Appendix DT/22

Updated VISSIM Package

MODELLING GROUP

Base Modelling Report

MG0123 – A49 Corridor VISSIM, Warrington

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DOCUMENT CONTROL ISSUE SHEET

Project & Document Details

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1. INTRODUCTION

1.1 Background

1.1.1 BestMore Consulting Ltd (now Modelling Group Ltd) has been commissioned by Highgate Transportation to develop a microsimulation model of the A49 corridor for the area to the north of Warrington, surrounding the M62 junction 9. The aim of this model is to provide a robust platform on which the proposed development (Peel Hall) can be tested and impact upon the highway network assessed.

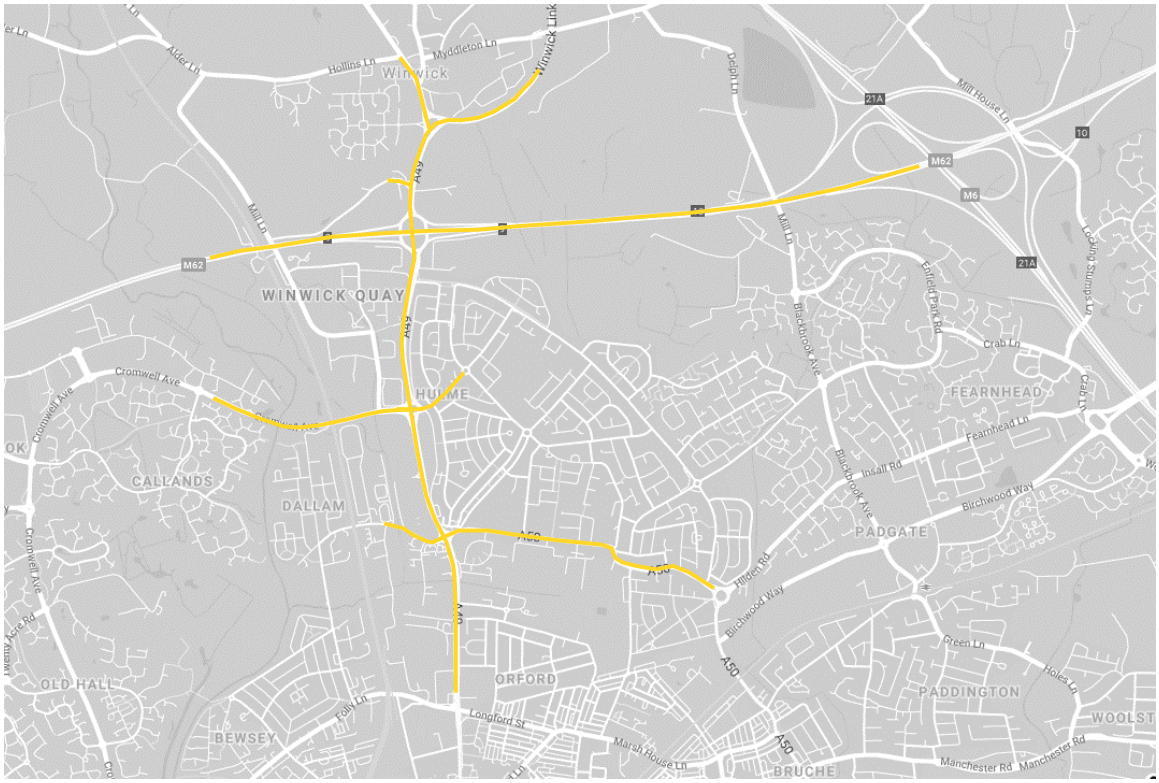

FIGURE 1.1: AREA OF INTEREST

1.2 Report Purpose

1.2.1 The following report summarises the methodology used to build and test the model, as well as the results obtained to determine the suitability of the model. For use in proposed option testing.

1.4 Report Structure

The report is structured as follows:

- Section 2: Base Model Development including details on the software used, the model extents alteration process, duration and any changes made to software parameters in line with best-practice recommendations;
- Section 3: Base Model Calibration including the comparison of previous model with newly cordoned model, as well as observed and modelled turning flows;
- Section 4: Model Validation including the comparison of observed and modelled journey times; and
- Section 5: Summary and Recommendations including a summary of the model development process and the overall suitability for future use.

2 BASE MODEL DEVELOPMENT

2.1 Previous Modelling

2.1.1 In 2017, a microsimulation model was developed by AECOM of the area surrounded by the A49 corridor to the west and the M6 to the east. The model was validated to 2015 conditions and data and included all of the main junctions and roads within the area defined in Figure 2.1. This model has been provided as a starting point for the revised model extents and model update.

