St.Helens Council

This Study was commissioned by St Helens Borough Council in partnership with Highways England and Wigan Council as the first stage in considering options for junction improvements at Junction 23 of the M6. It does not represent Council policy. It is part of a visioning and options testing process.

.

ST. HELENS COUNCIL

M6 JUNCTION 23 HAYDOCK ISLAND

Capacity Feasibility Study

Revision A

JUNE 2019

CONFIDENTIAL

ST. HELENS COUNCIL

M6 JUNCTION 23 HAYDOCK ISLAND

CAPACITY FEASIBILITY STUDY

Revision A

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70044810

DATE: JUNE 2019

WSP

1st Floor, Exchange Station,
Tithebarn Street,
Liverpool
L2 2QP

Phone: +44 151 331 8100

WSP.com

QUALITY CONTROL

Issue/revision	Original	Revision A	
Remarks	First Issue	Second Issue	
Date	29th January 2019	14th June 2019	
Prepared by	Rory Lingham	Martin Boardman	
Signature	RL	MB	
Date	11/2/19	14/6/19	
Checked by	Nick Green	Nick Green	
Signature	NG	NG	
Date	12/2/19	14/6/19	
Authorised by	Tony Gordon	Tony Gordon	
Signature	TG	TG	
Date	13/02/19	14/6/19	
Project number	70044810	70044810	

CONTENTS

APPENDICES

1

THE COMMISSION

1. THE COMMISSION

Through the Lot 1: PSC1 Civil Engineering Consultancy Services 2017-2021 Framework, WSP has been commissioned by St Helens Council, in partnership with Highways England and Wigan Council (known as the J23 Steering Group in this report), to undertake a junction improvement study of The M6 Junction 23 (Haydock Island) (M6 J23). The study will advise the preparation of the St. Helens Local Plan 2018-2033 (including the Infrastructure Delivery Plan) and may ultimately lead to the development of a future major transport scheme with the partner organisations.

This study forms part two of the five-stage M6 J23 Improvement Programme (as identified in the Project Brief) and examines the existing issues at the junction and produces preliminary design options for improvements. The scheme types were identified in a workshop attended by the partner organisations in 2017 and these have been identified in the Brief:

- Scheme Type 1: Improvements that could be carried out on Junction 23 itself to provide additional capacity such as additional lanes;
- Scheme Type 2: Improvements or relatively minor new infrastructure on the Liverpool City Region Key Route Network and Local Road Network in St Helens and Wigan within approximately 2 miles of the junction, that may remove existing local traffic from the junction;
- Scheme Type 3: Major new infrastructure on the roads at and approaching the junction to provide free-flow slip roads and/or grade separated flows.

This study uses the traffic demand forecasts from the St Helens SATURN Model, as well as the modelling support provided by Highways England through their LINSIG model of M6 J23. This study will ultimately provide the evidence case for the J23 Steering Group to obtain funding for the detailed design stage of the project.

The following project methodology was developed based on the information provided in the brief and subsequent discussions with the J23 Steering Group:

- Evaluate existing documents, consider forecast traffic demands, undertake a traffic survey and visit the site to identify the current issues at the junction;
- From this information, multiple conceptual options would be developed for improving capacity and reducing congestion at the junction. The options would deliberately vary in scale, programme and ambition in line with the three core scheme types identified in the brief;
- In accordance with the requirements of the brief, “a review of opportunities for alternative improvements around active travel or public transport to address transport demand at this location” would be undertaken;
- A design workshop would be hosted by WSP to present the conceptual options to the relevant stakeholders and to rank them based on several criteria including traffic and safety benefits, outline costs and buildability;
- The outcome of the workshop would be presented to all stakeholders in the format of an interim report;
- Progress meetings would be held with the client organisations to confirm which options would be further developed;

- The short-listed design options would be modelled and a design options appraisal would be undertaken. This would include a consideration of cost, programme and an assessment of the benefits and drawbacks of each option;
- A final report would be prepared, providing details of the final options and an identified programme for the next stages to provide the evidence case for Stage 3 of the project to be funded.

This commission also includes a ‘review of opportunities for alternative improvements around active travel or public transport to address transport demand at this location’ as outlined in Task 4 of the brief.

2

BACKGROUND AND CONTEXT

2. BACKGROUND AND CONTEXT

2.1. The Junction in its Regional Context

The M6 Junction 23, is a strategically important, all movement junction connecting the A580 (East Lancashire Road) and A49 (Lodge Lane) with the M6. Both the A580 and A49 were formerly Trunk Roads with responsibility for their management and maintenance resting with the Highways Agency. Within the St Helens area, this responsibility now has transferred to the local Highway Authority, St Helens Council.

The A580 acts as a Primary Distributor linking Manchester with Liverpool and connects several other major towns in the region including Salford, Leigh, St Helens and Knowsley. The road also acts as a District Distributor, providing access from many industrial and distribution sites to the Strategic Route Network (SRN), the M6. Additionally, the A580 provides the link between the local highway network in St Helens and the M6.

The A49 is no longer on the Primary Route Network but nonetheless is included on the Key Route Network (as is the A580) within the Liverpool City Region Combined Authority.

2.2. Programme of Previous Highways Improvements at the Junction

The A580 was the UK's first specifically designed inter urban road and opened in 1934. It comprised of a 30 feet wide single carriageway, marked out as 3 lanes. It was widened to dual carriageway standard in the 1960s and the "cut through" beneath the M6 was constructed in the 1970s.

Minor improvements at the M6/A580 junction were subsequently carried out including widening of the "off" slip roads from the motorway and provision of measures for cycling and pedestrians.

Although the A580 was de-trunked in 2004, the Highways Agency elected to retain responsibility for the gyratory section, for 200m of the approaches to the junction on the A580 and for the traffic signals at the junction.

Despite these improvements, congestion at the junction continued to increase. Due to continued requests for improvement from local businesses, St Helens Council and Haydock Park Racecourse, a scheme was promoted by the Highways Agency for inclusion in their national "Pinch Point" Programme. This "Pinch-Point" scheme was constructed during 2014/15 and comprised:

a) Widening of the A580 "cut-through" beneath the motorway to provide two straight-ahead and two right-turning lanes in both directions.

b) Widening of the "off" slip roads from the M6 to give increased capacity

c) Minor widening of the carriageway within the junction to improve capacity and traffic circulation.

Although the "Pinch Point" Scheme gave some improvement to the operational performance and reduced congestion at the junction, the M6 J23 still experiences significant congestion during peak traffic times and when race meetings are held at Haydock Park. It is considered essential that the junction's capacity is improved to manage the existing traffic flows and to facilitate the projected development growth anticipated in the area.

2.3. Development Proposals Affecting the Junction

The St Helens Draft Local Plan Preferred Options was published in December 2016. This was subject to consultation and amendment and the St Helens Local Plan Submission Draft version was approved by Cabinet on 12th December 2018 and full Council on 19th December 2018. Within the Plan, potential development sites are identified together with their impact on the highway network.

Several of the development sites would generate considerable traffic flows which would affect M6 J23 and these sites are included in Appendix A.

3

EXISTING JUNCTION

3. EXISTING JUNCTION

3.1. Personal Injury Accident Data

The accident data includes J23 and the approach roads up to 60m from the junction. The 5-year data has been split into two groups - accidents before the "Pinch-Point" scheme improvements (2013-14) and accidents after (2015-17). Splitting the data into these two groups helps to identify whether the "Pinch-Point" scheme has reduced accidents. A sketch summarising this data is provided in Appendix B.

Table 3-1 – Five-Year Accident Data (2013-2017)

Accident Type	Before Pinch Point Scheme (2013-14)	After Pinch Point Scheme (2015-17)	Overall (2013-17)
Failed to stop at red light	19	13	32
Shunting	5	5	10
Side swipe	1	3	4
Mid-junction collisions	1	3	4
Loss of control	2		2
Rolling back while stopped at lights		1	1
Vehicle short cut through garage	1		1
Total	29	25	54
Average per year	**14.5**	**8.33**	**10.8**

Table 3-2 – Accident Data Vehicle Types

Types of Vehicles Involved in Accidents	Number of Vehicles
Cars	97
Van/Goods Vehicles	16
Motorbikes	2
Pedal Bikes	1
Other/Not Specified	1

Out of the 54 accidents in the five-year period, 8 resulted in serious injury and 46 resulted in slight injury. There were two main clusters of accidents, at the eastbound and westbound approaches and exits on A580.

Of the 25 accidents since the pinch point scheme (2015-17), 3 resulted in serious injury and 22 resulted in slight injury. The main concentrations of accidents are located on the east side of the junction with traffic travelling eastbound. Following the improvement works, accidents that result from a "failure to stop at red light" have reduced on both the eastbound and westbound approaches to J23. It should be noted that "failure to stop at red light" was by far the most frequent cause of an accident, accounting for 65% and 52% of all accidents, before and after the implementation of the "Pinch-Point" scheme, respectively. The figures indicate that traffic signal cameras may be justified for installation at the junction to ensure better compliance with signals.

There was one fatal accident in the area (not included in these results) approximately 400 metres east of the junction turning right on to East Lancashire Road from the farm track cutting across the westbound lane of the East Lancashire Road.

During 2013 and 2014 there were 29 personal injury accidents (14.5 per year) compared to 25 Personal Injury Accidents (8.33 per year) between 2015-17. This indicates that the accident rate has decreased by approximately 40% since the completion of the "Pinch Point" scheme. However, the accident rate is still very high and the junction has the worst accident rate in St Helens and one of the worst in Merseyside. The junction would justify inclusion as an Accident Investigation and Prevention scheme.

3.2. Traffic Survey

Traffic surveys were undertaken at M6 J23 in 2018 to provide data for local junction models and to enable a better understanding of the performance of the junction under typical conditions.

The traffic surveys conducted included:

- Turning count surveys
- Queue length surveys
- Journey time surveys
- Drone surveys

The surveys recorded at the junction were conducted in Summer and Autumn in July, September and November 2018 respectively. 12-hour traffic flows recorded during the Summer survey are shown in Tables 3-1. Peak hour turning movements are provided in Table 3-2.

Table 3-1 – 12-Hour Traffic Volumes at M6 Junction 23 (Vehicles)

Arm	Name	Total Inbound	Total Outbound
A	M6 Junction 23 (N)	5,406	6,840
B	A49 Lodge Lane (N)	4,989	2,843
C	A580 East Lancashire Road (E)	9,617	8,490
D	M6 Junction 23 (S)	5,391	8,311
E	A49 Lodge Lane (S)	3,932	3,582
F	A580 East Lancashire Road (W)	8,064	7,471
G	Shell Petrol Station	839	701
Total		**38,238**	**38,238**

Table 3-2 – Observed Peak Hour Turning Volumes

AM Peak Hour (08:00-09:00) Survey Flows (vehicles)							
	M6 North	A49 North	A580 East	M6 South	A49 South	A580 West	Petrol Station
M6 North	5	202	790	5	178	22	3
A49 North	11	1	194	249	57	11	1
A580 East	425	136	2	205	78	581	18
M6 South	4	211	154	1	116	445	11
A49 South	180	56	47	43	0	141	11
A580 West	49	118	577	424	103	1	0
Petrol Station	41	23	30	51	14	2	0
PM Peak Hour (17:00-18:00) Survey Flows (vehicles)							
	M6 North	A49 North	A580 East	M6 South	A49 South	A580 West	Petrol Station
M6 North	1	117	859	5	284	112	2
A49 North	37	0	228	295	63	29	1
A580 East	503	104	5	166	64	654	14
M6 South	6	383	336	1	89	873	14
A49 South	227	113	70	46	0	243	7
A580 West	58	107	596	295	94	0	0
Petrol Station	33	23	27	31	6	3	0

Full details on the traffic surveys can be found in Appendix C.

3.3. Site Visit

A site visit was held on 30th May 2018 and attended by representatives from the J23 Steering Group and WSP. The purpose of the site visit was to review the operational performance of the junction (to consider how issues identified in sections 6.1 and 6.3 of the Brief, identified above, could be progressed). The site visit also aimed to identify improvements for relatively minor new infrastructure on the Liverpool City Region Key Route Network that may remove existing local traffic from the junction (in accordance with Section 6.2 of the Brief) to reduce traffic congestion at M6 J23. The notes from this site visit can be found in Appendix D.

3.4. Constraints for Future Improvement Schemes

The existing junction is constrained on all sides by privately owned land, which limits the extent of improvement which can be carried out without recourse to purchasing additional land. Built development occurs in the north-west quadrant and comprises (progressing north west from the junction), a petrol filling station, a hotel and industrial buildings.

In the north-west quadrant, the highway boundary runs immediately alongside a petrol filling station and any moving over of the highway boundary by more than 3m would involve acquisition of at least some of the land from within the site. It is possible that a modest encroachment (say 3m) into the site would not impact on the operation of the site but anything more may well render the site as not being viable.

A proposed improvement scheme requiring land beyond the petrol filling station would affect the hotel and several industrial units. Costs of acquisition of any of these units would be high and design of any improvement scheme would try to exclude any of these units.

In the north-east quadrant, land has been identified in the St Helens Draft Local Plan Preferred Options as being "Safeguarded Employment Land (removed from Green Belt)". Improvement schemes being considered include the diversion of A49 Lodge Lane on the north and south sides of the junction. The diversion of the A49 Lodge on the north side of the junction would need to pass through this land but this diversion could also function as an access road servicing the site and enabling any development to connect with the A580. At present it is difficult to envisage how traffic from this development site could connect satisfactorily with the A49 and A580.

In the south-east and south-west quadrants, the land has been identified in the St Helens Draft Local Plan Preferred Options as being "Greenbelt". There may be development aspirations for these areas in the medium term and any proposed highway improvements would have to consider how to minimise the impacts on any development proposals.

4

DESIGN WORKSHOP – OPTIONS AND DISCUSSION

4. DESIGN WORKSHOP – OPTIONS AND DISCUSSION

Following the site visit, draft scheme designs were drawn up and discussed with the clients at the subsequent progress meetings. These scheme designs were further developed and led to WSP producing eight major draft scheme proposals for presentation and evaluation at the Workshop. An additional three options were also presented on the day by other stakeholders.

On 18th July 2018, the design workshop was hosted by WSP and attended by representatives from St Helens Council, Highways England, Wigan Council, Merseytravel and the Highways England Area 10 contractor. The workshop commenced with a presentation on the background and objectives of the scheme as well as details about the model inputs for the study and the forecast demands at the junction. The existing issues at the junction were then discussed based on the site visit, the traffic survey information and anecdotal feedback from users. The eleven conceptual design options, of varying scale and ambition, were then presented and discussed. These options aimed to cover the three core scheme types identified in the 2017 workshop undertaken by the partner organisations:

- Scheme Type 1: Improvements that could be carried out on Junction 23 itself to provide additional capacity such as additional lanes;
- Scheme Type 2: Improvements or relatively minor new infrastructure on the Liverpool City Region Key Route Network and Local Road Network in St Helens and Wigan within approximately 2 miles of the junction that may remove existing local traffic from the junction;
- Scheme Type 3: Major new infrastructure on the roads at and approaching the junction to provide free-flow slip roads and/or grade separated flows.

The workshop report can be in Appendix E which includes sketches, details and discussion on each of the proposed options.

4.1. Option 1 – Free Flow Links to/from M6

The M6 off-slip roads contribute a large volume of traffic into the circulatory carriageway, causing congestion particularly during peak times with traffic backing up and blocking traffic lanes on M6. This Type 3 Option proposes “free flow links” between the A580 and the M6 on some or all the junction’s quadrants.

The main beneficiaries of the “free flow” links are - M6 southbound to A580 eastbound and M6 northbound to A580 westbound. Both links are restricted by A49 Lodge Lane and would have to be grade-separated above the A49 or alternatively the A49 would have to be diverted away from the roundabout. See Option 2. Land take outside highway boundary would be required.

4.2. Option 2 – Diversion of A49 Lodge Lane

This Type 3 Option diverts Lodge Lane away from the junction, connecting with A580 through two new separate signal controlled junctions. See Section 7 for more details.

4.3. Option 3 – Combine M6 Slip Roads with A49, Remote from the Junction

To reduce conflicts and to provide greater capacity on the gyratory where the M6 slip roads and A49 Lodge Lane join, this Type 3 Option would combine both these roads at new junctions remote from the gyratory. New link roads would be constructed to take traffic from these junctions to the gyratory where traffic would join through a single point of entry. This would remove entry points onto the gyratory, reducing the complexity of the junction and increase stacking space.

Works to the M6 mainline would be required moving the point of bifurcation between the motorway slip road and the M6 mainline further away from J23 and this could include extending existing structures, both north and south of the junction.

4.4. Option 4 – Junction 24 Improvement: Providing South-Facing Slips

M6 Junction 24 connects the motorway with A58 Liverpool Road. The junction has north facing slip roads only and traffic cannot leave the M6 northbound, nor join the M6 southbound. Traffic wanting to make these manoeuvres must use either A49 Lodge Lane / M6 J23 or use the M6 J25. This Type 2 Option would construct south-facing slip roads on the southern side of junction 24.

This scheme requires land on the south side of the junction and impacts severely on properties in the south-east corner of the junction. Land from the adjacent golf course would also be needed. Detailed traffic surveys would be required to determine the benefit, but it is likely to be a poor value scheme due to the high land acquisition costs.

4.5. Option 5 – Widening and Extension of Lanes beneath the M6 Overbridge

The full capacity of the straight-ahead and right-turn lanes in the centre of the roundabout is not being fully utilised due to lane blockages and tight vehicle manoeuvres. This is particularly evident when HGVs make right-turn manoeuvres from the A580 towards the M6 because the tight geometrical layout requires HGVs to queue in the left-hand lane (of the two right-turning lanes) to make this turn. The tailback of traffic in this left-hand lane, blocks vehicles from entering the right-hand lane, causing a queue of vehicles across the gyratory and approach lanes.

This Type 1 Option would increase capacity through the centre of the gyratory, by providing four lanes of traffic through the junction (two straight-ahead and two right-turning) and would also provide four lanes on both A580 approaches to the roundabout. The scheme would be relatively low cost, would not cause major disruption during construction, not require any land nor require any major diversion or alteration of traffic signals, statutory undertakers' apparatus or drainage. However, the scheme does not address the congestion and traffic conflicts caused by the M6 slip roads and A49 Lodge lane all converging on the roundabout in close proximity to each other.

This option represents an incremental improvement to the junction by improving the alignment, and additional traffic capacity for the predominant vehicle movements at the junction – straight-ahead along the A580 and for right-turns onto the M6.

4.6. Option 6 – Relocation of Straight-Ahead Lanes and Realignment of Right-Turn Lanes

This Type 1 Option improves traffic flows through the centre of the roundabout by separating and realigning the straight-ahead and right-turn lanes on both carriageways of the A580. See Section 8 for further details.

4.7. Option 7 – Extension of Roundabout

This Type 1 Option is an extension of Option 6, using the available space between the M6 bridge supports to segregate flows. Option 7 extends the circulatory carriageway to the east and/or west to increase the capacity and improve stacking around the A49 Lodge Lane arms. Alignment of the right-turn manoeuvre from the A580 onto the M6 could be improved and the M6 on-slip roads could be realigned to ensure a smoother and more gradual turning manoeuvre to allow more vehicles through the junction.

This option would require land beyond the highway boundary and is constrained by the existing Shell petrol station in the north-west quadrant. Dealing with existing traffic during construction would be difficult and could cause considerable disruption to traffic.

Benefits of this option might not justify the costs given the land take required and the fact it does not necessarily address key safety issues at the junction nor provide a long-term solution to the capacity issues.

4.8. Option 8 – Cloverleaf Junction

A full or partial cloverleaf junction, a Type 3 Option, is a large-scale solution for resolving traffic and congestion issues at M6 J23. The option would be dependent on A49 Lodge Lane being diverted enabling the roundabout to be removed and ensuring the free flow of traffic for all movements between the A580 and the M6.

This option requires a large amount of property demolition in the north-west quadrant with the hotel and the Shell garage affected. The other three quadrants have been identified for potential future development, and the links would reduce the size and impact on these developable areas.

As an alternative and to reduce the scale and cost of land acquisition, a partial cloverleaf has also been considered, providing free flow links in the south-west and north-east quadrants, to cater for the largest flows. Compared to the full cloverleaf option, the advantages are the reduced impact on potential developable land and no land acquisition in the north-west and south-east quadrants. However, the relatively lightly trafficked flows from M6 North to A580 East and M6 South to A580 West would have to be accommodated.

The Cloverleaf option is ambitious and expensive but it does facilitate a much larger volume of traffic and improve the safety of the interchange. If the smaller options do not provide sufficient improvements when modelled, a long-term solution of this scale may be required.

4.9. Additional Option 1 – Three-Level Grade Separated Junction

This Type 3 Option was presented as a conceptual sketch at the Design Workshop. The scheme would lower the A580 beneath the existing roundabout enabling the dominant traffic flows (A580 straight-ahead traffic) to travel through the junction without being subject to any form of traffic control. This option could be combined with the diversion of A49 Lodge Lane, as this would eliminate the need to connect Lodge Lane directly with A580 at the junction.

This option has the potential to greatly reduce congestion and improve safety but has significant buildability constraints, particularly due to the construction that would be required beneath the M6 structural piers. This option would be expensive but it represents a feasible, long-term solution addressing a number of issues at the junction.

4.10. Additional Option 2 – Diverging Diamond Junction

The scheme could be considered as a hybrid of Type 1 and 3 Options and involves traffic crossing to the opposite side of the road prior to the junction and then back again after the junction. A49

Lodge Lane would need to be diverted on both side of the junction to facilitate this proposal. See Section 10 for more details.

4.11. Additional Option 3 – Minor Improvements (Signals, Line Markings, Minor Geometric Improvements)

Either in isolation or in conjunction with other schemes, there are some minor improvements that could be made at the existing junction to improve capacity and safety:

- Review of signals phasing and re-calibration;
- Advanced signing installation;
- Adjustments to line marking, including modifying the stop lines to ease the issue of limited stacking space;
- Small geometric changes to help turning movements and traffic flow;
- Upgrading pedestrian facilities including push button facilities on slip roads.

More informed improvements could be made following receipt of the Post Opening Project Evaluation report but fundamentally, all these minor improvements are short-term and do not address the root causes of the problems at the junction.

5

SCORING MATRIX

5. SCORING MATRIX

The workshop group completed a scoring exercise whereby each option was assessed against a range of cost and benefit metrics such as impact on safety, buildability and environmental impact. The summary results of this exercise are shown in Table 5-1 below. The complete breakdown of scores can be found at the end of the workshop report - Appendix E. Note that each score is on a scale from 1 to 5 where 1 denotes a poor score and a 5 denotes an excellent score.

Table 5-1 – Workshop Score Summary

Option	Title	Average Score
1	Free Flow Links to/from the M6	2.4
2	Diversion of A49 Lodge Lane	3.4
3	Combine M6 Slip Roads with A49, remote from the Junction	1.7
4	Junction 24 Improvement: Provision of South-Facing Slip Roads	1.6
5	Widening and Extension of Lanes beneath the M6 Overbridge	2.9
6	Relocation of Straight-Ahead Lanes and Realignment of Right-Turn Lanes	3.3
7	Extension of Roundabout	2.3
8	Cloverleaf Junction	2.6
Additional Option 1	Three-Level Grade Separated Junction	3.2
Additional Option 2	Diverging Diamond Junction	3.9
Additional Option 3	Minor Improvements (Signals, Line Marking, Minor Improvements)	3.6

Based on these scores and their anticipated costs, the following recommendations were made in the interim report that was issued to the J23 Steering Group for review:

- Options 3, 4, 7 and 8 were not to be taken further;
- Option 1 and Additional Option 3 were to be taken further, but only in conjunction with other solutions;
- Options 2, 5, 6 and Additional Options 1 and 2 were to be taken forward for further assessment.

5.1. Workshop Conclusions

At the progress meeting held on 26th September and attended by representatives from St Helens Council, WSP, Highways England and Wigan Council, it was agreed by all parties that WSP would further consider and assess Option 2 (Divert Lodge Lane), Option 6 (Relocation and Realignment of Straight-Ahead and Right-Turn Lanes) and the Diverging Diamond proposal.

One important observation made at the workshop was that the permanent diversion of A49 Lodge Lane may prove to be a fundamental requirement of all other design solutions, either from a capacity or buildability perspective or to facilitate a user-friendly and safe junction arrangement.

6

MODEL DEVELOPMENT

6. MODEL DEVELOPMENT

6.1. Approach to Traffic Modelling

Two different model types have been used to inform option development and testing, namely:

- **The St Helens SATURN Model (SHSM)**, which is a strategic model that covers the entire St Helens District and has been used to test the traffic impact of the Local Plan Preferred Options. For the current study, the model has primarily been used to understand the broad impact of re-routing through the network as a result of schemes to improve capacity at M6 J23 and to refine the forecasts used in the more detailed local junction models;
- **Local Junction Models** – these have been developed within the TRANSYT software, which, unlike SHSM, has the ability to simulate complex traffic signals and the interaction between adjacent signalled junctions.

Full details on the strategic modelling can be found by reference to Appendix F. For the local junction modelling, the detail can be found in Appendix G.

6.2. Traffic Counts

Traffic flows through M6 J23 were based on the traffic survey undertaken in July 2018. These were inputted into the TRANSYT models of the existing base and potential improvement options.

In the proposed options where the Lodge Lane arms are proposed to be diverted to either side of the East Lancashire Road, flows have been redistributed from these arms onto the rest of the local highway network. A review of the traffic survey data identified the following network peak hours:

- Morning Peak Hour = 8:00am to 9:00am (AM) and;
- Evening Peak Hour = 5:00pm to 6:00pm (PM).

6.3. Future Year Growth / Assessments

Traffic growth factors were extracted from TEMpro Version 7.2 for the St Helens area. The “Urban” area and “Motorway” type were chosen to determine the growth factors relating to the SRN junction.

Table 6-1 – TEMpro Forecast Demand Projections

Growth Factors for St Helens 005 Output Area				
	2018-2023		2018-2033	
	AM	PM	AM	PM
Urban Motorway	1.0691	1.0674	1.1557	1.1547

6.4. Existing Junction Performance

The existing junction has been modelled using the traffic survey data and validated using surveyed queue data (including the observations that were made from the drone surveys) to deliver an assessment of the existing conditions and to provide a comparison of the summary results for the potential design options. For the purposes of this report, the performance of the existing junction as well as the potential improvement options has been measured and compared using the metrics of:

- Total Delay (Passenger Car unit (PCU)-hr / hr) at the junction and;
- The Degree of Saturation (DOS) at the junction's key arms at their respective critical peak period (AM or PM).

Table 6-2 and Table 6-3 below represent the baseline traffic performance of the junction i.e. how Junction 23 is projected to perform if no improvement schemes are undertaken.

Typically, whilst a DOS of 100% represents a point where theoretical capacity is met, a DOS of 85% and over is indicative of a junction (or approach arm) that is beginning to experience capacity issues, with queues and delays increasing significantly from that point onwards. It can be seen with reference to the tables below, that in the 2018 base year models, DOS over 85% are experienced on each approach arm and indeed, for most arms the DOS is over 90% and both Lodge Lane arms are exceed 100%. The capacity issues are exacerbated at both forecast years, corresponding to significant increase in the total delay experienced at the junction.

Note that the TRANSYT model has been developed to prioritise overall junction performance and not the individual performance of key arms. This methodology means that some key arm data appears counter-intuitive i.e. a reduction in key arm saturation over time, but this is a function of the manipulation of phasing to optimise overall junction performance.

Table 6-2 – Baseline Junction Performance – "Do Nothing"

	AM	PM
	Total Delay (PCU-hr / hr)	
2018	95.00	139.25
2023	128.13	330.22
2033	338.47	852.76

Table 6-3 – Baseline Key Arms Performance – "Do Nothing"

	2018	2023	2033
	Highest Degree of Saturation (%) (AM or PM peak)		
A580 - WB Approach	98 (PM)	108 (PM)	117 (PM)
Lodge Lane N (SB)	102 (PM)	109 (PM)	102 (PM)
M6 SB Off-Slip	84 (AM)	94 (AM)	96 (AM)
A580 - EB Approach	92 (PM)	97 (AM)	126 (PM)
Lodge Lane S (NB)	100 (PM)	109 (PM)	124 (PM)
M6 NB Off-Slip	86 (PM)	89 (PM)	85 (PM)

7

OPTION A – DIVERSION OF A49 LODGE LANE IN ISOLATION

7. OPTION A – DIVERSION OF A49 LODGE LANE IN ISOLATION

7.1. Description

Due to A49 Lodge Lane entering the roundabout in the north-east and south-west quadrants, there is limited stacking capacity on the circulatory carriageway in these two areas. As fewer vehicles can be stored within these sections of the circulatory carriageway, stationary vehicles must be held on the approach arms, resulting in increased queues on these arms. Furthermore, with the existing junction consisting of six approach arms, the available green time is allocated across many movements and where insufficient green time can be provided, delay increases on the approaches to the junction. This is a major issue at the junction. This option proposes to divert Lodge Lane away from the junction and to form two separate signal controlled junctions along the A580, either side of J23.

As there is development proposed in the north-east quadrant, two layout options for the north-east diversion are proposed, one skirting the perimeter of a proposed development and one running through the proposed site. Sketches of design Options A-D are all provided in Appendix H, including the two proposed layouts for the north-east Lodge Lane diversion.

7.2. Discussion

This option would not only remove traffic from the junction, but also reduce the complexity of the junction, increasing the stacking capacity on the circulatory carriageway and enabling the available green time to be allocated to the A580 and M6 slip roads. By reducing the number of junction arms and thus reducing the complexity of the junction, this option should have a positive impact on safety.

One constraint on this option is that the land through which Lodge Lane would be diverted is put forward for development, and any alignment would need to limit the impact on these developments. The design also requires two new signalised junctions, which could affect the flow of traffic along the A580.

7.3. Modelling/Traffic Performance

Table 7-1 – Option A - Junction Performance

	AM	**PM**
	Total Delay (PCU-hr / hr)	
2023	82.52 *(128.13*)*	223.54 *(330.22)*
2033	112.59 *(338.47)*	346.71 *(852.76)*

**Numbers in brackets show the comparison to the “Do Nothing” scenario*

Table 7-2 - Option A - Key Arms Performance

	2023	2033
	Highest Degree of Saturation (%) (AM or PM peak)	
A580 - WB Approach	94 (PM) *(108*)*	120 (PM) *(117)*
M6 SB Off-Slip	78 (PM) *(94)*	84 (PM) *(96)*
A580 - EB Approach	103 (PM) *(97)*	98 (PM) *(126)*
M6 NB Off-Slip	84 (PM) *(89)*	97 (PM) *(85)*

**Numbers in brackets show the comparison to the "Do Nothing" scenario*

The model indicates that the A580 westbound approach would be operating with a DOS of 120% in the PM peak by 2033. Several of the other key arms are forecast to be operating near saturation levels in the peak periods by 2033.

7.4. Estimate of Costs

The costs of this potential option are broken down as follows:

- Diversion of Lodge Lane in the south-west quadrant (layout 1): **£5.9M**
- Diversion of Lodge Lane in the north-east quadrant through the Peel site (layout 2): **£11.8M**
- Diversion of Lodge Lane in the north-east quadrant around the perimeter of the Peel site (layout 3): **£19.3M**

A more detailed breakdown of costs for Options A-D is provided in Appendix I.

7.5. Conclusions

This is a permanent solution with clear benefits for the junction. In isolation, or in conjunction with other schemes, it is considered fundamental to improving the junction in the medium to long-term. It could enable "Free-Flow Links" to be constructed at relatively low cost, to take traffic from i) M6 southbound off-slips to A580 eastbound and ii) M6 northbound off-slip road to A580 westbound. By removing these high-volume traffic movements from the junction, further space would be available to accommodate traffic on the gyratory and the performance of the junction could considerably improve

The modelling, however, does suggest that in isolation this scheme would not prevent the arms of the junction from being saturated at peak times if demand increases in accordance with the forecast demands.

8

OPTION B – RELOCATION OF STRAIGHT-AHEAD LANES AND REALIGNMENT OF RIGHT-TURN LANES

8. OPTION B – RELOCATION OF STRAIGHT-AHEAD LANES AND REALIGNMENT OF RIGHT-TURN LANES

8.1. Description

This option aims to improve traffic flows through the centre of the roundabout by relocating the straight-ahead lanes and realigning the right-turn lanes on both the eastbound and westbound carriageways of the A580.

8.2. Discussion

The 2015 “Pinch Point” scheme provided right-turn lanes from the A580 towards the M6 but the limited space between the bridge piers to accommodate four lanes of traffic was always going to constrain the alignment of the turn lanes, forcing right-turning HGVs to make a 90 degree turn towards the M6 at a very low speed. HGVs can only make this manoeuvre from the left lane of the two right-turning lanes, often straddling two lanes. This restricts traffic flows and causes congestion.

By removing the straight-ahead lanes from this central span of the overbridge, there would be additional space available to widen and realign the right-turn lanes. This would enable a much-improved alignment to be provided, reducing the severity of the turning manoeuvre for right-turning vehicles. This smoother alignment for the right-turn lanes provided could considerably improve traffic flows.

Whilst this option increases capacity through the junction and significantly improves the right-turn movement, relocating the straight-ahead movements reduces the amount of stacking capacity on the circulatory carriageway for Lodge Lane. Additional works to Lodge Lane (see Option C) or fundamental changes to the traffic signal timings may be required.

From a safety perspective, this option does not act to simplify what is currently a complex gyratory carriageway with six arms operating at or near capacity. It does however, improve the turning movements for right-turning vehicles from the A580.

This option would be relatively easy to construct and would cause minimal disruption during construction as most of the works would be built offline in unused land beneath the M6 overbridge.

8.3. Modelling/Traffic Performance

Table 8-1 – Option B - Junction Performance

	AM	PM
	Total Delay (PCU-hr / hr)	
2023	201.46 *(128.13*)*	289.19 *(330.22)*
2033	333.63 *(338.47)*	424.91 *(852.76)*

**Numbers in brackets show the comparison to the “Do Nothing” scenario*

Key Arms:

Table 8-2 - Option B - Key Arms Performance

	2023	2033
	Highest Degree of Saturation (%) (AM or PM peak)	
A580 - WB Approach	78 (AM) *(108*)*	77 (AM) *(117)*
Lodge Lane N (SB)	79 (PM) (109)	93 (AM) *(102)*
M6 SB Off-Slip	82 (PM) *(94)*	89 (PM) *(96)*
A580 - EB Approach	85 (AM) *(97)*	96 (AM) *(126)*
Lodge Lane S (NB)	97 (PM) (109)	114 (PM) *(124)*
M6 NB Off-Slip	127 (PM) *(89)*	148 (AM) *(85)*

**Numbers in brackets show the comparison to the "Do Nothing" scenario*

By 2033, the modelling indicates that both the northbound Lodge Lane approach and the M6 northbound off-slip will be operating above capacity in AM and PM peak times with a maximum DOS of 148%. The remaining junction arms are shown to operate within theoretical capacity.

8.4. Estimate of Costs

The estimated cost of this option is **£12.1M.**

8.5. Conclusions

Note that this option was modelled with two straight-ahead lanes only but it may be possible to fit three straight-ahead lanes within this overbridge span. Both the feasibility of this arrangement and its impact on performance would require further analysis.

In isolation, this option does not represent a significant long-term betterment for the junction.

9

OPTION C – COMBINED A49 LODGE LANE DIVERSION WITH RELOCATION OF STRAIGHT-AHEAD LANES AND REALIGNMENT OF RIGHT-TURN LANES

9. OPTION C – COMBINED A49 LODGE LANE DIVERSION WITH RELOCATION OF STRAIGHT-AHEAD LANES AND REALIGNMENT OF RIGHT-TURN LANES

9.1. Description

This option combines Option A and Option B and involves:

- Diverting the A49 Lodge Lane arms away from Junction 23 and;
- Relocating the straight-ahead lanes and realigning the right-turn lanes on the A580.

9.2. Discussion

The primary inhibitor to the performance of Option B is the short stacking space for vehicles entering the junction from Lodge Lane. This is exacerbated by the relocation of the A580's straight-ahead lanes. Option C addresses this problem by diverting Lodge Lane away from the junction.

This arrangement improves the safety of the junction because it segregates traffic flows and reduces the conflict points on the roundabout as there are less approaches.

As with Option B, the straight-ahead lanes could be relatively easily relocated and cause minimal disruption during construction as the works would be in unused land beneath the M6 overbridge.

9.3. Modelling/Traffic Performance

Table 9-1 – Option C - Junction Performance

	AM	**PM**
	Total Delay (PCU-hr / hr)	
2023	71.71 *(128.13*)*	99.22 *(330.22)*
2033	85.24 *(338.47)*	178.58 *(852.76)*

**Numbers in brackets show the comparison to the "Do Nothing" scenario*

Table 9-2 – Option C – Key Arms Performance

	2023	**2033**
	Highest Degree of Saturation (%) (AM or PM peak)	
A580 - WB Approach	66 (AM) *(108*)*	87 (PM) *(117)*
M6 SB Off-Slip	88 (PM) *(94)*	100 (PM) *(96)*
A580 - EB Approach	86 (PM) *(97)*	102 (AM) *(126)*
M6 NB Off-Slip	81 (PM) *(89)*	94 (PM) *(85)*

**Numbers in brackets show the comparison to the "Do Nothing" scenario*

An assessment of the 2033 scenario indicates that the junction would still operate within capacity in the AM peak, however in the PM peak it is noted that the junction would operate at theoretical capacity at the M6 southbound off-slip and the A580 eastbound approaches to the junction.

9.4. Estimate of Costs

The estimated cost of Option C is dependent on which layout is chosen for the diversion of Lodge Lane diversion in the north-east quadrant:

- Estimated cost if A49 diverted through proposed site in north-east quadrant: **£29.8M**
- Estimated cost if A49 diverted around perimeter of proposed site in north-east quadrant: **£37.3M**

9.5. Conclusions

This option represents a medium-term solution with significant benefits.

As with Option B, this option was modelled with two straight-ahead lanes only but it may be possible to fit three straight-ahead lanes within this overbridge span. Both the feasibility of this arrangement and its impact on performance would require further analysis.

As with Option A, the diversion of Lodge Lane could facilitate “Free-Flow Links” to be also constructed at relatively low cost, to take traffic from i) M6 southbound off-slips to A580 eastbound and ii) M6 northbound off-slip road to A580 westbound.

Option C lends itself to an incremental approach to construction whereby the diversion of A49 Lodge Lane could be undertaken in isolation first. The junction would then be re-assessed, before committing to the relocation and realignment of lanes beneath the M6.

10

OPTION D – DIVERGING DIAMOND INTERCHANGE

10. OPTION D – DIVERGING DIAMOND INTERCHANGE

10.1. Description

The basic concept of this scheme is for the two directions of traffic on the A580 (which are the dominant flows) to cross to the opposite side of the road prior to the junction and then back again after the junction. This would enable the high volumes of traffic which make right turns from A580 towards the M6, to make this manoeuvre without having to cut across traffic approaching from the opposite direction. The number of free flow turning movements would be increased and the number of signalised intersections would be reduced.

10.2. Discussion

A diverging diamond junction has never been constructed in the UK but has proved to be successful in a variety of different locations around the world, particularly in the USA where approximately 100 diverging diamond interchanges are operational.

This design would enable the high volumes of traffic which make right turns from A580 towards the M6, to make this manoeuvre without having to cut across traffic approaching from the opposite direction. The number of free flow turning movements would be increased and the number of signalised intersections would be reduced. The scheme has the potential to increase efficiency and as the number of conflict points is reduced, the scheme also has the potential to reduce accidents.

The scheme would require the diversion of A49 Lodge Lane on both sides of the junction and the construction of two new signal controlled junctions with A580. It is envisaged that this option could be constructed within existing highway boundaries (except for the A49 Lodge Lane diversions).

The scheme has the potential to provide a significant improvement to the capacity and flow of the junction, as it removes the right-turning traffic conflicts towards the M6 slip roads which are a major safety issue and a source of congestion within the roundabout.

10.3. Modelling/Traffic Performance

Table 10-1 – Option D – Junction Performance

	AM	PM
	Total Delay (PCU-hr / hr)	
2023	42.24 *(128.13*)*	56.30 *(330.22)*
2033	48.97 *(338.47)*	68.81 *(852.76)*

**Numbers in brackets show the comparison to the "Do Nothing" scenario*

Table 10-2 – Option D - Key Arms Performance

	2023	2033
	Highest Degree of Saturation (%) (AM or PM peak)	
A580 - WB Approach	76 (PM) *(108*)*	85 (PM) *(117)*
M6 SB Off-Slip	41 (PM) *(94)*	46 (PM) *(96)*
A580 - EB Approach	71 (AM) *(97)*	73 (AM) *(126)*
M6 NB Off-Slip	47 (PM) *(89)*	50 (PM) *(85)*

**Numbers in brackets show the comparison to the "Do Nothing" scenario*

With the 3-lane DDI junction in place at M6 J23, the 2033 future year scenario in both AM and PM peaks would operate within capacity on all arms with a maximum DOS of 85% at the A580 WB approach to the junction.

It should be noted that, of all the options considered, this is the only option that provides sufficient capacity to ensure that the junction can operate within capacity until 2033.

10.4. Combined Network Modelling and Sensitivity Testing

In line with options A, B and C, the results above consider each intersection in isolation and assume a uniform traffic growth across the junction as per the TEMPRO assessment. Further analysis was undertaken on Option D to consider:

- How the DDI option would interact with the proposed Lodge Lane/A580 intersections i.e. platoon flows and lane swapping;
- How this DDI junction would operate if the projected flows were adjusted to account for the origin and destination flows projected by the SATURN model for St Helens.

The methodology and results of this testing can be found in section 4 of Appendix G.

10.5. Estimate of Costs

The estimated cost of Option D is dependent on which layout is chosen for the diversion of Lodge Lane in the north-east quadrant:

- Estimated cost if A49 diverted through proposed site in north-east quadrant: **£32.8M**
- Estimated cost if A49 diverted around perimeter of proposed site in north-east quadrant: **£40.3M**

10.6. Conclusions

This option is an innovative solution with the potential to sit within the medium-scale cost band whilst providing benefits in line with other larger scale options which have been assessed.

Option D (as with option C) lends itself to an incremental approach to construction whereby the diversion of A49 Lodge Lane could be undertaken in isolation first. The junction would then be re-assessed, before committing to the diverging diamond scheme.

11

OPPORTUNITIES FOR ENCOURAGING ALTERNATIVE TRAVEL MODES

11. OPPORTUNITIES FOR ENCOURAGING ALTERNATIVE TRAVEL MODES

The highway interventions for improving capacity and reliability at the M6 Junction 23 (J23) can be supplemented by the identification of opportunities for alternative improvements around active travel or public transport to address local transport demand at this location.

The following key tasks have been undertaken to provide an evidence base for developing a range of feasible alternative options for reducing local car travel:

- Reviewing existing relevant transport studies and data;
- Understanding existing sustainable transport options in the area;
- Understanding existing and proposed development near the M6 J23 / A580;
- A review of potential and proposed transport infrastructure improvements in the St Helens area, for example, Local Walking and Cycling Infrastructure Plans (LCWIP).
- Consulting with key public authorities on relevant studies, data and sustainable transport improvements;
- Understanding current travel patterns and defining the catchment area of existing/forecast local traffic where alternative options may be feasible e.g. via Census data;
- Determination of any funding opportunities which could encourage the use of sustainable transport modes; and
- Determination of any existing or former Travel Plan / Area Travel Plan work undertaken at employment sites close to M6 J23 / A580.

The deliverability of the key thematic opportunities identified has been assessed in terms of timescale (quick win, short term < 2 years, medium term 2-5 years and long term 5-10 years), cost (low cost <£5,000, medium cost £5,000-£35,000, high cost > £35,000) and key risks, as set out in Table 11-1.

By nature, the industrial area comprises employment uses that operate 24 hours a day, seven days a week. The shift patterns for staff can therefore create real or perceived barriers to the use of sustainable modes for the commute to work. The application of a wide range of opportunities outlined in this report will ensure that the feasibility to encourage existing and new travel demand by sustainable modes is maximised.

Appendix J provides full details on the assessment of opportunities for encouraging alternative travel modes.

Table 11-1 – Alternative Options Delivery Assessment

Option	Delivery Timescale	Delivery Cost	Key Risks
Accessibility Improvements	Medium-long	Medium - High	Lack of funding for measures Increasing traffic congestion exacerbating access issues Lack of travel planning to promote the use of access improvements Lack of public engagement on measures (facilitates ownership to encourage use) Shift times limiting use Ongoing cross-borough issues Ongoing connectivity issues
Behaviour Change Initiatives	Quick win / Short for some initiatives Medium for full impact of some initiatives to be realised e.g. a car share scheme	Low-Medium	Lack of funding Low employer engagement / enthusiasm Lack of dedicated employer resource/management Lack of / poor marketing of sustainable travel options Shift times limiting behaviour change opportunities
Public Transport	Short - Medium	Medium - High	Bus operators control of services Poor marketing
Planning / Enforcement	Ongoing	Medium - High	Lack of Council Officer Travel Plan enforcement Lack of sustainable development in line with Local Plan Preferred Options i.e. effective land-use planning Continued high car use despite of measures / infrastructure improvements
Effective Promotion of Alternative Options at optimal times (i.e. in line with new infrastructure/service provision)	Quick win / Ongoing	Low - Medium	Requires sustained effective marketing strategy at existing and new development
Travel Plan Management	Quick win - Medium	Low - Medium	Recruitment of non-local workforce Lack of Employer Senior Management interest/resource for Travel Plans

12

CONCLUSIONS AND NEXT STEPS

12. CONCLUSIONS AND NEXT STEPS

12.1. Summary and Conclusions

This study has clearly identified that the existing Junction 23 on M6 suffers from serious operational and safety issues. Although the Pinch Point Scheme, completed in 2015, has provided some improvement at the junction, there are still major issues to be addressed, in particular:

- Heavy congestion at peak times which causes delay and increased journey times for traffic using the junction;
- Extended queues often develop on all approach arms and on the M6 slip roads, these can back up and block running lanes on the M6;
- A poor accident record, with the junction having the worst road safety record in St Helens and one of the worst in Merseyside;
- Limited facilities for pedestrians and cyclists as the junction presents a daunting obstacle for these non-motorised road users;
- The junction acts as a constraint on development opportunities in the area.

Junctions remote from M6 J23 were identified to determine whether their improvement might encourage traffic to use alternative routes away from J23, reducing congestion at this junction. However, after evaluation, it was considered that improvement at these sites would:

- Only reduce congestion in the immediate vicinity or;
- Provide access onto the A580 from large scale developments, adding to the traffic likely to use M6 Junction 23 or;
- Provide limited benefits at M6 Junction 23, disproportionate to the costs of construction.

Eleven options for improvement at the junction, ranging from under £50k to over £80m were initially considered. These options were developed and discussed at the Workshop and it was concluded that many of the proposals would only give short-term improvements. Options were scored at the Workshop and a post-Workshop Report was produced detailing the schemes and identifying their merits.

Further evaluation by Steering Group members led to four schemes being considered for more detailed assessment:

- A: Relocation of Straight Ahead Lanes and Realignment of Right-Turn Lanes (ROSAL);
- B: Diversion of A49 Lodge Lane on both sides of junction forming new junctions with A580;
- C: Combination of Options A and B;
- D: Diverging Diamond Interchange (including the diversion of Lodge Lane).

Initial modelling work identified that Option A would not give any significant improvements in performance as a stand-alone scheme. The conflicting movements and the limited stacking space for vehicles where M6 slip roads, A49 Lodge Lane, the circulatory section of the roundabout and the straight-ahead lanes on A580 converge, would always constrain any attempt to improve the operational performance of the junction. Moreover, these conflicting vehicle movements would continue to present a safety hazard at the junction for both vehicles, pedestrians and cyclists, which would be difficult to resolve.

The Steering Group resolved that to achieve any significant level of improvement, and whichever additional option for improvement was taken forward, A49 Lodge Lane should be diverted on both sides of the junction, removing the connections with the existing roundabout. New junctions would have to be constructed with A580 at a likely distance of 400m to 600m from M6 J23.

Modelling of the Options for the Design Year 2033, showed that the Diverging Diamond (Option D) had a Degree of Saturation on all approaches of less than one hundred percent, ROSAL with a Lodge Lane Diversion (Option C) would exceed this figure on two of the approaches.

Based on this preliminary modelling, the Diverging Diamond would appear to be the only option which would accommodate forecast traffic flows in the Design year 2033 and on this basis, should be taken forward to more detailed design modelling and preparation of more robust cost estimates.

It is to be noted that all modelling had been undertaken based on conceptual layouts. Additional improvements and refinements to the models have been identified that could be investigated and analysed in more detail in the next phase of the programme.

Cost estimates for each of the four options were developed based on the assumptions provided in Appendix I. These have been verified against industry price book levels. Table 12-1 below and overleaf provides a summary of these estimates and for each option, includes a £5M lump sum allowance for supplementary cycling and walking improvements over and above what has been allowed for at the junction itself. This includes replacing/improving the existing pedestrian overbridge (located 1.2km north of J23) as well as improvements to the cycleways/footways and associated lighting either side of the bridge to improve the link between residential areas and the industrial park.

Table 12-1 - Cost Estimate Summary

	Inclusions	Estimated Cost
Option A	- **Diversion of Lodge Lane in the SW Quadrant;** - **Diversion of Lodge Lane in the NE Quadrant through the proposed development site;** - **£5M allowance for supplementary cycling and walking improvements**	**£22.7M**
Option B	- **Relocation of straight-ahead lanes at interchange;** - **Realignment of right-turning lanes at interchange;** - **£5M allowance for supplementary cycling and walking improvements**	**£17.1M**

Option C	- **Relocation of straight-ahead lanes at interchange;** - **Realignment of right-turning lanes at interchange;** - **Diversion of Lodge Lane in the SW Quadrant;** - **Diversion of Lodge Lane in the NE Quadrant through the proposed development site;** - **£5M allowance for supplementary cycling and walking improvements**	**£34.8M**
Option D	- **Construction of a Diverging Diamond Interchange;** - **Diversion of Lodge Lane in the SW Quadrant;** - **Diversion of Lodge Lane in the NE Quadrant through the proposed development site;** - **£5M allowance for supplementary cycling and walking improvements**	**£37.8M**

12.2. Next Steps

This in-depth study of the junction has enabled the J23 Steering Group to better understand how the junction is performing, the constraints to carrying out improvements, which schemes would be unlikely to improve the junction and which schemes would be likely to improve the operational performance of the junction.

It has previously been identified that the relocation of the two A49 Lodge Lane arms from the junction is a prerequisite to carrying out any other improvements. The two other options which have been modelled i.e. the Diverging Diamond and the ROSAL scheme, both have great potential in improving operational capacity, reducing accidents and making the junction easier to negotiate for non-motorised users.

LODGE LANE DIVERSION

This study has revealed that any significant improvements at the junction hinge on the diversion of Lodge Lane away from the gyratory carriageway, either in isolation or in conjunction with another junction improvement scheme. In this commission, the modelling of these diversions was limited to indicative alignments and conceptual junction geometries. It will be necessary to further this design to more accurately ascertain the benefits and issues of diverting Lodge Lane. It would also be prudent to investigate alternative diversion options such as utilising Vista Road as the primary route from Newton-le-Willows onto the M6 J23 interchange.

Although the diversion of Lodge Lane is considered essential for the improvement of the junction, consideration could also be given to keeping both arms of the A49 open one way (outbound from the junction) as this might not impact on traffic signal operation and would make the detour for the A49 users less and could simplify the new junctions with A580. This would impact on any free flow links, so it would likely be an either / or situation and providing free flow links may be the better option.

RLOCATION OF STRAIGHT AHEAD LANES AND REALIGNMENT OF RIGHT-TURN LANES OPTION

Consideration could be given to refine the ROSAL option through further investigation. Additional works could include:

- In the north-east and south-west quadrants of the gyratory, there is a signals stop line immediately prior to the M6 off-slip road. There is a second stop line approximately 15m to the south-east, at the location of what would appear to be the old stop line before Lodge Lane. There is potential to relocate the stop line to an optimal position for the traffic flows but this would require further analysis.
- The dominant turning movements at the junction are M6 southbound to A580 Manchester (and the reciprocal movement) and M6 northbound to A580 Liverpool (and the reciprocal movement). Having removed A49 Lodge Lane from both quadrants, free flow movements (M6 southbound to A580 east and M6 northbound to A580 east) could be considered as an additional feature of the layout as it prevents high volumes of traffic being taken through two sets of signals. The feasibility of this feature requires further investigation.
- Whilst our conceptual ROSAL model was modelled with two straight-ahead lanes, consideration should be given as to whether three straight-ahead lanes could be safely accommodated between the M6 overbridge piers and if so, what impact this would have on the performance of the junction.
- In the ROSAL Model, the double right-turning lanes beneath the M6 overbridge have been modelled with a slight re-alignment. A detailed design of the layout may indicate that a more ambitious re-alignment could be achieved and this could act to improve traffic flows significantly.

DIVERGING DIAMOND OPTION

Given the unusual nature of this Diverging Diamond arrangement, particularly within the UK, we foresee a significant amount of research, design and consultation will have to be undertaken before this option can be considered feasible.

Our conceptual design of this junction provided in this study should be considered indicative only. More investigation will be required to ascertain the number of lanes that can be provided through the M6 overbridge piers and what affect this has on the operational performance of the junction. The optimum crossover angle at the two main conflict zones also needs to be studied further from a safety and performance perspective. Traffic modelling would need to be updated progressively as the design develops to capture the benefits of this scheme.

COST ESTIMATES

The estimated costs of the scheme options have been produced using costs based on the overall scheme areas and with percentage additions for statutory undertaker's diversions and contingencies. C2 drawings have been supplied by the statutory undertakers but more realistic C3 estimates should be obtained and a more detailed breakdown of the work necessary to construct the schemes would need to be developed before more robust scheme estimates can be provided. Further detail on how these estimates were undertaken and how they could be refined is provided at the end of Appendix I.

TRAFFIC MODELLING

To improve the robustness of the traffic modelling as the scheme is developed further, it would be beneficial to consider the following:

- Updating the observed origin and destination data, in particular for trips that make use of M6 Junction 23. This could take advantage of the work that is currently in progress to update LCRTM to avoid costly roadside interview surveys;
- Refining the SHSM model validation along routes to and from the junction, potentially disaggregating zones and refining the points at which traffic enters and leaves the network to represent more closely the case in-situ;
- A further consideration of the likely development quanta to be included in the model, in particular those sites that are adjacent to Junction 23, aligned to WebTAG methodologies, including uncertainties and;
- The integration of a micro-simulation model into the suite of traffic models available to assess the traffic impact of the scheme.

It is also recommended that the alternative options assessment is taken forward for further consideration/exploration and potential implementation in line with the progression of the M6 J23 scheme design and implementation.

ALTERNATIVE TRAVEL OPTIONS

It is also recommended that the alternative options assessment is taken forward for further consideration/exploration and potential implementation in line with the progression of the M6 J23 scheme design and implementation. The next steps should focus on the key opportunities identified, including:

- Undertaking a detailed travel demand feasibility study through on-site business engagement;
- Seeking opportunities to fund appropriate resource to manage, promote and implement travel planning measures at HIA i.e. a Travel Plan Coordinator;
- Building upon the current HIA Networking Group for effective communication and to encourage buy-in of travel plan measures at the existing site;
- Working in conjunction with key stakeholders (neighbouring authorities, bus operators, Merseytravel, TfGM, St Helens Chamber, local schools etc.) to maximise the opportunities for encouraging sustainable travel at the existing HIA site and at new development through the Local Plan 2020-2035 planning process.

Appendix A

DEVELOPMENT PROPOSALS AFFECTING M6 J23

DEVELOPMENT PROPOSALS AFFECTING M6 J23

(As identified in St Helens Local Plan Submission Draft)

a) 2EA Land at Florida Farm North, Haydock. Employment Allocation (Removed from Green Belt). Access via upgraded junction at A580/Haydock Lane (These works completed in December 2018). Enhancement work required at M6 J23 to mitigate impact (S278 contribution?)

b) 3EA Land north of Penny Lane, north east Haydock Industrial Estate, west of M6. Employment Allocation (Removed from Green Belt).

c) 4EA Land south of Penny Lane, north east Haydock Industrial Estate, west of M6. Employment Allocation (Removed from Green Belt).

d) 5EA Land to north west of Haydock Industrial Estate, Haydock. Employment Allocation (Removed from Green Belt). Access via upgraded junction at A580/Haydock Lane (These works completed in December 2018). Enhancement work required at M6 J23 to mitigate impacts from proposed developments (S278 contribution?).

e) 6EA Land west of Millfield Lane, south of Liverpool Road, Haydock. Employment Allocation (Removed from Green Belt). Access via upgraded junction at A580/Haydock Lane (These works completed in December 2018). Enhancement work required at M6 J23 to mitigate impacts from proposed developments. (S278 contribution?).

f) 7EA Parkside East, Newton-le Willows. East of M6, north of M6 J22. New access road to service development from M6 J22 approved with £24m contribution from LCR towards the £40m overall cost.

g) 8EA Parkside West, Newton-le Willows. East of A49, west of M6. Initial phase of development serviced from A49 with impacts on M6 J23.

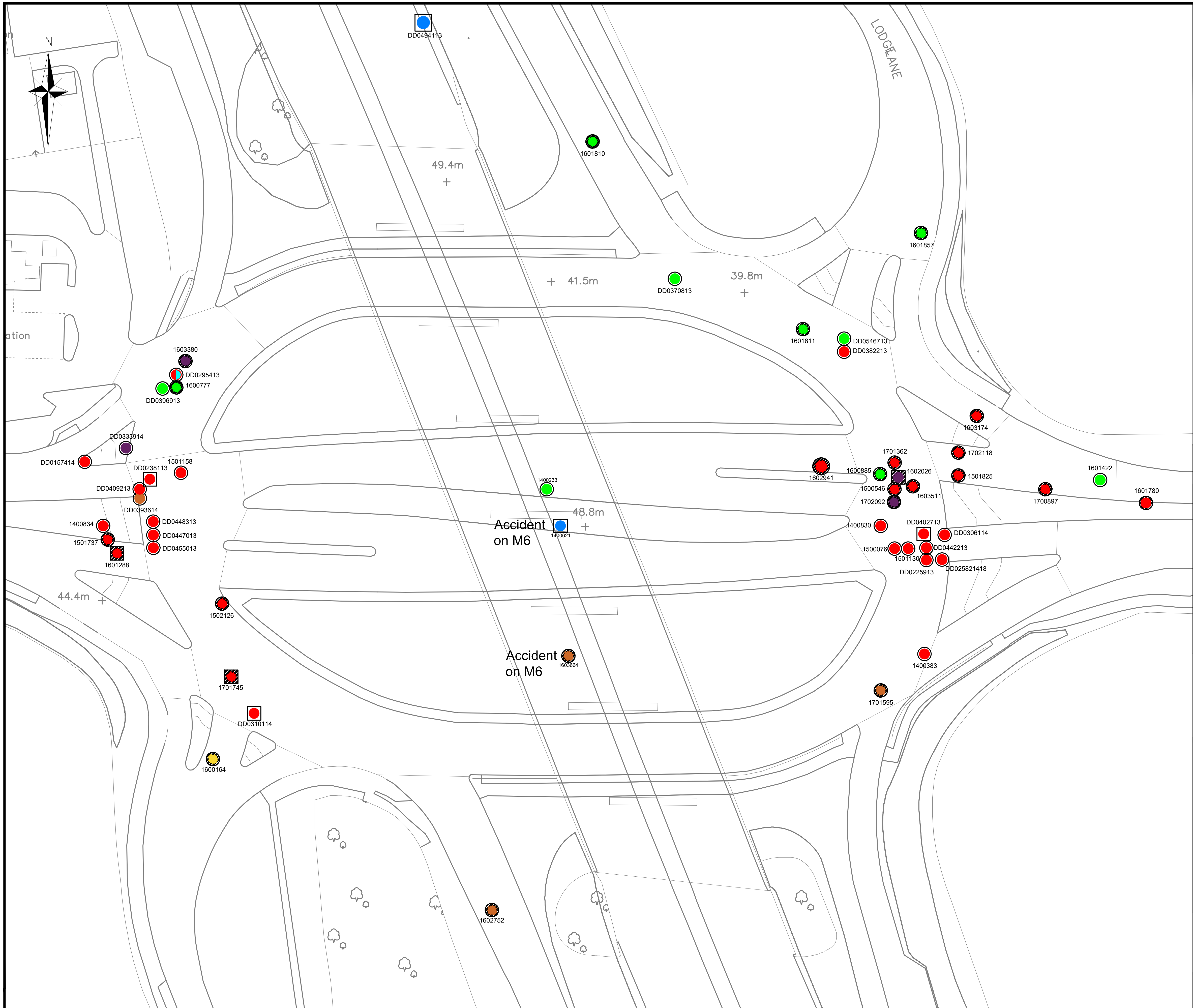
h) 2ES Land north east of M6 J23, south of Haydock Racecourse. Safeguarded Employment Land (Removed from Greenbelt). Enhancement work required to M6 J23 to mitigate impacts from proposed development and/or safeguard sufficient land for future enhancement works which may be required at Junction 23. (S278 contribution?).

k) Stoford/Oxenwood development at Golborne, Wigan. Impact on M6 J23 not known.

Appendix B

FIVE-YEAR ACCIDENT STATISTICS 2013-2017

CONFIDENTIAL



DO NOT SCALE

Type of accident

- Fail to stop at Red light (32)
- Shunt (10)
- Loss of control (2)
- Roll back at lights (1)
- Side swipe (4)
- Mid Junction Collision (4)
- Short cut to avoid red light (1)

Severity

- Serious (8)
- Slight (46)

Accidents within last 3 years

REV	DATE	BY	DESCRIPTION	CHK	APP
P01	12/07/2018	MH	FIRST ISSUE	AI	MB

DRAWING STATUS: S2 - FOR INFORMATION

wsp

1st Floor Exchange Station, Tithebarn Street, Liverpool, L2 2QP

CLIENT: St.Helens Council

PROJECT: M6 Junction 23 Improvement Scheme

TITLE: Accident Data Summary Last 5 years

SCALE @ A3: N.T.S.	CHECKED: AI		APPROVED: MB
PROJECT No: 70044810	DESIGNED: MH	DRAWN: MH	DATE: July 18

DRAWING No: M6J23-WSP-HGN-00-CH-SK-0101

REV: P01

Appendix C

TRAFFIC SURVEY

CONFIDENTIAL

St Helens Council

M6 JUNCTION 23 FEASIBILITY STUDY

Report of Traffic Surveys

70044810_SURVEYS
MAY 2019

CONFIDENTIAL

St Helens Council

M6 JUNCTION 23 FEASIBILITY STUDY

Report of Traffic Surveys

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70044810

OUR REF. NO. 70044810_SURVEYS

DATE: MAY 2019

WSP

1st Floor Station House
Tithebarn Street, Exchange Station
Liverpool
L2 2QP

Phone: +44 151 331 8100

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Draft	Draft		
Date	31st January 2019	20th May 2019		
Prepared by	Rakiya Edwards	Sophie Higham		
Signature				
Checked by	Nick Green	Nick Green		
Signature				
Authorised by	Nick Green	Nick Green		
Signature				
Project number	70044810	70044810		
Report number	SUR_1	SUR_1		
File reference	70044810	70044810		

CONTENTS

1

OVERVIEW

1 OVERVIEW

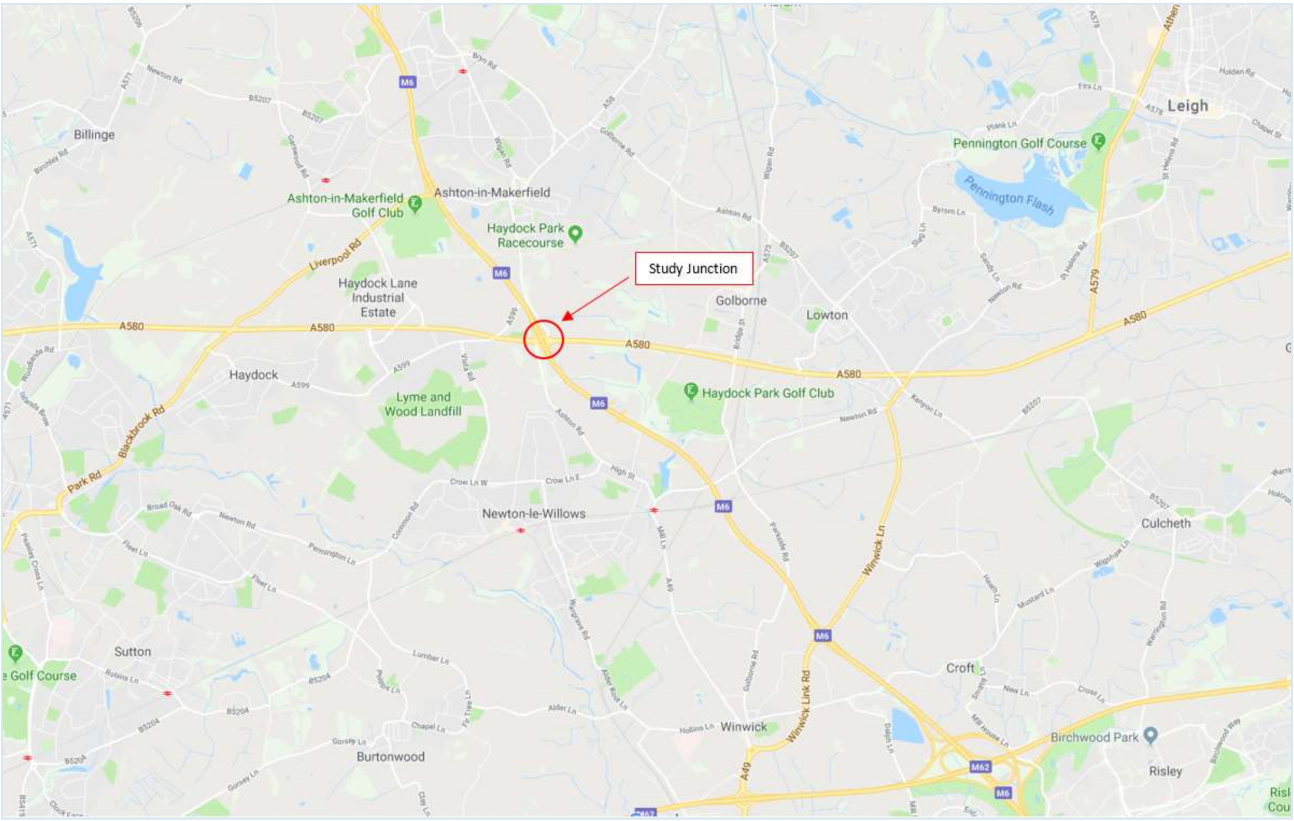
Traffic surveys were undertaken at M6 J23 to provide data for local junction models and to enable a better understanding of the performance of the junction under typical conditions.

The traffic surveys conducted included:

- Turning count surveys
- Queue length surveys
- Journey time surveys
- Drone surveys

Figure 1.1 shows a location plan of the M6 Junction 23.

Figure 1.1 – M6 Junction 23 Location Map



Source: Google Maps

1.1 TURNING COUNT SURVEYS

Turning counts surveys were taken as part of the traffic surveys at the M6 Junction 23. The surveys recorded at the junction were conducted in Summer and Autumn in July, September and November respectively.

Turning count surveys taken during the summer months, were conducted during the weekday on two neutral days Wednesday 4th July 2018 and Thursday 5th July 2018.

Surveys conducted in July were recorded in 15-minute intervals between 06:00 am and 21:00 pm.

Additional turning counts were taken in Autumn, during the month of September and November. These surveys were conducted on one weekend and one weekday; Saturday 29th September 2018 and Tuesday 20th November 2018.

Surveys conducted during these months were recorded in 5-minute intervals between 06:00 am and 21:00 pm.

1.2 QUEUE LENGTH SURVEYS

Queue length surveys were also conducted at M6 Junction 23. These surveys were taken at the same time and on the same date (July, September and November) as the turning count surveys.

Summer queue length surveys were conducted during the weekday on two neutral days Wednesday 4th July 2018 and Thursday 5th July 2018. Queue length surveys conducted in the summer were recorded in 5-minute intervals between 06:00 am and 21:00 pm.

Autumn queue surveys were conducted on one weekday and weekend in September and November (Saturday 29th September 2018 and Tuesday 20th November 2018).

1.3 JOURNEY TIME SURVEYS

Journey time data has been collected by a third-party company using positional data from mobile phones travelling through the network.

Data has been obtained for a period of 27 days in October 2018: From Monday 1st October to Saturday 27th October – i.e. 4 weeks of continuous data collected 24 hours a day.

The data has been broken down into weekday and weekend data and then into the following time periods

- AM Peak: 0700 – 1000
- AM Peak Hour: 0800 – 0900
- Interpeak Period: 1000 – 1600
- PM Peak: 1600 – 1900
- Evening / Overnight: 1900 – 0700

1.4 DRONE SURVEYS

Drone footage (videos and photographs) was also taken to coincide with the queue length traffic surveys taken at the M6 Junction 23. Four-time periods were taken of the junction including:

- Morning Peak 07:54am to 08:11am
- Morning Peak 08:20am to 09:35am
- Midday (Interpeak) 12:20pm to 13:00pm
- Evening Peak 16:20pm to 18:00pm

All footage was filmed from the north-eastern quadrant of land adjacent to the junction at the A49 Lodge Lane north arm.

2

TRAFFIC COUNT SURVEY DATA

2 TRAFFIC COUNT SURVEY DATA

2.1 12-HOUR FLOWS

Figure 2.1 to 2.3 details the inbound and outbound flows (vehicles) at M6 Junction 23 and the corresponding turning movement flows at each arm over a 12-hour period for both Summer and Autumn conducted surveys.

Flow diagrams for AM and PM peak hours can be found in Appendix A:

- For the AM peak, results presented in this report represent flows between 08:00 and 09:00.
- For the PM peak, results presented in this report represent flows between 17:00 and 18:00.

Table 2.1 – Weekday Summer Survey 12-hour flows at M6 Junction 23 by arm (in vehicles)

Arm	Name	Total Inbound	Total Outbound
A	M6 Junction 23 (N)	5,406	6,840
B	A49 Lodge Lane (N)	4,989	2,843
C	A580 East Lancashire Road (E)	9,617	8,490
D	M6 Junction 23 (S)	5,391	8,311
E	A49 Lodge Lane (S)	3,932	3,582
F	A580 East Lancashire Road (W)	8,064	7,471
G	Shell Petrol Station	839	701
Total		**38,238**	**38,238**

Table 2.2 – Weekday Autumn Survey 12-hour flows at M6 Junction 23 by arm (in vehicles)

Arm	Name	Total Inbound	Total Outbound
A	M6 Junction 23 (N)	6,486	2,745
B	A49 Lodge Lane (N)	5,181	5,119
C	A580 East Lancashire Road (E)	11,191	12,372
D	M6 Junction 23 (S)	7,758	9,345
E	A49 Lodge Lane (S)	2,715	4,455
F	A580 East Lancashire Road (W)	11,405	10,733
G	Shell Petrol Station	364	331
Total		**45,100**	**45,100**

Table 2.3 – Weekend Autumn Survey 12-hour flows at M6 Junction 23 by arm (in vehicles)

Arm	Name	Total Inbound	Total Outbound
A	M6 Junction 23 (N)	4,835	1,297
B	A49 Lodge Lane (N)	4,591	4,883
C	A580 East Lancashire Road (E)	6,812	9,643
D	M6 Junction 23 (S)	6,057	6,341
E	A49 Lodge Lane (S)	2,312	3,957
F	A580 East Lancashire Road (W)	8,682	7,466
G	Shell Petrol Station	424	126
Total		**33,713**	**33,713**

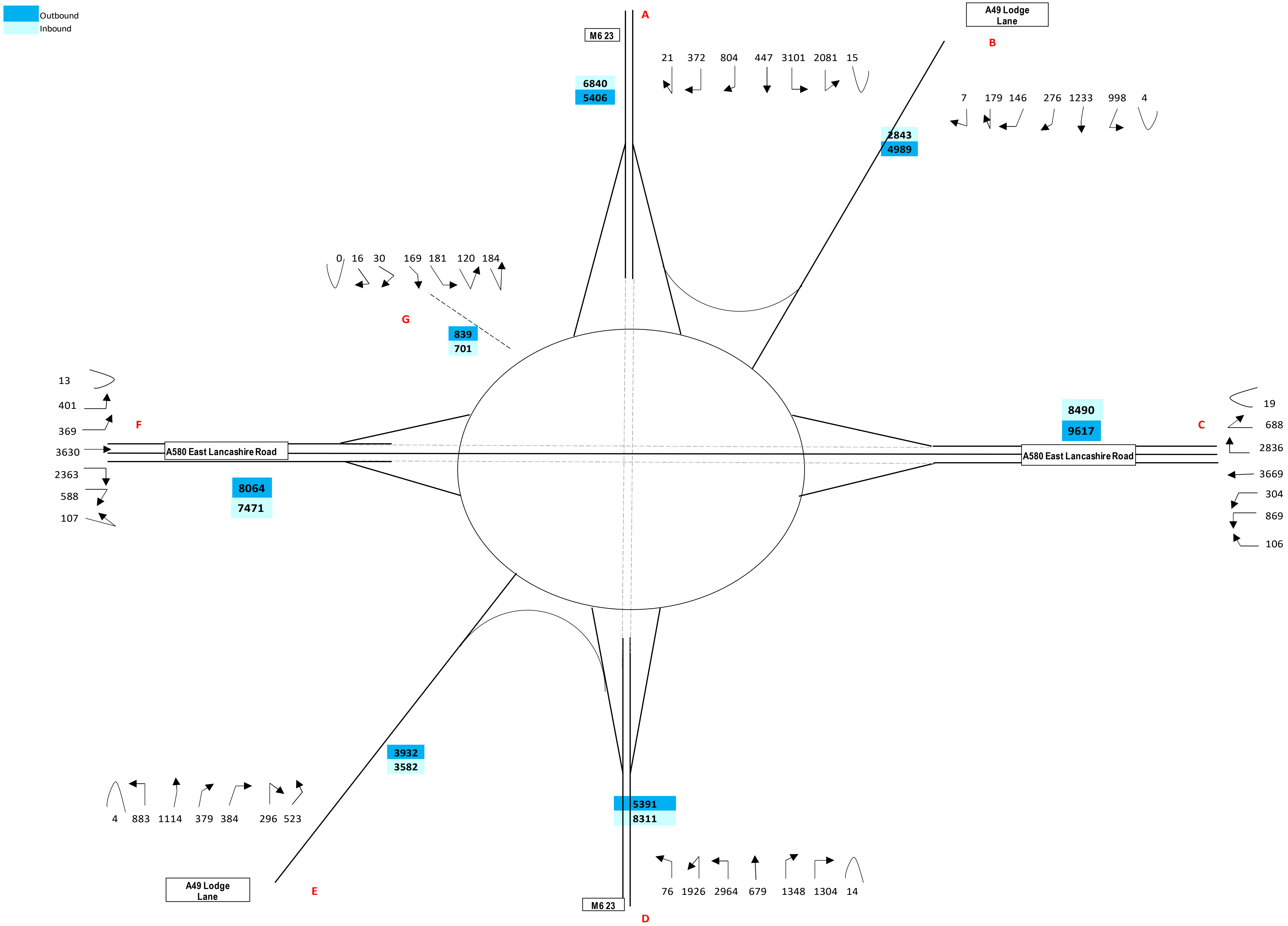


Figure 2.1 – Weekday Summer Survey Flows at M6 Junction 23 (vehicles)

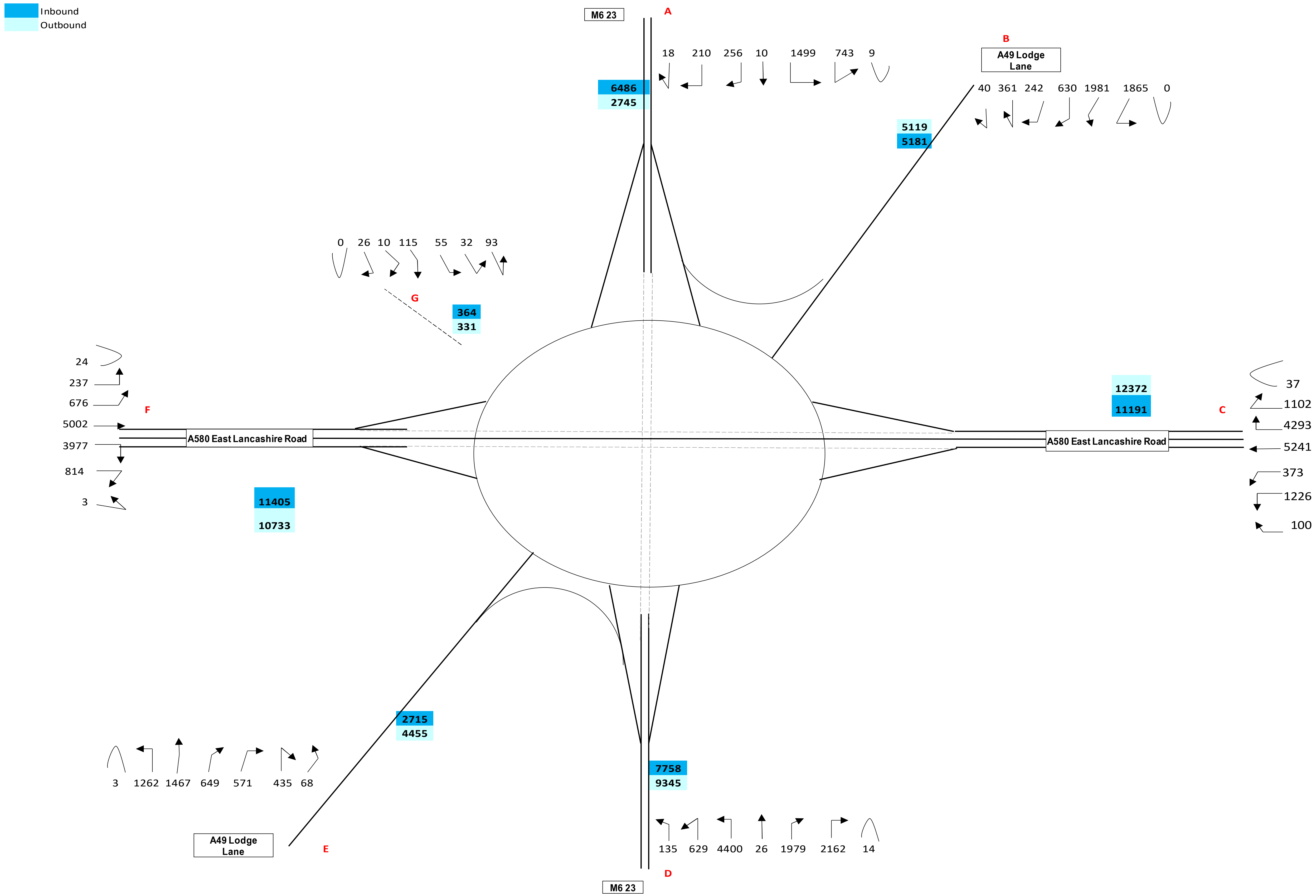


Figure 2.2 – Autumn Weekday Survey Flows at M6 Junction 23 (vehicles)

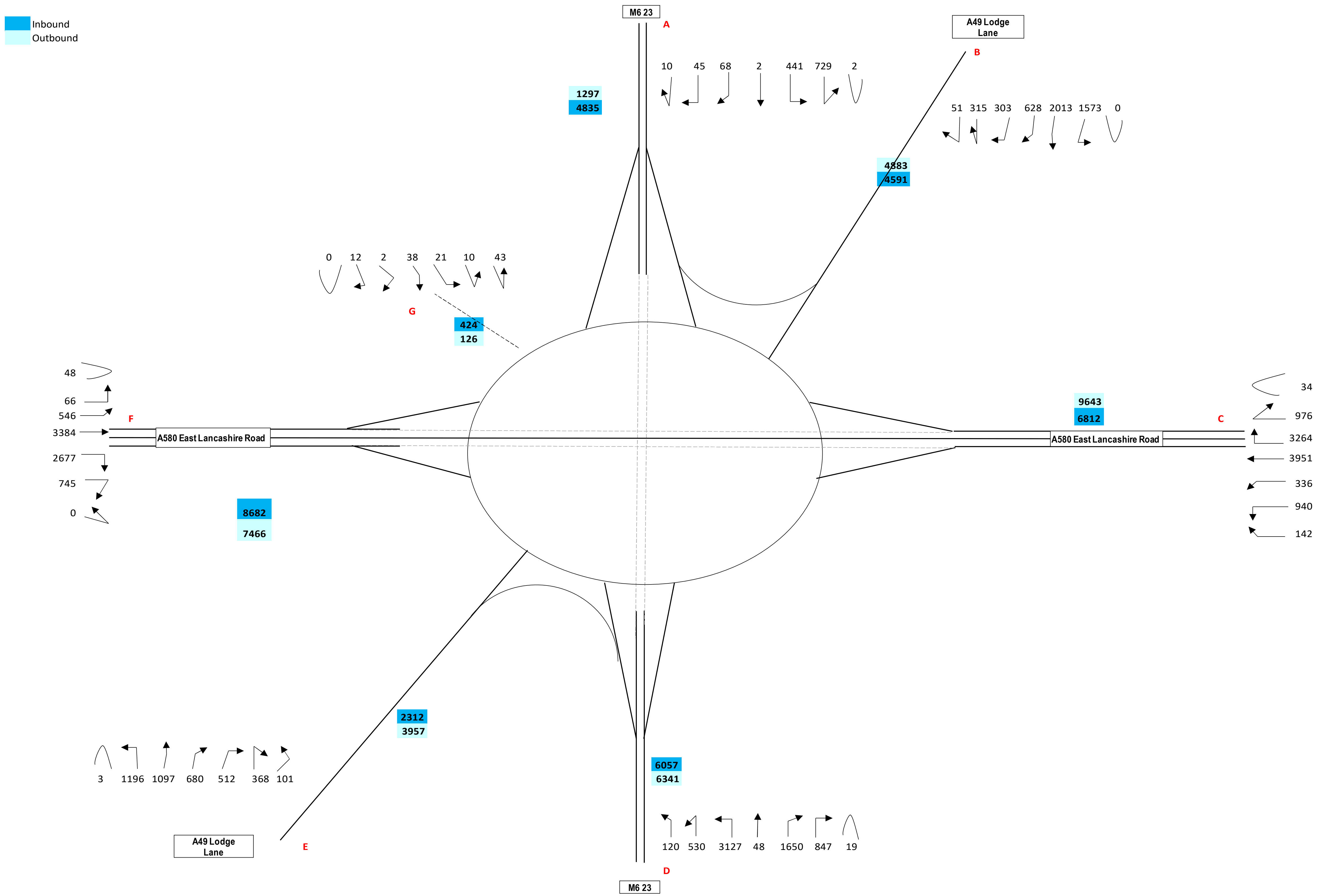


Figure 2.3 – Autumn Weekend Survey Flows at M6 Junction 23 (vehicles)

2.2 TURNING COUNT TRAFFIC FLOW - KEY OBSERVATIONS

2.2.1 JULY TURNING COUNT SURVEYS

From the survey data provided in Appendix A, surveys conducted on Wednesday highlighted the busiest peak being in the PM peak period between 17:00pm and 18:00pm.

Traffic flows surveys show that at the M6 Junction 23 the busiest route was along the M6, with 1,756 vehicles per hour travelling from the M6 South to the A580 East Lancashire Road West.

2.2.2 NOVEMBER TURNING COUNT SURVEYS

From the survey data collected on Tuesday 20th November, traffic behaviour showed the busiest period was during the PM peak between 16:00 pm and 17:00 pm for the 12-hour peak survey count.

During the AM peak the survey data highlights that between 07:40 am and 08:40 am was the busiest period at the junction with 2,797 vehicles passing through M6 Junction 23.

During the PM peak period the survey data shows that the busiest time-period at the junction was between 16:05 pm and 17:05 pm with 3,336 vehicles travelling through the junction.

Table 2.4 and 2.5 gives headline figures for the highest total flows in each time-period at Junction 23 for weekday surveys.

Table 2.4 – Highest total flow per Peak period (weekday surveys)

Time Period Name	Time Period	Highest Flow Time Period	Total flow (vehicles)
AM	07:00 am – 11:00 am	07:40 am – 08:40 am	2,797
IP	12:00 pm – 16:00 pm	14:55 pm – 15:55 pm	2,655
PM	17:00 pm – 20:00 pm	16:05 pm - 17:05 pm	3,336

Table 2.5 – Total flow per vehicle class[1] (weekday surveys)

Time	Car	LGV	OGV1	OGV2
16:05	193	52	14	7
16:10	204	52	7	14
16:15	217	59	10	11
16:20	191	42	10	10
16:25	184	46	13	9
16:30	230	46	9	14
16:35	219	46	6	12
16:40	203	55	10	6
16:45	236	35	7	15
16:50	218	42	11	9
16:55	198	39	8	4
17:00	240	39	4	12
17:05	183	43	6	7
TOTAL	**2,716**	**1,154**	**235**	**130**

From the survey data collected on Saturday 29th November, traffic behaviour showed the busiest period was during the AM peak between 16:00 pm and 17:00 pm for the 12-hour peak survey count.

During the AM peak the survey data highlights that between 10:35 am and 11:35 am was the busiest period at the junction with 2,501 vehicles passing through M6 Junction 23.

---

[1] *LGV (Light Goods Vehicle*) - All car type delivery vans and those of the next larger carrying capacity such as transit vans. Included here are small pickups, ambulances which look like vans without windows and milk floats. Most of this group are delivery vans of one type or another and goods vehicles (middle-sized trucks) with single rear wheels. Also includes LGVs towing a trailer or caravan as one 'LGV'
OGV 1 (Ordinary Goods Vehicle 1) All larger rigid vehicles with two or three axles including larger ambulances with double rear wheels, tractors (without trailers), road rollers for tarmac pressing, box vans, similar large vans and middle-sized trucks which have double rear wheels.
OGV 2 (Ordinary Goods Vehicle 2) Includes all rigid vehicles with four or more axles and all articulated vehicles. Also included in this class are OGV1 goods vehicles towing a caravan or trailer.

During the PM peak period the survey data shows that the busiest time-period at the junction was between 16:00 pm and 17:00 pm with 1,688 vehicles travelling through the junction.

Table 2.6 and 2.7 gives headline figures for the highest total flows in each time-period at Junction 23 for weekday surveys.

Table 2.6 – Highest total flow per Peak period (weekend surveys)

Time Period Name	Time Period	Highest Flow Time Period	Total flow (vehicles)
AM	07:00 am – 11:00 am	10:35 am – 11:35 am	2,501
IP	12:00 pm – 16:00 pm	11:00 am – 12:00 pm	2,483
PM	17:00 pm – 20:00 pm	15:30 pm - 16:30 pm	2,073

Table 2.7 – Total flow per vehicle class (weekend surveys)

Time	Car	LGV	OGV1	OGV2
10:35	162	18	6	7
10:40	181	21	5	6
10:45	163	13	3	5
10:50	184	22	12	6
10:55	174	13	3	3
11:00	179	19	7	4
11:05	151	17	3	3
11:10	172	13	5	4
11:15	197	21	4	5
11:20	180	19	5	5
11:25	158	11	7	2
11:30	195	19	4	6
11:35	169	17	2	2
TOTAL	**2,265**	**223**	**66**	**58**

3

QUEUE LENGTH SURVEY DATA

3 QUEUE LENGTH SURVEY DATA

3.1 RESULTS

Table 3.1 details the average queues for each arm at the M6 Junction 23 roundabout (as per Figure 3.1). The table shows the maximum average queues during the AM (08:00 to 09:00) and PM (17:00 to 18:00) peak hours, for both survey seasons, Autumn and Summer.

The table shows that during the summer surveys the longest queues formed, with double the length of queues occurring on the A580 East Lancashire Road during the AM.

The table also shows that during the summer months the A49 Lodge Lane formed more queues on both north and south arms during the AM and PM.

Both northbound and westbound routes for the A580 East Lancashire Road and the A49 Lodge Lane, during the PM had more queues then in the AM for both Autumn and Summer months.

The queue length profile across the survey periods are shown graphically within the Appendix.

Table 3.1 – AM (PM) Queue Lengths per arm at M6 Junction 23

Arm	Road Name	Maximum Average Queue(Autumn)* (m)	Maximum Average Queue(Summer)* (m)
A	M6 Junction 23 (North)	70 (65)	60 (70)
C	A580 East Lancashire Road (West)	130 (70)	275 (115)
D	A49 Lodge Lane (South)	40 (70)	20 (95)
E	M6 Junction 23 (South)	60 (70)	60 (70)
F	A580 East Lancashire Road (East)	80 (100)	50 (125)
G	A49 Lodge Lane (North)	45 (40)	205 (205)
X	A580 East Lancashire Road (mainline eastbound)	35 (35)	35 (40)
Y	A580 East Lancashire Road (mainline westbound)	30 (30)	40 (30)

* All values are given to the nearest 5 metres. It should also be noted that queue length surveys should be treated with caution: firstly, because the degree of queuing is subject to judgement, especially in terms of slow moving, congested conditions as experienced at this location; secondly maximum values are restricted by the degree to which cameras can adequately capture the back of the queue. Nevertheless, the survey does provide a useful snapshot of the relative degree of queueing on the approaches to J23.

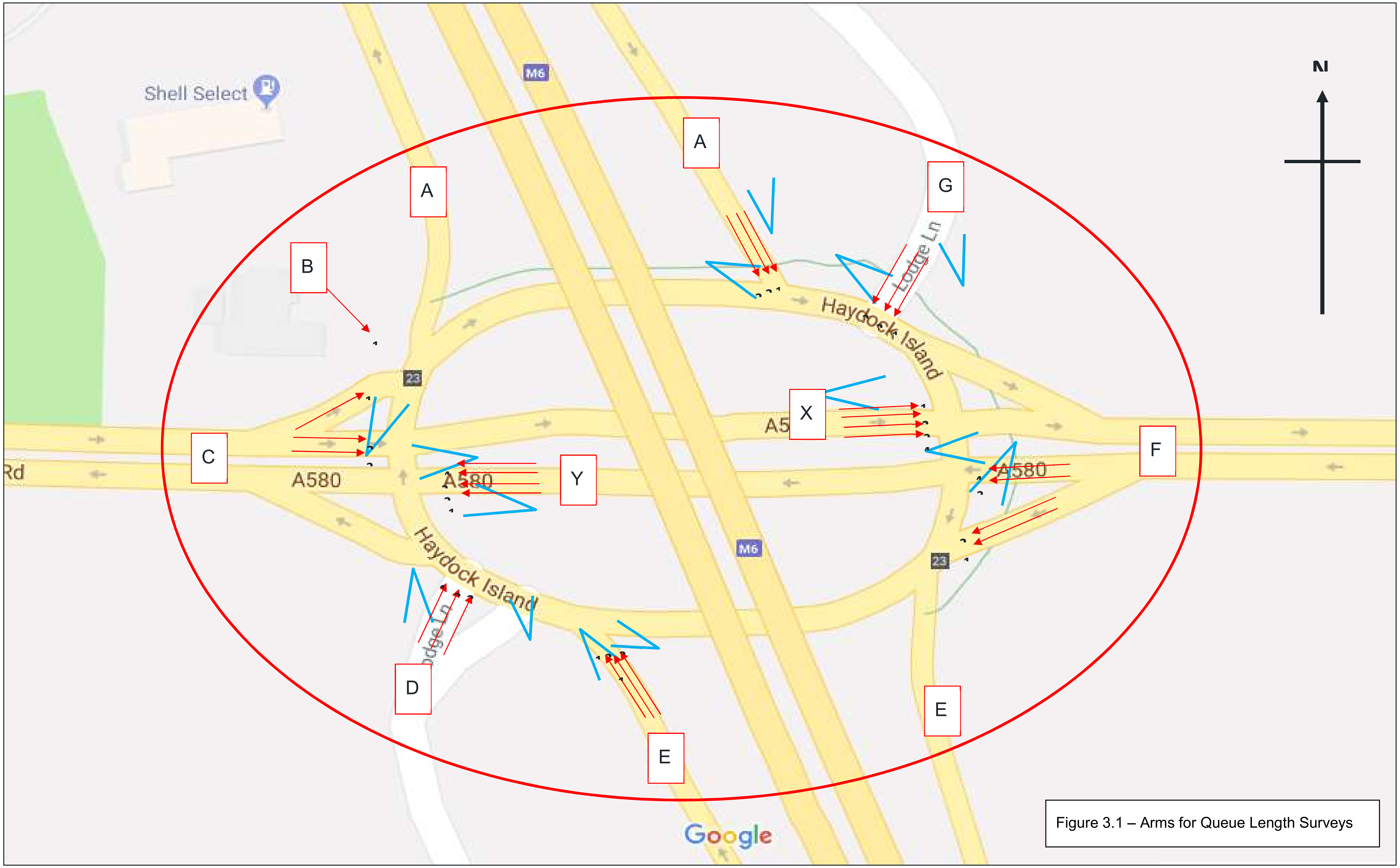


Figure 3.1 – Arms for Queue Length Surveys

3.2 QUEUE LENGTH DATA - KEY OBSERVATIONS

3.2.1 JULY TURNING COUNT SURVEYS

For traffic travelling southbound, the longest average queue on this route was during the PM at 17:35 pm with queue lengths of 105 m. On this arm, Lane 2 formed the longest queues for routes using the A58 mainline route.

For eastbound movements at the junction, the longest average queue on the A580 East Lancashire Road was 670 m occurring during the AM at 07:35 am with the majority of traffic forming in Lane 2. The shortest queue lengths were 5 m occurring at 20:20 pm during the off-peak.

For traffic travelling westbound, traffic behaviour showed the longest average queues on the M6 (north arm) was 300 m in the PM peak, occurring at 17:30 pm. Lane 1 of this arm consisted of the longest queues using the outer lane of the approach lanes. The shortest queue occurred during the off-peak hours at 20:50 pm with a queue of 5 m forming in Lane 2.

For traffic travelling northbound along the M6, the longest queues occurred across all lanes, with average queue lengths of 115m forming at 16:20pm in the PM. In comparison to the shortest queues of 5 m occurring at 21:00 pm.

3.2.2 NOVEMBER TURNING COUNT SURVEYS

From the survey data collected on Tuesday 20th November, traffic behaviour showed the longest average queues on the M6 (north arm) was 105 m in the PM peak, occurring at 16:45 pm. Lane 2 of this arm consisted of the longest queues using the circulatory. The shortest queue occurred during the off-peak hours at 20:45 pm with a queue of 5 m forming in Lane 1.

For eastbound movements at the junction, the longest average queue on the A580 East Lancashire Road was 140 m occurring during the inter-peak at 15:50pm with most of traffic forming in Lane 3. The shortest queue length was 15 m occurring at 20:30 pm during the off-peak.

For traffic travelling westbound, the longest average queue on this route was during the AM at 08:30 am with queue lengths of 165 m. On this arm, Lane 3 formed the longest queues for routes using the A58 mainline route.

For traffic travelling southbound along the M6, the longest queues occurred in Lane 2 of the M6 south arm, with average queue lengths of 95 m forming at 15:35pm in the inter peak. In comparison to the shortest queues of 15 m occurring at 06:20am.

4

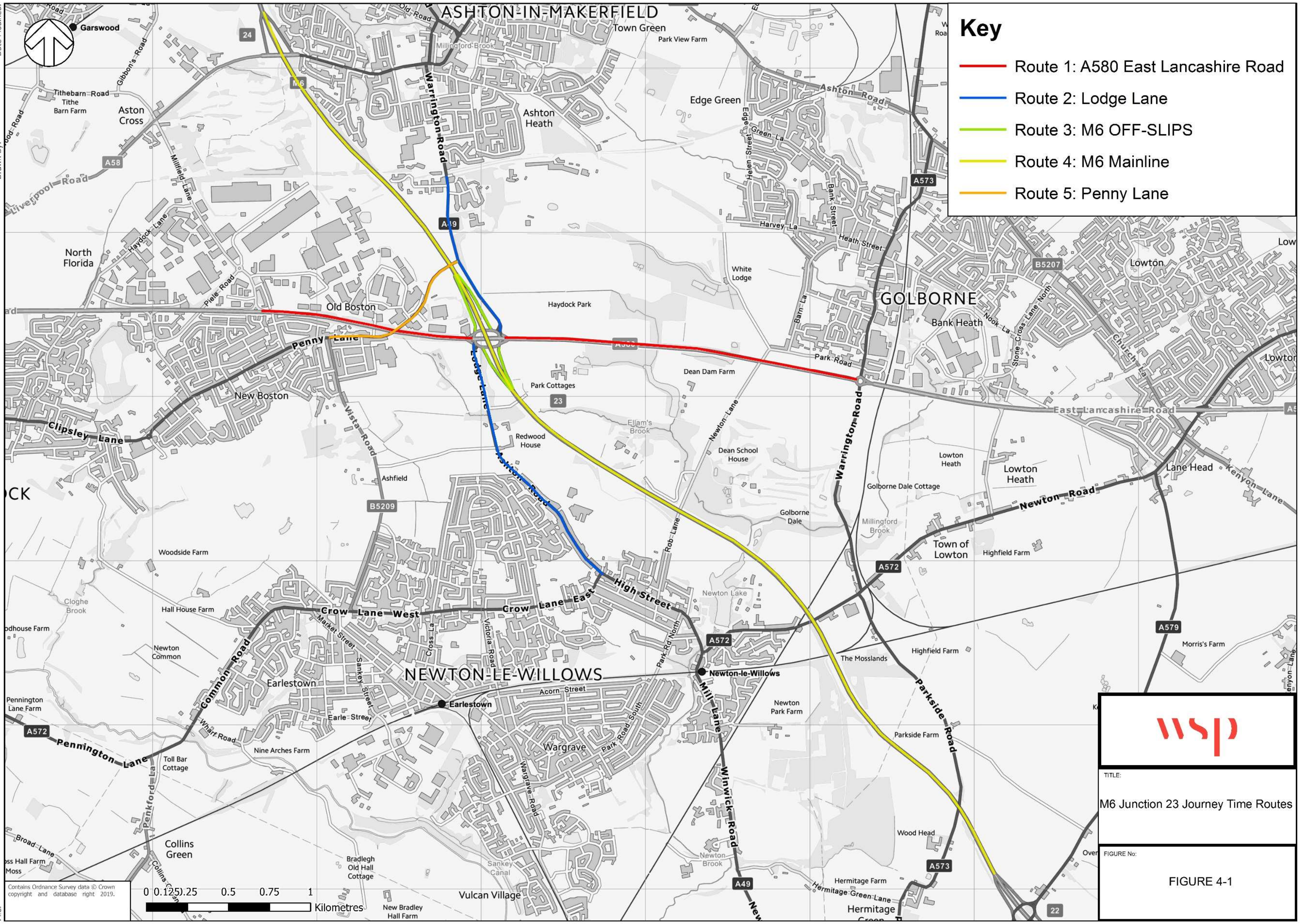
JOURNEY TIME SURVEY DATA

4 JOURNEY TIME SURVEY DATA

4.1 INTRODUCTION

Journey times were also measured on key routes approaching and adjacent to M6 Junction 23. Journey time data was provided by St Helens Council for the routes shown in Figure 4.1. The data was extracted from Rennicks Virtual Journey Time System (http://www.rvjts.com/), which collates vehicle journey times using mobile phone data.

Figure 4-1 - Journey Time Routes for M6 Junction 23



4.2 JOURNEY TIME DATA - KEY OBSERVATIONS

4.2.1 ROUTE 1: A580 EAST LANCASHIRE ROAD

Journey times for the A580 East Lancashire Road were observed eastbound between Millfield Lane and Junction 23 of the M6 and Westbound between Golbourne roundabout.

Table 4.1 below summarises the journey times along the routes.

Table 4.1 – A580 East Lancashire Road - Journey Time Summary

A580 Eastbound - Millfield Lane to M6 J23							
	Time Range	Journey Time (S)			Std Dev[2]	Number Observed	
Period		Min	Max	Mean			Average Speed (mph)
AM Peak	0700-1000	71	1266	118.94	144.57	321	23.5
AM Peak	0800-0900	71	840	100.87	89.32	105	27.7
Inter-peak	1000-1600	77	140	89.37	7.35	643	31.3
PM Peak	1600-1800	72	360	99.08	38.80	336	28.2
Evening	1900-0700	70	248	80.61	8..42	1871	34.7
Weekday	24-hour	70	1266	93.06	54.59	2610	30.0
Weekend	24-hour	69	91	78.00	3.31	907	35.8
A580 Westbound - Golbourne Roundabout to M6 J23							
	Time Range	Journey Time (S)			Std Dev	Number Observed	
Period		Min	Max	Mean			Average Speed (mph
AM Peak	0700-1000	107	986	188.31	98.36	321	24.9
AM Peak	0800-0900	107	658	207.4	97.08	105	22.6
Inter-peak	1000-1600	108	435	127.69	27.36	642	36.8
PM Peak	1600-1800	111	1001	277.21	135.35	223	16.9
Evening	1900-0700	99	986	127.23	59.14	1351	36.9

[2] Standard Deviation is a measure that is used to quantify the amount of variation or dispersion of a set of data values. A low standard deviation indicates that the data points tend to be close to the mean (also called the expected value) of the set, while a high standard deviation indicates that the data points are spread out over a wider range of values

Weekday	24-hour	99	1001	140.16	76.58	2610	33.5
Weekend	24-hour	98	128	109.50	4.21	906	42.9

The highest average journey time eastbound was 119 seconds in the AM peak. This period also saw the highest standard deviation in journey time and the greatest range of journey times.

The shortest journey time was 71 seconds with the longest journey time 1266 seconds – just over 21 minutes compared to an AM Peak average of just under two minutes. This was likely caused by an incident on the morning of the 17/10/18 that caused significant delay.

