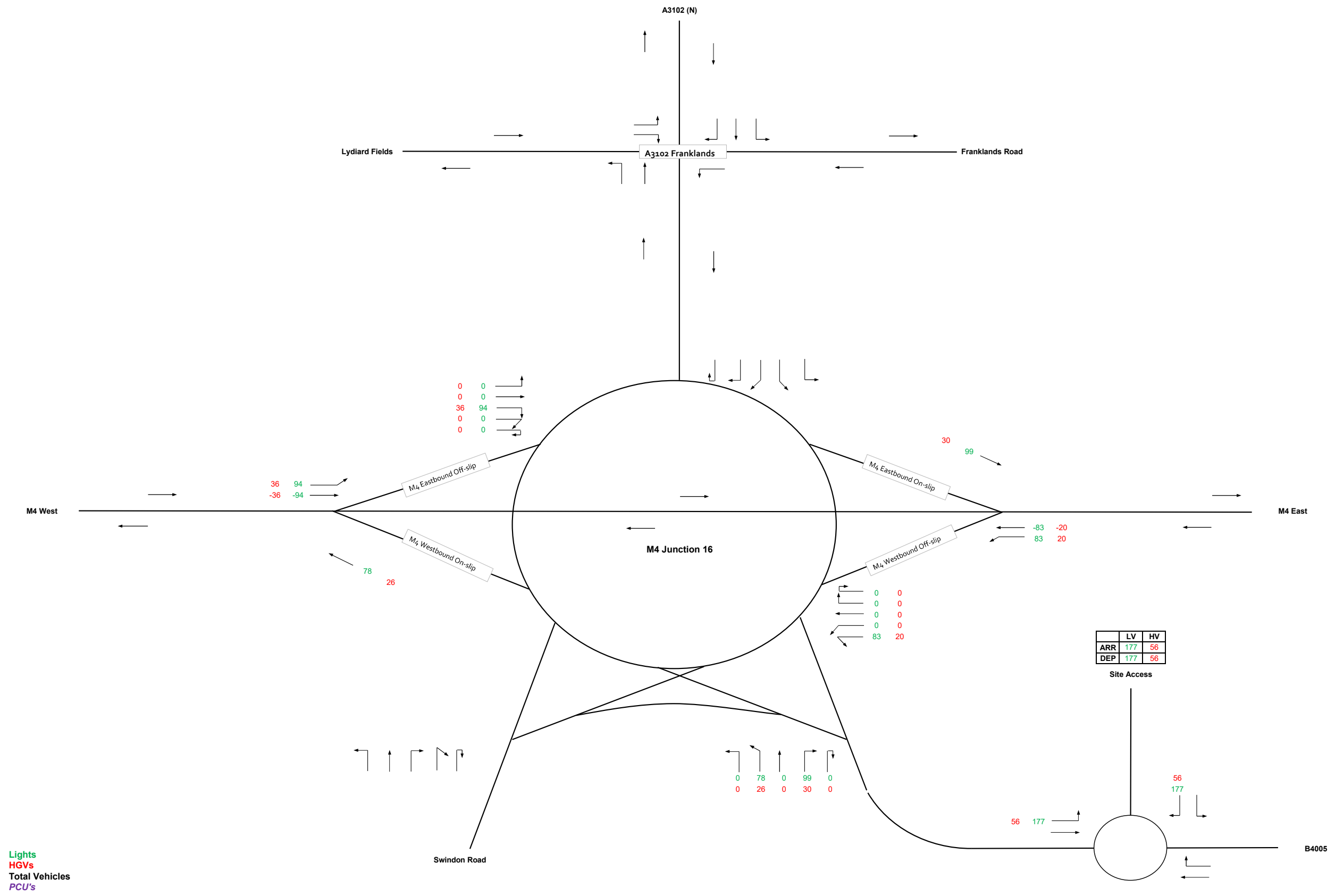


Figure 17 Proposed Development Flows - Motorway Trips - Weekday AM Peak (0730-0830)

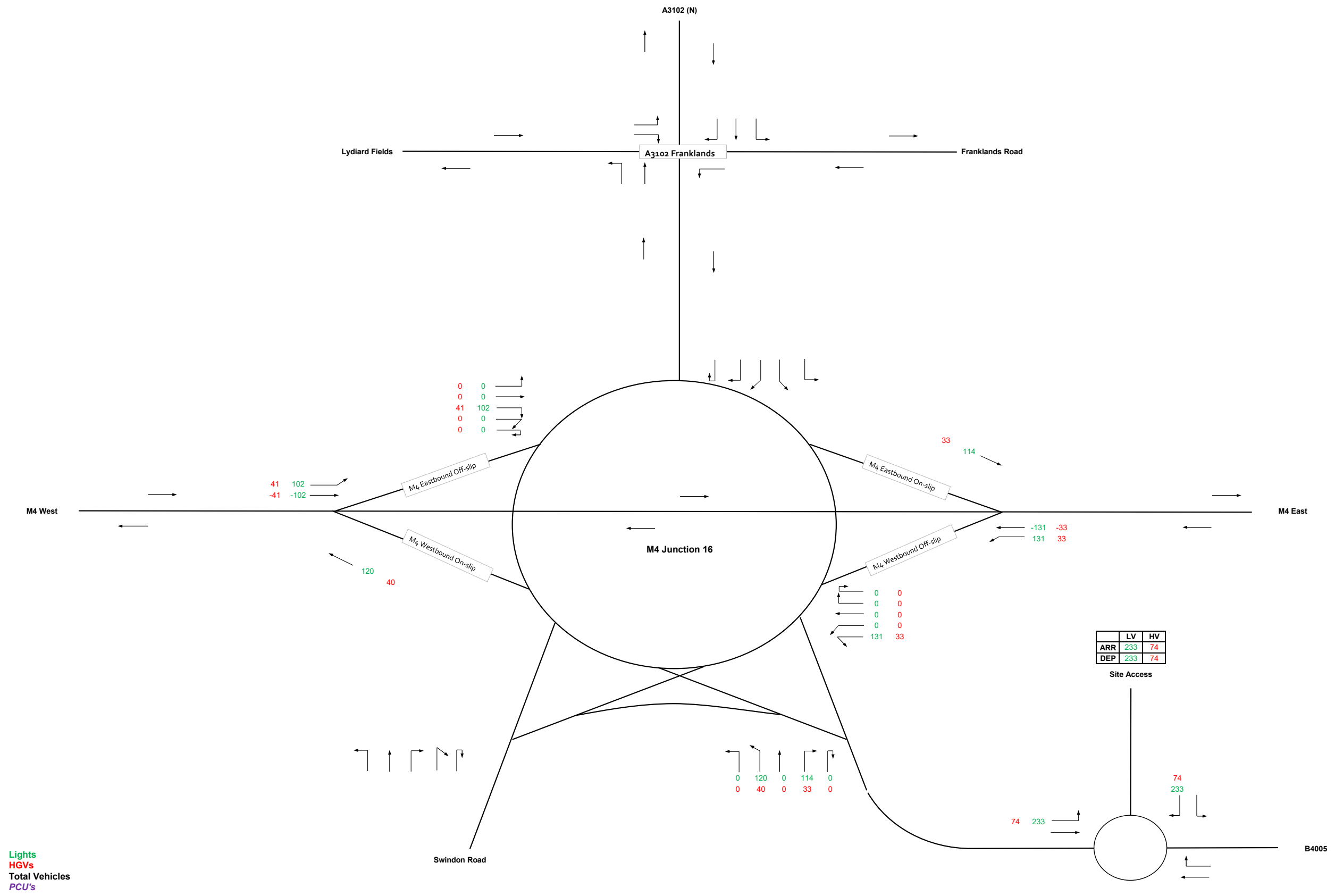


Figure 18 Proposed Development Flows - Motorway Trips - Weekday PM Peak (1630-1730)

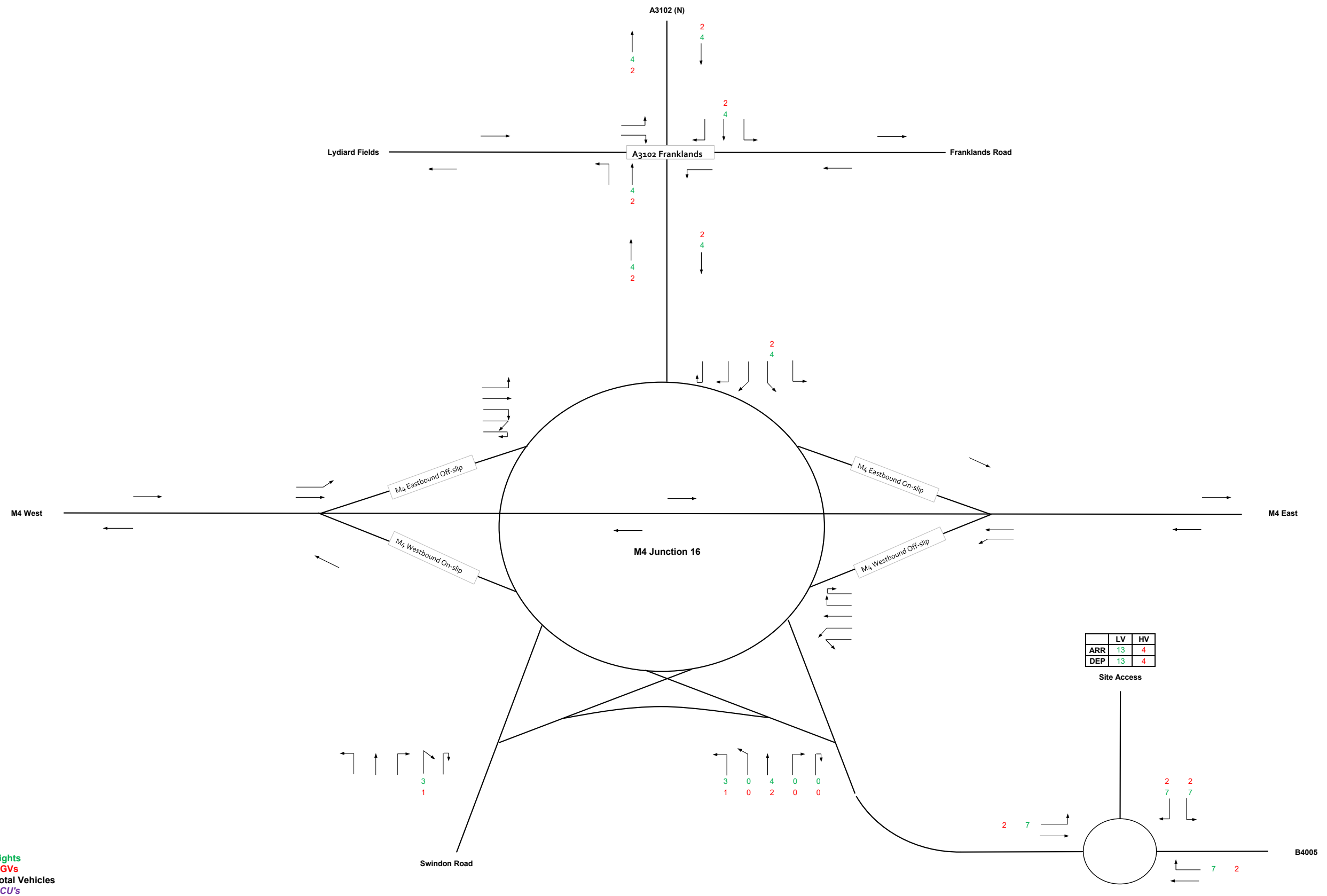


Figure 19 Proposed Development Flows - Local Road Trips - Weekday AM Peak (0730-0830)

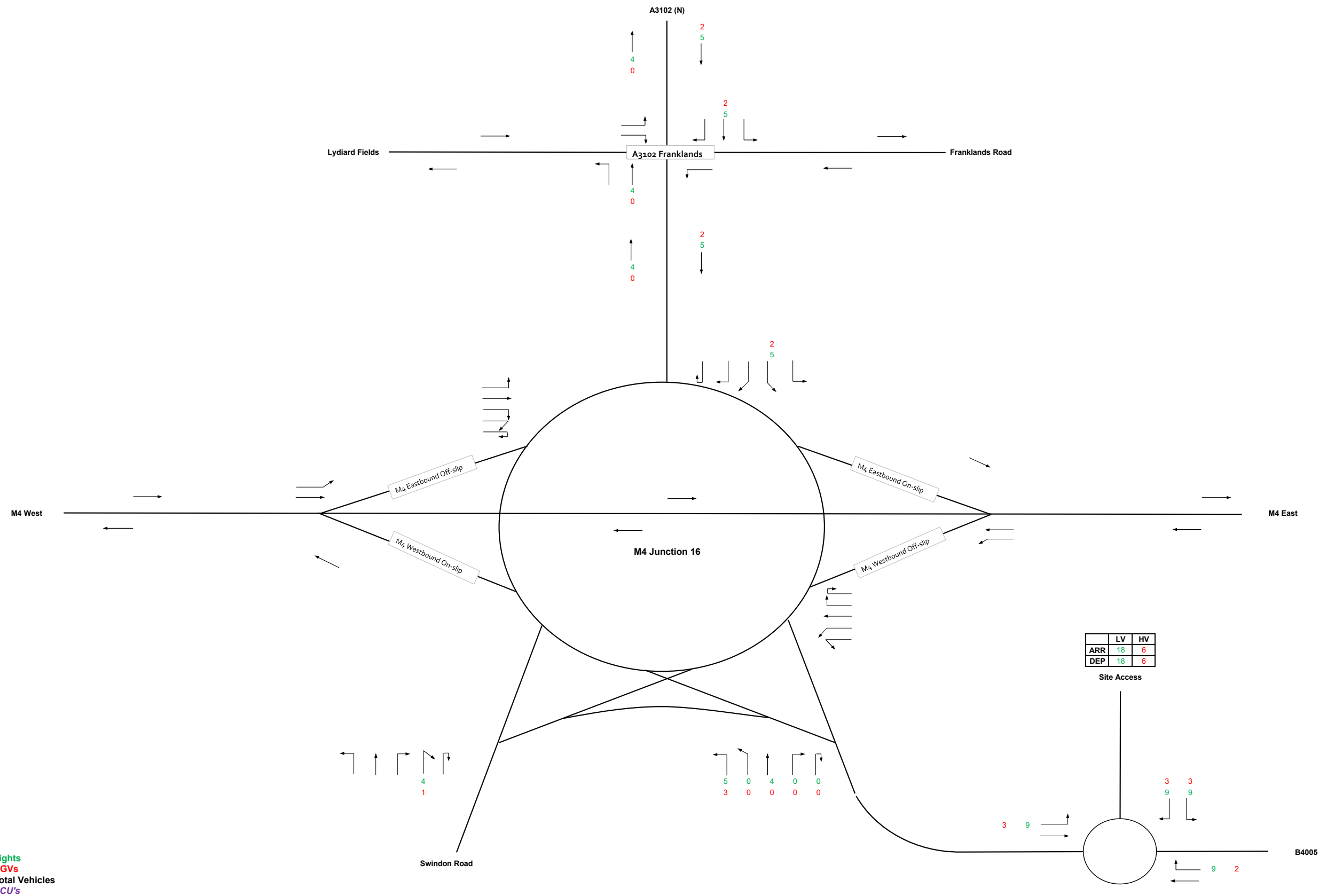


Figure 20 Proposed Development Flows - Local Road Trips - Weekday PM Peak (1630-1730)

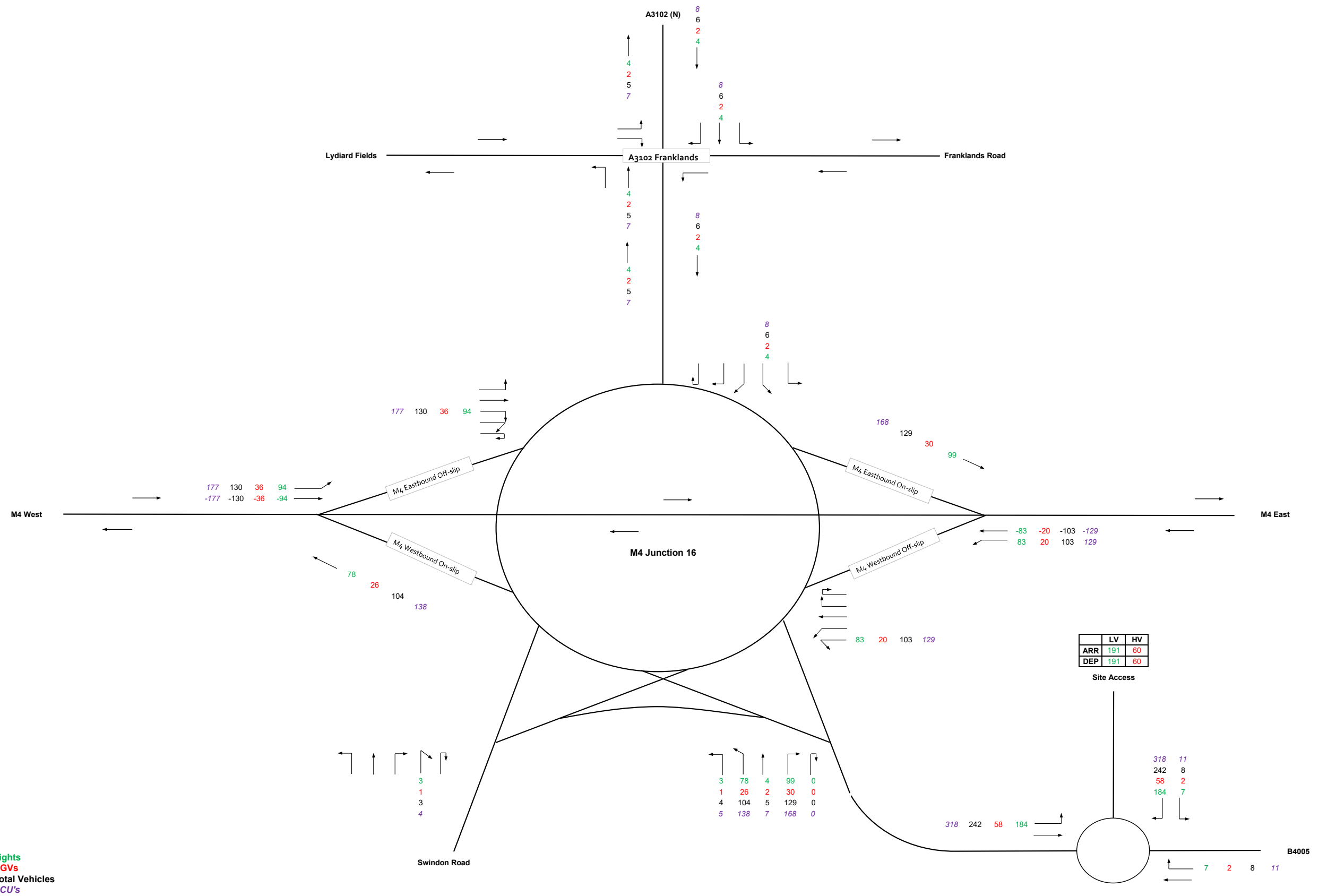


Figure 21 Proposed Development Flows - Total Trips - Weekday AM Peak (0730-0830)

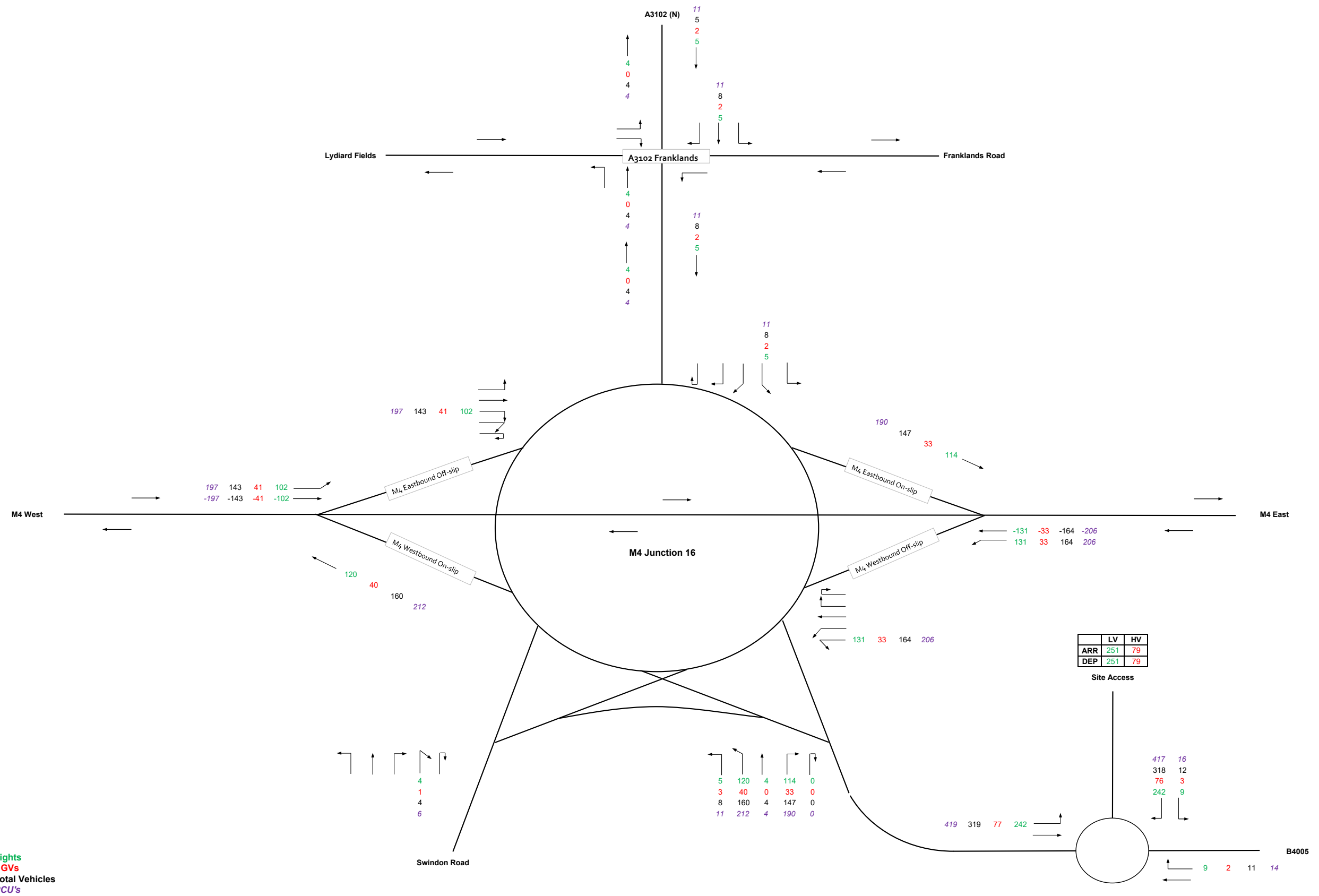
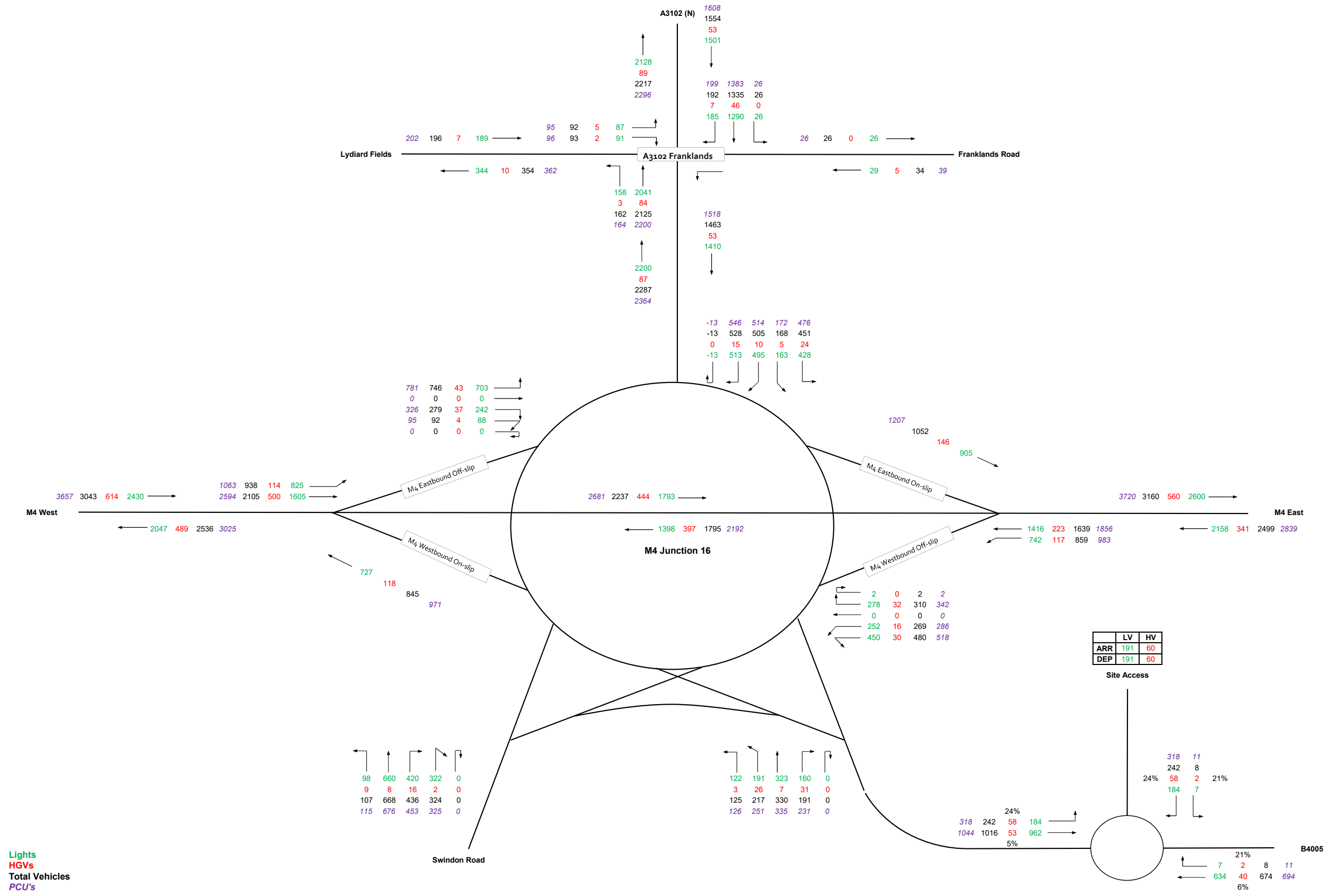


Figure 22 Proposed Development Flows - Total Trips - Weekday PM Peak (1630-1730)



	LV	HV
ARR	191	60
DEP	191	60

Site Access

Figure 23 2027 With Development Flows - Weekday AM Peak (0730-0830)

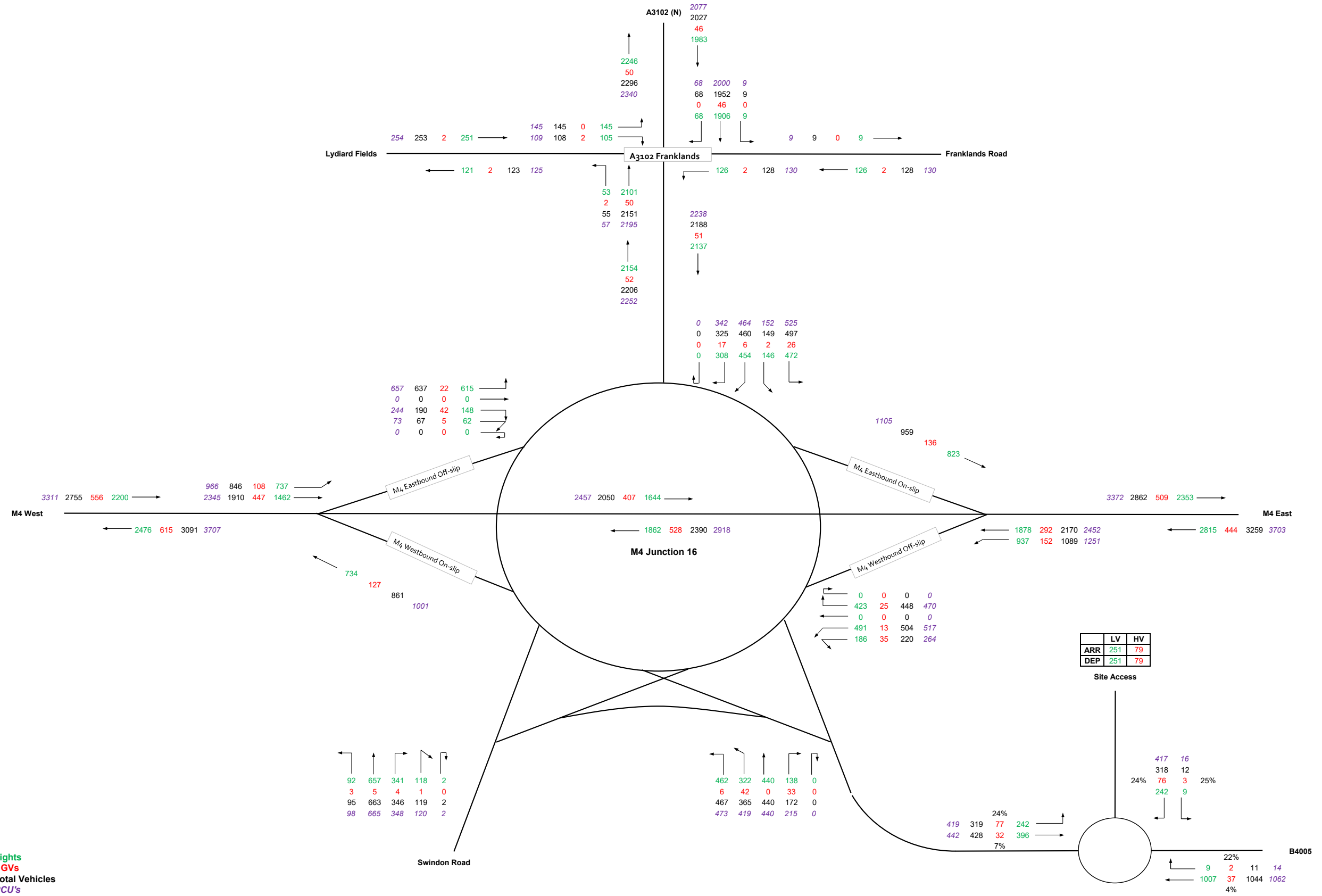


Figure 24 2027 With Development Flows - Weekday PM Peak (1630-1730)

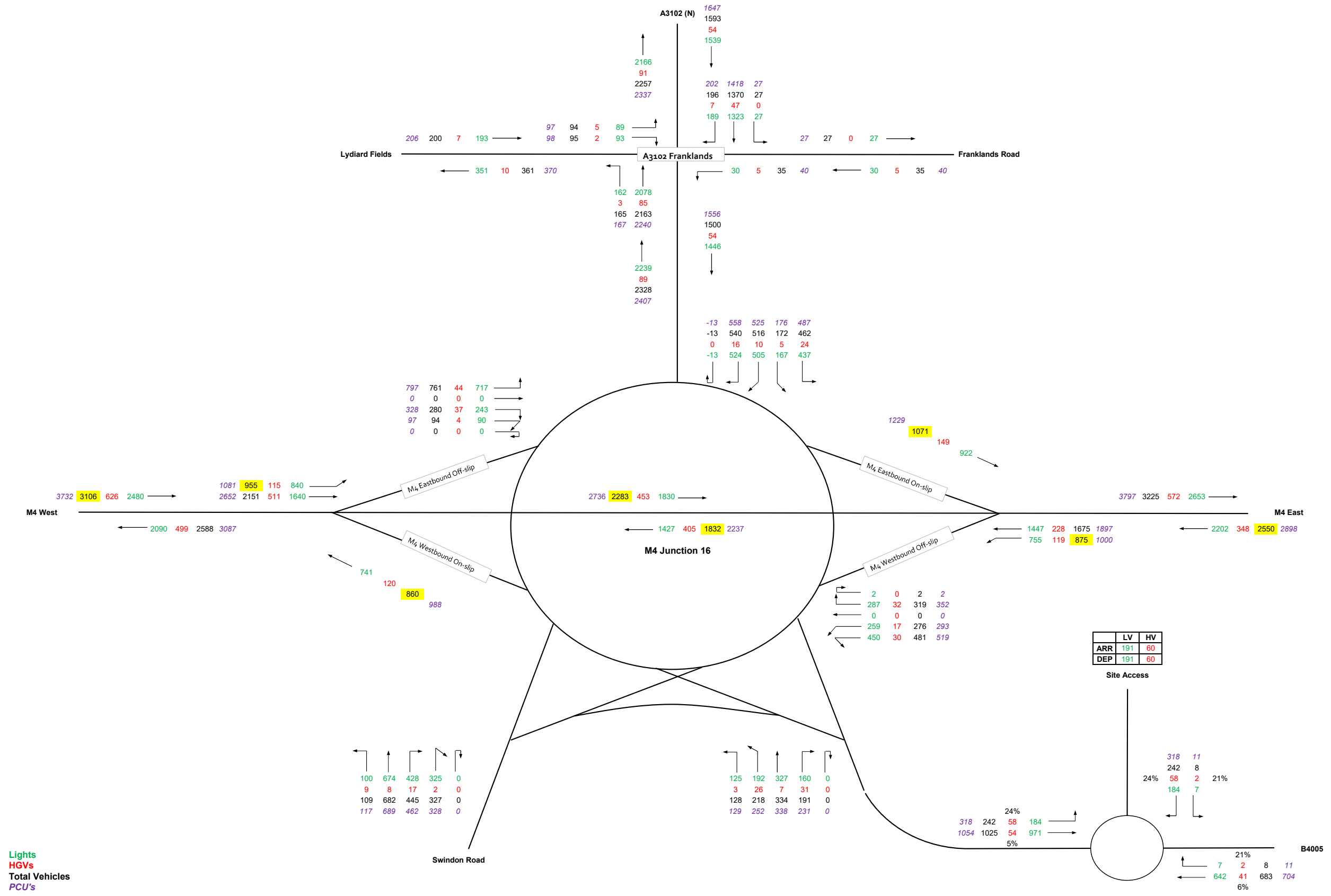


Figure 25 2033 With Development Flows - Weekday AM Peak (0730-0830)

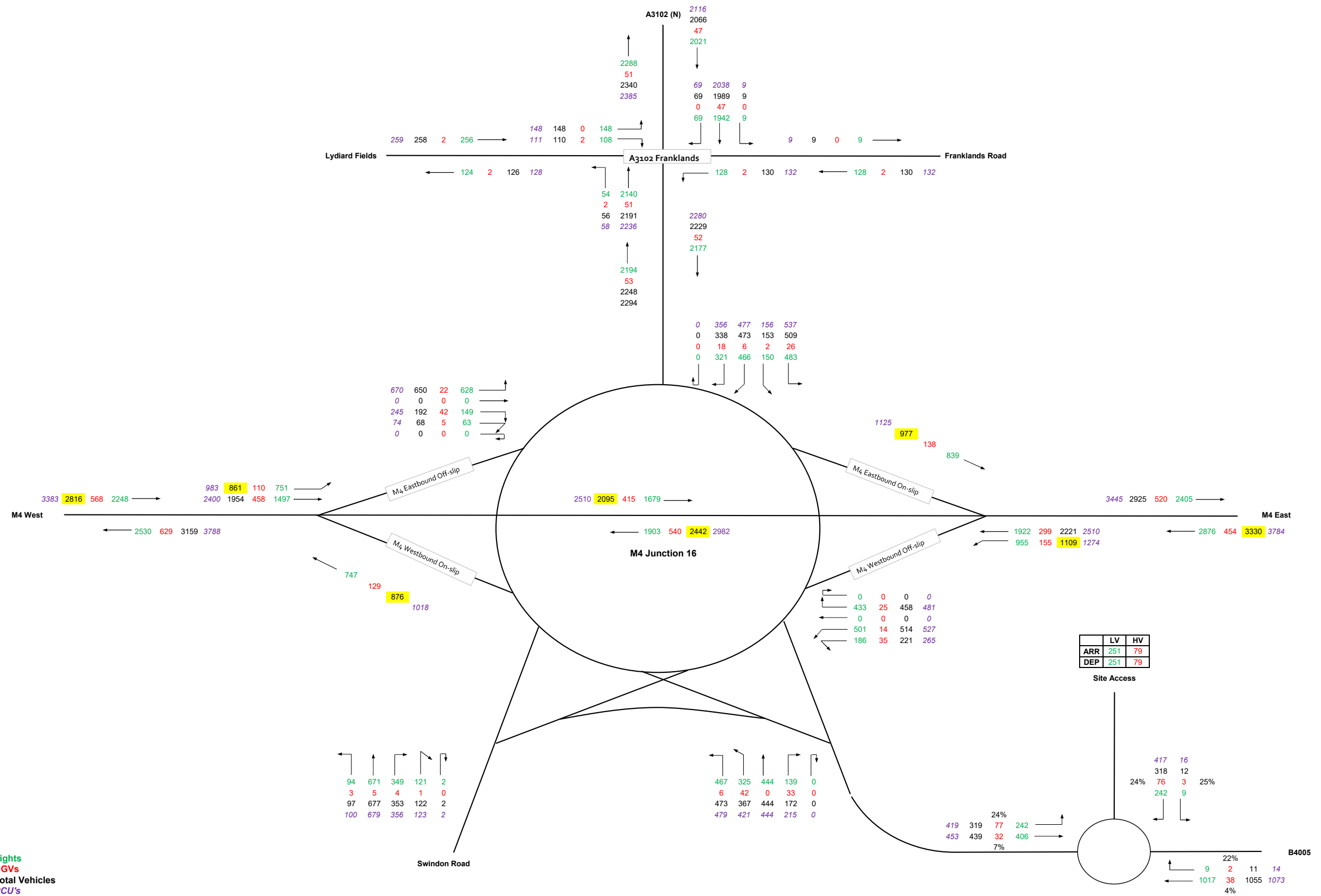
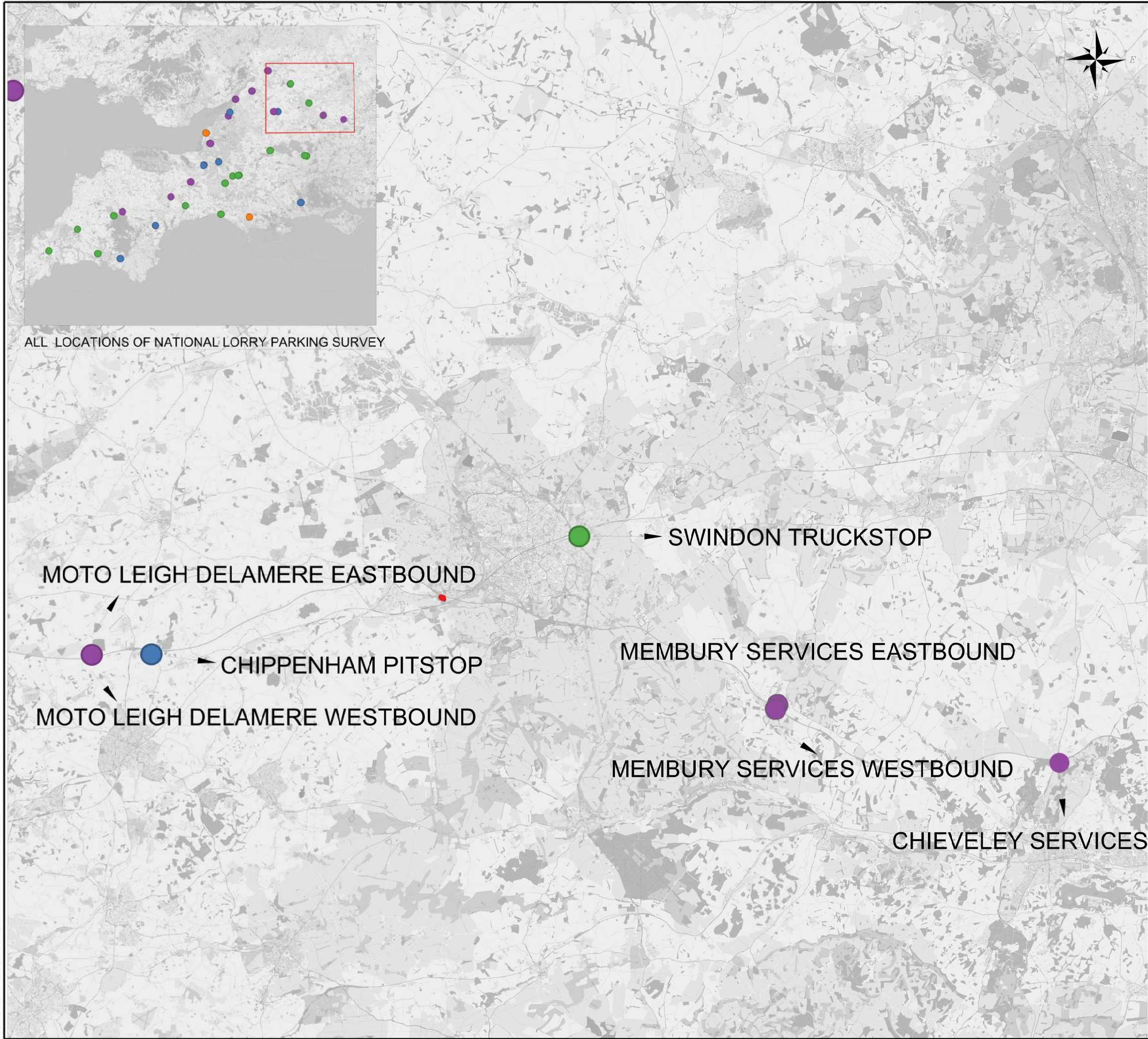


Figure 26 2033 With Development Flows - Weekday PM Peak (1630-1730)

APPENDICES

APPENDIX 1

HGV Parking Survey Data



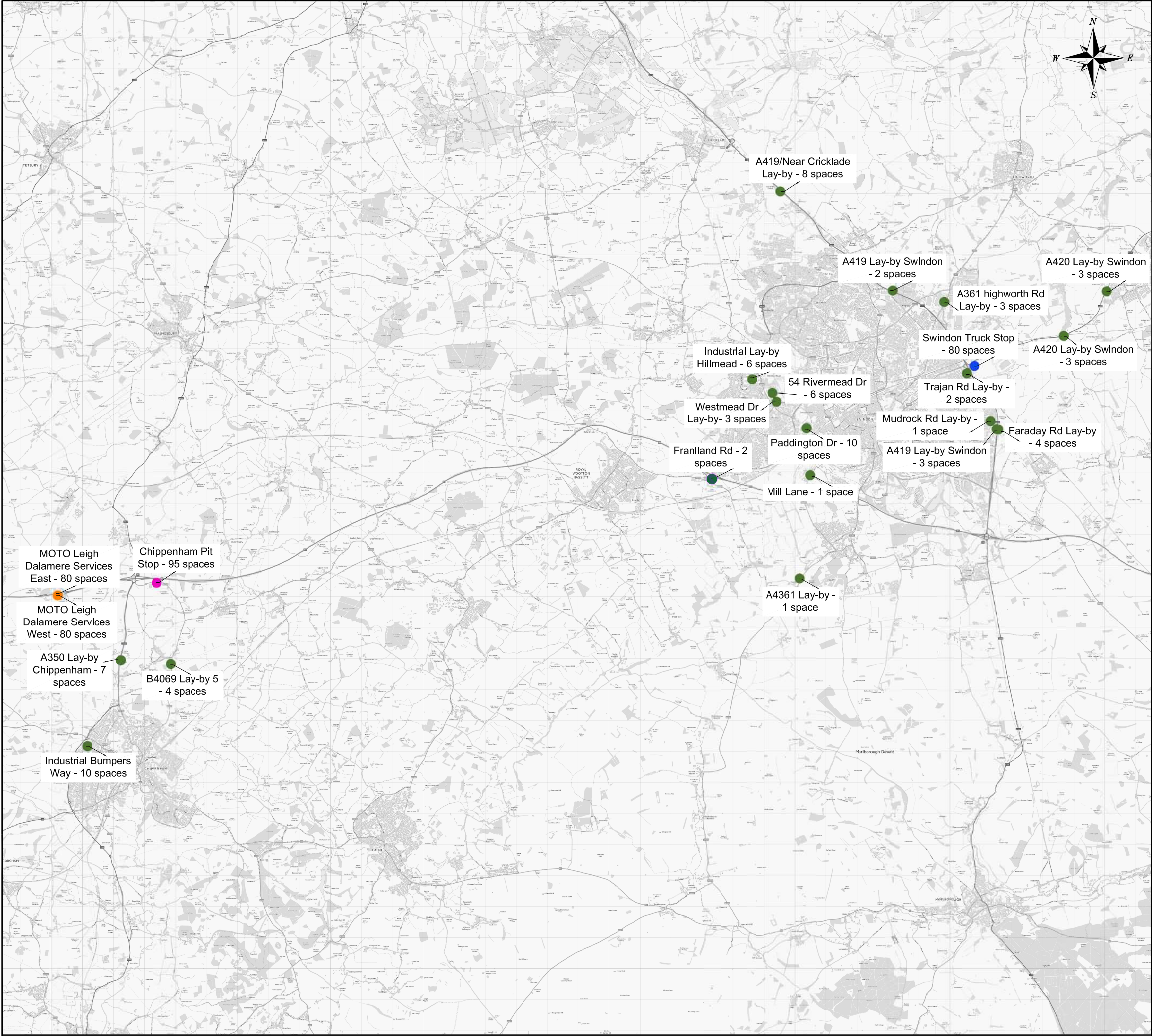
ALL LOCATIONS OF NATIONAL LORRY PARKING SURVEY

NOTES

- Site Location
- Trunk Road Service Area
- Motorway Service Area (MSA)
- Independent Truckstop
- Local Authority Truckstop

REV	DETAILS	DRAWN	CHECKED	DATE
CLIENT: MOTO				
PROJECT: MOTO SWINDON				
DRAWING TITLE: LOCATION OF NATIONAL LORRY PARKING SURVEYS (SOUTH-WEST) IN THE SWINDON AREA				
SCALES: NTS @ A3				
DRAWN: LG		CHECKED: MTC		DATE: OCT 2023
Eddisons 340 Deansgate Manchester M3 4LY Email: info@crofts.co.uk Tel: 0161 837 7380 Web: www.eddisons.com/services/transport-planning				
DRAWING NUMBER: 3728-03				REVISION: -



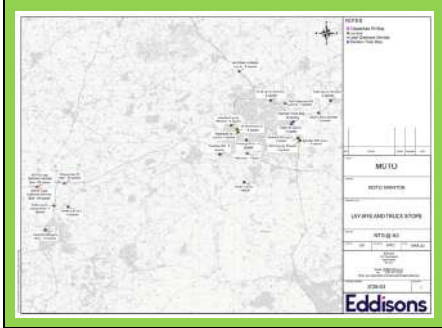


NOTES

- Chippenham Pit Stop
- Lay-bys
- Leigh Delamare Services
- Swindon Truck Stop

REV	DETAILS	DRAWN	CHECKED	DATE
CLIENT: MOTO				
PROJECT: MOTO SWINDON				
DRAWING TITLE: LAY-BYS AND TRUCK STOPS				
SCALES: NTS @ A3				
DRAWN:	LG	CHECKED:	MTC	DATE: MAR 23
Eddisons 340 Deansgate Manchester M3 4LY Email: info@crofts.co.uk Tel: 0161 837 7380 Web: www.eddisons.com/services/transport-planning				
DRAWING NUMBER: 3728-03				REVISION: -
Eddisons				

SWINDON LAYBY SURVEY - Tuesday 28th March 2023																							
DAY	Layby No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Parked	%
	Description	A350	B4069	Bumpers	A4361	Frankland	Mill Lane	Paddington	Hillmead	Rivermead	Westmead	Faraday	Murdock	A419	Trajan	A419	A361	A420	A420	A419	A350		
Tues 28 Mar	Spaces	10	4	10	1	20	2	10	6	6	6	4	10	10	5	3	3	8	3	8	4	Total	133
	7pm	7	1	5	0	9	0	0	0	3	2	0	1	7	5	2	2	4	1	5	4	58	43.6%
	9pm	9	1	6	0	12	0	1	0	4	3	1	2	11	6	4	2	5	1	5	4	77	57.9%
	12pm	11	0	9	0	17	0	1	1	5	3	1	2	11	5	4	3	7	2	6	4	92	69.2%
	Time																						Total



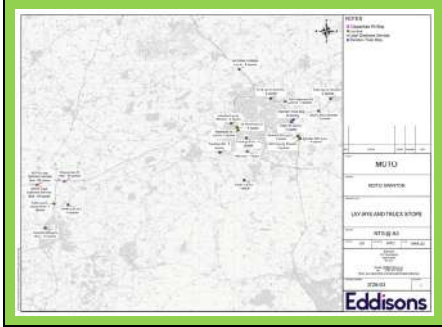
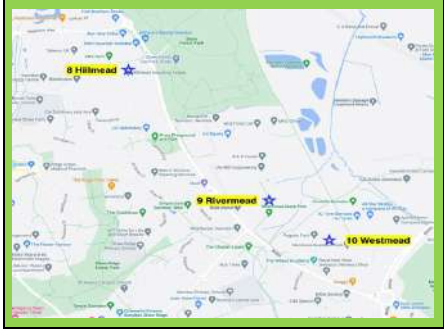
Notes

6 - Mill Lane - Now 3 EV Charging Spaces

Spaces are Estimated on Typical 15m HGV Length and not on DYL

Site 20 - A350 Added

SWINDON LAYBY SURVEY - Tuesday 18th April 2023																							
DAY	Layby No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Parked	%
	Description	A350	B4069	Bumpers	A4361	Frankland	Mill Lane	Paddington	Hillmead	Rivermead	Westmead	Faraday	Murdock	A419	Trajan	A419	A361	A420	A420	A419	A350		
Tues 18 April	Spaces	10	4	10	1	20	2	10	6	6	6	4	10	10	5	3	3	8	3	8	4	Total	133
	7pm	6	0	3	0	8	0	5	1	2	0	0	0	7	2	1	1	3	2	2	3	46	34.6%
	9pm	7	0	5	0	9	0	7	1	3	1	0	0	10	4	3	1	3	4	2	4	64	48.1%
	12pm	9	0	7	0	13	0	8	1	3	1	0	2	10	4	4	3	4	4	3	4	80	60.2%
	Time																						Total



Notes

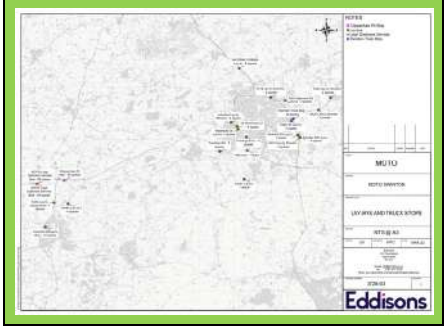
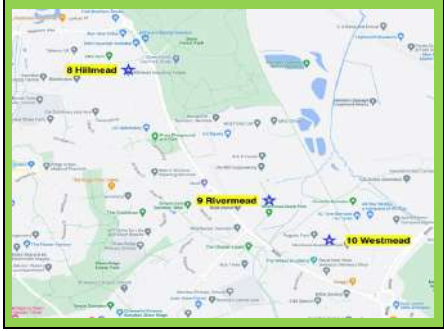
6 - Mill Lane - Now 3 EV Charging Spaces

Spaces are Estimated on Typical 15m HGV Length and not on DYL

Site 20 - A350 Added

SWINDON LAYBY SURVEY - Tuesday 9th May 2023																							
DAY		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Parked	%
	Description	A350	84069	Bumpers	A4361	Frankland	Mill Lane	Paddington	Hillmead	Rivermead	Westmead	Faraday	Murdock	A419	Trajan	A419	A361	A420	A420	A419	A350		
Tue 9 May	Spaces	10	4	10	1	20	2	10	6	6	6	4	10	10	5	3	3	8	3	8	4	Total	133
	7pm	6	0	6	1	10	0	1	2	5	0	0	0	4	3	2	3	1	1	3	2	50	37.6%
	9pm	7	0	7	1	11	0	1	3	6	0	0	1	4	4	2	3	1	2	5	2	60	45.1%
	12pm	7	0	9	2	14	0	1	4	9	0	0	1	4	4	2	4	1	2	6	2	72	54.1%
	Time	* NB Coned Off													* SB Coned Off							* NB Coned Off	Total

SWINDON LAYBY SURVEY - Tuesday 12th September 2023																						
DAY	Layby No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	Description	A350	B4069	Bumpers	A4361	Frankland	Mill Lane	Paddington	Hillmead	Rivermead	Westmead	Faraday	Murdock	A419	Trajan	A419	A361	A420	A420	A419	A350	
Tue 12 Sept	Spaces	10	4	10	1	20	2	10	6	6	4	4	10	10	5	3	3	8	3	8	4	Total
	7pm	3	0	6	0	5	0	1	1	3	2	1	0	1	1	1	1	1	0	0	0	27
	9pm	4	1	8	0	9	0	1	2	3	2	4	1	4	1	1	4	1	1	2	1	50
	12pm	7	1	10	0	11	0	2	5	4	3	5	2	6	2	2	4	1	2	4	1	72
	Time																					Total
																						%



Notes

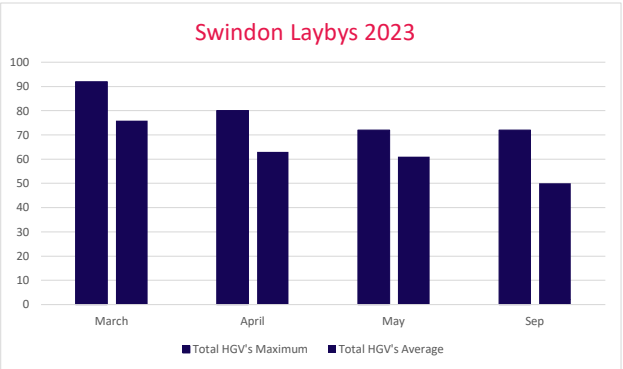
6 - Mill Lane - Now 3 EV Charging Spaces

Spaces are Estimated on Typical 15m HGV Length and not on DYL

Site 20 - A350 Added

SWINDON LAYBY SURVEY

	Total HGV's Maximum	Total HGV's Average
March	92	76
April	80	63
May	72	61
Sep	72	50



LAYBY NO.	SPACES	LOCATION OF PARKED HGV'S
1	10	A350 Eastern Layby
2	4	B4069 Swindon Road Lay-bys
3	10	Industrial Bumpers Way
4	1	A4361 Western Layby
5	20	Frankland Road – Industrial Estate
6	2	Mill Lane Western Layby
7	10	Paddington Drive – Industrial Estate
8	6	Hillmead – Industrial Estate
9	6	Rivermead Drive – Industrial Estate
10	6	Westmead Drive – Industrial Estate
11	4	Faraday Road – Industrial Estate
12	10	Murdock Road – Industrial Estate
13	10	A419 Lay-bys
14	5	Trajan Road - A420 (Merlin Way)
15	3	A419 – Northern Layby
16	3	A361 – Western Layby
17	8	A420 – Northern Layby
18	3	A420 – Western Layby
19	8	A419 - ???
20	4	A350- ???