Westbound, the average weekday journey time was 140 seconds, this rose to an average of 188 seconds in the AM peak, however it was the PM peak that saw the longest average journey time at 277 seconds and the least reliable journey times.

The longest journey time was 16 minutes compared to an average of around 1 minute 20 seconds for a weekday.

Westbound journey times in the PM peak were on average, only 80 seconds longer than those in the evening and inter-peak periods, with eastbound AM peak journeys only 40 seconds longer.

4.2.2 ROUTE 2: LODGE LANE

Journey times on Lodge Lane were measured northbound from High Street to Junction 23 of the M6 and southbound from Haydock Racecourse to Junction 23.

Table 4.2 below summarises the journey times along the routes.

Table 4.2 – Lodge Lane Journey Time Summary

Lodge Lane Northbound – High Street to M6 J23							
	Time Range	Journey Time (S)			Std Dev	Number Observed	Average
Period		Min	Max	Mean			Speed (mph)
AM Peak	0700-1000	127	1596	170.80	78.65	336	21.5
AM Peak	0800-0900	133	1401	267.40	205.23	115	13.7
Inter-peak	1000-1600	127	202	146.77	8.57	673	25.0
PM Peak	1600-1800	134	670	213.74	106.43	334	17.2
Evening	1900-0700	113	432	113.05	12.44	1351	32.5
Weekday	24-hour	113	1596	163.42	94.63	2704	22.4
Weekend	24-hour	114	156	130.89	6.90	811	28.0
Lodge Lane Southbound – Haydock Racecourse to M6 J23							
	Time Range	Journey Time (S)			Std Dev	Number Observed	
Period		Min	Max	Mean			Average Speed (mph)
AM Peak	0700-1000	88	809	150.85	109.98	321	15.4
AM Peak	0800-0900	97	809	144.83	70.68	105	16.1
Inter-peak	1000-1600	86	744	112.75	39.61	642	20.6
PM Peak	1600-1800	75	422	125.43	33.68	334	18.5
Evening	1900-0700	74	230	90.78	11.74	1313	25.6
Weekday	24-hour	74	109	109.00	52.42	2609	21.3
Weekend	24-hour	73	140	90.66	10.01	906	25.7

The highest average journey time northbound was 267 seconds in the AM peak. This period also saw the highest standard deviation in journey time. The shortest journey time seen in any period was 113 seconds with the longest journey time 1596 seconds –more than 26 minutes against an average of just under 3 minutes. It is once again likely that an incident has caused significant delay.

Westbound, the average weekday journey time was 109 seconds, this rose to an average of 151 seconds in the AM peak which saw the greatest deviation in journey times.

This period also saw the highest recorded journey time of 809 seconds – 13 minutes against a weekday average of under one minute.

Northbound journey times in the AM peak were on average around 3 minutes longer than those in the evening periods, with southbound journeys around 1 minute longer.

4.2.3 ROUTE 3: M6 OFF-SLIPS

Journey times on the M6 Northbound Off Slip and M6 Southbound Off Slip were measured on the M6 Mainline.

Table 4.3 below summarises the journey times along the routes.

Table 4.3 – M6 Offs-slips Journey Time Summary

M6 Northbound Off-slip							
	Time Range	Journey Time (S)			Std Dev	Number Observed	
Period		Min	Max	Mean			Average Speed (mph)
AM Peak	0700-1000	88	809	40.07	14.74	427	17.3
AM Peak	0800-0900	97	588	64.21	17.19	105	13.2
Inter-peak	1000-1600	86	744	46.45	6.39	641	18.3
PM Peak	1600-1800	75	422	45.57	17.09	451	18.7
Evening	1900-0700	74	230	30.97	4.61	1315	27.4
Weekday	24-hour	74	109	39.82	13.81	2608	21.3
Weekend	24-hour	73	140	31.55	4.22	907	26.9
M6 Southbound Off Slip							
	Time Range	Journey Time (S)			Std Dev	Number Observed	
Period		Min	Max	Mean			Average Speed (mph
AM Peak	0700-1000	40	257	100.96	37.55	338	9.5
AM Peak	0800-0900	45	236	119.78	35.39	110	8.0
Inter-peak	1000-1600	43	141	61.40	8.87	677	15.7
PM Peak	1600-1800	41	139	71.59	19.67	342	13.4
Evening	1900-0700	33	127	44.93	6.88	1350	21.4
Weekday	24-hour	33	257	59.41	24.66	2707	16.2
Weekend	24-hour	33	80	44.82	6.84	811	21.5

The highest average journey time northbound was 267 seconds in the AM peak. This period also saw the highest standard deviation in journey time. The shortest journey time seen in any period was 113 seconds with the longest journey time 1596 seconds –more than 26 minutes against an average of just under 3 minutes. It is once again likely that an incident has caused significant delay.

Westbound, the average weekday journey time was 109 seconds, this rose to an average of 151 seconds in the AM peak which saw the greatest deviation in journey times. This period also saw the highest recorded journey time of 809 seconds – 13 minutes against a weekday average of under one minute.

Northbound journey times in the AM peak were on average around 3 minutes longer than those in the evening periods, with southbound journeys around 1 minute longer.

4.2.4 ROUTE 4: M6 MAINLINE

Journey times on the M6 Mainline were measured northbound and southbound between Junction 22 at Winwick to Junction 24 at Ashton in Makerfield

Table 4.4 below summarises journey times along the route.

Table 4.4 – M6 Mainline-Journey Time Summary

M6 Northbound J22-24							
	Time Range	Journey Time (S)			Std Dev	Number Observed	
Period		Min	Max	Mean			Average Speed (mph)
AM Peak	0700-1000	230	1552	256.50	90.71	314	61.0
AM Peak	0800-0900	230	476	254.35	49.15	107	61.6
Inter-peak	1000-1600	229	565	247.37	25.27	641	63.3
PM Peak	1600-1800	246	651	363.40	84.46	224	43.1
Evening	1900-0700	220	674	241.98	27.91	1308	64.7
Weekday	24 hour	220	1552	260.27	65.68	2599	60.2
Weekend	24 hour	220	345	234.56	9.30	902	66.8
M6 Southbound J24 -22							
	Time Range	Journey Time (S)			Std Dev	Number Observed	
Period		Min	Max	Mean			Average Speed (mph
AM Peak	0700-1000	217	4013	477	494	332	32.8
AM Peak	0800-0900	217	1828	422	286	114	37.1
Inter-peak	1000-1600	221	2545	255	165	562	61.3
PM Peak	1600-1800	219	299	234	6	343	66.8
Evening	1900-0700	217	1754	260	122	786	60.2
Weekday	24-hour	216	4013	276	214	2695	56.7
Weekend	24-hour	217	314	230	8	806	68.0

The highest average northbound was 363 seconds in the PM peak, more than 100 seconds higher than the AM Peak average.

The shortest journey time seen in any period was 200 seconds with the longest journey time 1552 seconds –more than 25 minutes against a weekday average of around 4 and a half minutes.

Slowest average speeds were in the AM peak at 32.8 mph compared with 66.8 mph in the PM peak which actually had higher average speeds than the evening/overnight period, suggesting that the southbound PM peak on the M6 can be considered to be later than on the wider network.

4.2.5 ROUTE 5: PENNY LANE

Journey times on Penny Lane were observed northbound from Vista Road to Lodge Lane.

Table 4.5 below summarises the journey times along the routes.

Table 4.5 –Penny Lane Journey Time Summary

Penny Lane							
Period	Time Range	Journey Time (S)			Std Dev	Number Observed	Average Speed (mph)
		Min	Max	Mean			
AM Peak	0700-1000	77	266	96.16	22.23	319	23.3
AM Peak	0800-0900	78	266	106.60	31.60	107	21.0
Inter-peak	1000-1600	75	246	88.66	9.82	639	25.2
PM Peak	1600-1800	75	264	95.67	25.13	337	23.4
Evening	1900-0700	68	105	79.46	5.28	1313	28.2
Weekday	24-hour	68	266	85.85	15.09	2608	26.1
Weekend	24-hour	68	92	76.53	4.52	907	29.2

The highest average journey time northbound was 107 seconds in the AM peak. This period also saw the highest standard deviation in journey time. The shortest journey time seen in any period was 68 seconds with the longest journey time 266 seconds.

4.3 QUEUE LENGTH DRONE FOOTAGE

Additional drone footage and photographs were taken of the M6 Junction 23 to illustrate the queue lengths formed at the junction. The drone footage and images highlight delays and queues during the AM between 08:00 am and 08:45 am and the PM between 17:05 pm and 18:00 pm.

Figures 4.2 to 4.5 shows the queues formed at the junction.

Figure 4.2 – M6 Junction 23 (north east) at 08:39 am

Figure 4.3 – M6 Junction 23 (north east) at 16:53 pm

Figure 4.4 – M6 Junction 23 (north east) at 17:05 pm

Figure 4.5 – M6 Junction 23 (north east) at 17:51 pm

5

APPENDIX

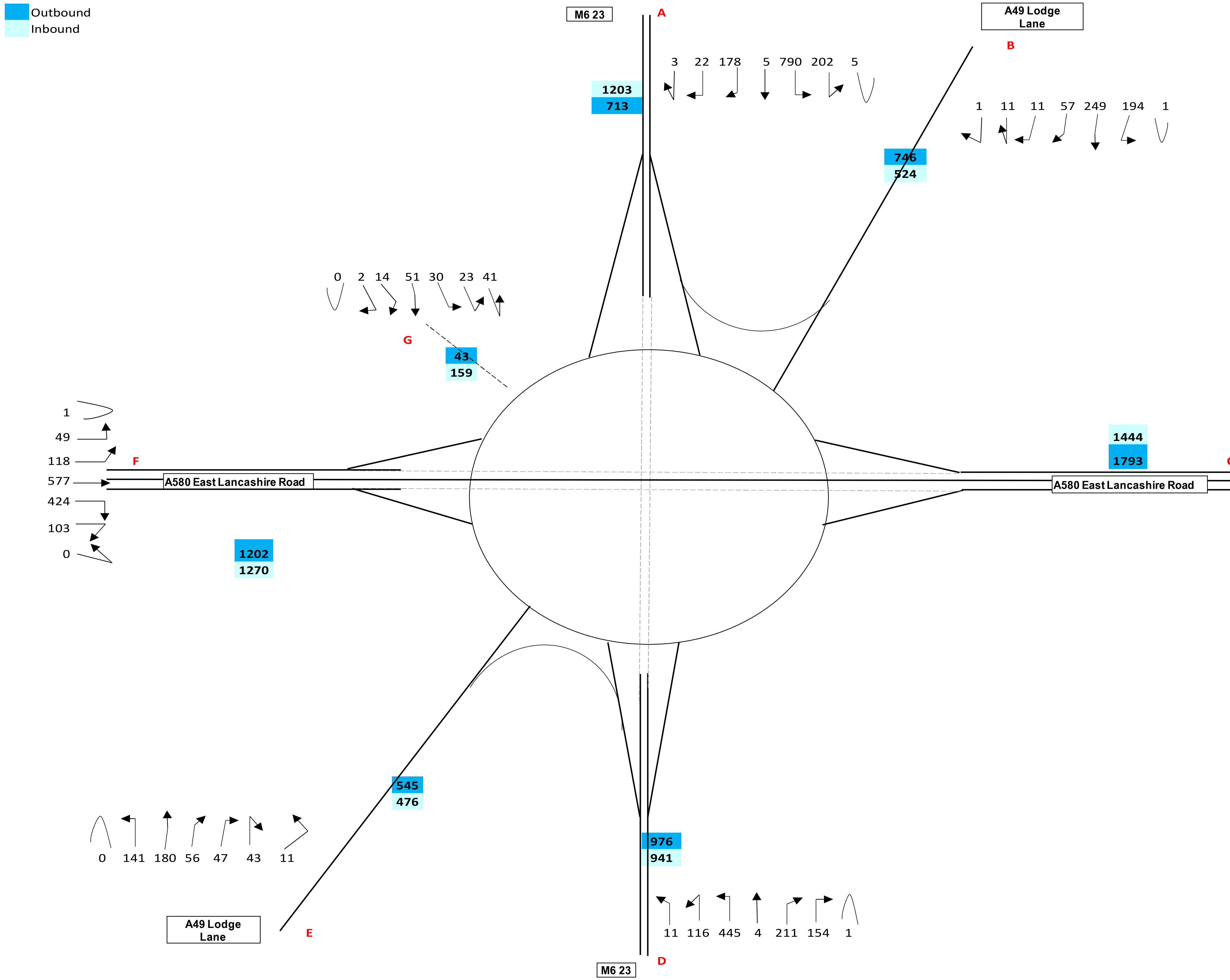
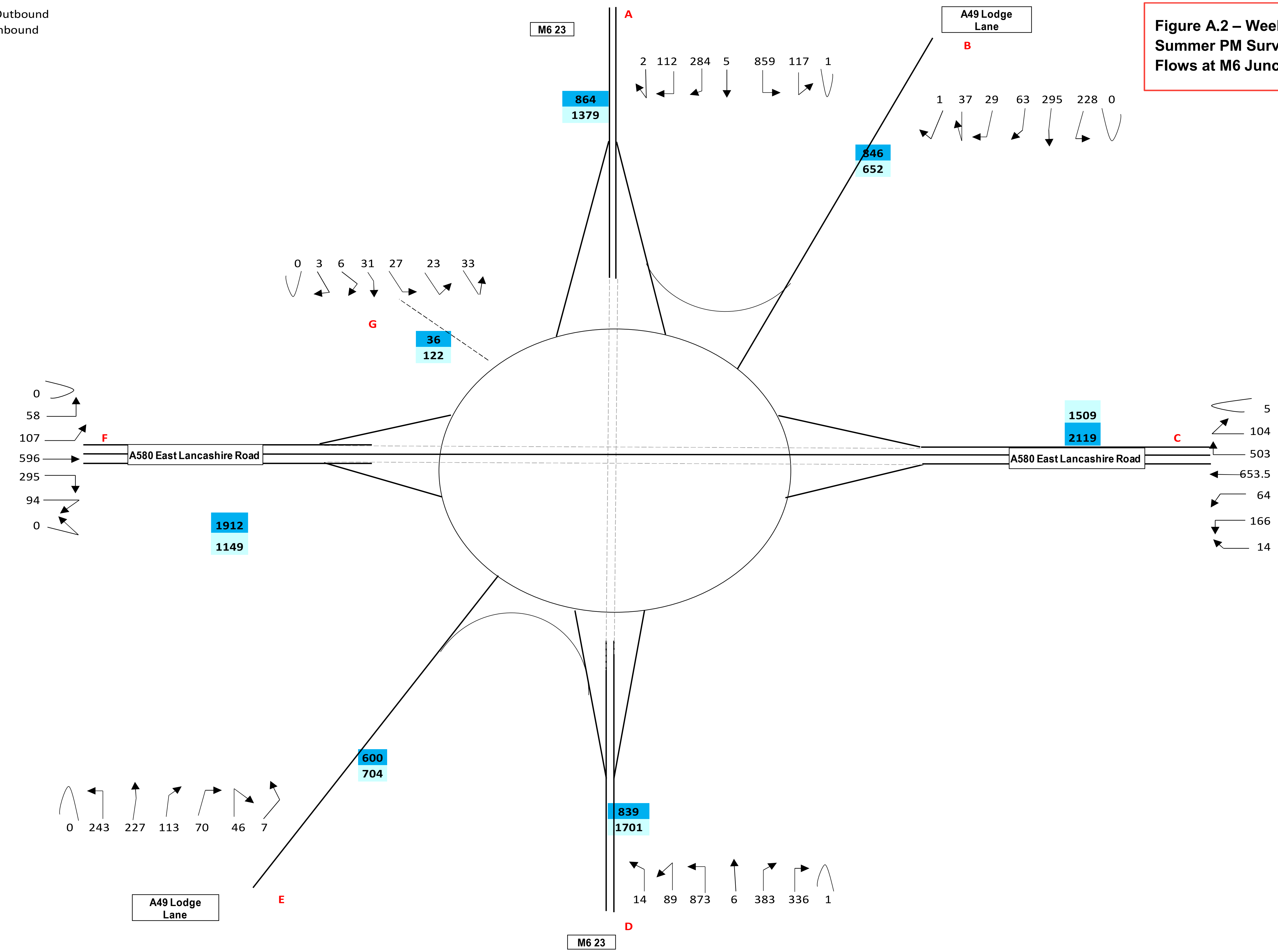
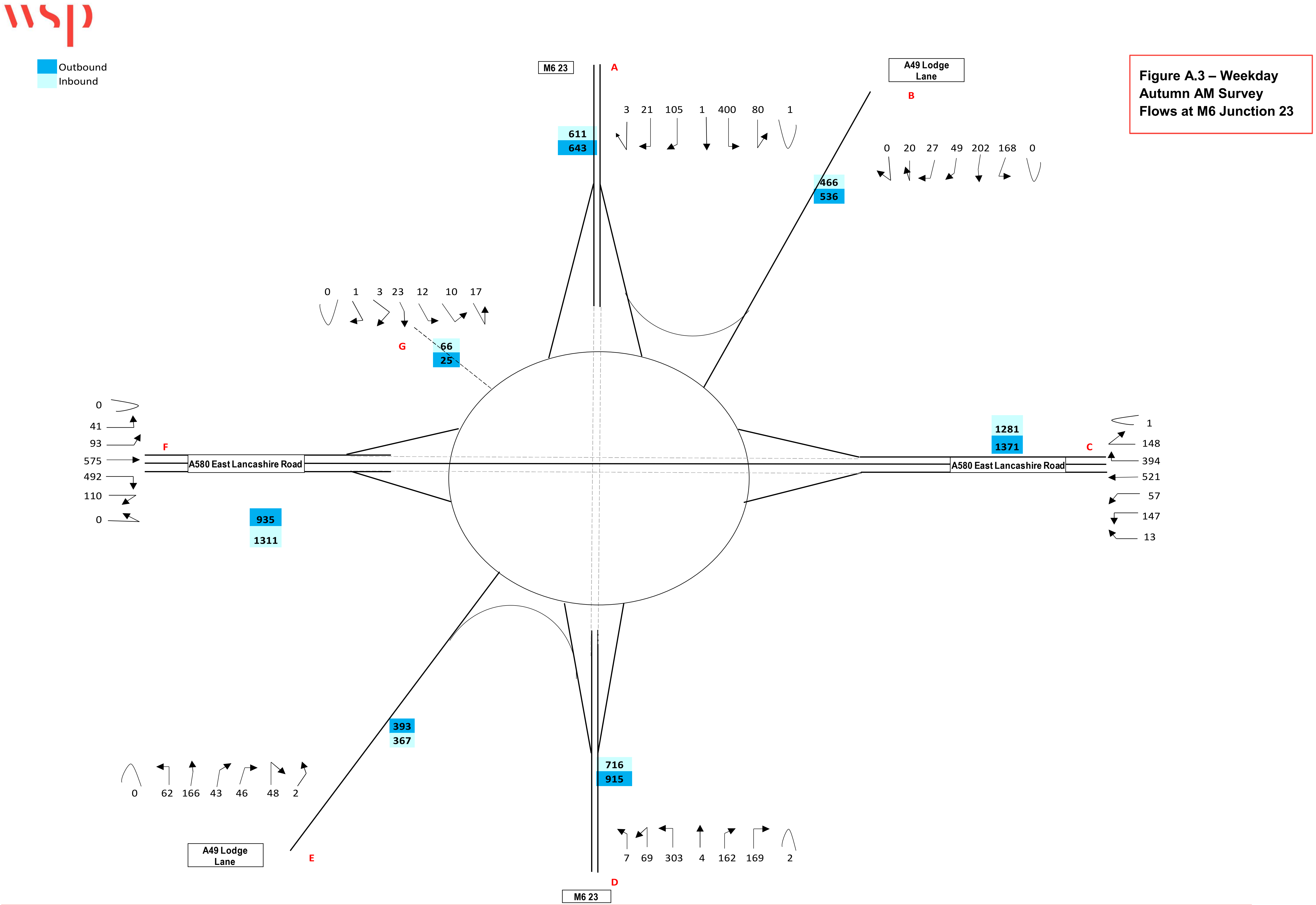


Figure A.1 – Weekday Summer AM Survey Flows at M6 Junction 23

Outbound
Inbound

Figure A.2 – Weekday Summer PM Survey Flows at M6 Junction 23





Outbound
Inbound
M6 23
A
A49 Lodge Lane
B
Figure A.3 – Weekday Autumn AM Survey Flows at M6 Junction 23
3 21 105 1 400 80 1
611
643
0 20 27 49 202 168 0
466
536
0 1 3 23 12 10 17
G
66
25
0
41
93
575
492
110
0
F
A580 East Lancashire Road
935
1311
1281
1371
C
A580 East Lancashire Road
1
148
394
521
57
147
13
393
367
716
915
0 62 166 43 46 48 2
A49 Lodge Lane
E
7 69 303 4 162 169 2
D
M6 23

Figure A.4 – Weekday Autumn PM Survey Flows at M6 Junction 23

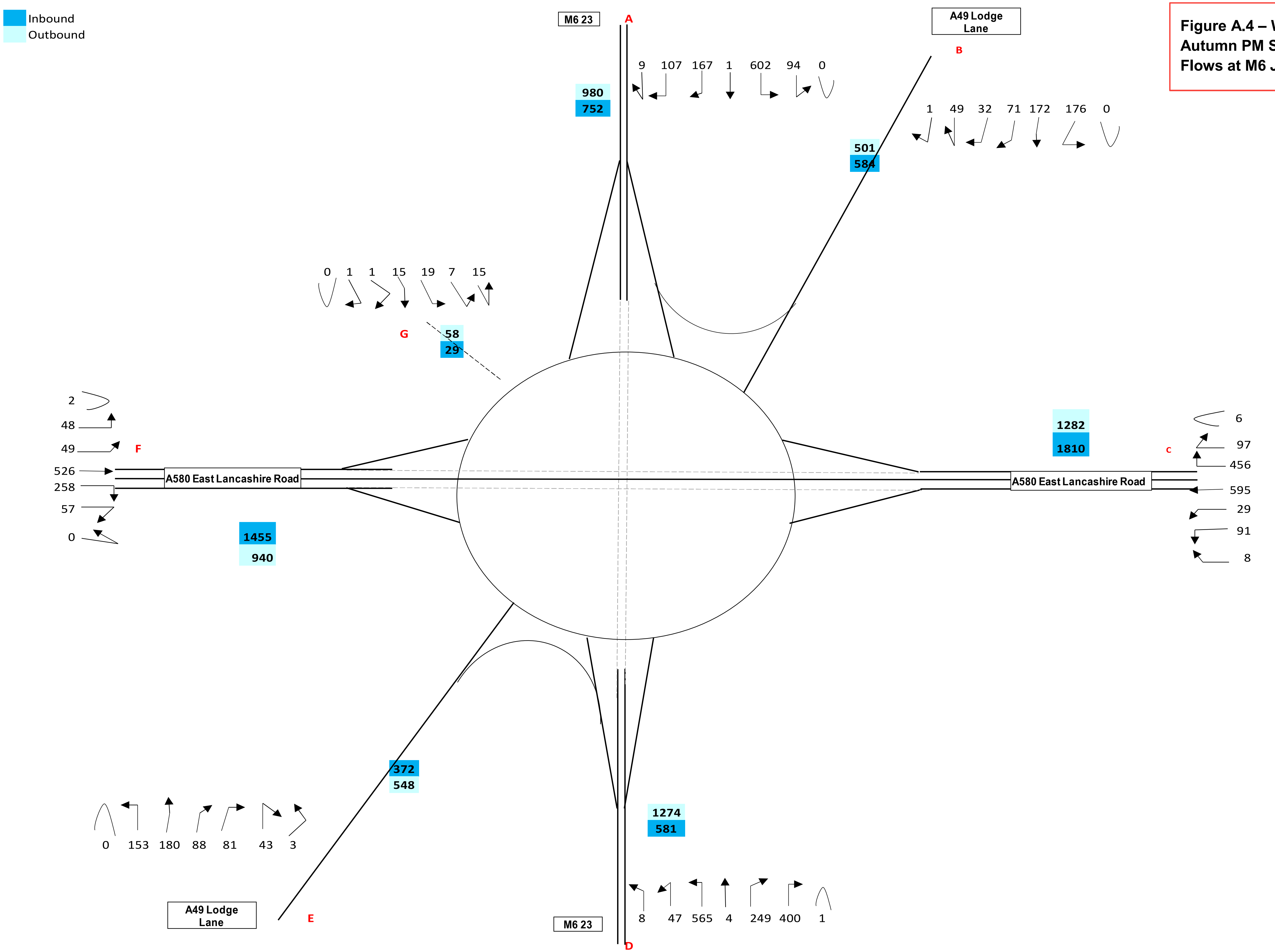


Figure A.5 – Weekend Autumn AM Survey Flows at M6 Junction 23

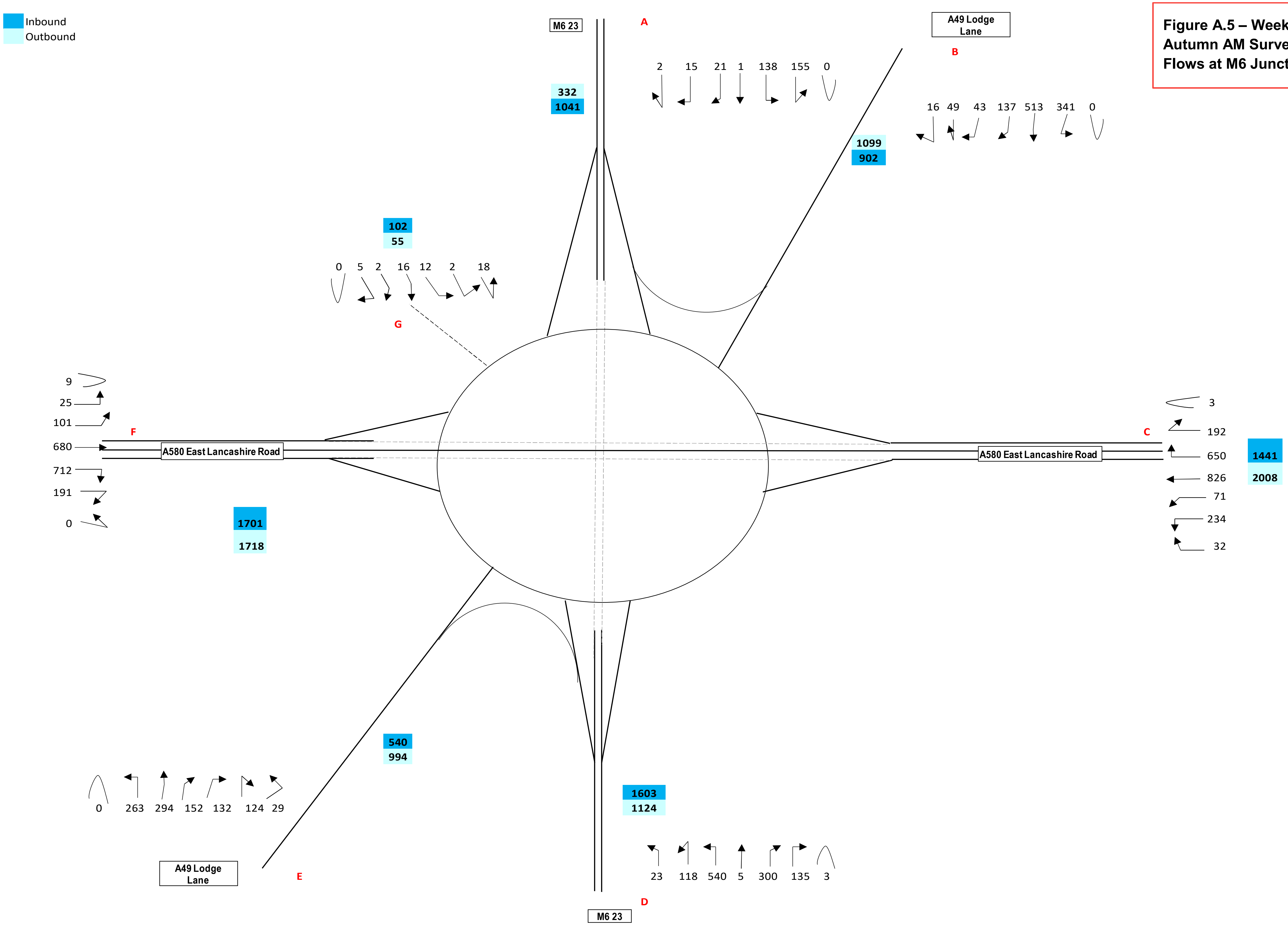
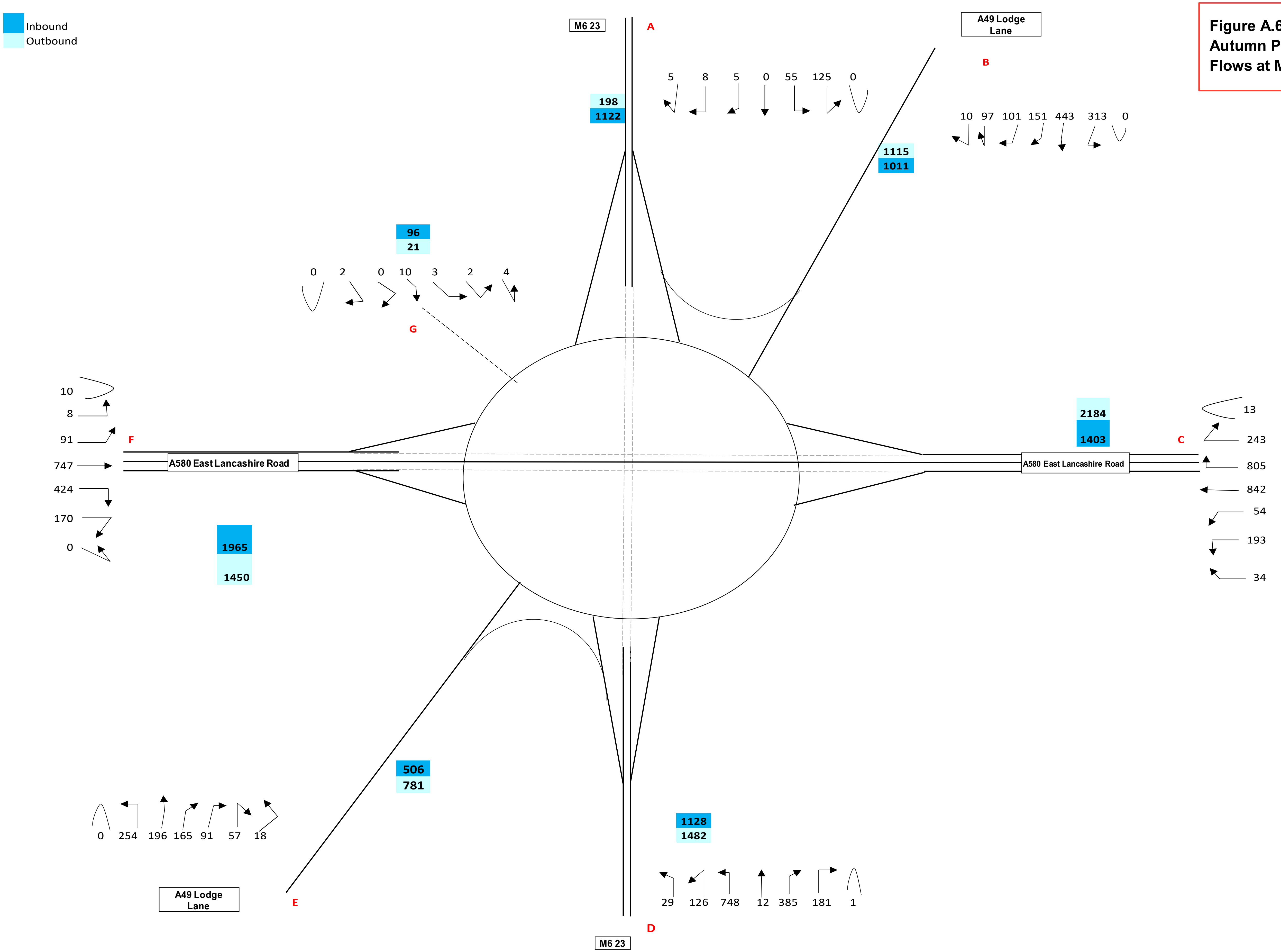


Figure A.6 – Weekend Autumn PM Survey Flows at M6 Junction 23



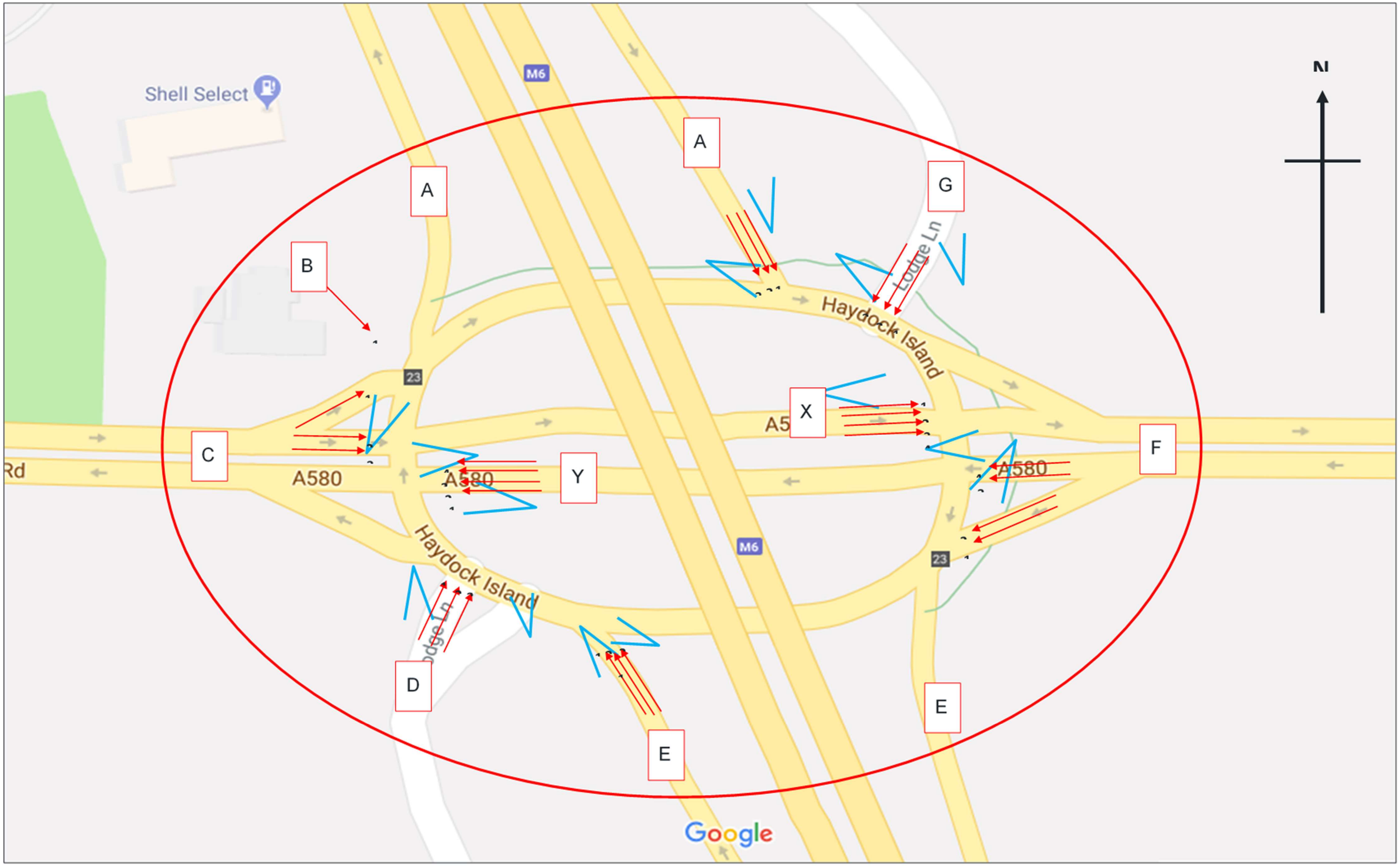


Figure A.7 - Arms for Queue length surveys carried out in the Autumn

Autumn 2018 Queue Length Data for M6 Junction 23

The Lanes are numbered outwards in the direction of travel from the nearside kerb. Lane 1 will always be the closest lane to the footway.

Figure A.8 - Queue Length for ARM A

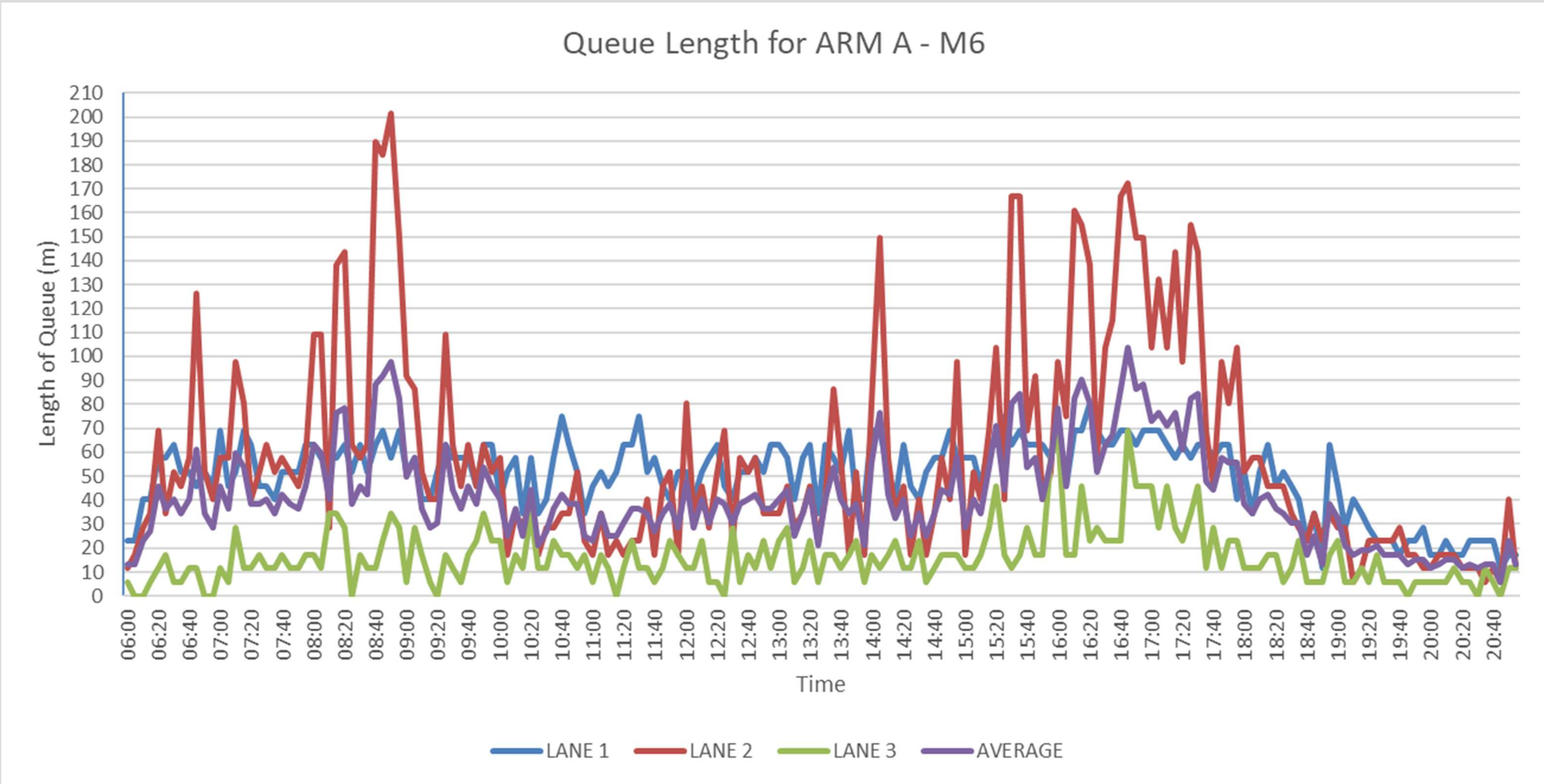


Figure A.9 - Queue Length for Arm C

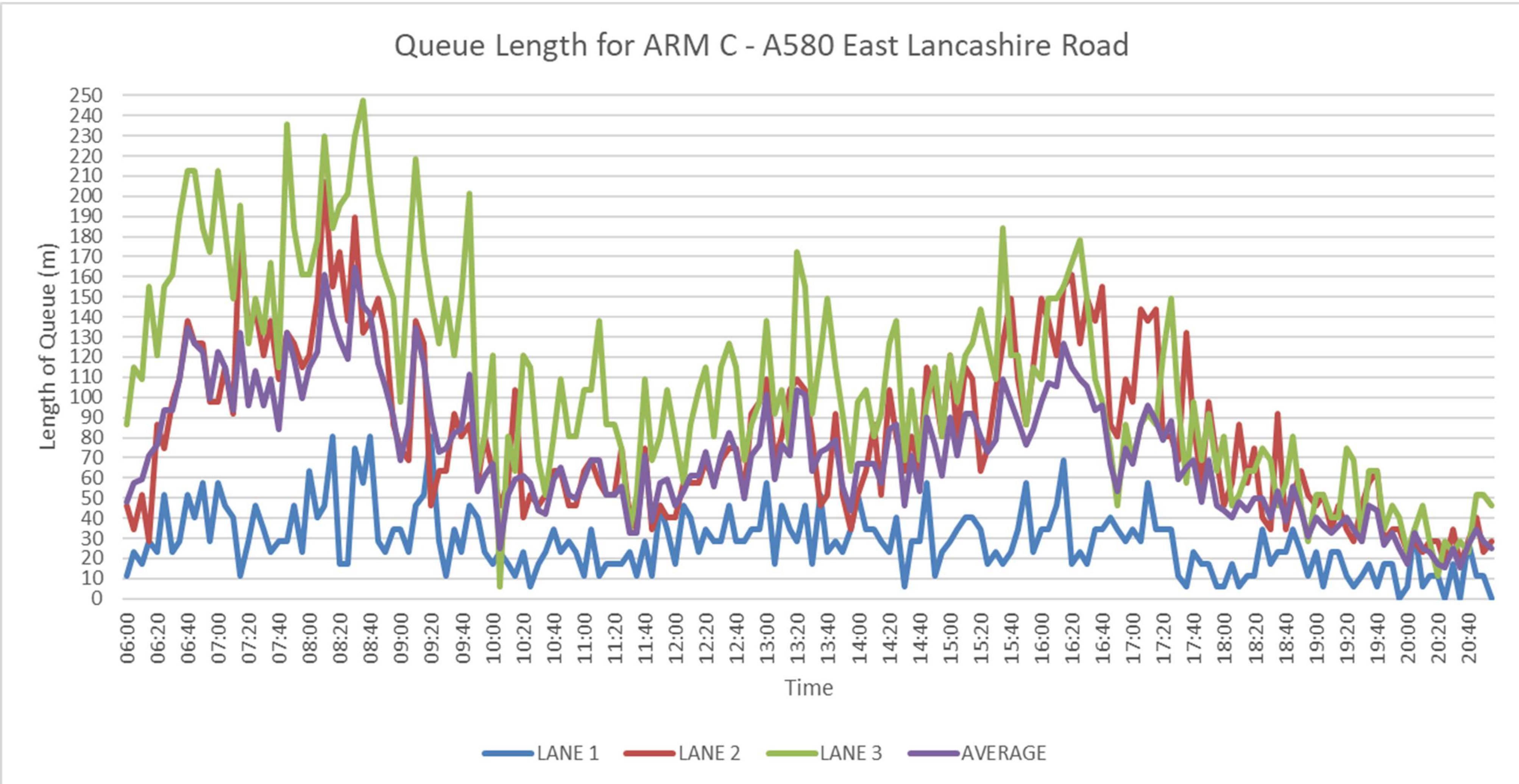


Figure A.10 - The Queue extent for Arm D

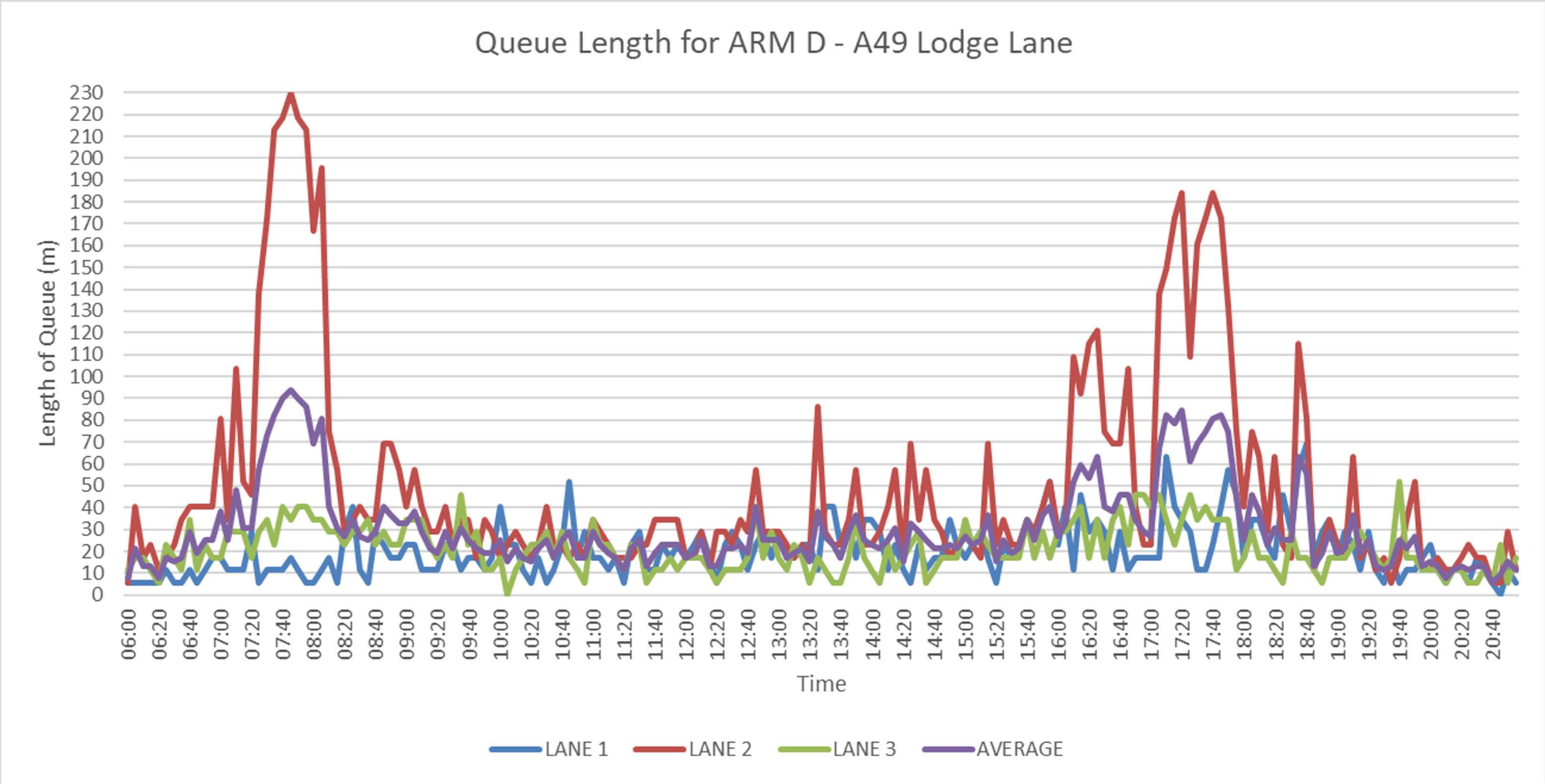


Figure A.11 - The extent of the queue length for Arm E

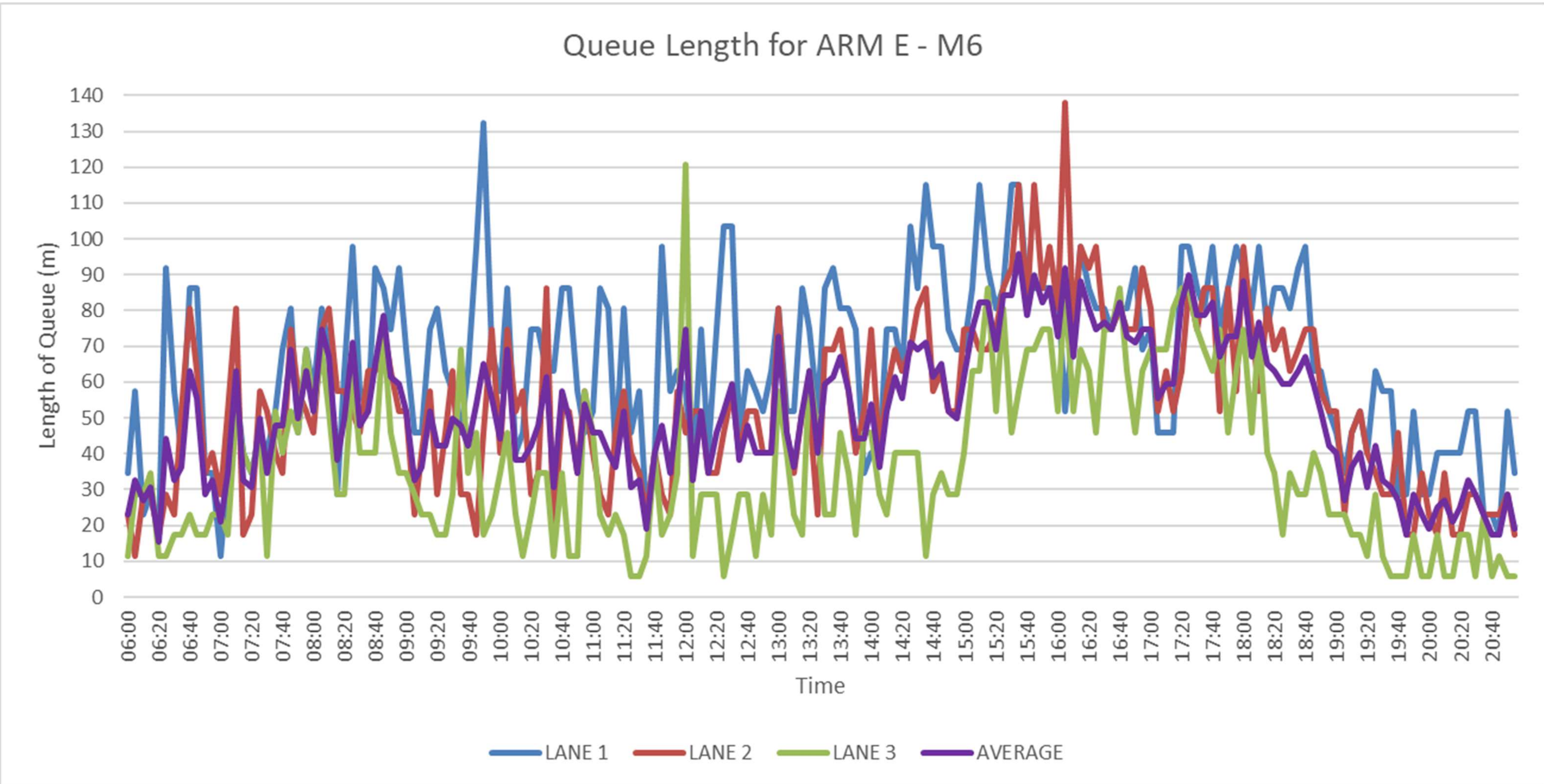


Figure A.12 - The length of the queue for Arm F

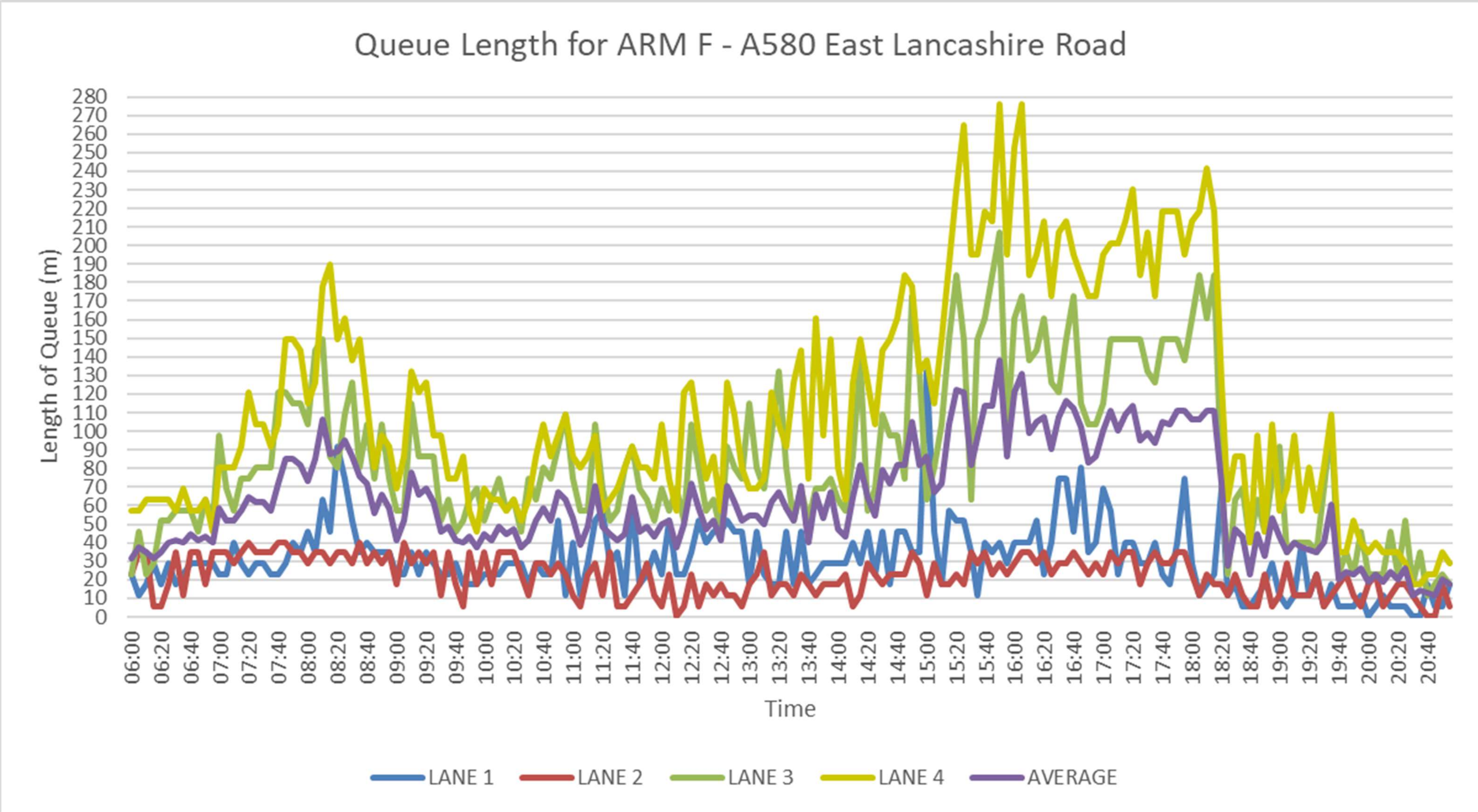


Figure A.13 - The length of the queue for Arm G

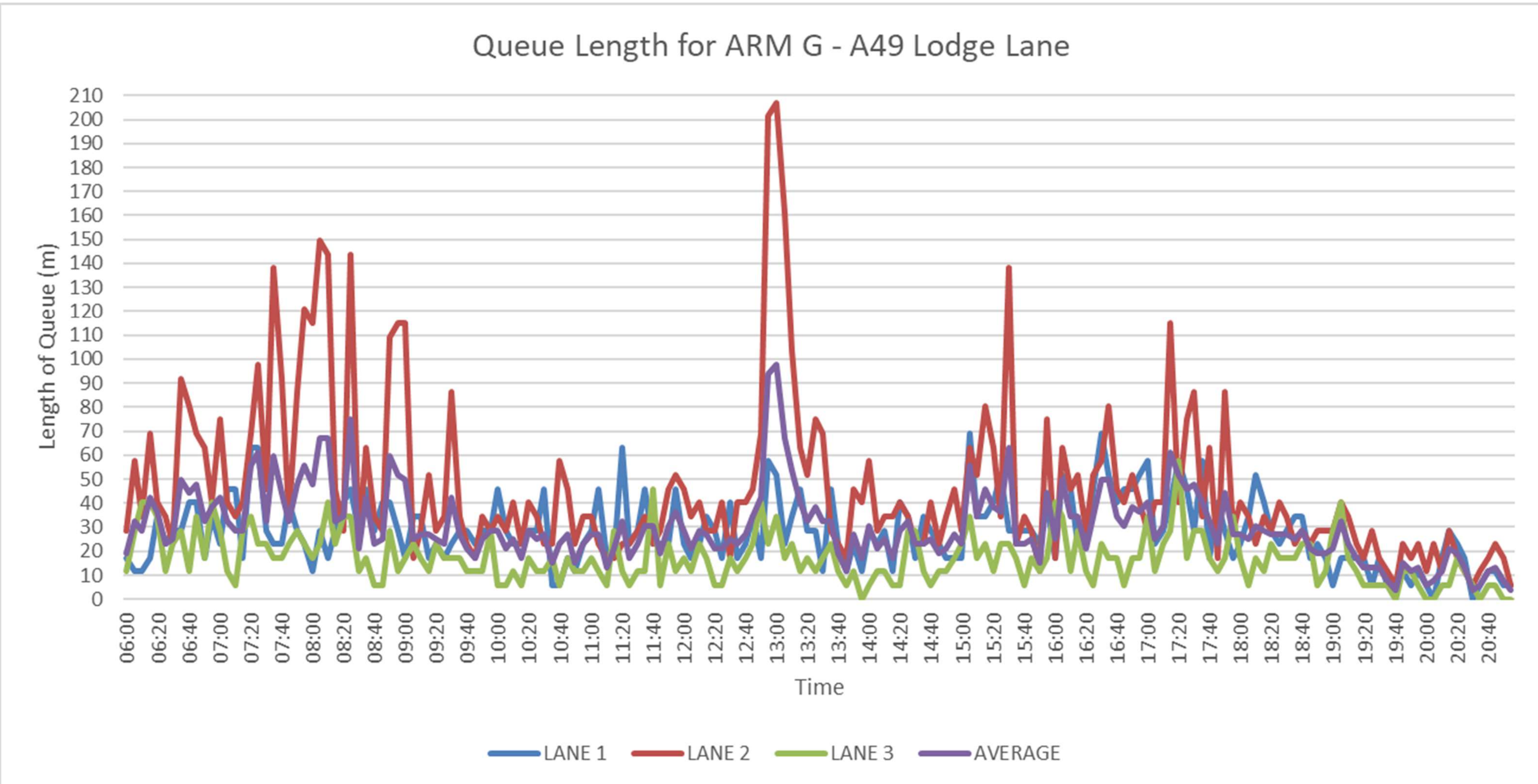


Figure A.14 - The exent of the queue for Arm X

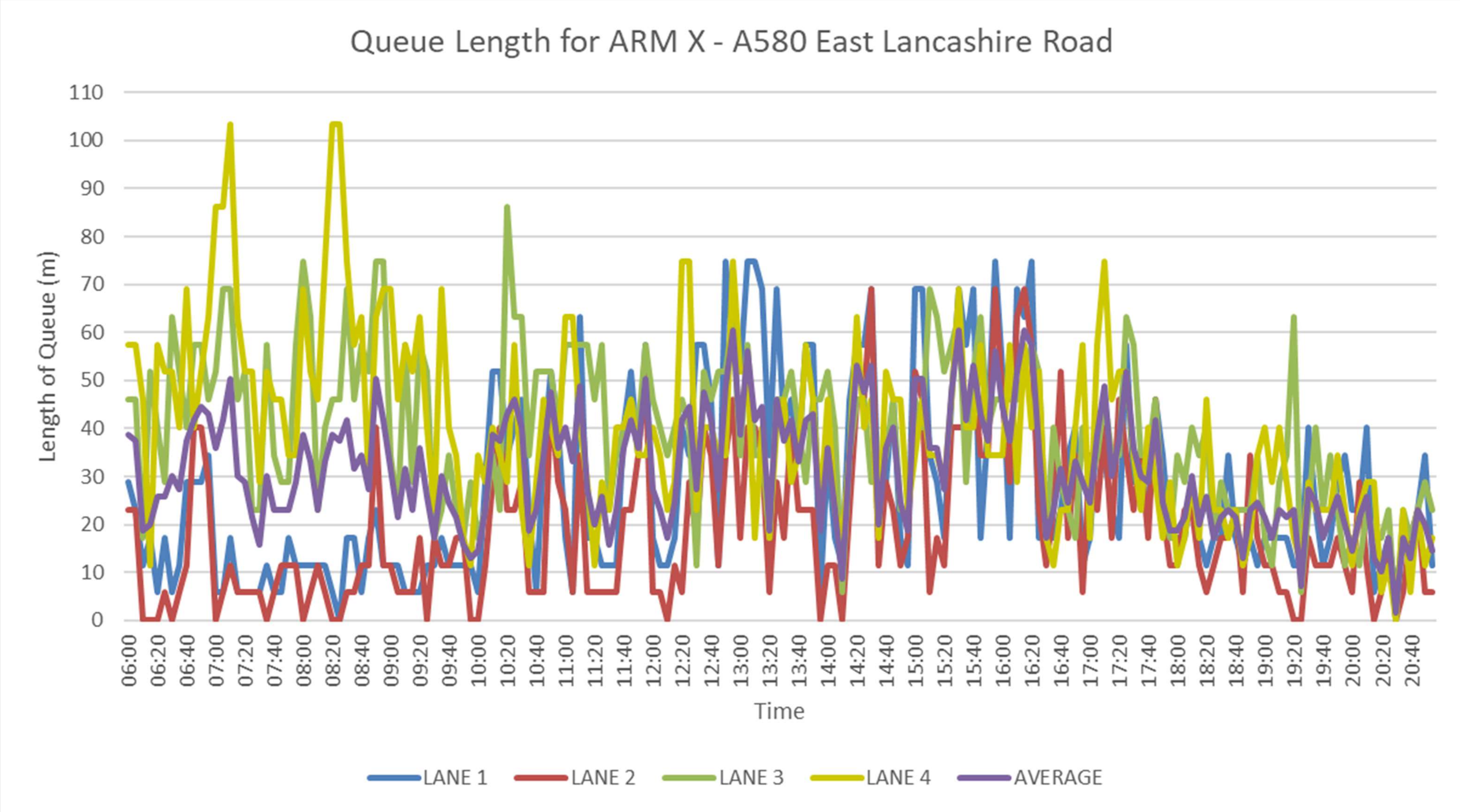


Figure A.14 - The length of the queue for Arm Y

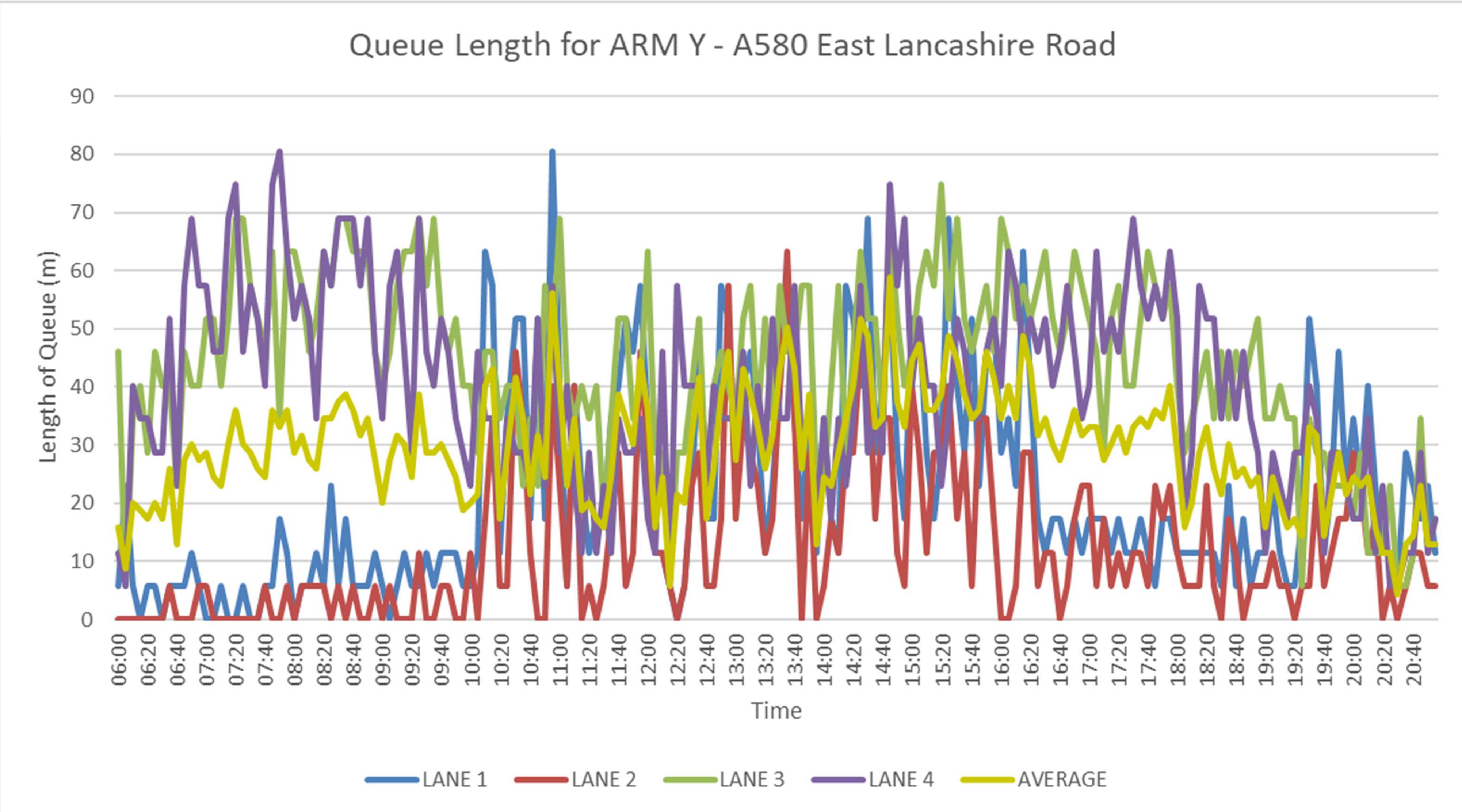


Figure A.15 - Lanes for Queue length surveys carried out in the Summer

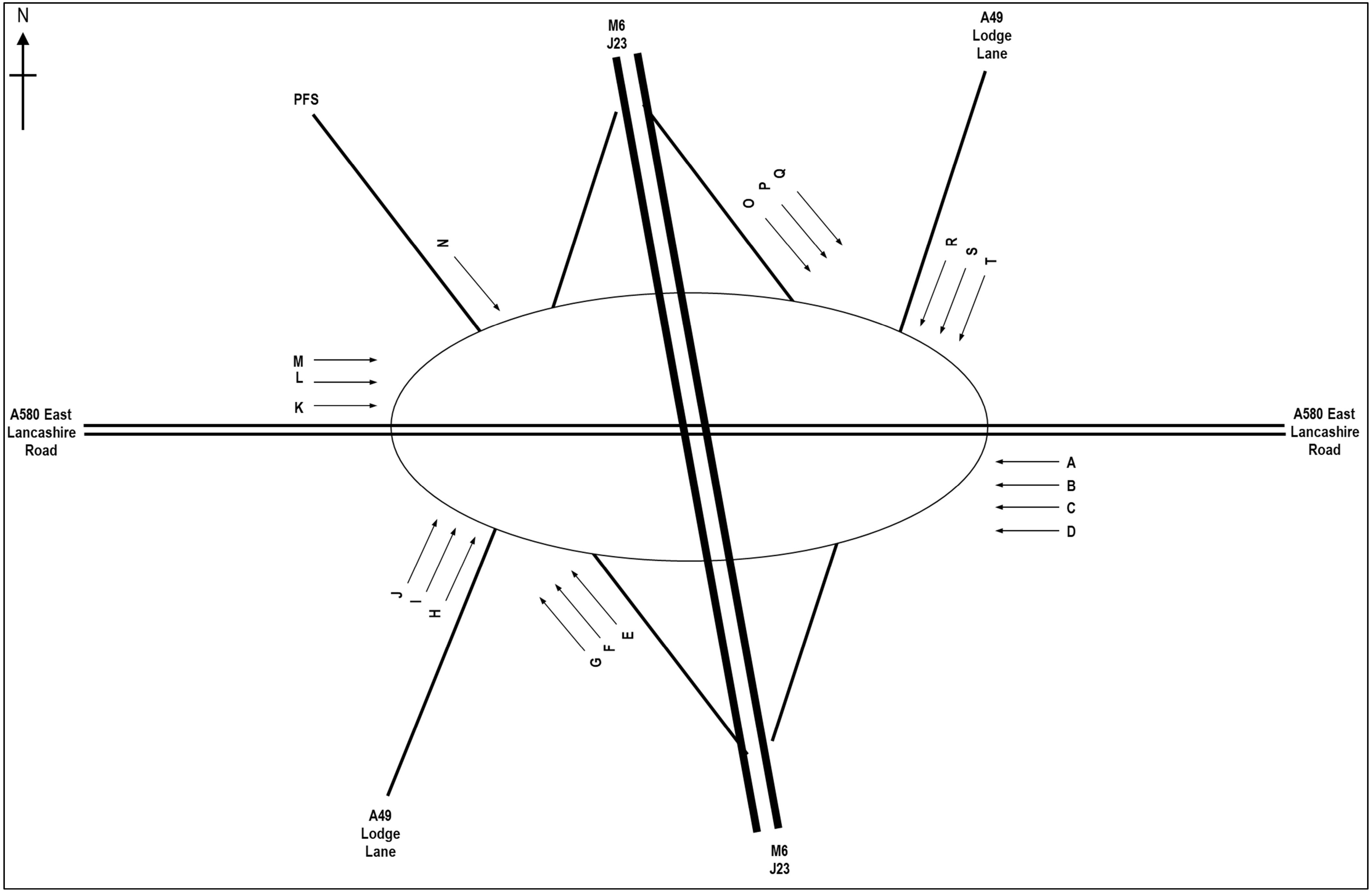


Figure A.16 - Lanes for Queue length surveys carried out in the Summer

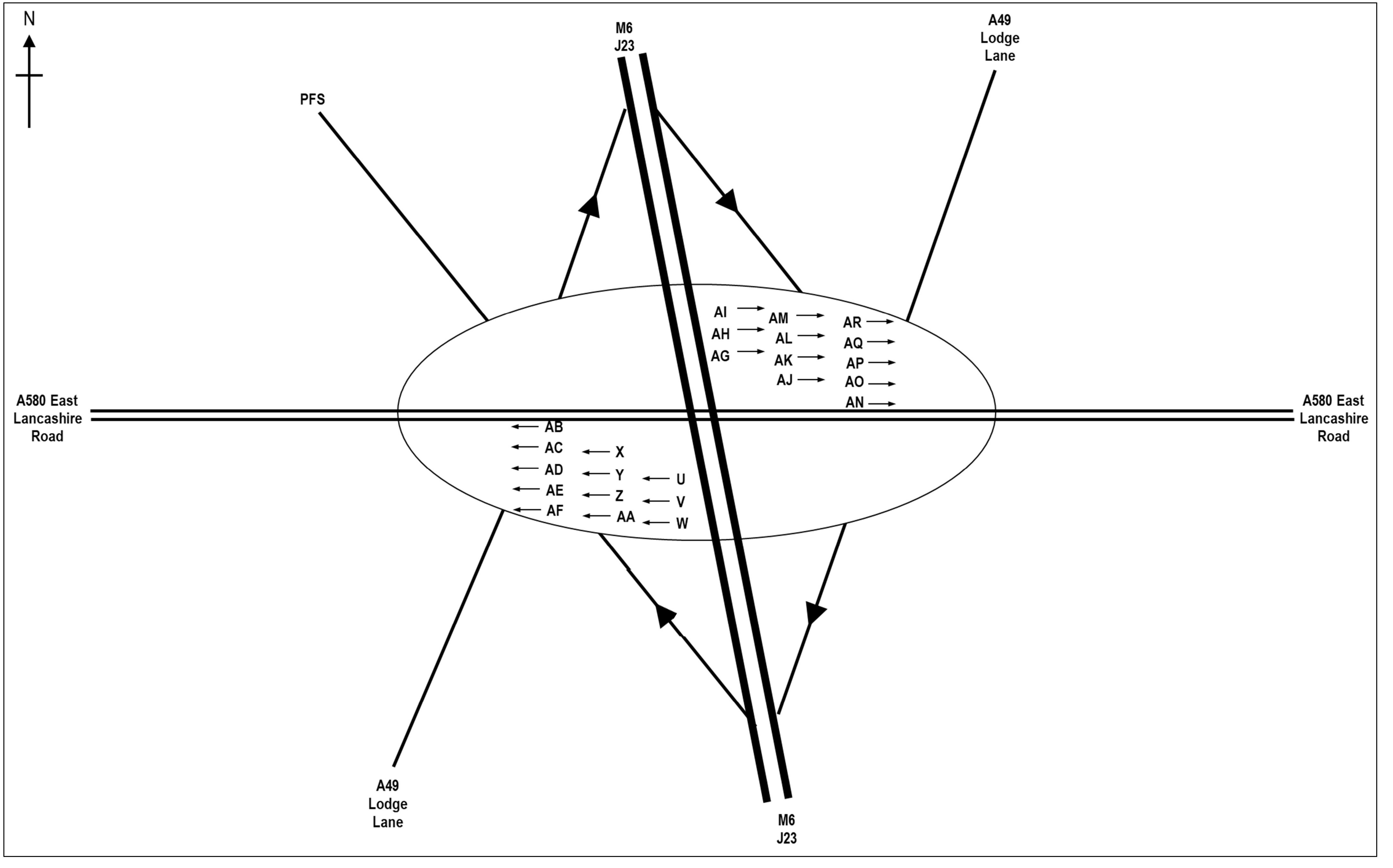
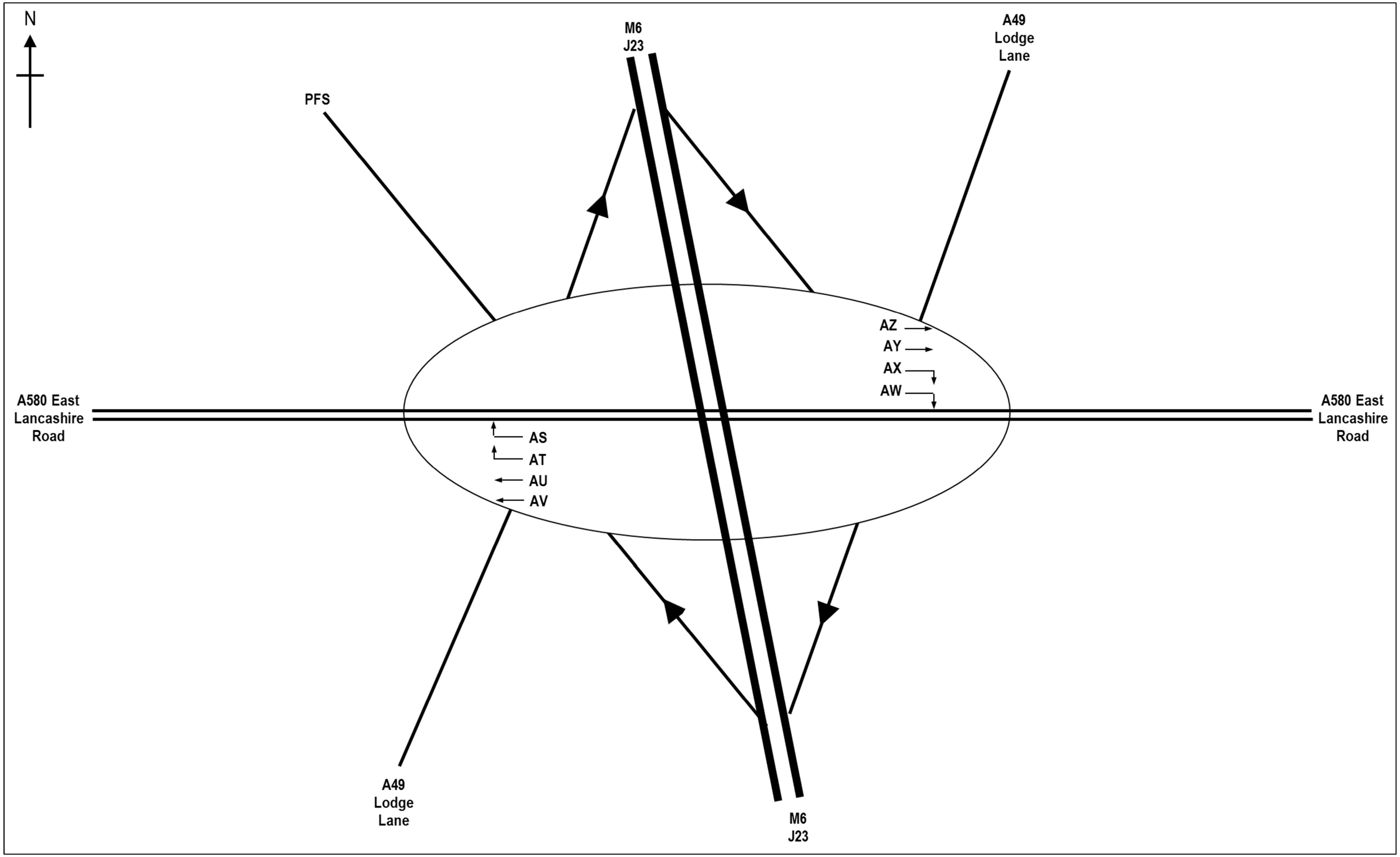


Figure A.17 - Lanes for Queue length surveys carried out in the Summer



Summer 2018 Queue Length Data for M6 Junction 23

Figure A.18 - The length of the Queue for Lanes A-D

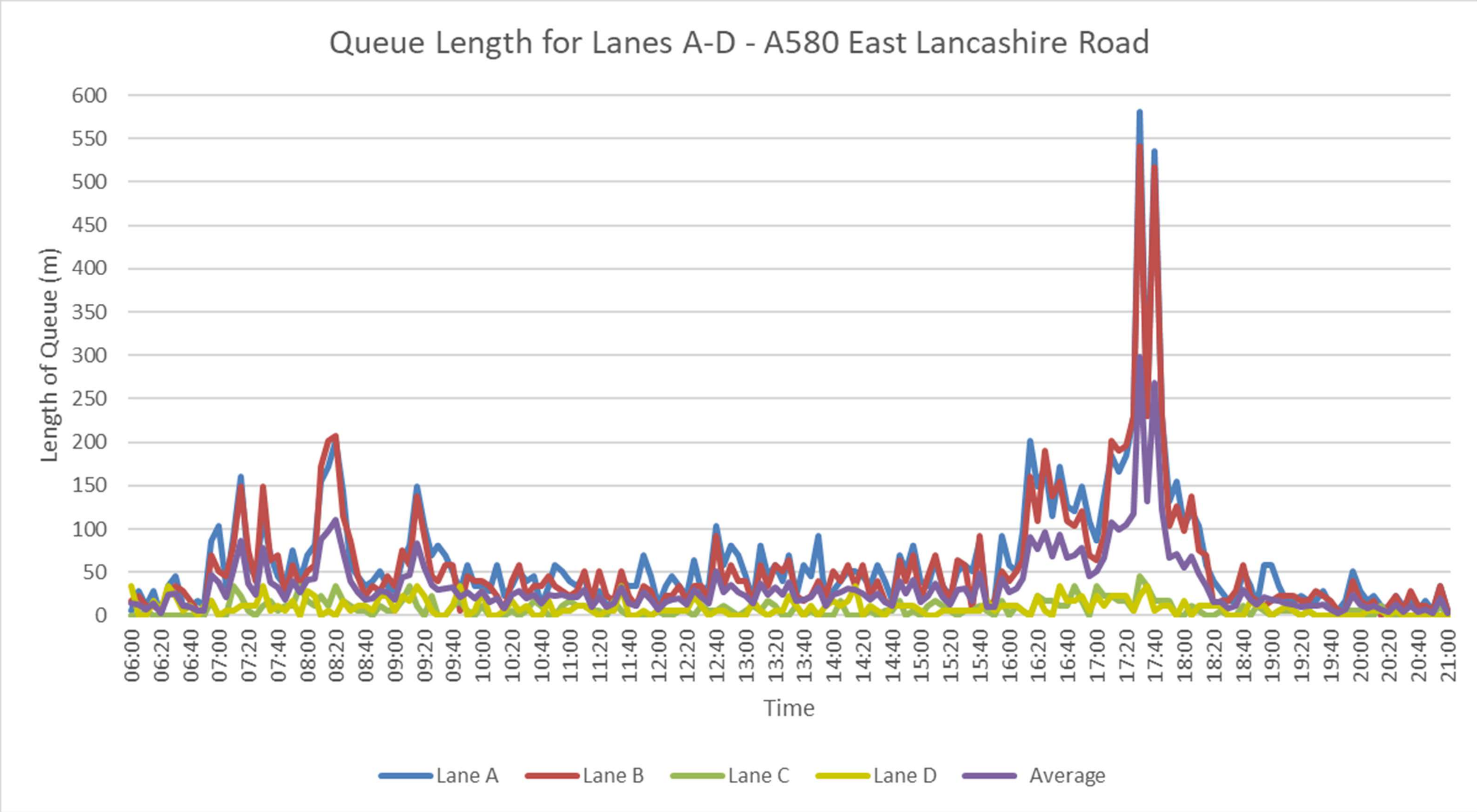


Figure A.19 - Queue length for Lanes E-G

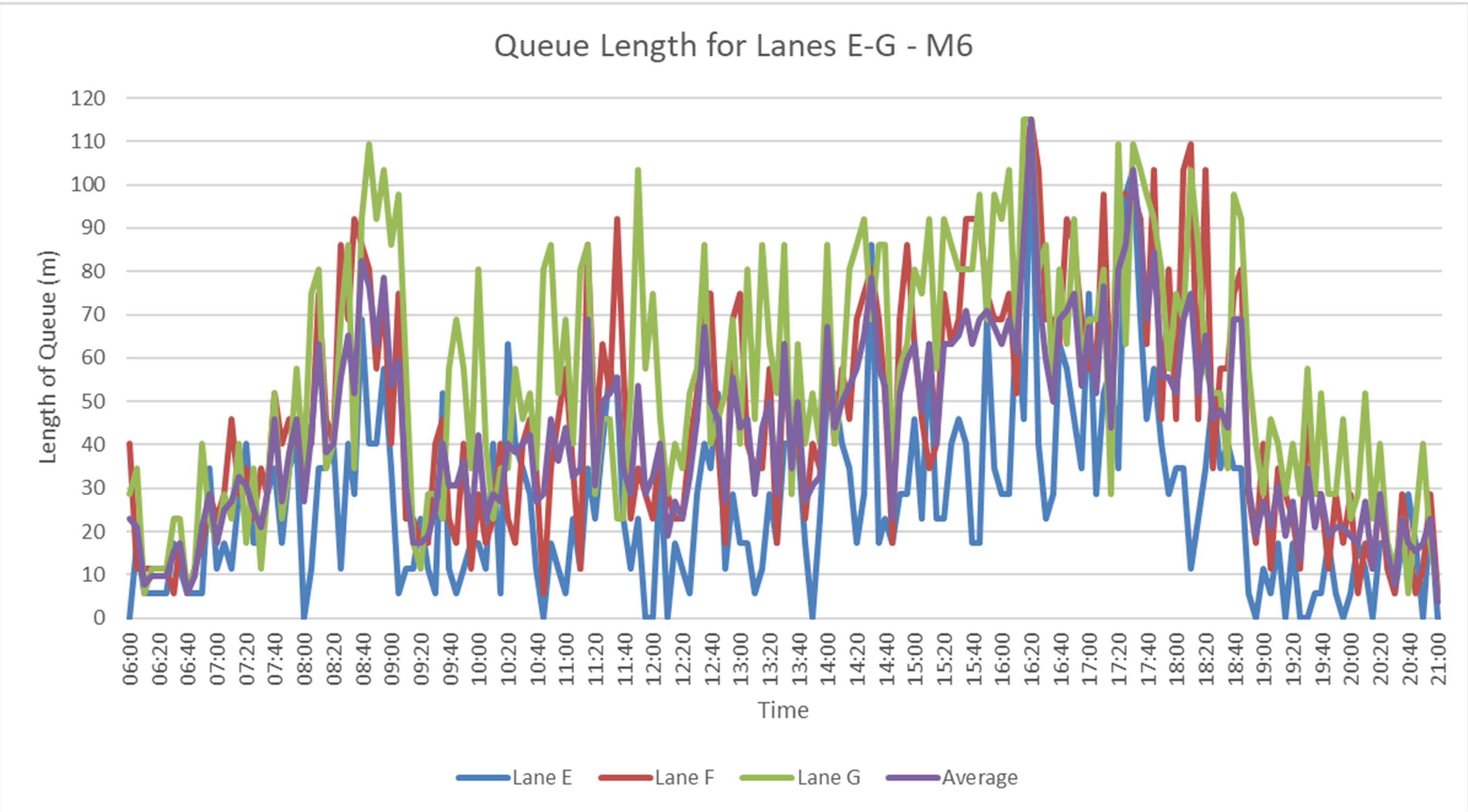


Figure A.20 - The length of the queue for Lanes H-J

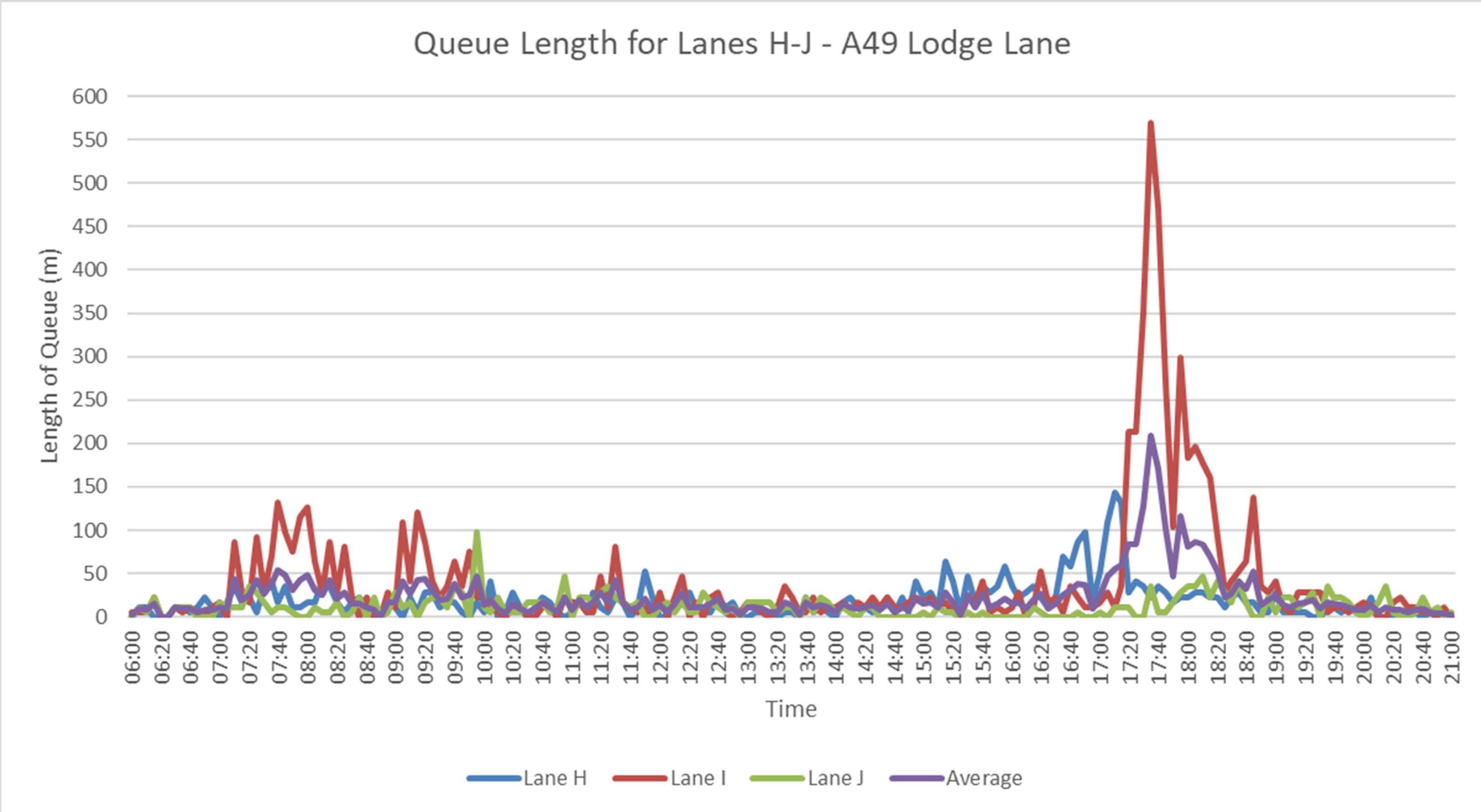


Figure A.21 - The queue length for Lanes K-M

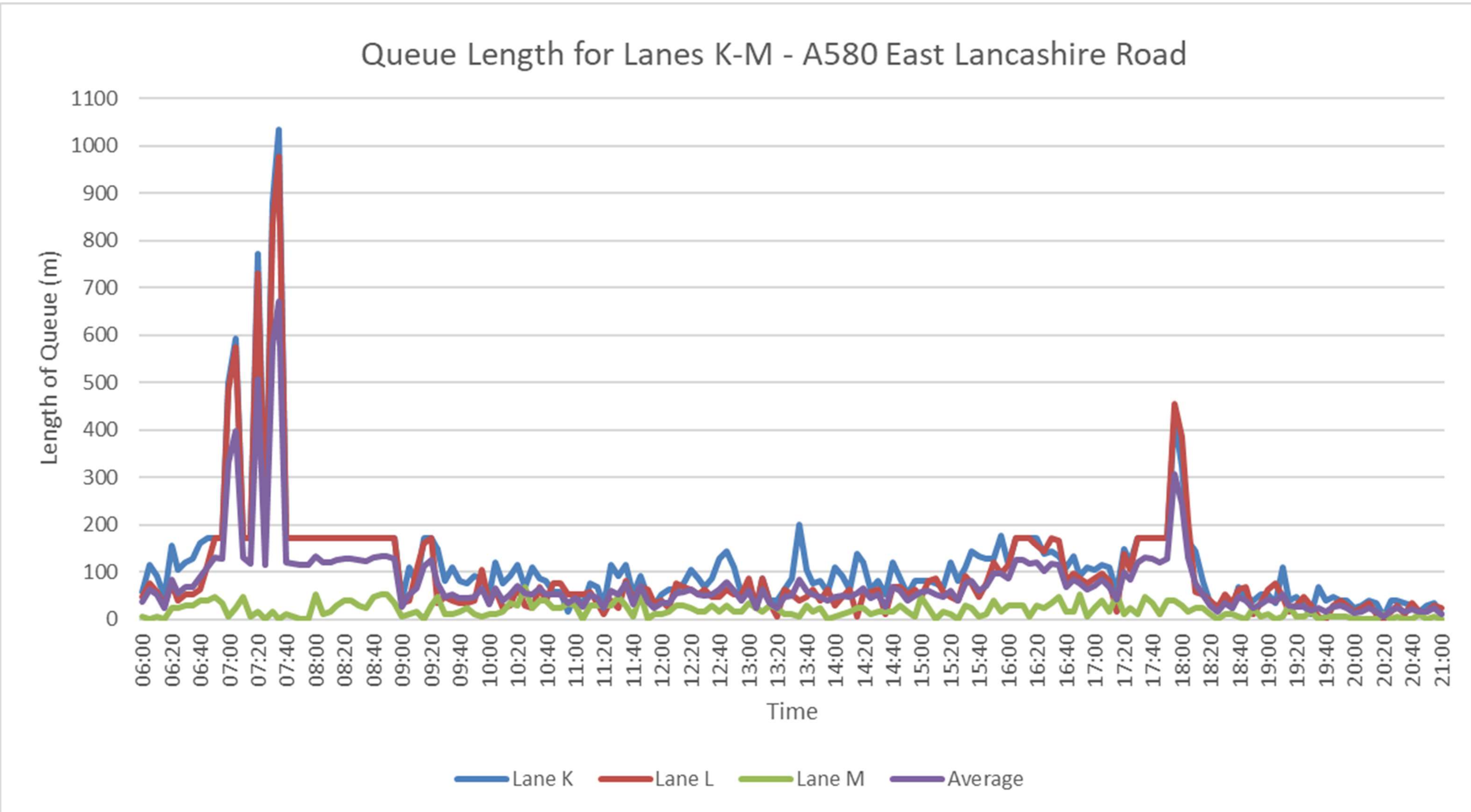


Figure A.22 – Queue length for Lanes O-Q.