APPENDIX 2

Parking Calculations

Month	24hr ADT	24hr %>6.6m	24hr AWT	24hr %>6.6m	18hr ADT	18hr %>6.6m	18hr AWT	18hr %>6.6m	16hr ADT	16hr %>6.6m	16hr AWT	16hr %>6.6m	12hr ADT	12hr %>6.6m	12hr AWT	12hr %>6.6m
Jan	30062	17.9	5381	30590	22.1	28930	17	29362	21.2	28549	16.9	29137	21.2	24790	16.7	25313
Feb	35018	16.1	5638	35625	20.2	33445	15	33848	19	32696	14.9	33138	18.9	28145	14.6	28350
Mar	35318	17.8	6287	35747	21.1	33567	16.5	33849	19.8	32741	16.4	33030	19.7	28188	16.2	28411
Apr	39143	14.9	5832	40682	17.8	37402	13.8	38766	16.6	36477	13.7	37829	16.5	31365	13.5	32461
May	39440	16.6	6547	40309	18.9	37472	15.4	38183	17.7	36519	15.4	37258	17.6	31226	15.2	31824
Jun	42098	14.5	6104	41665	17.7	40070	13.5	39480	16.6	38924	13.4	38419	16.6	33183	13.4	32689
Jul	41547	14.6	6066	42203	17.9	39439	13.5	39891	16.7	38251	13.5	38758	16.7	32432	13.4	32792
Aug	45299	13.9	6297	45328	16.5	43150	12.9	43044	15.5	41823	12.9	41826	15.4	35391	12.8	35379
Sep	41497	15.1	6266	40959	17.9	39404	14.1	38760	16.8	38349	14	37789	16.7	32741	13.9	32170
Oct	39421	14.4	5677	40449	18.3	37501	13.3	38261	17.1	36531	13.2	37353	17	31293	12.9	31886
Nov	38576	16.1	6211	38589	19.5	36671	14.9	36493	18.2	35763	14.7	35621	18.1	30887	14.4	30696
Dec	36932	13.6	5023	39140	15.9	35261	12.4	37310	14.6	34422	12.2	36432	14.4	30079	11.7	31657
Avg	38695	15.5	5998	39273	18.7	36859	14.3	37270	17.5	35920	14.3	36382	17.4	30810	14.1	31135
Site Hours	8463															
Number of	358															
1a. AADF (1	30810															
1b. AADF (1	35920															
1c. AADF (1	36859															
2a. AAWF (1	31135															
2b. AAWF (1	36382															
2c. AAWF (1	37270															
3a. peak d	51775															
3b. peak d: #####																
3c. peak hc	4457															
3d. peak hc #####																
4a. AADF (Two way) 16 Hr																
4b. AADF (Two way) 24 Hr																
5. CRF																
6. Stress																
7a. % vehic	15.46%															
7b. % vehic	18.66%															
Annual report for 2023 for Sitled : 2785																
Month	24hr ADT	24hr %>6.6m	24hr AWT	24hr %>6.6m	18hr ADT	18										

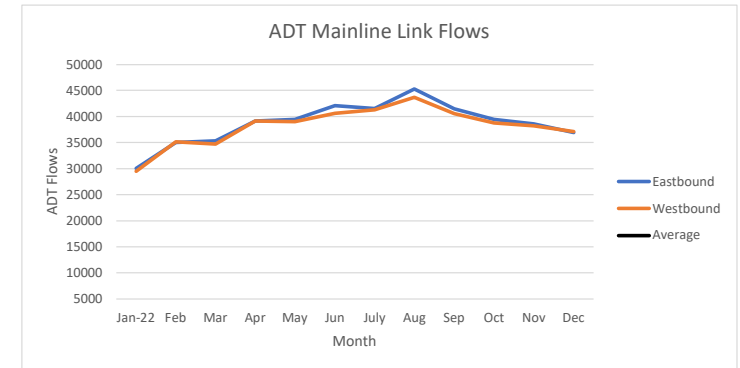
[illegible][illegible]

WEBTRIS Data Calculations - January 2022 - December 2022

Count Point 3335B
Description MIDAS site at M4/3335B_Eastbound

Month	ADT 24hr	%>6.6m	ADT >6.6m
Jan-22	30062	17.9	5381
Feb	35018	16.1	5638
Mar	35318	17.8	6287
Apr	39143	14.9	5832
May	39440	16.6	6547
Jun	42098	14.5	6104
July	41547	14.6	6066
Aug	45299	13.9	6297
Sep	41497	15.1	6266
Oct	39421	14.4	5677
Nov	38576	16.1	6211
Dec	36932	13.6	5023
Average	38696	15	5944

39002

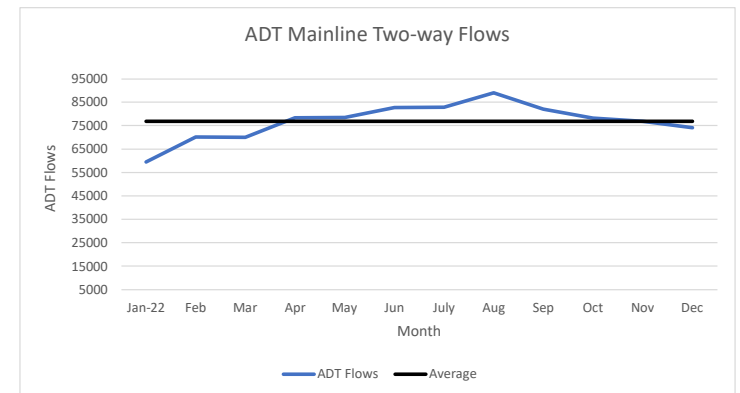


Count Point 3319A
Description MIDAS site at M4/3319A_Westbound

Month	ADT 24hr	%>6.6m	ADT >6.6m
Jan-22	29490	12.5	3686
Feb	35125	11.4	4004
Mar	34684	12.5	4336
Apr	39142	10.4	4071
May	39009	11.6	4525
Jun	40622	10.3	4184
July	41266	10.1	4168
Aug	43704	9.5	4152
Sep	40517	10.5	4254
Oct	38746	10.1	3913
Nov	38207	11.1	4241
Dec	37133	9.5	3528
Average	38137	11	4088

39552

	Two-way	Two-Way HGV	Two Way LGV	Avg
Jan-19	59552	9067	50485	76833
Feb	70143	9642	60501	76833
Mar	70002	10622	59380	76833
Apr	78285	9903	68382	76833
May	78449	11072	67377	76833
Jun	82720	10288	72432	76833
July	82813	10234	72579	76833
Aug	89003	10448	78555	76833
Sep	82014	10520	71494	76833
Oct	78167	9590	68577	76833
Nov	76783	10452	66331	76833
Dec	74065	8550	65515	76833
Average	76833	10032	66801	76833



Parking Requirements		Motorway Service Area (MSA)			Motorway Rest Area = MSA / 2	
		2022	2033		2022	2033
Light Vehicles		78555	90589			
HGV and Coach		10448	12049			
		89003	102638			
Cars	0.5%	393	453		196	226
HGV	1.0%	104	120		52	60
Abnormal Load	minimum 1	1	1		1	1
Coach	0.1%	10	12		5	6
Caravan/Motorhome	0.015%	12	14		6	7
Motorcycle	0.015%	12	14		6	7
Lodge/Hotel	1 space per 2 bedrooms	0	0		0	0
Disabled car users (minimum of 5)	5.0%	20	23		10	11
Disabled Caravan (minimum of 1)	5.0%	1	1		0	0

NTM Temporo Growth Factor 2022 -2033 (Motorways Wiltshire)

Average Day 1.1532

APPENDIX 3

Framework Travel Plan

Proposed Motorway Rest Area
M4 Junction 16, Swindon, Wiltshire

September 2023

TRAVEL PLAN



Eddisons

REPORT

DOCUMENT:	Travel Plan
PROJECT:	Proposed Motorway Rest Area, M4 Junction 16, Swindon, Wiltshire
CLIENT:	MOTO Hospitality Ltd
JOB NUMBER:	3728
FILE ORIGIN:	Z:\projects\3728 MOTO Swindon\Docs\Reports\3728.TP.01.docx

DOCUMENT CHECKING:

Primary Author:	MTC	Initialled:	MTC
Contributor	SM	Initialled:	SM
Review By:	PJW	Initialled:	PJW

Issue	Date	Status	Checked for Issue
1	08-09-23	First Draft	MTC
2			
3			
4			

CONTENTS

1	INTRODUCTION	1
1.1	Background.....	1
1.2	Planning Policy.....	1
2	OBJECTIVES AND TARGETS.....	4
2.1	Objectives	4
2.2	Targets.....	4
2.3	Site Assessment.....	5
3	ACCESSIBILITY BY NON CAR MODES	7
3.1	Introduction.....	7
3.2	Access on Foot.....	7
3.3	Access by Cycle	8
3.4	Access by Bus	9
3.5	Accessibility by Rail.....	10
3.6	Accessibility Summary	10
4	TRAVEL PLAN MANAGMENT	11
4.1	Travel Plan Coordinator.....	11
5	TRAVEL PLAN MEASURES	12
6	MONITORING AND REVIEW	14
7	REMEDIAL MEASURES	16
8	FUNDING	17
9	ACTION PLAN	18

PLANS (See Transport Assessment)

1 INTRODUCTION

1.1 Background

1.1.1 This Travel Plan (TP) has been prepared by Eddisons on behalf of Moto Hospitality Limited (Moto) for a new motorway rest area (MRA) on land adjacent to Junction 16 of the M4 in Swindon, Wiltshire. Moto is the leading provider of services on the UK's motorway network with sites in England, Scotland and Wales, with service areas across 45 locations. Moto proposes to expand its service offer at locations where there are gaps in the strategic highway network to meet the safety and welfare needs of the public and HGV drivers.

1.1.2 The proposals would provide motorway service area with amenities for up to 242 cars and 62 HGV drivers. including showers and toilets, a hot food cafeteria, a lounge area and retail space.

Moto has a mission statement which states:

"We aim to be the nation's favourite break when travelling by delivering great brands and exceptional service to every customer. We continually strive to improve our operations and to create a rewarding working environment for our employees whilst delivering superior returns for our shareholders."

1.1.3 Consistent with that mission statement, a travel plan is proposed to achieve a sustainable development and enable staff to choose alternatives to single-occupancy car-use and promote greener, cleaner travel choices. In order for a travel plan to be successful it needs to be tailored to suit the needs of the particular location in question, and have the full backing of management and staff at all levels.

1.2 Planning Policy

1.2.1 The National Planning Policy Framework (NPPF) promotes the achievement of sustainable development. Paragraph 113 states:

“All developments that will generate significant amounts of movement should be required to provide a travel plan,. ”

1.2.2 The Government’s Planning Practice Guidance sets out the requirements for Travel Plans. The guidance at paragraph 3 of section 42 states:

“Travel Plans are long-term management strategies for integrating proposals for sustainable travel into the planning process.”

1.2.3 Paragraph 6 points out travel plans can positively contribute to:

- encouraging sustainable travel;
- lessening traffic generation and its detrimental impacts;
- reducing carbon emissions and climate impacts;
- creating accessible, connected, inclusive communities;
- improving health outcomes and quality of life;
- improving road safety; and
- reducing the need for new development to increase existing road capacity or provide new roads.

1.2.4 Paragraph 9 provides guidance on when travel plans are needed; amongst the considerations to be taken into account are:

- the scale of development and its potential for additional trip generation;
- existing intensity of transport use; and
- the cumulative impacts of multiple developments within a particular area.

1.2.5 Paragraph 11 advises:

“Travel Plans should set explicit outcomes rather than just identify processes to be followed (such as encouraging active travel or supporting the use of low emission vehicles). They should address all journeys resulting from a proposed development by anyone who may need to visit or stay and they should seek to fit in with wider strategies for transport in the area.”

- 1.2.6 MRAs allow the opportunity to provide stopping points on the motorway for the safety and welfare of the travelling public and HGV drivers. The provision of MRAs assists in achieving sustainable travel by keeping vehicles on the motorway, or in the case of junction site alongside the motorway. This avoids motorists from leaving the motorway in search of places to stop for rest and refreshment which can involve substantial additional mileage and add to local traffic congestion. Providing motorists/HGV drivers with the opportunity to stop on their motorway journey reduces congestion, unnecessary mileage, and additional trips. This in turn reduces air pollution and saves on finite fuel resources making journeys shorter and more efficient.
- 1.2.7 These measures go a long way to achieving the objectives of a travel plan, however for a MRA, there is potential to specifically address employee travel. It is proposed that this Travel Plan forms the basis of discussions with Wiltshire Council (the Council), in its role as local highway authority.

2 OBJECTIVES AND TARGETS

2.1 Objectives

2.1.1 The objectives of this Travel Plan are:

- to encourage sustainable travel;
- to lessen traffic generation;
- to reduce carbon emissions;
- to improve road safety;
- to encourage the use of public transport; and
- to maximise the use of car sharing.

2.2 Targets

2.2.1 Prior to the opening of the development, the actual travel patterns of the staff are not known. A baseline travel survey is proposed within three months of the opening which will establish existing travel patterns against which the targets can be judged.

2.2.2 The interim targets have been set based on experience gained elsewhere by Moto.

2.2.3 These are detailed in **Table 2.1** below:

Target No	Details
1	To achieve a 5% reduction in vehicle driver mode share during the AM and PM peak hours, within three years of baseline.
2	To achieve at least 5% car sharing by members of staff within three years of baseline.
3	To achieve at least 5% of employee trips by public transport within three years of baseline

Table 2.1 – Interim Targets

3 SITE ASSESSMENT

Site Location

- 3.1.1** The site is located on the outskirts of Swindon, approximately 5 kilometres to the southwest of the town centre.
- 3.1.2** The site is bound to the north by the M4 Motorway, to the south by the B4005, to the west Junction 16 of the M4 and to the east by undeveloped land.
- 3.1.3** The location of the site in relation to the surrounding area is shown on **Plan 1** of the accompanying Transport Assessment (TA).

Existing Highway Network

- 3.1.4** The site is located in close proximity to the primary route network, namely Junction 16 of the M4.
- 3.1.5** To the northwest of the site, the B4005 provides direct access to the M4 motorway at Junction 16 via a five-arm signalised roundabout. The B4005 is subject to a 40mph speed limit where it passes the site and is street lit on the approach to Junction 16 only.
- 3.1.6** Junction 16 links the M4 to the nearby towns of Swindon (to the north of the site via the A3102) and to Royal Wooten Bassett (to the southwest via the A3102 Swindon Road).
- 3.1.7** A small layby is located on the B4005 site frontage. This layby will be retained as part of the Proposed Development.

Development Proposals

- 3.1.8** The proposals would provide motorway rest area with associated amenities for up to 242 cars and 62 HGV drivers. Amenities will include showers and toilets, a hot food cafeteria, a lounge area and retail space.

- 3.1.9** Vehicular access to the site would be gained via the creation of a new 55 metre ICD roundabout on the B4005.
- 3.1.10** It is not considered that a development of this type will offer significant local customer demand to warrant a dedicated public transport service, cycle lanes or footpaths on the local road network upon opening.
- 3.1.11** Nevertheless, the connectivity of the site by other modes of travel should be considered to ensure that unnecessary staff related trips are not induced via the strategic road network.
- 3.1.12** In the following section, the accessibility of the site has been assessed in relation to the potential for travel by alternative, more sustainable, modes of transport to the motor vehicle as part of the TA, recognising that the primary purpose of an MRA is to serve drivers who are using the strategic road network.

4 ACCESSIBILITY BY NON CAR MODES

4.1 Introduction

4.1.1 In order to accord with the aspirations of the NPPF and Local Planning Policy, any new proposals should extend the choice in transport and secure mobility in a way that supports sustainable development.

4.1.2 New proposals should therefore attempt to influence the mode of travel to the development in terms of gaining a shift in modal split towards non-car modes, thus assisting in meeting the aspirations of current national and local planning policy.

4.1.3 The accessibility of the proposed site has been considered by the following modes of transport:

- accessibility on foot;
- accessibility by cycle;
- accessibility by bus; and
- accessibility by rail.

4.2 Access on Foot

4.2.1 It is important to create a choice of direct, safe and attractive routes between where people live and where they need to travel in their day-to-day life. This philosophy clearly encourages the opportunity to walk whatever the journey purpose and also helps to create more active streets and a more vibrant neighbourhood.

4.2.2 The pedestrian infrastructure in the vicinity of the site is currently very limited, however, given the nature of the proposed land use, there will be minimal demand to warrant travel to the site by foot.

- 4.2.3** A new shared cycleway / footway is proposed along the site frontage on the B4005 to link the site to the existing pedestrian crossing facilities at Junction 16 and the nearest bus stop on the A3102. In addition, pedestrian crossing facilities will be provided internally within the site to link the car parking areas to the proposed amenity building.

4.3 Access by Cycle

- 4.3.1** An alternative mode of travel to the site could be achieved by bicycle.
- 4.3.2** Clearly, the new advice contained within the Highway Code, which was updated on 29th January 2022, will improve the safety of vulnerable road users including cyclists, pedestrians, and horse-riders. Most of the new advice relates to where cyclists should position themselves within the lane in various traffic conditions and motorists being required to give cyclists priority in slow moving traffic and locations where there is insufficient room for vehicles to overtake cyclists safely, allowing 1.5-metres for cyclists when overtaking them.
- 4.3.3** The Cycling England document 'Integrating Cycling Into Development Proposals' advises that 'For short trips, [cycle links] can give cyclists significant advantages over car users in terms of convenience and journey time... Most cycle journeys for non-work purposes and those to rail stations are between 0.5 and 2 miles, but many cyclists are willing to cycle much further. For work, a distance of 5 miles should be assumed.'
- 4.3.4** This distance equates to a journey of around 40 minutes based on a leisurely cycle speed of 12 kilometres per hour and would encompass Royal Wootton Bassett, Common Platt, Hook, Lydiard Millicent and Swindon.
- 4.3.5** National Cycle Route 45 is located approximately 2 kilometres to the north of the site in Blagrove off Franklands Road. This route links to Swindon town centre and many of its surrounding suburbs providing an opportunity to assist with commuting trips to and from the site.

4.3.6 The development proposals will provide cycle parking facilities along with lockers and changing facilities for staff.

4.3.7 The site can, therefore, be considered as being accessible by cycle.

4.4 Access by Bus

4.4.1 An effective public transport system is essential in providing good accessibility for large parts of the population to opportunities for work, education, shopping, leisure and healthcare in the town and beyond.

4.4.2 The nearest bus stop to the site is located along the A3102 Swindon Road, immediately to the west of the development site. This stop consists of a bus stop layby and pole with service information.

4.4.3 A summary of the services available from the nearest bus stops from the development site is provided in Table 4.1 below.

Service No.	Route	Monday - Friday			Saturday			Sun
		Pre 08:00	08:00-17:00	Post 17:00	Pre 08:00	08:00-17:00	Post 17:00	
55	Chippenham - Swindon	9 services	10 minutes	18 services	5 services	20 minutes	10 services	30 minutes
99	Chippenham - Malmesbury - Wootton Bassett -	2 services	60 minutes	3 services	-	60 minutes	2 services	-

Table 4.1 Existing Bus Services Operating in the Vicinity of the Site

4.4.4 As can be seen from Table 4.1, the nearest bus stops to the site provides various services throughout the day to destinations such as Chippenham, Swindon and Royal Wooten Bassett.

4.4.5 The above services operate from around 4:45am to around 23:45pm, making travel by public transport a real alternative to travelling by car for commuting trips.

4.4.6 It is therefore concluded that the site is accessible by bus for locally employed staff.

4.5 Accessibility by Rail

4.5.1 The nearest railway station to the site is Swindon station. This station can be accessed by a 15-minute bus journey on service 55 or by a 26-minute cycle. The station is managed by Great Western Railway and has 4 platforms, offering 13 services per hour to destinations such as London and Swansea.

4.5.2 This provides commuting opportunities to and from the site as part of a multi-model trip.

4.6 Accessibility Summary

4.6.1 The proposals have been considered in terms of accessibility by non-car modes for the proposed development.

4.6.2 The following conclusions can be drawn from this section of the report:

- Footway provisions will be improved as part of the development proposals to link the site to the nearby bus stops.
- The site is accessible by cycle for locally employed staff.
- The bus and rail services available in the area will help to encourage employees to travel to and from the site by public transport.

4.6.3 In light of the above, it is considered that the site is accessible and will cater for needs of the development's staff and assist in promoting a choice of travel modes other than the private car.

5 TRAVEL PLAN MANAGMENT

5.1 Travel Plan Coordinator

5.1.1 The Travel Plan Coordinator has a crucial role in ensuring that the Travel Plan is implemented, managed, monitored and reviewed over time. The Travel Plan Coordinator will coordinate the on-going development and management of the Travel Plan, including further measures, raising awareness, monitoring and review. It is anticipated the Travel Plan Coordinator will be a senior member of the management team at the services.

5.1.2 The role of the Travel Plan Coordinator will include:

- acting as a point of contact;
- marketing and promoting the Travel Plan;
- providing sustainable travel information to staff;
- monitoring and reviewing the Travel Plan;
- liaison with the Council, transport operators and specialist groups;
- arranging for travel surveys to be undertaken of staff;
- arranging Personal Travel Planning, where required; and
- submitting an annual monitoring report to the Council.

6 TRAVEL PLAN MEASURES

6.1.1 The proposed Travel Plan measures focus on maximising the site's accessibility and sustainability as part of the development proposals.

6.1.2 Marketing and promotion of the Travel Plan will form part of the implementation of the Travel Plan, and this will include the distribution of Travel Information to new staff.

Travel Information

6.1.3 Travel Information will be made known to all staff at the proposed development with the intention of encouraging staff to engage in more sustainable modes of transport. The Travel Information is expected to include:

- details of bus services including routes, fares and timetables; and
- journey planning websites.

Public Transport Measures

6.1.4 Good public transport provision is important to achieving sustainable transport targets. By encouraging staff to use existing bus services, additional revenue will be generated and the quality of services should improve.

6.1.5 Public transport use will be encouraged through the following measures:

- providing travel information for local services;
- encouraging improved bus services; and
- providing details of promotions and potential discounted tickets for local bus operators.

Car Sharing

- 6.1.6** When two or more people share a car, and travel together, it can result in considerable cost savings and other benefits. Car sharing not only reduces an individual's transport cost by fuel costs being shared, but also reduces the number of cars on the roads, provides a real solution to transport problems of rural areas, and reduces the need for a private car.
- 6.1.7** The Travel Plan Coordinator will ensure that all staff are advised of the financial savings which can be achieved through car sharing and will examine ways of introducing potential car sharers to one another. Where appropriate car sharing initiatives will be introduced.

7 MONITORING AND REVIEW

- 7.1.1** An effective monitoring and review process is important to establish how successful the Travel Plan has proved. Monitoring involves collecting data and information, and the review process involves the consideration of these details to determine whether or not the Travel Plan targets have been met.
- 7.1.2** As part of the monitoring process it is important to establish the baseline conditions. It is proposed a baseline travel survey of employees will be undertaken within three months of the opening of the proposed development. The Travel Plan Coordinator will be responsible for organising the survey, coordinating the results and submitting a report of survey to the Council within one month of completion of the survey.
- 7.1.3** Based on the monitoring and review process, it will then be necessary for the Travel Plan Coordinator, in conjunction with the Council, to decide what, if any, amendments are required to the Travel Plan.
- 7.1.4** For the on-going management of the Travel Plan to be successful and to deliver the desired outcomes, it is important that the parties involved in the delivery of the Travel Plan, which means Moto together with the Travel Plan Coordinator and the Council, work effectively in partnership. It is recognised that certain outcomes are dependent on others such as the improvement to bus services.
- 7.1.5** Monitoring of travel patterns over time, to ascertain whether the initiatives of the Travel Plan are proving successful and whether there has been a shift to more sustainable modes of travel, requires on-going travel surveys to be undertaken.
- 7.1.6** It is proposed that annual monitoring takes place for a minimum period of three years commencing no later than 15 months after first opening. On this basis a total of four annual surveys will be conducted when the baseline travel survey is taken into account.

- 7.1.7** The precise format of the baseline travel survey and annual monitoring survey will be agreed with the Council before being undertaken. The travel survey will be used to establish reasons why people drive and to identify barriers to sustainable travel that could be addressed.
- 7.1.8** The results of the travel surveys will be analysed and the factors influencing travel behaviour will be investigated. If the target modal share of car use is not met then it may be necessary to review what remedial measures need to be implemented to mitigate the impact of any under achievement. The Travel Plan Coordinator, in conjunction with the Council, will decide what, if any, amendments are required to the Travel Plan.

DRAFT

8 REMEDIAL MEASURES

8.1.1 In the event that the Travel Plan is shown to be underachieving a remedial strategy needs to be outlined, which considers measures to help get the Travel Plan 'back on track'. Remedial measures are intended to achieve modal shift and mitigate the impact of any under achievement in meeting targets.

8.1.2 A set of potential remedial measures, to be triggered in the event that measures mentioned above fail to meet the required Travel Plan targets, could include the following:

- extending the appointment of the Travel Plan Coordinator and monitoring for a further two years;
- additional active marketing and promotion of sustainable travel information;
- offering Personal Travel Planning to staff; and
- liaising with the Council and bus operators over potential bus voucher scheme for staff.

8.1.3 The remedial measures are different to the Travel Plan measures, and the exact nature of what, if any, remedial measures are required will be identified through the monitoring and review process in conjunction with the Council.

9 FUNDING

- 9.1.1** It is anticipated that a planning obligation will be completed that secures the funding of the Travel Plan. The funding will include for the services of the Travel Plan Coordinator, the cost of the annual surveys as well as provision for 'remedial' funds to cover the cost of measures required in the event the Travel Plan does not meet the required targets.

DRAFT

10 ACTION PLAN

10.1.1 An action plan needs to be incorporated into the Travel Plan to outline the actions required to implement the Travel Plan, who is responsible for implementing the action, and a deadline for completion. The proposed Travel Plan Action Plan is set out in Table 10.1 below.

Action/ Objective	Measure	Indicator	Responsibility	Timescale
All	Appoint a Travel Plan Coordinator	TPC appointed	Moto	At least 3 months before opening
Encourage sustainable travel	Provide details of public transport services in Travel Information	Details included and updated in Travel Information	TPC	Before opening and on appointment of all staff
Lessen traffic generation	Provide details of car sharing scheme			Within 3 months of opening
	Provide details of public transport services in Travel Information			Before opening and on appointment of all staff
Reduce carbon emissions	Encourage car sharing			Within 3 months of opening
	Provision of EV charging points	As part of the proposed development	Moto	Before opening
Improve road safety	Provide parking and other facilities to comply with DfT Circular 02/2013			
Encourage use of sustainable travel	Pedestrian improvements to link the site to the nearby bus stops	S278 agreement		
Maximise the use of car sharing	Develop car sharing initiative	Details included in Travel Information	TPC	Within 3 months of opening
Remedial measures	To be agreed with the Council	TBC	TPC and Council	Annually, and no later than 3 years and 3 months after opening

Table 10.1 – Action Plan

APPENDIX 4

Local Model Validation Report



National Highways

M4 JUNCTION 16

Local Model Validation Report





National Highways

M4 JUNCTION 16 VISSIM MODEL

Local Model Validation Report

TYPE OF DOCUMENT (VERSION) PUBLIC

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CONTENTS

1	INTRODUCTION	1
1.1	BACKGROUND	1
1.2	REPORT STRUCTURE	1
2	DATA COLLECTION	2
2.1	TRAFFIC SURVEYS	2
2.2	WEBTRIS DATA AND IMPACT OF COVID-19	4
2.3	FEBRUARY 2023 TRAFFIC SURVEY	7
2.4	MOVA DATA	9
3	MODEL DEVELOPMENT	10
3.1	INTRODUCTION	10
3.2	NETWORK DEVELOPMENT	10
3.3	TRAFFIC MATRIX DEVELOPMENT	14
4	TRAFFIC ASSIGNMENT, CONVERGENCE AND CALIBRATION	17
4.1	DYNAMIC ASSIGNMENT	17
4.2	CONVERGENCE	17
4.3	CALIBRATION	17
5	CALIBRATION AND VALIDATION RESULTS	21
5.2	TRAFFIC FLOW CALIBRATION RESULTS	22
5.3	JOURNEY TIME VALIDATION RESULTS	26
6	SUMMARY	28

TABLES

Table 2-1 – ANPR sites	3
Table 3-1 – Bus routes within the model area	13
Table 3-2 - VISSIM peak hour demand matrix totals	16
Table 5-1 – Traffic flow calibration criteria	22
Table 5-2 – Overall flow calibration: AM 07:30 – 08:30	23
Table 5-3 – Overall flow calibration: PM 16:30 – 17:30	23
Table 5-4 – Overall flow calibration: AM 08:00 – 09:00	24
Table 5-5 – Overall flow calibration: PM 17:00 – 18:00	24
Table 5-6 – Journey time validation results for observed AM and PM peak hours	27
Table 5-7 – Journey time validation results for traditional AM and PM peak hours	27

FIGURES

Figure 1-1 - M4 Junction 16 layout	1
Figure 2-1 - M4 junction 16 WebTRIS sites	4
Figure 2-2 - Westbound mainline	5
Figure 2-3 - Eastbound mainline	5
Figure 2-4 – Eastbound off-slip	6
Figure 2-5 – Eastbound on-slip	6
Figure 2-6 - Westbound off-slip	7
Figure 2-7 - Westbound on-slip	7
Figure 2-8 – February 2023 survey locations	8
Figure 3-1 - M4 J16 network and link structure detail	10
Figure 3-2 – M4 J16 VISSIM model zone structure	11
Figure 4-1 - Signal phases between Lydiard Fields and junction 16	19
Figure 4-2 – A3102 queueing on approach to M4 J16, looking east through the Lydiard Fields	20
Figure 4-3 - A3102 exit from M4 J16, blocking back through the junction in the PM peak	20

Figure 4-4 – A3102 exit from M4 J16 looking westbound towards Wootton Bassett, PM peak	20
Figure 5-1 - Flow calibration all flows AM 07:30 - 08:30 (all vehs)	23
Figure 5-2 - Flow calibration all flows PM 16:30 - 17:30 (all vehs)	24
Figure 5-3 - Flow calibration all flows AM 08:00 - 09:00 (all vehs)	25
Figure 5-4 - Flow calibration all flows PM 17:00 - 18:00 (all vehs)	25
Figure 5-5 - Journey time routes	26

1 INTRODUCTION

1.1 BACKGROUND

WSP was commissioned by National Highways to develop a new VISSIM microsimulation model of Junction 16 of the M4. It is intended that the model will be used to assess the impacts of development and infrastructure proposals on the operation of the junction. This Local Model Validation Report (LMVR) describes the data collection exercise, model development, calibration, and validation processes to build the 2021 base year VISSIM model.

M4 junction 16 is a grade-separated signalised motorway junction to the south-west of Swindon. As well as providing access to the M4, it connects the A3102 between Swindon and Royal Wootton Bassett, and the B4005 to the south-east of the junction. Lydiard Fields is a signalised crossroads just to the east of junction 16 and is included in the model due to interaction between the two junctions. The junction layout is shown in Figure 1-1.

Figure 1-1 - M4 Junction 16 layout



1.2 REPORT STRUCTURE

The report is structured as follows:

- Chapter 2: Traffic Data collection.
- Chapter 3: Model development process.
- Chapter 4: Assignment, convergence and calibration.
- Chapter 5: Calibration and validation results.
- Chapter 6: Summary.

2 DATA COLLECTION

New traffic surveys were undertaken by Intelligent Data Collection (IDC) to gather the data necessary to build and validate the new base year model. Surveys were originally scheduled for late November 2021 and commenced on this basis but had to be repeated due to technical issues. The repeat surveys took place at the next available opportunity, Wednesday 1st December 2021. Longer term counts were undertaken for two consecutive weeks covering 23rd November – 6th December 2021 including the survey day.

The surveys were undertaken at a time of no restrictions associated with the Covid-19 pandemic – with the surveys completed before a move to ‘Plan B’ measures announced on 8th December 2021. Whilst the surveys were not fully undertaken during a neutral month, with the turn count survey undertaken on 1st December, comparisons have been made to available November 2021 WebTRIS data to justify its use. Section 2.2 contains this analysis and indicates that the December survey data is broadly comparable to the average traffic level during November 2021. On this basis we consider it acceptable to use the December survey data for this project.

Further traffic surveys were undertaken during February 2023 to review westbound traffic demands on the A3102 heading towards Lydiard Fields from Swindon and exiting junction 16 towards Royal Wootton Bassett.

2.1 TRAFFIC SURVEYS

The following surveys were commissioned at both M4 junction 16 and the Lydiard Fields crossroads:

- Junction turning counts (MCCs)
- Automatic number plate recognition (ANPR)
- Queue lengths
- Video counts (in lieu of Automatic Traffic Counters)

The MCC and ANPR surveys were both undertaken on 1st December 2021, with video counts undertaken between 23rd November 2021 and 6th December 2021 on the M4 eastbound off-slip and westbound off-slip and Frankland Road. The MCC and ANPR surveys provided processed data for a 12-hour period from 07:00-19:00. Table 2-1 provides an overview of ANPR camera locations.

Additionally, data was downloaded from the WebTRIS database for sites on the slip roads and along the M4 mainline. This data was used for comparison against the survey data, building the matrix and conducting a comparison between pre- and post-Covid traffic levels.

National Highways provided MOVA files, specifications and data for the controllers on the two junctions and this was used to program MOVA operation in the VISSIM model, using PCMOVA.

Table 2-1 – ANPR sites

Site	Location	Date
1	A3102 west entry	1/12/2021
2a	A3102 west at stop line	1/12/2021
2b	M4 westbound on-slip	1/12/2021
2c	M4 eastbound off-slip, at stop line	1/12/2021
2e	M4 J16 northern circulatory	1/12/2021
2f	A3102 east near stop line	1/12/2021
2g	M4 J16 eastern circulatory	1/12/2021
2h	M4 westbound off-slip at stop line	1/12/2021
2i	B4005 near stop line	1/12/2021
3	A3102 eastbound exit into Lydiard Fields	1/12/2021
4a	A3012 east near Blagrove Roundabout	1/12/2021
5	B4005 near Hay Lane	1/12/2021

It should be noted that there was no ANPR data collected on the M4 eastbound on-slip; whilst this location was specified in the Survey Specification, the surveyor found that they could not safely install a camera at the requested location. Some other ANPR sites also returned low capture rates, and the methodology to account for ANPR issues is discussed in detail in section 3.3.

2.1.1 TOMTOM DATA FOR JOURNEY TIMES

To complement the ANPR data in the matrix development process and journey time validation, TomTom data was procured for the period of 9th November – 2nd December 2021 (Tuesdays, Wednesdays and Thursdays) for passenger vehicles.

The received data included average journey time across sections covering the M4 junction 16 model network area. These sections were then compiled into full routes.

2.2 WEBTRIS DATA AND IMPACT OF COVID-19

The Covid-19 pandemic led to a significant impact on travel demand across the country. In some areas this has continued to an extent due to increased homeworking. Therefore, it was necessary to investigate long term traffic flows around the junction to see if flows have now stabilised, and if the December 2021 survey day can be considered representative.

There are various WebTRIS sites around junction 16 for the M4 mainline and off-slips. Figure 2-1 shows their location. Data was downloaded for November 2021 (closest neutral month to the survey day), the same month in 2019 to compare with pre-pandemic traffic levels, and November 2022 for the most recent comparable period. Data was also downloaded for the actual survey day, 1st December 2021. Comparisons for all four slips and two mainline sites are shown in Figure 2-2 to Figure 2-7, with data presented for an average weekday (Tuesday – Thursday).

The graphs show that the average November 2021 flows are generally lower in the peak periods than the equivalent for 2019, significantly so in some cases. The data also shows that, while the survey day was not in a neutral month, traffic levels are comparable to the average November 2021 level.

Comparison with November 2022 data indicates some growth in flow on the westbound off-slip during the AM peak hour in particular. This may reflect a gradual increase in traffic levels post-Covid, noting the large areas of employment to the north of Junction 16. For this reason, it is recommended that traffic levels are reviewed at the time of any future use of the model, to confirm any change in traffic levels from those surveyed in 2021. Based on the outcome of this review, it may be necessary to develop a Reference Case model that reflects prevailing slip road traffic levels at the time of use.

Figure 2-1 - M4 junction 16 WebTRIS sites



Figure 2-2 - Westbound mainline

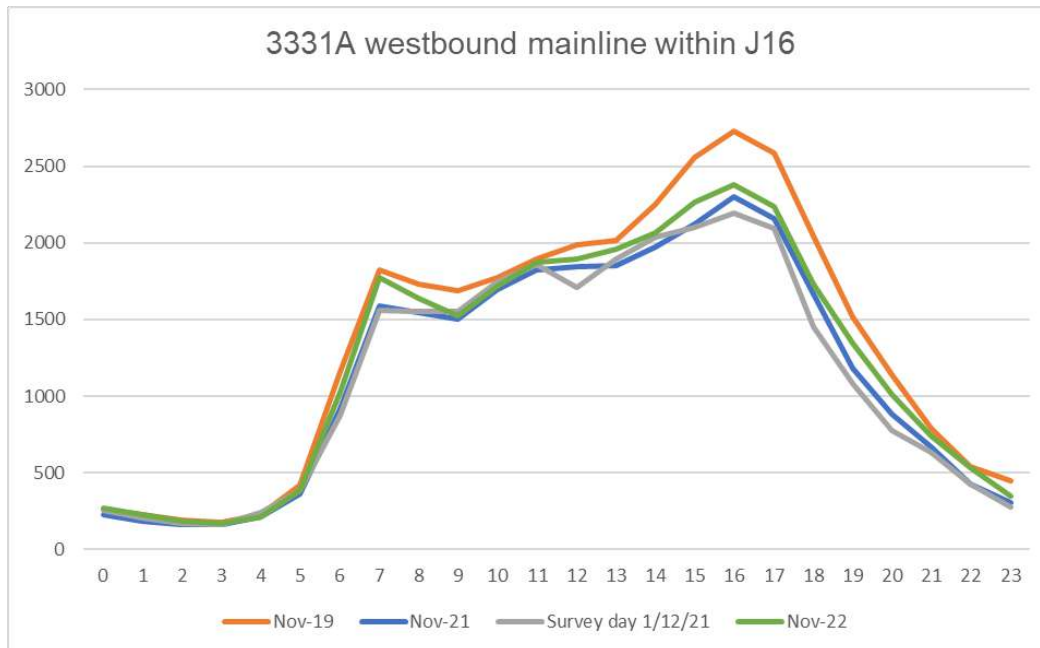


Figure 2-3 - Eastbound mainline

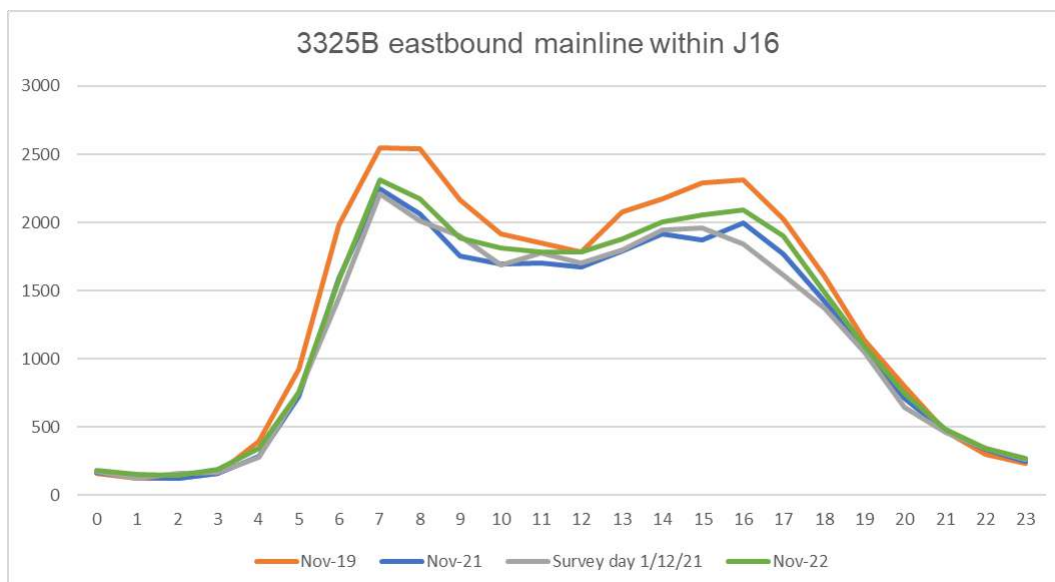


Figure 2-4 – Eastbound off-slip

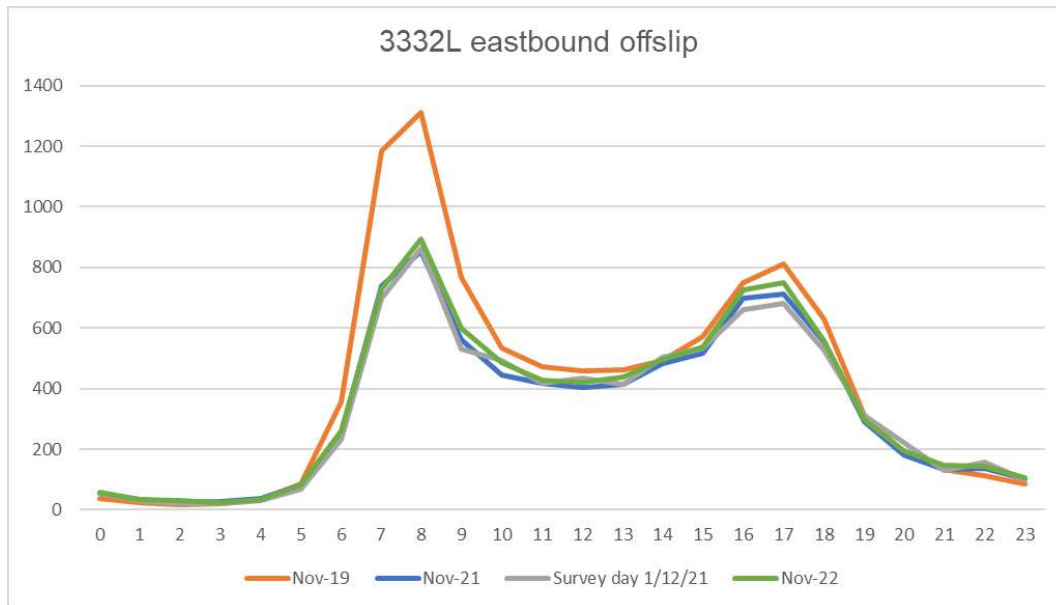


Figure 2-5 – Eastbound on-slip

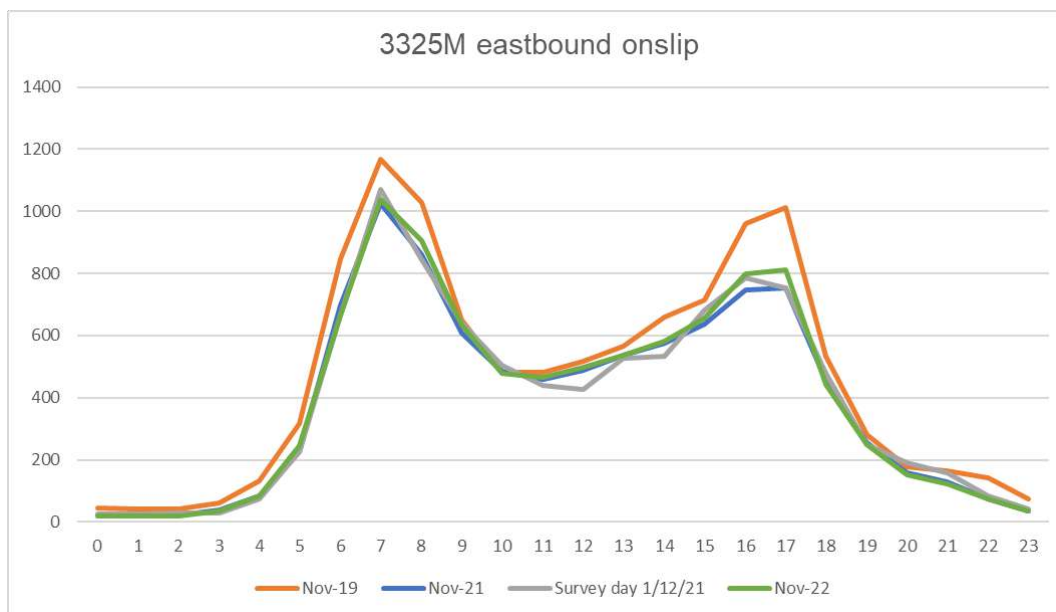


Figure 2-6 - Westbound off-slip

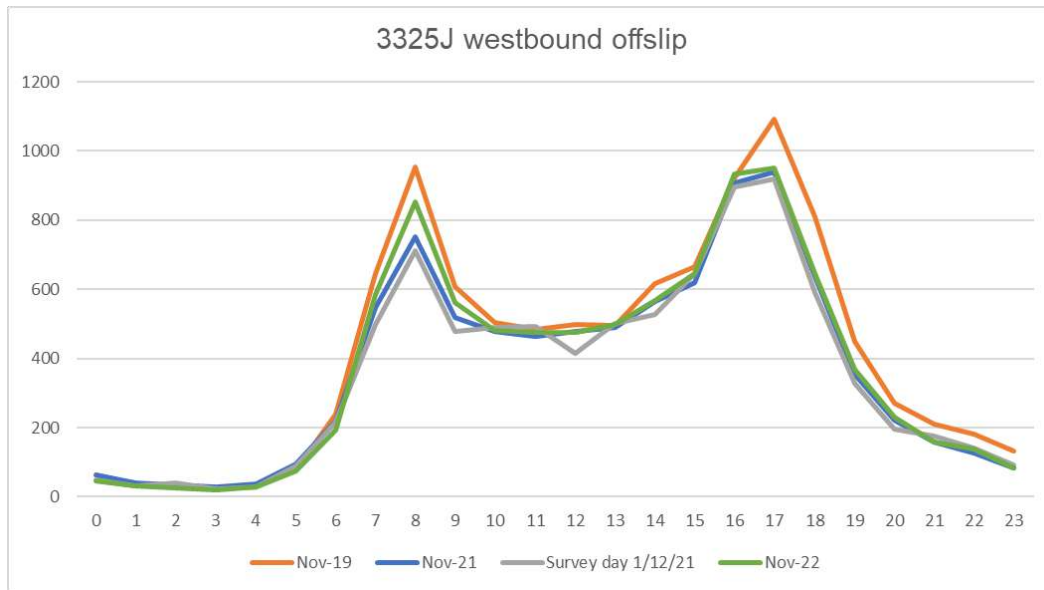
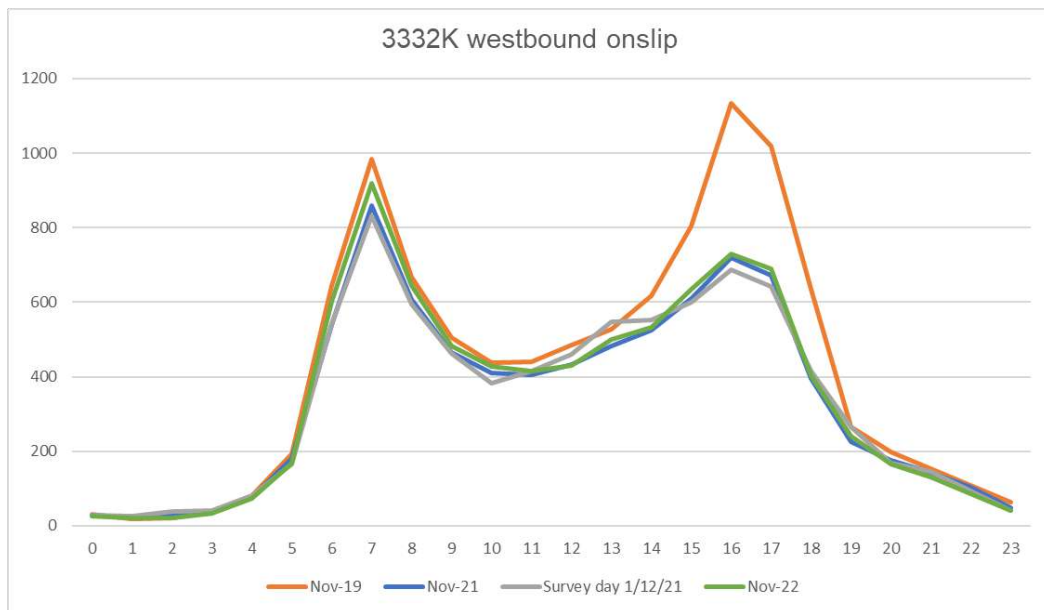


Figure 2-7 - Westbound on-slip



2.3 FEBRUARY 2023 TRAFFIC SURVEY

During the review of survey footage it was evident that on the day of the 1st December 2021 survey there was notable congestion in the PM peak on the A3102 Swindon to Royal Wootton Bassett movement. There appeared to be exit blocking downstream of the westbound merge on exit from junction 16 to the A3102. This in turn caused queuing back through junction 16 and Lydiard Fields. It is not clear whether the constraint related to the volume of traffic merging on exit and link capacity of the downstream A3102, or a downstream blockage; survey video coverage did not show

conditions to the west of the merge point. Subsequent site observations during the PM period did identify slower moving traffic exiting the merge to travel west towards Royal Wootton Bassett, however the scale of congestion recorded on the survey day was not observed again. November 2021 camera footage for the A3102 approach to Lydiard Fields did not show the same level of queueing on the A3102 approach to junction 16 on other days during the two-week survey period. On this basis, the level of westbound queueing on the survey day does not appear to be typical conditions.