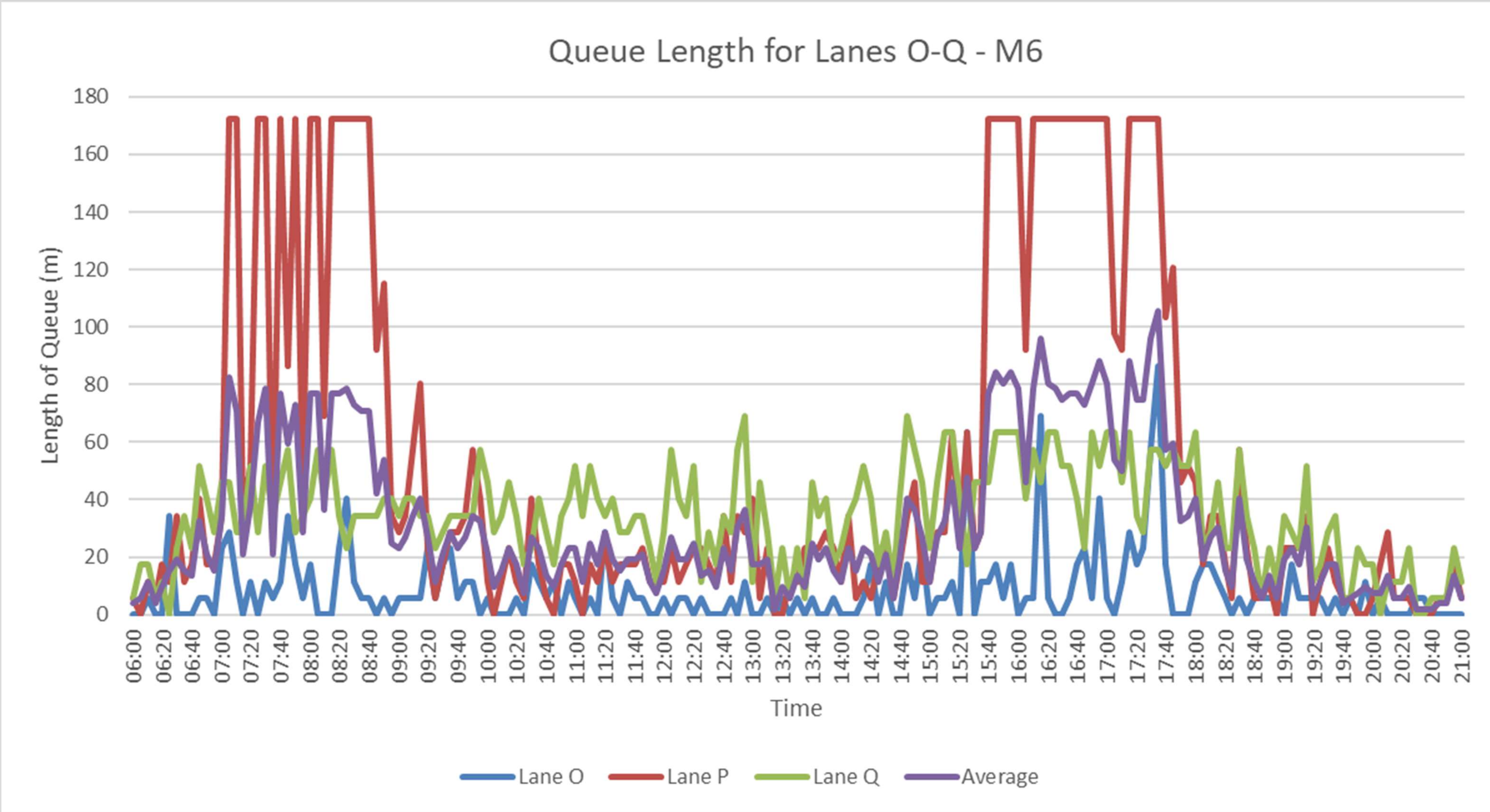


Figure A.23 - The length of the queue for Lanes R-T

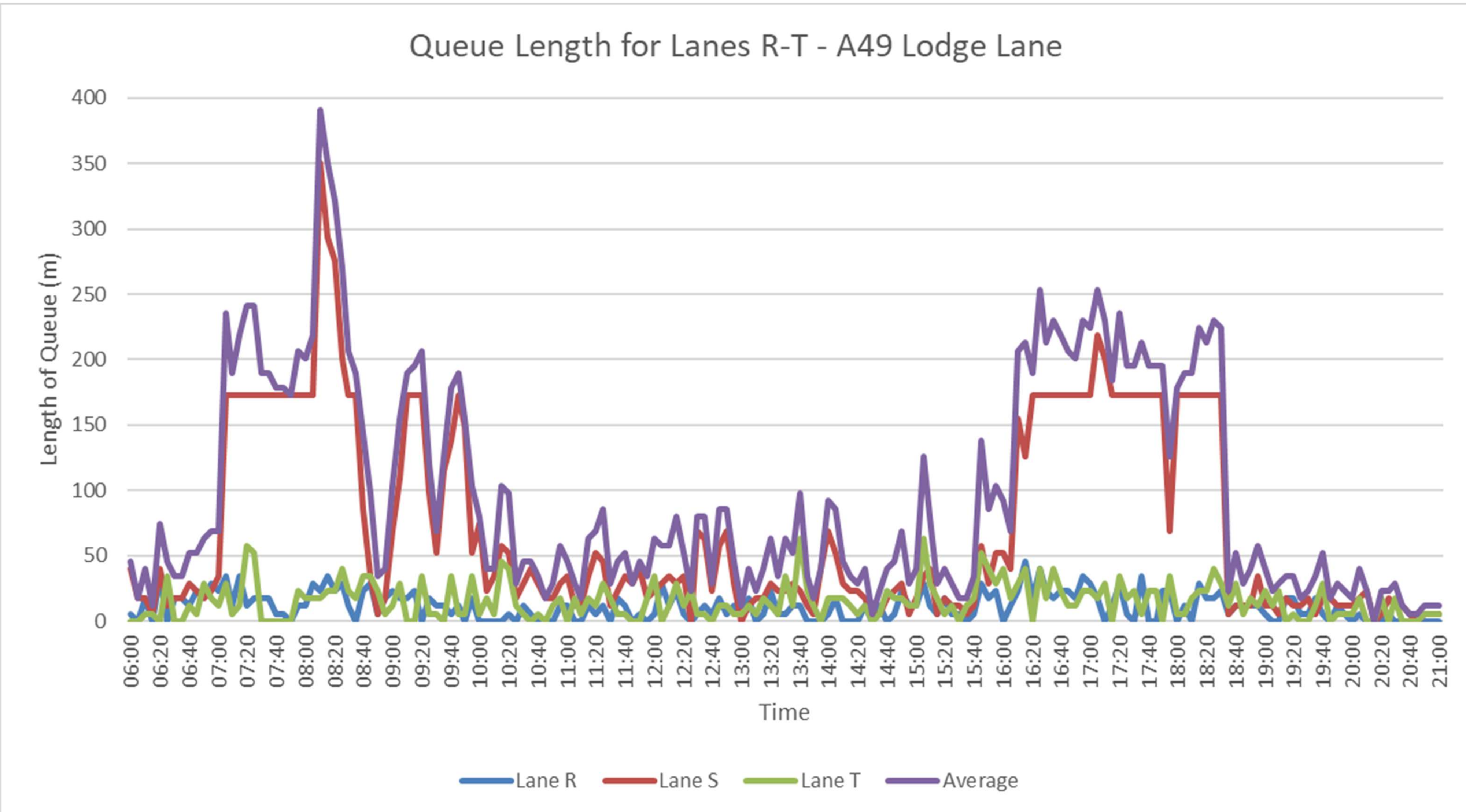


Figure A.24 - Queue Length for Lanes AB - AF

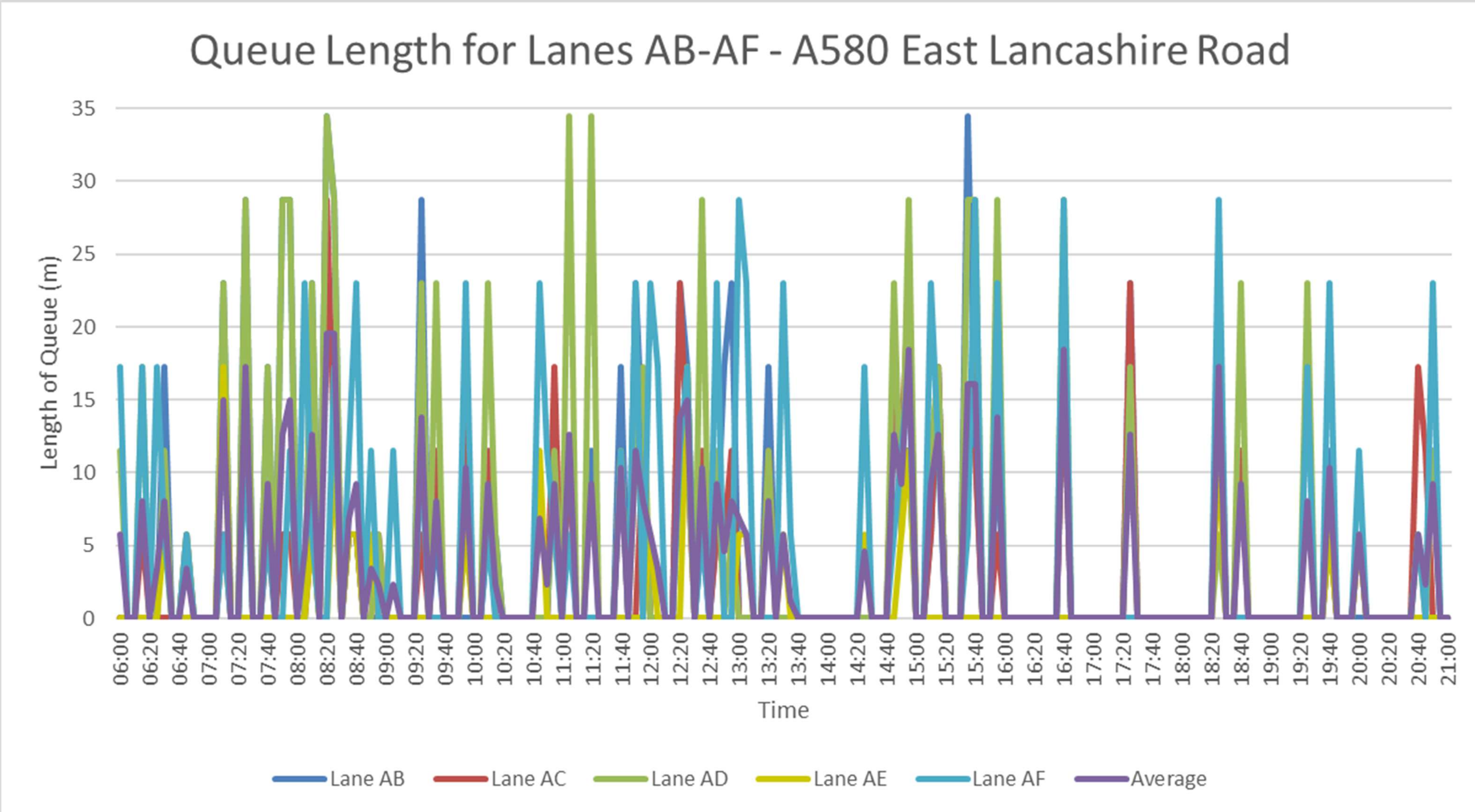


Figure A.25 - The length of the queue for Lanes X-AA

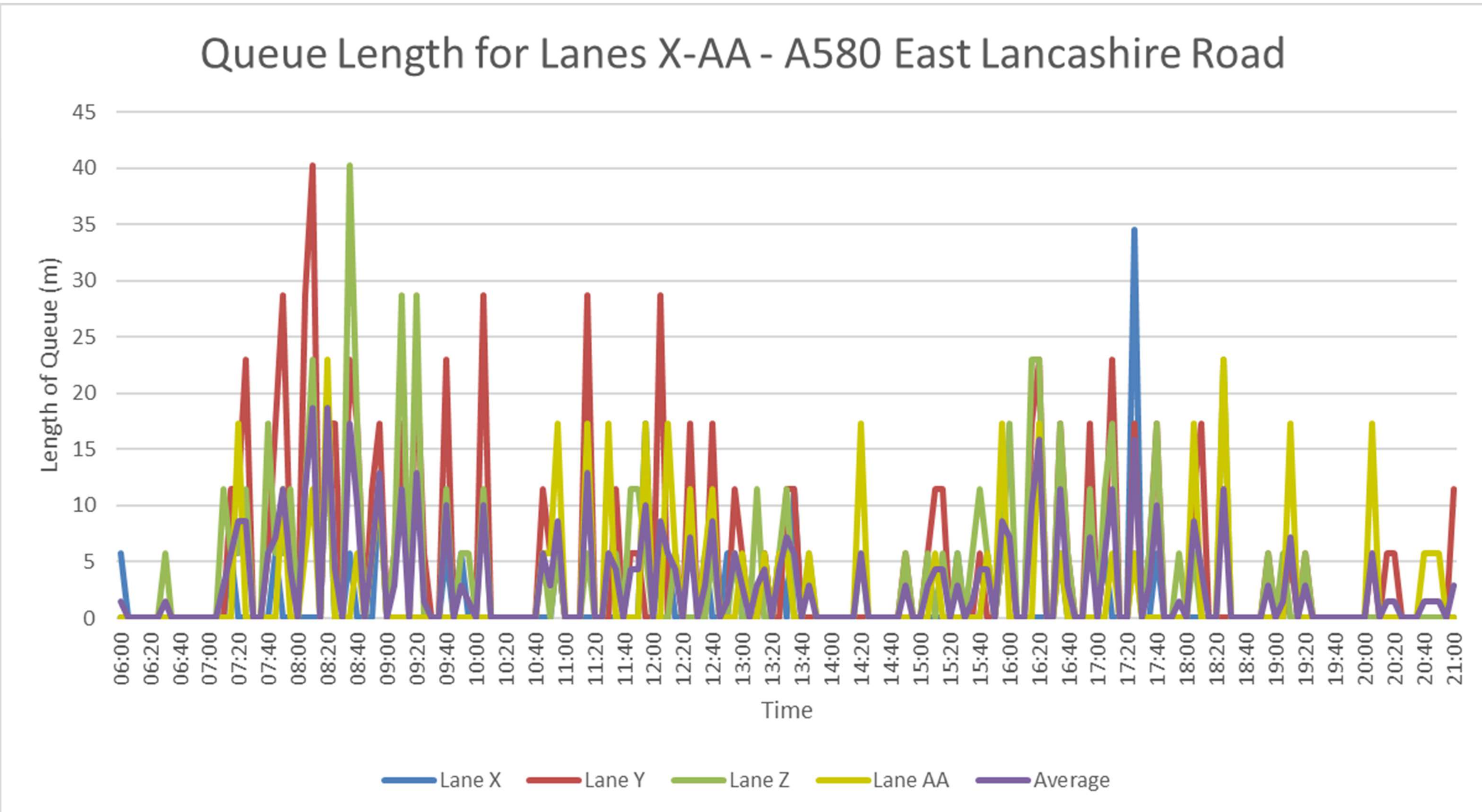


Figure A.26 - Queue length data for Lanes U-W

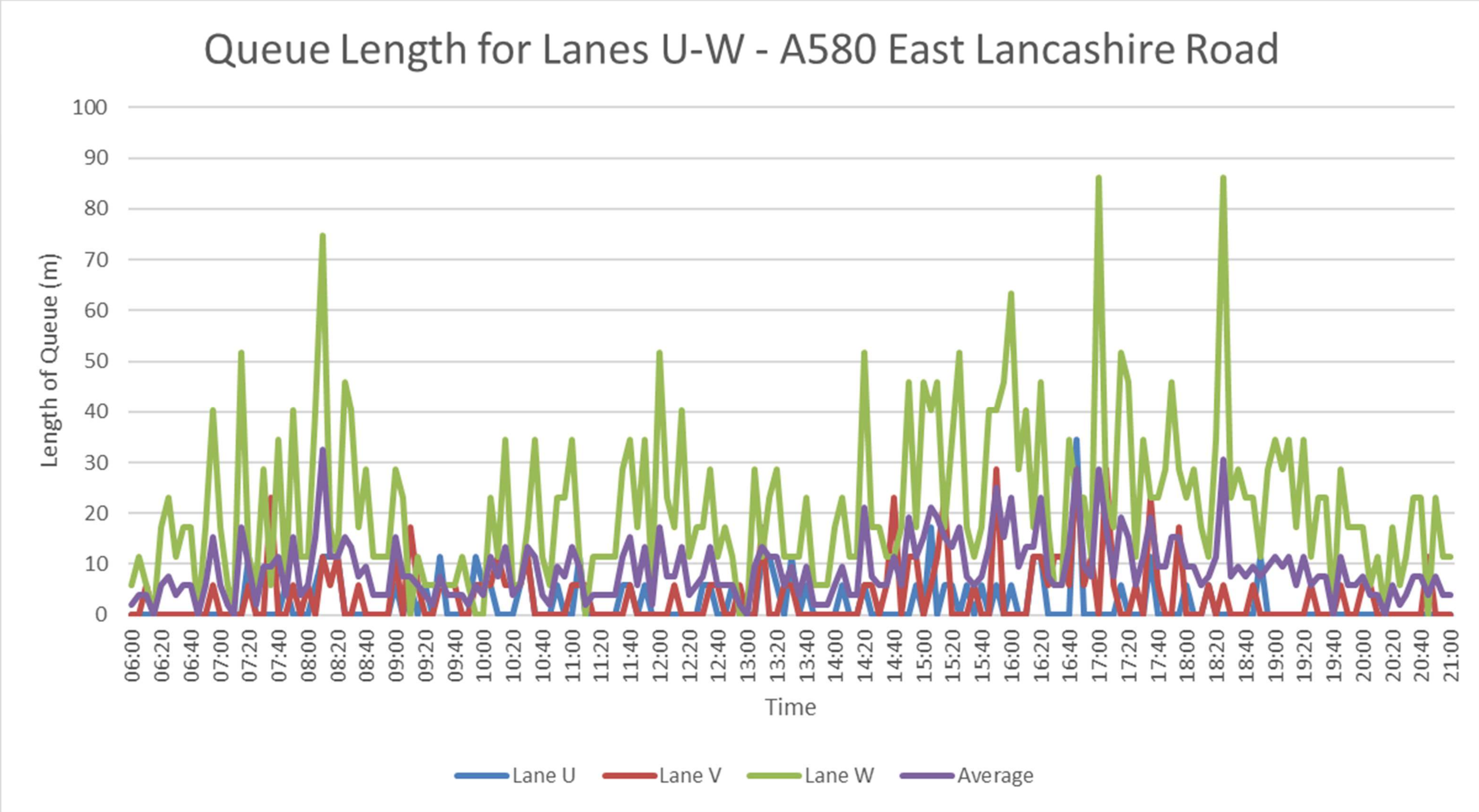


Figure A.27 - Length of the Queue for Lanes AJ -AM

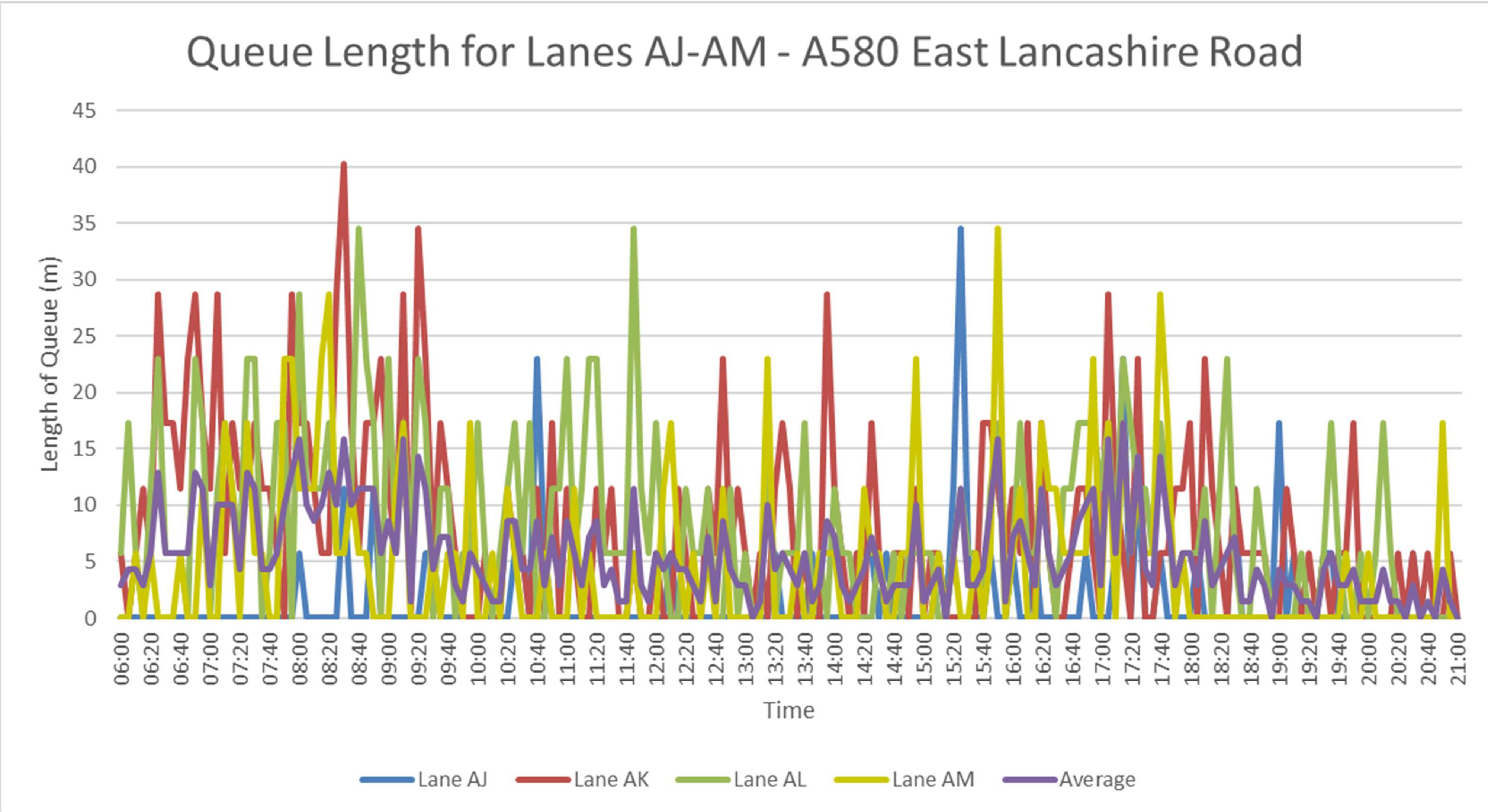


Figure A.28 - Queue Length for Lanes AG - AI

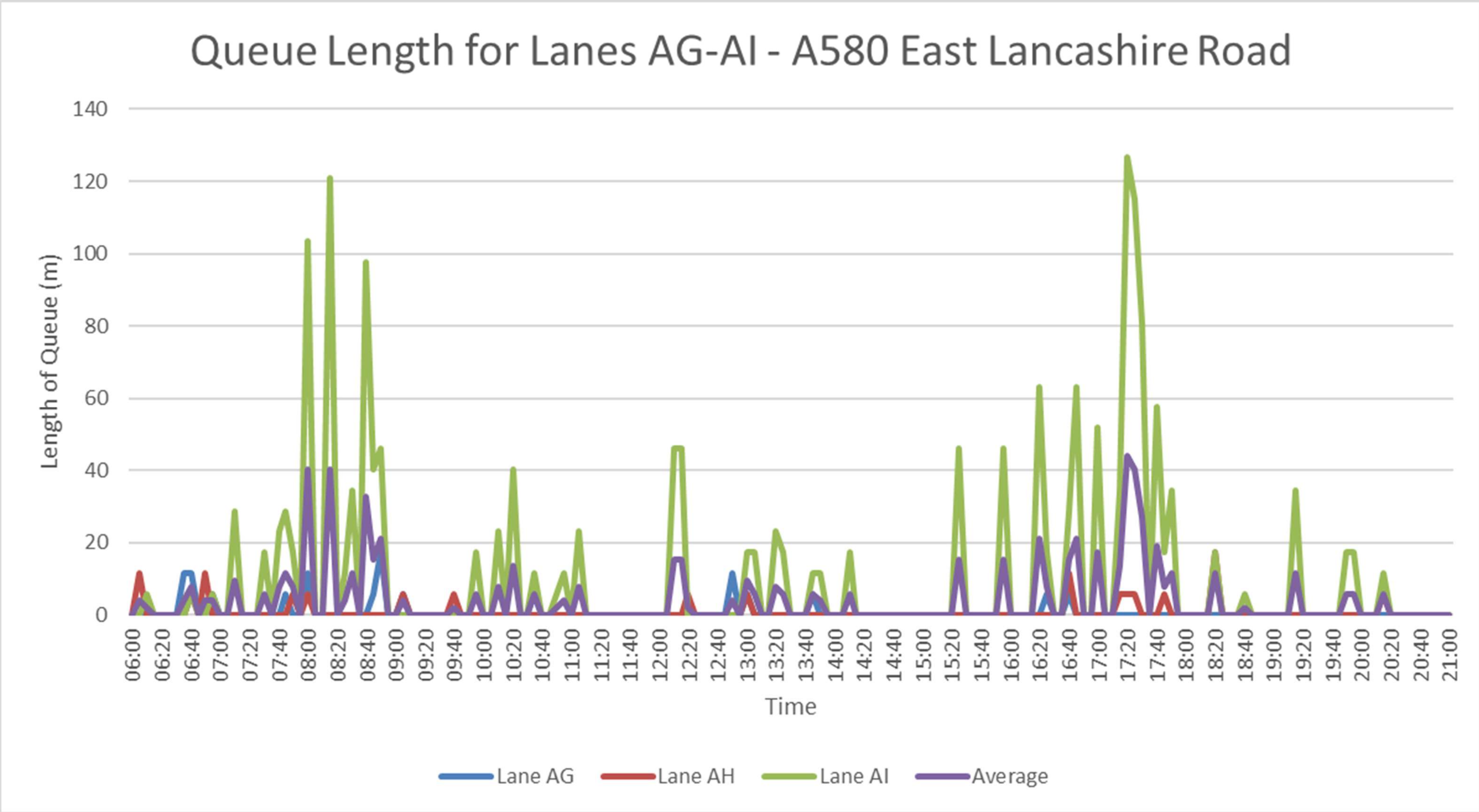


Figure A.29 - Highlights the Queue Length for Lanes AN - AR

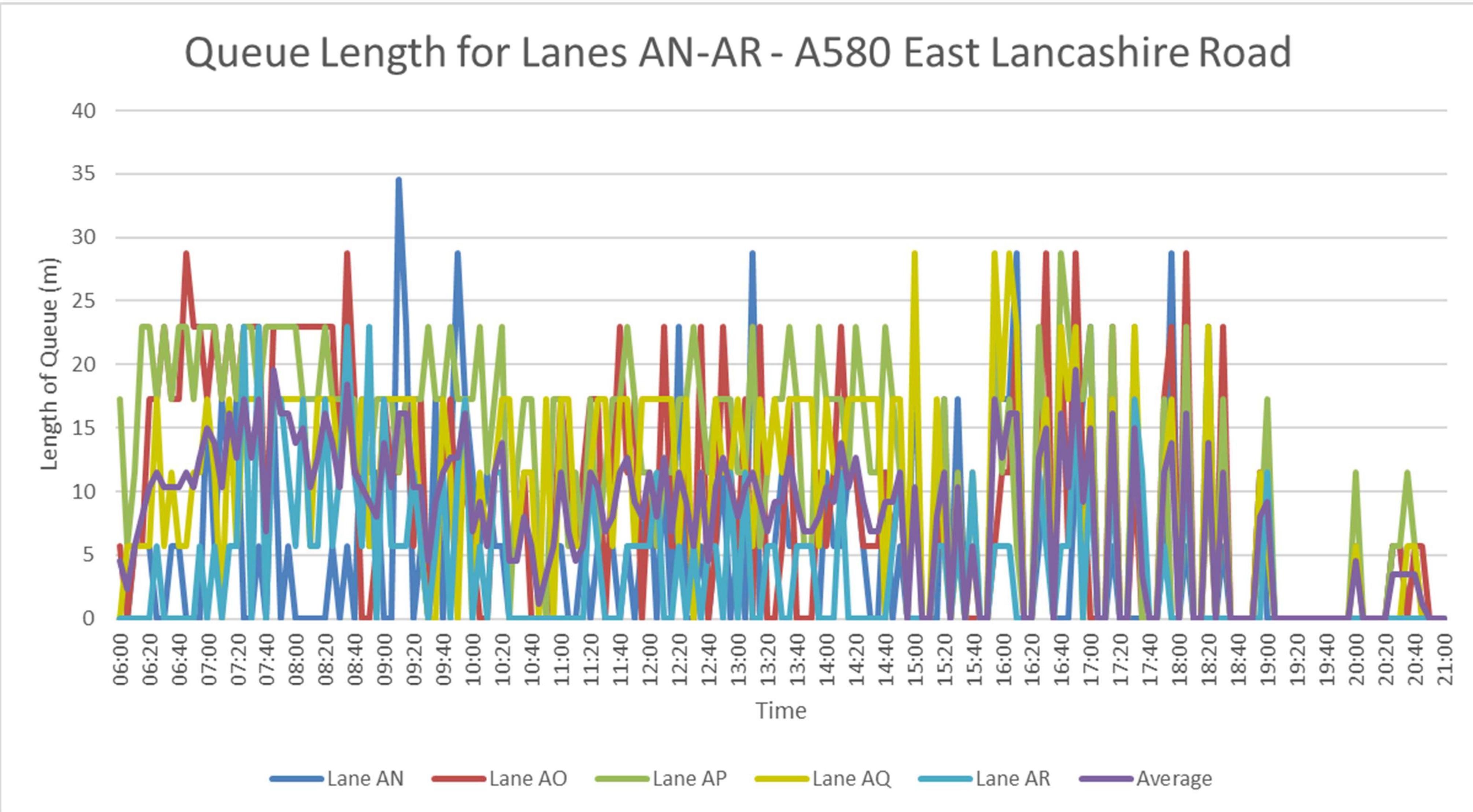


Figure A.30 - The length of the queue for Lanes AS - AV

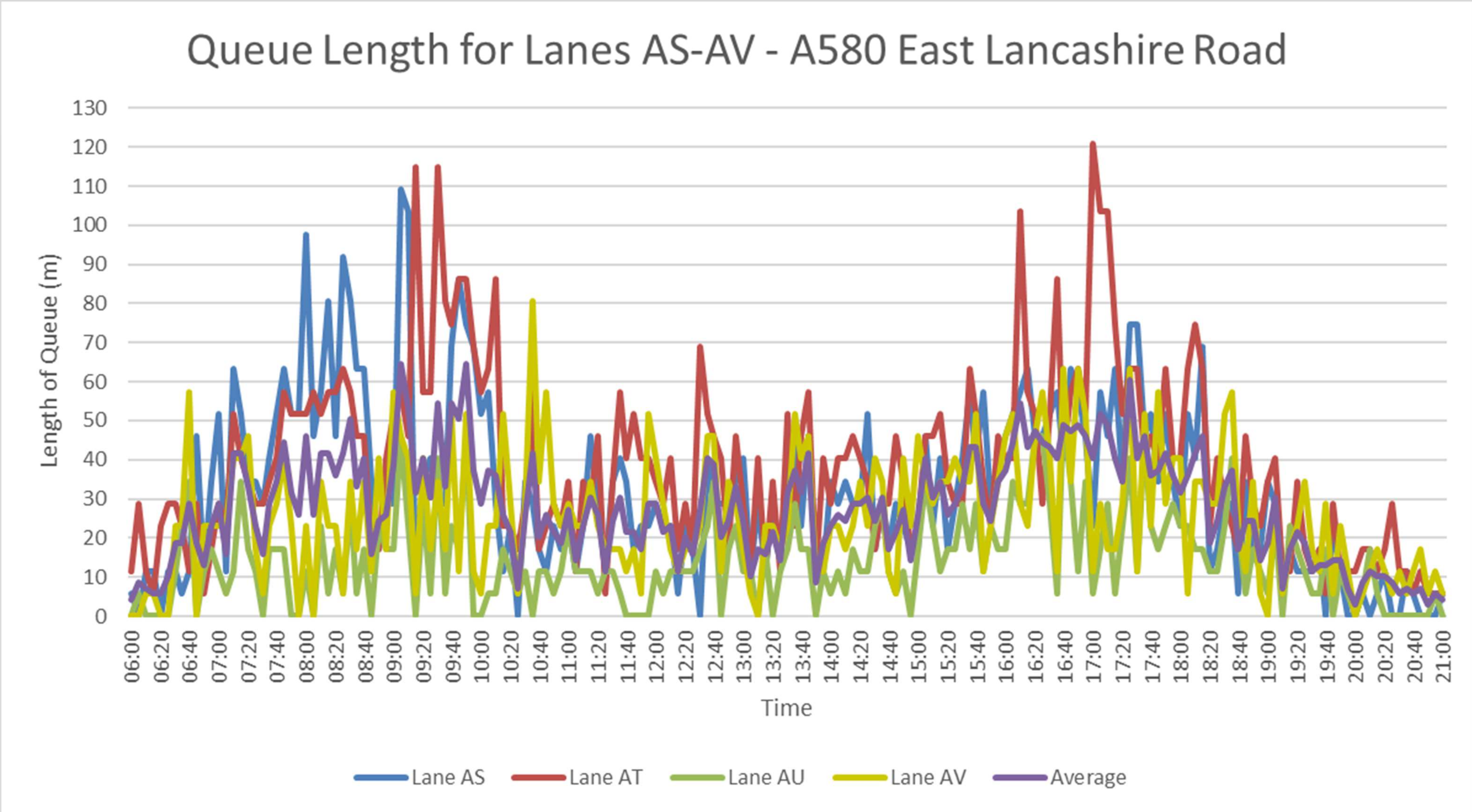
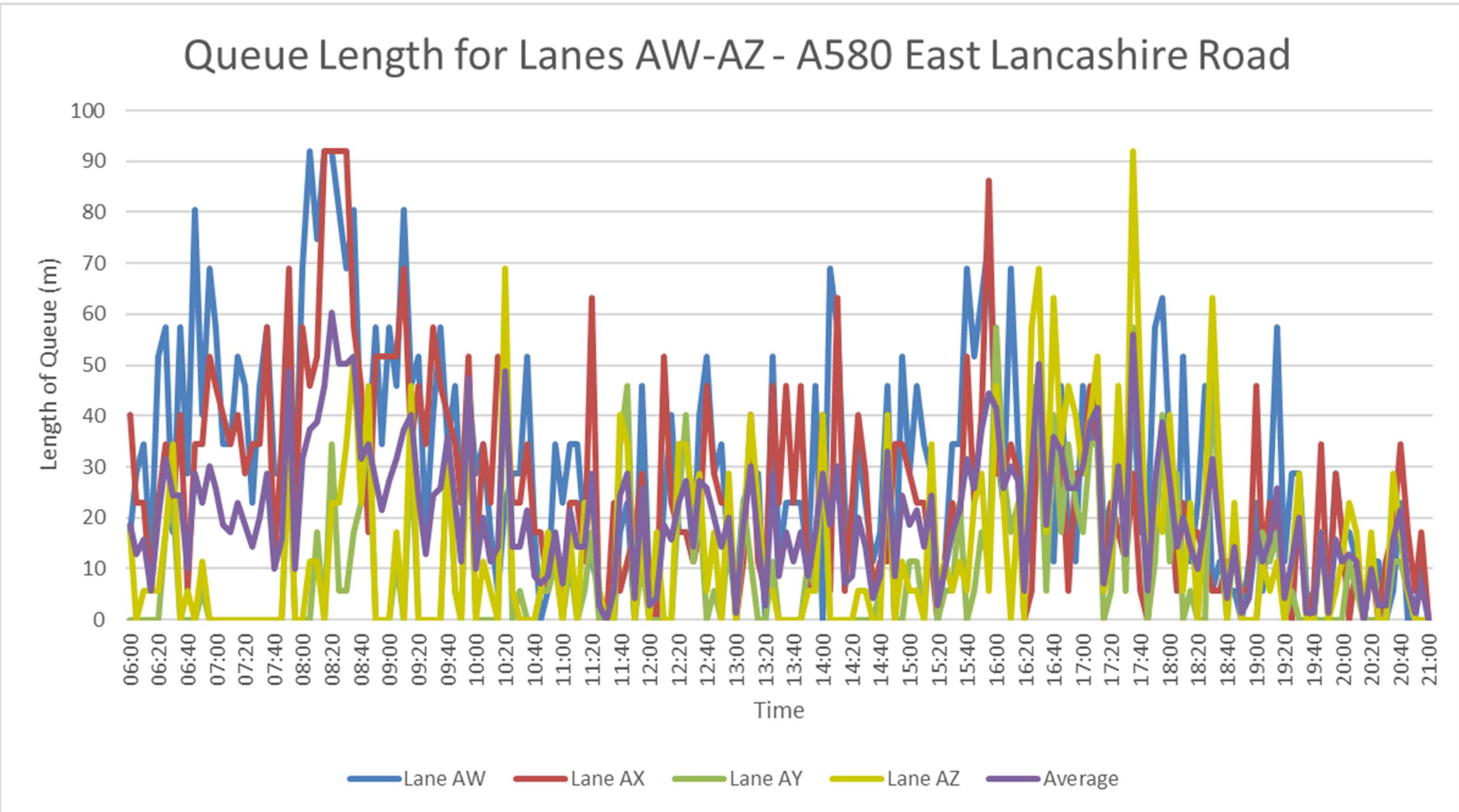


Figure A.31 - Queue length for Lanes AW - AZ



1st Floor Station House
Tithebarn Street, Exchange Station
Liverpool
L2 2QP

wsp.com

Appendix D

SITE VISIT NOTES

NOTES OF SITE MEETINGS HELD AT M6 JUNCTION 23 AND OTHER JUNCTIONS IN ST. HELENS

30th MAY 2018

1.0 Present

Jim Dutton	St Helens Council
Martin Boardman	WSP
Rory Lingham	WSP

2.0 Purpose of Meeting

2.1 To review constraints on existing junctions at strategic locations in St Helens to help inform the design process to improve the capacity and operational performance of M6 Junction 23, Haydock Island.

3.0 M6 J23, Haydock Island

3.1 Improvements were carried out at this junction as part of Highways England's "Pinch Point" Programme. The works were substantially completed in 2016. The main improvements at the junction included the provision of dedicated double right turn lanes from the A580 in both the eastbound and westbound directions to take traffic from the A580 onto the northbound and southbound slip roads, obviating the need for this traffic to use the circulatory part of the roundabout.

3.2 It was noted that the roundabout was not in a good condition and the following defects were recorded :-

a) Large amounts of detritus at the junction, particularly in the carriageway channels.

b) Many of the gullies and combined kerb/drainage units were heavily silted and it is unlikely that these would be working satisfactorily.

c) Landscaping very overgrown with some of the grasses and weeds affecting visibility (including sight stopping distances) around the junction.

d) Carriageway surfacing starting to break up at south east of the junction.

e) Many items of street furniture damaged / missing / leaning including pedestrian guard rail, traffic signs, bollards, road signs. Some pedestrian guard rail has snapped off at the base of the posts and not been replaced.

f) Lattix road sign posts have been used throughout the junction but these are often adjacent to lighting columns and other posts which are not passive safety compliant.

3.4 From the west, traffic has a 3 lane approach to the traffic signals:-

a) The nearside lane is marked as a left turn for traffic turning left onto the M6 northbound slip road and for traffic entering the circulatory and travelling to A49 north and A49 south. The centre and offside lanes are marked with straight ahead arrows and A580 M'cr.

b) It was noted that under the M6 overbridge, HGVs on the A580 eastbound, travelling to the M6 southbound on slip road, tended to use the nearside lane of the two right turn lanes. Queues developed in this nearside lane which prevented vehicles getting into the offside lane of these two turning lanes. These vehicles were generally cars or light vans. Rather than block the circulatory, vehicles were held back on the approach to the circulatory, with the queue extending back along the A580 towards Haydock..

3.5 It was noted that the nearside channel of the straight ahead (eastbound) channel does not align through to the triangular splitter island to the east of the circulatory.

3.6 Major congestion/conflict point at the intersection of M6 southbound off slip road / A49 southbound and the circulatory section of the roundabout. Only two or three vehicles were able to exit from Lodge Lane in stage of the traffic signals cycle.

3.7 At peak times, traffic from A580 (west) travelling to M6 (south) has been avoiding travelling into the centre of the roundabout and into the two dedicated right turn lanes and instead is travelling around the circulatory section of the roundabout to avoid the heavy congestion.

Potential for Improvement

3.8 It was noted that the two lane approach to the roundabout, (particularly from the west) could be increased to provide a three lane, or perhaps even a four lane approach. There appeared to be little traffic in the dedicated left turn lane from A580 (west) to M6 (north) and this could potentially be re-designated as a straight ahead and left turn lane.

3.9 A major constriction at the junction occurs where two lanes (on both the east and west sides of the roundabout) enter the central island. See para.3.4). If this could be widened to provide three lanes or (ideally) four lanes, lane or 4 lane

3.10 It was also noted that the traffic flow from A580 (west) to M6 (north) appeared to be lower than from A580 (east) to M6 (south). Traffic counts to confirm this. “Pinch Point” scheme appears to be designed as symmetrical whereas the traffic flows would appear not to warrant this approach.

3.11 The two straight ahead and two right turn lanes in both the eastbound and westbound directions are “fitted in” between support piers for the M6 overbridge. The distance between the support piers is approximately 19m (to be confirmed by survey). Allowing for 1.5m clearance to the piers, it would be possible to re-align the carriageway beneath the overbridge to provide two straight ahead and two right turn lanes in each direction. This would eliminate the narrow two lane entry into central island area and considerably increase the capacity of the junction.

3.12 There is a heavy A580 (east) to M6 (south) traffic movement. The provision of a dedicated “free flow” link would take traffic off the junction and help to reduce congestion.

3.13 Other potential improvements at the junction including further “free flow” links may further help to increase capacity and reduce congestion. Further consideration to these improvements could be given when traffic counts have been completed.

4.0 A580 / A58 LIVERPOOL ROAD JUNCTION.

4.1 A junction improvement was proposed at this location. Preliminary funding approval had been received by St Helens B.C. Design work was progressing and the scheme was expected to be on site in 2019.

4.2 The scheme would provide additional carriageway capacity on the A580 and on the A58 (south side of the junction).

4.3 On A58 (south side), the left turn lane (for traffic turning towards A580 west) would be increased in length to provide a longer turning lane.

4.4 On A580, The number of lanes would be increased from two to three in both directions.

4.5 No improvements would be possible on the A58 on the northern side as the highway was constricted by housing on both sides and the steep rise to the houses on the east side limited the opportunity to widen the carriageway. However this would be looked at as part of the detailed design.

4.6 The main benefit to the junction would be provided by having the three lane approach on the A580. This would enable the A580 signal stage timing to be reduced, thereby allowing the A58 to be increased, thus reducing congestion on the A58

5.0 A58 Liverpool Road / Tithebarn Road Junction

5.1 An improvement was carried out at this junction in 2017. The carriageway on A58 Liverpool Road was widened slightly, enabling substandard but nonetheless effective right turn lanes to be incorporated into the junction.

5.2 New traffic signals were installed as part of the junction improvement and the carriageway resurfaced.

5.3 At the time that the junction was visited (approximately 11-00am, there was no significant build up of traffic on any of the approaches.

5.4 It was noted that the traffic signals appeared to operate with three stages in each cycle :-

a) Millfield Lane (the approach from the east side of the junction).

b) Tithebarn Road (the approach from the west side of the junction).

c) A58 Liverpool Road (the approaches from north and south sides of the junction).

5.5 When the traffic from Millfield Lane was given the green signal, no indication was given to this traffic that right turning vehicles could make the right turn into A58 Liverpool Road (north) without conflicting with traffic from the opposite direction (Tithebatrn Road). Consequently there was hesitation from drivers making this right turn until they realised that they could complete the turn without conflicting with the opposing traffic. A “green” right turn arrow on the signal head would eliminate this hesitation and improve the capacity of the junction.

5.6 Similarly the traffic from the opposite direction does not have the benefit of a “green” right turn arrow and again, the provision of this would improve capacity of the junction.

6.0 M6 Junction 24

6.1 This junction has north facing slip roads only ie from A58 to M6 north and from M6 southbound to A58.

6.2 Vehicles travelling northbound on the M6 and wanting to access this area or vehicles from this area wishing to join M6 southbound, have two options :-

a) Travel along A49 to/from M6 J23 where access to the M6 can be gained in all directions as well as access to the M6.

b) Use Junction 25 (a possible option for vehicles travelling to or from the area in Wigan to the north of the A58 and where the distance travelled would be offset by faster travelling on M6 rather than using A49 Lodge Lane / Haydock lane) would be offset by southbound on M6.

6.3 There is a large industrial estate to the north east of the centre of Ashton, which includes a large number of storage / distribution depots. It would be helpful if an origin and destination survey could be undertaken as it is likely that the majority of vehicles accessing the site will be heading to or from the M6.

6.4 Housing on the east side of Junction 24 and a golf course on the west side of the junction would make the provision of south facing slip roads a difficult and probably expensive option.

R.S.Lingham

30th May 2018

Appendix E

INTERIM WORKSHOP REPORT

CONFIDENTIAL

M6 J23 HAYDOCK ISLAND

DESIGN WORKSHOP - DISCUSSIONS AND CONCLUSIONS

Date of Workshop: 18/7/2018

Venue: WSP, Tithebarn Street Exchange Station, Liverpool L2 2QP

Attendees:
St Helens Council: Mark Osborne (MO), Jim Dutton (JD), Fiona Soutar (FS), Alan Kilroe (AK).
Highways England: Kristian Marsh (KM).
Wigan Council: Damian Garner (DG), Ken Stroud (KS).
Merseytravel: Michael Cloherty (MC).
Balfour Beatty/Mott McDonald: Darren Smith (DS).
WSP: Tony Gordon (TG), Rory Lingham (RL), Jeremy Thompson (JT), Nick Green (NG), Andy Ivey (AI), Martin Boardman (MB), Tim Young (TY), Richard Parker (RP).

Apologies:
St Helens Council: Charlotte Griffiths, Gareth Tyson.
WSP: Samir Gasmi, Neville McKenzie.

Distribution:
Attendees and Apologies.

Introduction

WSP has been commissioned by St Helens Council to undertake a feasibility study to consider options to improve the capacity and operational safety of the M6 Junction 23 (Haydock Island). This commission is in partnership with Highways England and Wigan Council, who are contributing to the cost of the study. The study will help inform and advise the preparation of the St. Helens Local Plan 2018-2033 and may lead to the development of a future Major Transport Scheme with the partner organisations.

In accordance with task 3 of the brief, a Design Workshop was held on 18th July 2018 to present various junction improvement options to the key stakeholders and discuss their viability, issues and benefits. This report aims to summarise the discussions held at the workshop and will help to determine which options should be taken forward for more detailed design considerations in accordance with tasks 4 and 5 within the brief.

The structure of the Workshop was as follows:

1. Background and context (WSP).
2. Group discussion.
3. Presentation and open discussion of eight junction improvement options (WSP).
4. Presentation of additional options (by others).
5. Group scoring exercise.

Background (Presented by Nick Green)

Study Objectives:

- The M6 Junction 23 is already operating at maximum capacity. Future residential and commercial developments proposed alongside the A580 will exacerbate traffic congestion on the A580 and in particular, at the Haydock Island Junction. Several of these developments have already received planning approval. It is critical that the capacity of the junction is increased to ease congestion.
- The immediate objective is to formulate a plan for the area, with Haydock Island forming an important component of St Helens Council's Local Plan.
- This is the second stage of the M6 J23 Improvement Programme, following the study undertaken by Mott McDonald/BE Group.

Context:

The most recent improvement to the junction was undertaken in 2015 as part of the National Pinch Point Programme with the aim of reducing daily congestion and improving safety. The total scheme cost was approximately £4M and included:

- New double right turn lanes from the A580 (both eastbound and westbound) to assist vehicles turning onto the M6 slip roads.
- Improved signalling across the junction.
- Widening of the M6 northbound off slip road to provide extra lane capacity.
- Improved access from the roundabout to the M6 southbound slip road.

Although the Pinch Point Scheme has provided some improvements to junction capacity, the junction still experiences significant congestion and negatively impacts upon user experience – journey times (reliability) and safety.

The A580 is included within the Liverpool City Region's Key Route Network. The Haydock Island junction provides the link between the motorway network (M6) and the major employment sites in St Helens (e.g. Haydock Industrial Estate). As such, Haydock Island remains a significant constraint to further development aspirations and economic growth in the region.

Inputs for the Study:

- St Helens (district-wide) SATURN model.
- Highways England's J23 microsimulation model.
- J23 LinSig model.
- New traffic surveys undertaken including turning counts and queue lengths.

Current Issues:

- Tight right-turn movements from A580 to M6 (northbound and southbound).
- Stacking spaces particularly at the A49 arms.
- Unequal lane usage.
- Poor signage and red-light confusion (see-through issues).
- High accident rate including red light running as evidenced by the historical accident data.
- Exacerbated congestion issues during Haydock race meetings.
- The Shell filling station being used as a cut-through.
- Poor pedestrian and cycling facilities

Forecast Demand:

Table 1 indicates forecast 2033 highway demands based on current work to inform the development of the St Helens Local Plan. ‘Do Minimum’ includes growth and developments for which planning approvals have already been granted. ‘Do Something’ includes developments included in the development plan.

Scenario	**Residential (units)**	**Employment (jobs)**
Do Minimum (over and above Base)	9,198	1,486
Do Something (over and above Do Minimum)	8,582	12,992

Table 1: 2033 Forecast Demand

Table 2 below translates the above forecasts into projected traffic demands at the junction relative to the 2017 base traffic demands at M6 J23:

Time Period	2033 Do Minimum	2033 Local Plan
AM	+ 33%	+ 49%
PM	+ 22 %	+ 32 %

Table 2: Projected Traffic Increase

Group Discussion

(DS) – Historically, short-term superficial solutions have been employed that work within the existing constraints (Pinch Point scheme 2015) but do not address the issues from a medium to long-term perspective.

(DS) – Other existing issues at the junction include:

- Traffic on A49 Lodge Lane (northside) can back up to Penny Lane and could take up to half an hour to pass through the junction.
- Anecdotally, it is suggested that a non-injury crash at the junction is an almost weekly occurrence.
- Police no longer provide assistance in controlling the traffic on days when there is a race meeting.
- There are Inefficiencies with the existing Microprocessor Optimised Vehicle Automation (MOVA) system.
- It is perceived by some A580 users that going around the circulatory carriageway is quicker than going straight through the roundabout.
- Pedestrian, cyclists and vulnerable road users find navigating the junction uncomfortable and tend to avoid the area.

(DS) – There is currently a suppressed vehicular and non-motorised user (NMU) demand for the roundabout consisting of the following:

- Local residents and commuters that refuse to use Haydock Island because of traffic congestion and/or safety concerns.
- Non-motorised users (NMUs) that would use the junction if it was safer and more accessible. This includes pedestrians using Lodge Lane to access Byrchall High School.
- Public transport routes that do not currently utilise Haydock Island due to the unreliability of the journey times may do so following future junction improvements.
- The completion of the Newton-le-Willows Park & Ride scheme will further increase the traffic flows at the junction.

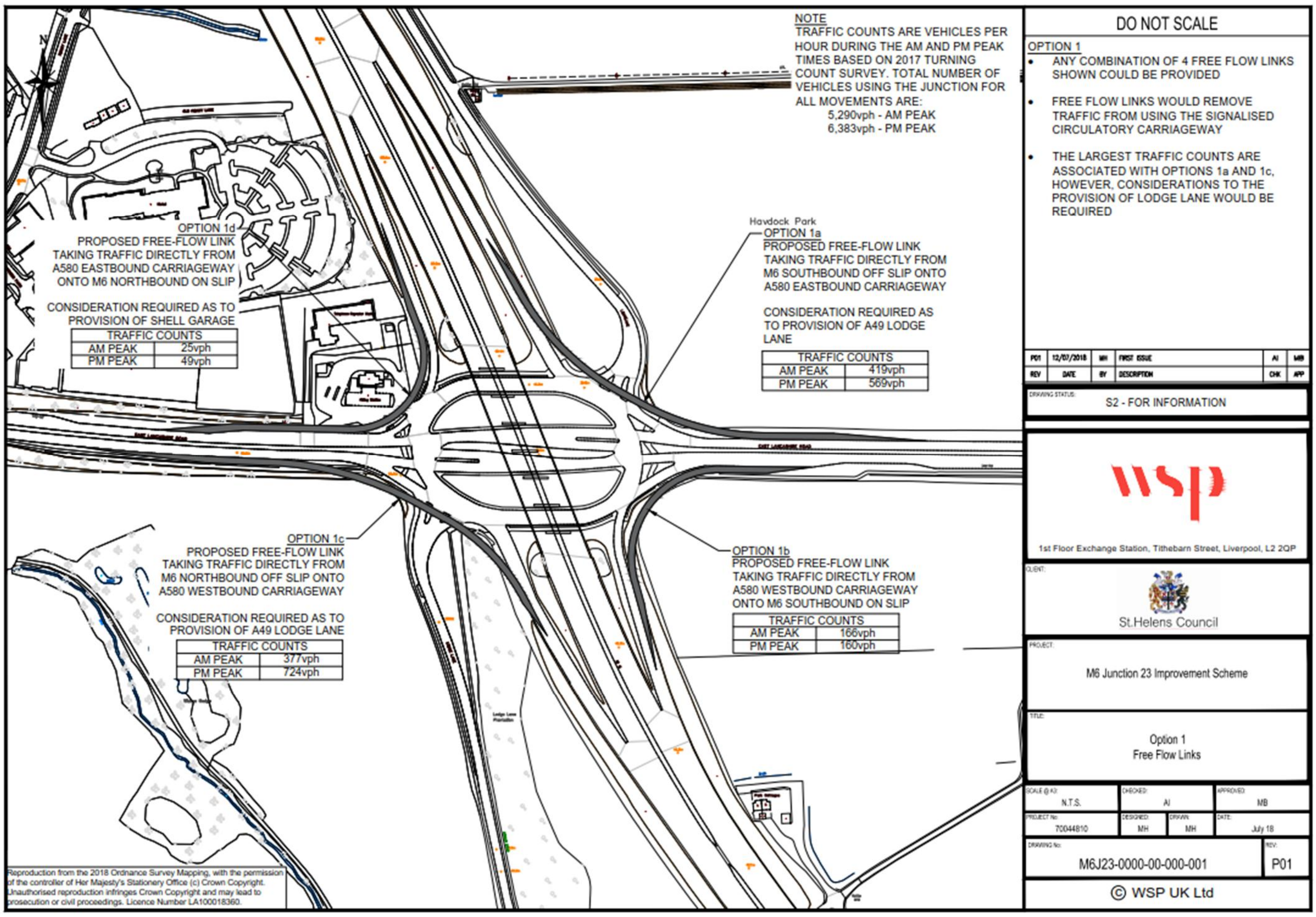
Ultimately, this suppressed demand will result in greater traffic flows once significant improvements are made at the junction. This means that any small increase in junction capacity will be very quickly subsumed by increased traffic at the junction and the projected traffic increases may not necessarily be supported. A large-scale Origin & Destination survey may help to identify this suppressed demand. This would involve setting a perimeter boundary around Haydock Island and establishing intermediate checkpoints to identify the number of vehicles travelling in the area and also the routes they are taking. This would assist in identifying how many vehicles are avoiding the junction at present.

(MO) – If the capacity is increased too much it may lead to problems at other roads/junction in the vicinity. As such, it is necessary to be careful about the balance of local and motorway traffic using the junction. Essentially, St Helens Council does not want the A580 to become a part of the Strategic Road Network.

Option 1 – Free Flow Links

Concept:

One of the issues identified at Haydock Island is that traffic entering the junction from the two off-slip roads from the M6, queues up the slip roads blocking other lanes. This option tackles this issue by providing free flow links, taking traffic from the two slip roads and directly connecting it with the A580. Within the option, consideration was also given to providing free flow links in the north-west and south-east quadrants to enable traffic from the A580 to directly connect with the M6 southbound and northbound, without having to travel through the junction. The largest traffic movements are from the M6 onto the A580; however, the A49 Lodge Lane meets the junction in these two quadrants which places a constraint in developing these two options. This could be overcome either with grade separation, or by diverting Lodge Lane (see option 2). Another constraint is the fuel station located in the north-west quadrant of the junction. However, the affected movement from the A580 eastbound onto the M6 northbound experiences the lowest traffic flows.



Pros:

- It enables traffic from the M6 northbound to A580 westbound and M6 southbound to A580 eastbound, to negotiate the junction without having to use the circulatory section of the roundabout considerably reducing delays.
- If the links were grade separated above Lodge Lane, it would support NMUs.
- The links from A580 westbound to M6 southbound and A580 eastbound to M6 northbound could be constructed without affecting A49 Lodge Lane (south side and north side respectively).

Cons:

- Does not provide a solution to any other issues, specifically the right turn movements onto the M6 from the A580.
- Would require land take outside the existing highway boundary on each quadrant including the Shell filling station.
- (DS) – High traffic volumes will mean that the links will not necessarily be free all the time.
- Would not benefit NMUs if it was not grade separated.

Conclusions:

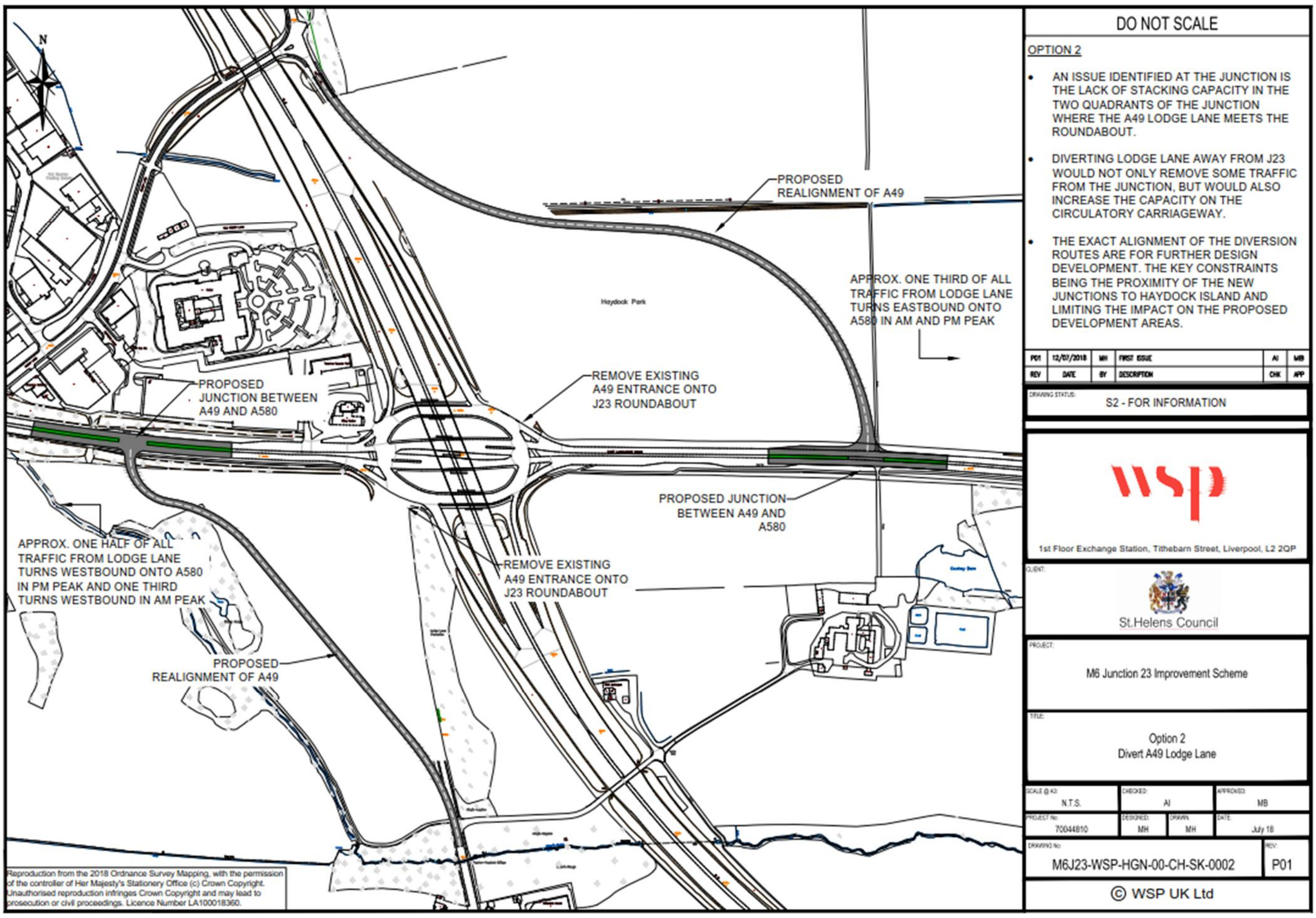
Worth considering in conjunction with other options.

Option 2 – Divert A49 Lodge Lane

Concept:

Due to the presence of A49 Lodge Lane entering the roundabout in the north-east and south-west quadrants, there is limited capacity on the circulatory carriageway in these two areas. This is a major issue at the junction. Option 2 proposes to divert Lodge Lane away from the junction and form two separate signal controlled junctions along the A580, either side of J23. This would not only remove some traffic from the junction, but also increase the stacking capacity on the circulatory carriageway.

The land, through which Lodge Lane would be diverted, is earmarked for development, and any alignment would need to limit the impact on these developments.



Pros:

- This option generally reduces the complexity of the junction by reducing the number of roundabout arms from six to four. This reduces driver confusion, the number of conflict points and addresses the issue of the short stacking space at the Lodge Lane arms of the roundabout.
- Takes traffic off the circulatory carriageway.
- Land adjacent to the (now redundant) section of the A49 could be offered to the developer in exchange for land required for the diverted route.
- The proposed diversion routes could serve as access roads to the proposed developments in the north-west and south-west quadrants.

Cons:

- The southern diversion of Lodge Lane is heavily constrained. Additionally, there is protected woodland to the north-east of the junction, but this is unlikely to be affected.
- (AK) – It may have to work in conjunction with the Peel development in the north-east quadrant which is subject to planning approval. There are alignment options and it would appear feasible for it to be done.
- Two new A49/A580 junctions would be created which would require signalised junctions. This may require localised widening of the A580.

Conclusions:

- Multi-purpose solution which can be used to connect other developments in the future.
- (DS) – It is a permanent solution and addresses some of the objectives.
- (KM) – In principle, the benefits are clear and the logistical issues can be worked around.
- (MO) – The option should be considered, but it is subject to the Peel development issues.

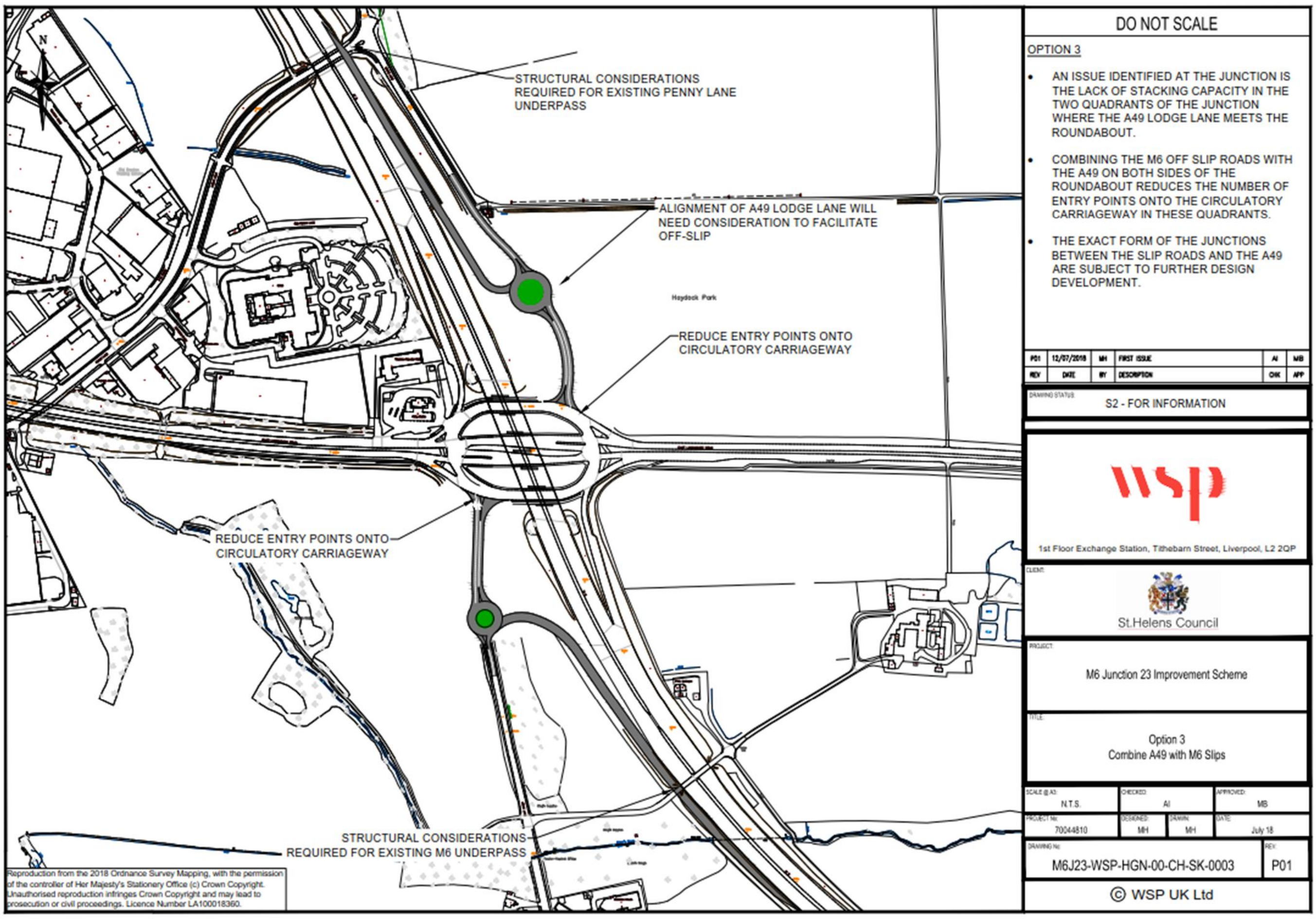
This is a permanent solution with clear benefits for the junction. In isolation, or in conjunction with other schemes, it is considered fundamental to improving the junction in the medium to long-term.

Option 3 – Combine A49 with M6 Slips

Concept:

An alternative option to reduce the conflicts where the A49 Lodge Lane meets the roundabout is to combine the M6 off-slips with Lodge Lane by forming separate junctions along Lodge Lane in advance of Junction 23. This option would remove entry points onto the junction which would enable a more efficient operation on the J23 roundabout. The alignment of Lodge Lane would require consideration to ensure that a solution that complies with DMRB standards could be achieved. In addition, analysis into the optimum junction form between the slip roads and Lodge Lane would be required. Works to the M6 mainline would be required to develop the slip roads further in advance of J23, which will include extensions to existing structures both north and south of the junction.

Note that the M6 off-slips/Lodge Lane junctions illustrated below are shown as roundabouts indicatively but could take an alternative form such as a fully signalised junction.



Pros:

- This option generally reduces the complexity of the junction by reducing the number of roundabout arms from six to four. This reduces driver confusion, the number of conflict points and addresses the issue of the short stacking space at the Lodge Lane arms of the roundabout.

Cons:

- (KM) – Would require the slip roads to be taken back and widened which means an additional land take along the M6 mainline.
- (KM) – Would not necessarily work well in conjunction with a SMART motorway upgrade.
- (KM) – The A49/slip lane junction would require a significant land take outside of the highway boundary. This would be over and above the scale shown on this initial concept sketch.

Conclusions:

- (MO) – This is a good new idea but it is not particularly feasible and the reality could be very difficult.
- (KM) – Not convinced that it addresses the crucial issues.

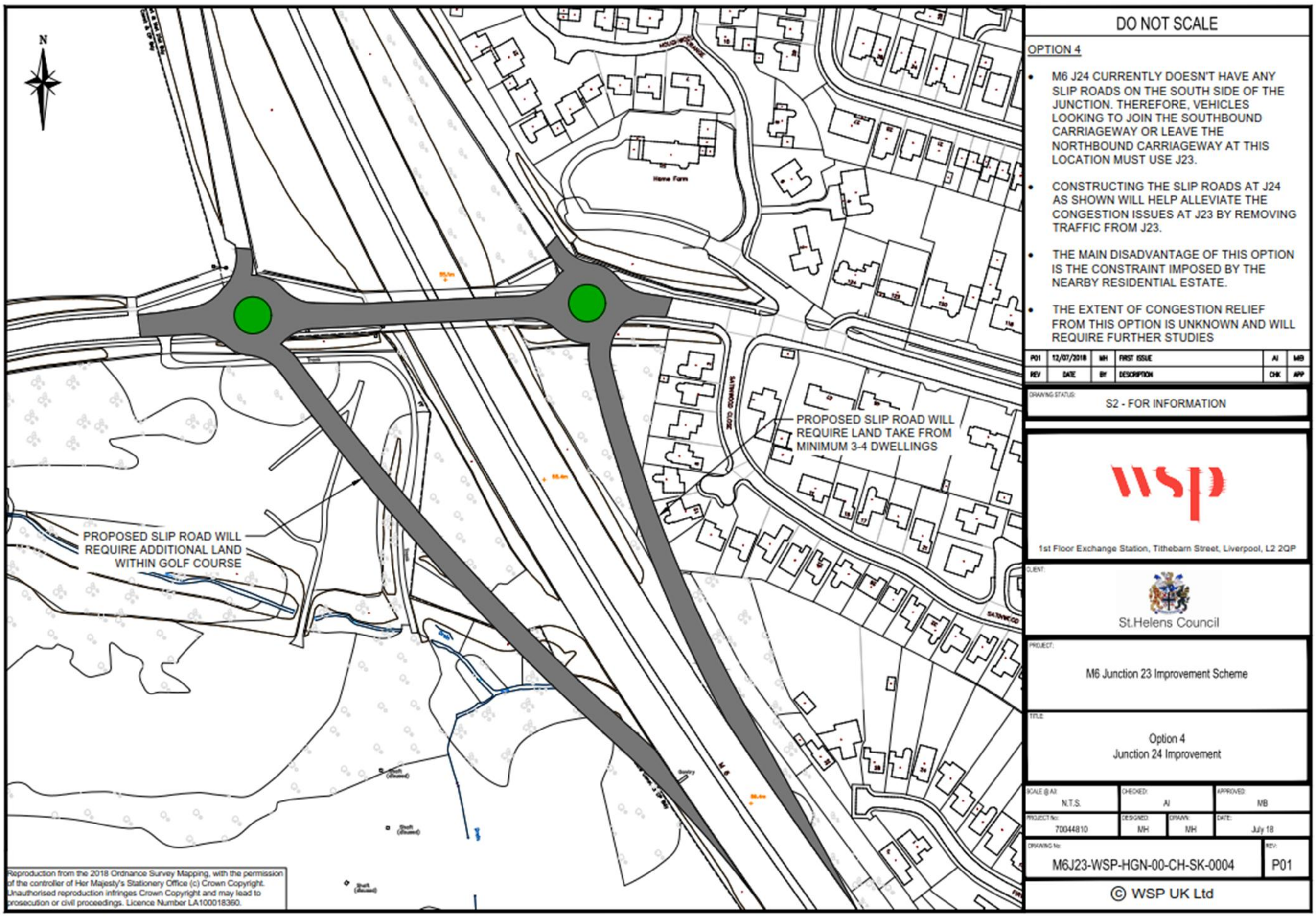
In reality, this configuration would require more land take than is shown on the concept sketch. This solution is likely to be very complicated and appears to be less viable than other options.

Option 4 – Junction 24 Improvement

Concept:

Junction 24 of the M6 currently only has north facing slip roads, meaning there is no opportunity at this junction for traffic to leave the M6 northbound carriageway, or join the M6 southbound carriageway. Therefore, traffic wanting to make these manoeuvres must use either Junction 23 or Junction 25. Option 4 comprises the construction of these south-facing slip roads on the southern side of junction 24. At this stage, it is unclear how much traffic this would remove from Junction 23, and additional investigation (including origin and destination surveys) would be required to model the full benefits of this proposal.

Most of the works associated with this option would require additional land, and the M6 is heavily constrained on both sides. As a minimum, four dwellings would need to be demolished and an area of the neighbouring golf course would need to be acquired.



Pros:

- Traffic travelling to/from the Ashton area would be able to access the M6 (south) rather than having to use Junction 23. This could ease congestion at Haydock Island but the degree of relief is not quantifiable.

Cons:

- Land take issues – properties/golf course within the corridors of the additional slip lanes.

- (DS/KM) – Benefit is likely to be disproportionate to cost.
- (DS) – May lead to other issues.
- (DG) – Very hard to sell politically.

Conclusions:

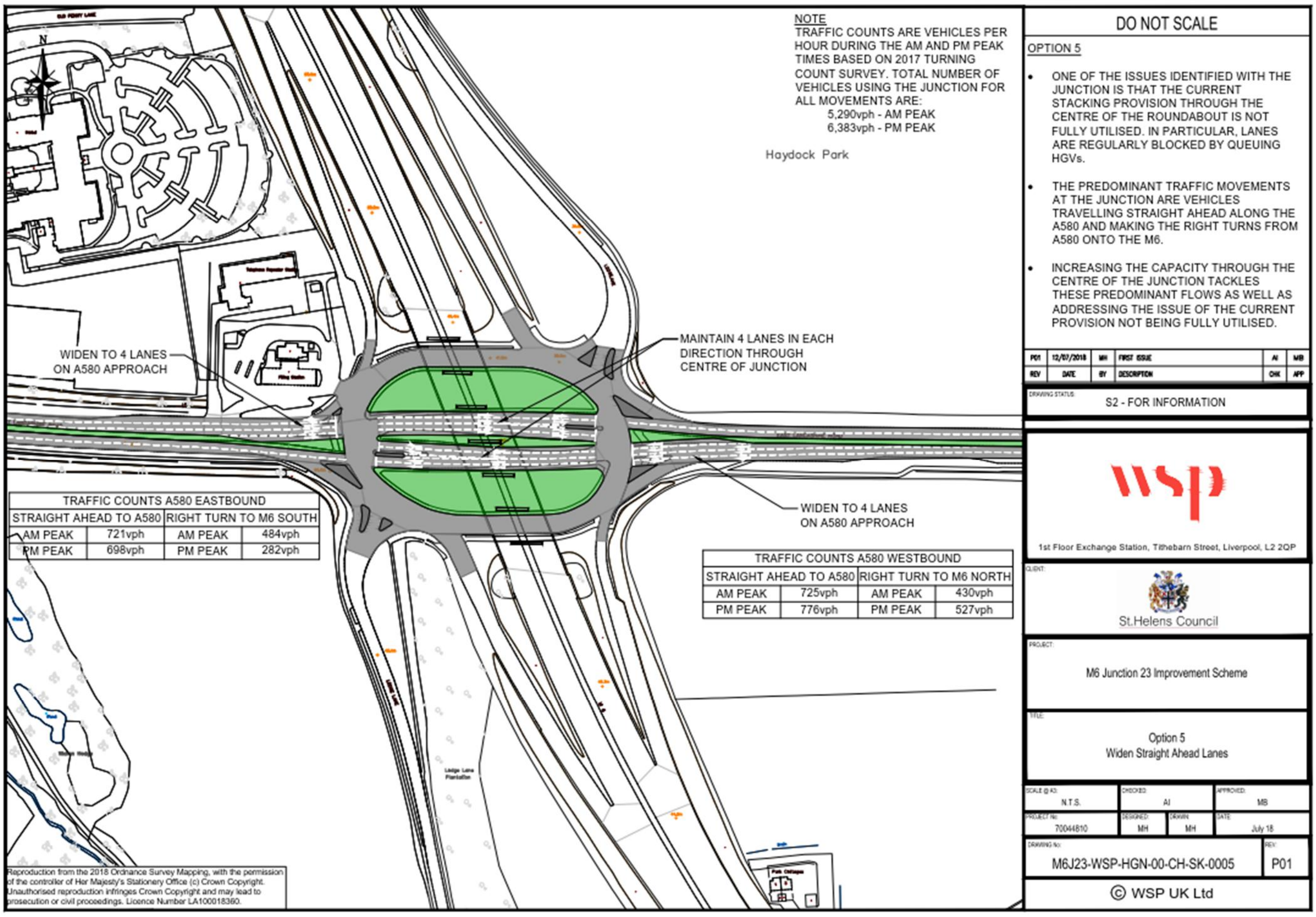
It is impossible to assess the benefit of this option within the scope of this study. Further survey works would be required to ascertain the true value of improvement.

Option 5 – Widen Straight Ahead Lanes

Concept:

It has been observed at the junction that the full capacity of the straight ahead and right turn traffic lanes in the centre of the roundabout are not being fully utilised. In particular, HGVs making the right turn manoeuvre towards the M6, generally queue in the right turn lane 1, blocking entry into lane 2. The subsequent queue of right turning traffic extends west of the roundabout, blocking lane 2 of the straight ahead traffic. This option looks to address this problem by increasing the capacity through the centre of the roundabout, providing 4 lanes of traffic through the junction (two straight ahead and two right-turning) and on the A580 approaches to the roundabout.

The predominant vehicle movements through the junction are those continuing straight ahead along the A580 or making the right turn from the A580 onto the M6; this option would improve these two flows.



Pros:

- The scheme can be constructed within highway land i.e. no requirement for additional land.
- Increases capacity of the junction.
- Relatively low cost of construction.

Cons:

- (DS) – Space between structural piers (19 metres) may be insufficient. (RL) – 4 x 3.5m lanes would leave 2.5m clearance on each side but bridge structure foundation would require checking.
- (DS) – Does not address some of the key issues at the junction including the A49/slip road conflicts and storage capacity.
- Unlikely to gain much support externally.

Conclusions:

- (DS) – May not actually improve capacity significantly in reality.
- (MO) – May be worthwhile in combination with another option (e.g. Free Flow Links).
- (AK) – Appears to be a short-term solution.
- (KM) – Represents an incremental improvement that may require further analysis but it does not appear to be that beneficial.

The option is worthwhile considering but it is doubtful whether it will provide the level of improvement required. In isolation, this does not provide long-term benefits.

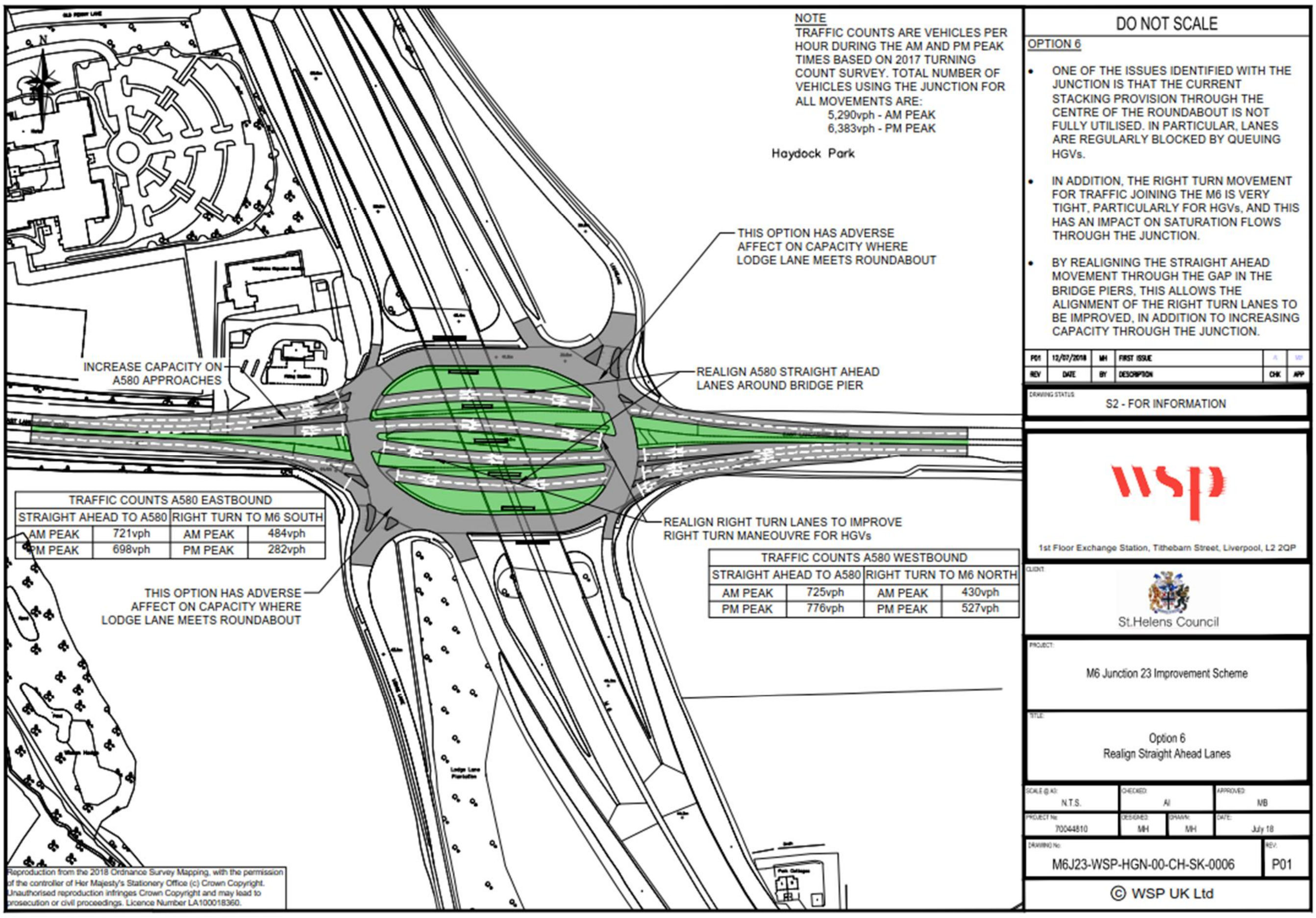
Option 6 – Realign Straight Ahead Lanes

Concept:

As with option 5, this option looks to improve the flows through the centre of the roundabout. Another issue that has been identified at the junction is that vehicles turning right from the A580 onto the M6 must perform a difficult turning manoeuvre. HGVs in particular have to make this turn at low speeds which is having a detrimental impact on the flows through the junction.

It has been identified that there is available space between the bridge supports to the north and south of the existing carriageway through the junction. Option 6 involves constructing the straight ahead lanes through this available space whilst the right turn lanes would remain between the existing supports. This allows the right turn lanes to have a better alignment which reduces the severity of the turning manoeuvre for right turning vehicles.

Whilst this option increases capacity through the junction and improves the right turn movement, realigning the straight ahead movements reduces the amount of stacking capacity on the circulatory carriageway which is a particular problem in the two quadrants where Lodge Lane joins the junction. To overcome this, additional works to Lodge Lane or fundamental changes to the traffic signal timings will be required.



Pros:

- Achievable within highway land.
- Improved alignment for traffic turning right onto M6 would improve capacity.
- (DS) – Buildability appears feasible given the unused space available between piers. Can be built offline, therefore traffic disruption during construction should be minimised.
- (DS) – improves see-through.
- Might work well with the Peel development.

Cons:

- Less stacking space around Lodge Lane and the M6 slips, although it could be combined with other options to address this loss of stacking space.
- May still only serve to be a short-term solution.

Conclusions:

- (DS/KM) – Appears complicated but has lots of potential.
- (MO) – Better than option 5 as it appears cleaner and seems to function better.

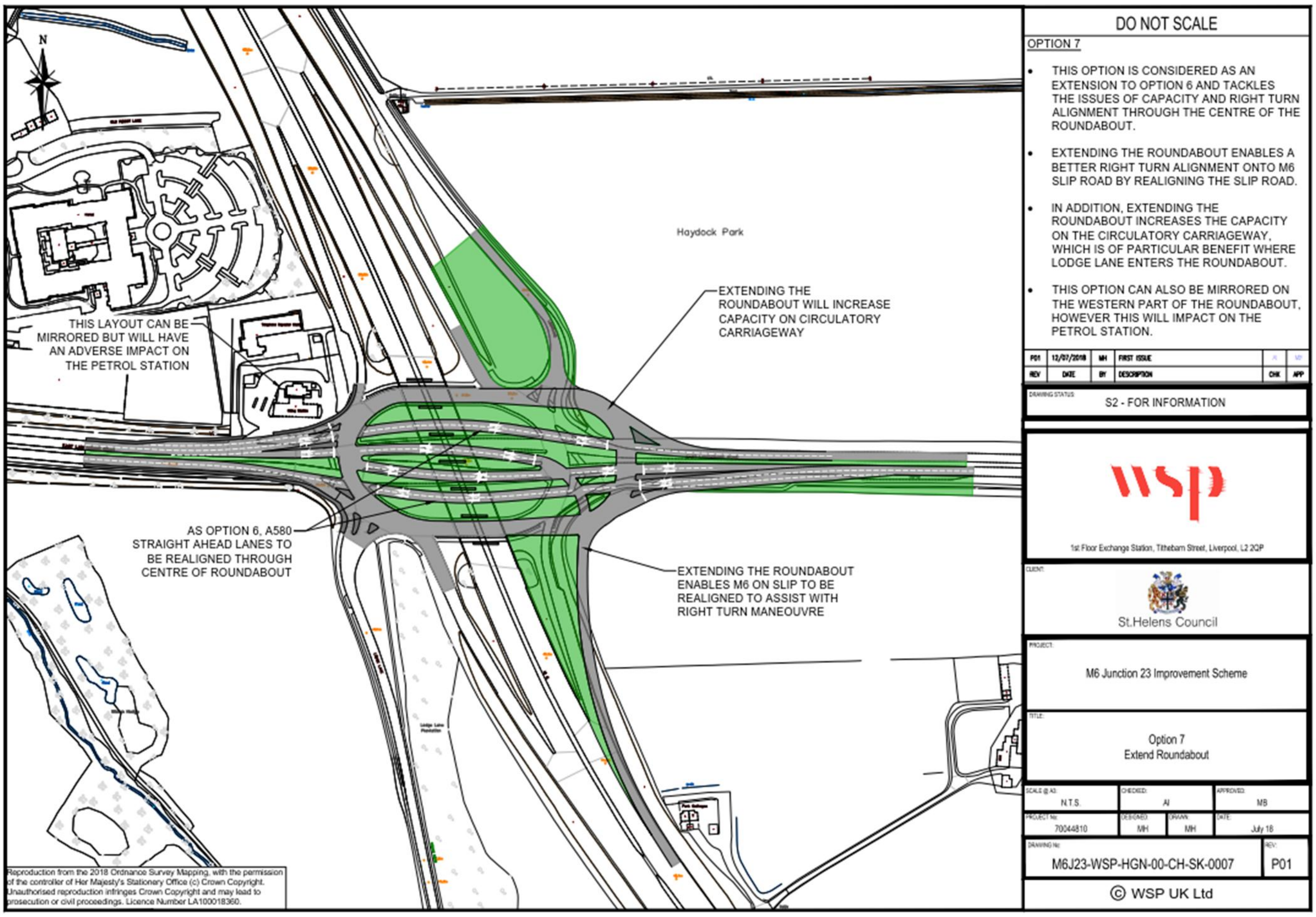
This option provides additional capacity at the junction, improves safety by segregating flows and is less costly than some options and could be constructed without causing major traffic disruption. Worth considering further.

Option 7 – Extend Roundabout

Concept:

Option 7 is suggested as an extension to option 6, where the realignment of the running lanes through the centre of the roundabout would utilise the available space between the currently unused bridge supports. In addition, this option proposes to extend the circulatory carriageway to the east. The extension can be mirrored to also extend the carriageway to the west; however, there are more constraints in this direction due to the presence of the Shell petrol station.

As discussed in the previous option, the realigned running lanes reduce the available capacity on the circulatory carriageway, particularly in the vicinity of Lodge Lane. Extending the roundabout would address this issue by creating additional capacity and allowing increased traffic volumes onto the junction. The alignment of the right turn manoeuvre from the A580 onto the M6 could also be improved further beyond option 6. The on slips could be realigned to ensure a smoother and more gradual turning manoeuvre to allow more vehicles through the junction.



Pros:

- Improves stacking capacity on roundabout.
- Improves alignment of right turns on to the M6 on-slips.
- Beneficial for A49 movements if it could not be diverted.

Cons:

- (DS) – Buildability issues.
- (DS) – Would require land take outside highway boundary.
- (DS) – Does not allow scope for future junction improvements.
- (KM) – Safety issues not necessarily addressed.
- May require acquisition of the petrol filling station if extended to the west.
- (KM) – Could affect dot matrix signs and control cabinets at the start of the slip roads.

Conclusions:

- (DS) – B/C ratio may not be great. May be worth modelling but the model might not be sensitive to the intricacies of the junction.
- (KM) – Might only provide a reasonable solution if the roundabout is elongated a long way east and west.

At this stage it is difficult to understand the benefits until further assessment has been undertaken on the junction. The option is only considered viable if the extension is undertaken in both directions (east and west).

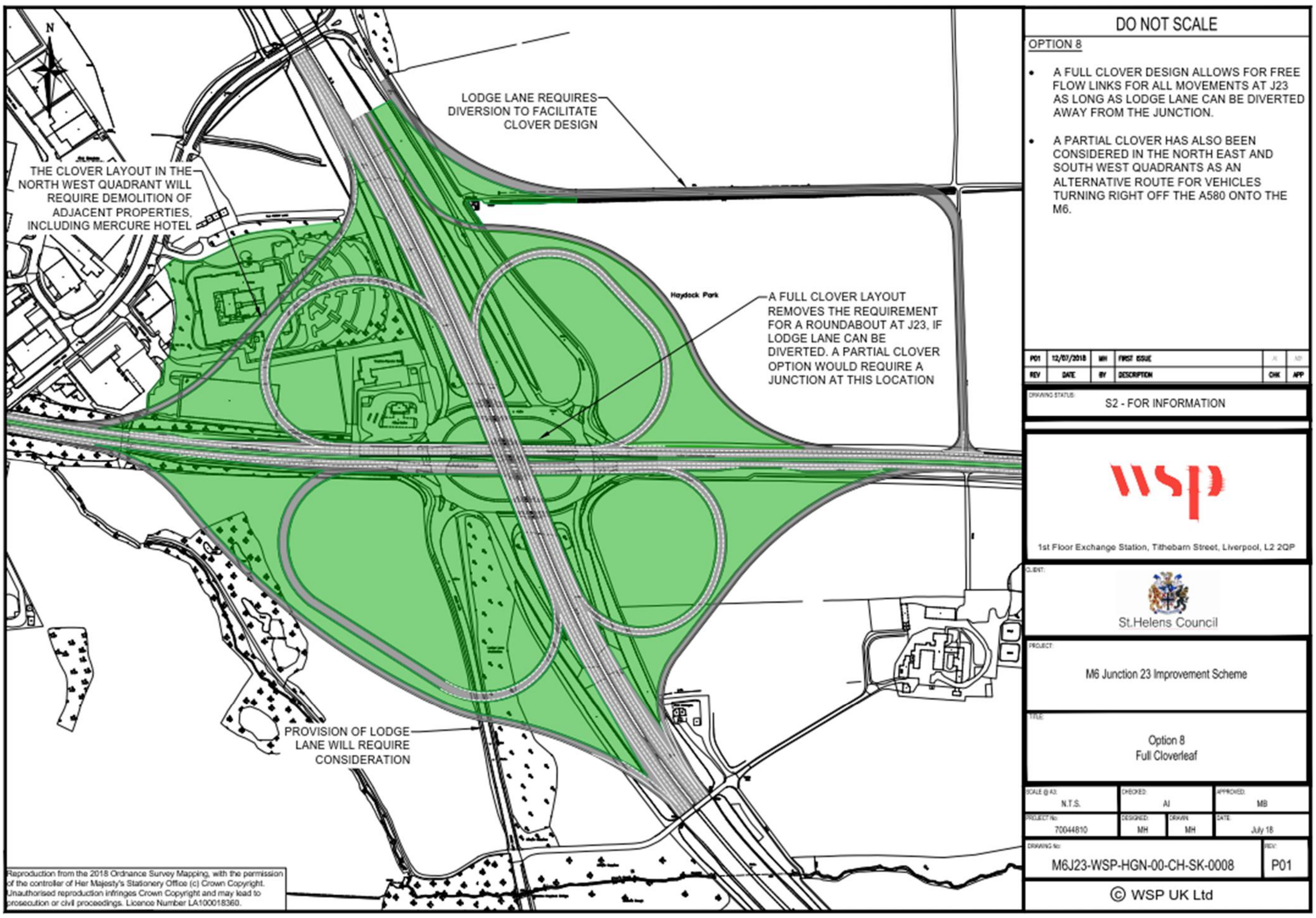
Option 8 – Cloverleaf

Concept:

A full or partial cloverleaf junction option has been considered as a large-scale solution at Junction 23. The full option is dependent on Lodge Lane (both north and south of the junction) being diverted away from the junction, enabling the removal of the roundabout and ensuring a free flow arrangement for all movements between the A580 and the M6. Due to the scale of the interchange links, this option requires a large amount of demolition in the north-west quadrant with the hotel and the Shell garage affected. The other three quadrants are all earmarked for future development, and the links have a negative effect on the developable area.

As an alternative, a partial cloverleaf has also been considered, where the free flow links will only be provided in the south-west and north-east quadrants, to cater for the largest flows. Compared to the full cloverleaf option, the advantages of the partial option are the reduced impact on development land and no demolition requirements. However, by only including two quadrants, the existing signalised roundabout must be retained, and all four on and off slips must remain operational. This results in complicated merge and diverge arrangements along the M6, which require much larger interchange loops in the two quadrants.

Option 8 is much larger and more expensive solution than the preceding 7 options. However, this arrangement facilitates the largest amount of traffic. The downside to allowing much higher volumes of traffic is that too much pressure could be placed on the wider highway network as a result.



Pros:

- Much greater capacity than the current junction and has full free flow links.
- Long term solution.

Cons:

- Very difficult from a design perspective.
- Does not work well with the Peel Development in the north-east quadrant.
- (DS/MO) - Does not necessarily fit current local authority policy or the planned function for the A580.
- Very large footprint and land take required to accommodate option.

Conclusions:

- (KM) – If utilising the existing layout/grade is deemed insufficient, then it is necessary to consider something this large. It should not be dismissed based on ambition but it is likely to be too much for what is needed.
- (MO) – The objective of the junction improvement is to improve the reliability of the junction and not necessarily to seek a significant reduction in commute time which this option would do.

The clover design is one of a number of possible larger scale solutions that could be implemented if the smaller scale solutions do not provide the benefits that are being sought after.

Additional Option 1 – Three Level Grade Separation

Concept:

This option involves lowering the A580 beneath the existing roundabout so straight-through traffic on the A580 does not intersect with the circulatory carriageway. This would act to simplify the junction, reduce the number of signalised intersections and improve the right-turn movements onto the M6. Given the high volume of vehicles on the A580 that do go straight through the roundabout (westbound and eastbound), this option has the potential to greatly reduce congestion and improve safety. This option can be compared with the A19/A1058 Coast Road, a Highways England project near Newcastle (see image below) which is currently under construction and is anticipated to cost £66-86M.

Although not necessarily essential, it may be desirable to couple this option with the diversion of Lodge Lane to deliver the greatest improvement.

Pros:

- (KM) – Most feasible grade separated option.
- (KM) – Likely to be politically acceptable.
- Long-term solution.

Cons:

- Buildability issues including construction below the M6 structural piers.
- (KM) – Expensive. Approximate estimate of £100-150M.

Conclusions:

- (KM) – If a large scheme is to be undertaken, this would probably be the preference.

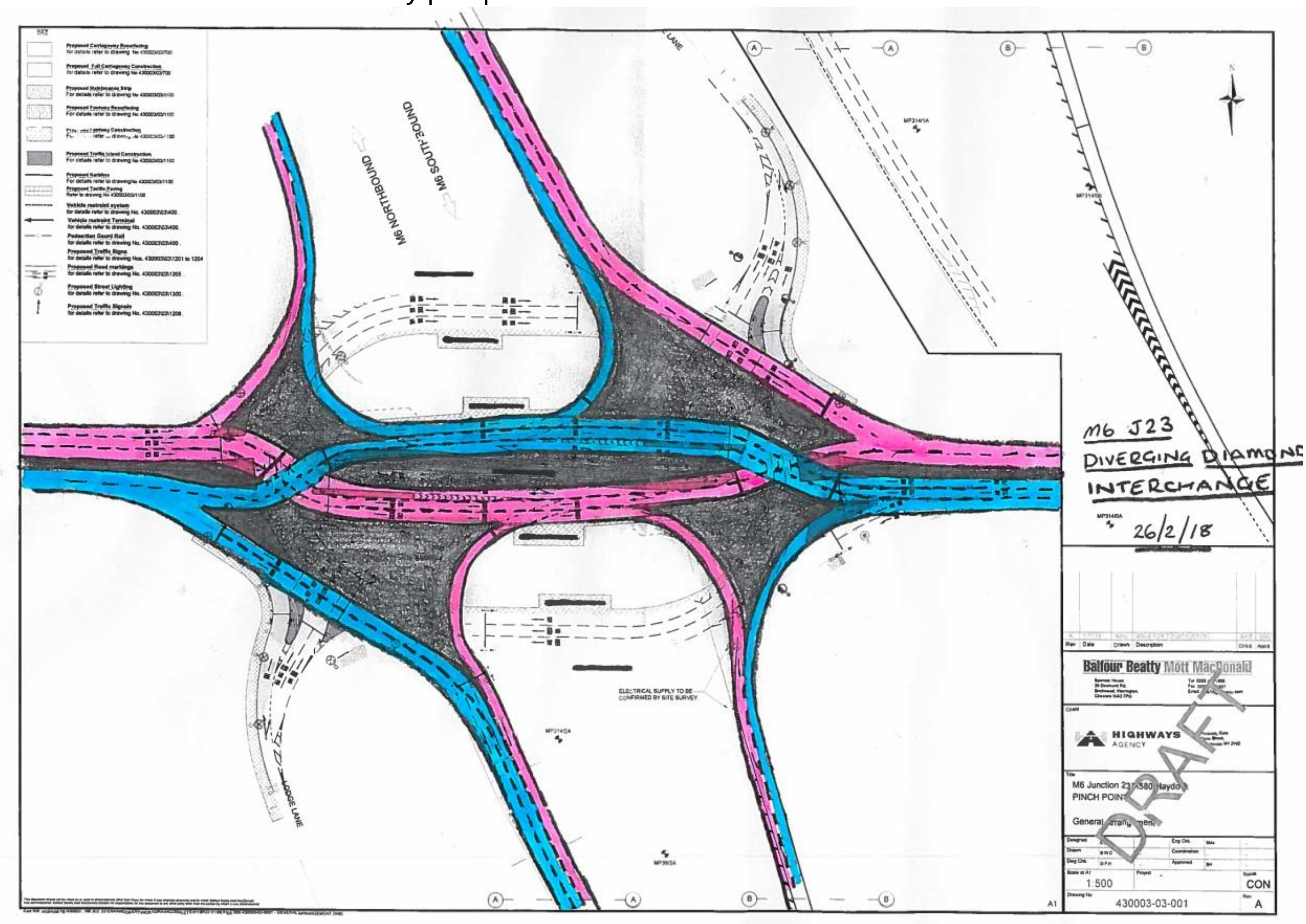
There is precedent of undertaking this type of development at congested junctions throughout the country. Further analysis is required to fully understand the benefits.

Additional Option 2 – Diverging Diamond

Concept:

A diverging diamond arrangement has never been constructed in the UK but it has proved to be successful around the world, particularly in the USA where approximately 100 diverging diamond interchanges are operational. The premise of this option is that the two directions of traffic on the A580 cross to the opposite side of the road within the junction itself which increases the number of free flow turning movements and reduces the number of signalised intersections, thereby increasing efficiency. It also removes the right turn movements onto the M6 slip roads which are currently a major safety issue and a source of congestion within the roundabout.

This option requires the diversion of A49 Lodge Lane both north and south of the junction and the construction of two new signal controlled junctions on the A580. The design is conceptual at this stage, but it is envisaged that the option would fit within highway land (except for the Lodge Lane diversions) and would be viable from a buildability perspective.



Pros:

- (KM) – Fits within existing highways boundary, except for the A49 diversion.
- (JT) – Represents a better arrangement for NMUs.
- (KM) – Literature has noted a 50% reduction in accidents using this arrangement.
- (KM) – Potential to deliver it as an innovation scheme.
- (KM) – Should fit within standards with no requirement for departures although further investigation is required

Cons:

- Would require diversion of the A49 to make the junction work efficiently. (MO) – this is likely to be the costly component of the scheme.
- (KM) – Has never been used within the UK (but is popular in the USA).
- (KM) – Would require a re-arrangement of the petrol station access.
- Drivers will not be familiar with configuration and merging manoeuvres.

Conclusions:

- (JT) – Modelling identifies that this arrangement would be at 68% degree of saturation with current traffic.
- (JT) – A 16% increase in traffic (projected demand at 2030 when applying a scaling factor from the TRANSYT model) is still below the ultimate capacity of the proposed junction. More modelling needs to be undertaken to confirm the life expectancy of this option.
- Note that the projections used for this model do not align with the 2033 projections used to inform St Helens Local Plan and this will need to be reconciled if this option is taken forward.

This option has the potential to sit within the medium-scale cost band whilst providing benefits in line with a larger scale development and it should be taken forward for further assessment. The option is dependent on the diversion of Lodge Lane to make it operate efficiently..

Additional Option 3 – Minor Improvements (Signals, Line Marking, Minor Geometric Improvements)

Concept:

Either in isolation or in conjunction with other schemes, there are some minor improvements that can be made at the existing junction to improve capacity and safety:

- Review of signals phasing and re-calibration.
- Advanced signing installation.
- Adjustments to line marking, including modifying the stop lines to ease the issue of short stacking space.
- Small geometric changes to help turning movements and traffic flow.
- Upgrading pedestrian facilities including push button facilities on slip roads.

Conclusions:

- More informed improvements could be made following receipt of the Post Opening Project Evaluation report.
- All of these improvements are short term and do not address the root causes of the problems at the junction.

Other Items Discussed

(DS) – There may be potential to reduce the signalisation of the roundabout to reduce conflicts. This idea has worked well on other schemes and is worth considering as part of all options.

(MO) – Note that the location of and access to the existing petrol station is quite archaic. Its removal/relocation should be considered under this study no matter the chosen option.

(MO) – There is an existing pedestrian overbridge 1.2km north of Haydock Island, near the Byrchall High School. This bridge is of a poor quality and the ramps are not to standard. There may be an opportunity under this scheme to replace this existing bridge and revitalise the pedestrian route. This will require coordination with both local authorities affected – Wigan and St Helens. (DS/KM) – It may be hard to justify the replacement/upgrade of the footbridge given the low numbers of existing users.

Scoring Matrix and Results

Scoring System:

1 - Poor

2 - Low

3 - Reasonable

4 - Good

5 – Excellent

Measure of Potential Cost:

1 - Very High (£50 million +)

2 - High (£15 to £50 million)

3 - Medium (£5 to £15 million)

4 - Low - (£1 - £5 million)

5 - Very Low (Up to £1 Million)

(70044810)
M6 Junction 23 - Haydock Island
Scoring Matrix

Option	Title	Description	Short term / Long term solution	Likelihood of easing congestion (1-5)	Impact on Safety (1-5)	Construct within existing highway boundary (1-5)	Buildability & disruption during construction (1-5)	Technical Difficulty (1-5)	Environmental Impact (1-5)	Likelihood of public support (1-5)	Clarity of Layout (1-5)	NMU Facilitation (1-5)	Average score	Potential cost (1-5)	Conclusion
1	Free Flow Links	Free flow links between M6 slip roads and A580 East Lancashire Road	Long	2	2	2	3	2	4	2	3	2	**2.4**	**2**	Recommended to be considered further, only in conjunction with other options
2	Divert A49 Lodge Lane	Divert A49 Lodge Lane north and south of Haydock Island to form separate junctions with the A580 East Lancashire Road	Short	3	3	1	5	5	4	4	3	3	**3.4**	**3**	Recommended to be considered further, in isolation or in conjunction with other options
3	Combine A49 with M6 Slips	Form separate junction between A49 Lodge Lane and M6 off-slips to combine entry onto J23 roundabout	Short	1	1	1	1	3	2	1	3	2	**1.7**	**2**	Recommended not to be considered further
4	Junction 24 Improvement	Provide on slip to M6 southbound and off slip from M6 northbound at M6 J24	Long	1	1	1	1	2	1	1	3	3	**1.6**	**2**	Recommended not to be considered further given the scope of this study
5	Widen Straight Ahead Lanes	Increase lane capacity through centre of J23 roundabout and on approaches to the junction for A580 through traffic	Short	2	1	5	4	5	4	1	2	2	**2.9**	**4**	Recommended to be considered further, in isolation or in conjunction with other options.
6	Realign Straight Ahead Lanes	Realign movements through centre of roundabout, utilising space between bridge support piers	Short	3	3	4	4	5	4	2	3	2	**3.3**	**3**	Recommended to be considered further, in isolation or in conjunction with other options
7	Extend Roundabout	Extend roundabout to increase stacking capacity on circulatory carriageway	Long	3	3	1	2	4	3	1	2	2	**2.3**	**3**	Recommended not to be considered further
8	Cloverleaf	Cloverleaf Design (full and partial variations)	Long	4	5	1	1	1	1	1	5	4	**2.6**	**1**	Recommended not to be considered further
9	Additional Option 1	Grade separation	Long	5	5	2	1	2	2	3	5	4	**3.2**	**1**	Recommended to be considered further, in isolation or in conjunction with other options
10	Additional Option 2	Diverging Diamond	Long	4	4	3	2	3	4	5	5	5	**3.9**	**2**	Recommended to be considered further, in conjunction with Option 2
11	Additional Option 3	Lining, signing and signal amendments	Short	1	3	5	5	5	5	2	3	3	**3.6**	**5**	Recommended to be considered further, only in conjunction with other options

Conclusions and Next Steps

To summarise, a total of eleven options were proposed and discussed at the workshop. These options were of varying ambition and were a mixture of short and long-term solutions.

Following the scoring exercise, which aimed to rank each option against cost and benefit metrics, the following options had the highest scores and are recommended to be taken forward for further assessment:

- Lodge Lane Diversion (Option 2)
- Widen Straight Ahead Lanes (Option 5)
- Realign Straight Ahead Lanes (Option 6)
- Three Level Grade Separation (Additional Option 1)
- Diverging Diamond (Additional Option 2)

The lowest scoring options that are not recommended to be taken further are:

- Combine A49 with M6 Slips (Option 3)
- Junction 24 Improvement (Option 4)
- Extend Roundabout (Option 7)
- Cloverleaf (Option 8)

The Free Flow Links (option 1) and Minor Improvements (additional option 3) options shall be considered further, but only in conjunction with the other solutions that are being taken forward.

It is to be noted that the ultimate solution may prove to be a combination of two or more of these options particularly as the diversion of Lodge Lane is considered fundamental to multiple options.

A meeting between St Helens Council and WSP will be arranged to discuss the outcome of the report and to agree a way forward with this study.

Appendix F

STRATEGIC MODELLING REPORT

CONFIDENTIAL

St Helens Council

M6 JUNCTION 23 FEASIBILITY STUDY

Strategic Modelling Report

20TH MAY 2019

CONFIDENTIAL

St Helens Council

M6 JUNCTION 23 FEASIBILITY STUDY

Strategic Modelling Report

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70044810

DATE: 20TH MAY 2019

WSP

1st Floor Station House
Tithebarn Street, Exchange Station
Liverpool
L2 2QP

Phone: +44 151 331 8100

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks				
Date	25/02/2019	20/05/2019		
Prepared by	Arjuna Kulupana	Arjuna Kulupana		
Signature				
Checked by	Nick Green	Nick Green		
Signature				
Authorised by	Nick Green	Nick Green		
Signature				
Project number	70039945	70039945		
Report number	SAT_1	SAT_1		
File reference	70039945	70039945		

CONTENTS

1 OVERVIEW

WSP was appointed by St Helens Council to undertake a Feasibility Study of improvements to Junction 23 of the M6. As part of this study, use has been made of the St Helens SATURN Model (SHSM) to provide information on the impact on traffic flows – in particular any re-routing arising from the potential improvement options and to inform the forecast flows used in detailed, operational, junction modelling.

This report provides an overview of the modelling undertaken and is structured as follows:

- **Section 2** provides a summary of SHSM and the derivation of the forecast travel demand;
- **Section 3** describes the different options for J23 that have been tested within SHSM;
- **Section 4** sets out the results from traffic modelling of the options, including a discussion on the key observations from the assignments; and
- **Section 5** concludes the report and provides recommendations for further work.

2 ST HELENS SATURN MODEL

2.1 BASE MODEL

The starting point of the SHSM base year model in terms of the network, zonal coverage and trip matrices was the Liverpool City Region Transport Model (LCRTM), which was subsequently focussed on the St Helens local authority district and extended to incorporate the M62 corridor to the Croft Interchange and an area around M6 Junction 23 and Golborne. Full details on the base year model development and validation can be found by reference to the Local Model Validation Report (LMVR)[1]

The SHSM study area is illustrated in Figure 2.1, depicting the area in which detailed junction modelling has been incorporated (simulation network) and the surrounding buffer area.

SHSM constitutes a peak-hour model, producing model outputs for the time periods given in Table 2-1.

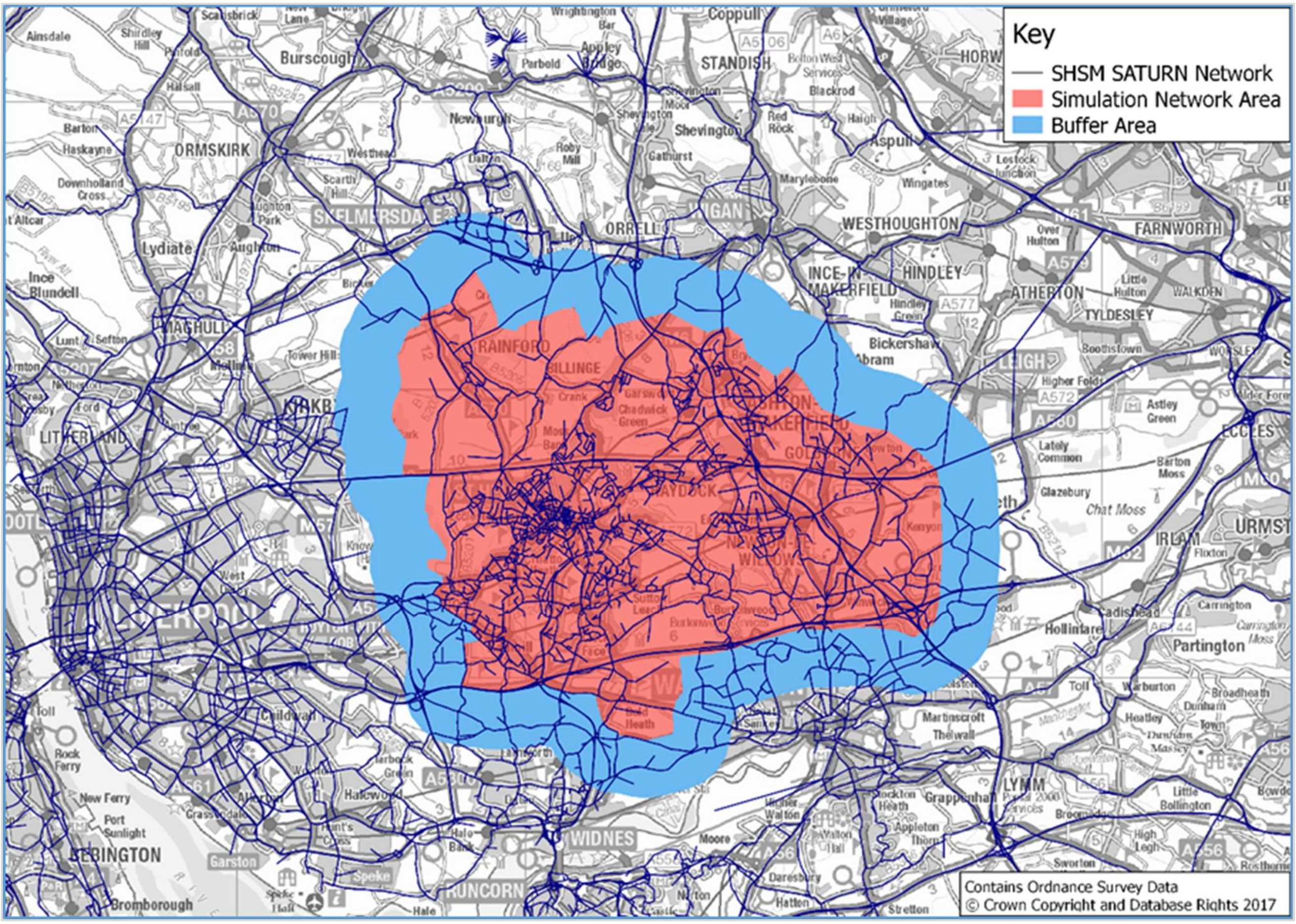
Table 2-1 – SHSM Modelled Hours

Time Period	Modelled Peak hour
AM Peak Hour	08:00-09:00
Average Interpeak (IP) hour	Average hour 10:00-16:00*
PM Peak Hour	17:00-18:00

*Currently not modelled in forecast

[1] St Helens SATURN Model Local Model Validation Report, WSP - March 2018

Figure 2-1 – SHSM Study Area



The model was calibrated to 2017 traffic flows and speed data using matrix estimation and was validated as described in the SHSM LMVR.

Figures 2.2 and 2.3 and demonstrate that the base SHSM replicates link flows to a reasonable standard at M6 Junction 23, noting that overall flows in the AM peak are within 3% of observed (June 2018) flows and in the PM peak this is 9%.

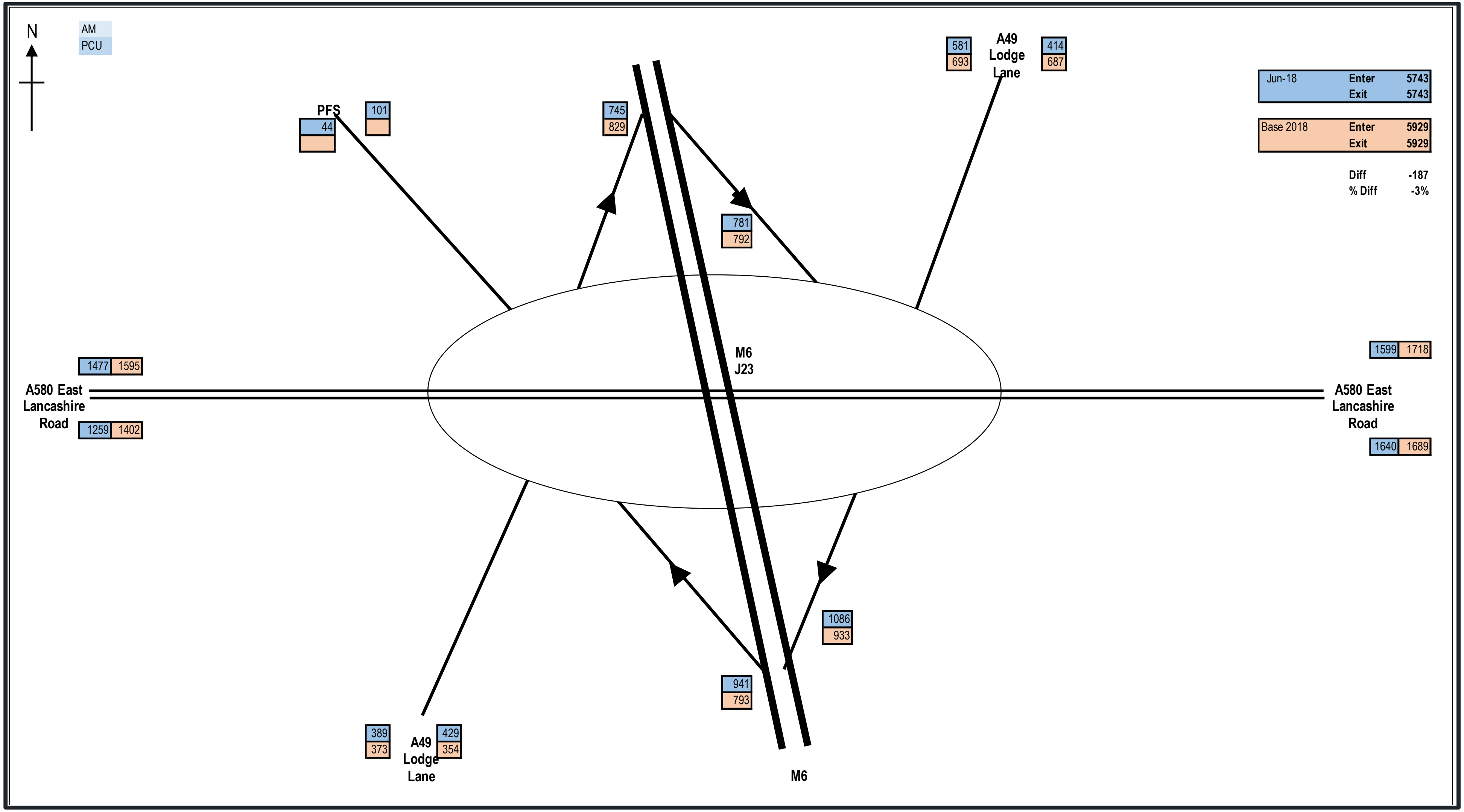


Figure 2-2 - AM Comparison of Base v Observed Flows

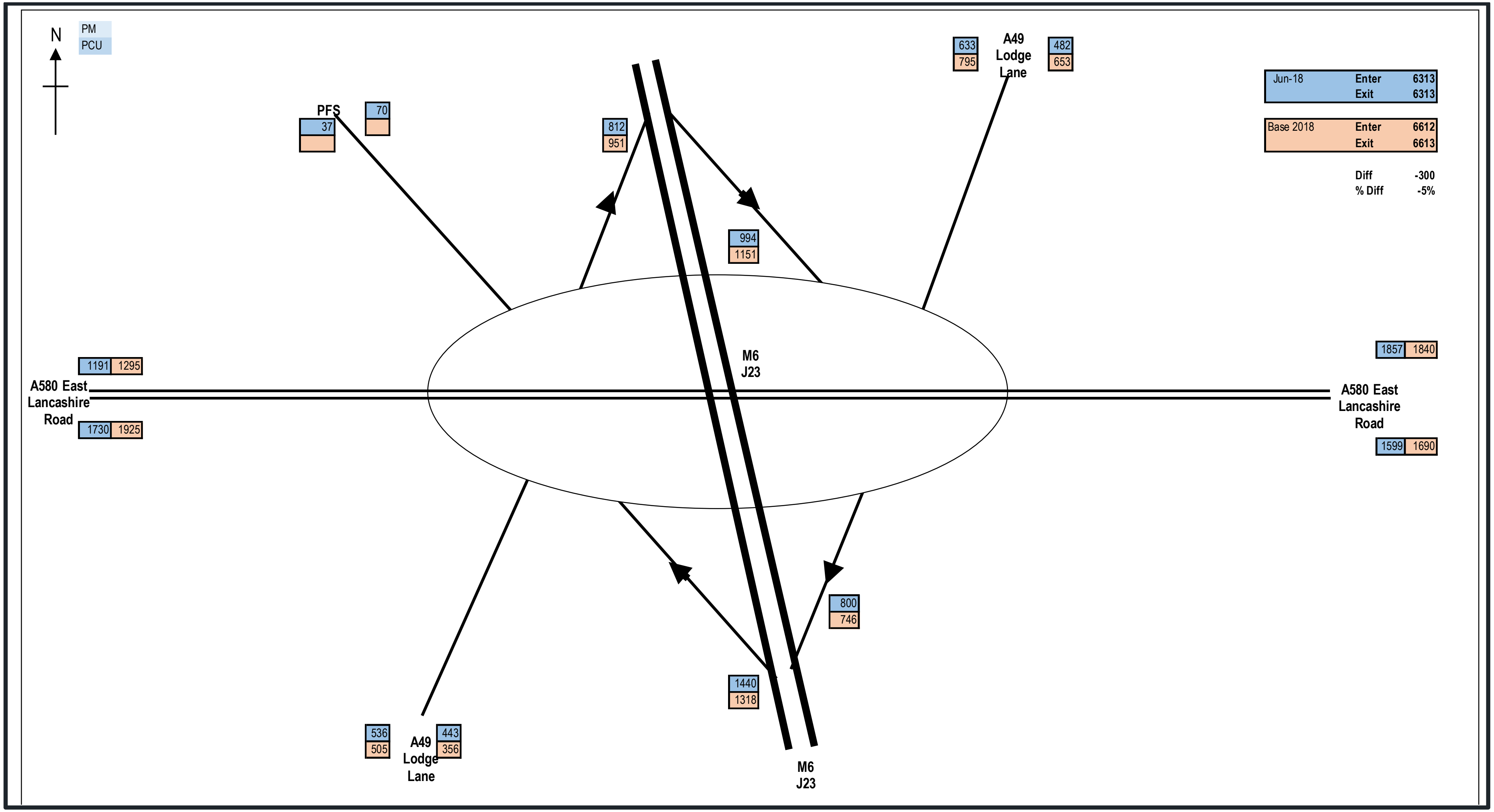


Figure 2-3 - PM Comparison of Base v Observed Flows

2.2 FORECAST MODEL OVERVIEW

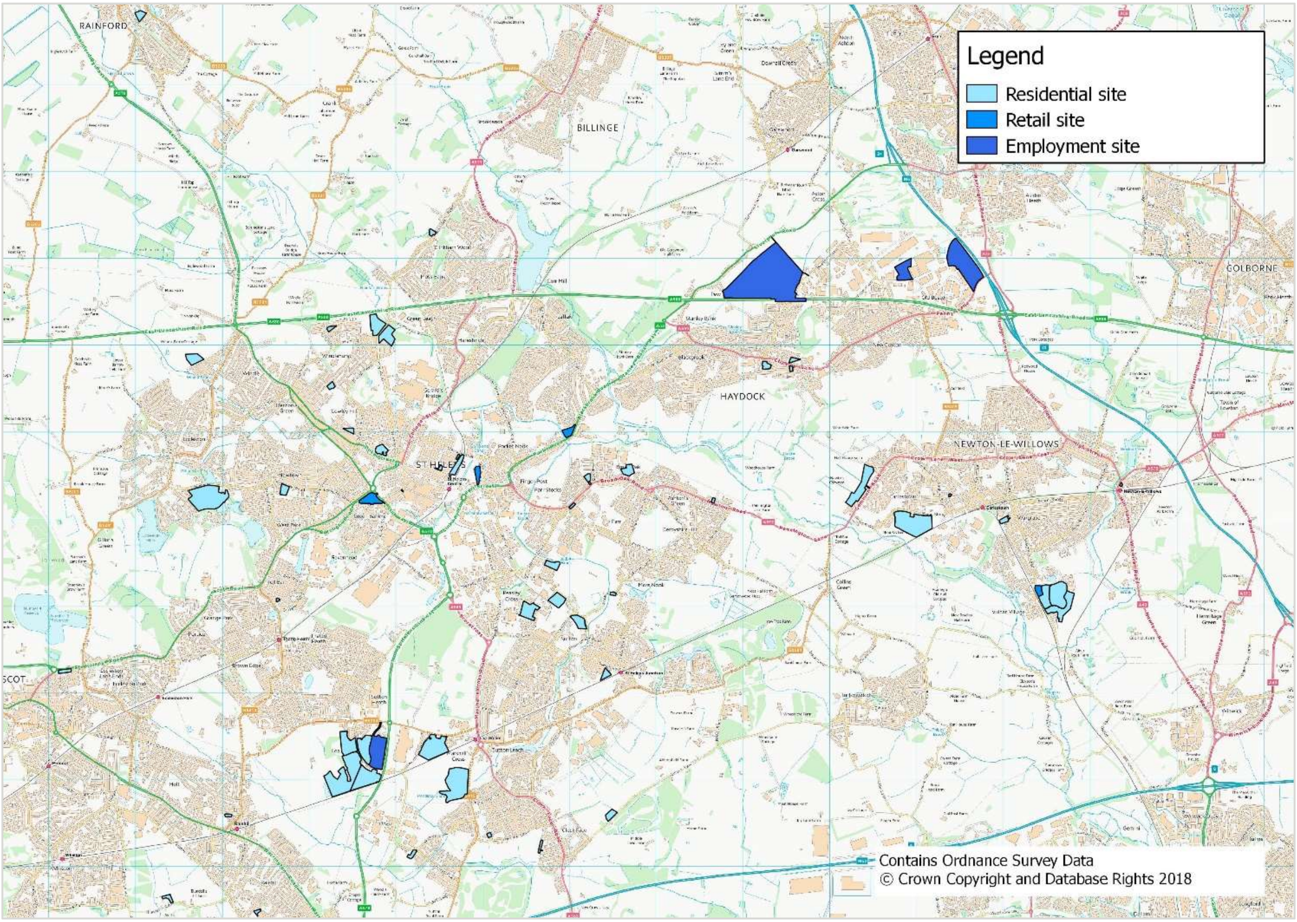
The SATURN modelling of the Junction 23 options has used as its starting point the model developed by WSP inform the traffic impact assessment of the St Helens Local Plan (2018-2033).

This model is described in the St Helens Transport Impact Assessment[2] as follows:

"Do Something 1 (DS1) includes all do minimum developments and planned infrastructure schemes, and in addition also includes the Local Plan preferred site allocations[3]. No further highway improvements have been assumed under DS1…"

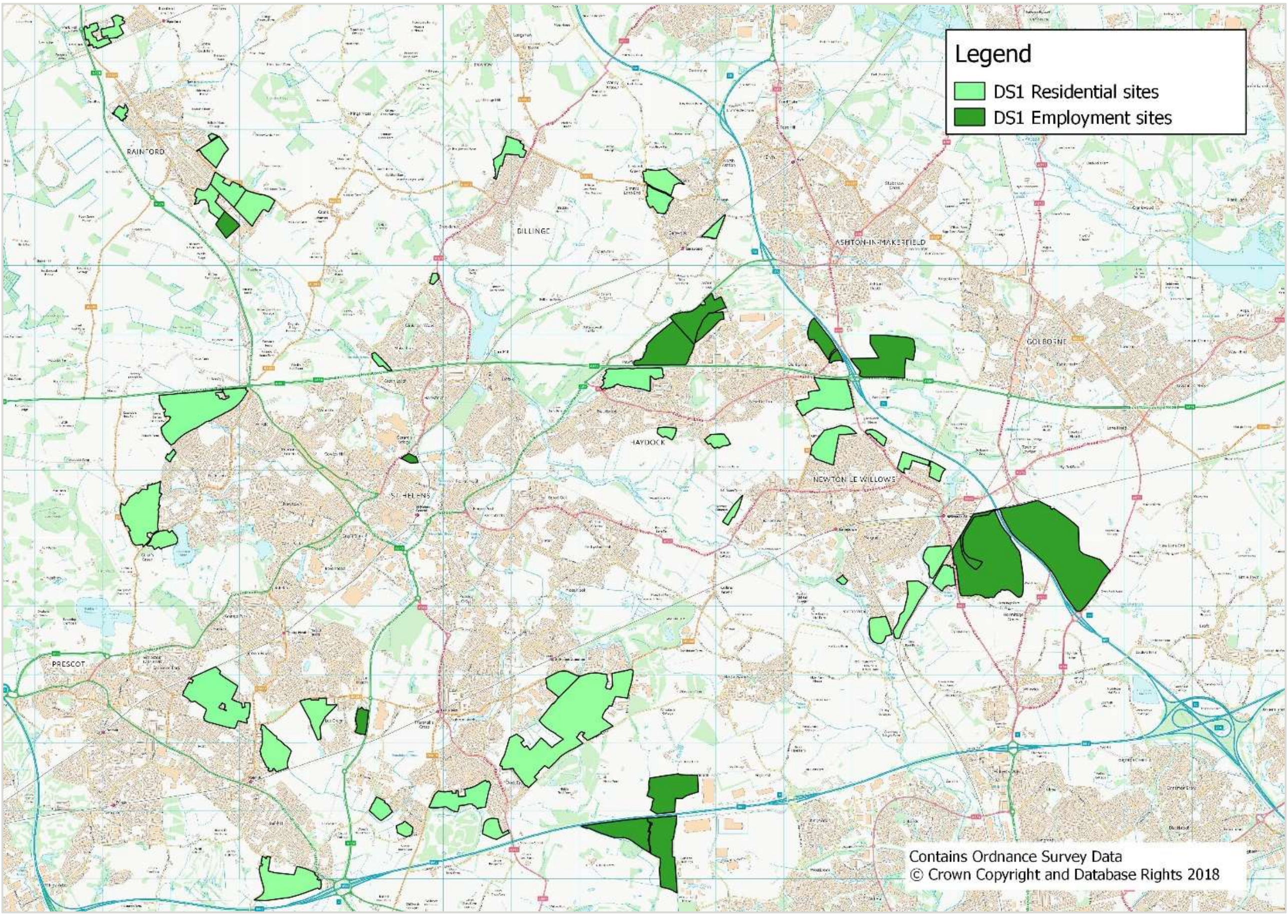
The developments that have been added to the forecast Do Minimum and Do Something scenarios (DS1) are given in Figures 2-4 and 2-5 below.

Figure 2-4 – Locations of Do Minimum developments represented explicitly in Forecast Model



[2] St Helens Local Plan Transport Impact Assessment, WSP January 2019
[3] The Local Plan modelling is based on the Draft Local Plan Preferred Options (and not the subsequent St Helens Local Plan Submission Draft)

Figure 2-5 – Locations of Local Plan developments represented explicitly in Forecast Model



The highway improvements that were added to the forecast model are listed in Table 2-2 below.

Table 2-2 – Highway Schemes included in Forecast Model

Scheme Name	Network	Area	Summary Description
A580/Haydock Lane	Local	St. Helens (Borough)	Scheme underway to deliver improved signalised junction at A580/Haydock Lane, including cycling improvements. includes improvements to enable right turn movements into Haydock Industrial Estate
A580/A58	Local	St. Helens (Borough)	New crossing poins for pedestrians and cyclists with capacity improvements at the junction
Elton Head Road/A570 St Helens Linkway	Local	St Helens (Rainhill)	Lower speed limit from 70mph to 50mph and introduce crossing points at key intersections for cyclists.
Sutton Road/Jackson Street	Local	St. Helens (Borough)	Junction capacity and safety improvements. Widening of junction approach from 1 lane to 2. New signalling changes and phases.

Scheme Name	Network	Area	Summary Description
Sutton Road/Watery Lane	Local	St. Helens (Borough)	New spine road layout with 4 mini roundabouts with pedestrian refuge points and crossings.
Windle Island	Local	St Helens (Rainford)	Relocation of Crank Road junction further north along Rainford Road, closer to the golf club.
Penny Lane/Lodge Lane	Local	St. Helens (Borough)	Removal of island on northbound approach – replacement with new island and signalling & phasing. New triangular island w/t Pedestrian crossing along 1) Penny lane north and triangle. 2) Lodge Lane parallel to traffic.
M62 Smart Motorway Improvements: M62 J10–12	Strategic	St. Helens (Borough)	M62 mainline capacity and reliability improvements.
M6 Smart Motorway Improvements: M6 J21A-26	Strategic	St. Helens (Borough)	M6 mainline capacity and reliability improvement.
M6 J22 Upgrade	Strategic	St. Helens (Borough)	Upgrade to provide additional capacity including widening the gyratory and new pedestrian footbridge.

2.2.1 TEMPRO CONSTRAINT

The DS1 forecasts used for the Local Plan TIA had not been constrained to TEMPRO and therefore were inconsistent to the requirements of scheme appraisal under WebTAG[4]. Therefore, an additional forecast for the M6 J23 was created that constrained the level of growth in the matrix to be consistent to TEMPRO.

The traffic movements in 2033 in the TEMPRO constrained demand matrices, between St Helens and the rest of the UK, are given in Table 2-3 below.

Table 2-3 – Trips within the 2033 forecast TEMPRO constrained DS1 matrices (PCU)

	AM PEAK		PM PEAK	
From\To	St Helens	Elsewhere	St Helens	Elsewhere
St Helens	11,296	13,654	11,052	11,479
Elsewhere	12,080	-	13,654	-

[4] WebTAG Unit M4 – Forecasting and Uncertainty

The above constrained DS1 trips are compared with the base model and unconstrained DS1 trips in Tables 2-4 and 2-5 respectively.

Table 2-4 – Trips within base year matrices (PCU)

	AM PEAK		PM PEAK	
From\To	St Helens	Elsewhere	St Helens	Elsewhere
St Helens	10,983	11,499	10,604	9,531
Elsewhere	9,530	-	11,857	-

Table 2-5 – Trips within the 2033 forecast unconstrained DS1 matrices (PCU)

	AM PEAK		PM PEAK	
From\To	St Helens	Elsewhere	St Helens	Elsewhere
St Helens	13,466	17,581	13,749	13,890
Elsewhere	11,742	-	14,423	-

3 SCENARIOS

3.1 OVERVIEW

Several scenarios for improving Junction 23 have been modelled. Each scenario has been assigned with the TEMPRO constrained 2033 forecast demand for the AM and PM peak hours.

The scenarios modelled are described in Table 3-1 below.

Table 3-1 – Modelled Scenarios

Scenario	Network
Scenario 1	Do Minimum, i.e. no Junction 23 improvement.
Scenario 2	Lodge Lane southern and northern arms removed from Junction 23.
Scenario 3	Lodge Lane southern arm only removed.
Scenario 4	Lodge Lane southern arm relocated to join the A580 at a new traffic signal junction to the west of Junction 23.
Scenario 5	Lodge Lane southern arm relocated to join Penny Lane.
Scenario 6	Lodge Lane southern arm relocated to join Penny Lane and Lodge Lane northern arm relocated to join the A580 at a new traffic signal junction to the east of Junction 23.
Scenario 7	Lodge Lane southern and northern arms relocated to join new traffic signal junctions on the A580.
Scenario 8	Lodge Lane arms relocated as in Scenario 7, and Parkside Link Road added between Mill Lane and Parkside Road.
Scenario 9	Junction 23 converted to a diverging diamond junction, and with the Scenario 8 changes also made.

The SATURN model networks for each scenario are given in Figures 3-1 to 3-9.

Figure 3-1 – Scenario 1 Network – Do Minimum

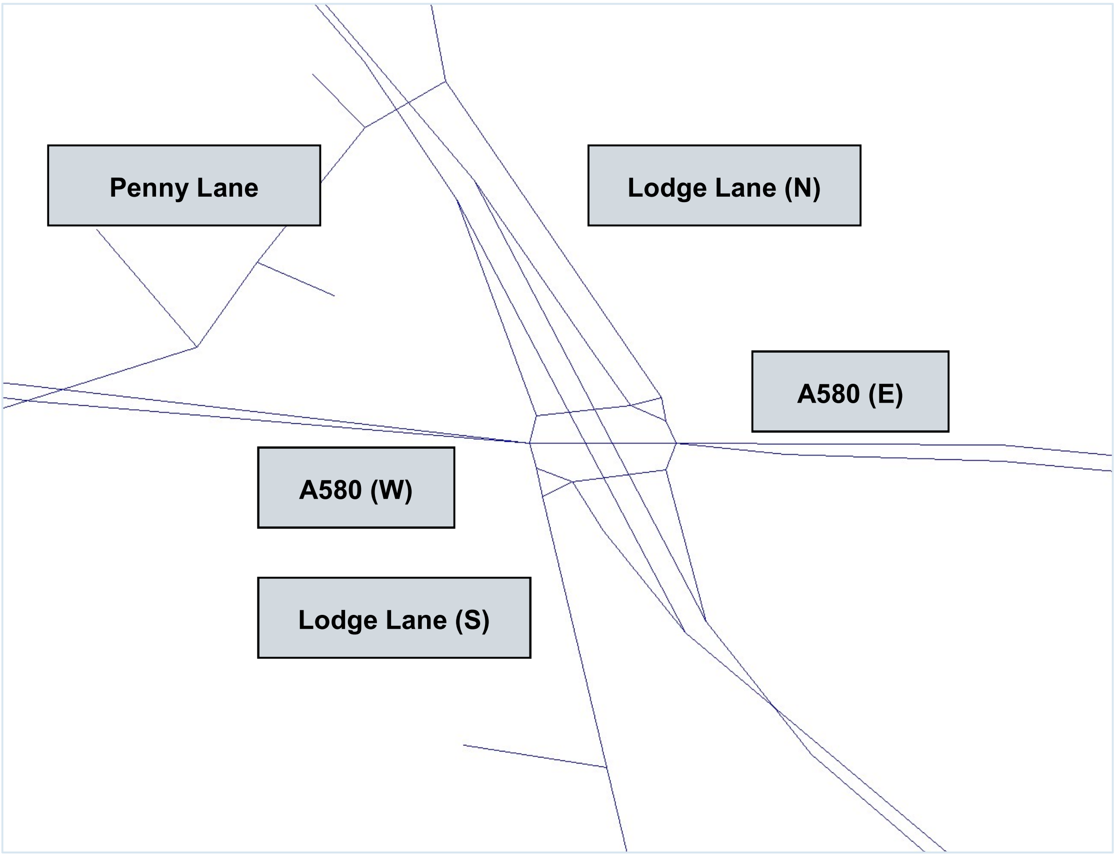


Figure 3-2 – Scenario 2 Network – Lodge Lane southern and northern arms removed from Junction 23

Figure 3-3 – Scenario 3 Network – Lodge Lane southern arm only removed

Figure 3-4 – Scenario 4 Network – Lodge Lane southern arm relocated to join the A580 at a new traffic signal junction to the west of Junction 23

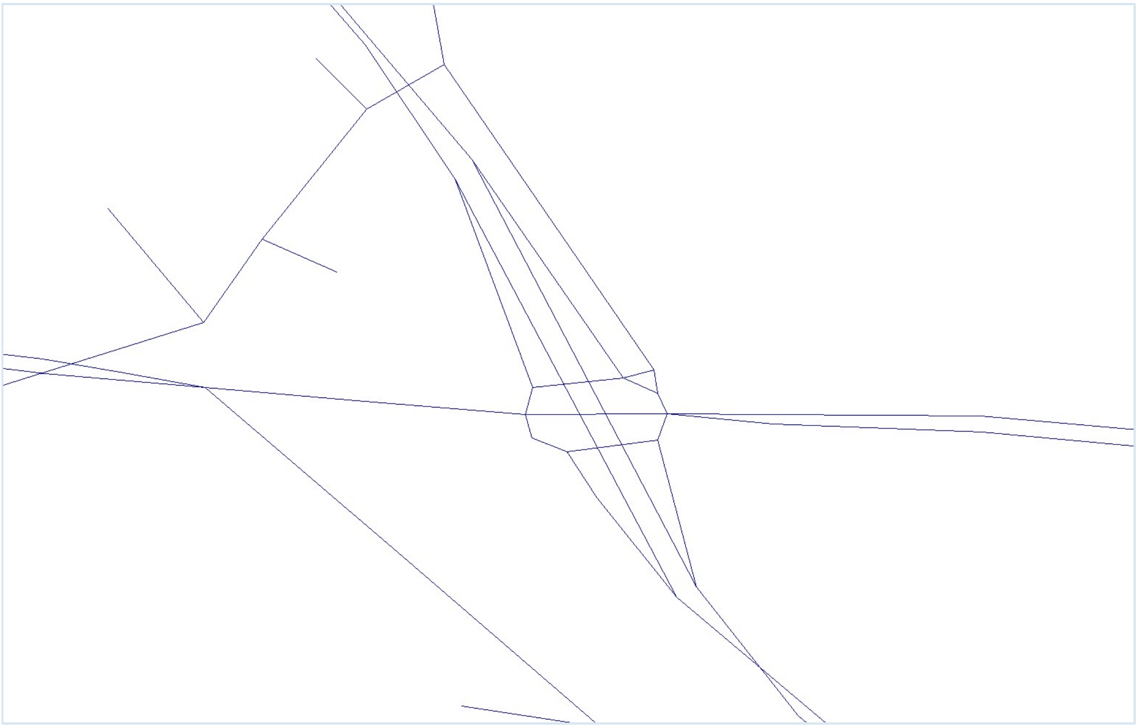


Figure 3-5 – Scenario 5 Network – Lodge Lane southern arm relocated to join Penny Lane

Figure 3-6 – Scenario 6 Network – Lodge Lane southern arm relocated to join Penny Lane and Lodge Lane northern arm relocated to join the A580 at a new traffic signal junction to the east of Junction 23

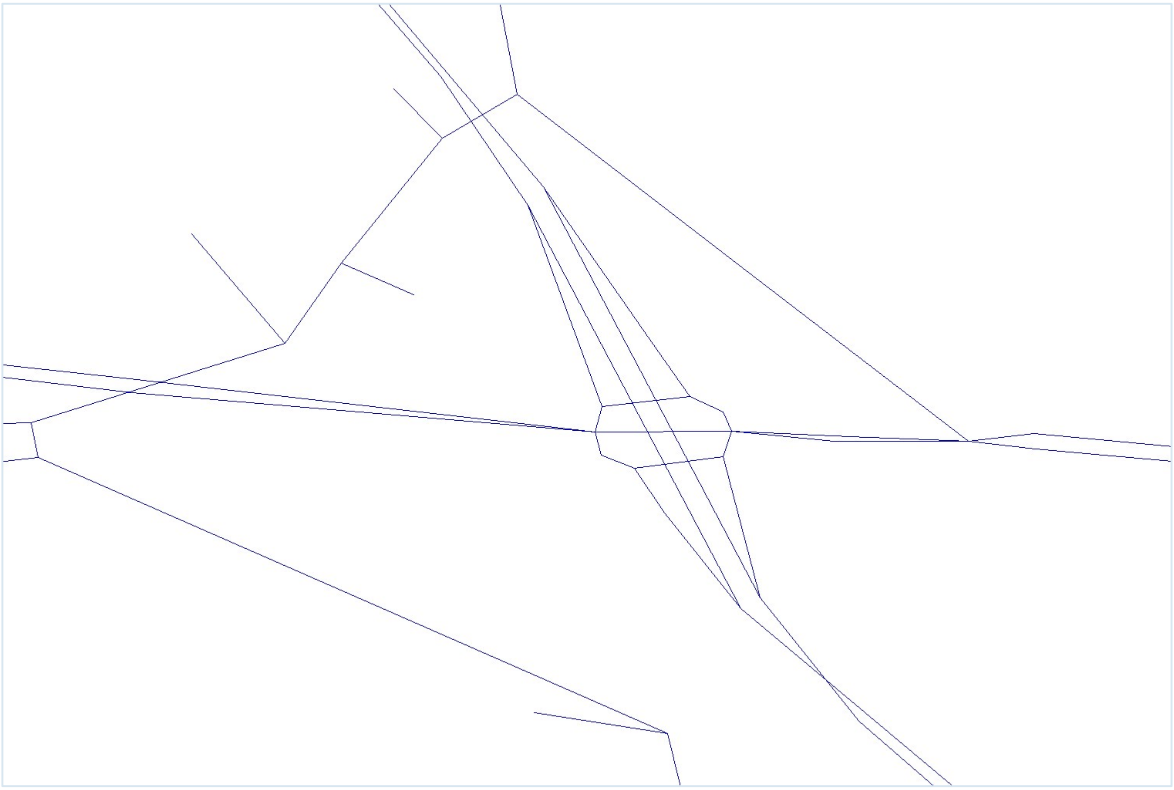


Figure 3-7 – Scenario 7 Network – Lodge Lane southern and northern arms relocated to join new traffic signal junctions on the A580

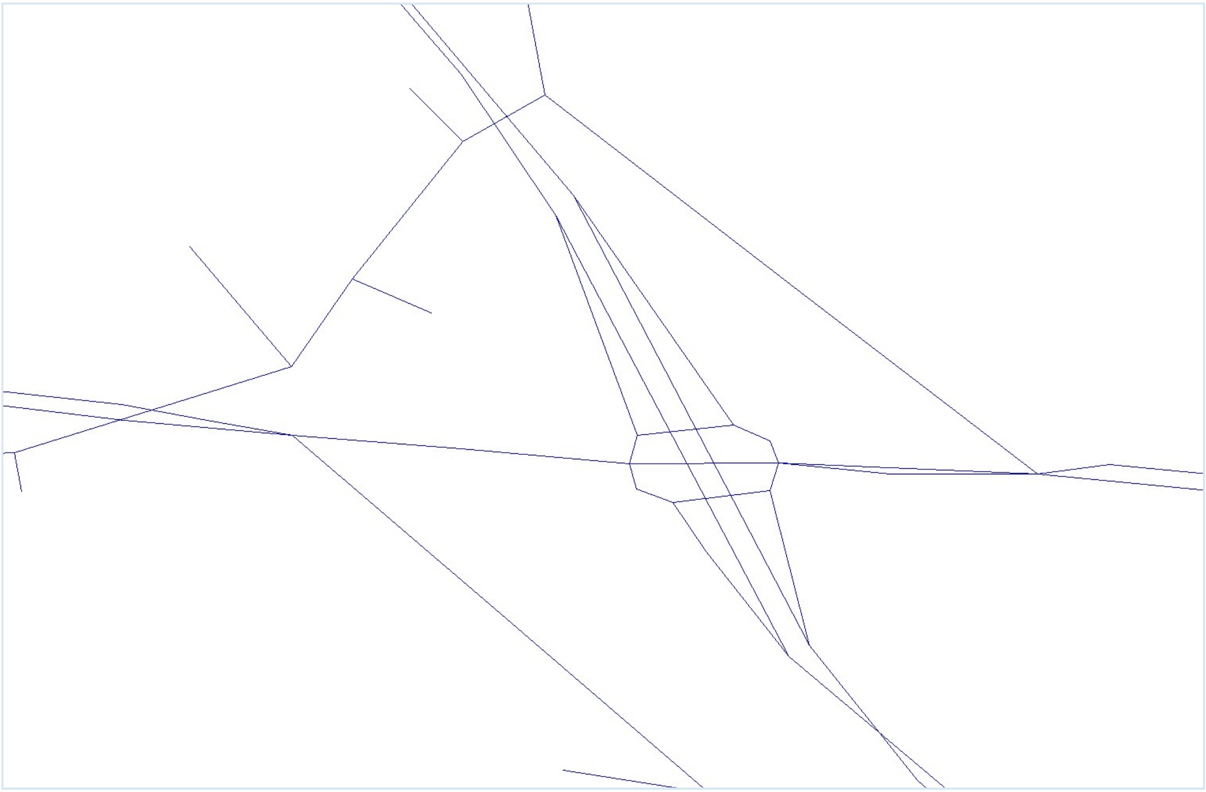


Figure 3-8 – Scenario 8 Network – Lodge Lane arms relocated as in Scenario 7, and Parkside Link Road added between Mill Lane and Parkside Road

Figure 3-9 – Scenario 9 Network – Junction 23 converted to a diverging diamond junction, and with the Scenario 8 changes also made

4 TRAFFIC ASSIGNMENT

The assigned traffic flows into M6 J23 with each scenario in 2033 are given in Tables 4-1 and 4-2 below.

Table 4-1 – Assigned Traffic Flows into M6 Junction 23 – AM Peak (PCU)

Scenario	A580 (W)	A580 (E)	Lodge Lane (S)	Lodge Lane (N)	M6 NB Offslip	M6 SB Offslip	M6 NB-Through	M6 SB - Through	TOTAL
Base 2017	1,601	1,686	373	692	766	703	3,506	3,595	12,922
1 (Do Min)	1,306	1,807	871	890	1,802	1,382	4,629	4,653	17,340
2	1,822	1,870	Arm Removed	Arm Removed	1,940	1,460	4,586	4,707	16,385
3	1,333	1,857	Arm Removed	1380	1,940	1,293	4,566	4,642	17,011
4	1,511	1,861	Arm Relocated	1440	1,940	1,237	4,569	4,643	17,201
5	1,326	1,850	Arm Relocated	1530	1,940	1,279	4,551	4,637	17,113
6	1,737	2,128	Arm Relocated	Arm Relocated	1,940	1,147	4,561	4,690	16,203
7	1,852	2,090	Arm Relocated	Arm Relocated	1,940	1,129	4,560	4,676	16,247
8	1,847	2,056	Arm Relocated	Arm Relocated	1,934	1,106	4,548	4,691	16,182
9	2,271	1,894	Arm Relocated	Arm Relocated	1,940	1,236	4,501	4,574	16,416

Table 4-2 – Assigned Traffic Flows into M6 Junction 23 – PM Peak (PCU)

Scenario	A580 (W)	A580 (E)	Lodge Lane (S)	Lodge Lane (N)	M6 NB Offslip	M6 SB Offslip	M6 NB-Through	M6 SB - Through	TOTAL
Base 2017	1,275	1,651	508	666	1,351	1,151	4,701	3,546	14,849
1 (Do Min)	1,649	1,796	733	1,027	1,854	1,517	5,816	4,513	18,905
2	1,597	1,944	Arm Removed	Arm Removed	1,940	1,622	5,653	4,539	17,295
3	1,635	1,888	Arm Removed	1,080	1,846	1,530	5,861	4,521	18,361
4	1,710	1,884	Arm Relocated	1,004	1,940	1,498	5,653	4,542	18,231
5	1,667	1,894	Arm Relocated	1,184	1,940	1,484	5,653	4,531	18,353
6	1,461	2,080	Arm Relocated	Arm Relocated	1,940	1,452	5,653	4,557	17,143
7	1,629	1,964	Arm Relocated	Arm Relocated	1,940	1,437	5,653	4,544	17,167
8	1,614	1,931	Arm Relocated	Arm Relocated	1,940	1,395	5,653	4,560	17,093
9	1,885	1,853	Arm Relocated	Arm Relocated	1,940	1,647	5,653	4,452	17,430

4.1 SCENARIO 2 – REMOVAL OF LODGE LANE NORTH AND SOUTH AT JUNCTION 23

The removal of the Lodge Lane connections to the north and south of Junction 23 results in some reassignment of traffic from the nearby roads, including from the M6. Instead of entering the roundabout from Lodge Lane south, traffic enters the roundabout from the west via a circuitous route via Vista Road, Piele Road, Millfield Lane and the A580. Also, instead of leaving the roundabout via Lodge Lane South, trips travel west along the A580 and leave via Kenyon’s Lane. In addition, there are also some trips that are expected to enter or leave the A580 via Newton Lane to the east, due to the closure of Lodge Lane South.

For trips entering the roundabout via Lodge Lane North and travelling via the A580, there is a reassignment of traffic away from Lodge Lane and on to the M6 from the north via Junction 24. Trips entering the roundabout via Lodge Lane North and then leaving via Lodge Lane South reassign via the A599 either onto the A580 or onto Vista Road. Traffic leaving the roundabout via Lodge Lane North will reassign via a more circuitous route via the A580, Kenyon’s Lane South and the A599.

There is also some displacement of trips from the west from the A580 to the M62 caused by extra traffic entering the A580 due to the above reassignment.

The trip reassignments described above are shown in Figure 4-1 below and replicated at larger scale in Appendix A. The patterns are similar in the AM and PM peaks.

In the following diagrams, Green represents an increase in traffic as a result of the M6 J23 scheme compared to the Do Minimum, Blue represents a decrease in traffic.

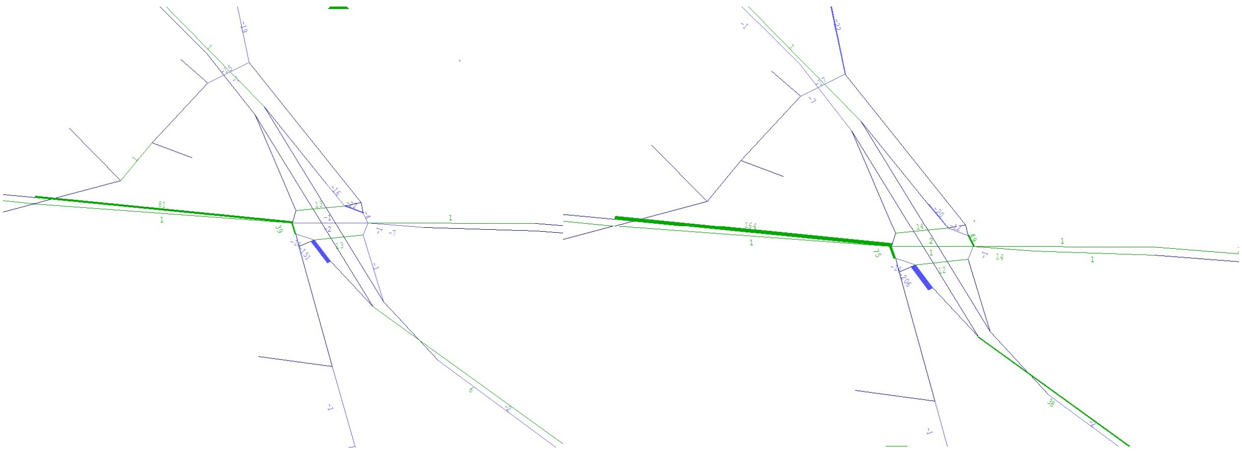
Figure 4-1 - Trip reassignment due to closure of both Lodge Lane North and South (PCU difference)

AM Peak PM Peak

Figure 4-2 (and Appendix B) shows that the removal of the Lodge Lane arms leads to a reduction in delay at the southern M6 offslip arm of the roundabout and some minor reductions in delay on most of the circulatory sections of the roundabout. However, there is an increase in delay at the A580 incoming arm. Some of these changes are due to the optimisation of the gyratory signals to accompany the junction improvement.

Figure 4-2 - Change in delays due to closure of both Lodge Lane North and South (seconds)

AM Peak PM Peak

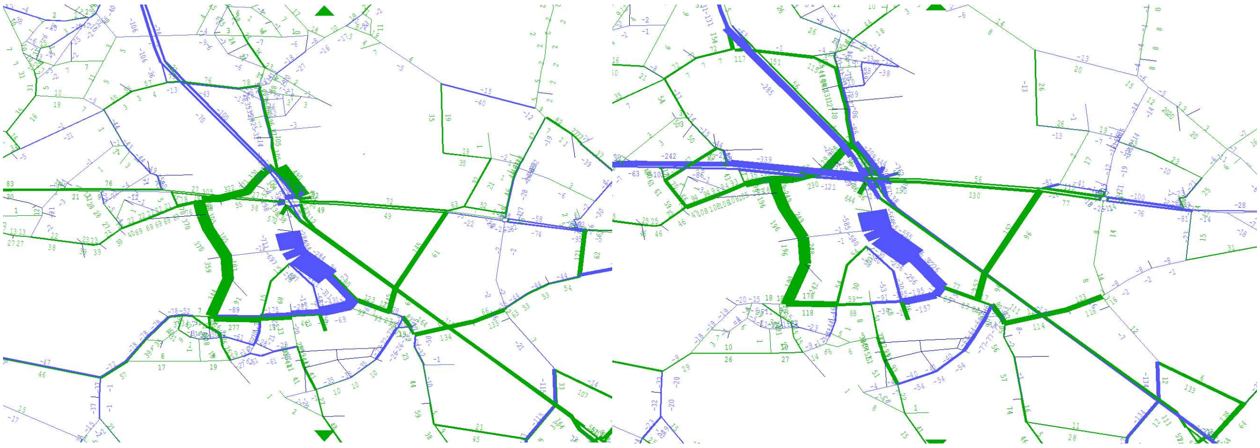


4.2 SCENARIO 3 – REMOVAL OF LODGE LANE SOUTH ONLY AT JUNCTION 23

With Lodge Lane South only removed, some of the reassignments described for Scenario 2 will take place. Instead of entering the roundabout from Lodge Lane south, traffic enters the roundabout from the west via a circuitous route via Vista Road, Penny Lane and Lodge Lane North. Also, instead of leaving the roundabout via Lodge Lane South, trips travel west along the A580 and leave via Kenyon's Lane. In addition, there are also some trips that are expected to enter or leave the A580 via Newton Lane to the east, due to the closure of Lodge Lane South. The reassignments are shown in Figure 4-3 below and replicated at larger scale in Appendix A.

Figure 4-3 - Trip reassignment due to closure of Lodge Lane South only (PCU difference)

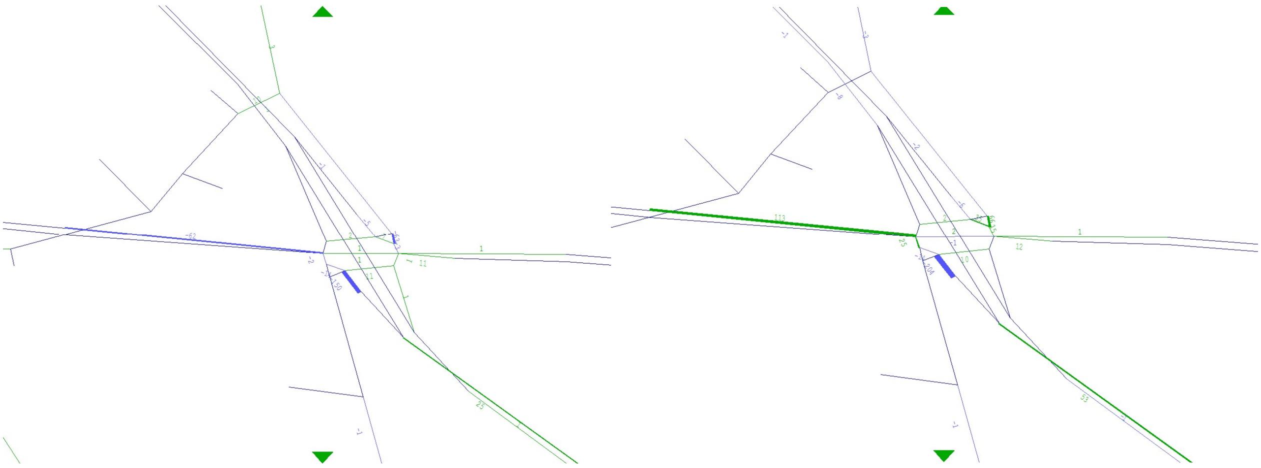
AM Peak PM Peak



The removal of the Lodge Lane southern arm leads to a reduction in delay at the southern M6 offslip arm of the roundabout and also at the A580 western arm of the Junction 23 roundabout. Some of these changes are due to the optimisation of the gyratory signals to accompany the junction improvement (Figure 4.4 and Appendix B).

Figure 4-4 - Change in delays due to closure of Lodge Lane South only (seconds)

AM Peak PM Peak

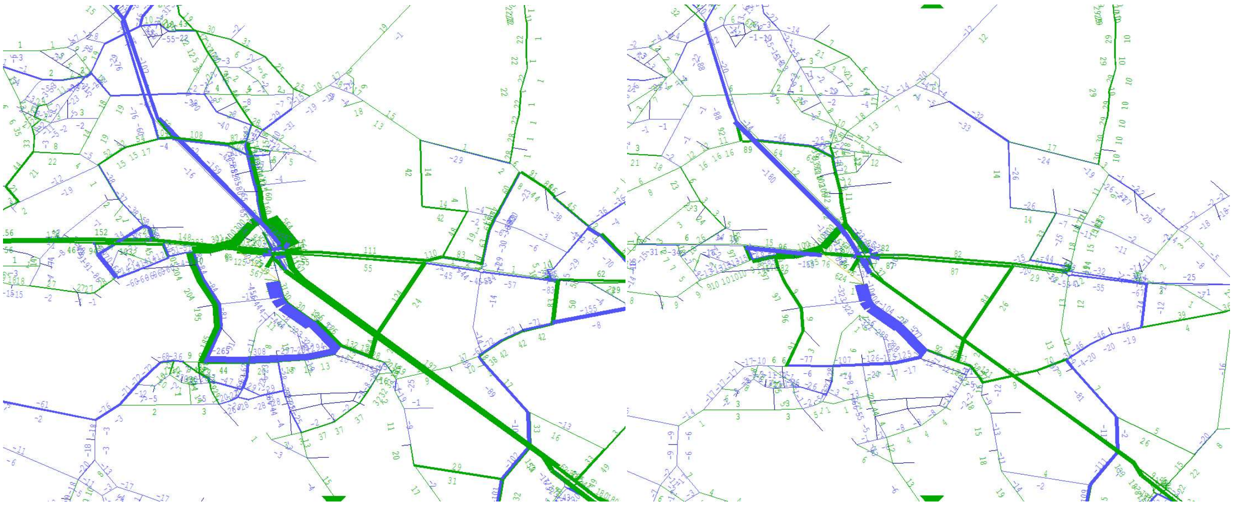


4.3 SCENARIO 4 – RELOCATION OF LODGE LANE SOUTH ONLY TO A580 WESTERN ARM

The relocation of Lodge Lane South to join the A580 at a signalised junction to the west of Junction 23 leads to some reassignment of trips entering the Junction away from Lodge Lane South and via Vista Road, Penny Lane and Lodge Lane North. The reassignment suggests that, even though the Lodge Lane south connection remains, the extra length due to the relocation of the junction makes the alternative route more attractive to some trips. In addition, there are also some trips that are expected to enter the A580 via Newton Lane to the east. The reassignments are shown in Figure 4-5 below and replicated at larger scale in Appendix A.

Figure 4-5 - Trip reassignment due to relocation of Lodge Lane South to A580 (PCU difference)

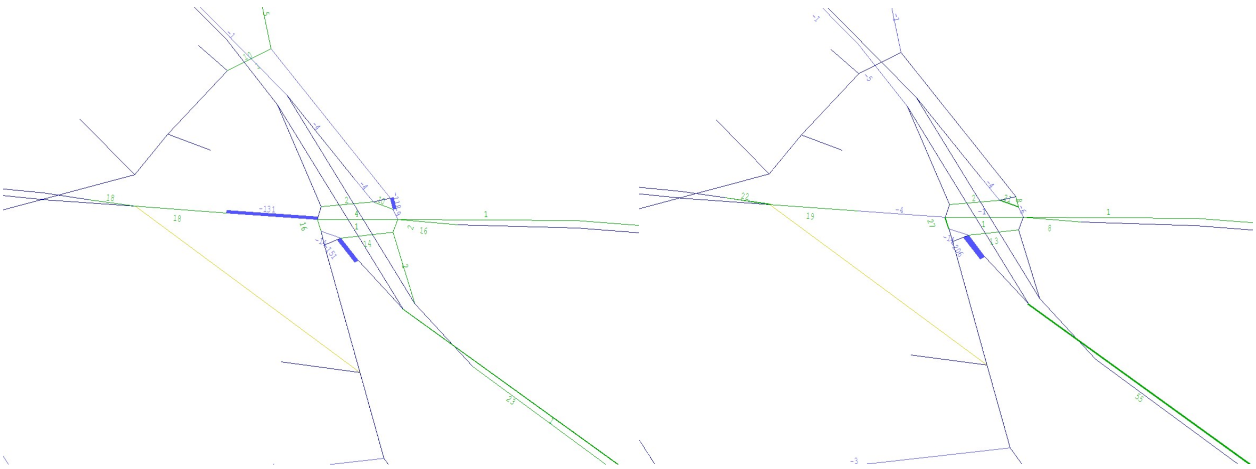
AM Peak PM Peak



The relocation of the Lodge Lane South arm tends to reduce delays on the circulatory arm and on the entry arms, as shown in Figure 4-6 below (and Appendix B). The reduction in delay is significant on the Lodge Lane north arm in the AM Peak. Some of these changes are due to the optimisation of the gyratory signals to accompany the junction improvement.

Figure 4-6 - Change in delays due to relocation of Lodge Lane South to A580 (seconds)

AM Peak PM Peak

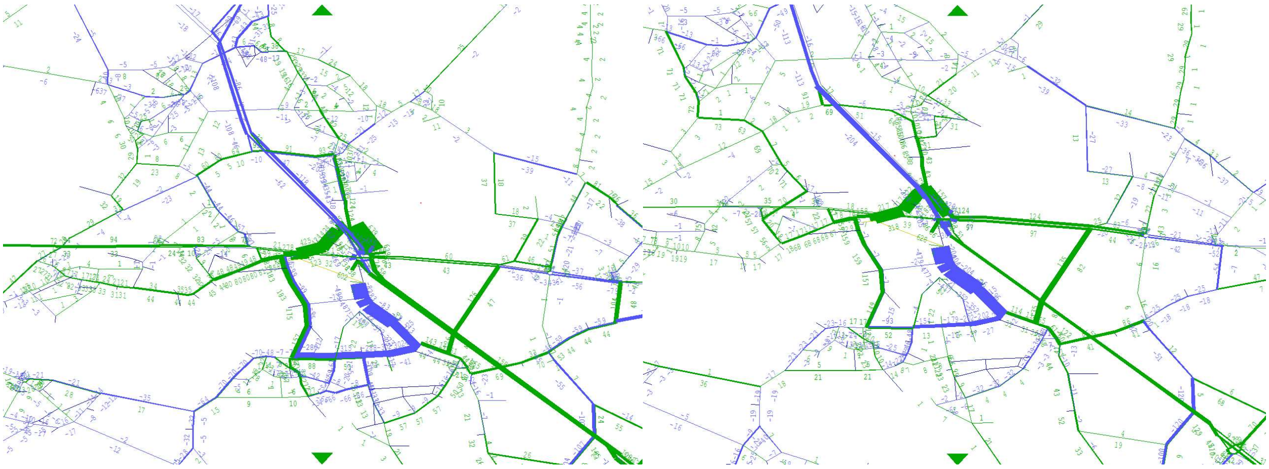


4.4 SCENARIO 5 – RELOCATION OF LODGE LANE SOUTH ONLY TO PENNY LANE

The relocation of Lodge Lane South onto Penny Lane has a similar impact to relocating onto the A580 as can be seen in Figure 4-7 below. The reassignment suggests that, even though the Lodge Lane south is connected to Penny Lane, the extra length due to the relocation of the junction makes the alternative route more attractive to some trips. The reassignments are shown in Figure 4-7 below and replicated at larger scale in Appendix A.

Figure 4-7 - Trip reassignment due to relocation of Lodge Lane South to Penny Lane (PCU difference)

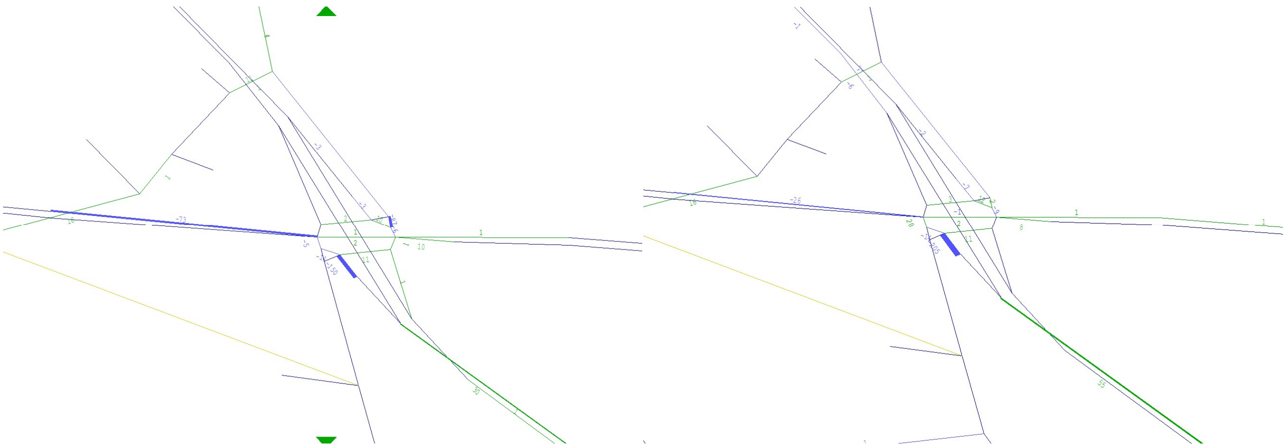
AM Peak PM Peak



The relocation of the Lodge Lane South arm tends to reduce delays on the circulatory arm and on the entry arms as shown in Figure 4-8 below (and Appendix B). The reduction in delay is significant on the Lodge Lane north arm and on the A580 western arm in the AM Peak.

Figure 4-8 - Change in delays to relocation of Lodge Lane South to Penny Lane (seconds)

AM Peak PM Peak



4.5 SCENARIO 6 – RELOCATION OF LODGE LANE SOUTH TO PENNY LANE AND LODGE LANE NORTH TO THE A580 EAST

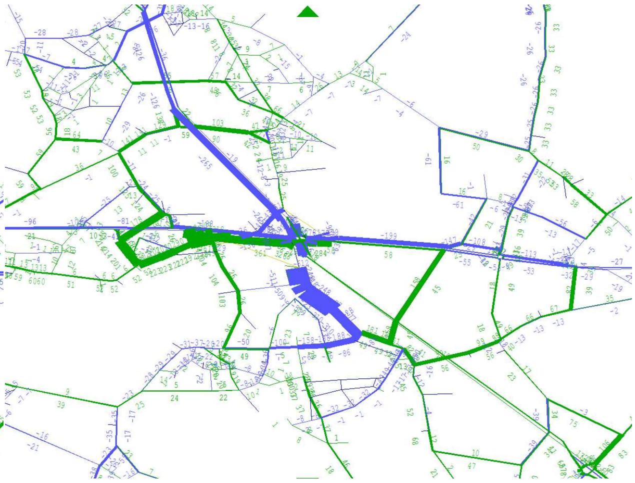
With the relocation of both the north and south Lodge Lane arms, the reassignment patterns are similar to Scenario 2, though the numbers reassigning are less. The removal of the Lodge Lane connections to the north and south of Junction 23 results in some reassignment of traffic from the nearby roads, including from the M6.

Instead of entering the roundabout from Lodge Lane south, traffic enters the roundabout from the west via a circuitous route via Vista Road, Piele Road, Millfield Lane and the A580. Also, instead of leaving the roundabout via Lodge Lane South, trips travel west along the A580 and leave via Kenyon's Lane. In addition, there are also some trips that are expected to enter or leave the A580 via Newton Lane to the east, due to the closure of Lodge Lane South. The reassignments are shown in Figure 4-9 below and replicated at larger scale in Appendix A.

Figure 4-9 - Trip reassignment due to relocation of Lodge Lane South to Penny Lane and Lodge Lane North to the A580 (PCU difference)

AM Peak

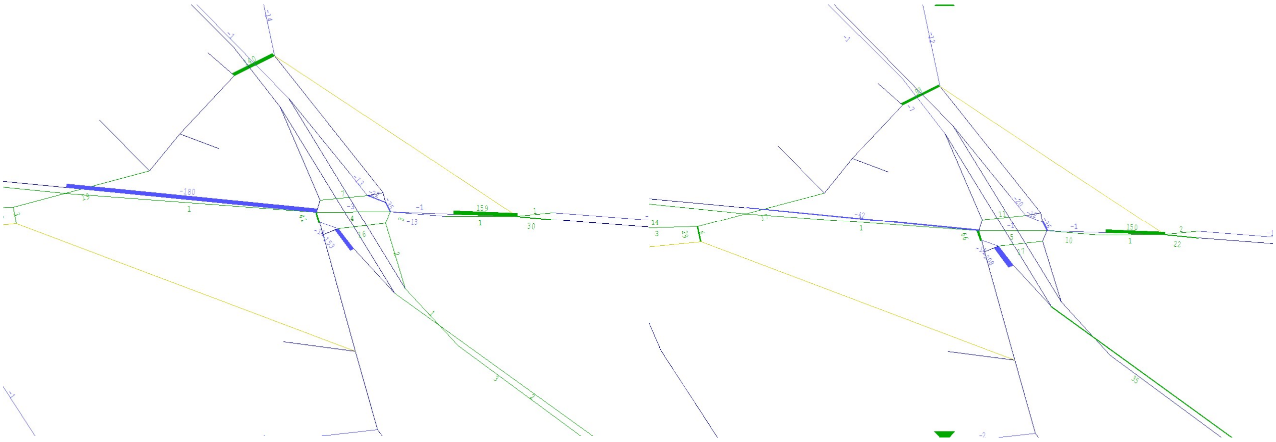
PM Peak



There is a significant reduction in delay at the junction due to the relocation of both Lodge Lane arms, especially on the A580 western arm and the M6 southern offslip arm, as shown in Figure 4-10 below. There are also small reductions in delay on the circulatory sections of the roundabout. The reassignments are replicated at larger scale in Appendix B.

Figure 4-10 - Change in delay due to relocation of Lodge Lane South to Penny Lane and Lodge Lane North to the A580 (seconds)

AM Peak PM Peak

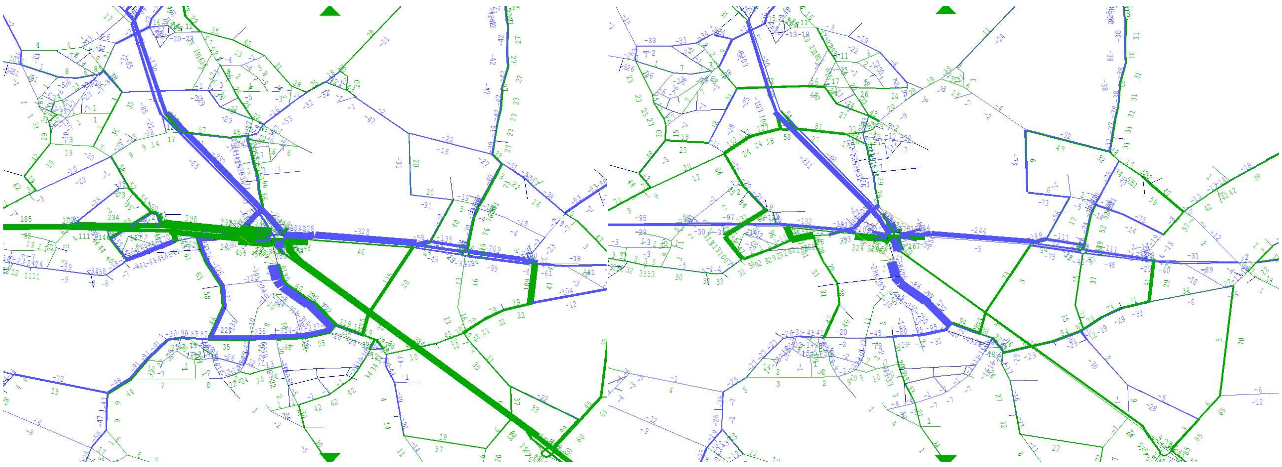


4.6 SCENARIO 7 – RELOCATION OF LODGE LANE SOUTH TO A580 WEST AND LODGE LANE NORTH TO THE A580 EAST

With the relocation of both the north and south Lodge Lane arms to the A580, the reassignment pattern is very similar to that due to Scenario 6 above, but of slightly lower magnitude. The reassignments are shown in Figure 4-11 below and replicated at larger scale in Appendix A.

Figure 4-11 - Trip reassignment due to relocation of Lodge Lane South and Lodge Lane North to the A580 (PCU difference)

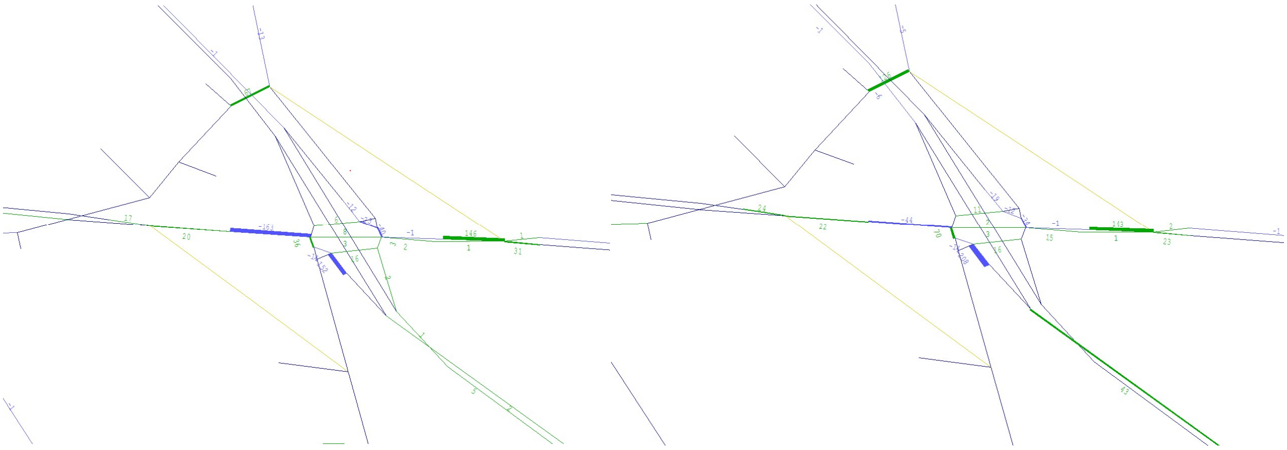
AM Peak PM Peak



There is a significant reduction in delay due to the relocation of the Lodge Lane arms at the junction on the M6 southern offslip arm. There are also small reductions in delay on the circulatory sections of the roundabout (Figure 4.11 and Appendix B).

Figure 4-12 - Change in delay due to relocation of Lodge Lane South and Lodge Lane North to the A580 (seconds)

AM Peak PM Peak



4.7 SCENARIO 8 – RELOCATION OF LODGE LANE SOUTH TO A580 WEST AND LODGE LANE NORTH TO THE A580 EAST AND THE ADDITION OF PARK LINK

This scenario has a similar impact to Scenario 7 on the links surrounding Junction 23 as shown in Figure 4-13 below. The addition of Park Link increase traffic in both directions on Barrow Lane and on Alnwick Road between Barrow Lane and the M6 Junction, as shown in Figure 4-14. There is also a reduction in traffic on Alnwick Road to the north of Barrow Lane. The reassignments are replicated at larger scale in Appendix A.

Figure 4-13 - Trip reassignment due to relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added (compared with Do Minimum). (PCU difference)

AM Peak PM Peak

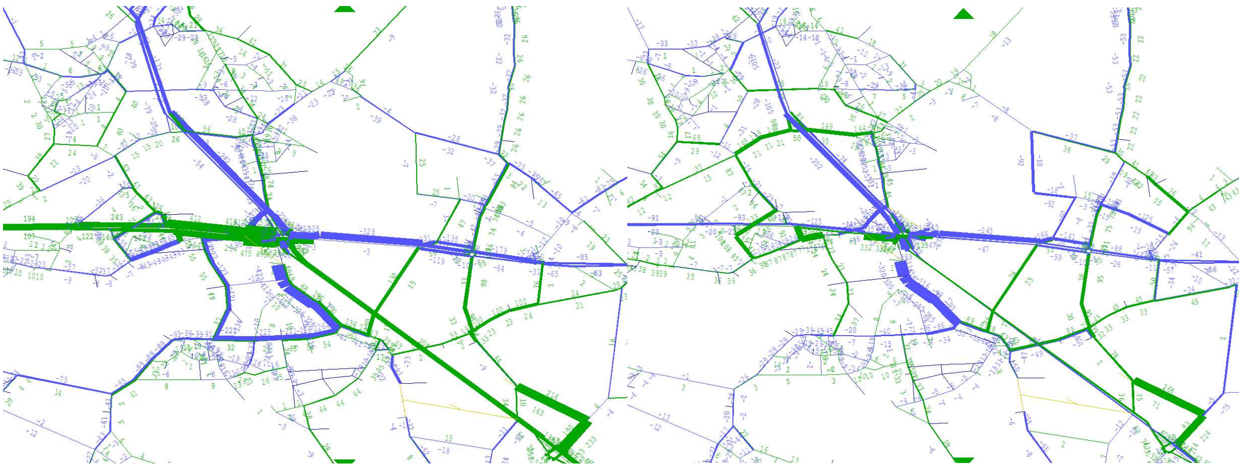
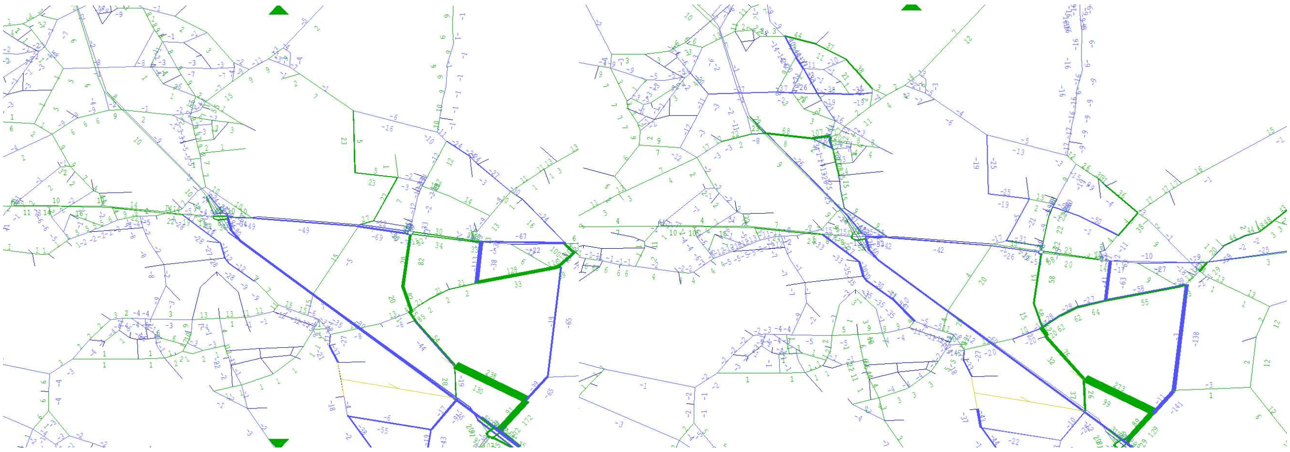


Figure 4-14 - Trip reassignment due to relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added (compared with Scenario 7). (PCU difference)

AM Peak PM Peak



There are significant reductions in delay at the M6 southern offslip and minor reduction on the circulatory sections of the roundabout due to this improvement as shown in Figure 4-15. The Parkside Link Road on its own contributes to a minor reduction in delay as shown in Figure 4-16. The reassignments are replicated at larger scale in Appendix B.

Figure 4-15 - Change in delay due to relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added (compared with Do Minimum). (seconds)

AM Peak PM Peak

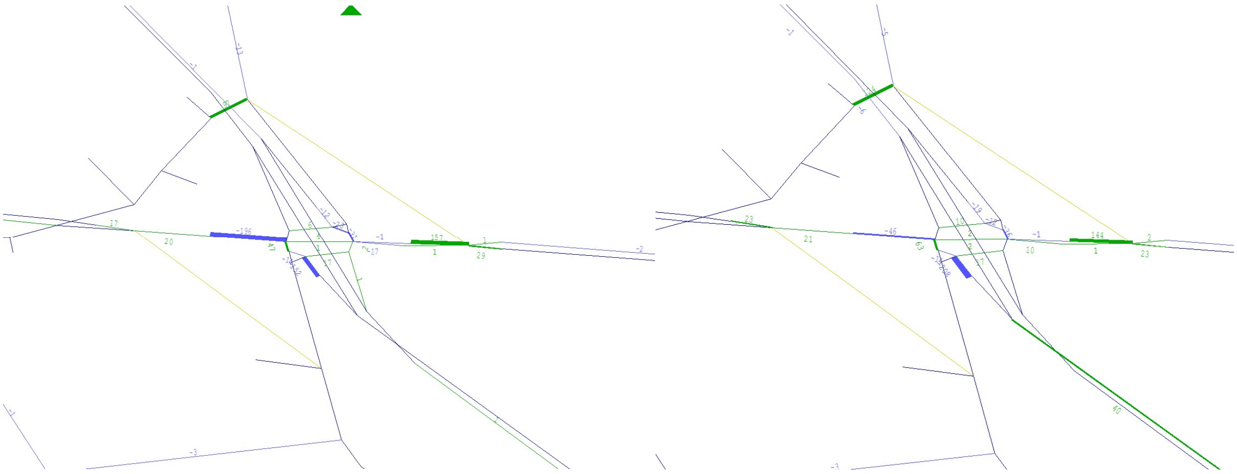


Figure 4-16 - Change in delay due to relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added (compared with Scenario 7). (seconds)

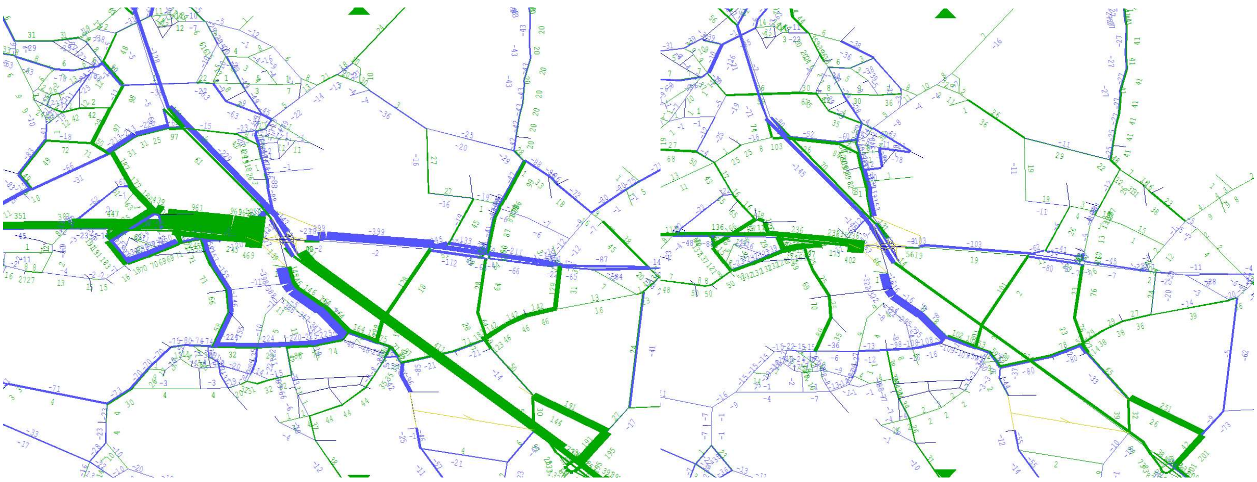
AM Peak PM Peak

4.8 SCENARIO 9 – DIVERGING DIAMOND JUNCTION AND RELOCATION OF LODGE LANE SOUTH TO A580 WEST AND LODGE LANE NORTH TO THE A580 EAST AND THE ADDITION OF PARKSIDE LINK ROAD

The diverging diamond junction increases trips between the A580 to the west and the M6 to the south of the junction. There is a corresponding reduction of straight through traffic on the A580 and also straight through traffic along the M6 across the junction. The reassignments are shown in Figure 4-17 below and replicated at larger scale in Appendix A.

Figure 4-17 - Trip reassignment due to Diverging Diamond Junction and relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added (PCU difference)

AM Peak PM Peak



There are significantly lower delays due to the diamond junction, as shown in Figures 4-18 and 4-19. However, there is a significant delay at the new junction that connects Lodge Lane north with the

A580. As the diamond junction is significantly different from the existing junction, the differences cannot be compared in the same diagram. Therefore, diagrams of total delays without and with the scheme are placed side by side in Figures 4-18 and 4-19.

Figure 4-18 - Delay due to Diverging Diamond Junction and relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added - AM Peak (seconds)

AM Peak Do Minimum | AM Peak with Diamond Junction and others

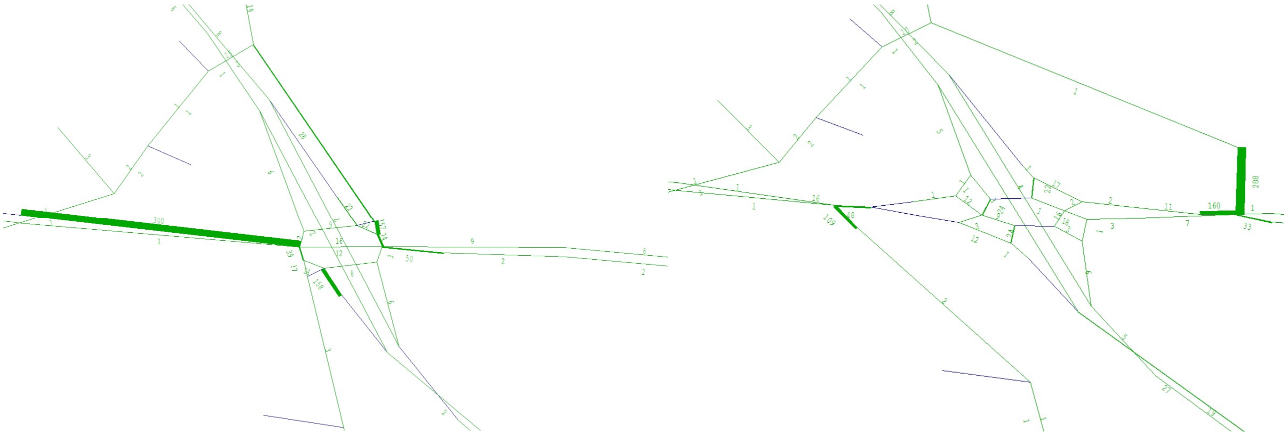
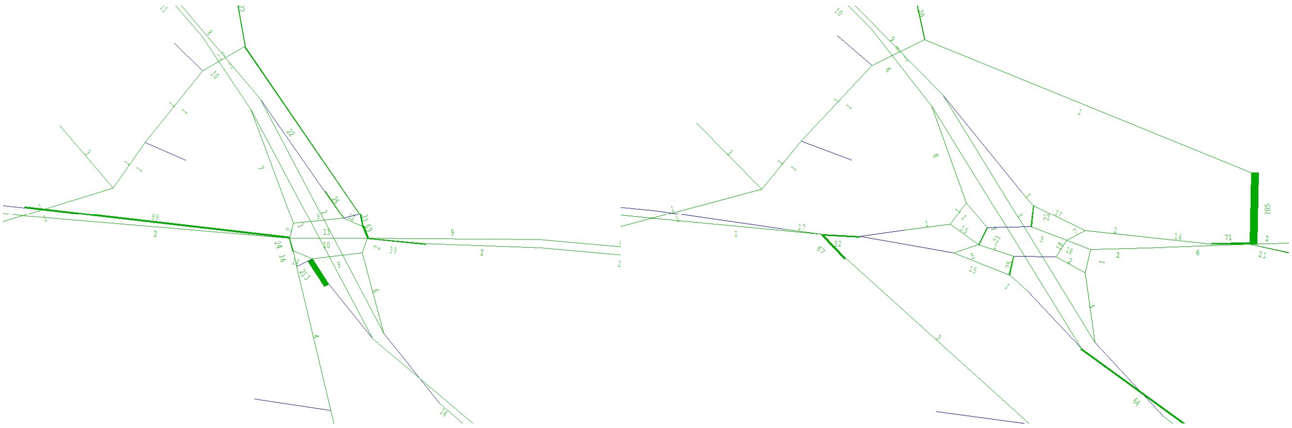


Figure 4-19 - Delay due to Diverging Diamond Junction and relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added - PM Peak. (seconds)

PM Peak Do Minimum | PM Peak with Diamond Junction and others



4.9 GLOBAL MODEL STATISTICS

The overall impacts of the junction improvements are captured in the global model statistics given below – which provide the total PCU hours and PCU kilometres within the model. These are compared in Table 4-3 below.

Table 4-3 – Model PCU Hours and PCU Kilometres 2033 Forecast Year

Scenario	Network	PCU KM – AM Peak	PCU HRS – AM Peak	PCU KM – PM Peak	PCU HRS – PM Peak
Base 2017	**Base Year Model**	**7,719,000**	**193,700**	**7,870,400**	**176,800**
Scenario 1	**Do Minimum, i.e. no Junction 23 improvement.**	**8,302,800**	**225,300**	**8,364,900**	**194,300**
Scenario 2	Lodge Lane southern and northern arms removed from Junction 23.	8,309,600	225,700	8,370,000	194,700
Scenario 3	Lodge Lane southern arm only removed.	8,304,200	225,300	8,366,300	194,400
Scenario 4	Lodge Lane southern arm relocated to join the A580 at a new traffic signal junction to the west of Junction 23.	8,303,100	225,200	8,364,800	194,300
Scenario 5	Lodge Lane southern arm relocated to join Penny Lane.	8,303,400	225,200	8,365,400	194,300
Scenario 6	Lodge Lane southern arm relocated to join Penny Lane and Lodge Lane northern arm relocated to join the A580 at a new traffic signal junction to the east of Junction 23.	8,304,700	225,300	8,367,000	194,300
Scenario 7	Lodge Lane southern and northern arms relocated to join new traffic signal junctions on the A580.	8,303,700	225,200	8,366,100	194,300
Scenario 8	Lodge Lane arms relocated as in Scenario 7, and Parkside Link Road added between Mill Lane and Parkside Road.	8,303,200	225,200	8,365,200	194,300
Scenario 9	Junction 23 converted to a diverging diamond junction, and with the Scenario 8 changes also made.	8,303,100	225,100	8,365,000	194,300

The values given in Table 4-3 above show that there is a reduction in journey times in the model overall for several scenarios. Scenarios 4, 5, 8 and 9 show a lower travel time in both the AM and PM peak, while Scenario 6 shows an improvement in the PM peak only, and Scenario 7 in the AM peak only.

Of all the scenarios, Scenario 9, with the diverging diamond options shows the greatest reduction in travel time in both the AM and PM peaks. It can also be seen that, where the Lodge Lane arms have been removed rather than relocated, there is an increase in total PCU hours. In almost all cases, the improvement options result in an increase in PCU distance. This is due to the re-assignment along longer routes of the Lodge Lane traffic due to either the removal or re-location of the Lodge Lane arms.

5 CORDON MATRICES

The traffic from the forecast SATURN model assignments have been used to inform the TRANSYT models of the improvement options.

The SATURN models were cordoned to fit the area of the TRANSYT model, and traffic flows were obtained in a matrix format from the cordoned models. The cordoned traffic matrices are given the tables below.

Table 5-1 – Cordoned Trips – Base Year AM Peak

	Lodge Lane South	A580 West outgoing	A580 West incoming	M6 NB onslip	M6 SB offslip	Lodge Lane North	A580 East outgoing	A580 East incoming	M6 SB onslip	M6 NB offslip	total
Lodge Lane South	0	107	0	125	0	24	65	0	54	0	375
A580 West outgoing	0	0	0	0	0	0	0	0	0	0	0
A580 West incoming	133	0	0	19	0	93	831	0	530	0	1605
M6 NB onslip	0	0	0	0	0	0	0	0	0	0	0
M6 SB offslip	83	21	0	0	0	119	571	0	0	0	793
Lodge Lane North	28	40	0	25	0	0	245	0	357	0	696
A580 East outgoing	0	0	0	0	0	0	0	0	0	0	0
A580 East incoming	1	812	0	676	0	245	0	0	0	0	1735
M6 SB onslip	0	0	0	0	0	0	0	0	0	0	0
M6 NB offslip	111	449	0	0	0	220	17	0	0	0	797
total	355	1429	0	846	0	699	1729	0	942	0	6001

Table 5-2 – Cordoned Trips – Do Minimum 2033 AM Peak

	Lodge Lane South	A580 West outgoing	A580 West incoming	M6 NB onslip	M6 SB offslip	Lodge Lane North	A580 East outgoing	A580 East incoming	M6 SB onslip	M6 NB offslip	total
Lodge Lane South	0	197	0	171	0	17	218	0	261	0	864
A580 West outgoing	0	0	0	0	0	0	0	0	0	0	0
A580 West incoming	20	0	0	0	0	0	962	0	373	0	1356
M6 NB onslip	0	0	0	0	0	0	0	0	0	0	0
M6 SB offslip	147	121	0	0	0	205	930	0	0	0	1403
Lodge Lane North	17	0	0	11	0	0	310	0	603	0	942
A580 East outgoing	0	0	0	0	0	0	0	0	0	0	0
A580 East incoming	8	958	0	497	0	270	0	0	245	0	1978
M6 SB onslip	0	0	0	0	0	0	0	0	0	0	0
M6 NB offslip	282	839	0	0	0	319	395	0	0	0	1834
total	474	2115	0	679	0	812	2814	0	1483	0	8377

Table 5-3 – Cordoned Trips – Scenario 7 – Lodge Lane North and South Reconnected to A580 - 2033 AM Peak

	Lodge Lane South	A580 West outgoing	A580 West incoming	M6 NB onslip	M6 SB offslip	Lodge Lane North	A580 East outgoing	A580 East incoming	M6 SB onslip	M6 NB offslip	total
Lodge Lane South	0	221	0	77	0	0	26	0	161	0	484
A580 West outgoing	0	0	0	0	0	0	0	0	0	0	0
A580 West incoming	120	0	0	0	0	0	784	0	842	0	1747
M6 NB onslip	0	0	0	0	0	0	0	0	0	0	0
M6 SB offslip	160	192	0	0	0	1	826	0	0	0	1179
Lodge Lane North	8	0	0	19	0	0	518	0	402	0	947
A580 East outgoing	0	0	0	0	0	0	0	0	0	0	0
A580 East incoming	8	914	0	577	0	204	0	0	305	0	2007
M6 SB onslip	0	0	0	0	0	0	0	0	0	0	0
M6 NB offslip	250	1001	0	0	0	388	353	0	0	0	1992
total	546	2328	0	674	0	592	2507	0	1709	0	8356

Table 5-4 – Cordoned Trips – Scenario 9 – Diamond Junction and Lodge Lane North and South Reconnected to A580 - 2033 AM Peak

	Lodge Lane South	A580 West outgoing	A580 West incoming	M6 NB onslip	M6 SB offslip	Lodge Lane North	A580 East outgoing	A580 East incoming	M6 SB onslip	M6 NB offslip	total
Lodge Lane South	0	229	0	63	0	0	16	0	167	0	475
A580 West outgoing	0	0	0	0	0	0	0	0	0	0	0
A580 West incoming	144	0	0	114	0	0	880	0	1211	0	2350
M6 NB onslip	0	0	0	0	0	0	0	0	0	0	0
M6 SB offslip	152	182	0	0	0	1	901	0	0	0	1235
Lodge Lane North	4	0	0	0	0	0	338	0	287	0	629
A580 East outgoing	0	0	0	0	0	0	0	0	0	0	0
A580 East incoming	8	795	0	701	0	206	0	0	266	0	1976
M6 SB onslip	0	0	0	0	0	0	0	0	0	0	0
M6 NB offslip	312	1117	0	0	0	336	284	0	0	0	2050
total	620	2323	0	878	0	543	2419	0	1932	0	8715

Table 5-5 – Cordoned Trips – Base Year PM Peak

	Lodge Lane South	A580 West outgoing	A580 West incoming	M6 NB onslip	M6 SB offslip	Lodge Lane North	A580 East outgoing	A580 East incoming	M6 SB onslip	M6 NB offslip	total
Lodge Lane South	0	166	0	177	0	28	81	0	57	0	508
A580 West outgoing	0	0	0	0	0	0	0	0	0	0	0
A580 West incoming	131	0	0	1	0	94	691	0	389	0	1304
M6 NB onslip	0	0	0	0	0	0	0	0	0	0	0
M6 SB offslip	133	65	0	0	0	135	819	0	0	0	1152
Lodge Lane North	38	111	0	0	0	0	225	0	281	0	655
A580 East outgoing	0	0	0	0	0	0	0	0	0	0	0
A580 East incoming	0	774	0	805	0	154	0	0	24	0	1758
M6 SB onslip	0	0	0	0	0	0	0	0	0	0	0
M6 NB offslip	54	845	0	0	0	391	33	0	0	0	1323
total	356	1961	0	983	0	802	1847	0	751	0	6701

Table 5-6 – Cordoned Trips – Do Minimum 2033 PM Peak

	Lodge Lane South	A580 West outgoing	A580 West incoming	M6 NB onslip	M6 SB offslip	Lodge Lane North	A580 East outgoing	A580 East incoming	M6 SB onslip	M6 NB offslip	total
Lodge Lane South	0	199	0	244	0	30	155	0	119	0	748
A580 West outgoing	0	0	0	0	0	0	0	0	0	0	0
A580 West incoming	154	0	0	1	0	66	1033	0	428	0	1682
M6 NB onslip	0	0	0	0	0	0	0	0	0	0	0
M6 SB offslip	212	163	0	0	0	197	951	0	0	0	1523
Lodge Lane North	62	163	0	27	0	0	270	0	514	0	1035
A580 East outgoing	0	0	0	0	0	0	0	0	0	0	0
A580 East incoming	25	967	0	536	0	210	0	0	223	0	1961
M6 SB onslip	0	0	0	0	0	0	0	0	0	0	0
M6 NB offslip	298	991	0	0	0	356	282	0	0	0	1927
total	752	2483	0	807	0	860	2691	0	1284	0	8876

Table 5-7 – Cordoned Trips – Scenario 7 – Lodge Lane North and South Reconnected to A580 - 2033 PM Peak

	Lodge Lane South	A580 West outgoing	A580 West incoming	M6 NB onslip	M6 SB offslip	Lodge Lane North	A580 East outgoing	A580 East incoming	M6 SB onslip	M6 NB offslip	total
Lodge Lane South	0	205	0	151	0	6	16	0	75	0	453
A580 West outgoing	0	0	0	0	0	0	0	0	0	0	0
A580 West incoming	132	0	0	0	0	24	824	0	612	0	1591
M6 NB onslip	0	0	0	0	0	0	0	0	0	0	0
M6 SB offslip	240	262	0	1	0	21	907	0	0	0	1430
Lodge Lane North	8	0	0	0	0	0	465	0	330	0	803
A580 East outgoing	0	0	0	0	0	0	0	0	0	0	0
A580 East incoming	25	883	0	586	0	169	0	0	281	0	1945
M6 SB onslip	0	0	0	0	0	0	0	0	0	0	0
M6 NB offslip	247	1155	0	0	0	393	297	0	0	0	2092
total	651	2505	0	738	0	613	2509	0	1297	0	8313

Table 5-8 – Cordoned Trips – Scenario 9 – Diamond Junction and Lodge Lane North and South Reconnected to A580 - 2033 PM Peak

	Lodge Lane South	A580 West outgoing	A580 West incoming	M6 NB onslip	M6 SB offslip	Lodge Lane North	A580 East outgoing	A580 East incoming	M6 SB onslip	M6 NB offslip	total
Lodge Lane South	0	235	0	90	0	0	18	0	75	0	418
A580 West outgoing	0	0	0	0	0	0	0	0	0	0	0
A580 West incoming	182	0	0	31	0	0	904	0	808	0	1927
M6 NB onslip	0	0	0	0	0	0	0	0	0	0	0
M6 SB offslip	249	277	0	1	0	1	1190	0	0	0	1717
Lodge Lane North	0	0	0	0	0	0	234	0	215	0	449
A580 East outgoing	0	0	0	0	0	0	0	0	0	0	0
A580 East incoming	25	805	0	696	0	181	0	0	248	0	1955
M6 SB onslip	0	0	0	0	0	0	0	0	0	0	0
M6 NB offslip	269	1295	0	0	0	274	313	0	0	0	2151
total	726	2611	0	818	0	456	2660	0	1346	0	8617

6 SUMMARY AND NEXT STEPS

The traffic impact of eight improvement options for the M6 Junction 23 have been modelled using the St Helens SATURN model. The reassignment of traffic due to each option has been considered in comparison with the Do Minimum, for the model year of 2033, using a forecast of traffic growth that takes into account Local Plan developments, constrained to TEMPRO.

Most significant to the reassignment is the closure or relocation of Lodge Lane, which relieves the traffic at M6 Junction 23, but causes some re-routing via local roads. The options also can lead to longer reassignments between the M6 and A580.

Global model values of total PCU distance and PCU time have also been compared, which tend to show a reduction in travel time, and enable comparison between the different options, showing the Diverging Diamond option to give the lowest overall travel times. The improvements tend to increase the overall PCU distances, which is due to reassignments caused by the amendments to Lodge Lane, causing longer journey distances.

Cordon matrices have been extracted from the assignments and used to inform the development of the local junction modelling within TRANSYT.

6.1.1 NEXT STEPS

SHSM is a district wide model and, similar to all models of such scale, care should be taken in interpreting results where improvements are focussed on changes to complex signal junctions. Should further work be undertaken to develop the scheme up to a full business case then several enhancements to the modelling approach would be recommended, including but not restricted to:

- Updating the observed origin and destination data, in particular for trips that make use of M6 Junction 23. This could take advantage of the work that is currently in progress to update LCRTM to avoid costly roadside interview surveys;
- Refining the model validation along routes to and from the junction, potentially disaggregating zones and refining the points at which traffic enters and leaves the network to represent more closely the case in-situ;
- A further consideration of the likely development quanta to be included in the model, in particular those sites that are adjacent to Junction 23; and
- The integration of a micro-simulation model into the suite of traffic models available to assess the traffic impact of the scheme.

APPENDIX A – FLOW DIAGRAMS

The changes in 2033 traffic flow due to the improvement options, already presented above, are repeated below in enlarged form, for easier visibility.