As a result of the observed congestion on 1st December 2021, long queues formed on the A3102 exiting Swindon. Whilst queues had cleared by around 18:00, this issue will have impacted the profile of traffic entering the Lydiard Fields junction and M4 junction 16 from the A3102 Swindon direction.

To better understand typical flow characteristics leaving Swindon in the PM peak period and provide further observations of merging activity towards Royal Wootton Bassett, further traffic surveys were undertaken in February 2023. These comprised week-long video link counts for the A3102 westbound carriageway at three locations: 1) to the west of the A3102 Blagrove Roundabout east of junction 16, 2) on the westbound exit from junction 16 towards Royal Wootton Bassett, and 3) on the A3102 towards RWB (near the Sally Pussey's Inn pub). Data at locations 1) and 2) was collected by video survey, with data at location 3) collected via ATC equipment. The locations are shown in Figure 2-8 below.

Figure 2-8 – February 2023 survey locations



Video survey data was gathered over seven days between Monday 20th and Sunday 26th February 2023 inclusive during school term time, with classified data supplied for 07:00-09:00 and 16:00-18:15. The ATC was installed to coincide with the video survey, but the equipment was damaged and so it was reinstalled to record data between 9th and 14th March 2023 inclusive.

The data for the A3102 westbound carriageway to the west of Blagrove roundabout was used to review the observed flow profile from the 1st December 2021. Video footage for the westbound exit

from junction 16 towards Royal Wootton Bassett was also used to review coding of vehicle behaviour at the exit merge. As per site observations, the footage identified some vehicle interaction and slowing at the merge, but not the same scale of delay and blocking back as recorded during the 1st December 2021 survey.

2.4 MOVA DATA

Both Junction 16 and the Lydiard Field junction operate under MOVA adaptive signal control. The following data was provided by National Highways for each of the junctions:

- Junction layout drawings
- MOVA Datasets (.mds files)
- Controller specifications (TOPAS 2500 forms)
- MOVA link diagram
- MOVA log data (including detector status information)

This information was used to develop MOVA Tools files of the junctions and a PCMOVA linker file for use with PCMOVA 3, a MOVA-emulator software. This means that the operation of MOVA in the VISSIM model should closely replicate the on-ground MOVA performance for these junctions.

In addition, analysis of the MOVA log data was used to support the calibration and validation of the Vissim base model. The MOVA link drawing is shown at Appendix A.

3 MODEL DEVELOPMENT

3.1 INTRODUCTION

This chapter describes the development of the model network and the traffic demand for the 2021 base year VISSIM model.

The model development process consists of the network development, matrix building, calibration, convergence, and model validation processes, which are iterative and inter-dependent processes.

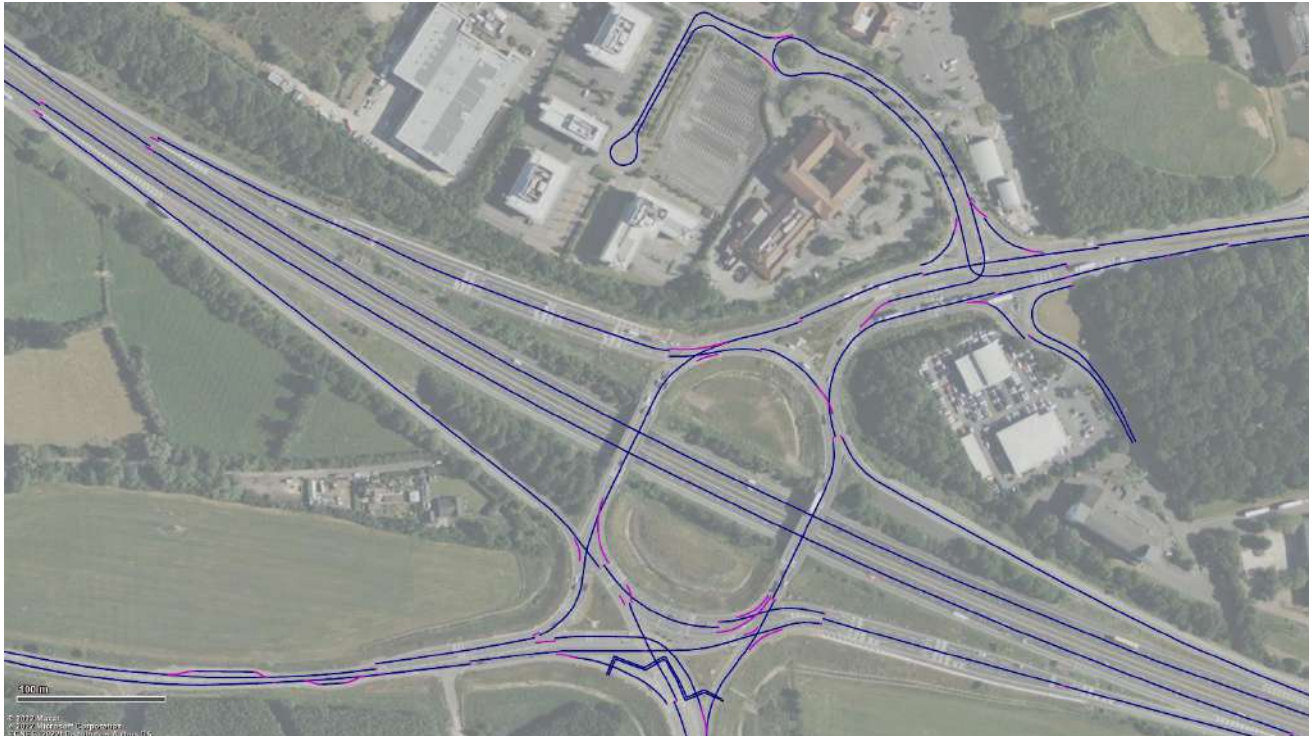
3.1.1 GUIDANCE

For microsimulation modelling, Transport for London (TfL)'s Traffic Modelling Guidelines (Version 4.0, TfL, 2021) is the most comprehensive and widely accepted guidance document, and this has been followed as far as practicable in the development of the M4 J16 model.

3.2 NETWORK DEVELOPMENT

VISSIM 2022-04 was used to develop the network. Bing maps satellite imagery was used to develop the network, using the in-built mapping service in VISSIM, cross referencing with other online aerial maps and the videos from the 2021 traffic survey. Roads and junctions were coded in detail, with particular attention paid to lane discipline and lane changes at the complex junctions, to provide realistic representation of vehicle behaviour and interaction.

Figure 3-1 - M4 J16 network and link structure detail



3.2.1 LINK STRUCTURE

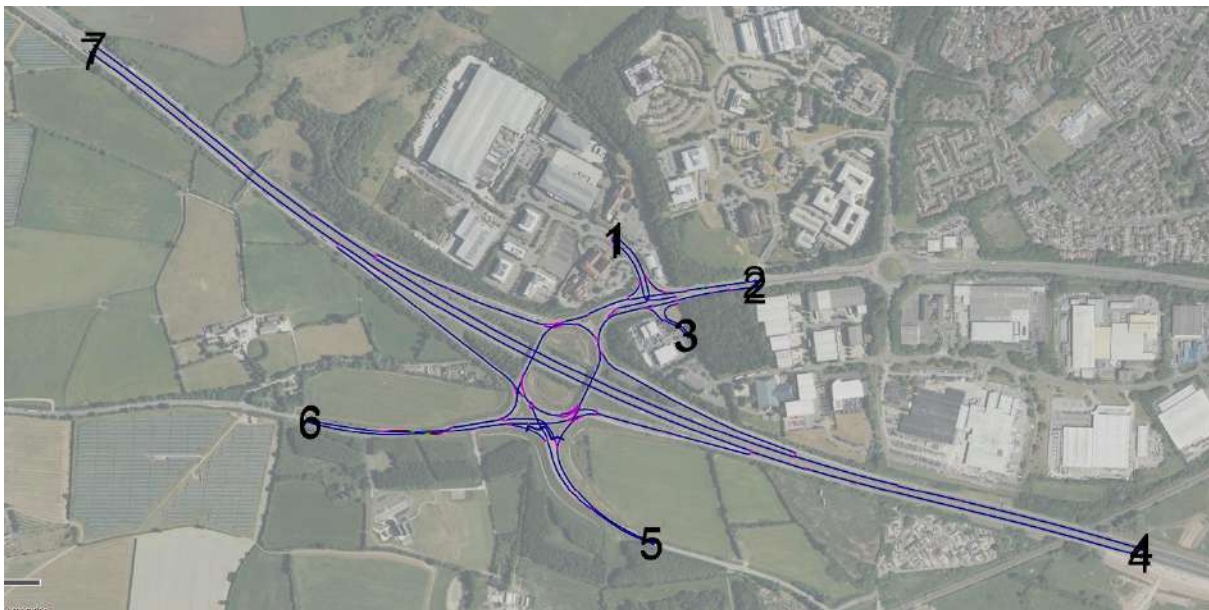
The link and connector structure was developed to represent realistic vehicle movements through the junctions.

Lane change and emergency stop distances were reviewed and updated to reflect observed vehicle behaviour on junction approaches. The lane change parameter sets out when a vehicle will begin to attempt to change lanes on the approach to a junction, preparing for their upcoming turn. The Emergency Stop distance specifies the last possible position for a vehicle to change lanes. For each connector these values have been reviewed and set to provide realistic simulation of lane changing within the network.

3.2.2 ZONE STRUCTURE

In VISSIM, a zone is defined as a point at which the vehicles enter and exit the model, so where links are truncated at the extremities of the model, a zone is defined. The 2021 base year model consists of 7 zones, based on the extent of the November 2021 traffic surveys.

Figure 3-2 – M4 J16 VISSIM model zone structure



3.2.3 SPEED, ACCELERATION AND DECELERATION DISTRIBUTIONS

Speed limits were applied according to the current local and national speed limits, and Reduced Speed Areas were coded where realistic vehicle speeds are lower than the actual limits, for example across junctions, on bends, or on narrow roads. Speed profiles for the different speed limit areas are derived from ONS¹ database for free flow speeds.

The pre-set acceleration and deceleration profiles within VISSIM are representative for the UK vehicle fleet, and these profiles were kept unchanged.

¹ ONS: Office for National Statistics

3.2.4 PRIORITY RULES AND CONFLICT AREAS

In the model network, most stop-lines are managed by traffic signals and therefore priority rules and conflict areas were not required at these points. However, they were coded to replicate yellow box behaviour where these are located, and to manage conflicts arising from different streams of traffic blocking back across opposing lanes.

3.2.5 MODEL TIME PERIODS

Analysis of the survey data for both junction 16 and the Lydiard Fields Crossroads indicated that the peak hours of traffic demand were:

- AM 07:30 – 08:30
- PM 16:30 – 17:30

It is likely that the model will be used to test prospective developments near junction 16, therefore the modelled periods will need to run until 09:00 and 18:00 respectively to cover the traditional network peak hours. Each peak period model therefore includes a 1.5hr validated modelled period and a 15-minute warm-up period prior to the peak hour, during which traffic is loaded onto the network. This ensures that the model contains a realistic level of traffic and is therefore representative of normal traffic conditions at the start of the peak period. The model also includes a 15-minute cool-down period during which traffic still in the network at the end of the peak hour leaves the model network. Demand within the 15-minute warm-up and cool-down periods was based on surveyed values during each period.

The whole modelled periods are:

- AM 07:15 – 09:15
- PM 16:15 – 18:15

3.2.6 VEHICLE CLASSIFICATIONS

The VISSIM model has separate vehicle inputs for each vehicle class, enabling the distinctive behaviour of each class to be defined. The classes used are:

- Cars and taxis
- LGV
- OGV1
- OGV2

Buses were modelled separately, as scheduled services.

3.2.7 PUBLIC TRANSPORT

Public Transport (PT) was coded into the model as a series of PT Stops and PT Lines, representing bus stops and bus routes respectively. Bus routes and timetables were sourced via the service operators' websites and bus times sites and matched with bus stops in the area using Google Maps. Table 3-1 shows the services included in the model.

Information on passenger numbers and bus dwell times was not available, therefore buses were assigned a random, normally distributed dwell time of 20 seconds average, with lower and upper bounds of zero and 40 seconds.

Table 3-1 – Bus routes within the model area

VISSIM Name	Service Number	Route/ Direction
31/31A eastbound	31/31A	Malmesbury – Swindon
31/31A westbound	31/31A	Swindon - Malmesbury
54 eastbound	54	Royal Wootton Bassett - Swindon
54 westbound	54	Swindon – Royal Wootton Bassett
55 eastbound	55	Royal Wootton Bassett – Swindon
55 westbound	55	Swindon – Chippenham
55 westbound via Canberra House	55	Chippenham – Swindon
99 eastbound	99	Chippenham – Swindon
99 westbound	99	Swindon – Chippenham

3.2.8 SIGNAL TIMINGS

The signal operation within the VISSIM model has been modelled using PCMOVA 3, a MOVA emulator software that allows MOVA signal control to be closely replicated in VISSIM. This has been developed in combination with the traffic signals data provided by National Highways (see subsection 2.4, p9).

Controller setup information such as phasing/staging information was taken from the TOPAS 2500 controller specification and was cross referenced with the latest junction drawing to ensure validity before being coded into the model. Detection was input based on drawings provided by National Highways and checked against the detector measurements in the MOVA dataset to refine against construction detailing.

In-depth analysis was undertaken of the linking that was implemented at and between the junctions to ensure that on-street conditions could be replicated in the VISSIM model. The MOVA link diagram was used to get a high-level understanding of the linking that was designed for the junctions. Further details on the operation were then obtained from the MOVA dataset, which provided the detail of how this specifically operated on street, and the controller specification, which included the logic used to implement these conditions.

Once a greater understanding of the linking and the associated timers was achieved, a MOVA Tools file was developed. This was done to replicate everything already provided in the MOVA dataset, while also providing MOVA 8 special conditioning functionality that utilises TRL's latest MOVA 8 features. All controller special conditioning related to MOVA was replicated in the MOVA Tools file.

An associated PCMOVA Linker file was then developed to allow the signal operation to be run with the VISSIM model, including all linking and special conditioning.

3.3 TRAFFIC MATRIX DEVELOPMENT

3.3.1 OVERVIEW

This chapter describes procedures used to develop the base year trip matrices for the VISSIM traffic model using the datasets that were described in Chapter 2.

The development of the trip matrices from the various data sources is described, including how the datasets were utilised for various Origin-Destination (OD) pairs and combined to form the peak hour matrices. This chapter also describes the profiling of the peak hour matrices to generate 15-minute warm-up and cool down periods either side of the peak hour.

3.3.2 DATA FOR MATRIX DEVELOPMENT

The data for the matrix development used the following datasets:

- Manual Classified Count (MCC) data from 2 sites surrounding M4 J16
- WebTRIS data for the M4 mainline situated within M4 J16 to coincide with the survey day
- Automatic Number Plate Recognition (ANPR) data from 9 sites surrounding M4 J16

The base matrices were developed using the MCC survey data as the primary source. The MCCs provided junction turning proportions for each junction, which, combined with link counts at each zone (where available) were used to generate a synthetic matrix. There were limitations with respect to the reliability of this method as some specific ODs were based solely on proportioned data as opposed to matched data. This is discussed in more detail below.

Due to camera positioning, ANPR data was unavailable for some specific ODs or had a limited sample rate. The dataset therefore provided known OD movements (where data was robust) which were uplifted to control counts and subsequently subtracted from the synthetic matrix prior to balancing the matrix to the origin/destination totals. MCC data has been utilised where OD movements were not captured.

MCC data and ATC data was also utilised for model calibration and validation, described in more detail in Chapter 4.

3.3.3 MATRIX DEVELOPMENT PROCESS

The matrix development process involved 5 main stages:

- **Stage 1:** Develop observed trip matrices using ANPR data
- **Stage 2:** Generate synthetic matrices from MCC and ATC data
- **Stage 3:** Integrate observed and synthetic matrices to create 'Prior Matrices'
- **Stage 4:** Refine prior matrices to reach observed origin/destination totals for each zone
- **Stage 5:** Calculate profiling factors from ATC data to generate warm-up and cool-down matrices

The methodology for each stage is detailed below:

3.3.3.1 STAGE 1: Development of matrices from ANPR data

The first stage in the process involved the development of observed trip matrices from the ANPR data. Combining the sample rates for each OD movement a sample rate matrix for each 15-minute band was generated. In some cases, sample rates for some OD pairs were limited, and prevented the uplift of observed ANPR trips to their respective control counts. Matches picked up by the ANPR cameras were converted into 15-minute band matrices.

3.3.3.2 STAGE 2: Generate synthetic matrices from MCC data

MCC flows for each vehicle class and time segment were combined with the proportion of vehicles making each turn. At this stage, any flow discrepancies between junctions were identified. The prior synthetic matrices were then built for each vehicle type and time period. The target total in-flow for each Origin Zone was multiplied by each relevant turning proportion encountered through the network until reaching the Destination Zone. This process was repeated for each OD until the overall matrix was populated with Actual Flows.

3.3.3.3 STAGE 3: Integrate observed and synthetic matrices

Given the relatively small nature of the network, some OD pairs could be completed after entering only one junction. Therefore, these trips could be considered 'observed' as opposed to calculated or synthetic. Once identifying these observed trips from the MCC matrix, these were considered 'fixed' OD pairs. These fixed OD pairs were removed from the ANPR matrix as this trip data is more reliable than uplifted ANPR data. The origins were constrained back to the MCC control count minus the fixed trips. This involved calculating a factor between the ANPR row total and MCC row total and applying this to each OD. It should be noted that the control count was based on vehicle class, therefore it is at this point the ANPR matrix was classified.

The ANPR matrix and the fixed MCC matrix were combined to produce one fixed matrix. The remaining OD pairs were tabulated and were considered the unfixed or un-Furnished trips that need refinement to match the row and column totals.

3.3.3.4 STAGE 4: Refine prior matrices

Matrices were then Furnished according to WebTAG criteria to balance row and column totals. Once the prior matrix was Furnished, the observed data was re-added to the prior matrix. The totals as well as the OD distribution were compared to the synthetic matrix only to check for any oddities.

15-minute warm-up and cool-down matrices were developed in the same way.

Table 3-2 show the matrix totals for the observed AM and PM peak hours (07:30-08:30 and 16:30-17:30) along with the traditional peak hours (08:00-09:00 and 17:00-18:00) across each vehicle class.

Table 3-2 - VISSIM peak hour demand matrix totals

	Observed Peak Hour		Traditional Peak Hour	
Vehicle class	AM 07:30-08:30	PM 16:30-17:30	AM 08:00-09:00	PM 17:00-18:00
Car	6,713	7,086	6,400	7,211
LGV	1,952	1,589	1,856	1,247
OGV1	174	116	210	79
OGV2	226	149	233	134
Total	9,065	8,940	8,699	8,670

4 TRAFFIC ASSIGNMENT, CONVERGENCE AND CALIBRATION

4.1 DYNAMIC ASSIGNMENT

In the M4 J16 model, traffic is introduced to the network using the “dynamic assignment” feature of VISSIM, rather than static routing. With dynamic assignment, vehicles are loaded onto the network in the form of a matrix specific to a vehicle type in 15-minute time-periods. Each individual vehicle is then able to choose its own route between its given origin and destination, based on the available paths within the model. While there is no actual route choice in the M4 J16 model, dynamic assignment makes it easier to construct and edit demand matrices, and this is particularly useful for forecasting.

Although there is no actual route choice, there are alternative routes between points in the model, given there are grade separated junctions (e.g. U-turning at the motorway roundabout to turn from A3102 east to Lydiard Fields). Unrealistic routes like these were banned either by closing edges, using route closures or by restricting the choice of routes in dynamic assignment to the quickest route.

4.2 CONVERGENCE

Model convergence is an iterative process whereby at the end of each model run the travel time costs are adjusted, and for the subsequent model run the adjusted generalised cost figures are used for each route when traffic distribution is calculated. Ideally, after each convergence model run the traffic volumes and travel times on each route will change less, and eventually they will not yield significant differences regarding flow and travel time results from run to run. The network can then be described as converged, behaving in a consistent manner and the operational performance of the model will not change if further runs are carried out.

Convergence is usually carried out on a model with dynamic assignment, however the M4 J16 model does not need converging due to the lack of route choice. Paths were checked to make sure there was only a single route available for each OD pair. This means that traffic assignment and distribution will not change from run to run.

4.3 CALIBRATION

4.3.1 PARAMETER SETTING

Model calibration involves ensuring the model represents the on-site and video footage observed conditions and driving behaviour by adjusting model inputs and parameters. This process involved examination of the network, checking for coding errors, and improving the performance of the model compared to observed data. Those adjustments included, but were not limited to, the following:

- Checking priority rules and conflict area parameters and locations to replicate observed driving behaviour.
- Separate priority rules for HGVs to consider the larger size and slower acceleration of such vehicles.
- Adjustment of link and connector structure to better reflect lane-changing and vehicle interaction.
- Placement and adjustment of reduced speed areas, with appropriate speed distributions, coded onto sections of links to ensure traffic behaviour is realistic.

- Desired speed decisions were placed around the network to ensure traffic obeyed the relevant speed limit for specific roads.

4.3.1.1 Merging behaviour

A special merging driving behaviour was developed for areas of the model where significant lane-changing happened, for example at a merge from two lanes to one lane, or an area where vehicles need to get into specific lanes to make turns. In VISSIM, vehicles attempt to maintain a desired distance and speed from vehicles in front of them. The default driving behaviours sometimes lead to unrealistic behaviour such as vehicles coming to a stop mid-lane rather than forcing a gap to change lanes.

A bespoke behaviour was therefore developed to make it easier for vehicles to merge. This was based on the Wiedemann '99 model, with the following changes:

- Safety distance reduction factor reduced to 0.2 from 0.6
- Max. deceleration for cooperative braking changed from -3m/s^2 to -9m/s^2
- Cooperative lane change activated; max. speed difference increased from 10.80km/h to 25km/h

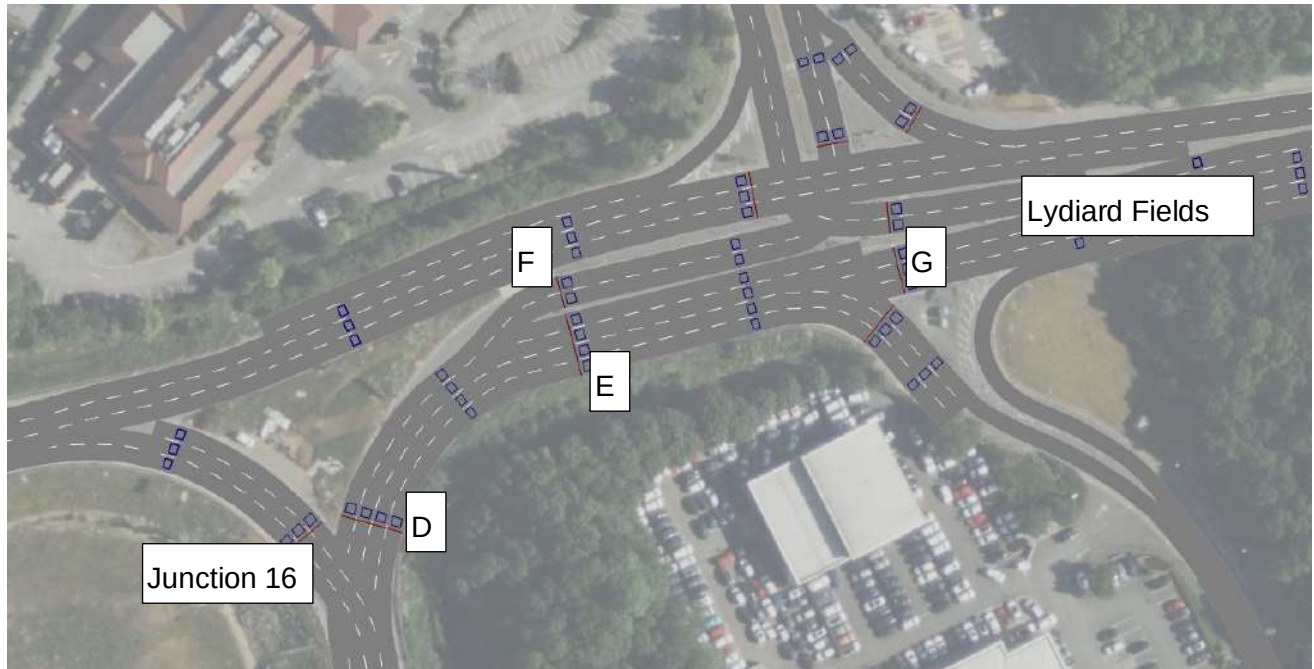
This was informed by video footage collected from the December 2021 and February 2023 survey data.

4.3.2 MOVA CONTROL

During the calibration process it became clear that the westbound signals between Lydiard Fields and junction 16 (set up as per the specification) were not operating in the same way as on-street, shown in the survey videos. This is likely because the on-street operation was changed away from the specification after installation. In the model, phase E (shown in Figure 4-1) went red after a specific amount of time, even if there was no demand on phase F. However, it was clear from the survey videos that, on-street, phase E only went red if there was demand on phase F.

In the .mova file, according to the specification, there was a hold command for continuing demand on phase G to hold phase D on green. There was also an option for phase G to hold phase E at green, however this was specified as off. This was changed so that demand on G held both phase E and D on green, which more accurately reflected on-site operation.

Figure 4-1 - Signal phases between Lydiard Fields and junction 16



4.3.3 MATRIX ADJUSTMENT USING FEBRUARY 2023 SURVEY DATA

During the model development and calibration process, it became clear that there was significant congestion on the day of the December 1st 2021 survey. In the PM peak, the survey videos showed that there was some blocking back on the A3102 westbound that appeared to emanate from a point downstream of the merge to a single lane (towards Royal Wootton Bassett). This blocking back had a significant effect on the operation of the junction and queue build-up back across the overbridge and along the A3102 through the Lydiard Fields junction. This queuing back is shown in Figure 4-2. Vehicles started queuing back through the junction at around 16:55 and this lasted for about an hour, having cleared by 18:00. This congestion did not appear to affect movements from the other zonal entry points. The exact cause of this congestion was not visible from the survey videos and appeared to occur further west, off the model network. The blocking back is shown in Figure 4-3 to Figure 4-4.

Whilst blocking back cleared by 18:00, this issue impacted the peak hour MCC count at Lydiard Fields, with the recorded peak hour flow likely to be less than the actual demand flow due to the queueing effects. In recognition of this issue, the additional data was collected in February 2023 to understand more typical traffic flow profiles. The February 2023 videos showed that there was no significant congestion on the A3102 exit towards Royal Wootton Bassett.

The resulting data was used to amend the PM matrix by taking the 15-minute profile from the February survey (Tuesday to Thursday average) and applying it to the original 2021 survey total MCC flow between 16:00 and 18:15, for the westbound flow from Swindon at Lydiard Fields. The matrix build Furnessing process was then rerun with the amended data.

Figure 4-2 – A3102 queueing on approach to M4 J16, looking east through the Lydiard Fields



Figure 4-3 - A3102 exit from M4 J16, blocking back through the junction in the PM peak



Figure 4-4 – A3102 exit from M4 J16 looking westbound towards Wootton Bassett, PM peak



5 CALIBRATION AND VALIDATION RESULTS

The process of model validation is iterative with calibration, in the sense that if the validation criteria are not met after a set of model runs, further adjustments are made to the network or the traffic matrices to achieve model validation.

Separate observed datasets were used for the calibration and validation checks. Junction turning counts (from MCC data) were used for model calibration, whilst TomTom journey times were used for model validation. While queue length data is not appropriate for validation, queues were checked visually and compared between the model and survey videos to ensure they were reasonably represented in the model. The traffic model is validated when all criteria for traffic flow and journey time comparisons are met.

5.1.1 MODEL RUNS

Traffic conditions vary day-to-day because of random driver behaviour such as speed selection, lane changing, driver route choice, and bus and parked vehicle dwell times. The stochastic micro-simulation traffic model in VISSIM attempts to replicate this day-to-day random variability by altering individual driver decisions based on random numbers.

The set of random numbers is generated from an initial 'seed' value specified at the start of a simulation run. A single set of random numbers, generated by a single seed value therefore represents one potential outcome, or one day of traffic operation. The actual value of the seed has no significance; however, they must be different from each other to produce a different outcome. Basing results on a single seed value has the potential to bias the overall result.

To reduce potential bias both the AM and PM models were run 20 times as per TfL guidance. A t-test was then performed on the model outputs to determine whether the chosen number of runs was enough to produce a reliable result based on model variability across the runs. The t-test calculated the required number of runs for a 95% confidence interval and the requirement that the margin of error is within 1% of the sample mean.

The t-test was performed using the average travel time per vehicle from the network statistics for each of the 20 AM and PM runs. For both peaks, the results showed that 20 runs was sufficient to produce a reliable result.

The model run results were then averaged for the flow and journey time comparison. Due to the validated period being 1.5hrs long, results are provided for full hours, for both the network peak hours (07:30-08:30, 16:30-17:30) and the traditional peak hours (08:00-09:00, 17:00-18:00).

5.1.2 TRAFFIC FLOW CALIBRATION CRITERIA

Acceptability criteria for the calibration and validation of traffic models are set out in Table 2 of the TAG Unit M3-1 *Highway Assignment Modelling* (May 2020). The criteria for traffic flow calibration are shown in Table 5-1.

Table 5-1 – Traffic flow calibration criteria

Criteria	Description	Acceptability guideline
Flow	Individual flows within 100 veh/h of counts for flows less than 700 veh/h	>85% of cases
	Individual flows within 15% of counts for flows from 700 to 2700 veh/h	>85% of cases
	Individual flows within 400 veh/h of counts for flows more than 2700 veh/h	>85% of cases
GEH	GEH<5 for individual flows	>85% of cases

TAG Unit M3-1 (May 2020) guidance state that the two criteria ('Flow' and 'GEH') are broadly consistent and traffic flows that meet either criterion should be regarded as satisfactory. This means that either the Flow or GEH criteria should be met in 85% of cases. The GEH statistic is defined in TAG as:

$$GEH = \sqrt{\frac{(M - C)^2}{(M + C)/2}}$$

Where M = modelled value

C = observed value

The GEH statistic considers the size of a number when determining whether another value is significantly different from it. This means large numbers can therefore have larger deviations than smaller numbers and still be acceptably close to one another. Values are considered acceptably close when their GEH is below the value of five. However, TfL Modelling Guidelines recommend that key links within a model should have a GEH of less than three, and this stricter criterion has also been adopted as part of the M4 junction 16 model validation.

5.2 TRAFFIC FLOW CALIBRATION RESULTS

A total of 35 observed turning movements were compared to modelled turning flows during the calibration process. The summary results of the turning flow calibration are shown in Table 5-2 and Table 5-3 for the surveyed AM and PM peak hours respectively and in Figure 5-1 and Figure 5-2. Results for the traditional peak hours are shown in Table 5-4, Table 5-5, Figure 5-3 and Figure 5-4.

This analysis demonstrate that the model achieves the TAG criteria with 100% in both the surveyed AM and PM peaks for 'total vehicle' counts having a GEH value of less than 5. All but one count (97%) also achieves the TfL criterion for GEH under 3 in both the observed and traditional AM peak. The only count that did not achieve this is the turn from M4 west to M4 east (via the offslip and onslip) where nine vehicles were observed to make this movement in the survey; however, the movement has been banned in the VISSIM model to prevent it being chosen as a competing route for all traffic, therefore all vehicles in the model use the mainline. All counts in the PM achieve a GEH of less than 3.

5.2.1 OBSERVED PEAK HOUR RESULTS

Table 5-2 – Overall flow calibration: AM 07:30 – 08:30

	GEH Statistics			Individual Flows		
	GEH < 3	GEH < 5	GEH < 6	f < 700	700 < f < 2700	f > 2700
Calibration	97%	100%	100%	100%	100%	No Data

Table 5-3 – Overall flow calibration: PM 16:30 – 17:30

	GEH Statistics			Individual Flows		
	GEH < 3	GEH < 5	GEH < 6	f < 700	700 < f < 2700	f > 2700
Calibration	100.0%	100.0%	100.0%	100.0%	100.0%	No Data

Figure 5-1 - Flow calibration all flows AM 07:30 - 08:30 (all vehs)

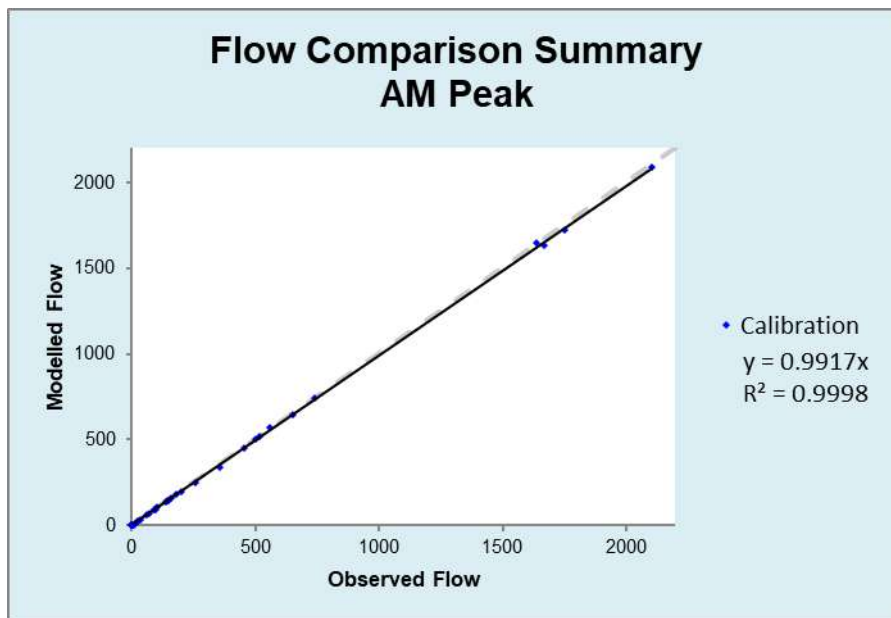
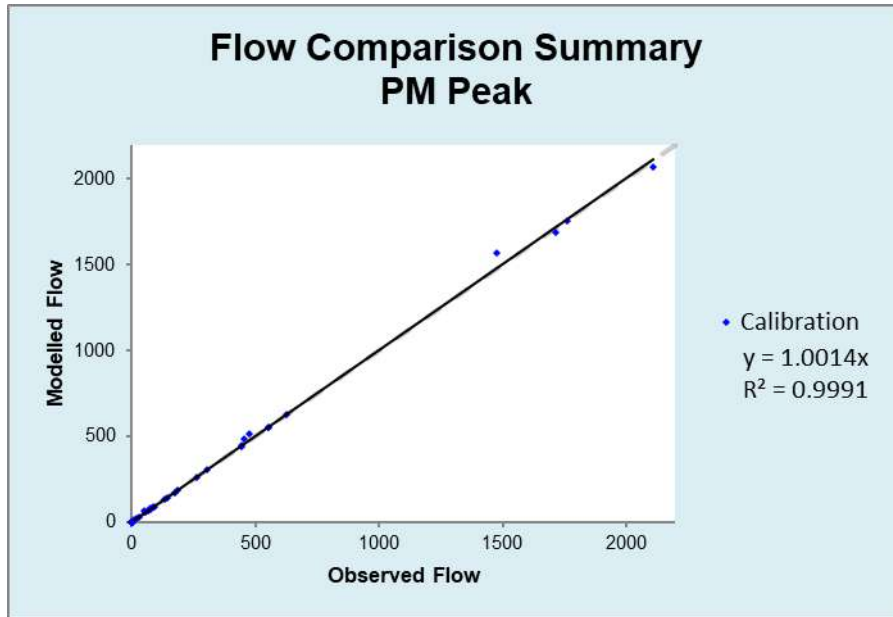


Figure 5-2 - Flow calibration all flows PM 16:30 - 17:30 (all vehs)



Full calibration results are provided in Appendix B.

5.2.2 TRADITIONAL PEAK HOUR RESULTS

Table 5-4 – Overall flow calibration: AM 08:00 – 09:00

	GEH Statistics			Individual Flows		
	GEH < 3	GEH < 5	GEH < 6	f < 700	700 < f < 2700	f > 2700
Calibration	97%	100%	100%	100%	100%	No Data

Table 5-5 – Overall flow calibration: PM 17:00 – 18:00

	GEH Statistics			Individual Flows		
	GEH < 3	GEH < 5	GEH < 6	f < 700	700 < f < 2700	f > 2700
Calibration	100.0%	100.0%	100.0%	100.0%	100.0%	No Data

Figure 5-3 - Flow calibration all flows AM 08:00 - 09:00 (all vehs)

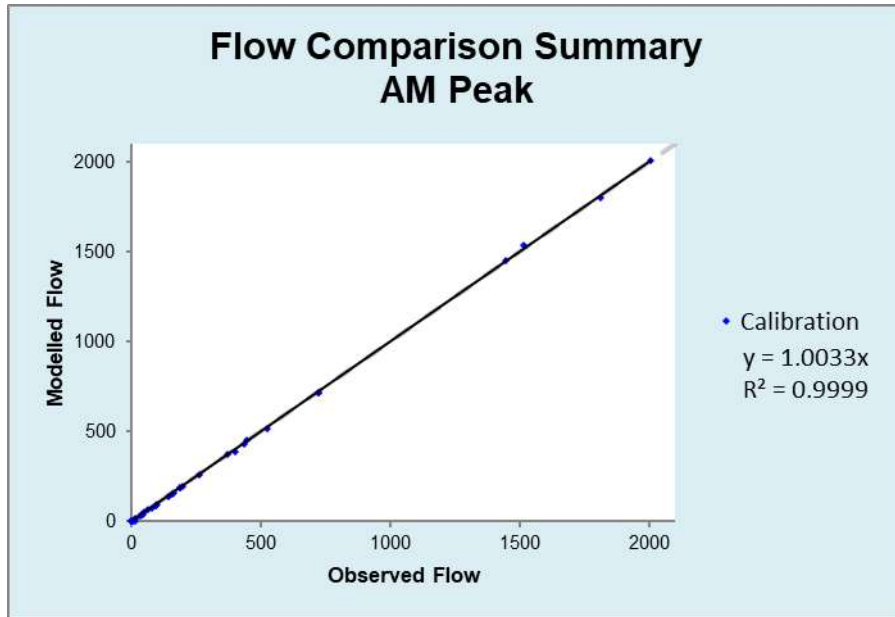
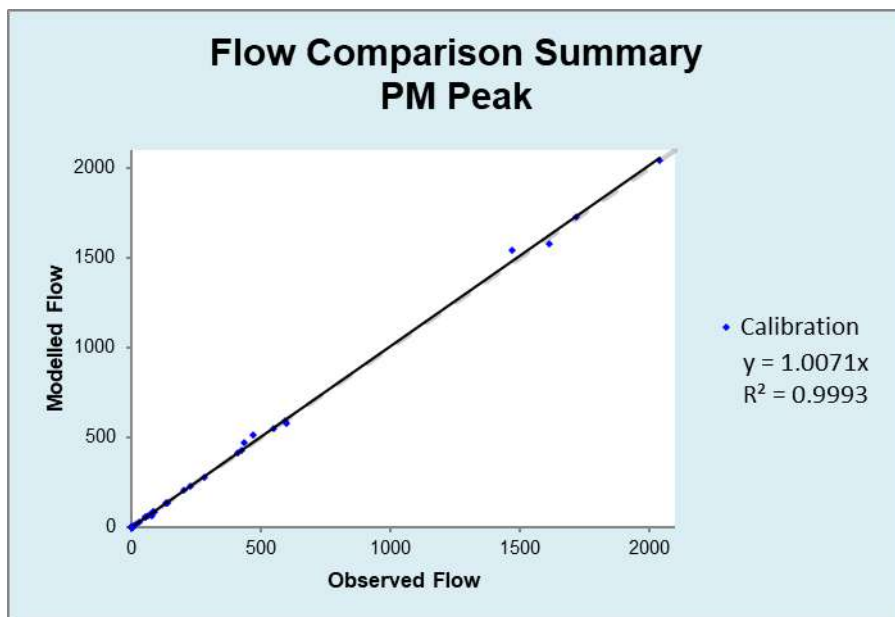


Figure 5-4 - Flow calibration all flows PM 17:00 - 18:00 (all vehs)



5.2.3 OBSERVED QUEUE DATA

Queues were not part of the formal calibration and validation processes due to the difficulty of measuring on-street queue lengths in the same way as modelled queue lengths. However, where available, queue data was still compared to ensure the model was reasonable in its replication of queues.

5.3 JOURNEY TIME VALIDATION RESULTS

Observed journey times were analysed from the TomTom data collected during the period November 9 to December 2, 2021 (Tuesday to Thursday only, for cars). The TomTom data was collated into six different routes covering the main arms of the junction.

- JT1 Eastbound: A3102 west to A3102 east
- JT1 Westbound: A3102 east to A3102 west
- JT2 eastbound: M4 west to B4005
- JT2 westbound: B4005 to M4 west
- JT3 eastbound: Lydiard Fields to M4 east
- JT3 westbound: M4 east to Lydiard Fields

These routes are shown in Figure 5-5.

Figure 5-5 - Journey time routes



TfL Modelling Guidelines v4.0 requires that modelled journey times should fall within 15% of the observed average on 85% of surveyed journey time routes. The summary results of the journey time validation are presented in Table 5-6, comparing the observed and modelled journey time on each route for the observed peak hours (07:30-08:30 and 16:30-17:30). Full results for all sections are shown in Appendix C.

Table 5-6 – Journey time validation results for observed AM and PM peak hours

	AM 07:30 – 08:30				PM 16:30 – 17:30			
Route	Obs. (s)	Mod. (s)	Diff. (s)	Diff. (%)	Obs. (s)	Mod. (s)	Diff. (s)	Diff. (%)
JT1 EB	126	120	-7	-5.3%	119	116	-4	-3.3%
JT1 WB	130	132	2	1.9%	182	155	-27	-14.9%
JT2 EB	119	115	-5	-3.9%	141	134	-7	-4.9%
JT2 WB	103	97	-6	-6.2%	108	98	-10	-9.0%
JT3 EB	128	116	-12	-9.6%	132	115	-17	-12.9%
JT3 WB	115	107	-8	-6.8%	122	105	-18	-14.4%

Table 5-7 compares the observed and modelled journey times during the traditional peak hours (08:00-09:00 and 17:00-18:00).

Table 5-7 – Journey time validation results for traditional AM and PM peak hours

	AM 08:00 – 09:00				PM 17:00 – 18:00			
Route	Obs. (s)	Mod. (s)	Diff. (s)	Diff. (%)	Obs. (s)	Mod. (s)	Diff. (s)	Diff. (%)
JT1 EB	131	120	-11	-8.2%	118	114	-4	-3.5%
JT1 WB	130	133	3	2.3%	174	155	-19	-10.8%
JT2 EB	119	117	-2	-2.0%	136	133	-3	-1.9%
JT2 WB	105	97	-9	-8.1%	106	98	-8	-7.6%
JT3 EB	125	117	-8	-6.1%	129	114	-15	-11.4%
JT3 WB	116	107	-9	-7.6%	118	104	-14	-11.6%

The tables show that journey time validation in both the observed and traditional peak hours is good, with all modelled routes within 15% of the observed time in both AM and PM.

In conclusion, the flow calibration and journey time validation process indicates that the base model provides an appropriate representation of surveyed conditions during both the observed peak hours and traditional peak hours.

6 SUMMARY

WSP was commissioned by National Highways to develop a new VISSIM microsimulation model of junction 16 of the M4. It is intended that the model will be used to assess the impacts of development and infrastructure proposals on the operation of the junction. This Local Model Validation Report (LMVR) describes the data collection exercise, model development, calibration and validation process to build the 2021 base year VISSIM model.

New traffic surveys were undertaken to develop and validate the base year model, including an ANPR survey, Manual Classified Count (MCC) data, link counts, and queue length observations. Surveys were carried out on 1st December, 2021. Subsequent analysis of available WebTRIS data for the M4 and junction 16 slip roads indicates that the survey day was broadly representative of traffic levels in neutral month of November 2021. To support the ANPR dataset, TomTom data was procured for more accurate journey time validation. Subsequent traffic data was collected in February and March 2023 to better understand merge activity and queuing on exit from junction 16 towards Royal Wootton Bassett, and to provide additional data about the profile of traffic flow demands leaving Swindon during the evening period.

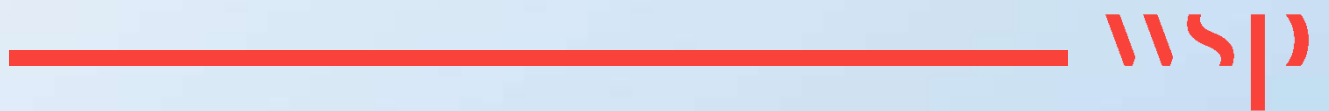
WebTRIS data was also reviewed to compare traffic levels recorded on the survey day with November 2019 and November 2022. The analysis showed a general reduction in traffic levels from November 2019 (pre-Covid) and indicated some post-Covid traffic increases since the date of surveys, principally for the westbound off-slip during the AM peak hour. It is therefore recommended that prevailing background traffic levels are reviewed at the time of any future use of the model, to confirm any change in traffic levels from that surveyed in 2021. Based on the outcome of this review, it may be necessary to develop a Reference Case model that reflects prevailing slip road traffic levels at the time of use.

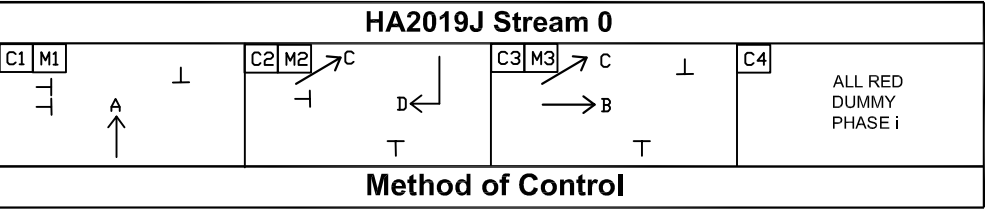
The VISSIM model matrices were developed from a combination of MCC and ANPR data. To provide flexibility around future assessment periods, the model covers both the observed peak hours (07:30–08:30 and 16:30–17:30) and traditional peak hours (08:00–09:00 and 17:00–18:00). The model showed a very close match to the observed flows. Validation was performed against the observed journey times extracted from the TomTom data for six routes around the junction, with all modelled journey times comparing well to observed values.

The base year VISSIM model therefore provides a suitable base for future forecast and scenario models.