Figure A.1 - Trip reassignment due to closure of both Lodge Lane North and South (PCU difference) – AM Peak

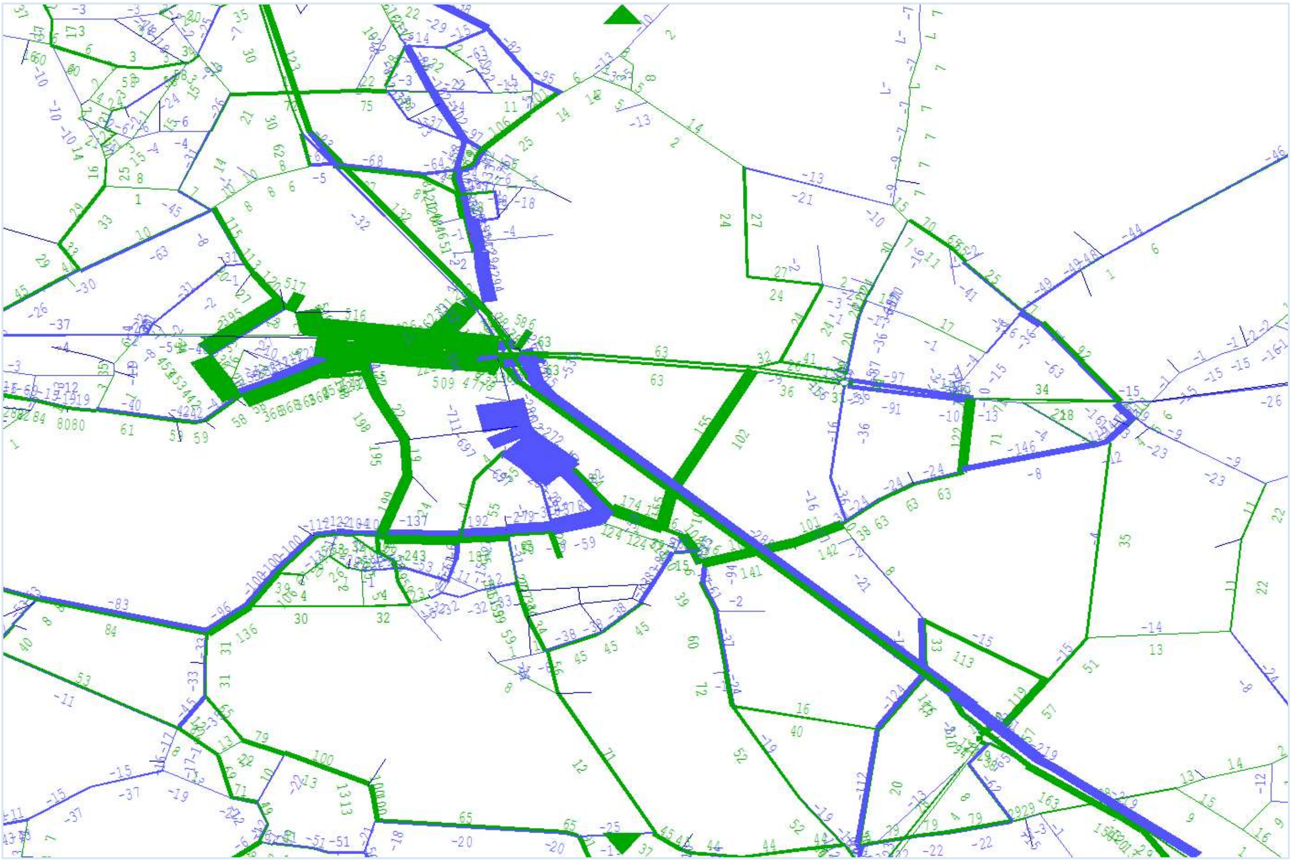


Figure A.2 - Trip reassignment due to closure of both Lodge Lane North and South (PCU difference) – PM Peak

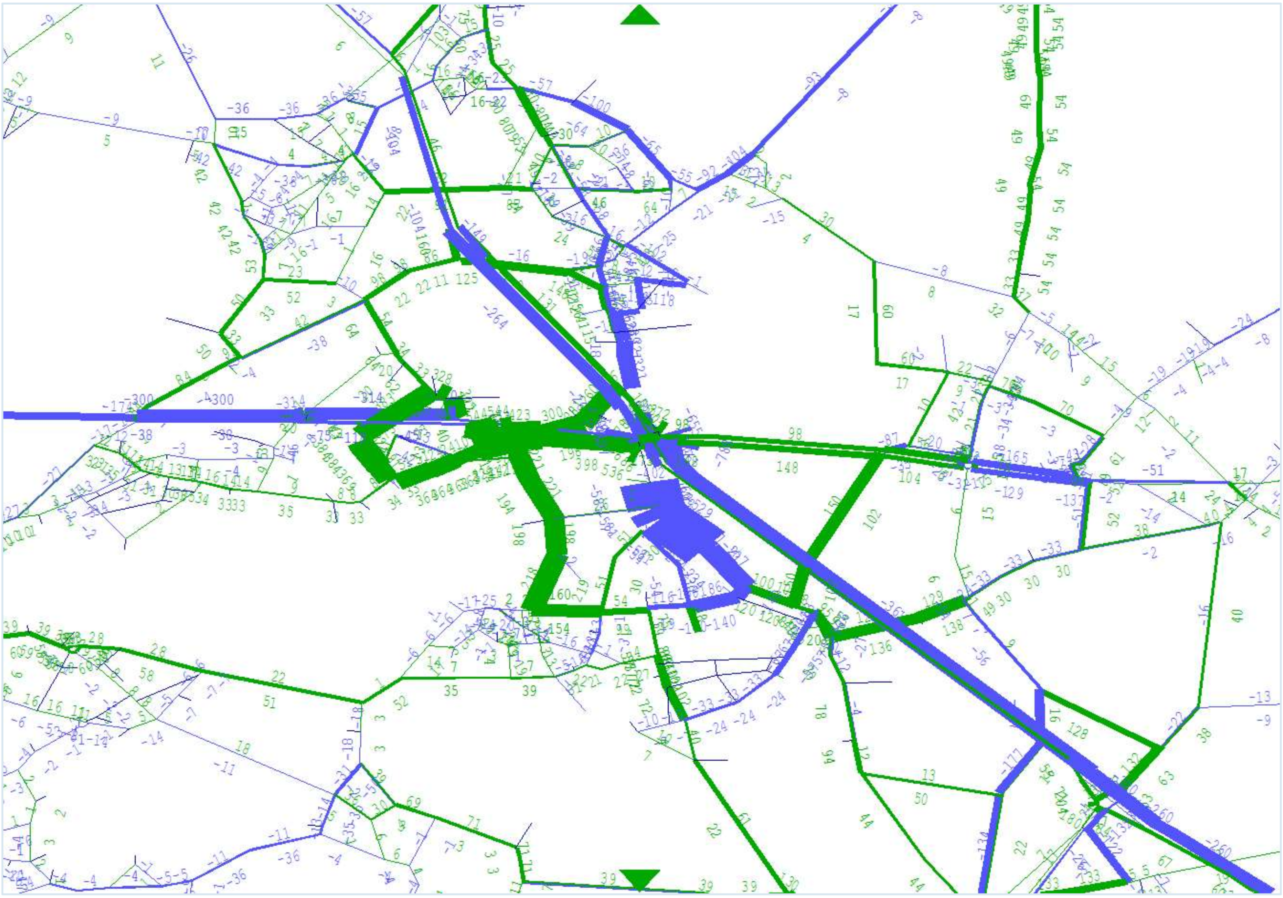


Figure A.3 - Trip reassignment due to closure of Lodge Lane South only (PCU difference) – AM Peak

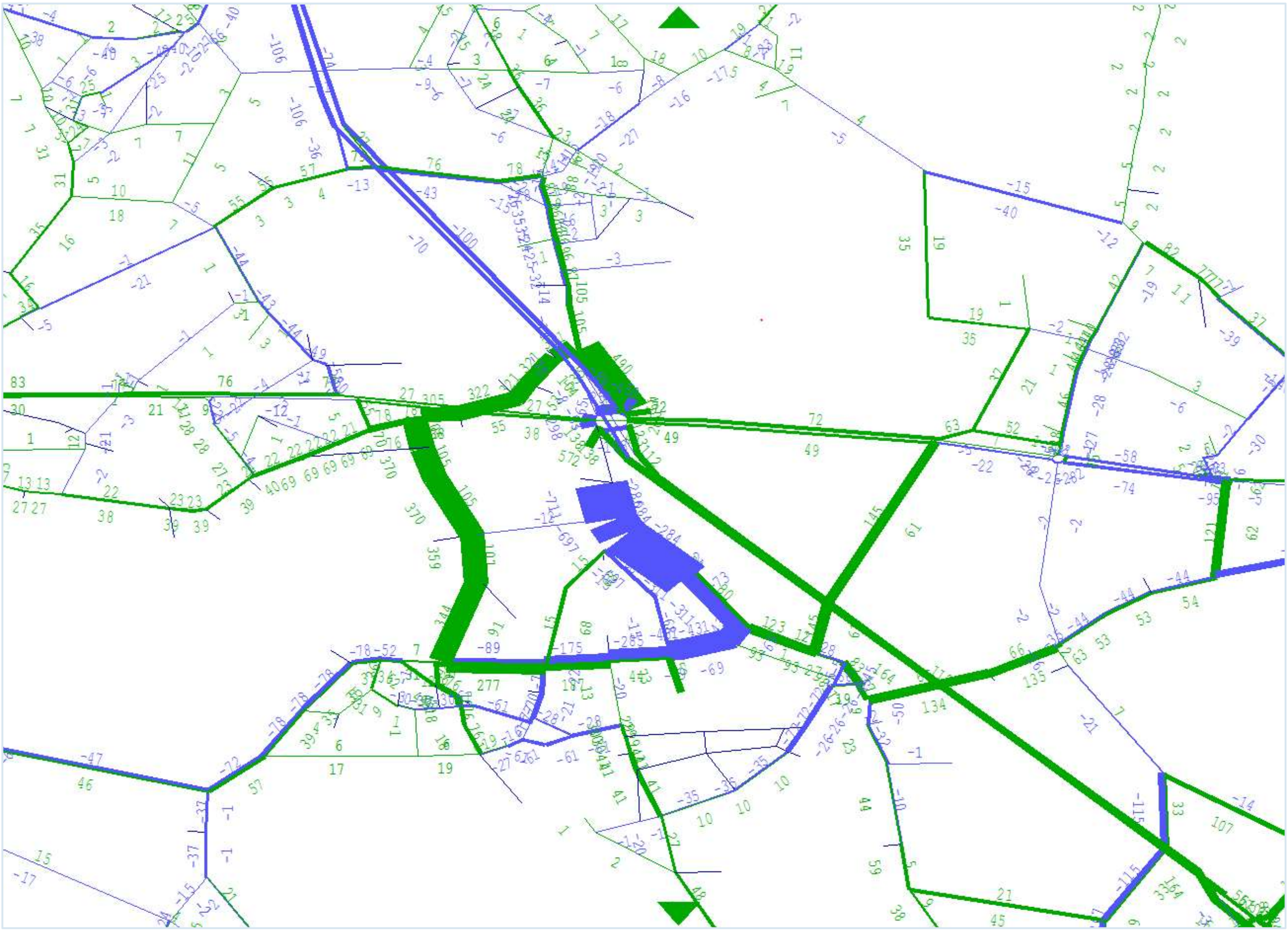


Figure A.4 - Trip reassignment due to closure of Lodge Lane South only (PCU difference) – PM Peak

Figure A.5 - Trip reassignment due to relocation of Lodge Lane South to A580 (PCU difference) – AM Peak

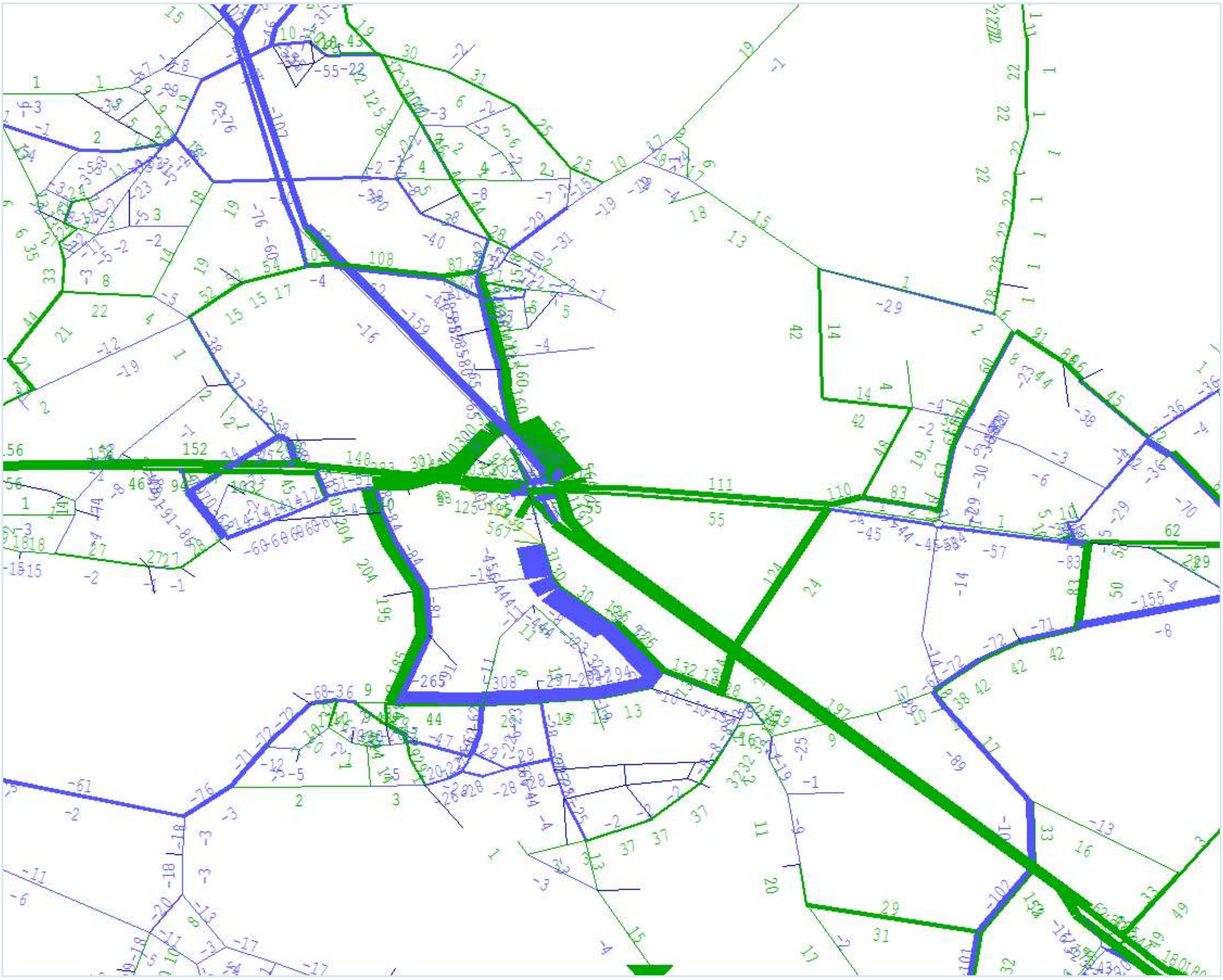


Figure A.6 - Trip reassignment due to relocation of Lodge Lane South to A580 (PCU difference) – PM Peak

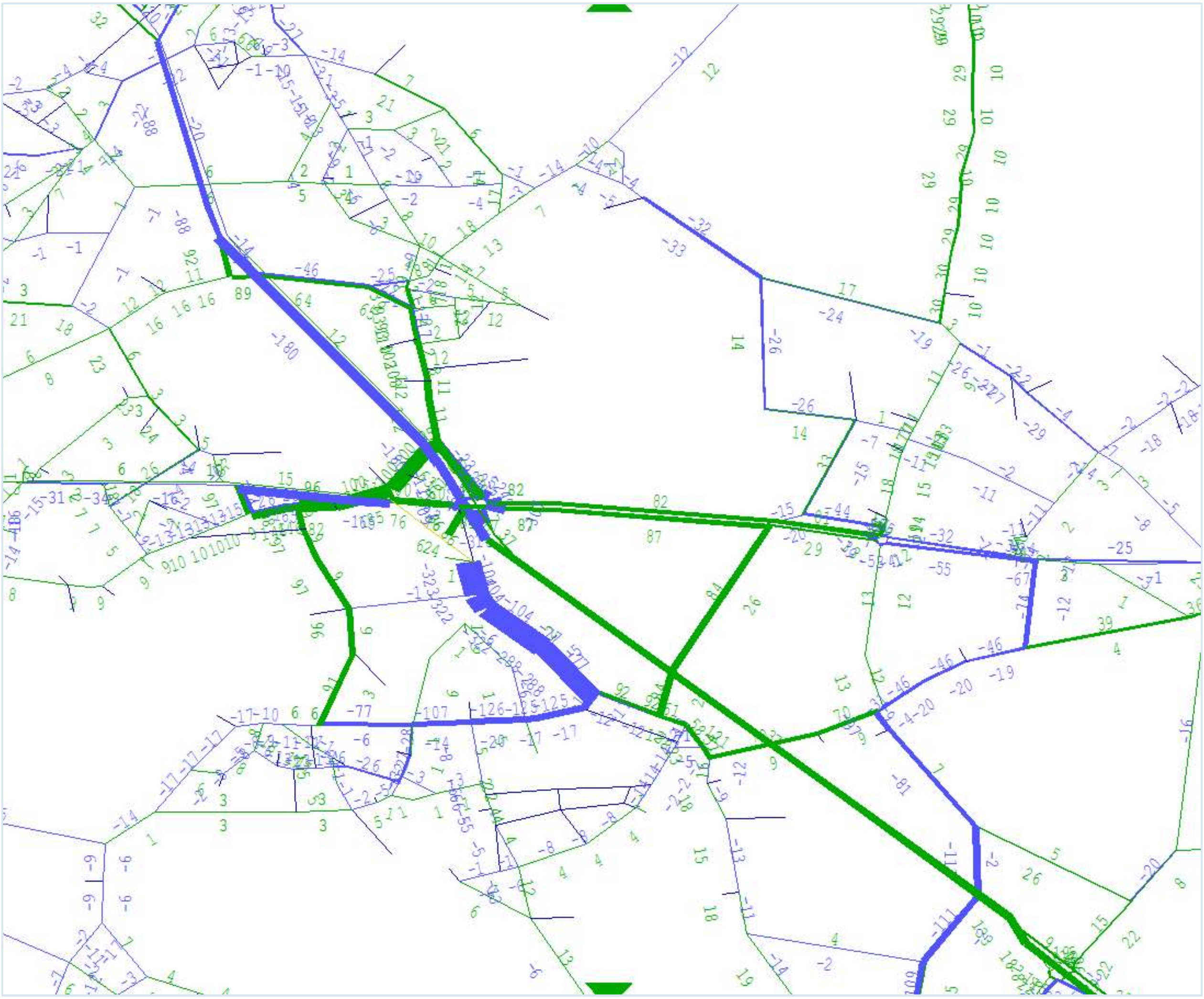


Figure A.7 - Trip reassignment due to relocation of Lodge Lane South to Penny Lane (PCU difference) – AM Peak

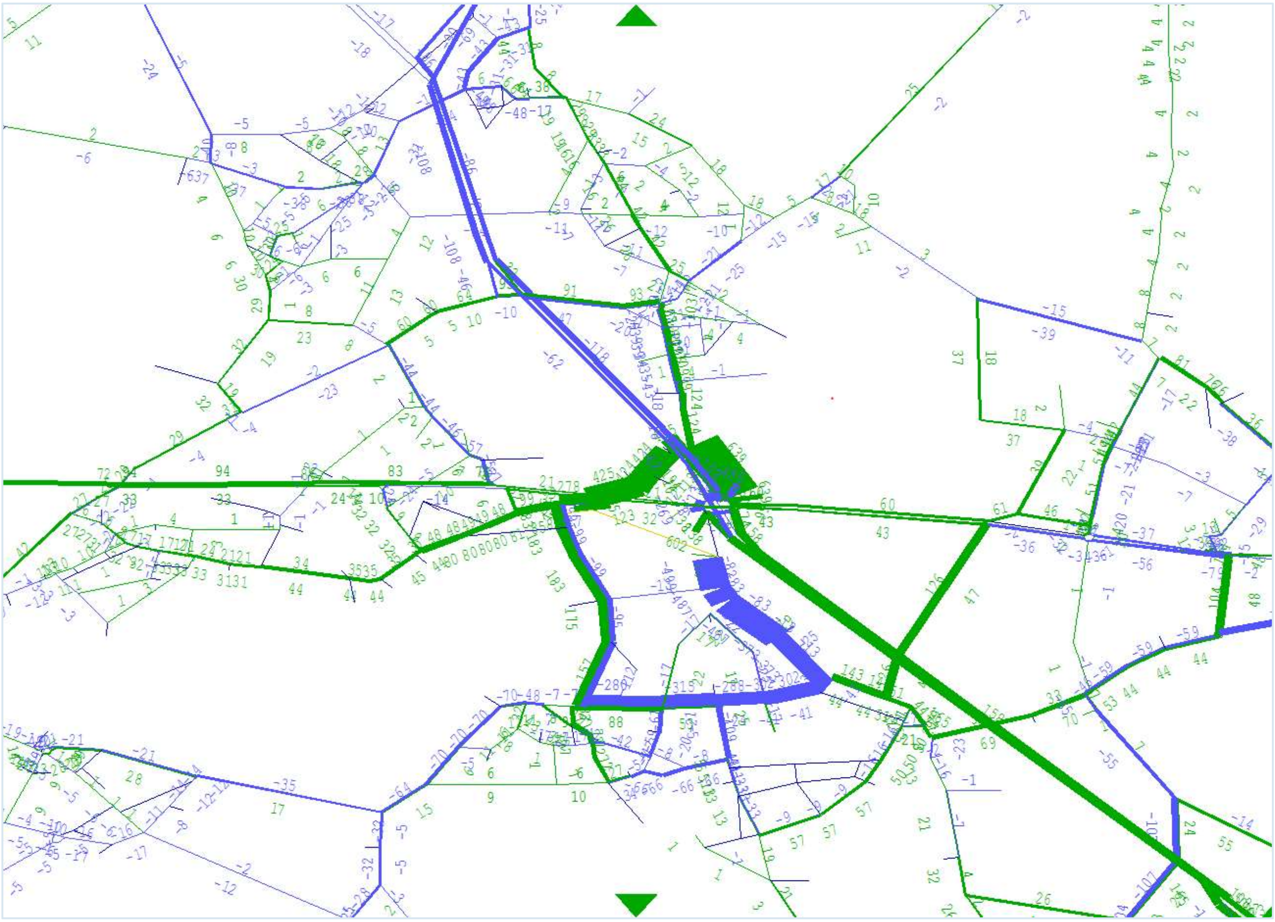


Figure A.8 - Trip reassignment due to relocation of Lodge Lane South to Penny Lane (PCU difference) – PM Peak

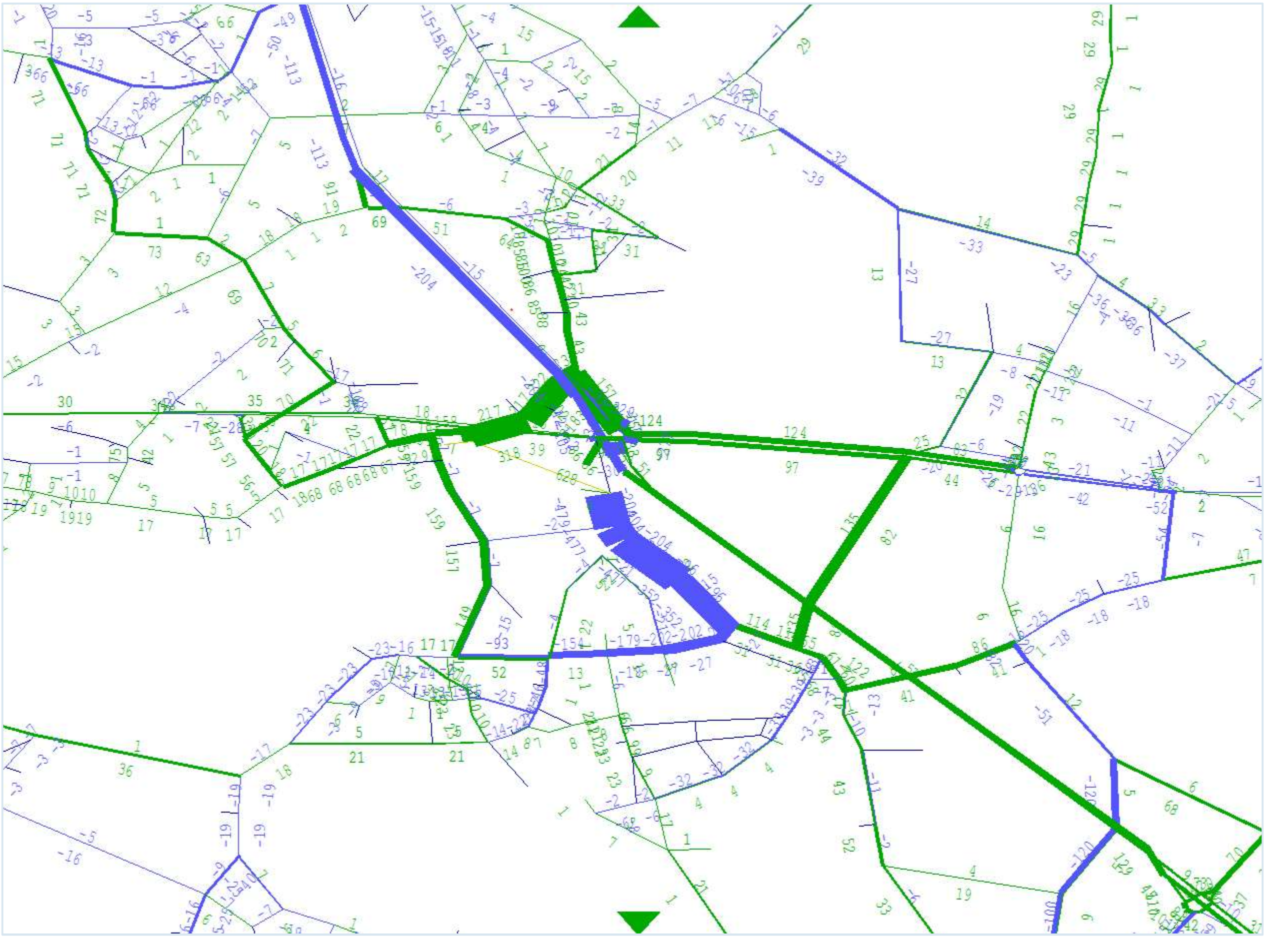


Figure A.9 - Trip reassignment due to relocation of Lodge Lane South to Penny Lane and Lodge Lane North to the A580 (PCU difference) – AM Peak

Figure A.10 - Trip reassignment due to relocation of Lodge Lane South to Penny Lane and Lodge Lane North to the A580 (PCU difference) – PM Peak

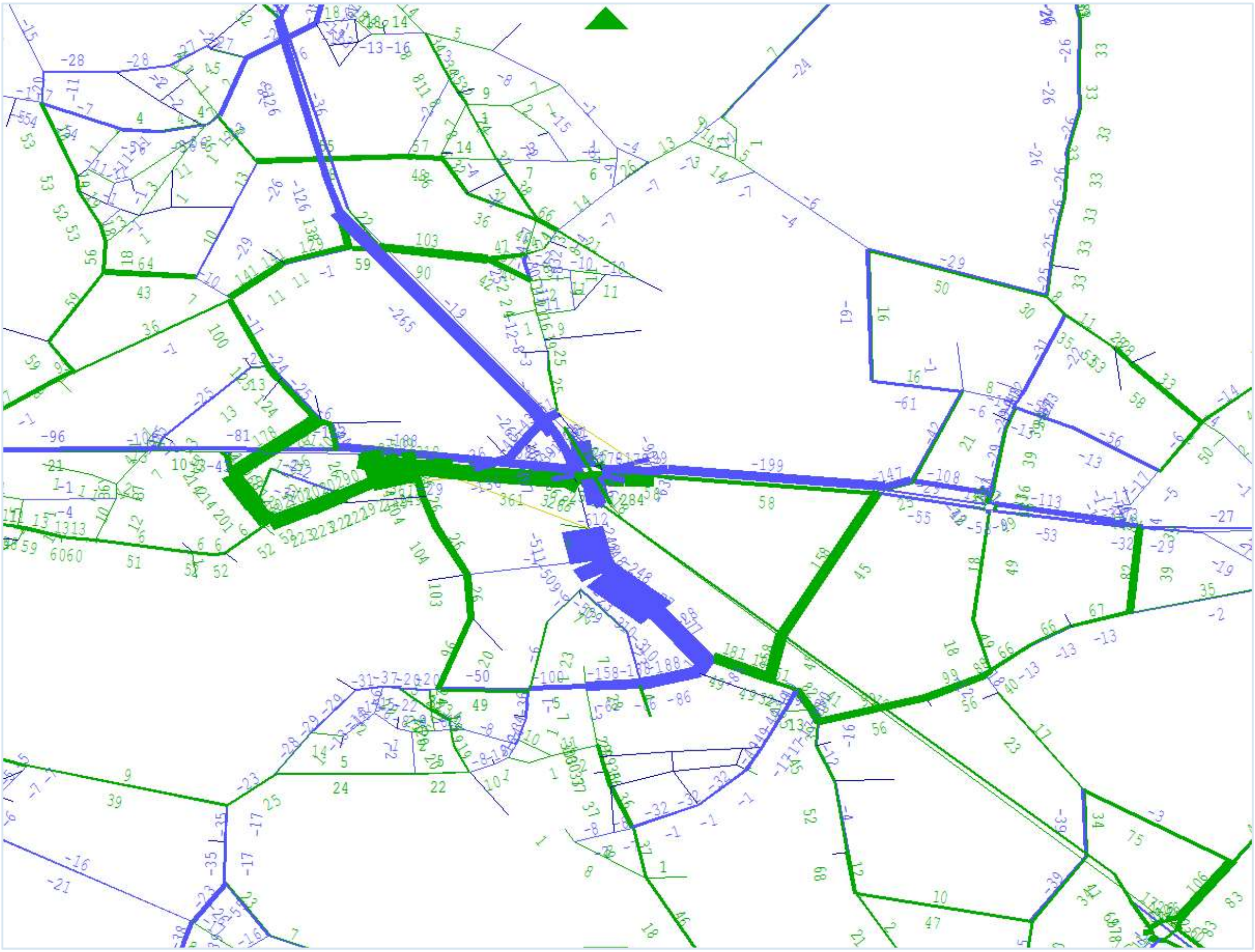


Figure A.11 - Trip reassignment due to relocation of Lodge Lane South and Lodge Lane North to the A580 (PCU difference) – AM Peak

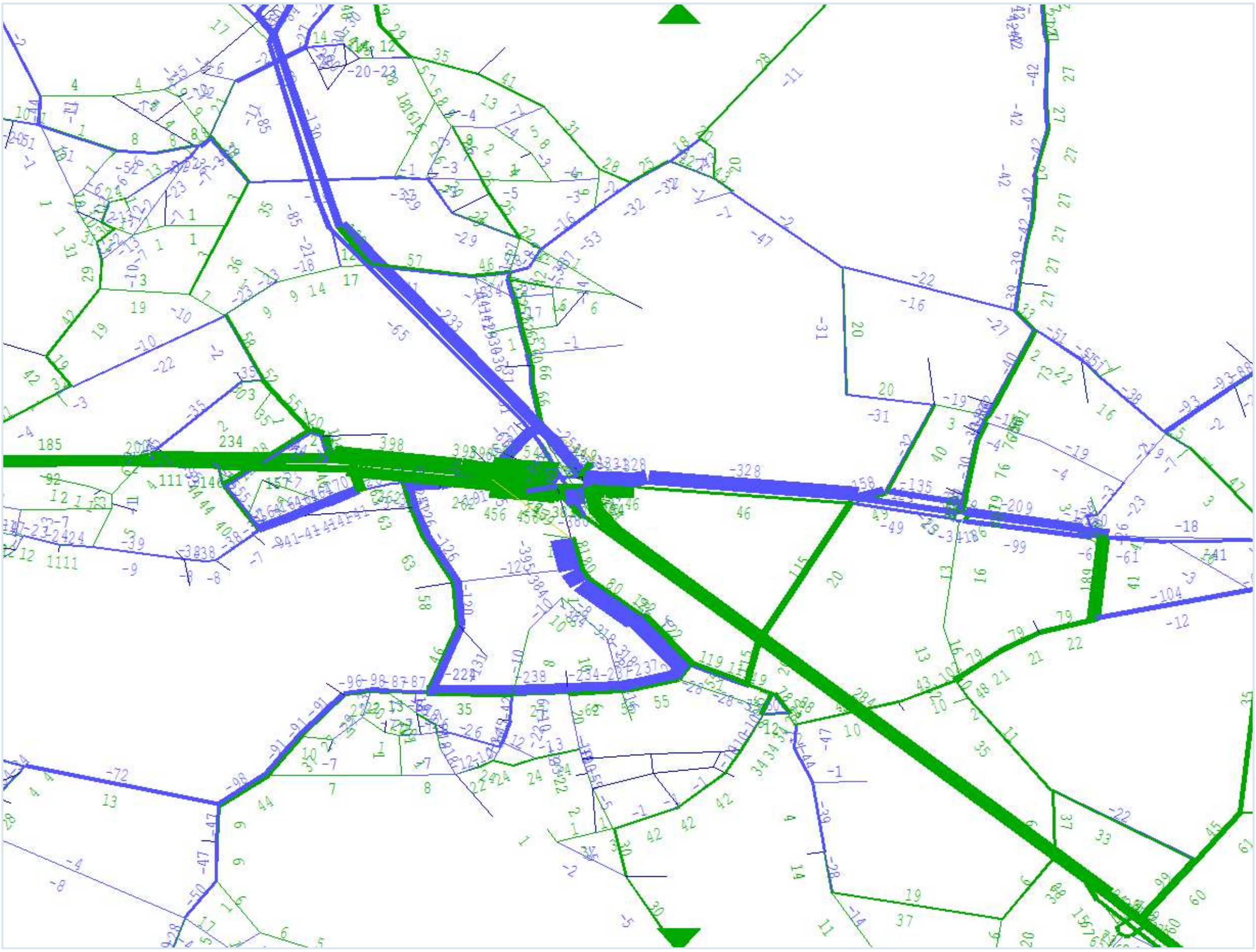


Figure A.12 - Trip reassignment due to relocation of Lodge Lane South and Lodge Lane North to the A580 (PCU difference) – PM Peak

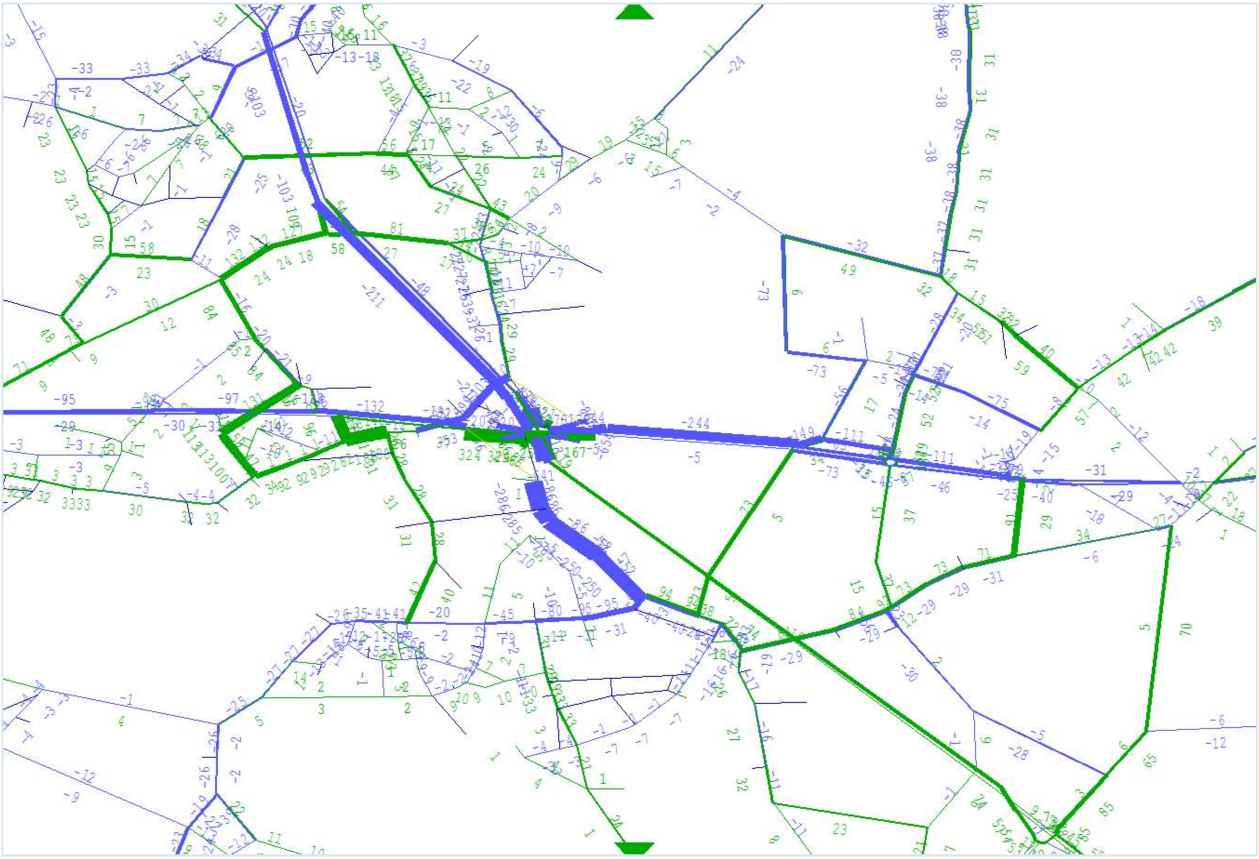


Figure A.13 - Trip reassignment due to relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added (compared with Do Minimum). (PCU difference) – AM Peak

Figure A.14 - Trip reassignment due to relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added (compared with Do Minimum). (PCU difference) – PM Peak

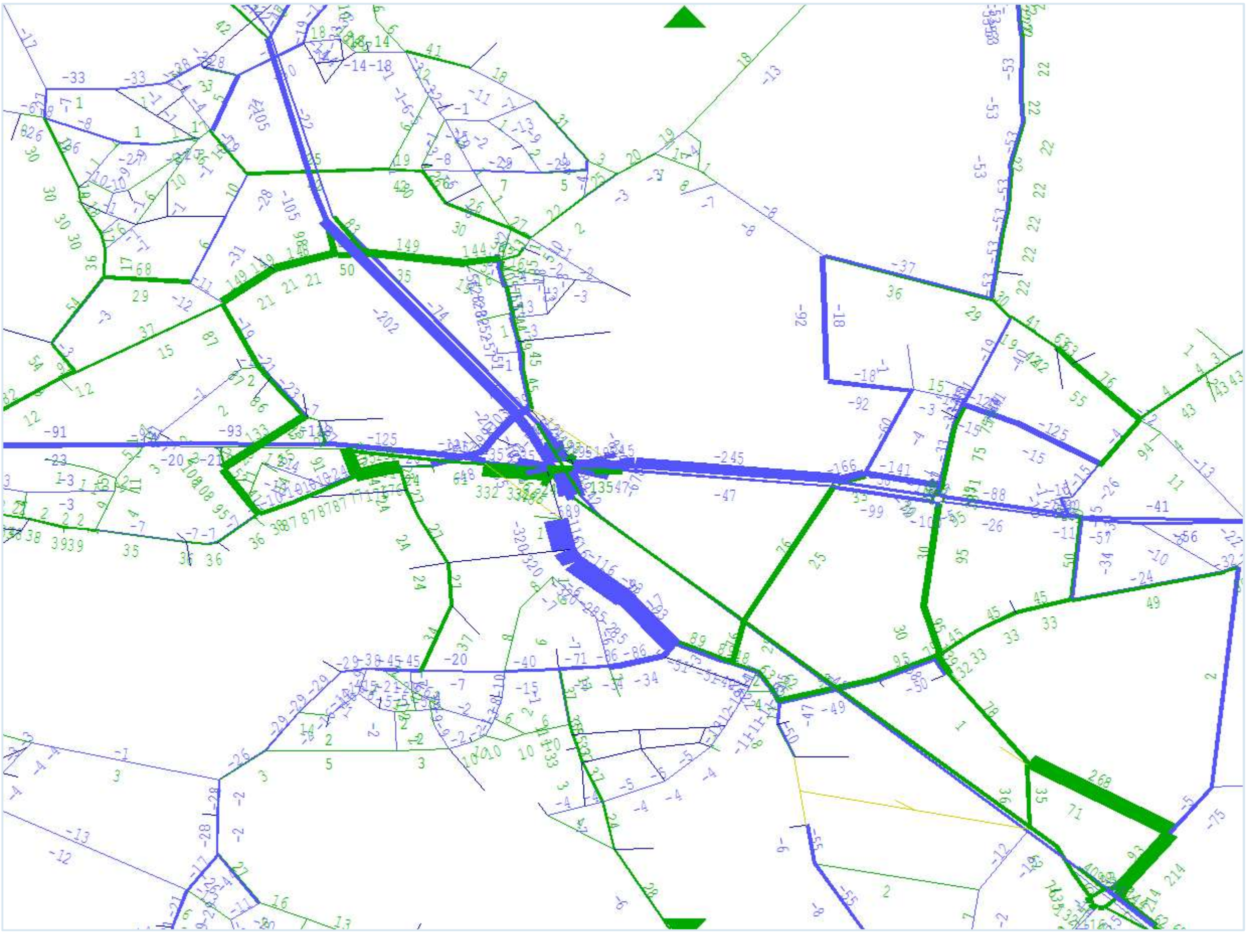


Figure A.15 - Trip reassignment due to relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added (compared with Scenario 7). (PCU difference) – AM Peak

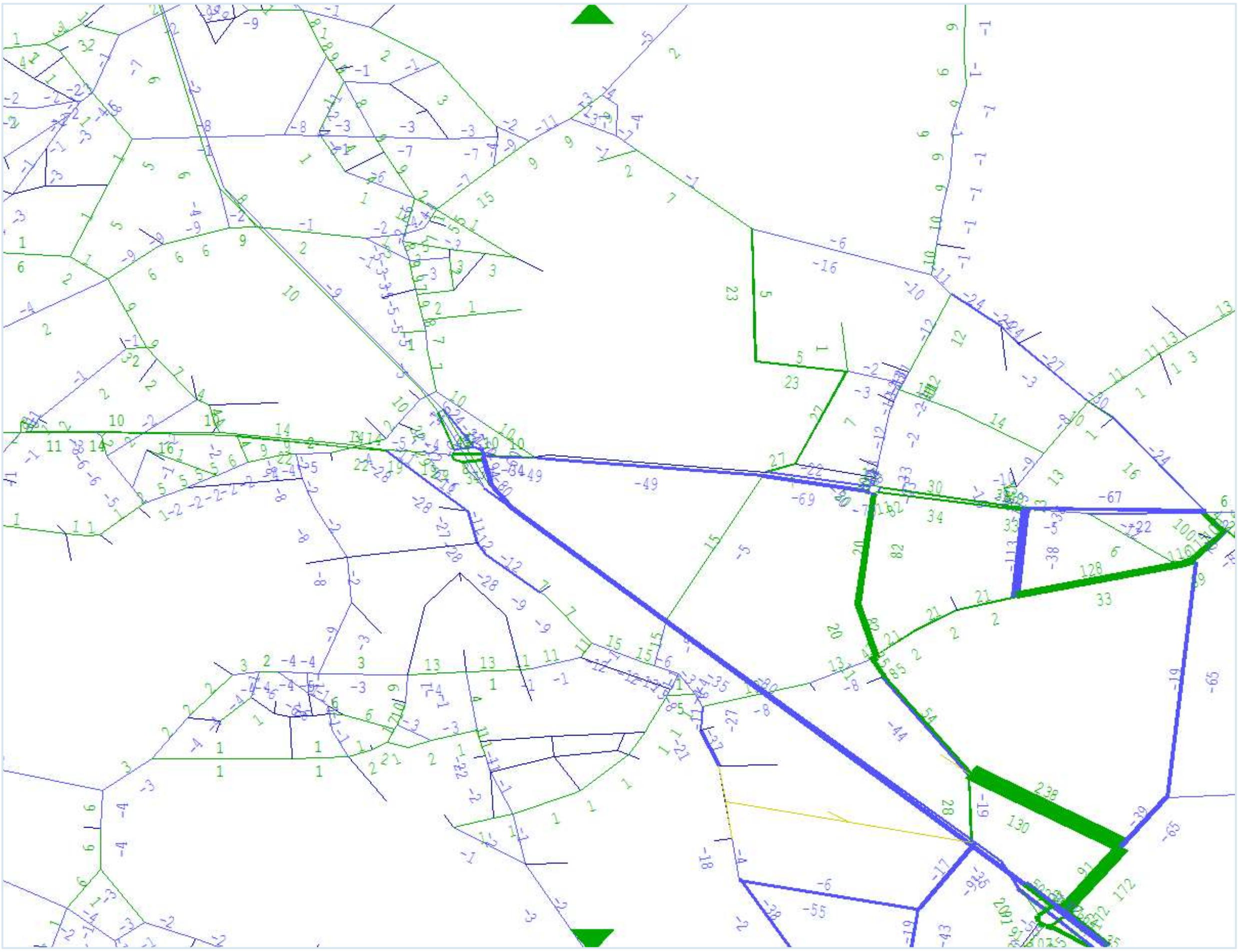


Figure A.16 - Trip reassignment due to relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added (compared with Scenario 7). (PCU difference) – PM Peak

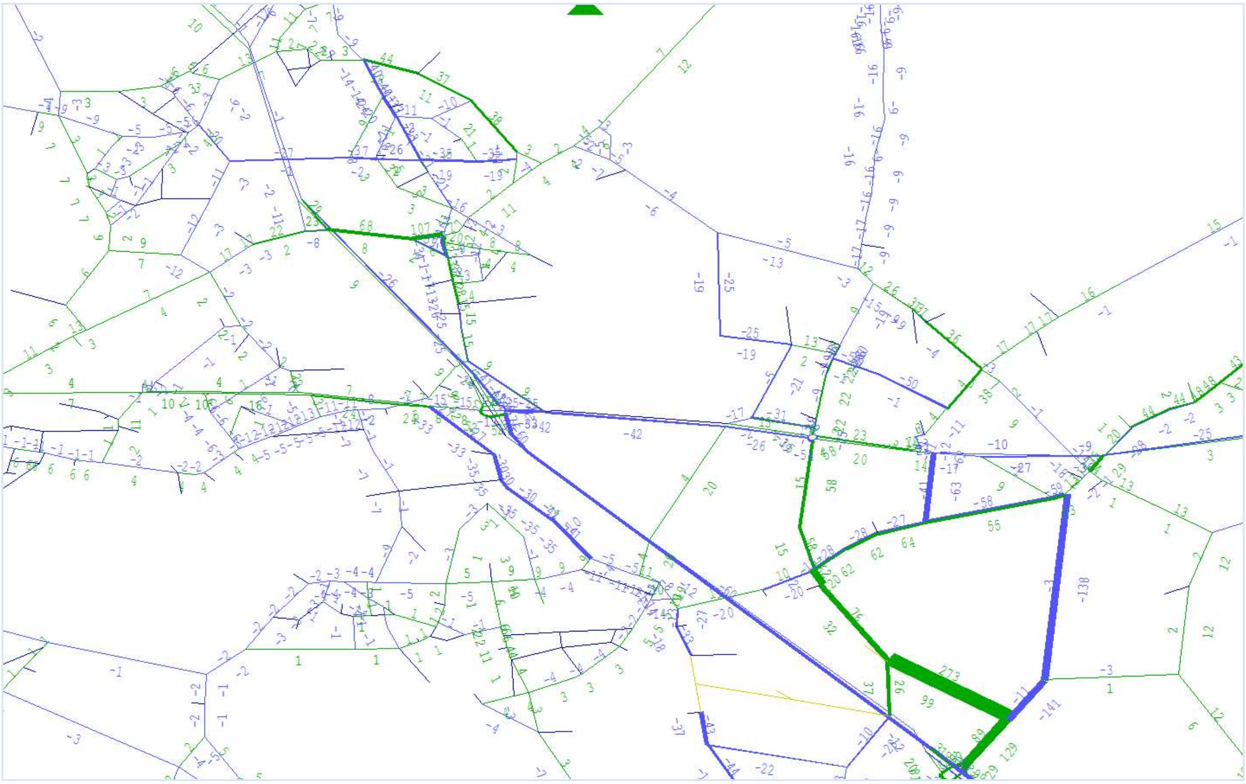


Figure A.17 - Trip reassignment due to Diverging Diamond Junction and relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added (PCU difference) – AM Peak

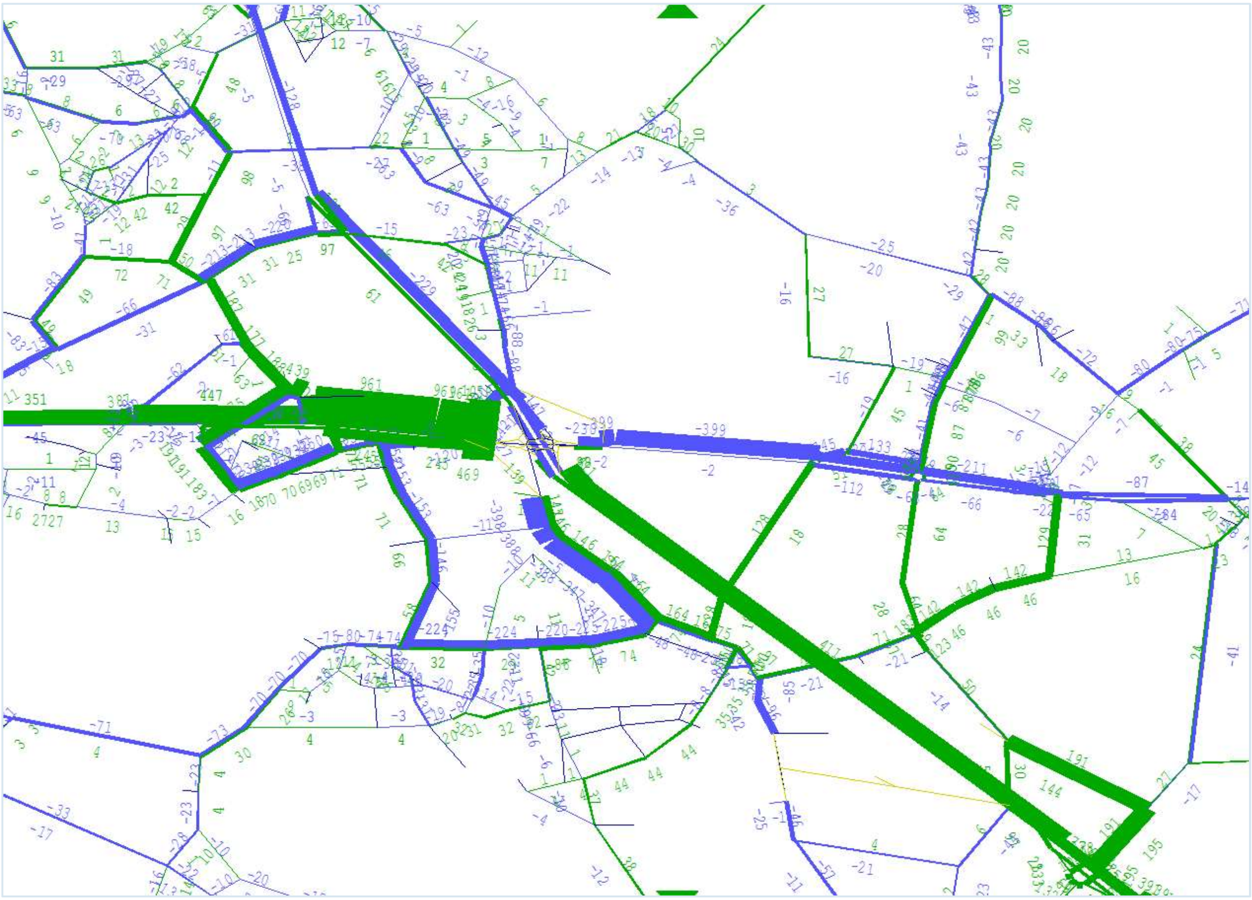
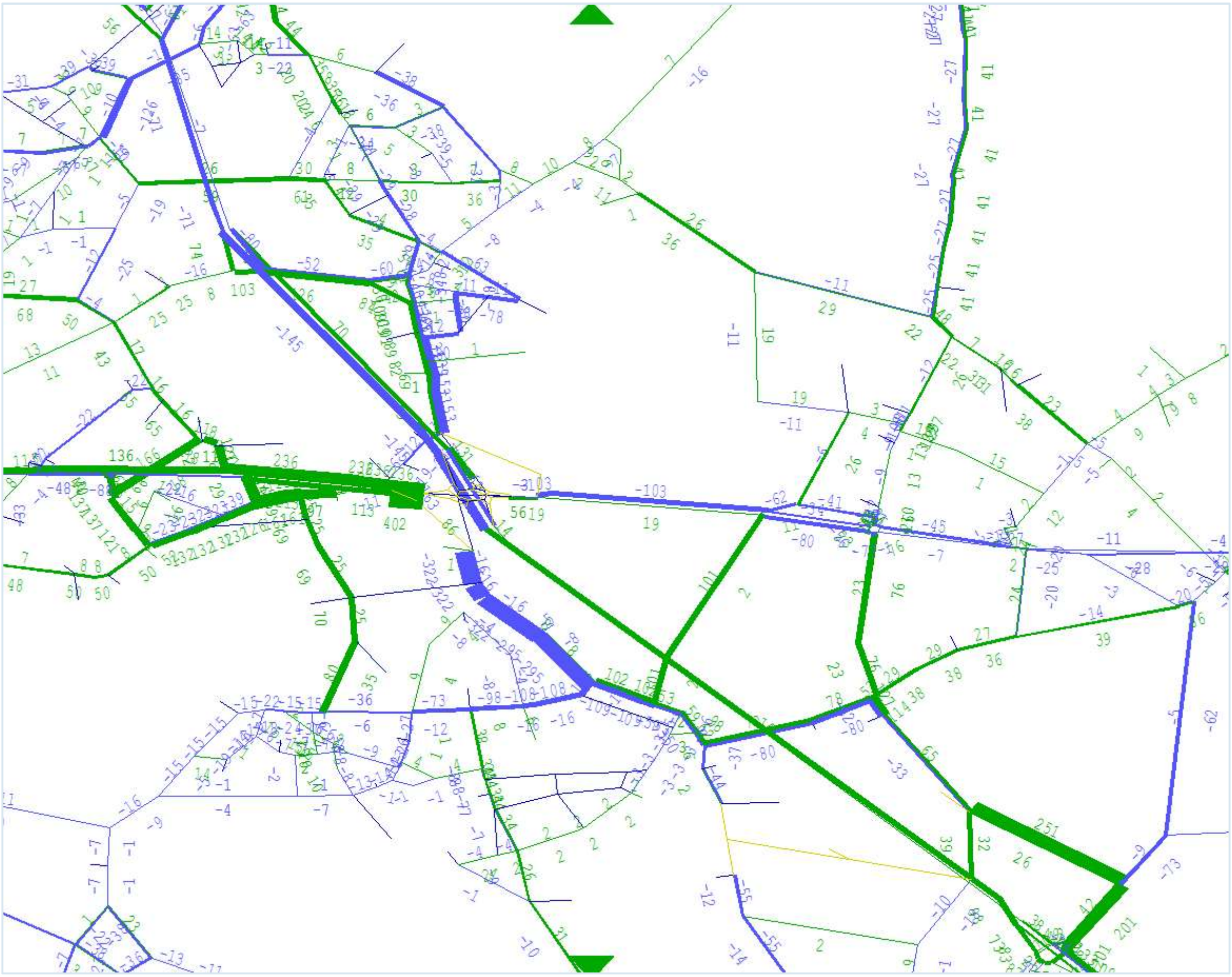


Figure A.18 - Trip reassignment due to Diverging Diamond Junction and relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added (PCU difference)

- **PM Peak**



APPENDIX B – DELAY CHANGES

The changes in 2033 traffic delays due to the improvement options are given below in enlarged form, for easier visibility.

Figure B.1 - Change in delays due to closure of both Lodge Lane North and South (seconds) – AM Peak

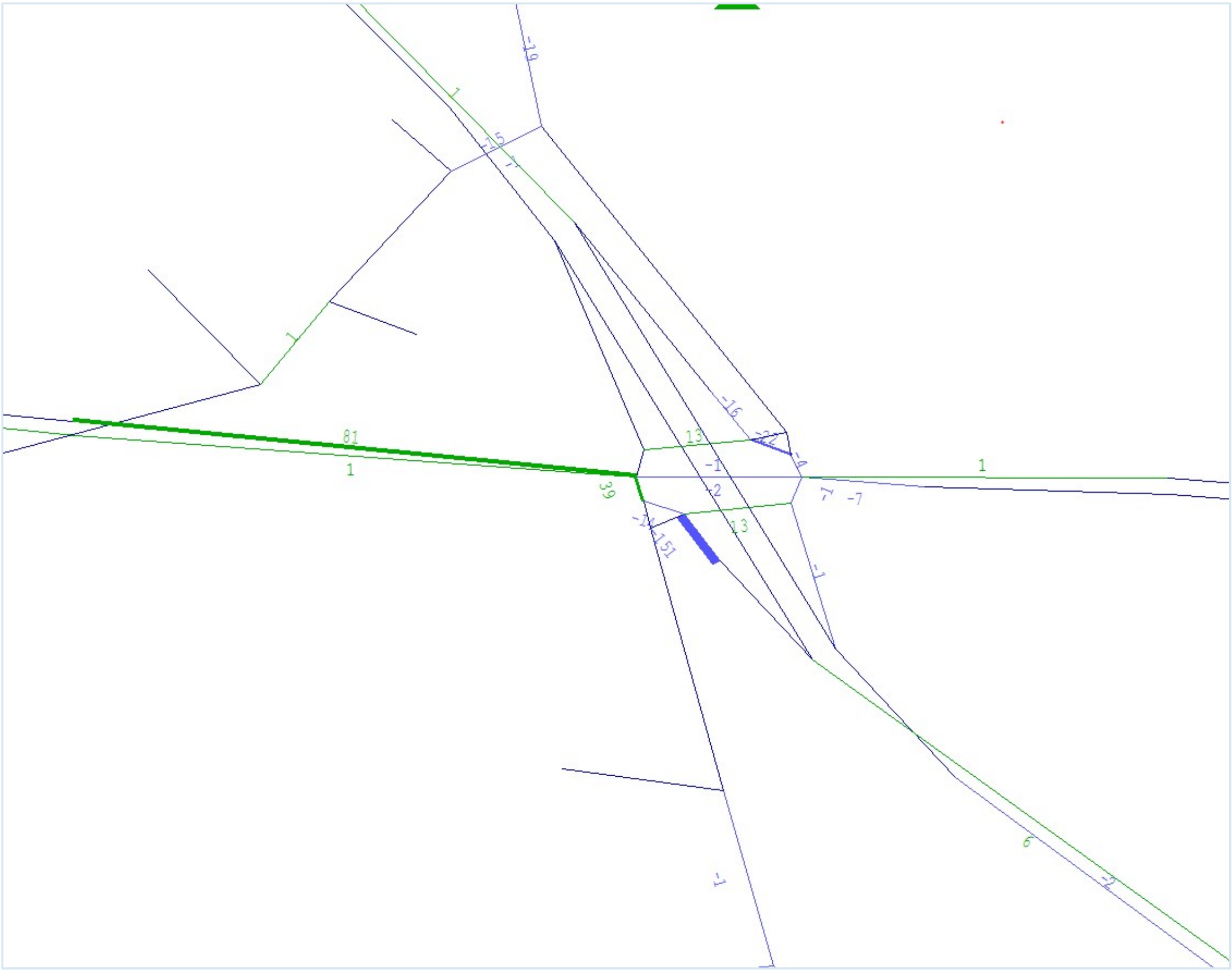


Figure B.2 - Change in delays due to closure of both Lodge Lane North and South (seconds) – PM Peak

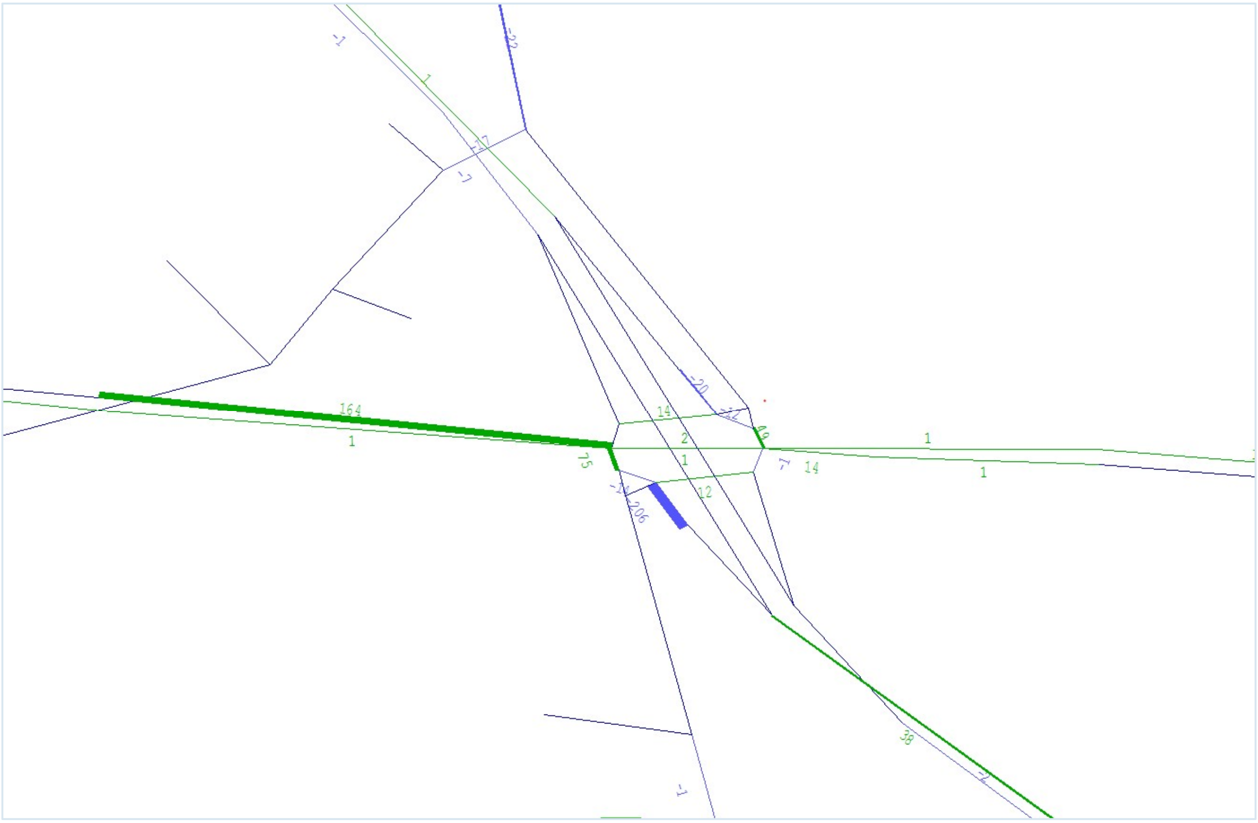


Figure B.3 - Change in delays due to closure of Lodge Lane South only (seconds) – AM Peak

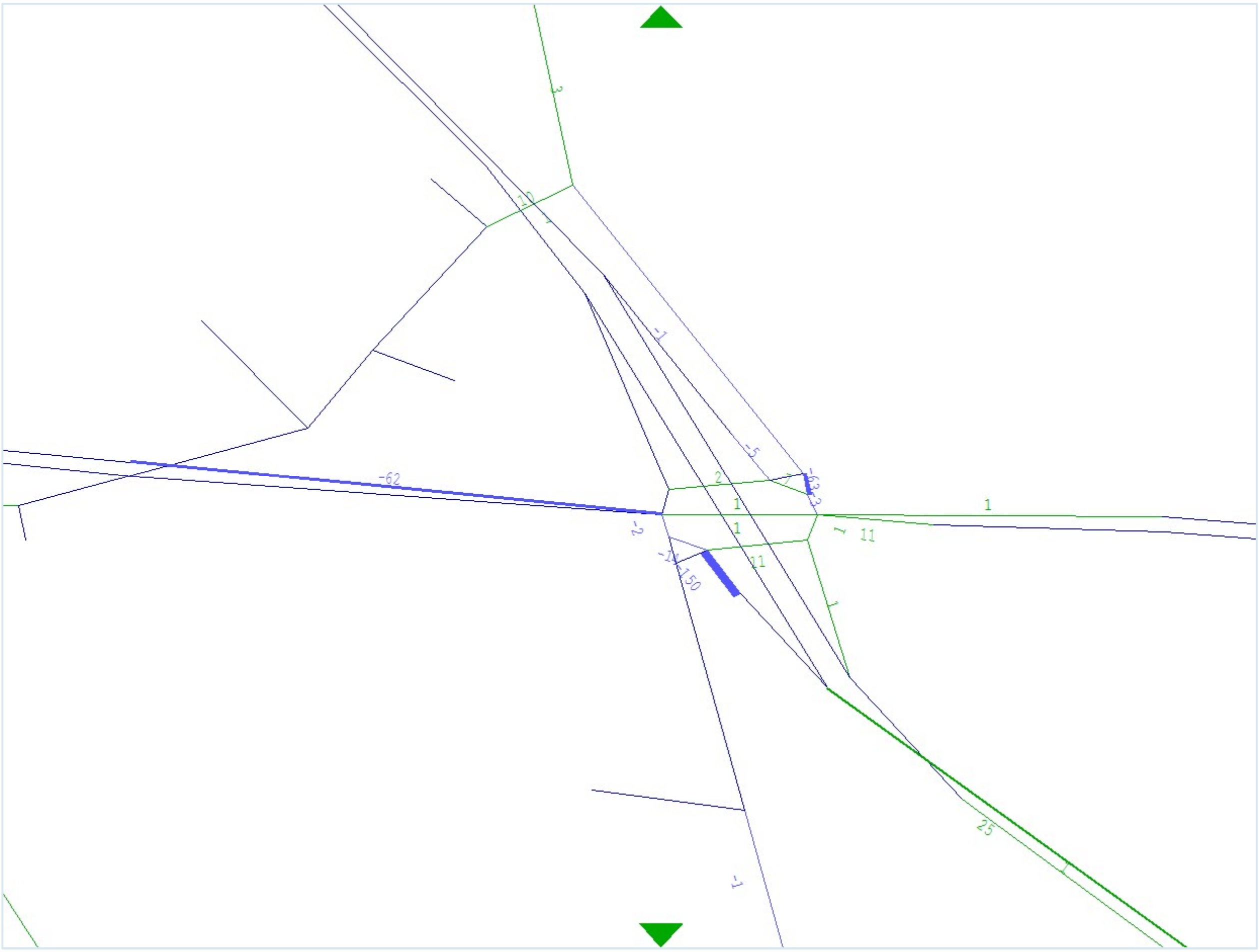


Figure B.4 - Change in delays due to closure of Lodge Lane South only (seconds) – PM Peak

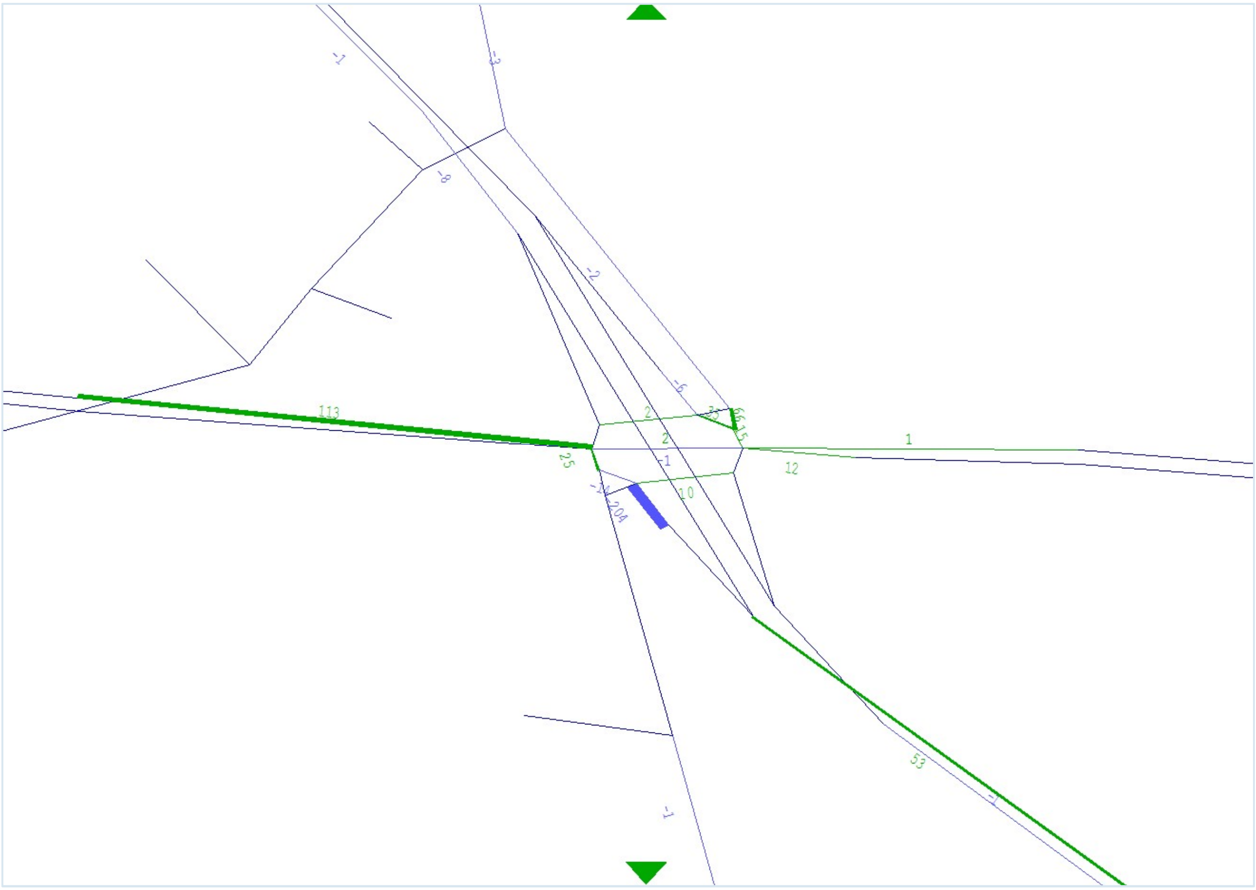


Figure B.5 - Change in delays due to relocation of Lodge Lane South to A580 (seconds) – AM Peak

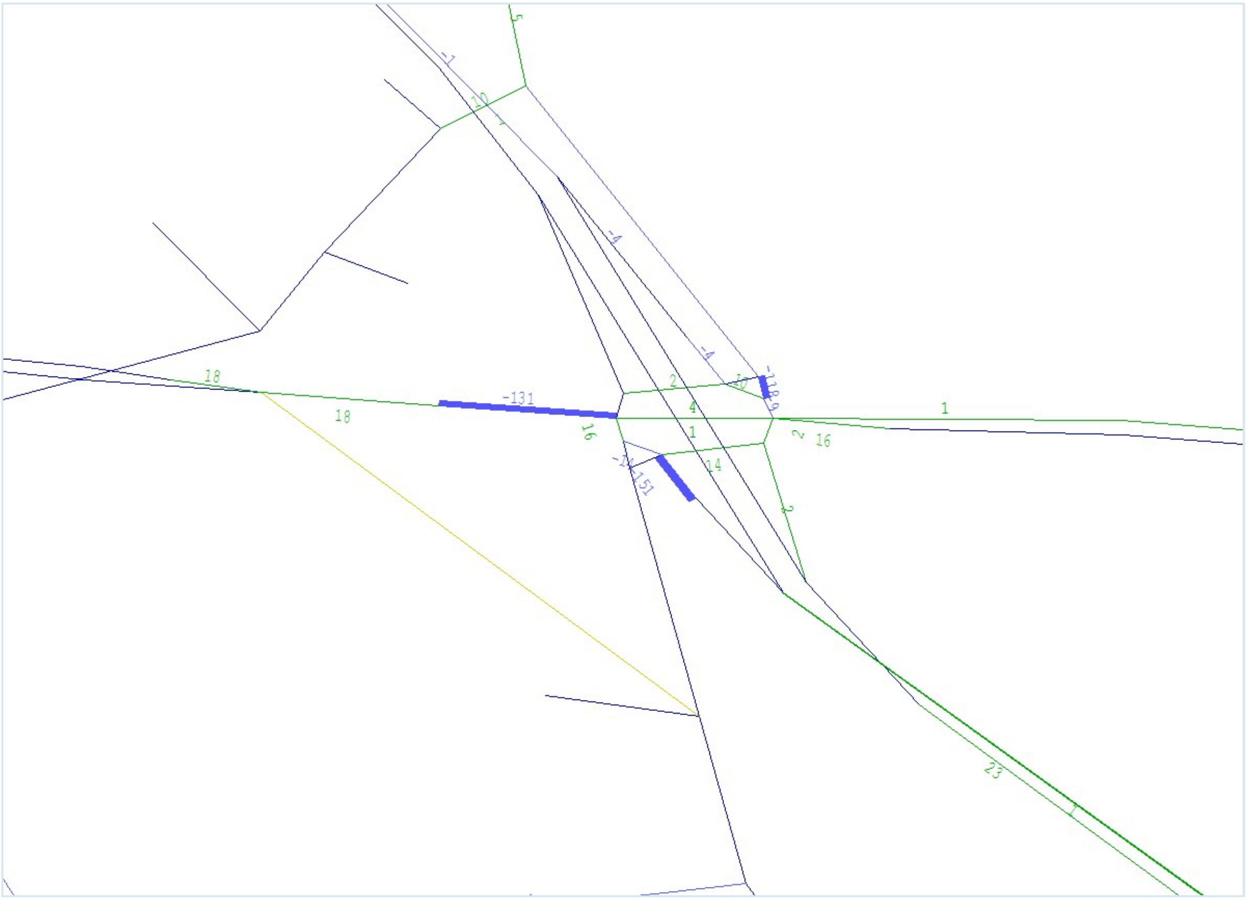


Figure B.6 - Change in delays due to relocation of Lodge Lane South to A580 (seconds) – PM Peak

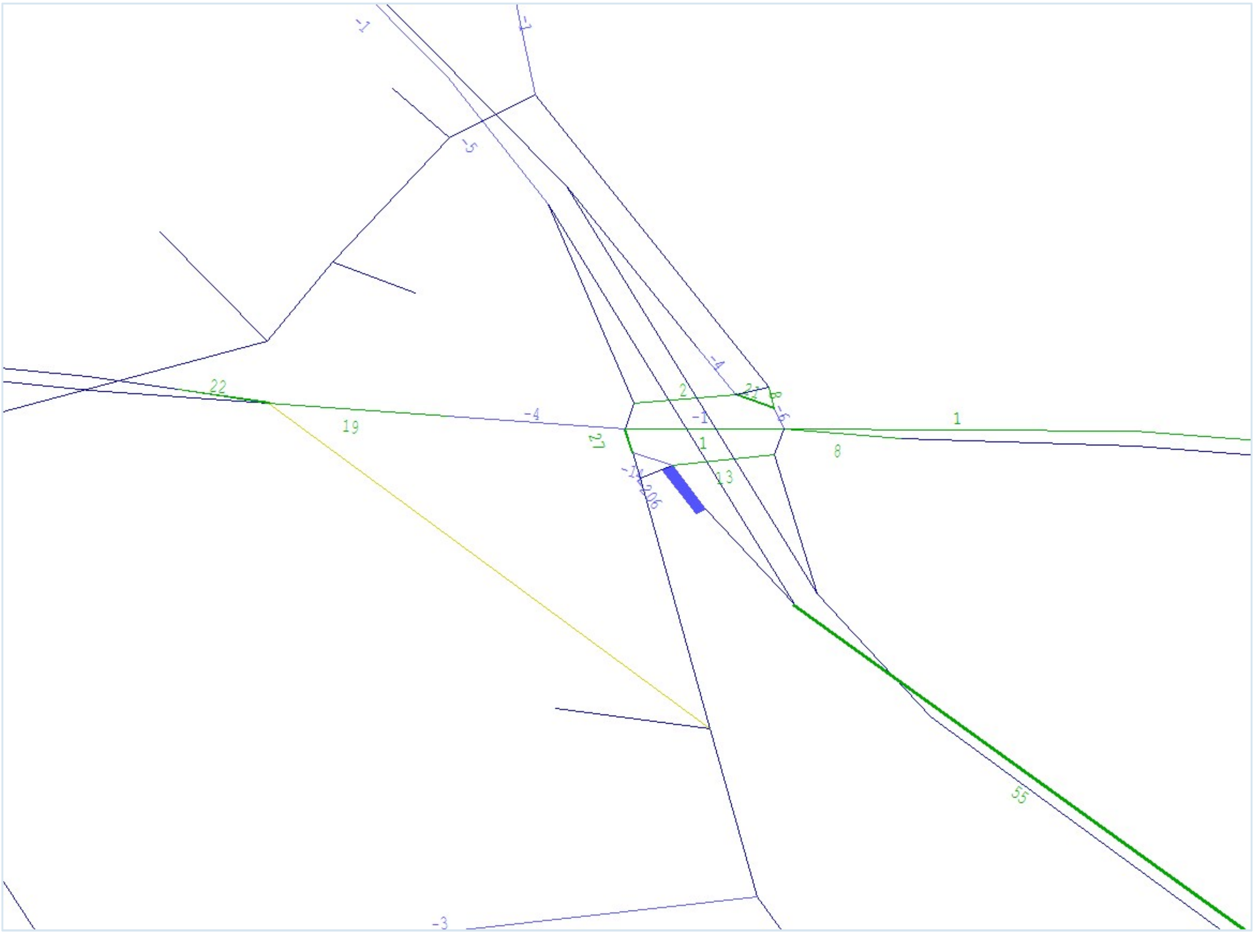


Figure B.7 - Change in delays to relocation of Lodge Lane South to Penny Lane (seconds) – AM Peak

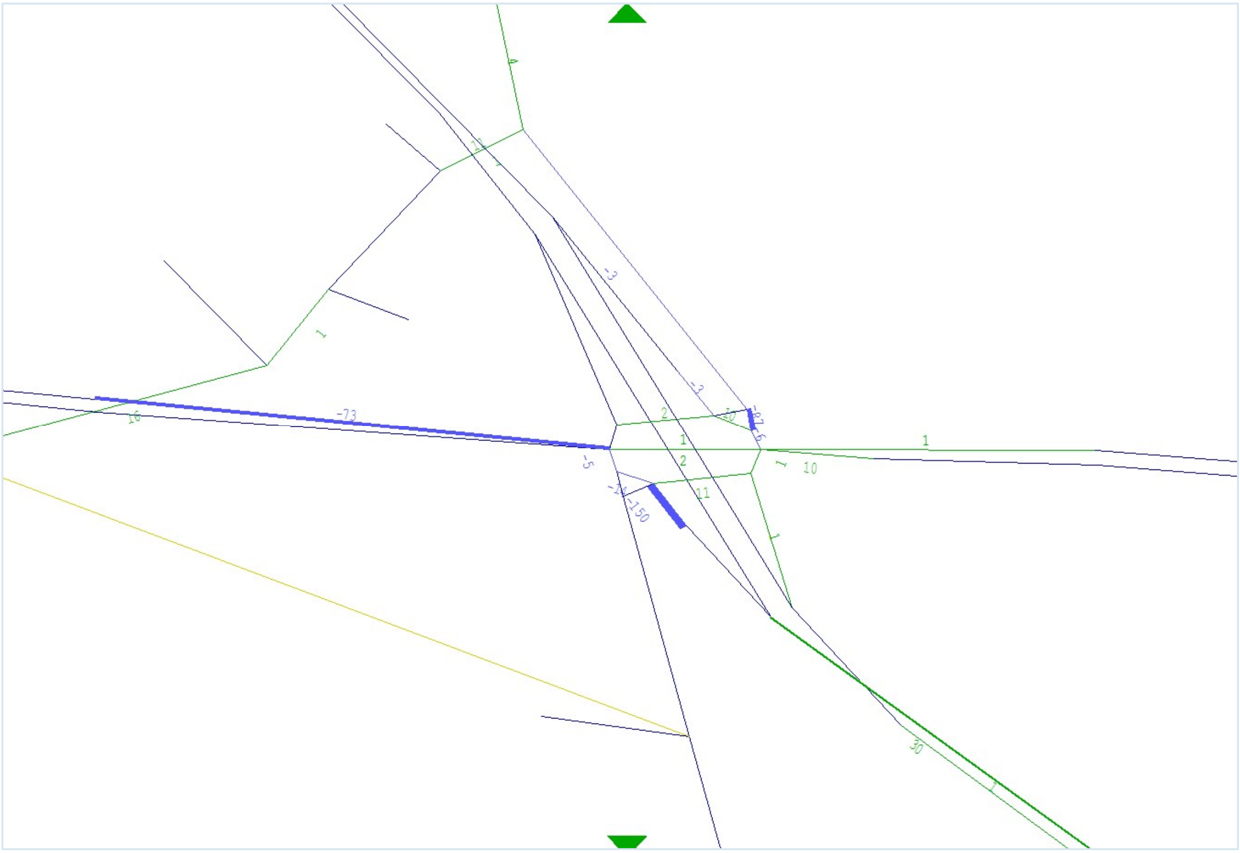


Figure B.8 - Change in delays to relocation of Lodge Lane South to Penny Lane (seconds) – PM Peak

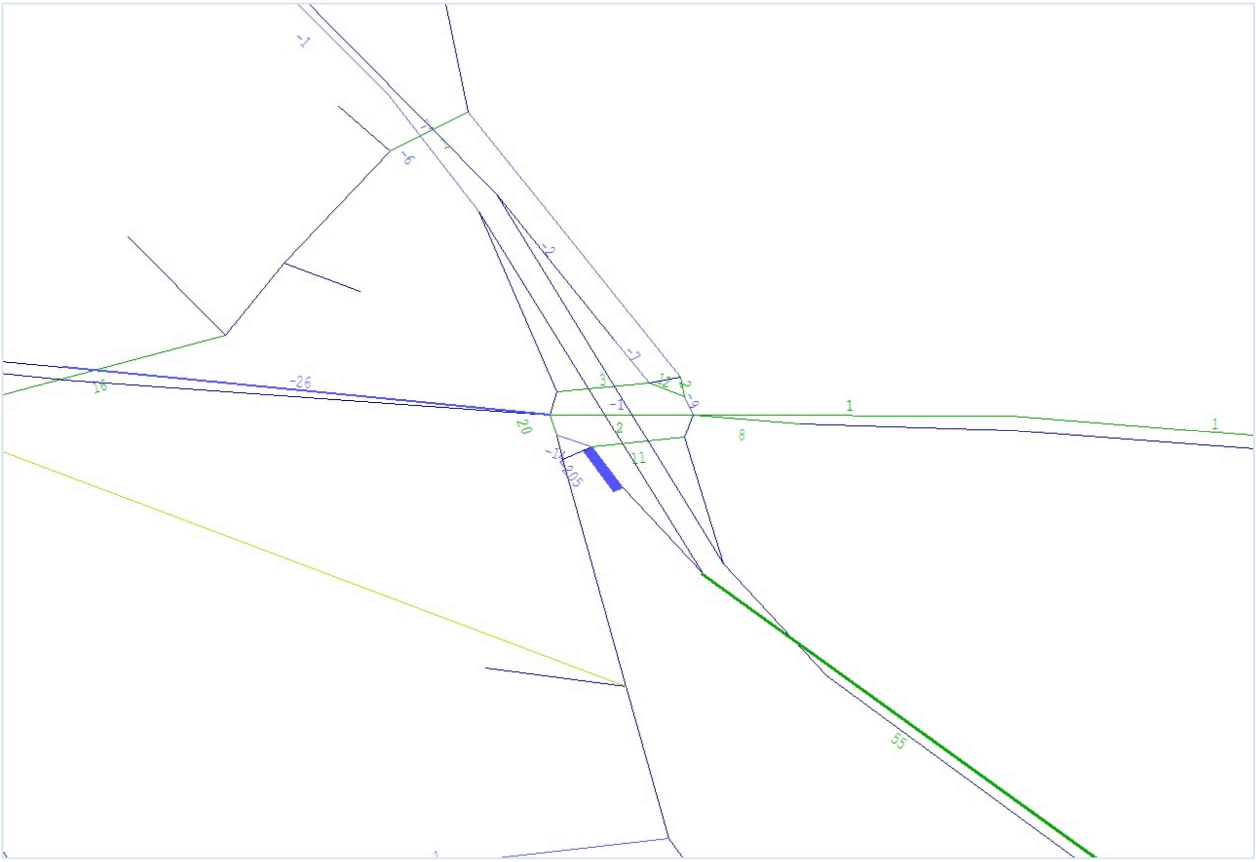


Figure B.9 - Change in delay due to relocation of Lodge Lane South to Penny Lane and Lodge Lane North to the A580 (seconds) – AM Peak

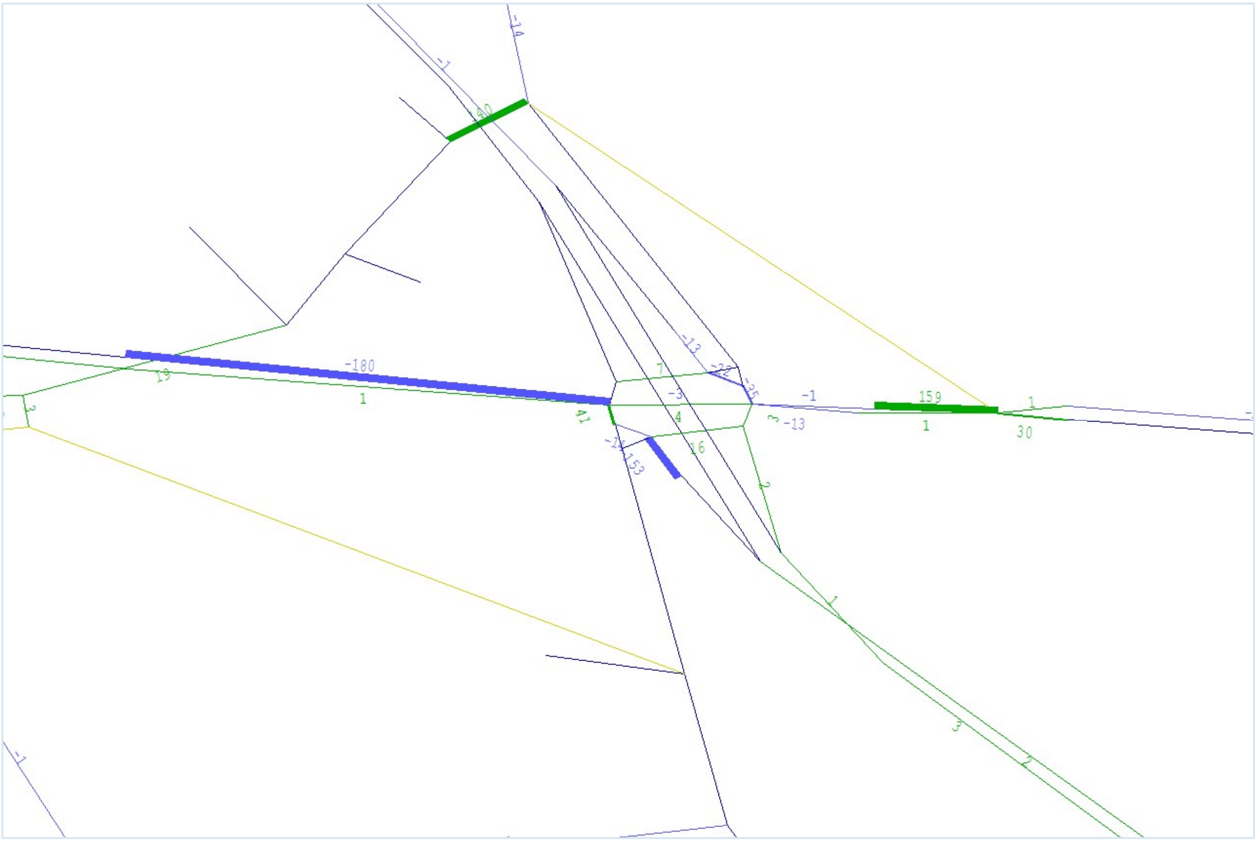


Figure B.10 - Change in delay due to relocation of Lodge Lane South to Penny Lane and Lodge Lane North to the A580 (seconds) – PM Peak

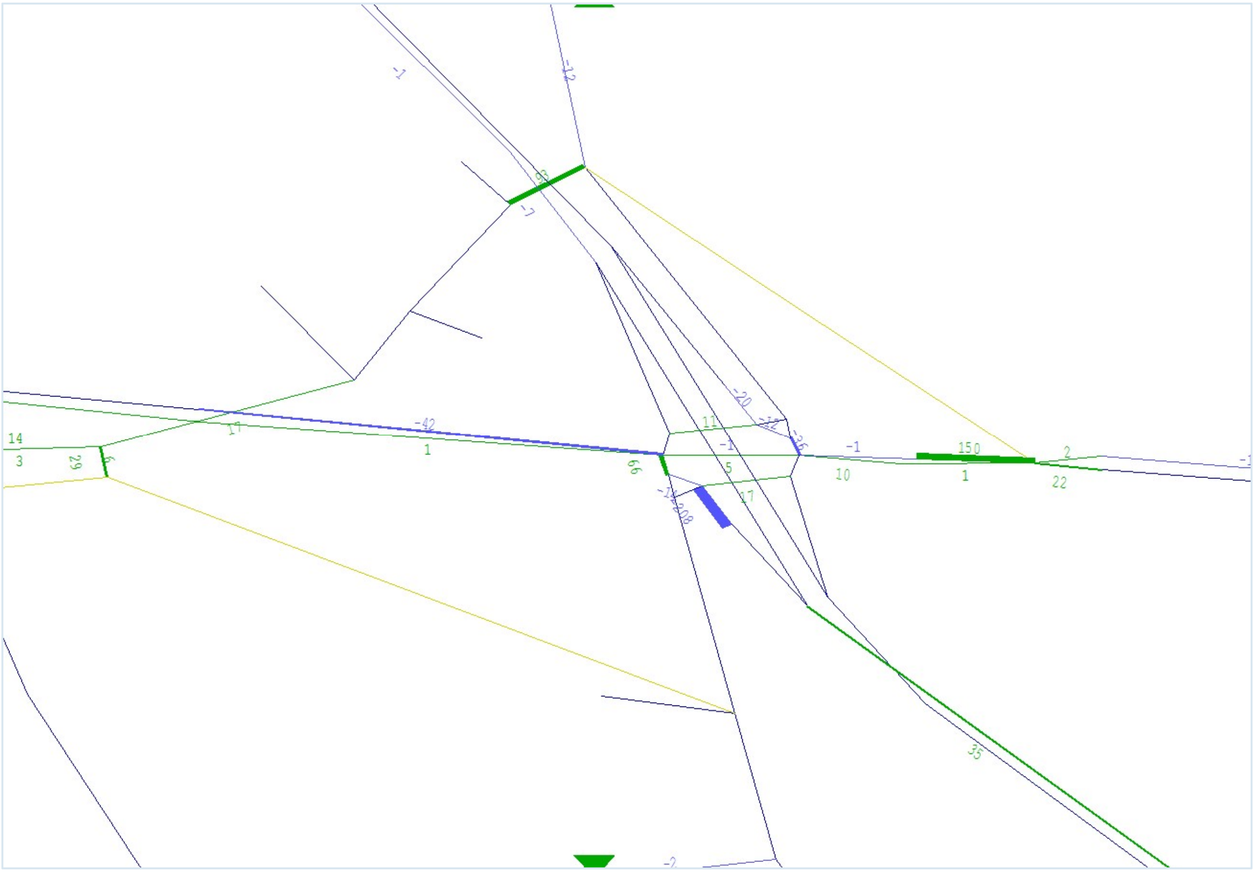


Figure B.11 - Change in delay due to relocation of Lodge Lane South and Lodge Lane North to the A580 (seconds) – AM Peak

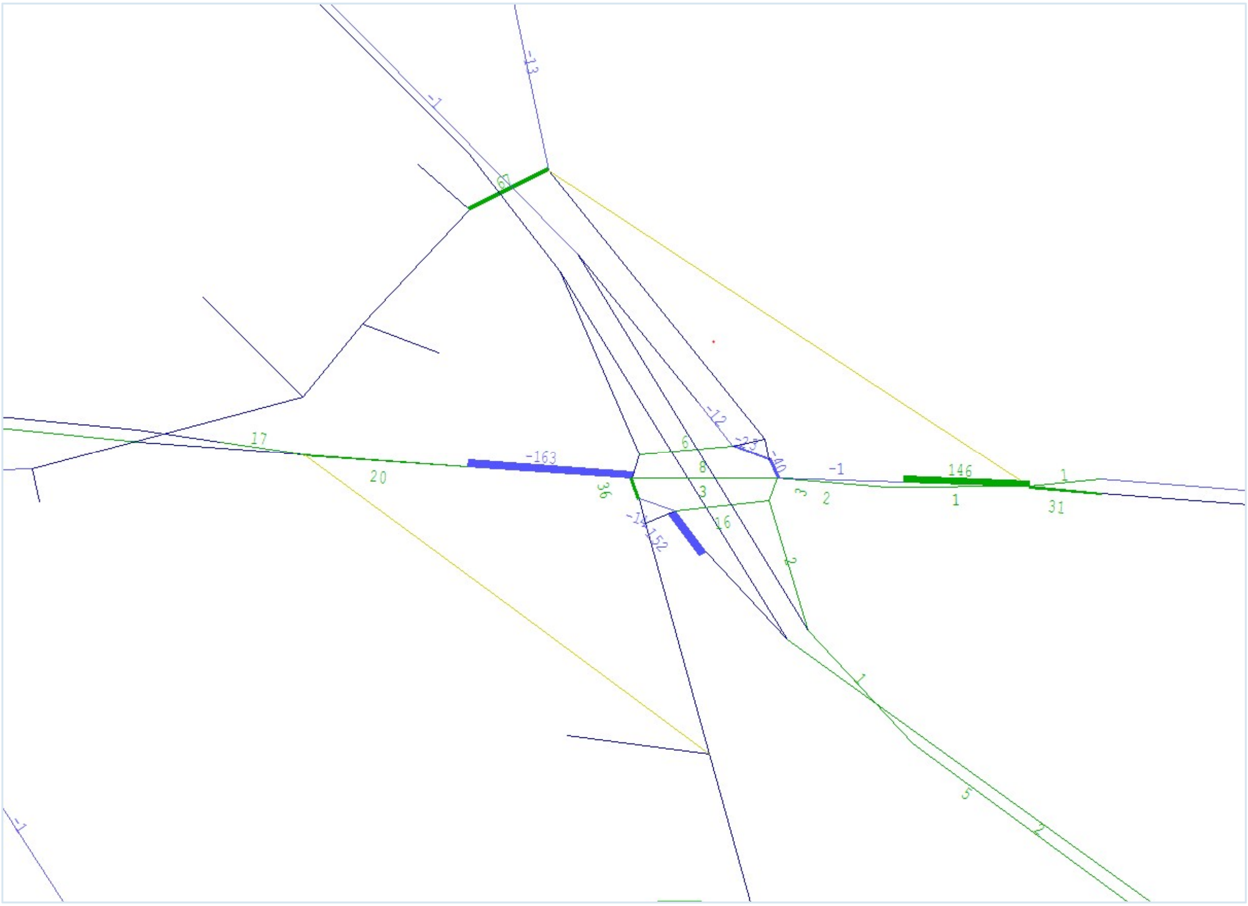


Figure B.12 - Change in delay due to relocation of Lodge Lane South and Lodge Lane North to the A580 (seconds) – PM Peak

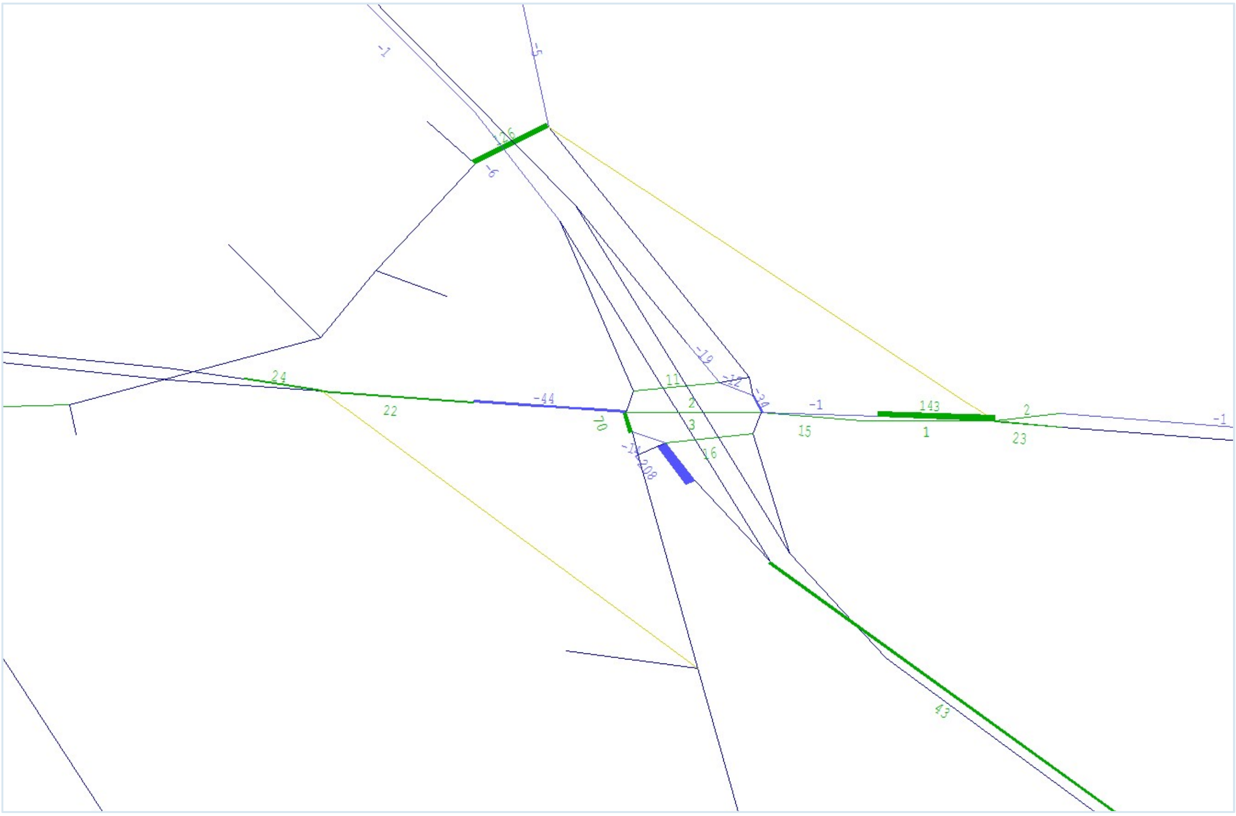


Figure B.13 - Change in delay due to relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Lind Road added (compared with Do Minimum). (seconds) – AM Peak

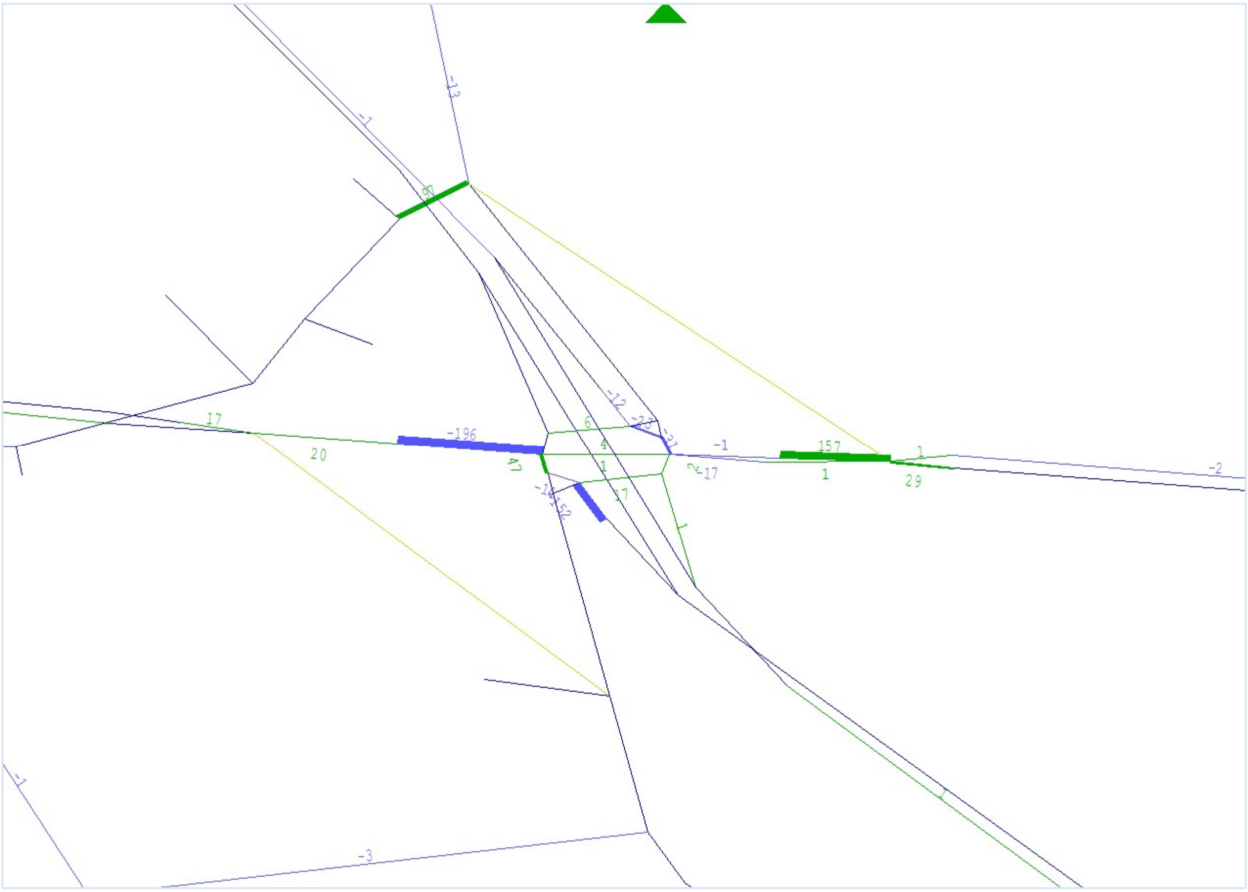


Figure B.14 - Change in delay due to relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added (compared with Do Minimum). (seconds) - PM Peak

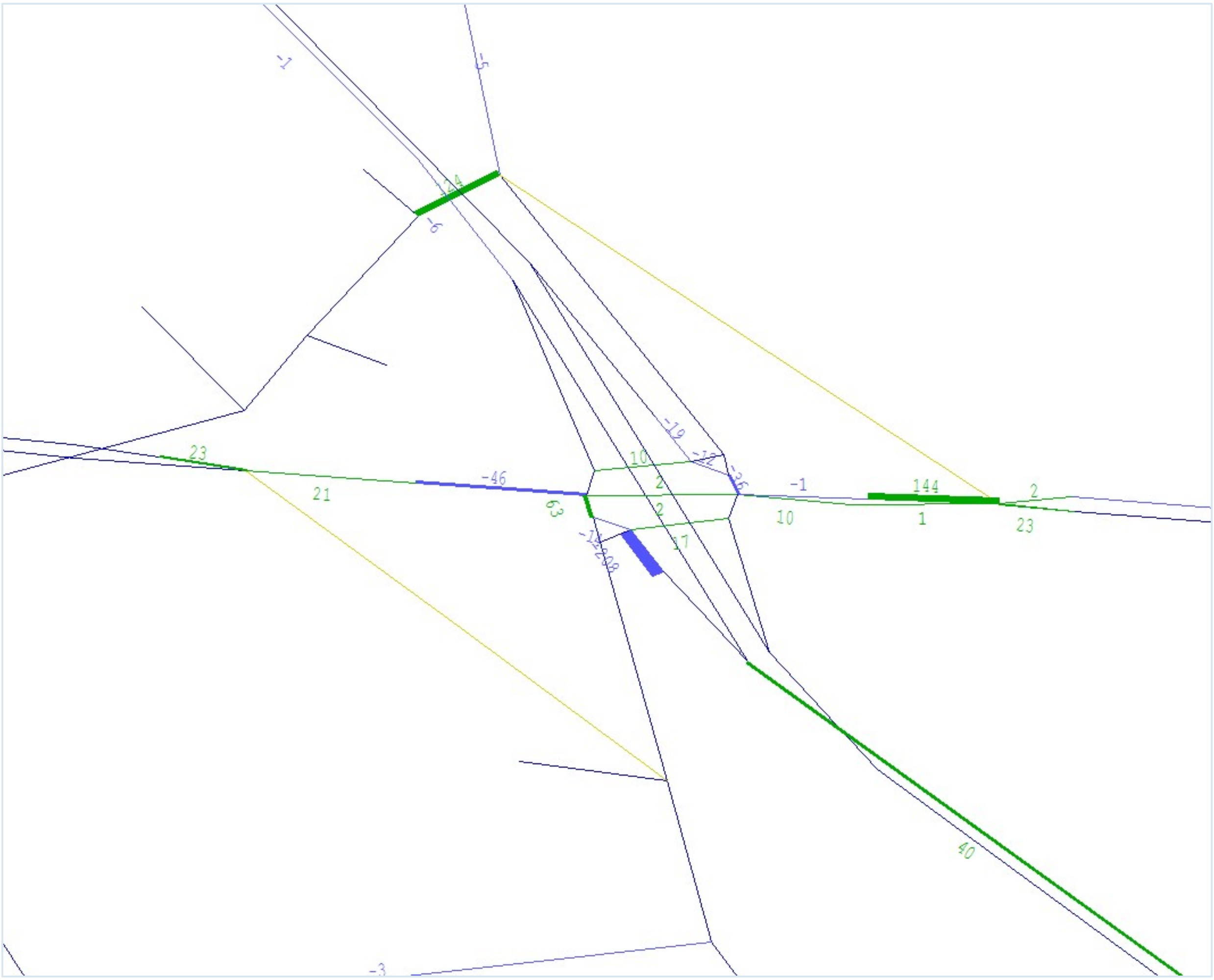


Figure B.15 - Change in delay due to relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added (compared with Scenario 7). (seconds) – AM Peak

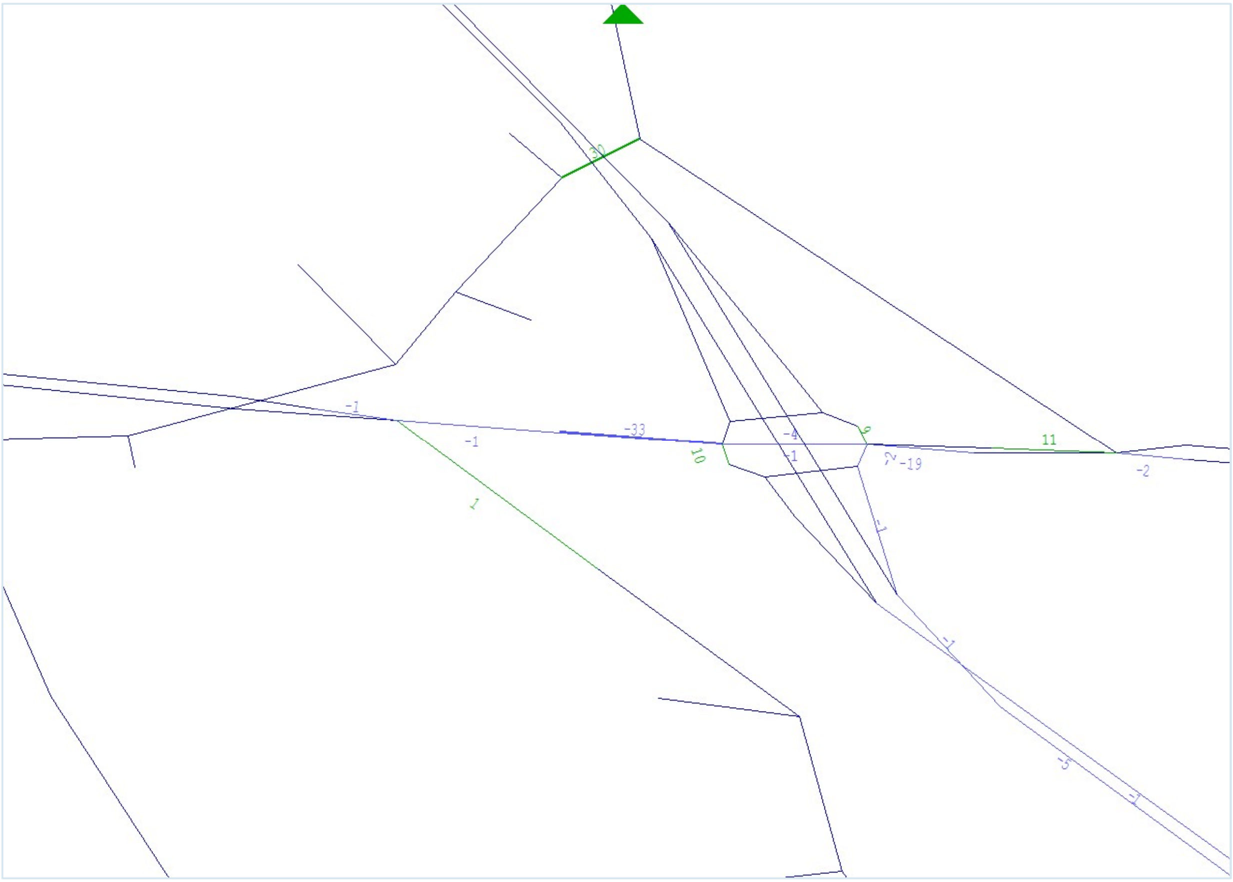


Figure B.16 - Change in delay due to relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added (compared with Scenario 7). (seconds) – PM Peak

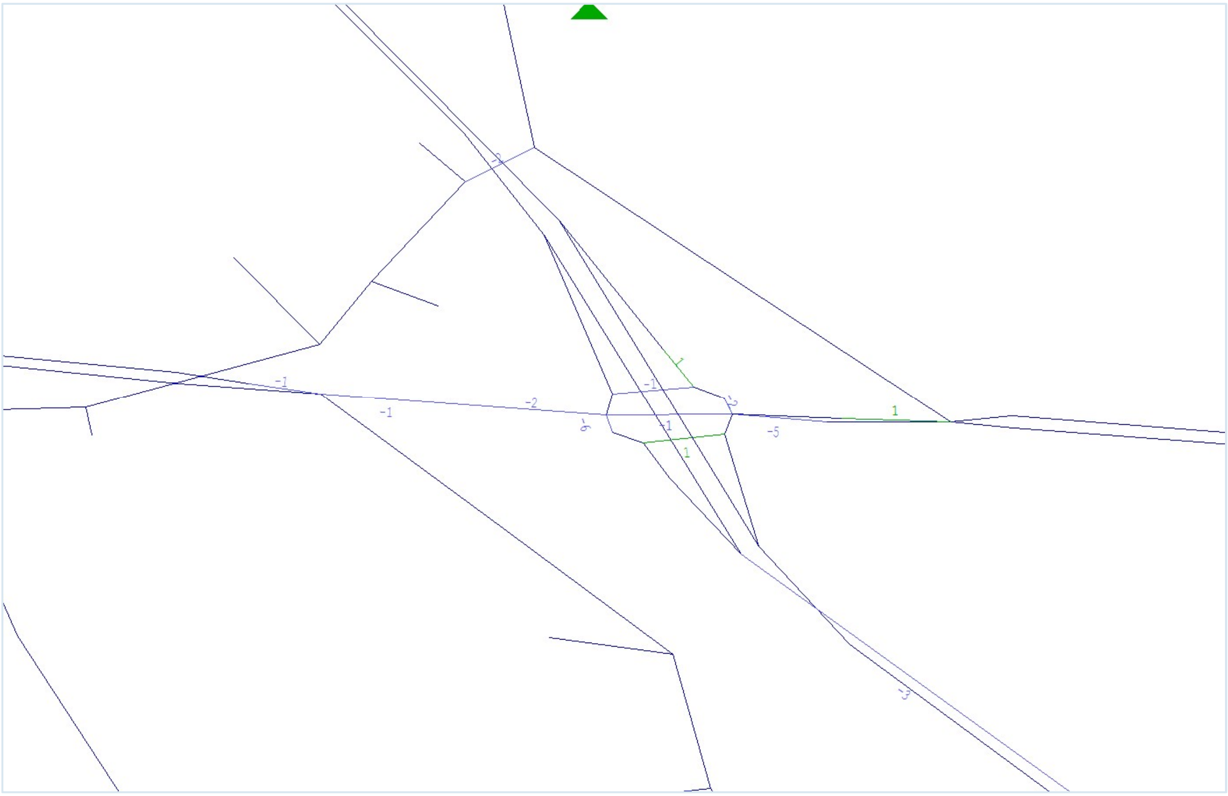


Figure B.17 - Delay due to Diverging Diamond Junction and relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added - AM Peak (seconds)

AM Peak Do Minimum

AM Peak with Diamond Junction, Lodge Lane and Parkside

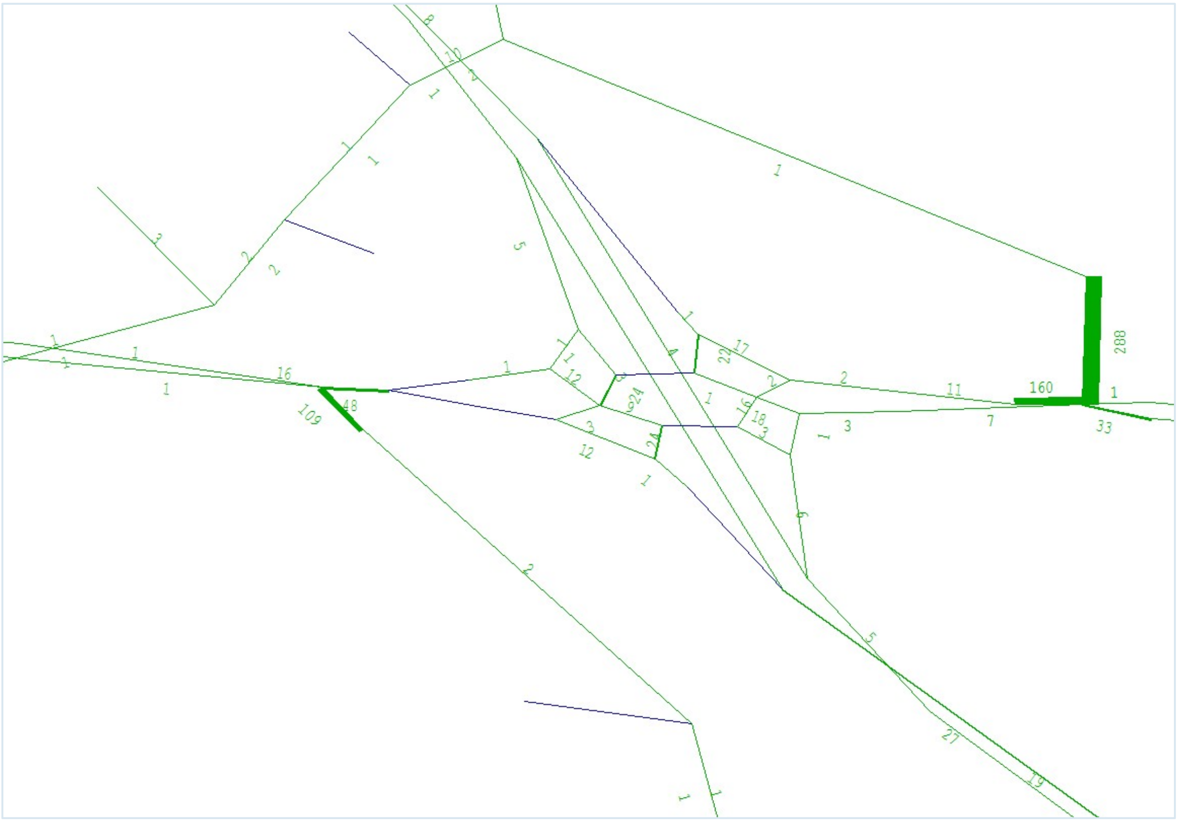
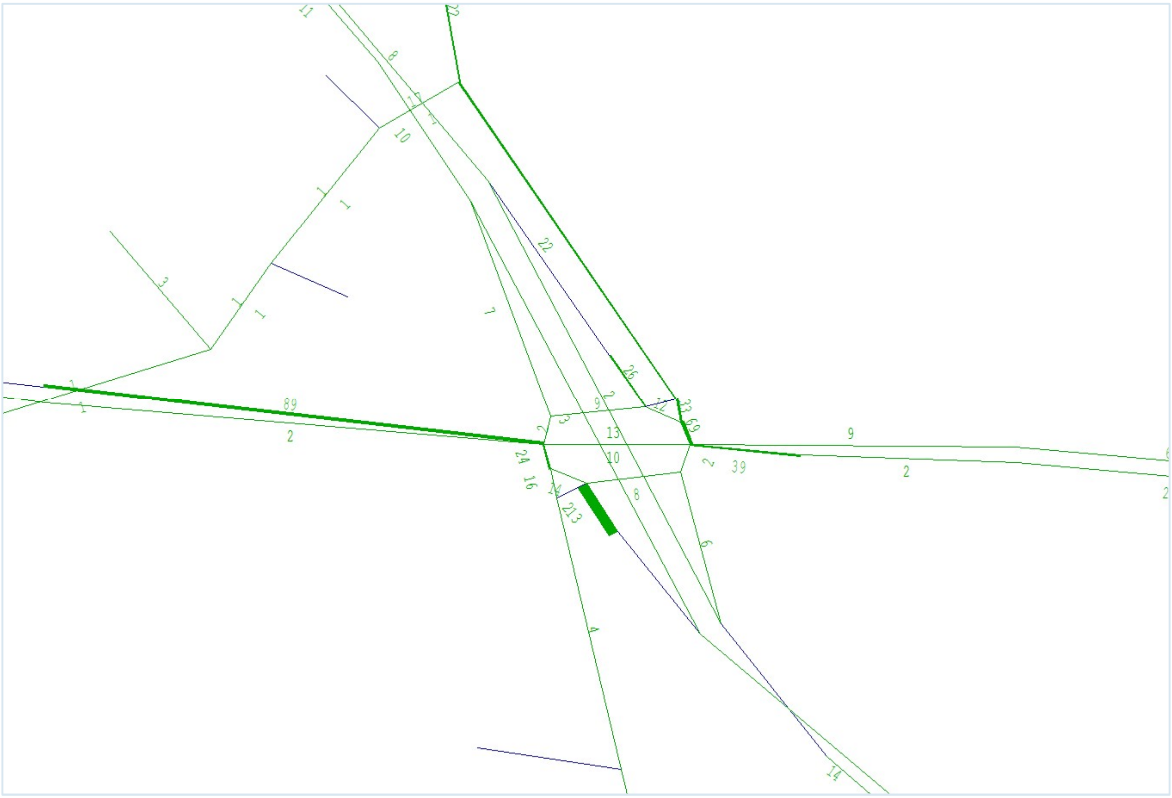
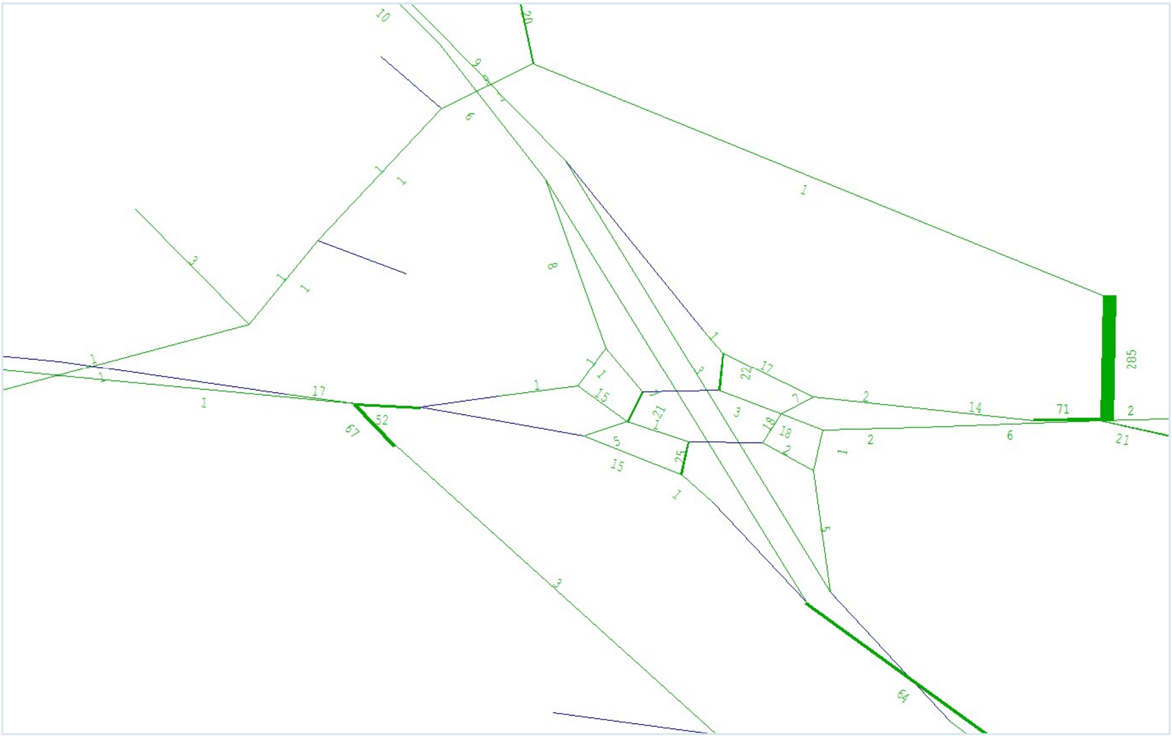


Figure B.18 - Delay due to Diverging Diamond Junction and relocation of Lodge Lane South and Lodge Lane North to the A580 and with Parkside Link Road added - PM Peak. (seconds)

PM Peak Do Minimum



PM Peak with Diamond Junction, Lodge Lane and Parkside



1st Floor Station House
Tithebarn Street, Exchange Station
Liverpool
L2 2QP

wsp.com

Appendix G

LOCAL JUNCTION MODELLING REPORT

CONFIDENTIAL

St Helens Council

A580 / M6 JUNCTION 23 IMPROVEMENT OPTIONS

Junction Assessment Results

003
MAY 2019

CONFIDENTIAL

St Helens Council

A580 / M6 JUNCTION 23 IMPROVEMENT OPTIONS

Junction Assessment Results

TECHNICAL NOTE (V1 0) CONFIDENTIAL

PROJECT NO. 70044810

OUR REF. NO. 003

DATE: MAY 2019

WSP

8 First Street
Manchester
M15 4RP

Phone: +44 161 200 5000

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Draft Issue	Final Issue	Final Issue	
Date	14th January 2019	28th January 2019	29th May 2019	
Prepared by	M Chau	M Chau	M Chau	
Signature				
Checked by	J Thompson	J Thompson	J Thompson	
Signature				
Authorised by	R Parker	R Parker	R Parker	
Signature				
Project number	70044810	70044810	70044810	
Report number	003	003	003	
File reference	-			

CONTENTS

1 TRAFFIC FLOW AND GROWTH ASSUMPTIONS

1.1 TRAFFIC SURVEY

As part of the M6 J23 study, traffic surveys at M6 J23 were commissioned in July 2018. These were converted into PCUs and were used as the preliminary flows for modelling of the existing base and potential improvement options within TRANSYT assessments. The turning count surveys for M6 J23 were undertaken on Wednesday 4th July 2018 and Thursday 5th July 2018. The fully-classified turning count data covered the time periods of 07:00-10:00 and 16:00-19:00.

As the A49 Lodge Lane arms of the potential options are proposed to be moved to either side of the A580 East Lancashire Road, the flows have been redistributed from the arms onto the rest of the local highway network.

Review of the traffic survey data identified the following network peak hours:

- Morning Peak Hour = 8:00am to 9:00am; and
- Evening Peak Hour = 5:00pm to 6:00pm.

The full traffic flows associated with M6 J23 can be found in **Appendix A**.

1.2 FUTURE YEAR GROWTH / ASSESSMENTS

Growth factors were extracted from TEMPRO Version 7.2 for the St Helens authority area.

The "Urban" area type and "Motorway" road type were chosen to determine the growth factors relating to the SRN junction.

Table 1 - Growth Factors for St. Helens Authority Area

Growth Factors for St. Helens 005 Output Area				
Road Type	2018-2023		2018-2033	
	AM	PM	AM	PM
(Urban) Motorway	1.0691	1.0674	1.1557	1.1547

Future Year testing for the assessment of the DDI junction coincides with the upcoming RIS2 (2020-2025) period for Highways England.

2 EXISTING M6 J23 OPERATION

It is known that the existing A580 / M6 Junction 23 Haydock Island junction currently operates at capacity, which is evident from the long queues and delays experienced at most of the arms of the junction. There are movements at the junction which currently include a high number of right turning movements, issues of small stacking spaces between stop lines and problems around the failure to comply with signals at the existing layout.

The existing junction has been modelled using recent surveys undertaken on 4 and 5 July 2018 and validated using surveyed queue data to deliver an assessment of the existing conditions and to provide a comparison of the summary results for the potential design options. It is noted that the existing signalised roundabout is controlled using MOVA, which can change cycle time and green split from one cycle to the next and consequently, an average 90 second cycle time has been adopted to represent the existing junction across all scenarios. The model was built using TRANSYT 15 proprietary software. This software was chosen specifically to more accurately model internal queues and blocking within the junction and to provide a comparison of junction performance using the Network Performance Index.

The Network Performance Index (NPI) refers to a monetary term, which, in its simplest form, is a weighted sum of all vehicle delay and stops. A number of available optimising routines systematically alter signal offsets and/or allocation of green times to search for the timings which reduce the NPI to a minimum value. TRL states within their user guide that:

> *…The model represents traffic behaviour in a network of streets in which one or more junctions are controlled by traffic light signals. The model predicts the value of a 'Performance Index' for the network, for any fixed-time plan and set of average flows that is of interest. The Performance Index is a measure of the overall cost of traffic congestion and is usually a weighted combination of the total amount of delay and the number of stops experienced by traffic.*
>
> *The optimisation process adjusts the signal timings and checks, using the model, whether the adjustments reduce the Performance Index or not. By adopting only those adjustments which reduce the Performance Index, subject to a number of constraints, such as minimum green, signal timings are successively improved. The model also provides for give-way priority control possibilities, including the modelling of opposed offside-turn traffic within signalled junctions and fully unsignalised junctions which are influenced by nearby signals.*

2.1 2018 / 2023 / 2033 BASE ASSESSMENTS (SCENARIO 1)

Figure 1 below illustrates a TRANSYT representation of the existing junction operation.

Figure 1 - Existing M6 J23 Junction TRANSYT model (2033 PM)

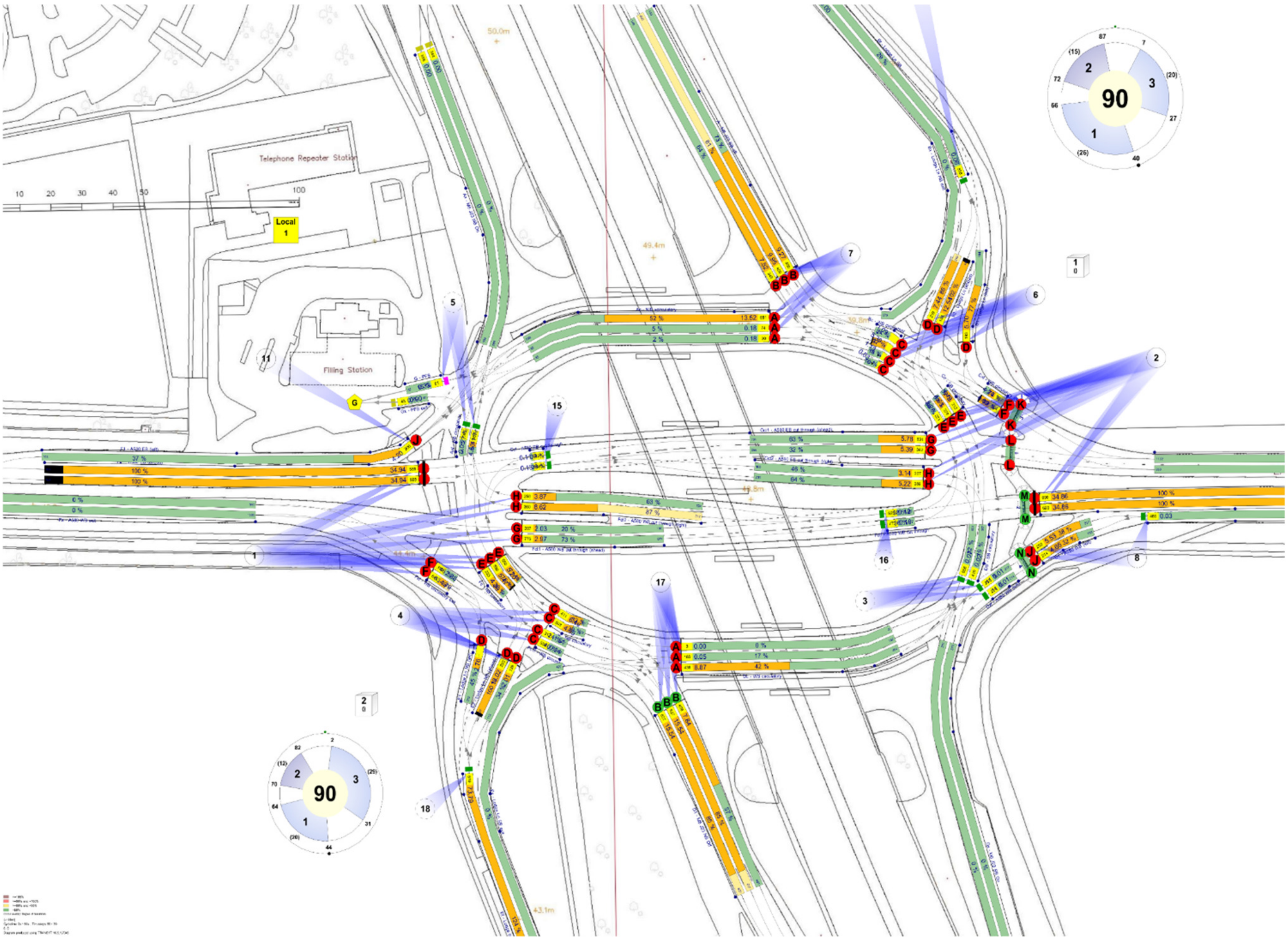


Table 2 to **Table 7** below provides a summary of the forecast performance of the junction and the operation of its key approach arms in the existing base year (2018), opening year (2023) and future year (2033).

Table 2 – 2018 Base Junction Summary Results

AM			PM		
Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)	Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)
1468.28	20.03	95	2124.15	17.29	139.25

Table 3 – 2018 Base Scenario TRANSYT Summary, Key Arms

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
A580 East Lancashire Road WB Approach	88	14.95	98	22.14
Lodge Lane N (SB)	57	3.91	102	11.94
M6 SB Off-Slip	84	8.62	69	8.04
A580 East Lancashire Road EB Approach	88	16.4	92	16.07
Lodge Lane S (NB)	47	4.1	100	13.45
M6 NB Off-Slip	76	8.72	86	14.25

Table 3 above indicates that existing design of junction in 2018 operates within its theoretical capacity within the AM peak, and operates above capacity in the PM peak, with a maximum DOS of 102% at the Lodge Lane N (SB) approach to the junction, and a maximum predicted queue of 22.14 PCUs in the PM peak along the A580 WB approach to the junction.

Table 4 – 2023 Base Year Junction Summary Results

AM			PM		
Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)	Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)
1959.28	18.42	128.13	4929	11.29	330.22

Table 5 - 2023 Base Year Scenario TRANSYT Summary, Key Arms

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
A580 East Lancashire Road WB Approach	91	17.08	108	104.11
Lodge Lane N (SB)	69	4.56	109	50.49
M6 SB Off-Slip	94	12.26	74	8.82
A580 East Lancashire Road EB Approach	97	23.46	95	18.09
Lodge Lane S (NB)	53	4.65	109	55.06
M6 NB Off-Slip	80	9.4	89	15.62

Table 5 above indicates that the 2023 future year scenario for the existing SRN junction would operate above capacity in both the AM & PM peaks.

Table 6 – 2033 Base Junction Summary Results

AM			PM		
Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)	Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)
5034.82	11.7	338.47	8579.09	7.91	852.76

Table 7 - 2033 Base Scenario TRANSYT Summary, Key Arms

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
A580 East Lancashire Road WB Approach	95	20.94	117	145.13
Lodge Lane N (SB)	102	17.41	102	12.54
M6 SB Off-Slip	96	13.74	81	9.95
A580 East Lancashire Road EB Approach	116	129.3	126	133.83
Lodge Lane S (NB)	57	5.08	124	86.81
M6 NB Off-Slip	83	10.21	85	15.54

Table 7 above indicates that the M6 Junction 23 would continue to operate above capacity in both the AM & PM peaks, with queues of 145.13 PCUs along the A580 WB approach to the junction and a maximum DoS of 126%.

3 PROPOSED OPTIONS AT M6 J23

3.1 REMOVAL OF LODGE LANE ARMS (SCENARIO 2)

This option explores the potential removal of the Lodge Lane arms from the existing junction and diverting the traffic to a new signalised junction either side of the SRN junction, assessing the impact on the existing junction.

This has been modelled using TRANSYT 15, removing the Lodge Lane arms from existing junction model, and diverting these flows so that they feed onto the A580 to new junctions either side of M6 via a proposed new signalised priority junction (considered later).

Figure 2 below shows the form of the junction being considered within TRANSYT.

Figure 2 - M6 J23 Existing (Excluding Lodge Lane Arms) As Modelled Within TRANSYT (2033 PM)

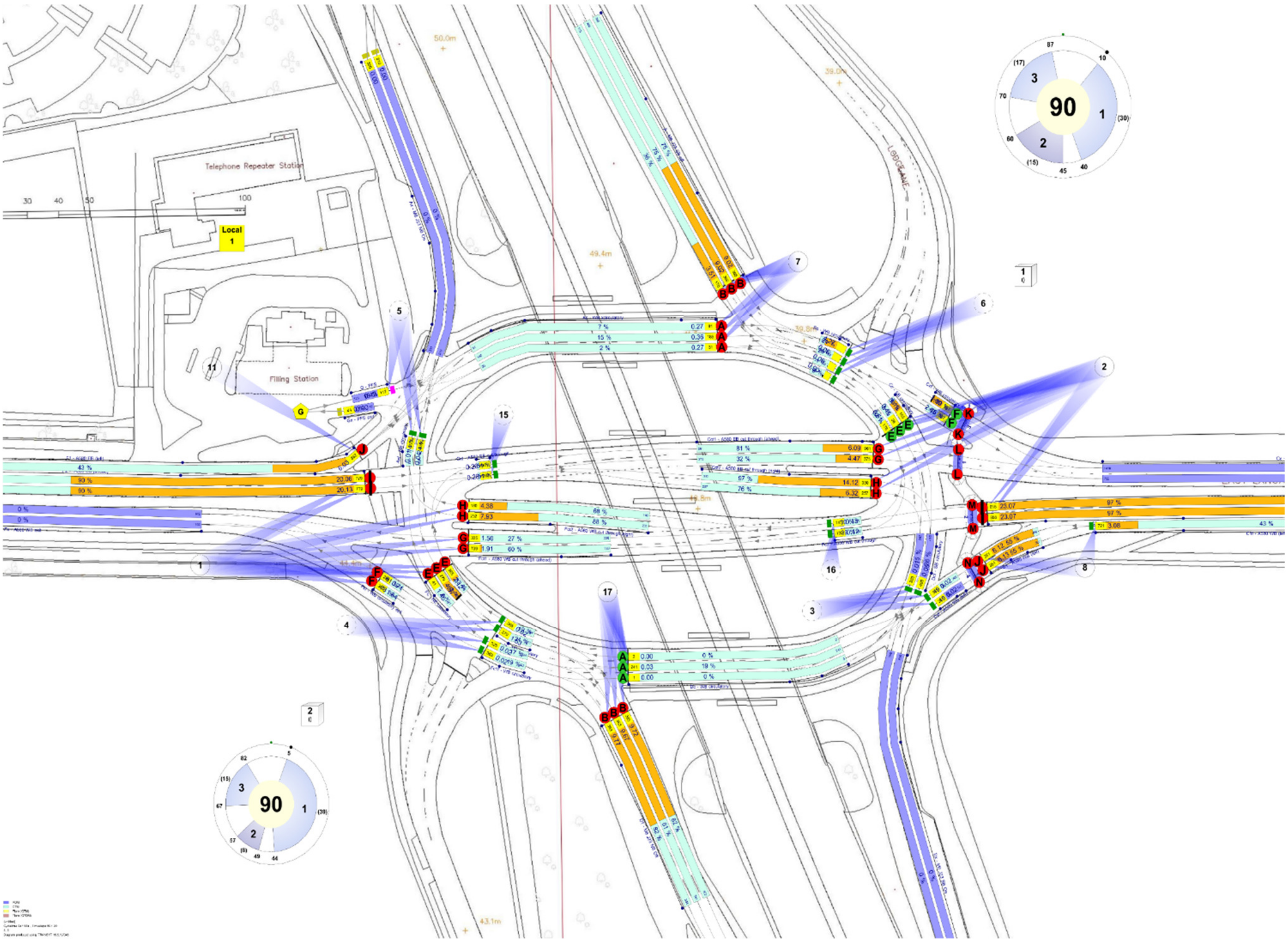


Table 8 to **Table 11** below provides a summary of the forecast performance of the junction and the operation of its key approach arms in the opening year (2023) and future year (2033).

Table 8 – 2023 Existing (Excluding Lodge Lane) Global Junction Summary Results

AM			PM		
Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)	Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)
1264.95	21.47	82.52	3362.16	14.57	223.54

Table 9 - 2023 Existing (Excluding Lodge Lane) TRANSYT Summary, Key Arms

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
A580 East Lancashire Road WB Approach	90	16.81	94	20.78
M6 SB Off-Slip	73	8.37	78	8.91
A580 East Lancashire Road EB Approach	88	17.91	103	83.05
M6 NB Off-Slip	69	8.04	84	12.96
Cycle Time	**90**		**90**	

Table 9 above indicates that the 2023 future year scenario for the existing junction with the removal of the Lodge Lane arms would operate at capacity in AM peak and above theoretical capacity in the PM peak. With a maximum DoS of 103% along the A580 WB approach to the junction, with a MMQ of 83.05 PCU.

Table 10 – 2033 Existing (Excluding Lodge Lane) Global Junction Summary Results

AM			PM		
Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)	Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)
1709.92	19.98	112.59	5169.25	11.85	346.71

Table 11 - 2033 Existing (Excluding Lodge Lane) TRANSYT Summary, Key Arms

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
A580 East Lancashire Road WB Approach	97	23.07	120	114.14
M6 SB Off-Slip	75	9.02	84	10.11
A580 East Lancashire Road EB Approach	90	20.06	98	25.42
M6 NB Off-Slip	82	9.72	97	20.51
Cycle Time	**90**		**90**	

Table 11 above indicates that the 2033 future year scenario for the existing junction would continue to operate above capacity in both the AM & PM peaks, even with the Lodge Lane arms removed.

3.2 IMPROVEMENT OPTION WITH LODGE LANE (SCENARIO 6)

A TRANSYT model was created to reflect a potential improvement to the junction with the Lodge Lane arms still in place (Scenario 6).

Figure 3 below shows the form of the junction being considered within TRANSYT.

Figure 3 – M6 J23 Improvement Option with Lodge Lane arms (Scenario 6) as Modelled Within TRANSYT (2033 PM)

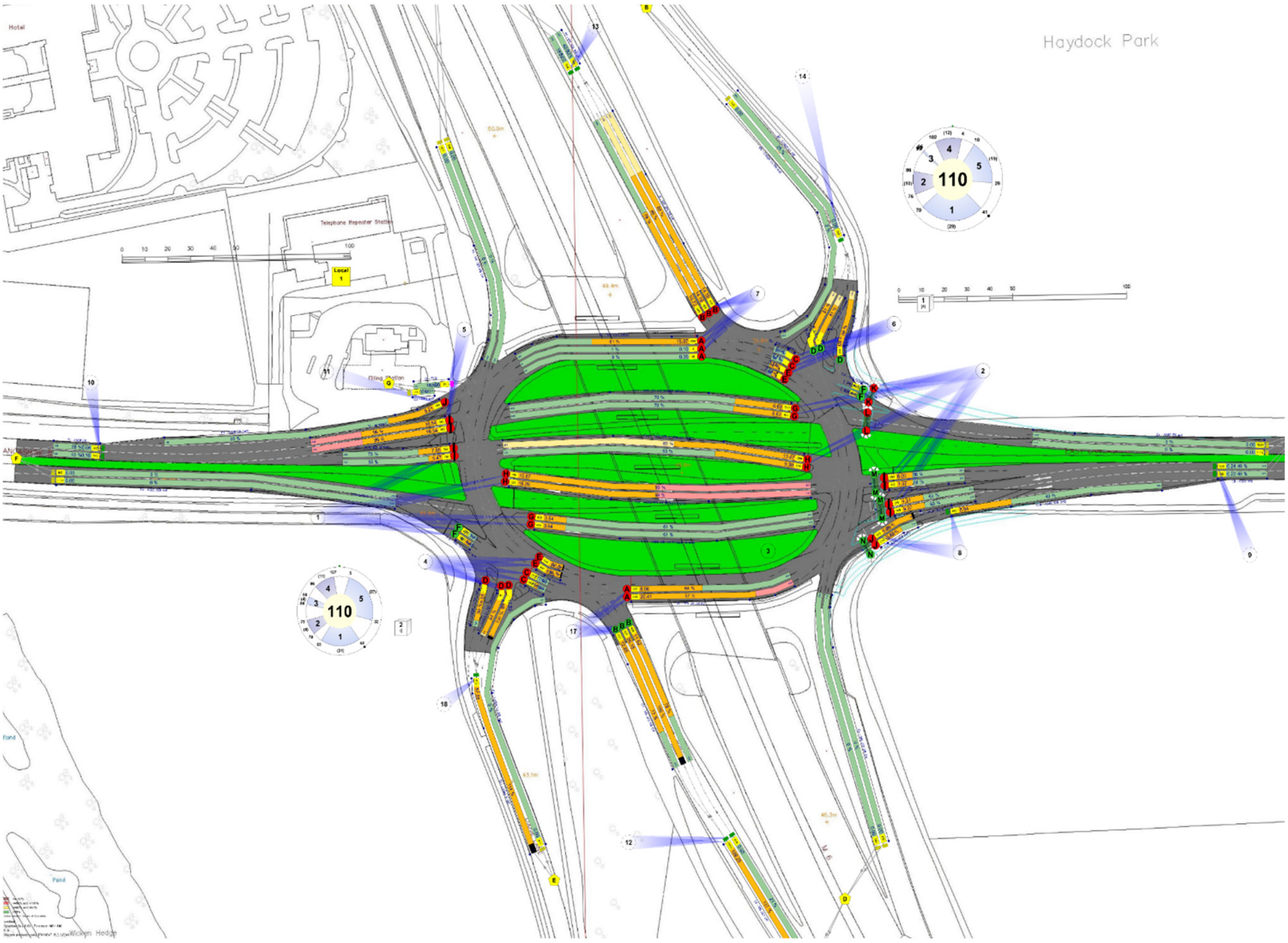


Table 12 to **Table 15** below provides a summary of the forecast performance of the junction and the operation of its key approach arms in the opening year (2023) and future year (2033).

Table 12 - 2023 Improvement Option Including Lodge Lane (Scenario 6) Global Junction Summary Results

AM			PM		
Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)	Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)
3014.25	15.13	201.46	4418.18	12.07	289.19

Table 13 - 2023 Improvement Option including Lodge Lane (Scenario 6) TRANSYT Summary, Key Arms

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
A580 East Lancashire Road WB Approach	78	9.59	60	8.5
Lodge Lane N (SB)	78	5.42	79	6.48
M6 SB Off-Slip	78	9.54	82	12.05
A580 East Lancashire Road EB Approach	85	11.35	85	11.53
Lodge Lane S (NB)	96	8.86	97	11.05
M6 NB Off-Slip	116	101.25	127	178.46
Cycle Time	**100**		**110**	

Table 13 above indicates that the improvements in place at M6 J23, along with keeping the Lodge Lane arms, the 2023 future year scenario would operate above theoretical capacity on the M6 NB and Lodge Lane NB approach to the junction. With a maximum DoS of 127% along the M6 NB arm, and a maximum predicted queue of 178.46 PCUs in the PM peak.

Table 14 - 2033 Improvement Option including Lodge Lane (Scenario 6) Global Junction Summary Results

AM			PM		
Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)	Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)
4919.81	11.9	333.63	6252.89	10.09	424.91

Table 15 - 2033 Improvement Option including Lodge Lane (Scenario 6) Global Junction Summary Results

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
A580 East Lancashire Road WB Approach	77	10.26	63	9.37
Lodge Lane N (SB)	93	8.25	86	7.83
M6 SB Off-Slip	88	11.98	89	14.19
A580 East Lancashire Road EB Approach	93	14.6	96	16.54
Lodge Lane S (NB)	104	39.34	114	70.08
M6 NB Off-Slip	148	179.17	137	225.4
Cycle Time	**100**		**110**	

An assessment of the 2033 future year scenario, indicates that the junction would continue to operate above capacity on both the M6 NB and Lodge Lane NB approaches to the junction, in both AM and PM peak.

3.3 IMPROVEMENT OPTION WITHOUT LODGE LANE (SCENARIO 6)

A TRANSYT 15 model was created to assess a potential improvement to the M6 / A580 junction. This option assumes the arms onto the roundabout from Lodge Lane would be closed and suitable alternative junctions on the A580 would be provided to the east and west of this junction.

Figure 4 below shows the form of the junction being considered within TRANSYT.

Figure 4 – M6 J23 Improvement Option without Lodge Lane (Scenario 6) as Modelled Within TRANSYT (2033 PM)

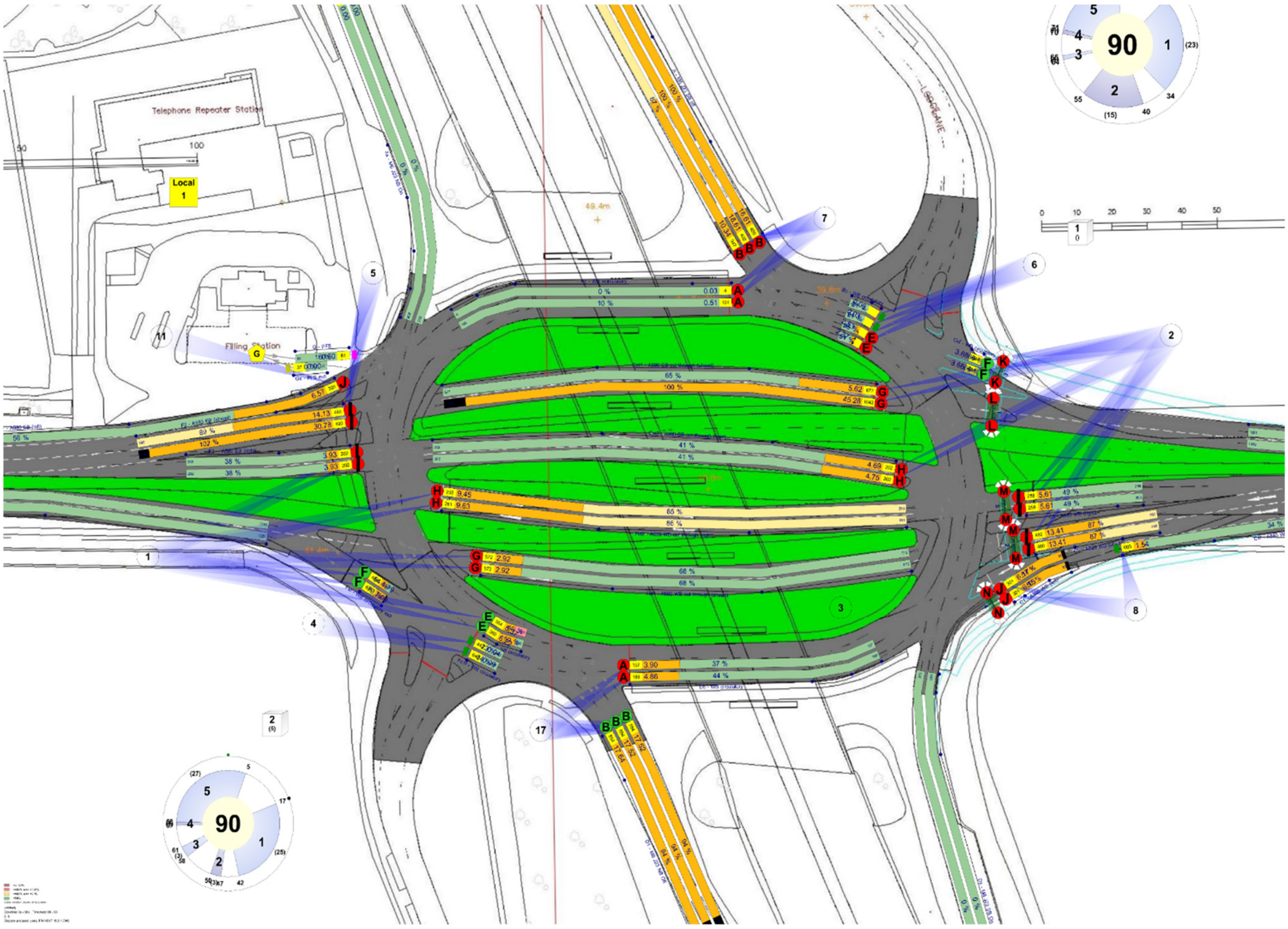


Table 16 to **Table 19** below provides a summary of the forecast performance of the junction and the operation of its key approach arms in the opening year (2023) and future year (2033).

Table 16 – 2023 Improvement Option without Lodge Lane (Scenario 6) Global Junction Summary Results

AM			PM		
Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)	Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)
1108.12	16.73	71.71	1521.26	15.05	99.22

Table 17 - 2023 Improvement Option without Lodge Lane (Scenario 6) TRANSYT Summary, Key Arms

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
A580 East Lancashire Road WB Approach	66	8.91	64	8.91
M6 SB Off-Slip	80	9.14	88	11.02
A580 East Lancashire Road EB Approach	69	9.79	86	12.58
M6 NB Off-Slip	66	7.56	81	12.44
Cycle Time	**90**		**90**	

Table 17 above indicates that with the improvement option in place at M6 J23, along with the removal of the Lodge Lane arms, the 2023 future year scenario would operate within capacity on all arms with a maximum DoS of 86% at the A580 EB approach to the junction, and a maximum predicted queue of 12.58 PCUs in the AM peak.

Table 18 – 2033 Improvement Option without Lodge Lane (Scenario 6) Junction Summary Results

AM			PM		
Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)	Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)
1311.65	16.02	85.24	2696.7	11.32	178.58

Table 19 – Improvement Option without Lodge Lane (Scenario 6) TRANSYT Summary, Key Arms

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
A580 East Lancashire Road WB Approach	72	10.14	87	13.41
M6 SB Off-Slip	87	10.72	100	18.61
A580 East Lancashire Road EB Approach	74	10.82	102	30.78
M6 NB Off-Slip	72	8.62	94	17.64
Cycle Time	**90**		**90**	

Table 19 above indicates that with the improvement option in place at M6 J23, the 2033 future year scenario would operate above capacity with a maximum DoS of 102% at the A580 EB approach to the junction, and a maximum predicted queue of 30.78 PCUs in the PM peak.

It should be noted that the increased number of lanes on the A580 approach has resulted in the loss of one of the internal stop lines and as a result, excessive intergreens that are required to provide safe clearance between traffic on the remaining circulating arms and the A580 and hence, the benefits of providing additional lanes through the junction is off balanced by the additional lost time necessary to maintain safe clearance times. Providing a more compact junction (to avoid long intergreens) may improve performance but this is unlikely to provide sufficient improvement to keep the junction operating within capacity until 2033.

3.4 M6 JUNCTION 23 DDI OPTION (SCENARIO 9)

A model was created using TRANSYT 15, to consider a Diverging Diamond Interchange (DDI) option at the junction. The model develops a 3-lane concept arrangement, previously considered in feasibility on behalf of Highways England. The proposal requires the closure of the Lodge Lane arms within the junction and relocation to new junctions either side of the M6. The junction arrangement removes any opportunity for vehicles to U turn within the junction (except from the M6 slip roads). The modelling also assumes the relocation of the petrol filling station away from the junction but assumes that Lodge Lane traffic continues to divert from new links onto the A580, through the DDI junction.

Figure 5 below shows the form of the junction being considered within TRANSYT.

Figure 5 – M6 J23 DDI Option as Modelled Within TRANSYT (2033 PM)

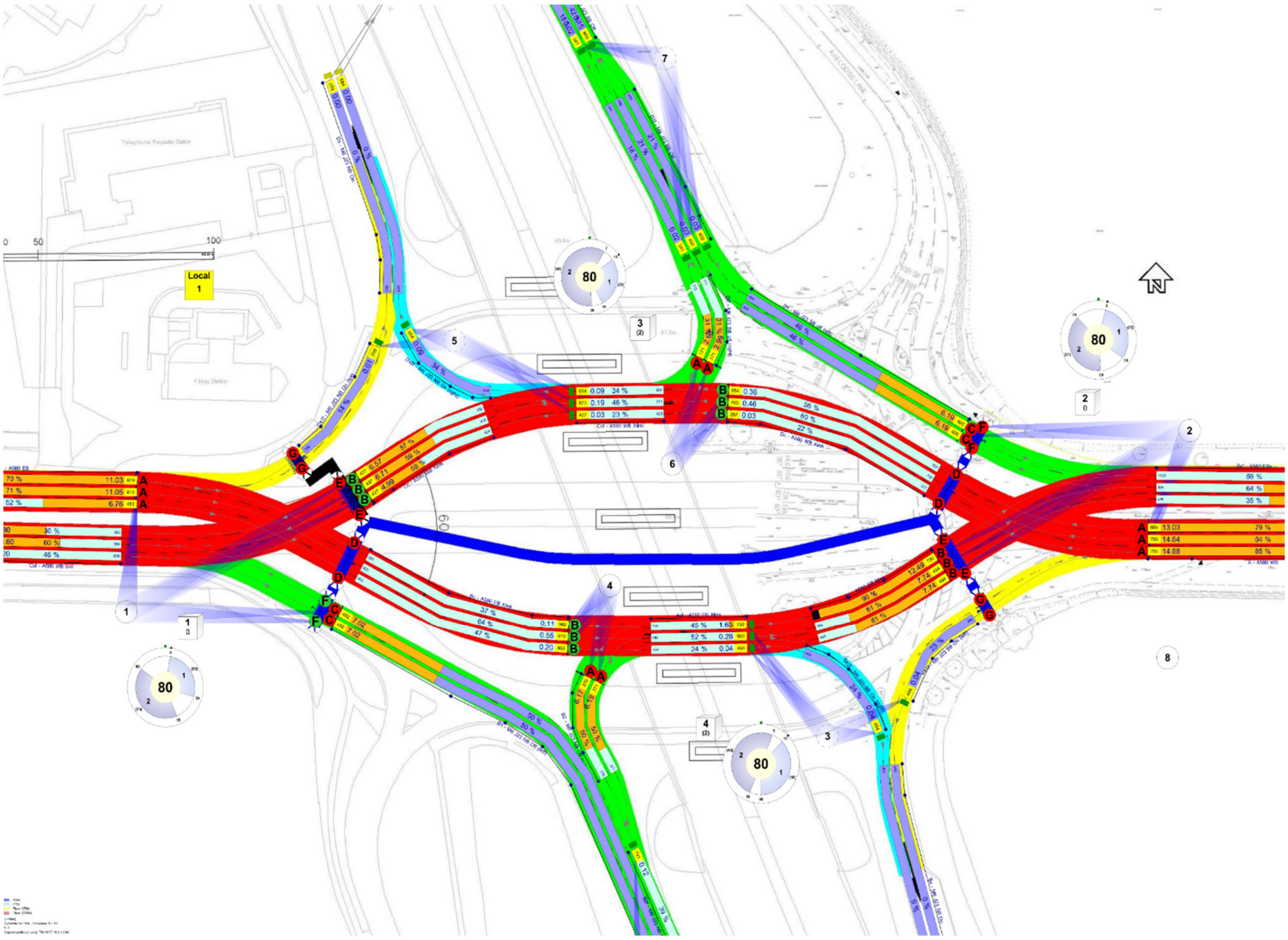


Table 20 to **Table 23** below provides a summary of the forecast performance of the junction and the operation of its key approach arms in the opening year (2023) and future year (2033).

Table 20 – 2023 DDI Opening Year Global Junction Summary Results

AM			PM		
Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)	Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)
679.49	20.87	42.24	887.65	19.55	56.3

Table 21 - 2023 DDI Opening Year Scenario TRANSYT Summary, Key Arms

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
A580 East Lancashire Road WB Approach	72	9.95	76	12.06
M6 SB Off-Slip	36	4.05	41	5.49
A580 East Lancashire Road EB Approach	71	10.08	63	9.39
M6 NB Off-Slip	30	3.3	47	5.44
Cycle Time	**70**		**80**	

Table 21 above indicates that with the DDI junction in place at M6 J23, the 2023 opening year scenario would operate within capacity on all arms with a maximum DOS of 76% at the A580 WB approach to the junction, and a maximum predicted queue of 12.06 PCUs in the PM peak.

Table 22 – 2033 DDI Future Year Global Junction Summary Results

AM			PM		
Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)	Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)
780.08	20.42	48.97	1077.65	18.71	68.81

Table 23 – 2033 DDI Future Year Scenario TRANSYT Summary, Key Arms

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
A580 East Lancashire Road WB Approach	78	11.63	85	14.68
M6 SB Off-Slip	39	4.49	46	6.19
A580 East Lancashire Road EB Approach	73	10.53	71	11.05
M6 NB Off-Slip	35	3.17	50	7.02
Cycle Time	**70**		**80**	

Table 23 above indicates that with the 3-lane DDI junction in place at M6 J23, the 2033 future year scenario in both AM and PM peaks would operate within capacity on all arms with a maximum DOS of 85% at the A580 WB approach to the junction, and a maximum predicted queue of 14.68 PCUs in the PM peak.

It should be noted that, of all the options assessed, this is the only option that provides sufficient capacity to ensure that the junction can operate within capacity until 2033.

3.5 LODGE LANE / A580 JUNCTION (EAST) (SCENARIO 7)

This option considers the impact of the potential closure of the northern and southern arms of Lodge Lane on the M6 / A580 junction. However, the assessment considers the operational performance a potential replacement junction to the east of the M6. The proposed signalised junction option has been assessed using TRANSYT 15 to establish whether a signalised junction could operate within capacity if a suitable point could be secured to divert Lodge Lane traffic.

The assessment provides pedestrian crossing facilities across Lodge Lane and across the A580. However, it is considered that pedestrian activity across the junction is likely to be low because of the remote location of the junction consequently, the junction has been modelled with pedestrian crossing being activated every alternate cycle.

Figure 6 shows the form of the junction being considered within TRANSYT.

Figure 6 – Lodge Lane / A580 East Lancashire Road (East) Signalised Junction as Modelled Within TRANSYT

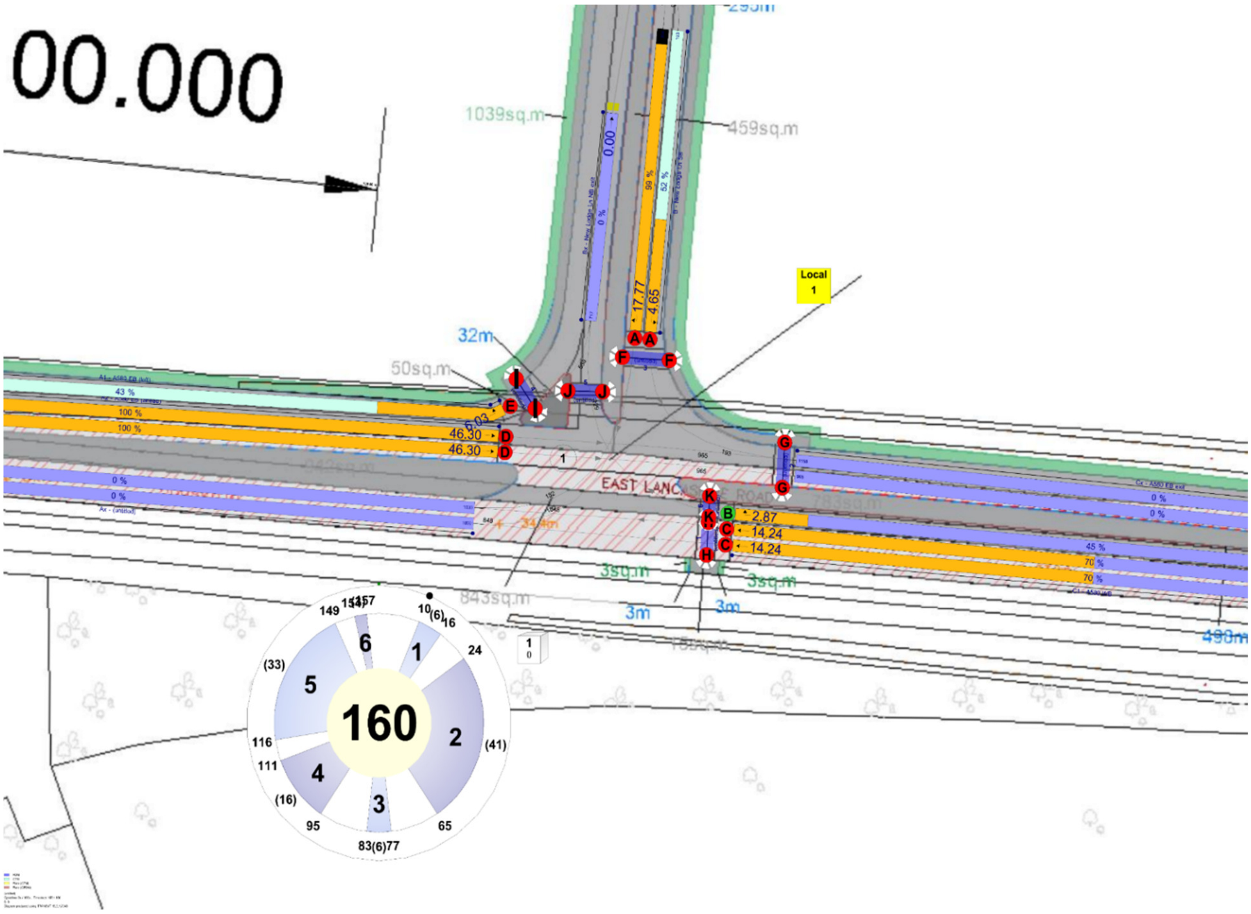


Table 24 to **Table 27** below provides a summary of the forecast performance of the new junction and the operation of its key approach arms in the opening year (2023) and future year (2033).

Table 24 – 2023 Lodge Lane (East) Global Junction Summary Results

AM			PM		
Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)	Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)
490.47	18.78	31.48	607.14	17.82	39.48

Table 25 - 2023 Lodge Lane (East) TRANSYT Summary, Key Arms

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
Lodge Lane N (SB)	93	9.37	94	14.4
A580 East Lancashire Road W (EB)	90	16.88	92	25.21
A580 East Lancashire Road E (WB)	66	10.7	64	12.76
Cycle Time	**140**		**160**	

Table 26 – 2033 Lodge Lane (East) Global Junction Summary Results

AM			PM		
Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)	Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)
808.08	15.56	52.86	1161.35	13.43	77.03

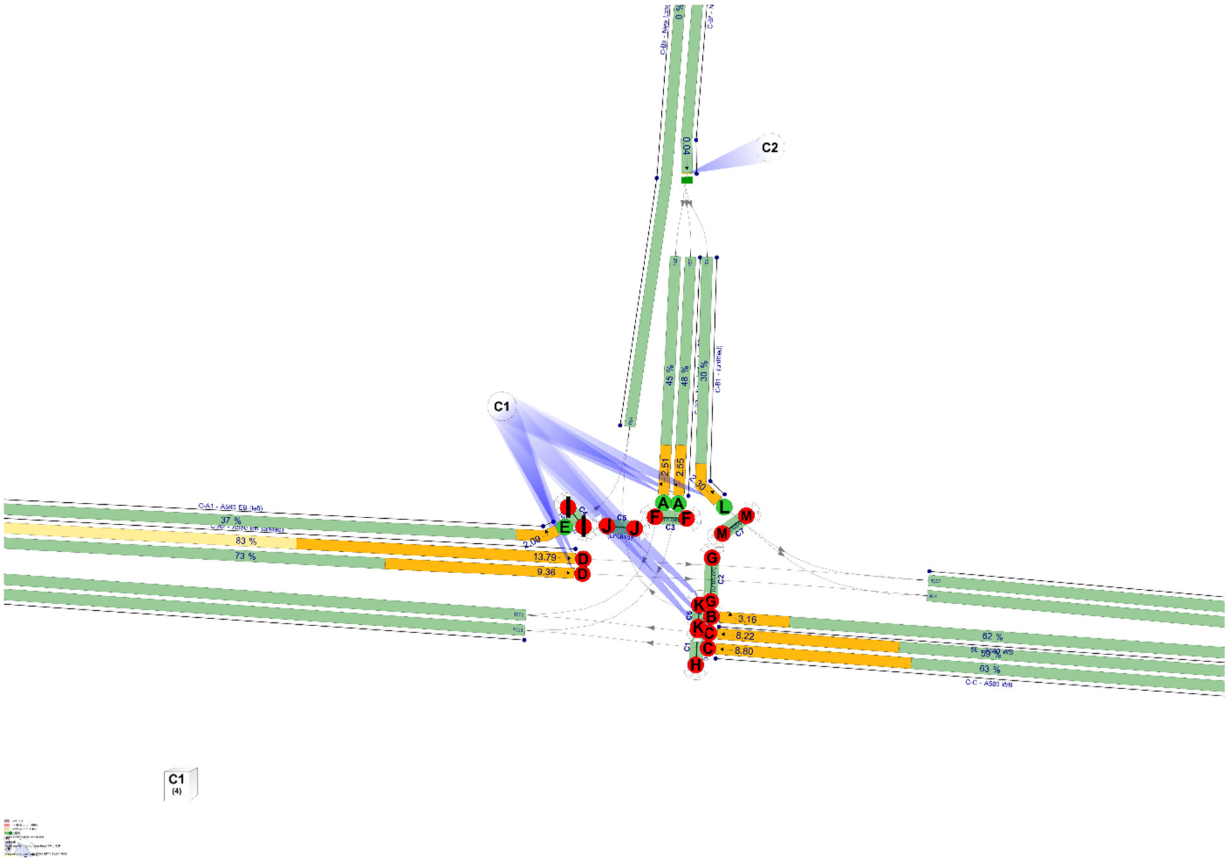
Table 27 - 2033 Lodge Lane (East) TRANSYT Summary, Key Arms

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
Lodge Lane N (SB)	100	15.92	99	17.77
A580 East Lancashire Road W (EB)	98	24.7	100	46.3
A580 East Lancashire Road E (WB)	71	12	70	14.24
Cycle Time	**140**		**160**	

Table 25 to **Table 27** above indicates that within both the 2023 & 2033 future year scenarios for the proposed Lodge Lane signalised junction to the east would operate above theoretical capacity in both the AM & PM peaks. However, further improvement to the junction i.e. providing a double right turn out of Lodge Lane and a left turn filter lane from the new Lodge Lane arm, would provide sufficient additional capacity to allow the junction to operate within capacity in 2033.

Figure 7 shows the form of the revised junction layout being considered within TRANSYT to provide a suitable design solution.

Figure 7 – Lodge Lane / A580 (East) Revised Junction Layout as Modelled Within TRANSYT



3.6 LODGE LANE / A580 JUNCTION (WEST) (SCENARIO 7)

This option considers the impact of the potential closure of the northern and southern arms of Lodge Lane on the M6 / A580 junction. However, this section considers the operational performance of a replacement junction to the west of the M6. The proposed signalised junction option has been assessed using TRANSYT 15 to establish whether a signalised junction could operate within capacity and what, if any improvements would be necessary to allow Lodge Lane traffic to be divert.

The assessment provides pedestrian crossing facilities across Lodge Lane only. However, it is considered that pedestrian activity across the junction is likely to be low because of the remote location of the junction consequently, the junction has been modelled with pedestrian crossing being activated every alternate cycle.

Figure 8 shows the form of the junction being considered within TRANSYT.

Figure 8 – Lodge Lane / A580 Junction (West) as Modelled Within TRANSYT

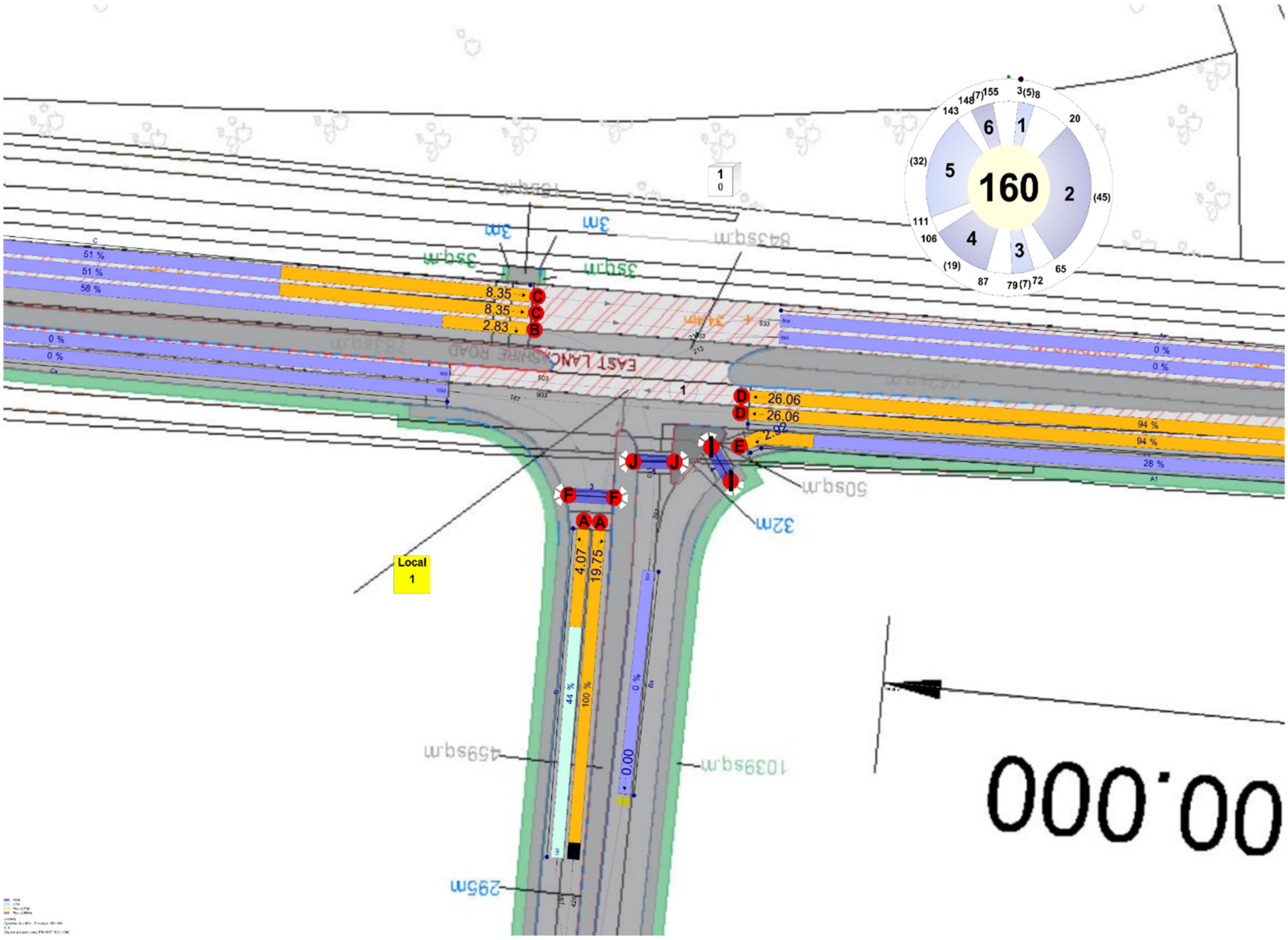


Table 28 to **Table 31** below provide a summary of the forecast performance of the new junction and the operation of its key approach arms in the opening year (2023) and future year (2033).

Table 28 – 2023 Lodge Lane (West) Global Junction Summary Results

AM			PM		
Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)	Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)
269.55	21.86	16.81	444.15	18.96	28.71

Table 29 - 2023 Lodge Lane (West) Scenario TRANSYT Summary, Key Arms

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
Lodge Lane S (NB)	82	7.3	95	14.87
A580 East Lancashire Road W (EB)	58	8.34	54	7.2
A580 East Lancashire Road E (WB)	68	10.04	86	19.67
Cycle Time	**140**		**160**	

Table 30 – 2033 Lodge Lane (West) Global Junction Summary Results

AM			PM		
Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)	Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)
322.55	21.22	20.21	662.7	16.5	43.54

Table 31 - 2033 Lodge Lane (West) TRANSYT Summary, Key Arms

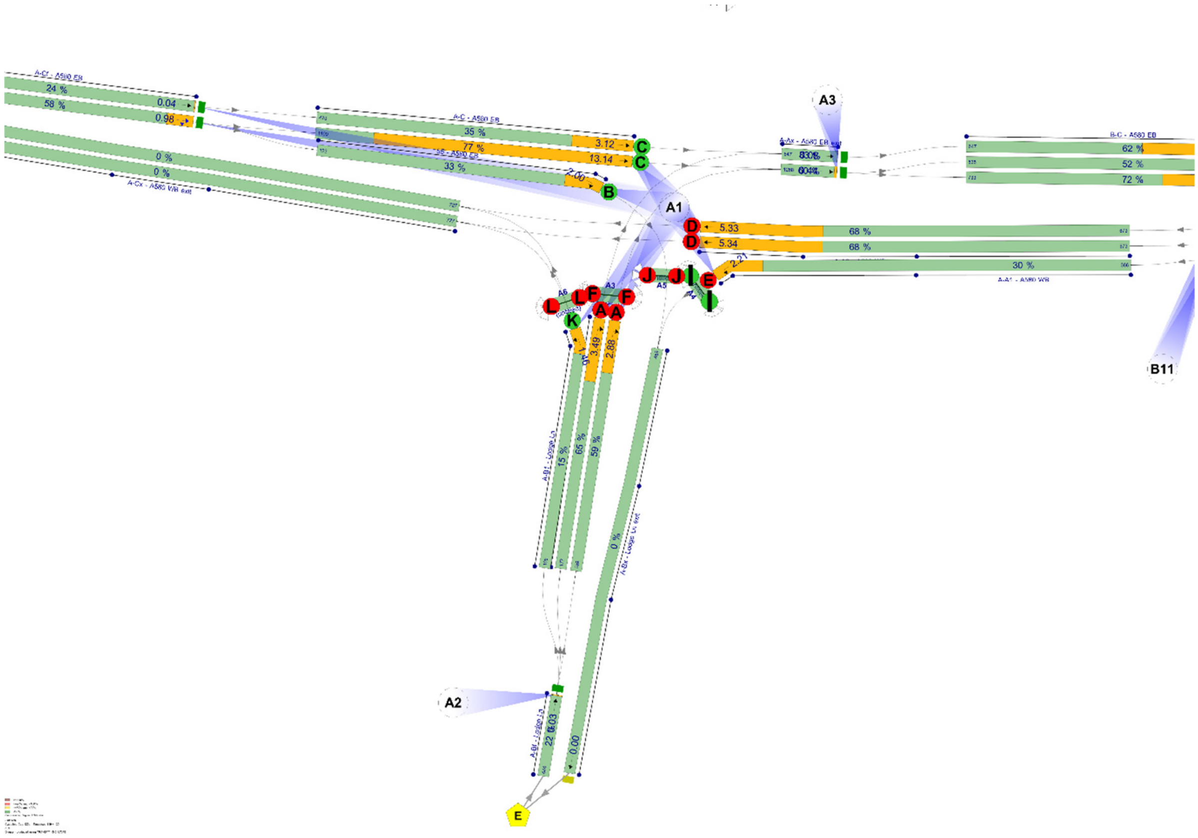
Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
Lodge Lane S (NB)	85	8.35	100	19.75
A580 East Lancashire Road W (EB)	63	9.57	58	8.35
A580 East Lancashire Road E (WB)	75	11.94	94	26.06
Cycle Time	**140**		**160**	

Table 29 to **Table 31** above indicate that within both the 2023 & 2033 future year scenarios for the proposed Lodge Lane signalised junction to the west would operate within capacity in the AM peak and above theoretical capacity in the PM peak respectively.

It is noted that the cycle times used within the Lodge Lane junction assessments are 140 seconds in the AM peak, and 160 in the PM peak. Whilst the cycle time within these junctions can be increased to maximise performance i.e. increasing the cycle time to 90 seconds, the greater cycle times at these junctions are likely to reduce the effectiveness of the proposed DDI design. Preliminary assessment of these junctions with a 90 second cycle time (consistent with the existing roundabout) suggest that, without further modification, this option still is forecast to exceed capacity and consequent, additional improvements would be required. Preliminary assessments with further improvements to the junction i.e. providing a double right turn out of Lodge Lane and a left turn filter lane from the new Lodge Lane arm, suggest that this would provide sufficient additional capacity to allow the junction to operate within capacity in 2033. This would also provide enough capacity to allow a lower cycle time to be adopted both on these two junctions and on the DDI improvement.

Figure 9 shows the form of the junction being considered within TRANSYT and extent of improvements necessary to provide a suitable design solution.

Figure 9 – Lodge Lane / A580 (East) Revised Junction Layout as Modelled Within TRANSYT



3.7 ASSESSMENT SUMMARY

Preliminary assessment of the operation of existing junction suggests that the existing junction arrangement has reached capacity and is forecast to reach absolute capacity by 2023. The assessment therefore suggests that there is a need to consider interventions with the junction within the next 3 years to avoid gridlock within the junction to enable future development within the area.

The closure of the Lodge Lane arms within the existing junction and creation of two new links on to the A580, to the west and east of the M6, will provide some temporary relief within the junction. However, the assessment indicates that the benefits to the existing junction are not sufficient to be considered in isolation.

Assessment of Scenario 6 with and without the Lodge Lane arms indicate that this option is not viable, primarily because the extensive intergreens required to maintain safety within the junction, which compromises the benefits gained by adding extra lanes on the approach to the junction.

Of all the options assessed within the report, the DDI option is the only option providing sufficient improvement in capacity to meet forecast traffic growth predicted by TEMPRO until 2033. However, this option (Scenario 9) cannot be considered in isolation and will require the closure and relocation of the Lodge Lane arms within the junction (as per Scenario 7).

It should be noted that, given the absence of any DDI junctions anywhere else within the UK, there are no prescribed standards for DDI junctions within the UK, and hence it's design will be subject to a rigorous approval process by the Department of Transport and by Highways England before it can be considered for introduction on UK roads. If such approval is forthcoming, the junction could be considered as a pilot scheme for use elsewhere within the UK.

Our assessment has shown that the relocated Lodge Lane arms will require a two lane right turn and single lane left turn out of the new junction to ensure that it will continue to operate within capacity until 2033. The additional capacity provided within the side road will also allow shorter cycle times to be provided on both the DDI junction and on the two new Lodge Lane junctions.

A summary of all the options assessed, including the existing (base) arrangement at M6 J23 is contained within **Table 32** for comparison purposes.

Table 32 – Preliminary Options Summary Table

EXISTING ARRANGEMENT

		2023 Base Year						2033 Base Year					
		AM			PM			AM			PM		
Junction - Scenario	Arm	DOS (%)	Mean Max Queue (PCU)	PI (£ Per Hr)	DOS (%)	Mean Max Queue (PCU)	PI (£ Per Hr)	DOS (%)	Mean Max Queue (PCU)	PI (£ Per Hr)	DOS (%)	Mean Max Queue (PCU)	PI (£ Per Hr)
M6 J23 / A580 Existing Arrangement	A580 East Lancashire Road WB Approach	91	17	1959	108	104	4929	95	21	5035	117	145	8579
	Lodge Lane N (SB)	69	5		109	50		102	17		102	13	
	M6 SB Off-Slip	94	12		74	9		96	14		81	10	
	A580 East Lancashire Road EB Approach	97	23		95	18		116	129		126	134	
	Lodge Lane S (NB)	53	5		109	55		57	5		124	87	
	M6 NB Off-Slip	80	9		89	16		83	10		85	16	

CONCEPT ARRANGEMENTS

		2023 DS						2033 DS					
		AM			PM			AM			PM		
Junction - Scenario	Arm	DOS (%)	Mean Max Queue (PCU)	PI (£ Per Hr)	DOS (%)	Mean Max Queue (PCU)	PI (£ Per Hr)	DOS (%)	Mean Max Queue (PCU)	PI (£ Per Hr)	DOS (%)	Mean Max Queue (PCU)	PI (£ Per Hr)
M6 J23 / A580 (Scenario 2) - EXISTING EXCLUDING LODGE LANE	A580 East Lancashire Road WB Approach	90	17	1265	94	21	3362	97	23	1710	120	114	5169
	M6 SB Off-Slip	73	8		78	9		75	9		84	10	
	A580 East Lancashire Road EB Approach	88	18		103	83		90	20		98	25	
	M6 NB Off-Slip	69	8		84	13		82	10		97	21	
M6 J23 / A580 (Scenario 6) - IMPROVEMENT OPTION INCLUDING LODGE LANE	A580 East Lancashire Road WB Approach	78	10	3014	60	9	4418	77	10	4920	63	9	6253
	Lodge Lane N (SB)	78	5		79	6		93	8		86	8	
	M6 SB Off-Slip	78	10		82	12		88	12		89	14	
	A580 East Lancashire Road EB Approach	85	11		85	12		93	15		96	17	
	Lodge Lane S (NB)	96	9		97	11		104	39		114	70	
	M6 NB Off-Slip	116	101		127	178		148	179		137	225	
M6 J23 / A580 (Scenario 6) - IMPROVEMENT OPTION EXCLUDING LODGE LANE	A580 East Lancashire Road WB Approach	66	9	1108	64	9	1521	72	10	1312	87	13	2697
	M6 SB Off-Slip	80	9		88	11		87	11		100	19	
	A580 East Lancashire Road EB Approach	69	10		86	13		74	11		102	31	
	M6 NB Off-Slip	66	8		81	12		72	9		94	18	
M6 J23 / A580 (Scenario 9)- DDI IMPROVEMENT OPTION	A580 East Lancashire Road WB Approach	72	10	679	76	12	888	78	12	780	85	15	1078
	M6 SB Off-Slip	36	4		41	5		39	4		46	6	
	A580 East Lancashire Road EB Approach	71	10		63	9		73	11		71	11	
	M6 NB Off-Slip	30	3		47	5		35	3		50	7	
A49 LODGE LN (East arm) / A580 (Scenario 7)	A49 Lodge Lane SB	93	9	490	94	14	607	100	16	808	99	18	1161
	A580 East Lancashire Road EB	90	17		92	25		98	25		100	46	
	A580 East Lancashire Road WB	66	11		64	13		71	12		70	14	
A49 LODGE LN (West arm) / A580 (Scenario 7)	A49 Lodge Lane NB	82	7	270	95	15	444	85	8	323	100	20	663
	A580 East Lancashire Road EB	58	8		54	7		63	10		58	8	
	A580 East Lancashire Road WB	68	10		86	20		75	12		94	26	

The following section provides a combined assessment of the best performing junction option assessed for the M6 J23 / A580 junction along with the improvement options for the diverted A49 / A580 junction to the east and west of the motorway.

4 COMBINED NETWORK MODELLING (SCENARIO 7 AND 9)

4.1 DDI OPTION & LODGE LANE / A580 SIGNALISED JUNCTIONS

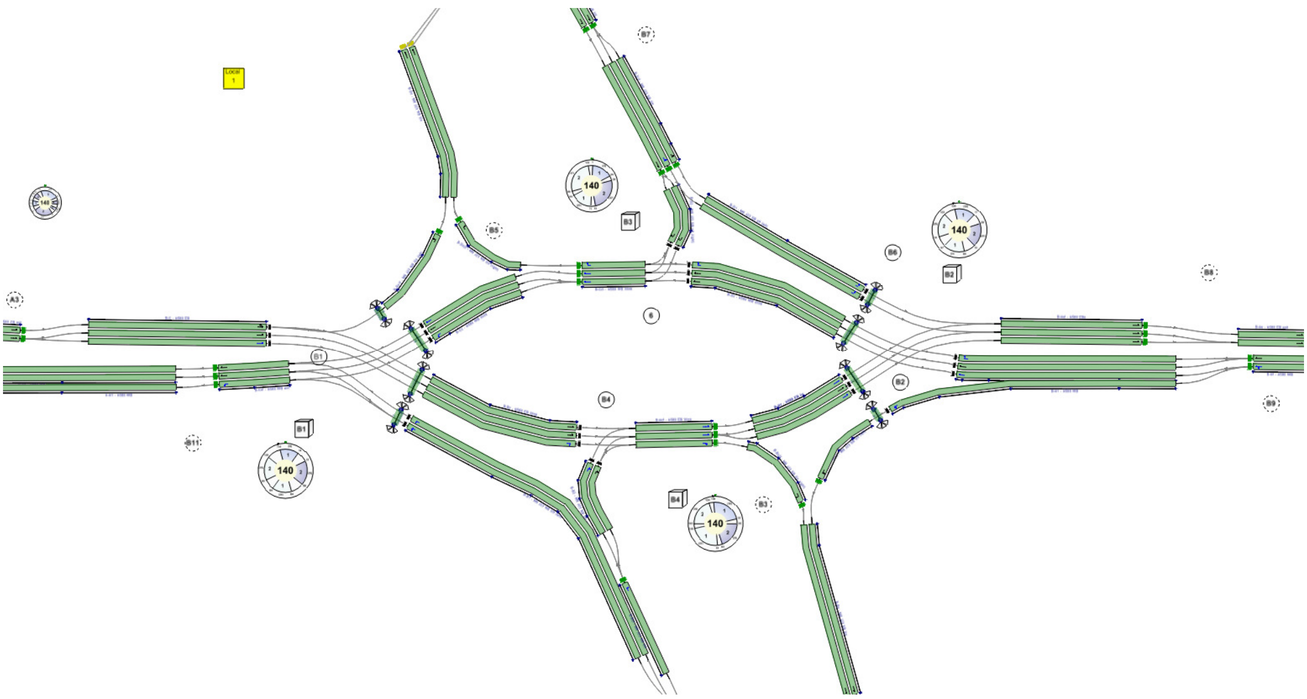
The results of the three individual junction assessments indicate that the design of each junction can operate within capacity in both 2023 opening year 2033 future year scenarios. However, assessing junctions in isolation will often mask the effect of platoon flows from one signalised junction to another and will often hide issues relating to the balancing of flows between lanes and junctions, particularly where drivers have insufficient time to swap lanes between junctions. The effect of combining the three junctions into a single TRANSYT model results in the need to consider additional improvements at the junctions and on DDI layout. These changes included:

- Providing an additional left turn filter lane on the A580 westbound.
- Reallocating the middle and offside lane as A580 westbound ahead movements on internal links and nearside lane to feed left onto Lodge Lane at the next junction.
- Providing 3 lanes between the westbound exit from the DDI and the new western Lodge Lane junction because the short 3-to-2 lane merging distance between the two junctions.

These improvements also allow a lower cycle time to be provided at DDI junction and thus allows the highway network to operate more efficiently.

Figure 10 shows the form of the improved DDI junction modelled within TRANSYT.

Figure 10 – Improved M6 J23 / A580 East Lancashire Road DDI



Due to the proximity of the overbridge to the west of M6 J23, the junction spacing between the proposed Lodge Lane A580 (West) and J23 had to be revised, bringing it closer to the SRN junction.

The form of the improved design of the new eastern and western Lodge Lane junctions as modelled within TRANSYT are set out within **Figure 11** and **Figure 12** below.

Figure 11 – Improved Lodge Lane / A580 East Lancashire Road (West) junction

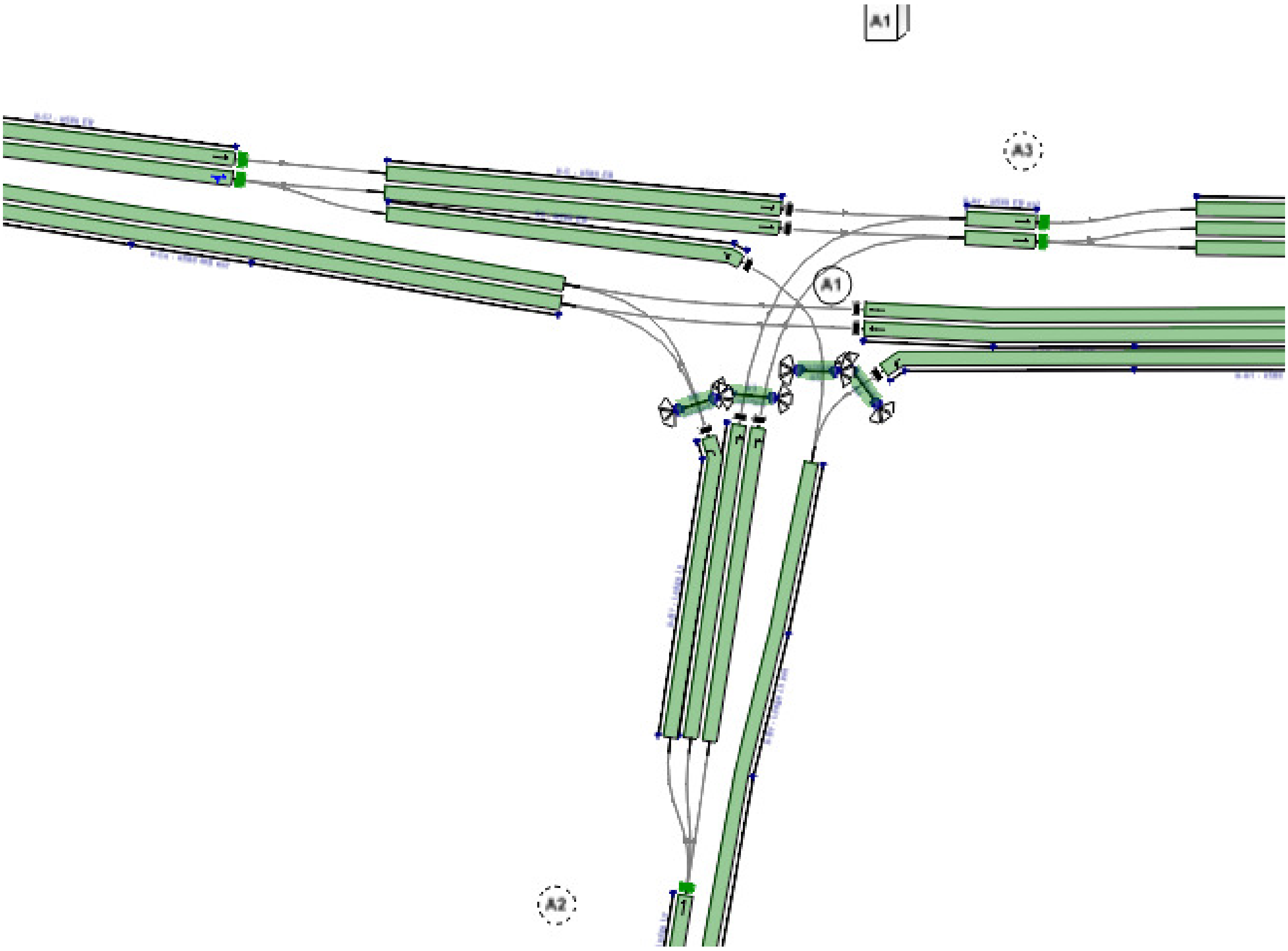
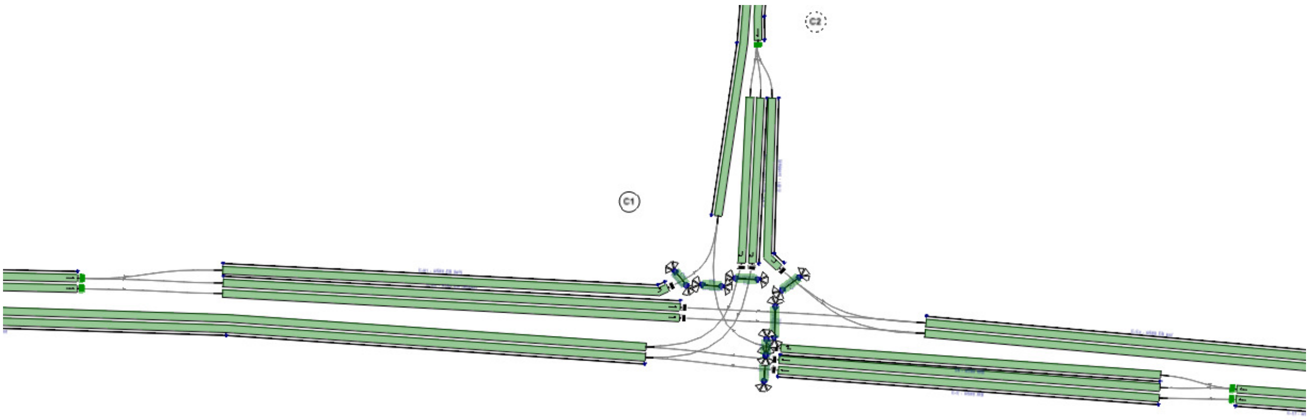


Figure 12 – Improved Lodge Lane / A580 East Lancashire Road (East) junction



Improvements to the Lodge Lane junctions include:

- Providing a left turn filter lane from the Lodge Lane arm, allowing pedestrians to cross in the shadow of the minor road stage
- Providing a double right turn out of Lodge Lane

For safety reasons, it is recommended that a pedestrian island be introduced between the right turn lane into Lodge Lane (Phase B) and the two ahead lanes along the A580 heading WB (Phase C). This would reinforce the need for pedestrians to check before they cross in front of mixed stationary/live traffic lanes and to provide a second offside signal head, where the offside signal may be obscured by stationary traffic within the offside lane.

The existing the 40mph speed limit on the A580 will also need to be extended to include the proposed Lodge Lane junctions.

Taking forward the DDI option and the Lodge Lane junctions either side of M6 J23, the three options have been combined and assessed within a single TRANSYT model, to evaluate how the junctions would perform in conjunction with one another, to ensure that lane balancing is properly catered for between the junctions and to establish the timing offsets between all three junctions.

4.2 2033 DDI & COMBINED LODGE LANE / A580 CAPACITY ASSESSMENTS

Table 33 to **Table 36** below provides a summary of the forecast performance of the preferred combined junction and the operation of its key approach arms in the 2033 future assessment assuming a lower cycle time of 60 second and 70 seconds in the AM and PM peak respectively.

Table 33 - 2033 Combined Option Summary Results

AM			PM		
Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)	Network Performance Index (£ Per Hour)	Average Speed (kph)	Total Delay (PCU-hr / hr)
1166.29	21.94	72.13	1584.36	20.56	98.92

Table 34 - 2033 DDI (Combined) Capacity Summary, Key Arms

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
A580 East Lancashire Road WB Approach	71	8.4	84	12.97
M6 SB Off-Slip	40	4	45	5.67
A580 East Lancashire Road EB Approach	72	10.53	78	13.49
M6 NB Off-Slip	53	4.06	54	6.54
Cycle Time	**60 (double cycled)**		**70 (double cycled)**	

Table 34 above indicates that with the 3-lane DDI junction in place at M6 J23, the 2033 future year scenario in both AM and PM peaks would operate within capacity on all arms with a maximum DOS of 84% at the A580 WB approach to the junction, and a maximum predicted queue of 12.97 PCUs in the PM peak.

It is concluded through the TRANSYT modelling that the junction would operate within capacity beyond 2033 in both AM & PM peaks.

Table 35 - 2033 Lodge Lane (East) TRANSYT Summary, Key Arms

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
Lodge Lane N (SB)	48	2.55	75	4.6
A580 East Lancashire Road W (EB)	83	13.79	83	18.55
A580 East Lancashire Road E (WB)	63	8.8	58	7.69
Cycle Time	**60 (with alternate ped stage)**		**70 (with alternate ped stage)**	

Table 36 - 2033 Lodge Lane (West) TRANSYT Summary, Key Arms

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
Lodge Lane S (NB)	65	3.49	81	5.91
A580 East Lancashire Road W (EB)	68	5.34	80	12.6
A580 East Lancashire Road E (WB)	77	13.14	54	7.83
Cycle Time	**60 (with alternate ped stage)**		**70 (with alternate ped stage)**	

Table 35 to **Table 36** above indicate that within the 2033 future year scenarios for both proposed Lodge Lane signalised junction to the east and west respectively would operate within capacity in both AM and PM peaks with the further improvements made to the Lodge Lane approach arm.

5 COMBINED NETWORK OPTION (SCENARIO 7 AND 9) – SATURN SENSITIVITY TEST

5.1 OVERVIEW

The combined option for scenario outlined within the previous chapter, assumes future year TEMPRO growth is applied across all arms and lanes of the junction equally. In order to ensure the junction can cater for the changes in flows based on their origin and destination, the change in flows between the 'Do Minimum' and 'Do Something' flows forecast by the SATURN model for St Helens, has been refined and proportionally adjusted to the reflect the lower traffic growth levels forecast by TEMPRO. The forecast changes in movements between the 2017 Saturn Base Flows and 2033 Saturn DDI Flows have been added to the 2018 Survey flows to establish how these changes may affect performance of the combined option, and to inform on what additional modifications (if any) may be required to the junction. The resulting changes in flows forecast by SATURN are set out within **Table 37** and **Table 38** below.

Figure 13 – Origin/ Destination Zones Diagram

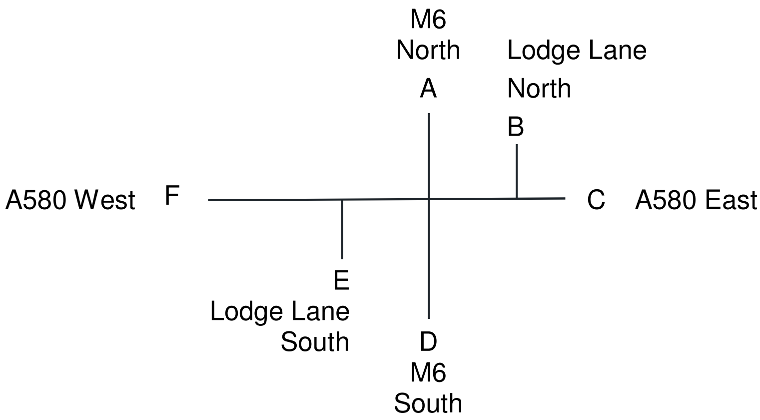


Table 37 – Changes in SATURN Flows - Adjusted for TEMPRO growth (AM)

AM Peak	A	B	C	D	E	F	SUM
A	0	-38	106	0	22	52	**142**
B	-8	0	30	-22	-8	-13	**-21**
C	8	-13	0	85	2	-6	**78**
D	0	37	86	0	65	215	**402**
E	-20	-8	-16	36	0	39	**32**
F	30	-30	16	219	4	0	**239**
SUM	**10**	**-50**	**221**	**318**	**85**	**287**	871

Table 38 – Changes in SATURN Flows - Adjusted for TEMPRO growth (PM)

PM Peak	A	B	C	D	E	F	SUM
A	0	-67	186	0	58	106	**283**
B	0	0	5	-33	-19	-56	**-103**
C	-55	14	0	112	12	16	**99**
D	0	-59	140	0	108	225	**415**
E	-43	-14	-31	9	0	34	**-45**
F	15	-47	107	210	26	0	**312**
SUM	**-83**	**-174**	**407**	**298**	**185**	**326**	960

Based on the flows shown in **Table 37** and **Table 38** above, the SATURN modelling predicts a significant increase in both movements between the western arm of the A580 and the southern arm of the M6 during the AM and PM peaks. Less significant increases are also observed between the northern and southern arms of the M6, east towards Manchester, and towards west Liverpool, St Helens and Newton-le-Willows.

5.2 CAPACITY ASSESSMENT RESULTS

The forecast changes were added to the original 2018 Survey flows to arrive at the adjusted 2033 Do Something scenario flows for the preferred option and these were inputted into the combined TRANSYT model. The summary assessment results of the revised 2033 Do Something flows for the combined option are set out within **Table 39** below.

Table 39 – 2033 DDI Combined Option (Sensitivity Test) Capacity Summary

Arm	AM		PM	
	DOS (%)	Mean Max Queue (PCU)	DOS (%)	Mean Max Queue (PCU)
A580 East Lancashire Road WB Approach	60	6.49	64	8.17
M6 SB Off-Slip	38	3.83	48	5.75
A580 East Lancashire Road EB Approach	89	12.2	75	10.63
M6 NB Off-Slip	50	4.33	63	9.01
Cycle Time	**60 (double cycled)**		**70 (double cycled)**	

The revised TRANSYT assessment using SATURN adjusted flows indicates that the junction can accommodate the change in flows with only minor optimisation of the signal timings.

6 CONCLUSION

6.1 SUMMARY

The Diverging Diamond Interchange (DDI) option is a design to provide a more efficient, safer and simpler layout than a traditional signalised roundabout option. The use of DDI junctions is already well established in the USA and in Europe but has yet to be implemented within the UK.

The diverging diamond interchange provides two stage signalised operation at for key nodes within the interchange. This allows the time lost for safety clearance to be kept to a minimum. The junction derives most of the improvement in capacity by removing opposed right turns movements, and by allowing left turn movements to free flow onto the slip roads. Removing the opposed right turn movements usually provides safety benefits by removing driver indecision, and the simplified junction arrangement reduces side swipe conflicts that are normally associated with drivers having to swap lanes between the closely spaces stoplines within the internal arms of signalised roundabouts.

Haydock Island currently experiences a high number of right turning movements from the A580 onto the M6, has small stacking spaces between stop lines and issues around the none compliance with reds at signals within the existing layout.

The DDI design at this junction requires 3 lane approaches on the A580, and the Lodge Lane arms of the existing junction will require diverting either side of the A580 in order to accommodate the DDI arrangement. The modelling assumes the petrol filling station to be relocated but alternative access arrangements may be considered subject to agreement with the land owners.

The concept of the DDI scheme is to provide footways and cycleways through the centre, rather than around the outside of the junction and these users will cross in the shadow of traffic movements. The large vehicle-free pedestrian zone in the middle of the junction is protected by concrete barriers and can be enhance with landscaping to encourage the use of sustainable modes of transport and can provide a more pleasant safer space for these users. Due to the perceived lack of existing pedestrian provisions and safety concerns at Haydock Island, it is noted that pedestrians and cyclists rarely if ever use M6 J23, so with the improved pedestrian routes in place, there is an opportunity to promote sustainable travel for employees / residents with the vicinity of the area.

An assessment of the 2033 future year scenario indicates that the key arms of the proposed combined junction would still operate within capacity and along with the improved new junctions being created from Lodge Lane onto the A580, there is an opportunity to provide improved capacity at this key connection to the strategic route network.

Capacity assessments using the TRANSYT model indicate that with DDI junction in place at M6 J23, with the Lodge Lane arms on either side of the 2033 future year scenario would operate within capacity on all arms with a maximum DOS of 84% at the A580 WB approach to the junction, and a maximum predicted queue of 13 PCUs in the PM peak.

For the purpose of sensitivity testing, the SATURN model for St Helens has also been used to refine the flows to provide a forecast of how future traffic growth may be applied to reflect changes in traffic routing through the junction based on their origin and destination.

The combined TRANSYT assessment for the DDI option (Scenario7) and diverted Lodge Lane arms (Scenario 9) indicates that the junction options can accommodate potential changes in traffic patterns in 2033, provided that traffic growth is maintained at the levels forecast by TEMPRO.

6.2 NEXT STEPS

It should be noted that all the assessments undertaken within this report assume that the petrol filling station, located within the north-western quadrant of the A580 /M6 junction, will be relocated elsewhere along the A580 (subject to negotiation with relevant parties). However, it is for St Helens Council to consider whether it would be more cost effective to modify the petrol filling station access rather than relocate this facility. Should a suitable access replacement be secured, additional assessment may be required to consider the effect of maintaining this traffic through the local highway network.

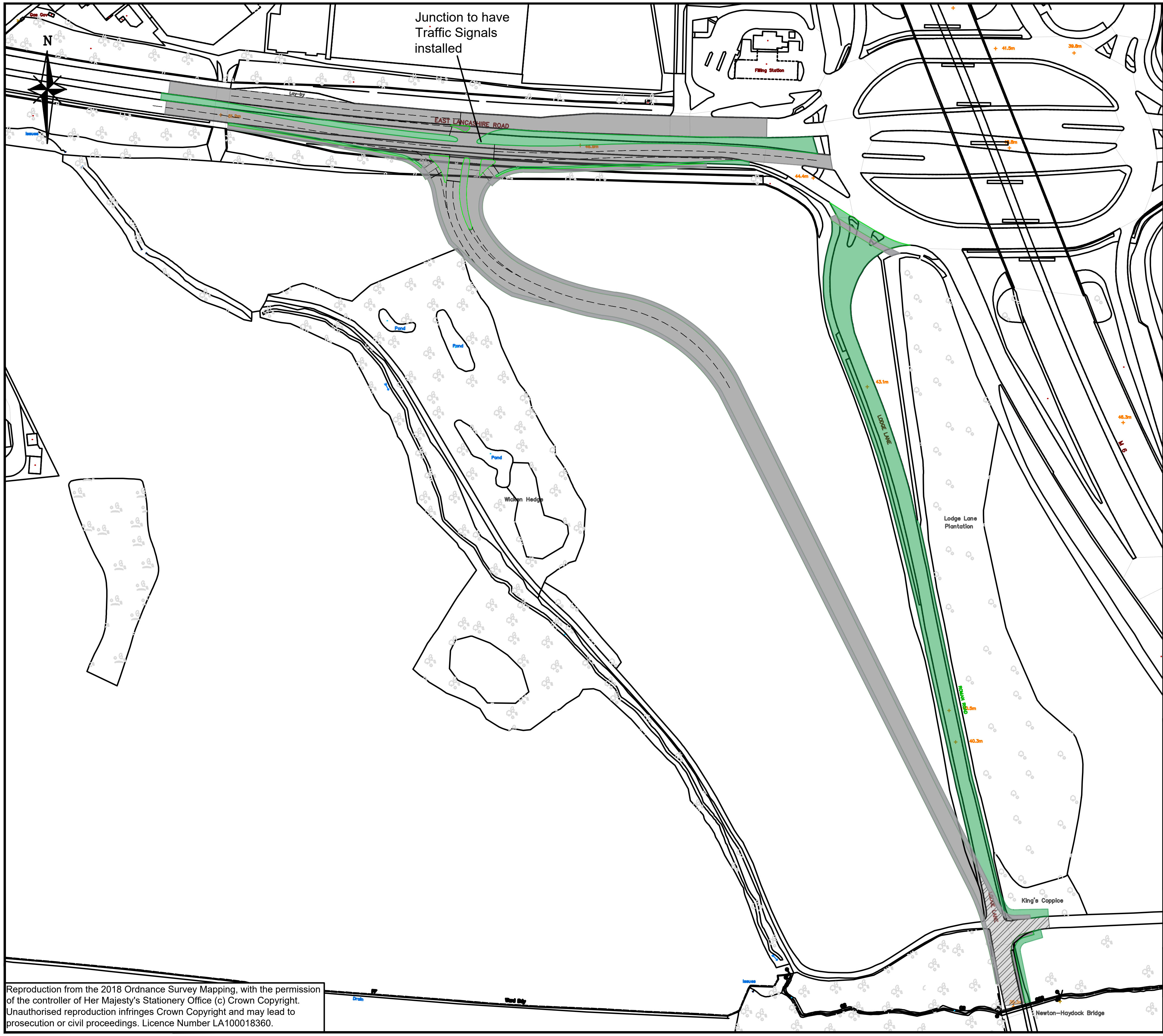
These junctions are located in proximity to Haydock Racecourse and hence it would be prudent to check the operation of the junctions on a typical race day to ensure that the junction can accommodate the seasonal change in flows on race days.