Appendix A

MOVA LINK DRAWING

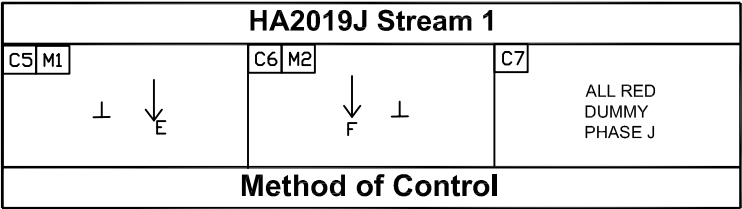
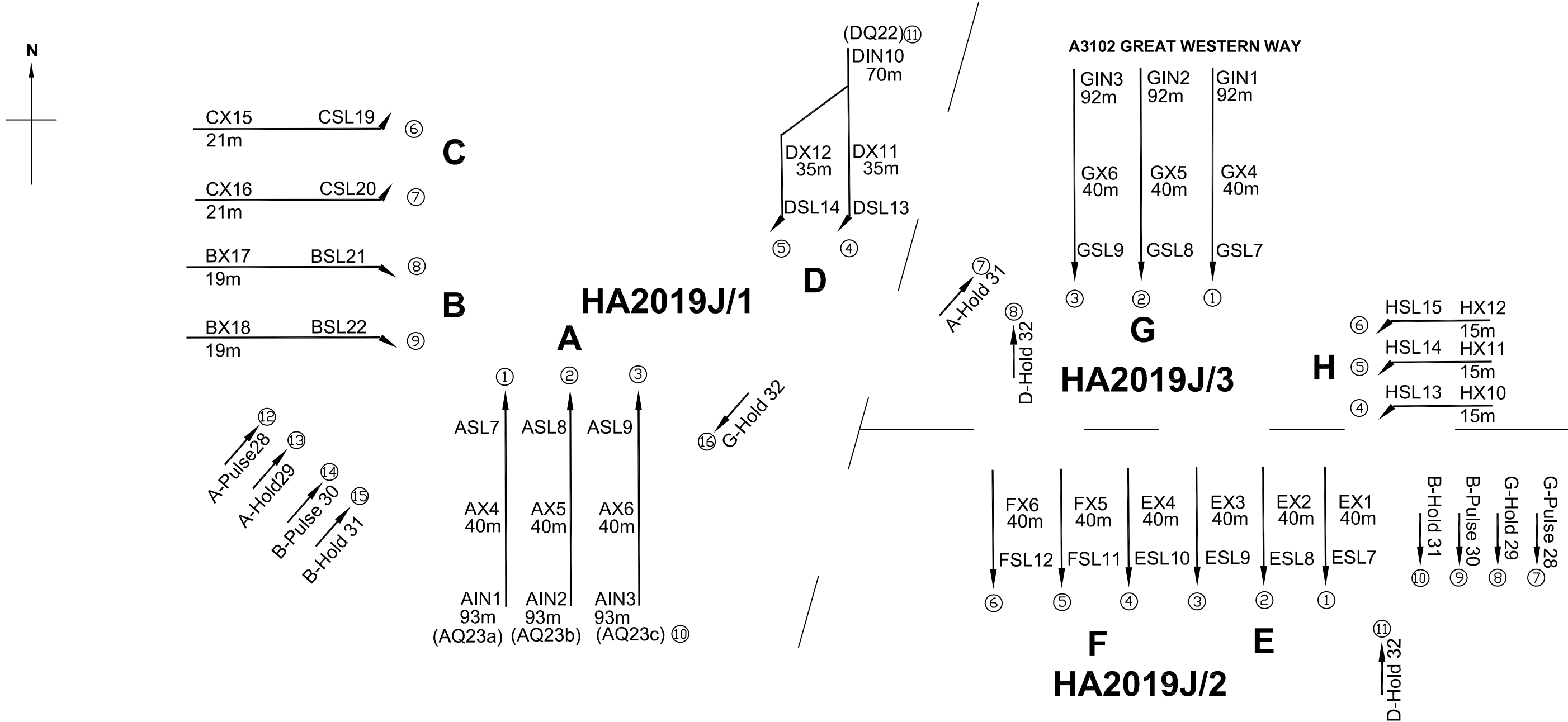
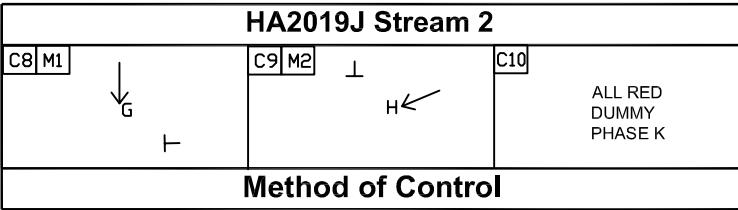




M4 J16 & Lydiards Swindon - HA Area 2

Controller 1 HA2019J

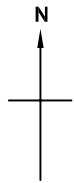
Detector Location, and Mova Lane / Link configuration



To Controller 2
HA2019J
OUTptG

① = Indicates Link / Lane Number

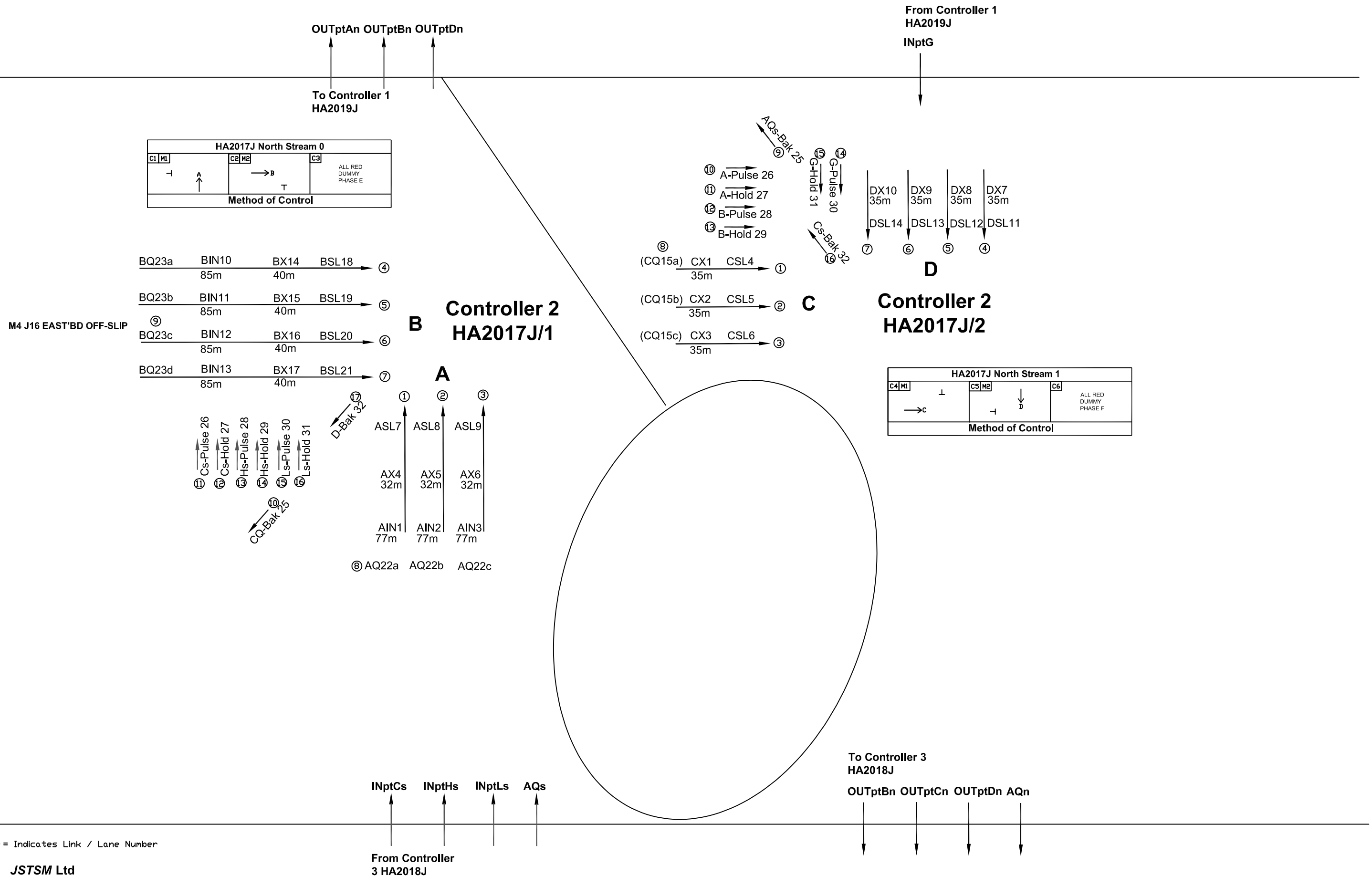
From Controller 2
HA2019J



M4 J16 & Lydiards Swindon - HA Area 2

HA2017 - Controller 2

Detector Location, and Mova Lane / Link configuration



① = Indicates Link / Lane Number

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M4 J16 & Lydiards Swindon - HA Area 2
HA2018 - Controller 3
Detector Location, and Mova Lane / Link configuration

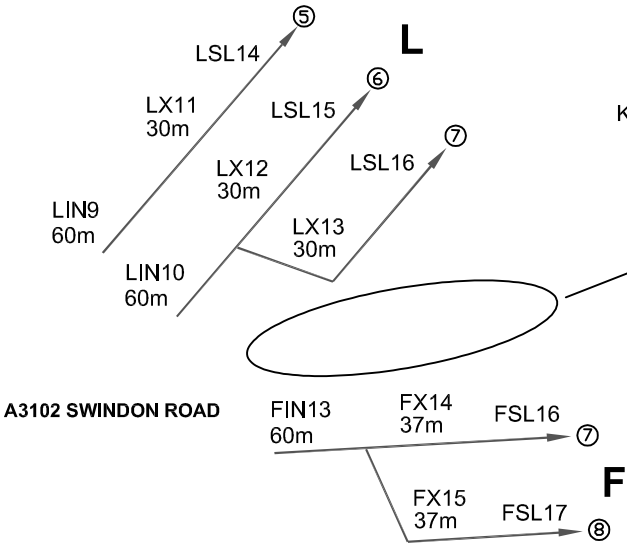
To Controller 3
HA2018J
INptBn INptCn INptDn AQn

OUTptCn OUTptHn OUTptLn
From Controller
3 HA2018J

HA2018J South Stream 2		
C9 M1	C9 M2	C10
		ALL RED DUMMY PHASE S
Method of Control		

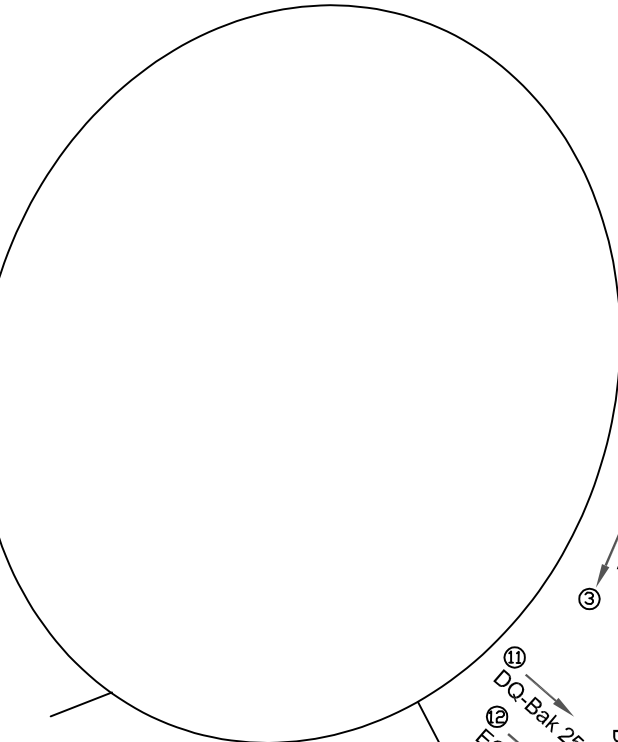
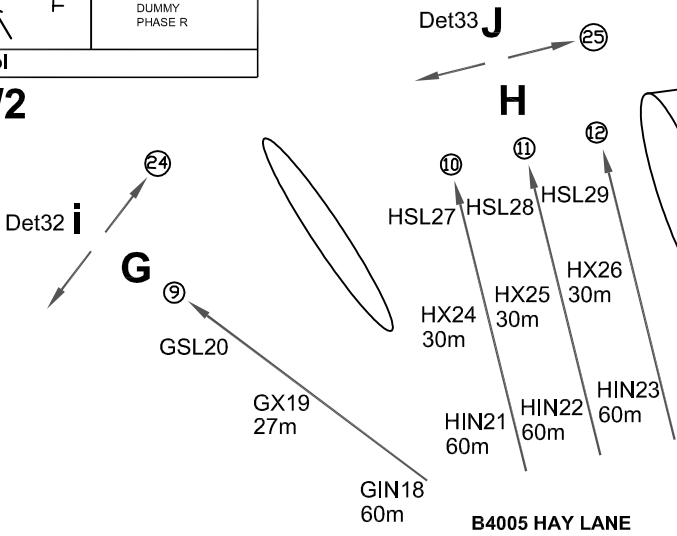
HA2018J/3

H-Hold 31
H-Pulse 30
C-Hold 29
C-Pulse 28
A-Hold 27
A-Pulse 26
Bn-Bak 32
AQn-Bak 25



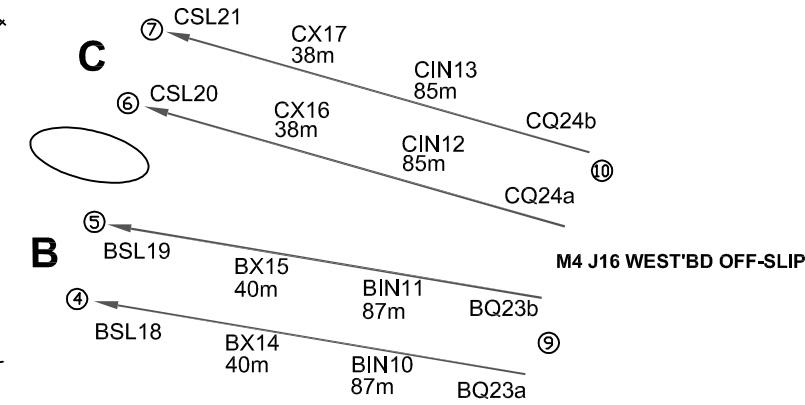
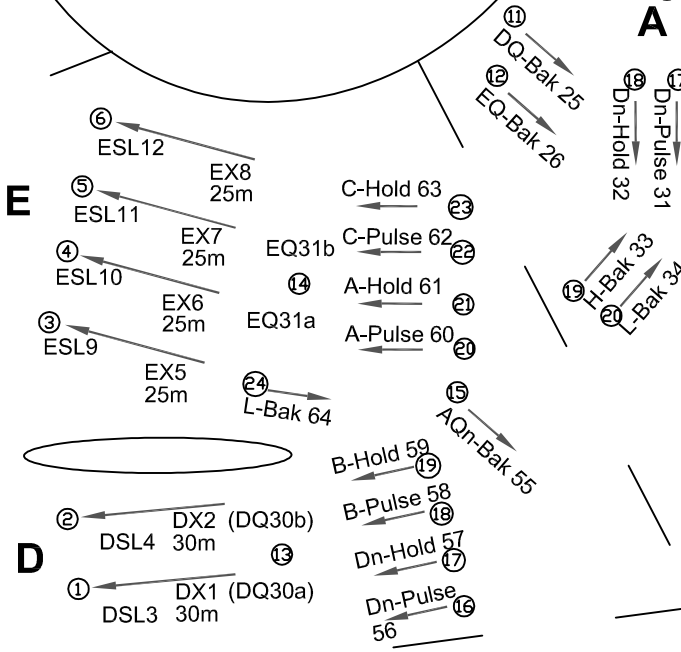
HA2018J South Stream 1			
C4 M1	C5 M2	C6 M3	C7
			ALL RED DUMMY PHASE R
Method of Control			

HA2018J/2



HA2018J South Stream 0		
C1 M1	C2 M2	C3
		ALL RED DUMMY PHASE Q
Method of Control		

HA2018J/1



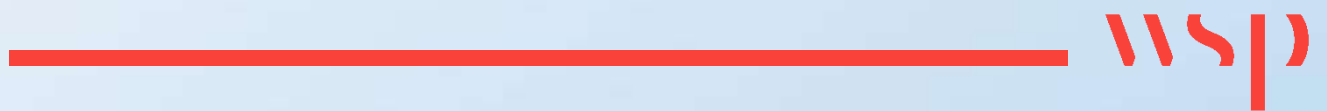
HA2018J South Stream 3		
C11 M1	C12 M2	C13
		ALL RED DUMMY PHASE T
Method of Control		

HA2018J/4

① = Indicates Link / Lane Number
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Appendix B

FULL CALIBRATION RESULTS



Appendix B.1

**FLOW CALIBRATION, OBSERVED
PEAK HOURS (07:30-08:30 AND
16:30-17:30)**





Vehicle Flow Information
Calibration Statistics
Car Vehicles
AM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	10	10	0	-1.0%	0.0	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	183	180	-3	-1.7%	0.2	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	0	0	0		0.0	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	271	252	-19	-7.2%	1.2	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	114	114	0	0.1%	0.0	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	47	48	1	2.1%	0.1	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	121	118	-3	-2.1%	0.2	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	7	7	0	0.7%	0.0	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	120	119	-1	-1.1%	0.1	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	1	0	-1	-100.0%	1.4	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	78	79	1	0.8%	0.1	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	544	538	-6	-1.0%	0.2	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	348	350	2	0.4%	0.1	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	52	50	-2	-3.5%	0.3	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	66	65	-1	-0.9%	0.1	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	513	508	-5	-0.9%	0.2	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	5	0	-5	-100.0%	3.2	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	153	151	-3	-1.6%	0.2	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	377	379	2	0.5%	0.1	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	398	413	15	3.7%	0.7	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	1	0	-1	-100.0%	1.4	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	376	381	5	1.4%	0.3	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	1520	1510	-10	-0.7%	0.3	Pass Mid
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	1209	1187	-22	-1.8%	0.6	Pass Mid
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	21	21	0	-0.2%	0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	1217	1229	12	1.0%	0.3	Pass Mid
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	153	151	-2	-1.5%	0.2	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	24	24	0	0.4%	0.0	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	120	119	-1	-0.9%	0.1	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	1319	1288	-31	-2.3%	0.9	Pass Mid
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	63	63	0	-0.6%	0.1	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	65	66	1	1.7%	0.1	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	9496	9418	-78	-0.8%	0.4



Vehicle Flow Information
Calibration Statistics
LGV Vehicles
AM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	9	9	0	-2.2%	0.1	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	59	58	-1	-0.9%	0.1	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	0	0	0		0.0	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	61	61	0	-0.2%	0.0	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	28	27	-1	-2.3%	0.1	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	13	13	0	-2.7%	0.1	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	35	36	1	2.1%	0.1	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	2	2	0	2.5%	0.0	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	18	18	0	1.9%	0.1	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	0	0	0		0.0	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	16	17	1	5.6%	0.2	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	97	98	1	0.8%	0.1	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	87	87	0	-0.1%	0.0	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	17	17	0	-0.6%	0.0	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	21	20	-1	-4.5%	0.2	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	192	192	0	0.1%	0.0	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	3	0	-3	-100.0%	2.4	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	44	44	0	0.6%	0.0	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	114	114	0	-0.4%	0.0	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	139	143	4	3.0%	0.4	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	1	0	-1	-100.0%	1.4	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	114	114	0	-0.1%	0.0	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	473	472	-1	-0.3%	0.1	Pass Low
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	374	365	-10	-2.6%	0.5	Pass Low
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	1	1	0	0.0%	0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	374	379	5	1.4%	0.3	Pass Low
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	23	23	0	1.3%	0.1	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	8	6	-2	-28.1%	0.9	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	22	26	4	17.3%	0.8	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	361	360	-1	-0.2%	0.0	Pass Low
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	24	24	0	-1.7%	0.1	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	26	27	1	2.7%	0.1	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	2757	2752	-4	-0.2%	0.2



Vehicle Flow Information
Calibration Statistics
OGV1 Vehicles
AM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	2	2	0	0.0%	0.0	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	4	4	0	-5.0%	0.1	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	0	0	0		0.0	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	7	8	1	9.3%	0.2	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	2	2	0	0.0%	0.0	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	0	0	0		0.0	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	5	5	0	0.0%	0.0	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	0	0	0		0.0	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	1	1	0	0.0%	0.0	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	1	0	-1	-100.0%	1.4	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	5	5	0	-4.0%	0.1	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	4	4	0	-6.3%	0.1	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	7	7	0	-5.0%	0.1	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	1	1	0	-30.0%	0.3	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	3	3	0	-5.0%	0.1	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	25	24	-1	-3.4%	0.2	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	1	0	-1	-100.0%	1.4	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	3	3	0	5.0%	0.1	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	5	5	0	-3.0%	0.1	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	3	2	-1	-23.3%	0.4	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	0	0	0		0.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	9	8	-1	-11.7%	0.4	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	44	44	0	0.2%	0.0	Pass Low
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	36	34	-2	-5.4%	0.3	Pass Low
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	0	0	0		0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	16	16	0	0.9%	0.0	Pass Low
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	4	4	0	0.0%	0.0	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	2	2	0	0.0%	0.0	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	4	2	-2	-52.5%	1.2	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	37	38	1	3.9%	0.2	Pass Low
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	4	4	0	0.0%	0.0	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	1	0	-1	-100.0%	1.4	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	236	227	-9	-3.7%	0.2



Vehicle Flow Information
Calibration Statistics
OGV2 Vehicles
AM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	5	6	1	13.0%	0.3	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	12	9	-3	-24.2%	0.9	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	0	0	0		0.0	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	18	16	-2	-12.8%	0.6	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	0	0	0		0.0	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	1	0	-1	-100.0%	1.4	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	0	0	0		0.4	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	2	1	-1	-42.5%	0.7	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	1	0	-1	-100.0%	1.4	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	0	0	0		0.0	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	5	4	-1	-18.0%	0.4	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	5	4	-1	-20.0%	0.5	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	12	11	-1	-11.7%	0.4	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	0	0	0		0.0	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	2	1	-1	-35.0%	0.5	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	9	16	7	79.4%	2.0	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	0	0	0		0.0	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	0	0	0		0.0	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	4	5	1	25.0%	0.5	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	17	12	-5	-28.2%	1.3	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	0	0	0		0.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	17	16	-1	-6.2%	0.3	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	64	61	-3	-4.7%	0.4	Pass Low
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	51	46	-5	-10.3%	0.8	Pass Low
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	0	0	0		0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	32	28	-4	-11.7%	0.7	Pass Low
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	1	3	2	200.0%	1.4	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	1	3	2	190.0%	1.4	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	1	1	0	25.0%	0.2	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	33	35	2	5.3%	0.3	Pass Low
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	0	1	1		1.4	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	4	2	-2	-51.3%	1.2	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	297	281	-16	-5.4%	0.6



Vehicle Flow Information
Calibration Statistics
All Vehicles
AM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	26	26	0	1.3%	0.1	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	258	251	-7	-2.6%	0.4	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	0	0	0		0.0	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	357	336	-21	-5.9%	1.1	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	144	143	-1	-0.4%	0.0	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	61	61	0	-0.6%	0.0	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	161	159	-2	-1.1%	0.1	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	11	10	-1	-6.8%	0.2	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	140	138	-2	-1.4%	0.2	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	2	0	-2	-100.0%	2.0	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	104	104	0	0.4%	0.0	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	650	644	-6	-0.9%	0.2	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	454	454	0	-0.1%	0.0	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	70	68	-2	-3.1%	0.3	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	92	90	-2	-2.6%	0.3	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	739	741	2	0.2%	0.1	Pass Mid
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	9	0	-9	-100.0%	4.2	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	200	198	-2	-1.1%	0.1	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	500	502	2	0.4%	0.1	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	557	570	13	2.4%	0.6	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	2	0	-2	-100.0%	2.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	516	519	3	0.6%	0.1	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	2102	2087	-15	-0.7%	0.3	Pass Mid
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	1670	1631	-39	-2.3%	1.0	Pass Mid
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	22	22	0	-0.2%	0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	1639	1653	14	0.8%	0.3	Pass Mid
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	181	181	0	0.0%	0.0	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	35	35	0	-0.7%	0.0	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	147	148	1	0.6%	0.1	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	1750	1722	-28	-1.6%	0.7	Pass Mid
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	91	91	0	0.2%	0.0	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	96	95	-1	-1.3%	0.1	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	12786	12679	-107	-0.8%	0.4



Vehicle Flow Information
Calibration Statistics
Car Vehicles
PM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	21	21	-1	-2.4%	0.1	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	343	341	-2	-0.5%	0.1	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	1	0	-1	-100.0%	1.4	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	324	325	1	0.2%	0.0	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	211	210	-1	-0.5%	0.1	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	70	70	0	-0.1%	0.0	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	154	155	1	0.4%	0.0	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	12	13	1	4.6%	0.2	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	109	110	1	1.0%	0.1	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	0	0	0		0.0	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	66	65	-1	-1.0%	0.1	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	506	503	-3	-0.5%	0.1	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	241	239	-2	-0.9%	0.1	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	53	53	0	0.6%	0.0	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	62	59	-3	-4.4%	0.4	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	393	391	-2	-0.4%	0.1	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	1	0	-1	-100.0%	1.4	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	155	154	-1	-0.4%	0.0	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	474	473	-2	-0.3%	0.1	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	393	424	31	7.8%	1.5	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	0	0	0		0.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	376	399	23	6.2%	1.2	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	1332	1309	-22	-1.7%	0.6	Pass Mid
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	1642	1606	-36	-2.2%	0.9	Pass Mid
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	8	8	0	0.6%	0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	1236	1313	77	6.2%	2.1	Pass Mid
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	43	61	18	42.9%	2.6	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	58	58	0	-0.5%	0.0	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	35	35	0	0.9%	0.1	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	1348	1337	-11	-0.8%	0.3	Pass Mid
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	133	132	-1	-0.6%	0.1	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	82	81	-1	-1.6%	0.1	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	9881	9945	63	0.6%	0.4



Vehicle Flow Information
Calibration Statistics
LGV Vehicles
PM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	7	7	0	2.1%	0.1	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	86	88	2	2.3%	0.2	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	0	0	0		0.0	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	97	100	3	3.1%	0.3	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	47	46	-1	-1.2%	0.1	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	16	17	1	3.4%	0.1	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	31	31	0	1.5%	0.1	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	8	8	0	5.0%	0.1	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	21	22	1	3.8%	0.2	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	0	0	0		0.0	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	8	8	0	4.4%	0.1	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	115	116	1	0.9%	0.1	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	58	61	3	4.7%	0.4	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	12	13	1	5.8%	0.2	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	10	11	1	13.5%	0.4	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	139	140	1	0.4%	0.0	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	0	0	0		0.0	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	17	16	-1	-5.0%	0.2	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	71	76	5	6.5%	0.5	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	66	76	10	15.1%	1.2	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	0	0	0		0.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	53	60	7	12.9%	0.9	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	320	316	-4	-1.2%	0.2	Pass Low
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	392	386	-6	-1.5%	0.3	Pass Low
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	1	1	0	0.0%	0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	200	213	13	6.4%	0.9	Pass Low
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	5	5	0	8.0%	0.2	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	11	10	-1	-9.1%	0.3	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	16	16	0	-0.6%	0.0	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	367	371	4	1.2%	0.2	Pass Low
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	10	10	0	0.0%	0.0	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	5	2	-3	-54.0%	1.4	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	2189	2227	38	1.7%	0.3



Vehicle Flow Information
Calibration Statistics
OGV1 Vehicles
PM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	2	2	0	0.0%	0.0	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	6	6	0	0.0%	0.0	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	0	0	0		0.0	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	8	11	3	41.3%	1.1	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	2	2	0	0.0%	0.0	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	1	1	0	0.0%	0.0	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	0	0	0		0.0	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	0	0	0		0.0	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	0	0	0		0.0	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	0	0	0		0.0	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	1	1	0	5.0%	0.0	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	5	5	0	1.0%	0.0	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	3	3	0	3.3%	0.1	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	1	1	0	0.0%	0.0	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	1	1	0	0.0%	0.0	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	9	9	0	3.9%	0.1	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	0	0	0		0.0	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	0	0	0		0.0	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	6	5	-1	-11.7%	0.3	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	6	7	1	14.2%	0.3	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	0	0	0		0.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	7	6	-1	-13.6%	0.4	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	26	26	0	1.1%	0.1	Pass Low
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	32	29	-3	-8.0%	0.5	Pass Low
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	0	0	0		0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	15	15	0	1.0%	0.0	Pass Low
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	0	0	0		0.4	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	2	1	-1	-52.5%	0.9	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	1	1	0	0.0%	0.0	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	24	25	1	2.5%	0.1	Pass Low
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	0	0	0		0.0	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	2	2	0	0.0%	0.0	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	159	160	1	0.4%	0.1



Vehicle Flow Information
Calibration Statistics
OGV2 Vehicles
PM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	0	0	0		0.0	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	7	7	0	-2.1%	0.1	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	0	0	0		0.0	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	13	11	-2	-11.9%	0.4	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	1	1	0	-15.0%	0.2	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	1	1	0	20.0%	0.2	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	0	0	0		0.0	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	0	0	0		0.4	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	0	0	0		0.0	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	0	0	0		0.0	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	2	2	0	2.5%	0.0	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	0	0	0		0.0	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	1	1	0	35.0%	0.3	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	0	0	0		0.0	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	4	4	0	3.8%	0.1	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	11	11	0	0.5%	0.0	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	0	0	0		0.0	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	0	0	0		0.4	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	1	1	0	0.0%	0.0	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	10	9	-1	-12.5%	0.4	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	0	0	0		0.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	17	16	-1	-5.6%	0.2	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	38	39	1	1.9%	0.1	Pass Low
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	46	47	0	1.0%	0.1	Pass Low
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	0	0	0		0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	25	25	0	0.2%	0.0	Pass Low
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	0	0	0		0.0	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	1	1	0	0.0%	0.0	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	1	1	0	25.0%	0.2	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	21	22	1	2.9%	0.1	Pass Low
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	0	0	0		0.0	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	0	0	0		0.0	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	200	199	-1	-0.5%	0.1



Vehicle Flow Information
Calibration Statistics
All Vehicles
PM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	30	30	0	-1.2%	0.1	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	442	442	0	0.0%	0.0	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	1	0	-1	-100.0%	1.4	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	442	448	6	1.2%	0.3	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	261	259	-2	-0.7%	0.1	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	88	89	1	0.7%	0.1	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	185	186	1	0.5%	0.1	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	20	21	1	5.3%	0.2	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	130	132	2	1.4%	0.2	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	0	0	0		0.0	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	77	77	0	-0.3%	0.0	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	626	624	-2	-0.2%	0.1	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	303	304	1	0.3%	0.1	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	66	67	1	1.5%	0.1	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	77	76	-1	-1.6%	0.1	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	552	551	-1	-0.1%	0.0	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	1	0	-1	-100.0%	1.4	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	172	171	-1	-0.8%	0.1	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	552	554	2	0.4%	0.1	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	475	515	40	8.5%	1.8	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	0	0	0		0.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	453	481	28	6.2%	1.3	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	1715	1690	-25	-1.5%	0.6	Pass Mid
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	2111	2068	-44	-2.1%	1.0	Pass Mid
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	9	9	0	0.6%	0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	1476	1566	90	6.1%	2.3	Pass Mid
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	48	67	19	39.5%	2.5	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	72	70	-2	-3.3%	0.3	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	53	53	0	0.8%	0.1	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	1760	1754	-6	-0.3%	0.1	Pass Mid
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	143	142	-1	-0.6%	0.1	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	89	85	-4	-4.6%	0.4	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	12430	12531	101	0.8%	0.4

Appendix B.2

**FLOW CALIBRATION, TRADITIONAL
PEAK HOURS (08:00-09:00 AND
17:00-18:00)**





Vehicle Flow Information
Calibration Statistics
Car Vehicles
AM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	15	15	0	-1.3%	0.1	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	185	184	-1	-0.3%	0.0	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	0	0	0		0.0	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	336	327	-9	-2.6%	0.5	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	125	125	0	-0.3%	0.0	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	37	38	1	2.8%	0.2	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	141	141	0	0.1%	0.0	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	7	7	0	-2.1%	0.1	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	122	119	-3	-2.1%	0.2	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	1	0	-1	-100.0%	1.4	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	62	63	1	1.8%	0.1	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	602	601	-2	-0.2%	0.1	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	281	287	6	2.2%	0.4	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	45	46	1	1.6%	0.1	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	52	53	1	1.6%	0.1	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	497	495	-2	-0.3%	0.1	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	8	0	-8	-100.0%	4.0	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	141	142	1	0.6%	0.1	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	401	398	-3	-0.6%	0.1	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	284	299	15	5.3%	0.9	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	2	0	-2	-100.0%	2.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	301	303	2	0.5%	0.1	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	1424	1428	3	0.2%	0.1	Pass Mid
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	1076	1090	14	1.3%	0.4	Pass Mid
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	28	28	0	0.7%	0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	1043	1052	9	0.9%	0.3	Pass Mid
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	162	162	0	-0.1%	0.0	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	24	22	-2	-7.9%	0.4	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	157	156	-1	-0.5%	0.1	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	1416	1407	-9	-0.6%	0.2	Pass Mid
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	59	60	1	1.1%	0.1	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	63	63	-1	-0.8%	0.1	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	9098	9111	13	0.1%	0.3



Vehicle Flow Information
Calibration Statistics
LGV Vehicles
AM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	8	8	0	3.8%	0.1	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	56	56	0	0.5%	0.0	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	0	0	0		0.0	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	38	36	-2	-5.4%	0.3	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	28	28	0	-0.4%	0.0	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	12	12	0	0.4%	0.0	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	20	20	0	2.0%	0.1	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	4	4	0	-3.8%	0.1	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	19	19	0	0.3%	0.0	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	0	0	0		0.0	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	17	17	0	-0.3%	0.0	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	108	108	0	-0.1%	0.0	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	64	65	1	1.9%	0.1	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	17	17	0	-0.3%	0.0	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	19	18	-1	-2.9%	0.1	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	194	193	-1	-0.5%	0.1	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	3	0	-3	-100.0%	2.4	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	39	39	-1	-1.3%	0.1	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	113	109	-4	-3.2%	0.3	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	136	130	-6	-4.7%	0.6	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	0	0	0		0.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	103	97	-6	-5.4%	0.6	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	454	458	4	0.9%	0.2	Pass Low
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	343	351	8	2.3%	0.4	Pass Low
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	7	7	0	-2.1%	0.1	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	335	338	3	0.8%	0.1	Pass Low
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	29	29	0	0.7%	0.0	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	16	14	-2	-14.4%	0.6	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	25	27	2	8.8%	0.4	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	330	330	0	0.0%	0.0	Pass Low
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	32	32	0	-0.8%	0.0	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	25	24	-1	-3.2%	0.2	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	2594	2587	-7	-0.3%	0.2



Vehicle Flow Information
Calibration Statistics
OGV1 Vehicles
AM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	3	3	0	0.0%	0.0	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	5	5	0	-1.0%	0.0	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	0	0	0		0.0	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	8	10	2	20.6%	0.6	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	3	3	0	-1.7%	0.0	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	0	0	0		0.0	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	1	1	0	-15.0%	0.2	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	1	1	0	-15.0%	0.2	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	0	0	0		0.0	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	1	0	-1	-100.0%	1.4	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	8	8	0	-0.6%	0.0	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	8	8	0	-2.5%	0.1	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	11	11	0	-1.8%	0.1	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	2	2	0	0.0%	0.0	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	3	3	0	-6.7%	0.1	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	17	17	0	2.4%	0.1	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	1	0	-1	-100.0%	1.4	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	4	4	0	0.0%	0.0	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	5	5	0	4.0%	0.1	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	9	9	0	-4.4%	0.1	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	0	0	0		0.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	13	13	0	-1.9%	0.1	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	56	57	0	0.4%	0.0	Pass Low
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	43	43	0	0.2%	0.0	Pass Low
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	0	0	0		0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	30	30	0	-0.8%	0.0	Pass Low
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	3	3	0	5.0%	0.1	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	0	0	0		0.5	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	2	2	0	-5.0%	0.1	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	33	34	1	2.3%	0.1	Pass Low
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	4	4	0	1.3%	0.0	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	2	1	-1	-55.0%	0.9	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	276	275	-1	-0.5%	0.2



Vehicle Flow Information
Calibration Statistics
OGV2 Vehicles
AM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	6	6	0	0.8%	0.0	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	14	14	0	0.4%	0.0	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	0	0	0		0.0	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	16	16	0	-1.9%	0.1	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	0	0	0		0.0	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	0	0	0		0.0	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	0	0	0		0.0	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	3	3	0	-8.3%	0.1	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	0	0	0		0.0	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	0	0	0		0.0	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	3	3	0	1.7%	0.0	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	1	1	0	10.0%	0.1	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	14	14	0	-2.5%	0.1	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	0	0	0		0.0	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	2	2	0	0.0%	0.0	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	13	14	1	4.6%	0.2	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	0	0	0		0.0	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	1	1	0	0.0%	0.0	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	6	6	0	-4.2%	0.1	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	14	14	0	-1.8%	0.1	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	0	0	0		0.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	18	17	-1	-5.0%	0.2	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	69	69	0	-0.5%	0.0	Pass Low
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	52	53	1	1.6%	0.1	Pass Low
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	0	0	0		0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	35	36	1	2.0%	0.1	Pass Low
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	0	0	0		0.0	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	1	1	0	15.0%	0.1	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	0	0	0		0.0	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	30	31	1	1.7%	0.1	Pass Low
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	0	0	0		0.4	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	3	1	-2	-66.7%	1.4	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	301	300	-2	-0.5%	0.1



Vehicle Flow Information
Calibration Statistics
All Vehicles
AM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	32	32	0	0.5%	0.0	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	260	260	0	-0.1%	0.0	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	0	0	0		0.0	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	398	388	-10	-2.4%	0.5	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	156	156	-1	-0.3%	0.0	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	49	50	1	2.2%	0.2	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	162	162	0	0.2%	0.0	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	15	14	-1	-4.7%	0.2	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	141	138	-3	-1.8%	0.2	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	2	0	-2	-100.0%	2.0	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	90	91	1	1.2%	0.1	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	719	717	-2	-0.2%	0.1	Pass Mid
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	370	377	7	1.9%	0.4	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	64	65	1	1.0%	0.1	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	76	76	0	0.1%	0.0	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	721	719	-2	-0.2%	0.1	Pass Mid
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	12	0	-12	-100.0%	4.9	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	185	185	0	0.2%	0.0	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	525	519	-6	-1.2%	0.3	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	443	451	8	1.8%	0.4	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	2	0	-2	-100.0%	2.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	435	430	-5	-1.2%	0.3	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	2004	2011	7	0.4%	0.2	Pass Mid
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	1515	1537	22	1.5%	0.6	Pass Mid
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	35	35	0	0.1%	0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	1443	1455	12	0.8%	0.3	Pass Mid
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	194	194	0	0.1%	0.0	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	41	37	-4	-9.5%	0.6	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	184	185	1	0.7%	0.1	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	1809	1802	-7	-0.4%	0.2	Pass Mid
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	95	96	1	0.6%	0.1	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	93	89	-4	-4.7%	0.5	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	12269	12272	3	0.0%	0.4



Vehicle Flow Information
Calibration Statistics
Car Vehicles
PM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	24	23	-1	-2.7%	0.1	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	332	330	-2	-0.5%	0.1	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	1	0	-1	-100.0%	1.4	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	328	322	-6	-1.8%	0.3	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	1	0	-1	-100.0%	1.4	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	192	192	0	0.0%	0.0	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	50	51	1	1.6%	0.1	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	184	183	-1	-0.6%	0.1	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	9	9	0	-1.1%	0.0	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	121	120	-1	-1.2%	0.1	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	0	0	0		0.0	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	70	70	0	-0.2%	0.0	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	502	504	2	0.3%	0.1	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	225	223	-2	-0.8%	0.1	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	48	47	-1	-2.1%	0.1	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	70	68	-3	-3.6%	0.3	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	418	417	-1	-0.2%	0.0	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	1	0	-1	-100.0%	1.4	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	130	127	-3	-2.0%	0.2	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	530	508	-22	-4.1%	1.0	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	410	419	9	2.3%	0.5	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	0	0	0		0.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	381	388	7	1.8%	0.3	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	1325	1303	-22	-1.7%	0.6	Pass Mid
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	1669	1690	21	1.2%	0.5	Pass Mid
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	5	5	0	2.0%	0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	1293	1303	10	0.7%	0.3	Pass Mid
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	76	62	-14	-19.0%	1.7	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	65	64	-1	-1.6%	0.1	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	39	39	0	-0.9%	0.1	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	1390	1389	-1	-0.1%	0.0	Pass Mid
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	125	126	1	0.4%	0.0	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	80	81	1	0.7%	0.1	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	10094	10060	-34	-0.3%	0.3



Vehicle Flow Information
Calibration Statistics
LGV Vehicles
PM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	3	3	0	10.0%	0.2	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	63	64	1	2.1%	0.2	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	0	0	0		0.0	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	86	93	7	8.1%	0.7	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	34	34	0	0.6%	0.0	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	10	10	0	4.5%	0.1	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	19	20	1	3.7%	0.2	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	2	2	0	17.5%	0.2	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	14	15	1	4.3%	0.2	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	0	0	0		0.0	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	8	8	0	0.0%	0.0	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	84	85	1	1.7%	0.2	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	51	51	0	-0.1%	0.0	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	6	7	1	9.2%	0.2	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	11	10	-1	-6.8%	0.2	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	116	117	1	0.6%	0.1	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	0	0	0		0.0	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	6	6	0	5.0%	0.1	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	66	66	0	-0.4%	0.0	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	41	74	33	81.0%	4.4	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	0	0	0		0.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	34	60	26	75.3%	3.7	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	240	228	-12	-5.0%	0.8	Pass Low
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	305	292	-13	-4.3%	0.8	Pass Low
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	0	0	0		0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	146	201	55	37.9%	4.2	Pass Low
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	2	2	0	0.0%	0.0	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	6	4	-2	-30.8%	0.8	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	8	9	1	6.9%	0.2	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	298	306	8	2.7%	0.5	Pass Low
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	8	8	0	-3.8%	0.1	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	4	0	-4	-100.0%	2.8	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	1671	1775	104	6.2%	0.6



Vehicle Flow Information
Calibration Statistics
OGV1 Vehicles
PM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	1	1	0	0.0%	0.0	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	8	8	0	-1.9%	0.1	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	0	0	0		0.0	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	6	7	1	20.8%	0.5	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	0	0	0		0.3	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	0	0	0		0.0	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	0	0	0		0.0	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	0	0	0		0.0	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	0	0	0		0.0	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	0	0	0		0.0	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	0	0	0		0.3	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	4	4	0	5.0%	0.1	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	0	0	0		0.4	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	0	0	0		0.0	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	1	1	0	20.0%	0.2	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	3	3	0	0.0%	0.0	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	0	0	0		0.0	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	0	0	0		0.0	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	0	0	0		0.9	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	7	9	2	28.6%	0.7	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	0	0	0		0.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	6	9	3	50.8%	1.1	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	18	18	0	-1.4%	0.1	Pass Low
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	23	22	-1	-3.3%	0.2	Pass Low
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	0	0	0		0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	11	14	3	30.0%	0.9	Pass Low
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	0	0	0		0.0	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	1	1	0	0.0%	0.0	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	1	1	0	0.0%	0.0	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	13	13	0	2.3%	0.1	Pass Low
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	0	0	0		0.0	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	2	3	1	52.5%	0.7	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	105	115	11	10.3%	0.2



Vehicle Flow Information
Calibration Statistics
OGV2 Vehicles
PM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	0	0	0		0.0	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	8	8	0	3.7%	0.1	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	0	0	0		0.0	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	6	7	1	17.5%	0.4	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	0	0	0		0.0	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	1	1	0	0.0%	0.0	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	1	1	0	0.0%	0.0	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	0	0	0		0.0	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	0	0	0		0.0	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	0	0	0		0.0	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	0	0	0		0.0	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	2	2	0	0.0%	0.0	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	0	0	0		0.0	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	5	4	-1	-14.0%	0.3	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	0	0	0		0.0	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	2	2	0	12.5%	0.2	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	12	12	0	-0.4%	0.0	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	0	0	0		0.0	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	0	0	0		0.0	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	0	0	0		0.0	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	8	10	2	28.8%	0.8	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	0	0	0		0.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	13	14	1	7.7%	0.3	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	32	31	-1	-3.8%	0.2	Pass Low
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	41	39	-2	-4.0%	0.3	Pass Low
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	0	0	0		0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	18	23	5	28.6%	1.1	Pass Low
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	0	0	0		0.0	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	0	0	0		0.0	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	3	3	0	-3.3%	0.1	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	16	16	0	0.0%	0.0	Pass Low
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	0	0	0		0.0	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	1	1	0	-15.0%	0.2	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	169	175	6	3.7%	0.1



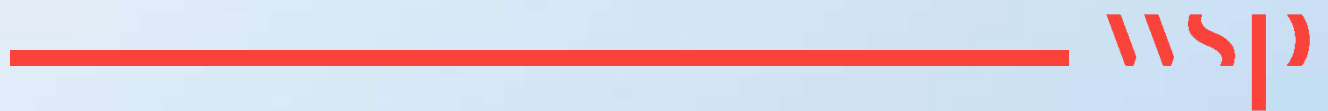
Vehicle Flow Information
Calibration Statistics
All Vehicles
PM Peak

Index	Junction	Name	Origin	Destination	Reference	Observed Flow	Modelled Flow	Difference	% Difference	G.E.H. Value (using hourly flows)	Flow Test (using hourly flows)
1	1	M4 east to B4005	M4 east	B4005	8:34:58	28	28	0	-1.2%	0.1	Pass Low
2	1	M4 east to A3102 west	M4 east	A3102 west	8:34:56	411	411	0	0.0%	0.0	Pass Low
3	1	M4 east to M4 west	M4 east	M4 west	8:34:44	1	0	-1	-100.0%	1.4	Pass Low
4	1	M4 east to A3102 east	M4 east	A3102 east	8:34:17	426	430	4	0.8%	0.2	Pass Low
5	1	M4 east to M4 east	M4 east	M4 east	8:34:31	1	0	-1	-100.0%	1.4	Pass Low
6	1	B4005 to B4005	B4005	B4005	8:42:58	0	0	0		0.0	Pass Low
7	1	B4005 to A3102 west	B4005	A3102 west	8:42:56	227	227	0	0.1%	0.0	Pass Low
8	1	B4005 to M4 west	B4005	M4 west	8:42:44	61	62	1	2.0%	0.2	Pass Low
9	1	B4005 to A3102 east	B4005	A3102 east	8:42:17	203	203	0	-0.2%	0.0	Pass Low
10	1	B4005 to M4 east	B4005	M4 east	8:42:31	11	11	0	2.3%	0.1	Pass Low
11	1	A3102 west to B4005	A3102 west	B4005	8:39:58	135	134	-1	-0.6%	0.1	Pass Low
12	1	A3102 west to A3102 west	A3102 west	A3102 west	8:39:56	0	0	0		0.0	Pass Low
13	1	A3102 west to M4 west	A3102 west	M4 west	8:39:44	80	80	0	-0.1%	0.0	Pass Low
14	1	A3102 west to A3102 east	A3102 west	A3102 east	8:39:17	590	593	3	0.5%	0.1	Pass Low
15	1	A3102 west to M4 east	A3102 west	M4 east	8:39:31	281	279	-2	-0.9%	0.1	Pass Low
16	1	M4 west to B4005	M4 west	B4005	8:16:58	54	54	0	-0.8%	0.1	Pass Low
17	1	M4 west to A3102 west	M4 west	A3102 west	8:16:56	84	81	-3	-3.3%	0.3	Pass Low
18	1	M4 west to M4 west	M4 west	M4 west	8:16:44	0	0	0		0.0	Pass Low
19	1	M4 west to A3102 east	M4 west	A3102 east	8:16:17	549	549	0	-0.1%	0.0	Pass Low
20	1	M4 west to M4 east	M4 west	M4 east	8:16:31	1	0	-1	-100.0%	1.4	Pass Low
21	1	A3102 east to B4005	A3102 east	B4005	8:27:58	136	134	-2	-1.7%	0.2	Pass Low
22	1	A3102 east to A3102 west	A3102 east	A3102 west	8:27:56	596	574	-22	-3.6%	0.9	Pass Low
23	1	A3102 east to M4 west	A3102 east	M4 west	8:27:44	466	513	47	10.0%	2.1	Pass Low
24	1	A3102 east to A3102 east	A3102 east	A3102 east	8:27:17	0	0	0		0.0	Pass Low
25	1	A3102 east to M4 east	A3102 east	M4 east	8:27:31	434	471	36	8.4%	1.7	Pass Low
26	1	M4 mainline eastbound	M4 west	M4 east	8:4:4	1615	1579	-35	-2.2%	0.9	Pass Mid
27	1	M4 mainline westbound	M4 east	M4 west	8:11:11	2038	2043	5	0.3%	0.1	Pass Mid
28	2	A3102 east to Frankland Road	A3102 east	Frankland Road	9:25:29	5	5	0	2.0%	0.0	Pass Low
29	2	A3102 east to A3102 west	A3102 east	A3102 west	9:25:27	1468	1541	73	5.0%	1.9	Pass Mid
30	2	A3102 east to Lydiard Fields	A3102 east	Lydiard Fields	9:25:24	78	64	-14	-18.5%	1.7	Pass Low
31	2	Frankland Road to A3102 west	Frankland Road	A3102 west	9:28:27	72	69	-3	-4.0%	0.3	Pass Low
32	2	A3102 west to Lydiard Fields	A3102 west	Lydiard Fields	9:18:24	51	51	0	0.2%	0.0	Pass Low
33	2	A3102 west to A3102 east	A3102 west	A3102 east	9:18:21	1717	1724	7	0.4%	0.2	Pass Mid
34	2	Lydiard Fields to A3102 east	Lydiard Fields	A3102 east	9:23:21	133	133	0	0.2%	0.0	Pass Low
35	2	Lydiard Fields to A3102 west	Lydiard Fields	A3102 west	9:23:27	87	84	-3	-2.9%	0.3	Pass Low

	Sum Obs.	Sum Mod.	Diff	% Diff	Ave. GEH
Overall Stats	12039	12126	88	0.7%	0.5

Appendix C

JOURNEY TIME VALIDATION



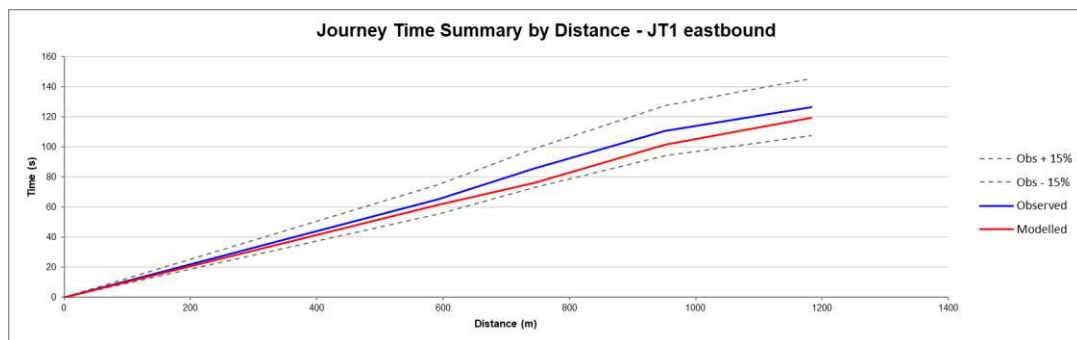
Appendix C.1

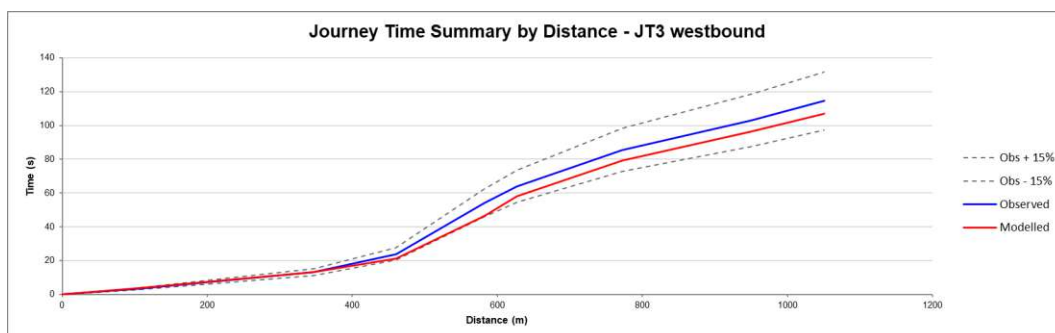
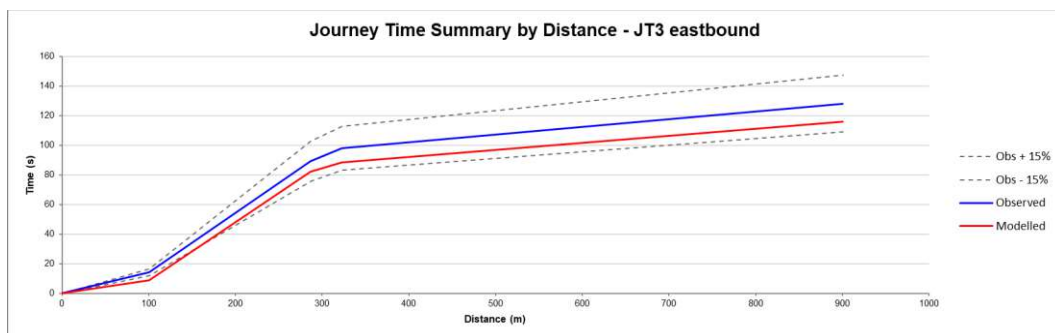
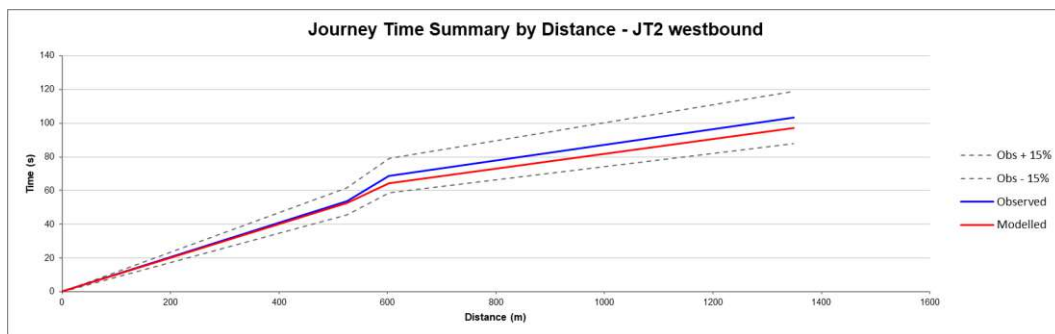
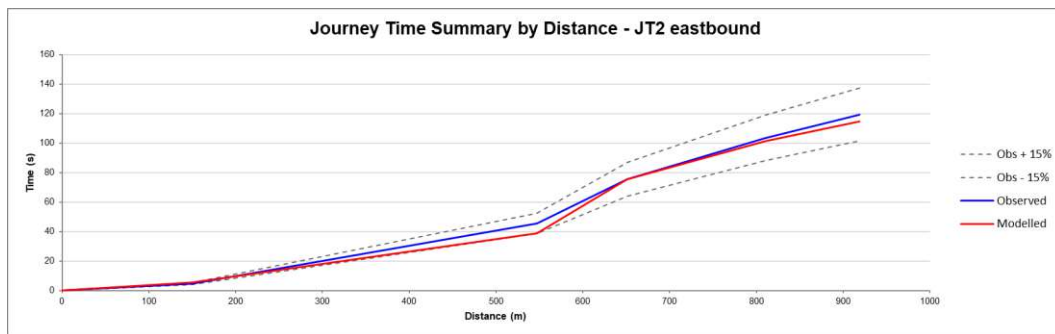
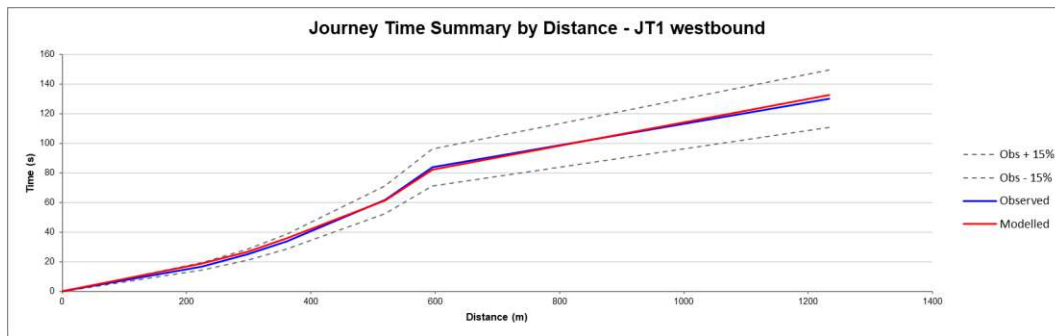
**JOURNEY TIME VALIDATION,
OBSERVED PEAK HOURS (07:30-
08:30 AND 16:30-17:30)**



AM Peak 07:30-08:30

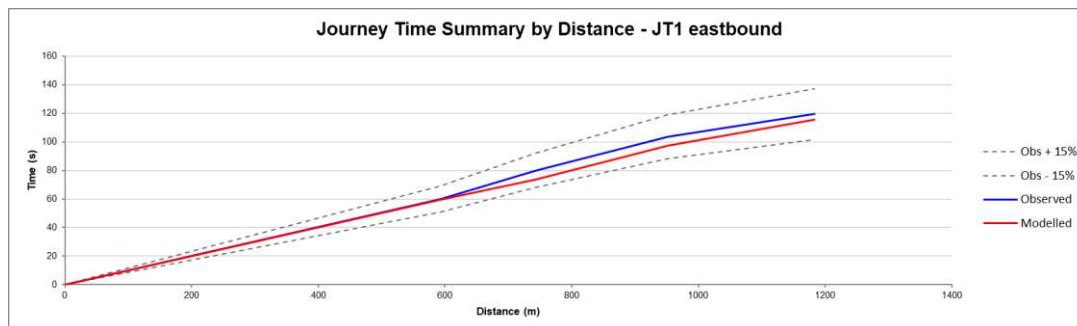
Route	Observed AM	Modelled AM	Diff AM	Diff% AM
1 - JT1 - EB1	65	61	-4	-6.1%
2 - JT1 - EB2	21	15	-6	-28.4%
3 - JT1 - EB3	25	25	1	2.5%
4 - JT1 - EB4	16	18	2	15.8%
5 - JT1 - WB1	17	19	2	12.3%
6 - JT1 - WB2	8	8	0	-0.6%
7 - JT1 - WB3	9	9	0	3.7%
8 - JT1 - WB4	28	26	-3	-9.0%
9 - JT1 - WB5	22	21	-1	-6.5%
10 - JT1 - WB6	46	50	4	8.8%
11 - JT2 - EB1	5	5	1	14.2%
12 - JT2 - EB2	41	34	-7	-17.8%
13 - JT2 - EB3	30	37	7	21.6%
14 - JT2 - EB4	28	26	-2	-7.9%
15 - JT2 - EB5	16	13	-2	-15.7%
16 - JT2 - WB1	54	53	-1	-2.0%
17 - JT2 - WB2	15	12	-4	-23.3%
18 - JT2 - WB3	35	33	-2	-5.2%
19 - JT3 - EB1	14	9	-5	-37.1%
20 - JT3 - EB2	75	73	-2	-2.4%
21 - JT3 - EB3	9	6	-2	-26.4%
22 - JT3 - EB4	30	27	-3	-9.8%
23 - JT3 - WB1	3	4	0	10.8%
24 - JT3 - WB2	10	10	0	-4.2%
25 - JT3 - WB3	11	8	-3	-25.5%
26 - JT3 - WB4	30	25	-5	-15.9%
27 - JT3 - WB5	10	11	1	14.7%
28 - JT3 - WB6	21	21	0	-1.0%
29 - JT3 - WB7	17	17	0	-2.2%
31 - JT3 - WB8	12	10	-1	-9.7%

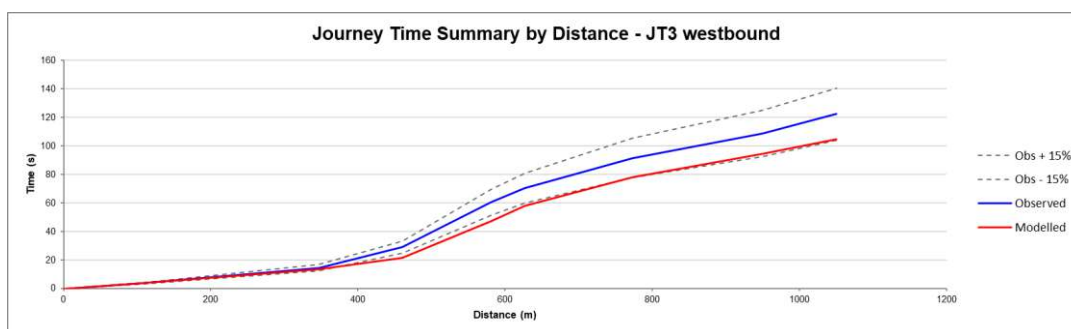
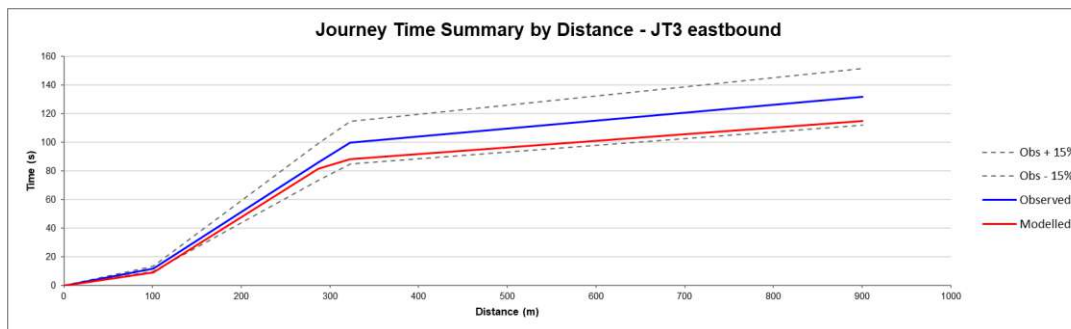
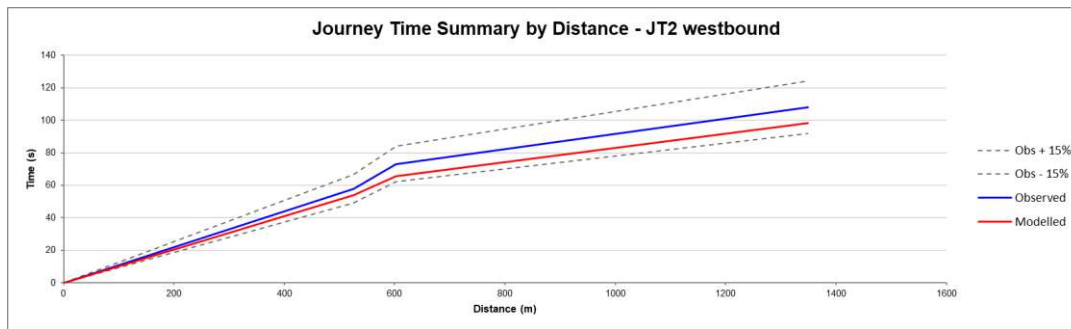
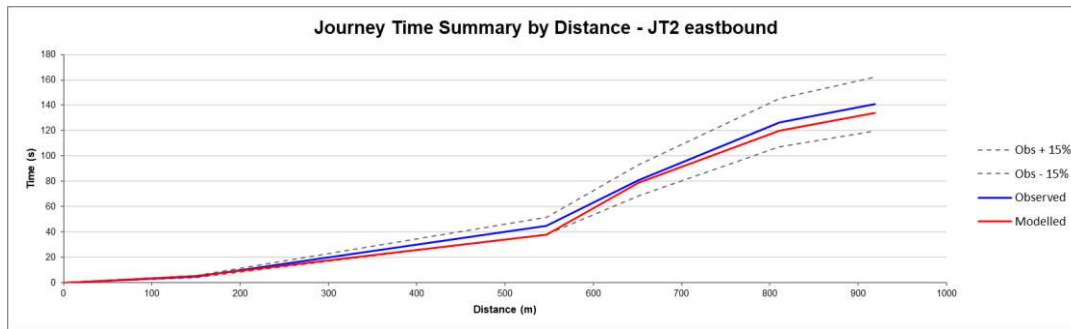
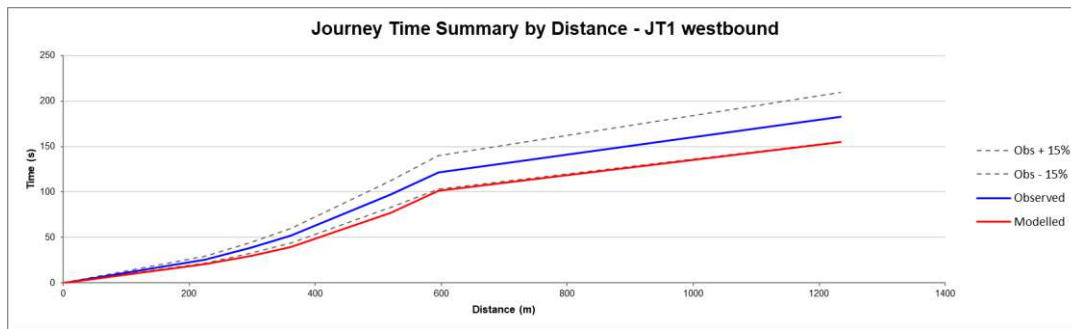




PM Peak 16:30-17:30

Route	Observed PM	Modelled PM	Diff PM	Diff% PM
1 - JT1 - EB1	60	60	0	-0.8%
2 - JT1 - EB2	20	14	-6	-29.6%
3 - JT1 - EB3	23	24	0	1.1%
4 - JT1 - EB4	16	18	2	14.2%
5 - JT1 - WB1	25	21	-5	-17.9%
6 - JT1 - WB2	13	9	-4	-33.3%
7 - JT1 - WB3	14	10	-4	-27.1%
8 - JT1 - WB4	45	37	-8	-17.7%
9 - JT1 - WB5	24	25	0	1.8%
10 - JT1 - WB6	61	54	-7	-11.6%
11 - JT2 - EB1	5	5	0	9.2%
12 - JT2 - EB2	40	33	-7	-18.3%
13 - JT2 - EB3	36	41	5	13.9%
14 - JT2 - EB4	45	41	-4	-9.4%
15 - JT2 - EB5	15	14	-1	-5.8%
16 - JT2 - WB1	58	54	-4	-7.0%
17 - JT2 - WB2	15	12	-3	-22.0%
18 - JT2 - WB3	35	33	-2	-6.6%
19 - JT3 - EB1	12	9	-3	-23.8%
20 - JT3 - EB2	75	73	-2	-2.5%
21 - JT3 - EB3	14	7	-7	-51.7%
22 - JT3 - EB4	32	27	-5	-16.5%
23 - JT3 - WB1	4	4	0	6.8%
24 - JT3 - WB2	11	10	-1	-11.2%
25 - JT3 - WB3	15	8	-7	-45.5%
26 - JT3 - WB4	32	26	-6	-18.2%
27 - JT3 - WB5	10	10	1	6.9%
28 - JT3 - WB6	21	20	-1	-3.4%
29 - JT3 - WB7	17	17	0	-2.8%
31 - JT3 - WB8	14	10	-4	-27.0%





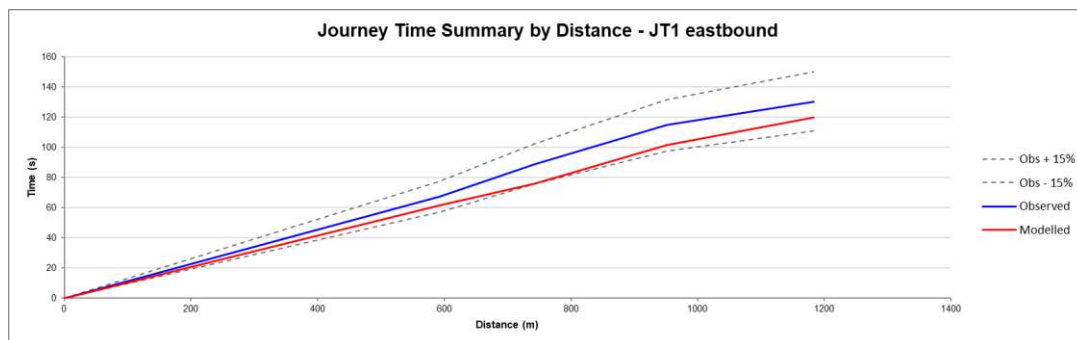
Appendix C.2

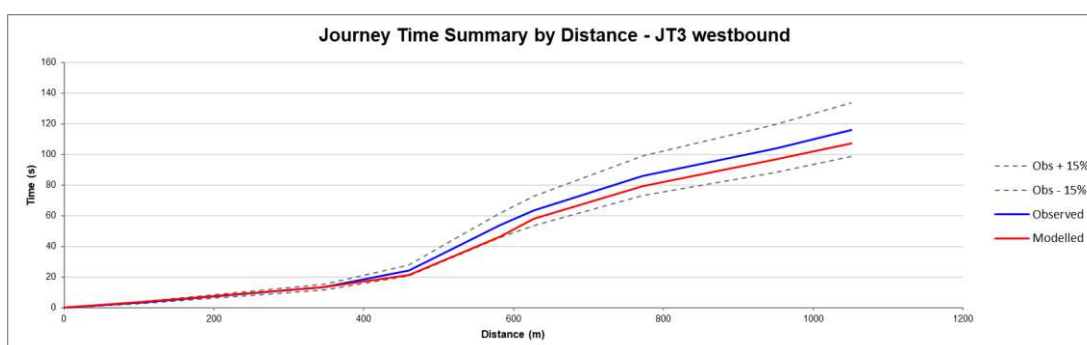
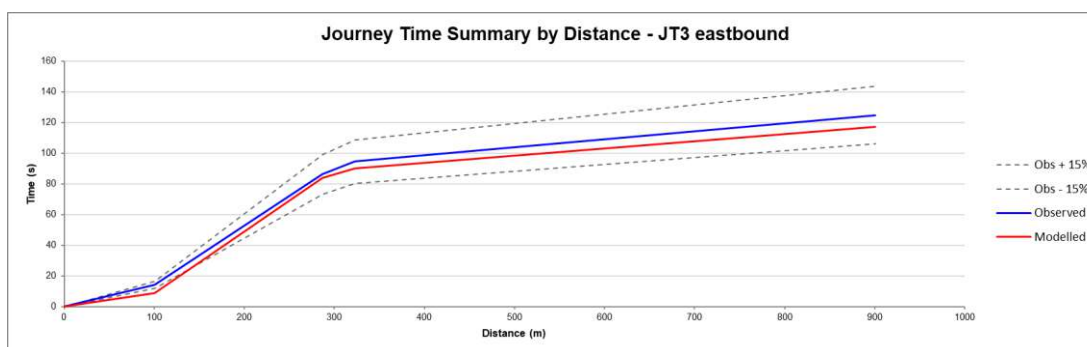
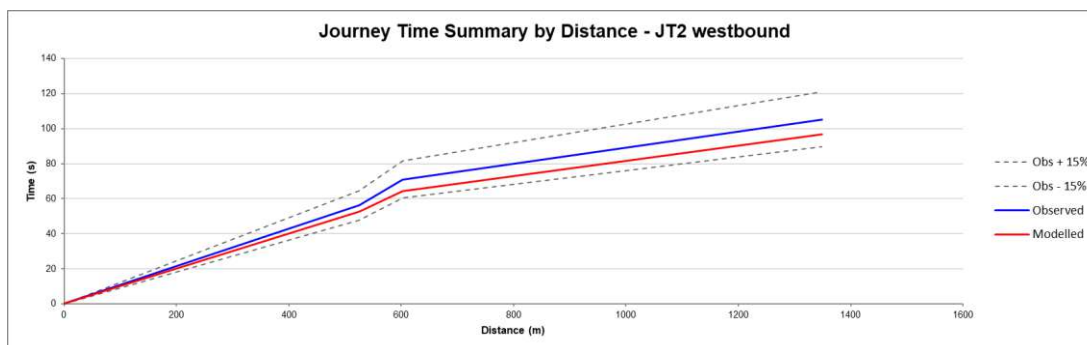
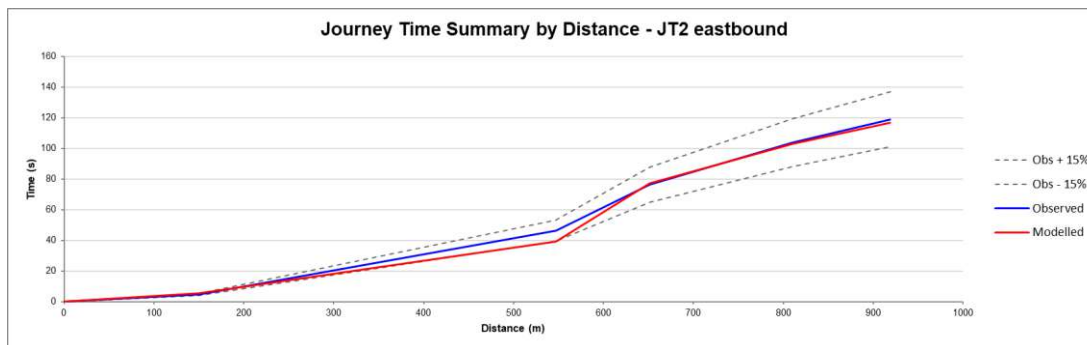
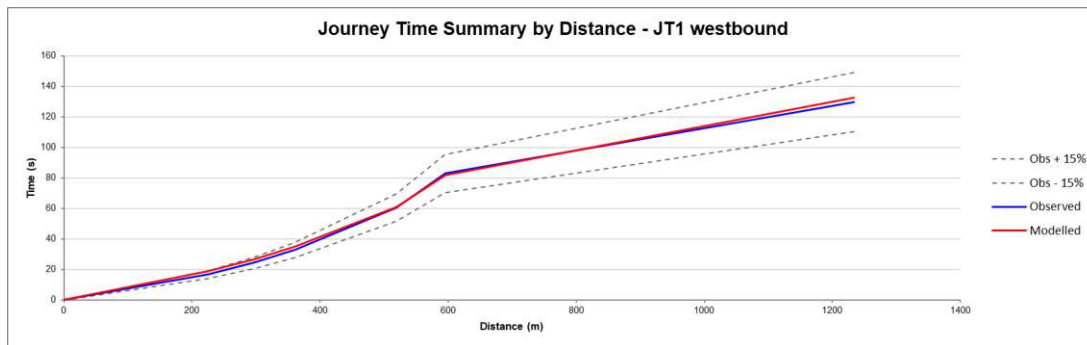
**JOURNEY TIME VALIDATION,
TRADITIONAL PEAK HOURS (08:00-
09:00 AND 17:00-18:00)**



AM Peak 08:00-09:00

Route	Observed AM	Modelled AM	Diff AM	Diff% AM
1 - JT1 - EB1	68	62	-6	-8.9%
2 - JT1 - EB2	22	15	-7	-33.3%
3 - JT1 - EB3	25	26	0	1.1%
4 - JT1 - EB4	16	18	2	14.6%
5 - JT1 - WB1	17	19	2	12.3%
6 - JT1 - WB2	8	8	0	1.4%
7 - JT1 - WB3	8	9	0	2.3%
8 - JT1 - WB4	28	26	-2	-6.4%
9 - JT1 - WB5	22	21	-2	-7.0%
10 - JT1 - WB6	47	51	4	8.4%
11 - JT2 - EB1	5	5	1	14.2%
12 - JT2 - EB2	42	34	-8	-18.9%
13 - JT2 - EB3	30	38	8	27.4%
14 - JT2 - EB4	28	26	-2	-6.3%
15 - JT2 - EB5	15	14	-2	-10.7%
16 - JT2 - WB1	56	53	-4	-6.3%
17 - JT2 - WB2	15	12	-3	-21.8%
18 - JT2 - WB3	34	33	-2	-5.1%
19 - JT3 - EB1	14	9	-5	-36.8%
20 - JT3 - EB2	72	75	3	4.1%
21 - JT3 - EB3	8	6	-2	-28.4%
22 - JT3 - EB4	30	27	-3	-9.9%
23 - JT3 - WB1	3	4	0	11.6%
24 - JT3 - WB2	10	10	0	-3.7%
25 - JT3 - WB3	11	8	-3	-26.8%
26 - JT3 - WB4	29	25	-4	-14.7%
27 - JT3 - WB5	10	12	2	20.9%
28 - JT3 - WB6	23	21	-1	-6.4%
29 - JT3 - WB7	18	17	-1	-3.4%
31 - JT3 - WB8	12	11	-2	-12.8%

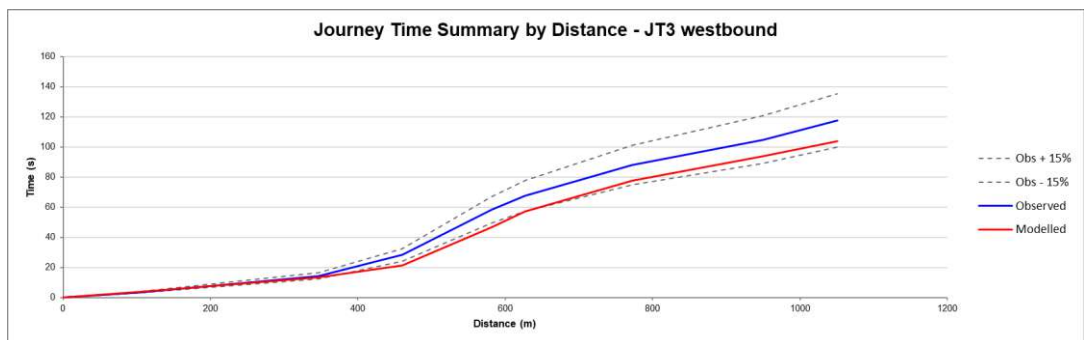
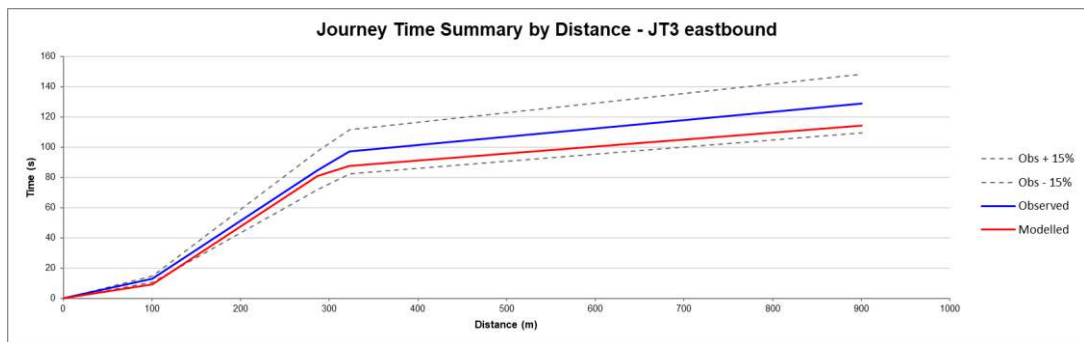
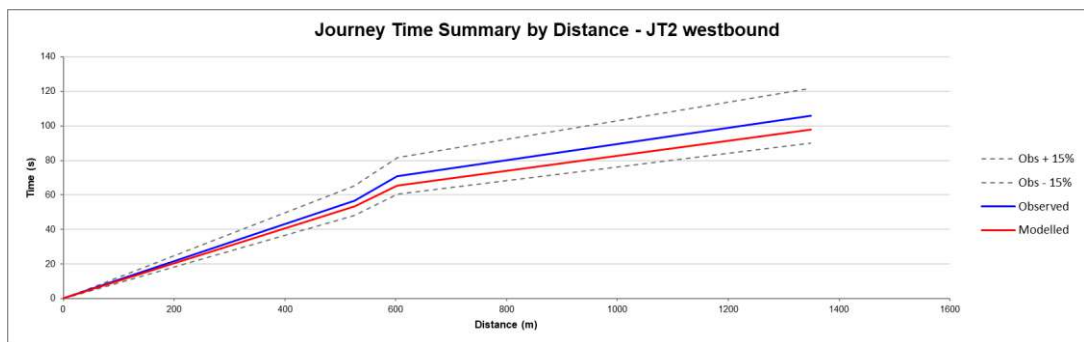
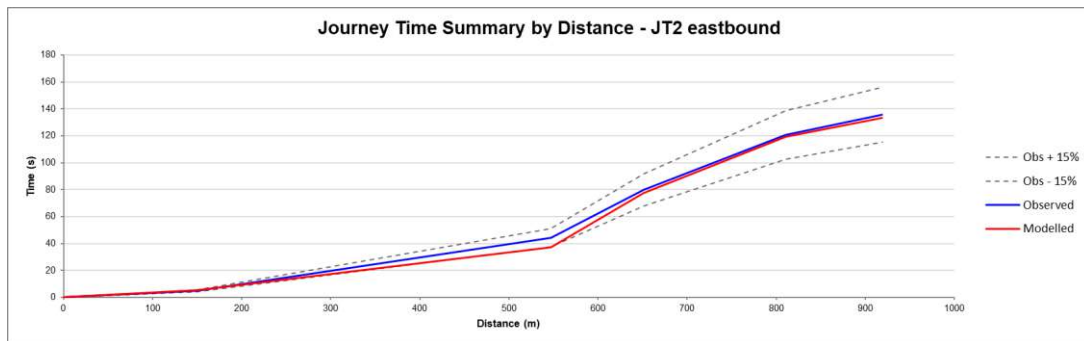
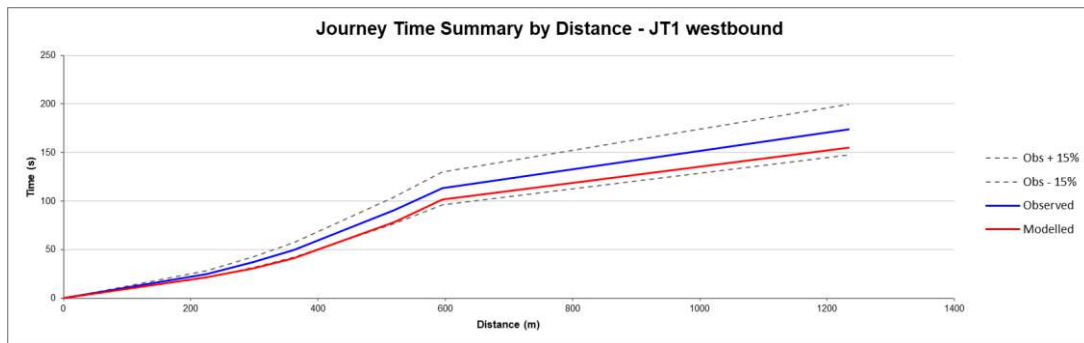




PM Peak 17:00-18:00

Route	Observed PM	Modelled PM	Diff PM	Diff% PM
1 - JT1 - EB1	60	59	-1	-1.5%
2 - JT1 - EB2	19	14	-5	-27.0%
3 - JT1 - EB3	24	23	0	-1.3%
4 - JT1 - EB4	16	18	2	14.1%
5 - JT1 - WB1	25	21	-3	-13.5%
6 - JT1 - WB2	12	10	-3	-22.8%
7 - JT1 - WB3	12	10	-2	-18.8%
8 - JT1 - WB4	41	37	-4	-8.6%
9 - JT1 - WB5	23	23	1	2.6%
10 - JT1 - WB6	61	53	-7	-12.0%
11 - JT2 - EB1	5	5	0	8.7%
12 - JT2 - EB2	39	32	-7	-19.0%
13 - JT2 - EB3	35	41	5	14.2%
14 - JT2 - EB4	41	42	1	2.0%
15 - JT2 - EB5	15	14	-1	-9.2%
16 - JT2 - WB1	57	53	-3	-5.5%
17 - JT2 - WB2	14	12	-3	-18.0%
18 - JT2 - WB3	35	33	-2	-6.7%
19 - JT3 - EB1	13	9	-4	-29.6%
20 - JT3 - EB2	72	72	0	0.0%
21 - JT3 - EB3	12	7	-6	-47.1%
22 - JT3 - EB4	32	27	-5	-16.0%
23 - JT3 - WB1	4	4	0	6.8%
24 - JT3 - WB2	11	10	-1	-11.5%
25 - JT3 - WB3	14	8	-6	-42.8%
26 - JT3 - WB4	30	26	-5	-15.1%
27 - JT3 - WB5	9	10	1	11.5%
28 - JT3 - WB6	20	20	0	1.3%
29 - JT3 - WB7	17	16	-1	-4.5%
31 - JT3 - WB8	13	10	-3	-21.2%







2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN

wsp.com

M4 junction 16
Project No.: 70090207 | Our Ref No.:
National Highways

WSP
April 2023

APPENDIX 5

Automatic Traffic Count Data

AM

Run Number >>	AVG
Vehicle Type >>	All

				AM Peak 07:30-08:30
Model Junction	Junction Description	From	To	AM 2023 Ref
				All
Juntion 1	Spittleborough Rounabout	A3102 (N)	M4 (E)	487
		A3102 (N)	B4005 (S)	196
		A3102 (N)	A3102 (SW)	507
		A3102 (N)	M4 (W)	562
		A3102 (N)	A3102 (N)	0
		M4 (E)	B4005 (S)	34
		M4 (E)	A3102 (SW)	327
		M4 (E)	M4 (W)	0
		M4 (E)	A3102 (N)	433
		M4 (E)	M4 (E)	0
		B4005 (S)	A3102 (SW)	144
		B4005 (S)	M4 (W)	59
		B4005 (S)	A3102 (N)	160
		B4005 (S)	M4 (E)	10
		B4005 (S)	B4005 (S)	0
		A3102 (SW)	M4 (W)	102
		A3102 (SW)	A3102 (N)	649
		A3102 (SW)	M4 (E)	422
		A3102 (SW)	B4005 (S)	139
		A3102 (SW)	A3102 (SW)	0
		M4 (W)	A3102 (N)	728
		M4 (W)	M4 (E)	0
		M4 (W)	B4005 (S)	66
		M4 (W)	A3102 (SW)	88
		M4 (W)	M4 (W)	0
Junction 2	Lydiard Field	The Lydiard Beefeater (N)	A3102 (E)	92
		The Lydiard Beefeater (N)	A3102 (W)	96
		A3102 (E)	Frankland Rd (S)	22
		A3102 (E)	A3102 (W)	1619
		A3102 (E)	The Lydiard Beefeater (N)	183
		Frankland Rd (S)	A3102 (W)	34
		A3102 (W)	The Lydiard Beefeater (N)	157
		A3102 (W)	A3102 (E)	1803

PM

Run Number >>	AVG
Vehicle Type >>	All

				PM Peak 16:30-17:30
Model Junction	Junction Description	From	To	PM 2023 Ref
				All
Juntion 1	Spittleborough Rounabout	A3102 (N)	M4 (E)	527
		A3102 (N)	B4005 (S)	170
		A3102 (N)	A3102 (SW)	557
		A3102 (N)	M4 (W)	577
		A3102 (N)	A3102 (N)	0
		M4 (E)	B4005 (S)	31
		M4 (E)	A3102 (SW)	459
		M4 (E)	M4 (W)	0
		M4 (E)	A3102 (N)	471
		M4 (E)	M4 (E)	0
		B4005 (S)	A3102 (SW)	260
		B4005 (S)	M4 (W)	100
		B4005 (S)	A3102 (N)	186
		B4005 (S)	M4 (E)	22
		B4005 (S)	B4005 (S)	0
		A3102 (SW)	M4 (W)	86
		A3102 (SW)	A3102 (N)	630
		A3102 (SW)	M4 (E)	328
		A3102 (SW)	B4005 (S)	132
		A3102 (SW)	A3102 (SW)	0
		M4 (W)	A3102 (N)	570
		M4 (W)	M4 (E)	0
		M4 (W)	B4005 (S)	69
		M4 (W)	A3102 (SW)	77
		M4 (W)	M4 (W)	0
Junction 2	Lydiard Field	The Lydiard Beefeater (N)	A3102 (E)	143
		The Lydiard Beefeater (N)	A3102 (W)	93
		A3102 (E)	Frankland Rd (S)	9
		A3102 (E)	A3102 (W)	1661
		A3102 (E)	The Lydiard Beefeater (N)	67
		Frankland Rd (S)	A3102 (W)	75
		A3102 (W)	The Lydiard Beefeater (N)	53
		A3102 (W)	A3102 (E)	1800

SURVEY CONTROL

Client: Eddisons

Client Contact: Phil Wooliscroft

Survey Location: Swindon

Date(s) of Survey: Friday 18th November 2022 - Thursday 1st December 2022

Notes:

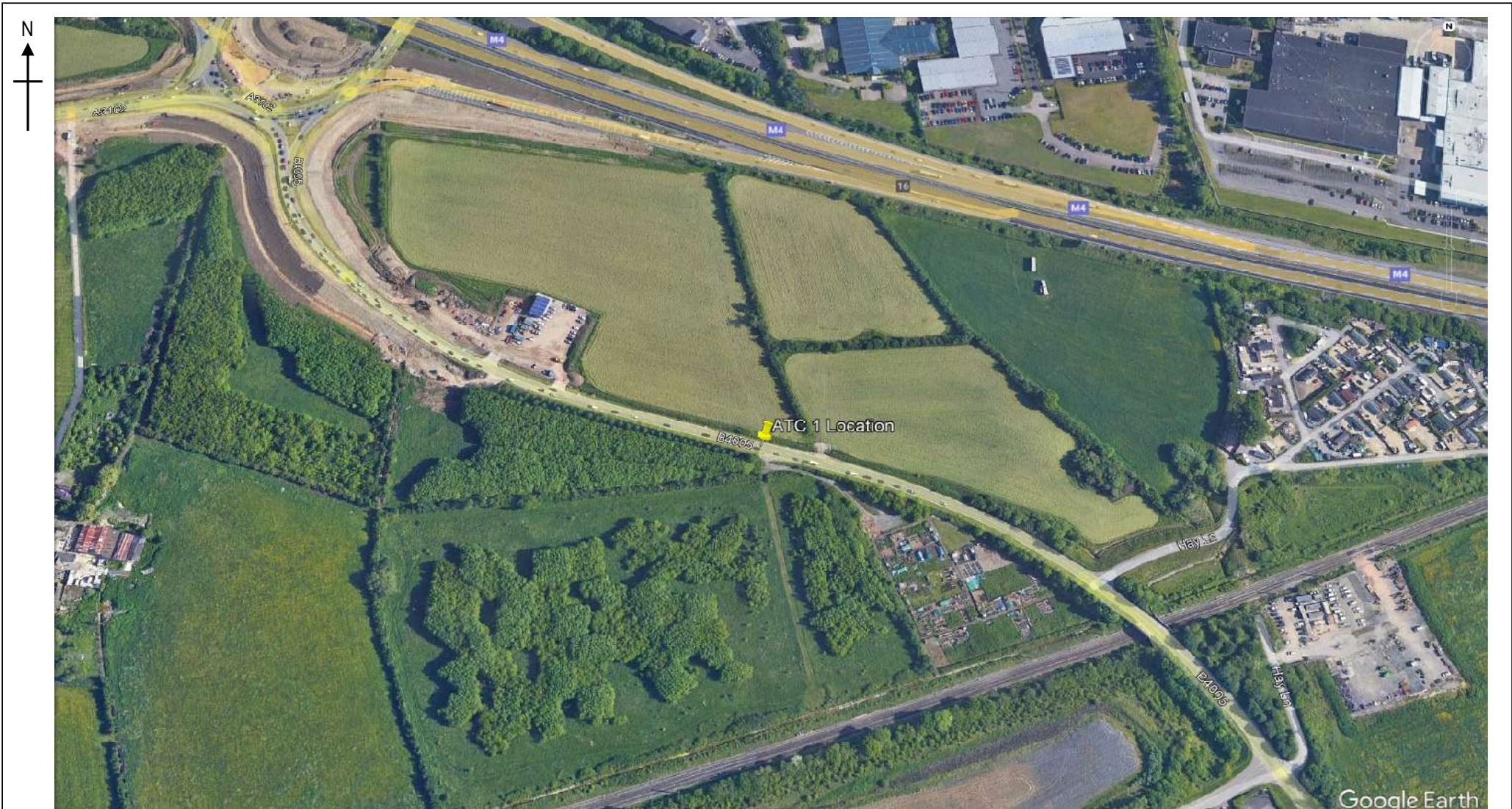
On Site Supervisor(s): Neil Harley

Data Checking: David Cheng

Survey Reference: 22.125 ATC

Status: Final

Date of Issue: 5th December 2022



DRAWING TITLE				MAP REFERENCE				signal surveys Traffic Counts and Car Park Surveys Parkway House, Palatine Road, Northenden, Manchester, M22 4DB Tel 0161 998 4226
JOB TITLE				22.125 SWINDON ATC				
DRAWN BY		DATE		SCALE		REF		
DC		NOV 2022		NTS		FIGURE 1		

Default

Globals

Report Id	CustomList-303
Descriptor	Default
Created by	MetroCount Traffic Executive
Creation Time (UTC)	2022-12-05T14:27:30
Legal	Copyright (c)1997 - 2019 MetroCount
Graphic	
Language	English
Country	United Kingdom
Time	UTC + 0 min
Create Version	5.0.8.0
Metric	Part metric
Speed Unit	mph
Length Unit	metre
Mass Unit	tonne

Dataset

Site Name	Swindon
Site Attribute	[51.541619, -1.848721]
File Name	D:\TDS\2022 - 2023\22.125 Swindon ATC\Swindon 0 2022-12-05 1242.EC0
File Type	Plus
Algorithm	Factory default axle
Description	B4005 [40mph]
Lane	0
Direction	6
Direction Text	6 - West bound A B, East bound B A.
Layout Text	Axle sensors - Paired (Class/Speed/Count)
Setup Time	2022-11-17T13:48:55
Start Time	2022-11-17T13:48:55
Finish Time	2022-12-05T12:42:27
Operator	TDS
Configuration	80 00 14 6a 6a 00 00 00 00 00

Profile

Name	Default Profile
Title	MetroCount Traffic Executive
Graphic Logo	
Header	
Footer	
Percentile 1	85
Percentile 2	95
Pace	10
Filter Start	2022-11-18T00:00:00
Filter End	2022-12-02T00:00:00
Class Scheme	ARX
	F Cls(1-12) Dir(E) Sp(0,100) Headway(J) Span(0 - 100) Lane(0-16)
Low Speed	0
High Speed	100
Posted Limit	40
Speed Limits	40 40 40 40 40 40 40 40 40
Separation	0.000
Separation Type	Headway
Direction	East
Encoded Direction	2

Column

Time [--	24-hour time (0000 - 2359)
Total	Number in time step
Cls 1	Class totals
Cls 2	Class totals
Cls 3	Class totals
Cls 4	Class totals
Cls 5	Class totals
Cls 6	Class totals
Cls 7	Class totals
Cls 8	Class totals
Cls 9	Class totals
Cls 10	Class totals
Cls 11	Class totals
Cls 12	Class totals
Mean	Average speed
Vpp 85	Percentile speed

Friday, 18 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	16	0	16	0	0	0	0	0	0	0	0	0	0	52.2	70.2
0100	3	0	3	0	0	0	0	0	0	0	0	0	0	43	-
0200	3	0	3	0	0	0	0	0	0	0	0	0	0	51.3	-
0300	6	0	4	0	2	0	0	0	0	0	0	0	0	52.9	-
0400	16	0	11	0	5	0	0	0	0	0	0	0	0	50.5	57.9
0500	37	0	30	0	5	0	0	0	0	0	2	0	0	51.2	55.8
0600	160	1	136	1	18	1	1	1	1	0	0	0	0	50	57
0700	401	3	347	0	49	0	1	0	0	0	1	0	0	46.9	52.2
0800	477	2	390	0	79	0	2	1	1	2	0	0	0	46.4	51.9
0900	360	3	317	1	36	1	2	0	0	0	0	0	0	47.7	53.6
1000	402	1	360	2	32	2	2	0	2	1	0	0	0	45.5	51.3
1100	415	3	351	2	54	2	2	0	0	0	1	0	0	45	50.5
1200	402	1	347	3	44	2	2	0	1	1	1	0	0	46.1	52
1300	377	3	330	3	36	0	2	0	3	0	0	0	0	45.7	51.3
1400	389	0	346	3	37	0	1	0	0	2	0	0	0	44.5	50.6
1500	470	5	427	4	30	0	2	0	1	1	0	0	0	46.1	52.8
1600	482	5	440	3	32	1	0	0	1	0	0	0	0	45.7	51.4
1700	406	5	380	0	20	1	0	0	0	0	0	0	0	46.3	52.5
1800	226	1	220	0	5	0	0	0	0	0	0	0	0	48.5	54.7
1900	162	0	155	0	7	0	0	0	0	0	0	0	0	49.2	56.2
2000	92	0	85	0	7	0	0	0	0	0	0	0	0	50.4	56.2
2100	63	0	62	0	1	0	0	0	0	0	0	0	0	47.7	54.4
2200	49	0	45	0	4	0	0	0	0	0	0	0	0	50.7	59.2
2300	35	0	33	0	2	0	0	0	0	0	0	0	0	50.7	58.7
07-19	4807	32	4255	21	454	9	16	1	9	7	3	0	0	46.1	52
06-22	5284	33	4693	22	487	10	17	2	10	7	3	0	0	46.4	52.5
06-00	5368	33	4771	22	493	10	17	2	10	7	3	0	0	46.5	52.6
00-00	5449	33	4838	22	505	10	17	2	10	7	5	0	0	46.5	52.7

Saturday, 19 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	14	0	14	0	0	0	0	0	0	0	0	0	0	53.6	64.4
0100	11	0	11	0	0	0	0	0	0	0	0	0	0	47	62.6
0200	11	0	9	0	2	0	0	0	0	0	0	0	0	46.6	53.8
0300	4	0	4	0	0	0	0	0	0	0	0	0	0	45.2	-
0400	7	0	5	0	2	0	0	0	0	0	0	0	0	52.9	-
0500	17	1	11	1	4	0	0	0	0	0	0	0	0	54.4	63.1
0600	62	0	53	0	7	0	1	1	0	0	0	0	0	49.6	55.7
0700	135	0	121	0	14	0	0	0	0	0	0	0	0	48.9	55.6
0800	230	2	215	0	11	0	1	0	0	0	1	0	0	46.4	52.9
0900	339	2	311	0	23	0	2	0	1	0	0	0	0	46.9	52.8
1000	450	4	427	0	16	3	0	0	0	0	0	0	0	46.3	51.6
1100	508	8	474	3	18	3	0	0	1	1	0	0	0	45.8	51.6
1200	501	6	472	0	17	2	2	0	1	0	1	0	0	46.2	51.3
1300	489	7	463	3	15	0	0	0	0	0	1	0	0	47.1	52.3
1400	487	14	460	1	10	2	0	0	0	0	0	0	0	45.2	51.1
1500	399	6	377	0	14	2	0	0	0	0	0	0	0	46.8	52.5
1600	318	4	301	0	13	0	0	0	0	0	0	0	0	46.9	51.8
1700	266	0	252	1	13	0	0	0	0	0	0	0	0	47.9	53.6
1800	170	0	166	0	4	0	0	0	0	0	0	0	0	47.4	55.1
1900	164	1	157	0	4	1	0	0	0	0	1	0	0	47.4	54.1
2000	88	1	85	0	2	0	0	0	0	0	0	0	0	49.1	56.7
2100	84	3	78	0	3	0	0	0	0	0	0	0	0	48.8	56.4
2200	56	0	55	0	1	0	0	0	0	0	0	0	0	50.1	57.5
2300	48	0	48	0	0	0	0	0	0	0	0	0	0	48.7	58.5
07-19	4292	53	4039	8	168	12	5	0	3	1	3	0	0	46.6	52.3
06-22	4690	58	4412	8	184	13	6	1	3	1	4	0	0	46.7	52.7
06-00	4794	58	4515	8	185	13	6	1	3	1	4	0	0	46.8	52.8
00-00	4858	59	4569	9	193	13	6	1	3	1	4	0	0	46.8	52.9

Sunday, 20 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	18	0	16	0	2	0	0	0	0	0	0	0	0	52.5	64.7
0100	12	0	10	0	1	0	0	0	0	1	0	0	0	50.9	57.9
0200	6	0	6	0	0	0	0	0	0	0	0	0	0	45.5	-
0300	5	0	5	0	0	0	0	0	0	0	0	0	0	52.4	-
0400	7	0	7	0	0	0	0	0	0	0	0	0	0	46.8	-
0500	11	0	10	0	1	0	0	0	0	0	0	0	0	46.5	54.9
0600	24	0	22	0	2	0	0	0	0	0	0	0	0	53.4	60
0700	74	1	67	0	5	0	0	0	1	0	0	0	0	49.8	58
0800	118	0	106	0	11	0	0	0	0	0	1	0	0	49.3	54.7
0900	286	0	273	2	11	0	0	0	0	0	0	0	0	48.6	54.9
1000	380	3	357	0	18	0	0	0	1	0	0	0	1	46.6	51.4
1100	397	1	386	0	10	0	0	0	0	0	0	0	0	46.2	52.2
1200	492	1	477	1	12	0	0	0	0	1	0	0	0	45	51.2
1300	440	2	419	2	17	0	0	0	0	0	0	0	0	42.2	47.7
1400	370	1	355	0	13	1	0	0	0	0	0	0	0	46.4	51.6
1500	318	4	295	0	19	0	0	0	0	0	0	0	0	46	52
1600	245	0	230	1	14	0	0	0	0	0	0	0	0	47	53.3
1700	189	0	186	0	3	0	0	0	0	0	0	0	0	46.4	53.6
1800	115	0	108	0	7	0	0	0	0	0	0	0	0	48.7	56.6
1900	94	0	89	0	5	0	0	0	0	0	0	0	0	48.4	54.1
2000	58	0	53	0	5	0	0	0	0	0	0	0	0	51.4	61.3
2100	43	0	38	1	4	0	0	0	0	0	0	0	0	48.8	54.8
2200	23	0	22	0	1	0	0	0	0	0	0	0	0	45.1	54.8
2300	21	0	19	0	2	0	0	0	0	0	0	0	0	49	56.4
07-19	3424	13	3259	6	140	1	0	0	2	1	1	0	1	46.1	52.3
06-22	3643	13	3461	7	156	1	0	0	2	1	1	0	1	46.3	52.7
06-00	3687	13	3502	7	159	1	0	0	2	1	1	0	1	46.3	52.8
00-00	3746	13	3556	7	163	1	0	0	2	2	1	0	1	46.4	52.9

Monday, 21 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	10	0	10	0	0	0	0	0	0	0	0	0	0	44.3	-
0100	2	0	2	0	0	0	0	0	0	0	0	0	0	50.4	-
0200	1	0	1	0	0	0	0	0	0	0	0	0	0	47.8	-
0300	5	0	4	0	1	0	0	0	0	0	0	0	0	44.8	-
0400	9	0	6	0	3	0	0	0	0	0	0	0	0	48.2	-
0500	32	0	26	0	5	0	0	0	0	0	1	0	0	49.5	54.5
0600	144	3	123	0	17	0	1	0	0	0	0	0	0	48.7	54.7
0700	392	4	341	1	42	0	1	0	1	0	2	0	0	45.9	50.9
0800	439	1	380	0	49	5	1	0	0	2	0	0	1	44.9	50.2
0900	367	1	313	1	43	3	2	0	4	0	0	0	0	44.8	49.7
1000	308	4	260	0	40	1	0	0	2	1	0	0	0	43	49.4
1100	323	1	279	0	35	3	5	0	0	0	0	0	0	44.8	50.1
1200	301	2	263	0	33	2	0	0	0	1	0	0	0	46	51.3
1300	284	2	249	2	27	3	1	0	0	0	0	0	0	44.7	51.2
1400	310	3	267	0	36	1	1	0	1	0	1	0	0	46.1	52.6
1500	371	3	331	3	23	2	8	0	0	1	0	0	0	45.4	51.4
1600	374	3	333	1	33	2	1	0	1	0	0	0	0	45.5	51.7
1700	419	4	391	1	22	1	0	0	0	0	0	0	0	44.6	50.7
1800	222	1	211	3	7	0	0	0	0	0	0	0	0	46.4	52.2
1900	156	1	149	0	6	0	0	0	0	0	0	0	0	47.9	55.1
2000	82	0	76	0	5	0	0	0	0	1	0	0	0	48.9	55.7
2100	59	0	57	0	2	0	0	0	0	0	0	0	0	48.8	57.3
2200	28	0	26	0	1	0	0	0	0	1	0	0	0	47.8	53.7
2300	17	0	16	0	0	0	1	0	0	0	0	0	0	51.1	59.4
07-19	4110	29	3618	12	390	23	20	0	9	5	3	0	1	45.1	50.9
06-22	4551	33	4023	12	420	23	21	0	9	6	3	0	1	45.5	51.3
06-00	4596	33	4065	12	421	23	22	0	9	7	3	0	1	45.5	51.4
00-00	4655	33	4114	12	430	23	22	0	9	7	4	0	1	45.5	51.4

Tuesday, 22 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	9	0	7	0	2	0	0	0	0	0	0	0	0	52.4	-
0100	12	0	8	0	4	0	0	0	0	0	0	0	0	48.4	61.1
0200	3	0	2	0	1	0	0	0	0	0	0	0	0	52.5	-
0300	4	0	2	0	1	1	0	0	0	0	0	0	0	35.3	-
0400	8	0	7	0	1	0	0	0	0	0	0	0	0	52.6	-
0500	29	0	25	0	4	0	0	0	0	0	0	0	0	51.3	58.4
0600	146	2	128	0	15	0	0	0	1	0	0	0	0	49.4	54.9
0700	404	1	353	1	45	1	0	0	2	0	1	0	0	47.4	53.2
0800	502	2	449	3	41	1	3	0	2	0	0	0	1	47.3	53
0900	348	2	300	1	42	0	1	1	1	0	0	0	0	45.6	51.6
1000	354	1	311	1	35	4	0	0	1	0	1	0	0	45.3	50.8
1100	345	0	312	1	27	4	1	0	0	0	0	0	0	45.4	52.2
1200	368	1	325	1	24	8	3	0	3	2	1	0	0	45.1	51
1300	349	6	309	2	29	2	0	0	1	0	0	0	0	46.2	52.4
1400	331	4	282	1	35	3	4	0	0	2	0	0	0	46.4	52.9
1500	346	3	300	2	37	2	1	0	1	0	0	0	0	44.7	51.1
1600	447	4	405	2	35	1	0	0	0	0	0	0	0	45	51.3
1700	497	5	470	0	21	0	0	0	1	0	0	0	0	44.4	49.5
1800	318	2	304	0	11	0	0	0	1	0	0	0	0	45.7	52.6
1900	192	1	181	0	10	0	0	0	0	0	0	0	0	48.5	55.1
2000	105	0	103	0	2	0	0	0	0	0	0	0	0	48.9	56.8
2100	76	0	71	0	5	0	0	0	0	0	0	0	0	50.5	58.2
2200	39	0	37	0	2	0	0	0	0	0	0	0	0	50.1	55.4
2300	24	0	23	0	1	0	0	0	0	0	0	0	0	51.8	56.8
07-19	4609	31	4120	15	382	26	13	1	13	4	3	0	1	45.7	51.8
06-22	5128	34	4603	15	414	26	13	1	14	4	3	0	1	46.1	52.3
06-00	5191	34	4663	15	417	26	13	1	14	4	3	0	1	46.1	52.5
00-00	5256	34	4714	15	430	27	13	1	14	4	3	0	1	46.2	52.5

Wednesday, 23 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	7	0	6	0	1	0	0	0	0	0	0	0	0	46.2	-
0100	3	0	3	0	0	0	0	0	0	0	0	0	0	48.8	-
0200	4	0	4	0	0	0	0	0	0	0	0	0	0	47	-
0300	3	0	2	0	1	0	0	0	0	0	0	0	0	47.7	-
0400	12	0	8	0	4	0	0	0	0	0	0	0	0	52.2	58.9
0500	37	0	33	0	4	0	0	0	0	0	0	0	0	52.4	59.9
0600	146	0	130	0	11	0	1	0	2	1	1	0	0	45.7	52
0700	398	1	357	1	37	0	0	1	1	0	0	0	0	45.2	50.3
0800	558	2	498	2	47	8	0	0	0	1	0	0	0	46	51.3
0900	484	0	415	3	54	8	2	0	1	0	1	0	0	45.3	51
1000	337	3	288	1	31	5	4	0	3	1	1	0	0	44.8	50.4
1100	367	6	311	1	45	0	1	1	0	2	0	0	0	44.6	50.5
1200	381	7	324	1	41	2	4	0	1	0	0	1	0	45.7	51.1
1300	335	1	304	3	23	2	1	0	1	0	0	0	0	46.8	53.6
1400	390	1	341	0	39	3	4	0	2	0	0	0	0	44.5	50.5
1500	384	3	343	3	27	3	3	0	1	1	0	0	0	45.8	51.7
1600	476	2	426	1	44	0	0	0	1	1	1	0	0	45.5	51.3
1700	486	2	459	0	23	2	0	0	0	0	0	0	0	44.9	51.8
1800	261	3	250	0	7	1	0	0	0	0	0	0	0	47.5	54
1900	150	1	142	0	7	0	0	0	0	0	0	0	0	48.3	54.9
2000	119	0	111	1	7	0	0	0	0	0	0	0	0	48.6	55.8
2100	77	0	74	0	3	0	0	0	0	0	0	0	0	47.6	54.8
2200	35	0	34	0	1	0	0	0	0	0	0	0	0	48	54
2300	15	0	15	0	0	0	0	0	0	0	0	0	0	48.5	55.7
07-19	4857	31	4316	16	418	34	19	2	11	6	3	1	0	45.5	51.3
06-22	5349	32	4773	17	446	34	20	2	13	7	4	1	0	45.7	51.7
06-00	5399	32	4822	17	447	34	20	2	13	7	4	1	0	45.7	51.7
00-00	5465	32	4878	17	457	34	20	2	13	7	4	1	0	45.8	51.8