8 First Street
Manchester
M15 4RP

wsp.com

Appendix H

DRAWINGS OF PREFERRED OPTIONS



DO NOT SCALE

REV	DATE	BY	DESCRIPTION	CHK	APP
P02	25/01/2019	MH	AMENDED LAYOUT FOR INCREASED CAPACITY OF JUNCTION	AI	MP
P01	12/07/2018	MH	FIRST ISSUE	AI	MP

DRAWING STATUS: S2 - FOR INFORMATION

wsp

1st Floor Exchange Station, Tithebarn Street, Liverpool, L2 2QP

CLIENT: St.Helens Council

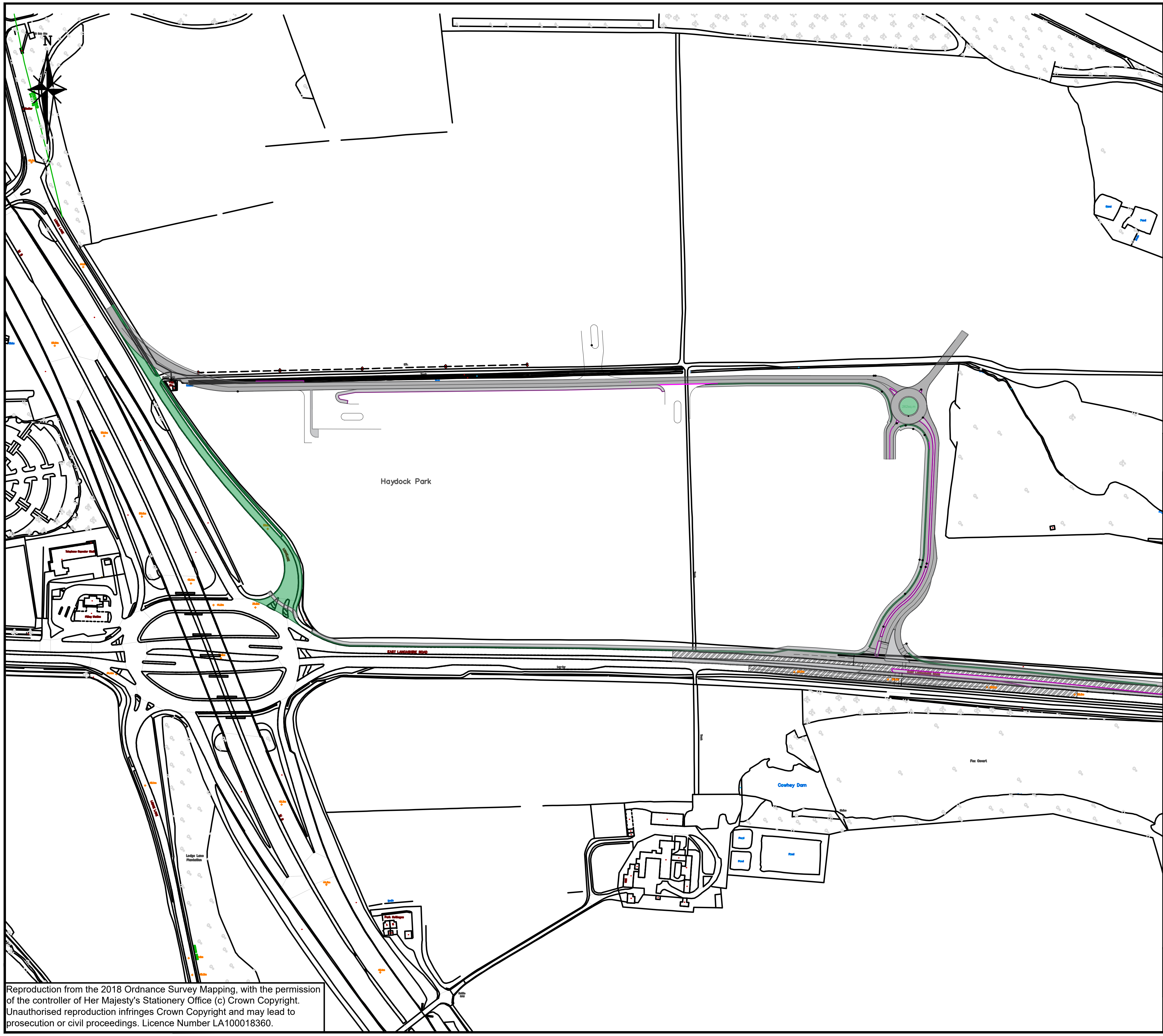
PROJECT: M6 Junction 23 Improvement Scheme

TITLE: Option A Layout 1 - Lodge Ln SW Option

SCALE @ A3: N.T.S.	CHECKED: AI		APPROVED: MB
PROJECT No: 70044810	DESIGNED: MH	DRAWN: MH	DATE: January 19

DRAWING No: M6J23-WSP-HGN-00-CH-SK-0009

REV: P02



DO NOT SCALE

REV	DATE	BY	DESCRIPTION	CHK	APP
P02	25/01/2019	MH	AMENDED LAYOUT FOR INCREASED CAPACITY OF JUNCTION	AI	MP
P01	12/07/2018	MH	FIRST ISSUE	AI	MP

DRAWING STATUS: S2 - FOR INFORMATION

wsp

1st Floor Exchange Station, Tithebarn Street, Liverpool, L2 2QP

CLIENT:

St.Helens Council

PROJECT:

M6 Junction 23 Improvement Scheme

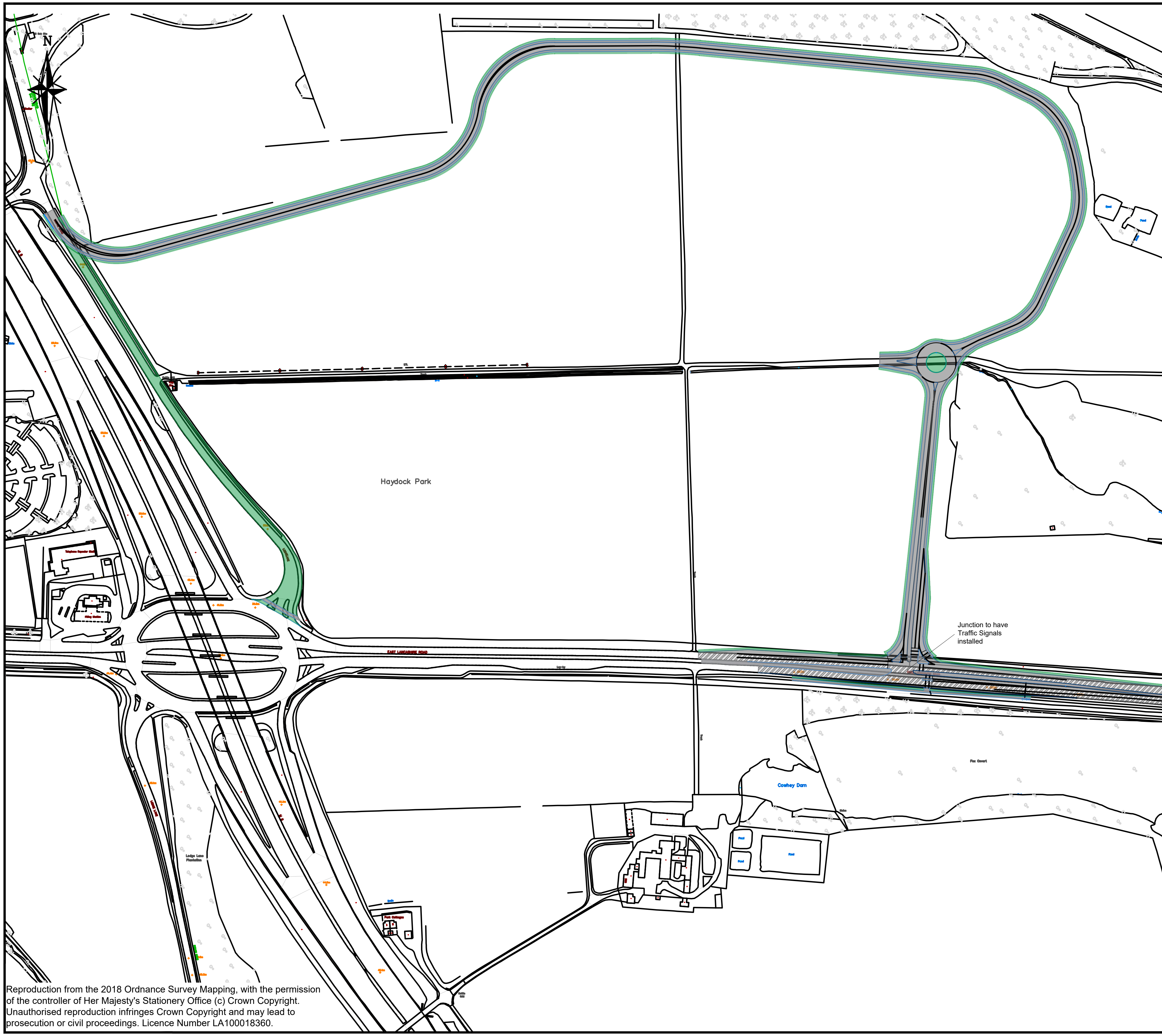
TITLE:

Option A Layout 2
Lodge Lane Peel Alignment

SCALE @ A3:	CHECKED:		APPROVED:
N.T.S.	AI		MB
PROJECT No:	DESIGNED:	DRAWN:	DATE:
70044810	MH	MH	January 19

DRAWING No: M6J23-WSP-HGN-00-CH-SK-0010

REV: P02



DO NOT SCALE

REV	DATE	BY	DESCRIPTION	CHK	APP
P02	25/01/2019	MH	AMENDED LAYOUT FOR INCREASED CAPACITY OF JUNCTION	AI	MB
P01	12/07/2018	MH	FIRST ISSUE	AI	MB

DRAWING STATUS: S2 - FOR INFORMATION

wsp

1st Floor Exchange Station, Tithebarn Street, Liverpool, L2 2QP

CLIENT: St.Helens Council

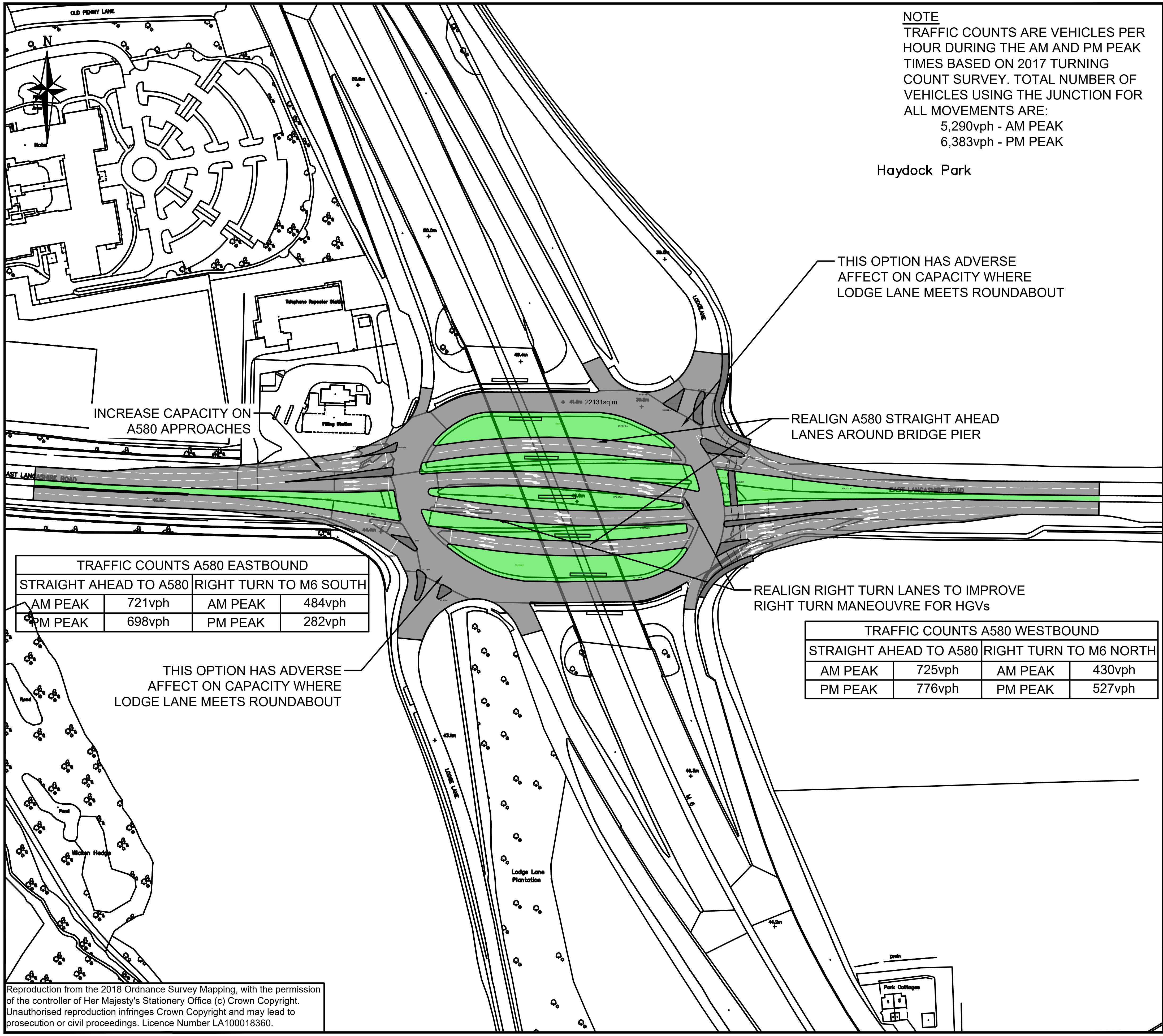
PROJECT: M6 Junction 23 Improvement Scheme

TITLE: Option A Layout 3
Lodge Ln Perimeter of Peel Site

SCALE @ A3:	CHECKED:		APPROVED:
N.T.S.	AI		MB
PROJECT No:	DESIGNED:	DRAWN:	DATE:
70044810	MH	MH	January 19

DRAWING No: M6J23-WSP-HGN-00-CH-SK-0011

REV: P02



NOTE
TRAFFIC COUNTS ARE VEHICLES PER HOUR DURING THE AM AND PM PEAK TIMES BASED ON 2017 TURNING COUNT SURVEY. TOTAL NUMBER OF VEHICLES USING THE JUNCTION FOR ALL MOVEMENTS ARE:
5,290vph - AM PEAK
6,383vph - PM PEAK

TRAFFIC COUNTS A580 EASTBOUND			
STRAIGHT AHEAD TO A580		RIGHT TURN TO M6 SOUTH	
AM PEAK	721vph	AM PEAK	484vph
PM PEAK	698vph	PM PEAK	282vph

TRAFFIC COUNTS A580 WESTBOUND			
STRAIGHT AHEAD TO A580		RIGHT TURN TO M6 NORTH	
AM PEAK	725vph	AM PEAK	430vph
PM PEAK	776vph	PM PEAK	527vph

DO NOT SCALE

OPTION B

- ONE OF THE ISSUES IDENTIFIED WITH THE JUNCTION IS THAT THE CURRENT STACKING PROVISION THROUGH THE CENTRE OF THE ROUNDABOUT IS NOT FULLY UTILISED. IN PARTICULAR, LANES ARE REGULARLY BLOCKED BY QUEUING HGVs.
- IN ADDITION, THE RIGHT TURN MOVEMENT FOR TRAFFIC JOINING THE M6 IS VERY TIGHT, PARTICULARLY FOR HGVs, AND THIS HAS AN IMPACT ON SATURATION FLOWS THROUGH THE JUNCTION.
- BY REALIGNING THE STRAIGHT AHEAD MOVEMENT THROUGH THE GAP IN THE BRIDGE PIERS, THIS ALLOWS THE ALIGNMENT OF THE RIGHT TURN LANES TO BE IMPROVED, IN ADDITION TO INCREASING CAPACITY THROUGH THE JUNCTION.

REV	DATE	BY	DESCRIPTION	CHK	APP
P01	08/02/2019	MH	FIRST ISSUE	AI	MB

DRAWING STATUS: S2 - FOR INFORMATION

wsp
1st Floor Exchange Station, Tithebarn Street, Liverpool, L2 2QP

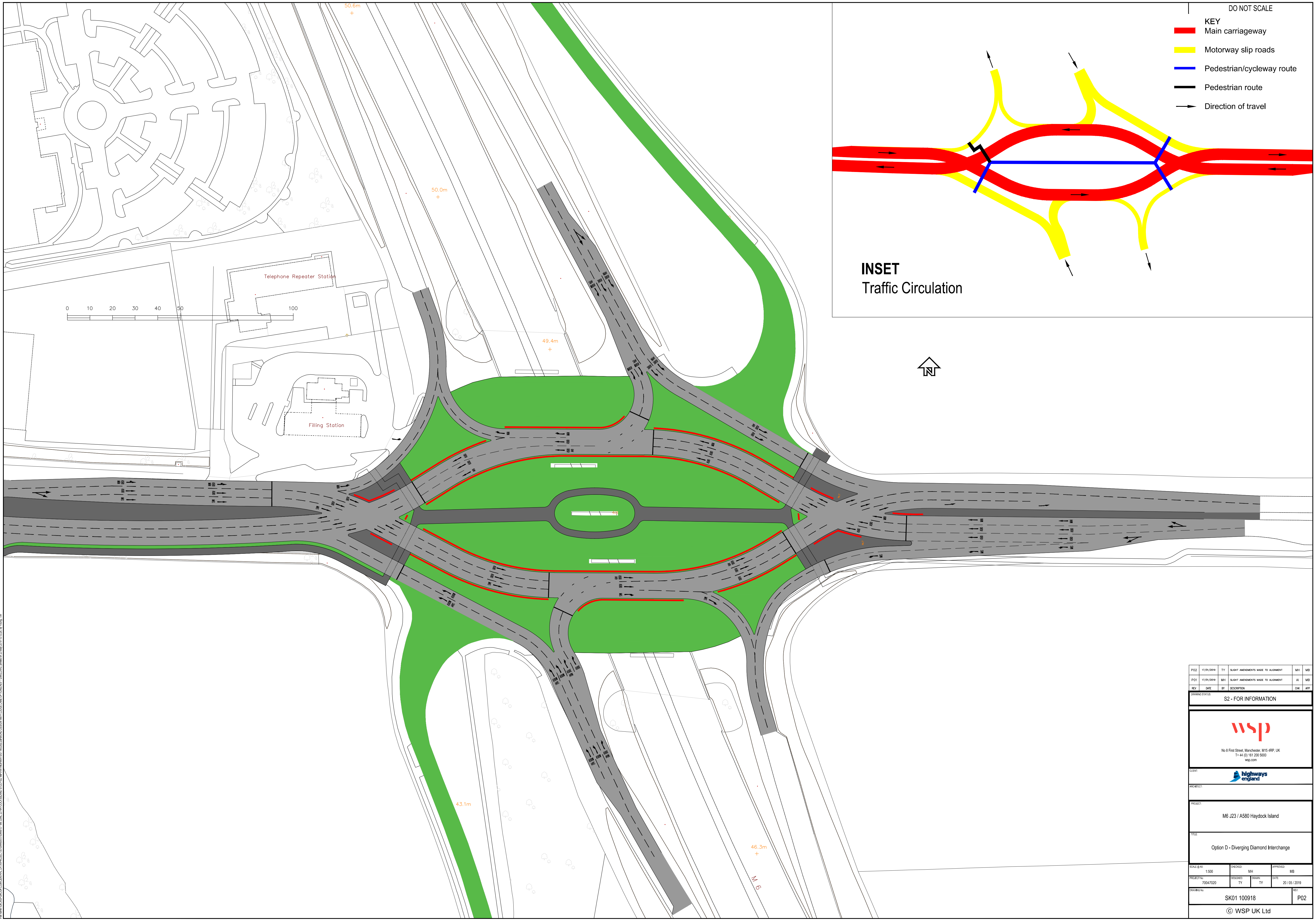
CLIENT: St.Helens Council

PROJECT: M6 Junction 23 Improvement Scheme

TITLE: Option B
Realign Centre of Junction

SCALE @ A3: N.T.S.	CHECKED: AI		APPROVED: MB
PROJECT No: 70044810	DESIGNED: MH	DRAWN: MH	DATE: January 19

DRAWING No: M6J23-WSP-HGN-00-CH-SK-0006
REV: P01



REV	DATE	BY	DESCRIPTION	CHK	APP
P02	17/01/2019	TY	SLIGHT AMENDMENTS MADE TO ALIGNMENT	MH	MB
P01	17/01/2019	MH	SLIGHT AMENDMENTS MADE TO ALIGNMENT	AI	MB

DRAWING STATUS: S2 - FOR INFORMATION

wsp
No 8 First Street, Manchester, M15 4RP, UK
T+ 44 (0) 161 200 5000
wsp.com

CLIENT: highways england

ARCHITECT:

PROJECT: M6 J23 / A580 Haydock Island

TITLE: Option D - Diverging Diamond Interchange

SCALE @ A0: 1:500	CHECKED: MH		APPROVED: MB
PROJECT No: 70047020	DESIGNED: TY	DRAWN: TY	DATE: 20 / 05 / 2019

DRAWING No: SK01 100918 — REV: P02

Appendix I

COST ESTIMATES

HIGHWAYS DESIGN - HIGH LEVEL ESTIMATING SYSTEM

Client:- Highways England

Very Early Stage Indicative Costing

Initial Costing Using basic plan drawing M6J23-WSP-HGN-00-CH-SK-0009 (P01)

M6 J23/A580 Haydock Island

Option A Layout 1 - Diverted A49 Lodge Lane SW Quadrant

Brief Work Content			unit	Approx all in unit rate	Amount
Cost Base deemed Q3 2018					
RoadWorks:-					
Roadworks New Highway (assumed on Embankments/in cutting)		0	sq m	£340	£0
Roadworks New Highway (at Grade)		4,972	sq m	£220	£1,093,840
Upgraded Highways Part New/Part Reconstruction/Part Removed (at grade)		3,304	sq m	£135	£446,040
Existing Highways top layer reconstruction allowance		340	sq m	£50	£17,000
Existing Highways,footways/cycleways/paved areas to be abandoned/removed & made good		4,458	sq m	£54	£238,503
Items considered additional to content of all in Roadworks rates used above					
Cycle/Footways/splitter islands (assumed at grade/minor fill)		3,467	sq m	£55	£190,685
Creating New verges		3,758	sq m	incl	£0
Vertical Concrete Safety Barrier		0	lm	£275	£0
traffic signal installation	(per carriageway & pedestrian controlled leg) power etc	0	complete installation	£37,500	£0
	(per carriageway controlled leg) power etc	0	complete installation	£30,000	£0
	(per pedestrian controlled leg) power etc	0	complete installation	£20,000	£0
Contingencies (unmeasured/imprecise design details and specification undefined at this stage)				**15.0%**	£297,910
			Sub-Total Roadworks		**£2,283,978**
Structures:-					
None indicated at current early design stage		0	sq m		£0
Items considered additional to content of all in Structures rates used above					
None indicated at current early design stage					£0

Contingencies (unmeasured/imprecise design details and specification undefined at this stage)		**5.0%**	£0
		Sub-Total Structures	**£0**
		Sub Total Basic construction works costs	**£2,283,978**
Preliminaries ((incl OH&P) 20%, temp works 2.5%, TM 8.5%)		**31.0%**	£708,033
OTHER MAJOR ITEMS			
None identified at present			£0
WORKS for and BY STATUTORY and OTHER AUTHORITIES incl dealing with lighting and communications installations (5% allowed currently)		(allowance only at this stage, no exact details but likely to be complex)	£149,601
LAND COSTS including compensation **1.22**	HA (rural)?	£40,500.00	£49,398
Feasibility Studies,SURVEYS, INVESTIGATION & DATA COLLECTION, DESIGN DEVELOPMENT & DOCUMENT PREPARATION, PROCUREMENT, SCHEME SUPERVISION, MANAGEMENT AND ADMINISTRATION. Plus CLIENT COSTS and INTERESTED PARTIES.		**16.0%**	£510,562
		GROSS SCHEME BASE ESTIMATE incl DESIGN (Excl. VAT)	**£3,701,571**
Scheme Risk's Allowance (Arbitary % prior to producing a scheme specific QRA)	(allowance only at this stage)	**10.0%**	£370,157
		GROSS SCHEME BASE ESTIMATE To Construct incl DESIGN & RISK (Excl. VAT)	**£4,071,729**
Current Design Stage Recommended OB Allowance (Roadworks as DfT guidance say stage 1)	(max applied at this early stage of estimating)	**45%**	£1,832,278
			£4,071,729
Current Design Stage Recommended OB Allowance (Structures as DfT guidance say stage 1)	(max applied at this early stage of estimating)	**66%**	£0
			£0
INITIAL HIGH LEVEL ESTIMATE TOTAL using indicative details (Excl. VAT)			**£5,904,006**
Forecast Future inflation to mid construction period			not indicated currently

NB exact scheme specific details or circumstances have not been assessed and have not been specifically considered at this stage of design and estimating but are deemed to be covered by rates used and allowances made

Prepared and produced by Martyn G Whittaker for WSP w/c 03/12/2018

HIGHWAYS DESIGN - HIGH LEVEL ESTIMATING SYSTEM

Client:- Highways England

Very Early Stage Indicative Costing

Initial Costing Using basic plan drawing M6J23-WSP-HGN-00-CH-SK-0010 (P01)

M6 J23/A580 Haydock Island

Option A Layout 2 - Diverted A49 Lodge Lane NW Quadrant through Peel site

Brief Work Content			unit	Approx all in unit rate	Amount
Cost Base deemed Q3 2018					
RoadWorks:-					
Roadworks New Highway (assumed on Embankments/in cutting)		0	sq m	£340	£0
Roadworks New Highway (at Grade)		12,483	sq m	£220	£2,746,260
Upgraded Highways Part New/Part Reconstruction/Part Removed (at grade)		4,909	sq m	£135	£662,715
Existing Highways top layer reconstruction allowance		320	sq m	£50	£16,000
Existing Highways,footways/cycleways/paved areas to be abandoned/removed & made good		3,650	sq m	£54	£195,275
Items considered additional to content of all in Roadworks rates used above					
Cycle/Footways/splitter islands (assumed at grade/minor fill)		7,493	sq m	£55	£412,115
Creating New verges		1,646	sq m	incl	£0
Vertical Concrete Safety Barrier		0	lm	£275	£0
traffic signal installation	(per carriageway & pedestrian controlled leg) power etc	2	complete installation	£37,500	£75,000
	(per carriageway controlled leg) power etc	1	complete installation	£30,000	£30,000
	(per pedestrian controlled leg) power etc	2	complete installation	£20,000	£40,000
Contingencies (unmeasured/imprecise design details and specification undefined at this stage)				**15.0%**	£626,605
				Sub-Total Roadworks	**£4,803,970**
Structures:-					
None indicated at current early design stage		0	sq m		£0
Items considered additional to content of all in Structures rates used above					
None indicated at current early design stage					£0

Contingencies (unmeasured/imprecise design details and specification undefined at this stage)		**5.0%**	£0
		Sub-Total Structures	**£0**
		Sub Total Basic construction works costs	**£4,803,970**
Preliminaries ((incl OH&P) 20%, temp works 2.5%, TM 6%)		**28.5%**	£1,369,131
OTHER MAJOR ITEMS			
None identified at present			£0
WORKS for and BY STATUTORY and OTHER AUTHORITIES incl dealing with lighting and communications installations (5% allowed currently)		(allowance only at this stage, no exact details but likely to be complex)	£308,655
LAND COSTS including compensation **2.16**	HA (rural)?	£40,500.00	£87,569
Feasibility Studies,SURVEYS, INVESTIGATION & DATA COLLECTION, DESIGN DEVELOPMENT & DOCUMENT PREPARATION, PROCUREMENT, SCHEME SUPERVISION, MANAGEMENT AND ADMINISTRATION. Plus CLIENT COSTS and INTERESTED PARTIES.		**13.5%**	£886,859
		GROSS SCHEME BASE ESTIMATE incl DESIGN (Excl. VAT)	**£7,456,184**
Scheme Risk's Allowance (Arbitary % prior to producing a scheme specific QRA)	(allowance only at this stage)	**10.0%**	£745,618
		GROSS SCHEME BASE ESTIMATE To Construct incl DESIGN & RISK (Excl. VAT)	**£8,201,803**
Current Design Stage Recommended OB Allowance (Roadworks as DfT guidance say stage 1)	(max applied at this early stage of estimating)	**45%**	£3,690,811 *£8,201,803*
Current Design Stage Recommended OB Allowance (Structures as DfT guidance say stage 1)	(max applied at this early stage of estimating)	**66%**	£0 *£0*
		INITIAL HIGH LEVEL ESTIMATE TOTAL using indicative details (Excl. VAT)	**£11,892,614**
Forecast Future inflation to mid construction period			not indicated currently

NB exact scheme specific details or circumstances have not been assessed and have not been specifically considered at this stage of design and estimating but are deemed to be covered by rates used and allowances made

Prepared and produced by Martyn G Whittaker for WSP w/c 03/12/2018

HIGHWAYS DESIGN - HIGH LEVEL ESTIMATING SYSTEM	
Client:- Highways England	

Very Early Stage Indicative Costing

Initial Costing Using basic plan drawing M6J23-WSP-HGN-00-CH-SK-0011 (P01)

M6 J23/A580 Haydock Island	**Option A Layout 3 - Diverted A49 Lodge Lane NW Quadrant around Peel site**

Brief Work Content			unit	Approx all in unit rate	Amount
Cost Base deemed Q3 2018					
RoadWorks:-					
Roadworks New Highway (assumed on Embankments/in cutting)		0	sq m	£340	£0
Roadworks New Highway (at Grade)		19,710	sq m	£220	£4,336,200
Upgraded Highways Part New/Part Reconstruction/Part Removed (at grade)		10,726	sq m	£135	£1,448,010
Existing Highways top layer reconstruction allowance		320	sq m	£50	£16,000
Existing Highways,footways/cycleways/paved areas to be abandoned/removed & made good		5,287	sq m	£54	£282,855
Items considered additional to content of all in Roadworks rates used above					
Cycle/Footways/splitter islands (assumed at grade/minor fill)		13,230	sq m	£55	£727,650
Creating New verges		8,300	sq m	incl	£0
Vertical Concrete Safety Barrier		0	lm	£275	£0
traffic signal installation	(per carriageway & pedestrian controlled leg) power etc	3	complete installation	£37,500	£112,500
	(per carriageway controlled leg) power etc	1	complete installation	£30,000	£30,000
	(per pedestrian controlled leg) power etc	2	complete installation	£20,000	£40,000
Contingencies (unmeasured/imprecise design details and specification undefined at this stage)				**15.0%**	£1,048,982
			Sub-Total Roadworks		**£8,042,197**
Structures:-					
None indicated at current early design stage		0	sq m		£0
Items considered additional to content of all in Structures rates used above					
None indicated at current early design stage					£0

Contingencies (unmeasured/imprecise design details and specification undefined at this stage)		**5.0%**	£0
		Sub-Total Structures	**£0**
		Sub Total Basic construction works costs	**£8,042,197**
Preliminaries ((incl OH&P) 20%, temp works 2.5%, TM 4%)		**26.0%**	£2,090,971
OTHER MAJOR ITEMS			
None identified at present			£0
WORKS for and BY STATUTORY and OTHER AUTHORITIES incl dealing with lighting and communications installations (5% allowed currently)		(allowance only at this stage, no exact details but likely to be complex)	£506,658
LAND COSTS including compensation	**4.12**	HA (rural)? £40,500.00	£167,022
Feasibility Studies,SURVEYS, INVESTIGATION & DATA COLLECTION, DESIGN DEVELOPMENT & DOCUMENT PREPARATION, PROCUREMENT, SCHEME SUPERVISION, MANAGEMENT AND ADMINISTRATION. Plus CLIENT COSTS and INTERESTED PARTIES.		**12.0%**	£1,296,822
		GROSS SCHEME BASE ESTIMATE incl DESIGN (Excl. VAT)	**£12,103,670**
Scheme Risk's Allowance (Arbitary % prior to producing a scheme specific QRA)	(allowance only at this stage)	**10.0%**	£1,210,367
		GROSS SCHEME BASE ESTIMATE To Construct incl DESIGN & RISK (Excl. VAT)	**£13,314,037**
Current Design Stage Recommended OB Allowance (Roadworks as DfT guidance say stage 1)	(max applied at this early stage of estimating)	**45%**	£5,991,317 *£13,314,037*
Current Design Stage Recommended OB Allowance (Structures as DfT guidance say stage 1)	(max applied at this early stage of estimating)	**66%**	£0 *£0*
INITIAL HIGH LEVEL ESTIMATE TOTAL using indicative details (Excl. VAT)			**£19,305,354**
Forecast Future inflation to mid construction period			not indicated currently

NB exact scheme specific details or circumstances have not been assessed and have not been specifically considered at this stage of design and estimating but are deemed to be covered by rates used and allowances made

Prepared and produced by Martyn G Whittaker for WSP w/c 03/12/2018

HIGHWAYS DESIGN - HIGH LEVEL ESTIMATING SYSTEM

Client:- Highways England

Very Early Stage Indicative Costing

Initial Costing Using basic plan drawing M6J23-WSP-HGN_00_CH_SK_0006 (P01)

M6 J23/A580 Haydock Island

Option B - Relocation of Straight-Ahead Lanes and Realignment of Right-Turn Lanes

Brief Work Content			unit	Approx all in unit rate	Amount
Cost Base deemed Q2 2018					
RoadWorks:-					
Roadworks New Highway (assumed on Embankments/in cutting)		0	sq m	£340	£0
Roadworks New Highway (at Grade)		6,870	sq m	£220	£1,511,400
Upgraded Highways Part New/Part Reconstruction/Part Removed (at grade)		6,520	sq m	£135	£880,200
Existing Highways top layer reconstruction allowance		5,460	sq m	£50	£273,000
Existing Highways,footways/cycleways/paved areas to be abandoned/removed & made good		1,100	cu m	£64	£69,850
Items considered additional to content of all in Roadworks rates used above					
Cycle/Footways/splitter islands (assumed at grade/minor fill)		1,235	sq m	£85	£104,975
Vertical Concrete Safety Barrier		0	lm	£275	£0
traffic signal installation	(per carriageway & pedestrian controlled leg) power etc	7	complete installation	£37,500	£262,500
	(per carriageway controlled leg) power etc	4	complete installation	£30,000	£120,000
	(per pedestrian controlled leg) power etc	0	complete installation	£20,000	£0
Contingencies (unmeasured/imprecise design details and specification undefined at this stage)				**15.0%**	£483,289
				Sub-Total Roadworks	**£3,705,214**
Structures:-					
None indicated at current early design stage		0	sq m		£0
Items considered additional to content of all in Structures rates used above					
None indicated at current early design stage					£0

Contingencies (unmeasured/imprecise design details and specification undefined at this stage)		**5.0%**	£0
		Sub-Total Structures	**£0**
		Sub Total Basic construction works costs	**£3,705,214**
Preliminaries ((incl OH&P) 20%, temp works 2.5%, TM 10%)		**32.5%**	£1,204,194
OTHER MAJOR ITEMS			
None identified at present			£0
WORKS for and BY STATUTORY and OTHER AUTHORITIES incl dealing with lighting and communications installations (25% allowed currently)	(allowance only at this stage, no exact details but likely to be complex)		£1,227,352
LAND COSTS including compensation **0.00**	HA (rural)?		not included works assumed within highway boundaries
Feasibility Studies,SURVEYS, INVESTIGATION & DATA COLLECTION, DESIGN DEVELOPMENT & DOCUMENT PREPARATION, PROCUREMENT, SCHEME SUPERVISION, MANAGEMENT AND ADMINISTRATION. Plus CLIENT COSTS and INTERESTED PARTIES.		**18.0%**	£1,104,617
	GROSS SCHEME BASE ESTIMATE incl DESIGN (Excl. VAT)		**£7,241,377**
Scheme Risk's Allowance (Arbitary % prior to producing a scheme specific QRA)	(allowance only at this stage)	**15.0%**	£1,086,207
	GROSS SCHEME BASE ESTIMATE To Construct incl DESIGN & RISK (Excl. VAT)		**£8,327,584**
Current Design Stage Recommended OB Allowance (Roadworks as DfT guidance say stage 1)	(max applied at this early stage of estimating)	**45%**	£3,747,413 *£8,327,584*
Current Design Stage Recommended OB Allowance (Structures as DfT guidance say stage 1)	(max applied at this early stage of estimating)	**66%**	£0 *£0*
INITIAL HIGH LEVEL ESTIMATE TOTAL using indicative details (Excl. VAT)			**£12,074,996**
Forecast Future inflation to mid construction period			not indicated currently

NB exact scheme specific details or circumstances have not been assessed and have not been specifically considered at this stage of design and estimating but are deemed to be covered by rates used and allowances made

Prepared and produced by Martyn G Whittaker for WSP w/c 10/12/18

HIGHWAYS DESIGN - HIGH LEVEL ESTIMATING SYSTEM

Client:- Highways England

Very Early Stage Indicative Costing

Initial Costing Using basic plan drawing SK01 240718

M6 J23/A580 Haydock Island

Option D - Diverging Diamond Interchange Concept Layout

Brief Work Content			unit	Approx all in unit rate	Amount
Cost Base deemed Q2 2018					
RoadWorks:-					
Roadworks New Highway (assumed on Embankments/in cutting)		0	sq m	£340	£0
Roadworks New Highway (at Grade)		8,440	sq m	£220	£1,856,800
Upgraded Highways Part New/Part Reconstruction/Part Removed (at grade)		9,490	sq m	£135	£1,281,150
Existing Highways top layer reconstruction allowance		720	sq m	£50	£36,000
Existing Highways,footways/cycleways/paved areas to be abandoned/removed & made good		4,583	cu m	£64	£290,989
Items considered additional to content of all in Roadworks rates used above					
Cycle/Footways/splitter islands (assumed at grade/minor fill)		1,610	sq m	£85	£136,850
Vertical Concrete Safety Barrier		745	lm	£275	£204,875
traffic signal installation	(per carriageway & pedestrian controlled leg) power etc	4	complete installation	£37,500	£150,000
	(per carriageway controlled leg) power etc	6	complete installation	£30,000	£180,000
	(per pedestrian controlled leg) power etc	4	complete installation	£20,000	£80,000
Contingencies (unmeasured/imprecise design details and specification undefined at this stage)				**15.0%**	£632,500
			Sub-Total Roadworks		**£4,849,163**
Structures:-					
None indicated at current early design stage		0	sq m		£0
Items considered additional to content of all in Structures rates used above					
None indicated at current early design stage					£0

Contingencies (unmeasured/imprecise design details and specification undefined at this stage)		**5.0%**	£0
	Sub-Total Structures		**£0**
	Sub Total Basic construction works costs		**£4,849,163**
Preliminaries ((incl OH&P) 20%, temp works 2.5%, TM 10%)		**32.5%**	£1,575,978
OTHER MAJOR ITEMS			
None identified at present			£0
WORKS for and BY STATUTORY and OTHER AUTHORITIES incl dealing with lighting and communications installations (20% allowed currently)	(allowance only at this stage, no exact details but likely to be complex)		£1,285,028
LAND COSTS including compensation **0.00**	HA (rural)?		not included works assumed within highway boundaries
Feasibility Studies,SURVEYS, INVESTIGATION & DATA COLLECTION, DESIGN DEVELOPMENT & DOCUMENT PREPARATION, PROCUREMENT, SCHEME SUPERVISION, MANAGEMENT AND ADMINISTRATION. Plus CLIENT COSTS and INTERESTED PARTIES.		**18.0%**	£1,387,831
	GROSS SCHEME BASE ESTIMATE incl DESIGN (Excl. VAT)		**£9,098,000**
Scheme Risk's Allowance (Arbitary % prior to producing a scheme specific QRA)	(allowance only at this stage)	**15.0%**	£1,364,700
	GROSS SCHEME BASE ESTIMATE To Construct incl DESIGN & RISK (Excl. VAT)		**£10,462,700**
Current Design Stage Recommended OB Allowance (Roadworks as DfT guidance say stage 1)	(max applied at this early stage of estimating)	**45%**	£4,708,215
			£10,462,700
Current Design Stage Recommended OB Allowance (Structures as DfT guidance say stage 1)	(max applied at this early stage of estimating)	**66%**	£0
			£0
INITIAL HIGH LEVEL ESTIMATE TOTAL using indicative details (Excl. VAT)			**£15,170,915**
Forecast Future inflation to mid construction period			not indicated currently

NB exact scheme specific details or circumstances have not been assessed and have not been specifically considered at this stage of design and estimating but are deemed to be covered by rates used and allowances made

(excl Lodge Lane N&S connections (likely to be at separate locations?) and any matters concerning petrol station, access/or relocation.

Prepared and produced by Martyn G Whittaker for WSP w/c 10/09/18

Brief Notes to Accompany the Estimating Content — M6 J23/A580 Haydock Island

Estimating Heading		Current Pricing Notes	Future Estimate Progression
RoadWorks:-		The main items and those shown as considered additional to the unit rating content are currently priced using overall road pavement area by an appropriate average unit rate developed from previous WSP historic scheme cost & estimating data and individual current average rates from the same historic cost data for works of a similar nature to be carried out in similar circumstances.	As design develops in detail the estimating will break down the scheme into measurement work elements and be priced individually using appropriate unit rates developed from previous WSP scheme cost & estimating data.
Contingencies (unmeasured work detail undefined at this stage.)	**15.0%**	This is a contingency sum applied to the basic unit priced elements measured which is considered at an appropriate level and considers the content of the base estimating, the level of design progression, site specific details known for a scheme of this nature and in this location at this stage. They cover for:- design choice, finite detail not currently measured seperately, specification detail,quality requirements, rating averaging/accuracy/not being exactly scheme specific,industry conditions etc all matters that are not able to be fully determined yet at present, but would be required complete the basic works cost estimating.	As the estimating develops and the basic works cost estimating is carried out in more detail the level of certainty on content will become more robust the required level of contingency will fall.
Preliminaries(incl OH&P) 20% & Temp works 2.5% & TM 8.5%)	**31.0%**	Currently this is general assessed percentage allowance considered at an appropriate level for a scheme of this nature and in this location at this stage as an addition to the basic works cost estimating and draws upon previous WSP experience of scheme cost & estimating data. The figures also compare the sums generated to the likely amounts required. ie TM at 8.5% generates £194k.	As the estimating develops calculations for Preliminaries will be further refined.
OTHER MAJOR ITEMS		Thes items will be as noted in each estimate and will be scheme specific to each design option and will be added where it is considered that the basic unit price estimating does not cover for their inclusion	As preferred scheme details become further surveyed/known and estimating details these items will be included/removed as appropriate to complete the estimating.
WORKS BY OTHER AUTHORITIES		Details are not currently known regarding the exact location, potential diversion or protection required to statutory Undertakers installations or the full impact the scheme will have in terms of intrusive/conflicting works. Therefore this sum is an Allowance Only to a considered appropriate level to complete the estimates content and made consideration for Statutory Undertakers and clashes with ;lighting & communications cabling until further details can be gathered.	C2, C3 , C4's will be obtained as scheme preferred is developed.
LAND COSTS including compensation		This item prices land at a published basic rural rate based upon the schemes landtake area adding a percentage to cover compensation and legal fees. It is an inclusion to complete the estimate content until the precise extent and ownership of land required is ascertained.	Contact with Local Authority/HE/District Valuer to obtain any appropriate information to further develop the pricing of these allowances.
Feasibility Studies, SURVEYS, INVESTIGATION & DATA COLLECTION, DESIGN DEVELOPMENT & DOCUMENT PREPARATION, PROCUREMENT, SCHEME SUPERVISION, MANAGEMENT, and ADMINISTRATION. Plus client costs and other interested parties.	**16.0%**	Currently this is priced as allowance relative to scheme costs and considers the likely design/supervision input of consultant, client and other interested parties based on previous WSP scheme cost & estimating data.	As estimating develops data will be collected from each party detailling their expected resourcing and also what processes the scheme has to go through ie public enquiry will all be considered including the method of procurement which will all influence the content of this item.
Scheme Risk's Allowance (Arbitary % prior to producing a scheme specific QRA)	**10.0%**	This currently is a basic allowance only to complete the scheme estimating content at this stage.	To develop a scheme specific risk register(as design develops and details become more fully known, whilst also adding any opportunities/value engineering strategies. Each risk will then be costed and the whole register run through a monte-carlo simulation software package to obtain an overall result to add a specific scheme risk value to the base estimating.
Current Design Stage Recommended OB Allowance Roadworks(as Dft Guidance for Design Stage 1)	**45.0%**	The percentages applied use the Dft WebTag guidance Appraisal for Practioner Tag Unit A1.2 Scheme Costs July 2017 issue(For Roadworks&Structures assessed as the most applicable % at this of scheme development)	The Stage of project will dictate the level of OB to be applied as design develops.
Current Design Stage Recommended OB Allowance Structures(as Dft Guidance for Design Stage 1)	**66.0%**		

Notes prepared by Martyn G Whittaker for WSP March/April 2019

Appendix J

ASSESSMENT OF OPPORTUNITIES FOR ENCOURAGING ALTERNATIVE TRAVEL MODES

ST HELENS COUNCIL

M6 JUNCTION 23 HAYDOCK ISLAND

Assessment of Opportunities for Encouraging Alternative Travel Modes

70044810-WSP-REPORT-APPENDIX A
JANUARY 2019

CONFIDENTIAL

ST HELENS COUNCIL

M6 JUNCTION 23 HAYDOCK ISLAND

Assessment of Opportunities for Encouraging Alternative Travel Modes

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70044810

OUR REF. NO. 70044810-WSP-REPORT-APPENDIX A

DATE: JANUARY 2019

WSP

1st Floor Station House
Tithebarn Street, Exchange Station
Liverpool
L2 2QP

Phone: +44 151 331 8100

ST HELENS COUNCIL

M6 JUNCTION 23 HAYDOCK ISLAND

Assessment of Opportunities for Encouraging Alternative Travel Modes

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2
Remarks	Draft	Final	
Date	30/01/2019	12/06/2019	
Prepared by	AB/HC	HC	
Signature			
Date	28/01/2018	12/06/2019	
Checked by	HC	HC	
Signature			
Date	29/01/2019	12/06/2019	
Authorised by	JM	JM	
Signature			
Date	30/01/2019	12/06/2019	
Project number	70044810	7044810	
Report number	Appendix A	Appendix A	
File reference			

CONTENTS

1

INTRODUCTION

1. INTRODUCTION

1.1.1. The highway interventions for improving capacity and reliability at the M6 Junction 23 (J23) can be supplemented by the identification of opportunities for alternative improvements around active travel or public transport to address local transport demand at this location.

1.1.2. This report includes an evidence base of existing transport conditions and considerations and provides a series of alternative options which aim to assist in reducing the impact of local car travel on the operation of the M6 J23 (and the A580).

1.1.3. The following key tasks have been undertaken to provide an evidence base for developing a range of feasible alternative options for reducing local car travel:

- Reviewing existing relevant transport studies and data;
- Understanding existing sustainable transport options in the area;
- Understanding existing and proposed development near the M6 J23 / A580;
- A review of potential and proposed transport infrastructure improvements in the St Helens area, for example, Local Walking and Cycling Infrastructure Plans (LCWIP).
- Consulting with key public authorities on relevant studies, data and sustainable transport improvements;
- Understanding current travel patterns and defining the catchment area of existing/forecast local traffic where alternative options may be feasible e.g. via Census data;
- Determination of any funding opportunities which could encourage the use of sustainable transport modes; and
- Determination of any existing or former Travel Plan / Area Travel Plan work undertaken at employment sites close to M6 J23 / A580.

2

REVIEW OF EXISTING STUDIES / DATA TO INFORM ALTERNATIVE OPTION DEVELOPMENT

2. REVIEW OF EXISTING STUDIES / DATA TO INFORM ALTERNATIVE OPTION DEVELOPMENT

2.1. Introduction

2.1.1. A review of the following key recent transport and development studies and Local Plan documents has been undertaken to understand local travel demand and the transport-related constraints and opportunities for alternative travel:

- *Mott MacDonald Haydock Industrial Area. Redevelopment, Extension and Access Study – Stage 3: Options and Appraisal Report (June 2017);*
- *Mott MacDonald Haydock Industrial Area. Redevelopments, Extension and Access Study – Stage 4: Final Report (June 2017);*
- *St Helen's Local Plan (2018-2033) Preferred Options (December 2016) and the associated draft allocations plans;*
- *M6 Junction 23 Site Audit undertaken by WSP (WSP, May 2018);*
- *Haydock Point: Transport Assessment Addendum undertaken on behalf of Peel Investments by Vectos (December 2017);*
- *Wigan Local Plan Core Strategy (September 2013) / Greater Manchester Spatial Planning Framework (October, 2016);*

2.2. Document Review

Mott MacDonald and Be Group Haydock Industrial Area Redevelopment, Extension and Access Study: Stage 3: Options and Appraisal Report (June 2017) / Stage 4: Final Report (June 2017)

General Review

2.2.1. The Stage 3 report identified options for transport interventions to improve access for the existing and expanded Industrial Area, with reference to the key constraints and opportunities which were set out in the Stage 1 and 2 reports. A series of development options were presented and appraised.

2.2.2. The Stage 4 Final Report described and appraised five potential expansion options ranging from redevelopment of the existing core of the Park, to expansion northwards. Reference is made to traffic modelling to assess the potential impact of the expansion of the Industrial Area at the M6 J23. Issues and solutions are discussed in the study, including the consideration of sustainable travel options. The report provides a summary of the work undertaken and makes recommendations on next steps.

2.2.3. The Mott MacDonald / BE Group study can be considered as the first stage of the process for developing and delivering a large-scale capacity improvement scheme for the M6 J23 – prior to this overall study. The key findings of the Mott MacDonald / BE Group study in relation to transport issues and sustainable travel considerations are summarised below.

Transport-Related Issues / Constraints – Haydock Industrial Area

- Poor pedestrian and cycle linkages to Haydock and Ashton-in-Makerfield / Wigan;

- Delay and congestion around M6 Junction 23 due to new development;
- Convoluted road access to the Haydock Industrial Estate site;
- Lack of visibility from strategic routes;
- Lack of a clear gateway into the site;
- A large proportion of the existing Haydock workforce live a short distance from the site yet choose to drive to work;
- Lorries park on the sides of the roads which reduces parking provision for cars and hinders traffic movement; and
- Unsociable shift patterns typically worked at the Industrial Area make it difficult for bus service timetables to meet peak hours of demand.

Sustainable Travel Opportunities / Suggested Improvements – Haydock Industrial Area:

General Improvements:

- Access by sustainable modes should be integral to further development. This is fundamental for any of the potential development options at the Estate to be taken forward, in addition to the wider Local Plan development.
- Consultation with Wigan Council should be undertaken due to the proximity of the Local Authority boundary which results in key pedestrian and cycle routes running through the Wigan area.
- Cycle routes from Wigan across the M6 across are unsigned and poorly maintained. With the expansion of the Industrial Area these facilities have the potential to become more of an asset to the site. Discussions should take place between Wigan and St Helens Council as to implementing new signage and improved maintenance.
- The introduction of an overall Site Manager should be considered for the Haydock Industrial Area.

Specific Improvements

- **Pedestrian improvements to Garswood Station and Wigan –**
    - Shared pedestrian / cycle routes are provided from the site to the east towards Wigan and north towards Garswood Station. En route to Garswood Station, School Lane and Tithebarn Road are St Helens 'recommended on street cycle routes' – cycle route signage is proposed here.
    - Analysis has recommended that an off-road cycleway may be feasible on the A58 Liverpool Road without the need for third party land (subject to further analysis). This would connect over the M6 to Wigan borough; discussion with Wigan Council would be necessary to ensure the potential for complementary improvements.
    - A segregated cycleway ideally would be provided on Millfield Lane. This would require significant widening between Andover Road and Liverpool Road requiring land outside of ownership.

- The existing public rights of way which connect east from a footbridge over the M6 should be improved with lighting and improved maintenance. Although formally cycling is not be permitted on these routes it is likely that they would be used by cyclists as they are segregated from traffic and lightly used by pedestrians. The installation of a wheeling ramp on the stepped areas of the footbridge should also be considered.

- **Speed limit reduction and pedestrian crossing on A580 East Lancashire Road –**
  - Reducing the speed limit to 40mph from 60mph on approach to the M6 J23 facilitates the potential for a new pedestrian crossing (signalised or uncontrolled) to be feasible at the junction on Piele Road and East Lancashire Road, connecting to North Florida Road – providing a convenient access for workers to the restaurant, shop and PFS facilities on the southern side of the A580. A footbridge is located close to this crossing; however, it is not well used with evidence indicating pedestrians cross the road in an uncontrolled manner. This will increase connectivity for the existing Industrial area, the (*proposed*) Canmoor site and the Bericote site.

- **Bus stops on the A580 East Lancashire Road and enhanced bus provision –**
  - Discussion with Merseytravel indicated no plans for enhancing bus provision but the importance of maintaining existing services is recognised. The potential to use the A580 as a high-speed express route has been tabled with Merseytravel. Merseytravel would not object to a bus service on a high-speed route but they have concerns on the economic viability of any express bus route. Westwards the A580 does not link to other urban areas until it reaches Kirkby and eastwards Walkden and Walsey are the nearest. Also, there would be some conflict with existing commercial services.
  - No bus services currently operate on the A580. It is recommended that land should be reserved along the A580 to enable the potential for a service in the future (to particularly benefit the Canmoor and Bericote site (*included in the Local Plan allocations*)).

- **St Helens pinch point scheme (improving pedestrian movements) –**
  - Signalisation of the Millfield Lane junction to allow right turning movements out of the junction as well as a toucan crossing across the A580 East Lancashire Road – facilitating pedestrian connectivity across the East Lancashire Road. This scheme should be reserved for future consideration by St Helens Council as it will have significant benefits (for pedestrians and traffic circulation across the site).

- **Disused Railway lines for alternative uses –**
  - Piele Road forms part of a previous railway alignment. Travelling south west from here it has been built upon through the residential areas of Haydock and Blackbrook. East from Piele Road the railway passes underneath the M6 (appears to be in existence but suitability needs clarification) and also eastwards to residential development in Ashton-in-Makerfield. However, there are few historic routes which are now either obstructed by new development,

new roads, existing railway lines or other physical barriers – hence this option has not been pursued further.

- **Travel planning measures –**
  - Measures have been implemented at existing employment sites at Haydock Industrial estate over the past 5 years. Findings suggested there is large potential to change travel behaviour.
  - Travel surveys at existing employment sites over the last 5 years or so within the Industrial Area revealed that around 20% of the current workforce live within two miles of the Industrial Area. Furthermore, a review of 2011 Census data reveals that around half of employees living close to the site travel by car. There is great potential to change travel behaviour of current employees if the right infrastructure or incentives are put in place.

Specific measures recommended can be summarised as follows:

- Improve active travel access to the site particularly to overcome the physical barriers created by the M6 and A580;
- Development of overarching travel plan document for Haydock Industrial Area;
- Understand the measures included within parent Travel Plan documents for larger organisations e.g. Sainsbury's;
- Promotion of cycle parking introduced within organisations in receipt of grants;
- Effective marketing strategy;
- Allocated Travel Plan budget;
- Reinvigorate car sharing data base and promote to organisations; and
- Engaging with bus operators to ensure maximum coordination between services and shift times.

Site Audit Report undertaken by Jim Dutton (St Helens Council), Martin Boardman (WSP) and Rory Lingham (WSP) – May 2018

General Overview

2.2.4. A site audit was held in May 2018 to review the constraints on existing junctions at strategic locations in St Helens.

Transport Issues

- The roundabout was not in good condition due to large amounts of detritus at the junction and breaking up of the carriageway surfacing.
- Major congestion/conflict point at the intersection of M6 southbound off slip road / A49 southbound and the circulatory section of the roundabout.
- Many items of street furniture damaged, missing or leaning including pedestrian guard rail, traffic signs, bollards and road signs.

Peel – Outline Planning Application – Transport Assessment Addendum – Development at Haydock Point (Vectos Transport Planning Specialists – December 2017)

General

2.2.5. Vectos reviewed the transport and highways systems surrounding a new high-quality logistics park on an area of land to the north east of Junction 23 of the M6 in Haydock (*included in the Local Plan*). The proposed development will comprise up to 1.8 million sqft (167,225 sqm) of employment floorspace. This will predominantly be occupied by B8 use with an element of B2 use.

2.2.6. Key issues and opportunities identified in the Transport application reports are set out below.

Transport Issues

- There are currently no formal vehicle access points to the site provided from either the A49 Lodge Lane or the A580.

Sustainable travel opportunities / suggested improvements

- The site is very well located to encourage journeys on foot, with a shared footway/cycleway on the A580 along its southern side, the eastern side of the A49 Lodge Lane and north along the A49.
- Continuing north along the A49, the existing pedestrian footway provides connections to bus stops served by the Number 320 service, and thereafter continues into Ashton-in-Makerfield.
- Newton-le-Willows station and Bryn stations are located within the 20 minute/ 5 kilometre cycle catchment of the site. Journeys can be carried out using both rail and bicycle.
- The site is also well located for travel by bus and is 400 metres from the bus stop. North and southbound bus stops are located on the A49 Lodge Lane to the north of the site.

St Helens Local Plan 2018-2033 Preferred Options (January 2016)

General

2.2.7. The Local Plan identifies the current and proposed areas for development between 2018-2033. This includes a range of employment and residential areas that aim to enhance growth within the borough.

2.2.8. ‘Policy LPA03: Development Principles’ sets out that new development in St Helens will be expected to support six development principles, one of which is:

5. Minimise the need to travel and maximise the use of sustainable transport by:

- *a) Guiding development to sustainable and accessible locations or locations that can be made sustainable and accessible;*
- *b) Encouraging a shift towards more sustainable modes of transport for people, goods and freight and encouraging the use of lower carbon transport;*
- *c) Encouraging safe and sustainable access for all, particularly by promoting the use of public transport, walking and cycling between homes and employment; and*

- *d) Supporting the provision and retention of shared space, community facilities and other local services (such as local shops, health facilities, education provision, meeting places, sports venues, cultural buildings, public houses and places of worship).*

2.2.9. 'Policy LPA07: Transport and Travel' sets out the requirements for new development, including sustainable travel requirements, as follows:

- *New Development should:*
  - *Be located where there is potential for good access to existing and proposed public transport services or be developed to allow access by public transport;*
  - *Promote sustainable modes of transport including where practicable electric vehicles and vehicle charging;*
  - *Provide for safe and adequate pedestrian, cycle and vehicular access to, from and within the development, including adequate visibility splays;*
- *Transport Assessments or Transport Statements will be required for all significant development in accordance with the requirements of the Ensuring a Choice of Travel Supplementary Planning Document (SPD);*
- *The Council's priorities for the transport network in St Helens during the Plan period will be set out in the Merseyside Local Transport Plan 3, Liverpool City Region Combined Authority, A Transport Plan for Growth (or equivalent) and in Transport for the North's strategies and include,*
  - *Improving existing rail links and capacity; and*
  - *Improving station accessibility and facilities, including protecting opportunities for improving access by all modes (e.g. walking, cycling, bus, park and ride) to existing and proposed rail stations in St Helens.*

Wigan Local Plan Core Strategy (September 2013)

General

2.2.10. The Wigan Local Plan Core Strategy was adopted in 2013 and sets out the spatial vision for the borough through to 2026. It states that the majority of development will be directed towards the 'east-west core' of the borough in order to create an attractive area to work and live. This area is set out for regeneration for businesses and residents to flourish. In addition to this, Golborne, Lowton and Standish also have the potential be developed, especially for housing. The key transport-related issues and opportunities identified in the Local Plan Core Strategy are summarised below.

Transport Issues

- There are high level of out-commuting to other towns and cities.
- Improvements need to be made to accessibility and the transport network including better integration of public transport.

- Long journey times and congestion are major issues. As a result, cycling and pedestrian paths are often unattractive.
- Despite relatively low average household incomes, car ownership and use are high in the borough.
- Levels of walking and cycling are low due to many factors.
- The borough's transport system is poorly integrated.

Sustainable Travel Opportunities / Suggested Improvements

- 'Policy C7 Accessibility' stated that accessibility will be improved to key destinations for people and goods and connect people to opportunities both within and outside the borough via a number of measures including:
  - Promoting accessibility improvements to/from key cross boundary locations such as St Helens;
  - Developing and enhancing on and off-road networks for walking and cycling, to connect local residents to employment and community facilities as well as for leisure purposes; and
  - Promoting the use of Travel Plans and requiring them to be produced and implemented for appropriate development.

Greater Manchester Spatial Planning Framework GMSF (Draft for Consultation October 2016)

General

2.2.11. The GMSF sets out the spatial pattern of development across Greater Manchester for the next 20 years. Delivery of the scale of growth set out in the GMSF will require a carefully prioritised programme of transport investment. It is recognised that a significantly revised draft is due to be released in January 2019.

Sustainable Travel Opportunities / Suggested Improvements

2.2.12. 'Policy GM6 Accessibility' includes the sub-policy for Infrastructure which includes the following key interventions:

Active Travel

- The establishment of a comprehensive cycle network linking key centres of activity across Greater Manchester.

Public Transport

- Deliver major improvements in public transport infrastructure to areas of significant growth such as the Northern Gateway, Western Gateway, Eastern Gateway, A580, including rapid transit were appropriate.

Key Points – Existing Transport Studies and Data:

- The relevant document review has identified a number of transport issues, constraints and opportunities (general and specific).
- Local Plan Allocations include several policies to encourage sustainable travel as an integral component of new development.

3

EXISTING SUSTAINABLE TRANSPORT PROVISION

3. EXISTING SUSTAINABLE TRANSPORT PROVISION

General

3.1.1. St Helens is a reasonably connected borough; however, Haydock Industrial Area lacks the provision which the town centre supports to travel further afield. Public transport within this area is therefore fairly minimal. The National Cycle Network avoids the borough almost completely, and while local provision for cycling is improving, it still needs significant improvement to provide a comprehensive, connected network; in particular, direct, protected routes through major junctions and across major roads are generally lacking.

Rail

3.1.2. The nearest train station to Haydock Industrial Area is Garswood. This is an approximate 30-minute walk from the centre of Haydock Industrial Estate or a nine-minute cycle. The station has bicycle stands and six storage spaces with CCTV; however, there is no car parking facility. The train services travel west to Liverpool (38-minute journey time) and north to Wigan (12-minute journey time). Trains from Garswood run every 30 minutes during peak times to/from Liverpool, starting at 0544 and finishing at 2312 Monday to Saturday. However, on Sunday there is a reduced service to Liverpool Lime Street Station with trains running approximately every hour, starting at 0851 and ending at 2308. Trains from Garswood to/from Wigan run every 30 minutes during peak times Monday to Saturday, starting at 0620 and finishing at 2349. There is a reduced service on Sunday to/from Wigan which starts at 0904 and finishes at 2348 with trains running approximately every hour. Other stations surrounding the industrial estate include Earlestown (55-minute walk / 17-minute cycle) and Newton-le-Willows (61-minute walk and 16-minute cycle).

Bus

3.1.3. Bus services that run through or on the periphery of Haydock Industrial Area are summarised in **Table 3-1**.

Table 3-1 – Bus Service Provision in the Vicinity of Haydock Industrial Area

Route No.	Operator	Route Description	Monday- Friday Service Frequency Interval (Minutes)			Saturday Service Frequency Interval (Minutes)		Sunday Service Frequency Interval (Minutes)	First / Last Service (Mon – Sat)
			Peak	Day	Eve	Day	Eve		
156	Merseytravel (with contribution from TfGM)	Lea Green – St Helens – Haydock Ind Est – Garswood – Downall Green – Bryn Cross – Ashton Library	60	60	60	60	60	60	0630/2326
602	Merseytravel	Ashton-in-Makerfield – Haydock – Earlestown – Newton			60		60	60	1826/2226
603	Merseytravel	Newton Community hospital – Earlestown – Haydock Ind Est – Blackbrook – Liverpool Road – Millfield Lane – Ashton	60	60		60			0714/1714
920	Arriva	St Helens – Thatto Heath – Sutton Manor – Clock Face – Parr – Haydock Ind Est		1rtn jny	1 rtn jny	1 rtn jny	1 rtn jny	2 rtn jnys	0500/2100
320	Arriva (with Sunday evening subsidy from TfGM)	St Helens – Blackbrook – Ashton-in-Makerfield – Platt Bridge - Wigan Market Hall	10	20	20	30	30	30	0520/2315
20	Arriva	St Helens – Blackbrook –	30	30	-	30	-	-	0605/1805

		Haydock - Earlestown								

Table 3-2 – Bus Service Provision in the Vicinity of Haydock Industrial Area

Route No.	Operator	Route Description	Monday-Friday Service Frequency Interval (Minutes)			Saturday Service Frequency Interval (Minutes)		Sunday Service Frequency Interval (Minutes)	First / Last Service (Mon-Sat)	First / Last Service (Sunday)
			Peak	Day	Eve	Day	Eve			
156	*Merseytravel (with contribution from TfGM)*	*Lea Green – St Helens – Haydock Ind Est – Garswood – Downall Green – Bryn Cross – Ashton Library*	*60*	*60*	*60*	*60*	*60*	*60*	*0630/2326*	*0744/2244*
157	*Merseytravel (Operated commercially by Comfybus)*	*Rainford – Crank – Kings Moss – Billinge – Garswood – North Ashton – Bryn Cross – Ashton-In-Makerfield*		*60*		*60*			*0907/1807*	*N/A*
602	*Merseytravel*	*Ashton-in-Makerfield – Haydock – Earlestown – Newton*			*60*		*60*	*60*	*1826/2226*	*0826/2226*
603	*Merseytravel*	*Newton Community hospital – Earlestown – Haydock Ind Est – Blackbrook – Liverpool Road – Millfield Lane – Ashton*	*60*	*60*		*60*			*0732/1732*	*N/A*
920	*Arriva*	*St Helens – Thatto Heath – Sutton Manor – Clock Face – Parr –*		*1rtn jny*	*1 rtn jny*	*1 rtn jny*	*1 rtn jny*	*2 rtn jnys*	*0500/2100*	*0500/2100*

		Haydock Ind Est								
320	*Arriva (with Sunday evening subsidy from TfGM)*	*St Helens – Blackbrook – Ashton-in-Makerfield – Platt Bridge - Wigan Market Hall*	*10*	*20*	*20*	*30*	*30*	*30*	*0520/2315*	*0530/2315*
20	*Arriva*	*St Helens – Blackbrook – Haydock - Earlestown*	*30*	*30*	*-*	*30*	*-*	*-*	*0605/1805 (Mon-Fri)* *0635/1735 (Sat)*	*N/A*

Note – the bus services reported are correct at the time of writing – services represent a mix of commercial and supported services and are subject to change based on financial viability.

3.1.4. The 156, 602, 603, 920 bus services all travel through Haydock Industrial Area and between them link to Lea Green, St Helens, Garswood, Ashton-in-Makerfield, Earlestown, Thatto Heath and Newton. The 157 links Rainford to Ashton-in-Makerfield and routes via Garswood Station. The 20 and 320 services route along the A599 Clipsley Lane, approximately 2km to the south of the Industrial Area and provide links to Ashton-in-Makerfield, Wigan, St Helens and Earlestown.

3.1.5. Additional bus services route between St Helens and Wigan (services 34/34A and 352). However, these do not currently serve the Haydock area.

3.1.6. There is a lack of bus provision to Haydock from the Warrington area. The 22 service from Warrington serves Earlestown and Newton-le-Willows (including Newton-le-Willows rail station).

Walking and Cycling

3.1.7. Active travel modes are not widely used modes in St Helens. The 2011 Census indicated that only 9% of individuals who work in St Helens travel to work on foot, whilst 2% travel by bicycle, even though nearly half of journeys to work are 5km or shorter, and nearly two thirds are 10km or shorter.

3.1.8. Encouraging active travel is essential for enhancing sustainability, in addition to supporting wider agendas such as health and employment within St Helens.

3.1.9. An assessment of the feasible walking and cycling catchment areas within the vicinity of the Haydock Industrial Area (HIA) has been undertaken to understand the potential residential catchment area for encouraging walking and cycling by employees who live locally and work there**. Figures 3-1** and **3-2** show 30-minute walking and cycling isochrones from two central locations within HIA. The isochrone maps do not take account of perception-related barriers such as roads which are difficult to cross, but provide a good indication of walking and cycling opportunities.

3.1.10. The isochrones indicate that the residential areas of Haydock and parts of Garswood, Ashton-in-Makerfield and Earlestown/Newton-Le-Willows are within a reasonable (30-minute) walking distance of the Industrial Area. Garswood Station is also within a 30-minute walk and hence train use coupled with walking may be considered as an option for travel to work by some employees who live close to stations served by this line.

3.1.11. For cycling, the areas within a 30-minute cycle extend to the entire area of St Helens town centre, Earlestown, Newton-le-Willows, Garswood, Bryn, Billinge, Golborne, Lowton, Ashton-in-Makerfield and Abram, in addition to northern areas of Warrington.

3.1.12. Numerous rail stations are included within a reasonable cycle distance, including Garswood, Bryn, Earlestown, Newton-le-Willows, St Helens Central and St Helens Junction. The opportunity therefore exists to encourage rail use coupled with cycling by those employees who live close to the rail network.

Figure 3-1 - 30 Minute Walking Isochrones from Haydock Industrial Estate

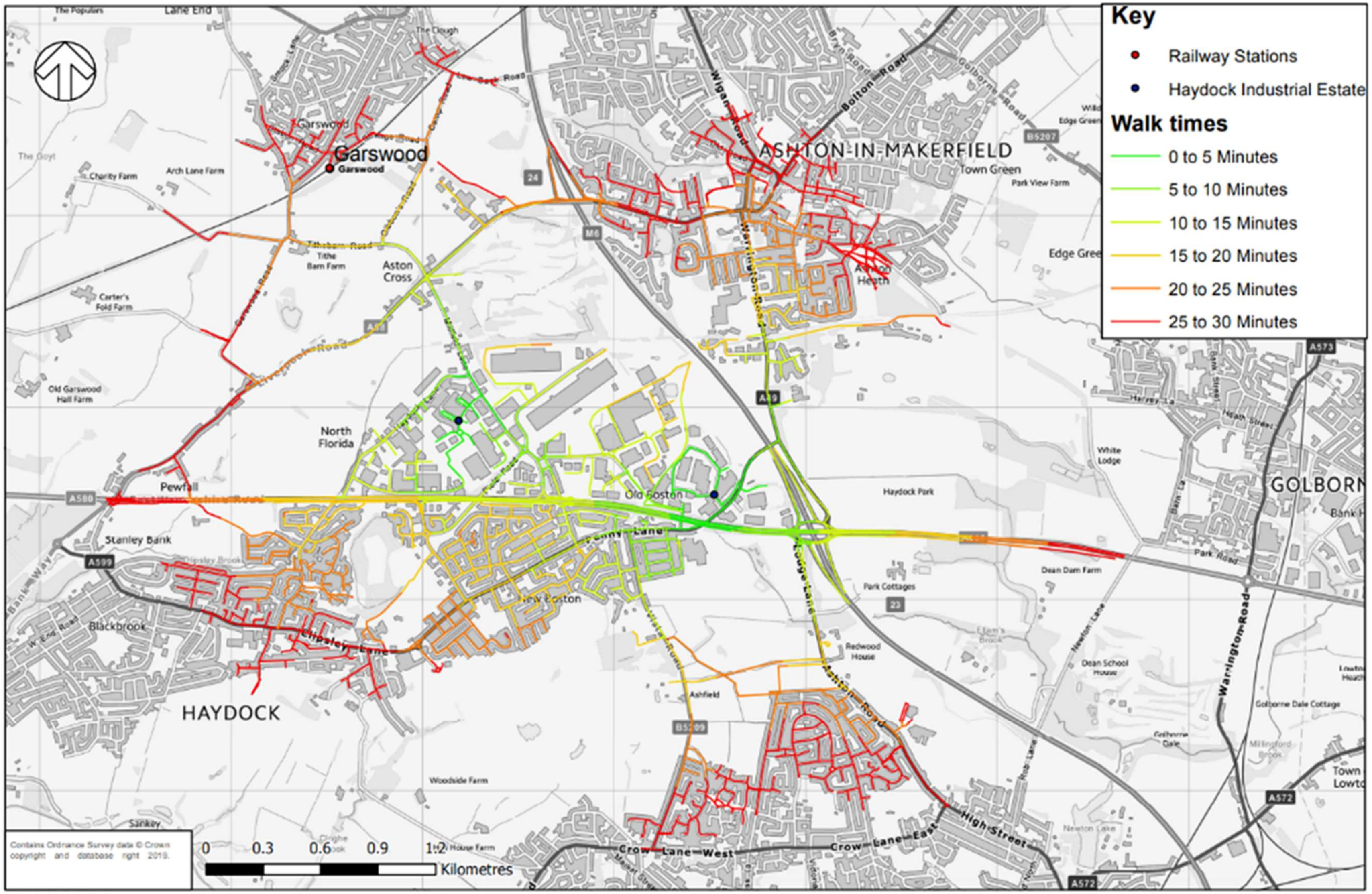
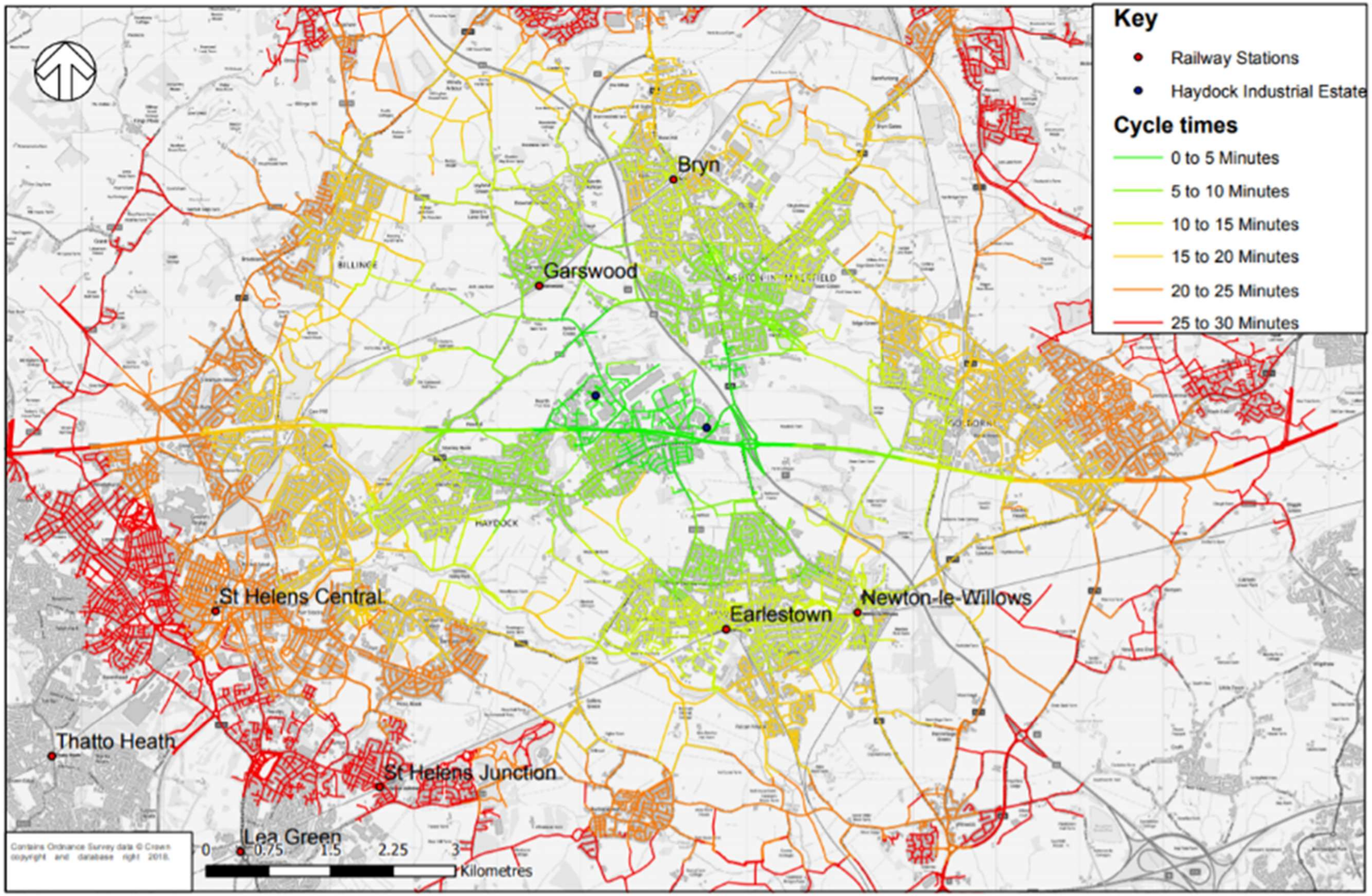


Figure 3-2 - 30 Minute Cycle Isochrones from Haydock Industrial Estate



Key Points – Existing Sustainable Transport Provision:

Constraints:

- An adequate level of bus provision is confined to specific areas of St Helens and Wigan.
- Direct public transport options to the wider geographic area are minimal or non-existent (within St Helens and to Wigan and Warrington).
- Shift times limit the use of sustainable travel options.
- The National Cycle Network avoids St Helens borough almost completely.
- The lack of good cycling infrastructure and the A580 present a barrier for walking and cycling to access HIA from the south of the borough.

.

Opportunities:

- 30-minute walking and cycling isochrone mapping indicates significant residential areas and a number of rail stations are accessible by active travel modes.
- Liaison with bus operators is required to improve routes and frequencies of existing services.

4

EXISTING AND PROPOSED DEVELOPMENT FOR CONSIDERATION

4. EXISTING AND PROPOSED DEVELOPMENT FOR CONSIDERATION

Introduction

4.1.1. It is essential to understand the existing and proposed land use around the M6 J23 / A580 in conjunction with existing and proposed sustainable transport conditions to identify opportunities for encouraging sustainable travel to reduce the high number of local car trips around the junction.

Existing Local Employment Development

4.1.2. Existing employment development in the vicinity of J23 largely comprises the Haydock Industrial Area (HIA) – located in the north-west quadrant of the M6 J23, within one mile of the junction.

4.1.3. Haydock Racecourse is also located close to the J23 – approximately 1.5km to the north east (NE) of the junction. Given this is predominantly a leisure destination the trip demand pattern is generally outside the traditional peak hour periods. However, the racecourse traffic causes a significant disruption to local traffic flow around the junction when events are on and this is an issue which needs to be addressed.

4.1.4. Datashine Census data indicates that approximately 8,000 people work in the Haydock area Medium Super Output Area (MSOA St Helens 005) – this largely incorporates HIA but also accounts for some smaller employment sites in the vicinity of the M6 and Haydock Racecourse.

Existing Local Residential Development

4.1.5. Over half of the borough's population lives in the town of St Helens, with other substantial communities in the south of the borough: Newton-le-Willows and Earlestown towards Warrington and Rainhill bordering Knowsley.

4.1.6. The predominant existing residential areas in the vicinity of HIA / M6 J23 where sustainable travel options may be feasible for local travel include Haydock, New Boston and Newton-le-Willows to the south of the A580 and Garswood, Golborne (Wigan), Edge Green (Wigan), Bryn (Wigan), Stubshaw Cross (Wigan) and Ashton-in-Makerfield (Wigan) to the north of the A580.

4.1.7. Bus service provision adds accessibility to wider areas, including Lea Green, St Helens town centre area, Earlestown, Thatto Heath, Newton, Ashton-in-Makerfield, Wigan and St Helens.

4.1.8. The northern areas of Warrington Local Authority area, such as Winwick, Croft and Culceth, are largely inaccessible by sustainable modes, these being located either more than 5km from HIA and/or public transport options being limited or requiring excessive interchange.

Proposed Residential and Employment Development

Development Allocations – St Helens Local Plan 2018-2033

4.1.9. Access by sustainable modes should be integral to further development in the area. The preparation of the St Helens Local Plan 2018-2033 provides the platform for facilitating development at locations that are or can be made sustainable, in combination with the effective introduction of travel planning and demand measures. In turn, this can increase sustainable transport choice to retain capacity and alleviate pressures on the local and strategic transport network.

4.1.10. **Tables 4-1** and **4-2** set out the St Helens Local Plan employment and residential development allocations in the vicinity of M6 Junction 23/A580, respectively. The allocations have been referenced with regards to the M6 J23/A580 in terms of proposal detail, relevant sustainable travel considerations and locational impacts.

Table 4-1 – Employment Allocations in the Vicinity of M6 J23/A580 – St Helens Local Plan 2018-2033 (January 2016)**

Site Name and Detail	Sustainable Transport Considerations	Locational impacts in relation to M6 J23 / A580
Policy LPA04.1: Strategic Employment Allocation Sites allocated on Policies Map in the vicinity of Junction 23		
EA2: Land at Florida Farm North, Slag Lane, Haydock Access via upgraded junction at A580 / Haydock Lane. 135,000 sq. m. of industrial and distribution warehouses and create an extension to Haydock Industrial Estate. *Bericote Site (extension of existing Haydock Industrial Estate).*	All strategic sites require a robust and implementable Travel Plan for entire site. P/2016/0608/HYBR conditions a travel plan for this site for the first 5 years of occupation. Design and layout to connect well to Haydock Industrial Estate and to sites EA6 and EA7 *(will facilitate permeability through new development areas).* *STEP funding applied for by the council to fund improvements on the A580 (new access junction and cycle and pedestrian crossing facilities across the road) – these are near completion.*	NW quadrant of junction. Immediately north of A580, to west of existing HIA. 2.5km west of M6 J23.
EA4: Land north east of Junction M6 J23, south of Haydock Racecourse, Haydock; *(Peel site – Haydock Point)* Up to 1.8m sq ft (167,625 sq m) of employment floor-space, a minimum shall be used for Class B8 purposes (logistics and distribution) and a maximum of 20% for general employment (Class B2). Ancillary facilities such as office / welfare facilities will also be provided. Vehicle access via a new signal-controlled junction on the A580 East Lancashire Road. A second priority-controlled access for emergency vehicles is proposed to the west of the site from the A49 Lodge Lane. This access will also serve pedestrian and cycle links to the site from the A49.	All strategic sites require a robust and implementable Travel Plan for entire site. *Planning Application (status currently awaiting decision) includes a robust Travel Plan for the site.* *New signalised access provision will impact on traffic delay but will assist with pedestrian and cyclist permeability.*	NE quadrant of Junction. Immediately east of M6 and north of A580. Adjacent to the junction.
EA7: Land west of Millfield Lane, south of Liverpool Road and north of Clipsley Brook, Haydock; (Canmoor site) 20.6 hectares of B2 / B8 development. Appropriate highway access via Haydock Lane or justified suitable alternative.	All strategic sites require a robust and implementable Travel Plan for entire site. Design and layout should seek to connect well to Haydock Industrial Estate and to sites EA2 and EA6 *(will facilitate permeability through new development ME).*	NW quadrant of junction. Immediately north of EA2 (N of A580), to north west of existing HIA. 2.5km north west of M6 J23.
EA8: Parkside East, Newton-le-Willows; **SRFI Policy LPA10 - Development of Strategic Rail Freight Interchange (SRFI) – 65 hectares** Land to the east and west of the M6 including part of the site of the former Parkside Colliery is identified as a strategic location. Provide direct access to the site from the M6 for HGVs.	All strategic sites require a robust and implementable Travel Plan for entire site. Policy LPA10 - Establish and implement a Travel Plan that incorporates measures which encourage travel to/from the site using sustainable transport modes, including access by public transport, cycle and foot, in accordance with Policy LPA07 (Transport and Travel).	Closer to M6 J22. Located 2.5km to the SE.
EA9: Parkside West, Newton-le-Willows Appropriate highway access via the existing A49 Newton Road access for an initial phase of development and in later phases via a new link road from the east of the M6. 80 hectares B2/B8 development.	All strategic sites require a robust and implementable Travel Plan for entire site.	Closer to M6 J22 (new access to M6). Located 2.5km to the SE.
Other Employment Allocations		
EA6 Land to the west if Haydock Industrial Estate, Haydock 7.75ha / B2/B8 use - NW quadrant of junction, Adjacent to EA7 to north west of existing HIA. 2.4km north west of M6 23		
EA5 Land South of Penny Lane, Haydock 2.16 Ha / B2/B8 - NW quadrant of junction, Adjacent to M6 and EA3. 500m north west of M6 23		
EA3 Land North of Penny Lane, Haydock 11.05 ha / B2/B8 - NW quadrant of junction, Adjacent to M6 and EA5. 300m north west of M6 23		

Table 4-2 – Housing Allocations in the Vicinity of M6 J23/A580 – St Helens Local Plan (January 2016)**

Policy LPA05.1 Strategic Housing Sites in the Vicinity of M6 J23 /A580		
Site Name and Detail	***Sustainable Transport Considerations***	***Local impacts in relation to M6 J23 / A580***
HA7: Land between Vista Road and Ashton Road, Earlestown; Appropriate access primarily via Vista Road and Ashton Road and suitable internal road network. 17 hectares.	All strategic sites require a robust and implementable Travel Plan for entire site. Create high quality pedestrian and cycleways to connect the sites to Lyme and Woods Pits Country Park, Haydock industrial Estate and where feasible land north east of M6 Junction 23 (EA4) along Penny Lane.	SW quadrant of junction. Immediately south of A580 – extending existing Haydock residential area. Close to employment sites EA2/EA7/EA6. 2.7km west of M6 J23.
HA10: Land south west of M6 J23 between Vista Road and Lodge Lane, Haydock 28 hectares.		SW quadrant of junction. Immediately south west of M6 J23. Close to employment sites EA3/EA5/EA4. <100m SW from M6 J23.
Other housing allocations in vicinity of M6 J23:		***Locational impacts in relation to M6 J23***
HA2 - Land south of Billinge Road, east of Garswood Road and west of Smock Lane, Garswood 9.58 ha 179 estimated delivery.		NW quadrant, Closer to M6 J24. 3.5km to the north west M6 J23. Extension to existing Garswood residential area.
HA13 - Former Red Bank Community Home, Winwick Road, Newton-le-Willows 8.03 ha / 150 estimated delivery.		Closer to M6 J22 (new access to M6). Located 3km to the SE of M6 J23.
Safeguarded housing sites in vicinity of M6 Junction 23:		***Locational impacts in relation to M6 J23***
HS01 - Land north of Strange Road and west of Camp Road, Garswood 4.45 ha / 83 minimum dwelling capacity.		Closer to M6 J24. Located east of Garswood. Approx. 2.8km NW from M6 J23.
HS02 - Land south of Leyland Green Road, North of Billinge Road and East of Garswood Road, Garswood 12.99 ha / 240 minimum dwelling capacity.		Closer to J24/J25 M6. Located NW of Garswood. Approx. 3.6km NW from M6 J23.
HS07 - Parcel B (Housing), Land between Ashton Road and M6, Earlestown, Newton-le-Willows.		SW Quadrant. North of Newton-Le-Willows. 800m south of M6 J23.
HS10 - Land south of former Central Works, Bellerophon Way, Haydock 6.59 ha / 120 dwellings minimum capacity.		SW Quadrant. Extension to south of Haydock residential areas. Approx. 2km SW from M6 J23.
HS11 - Land south of Station Road, Haydock 5.67 ha / 85 dwellings minimum capacity.		SW Quadrant. Extension to south of Haydock residential areas. Approx. 3km SW from M6 J23.
HS15/16 15 - Land east of Rob Lane and rear of Castle Hill, Newton-le-Willows. 3.5 ha / 105 dwellings minimum capacity. 16 - Land to rear of 6 Ashton Road and Elms Farm and west of Rob Lane, Newton-le-Willows. 5.5 ha / 110 dwellings minimum capacity.		SW Quadrant. North of Newton-Le-Willows. 1.5-2km south of M6 J23.
HS17 - Land west of Winwick Road and south of Wayfarers Drive, Newton-leWillows 12.3 ha / 255 dwellings minimum capacity.		Closer to M6 J22. Located 3km to the SE.

Note – at the time of writing the St Helens Local Plan Preferred Options Document (December 2016) was available. There is now an updated St Helens Local Plan Submission Draft (January 2019) – therefore some of the sites listed have been amended/or removed.

4.1.11. The St Helens Local Plan employment and residential allocations will increase pressure on the local and strategic route network via the M6 J23 and the A580. The employment allocations will also attract trips from existing local residential areas through local job creation. The Local Plan stipulates that all strategic sites require a robust and implementable Travel Plan for entire site. This will assist in encouraging sustainable travel from the outset, as will area-based employer collaboration in the set-up and delivery of sustainable travel initiatives.

Development Allocations – Wigan Local Authority Area

4.1.12. **Table 4-3** sets out the proposed development in the nearby Wigan area to the north east of the M6 J23, which will initiate cross-boundary travel via the M6 J23/A580.

Table 4-3 - Development Allocations in the Vicinity of M6 J23 – Wigan Local Plan Core Strategy (2013) / Greater Manchester Spatial Planning Framework GMSPF (October 2016)**

Wigan Local Plan Core Strategy Policy SP4 - Broad Locations for New Development (September 2013)		
Site Details	***Sustainable Travel Considerations***	***Locational impacts in relation to M6 J23***
Golborne and Lowton - Housing development with approximately 1,000 dwellings on safeguarded land up to 2026. The **broad** site options are: Land at Rothwell's Farm, Lowton Road, Golborne Land east of Stone Cross Lane, Lowton Land at Pocket Nook Lane, Lowton.	Policy CP 7 – Accessibility - sets out the need to promote accessibility improvements across the borough and to/from key cross boundary locations including St Helens. Travel to work to St Helens from new nearby residential development in Wigan will exacerbate traffic issues. Effective travel planning is necessary from the outset of new development.	Located 2.4km east of M6 J3 – broad proposals superseded by GMSPF.
Greater Manchester Spatial Planning Framework (GMSPF) October 2016		
Pocket Nook, Lowton - a new high quality employment site - 133,000m2 floorspace created for B1, B2 and B3 uses in addition to a new junction on the A579 Atherleigh Way.	**Wigan area –** The Local Plan states that the site will be well connected with adjacent areas, including for walking and cycling, and to bus services on the surrounding road network. The site will be principally served from a new junction on the A579 Atherleigh Way, close to its junction with the A580. Opportunities for local trips into the employment site from surrounding communities should be possible without having to use the A579, particularly by walking, cycling and bus. The site is remote from rail stations. Trips from St Helens are likely to be predominantly by car, depending on public transport provision.	Located approximately 5km to the east of M6 J23.

*****Note – at the time of writing the St Helens Local Plan Preferred Options Document (December 2016) was available. There is now an updated St Helens Local Plan Submission Draft (January 2019) – therefore some of the sites listed have been amended/or removed.***

4.1.13. The employment development identified in the GMSPF is likely to initiate car trips via the M6 J23 and A580. The implementation and promotion of alternative options is essential from the outset to reduce the impact of car trips across the junction as far as possible.

Key Points – Development Allocations:

Constraints:

- The St Helens Local Plan 2018-2033, the Wigan Local Plan Core Strategy/GMSPF indicate significant development that will impact on the M6 J23 and the A580.

Opportunities:

- Local Plan policies stipulate that accessibility is integral to facilitate sustainable development.
- All strategic sites require a robust and implementable Travel Plan.
- Travel Plans / Area Travel Plans can effectively promote local trips from/to new and existing development by sustainable modes.
- Design and layout of several strategic (EA2 / EA7) and other employment sites (EA6) connect well to Haydock Industrial Estate and to one another (EA2/EA6/EA7) - this *will facilitate permeability through new development areas*.
- When considering the location of the St Helens Local Plan allocations many of the strategic and large-scale housing (HA3, HA10, HA7) and employment sites (EA2, EA3, EA4, EA5, EA6, EA7) close to the existing Haydock Industrial Estate will indicate a similar level of walking and cycling accessibility to that of the existing HIA. The production and promotion of site-specific isochrone mapping provides an ideal opportunity to raise awareness of sustainable travel options at new housing and employment sites from the outset.
- STEP funding applications have made by the council to fund improvements on the A580 (*new access junction and cycle and pedestrian crossing facilities across the road – to support strategic employment allocation site – EA2*). These are near completion.

5

TRANSPORT INFRASTRUCTURE PROPOSALS AND IMPROVEMENTS

5. TRANSPORT INFRASTRUCTURE PROPOSALS AND IMPROVEMENTS

5.1.1. An understanding of potential and proposed transport infrastructure improvements in the St Helens area is essential to realise the opportunity to encourage alternative travel options at existing and proposed development locations. **Tables 5-1** and **5-2** respectively set out the potential and proposed highways and sustainable transport infrastructure improvements in the St Helens area.

Table 5-1 – Transport Infrastructure Improvements - Highways

Transport Scheme and Details (status)	Considerations for local traffic at M6 J23 / A580
Parkside link Road (approved) The scheme is located to the east of the town of Newton-le-Willows and comprises a new road to link a proposed logistics development. The scheme is approximately 3.3km in length. The development is expected to create 8,000 jobs, accounting for 68% of economic development within St Helens district. ▪ The new 3.3km road will connect the A49 in Newton-le-Willows directly with the M6 at Junction 22, and will act as a by-pass to divert traffic away from Newton-le-Willows, Winwick and Hermitage Green, as well as unlocking significant commercial development and wider economic benefits. ▪ The new road will also include provision for cycleways and footpaths. ▪ The total scheme will cost in the region of £40 million, with the Liverpool City Region Combined Authority providing £23.8 million. *Source: https://www.sthelens.gov.uk/news/2018/october/19/st-helens-council-secures-24m-city-region-funding-for-parkside-link-road/*	Whilst facilitating access to new development which will increase traffic on the local and strategic highway network, the link road will assist in reducing pressure at the M6 J23.

Table 5-2 – Potential and Proposed Transport Infrastructure Improvements – Sustainable Transport

Transport Scheme and Details	Status	Impact for M6 J23 / A580
Newton-le-Willows Station Interchange		
The scheme was funded by the Local Growth Fund and Merseytravel. It is an important project in the Long-Term Rail Strategy and Growth Deal for the Liverpool City Region Combined Authority as well as the St Helens Local Development Framework. The first phase of the car park included a 100-space section which opened at the end of November 2016. Work on the rail elements of the scheme, including the new ticket office, subway, lifts and waiting facilities, commenced on site in December 2016. The station works are now complete (January 2019), with the full car park and bus interchange now operational. Merseytravel led the scheme, closely working with St Helens Council, Network Rail and Northern.	**Complete**	The improvements to the station aim to help create a strategic transport hub, connecting the local transport network with strategic rail links across the country, building on the Liverpool-to-Manchester line electrification works and the new services that will soon stop at the station. It will also support the future development of the nearby former Parkside Colliery site. Such improvements will be beneficial for reducing traffic impacts at the M6 J23 / A580.
Sustainable Travel Enhancements Package (STEP) Fund		
The STEP programme is targeted geographically in Growth Zone areas that will benefit from investment in businesses, housing and training and employment opportunities over the coming years. The Haydock area forms part of the Eastern Investment Area relevant with committed schemes for Years 1-2 (2015-2017) and schemes for Years 3-6 (2017-2021). For St Helens, relevant schemes include Haydock Connectivity, Connecting Haydock Active Travel and St Helens Town Centre Connectivity. Haydock Connectivity and Connecting Haydock both aim to improve pedestrian and cycling infrastructure in Haydock, specifically to the industrial estate. A key achievement in Years 1-2 was Haydock Connectivity, Stanley Bank Way – an off-road cycle link connecting Haydock Industrial Estate with M62 and to Stanley Bank Way. Three schemes in St Helens have had external funding allocated and will be on site from 2017 to 2021, as follows: - **Haydock Connectivity A580** - A580/Haydock Lane Junction Improvement – to provide active travel crossing. Increases connectivity to the interconnected cycle routes delivered in STEP Years 1 and 2. (£2.8 million) - **Connecting Haydock Active Travel** – improvements to complete or upgrade missing links for active travel users in the vicinity of the A58 to improve access to employment and retail. Also improved signage. (£275,000). - **St Helens Town Centre Connectivity** – improvements to walking and cycling routes from the Haydock and Newton Le Willows areas to key destinations such as railway stations, local amenities and employment and education opportunities (£1.1 million). *(Source: Merseytravel website Step Years 3-6 Business Case)*	**Ongoing**	The three STEP schemes are beneficial for reducing traffic impacts at the M6 J23 and the A580, as follows: **Haydock Connectivity** - Controlled crossing for pedestrians and cyclists. - Improved access for all highway users to Haydock Industrial Estate. - Improved access to employment opportunities. **Connecting Haydock Active Travel East** - 100m new cycle lane, 1km of new on-road cycleway. - Improved linkages to employment and amenities. **St Helens Town Centre Accessibility** - 3.2km new off-road cycleway. - 1.6km of new on-road cycleway. - 1 new Toucan crossing and 2 upgraded Toucan crossings.
St Helens Local Cycling and Walking Infrastructure Plan (LCWIP)		
LCWIPs are set out as a recommended approach to planning provision for cycling and walking in the Government's Cycling and Walking Investment Strategy. They offer a new and strategic long-term approach (ideally over a ten-year period) to identifying cycling and walking improvements required at the local level. They are a key part of the Government's strategy to increase the number of trips made on foot or by cycle, and it appears likely that they will be an essential part of funding bids in the future. The key outputs from LCWIPs include a network plan for walking and cycling which identifies preferred routes and core zones for further development, a prioritised programme of infrastructure improvements for future investment and a report to provide the associated narrative. In terms of timescales, the LCWIP should be broadly split into three delivery periods: short-term (<3 years), medium-term (<5 years) and long-term (>5 years). Merseytravel and the six local authorities in the Liverpool City Region – including St Helens Council – are currently working together to develop an LCWIP for the city region, which will include a network plan and a programme of infrastructure improvements for prioritisation.	**In Progress**	St Helens draft LCWIP proposals include a number of strategic routes in the Haydock area. These complement the wider STEP programme and other public right of way improvements, and will assist in encouraging active travel to employment and other journey purposes – hence positive impacts for the M6 J23 / A580.

Transport Scheme and Details	Status	Impact for M6 J23 / A580
St Helens Bus Review - Merseytravel		
Merseytravel, as part of its Bus Strategy, undertook consultation for a review of the St Helens Bus Network during summer 2018. The next steps will be to draft any changes to the network and publicise them on their website, with a new online survey to be published to provide the chance for further public feedback. As with previous reviews, Merseytravel will work with operators to make any route changes for commercial services. Any changes will come into effect in April 2019. WSP has engaged with Bus Development Officers at Merseytravel to understand any relevant outcomes of the review which may impact upon sustainable travel options.	**In Progress**	WSP liaison with Bus Development Officers at Merseytravel has indicated that there are currently no planned changes to bus services in the Haydock area. However, the 603 service is being reviewed with a view of aiming to improve north-south links between Garswood and Newton Community Hospital – with the continuation of the service via Haydock Industrial Estate. This review will also consider the provision of the 22 service (which currently routes between Wigan – Earlestown and Warrington). Any improvements that come to fruition could be beneficial for reducing traffic impacts at the M6 J23 / A580.
Transforming Cities Fund (TCF) Liverpool City Region– Earlestown Interchange		
The LCR secured £134 million in capital grant from the Transforming Cities Fund for local transport investment over a 4-year period. The fund aims to help transform sustainable transport connectivity in key commuter routes in major city regions. The funding forms part of the wider Strategic Investment Fund. The Earlestown interchange is a St Helens Local Authority TCF proposal that involves the creation of a new station building, adjacent to the bus station which will support facilities in addition to walking and cycling improvements. The scheme serves new developments which provides new potential customers for bus operators. This opens up the opportunity to extend bus services to Haydock Industrial estate, along with other areas to provide connectivity. A proposed sub-intervention is to extend number 20 service to the Station.	**Proposed TCF Intervention**	Improved bus links to Haydock via the station will benefit both local and wider travellers who may currently travel to work in Haydock by car due to limited public transport options. This improved bus connectivity is positive for reducing traffic impacts at the M6 J23 / A580.
Moss Bank Station (Carr Mill) – Liverpool City Region Long Term Rail Strategy		
This proposal aims to reopen the disused railway nearby Carr Mill and reopen the station which will sit along the A580 East Lancashire Road. The LCR new stations assessment tool reviews the potential for new station locations across the network, mostly identified in 2014 to be delivered up to 2032. In the assessment tool Carr Mill station performs moderately well and is identified as a potential short-term scheme (as it can be developed on the current network without any new lines of connections). However, further work is required to establish whether a business case exists for each of the possible stations.	**Proposal** only at this stage – potentially eligible for TCF support but would be timescale dependent	The opening of the station would enhance sustainable transport for those travelling for employment, specifically to Haydock Industrial Estate. The use of the station could have particular impacts on reducing strategic car trips via M6 J23.
Enhancement of the Key Route Network (KRN) – KRN Scheme 'A580 Employment Hubs'		
The LCR Key Route Network schemes are funded via the LCR Combined Authority Single Investment Fund (SIF). The KRN Scheme 'A580 Employment Hubs' within the Eastern Investment Gateway Area forms part of the KRN Strategic Maintenance Package. This includes the upgrade of two pedestrian/cycle crossings in the Haydock area.	**Proposal**	Improved accessibility for existing businesses and residents.

Key Points – Transport Improvements:

Constraints:

- Funding availability and determination will determine the extent of sustainable transport infrastructure and connectivity improvements.

Opportunities:

- There are a number of ongoing and proposed sustainable transport infrastructure improvements which will improve connectivity by alternative modes when they come to fruition and therefore assist in alleviating traffic pressures – both at a local and strategic level.
- Promotion of sustainable transport improvements at existing and new employment is essential to maximise and sustain the use of alternative modes.

6

CONSULTATION WITH RELEVANT STAKEHOLDERS

6. CONSULTATION WITH RELEVANT STAKEHOLDERS

Introduction

6.1.1. As part of the exploration of alternative options for encouraging sustainable travel in the Haydock area, consultation with relevant contacts at key public authorities and specific businesses was undertaken. This consultation supplemented the transport evidence base outlined above by providing further information on existing or proposed funding opportunities for sustainable travel initiatives, existing travel issues and knowledge on existing or previous sustainable travel work that could be built upon.

6.1.2. Liaison/consultation was undertaken with the following key public authorities / businesses to inform the study:

- St Helens Council
  - Mark Osborne - Principal Transport Officer (Policy).
  - Susan Waller - Business Liaison Officer.
- Wigan Council
  - David Kearsley - Team Leader Planning and Transport Policy.
  - Dawn Jones - Travel Plan Officer.
- Highways England
  - Kristian Marsh - Asset Manager.
- Merseytravel
  - Simon Ackers - Principal Bus Development Officer.
  - Steve Atkinson - Engagement Officer.
- TfGM
  - James Tomkinson / Michael Hall - Bus Provision.
- Arriva North West and North Wales
  - Mike Kent - Business-to-Business Manager.
- Specific Business Consultation:
  - Azure Solutions - Sarah Singleton (SS), Product Consultant.