Thursday, 24 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	5	0	5	0	0	0	0	0	0	0	0	0	0	44.2	-
0100	6	0	5	0	1	0	0	0	0	0	0	0	0	43.6	-
0200	7	0	5	0	2	0	0	0	0	0	0	0	0	51.2	-
0300	4	0	3	0	1	0	0	0	0	0	0	0	0	46.9	-
0400	11	0	8	0	2	0	0	0	1	0	0	0	0	52.2	60.6
0500	39	1	34	0	3	0	0	0	1	0	0	0	0	49.1	54.6
0600	125	1	107	0	14	1	1	0	1	0	0	0	0	49.4	56.4
0700	422	1	372	0	41	2	3	0	2	1	0	0	0	46.3	51.9
0800	529	2	460	1	56	3	1	2	1	3	0	0	0	45.9	51.8
0900	411	0	345	1	48	4	4	0	7	2	0	0	0	45.8	52.3
1000	356	0	314	3	30	4	1	0	3	0	1	0	0	45.2	50.6
1100	332	2	294	2	29	2	1	0	0	0	2	0	0	45.5	51.8
1200	182	1	151	2	25	1	2	0	0	0	0	0	0	44	49.4
1300	349	0	313	1	27	2	1	1	2	0	2	0	0	46.2	51.7
1400	368	0	329	0	28	6	2	0	1	1	0	1	0	44.6	50.5
1500	323	1	291	0	25	2	2	0	1	1	0	0	0	45.8	51.8
1600	447	2	404	2	35	0	0	0	2	1	1	0	0	45.7	52.1
1700	483	3	454	1	25	0	0	0	0	0	0	0	0	45.7	51.9
1800	266	1	258	1	6	0	0	0	0	0	0	0	0	47.4	53.9
1900	157	0	150	0	7	0	0	0	0	0	0	0	0	47.8	55.4
2000	110	0	107	0	3	0	0	0	0	0	0	0	0	47.7	55.4
2100	82	0	79	0	3	0	0	0	0	0	0	0	0	51.5	60.3
2200	59	0	58	0	1	0	0	0	0	0	0	0	0	49.8	58.8
2300	25	0	24	0	1	0	0	0	0	0	0	0	0	52	60.5
07-19	4468	13	3985	14	375	26	17	3	19	9	6	1	0	45.7	51.8
06-22	4942	14	4428	14	402	27	18	3	20	9	6	1	0	46	52.1
06-00	5026	14	4510	14	404	27	18	3	20	9	6	1	0	46.1	52.2
00-00	5098	15	4570	14	413	27	18	3	22	9	6	1	0	46.1	52.2

Friday, 25 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	9	0	9	0	0	0	0	0	0	0	0	0	0	52.1	-
0100	3	0	2	0	1	0	0	0	0	0	0	0	0	56.5	-
0200	5	0	4	0	1	0	0	0	0	0	0	0	0	41.2	-
0300	7	0	6	0	1	0	0	0	0	0	0	0	0	40.5	-
0400	17	0	13	0	4	0	0	0	0	0	0	0	0	52.5	67.9
0500	33	0	29	0	4	0	0	0	0	0	0	0	0	49.3	55.4
0600	122	1	105	0	13	0	0	0	3	0	0	0	0	49.7	55.7
0700	397	2	347	0	41	5	1	0	0	0	1	0	0	47	53.5
0800	454	1	383	3	58	1	3	0	4	1	0	0	0	46.2	52.5
0900	369	2	320	2	40	0	2	0	2	1	0	0	0	46.8	52.2
1000	393	0	341	1	40	7	1	1	1	1	0	0	0	45.3	51
1100	385	5	343	1	29	4	3	0	0	0	0	0	0	44.5	51.4
1200	368	2	331	1	30	1	3	0	0	0	0	0	0	45.7	52.4
1300	389	2	348	2	30	1	3	0	3	0	0	0	0	45.5	51.7
1400	485	7	443	3	27	2	2	0	1	0	0	0	0	45.7	51.9
1500	447	4	403	2	28	4	1	0	2	2	1	0	0	46.3	51.7
1600	496	5	457	3	24	4	1	0	1	1	0	0	0	45.2	51.4
1700	452	3	421	0	24	3	0	0	1	0	0	0	0	45.1	51.6
1800	283	2	275	0	5	0	0	0	0	1	0	0	0	47	53.2
1900	150	0	140	0	9	0	0	0	0	1	0	0	0	47	54.3
2000	91	1	82	0	8	0	0	0	0	0	0	0	0	47.3	52.7
2100	67	0	63	0	4	0	0	0	0	0	0	0	0	47.9	54.8
2200	40	0	39	0	1	0	0	0	0	0	0	0	0	47.8	58.3
2300	34	0	33	0	0	0	0	0	0	1	0	0	0	48.2	55.3
07-19	4918	35	4412	18	376	32	20	1	15	7	2	0	0	45.8	52
06-22	5348	37	4802	18	410	32	20	1	18	8	2	0	0	46	52.2
06-00	5422	37	4874	18	411	32	20	1	18	9	2	0	0	46	52.3
00-00	5496	37	4937	18	422	32	20	1	18	9	2	0	0	46.1	52.3

Saturday, 26 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	13	0	13	0	0	0	0	0	0	0	0	0	0	53.8	69.8
0100	8	0	7	0	1	0	0	0	0	0	0	0	0	45.4	-
0200	5	0	5	0	0	0	0	0	0	0	0	0	0	49.2	-
0300	5	0	3	0	2	0	0	0	0	0	0	0	0	51.1	-
0400	12	0	11	0	1	0	0	0	0	0	0	0	0	52.8	65.2
0500	14	0	12	0	2	0	0	0	0	0	0	0	0	49.5	60
0600	49	0	45	0	4	0	0	0	0	0	0	0	0	50.6	56.9
0700	137	0	121	0	13	0	1	0	1	0	1	0	0	48.4	55.8
0800	215	2	193	2	16	0	1	0	1	0	0	0	0	47.2	54.5
0900	315	1	293	1	19	0	0	0	1	0	0	0	0	46.5	52.7
1000	439	0	417	1	19	2	0	0	0	0	0	0	0	45.2	51.2
1100	496	0	470	0	24	2	0	0	0	0	0	0	0	45.7	51.3
1200	507	7	477	2	16	4	0	0	0	0	1	0	0	45.2	51.1
1300	489	4	465	2	16	2	0	0	0	0	0	0	0	44.7	50.3
1400	429	1	414	3	10	0	0	0	1	0	0	0	0	45.4	51.2
1500	372	1	356	0	14	1	0	0	0	0	0	0	0	45	50.2
1600	315	1	306	0	7	0	0	0	1	0	0	0	0	46	51.5
1700	248	0	237	0	11	0	0	0	0	0	0	0	0	46.5	52.9
1800	191	0	180	0	10	1	0	0	0	0	0	0	0	47.5	54.8
1900	127	1	121	0	4	1	0	0	0	0	0	0	0	47.6	56.1
2000	102	1	97	0	4	0	0	0	0	0	0	0	0	48.2	54.1
2100	76	0	76	0	0	0	0	0	0	0	0	0	0	47.4	55.7
2200	47	0	44	0	3	0	0	0	0	0	0	0	0	47	54.3
2300	44	0	44	0	0	0	0	0	0	0	0	0	0	47.3	53.2
07-19	4153	17	3929	11	175	12	2	0	5	0	2	0	0	45.8	51.9
06-22	4507	19	4268	11	187	13	2	0	5	0	2	0	0	45.9	52.2
06-00	4598	19	4356	11	190	13	2	0	5	0	2	0	0	46	52.2
00-00	4655	19	4407	11	196	13	2	0	5	0	2	0	0	46	52.3

Sunday, 27 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	24	0	24	0	0	0	0	0	0	0	0	0	0	50.1	55
0100	11	0	9	0	2	0	0	0	0	0	0	0	0	44	50.5
0200	5	0	5	0	0	0	0	0	0	0	0	0	0	45.7	-
0300	2	0	2	0	0	0	0	0	0	0	0	0	0	47.6	-
0400	5	0	5	0	0	0	0	0	0	0	0	0	0	48.9	-
0500	12	0	10	0	1	0	0	0	1	0	0	0	0	47.5	50.7
0600	26	0	24	0	2	0	0	0	0	0	0	0	0	52.8	60.9
0700	75	0	72	0	3	0	0	0	0	0	0	0	0	49.8	59.4
0800	129	2	118	1	8	0	0	0	0	0	0	0	0	48	55.4
0900	231	3	223	0	5	0	0	0	0	0	0	0	0	46.2	52.6
1000	396	4	377	1	12	0	1	0	0	1	0	0	0	46.1	51.3
1100	464	3	447	2	12	0	0	0	0	0	0	0	0	44.9	50.1
1200	533	1	512	2	13	5	0	0	0	0	0	0	0	44	49.6
1300	459	10	439	0	9	1	0	0	0	0	0	0	0	46.5	52.2
1400	403	1	379	1	19	1	1	0	1	0	0	0	0	46.9	52.3
1500	327	2	316	0	8	1	0	0	0	0	0	0	0	46.7	52.7
1600	291	2	282	1	5	0	0	0	0	0	1	0	0	47.2	53.3
1700	192	0	187	0	5	0	0	0	0	0	0	0	0	48.3	54.8
1800	135	0	132	0	3	0	0	0	0	0	0	0	0	49.9	57.1
1900	99	0	93	0	6	0	0	0	0	0	0	0	0	49.7	56.3
2000	57	0	54	0	3	0	0	0	0	0	0	0	0	48.3	56.2
2100	55	0	53	0	1	1	0	0	0	0	0	0	0	50.6	58.4
2200	33	0	31	0	2	0	0	0	0	0	0	0	0	52.5	60.4
2300	9	0	7	0	2	0	0	0	0	0	0	0	0	47.6	-
07-19	3635	28	3484	8	102	8	2	0	1	1	1	0	0	46.3	52.2
06-22	3872	28	3708	8	114	9	2	0	1	1	1	0	0	46.6	52.6
06-00	3914	28	3746	8	118	9	2	0	1	1	1	0	0	46.6	52.7
00-00	3973	28	3801	8	121	9	2	0	2	1	1	0	0	46.6	52.7

Monday, 28 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	10	0	10	0	0	0	0	0	0	0	0	0	0	51.9	-
0100	4	0	4	0	0	0	0	0	0	0	0	0	0	48.2	-
0200	6	0	6	0	0	0	0	0	0	0	0	0	0	52.8	-
0300	3	0	2	0	1	0	0	0	0	0	0	0	0	59.6	-
0400	13	0	9	0	4	0	0	0	0	0	0	0	0	49.7	55.1
0500	37	1	29	1	5	0	0	0	1	0	0	0	0	50.4	58.6
0600	135	2	121	0	12	0	0	0	0	0	0	0	0	49.1	54.2
0700	378	1	337	2	35	0	3	0	0	0	0	0	0	45.3	50.9
0800	448	0	394	3	42	2	4	0	2	1	0	0	0	45.4	50.4
0900	349	0	295	2	46	1	0	1	2	1	1	0	0	44.2	49.4
1000	345	2	299	2	40	0	1	0	1	0	0	0	0	44.9	51.2
1100	330	4	287	1	22	8	5	0	1	0	2	0	0	44.8	50.9
1200	312	0	277	1	31	3	0	0	0	0	0	0	0	45.9	51.3
1300	348	2	307	1	28	1	2	0	4	2	1	0	0	44.5	50.3
1400	346	2	315	0	23	4	1	1	0	0	0	0	0	45	51.1
1500	431	3	386	2	35	1	1	0	0	1	2	0	0	45	51.2
1600	501	3	469	1	22	4	1	0	1	0	0	0	0	45.2	51
1700	453	3	430	1	18	1	0	0	0	0	0	0	0	45.2	51.1
1800	275	2	261	0	12	0	0	0	0	0	0	0	0	47.6	54.9
1900	136	0	125	0	8	1	0	0	0	1	1	0	0	44.9	52.7
2000	103	2	95	0	6	0	0	0	0	0	0	0	0	45.7	52.1
2100	52	0	52	0	0	0	0	0	0	0	0	0	0	47.7	54
2200	35	0	33	0	2	0	0	0	0	0	0	0	0	47.5	57.3
2300	20	0	18	0	2	0	0	0	0	0	0	0	0	49.6	61.3
07-19	4516	22	4057	16	354	25	18	2	11	5	6	0	0	45.2	51.2
06-22	4942	26	4450	16	380	26	18	2	11	6	7	0	0	45.3	51.4
06-00	4997	26	4501	16	384	26	18	2	11	6	7	0	0	45.4	51.4
00-00	5070	27	4561	17	394	26	18	2	12	6	7	0	0	45.5	51.6

Tuesday, 29 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	11	0	10	0	0	1	0	0	0	0	0	0	0	45.4	50.8
0100	5	0	5	0	0	0	0	0	0	0	0	0	0	48.1	-
0200	10	0	9	0	1	0	0	0	0	0	0	0	0	44.6	-
0300	3	0	2	0	1	0	0	0	0	0	0	0	0	48.6	-
0400	8	0	4	0	4	0	0	0	0	0	0	0	0	43.8	-
0500	32	0	23	0	8	0	0	0	0	0	1	0	0	47.1	54.1
0600	123	1	107	1	13	0	0	0	1	0	0	0	0	48.2	54.5
0700	455	2	402	1	41	3	4	0	0	0	2	0	0	43.8	49
0800	475	1	430	2	39	0	1	0	0	0	2	0	0	44.9	49.9
0900	365	4	300	3	48	2	5	0	1	2	0	0	0	45.2	51.3
1000	387	0	338	0	38	9	0	0	1	1	0	0	0	44.6	51.1
1100	319	0	275	1	30	8	2	0	1	2	0	0	0	46.9	52.8
1200	412	1	373	1	26	9	0	0	2	0	0	0	0	45.3	51.6
1300	352	0	303	2	37	8	2	0	0	0	0	0	0	45.5	51.7
1400	353	2	304	1	35	5	2	0	1	0	2	0	1	45.2	52.4
1500	387	4	338	4	34	5	0	1	0	1	0	0	0	45.5	51.3
1600	440	2	398	1	32	5	0	0	1	1	0	0	0	46.2	52.1
1700	470	2	443	1	22	2	0	0	0	0	0	0	0	44.7	50.6
1800	296	4	276	0	16	0	0	0	0	0	0	0	0	46.8	54
1900	116	1	109	0	6	0	0	0	0	0	0	0	0	47.6	56.4
2000	82	1	76	0	5	0	0	0	0	0	0	0	0	49.2	56
2100	64	1	62	0	1	0	0	0	0	0	0	0	0	48.7	56.8
2200	31	0	29	0	2	0	0	0	0	0	0	0	0	49.5	59.8
2300	17	0	13	0	4	0	0	0	0	0	0	0	0	48.9	56.1
07-19	4711	22	4180	17	398	56	16	1	7	7	6	0	1	45.3	51.4
06-22	5096	26	4534	18	423	56	16	1	8	7	6	0	1	45.5	51.8
06-00	5144	26	4576	18	429	56	16	1	8	7	6	0	1	45.6	51.8
00-00	5213	26	4629	18	443	57	16	1	8	7	7	0	1	45.6	51.8

Wednesday, 30 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	10	0	7	0	2	1	0	0	0	0	0	0	0	47.3	-
0100	5	0	3	0	2	0	0	0	0	0	0	0	0	49.6	-
0200	5	0	4	0	1	0	0	0	0	0	0	0	0	50.9	-
0300	3	0	1	0	2	0	0	0	0	0	0	0	0	58.1	-
0400	11	0	10	0	1	0	0	0	0	0	0	0	0	49.8	56.5
0500	35	1	27	0	6	0	0	0	0	0	1	0	0	48.2	56.1
0600	145	0	129	0	15	0	1	0	0	0	0	0	0	47.5	54.1
0700	405	1	360	1	37	2	4	0	0	0	0	0	0	46.5	51.5
0800	482	0	428	5	41	1	1	0	2	0	3	0	1	46.1	52.1
0900	390	4	338	1	34	5	4	0	2	1	1	0	0	45.6	51.5
1000	340	2	292	3	32	6	2	0	0	3	0	0	0	44.9	49.7
1100	338	3	297	0	28	2	3	0	3	0	2	0	0	44.9	50.4
1200	415	2	375	2	26	6	2	0	0	1	0	1	0	44.5	50.6
1300	357	2	321	2	24	4	3	0	0	1	0	0	0	45.9	52.2
1400	415	0	368	1	38	5	0	0	1	1	1	0	0	45.9	51.8
1500	420	2	375	3	31	3	3	0	1	1	1	0	0	46.3	52.2
1600	504	3	454	1	38	4	1	0	1	1	1	0	0	45.4	51.7
1700	578	1	547	1	24	4	1	0	0	0	0	0	0	45.3	50.9
1800	288	2	278	0	8	0	0	0	0	0	0	0	0	46.3	53.3
1900	162	0	155	2	4	0	1	0	0	0	0	0	0	41.1	47.4
2000	103	0	96	0	6	0	0	0	1	0	0	0	0	40.9	46
2100	81	1	77	0	3	0	0	0	0	0	0	0	0	42.9	49.3
2200	43	0	41	0	2	0	0	0	0	0	0	0	0	44.5	55.1
2300	19	0	15	0	4	0	0	0	0	0	0	0	0	44.8	50.1
07-19	4932	22	4433	20	361	42	24	0	10	9	9	1	1	45.6	51.6
06-22	5423	23	4890	22	389	42	26	0	11	9	9	1	1	45.4	51.4
06-00	5485	23	4946	22	395	42	26	0	11	9	9	1	1	45.4	51.4
00-00	5554	24	4998	22	409	43	26	0	11	9	10	1	1	45.4	51.6

Thursday, 1 December 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	5	0	5	0	0	0	0	0	0	0	0	0	0	46.8	-
0100	5	0	5	0	0	0	0	0	0	0	0	0	0	51	-
0200	5	0	3	0	2	0	0	0	0	0	0	0	0	51.8	-
0300	5	0	3	0	1	0	0	1	0	0	0	0	0	47.4	-
0400	13	0	10	0	2	0	0	0	1	0	0	0	0	46.3	53.4
0500	28	2	24	0	2	0	0	0	0	0	0	0	0	49.9	57.1
0600	116	2	97	0	14	1	2	0	0	0	0	0	0	45.1	51.9
0700	389	1	338	1	48	0	1	0	0	0	0	0	0	44.2	49
0800	462	0	404	1	42	5	4	0	5	0	1	0	0	44	50.7
0900	377	2	323	4	38	2	5	0	1	1	1	0	0	43.5	50.1
1000	318	3	281	1	28	1	2	1	1	0	0	0	0	43.3	49.3
1100	309	1	272	1	24	4	4	0	1	1	0	1	0	42.8	49
1200	373	4	325	2	29	7	4	0	0	1	1	0	0	44.3	49.4
1300	359	6	319	1	23	6	3	1	0	0	0	0	0	43.8	50.3
1400	356	7	305	0	37	4	1	0	1	0	1	0	0	43.7	49.7
1500	364	3	319	4	36	1	0	0	0	1	0	0	0	44.4	50.5
1600	441	2	413	0	23	1	0	0	1	0	1	0	0	43	49.4
1700	506	2	471	1	30	2	0	0	0	0	0	0	0	42.9	48.5
1800	270	1	255	0	14	0	0	0	0	0	0	0	0	45.1	50.7
1900	165	1	152	0	12	0	0	0	0	0	0	0	0	46.5	53.3
2000	125	1	120	0	4	0	0	0	0	0	0	0	0	46.7	53.1
2100	87	0	80	0	6	0	1	0	0	0	0	0	0	45.7	52.4
2200	36	0	33	0	3	0	0	0	0	0	0	0	0	48.5	58.4
2300	22	0	18	0	3	0	1	0	0	0	0	0	0	46.2	55
07-19	4524	32	4025	16	372	33	24	2	10	4	5	1	0	43.7	49.7
06-22	5017	36	4474	16	408	34	27	2	10	4	5	1	0	43.9	50
06-00	5075	36	4525	16	414	34	28	2	10	4	5	1	0	44	50
00-00	5136	38	4575	16	421	34	28	3	11	4	5	1	0	44	50.1

Default

Globals

Report Id	CustomList-122
Descriptor	Default
Created by	MetroCount Traffic Executive
Creation Time (UTC)	2023-08-09T16:01:49
Legal	Copyright (c)1997 - 2019 MetroCount
Graphic	
Language	English
Country	United Kingdom
Time	UTC + 60 min
Create Version	5.0.7.0
Metric	Part metric
Speed Unit	mph
Length Unit	metre
Mass Unit	tonne

Dataset

Site Name	Swindon
Site Attribute	[51.541619, -1.848721]
File Name	D:\2022 - 2023\22.125 Swindon ATC\Swindon 0 2022-12-05 1242.EC0
File Type	Plus
Algorithm	Factory default axle
Description	B4005 [40mph]
Lane	0
Direction	6
Direction Text	6 - West bound A B, East bound B A.
Layout Text	Axle sensors - Paired (Class/Speed/Count)
Setup Time	2022-11-17T13:48:55
Start Time	2022-11-17T13:48:55
Finish Time	2022-12-05T12:42:27
Operator	GW
Configuration	80 00 14 6a 6a 00 00 00 00 00

Profile

Name	Default Profile
Title	MetroCount Traffic Executive
Graphic Logo	
Header	
Footer	
Percentile 1	85
Percentile 2	95
Pace	12.4274
Filter Start	2022-11-18T00:00:00
Filter End	2022-12-02T00:00:00
Class Scheme	ARX
	F Cls(1-12) Dir(W) Sp(0,99) Headway(I) Span(0 - 100) Lane(0-16)
Low Speed	0
High Speed	99
Posted Limit	37
Speed Limits	37 37 37 37 37 37 37 37 37
Separation	0.000
Separation Type	Headway
Direction	West
Encoded Direction	8

Column

Time [--	24-hour time (0000 - 2359)
Total	Number in time step
Cls 1	Class totals
Cls 2	Class totals
Cls 3	Class totals
Cls 4	Class totals
Cls 5	Class totals
Cls 6	Class totals
Cls 7	Class totals
Cls 8	Class totals
Cls 9	Class totals
Cls 10	Class totals
Cls 11	Class totals
Cls 12	Class totals
Mean	Average speed
Vpp 85	Percentile speed

Friday, 18 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	7	0	7	0	0	0	0	0	0	0	0	0	0	48.4	-
0100	6	0	6	0	0	0	0	0	0	0	0	0	0	43.1	-
0200	3	0	3	0	0	0	0	0	0	0	0	0	0	39.9	-
0300	6	0	6	0	0	0	0	0	0	0	0	0	0	44.9	-
0400	11	0	8	0	3	0	0	0	0	0	0	0	0	47.2	55.3
0500	35	1	27	0	6	0	0	0	0	0	1	0	0	47	53.9
0600	130	0	108	0	18	0	1	0	0	1	2	0	0	46.7	53.1
0700	320	5	275	1	33	0	1	0	1	1	3	0	0	44.3	49.5
0800	494	3	435	5	48	1	0	0	1	1	0	0	0	43.1	48.2
0900	312	1	258	2	47	2	1	0	1	0	0	0	0	44.4	49.4
1000	313	2	276	1	30	2	1	0	1	0	0	0	0	43.1	48.2
1100	394	0	342	2	39	3	2	0	1	1	4	0	0	41.8	47.1
1200	386	2	335	3	42	2	2	0	0	0	0	0	0	43.6	48.6
1300	402	4	357	1	37	1	1	0	0	0	1	0	0	42.2	47.4
1400	535	5	477	1	48	0	0	0	0	1	2	0	1	40.2	46.8
1500	519	2	457	3	52	3	1	0	0	1	0	0	0	42.6	47.3
1600	525	3	472	6	40	0	0	0	0	0	4	0	0	42	47.3
1700	451	2	426	4	18	0	0	1	0	0	0	0	0	41.4	46.3
1800	238	1	219	3	14	1	0	0	0	0	0	0	0	42.8	47.3
1900	152	2	139	0	11	0	0	0	0	0	0	0	0	44.5	51.1
2000	83	0	80	0	3	0	0	0	0	0	0	0	0	44.9	50.8
2100	69	0	68	0	1	0	0	0	0	0	0	0	0	44	52.2
2200	46	0	45	0	0	0	0	0	0	0	1	0	0	45.2	52.5
2300	24	0	22	0	2	0	0	0	0	0	0	0	0	46.4	52.9
07-19	4889	30	4329	32	448	15	9	1	5	5	14	0	1	42.5	47.8
06-22	5323	32	4724	32	481	15	10	1	5	6	16	0	1	42.7	48.1
06-00	5393	32	4791	32	483	15	10	1	5	6	17	0	1	42.7	48.1
00-00	5461	33	4848	32	492	15	10	1	5	6	18	0	1	42.8	48.2

Saturday, 19 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	12	0	10	0	2	0	0	0	0	0	0	0	0	46	53.2
0100	9	0	9	0	0	0	0	0	0	0	0	0	0	40	-
0200	6	0	6	0	0	0	0	0	0	0	0	0	0	42	-
0300	6	0	6	0	0	0	0	0	0	0	0	0	0	46.2	-
0400	9	0	7	0	2	0	0	0	0	0	0	0	0	49	-
0500	17	0	15	0	2	0	0	0	0	0	0	0	0	49.2	58.1
0600	40	0	31	0	7	0	0	0	0	0	2	0	0	46	52.2
0700	89	0	77	1	9	0	1	0	1	0	0	0	0	47.1	51.8
0800	178	1	163	0	13	0	0	0	1	0	0	0	0	46.1	53.6
0900	297	2	275	2	14	0	3	0	0	1	0	0	0	44.8	50.4
1000	370	4	345	6	14	0	0	0	1	0	0	0	0	42.7	46.6
1100	421	3	401	0	13	2	0	0	1	0	1	0	0	43.5	48.2
1200	491	9	455	4	21	0	1	0	0	0	1	0	0	41.6	47
1300	461	2	440	4	14	0	0	0	1	0	0	0	0	42.3	47.9
1400	446	5	412	6	22	1	0	0	0	0	0	0	0	41.3	45.7
1500	429	7	406	3	12	0	1	0	0	0	0	0	0	41.5	46.8
1600	424	5	404	4	10	1	0	0	0	0	0	0	0	40.6	44.8
1700	277	3	263	5	6	0	0	0	0	0	0	0	0	41	46.4
1800	152	0	147	0	5	0	0	0	0	0	0	0	0	43	48.6
1900	105	4	95	1	5	0	0	0	0	0	0	0	0	43.3	48.1
2000	55	0	50	0	2	3	0	0	0	0	0	0	0	41.2	49.9
2100	63	1	62	0	0	0	0	0	0	0	0	0	0	42.8	47.5
2200	60	0	60	0	0	0	0	0	0	0	0	0	0	43.7	48.9
2300	50	0	49	0	1	0	0	0	0	0	0	0	0	43.4	53.1
07-19	4035	41	3788	35	153	4	6	0	5	1	2	0	0	42.4	47.8
06-22	4298	46	4026	36	167	7	6	0	5	1	4	0	0	42.4	47.9
06-00	4408	46	4135	36	168	7	6	0	5	1	4	0	0	42.5	47.9
00-00	4467	46	4188	36	174	7	6	0	5	1	4	0	0	42.5	48

Sunday, 20 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	31	3	27	0	1	0	0	0	0	0	0	0	0	41.7	48.4
0100	6	0	4	0	1	0	0	0	0	0	1	0	0	46.8	-
0200	10	0	10	0	0	0	0	0	0	0	0	0	0	50.2	-
0300	3	0	2	0	1	0	0	0	0	0	0	0	0	44	-
0400	3	0	3	0	0	0	0	0	0	0	0	0	0	34.5	-
0500	7	0	7	0	0	0	0	0	0	0	0	0	0	45.9	-
0600	27	0	25	0	2	0	0	0	0	0	0	0	0	45.8	50.2
0700	47	2	42	0	3	0	0	0	0	0	0	0	0	44.8	51.9
0800	88	1	76	0	8	0	1	0	1	0	1	0	0	46.5	55
0900	212	8	194	1	9	0	0	0	0	0	0	0	0	43.8	49.9
1000	283	1	268	0	11	1	0	0	1	0	1	0	0	43.1	49
1100	373	1	359	1	12	0	0	0	0	0	0	0	0	42	47.3
1200	461	9	440	2	10	0	0	0	0	0	0	0	0	42.2	47.2
1300	405	2	393	1	8	0	0	0	1	0	0	0	0	38.9	44.3
1400	372	0	355	2	15	0	0	0	0	0	0	0	0	41.4	46.5
1500	372	1	349	2	19	1	0	0	0	0	0	0	0	41.7	47.1
1600	273	3	264	0	6	0	0	0	0	0	0	0	0	42	47.4
1700	162	1	156	0	5	0	0	0	0	0	0	0	0	41.8	46.7
1800	119	0	114	1	4	0	0	0	0	0	0	0	0	44.2	49.5
1900	82	0	78	0	4	0	0	0	0	0	0	0	0	43.5	51
2000	56	0	54	1	1	0	0	0	0	0	0	0	0	44.1	51.9
2100	33	1	31	0	1	0	0	0	0	0	0	0	0	43.8	48.4
2200	29	0	28	0	1	0	0	0	0	0	0	0	0	41.7	52.2
2300	21	1	18	0	2	0	0	0	0	0	0	0	0	44.9	55.2
07-19	3167	29	3010	10	110	2	1	0	3	0	2	0	0	42	47.5
06-22	3365	30	3198	11	118	2	1	0	3	0	2	0	0	42.1	47.6
06-00	3415	31	3244	11	121	2	1	0	3	0	2	0	0	42.1	47.8
00-00	3475	34	3297	11	124	2	1	0	3	0	3	0	0	42.1	47.8

Monday, 21 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	6	0	6	0	0	0	0	0	0	0	0	0	0	43.4	-
0100	2	0	2	0	0	0	0	0	0	0	0	0	0	40.9	-
0200	2	0	2	0	0	0	0	0	0	0	0	0	0	45.9	-
0300	4	0	2	0	1	0	0	0	0	0	1	0	0	39.7	-
0400	9	0	8	0	1	0	0	0	0	0	0	0	0	49	-
0500	40	0	31	0	8	0	0	0	0	0	1	0	0	45.3	52.1
0600	144	1	128	0	12	0	0	0	2	0	1	0	0	45	49.9
0700	348	3	308	5	27	1	3	0	1	0	0	0	0	42.4	48.2
0800	479	4	427	2	41	2	1	1	0	0	1	0	0	42.3	47.3
0900	336	4	290	3	35	0	1	0	1	0	2	0	0	41.9	46.6
1000	300	1	249	3	44	0	1	0	0	1	1	0	0	40.4	46
1100	268	0	241	2	22	1	0	0	1	0	1	0	0	42.5	47.2
1200	330	0	297	0	29	1	1	0	0	0	2	0	0	42.6	48.1
1300	262	0	227	3	31	1	0	0	0	0	0	0	0	41.3	47.9
1400	301	2	263	0	32	1	0	0	2	0	1	0	0	41.6	47
1500	386	3	335	2	39	1	4	0	0	0	2	0	0	42.2	47.9
1600	420	1	382	2	34	0	0	0	0	0	1	0	0	40.1	45.2
1700	391	6	356	2	27	0	0	0	0	0	0	0	0	40.5	45.5
1800	203	2	191	0	9	0	1	0	0	0	0	0	0	42.1	47.1
1900	125	1	116	0	7	0	0	0	1	0	0	0	0	43.9	49.8
2000	92	0	88	1	3	0	0	0	0	0	0	0	0	43.1	48.5
2100	75	1	70	0	3	0	0	0	0	0	1	0	0	44.1	50.6
2200	32	1	30	0	1	0	0	0	0	0	0	0	0	47	53.5
2300	14	0	13	0	1	0	0	0	0	0	0	0	0	46.9	54.1
07-19	4024	26	3566	24	370	8	12	1	5	1	11	0	0	41.6	47
06-22	4460	29	3968	25	395	8	12	1	8	1	13	0	0	41.9	47.3
06-00	4506	30	4011	25	397	8	12	1	8	1	13	0	0	41.9	47.4
00-00	4569	30	4062	25	407	8	12	1	8	1	15	0	0	42	47.5

Tuesday, 22 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	11	0	11	0	0	0	0	0	0	0	0	0	0	48.1	56
0100	6	0	5	0	1	0	0	0	0	0	0	0	0	45 -	
0200	3	0	3	0	0	0	0	0	0	0	0	0	0	48 -	
0300	5	0	4	0	1	0	0	0	0	0	0	0	0	36.8 -	
0400	9	0	7	0	2	0	0	0	0	0	0	0	0	47.1 -	
0500	42	0	36	0	6	0	0	0	0	0	0	0	0	44.9	50.2
0600	144	1	117	0	25	0	0	0	0	0	1	0	0	45	50
0700	382	3	341	3	28	1	4	0	2	0	0	0	0	43.1	48.4
0800	499	1	459	3	32	3	1	0	0	0	0	0	0	43.4	48.4
0900	275	3	233	3	29	3	2	0	2	0	0	0	0	42.5	48.4
1000	285	4	244	0	34	1	1	0	1	0	0	0	0	41.8	47.1
1100	300	2	252	5	34	4	1	0	0	1	1	0	0	41	46.5
1200	345	4	303	2	31	1	1	0	2	1	0	0	0	42.6	48.4
1300	353	3	296	1	44	6	1	0	0	1	1	0	0	42.8	48.2
1400	385	2	341	2	36	2	1	0	1	0	0	0	0	42.8	47.8
1500	435	3	378	2	47	4	0	0	1	0	0	0	0	42.5	47.9
1600	531	3	478	0	43	2	4	0	0	0	1	0	0	40.9	45.5
1700	472	3	436	3	27	2	0	0	0	0	1	0	0	40.7	45.6
1800	263	1	242	1	18	0	0	0	0	0	0	0	1	41.8	46.9
1900	171	1	164	0	5	0	0	0	0	1	0	0	0	43.1	48.9
2000	104	1	102	0	1	0	0	0	0	0	0	0	0	46.6	54.2
2100	92	0	88	0	4	0	0	0	0	0	0	0	0	45.4	50.3
2200	34	1	33	0	0	0	0	0	0	0	0	0	0	45.8	51.5
2300	24	0	22	0	2	0	0	0	0	0	0	0	0	43.8	51.9
07-19	4525	32	4003	25	403	29	16	0	9	3	4	0	1	42.2	47.6
06-22	5036	35	4474	25	438	29	16	0	9	4	5	0	1	42.4	48
06-00	5094	36	4529	25	440	29	16	0	9	4	5	0	1	42.5	48
00-00	5170	36	4595	25	450	29	16	0	9	4	5	0	1	42.5	48

Wednesday, 23 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	6	0	6	0	0	0	0	0	0	0	0	0	0	46.6 -	
0100	0	0	0	0	0	0	0	0	0	0	0	0	0	-	
0200	4	0	4	0	0	0	0	0	0	0	0	0	0	43.7 -	
0300	4	0	3	0	1	0	0	0	0	0	0	0	0	45.5 -	
0400	8	0	7	0	1	0	0	0	0	0	0	0	0	47 -	
0500	33	0	25	1	7	0	0	0	0	0	0	0	0	44.6	52.1
0600	138	2	115	0	17	2	0	0	0	0	2	0	0	42	46.9
0700	358	3	322	3	28	1	0	0	0	1	0	0	0	39.8	44.1
0800	508	4	448	5	45	1	0	0	1	1	3	0	0	42.7	48
0900	346	4	293	1	37	6	2	1	1	0	1	0	0	42.1	46.9
1000	287	0	249	0	32	2	0	1	2	0	0	1	0	42.7	47.5
1100	338	0	298	3	29	2	3	0	1	0	1	0	1	41.8	47.3
1200	347	0	310	3	26	2	3	0	0	1	1	1	0	41.6	46.3
1300	349	1	313	2	31	0	0	0	1	1	0	0	0	41.9	47.8
1400	400	1	338	1	49	4	3	0	2	1	1	0	0	41.5	46.9
1500	443	1	380	5	56	0	0	1	0	0	0	0	0	40.7	46.5
1600	507	3	448	4	47	2	1	0	0	0	2	0	0	40.6	46.4
1700	494	2	450	4	35	1	0	0	1	1	0	0	0	40.3	44.9
1800	262	1	236	2	20	1	0	0	1	0	1	0	0	41.7	46.8
1900	143	1	135	0	6	1	0	0	0	0	0	0	0	44.6	49.8
2000	91	1	86	0	4	0	0	0	0	0	0	0	0	45.2	50.4
2100	76	0	74	0	2	0	0	0	0	0	0	0	0	45.1	50.6
2200	49	0	49	0	0	0	0	0	0	0	0	0	0	45.9	51.6
2300	21	3	18	0	0	0	0	0	0	0	0	0	0	44.6	51.8
07-19	4639	20	4085	33	435	22	12	3	10	6	10	2	1	41.4	46.8
06-22	5087	24	4495	33	464	25	12	3	10	6	12	2	1	41.6	47.1
06-00	5157	27	4562	33	464	25	12	3	10	6	12	2	1	41.7	47.1
00-00	5212	27	4607	34	473	25	12	3	10	6	12	2	1	41.7	47.1

Thursday, 24 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	5	0	5	0	0	0	0	0	0	0	0	0	0	44.6	-
0100	4	0	3	0	1	0	0	0	0	0	0	0	0	45.1	-
0200	4	0	4	0	0	0	0	0	0	0	0	0	0	41.7	-
0300	4	0	3	0	1	0	0	0	0	0	0	0	0	45.6	-
0400	6	0	5	0	1	0	0	0	0	0	0	0	0	48.3	-
0500	40	0	33	0	6	0	1	0	0	0	0	0	0	46.8	53.4
0600	140	0	120	0	17	0	1	0	1	0	1	0	0	43.8	49.3
0700	360	3	327	0	26	0	1	0	0	1	2	0	0	43.4	48.7
0800	499	4	439	6	44	3	2	0	0	0	1	0	0	42	46.6
0900	308	3	257	2	38	2	2	0	1	2	1	0	0	43.7	49.4
1000	314	1	265	2	38	1	1	0	1	3	2	0	0	41.7	46.8
1100	348	1	299	4	38	4	1	0	0	0	1	0	0	41.2	45.7
1200	156	0	146	0	9	0	1	0	0	0	0	0	0	41.4	46
1300	308	2	283	2	20	0	0	0	0	0	1	0	0	42	46.9
1400	393	3	333	5	47	0	0	1	3	0	1	0	0	40.6	45.4
1500	486	1	424	2	52	1	3	1	2	0	0	0	0	41.1	47
1600	484	1	449	1	28	1	1	0	2	1	0	0	0	41.7	46.8
1700	508	2	471	5	28	0	1	0	1	0	0	0	0	39.7	44.4
1800	217	1	206	0	8	1	0	0	0	0	1	0	0	42	45.9
1900	149	0	142	0	7	0	0	0	0	0	0	0	0	44.5	49.7
2000	104	0	100	0	3	1	0	0	0	0	0	0	0	42.9	49.4
2100	86	0	83	0	3	0	0	0	0	0	0	0	0	44.5	49.7
2200	55	0	54	0	1	0	0	0	0	0	0	0	0	44.6	49.9
2300	27	0	27	0	0	0	0	0	0	0	0	0	0	43.1	48.7
07-19	4381	22	3899	29	376	13	13	2	10	7	10	0	0	41.6	46.8
06-22	4860	22	4344	29	406	14	14	2	11	7	11	0	0	41.8	47.1
06-00	4942	22	4425	29	407	14	14	2	11	7	11	0	0	41.9	47.1
00-00	5005	22	4478	29	416	14	15	2	11	7	11	0	0	41.9	47.1

Friday, 25 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	8	0	8	0	0	0	0	0	0	0	0	0	0	47.6	-
0100	4	0	4	0	0	0	0	0	0	0	0	0	0	47.5	-
0200	7	0	5	0	1	1	0	0	0	0	0	0	0	40.7	-
0300	5	0	5	0	0	0	0	0	0	0	0	0	0	36.4	-
0400	8	0	5	0	3	0	0	0	0	0	0	0	0	46.9	-
0500	45	1	34	0	9	0	0	0	0	1	0	0	0	44.9	52.3
0600	120	0	101	1	16	1	1	0	0	0	0	0	0	44.4	50.4
0700	314	3	285	2	22	1	0	0	0	0	1	0	0	44	49.7
0800	469	3	413	1	44	0	3	0	1	1	2	0	1	43.3	48.5
0900	316	6	278	2	23	2	2	0	0	1	2	0	0	44	49.3
1000	325	4	288	1	25	2	0	0	2	1	2	0	0	42.6	48
1100	348	2	315	3	22	1	2	0	2	0	1	0	0	41.6	46.9
1200	360	2	325	2	25	1	3	0	1	1	0	0	0	41.8	46.5
1300	390	6	346	3	32	1	1	0	0	1	0	0	0	41.4	47.3
1400	472	6	416	3	45	1	1	0	0	0	0	0	0	41.7	46.5
1500	554	6	496	5	41	1	0	1	0	2	2	0	0	40.9	45.7
1600	588	0	536	4	42	2	1	0	2	0	1	0	0	40.2	44.8
1700	433	2	413	2	15	0	0	0	1	0	0	0	0	40.7	46
1800	230	1	220	1	8	0	0	0	0	0	0	0	0	41.2	45.3
1900	113	1	107	0	4	1	0	0	0	0	0	0	0	42.7	49.1
2000	76	0	72	0	3	1	0	0	0	0	0	0	0	43.6	49.6
2100	93	1	91	0	1	0	0	0	0	0	0	0	0	42.9	50
2200	57	0	56	0	1	0	0	0	0	0	0	0	0	41.5	47.3
2300	30	1	29	0	0	0	0	0	0	0	0	0	0	45.9	54.2
07-19	4799	41	4331	29	344	12	13	1	9	7	11	0	1	41.8	47.1
06-22	5201	43	4702	30	368	15	14	1	9	7	11	0	1	41.9	47.3
06-00	5288	44	4787	30	369	15	14	1	9	7	11	0	1	42	47.3
00-00	5365	45	4848	30	382	16	14	1	9	8	11	0	1	42	47.3

Saturday, 26 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	13	0	13	0	0	0	0	0	0	0	0	0	0	43.1	48.3
0100	11	0	11	0	0	0	0	0	0	0	0	0	0	42.1	53.1
0200	6	0	6	0	0	0	0	0	0	0	0	0	0	42.8	-
0300	8	0	7	0	1	0	0	0	0	0	0	0	0	46.2	-
0400	6	0	4	0	2	0	0	0	0	0	0	0	0	52	-
0500	23	0	18	0	5	0	0	0	0	0	0	0	0	50	57.8
0600	31	0	25	0	5	0	0	0	1	0	0	0	0	45.7	53.8
0700	99	3	86	0	9	0	0	0	1	0	0	0	0	46.4	53.4
0800	197	2	180	2	12	0	1	0	0	0	0	0	0	45.7	52.2
0900	272	3	256	2	9	1	1	0	0	0	0	0	0	43.8	49.7
1000	359	5	336	2	13	2	0	0	1	0	0	0	0	43.4	48.3
1100	417	1	402	1	13	0	0	0	0	0	0	0	0	42.8	47.8
1200	444	4	420	3	16	0	0	0	0	1	0	0	0	42.4	47.9
1300	428	4	401	2	21	0	0	0	0	0	0	0	0	41.9	47
1400	452	1	434	3	13	0	1	0	0	0	0	0	0	40.7	46.1
1500	435	2	417	3	13	0	0	0	0	0	0	0	0	41	46.2
1600	380	0	359	1	19	1	0	0	0	0	0	0	0	39.8	44.9
1700	240	0	229	0	9	1	1	0	0	0	0	0	0	40.2	46.8
1800	170	0	158	0	11	1	0	0	0	0	0	0	0	42.2	48.9
1900	84	0	82	0	2	0	0	0	0	0	0	0	0	42.9	49.8
2000	72	0	69	0	3	0	0	0	0	0	0	0	0	43.3	51.4
2100	61	0	61	0	0	0	0	0	0	0	0	0	0	40.9	47.8
2200	56	0	55	0	1	0	0	0	0	0	0	0	0	39.5	46.8
2300	26	1	24	0	1	0	0	0	0	0	0	0	0	38.3	45.7
07-19	3893	25	3678	19	158	6	4	0	2	1	0	0	0	42.1	47.7
06-22	4141	25	3915	19	168	6	4	0	3	1	0	0	0	42.1	47.9
06-00	4223	26	3994	19	170	6	4	0	3	1	0	0	0	42.1	47.8
00-00	4290	26	4053	19	178	6	4	0	3	1	0	0	0	42.2	47.9

Sunday, 27 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	24	0	24	0	0	0	0	0	0	0	0	0	0	40.3	46.6
0100	11	0	9	0	2	0	0	0	0	0	0	0	0	40.9	45.4
0200	10	0	10	0	0	0	0	0	0	0	0	0	0	43.3	-
0300	6	0	5	0	1	0	0	0	0	0	0	0	0	46.6	-
0400	6	0	5	0	1	0	0	0	0	0	0	0	0	46.7	-
0500	9	0	9	0	0	0	0	0	0	0	0	0	0	48.9	-
0600	13	0	10	0	3	0	0	0	0	0	0	0	0	43.7	51.1
0700	54	1	48	0	5	0	0	0	0	0	0	0	0	46	52.1
0800	96	0	92	0	4	0	0	0	0	0	0	0	0	45.2	52.4
0900	185	3	173	1	6	1	1	0	0	0	0	0	0	44.4	51.4
1000	287	0	274	0	12	0	0	0	1	0	0	0	0	45.2	50.3
1100	433	4	415	4	8	2	0	0	0	0	0	0	0	42.4	47.5
1200	523	4	502	5	10	2	0	0	0	0	0	0	0	41.5	46.1
1300	410	3	397	4	5	0	0	0	1	0	0	0	0	41.5	47
1400	384	1	355	4	21	2	1	0	0	0	0	0	0	43	48.3
1500	380	1	366	1	12	0	0	0	0	0	0	0	0	42.3	47.4
1600	305	4	289	1	11	0	0	0	0	0	0	0	0	41.8	46.7
1700	165	2	157	0	6	0	0	0	0	0	0	0	0	42.7	48.3
1800	155	0	149	1	4	0	0	0	0	1	0	0	0	43.8	48.7
1900	92	0	91	0	1	0	0	0	0	0	0	0	0	43.8	50.2
2000	65	0	62	0	3	0	0	0	0	0	0	0	0	43.6	50.7
2100	47	1	42	0	4	0	0	0	0	0	0	0	0	45.4	51.3
2200	33	0	32	0	0	1	0	0	0	0	0	0	0	43.9	51
2300	9	1	7	0	1	0	0	0	0	0	0	0	0	45.2	-
07-19	3377	23	3217	21	104	7	2	0	2	1	0	0	0	42.7	48.2
06-22	3594	24	3422	21	115	7	2	0	2	1	0	0	0	42.8	48.3
06-00	3636	25	3461	21	116	8	2	0	2	1	0	0	0	42.8	48.3
00-00	3702	25	3523	21	120	8	2	0	2	1	0	0	0	42.8	48.3

Monday, 28 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	1	0	1	0	0	0	0	0	0	0	0	0	0	48	-
0100	5	0	5	0	0	0	0	0	0	0	0	0	0	40.4	-
0200	3	0	2	0	0	0	0	0	0	1	0	0	0	43.4	-
0300	4	0	4	0	0	0	0	0	0	0	0	0	0	43.4	-
0400	6	0	4	0	2	0	0	0	0	0	0	0	0	48.2	-
0500	39	0	29	0	8	0	0	0	1	0	1	0	0	46.7	54.1
0600	121	1	103	0	15	0	0	0	1	0	1	0	0	45	50.4
0700	349	3	313	5	24	2	1	0	0	0	1	0	0	42.9	48.4
0800	463	1	418	4	33	3	2	0	0	1	1	0	0	42.3	48
0900	321	2	265	3	40	3	4	0	2	0	2	0	0	40.2	46.8
1000	273	5	244	1	17	4	0	0	1	0	1	0	0	42.7	48.7
1100	295	0	263	2	28	1	1	0	0	0	0	0	0	42.9	48.7
1200	298	0	260	2	32	0	1	1	0	1	1	0	0	41.8	46.4
1300	304	2	271	1	25	0	3	0	0	1	1	0	0	41.8	46.3
1400	402	6	345	2	40	2	0	2	1	1	3	0	0	41.9	47
1500	397	2	359	3	26	4	2	0	0	1	0	0	0	41.8	46.6
1600	558	2	498	4	47	2	1	0	2	1	1	0	0	39.1	45.1
1700	455	2	418	5	30	0	0	0	0	0	0	0	0	39.9	44.1
1800	214	1	194	1	18	0	0	0	0	0	0	0	0	42.8	48.2
1900	122	0	118	0	4	0	0	0	0	0	0	0	0	43.9	50.7
2000	103	0	98	1	3	1	0	0	0	0	0	0	0	42.9	50
2100	52	0	50	0	1	0	0	0	0	0	1	0	0	46.4	53.8
2200	35	0	33	0	2	0	0	0	0	0	0	0	0	44.5	50.9
2300	14	1	13	0	0	0	0	0	0	0	0	0	0	41.6	47.8
07-19	4329	26	3848	33	360	21	15	3	6	6	11	0	0	41.5	47
06-22	4727	27	4217	34	383	22	15	3	7	6	13	0	0	41.7	47.3
06-00	4776	28	4263	34	385	22	15	3	7	6	13	0	0	41.7	47.3
00-00	4834	28	4308	34	395	22	15	3	8	7	14	0	0	41.8	47.4

Tuesday, 29 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	11	0	10	0	1	0	0	0	0	0	0	0	0	45.4	52.7
0100	2	0	1	0	0	0	0	0	0	0	1	0	0	42	-
0200	2	0	2	0	0	0	0	0	0	0	0	0	0	39.7	-
0300	9	0	6	0	3	0	0	0	0	0	0	0	0	41.1	-
0400	8	0	4	0	4	0	0	0	0	0	0	0	0	43.6	-
0500	42	0	31	0	10	0	1	0	0	0	0	0	0	43.6	49.1
0600	130	0	115	0	14	0	0	0	0	1	0	0	0	44.8	50.8
0700	389	4	343	1	35	1	2	0	0	0	2	1	0	41.8	47
0800	488	3	446	2	32	2	2	0	0	0	1	0	0	42.2	47
0900	302	1	249	2	43	3	2	0	0	0	2	0	0	40.4	46.5
1000	262	1	220	3	31	3	3	0	1	0	0	0	0	42.4	47.7
1100	315	1	269	5	32	3	3	0	1	0	1	0	0	41.3	47.4
1200	324	1	277	3	29	5	3	1	1	3	1	0	0	41.5	47.2
1300	333	1	290	2	31	5	3	0	0	0	1	0	0	41.7	47
1400	350	2	296	3	39	3	3	1	1	1	1	0	0	41.7	48.2
1500	391	1	352	5	29	2	1	0	0	1	0	0	0	42.1	47.4
1600	518	2	470	4	35	3	2	0	0	0	2	0	0	40.3	45.2
1700	446	1	418	2	23	1	0	1	0	0	0	0	0	40.1	44.6
1800	215	0	200	0	14	1	0	0	0	0	0	0	0	42.9	49.7
1900	140	0	130	0	8	1	0	1	0	0	0	0	0	43.9	49.4
2000	91	1	81	1	8	0	0	0	0	0	0	0	0	45.3	53.4
2100	76	1	72	0	2	0	0	0	0	1	0	0	0	43	48.1
2200	45	1	42	0	2	0	0	0	0	0	0	0	0	44.4	50.4
2300	26	1	24	0	1	0	0	0	0	0	0	0	0	43.2	51.7
07-19	4333	18	3830	32	373	32	24	3	4	5	11	1	0	41.4	47
06-22	4770	20	4228	33	405	33	24	4	4	7	11	1	0	41.7	47.2
06-00	4841	22	4294	33	408	33	24	4	4	7	11	1	0	41.7	47.3
00-00	4915	22	4348	33	426	33	25	4	4	7	12	1	0	41.8	47.3

Wednesday, 30 November 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	8	0	8	0	0	0	0	0	0	0	0	0	0	47.5	-
0100	2	0	1	0	0	0	0	0	0	1	0	0	0	37.6	-
0200	1	0	1	0	0	0	0	0	0	0	0	0	0	40.3	-
0300	3	0	3	0	0	0	0	0	0	0	0	0	0	46.6	-
0400	9	0	8	0	1	0	0	0	0	0	0	0	0	47.9	-
0500	39	0	34	0	5	0	0	0	0	0	0	0	0	47.1	54.6
0600	135	0	116	0	16	2	0	0	0	0	1	0	0	45.1	49.2
0700	365	4	326	2	27	1	2	0	0	1	2	0	0	43	47.9
0800	506	5	456	3	35	0	1	0	3	0	2	1	0	42.3	47.8
0900	298	0	266	0	27	2	1	0	0	1	1	0	0	42.7	48.1
1000	313	1	267	1	37	0	1	1	3	0	2	0	0	41.2	47.8
1100	331	0	283	4	35	0	4	0	1	0	3	0	1	41.4	46.9
1200	332	3	289	0	28	1	4	0	1	3	2	1	0	41.3	45.9
1300	348	0	308	1	32	4	1	0	1	0	1	0	0	42.8	47.9
1400	373	2	323	2	34	6	3	0	1	0	2	0	0	41.8	47.6
1500	448	3	397	4	39	1	1	0	1	0	2	0	0	41.8	47.1
1600	500	1	460	2	33	0	2	0	0	1	0	1	0	41.1	46.2
1700	524	3	484	6	29	0	1	0	0	0	1	0	0	40.4	45.9
1800	255	2	237	0	14	1	1	0	0	0	0	0	0	40.7	46.8
1900	169	1	161	1	5	1	0	0	0	0	0	0	0	38.7	44.5
2000	97	1	94	0	2	0	0	0	0	0	0	0	0	38.8	43.3
2100	80	2	76	0	2	0	0	0	0	0	0	0	0	38.9	45.4
2200	68	0	65	0	3	0	0	0	0	0	0	0	0	35.8	42.4
2300	21	1	19	0	0	0	0	0	0	0	1	0	0	39.8	49.6
07-19	4593	24	4096	25	370	16	22	1	11	6	18	3	1	41.7	47
06-22	5074	28	4543	26	395	19	22	1	11	6	19	3	1	41.6	47
06-00	5163	29	4627	26	398	19	22	1	11	6	20	3	1	41.5	46.9
00-00	5225	29	4682	26	404	19	22	1	11	7	20	3	1	41.6	47

Thursday, 1 December 2022

Time [--]	Total	Cls 1	Cls 2	Cls 3	Cls 4	Cls 5	Cls 6	Cls 7	Cls 8	Cls 9	Cls 10	Cls 11	Cls 12	Mean	Vpp 85
0000	8	0	7	0	1	0	0	0	0	0	0	0	0	50.7	-
0100	2	0	2	0	0	0	0	0	0	0	0	0	0	38.5	-
0200	3	0	2	0	0	0	0	0	0	1	0	0	0	42.4	-
0300	3	0	2	0	1	0	0	0	0	0	0	0	0	53.6	-
0400	10	1	5	0	4	0	0	0	0	0	0	0	0	43.1	-
0500	41	0	34	0	6	0	1	0	0	0	0	0	0	44.5	50.9
0600	111	0	92	0	14	1	3	0	0	0	1	0	0	41.8	46.3
0700	376	3	332	1	32	4	2	1	1	0	0	0	0	41.7	46.6
0800	481	3	431	0	36	5	5	0	0	1	0	0	0	41.8	47.1
0900	292	6	252	4	23	1	2	0	0	1	2	1	0	43.1	48.1
1000	283	1	244	2	26	4	2	0	1	0	3	0	0	42.3	47.8
1100	321	0	281	1	31	2	4	0	1	1	0	0	0	41.6	46.9
1200	324	2	286	0	30	3	1	0	0	1	1	0	0	41.8	47.1
1300	320	2	273	1	36	0	3	1	3	1	0	0	0	42.7	48.4
1400	381	3	330	2	41	0	2	0	3	0	0	0	0	41.2	46.2
1500	412	2	369	3	34	2	0	0	1	1	0	0	0	41.7	47.1
1600	468	1	425	3	36	2	0	0	0	0	1	0	0	41	45.6
1700	438	1	405	2	29	0	1	0	0	0	0	0	0	39.5	44
1800	241	1	225	0	12	3	0	0	0	0	0	0	0	42.2	47.7
1900	166	0	160	0	6	0	0	0	0	0	0	0	0	44.1	49.9
2000	105	0	97	0	8	0	0	0	0	0	0	0	0	42.5	48.5
2100	108	0	98	1	7	1	1	0	0	0	0	0	0	43.5	49.1
2200	55	0	52	0	3	0	0	0	0	0	0	0	0	42.6	48.6
2300	23	0	21	0	1	0	1	0	0	0	0	0	0	42.4	49
07-19	4337	25	3853	19	366	26	22	2	10	6	7	1	0	41.6	46.8
06-22	4827	25	4300	20	401	28	26	2	10	6	8	1	0	41.8	46.9
06-00	4905	25	4373	20	405	28	27	2	10	6	8	1	0	41.8	47
00-00	4972	26	4425	20	417	28	28	2	10	7	8	1	0	41.8	47

APPENDIX 6

TEMPRO Outputs

Dataset Version: 80
Dataset Scenario: Core
Result Type: Trip ends by time period
Base Year: 2023
Future Year: 2027
Trip Purpose Group: All purposes
Time Period: Weekday AM peak period (0700 - 0959)
Trip End Type: Origin/Destination
Alternative Assumptio No

Growth Factor (2027 Data/2023 Data)			
Area Description		All purposes	
Level	Name	Origin	Destination
E02006650	Wiltshire 007	1.0195	1.0317

Future Year (2027) - Base Year (2023)			
Area Description		All purposes	
Level	Name	Origin	Destination
E02006650	Wiltshire 007	73	128

Base Year (2023)			
Area Description		All purposes	
Level	Name	Origin	Destination
E02006650	Wiltshire 007	3,750	4,046

Future Year (2027)			
Area Description		All purposes	
Level	Name	Origin	Destination
E02006650	Wiltshire 007	3,823	4,174

Dataset Version: 80
Dataset Scenario: Core
Result Type: Trip ends by time period
Base Year: 2023
Future Year: 2033
Trip Purpose Group: All purposes
Time Period: Weekday AM peak period (0700 - 0959)
Trip End Type: Origin/Destination
Alternative Assumptio No

Growth Factor (2033 Data/2023 Data)			
Area Description		All purposes	
Level	Name	Origin	Destination
E02006650	Wiltshire 007	1.0317	1.0618

Future Year (2033) - Base Year (2023)			
Area Description		All purposes	
Level	Name	Origin	Destination
E02006650	Wiltshire 007	119	250

Base Year (2023)			
Area Description		All purposes	
Level	Name	Origin	Destination
E02006650	Wiltshire 007	3,750	4,046

Future Year (2033)			
Area Description		All purposes	
Level	Name	Origin	Destination
E02006650	Wiltshire 007	3,869	4,296

Dataset Version: 80
Dataset Scenario: Core
Result Type: Trip ends by time period
Base Year: 2023
Future Year: 2027
Trip Purpose Group: All purposes
Time Period: Weekday PM peak period (1600 - 1859)
Trip End Type: Origin/Destination
Alternative Assumptio No

Growth Factor (2027 Data/2023 Data)			
Area Description		All purposes	
Level	Name	Origin	Destination
E02006650	Wiltshire 007	1.0299	1.0216

Future Year (2027) - Base Year (2023)			
Area Description		All purposes	
Level	Name	Origin	Destination
E02006650	Wiltshire 007	129	85

Base Year (2023)			
Area Description		All purposes	
Level	Name	Origin	Destination
E02006650	Wiltshire 007	4,330	3,919

Future Year (2027)			
Area Description		All purposes	
Level	Name	Origin	Destination
E02006650	Wiltshire 007	4,459	4,004

	AM	PM
2023-2027	1.0256	1.0258
2023-2033	1.0468	1.0482
2019-2023	Average Day 1.03105	

Dataset Version: 80
Dataset Scenario: Core
Result Type: Trip ends by time period
Base Year: 2023
Future Year: 2033
Trip Purpose Group: All purposes
Time Period: Weekday PM peak period (1600 - 1859)
Trip End Type: Origin/Destination
Alternative Assumptio No

Growth Factor (2033 Data/2023 Data)			
Area Description		All purposes	
Level	Name	Origin	Destination
E02006650	Wiltshire 007	1.0584	1.0379

Future Year (2033) - Base Year (2023)			
Area Description		All purposes	
Level	Name	Origin	Destination
E02006650	Wiltshire 007	253	149

Base Year (2023)			
Area Description		All purposes	
Level	Name	Origin	Destination
E02006650	Wiltshire 007	4,330	3,919

Future Year (2033)			
Area Description		All purposes	
Level	Name	Origin	Destination
E02006650	Wiltshire 007	4,582	4,068

APPENDIX 7

ARCADY Output – B4005 / Proposed Site Access

Junctions 9									
ARCADY 9 - Roundabout Module									
Version: 9.5.2.1013 © Copyright TRL Limited, 2019									
For sales and distribution information, program advice and maintenance, contact TRL: +44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk									
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution									

Filename: B4005_Site Access Roundabout.j9
Path: Z:\projects\3728 MOTO Swindon\Arcady
Report generation date: 15/09/2023 15:54:51

»Proposed Site Access - 2027 With Development Flows, AM
»Proposed Site Access - 2027 With Development Flows, PM
»Proposed Site Access - 2033 With Development Flows, AM
»Proposed Site Access - 2033 With Development Flows, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	Proposed Site Access - 2027 With Development Flows									
Arm 1	D1	5.3	13.06	0.83	B	D2	1.3	4.87	0.53	A
Arm 2		0.6	5.70	0.36	A		0.7	4.95	0.35	A
Arm 3		0.0	0.00	0.00	A		0.0	0.00	0.00	A
Arm 4		1.2	5.39	0.52	A		5.0	15.62	0.83	C
	Proposed Site Access - 2033 With Development Flows									
Arm 1	D3	5.5	13.54	0.84	B	D4	1.2	4.67	0.51	A
Arm 2		0.7	7.14	0.37	A		0.6	4.82	0.34	A
Arm 3		0.0	0.00	0.00	A		0.0	0.00	0.00	A
Arm 4		1.2	5.48	0.53	A		5.3	16.42	0.84	C

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

File summary

File Description

Title	B4005 / Site Access
Location	Swindon
Site number	
Date	22/08/2023
Version	
Status	TIA
Identifier	
Client	
Jobnumber	3728
Enumerator	EDD\Mark.Cleary
Description	

Units

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

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2027 With Development Flows	AM	ONE HOUR	07:15	08:45	15	✓
D2	2027 With Development Flows	PM	ONE HOUR	16:15	17:45	15	✓
D3	2033 With Development Flows	AM	ONE HOUR	07:15	08:45	15	✓
D4	2033 With Development Flows	PM	ONE HOUR	16:15	17:45	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Proposed Site Access	✓	100.000	100.000

Proposed Site Access - 2027 With Development Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	B4005 / Site Access	Standard Roundabout		1, 2, 3, 4	9.79	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B4005 (W)	
2	Site Access	
3	Farm Access	
4	B4005 (E)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	3.80	7.00	18.0	30.0	55.0	29.0	
2	3.80	7.00	10.0	34.0	55.0	30.0	
3	3.00	3.00	0.0	10.0	55.0	34.0	
4	3.85	7.30	12.0	20.0	55.0	34.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.609	1804
2	0.583	1663
3	0.413	852
4	0.578	1687

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2027 With Development Flows	AM	ONE HOUR	07:15	08:45	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
------------------------------	-------------------------------	--------------------	---------------------------

✓	✓	HV Percentages	2.00
---	---	----------------	------

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	1362	100.000
2		ONE HOUR	✓	329	100.000
3		ONE HOUR	✓	0	100.000
4		ONE HOUR	✓	705	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
		1	2	3	4
From	1	0	318	0	1044
	2	318	0	0	11
	3	0	0	0	0
	4	694	11	0	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
		1	2	3	4
From	1	0	24	0	5
	2	0	0	0	0
	3	24	0	0	21
	4	6	21	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.83	13.06	5.3	B	1250	1875
2	0.36	5.70	0.6	A	302	453
3	0.00	0.00	0.0	A	0	0
4	0.52	5.39	1.2	A	647	970

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1025	256	8	1799	0.570	1020	759	0.0	1.4	4.993	A
2	248	62	782	1207	0.205	247	246	0.0	0.3	3.744	A
3	0	0	1028	427	0.000	0	0	0.0	0.0	0.000	A
4	531	133	238	1549	0.343	529	790	0.0	0.5	3.737	A

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service

1	1224	306	10	1798	0.681	1221	909	1.4	2.3	6.749	A
2	296	74	936	1117	0.265	295	295	0.3	0.4	4.377	A
3	0	0	1231	344	0.000	0	0	0.0	0.0	0.000	A
4	634	158	285	1522	0.416	633	946	0.5	0.8	4.296	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1500	375	12	1797	0.834	1488	1112	2.3	5.1	12.267	B
2	362	91	1141	998	0.363	361	360	0.4	0.6	5.649	A
3	0	0	1502	232	0.000	0	0	0.0	0.0	0.000	A
4	776	194	349	1485	0.523	775	1153	0.8	1.1	5.368	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1500	375	12	1797	0.834	1499	1114	5.1	5.3	13.058	B
2	362	91	1149	993	0.365	362	362	0.6	0.6	5.704	A
3	0	0	1511	228	0.000	0	0	0.0	0.0	0.000	A
4	776	194	350	1485	0.523	776	1161	1.1	1.2	5.395	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1224	306	10	1798	0.681	1236	912	5.3	2.4	7.107	A
2	296	74	947	1111	0.266	297	298	0.6	0.4	4.425	A
3	0	0	1244	338	0.000	0	0	0.0	0.0	0.000	A
4	634	158	287	1522	0.417	635	957	1.2	0.8	4.323	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1025	256	8	1799	0.570	1029	763	2.4	1.5	5.114	A
2	248	62	789	1203	0.206	248	249	0.4	0.3	3.772	A
3	0	0	1037	424	0.000	0	0	0.0	0.0	0.000	A
4	531	133	240	1549	0.343	532	797	0.8	0.6	3.764	A

Proposed Site Access - 2027 With Development Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	B4005 / Site Access	Standard Roundabout		1, 2, 3, 4	9.77	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2027 With Development Flows	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	861	100.000
2		ONE HOUR	✓	433	100.000
3		ONE HOUR	✓	0	100.000
4		ONE HOUR	✓	1076	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
From		1	2	3	4
	1	0	419	0	442
	2	417	0	0	16
	3	0	0	0	0
	4	1062	14	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
From		1	2	3	4
	1	0	24	0	7
	2	24	0	0	25

	3	0	0	0	0
	4	4	22	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.53	4.87	1.3	A	790	1185
2	0.35	4.95	0.7	A	397	596
3	0.00	0.00	0.0	A	0	0
4	0.83	15.62	5.0	C	987	1481

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	648	162	10	1798	0.361	646	1107	0.0	0.6	3.574	A
2	326	81	331	1470	0.222	325	325	0.0	0.4	3.893	A
3	0	0	656	581	0.000	0	0	0.0	0.0	0.000	A
4	810	203	313	1507	0.538	805	343	0.0	1.2	5.314	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	774	194	13	1797	0.431	773	1326	0.6	0.9	4.029	A
2	389	97	397	1432	0.272	389	389	0.4	0.5	4.279	A
3	0	0	786	528	0.000	0	0	0.0	0.0	0.000	A
4	967	242	374	1471	0.658	964	411	1.2	2.0	7.362	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	948	237	15	1795	0.528	946	1617	0.9	1.3	4.854	A
2	477	119	486	1380	0.345	476	476	0.5	0.6	4.935	A
3	0	0	962	455	0.000	0	0	0.0	0.0	0.000	A
4	1185	296	458	1422	0.833	1174	503	2.0	4.7	14.470	B

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	948	237	15	1795	0.528	948	1628	1.3	1.3	4.872	A
2	477	119	487	1379	0.346	477	477	0.6	0.7	4.946	A
3	0	0	963	454	0.000	0	0	0.0	0.0	0.000	A
4	1185	296	459	1422	0.833	1184	504	4.7	5.0	15.621	C

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	774	194	13	1797	0.431	776	1342	1.3	0.9	4.048	A
2	389	97	398	1431	0.272	390	390	0.7	0.5	4.291	A
3	0	0	788	526	0.000	0	0	0.0	0.0	0.000	A

4	967	242	376	1470	0.658	979	413	5.0	2.1	7.811	A
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17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	648	162	11	1798	0.361	649	1117	0.9	0.7	3.597	A
2	326	81	333	1469	0.222	326	326	0.5	0.4	3.909	A
3	0	0	660	580	0.000	0	0	0.0	0.0	0.000	A
4	810	203	314	1505	0.538	813	345	2.1	1.2	5.444	A

Proposed Site Access - 2033 With Development Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	B4005 / Site Access	Standard Roundabout		1, 2, 3, 4	10.28	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2033 With Development Flows	AM	ONE HOUR	07:15	08:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	1372	100.000
2		ONE HOUR	✓	329	100.000
3		ONE HOUR	✓	0	100.000
4		ONE HOUR	✓	715	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
		1	2	3	4
From	1	0	318	0	1054
	2	318	0	0	11
	3	0	0	0	0
	4	704	11	0	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
		1	2	3	4
From	1	0	24	0	5
	2	24	0	0	21

	3	0	0	0	0
	4	6	21	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.84	13.54	5.5	B	1259	1888
2	0.37	7.14	0.7	A	302	453
3	0.00	0.00	0.0	A	0	0
4	0.53	5.48	1.2	A	656	984

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1033	258	8	1799	0.574	1027	766	0.0	1.4	5.038	A
2	248	62	789	1203	0.206	246	246	0.0	0.3	4.657	A
3	0	0	1035	424	0.000	0	0	0.0	0.0	0.000	A
4	538	135	238	1550	0.347	536	797	0.0	0.6	3.765	A

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1233	308	10	1798	0.686	1230	917	1.4	2.3	6.851	A
2	296	74	945	1112	0.266	295	295	0.3	0.4	5.455	A
3	0	0	1240	340	0.000	0	0	0.0	0.0	0.000	A
4	643	161	285	1522	0.422	642	955	0.6	0.8	4.340	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1511	378	12	1797	0.841	1499	1123	2.3	5.3	12.655	B
2	362	91	1151	992	0.365	361	359	0.4	0.7	7.061	A
3	0	0	1513	227	0.000	0	0	0.0	0.0	0.000	A
4	787	197	349	1485	0.530	786	1163	0.8	1.2	5.449	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1511	378	12	1797	0.841	1510	1125	5.3	5.5	13.537	B
2	362	91	1160	987	0.367	362	362	0.7	0.7	7.139	A
3	0	0	1522	223	0.000	0	0	0.0	0.0	0.000	A
4	787	197	350	1485	0.530	787	1172	1.2	1.2	5.480	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1233	308	10	1798	0.686	1246	921	5.5	2.4	7.242	A
2	296	74	957	1105	0.268	297	299	0.7	0.5	5.523	A
3	0	0	1254	334	0.000	0	0	0.0	0.0	0.000	A

4	643	161	287	1521	0.422	644	967	1.2	0.8	4.367	A
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08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1033	258	8	1799	0.574	1037	771	2.4	1.5	5.165	A
2	248	62	796	1199	0.207	248	249	0.5	0.3	4.696	A
3	0	0	1045	421	0.000	0	0	0.0	0.0	0.000	A
4	538	135	240	1549	0.348	539	805	0.8	0.6	3.789	A

Proposed Site Access - 2033 With Development Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	B4005 / Site Access	Standard Roundabout		1, 2, 3, 4	10.14	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2033 With Development Flows	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	825	100.000
2		ONE HOUR	✓	433	100.000
3		ONE HOUR	✓	0	100.000
4		ONE HOUR	✓	1087	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
From		1	2	3	4
	1	0	419	0	406
	2	417	0	0	16
	3	0	0	0	0
	4	1073	14	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
From		1	2	3	4
	1	0	24	0	7
	2	24	0	0	25

	3	0	0	0	0
	4	4	22	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.51	4.67	1.2	A	757	1136
2	0.34	4.82	0.6	A	397	596
3	0.00	0.00	0.0	A	0	0
4	0.84	16.42	5.3	C	997	1496

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	621	155	10	1798	0.345	619	1116	0.0	0.6	3.503	A
2	326	81	304	1486	0.219	325	325	0.0	0.3	3.841	A
3	0	0	629	592	0.000	0	0	0.0	0.0	0.000	A
4	818	205	313	1507	0.543	813	316	0.0	1.2	5.375	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	742	185	13	1797	0.413	741	1336	0.6	0.8	3.919	A
2	389	97	365	1451	0.268	389	389	0.3	0.5	4.203	A
3	0	0	753	541	0.000	0	0	0.0	0.0	0.000	A
4	977	244	374	1471	0.664	974	379	1.2	2.0	7.504	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	908	227	15	1795	0.506	907	1628	0.8	1.2	4.653	A
2	477	119	446	1403	0.340	476	476	0.5	0.6	4.812	A
3	0	0	922	471	0.000	0	0	0.0	0.0	0.000	A
4	1197	299	458	1422	0.842	1185	464	2.0	5.0	15.089	C

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	908	227	15	1795	0.506	908	1640	1.2	1.2	4.669	A
2	477	119	447	1403	0.340	477	477	0.6	0.6	4.822	A
3	0	0	924	471	0.000	0	0	0.0	0.0	0.000	A
4	1197	299	459	1422	0.842	1196	465	5.0	5.3	16.421	C

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	742	185	13	1797	0.413	743	1353	1.2	0.8	3.936	A
2	389	97	366	1450	0.268	390	390	0.6	0.5	4.216	A
3	0	0	756	540	0.000	0	0	0.0	0.0	0.000	A

4	977	244	376	1470	0.665	990	380	5.3	2.1	8.002	A
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17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	621	155	11	1798	0.345	622	1126	0.8	0.6	3.522	A
2	326	81	306	1485	0.220	326	326	0.5	0.4	3.857	A
3	0	0	632	591	0.000	0	0	0.0	0.0	0.000	A
4	818	205	314	1505	0.544	822	318	2.1	1.3	5.513	A

APPENDIX 8

M4 Junction 16 – VISSIM Model Results and Forecasting Report

Run number>>>

AVG

	AM 2023 Ref	AM 2027 Ref	AM 2033 Ref	AM 2027 Ref + Dev	AM 2033 Ref + Dev
	07:30 - 08:30	07:30 - 08:30	07:30 - 08:30	07:30 - 08:30	07:30 - 08:30
Average Delay per Vehicle in the Network (s)	19.8	22.5	22.9	26.9	28.1
Average Speed per Vehicle (mph)	62.3	59.5	59.2	56.0	55.2
Vehicles Active in the Network	291.0	325.0	332.0	364.0	388.0
Vehicle Trips Completed	9121.0	9845.0	10036.0	10290.0	10467.0
Latent Demand at End of Time Period	0.3	0.7	0.9	0.8	0.7
Total Delay (hrs)	6.2	7.8	8.0	9.8	11.1
Latent Delay (hrs)	0.0	0.1	0.1	0.1	0.1

	PM 2023 Ref	PM 2027 Ref	PM 2033 Ref	PM 2027 Ref + Dev	PM 2033 Ref + Dev
	16:30 - 17:30	16:30 - 17:30	16:30 - 17:30	16:30 - 17:30	16:30 - 17:30
Average Delay per Vehicle in the Network (s)	20.0	20.8	21.5	23.9	25.1
Average Speed per Vehicle (mph)	62.1	61.1	60.6	58.3	57.5
Vehicles Active in the Network	289.0	300.0	314.0	340.0	351.0
Vehicle Trips Completed	9223.0	9643.0	9845.0	10239.0	10446.0
Latent Demand at End of Time Period	0.1	0.3	0.5	0.8	1.1
Total Delay (hrs)	6.2	6.9	7.5	8.7	9.3
Latent Delay (hrs)	0.0	0.0	0.0	0.1	0.1



M4 J16 VISSIM

Forecasting and Results Summary

Prepared by:

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Table of Contents

1.0	Introduction	1
2.0	Base VISSIM Model Network	2
3.0	VISSIM Model Forecasting	4
4.0	VISSIM Model Results	6
5.0	Summary	7

Tables in Text

Table A:	TEMPro Growth Factors	4
Table B:	Development Demands (Vehicle Trip Generation)	5

Figures in Text

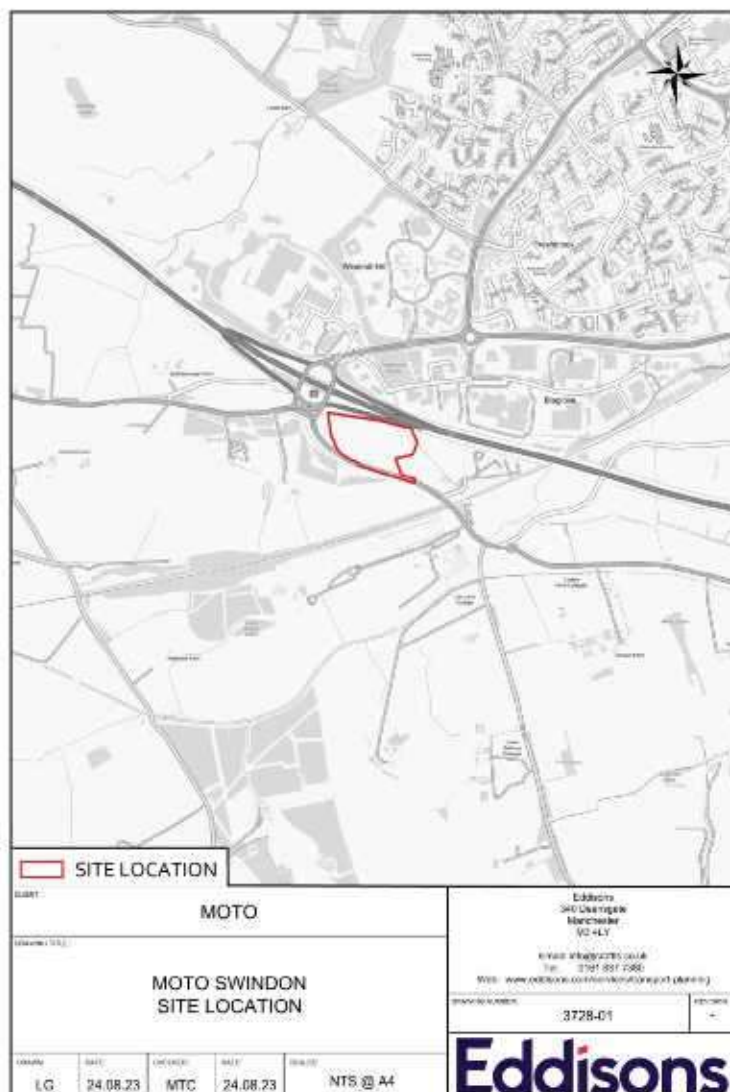
Figure A:	Proposed Development Site Boundary	1
Figure B:	2023 Base Model Extent	2



1.0 Introduction

- 1.1 SLR Consulting Ltd (SLR) has been appointed by Eddisons, on behalf of Moto Hospitality Ltd, to provide highways support and advice regarding a proposed redevelopment of a plot of land located to the southeast of M4 J16 Spittleborough Roundabout. The proposals are to deliver a motorway rest area with associated amenities including showers and toilets, hot food cafeteria, lounge area and retail space.
- 1.2 To support the live planning application it has been agreed between the client team and the local highway authorities that testing of the proposed development should be undertaken through the use of an existing VISSIM microsimulation model.
- 1.3 This Note sets out the development testing methodology, including the existing package of available models, forecasting methodology, development assumptions and the results of the testing.
- 1.4 The site boundary is provided in **Figure 1** below:

Figure A: Proposed Development Site Boundary



2.0 Base VISSIM Model Network

- 2.1 For the purposes of assessing the proposed development within a microsimulation environment, WSP as highways consultants for National Highways has provided a series of VISSIM model files and associated documentation.
- 2.2 A Base VISSIM model¹ was developed by WSP in 2021, during the COVID-19 pandemic. On review of the Local Model Validation Report (LMVR)² the model exhibited a strong correlation with observed data and SLR is in agreement that the model is calibrated and validated to a high standard. SLR has run the provided models to confirm that model outputs align with those reported in the LMVR, thus providing the necessary confidence that the models supplied are correct.
- 2.3 The model extent is provided in **Figure 2** below:

Figure B: 2023 Base Model Extent



¹ M4 J16_issued (2) – model folder

² M4J16_LMVR_20230428_signed



- 2.4 WSP has also provided a 2023 Reference Case model³, along with an associated Reference Case Technical Note⁴, which details updates to the model to account for traffic growth and accompanying changes to queuing conditions and network performance between 2021 and 2023.
- 2.5 The changes include:
- Analysis and adjustment of off-slip and on-slip movements at J16 via interrogation of the WEBTRIS database to ensure the vehicle totals in each direction align with 2023 data; and
 - Review of MOVA datasets and adjustment of signal timings to more closely align with on-street conditions in 2023.
- 2.6 SLR has reviewed the demands in the 2023 model and found them to replicate the methodology described in the Technical Note and is in agreement with the justification for those adjustments.
- 2.7 The 2023 VISSIM model is used as the foundation for testing of the proposed Moto Hospitality Ltd development.

VISSIM Version & Parameters

- 2.8 The 2023 model has been developed using VISSIM Version 2022 SP04. This is a relatively new version of the software and therefore no consideration for software update is required.
- 2.9 The model contains two signalised junctions; M4 J16 and A3102/Lydiard Fields junction, both of which are controlled via PC-MOVA. The peak hours assumed for the assessment are 07:30-08:30 and 16:30-17:30, maintaining the calculated peak hours in the baseline.
- 2.10 The AM and PM models are contained within the same model folder which has been set up using Scenario Management, as per best practice. All future year model scenarios will be developed using this same methodology.
- 2.11 As a result of the revisions to network demands following inclusion of growth, committed development and development traffic, some adjustments have been made to the MOVA configurations to balance the flows at Junction 16 and optimise the performance of the junction. These changes are restricted to minor adjustments to the maximum green times allowed for a particular stage. All other network parameters remain as per the received 2023 Reference Case model.

³ M4J16 reference case – model folder

⁴ M4 J16 Reference Case TN



3.0 VISSIM Model Forecasting

TEMPro Factors

- 3.1 The VISSIM model has been forecast to two future years; 2027 and 2033.
- 3.2 TEMPro 8 has been interrogated to obtain appropriate growth factors between the 2023 base year and the two forecast years. The derived growth factors are tabulated below:

Table A: TEMPro Growth Factors

	AM	PM
2023 – 2027	1.0256	1.0258
2023 – 2033	1.0468	1.0482

- 3.3 Growth has been applied to all vehicle types (Car, LGV, OGV1 and OGV2), and across the whole simulation period. Growth has been included in VISSIM within its own matrix level, with new 'Growth' vehicle classes added to assist in disaggregating between 2023 baseline trips and the future year growth.

Committed Development

- 3.4 The Southern Town Expansion development at Wichelstowe, which was permitted in 2014 and is partially developed, has been accounted for using proposed demand flows provided by Eddisons and set out within the draft TA. Committed development flows assume both positive and negative trip numbers across the network. Positive committed development O-Ds have been included within a specific 'Committed Development' matrix level and applied to the VISSIM model as a single hourly matrix. All committed development demands are assumed to be Cars.
- 3.5 Negative values are removed from the Baseline Car peak hour matrices. In cases where the applied negative brings the baseline O-D value down to a number below zero, the O-D is capped at zero. The end result is that Baseline demands for the 2027 and 2033 Reference Case scenarios differ from the supplied Baseline demands in the 2023 Reference Case, in-line with these adjustments.



Development Demands

- 3.6 Development demands were also supplied by Eddisons in the format of a flow diagram. The total inbound and outbound development trips are summarised below:

Table B: Development Demands (Vehicle Trip Generation)

		AM 07:30-08:30	PM 16:30-17:30
Lights	Inbound	184	242
	Outbound	184	242
Heavies	Inbound	58	76
	Outbound	58	76

- 3.7 The demands above refer to the inbound and outbound trips that interact with the model extent. Vehicles travelling between the Site and B4005 East, i.e. travelling eastwards away from the Site, or approaching the Site from the east, are excluded. These number only 7 trips in the AM and 9 trips in the PM.
- 3.8 Development demands are included within their own vehicle class and matrix level and applied to the VISSIM network as hourly Lights and Heavy matrices.



4.0 VISSIM Model Results

- 4.1 Comprehensive VISSIM results outputs are provided in the Appendices, with a summary of the forecast impacts provided below.

AM Peak Hour 07:30-08:30

- 4.2 Following inclusion of development, average delay per vehicle is forecast to increase by approximately 4 seconds in 2027 and 5 seconds in 2033.
- 4.3 The highest increase in journey times is forecast on the route from A3102 Great Western Way north of J16 to A3102 Swindon Road west of J16, which increases from 144 seconds in the 2027 Reference Case to 163 seconds in the 2027 With Development, and from 146 seconds in the 2033 Reference Case to 171 seconds in the 2033 With Development. No other journey time increases by more than 16 seconds across the whole network.
- 4.4 In regards to maximum queue lengths, the A3102 Great Western Way approach to J16 shows queue increases of 5 and 6 vehicles in 2027 and 2033 respectively. Maximum queue lengths on the westbound off-slip reach approximately 100m in both years, which is well within the slip length of ~350m. Eastbound off-slip maximum queue lengths reach <70m, again within the available slip length of ~350m.
- 4.5 As a result of these minor increases, the impact during the AM peak is considered negligible.

PM Peak Hour 16:30-17:30

- 4.6 Following inclusion of development, average delay per vehicle is forecast to increase by approximately 3 seconds in both 2027 and 2033.
- 4.7 The highest journey time increase is forecast on the B4005 approach to J16, which is expected to increase by 11 seconds in 2027 and 12 seconds in 2033 (from ~65 seconds to ~75 seconds). This corresponds to a maximum queue length increase of only 3 vehicles.
- 4.8 As per the AM, minor journey time increases are forecast on the route from A3102 Great Western Way north of J16 to A3102 Swindon Road west of J16, which increases from 141 seconds in the 2027 Reference Case to 150 seconds in the 2027 With Development, and from 145 seconds in the 2033 Reference Case to 157 seconds in the 2033 With Development.
- 4.9 Maximum queue lengths on the eastbound and westbound off-slips do not exceed 70m in With Development scenarios in either 2027 nor 2033.
- 4.10 As a result of these minor increases, the impact during the PM peak is considered negligible.



5.0 Summary

- 5.1 SLR Consulting Ltd (SLR) has been commissioned by Eddisons, on behalf of Moto Hospitality Ltd, to provide microsimulation modelling expertise in support of a live planning application for a proposed motorway rest area to the south east of M4 J16 in Swindon, Wiltshire.
- 5.2 This Note sets out the VISSIM model files received from National Highways, the methodology adopted for the testing, and the results which set out the forecast impact of the development on M4 J16 and the surrounding network.
- 5.3 Modelling results suggest that the network is able to accommodate the forecast traffic growth with minimal impact on network performance.



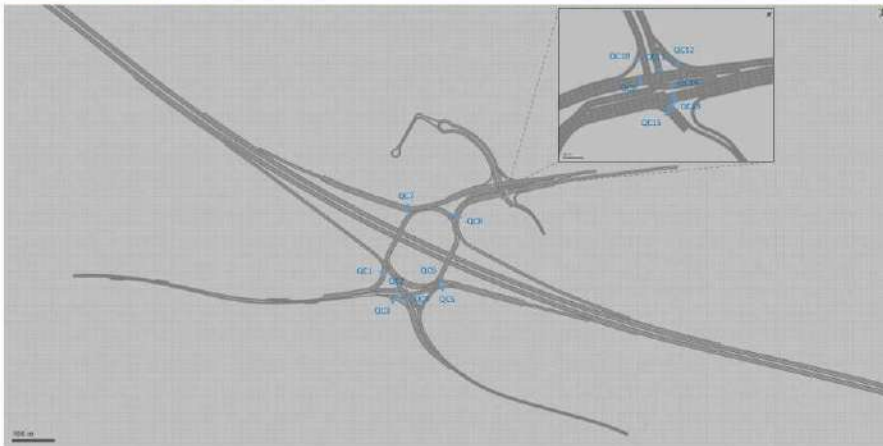
Average Speed per Vehicle (mph)
 Vehicles per mile in the Network
 Vehicle Trip Cancellations
 Latency (seconds) at End of Trip Period
 Total Delay (min)
 Latency Delta (min)

European Delivery not available for the following:
 - American owned and/or vehicle bought
 - Vehicles not new to the market
 - Vehicle from Canada and
 - Subject to approval at End of Trip Period
 - Total Delivery time
 - Lowest Delta time

PM 10.0 (µg)	PM 10.0 (µg)	PM 2.5 (µg)	PM 2.5 (µg)	PM 2.5 (µg)
10:00-12:00	10:00-12:00	10:00-12:00	10:00-12:00	10:00-12:00
200	200	210	210	210
220	220	220	220	220
240	240	240	240	240
260	260	260	260	260
280	280	280	280	280
300	300	300	300	300
320	320	320	320	320
340	340	340	340	340
360	360	360	360	360
380	380	380	380	380
400	400	400	400	400
420	420	420	420	420
440	440	440	440	440
460	460	460	460	460
480	480	480	480	480
500	500	500	500	500

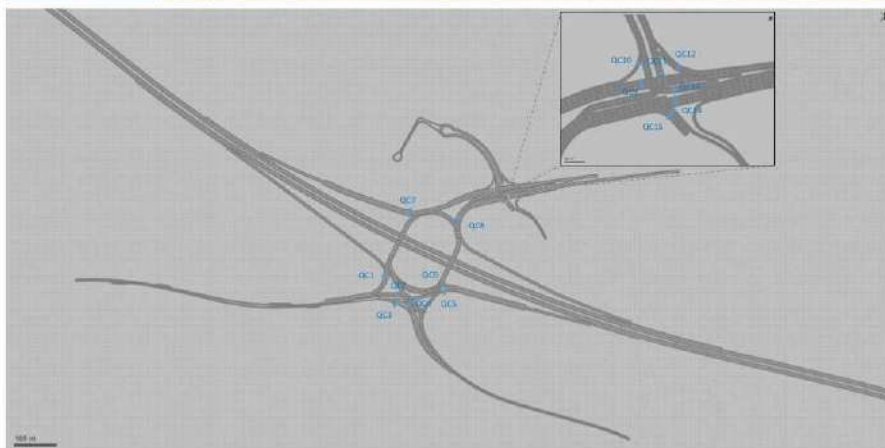
Run Number	AW
El Type	Mw

Sphindeneagh Roundabout														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
AS101 west ahead	A3122 west right	D4001 left	B4205 ahead	M5 ab w/1 left	M5 ab off ahead	M5 ab w/1	A3122 east	DWW ab ahead	DWW ab left	Lycall Fields right	Lycall Fields left	GWW ab ahead	DWW ab right	Frankford Road
AM 2013 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2013 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref
0740-0735	72	37	15	14	31	35	41	61	71	10	14	70	21	18
0745-0740	48	16	10	14	30	32	42	56	76	2	14	56	18	8
0740-0745	48	17	18	23	32	32	46	63	82	3	22	24	56	7
0745-0750	44	14	20	19	31	34	54	57	54	6	15	18	54	14
0750-0755	47	13	18	20	31	31	45	100	31	12	15	42	25	15
0755-0800	74	10	10	20	31	32	53	45	109	4	15	58	46	16
0800-0805	62	13	23	19	38	41	51	55	81	4	17	33	36	6
0805-0810	66	13	24	18	39	32	45	57	68	3	12	31	29	5
0810-0815	62	15	20	18	38	42	48	68	89	4	18	34	40	6
0815-0820	74	15	25	18	36	42	48	47	91	2	16	54	42	9
0820-0825	83	16	23	20	39	42	50	41	123	5	21	33	43	11
0825-0830	57	10	22	17	43	46	53	46	111	8	16	15	41	12
AM 2023 Ref	Mix	17	23	24	43	46	54	68	121	8	22	18	70	18
AM 2023 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref	AM 2021 Ref
0740-0735	85	25	14	32	53	40	43	67	70	3	15	21	68	9
0745-0740	45	11	14	28	61	38	47	68	82	2	15	51	62	8
0740-0745	70	11	17	29	60	44	47	71	67	4	19	32	54	8
0745-0750	65	20	20	33	65	40	59	48	111	4	12	38	55	14
0750-0755	65	23	18	34	58	42	62	50	109	4	15	15	44	15
0755-0800	66	20	10	33	59	39	62	51	111	3	15	18	41	15
0800-0805	58	26	18	31	64	36	54	64	136	5	16	18	46	6
0805-0810	65	20	21	31	59	31	52	72	98	7	13	24	27	5
0810-0815	62	26	20	32	62	52	53	70	105	4	17	21	35	5
0815-0820	65	28	24	32	63	57	54	45	110	5	16	34	41	5
0820-0825	64	26	22	31	58	50	62	42	130	11	19	34	36	11
0825-0830	77	28	14	35	61	55	65	57	131	10	17	18	28	12
AM 2027 Ref	Mix	31	24	29	71	58	62	72	132	21	19	28	68	15
AM 2027 Ref	AM 2023 Ref	AM 2023 Ref	AM 2023 Ref	AM 2023 Ref	AM 2023 Ref	AM 2023 Ref	AM 2023 Ref	AM 2023 Ref	AM 2023 Ref	AM 2023 Ref	AM 2023 Ref	AM 2023 Ref	AM 2023 Ref	AM 2023 Ref
0740-0735	45	27	13	33	56	39	49	72	75	6	13	22	67	8
0745-0740	72	11	15	37	63	44	51	64	85	1	14	31	69	8
0740-0745	78	30	18	40	62	48	51	76	98	4	19	32	73	7
0745-0750	71	27	19	33	63	41	58	66	105	4	18	20	55	14
0750-0755	69	22	15	33	59	34	58	59	118	2	15	16	38	16
0755-0800	63	25	16	30	58	36	46	61	115	3	14	16	50	15
0800-0805	60	30	21	33	64	52	59	63	94	5	14	24	45	6
0805-0810	68	25	23	30	62	57	50	77	108	3	13	34	29	5
0810-0815	68	28	22	29	60	48	59	78	109	6	18	30	25	5
0815-0820	70	27	11	32	61	56	62	46	119	14	19	18	37	6
0820-0825	70	31	13	34	64	60	61	50	136	10	18	15	37	11
0825-0830	71	29	23	32	65	57	68	46	125	14	16	16	40	12
AM 2031 Ref	Mix	31	24	29	65	60	62	78	130	10	19	20	72	16
AM 2031 Ref	AM 2027 Ref	AM 2027 Ref	AM 2027 Ref	AM 2027 Ref	AM 2027 Ref	AM 2027 Ref	AM 2027 Ref	AM 2027 Ref	AM 2027 Ref	AM 2027 Ref	AM 2027 Ref	AM 2027 Ref	AM 2027 Ref	AM 2027 Ref
0740-0735	74	25	15	33	68	48	46	71	61	2	14	21	76	8
0745-0740	76	20	10	33	78	58	53	73	61	2	13	8	53	8
0740-0745	79	34	25	37	84	62	52	80	86	5	19	13	64	8
0745-0750	79	32	22	33	83	75	56	83	106	3	12	17	50	14
0750-0755	77	25	23	33	80	72	60	67	107	3	16	16	36	15
0755-0800	79	32	10	39	75	55	57	62	112	4	15	17	42	15
0800-0805	70	30	12	36	85	63	50	77	94	5	18	16	51	6
0805-0810	76	30	18	38	92	60	50	93	103	4	18	16	36	5
0810-0815	70	32	27	34	89	55	55	103	97	5	17	12	40	5
0815-0820	77	26	26	32	91	62	56	91	109	5	14	24	43	9
0820-0825	84	32	24	34	97	66	64	74	115	10	21	13	47	11
0825-0830	82	30	25	30	91	60	64	75	120	7	14	14	48	12
AM 2037 Ref	Mix	34	29	34	97	90	96	105	125	10	21	17	75	15
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0740-0735	73	20	16	35	72	57	47	84	73	2	14	21	70	8
0745-0740	84	27	18	32	80	50	52	81	86	10	13	21	63	8
0740-0745	85	33	18	36	78	60	53	84	92	4	20	13	67	7
0745-0750	88	31	21	35	81	62	60	91	109	2	12	18	54	14
0750-0755	77	24	17	39	85	68	66	72	120	3	16	17	41	16
0755-0800	76	33	19	43	80	67	63	71	119	3	16	18	39	15
0800-0805	73	30	26	38	84	66	60	82	121	3	14	15	51	6
0805-0810	72	30	26	33	92	67	56	92	109	2	15	24	45	5
0810-0815	77	32	20	33	88	61	59	112	108	6	19	21	56	5
0815-0820	80	31	20	34	96	68	50	105	117	12	16	23	56	9
0820-0825	88	38	21	36	67	56	64	99	129	4	18	14	69	11
0825-0830	83	36	20	33	61	46	66	83	130	5	15	17	63	12
AM 2043 Ref	Mix	37	35	43	97	80	98	112	130	12	20	18	70	16



Run Number	AWG
El Type	MW

	Spilldowneigh Roundabout										Lyford Road							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	AS101 west ahead	A3122 west right	D4001 left	B4202 ahead	M5 ab w/1 left	M5 ab off ahead	M5 ab w/1	A3122 east	DWW ab ahead	DWW ab left	Lyford Fields right	Lyford Fields left	GWW ab ahead	DWW ab right	Frankland Road			
PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref
1630-1635	53	37	33	31	37	35	35	33	30	1	12	13	35	12	8			
1635-1640	57	35	32	34	32	35	37	32	32	0	12	14	37	12	8			
1640-1645	53	34	34	34	27	33	35	31	27	0	10	14	39	12	10			
1645-1650	48	35	31	24	44	42	40	35	30	1	12	13	39	11	13			
1650-1655	58	32	25	22	40	41	42	35	32	1	13	14	38	11	15			
1655-1700	62	34	28	25	38	35	41	40	35	0	14	14	34	10	15			
1700-1705	71	36	30	26	40	42	36	27	85	1	13	14	31	11	14			
1705-1710	76	30	34	31	33	35	35	33	79	2	13	14	36	11	14			
1710-1715	73	34	31	26	40	41	35	34	84	1	13	14	32	12	14			
1715-1720	61	34	41	29	41	42	31	47	86	2	13	15	35	12	9			
1720-1725	56	35	45	25	45	47	35	47	79	1	10	16	34	10	10			
1725-1730	49	36	44	25	43	46	35	48	77	0	11	15	33	12	12			
PM 2013 Ref	Max	37	43	31	45	47	43	33	83	2	14	14	37	13	16			
PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref
1630-1635	54	37	39	43	42	43	43	57	86	2	10	24	80	11	5			
1635-1640	61	34	71	56	48	50	46	48	107	1	9	15	23	12	5			
1640-1645	61	35	75	59	43	45	41	49	98	0	11	24	14	14	5			
1645-1650	71	36	68	51	39	41	48	40	117	1	14	15	38	12	10			
1650-1655	66	34	62	50	41	41	51	43	118	1	15	15	38	11	12			
1655-1700	89	30	51	42	33	35	38	39	114	0	14	16	31	12	12			
1700-1705	73	35	60	56	40	41	42	39	110	0	11	16	34	12	7			
1705-1710	78	35	72	58	42	42	43	121	121	0	13	20	35	10	8			
1710-1715	69	35	71	57	42	44	44	37	105	0	13	27	25	11	7			
1715-1720	64	34	80	65	48	49	41	43	104	0	9	36	26	11	6			
1720-1725	58	34	110	91	49	50	43	48	100	0	30	17	21	11	7			
1725-1730	59	30	105	84	50	51	38	51	94	0	10	18	24	10	8			
PM 2017 Ref	Max	73	37	130	93	50	53	53	118	1	15	39	40	14	12			
PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref
1630-1635	63	36	50	48	41	42	43	61	84	1	11	15	40	12	6			
1635-1640	61	36	73	60	45	47	47	52	104	0	9	14	36	12	5			
1640-1645	62	35	81	65	47	48	43	50	120	1	11	15	26	11	5			
1645-1650	88	30	68	51	39	41	51	43	125	0	14	15	38	12	10			
1650-1655	69	32	65	53	43	44	50	49	129	1	14	15	39	12	13			
1655-1700	65	34	52	47	42	45	44	41	123	0	15	14	35	11	11			
1700-1705	71	34	57	53	44	46	44	39	111	1	15	16	41	13	8			
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1715-1720	68	34	81	64	47	46	41	45	106	0	9	17	29	12	9			
1720-1725	64	34	123	96	51	52	43	47	108	0	10	20	28	10	7			
1725-1730	58	35	116	99	46	46	41	50	110	0	11	18	27	11	8			
PM 2013 Ref	Max	77	36	116	99	51	53	53	120	1	15	20	41	13	13			
PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref	PM 2017 Ref
1630-1635	67	37	74	64	52	52	45	55	84	1	11	15	23	11	5			
1635-1640	67	37	91	80	63	62	45	51	110	1	10	15	20	12	5			
1640-1645	72	38	92	79	54	59	44	49	107	0	11	15	27	12	5			
1645-1650	78	36	74	77	63	62	45	42	120	0	11	14	36	11	10			
1650-1655	69	34	87	77	61	60	43	43	110	1	15	15	30	12	12			
1655-1700	77	34	92	77	59	56	50	42	109	0	13	14	37	11	11			
1700-1705	82	36	97	81	59	59	44	39	108	0	15	14	43	12	7			
1705-1710	79	35	94	79	61	61	38	40	106	1	14	19	43	10	9			
1710-1715	73	35	99	83	61	61	41	41	105	1	14	17	42	12	7			
1715-1720	74	35	99	81	63	62	43	40	101	0	9	18	21	11	6			
1720-1725	63	34	127	110	64	64	41	45	100	0	9	18	21	10	7			
1725-1730	65	35	117	100	66	66	44	47	102	0	9	17	25	10	8			
PM 2017 Ref	Max	82	37	127	110	66	68	67	120	1	15	19	43	13	12			
PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref	PM 2013 Ref
1630-1635	58	38	76	62	63	58	43	63	81	2	10	25	40	11	6			
1635-1640	64	35	91	80	64	64	45	62	96	1	11	24	29	12	5			
1640-1645	73	36	102	86	62	62	47	60	106	0	11	15	31	13	5			
1645-1650	71	36	100	84	63	63	49	51	115	1	14	14	30	11	10			
1650-1655	78	34	94	79	60	59	54	47	117	0	15	15	41	12	11			
1655-1700	72	36	91	83	60	61	52	54	119	1	15	15	36	10	12			
1700-1705	83	35	97	83	60	61	46	46	120	1	16	15	32	12	7			
1705-1710	83	35	102	89	56	56	47	39	112	0	12	17	35	10	8			
1710-1715	83	36	98	87	65	64	48	52	103	0	15	18	35	11	7			
1715-1720	81	35	107	93	66	66	49	65	118	0	9	16	30	11	8			
1720-1725	66	34	130	114	65	67	48	50	106	1	9	18	24	11	7			
1725-1730	68	36	111	118	69	71	49	63	114	0	17	21	27	11	7			
PM 2017 Ref	Max	83	38	133	118	69	71	64	118	1	16	21	41	13	12			

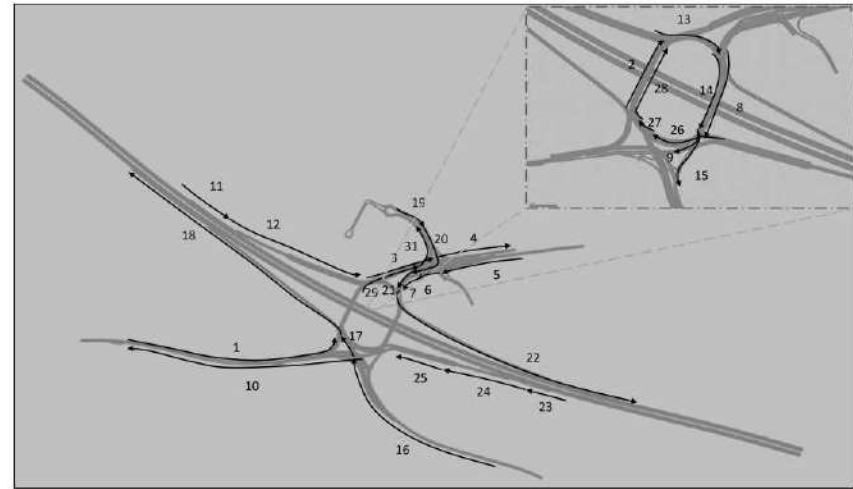


Appendix C: Average Journey Times (seconds)