Consultation Outcomes

6.1.3. The key outcomes from the consultation process are outlined in **Table 6-1**.

Table 6-1 – Consultation Responses to Inform the Identification of Alternative Options

Contact Name/Organisation.	Key Points	Issues	Opportunities
PUBLIC AUTHORITY CONSULTATION			
Mark Osborne – Principal Transport Officer (Policy) – St Helens Council	Mark Osborne provided the background context (issues and opportunities) relevant to the consideration of sustainable travel options around the M6 J23, in addition to key documents for review and relevant contacts (included below).	Requirements in line with Local Plan allocations were discussed. The key barriers to walking and cycling were noted i.e. lack of/standard of pedestrian and cycle routes across the M6 and A580.	Key contacts for consultation where provided in addition to knowledge on potential opportunities through the Transforming Cities Fund, LCWIP and ongoing STEP improvements.
Merseytravel – Steve Atkinson (SA), Engagement Team Leader, Communities and Employers	Merseytravel Officers are aware of Travel Planning work undertaken in the past at Haydock Industrial Estate – namely through Local Sustainable Transport Fund (LSTF) The Merseytravel Employers Network includes 16 Haydock business contacts – all of whom were introduced to WSP (by SA) to have the opportunity to input into the study. Subsequently, WSP liaised with some of the specific businesses. There is a HIA tenants group (database of contacts for all tenants). Azure Solutions has been the voice of various businesses in submitting information for the study. SA introduced WSP to a contact at St Helens Chamber (Joanne Hitchen).	Around 140 businesses on the estate – many operate shifts. For example, shifts operate at 6am – 2pm / 2pm – 10pm / 10pm – 6am. Shift patterns do not align to public transport hence impact on travel options and safety fears for active travel. Roads act as a barrier to active modes. Employers concerned for employee well-being, particularly in winter months. New development likely to operate on a shift pattern. Failure to implement appropriate public transport will impact on recruitment for new businesses, as it does for existing businesses.	Building on existing networks. Introduction to existing Working Group at Haydock Industrial Estate. Introduction to specific businesses and tenants group who are keen to explore opportunities to encourage sustainable travel e.g. Coral Mouldings, Azure Solutions. Introduction to key contact at Chamber of Commerce.
Sue Waller (SW), Business Liaison Officer, St Helens Council	Travel Planning has been undertaken in the past, notably as part of the Local Sustainable Transport Fund. SW attends the HIA networking meeting (monthly). All members of the tenants group are invited but only some attend. The representative from Azure Liquid Solutions is contributing thoughts both from her own company perspective, but also as a member of the tenants group.	Lack of public transport for employees accessing the Estate. The Haydock networking group is trying to get other firms on the site get involved, but it is difficult.	Monthly Haydock networking. SW can assist with introduction to businesses and tenants group.
Adam Sanderson, Business Liaison Officer, St Helens Council Chamber	AS attends the HIA networking meeting (monthly). They discuss a variety of topics but the group is used as a vehicle for transport issues – good feedback - businesses keen for better travel options. WSP welcome to attend (can establish buy-in for travel planning measures). There is also an email group to reach out to those who do not attend the meetings.	Many businesses contact the Chamber over concerns with transport – commuting, interview issues, staff retention. Safety issues with HGVs - narrow roads - employers not keen on staff cycling for safety reasons. Currently lack of staff resource to implement an up-to-date staff travel survey. No dedicated funding dedicated at present for travel planning measures.	Arriva attend networking group - discuss service demand/ bus routes in addition to wider measures, also cycle to work schemes etc. Approx. 40-50% of businesses represented at meetings – tight knit community. Chamber recently administered a business overview questionnaire to understand operations in relation to demand for bus service improvements: - basic surveys with employers – shift patterns and demand in line with bus services

Contact Name/Organisation.	Key Points	Issues	Opportunities
			- aiming to build a case for new buses with Arriva - adequate survey response Travel Plan Action Plan – would be useful to have an action plan to consult employers on. Need for a Site Travel Plan Coordinator - With Amazon and the big logistics centre moving in and Sainsburys and Bookers already on site, a Travel Plan Coordinator would be worthwhile. Must also include smaller businesses.
Mike Kent (MK) – Business to Business Manager Arriva North West and North Wales	Offer businesses ticketing offers to encourage bus travel. MK is attending HIA February networking meeting – to explore route options and ticketing initiatives	Bus travel options are limited for those working shifts.	Opportunity to market and tailor the Arriva ticketing offers to those staff who can benefit. Also, to determine demand for new / altered bus routes.
Simon Ackers, Principal Bus Development Officer, Merseytravel	There is a current ongoing St Helens Bus Review.		There are no current planned changes to services time by the Council or Arriva. However, the 603 services is being considered with a view of trying to improve north/south links between Garswood and Newtom Community Hospital. The 22 service to Warrington is also being reviewed as part of this work.
David Keasley, Team Leader Planning and Transport Policy, Wigan Council (feedback via discussion with colleagues in Network Management and Major Projects teams)	The Council is proposing highway infrastructure improvements in the Lowton and Golborne area, which will be funded through S106 receipts, to mitigate the impact of committed residential developments in the area. Improvements are anticipated at key junctions on the A580 including at Lane Head and potentially Golborne Island, but this is unlikely to notably reduce car use at Haydock Island. Work is in progress on the Wigan LCWIP – being led by TfGM at a GM level. Draft evidence based plans have been produced for cycling, with additional work planned on walking routes (though our focus for this will be Leigh). Improvements to cross-boundary cycleways will potentially come out of the LCWIP process. The GM Streets for All programme includes the A49 route from Ashton to Wigan and beyond to Standish. Officers will have more details from this study in the coming months/spring 2019.	The Council does not have a 2017 Rights of Way Improvement Plan (ROWIP). The latest ROWIP is dated 2008. No proposed or committed transport infrastructure improvements (for all modes) in the Wigan area for journeys across the boundary to St Helens (hence travel to the Haydock area).	A strategic bid is planned for Leigh in the next MCF round, and a logical next step for future rounds would be to look at opportunities for a strategic bid covering the area in and around Ashton. The LCWIP/Beelines will provide the context for future bids into the GM Mayor's Challenge Fund (MCF) for cycling and walking – none of the successful bids to date have included the area that borders Haydock, and no definite proposals are on their current list of future opportunities. Officers have mentioned the importance of cross boundary links in both the LCWIP and Beelines work, but it is uncertain how this will be taken forward at this time.
Kristian Marsh, Asset Manager, Highways England	There is a dedicated funding mechanism for cycling and walking and an integration fund for other sustainable modes. This is expected to continue in to Road Investment Strategy 2.	For Junction 23, and the area surrounding, there are not currently any proposals for interventions under any of these funds. There are no existing studies for the area.	Potential to consider the Haydock area in future funding.
Transport for Greater Manchester (TfGM) ***Michael Hall – Bus Service Provision***	TfGM provided a copy of timetables for cross-boundary bus services which route from Wigan to St Helens.	There were no additional bus routes serving the Haydock area than those outlined in **Table 1** above.	Work with TfGM to encourage service improvements.

Contact Name/Organisation.	Key Points	Issues	Opportunities
Dawn Jones (DJ), Transport and Planning Officer, Wigan Council	Through the planning application process DJ assesses if a particular application is over the threshold to require a Travel Plan (according to their Travel Plan Supplementary Planning Document). A Travel Plan is requested from developers with a S106 as a condition.	The Council work with the site occupiers to implement their Travel Plan. After their year one report is submitted they are then eligible to apply for an annual sustainable travel grant through Transport for Greater Manchester (TFGM).	The sustainable travel funding is used to support cycling, walking, car share and public transport initiatives around the site. Hence supporting staff/residents' health and well-being and a reduction in CO2 and other emissions around the site which can improve air quality.
Specific Business Consultation			
Sarah Singleton (SS), Product Consultant, Azure Liquid Solutions	SS is a key member of the tenants / networking group (monthly meetings and an email distribution list) at HIA and has collected input from businesses on transport issues and desired opportunities. SS has provided an inventory of all employers and contact details at HIA. SS has confirmed that the majority of businesses on HIA operate five days a week, with shift patterns varying by organisation. The main engagement process is via the networking/email group. Many employers.	**Current Issues:** Overall lack of public transport to serve the site and a minority of staff use public transport. Buses do not circle the industrial estate. Routes which serve HIA are not always clear. There are a lack of bus routes serving local rail stations. There is no current business-specific or area-wide travel planning work being undertaken. Travel issues and lack of accessibility impact on recruitment. Many no shows for interviews. Some staff cycle and there are Cycle to Work schemes within some businesses but cycle route infrastructure is not that good, particularly with the high presence of HGVs which does not help with promotion of cycling (dangerous for cyclists).	**Current measures:** Need for improved infrastructure and initiatives for sustainable travel. The networking group can be used to inform businesses of any new travel behaviour initiatives. Travel issues are raised to the council / Chamber of Commerce on a regular basis. Many employers have cycle parking – some uncertainty on what shower facilities are available. All sustainable travel modes require improvement, with a particular emphasis on public transport.

Key Points – Stakeholder Consultation:

Constraints:

- Lack of current travel planning on site.
- Current lack of cross-boundary transport infrastructure improvements i.e. from Wigan, for example, via LCWIP.
- Lack of proposed bus service improvements.
- Shift patterns do not favour the use of sustainable travel modes.
- Poor accessibility impacts on employer recruitment.
- Lack of interest in travel planning by some businesses.

Opportunities:

- Existing tenants / networking group.
- An existing contact database of all employers at HIA is available.
- Historic travel plan work to build upon.
- Specific employer contacts enthusiastic to champion/influence sustainable travel.
- Merseytravel's Engagement team, St Helens Chamber of Commerce, St Helens Council Business Liaison Manager and Arriva North West are already working with the HIA networking group.
- Ongoing St Helens Bus Review.
- Haydock may be considered in future rounds of Highways England funding.

7

DEFINING CATCHMENT OF EXISTING / FORECAST LOCAL TRAFFIC WHERE ALTERNATIVE OPTIONS MAY BE FEASIBLE

7. DEFINING CATCHMENT OF EXISTING / FORECAST LOCAL TRAFFIC WHERE ALTERNATIVE OPTIONS MAY BE FEASIBLE

Introduction

7.1.1. The Haydock Industrial Estate Study Final Report indicated that a large proportion of the existing Haydock workforce live a short distance from the site but choose to travel to work by car. Using the most recent Census travel to work data (2011), thorough analysis has been undertaken to understand current travel demand patterns around M6 J23 / A580 and to determine the potential feasibility for encouraging alternative options.

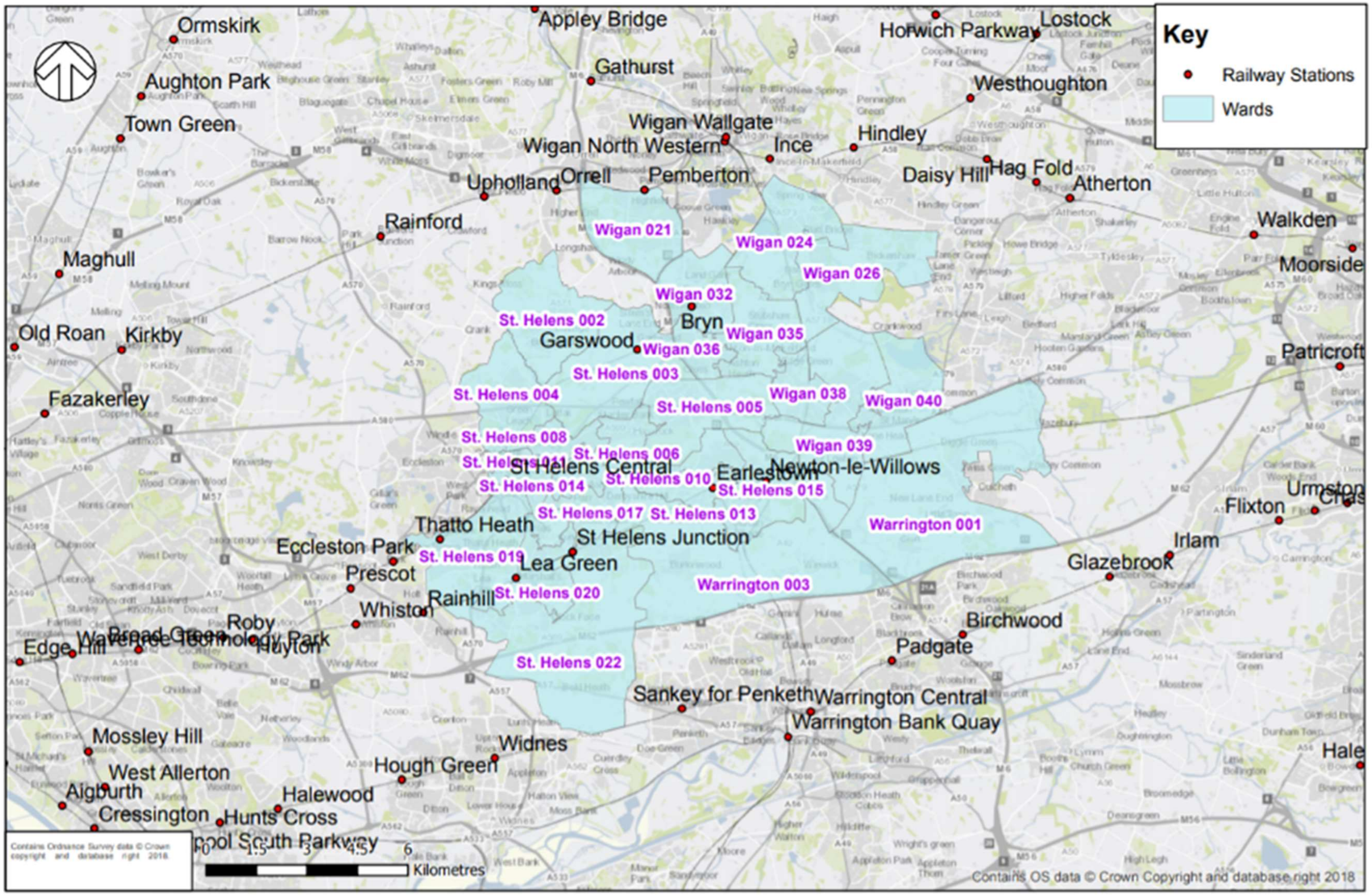
Local and Wider Travel Analysis:

7.1.2. Analysis has been undertaken at the Medium Super Output Area (MSOA) level. A copy of the MSOA map for the St Helens and surrounding area is included as **Figure 7-1**, below. The M6 J23 is located within the St Helens 005 Middle Layer Super Output Area (MSOA). The journey to work data analysis has included the following:

1. Analysis of travel to work data within MSOA St Helens 005 i.e. which includes HIA.
2. Analysis of travel to work data to/from MSOA St Helens 005:
   - to/from surrounding MSOAs in the St Helens, Warrington and Wigan area (St Helens 2,3,4,5,6,8,10,11,13,14,15,17,19,20,22, Warrington 001/003, Wigan 21,24,26,32,35,336,38,39,40).
   - From all areas to St Helens 005 via Datashine analysis i.e. wider areas*.

     * Datashine Travel to Work Flows have been reviewed to supplement the specific MSOA analysis above. Datashine is a large origin-destination matrix of how people travel to work, based on the 2011 Census data. It provides visualised flows of how people travel to work – using MSOA population weighted centroids.
3. Specific modal analysis for travel to work patterns in the area from MSOAs surrounding St Helens 005 i.e. immediate local areas; and
4. Quadrant analysis of grouped MSOAs around the M6 J23 i.e. to establish travel patterns across the junction between the north east / north west / south east / south west quadrants of the junction.

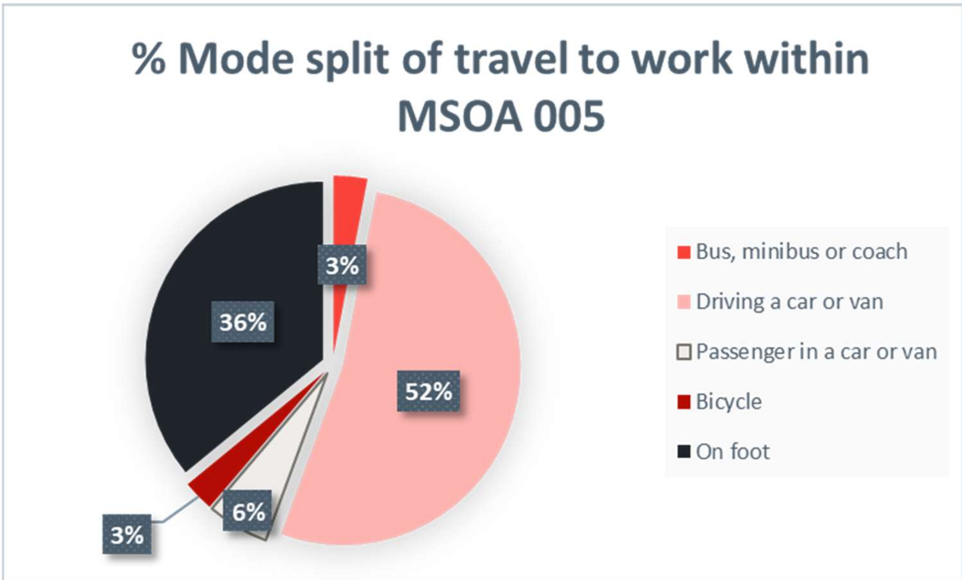
Figure 7-1 - MSOAs included Census Travel to Work Data Analysis



Travel within St Helens MSOA 005

7.1.3. The Haydock Industrial Estate area is located in MSOA St Helens 005. The 2011 Census travel to work data was analysed to understand the modal split for people who currently live **and** work within the St Helens 005 catchment area. The results are set out in **Chart 1** below.

Chart 1 Modal Split of Travel to Work within MSOA St Helens 005



7.1.4. The majority of residential development (New Boston/Haydock area) and employment development (i.e. Haydock Industrial Area) is located to the south west and north west of the St Helens 005 MSOA, respectively. The majority of trips between these residential and employment areas, i.e. commuting to work from the same MSOA area that they reside in, are within a 2km walking distance. However, 52% of residents are travelling by car to their local employment destination. Significant potential therefore exists to further encourage travel by sustainable modes within MSOA St Helens 005, particularly on foot (currently 36%) and by bicycle (currently 3%). The isochrone maps included as **Figures 3-1** and **3-2** above also emphasise the opportunity to encourage an increase in travel by **active** travel modes for local journeys.

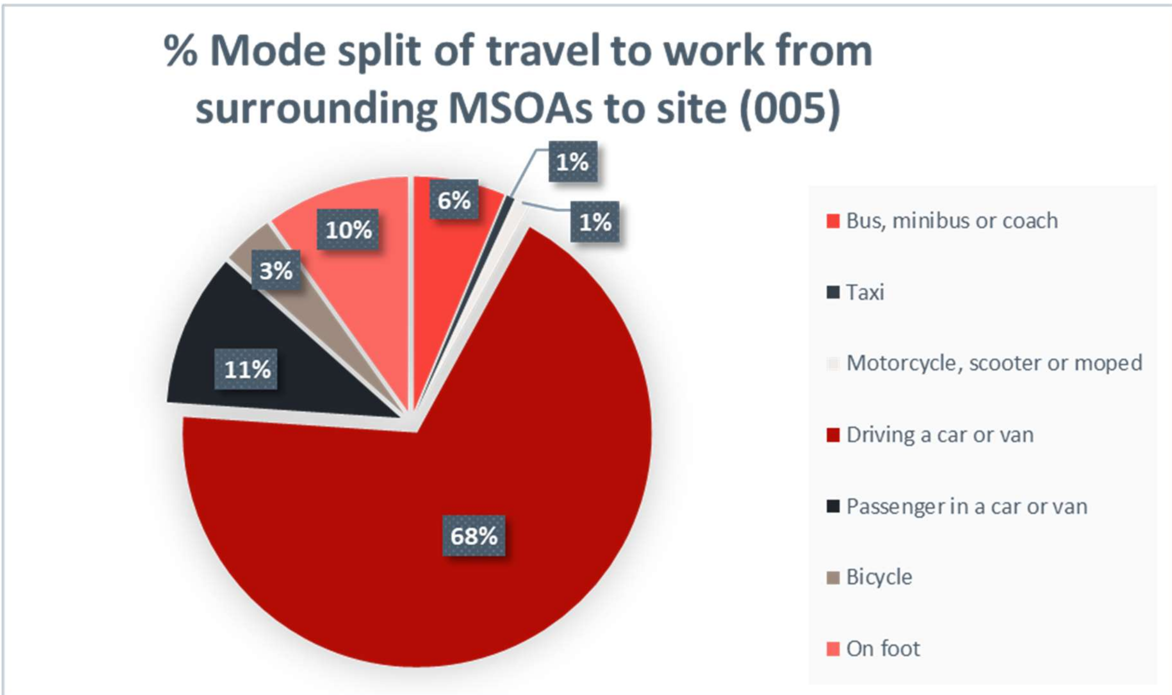
Travel Patterns to/from MSOA 005 (HIA) from Surrounding MSOAs

7.1.5. The 2011 Census journey to work data has been analysed to understand the modal split for people who currently **live** in the surrounding MSOAs **but work** within the St Helens 005 catchment area. The MSOAs indicated in **Figure 7-1** above are those that have been included in this local trip demand analysis.

Overall Modal Split for Travel to Work to MSOA St Helens 005 from Surrounding MSOAs

7.1.6. The overall modal split results for travel to work to St Helens 005 from the surrounding local MSOAs are set out in **Chart 2**.

Chart 2 Modal Split of Travel to Work to St Helens 005 from surrounding MSOAs



7.1.7. The majority of those commuting to work from surrounding MSOAs are travelling via car or van (68%). Passenger in a car constitutes 11% of trips, with walking (9%), bus (6%) and cycling (4%) accounting for the remaining trips. Rail use is not reflected in the chart above as less than 0.5% of trips to the St Helens 005 MSOA are by rail, given the lack of a rail station within easy access of the site. Travel by bus is limited at 6%.

Overall Modal Split for Travel to Work to MSOA St Helens 005 – Datashine Analysis

7.1.8. The overall modal split results for travel to work to St Helens 005 from all MSOAs was analysed by using the Datashine Commute platform.

7.1.9. A similar modal split pattern of travel to work patterns to St Helens MSOA 005 is evident for travel from all areas (all MSOAs) i.e. 74% of trips by car, 9% as a passenger in a car, 10% on foot, 4% by cycle and 3% by bus. Again, rail is not reflected due to low use. The increase in car use can be expected for travel from wider areas, as can the decrease in bus use due to less provision.

Specific Mode Analysis for Travel to Work to 005

7.1.10. **Figure 7-2** illustrates the distribution of all trips to work in St Helens 005 from surrounding local MSOAs. These trips are then segregated by mode in **Figure 7-3** (car trips), **Figure 7-4** (trips on foot), **Figure 7-5** (bus trips), **Figure 7-6** (cycling trips) and **Figure 7-8** (rail trips). Analysis of these mode-specific figures indicates the following key conclusions for existing travel to work patterns to MSOA St Helens 005 i.e. Haydock Industrial Estate Area:

All Trips (3391 trips to St Helens 005 from local surrounding MSOAs)

- The highest concentration of work trips to St Helens 005 are from the immediate adjacent MSOAs in St Helens 003 (137 trips) / 006 (255 trips) / 008 (289 trips) and Wigan 032 (181 trips) / Wigan 035 (171 trips) / Wigan 052 (202 trips).
- There is a significant proportion of trips across the M6 into Wigan MSOAs.
- There are minimal trips from the adjacent local Warrington MSOAs (001 / 003), in comparison to the St Helens and Wigan MSOAs included in the analysis. However, this can be expected given the minimal residential land use in the adjacent Warrington areas.

Trips by Car (2313 trips / 68% of trips to St Helens 005 from local surrounding MSOAs)

- The highest number of car trips are internally within St Helens 005 (Haydock area) and from the adjacent MSOAs to the east of Haydock (St Helens 006 (171 trips) / 008 (191 trips)).
- Significant trips are also made from the Wigan MSOAs nearest to the M6 J23 i.e. particularly Wigan 032 (120 trips) / 035 (135 trips) / 036 (110 trips) - from the Ashton-in-Makerfield and Bryn Residential areas.
- High car travel from Wigan MSOAs will have significant impact on the operation of M6 J23.

Trips On Foot (308 trips to St Helens 005 from local surrounding MSOAs)

- The range for trips on foot across the MSOAs assessed is from 1 trip through to 153 trips.
- The notable MSOAs with the highest trips are internally within St Helens 005 (153). The remaining trips are then confined to the MSOAs immediately adjacent to MSOA 005 – notably Haydock residential areas (St Helens 006 – 48 trips), Earlestown (MSOA St Helens 013 – ten trips), Garswood to the north (MSOA 003 - eight trips), and then across the M6 to Wigan 032 (eight trips) / 035 (15 trips) / 036 (23 trips).

Cycle Trips (119 trips to St Helens 005 from local surrounding MSOAs)

- Cycle trips across the entire MSOAs assessed ranges from 1 trip through to 12 trips.
- Although not excessive, cycle trips are occurring across the majority of MSOAs analysed.
- The notable MSOAs with the highest trips are internally within St Helens 005 (12 trips), then across the M6 to Wigan 035 (Ashton-in- Makerfield), to the south (MSOAs St Helens 10/ 13/15 – Newton-le-Willows / Earsletown etc.) and to the west of Haydock (MSOA 008).

Rail Trips (13 trips to St Helens 005 from local surrounding MSOAs)

- There are minimal rail trips from the MSOAs surrounding St Helens 005, the highest noted being four trips from St Helens 003 which includes Garswood Station.
- Rail is a more appropriate mode for strategic trips rather than local journeys, given the geography of rail stations within the St Helens area.

Figure 7-1 – Travel to Work – All trips to St Helens 005

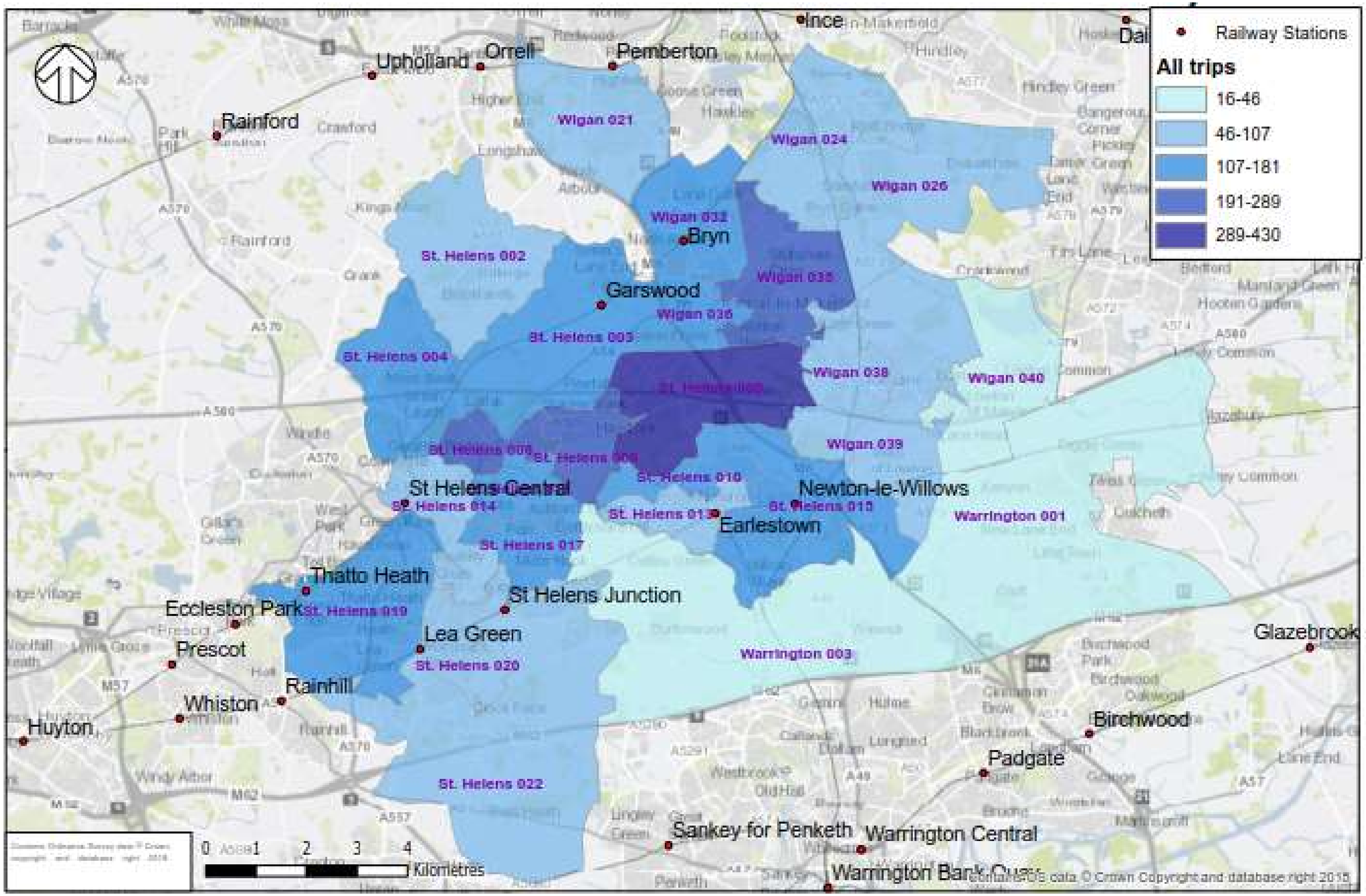


Figure 7-2 - Travel to Work - Car Trips to St Helens 005

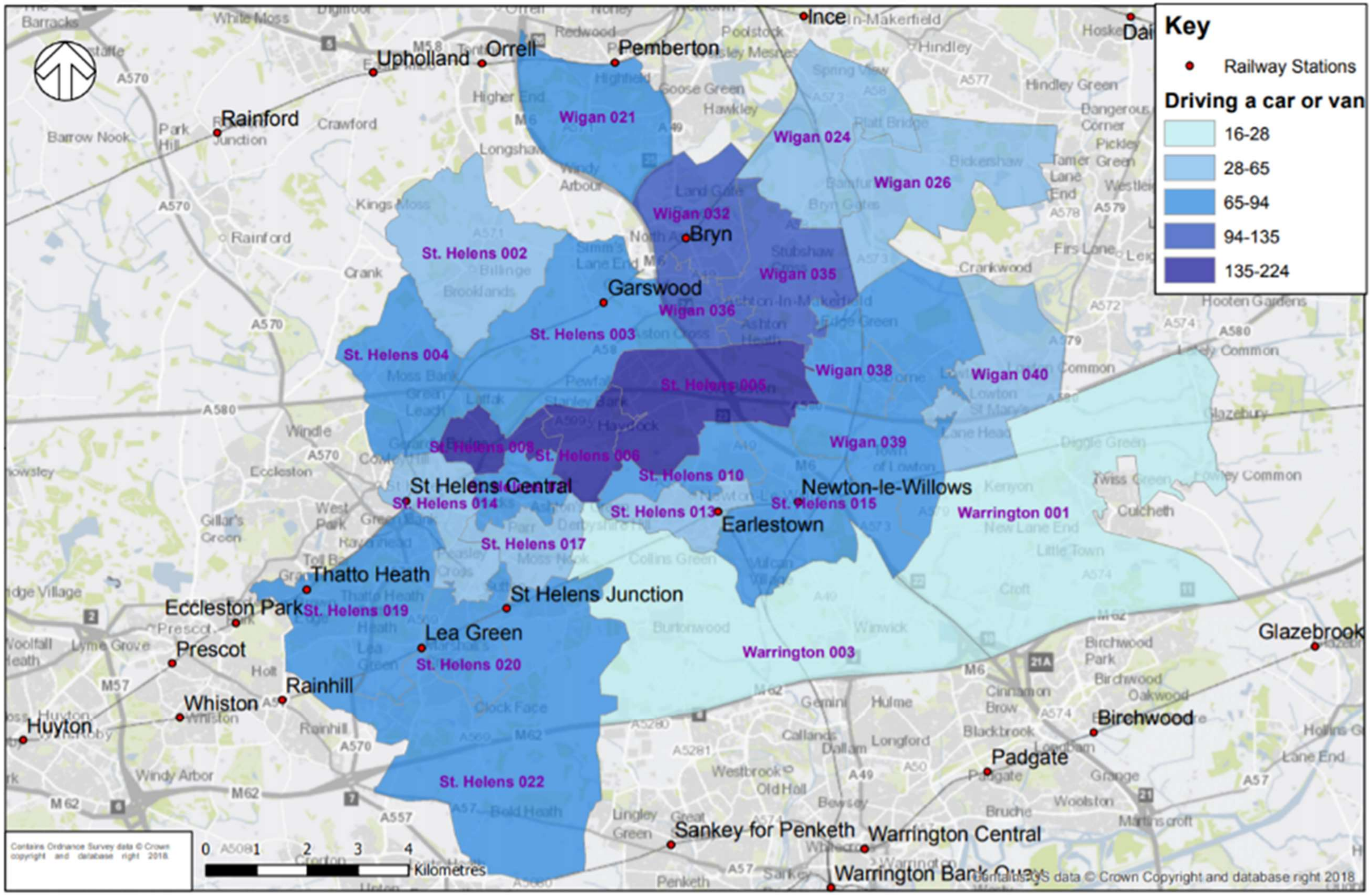


Figure 7-3 - Travel to Work - Walking Trips to St Helens 005

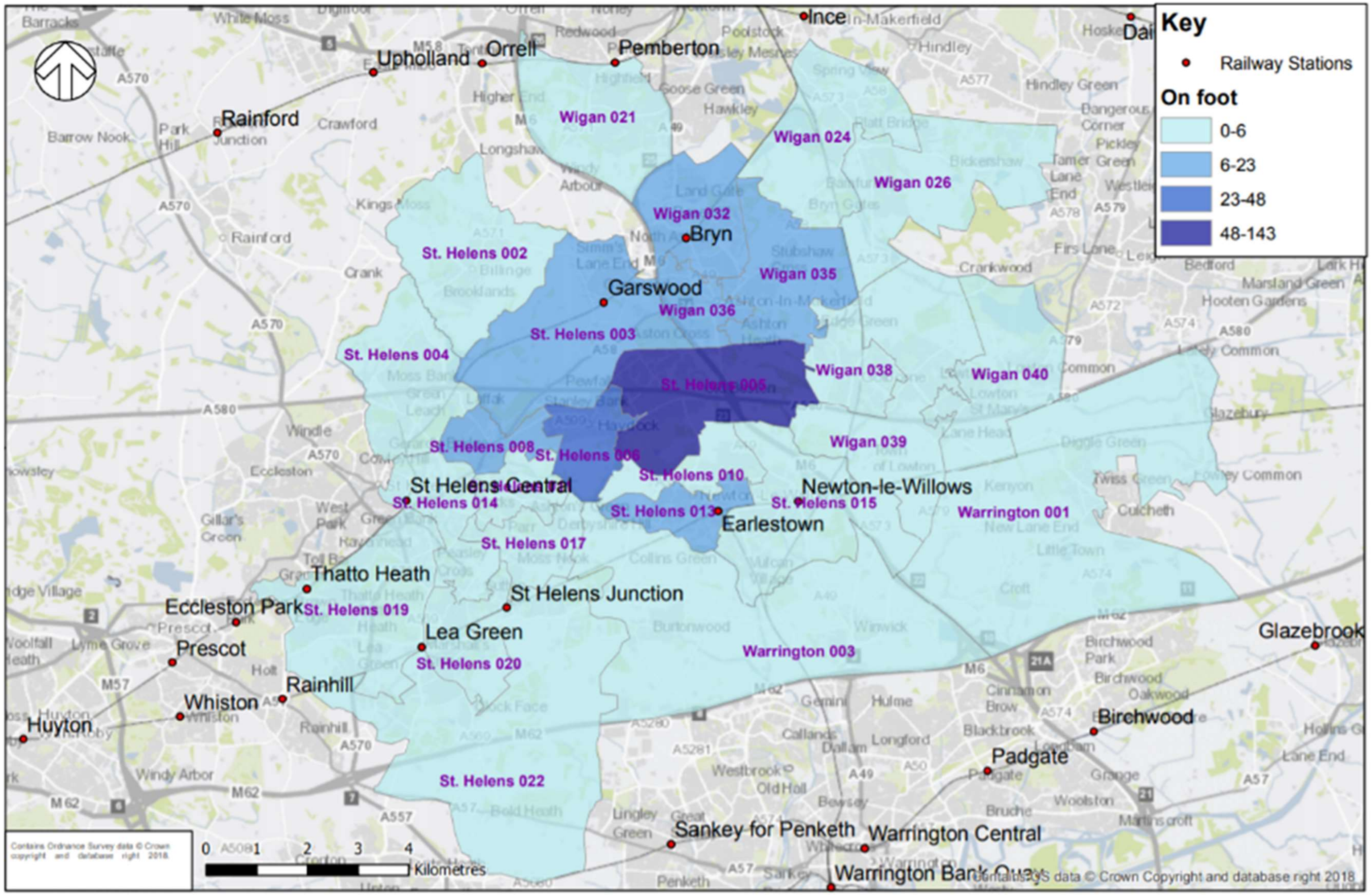


Figure 7-4 - Travel to Work - Bus Trips to St Helens 005

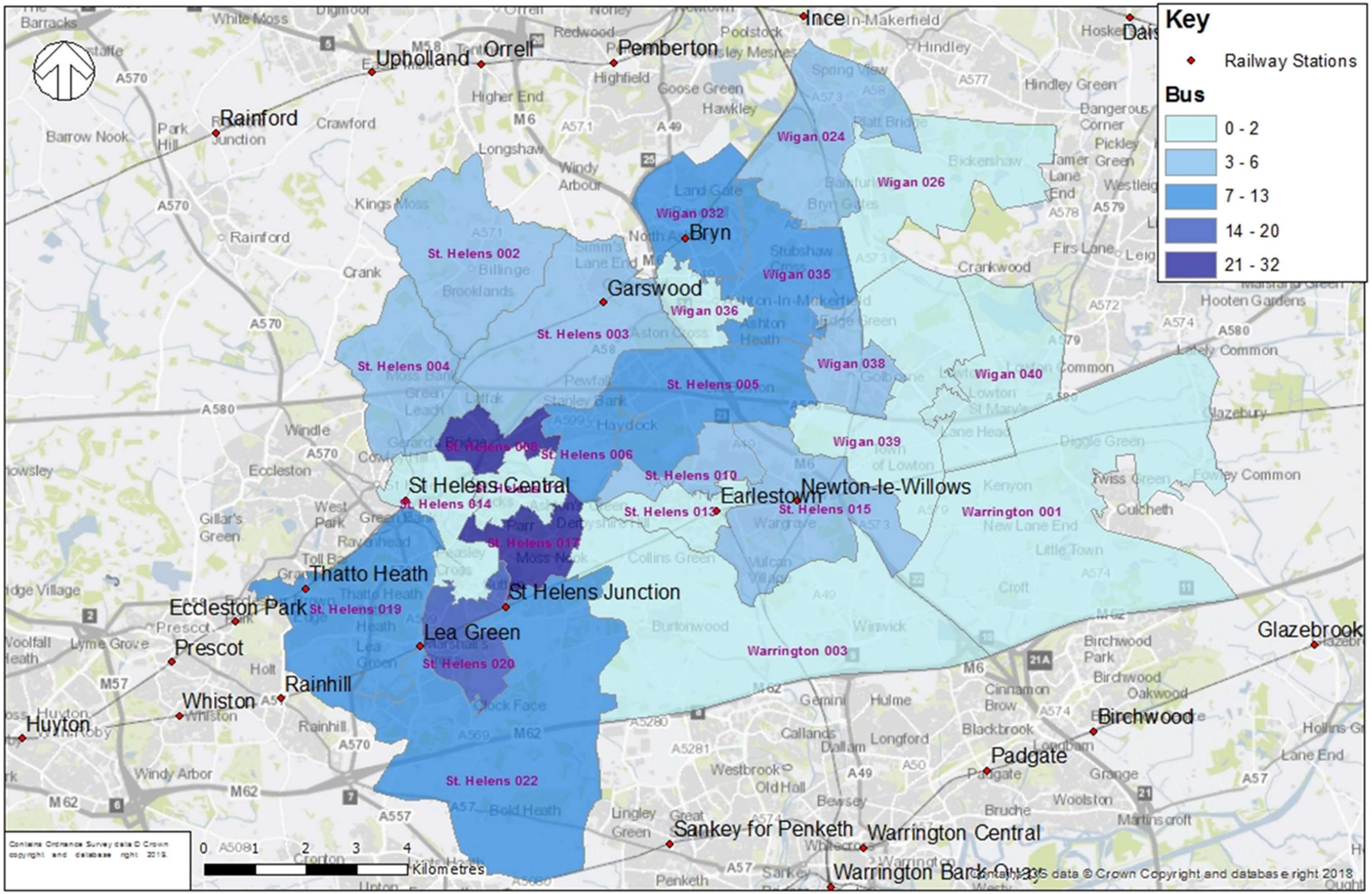


Figure 7-5 - Travel to Work - Cycle Trips to St Helens 005

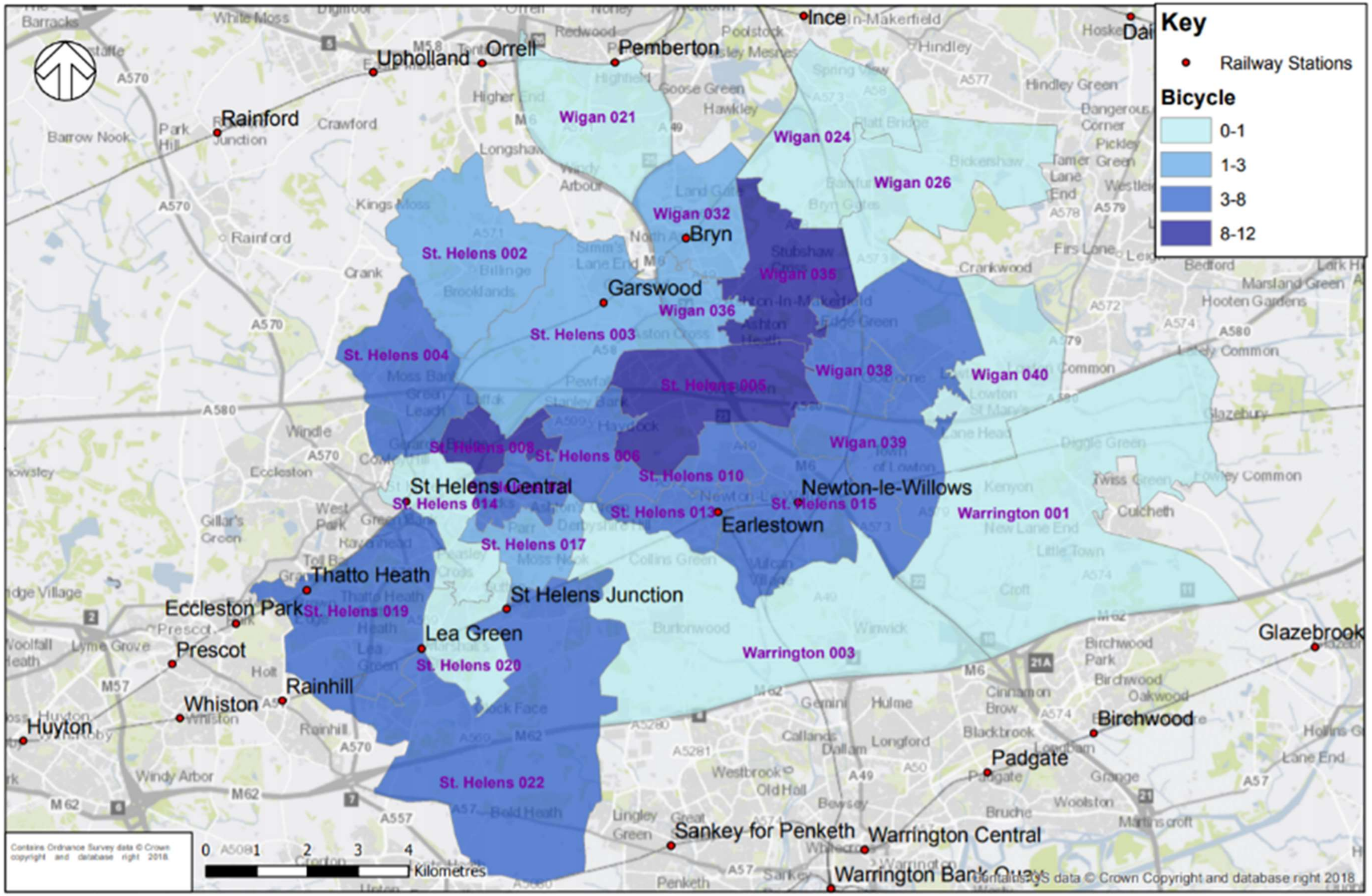
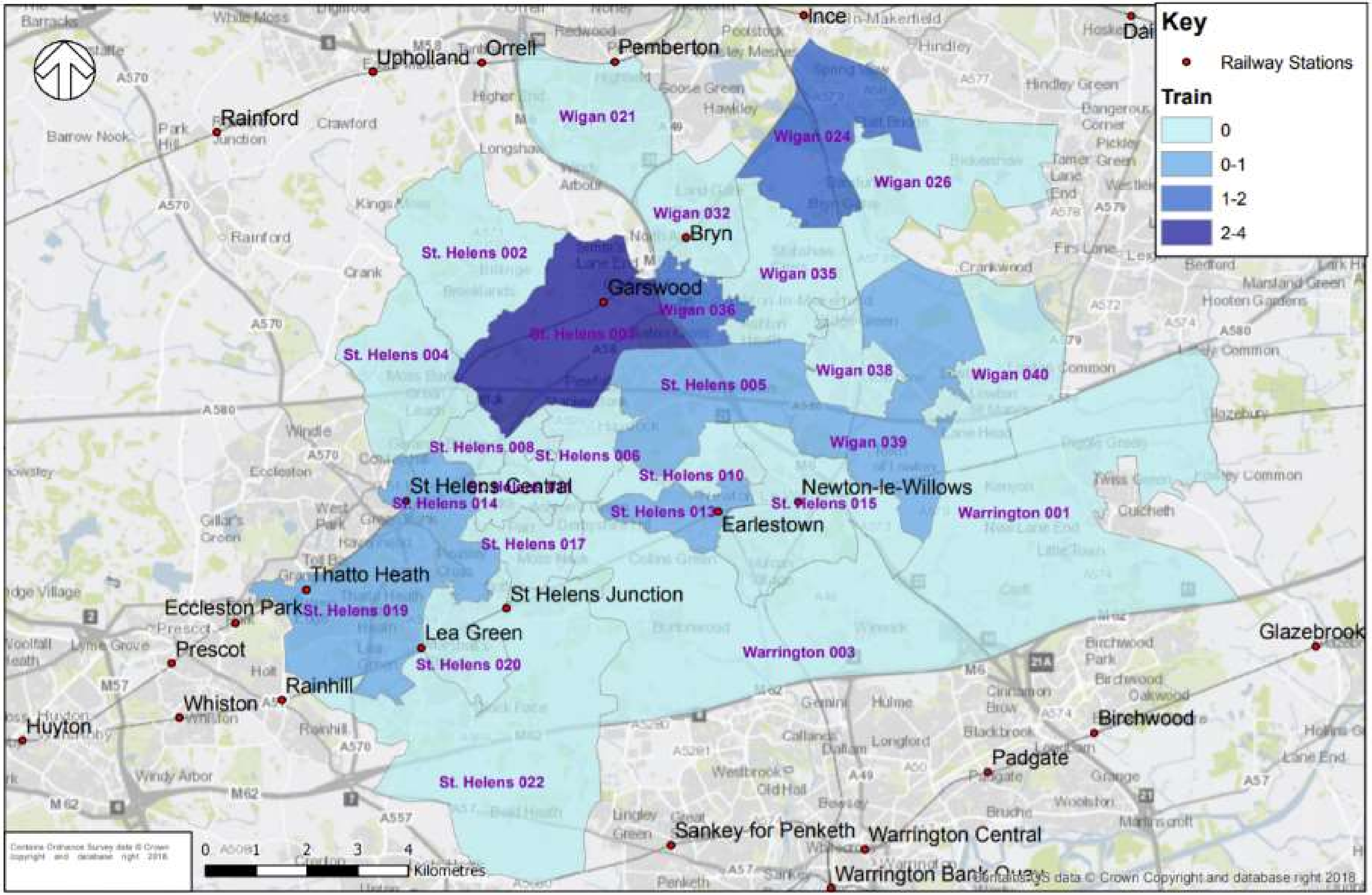


Figure 7-6 - Travel to Work - Rail Trips to St Helens 005



M6 J23 NW/NE/SW/SE Quadrant Analysis

7.1.11. Further analysis of journey to work data has been undertaken through assessing the travel to work data between each quadrant of MSOAs surrounding the M6 J23. This has been undertaken to establish travel patterns across the junction between the north east (NE), north west (NW), south east (SE) and south west (SW) quadrants.

7.1.12. **Figures 7-7 to 7-11** illustrate the quadrant analysis for the distribution of trips to work from each quadrant for each transport mode. Analysis of travel demand on a mode-specific quadrant basis indicates the following key conclusions for existing travel to work patterns in the vicinity of the M6 J23:

Car Drivers (total trips 18,045)

- The quadrant analysis emphasises the significant local car trips from the SW across the M6 J23 to Wigan (2653 two-way trips) and also the significant internal local car trips to work within the SW (8421 internal journey to work trips) and NW (3686 internal journey to work trips) quadrants.

On Foot (total trips 4809)

- The quadrant analysis indicates that there is some travel on foot to work across the M6 J23 into the Wigan MSOAs (83 two-way trips) i.e. between the SW to NE and across the A580 between the SW and NW (147 two-way trips).

Bus (total trips 2100)

- The vast majority of bus trips occur internally within the SW quadrant of the junction (1327 of 2100 total trips) and between the SW and NW (130 two-way trips) – both of which have limited or no impact on the M6 J23.
- In terms of bus trips which route across the junction:
  - Although limited, the only travel to work by bus occurs between the SW - NE (158 two-way trips) i.e. between St Helens (south of A580) and Wigan.
  - There is no or minimal bus travel between NE-SE / SW-SE / NW-NE and NW-SE quadrants.

Cycle Trips (total trips 670)

- As for bus, significant cycle trips occur internally within the SW quadrant of the junction (375 of 670 trips).
- There is also a notable number of cycle trips between the SW (St Helens) – NE (Wigan) (72 two-way trips) and between the NW and SW (43 two-way trips).
- There is a lack of cycle trips between any other quadrants.

Train (total trips 238)

- The number of total trips by train in the area of analysis is minimal. As such travel within and between the various quadrants is also limited, with the only notable level of rail trips being undertaken in the SW quadrant (134 trips), due to the presence of several rail stations.

Figure 7-7 - Quadrant Analysis - Bus Trips within and to each Quadrant Area

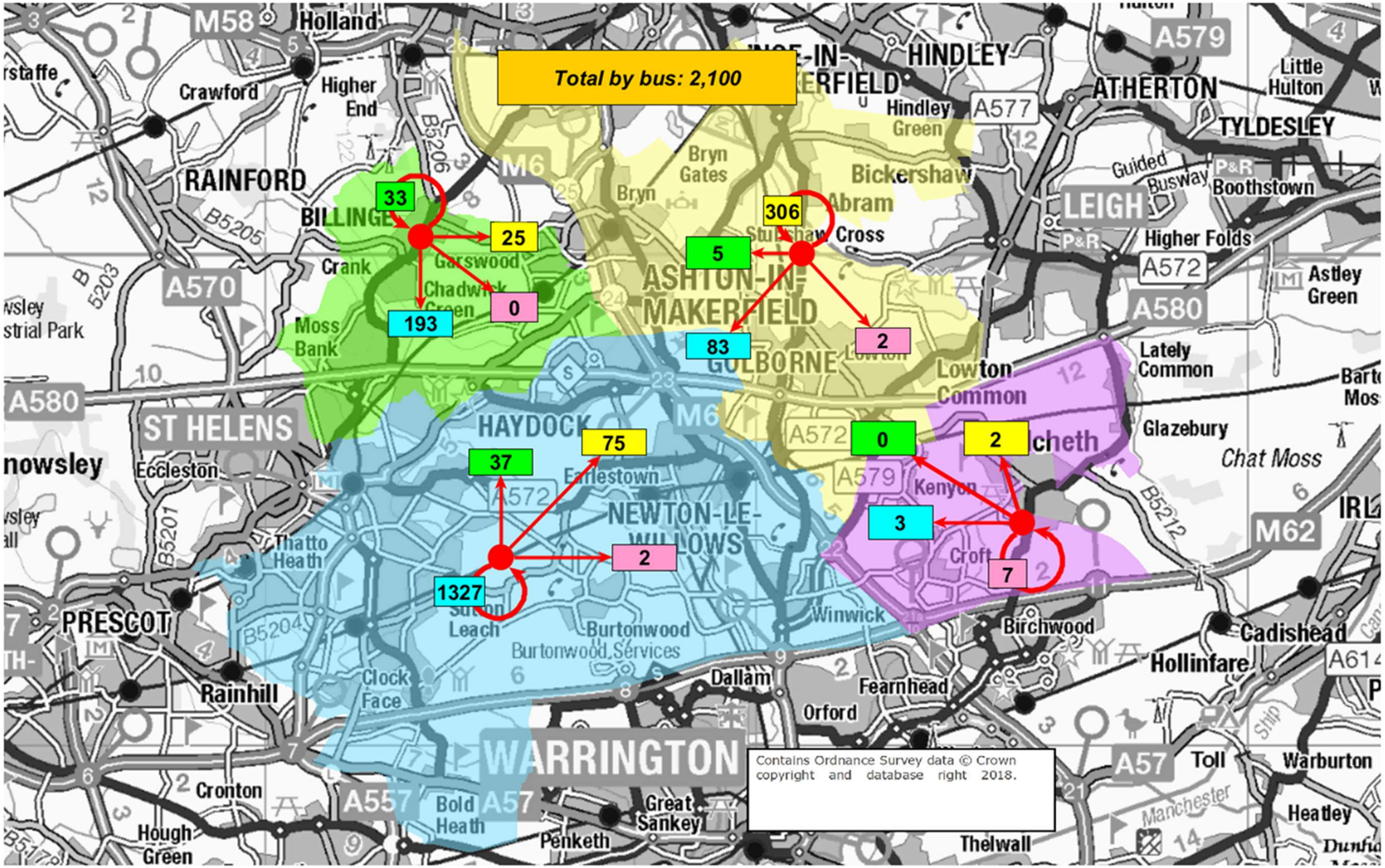


Figure 7-8 - Quadrant Analysis - Rail Trips within and to each Quadrant Area

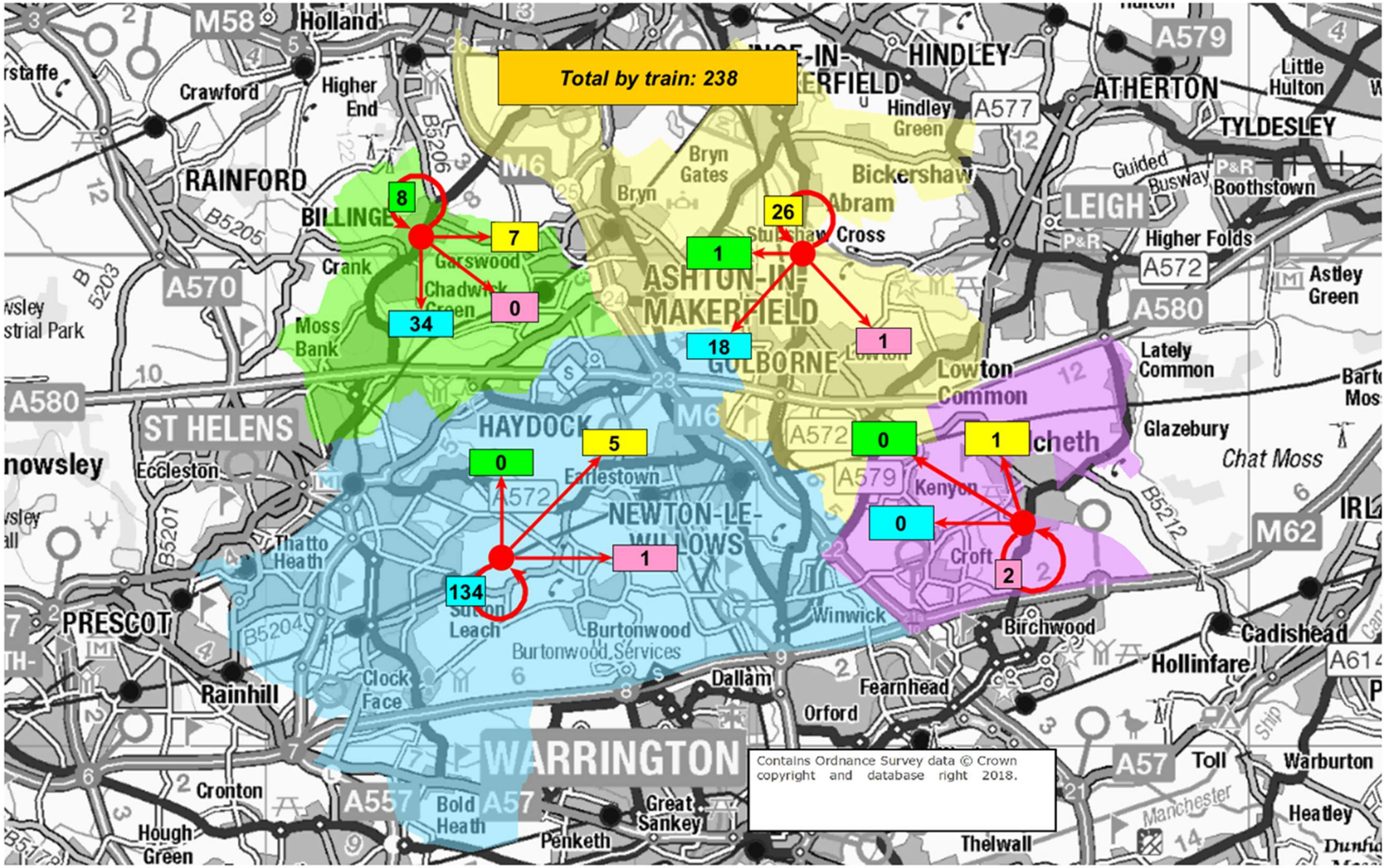


Figure 7-9 - Quadrant Analysis - Cycle Trips within and to each Quadrant Area

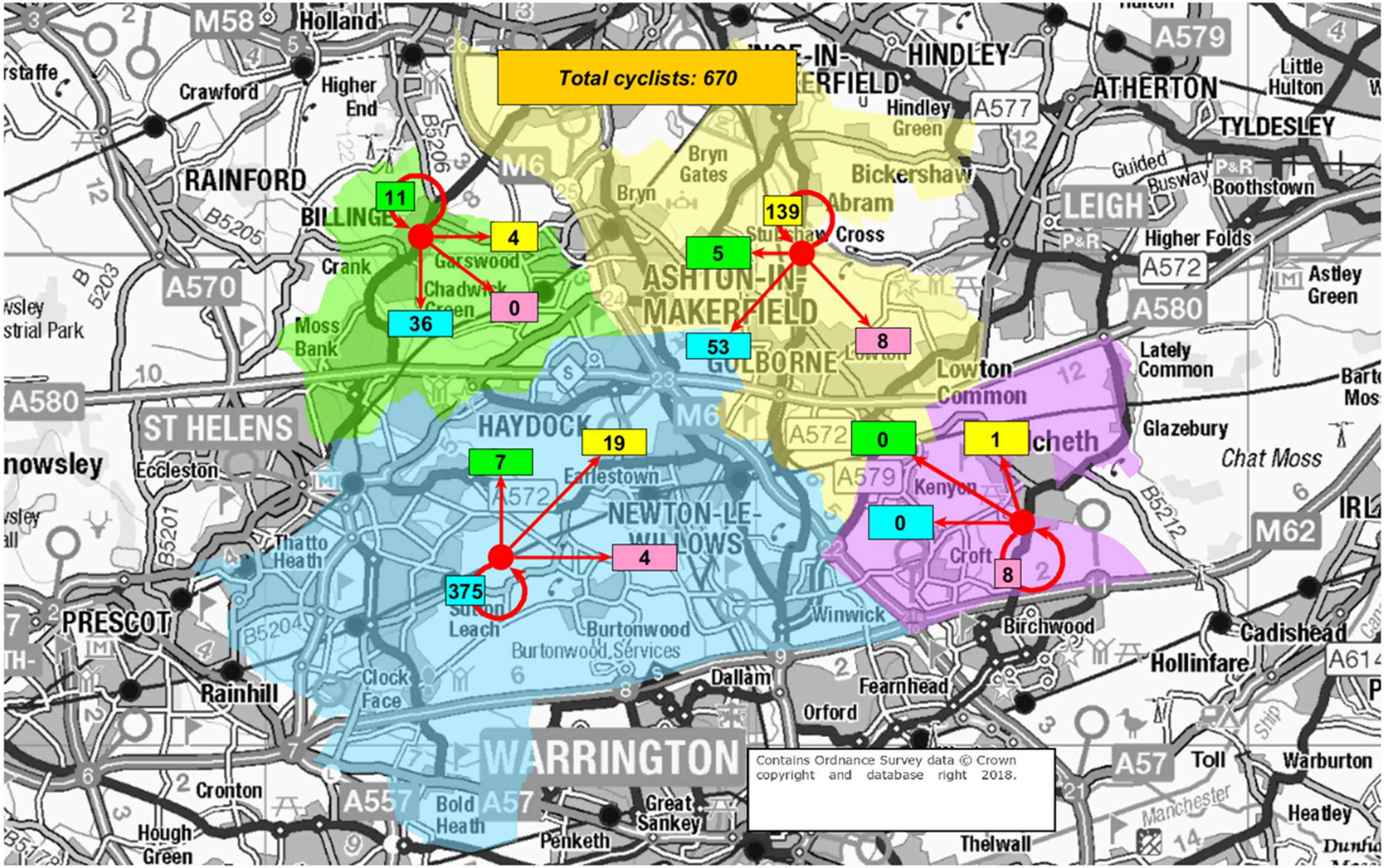


Figure 7-10 - Quadrant Analysis - Car Trips within and to each Quadrant Area

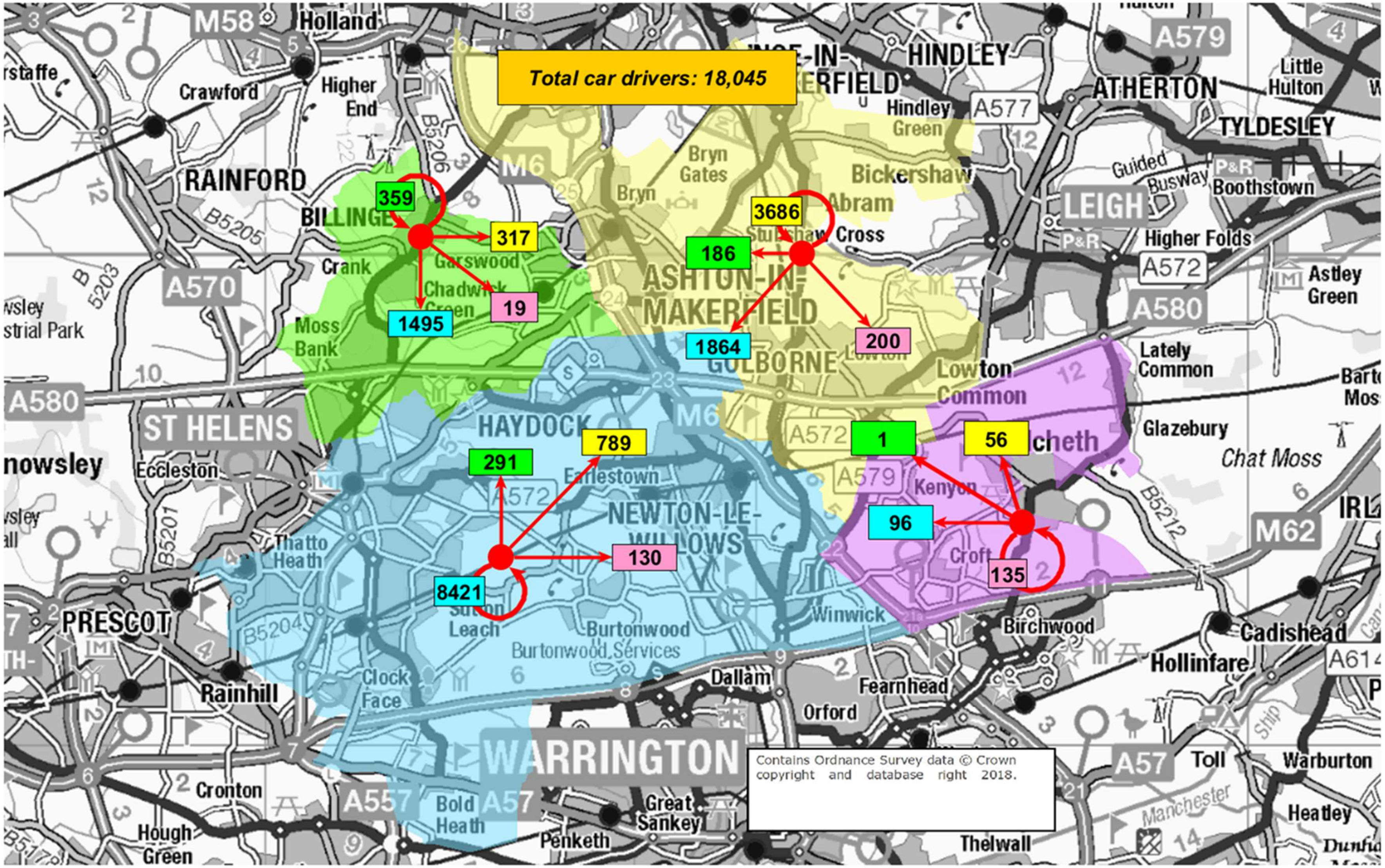
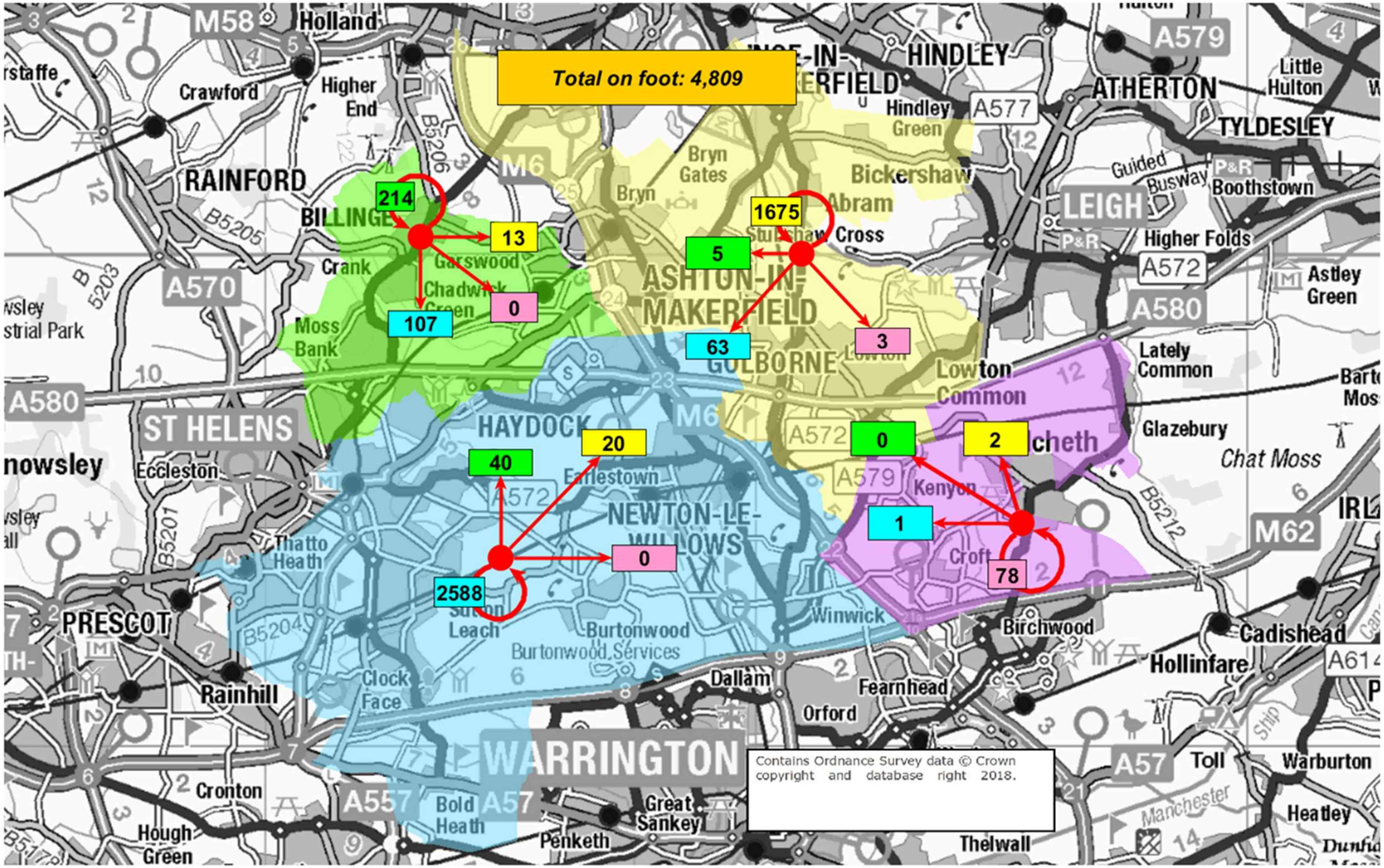


Figure 7-11 - Quadrant Analysis - Trips on Foot within and to each Quadrant Area



Key Points – Travel Demand Analysis:

Constraints:

- Significant local travel by car i.e. 52% of internal travel to work within St Helens 005 MSOA is by car, with 68% of residents travelling to work in 005 by car from surrounding MSOAs and 74% travelling by car from all areas (i.e. Datashine statistics).
- Significant travel by car across the M6 J23 to Wigan areas.
- The notable level of travel on foot from Wigan areas (Ashton Heath, Ashton-in-Makerfield, Stubshaw Cross, Bryn etc,) to the east of the M6 highlights the necessity to enhance the existing limited pedestrian permeability from this area.
- Bus use is fairly minimal, with notable gaps in provision resulting in poor connectivity.
- Bus use is low even in areas where provision exists – although shift times will determine feasibility of use.
- Lack of bus travel between most quadrant areas (all except SW-NE i.e. St Helens to Wigan) emphasises the poor connectivity in provision.
- Rail is a more appropriate mode for strategic trips rather than local journeys, given the geography of rail stations within the St Helens area.

Opportunities:

- Existing levels of walking and cycling to work (10% and 4% of modal share, respectively) and the use of these modes across to Wigan (quadrant analysis) indicates significant potential to increase their mode share through a combination of behaviour change initiatives and infrastructure improvements.
- Necessity to improve bus service provision and connectivity via liaison with bus operators/TfGM/Merseytravel/Warrington BC.
- Maximising and increasing existing bus use to/from Wigan and to the north and south residential areas of St Helens – opportunity to encourage more staff through enhanced service provision and awareness raising.
- Passenger (car share) travel constitutes 11% of current trips from surrounding MSOAs – given the significant local travel by car, car sharing should only be promoted where alternatives are not viable i.e. due to shift times or those staff living further afield etc.

8

STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS (SWOT) ANALYSIS FOR CONSIDERING ALTERNATIVE TRAVEL OPTIONS

8. STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS (SWOT) ANALYSIS FOR CONSIDERING ALTERNATIVE TRAVEL OPTIONS

Swot Analysis Overview

8.1.1. A SWOT analysis has been undertaken using the transport and data evidence base set out above to develop a range of feasible options for encouraging alternative travel options to assist in minimising the impact of local car travel at the M6 J23 and A580. The SWOT analysis has been categorised into several key themes and is included as **Table 8-1**.

8.1.2. The key constraint and opportunity outcomes of the SWOT analysis for each theme are illustrated in **Figures 8-1** and **8-2**, respectively.

Table 8-1 – SWOT Analysis for Considering Alternative Travel Options to reduce local car trips which impact on the M6 J23 / A580

	Strengths	Weaknesses / Constraints	Threats	Opportunities
Planning Allocations	- Associated J23 capacity improvements will assist development-related traffic pressures. - Recently approved Parkside Link Road (new 3.3km road will connect the A49 in Newton-le-Willows directly with the M6 at Junction 22) will assist in reducing some pressure at M6 J23.	- Further delay and congestion around M6 J23 due to new development. - Current Peel planning application (Haydock Point – awaiting decision) will exacerbate traffic issues. - The St Helens Local Plan employment and residential allocations will increase pressure on the local and strategic route network via the M6 J23 – as will the GMSPF. - New development is likely to operate on shift basis – further exacerbating existing travel issues and recruitment issues.	- Extensive development proposed adjacent to M6 J23.	- Local Plan policies (LPA03 / LPA07) support and encourage sustainable travel (access by sustainable modes integral to further development) and stipulate that all strategic sites require a robust and implementable Travel Plan. - Local Plan proposals encourage permeability/connectivity to HIA and to one another (sites EA2 / EA6 / EA7). - Peel development at Haydock Point includes a range of proposed Travel Plan measures. - The Council Planning/Highways Officers should have an effective process for monitoring and enforcing the implementation of conditioned Travel Plans to maximise the potential benefits (for example, learning from best practice such as the iTRACE Travel Plan Management Software system in London https://london.itrace.org.uk/) – particularly in relation to the large-scale Local Plan development. - Sustainable transport infrastructure improvements will assist in supporting alternative travel options at new development sites. Improvements must be promoted at existing and new development sites. - Area travel planning (with dedicated coordinator) should be considered from the outset at clusters of existing (i.e. HIA) and new development. - Promotion of car share databases* at new large-scale development (appropriate budget would be required). **Recommended for longer distance journeys only given the current opportunity to encourage local trips by non-car modes.* - Ensure appropriate car park provision – in line with 'SPD – Ensuring a Choice of travel' and effective car park management policies and practices at new developments from the outset.
Existing Travel Plans	- Travel planning work has historically taken place at HIA.	- Lack of current travel planning at local businesses.	- Lack of willingness by Employer Managers to integrate sustainable travel initiatives at their business.	- Existing planning conditions enforced to ensure travel planning at recent operational development. - Build upon previous successful work and review previous travel survey results. - Seek any appropriate funding to support sustainable travel measures and/or to develop an area-wide Travel Plan for HIA and adjacent new development (also via s106 contributions for new development). - Maximise opportunities to link with overarching organisational Travel Plans produced by larger organisations such as Sainsbury's. - Set up a new car share database* using appropriate software, for example Liftshare (a budget for this would be required). **Recommended for longer distance journeys only given the current opportunity to encourage local trips by non-car modes.* - Revisit car park management policies and practises to maximise behaviour change initiatives.
Sustainable Transport	- A range of sustainable transport infrastructure improvements proposed. - Maximise sustainable travel opportunities at development located near to existing public transport and active travel routes. - Encouraging active travel supports health, economy and employment within St Helens. - Arriva Business-to-Business Manager is	- Internal environment of HIA presents a significant barrier to travelling by sustainable modes for short trips i.e. for the 'last mile' of a potential journey (i.e. lack of cycling infrastructure, inadequate footway widths, inappropriate car parking etc.) . The historic incremental development of the site has created a disjointed geography that is not inclusive for walking and cycling. - Significant physical barriers to sustainable travel include M6 / A580 / railway lines – in addition to the crossing of the M6 J23 itself. - Lack of bus routes to Wigan and Warrington areas.	- Lack of appropriate funding to continue to improve sustainable travel networks – internally and externally.	General - Effective promotion of sustainable transport infrastructure improvements is essential at existing and new development. - Maximise opportunities to improve accessibility across the physical road and railway barriers in the area. - Consider a speed limit reduction on A580 East Lancashire Road on approach to M6 J23. - Consider the development of a How to Get to Guide / Travel Information brochure for HIA and other clusters of large-scale developments as they come to fruition. - Promote any available grant schemes via Merseytravel / LCR Combined Authority, for example the current electric vehicle charging point grants available via Merseytravel / any future grants to support sustainable travel (such as the recent DfT Cycling and Walking to Work Fund). - Set up sustainable travel challenges to encourage take-up. Active Travel - Existing level of local trips on foot and by cycle indicates the potential to increase active travel to the Haydock employment areas through effective travel planning measures (walking groups / Bicycle User Groups, personalised journey plans, calorie maps). - Improved awareness of suggested/improved walk/cycle routes to local rail stations, for example to Garswood station via a potential off-road cycleway via the A58. - The production and promotion of site-specific isochrone mapping provides an ideal opportunity to raise awareness of sustainable travel options at new housing and employment sites from the outset.

	Strengths	Weaknesses / Constraints	Threats	Opportunities
	attending the February HIA Networking event. - The isochrone maps included as Figures 1 and 2 above emphasise the opportunity to encourage an increase in travel by active travel modes for local journeys.	- Poor bus links to rail stations. - Poor pedestrian and cycle linkages to Haydock and Ashton-in-Makerfield / Wigan. - Lack of pedestrian routes to cross into Wigan borough for all journey purposes – i.e. employment and also education: several schools are located in Wigan that are used by St Helens residents. - The footbridge across the M6 (between J23 and J24) to the north-east of the Industrial Estate is not accessible and is in a poor state of repair – discouraging use for school and employment trips from/to the south-west Wigan area. - National Cycle Network avoids the borough almost completely. - Active travel modes constitute a low proportion of journey to work trips i.e. the 2011 Census indicated that only 9% of individuals who work in St Helens travel to work on foot, whilst 2% travel by bicycle, even though nearly half of journeys to work are 5km or shorter, and nearly two thirds are 10km or shorter. - The strategic and large-scale housing (HA3, HA10, HA7) and employment sites (EA2, EA3, EA4, EA5, EA6, EA7) located close to the existing Haydock Industrial Estate will experience the existing difficulties with walking and cycling accessibility. - Lorries parking on the sides of roads hinders traffic movement and impacts on safety for all modes. - Unsocial shift pattern hours typically worked at the Industrial Area make it difficult for bus service times to meet peak hours of demand.		- Replace or improve the accessibility (including consideration of ramped access) / maintenance / lighting of the existing footbridge over the M6 to the north of J23 – routing to Wigan, to encourage active travel for all journey purposes. - Liaise with Wigan Council to improve pedestrian and cycle routes (signage and maintenance) across the borough boundary. - Introduce a pedestrian crossing on the A580 East Lancashire Road (west of M6 J23), as an alternative to the poorly used existing footbridge - Promote the use of cycle parking and showers/changing facilities at existing and new developments. - Consider the signalisation of Millfield Lane junction to facilitate pedestrians crossing the A58. Public Transport - Better promotion and use of existing services. - Liaise with bus operators, Merseytravel and TfGM to encourage and explore opportunities to enhance bus service provision to HIA, to rail stations (improved routes to rail stations are more likely to benefit longer-distance commuters), to new large-scale development areas and across local authority boundaries. Improvements should be in terms of routes, frequencies and alignment to shift times. - Maximise opportunities to enhance bus routes and offer ticketing initiatives via the Business to Business Manager at Arriva. - Raise awareness of any bus changes following the current Merseytravel St Helens Bus Review. - Explore opportunities to enhance bus service 320 to serve Haydock Lane or Piele Road, and up to the Bericotes development area. This could operate on a time-specific service, with a 320A offering the additional route, in a similar way to that of the 10/10A. - Consider the introduction of bus stop provision on A580 East Lancashire Road and enhanced bus service provision to operate via the A580 (potential express route – more beneficial for strategic journeys than local). - Potential to utilise disused railway lines for alternative uses – although limited opportunity due to existing development along them.
Consultation with Public Authorities	- Merseytravel has an ongoing Bus Review for St Helens. - Arriva's B2B Manager is in contact with Haydock Industrial	- Currently there are no proposals to increase bus provision in the area surrounding the M6 J23. - Shift patterns do not align to bus service provision. - Safety fears for active travel modes at unsociable hours.		- Opportunity to build upon the existing liaison occurring between Steve Atkinson (Engagement Team Leader – Merseytravel), Arriva and the HIA Tenants/Networking Group and St Helens Chamber. - Build upon contacts established with specific employers representing HIA Tenants Group (in terms of issues identified and potential opportunities). - Ensure ongoing liaison with Wigan Council / TfGM /Merseytravel to seek cross-boundary transport infrastructure improvements for all modes e.g. opportunities via LCWIP, bus service improvements etc.

	Strengths	Weaknesses / Constraints	Threats	Opportunities
	Estate's Networking Group.	- Roads and railways act as a barrier to active travel.		
Infrastructure Improvements	- A number of planned and proposed sustainable transport improvements will improve connectivity locally and strategically.	- Significant gaps remain in terms of providing a cohesive and attractive active travel and bus service network.	- Lack of appropriate funding to continue to improve sustainable travel networks.	- Continue to seek funding for sustainable travel infrastructure and behaviour change initiatives and ensure effective promote of sustainable travel funding available to employers. - Accessibility by walking and cycling for the whole journey from residential areas through to HIA and within HIA need considering to enable the mode shift of short journeys currently being made by car. This must be coupled with appropriate cycle parking and showers/changing facilities at the employment destination.
Funding Opportunities	- Existing funding opportunities are available.	- The dedicated Highways England funding mechanism for cycling and walking and an integration fund for other sustainable modes exists. This is expected to continue in to Road Investment Strategy 2. For Junction 23, and the area surrounding, there are not currently any proposals for interventions under any of these funds.	- Lack of funding opportunities to support sustainable travel in the future.	- Continue to seek funding for sustainable travel infrastructure and behaviour change initiatives and ensure effective promote of sustainable travel funding available to employers. - Potential for the Haydock area to be considered in any potential future Highways England funding dedicated to cycling and walking. - Potential for measures to be funded through LCWIP process. - Link to health & well-being agendas.
Existing Businesses	- Existing networking and tenant group at HIA. - A complete contact database has been made available for HIA.	- Employers concerned for employees' well-being if they choose active modes at unsociable hours, particularly in winter months. - Buses do not circle the industrial estate. - Bus routes which serve HIA are not always clear. - There is a lack of bus routes serving local rail stations. - There is no current business-specific or area-wide travel planning work being undertaken. - Travel issues and lack of accessibility impact on recruitment. - Need for improved infrastructure and initiatives for sustainable travel. - Travel issues are raised to the council / Chamber of Commerce on a regular basis.	- New development will experience the same ongoing transport issues without appropriate interventions.	- Build on existing networking / tenant group, the current involvement of St Helens Chamber / Merseytravel / Arriva in HIA and previous Travel Plan work. - Maximise opportunities via influential contacts made at key businesses e.g. Azure Liquid Solutions. - The networking group can be used to inform businesses of any new travel behaviour initiatives.
Management	- Can utilise existing business networks to communicate new management structures and to obtain specific business representatives. - New development will have a planning	- Current lack of overall site management at HIA.	- Lack of funding and/or employer contributions for appropriate management structure.	- Aim to provide an overall site manager for Haydock Industrial Area. - Determine an appropriate Travel Plan budget (around £35,000 per annum for employment of TPC and associated initiatives). - Within the overall management structure seek appropriate funding opportunities and/or employer contributions to secure a HIA Area Travel Plan (ATP) with a dedicated Travel Plan Coordinator (TPC) - small contributions can lead to economies of scale for travel behaviour change initiatives. The TPC could operate on a part-time basis either as a dedicated staff member or via a consultancy role. - Develop a Memorandum of Understanding for Sustainable Travel for employers to sign up to as part of the ATP.

	Strengths	Weaknesses / Constraints	Threats	Opportunities
	requirement to ensure good site management in transport terms.		- Lack of interest in transport by some existing Employer Managers.	- The production of a How to Get to Guide / Travel Information Brochure for the HIA and other business areas with support from management. - Identify specific employer Champions and raise awareness of sustainable travel options and infrastructure improvements as they come to fruition. - Effective car park management policies and practices as part of travel planning at development sites to support the use of sustainable modes.
Travel to Work Data (i.e. predominantly Census 2011 data)	- Census data available provides a useful baseline for monitoring. - The most recent travel surveys show 20% of current workforce live within two miles of the Industrial Area. - Over half (52%) of residents within MSOA St Helens 005 (where HIA is located) are travelling very short distances by car to their local employment destination i.e. within MSOA St Helens 005 so within a 2km distance.	- A large proportion of the existing Haydock workforce live a short distance from the site yet choose to drive to work. - When combining all trip data, there is a significant number of trips across the M6 into Wigan MSOAs, the majority of which are by car. - There is a notable lack of travel to work by bus across the M6 J23.	- New development may initiate continued high car use without appropriate interventions.	- Travel to work statistics indicate that there is high potential to change travel behaviour with tailored behaviour change initiatives, improvements to bus network provision and appropriate infrastructure improvements. - There are a number of trips by bus, on foot and by cycle across the Wigan boundary – indicating the modal share by sustainable travel could be increased through effective initiatives and infrastructure. Existing sustainable travel users can be encouraged to Champion modal shift.
Haydock Racecourse	- Traffic impacts are often outside traditional peak hour periods due to the nature of the site.	- Racecourse traffic is a particular issue for the local highway network – resulting in congestion, queuing and delays.	- Lack of interest in transport support by racecourse management.	- Include the Racecourse in any behaviour change initiatives and general promotion of new and existing transport options. - Consider the racecourse location when considering bus service provision in conjunction with bus operators, TfGM and Merseytravel. - Encourage management at the racecourse to take up appropriate travel planning for both staff and visitors.
General Marketing	- An abundance of existing general travel information and promotional materials are already available for use by employers.	- Lack of promotion of travel information at existing sites.	- Lack of interest in marketing sustainable travel by existing employer management.	Promotional work with employers and residents can include the following, in addition to site-specific measures: - The Liverpool City Region Combined Authority 'Arrive Happy' campaign. The website is useful for organisations looking to promote cycling and walking, funded through the combined Authority's Cycling and Walking to Work Programme - https://www.arrivehappy.org/ - Links to journey planning information, such as: → Cycling maps https://www.merseytravel.gov.uk/getting-around/cyclingandwalking/Pages/Merseyside-Cycle-Maps.aspx → Merseytravel journey planner online: https://jp.merseytravel.gov.uk → Merseytravel journey planner app: https://www.merseytravel.gov.uk/getting-around/key-destinations/Pages/How-to-use-and-download-the-Journey-Planner-app.aspx → Merseytravel Travel Line on 0151 330 1000 for timetable and ticket information → Merseytravel Public Transport Maps https://www.merseytravel.gov.uk/getting-around/route-maps/Pages/default.aspx
Best Practice Examples	- Successful initiatives that have been implemented in St Helens (for example St Helens Personalised	- Initiatives in other areas may not be applicable in St Helens.	- Lack of appropriate funding opportunities.	Consider initiatives such as further personalised journey planning projects in line with the promotion of sustainable transport infrastructure improvements and/or wider area examples such as AtoBetter for application in the St Helens area (funding dependent), as follows: ***AtoBetter*** AtoBetter is being delivered in partnership by Norfolk County Council along with a variety of local delivery partners. It is an innovative way of securing funding for behavioural change work from housing developers, with benefits to

	Strengths	Weaknesses / Constraints	Threats	Opportunities
	Journey Planning Project 2015) and other areas can be considered, if appropriate funding facilitates their application.			the developers, residents and local councils. Currently the AtoBetter programme in Norfolk is working on behalf of nine developers and has 21 secured sites with over 7,500 dwellings and a five-year delivery budget in excess of £3m. AtoBetter offers enhanced travel plan strategies that seek to: • improve sustainable travel options to maximise the use of walking for local trips, and increase the use of cycling, public transport and car sharing • reduce private vehicle use • work with local schools to support sustainable travel options for school journeys • promote the health-related benefits of active travel • promote the availability of public transport services. ***Planning Process*** AtoBetter fits into the planning process as follows: As part of the planning application process in Norfolk, housing developers are offered two options: they can either opt to deliver their travel plan themselves or agree a commuted sum (through their Section 106 planning agreement) for delivery by the AtoBetter team. ***Responsibility*** Responsibility for the initiative is by way of an arrangement that takes the travel plan delivery responsibility from the developers and places it onto Norfolk County Council and WSP as their framework partner. ***Payment*** The developers, as part of their Section 106 planning agreement, pay an agreed commuted sum per dwelling to the local authority which is used to fund the AtoBetter programme. ***Travel Plan Delivery through AtoBetter (5-year delivery period)*** • Understanding sites by reviewing information to develop an interim travel plan. • Engagement through meetings and events, and by undertaking travel surveys and counts to identify travel patterns and opportunities. • Developing and delivering a range of site-specific measures. • Monitoring and learning by seeking feedback and undertaking periodic surveys and focus groups. • Improving the measures to ensure that at the end of the five-year delivery period AtoBetter has enabled change.

Figure 8-1 - SWOT Outcomes - Key Thematic issues

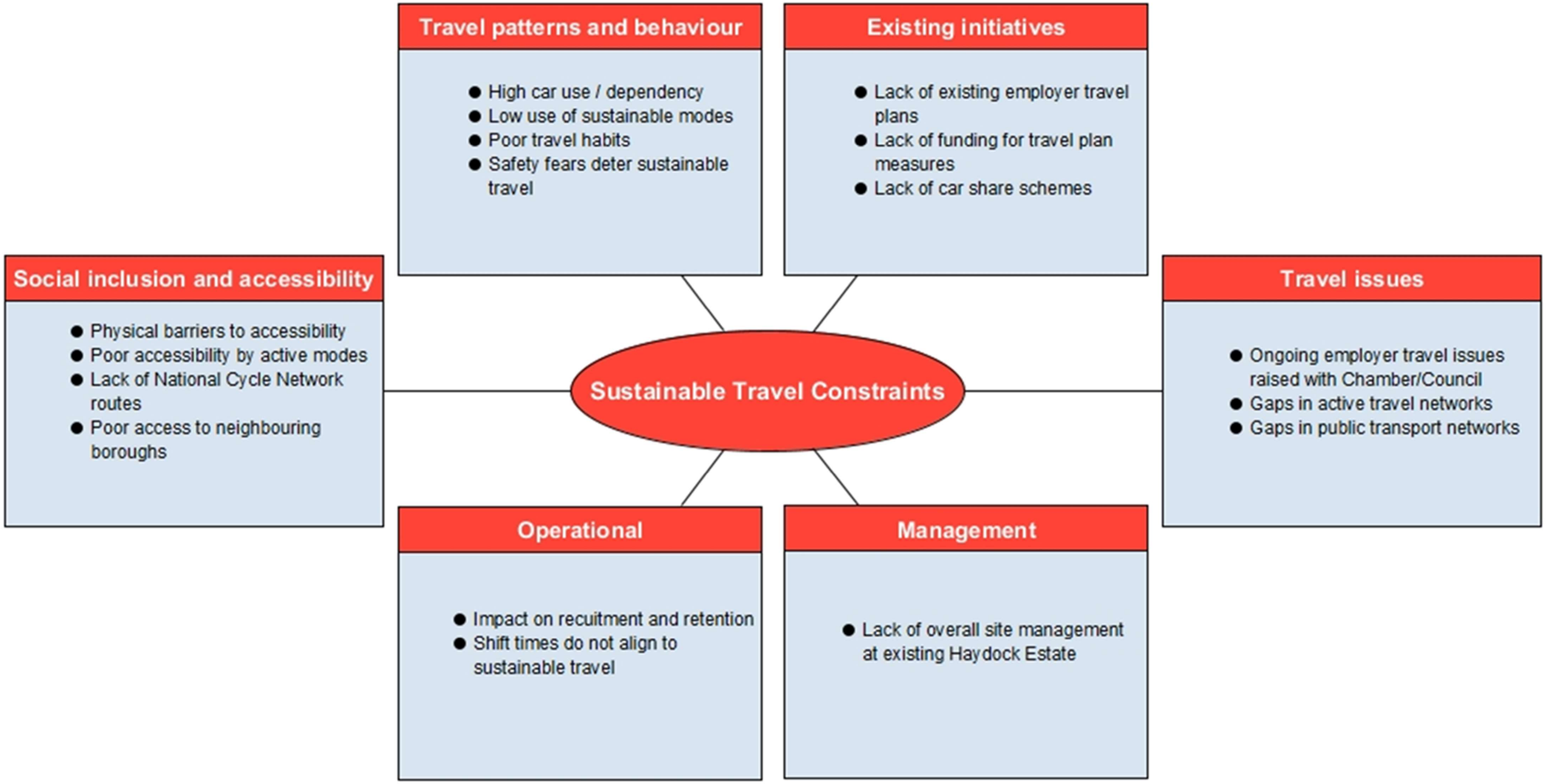
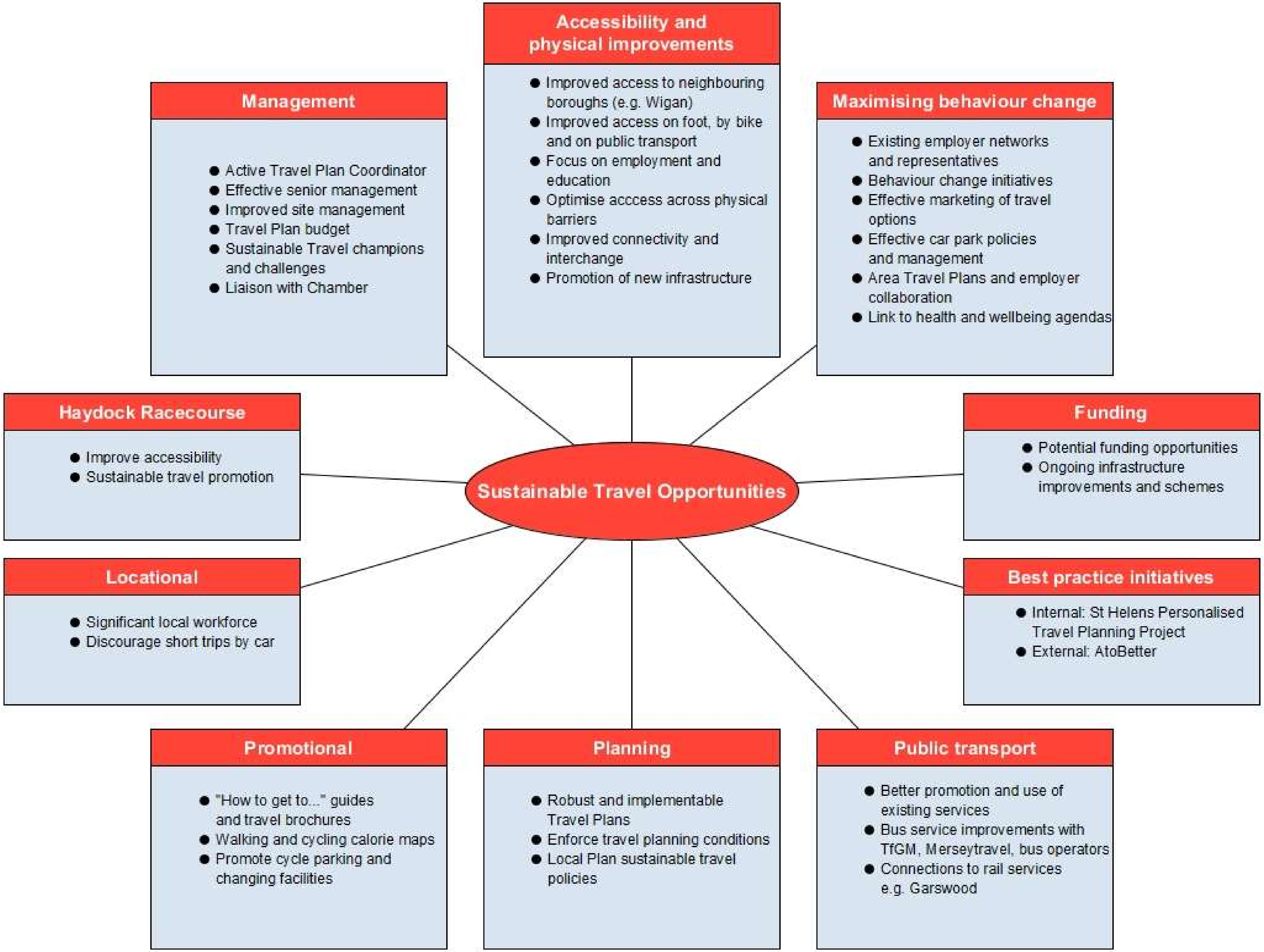


Figure 8-2 - SWOT Outcomes - Key Thematic Opportunities



9

ALTERNATIVE OPTION DELIVERABILITY AND RISK ASSESSMENT

9. ALTERNATIVE OPTION DELIVERABILITY AND RISK ASSESSMENT

9.1.1. The deliverability of the key thematic opportunities identified has been assessed in terms of timescale (quick win, short term < 2 years, medium term 2-5 years and long term 5-10 years), cost (low cost <£5,000, medium cost £5,000-£35,000, high cost > £35,000) and key risks, as set out in **Table 9-1.**

Table 9-1 – Alternative Options Deliverability Assessment

Option	Delivery Timescale	Delivery Cost	Key Risks
Accessibility Improvements	Medium-long	Medium - High	Lack of funding for measures Increasing traffic congestion exacerbating access issues Lack of travel planning to promote the use of access improvements Lack of public engagement on measures (facilitates ownership to encourage use) Shift times limiting use Ongoing cross-borough issues Ongoing connectivity issues
Behaviour Change Initiatives	Quick win / Short for some initiatives Medium for full impact of some initiatives to be realised e.g. a car share scheme	Low-Medium	Lack of funding Low employer engagement / enthusiasm Lack of dedicated employer resource/management Lack of / poor marketing of sustainable travel options Shift times limiting behaviour change opportunities
Public Transport	Short - Medium	Medium - High	Bus operators control of services Poor marketing
Planning / Enforcement	Ongoing	Medium - High	Lack of Council Officer Travel Plan enforcement Lack of sustainable development in line with Local Plan i.e. effective land-use planning Continued high car use despite of measures / infrastructure improvements

Option	Delivery Timescale	Delivery Cost	Key Risks
Effective Promotion of Alternative Options at optimal times (i.e. in line with new infrastructure/service provision)	Quick win / Ongoing	Low - Medium	Requires sustained effective marketing strategy at existing and new development
Travel Plan Management	Quick win - Medium	Low - Medium	Recruitment of non-local workforce Lack of Employer Senior Management interest/resource for Travel Plans

10

CONCLUSIONS AND NEXT STEPS

10. CONCLUSIONS AND NEXT STEPS

Conclusions

10.1.1. The highway interventions for improving capacity and reliability at the M6 Junction 23 can be supplemented by the identification of opportunities for alternative improvements around active travel or public transport to address local transport demand at this location.

10.1.2. This report provides an evidence base of existing transport conditions and considerations and provides a SWOT analysis and a series of alternative options which aim to assist in reducing the impact of local car travel on the operation of the M6 J23 (and the A580).

10.1.3. By nature, the industrial area comprises employment uses that operate 24 hours a day, seven days a week. The shift patterns for staff can therefore create real or perceived barriers to the use of sustainable modes for the commute to work. In addition, the historic incremental development of the internal HIA site has created an environment that is not attractive for walking and cycling, coupled with the external barriers of major roads, junctions and railway lines. Such barriers need addressing in order to enable the 'last mile' of a potential sustainable journey to become more feasible; in addition to considering accessibility for the 'whole journey' and the appropriate provision of facilities to support active travel at the employment destination.

10.1.4. The assessment of existing travel patterns has indicated significant potential to reduce the number of local trips made by car, particularly during peak hour periods. The application of a wide range of opportunities outlined in this report will ensure that the feasibility to encourage existing and new travel demand by sustainable modes is maximised.

Next Steps

10.1.5. It is recommended that the alternative options assessment outcomes indicated in **Table 8** and summarised in **Figures 8-1 and 8-2** are taken forward for further consideration/exploration and potential implementation in line with the progression of the M6 J23 scheme design and implementation.

10.1.6. In progressing the application of measures, appreciation of site-specific operational issues will be necessary. The opportunity exists to build upon the existing business networks already in place in the area (i.e. Haydock Industrial Area Tenants Group / Networking Group) and to work with key stakeholders (neighbouring authorities, bus operators, Merseytravel, TfGM, St Helens Chamber, local schools etc.) to maximise the opportunities for encouraging sustainable travel at new development through the Local Plan 2020-2035 planning process.

10.1.7. The next steps should therefore include a further detailed HIA travel planning travel demand feasibility study – which could include attendance of an appropriate travel planning representative at the HIA networking meetings, a detailed site audit, understanding on the recent employer survey and potential Arriva bus service improvements, staff postcode mapping, a staff travel behaviour survey and the development of a high-level Travel Plan action plan for consultation and potential implementation.

10.1.8. The availability of appropriate resource is essential to increase sustainable travel to the site, for example via an overall Travel Plan Coordinator at the existing HIA, and enforcement of Travel Plan management and implementation at new development sites (including appropriate developer contributions), in order to maximise behaviour change strategies in alignment with infrastructure improvements as they come to fruition.

10.1.9. Best practice from other large-scale employment sites provides the evidence base to indicate that effective travel planning coupled with walking/cycling infrastructure improvements can influence behaviour change to reduce car use for the commute for work. For example, the Omega site in Warrington has had successful travel planning delivery through planning-related developer-funding (including a bespoke bus service and excellent cycle parking), coupled with the implementation of excellent walking and cycling infrastructure. Consistent funding for infrastructure improvements and travel planning measures around HIA is therefore essential to maximise the opportunities to reduce the current high number of short car trips to the site, and to sustain the travel planning momentum amongst occupiers. Previous travel planning work at HIA using funding sources such as the Local Sustainable Transport Fund (LSTF) have indicated an appetite for travel planning by employers and have led to the successful delivery of Sustainable Travel Enhancements Package (STEP) funding to improve walking and cycling routes to the Haydock site.

10.1.10. The linking of sustainable travel objectives to wider agendas such as health, economy, employment and education will also assist in maximising the potential to improve sustainable travel options and reduce car travel for local journeys in the Haydock area.

1st Floor Station House
Tithebarn Street, Exchange Station
Liverpool
L2 2QP

wsp.com

1st Floor, Exchange Station,
Tithebarn Street,
Liverpool
L2 2QP

wsp.com