Run Numbers >>> AVG

	AM 2023 Ref	AM 2027 Ref	AM 2033 Ref	AM 2027 Ref + Dev	AM 2033 Ref + Dev
1	Modelled	Modelled	Modelled	Modelled	Modelled
2	70	69	70	73	71
3	14	14	14	14	15
4	26	26	26	26	26
5	18	18	18	18	18
6	19	19	19	19	21
7	8	8	8	9	11
8	10	10	11	14	16
9	23	20	30	38	41
10	25	26	27	30	30
11	52	52	52	53	53
12	5	6	6	6	6
13	36	30	30	40	41
14	29	30	30	30	33
15	23	27	28	32	35
16	15	17	17	20	20
17	59	63	63	69	70
18	8	10	10	10	10
19	31	31	31	34	34
20	9	9	9	9	9
21	50	62	64	68	75
22	7	8	8	11	12
23	27	28	28	28	28
24	4	4	4	4	4
25	10	10	10	10	10
26	8	10	10	16	16
27	25	28	28	29	30
28	10	10	10	10	10
29	20	23	23	24	24
30	17	18	18	18	18
31	10	10	10	10	10

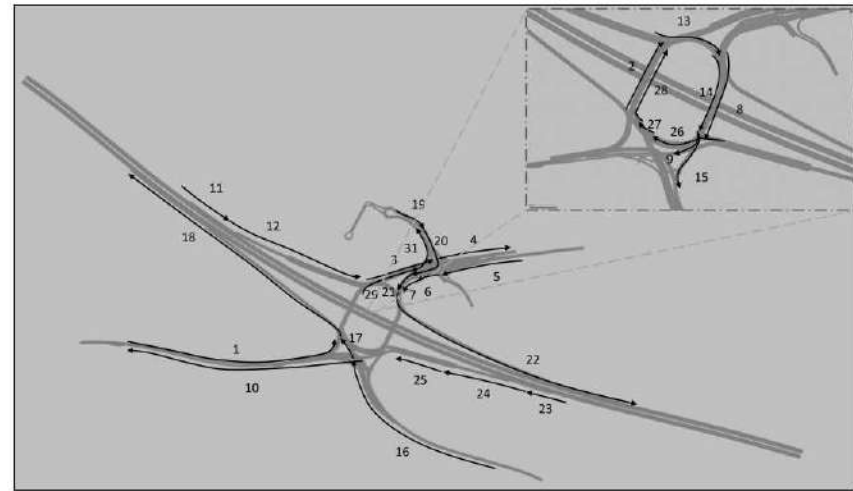
JT1 EB	127	127	128	132	133
JT1 WB	137	144	146	163	171
JT2 EB	108	117	118	128	139
JT2 WB	99	105	106	113	114
JT3 EB	103	107	109	115	124
JT3 WB	109	114	114	121	122

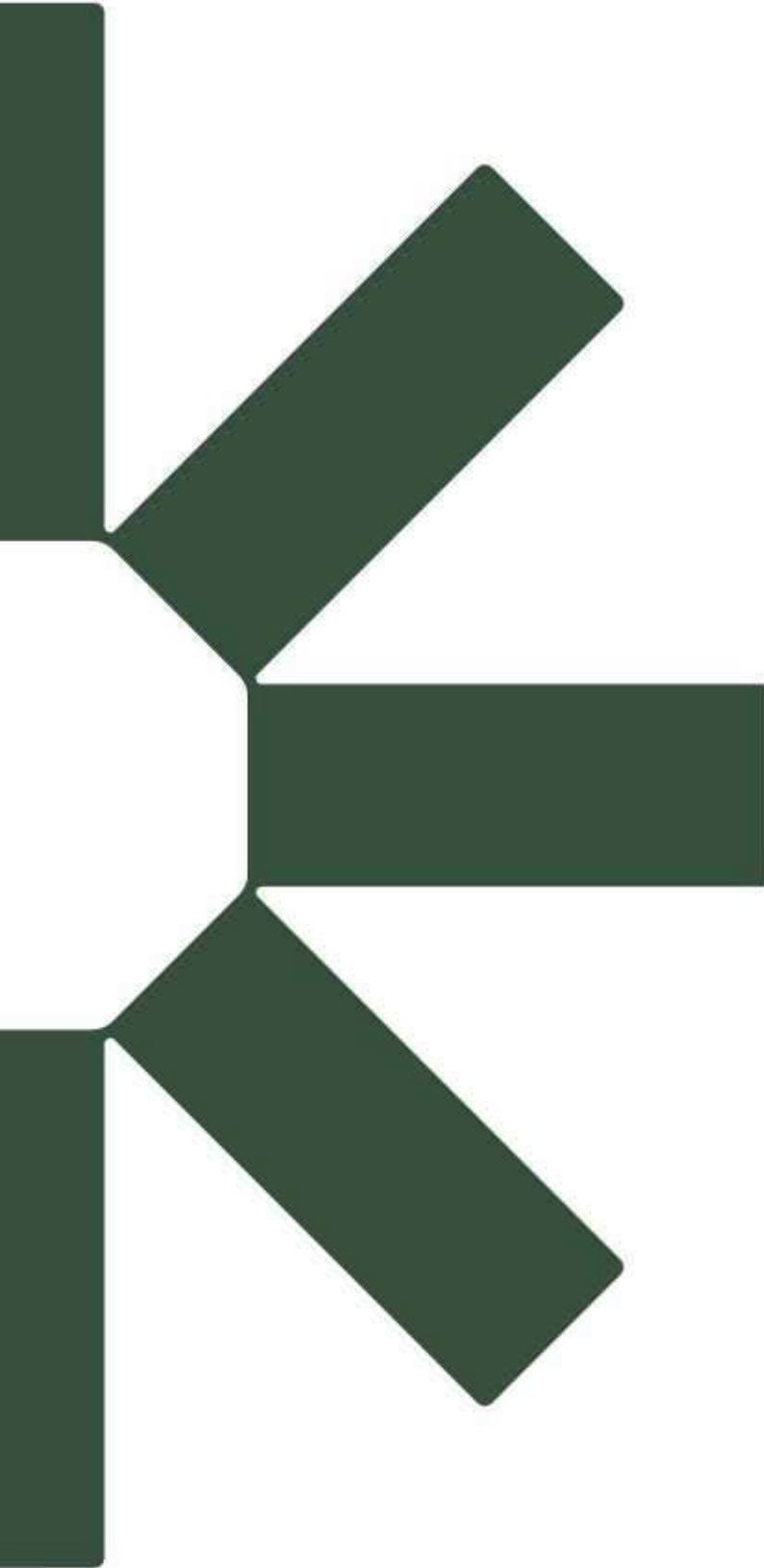


Run Numbers >> AVG

	PM 2023 Ref	PM 2027 Ref	PM 2033 Ref	PM 2027 Ref + Dev	PM 2033 Ref + Dev
1	Modelled	Modelled	Modelled	Modelled	Modelled
2	98	96	96	99	70
3	14	14	14	14	14
4	24	24	24	24	24
5	18	18	18	18	18
6	20	18	18	18	18
7	7	8	8	8	8
8	8	9	9	11	11
9	26	23	24	26	29
10	26	26	26	29	31
11	56	58	58	58	58
12	5	5	5	5	5
13	34	37	38	38	39
14	31	26	27	28	28
15	27	23	25	23	26
16	15	14	14	16	16
17	60	64	65	75	76
18	8	9	9	9	9
19	31	31	31	31	34
20	9	9	9	9	9
21	50	57	60	57	50
22	6	7	7	8	8
23	27	28	28	28	28
24	4	4	4	4	4
25	10	10	10	10	10
26	8	9	9	10	11
27	30	30	30	31	31
28	9	10	10	10	10
29	19	22	22	22	22
30	17	18	18	18	18
31	10	10	10	10	10

JT1 EB	124	122	123	126	126
JT1 WB	143	141	145	150	157
JT2 EB	118	106	109	111	119
JT2 WB	100	105	106	117	119
JT3 EB	101	101	103	102	104
JT3 WB	107	112	113	117	119



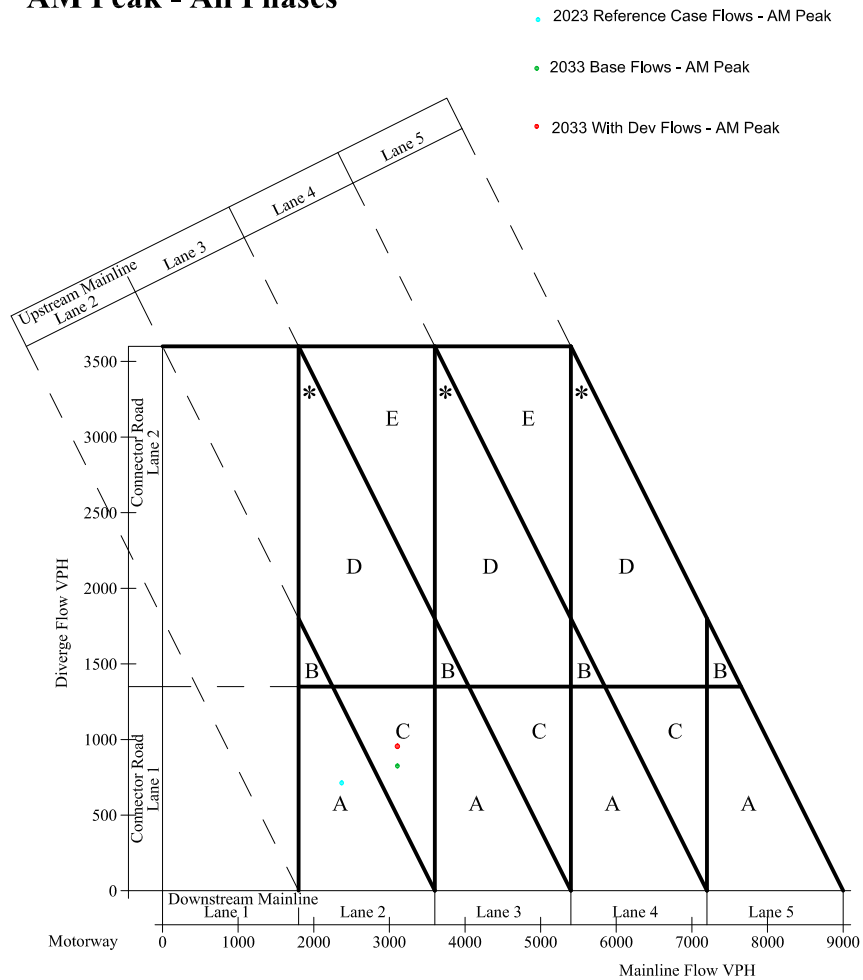


APPENDIX 9

Merge / Diverge Diagrams

From TD22/06, Figure 2/5 MW

M4 Junction 16 - EASTBOUND DIVERGE
AM Peak - All Phases



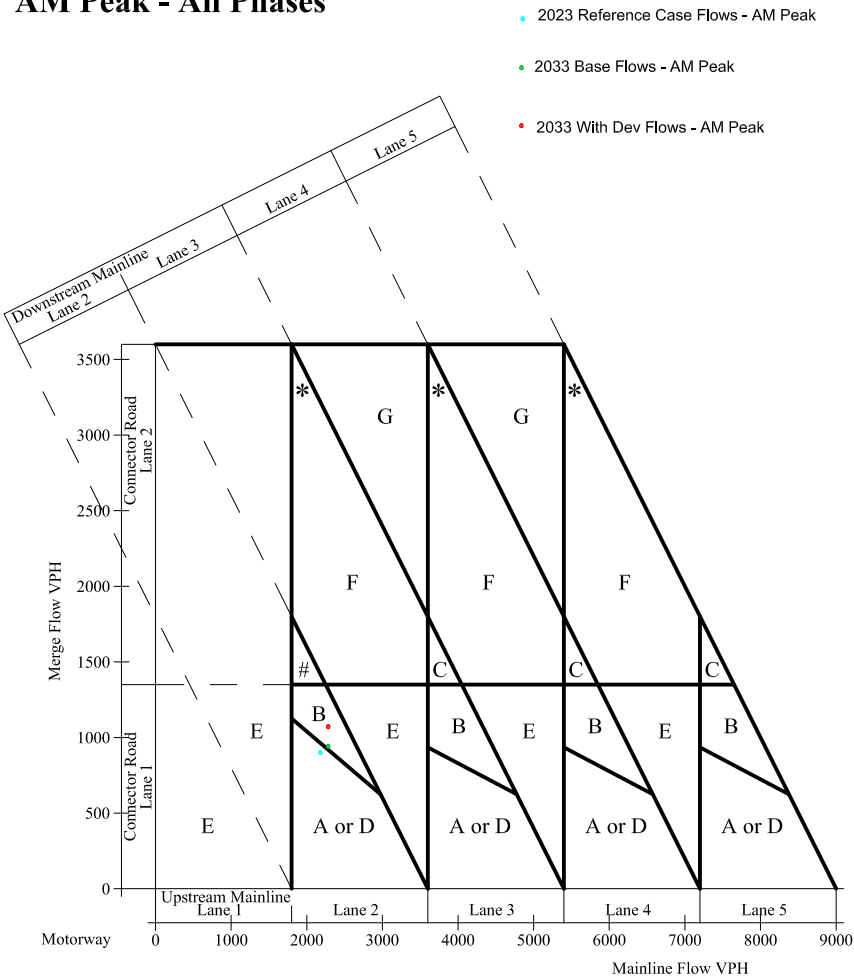
Notes:-

* If Layout D Option 2 is used consider Auxilliary Lane (see paragraph 4.24 of TD22/06).

Motorway Diverging Diagram

From TD22/06, Figure 2/3 MW

M4 Junction 16 - EASTBOUND MERGE
AM Peak - All Phases



Notes:-

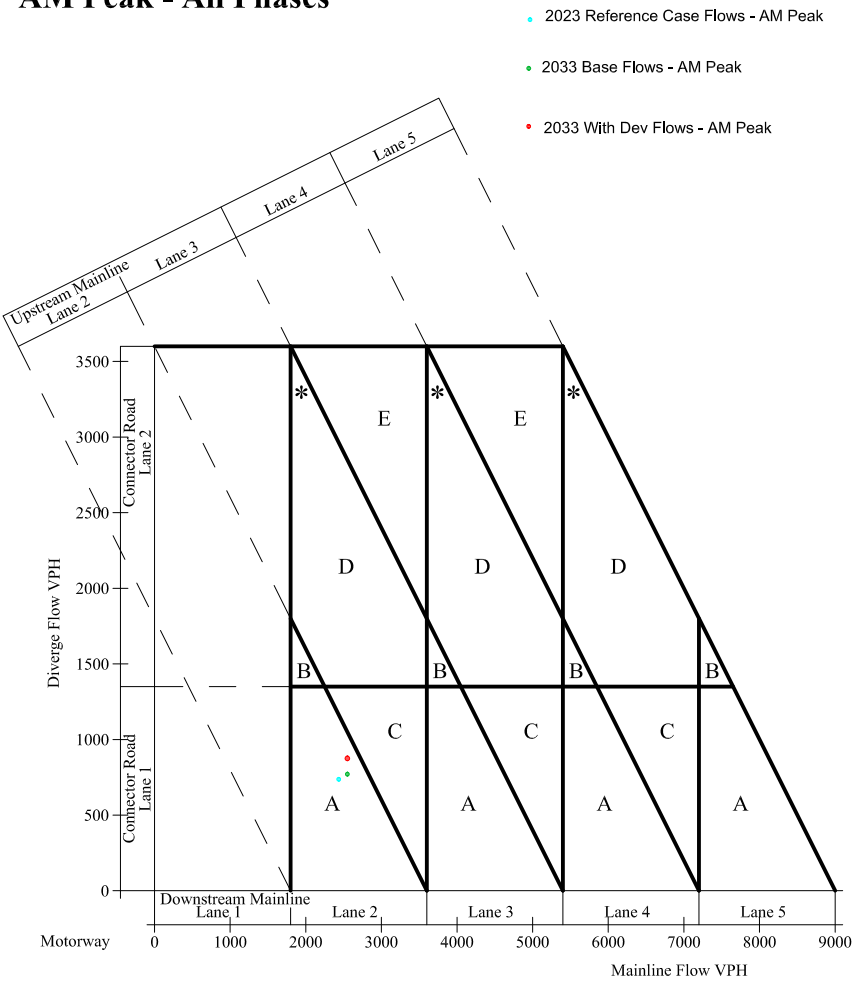
* If Layout F Option 2 is used consider Auxilliary Lane (see paragraph 4.23 of TD22/06).

Area of uncertainty - In this area the choice will depend on the downstream provision. If there is a lane gain then use Layout E or F.

Motorway Merging Diagram

From TD22/06, Figure 2/5 MW

M4 Junction 16 - WESTBOUND DIVERGE
AM Peak - All Phases

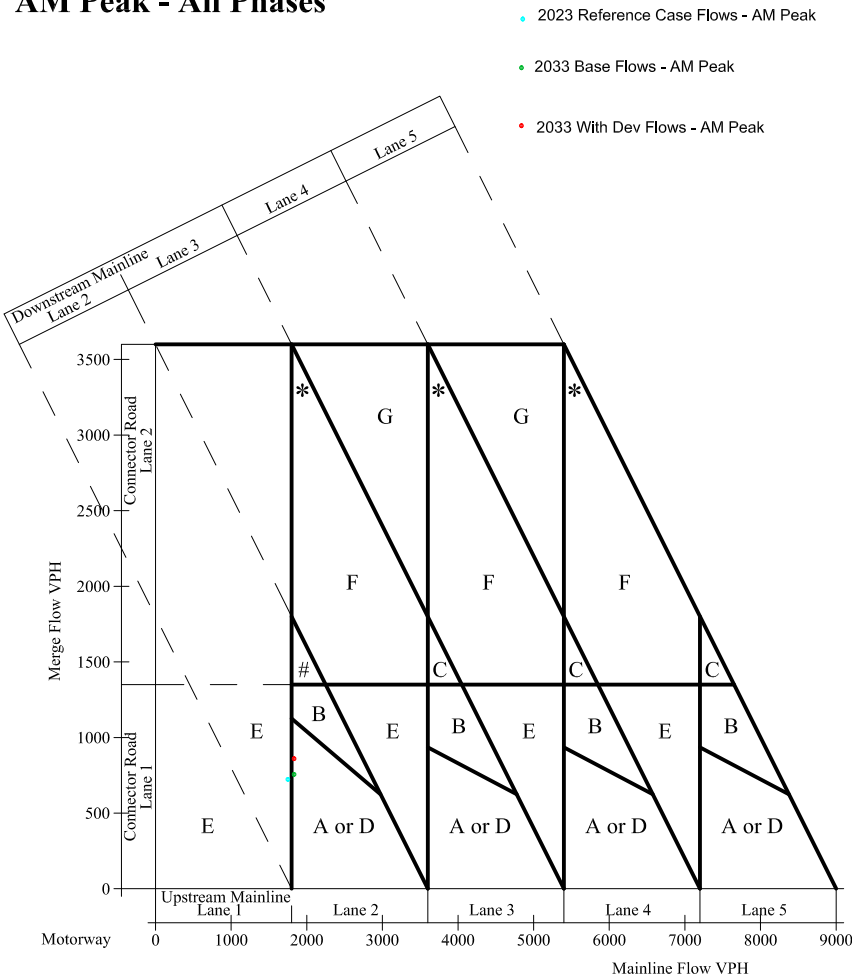


Notes:-
* If Layout D Option 2 is used consider Auxilliary Lane (see paragraph 4.24 of TD22/06).

Motorway Diverging Diagram

From TD22/06, Figure 2/3 MW

M4 Junction 16 - WESTBOUND MERGE
AM Peak - All Phases



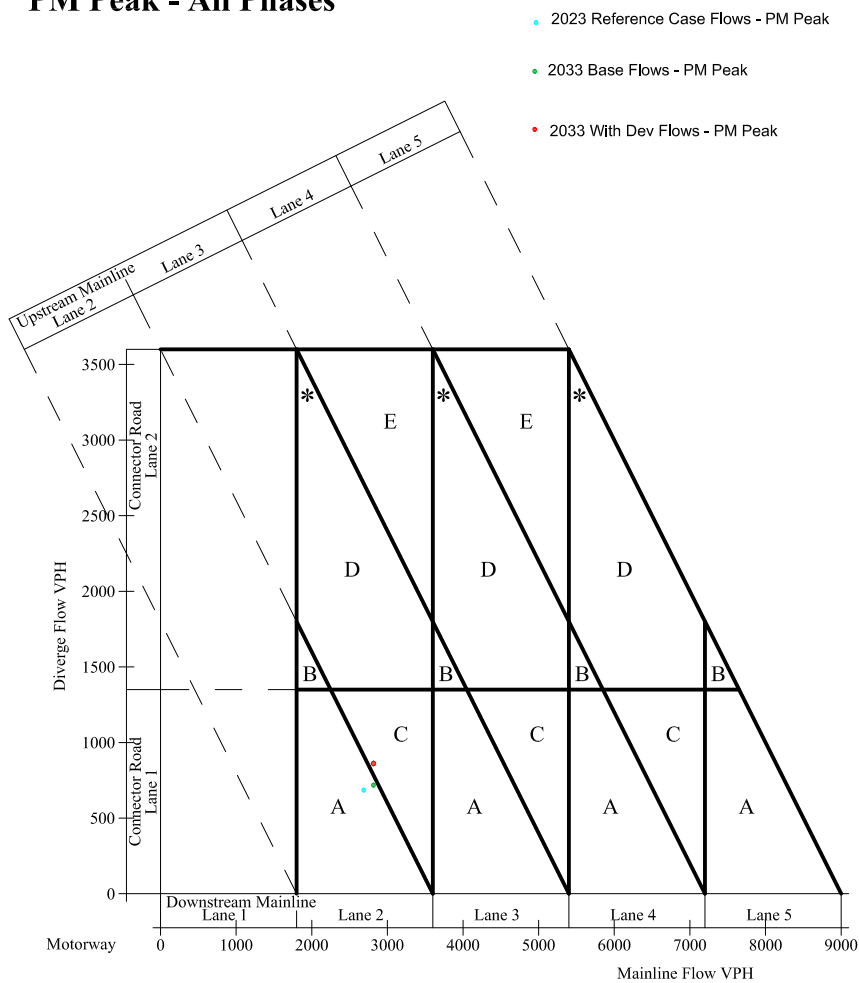
Notes:-

- * If Layout F Option 2 is used consider Auxilliary Lane (see paragraph 4.23 of TD22/06).
- # Area of uncertainty - In this area the choice will depend on the downstream provision. If there is a lane gain then use Layout E or F.

Motorway Merging Diagram

From TD22/06, Figure 2/5 MW

M4 Junction 16 - EASTBOUND DIVERGE
PM Peak - All Phases

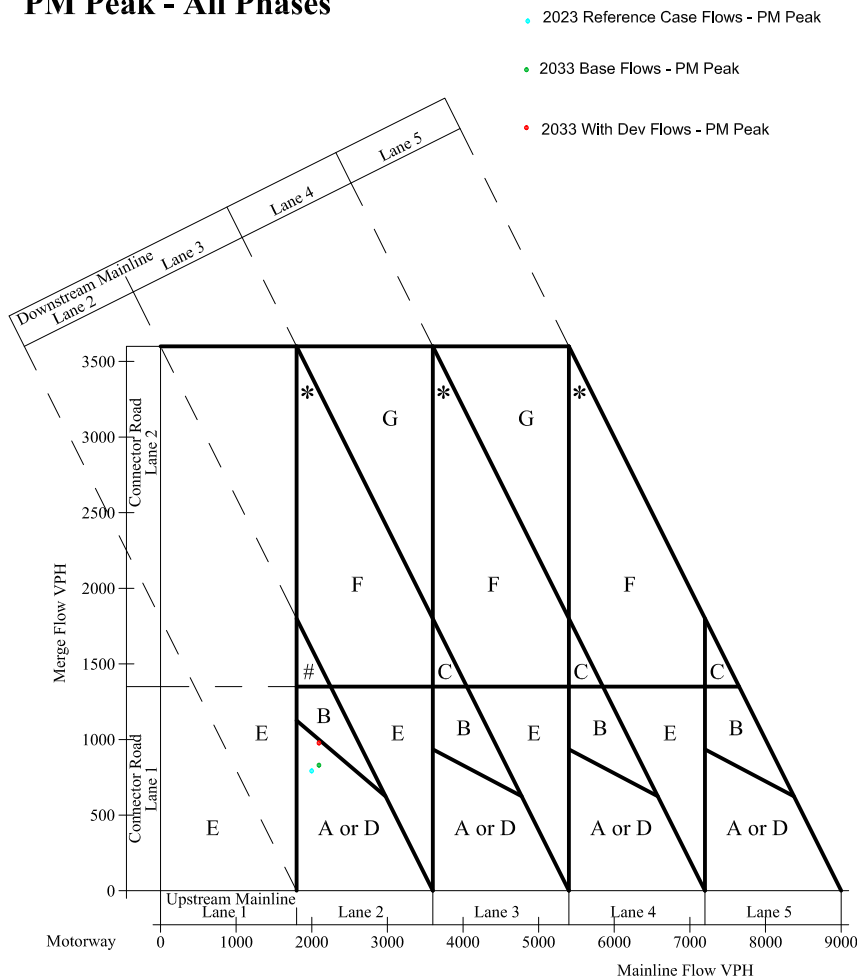


Notes:-
* If Layout D Option 2 is used consider Auxilliary Lane (see paragraph 4.24 of TD22/06).

Motorway Diverging Diagram

From TD22/06, Figure 2/3 MW

M4 Junction 16 - EASTBOUND MERGE
PM Peak - All Phases



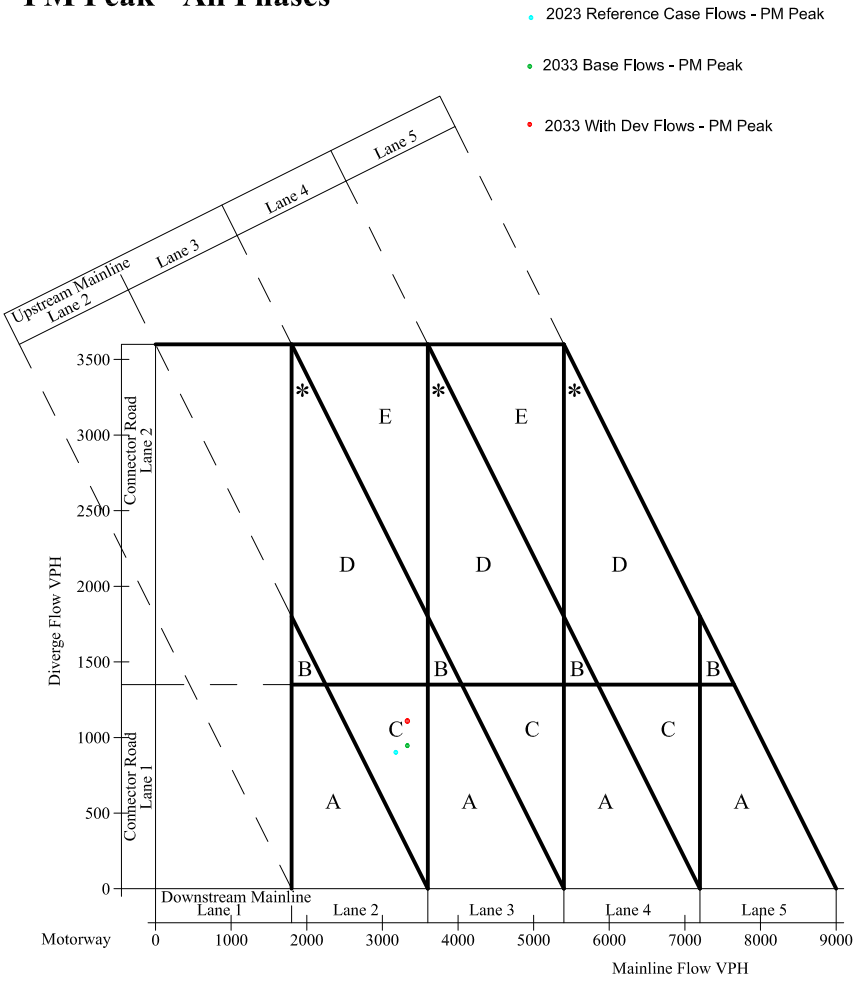
Notes:-

- * If Layout F Option 2 is used consider Auxilliary Lane (see paragraph 4.23 of TD22/06).
- # Area of uncertainty - In this area the choice will depend on the downstream provision. If there is a lane gain then use Layout E or F.

Motorway Merging Diagram

From TD22/06, Figure 2/5 MW

M4 Junction 16 - WESTBOUND DIVERGE
PM Peak - All Phases



Motorway Diverging Diagram

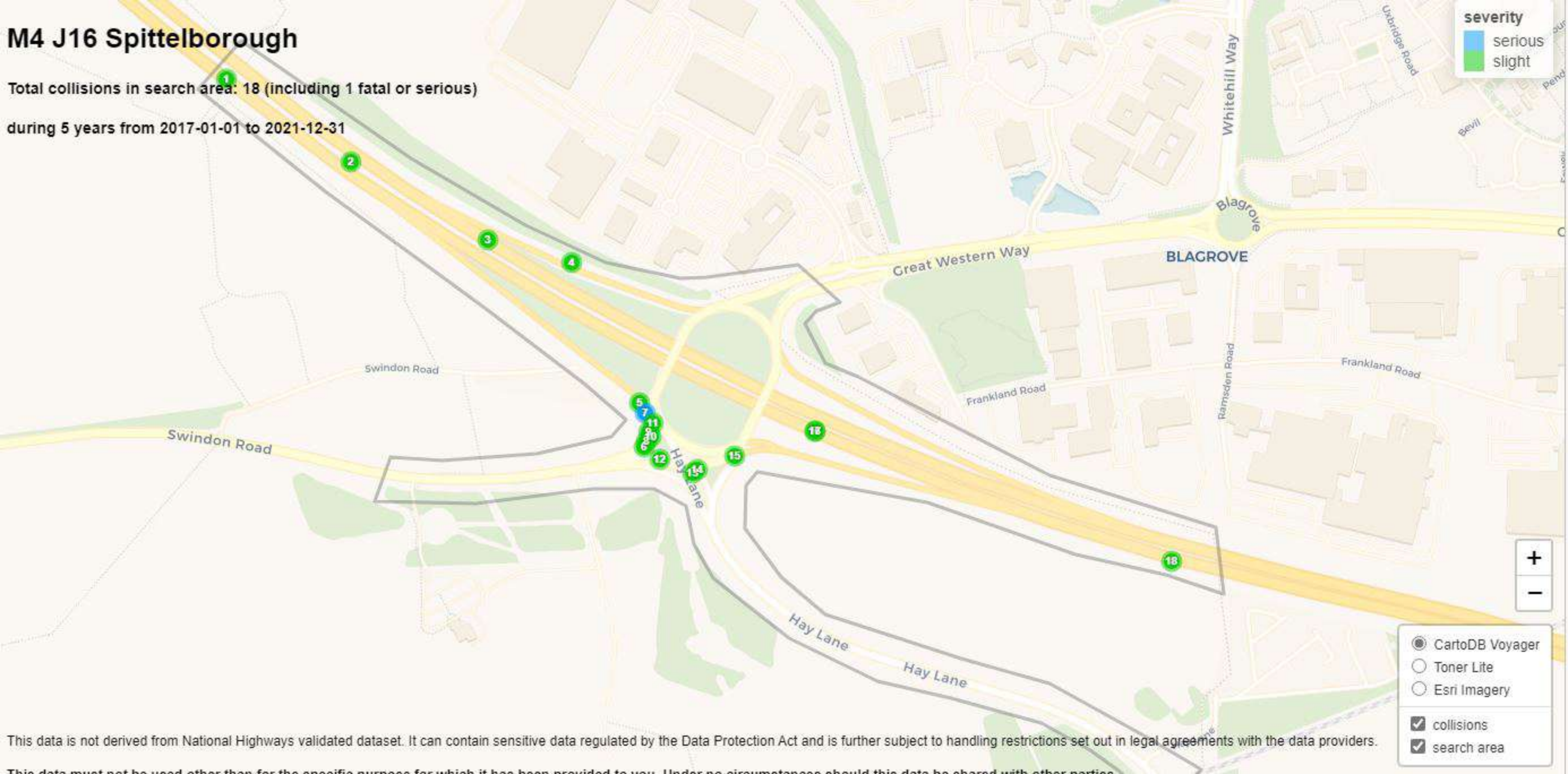
APPENDIX 10

Accident Data

M4 J16 Spittelborough

Total collisions in search area: 18 (including 1 fatal or serious)

during 5 years from 2017-01-01 to 2021-12-31



This data is not derived from National Highways validated dataset. It can contain sensitive data regulated by the Data Protection Act and is further subject to handling restrictions set out in legal agreements with the data providers.

This data must not be used other than for the specific purpose for which it has been provided to you. Under no circumstances should this data be shared with other parties.

Collision Summary Report

M4 J16 Spittelborough

Collisions between 01-01-2017 and 31-12-2021

Report Date: 13-06-2023

This data is not derived from National Highways validated dataset. It can contain sensitive data regulated by the Data Protection Act and is further subject to handling restrictions set out in legal agreements with the data providers.

This data must not be used other than for the specific purpose for which it has been provided to you. Under no circumstances should this data be shared with other parties.

Count of collisions by severity and year

year	fatal	serious	slight	Total
2017	0	0	4	4
2018	0	0	1	1
2019	0	1	3	4
2020	0	0	3	3
2021	0	0	6	6
Total	0	1	17	18

Count of collisions by month and year

year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2017	0	0	0	2	1	0	1	0	0	0	0	0	4
2018	0	0	0	0	0	0	0	0	0	0	0	1	1
2019	0	0	1	1	0	0	0	2	0	0	0	0	4
2020	1	0	1	0	0	1	0	0	0	0	0	0	3
2021	0	2	0	0	0	0	0	0	3	1	0	0	6
Total	1	2	2	3	1	1	1	2	3	1	0	1	18

Count of collisions by day and time

hourOfDay	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total
00:00	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	1	1
03:00	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	1	1
05:00	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0
07:00	0	0	0	0	1	0	0	1
08:00	0	0	1	0	0	0	1	2
09:00	0	0	0	0	0	0	0	0
10:00	0	0	1	0	0	0	0	1
11:00	0	0	0	0	0	1	0	1
12:00	0	0	0	0	0	0	0	0
13:00	0	0	0	0	1	0	0	1
14:00	0	1	0	0	1	0	0	2
15:00	0	0	1	0	0	0	0	1
16:00	0	1	1	0	0	0	1	3
17:00	1	0	0	0	0	1	0	2
18:00	0	0	0	0	0	0	0	0
19:00	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0
21:00	0	0	1	0	1	0	0	2
22:00	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0
Total	1	2	5	0	4	2	4	18

Count of collisions by junction detail

junctionDetail	collisions
not at junction	6
other junction	1
roundabout	11
Total	18

Count of collisions by junction control

junctionControl	collisions
auto traffic signal	10
give way or uncontrolled	2
not at junction	6
Total	18

Count of collisions by weather

weatherConditions	collisions
fine, without high winds	14
raining, with high winds	1
raining, without high winds	1
unknown	2
Total	18

Count of collisions by road surface

roadSurface	collisions
dry	16
wet or damp	2
Total	18

Count of collisions by light conditions

lightingConditions	collisions
daylight	11
dark, street lights lit	4
dark, street lights unlit	1
dark, no street lights	1
dark, street lighting unknown	1
Total	18

Collision Search

M4 J16 Spittelborough

Collisions between 01-01-2017 and 31-12-2021.

Collision descriptions and other vehicle and casualty attributes for individual collisions within search area.

Date of report: 13/06/2023

This data is not derived from National Highways validated dataset. It can contain sensitive data regulated by the Data Protection Act and is further subject to handling restrictions set out in legal agreements with the data providers.

This data must not be used other than for the specific purpose for which it has been provided to you. Under no circumstances should this data be shared with other parties.

For collision locations refer to plot number on collision plot.

plotNumber	refNumber	severity	day of week	date	time (24hr)
1	28864/17	slight	Saturday	01 Apr 2017	1113

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
70	not at junction	not at junction	dual car-riageway	daylight	fine, without high winds	dry	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	1	slight	driver/rider	male	29	not pas-senger	not ped.	not ped.	not ped.	other
2	2	slight	driver/rider	male	24	not pas-senger	not ped.	not ped.	not ped.	other
3	1	slight	passenger	male	31	front seat	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	car	going ahead	none	SE	NW	on main c'way	skidded and over-turned	not at	none	offside + crossed central res.	central vrs	male	29	-ve
2	car	going ahead	none	SE	NW	on main c'way	none	not at	none		none	male	24	-ve

V1 (CAR) TRAV NW. DVR OF V1 HAS FALLEN ASLEEP AT THE WHEEL & COLLIDED WITH REAR OF V2 (CAR) TRAV NW. V1 THEN SKIDDED INTO CENTRAL CRASH BARRIER, CAUSING V1 TO OVERTURN OVER BARRIER & COME TO REST IN LANE 2 OF E/BOUND C/WAY. KB

plotNumber	refNumber	severity	day of week	date	time (24hr)
2	77367/19	slight	Tuesday	06 Aug 2019	1638

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
70	not at junction	not at junction	dual carriageway	daylight	fine, without high winds	dry	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	1	slight	driver/rider	female	27	not passenger	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	van/goods (under 3.5t)	going ahead	none	NW	SE	on main c'way	none	not at	none	offside onto central res. + re-bounded	central vrs	female	27	-ve

V1 (VAN) TRAV SE LOST CONTROL, COLLIDED WITH C/RESERVATION O/S, REBOUNDED AND COLLIDED WITH CRASH BARRIER N/S. TN

plotNumber	refNumber	severity	day of week	date	time (24hr)
3	A1376/21	slight	Sunday	17 Oct 2021	249

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
70	other junction	give way or uncontrolled	dual carriageway	dark, street lighting unknown	unknown	dry	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	1	slight	driver/rider	female	31	not passenger	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	car	going ahead	none	W	E	on main c'way	none	leaving junction	none	nearside	near/offside vrs	female	31	+ve

V1(CAR) TRAV E. V1 HAS CHANGED DECISION TO LEAVE C/WAY AND HAS COLLIDED FRONT WITH SIDE CRASH BARRIER. V1 DRIVER INTOX. SMO

plotNumber	refNumber	severity	day of week	date	time (24hr)
4	36212/17	slight	Wednesday	26 Apr 2017	845

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
70	not at junction	not at junction	slip road	daylight	fine, without high winds	dry	none within ped phase at traffic signal junction0m	roadworks	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	2	slight	driver/rider	male	55	not passenger	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	van/goods (under 3.5t)	going ahead	none	NW	SE	on main c'way	none	not at	none	nearside	none	male	68	not provided (medical reasons)
2	van/goods (under 3.5t)	waiting to go	none	NW	SE	on main c'way	none	not at	none	nearside	none	male	55	-ve

V2 (VAN) TRAV SE STOPPED IN TRAFFIC. V1 (VAN) TRAV SE BEHIND V2. DVR OF V1 HAS SUFFERED A CARDIAC ARREST AT THE WHEEL & COLLIDED WITH REAR OF V2. V1 & V2 BOTH LEFT C/WAY N/SIDE. KB

plotNumber	refNumber	severity	day of week	date	time (24hr)
5	85925/19	slight	Friday	30 Aug 2019	1423

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
70	roundabout	auto traffic signal	slip road	daylight	unknown	dry	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	2	slight	driver/rider	male	20	not passenger	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	van/goods (under 3.5t)	moving off	none	SE	NW	on main c'way	none	leaving rbt	none		none	not known	data missing	driver not contacted
2	car	moving off	none	SE	NW	on main c'way	none	leaving rbt	none		none	male	20	not requested

V1 (VAN) TRAV NW, V2 (CAR) TRAV NW. V1 & V2 MOVED OFF AT LIGHTS, V1 COLLIDED N/S V2 & THEN DROVE OFF. TN

plotNumber	refNumber	severity	day of week	date	time (24hr)
6	08728/20	slight	Saturday	25 Jan 2020	1733

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
40	roundabout	auto traffic signal	roundabout	dark, street lights lit	fine, without high winds	dry	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	1	slight	passenger	female	84	front seat	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	car	going ahead	none	SW	NE	on main c'way	none	approach junction	none		none	male	80	-ve
2	car	waiting to go	none	SW	NE	on main c'way	none	approaching junction	none		none	male	57	-ve
2	car	waiting to go	none	SW	NE	on main c'way	none	approach junction	none		none	male	57	-ve
1	car	going ahead	none	SW	NE	on main c'way	none	approaching junction	none		none	male	80	-ve

V1 (CAR) TRAV NE BEHIND V2 (CAR) TRAV NE. V2 SLOWED FOR TRAFFIC LIGHTS, V1 COLLIDED REAR V2. TN

plotNumber	refNumber	severity	day of week	date	time (24hr)
7	39979/19	serious	Friday	26 Apr 2019	1312

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
40	roundabout	auto traffic signal	roundabout	daylight	raining, with high winds	wet or damp	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	2	serious	driver/rider	female	45	not passenger	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	car	turning right	none	S	NE	on main c'way	none	leaving rbt	none		none	male	76	-ve
2	car	turning left	none	S	NW	on main c'way	none	leaving rbt	none		none	female	45	-ve

V1 (CAR) TRAV NE, V2 (CAR) TRAV NW. V1 & V2 MOVED OFF AT LIGHTS IN WRONG LANES, V1 COLLIDED N/S V2. TN

plotNumber	refNumber	severity	day of week	date	time (24hr)
8	92456/21	slight	Wednesday	22 Sep 2021	1030

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
40	roundabout	auto traffic signal	roundabout	daylight	fine, without high winds	dry	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	2	slight	driver/rider	female	24	not passenger	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	goods (3.5t to 7.5t)	moving off	none	SW	N	on main c'way	none	approach junction	none		none	male	52	not requested
2	car	waiting to go	none	SW	N	on main c'way	none	approaching junction	none		none	female	24	not requested

V1(LORRY) TRAV N. V2(CAR) TRAV N. V2 HAS STOPPED AT TRAFFIC LIGHTS. V1 HAS FAILED TO NOTICE AND COLLIDED FRONT WITH V2 REAR. SMO

plotNumber	refNumber	severity	day of week	date	time (24hr)
9	30405/20	slight	Friday	27 Mar 2020	718

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
40	roundabout	auto traffic signal	roundabout	daylight	fine, without high winds	dry	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	2	slight	driver/rider	male	31	not passenger	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	car	reversing	none	N	W	on main c'way	none	leaving rbt	none		central vrs	male	27	-ve
2	car	reversing	none	SW	E	on main c'way	none	mid junction	none		central vrs	male	31	-ve
2	car	reversing	none	SW	E	on main c'way	none	mid junction	none		central vrs	male	31	-ve
1	car	reversing	none	N	W	on main c'way	none	leaving rbt	none		central vrs	male	27	-ve

V1 (CAR) TRAV N. V2 (CAR) TRAV E. V1 TAKES R/BOUT TO GET ONTO M4. V1 RUNS RED LIGHT & COLLIDES O/S OF V2. JT.

plotNumber	refNumber	severity	day of week	date	time (24hr)
10	90080/21	slight	Wednesday	15 Sep 2021	1506

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
40	roundabout	auto traffic signal	roundabout	daylight	fine, without high winds	dry	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	2	slight	driver/rider	male	56	not passenger	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	car	going ahead	none	E	W	on main c'way	none	mid junction	none		none	male	67	driver not contacted
2	car	moving off	none	SW	N	on main c'way	none	mid junction	none		none	male	56	not requested

V1(CAR) TRAV W. V2(CAR) TRAV N. V1 HAS DISOBEYED RED TRAFFIC LIGHT CAUSING V2 TO COLLIDE FRONT WITH V1 N/S. V1 FTS. SMO

plotNumber	refNumber	severity	day of week	date	time (24hr)
11	90667/21	slight	Wednesday	15 Sep 2021	2125

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
30	roundabout	auto traffic signal	roundabout	dark, street lights lit	fine, without high winds	dry	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	2	slight	driver/rider	female	58	not passenger	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	car	going ahead	none	E	N	on main c'way	none	mid junction	none		none	male	30	not requested
2	car	moving off	none	SW	N	on main c'way	none	mid junction	central island of roundabout		none	female	58	not requested

V1(CAR) TRAV N. V2(CAR) TRAV N. V2 HAS ENTERED RBT ON GREEN LIGHT AND V1 HAS COLLIDED FRONT WITH V2 O/S CAUSING V2 TO SPIN AND IMPACT CRASH BARRIER. SMO

plotNumber	refNumber	severity	day of week	date	time (24hr)
12	39458/17	slight	Friday	05 May 2017	2113

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
60	roundabout	auto traffic signal	roundabout	dark, street lights lit	fine, without high winds	dry	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	2	slight	driver/rider	female	54	not passenger	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	car	turning left	none	E	W	on main c'way	none	leaving rbt	none		none	male	31	-ve
2	car	going ahead	none	E	N	on main c'way	none	mid junction	none	nearside	none	female	54	-ve
3	car	waiting to go	none	SW	NE	on main c'way	none	approach junction	none		none	male	54	-ve
4	car	going ahead	none	E	N	on main c'way	none	mid junction	none		none	male	34	-ve

V2 & V4 (CARS) TRAV NW ON RBT IN LH LN. V4 BEHIND V2. V1 (CAR) TRAV NW IN MIDDLE LN. V1 CUT ACROSS FRONT OF V2 TO LEAVE RBT, HITTING FRONT OF V2. V2 WAS PUSHED BACK INTO FRONT OF V4. V2 THEN LEFT RD ACROSS ISLAND & BACK INTO C/WAY, HITTING V3 (CAR) TRAV NE. KB

plotNumber	refNumber	severity	day of week	date	time (24hr)
13	B6951/18	slight	Monday	10 Dec 2018	1742

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
60	roundabout	auto traffic signal	roundabout	dark, street lights lit	fine, without high winds	dry	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	1	slight	driver/rider	female	20	not passenger	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	motorcycle (over 500cc)	moving off	none	NE	NW	on main c'way	none	mid junction	none		none	female	20	-ve
2	car	going ahead	none	SE	N	on main c'way	none	mid junction	none		none	male	44	-ve

V1 (M/CYCLE) TRAV N, V2 (CAR) TRAV N. V1 HAS LOOKED AT WRONG TRAFF LIGHT AND THOUGHT SHE HAD THE GREEN LIGHT AND MOVED OFF. V2 HAS COLLIDED INTO V1. IW

plotNumber	refNumber	severity	day of week	date	time (24hr)
14	14871/21	slight	Sunday	14 Feb 2021	1657

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
40	roundabout	give way or uncontrolled	roundabout	dark, street lights unlit	raining, without high winds	wet or damp	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	2	slight	driver/rider	female	53	not passenger	not ped.	not ped.	not ped.	other
2	1	slight	driver/rider	male	42	not passenger	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	car	going ahead	none	E	W	on main c'way	none	mid junction	none		none	male	42	-ve
2	car	turning right	none	S	N	on main c'way	none	leaving junction	none		none	female	53	not requested

V2(CAR) TRAV W. V1(CAR) TRAV N. V2 CROSSING JCT WHERE TRAFFIC LIGHTS AND STREET LIGHTS NOT FUNCTIONING. V1 COLLIDED FRONT WITH V2 N/S MID-JCT. SMO

plotNumber	refNumber	severity	day of week	date	time (24hr)
15	56512/20	slight	Sunday	14 Jun 2020	802

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
40	roundabout	auto traffic signal	roundabout	daylight	fine, without high winds	dry	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	2	slight	driver/rider	female	28	not passenger	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	car	going ahead	none	N	SW	on main c'way	none	mid junction	none		none	male	42	-ve
2	pedal cycle	going ahead	none	E	SW	on main c'way	none	mid junction	none		none	female	28	N/A
1	car	going ahead	none	N	SW	on main c'way	none	mid junction	none		none	male	42	-ve
2	pedal cycle	going ahead	none	E	SW	on main c'way	none	mid junction	none		none	female	28	N/A

V1 (CAR) TRAV SW. V2 (CYCLE) TRAV SW. V1 GOES THROUGH TRAFFIC LIGHTS TO BEAT THE GREEN LIGHT AND COLLIDES REAR V2. JT.

plotNumber	refNumber	severity	day of week	date	time (24hr)
16	30146/19	slight	Wednesday	27 Mar 2019	1645

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
70	not at junction	not at junction	dual carriageway	daylight	fine, without high winds	dry	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	2	slight	driver/rider	female	22	not passenger	not ped.	not ped.	not ped.	other
2	1	slight	passenger	female	25	front seat	not ped.	not ped.	not ped.	other
3	1	slight	passenger	female	52	rear seat	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	car	going ahead	none	SE	NW	on main c'way	skidded	not at	none		none	male	24	-ve
2	car	slowing/stopping	none	SE	NW	on main c'way	none	not at	none		none	female	22	-ve

V1 (CAR) TRAV NW, V2 (CAR) TRAV NW. V2 BRAKED DUE TO TRAFFICE, V1 COLLIDED REAR V2. TN

plotNumber	refNumber	severity	day of week	date	time (24hr)
17	14734/21	slight	Sunday	14 Feb 2021	437

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
70	not at junction	not at junction	dual carriageway	dark, no street lights	fine, without high winds	dry	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	1	slight	driver/rider	male	44	not passenger	not ped.	not ped.	not ped.	other
2	2	slight	driver/rider	male	40	not passenger	not ped.	not ped.	not ped.	other
3	2	slight	passenger	male	40	front seat	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	car	going ahead	none	SE	NW	on main c'way	none	not at	none		none	male	44	not requested
2	car	going ahead	none	SE	NW	on main c'way	none	not at	none	nearside	none	male	40	not requested

V1 (CAR) TRAV NW. V2 (CAR) TRAV NW. V1 HAS COLLIDED W/ REAR V2. JT.

plotNumber	refNumber	severity	day of week	date	time (24hr)
18	60244/17	slight	Tuesday	04 Jul 2017	1430

speed limit	junction?	junction control?	road type	lighting	weather	road surface	ped. crossing facility?	special conditions	carriageway hazards
70	not at junction	not at junction	dual carriageway	daylight	fine, without high winds	dry	none within ped phase at traffic signal junction0m	none	none

casualty number	vehicle number	casualty severity	casualty class	sex	age	passenger	ped. direction	ped. movement	ped. location	school pupil?
1	4	slight	driver/rider	male	57	not passenger	not ped.	not ped.	not ped.	other
2	2	slight	driver/rider	male	50	not passenger	not ped.	not ped.	not ped.	other

vehicle number	vehicle type	manoeuvre	towing?	from	to	vehicle location	skid?	junction location	hit object in c'way	vehicle left c'way?	hit object off c'way	sex	age	breath test result
1	goods (over 7.5t)	going ahead	articulated	SE	NW	on main c'way	none	not at	none		none	male	43	-ve
2	car	waiting to go	none	SE	NW	on main c'way	none	not at	none		none	male	50	-ve
3	minibus	waiting to go	none	SE	NW	on main c'way	none	not at	none	nearside	none	male	51	-ve
4	car	waiting to go	none	SE	NW	on main c'way	none	not at	none	nearside	none	male	57	-ve
5	car	waiting to go	none	SE	NW	on main c'way	none	not at	none	nearside	none	male	34	-ve
6	car	waiting to go	none	SE	NW	on main c'way	none	not at	none		none	male	60	-ve

V2,V3,V4,V5 & V6 (CARS) TRAV NW IN STATIONARY TRAFFIC. V1 (LORRY) TRAV NW BEHIND V2 FAILED TO SLOW & HIT REAR OF V2, PUSHING V2 INTO V3 WHICH CAUSED V3 TO HIT REAR OF V6 & V5. V5 HIT REAR OF V4. V3, V4 & V5 ALL LEFT C/WAY N/SIDE ONTO HARD SHOULDER. KB

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