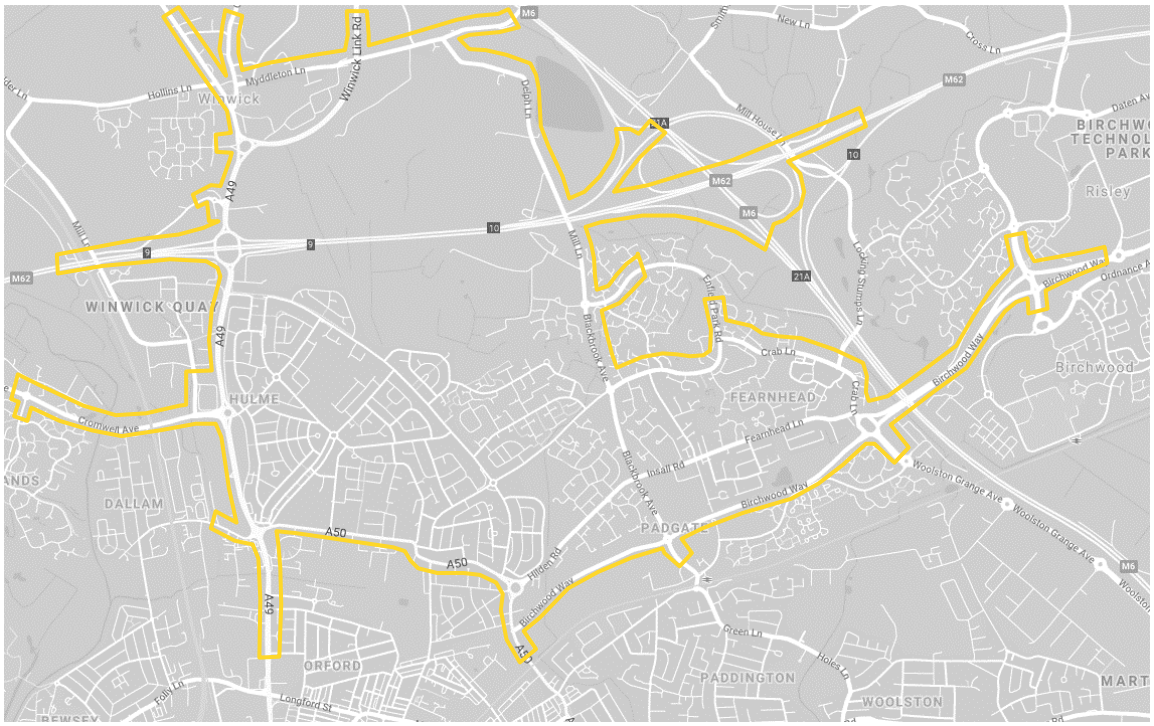

FIGURE 2.1: PREVIOUS MODEL EXTENTS

2.2 Changes to Previous Modelling

2.2.1 As the previous modelling had been carried out in an outdated version (08.00-04) of the software, it was decided to firstly update the network to the latest fully stable and tested version of the software (11.00-13). As a result of this, testing was required to ensure that key model performance indicators were comparable to the original model.

2.2.2 Tables 2.1 and 2.2 shows a comparison between turning volumes at each junction:

AM PEAK	Nodes – Average volume comparison per movement/ time period							
	VEHS (ALL)		VEHS (Car)		VEHS (LGV)		VEHS (HGV)	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
TOTAL	2112		2112		2112		2112	
GEH <=3	2106	99.7%	2106	99.7%	2108	99.8%	2112	100.0%
GEH <=5	2109	99.9%	2109	99.9%	2112	100.0%	2112	100.0%
GEH <=10	2112	100.0%	2112	100.0%	2112	100.0%	2112	100.0%

TABLE 2.1: AM SUMMARY DATA – VOLUME COMPARISON PER MOVEMENT

PM PEAK	Nodes – Average volume comparison per movement/ time period							
	VEHS (ALL)		VEHS (Car)		VEHS (LGV)		VEHS (HGV)	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
TOTAL	2112		2112		2112		2112	
GEH <=3	2107	99.8%	2107	99.8%	2112	100.0%	2112	100.0%
GEH <=5	2109	99.9%	2109	99.9%	2112	100.0%	2112	100.0%
GEH <=10	2112	100.0%	2112	100.0%	2112	100.0%	2112	100.0%

TABLE 2.2: PM SUMMARY DATA – VOLUME COMPARISON PER MOVEMENT

2.2.3 As can be seen, volumes of all vehicle types, at all junctions remained directly comparable. Analysis of journey time data was also carried out – a summary of the results is shown below in Tables 2.3 and 2.4:

AM PEAK – Travel Time Route Volumes						AM Peak – Travel Times			
GEH			Percentage Difference			Percentage Difference		Actual Difference	
Measure	Count	%	Measure	Count	%	Measure	%	Measure	%
TOTAL	99		TOTAL	99		**99** TOTAL		**99** TOTAL	
GEH <=3	99	100%	GEH <=3	97	98%	**79** <>5%	80%	**79** <>5%	86%
GEH <=5	99	100%	GEH <=5	99	100%	**85** <>10%	86%	**85** <>10%	92%
GEH <=10	99	100%	GEH <=10	99	100%	**86** <>15%	87%	**86** <>15%	96%

TABLE 2.3: AM SUMMARY DATA – TRAVEL TIME ROUTE VOLUMES & TIMES

PM PEAK – Travel Time Route Volumes						PM Peak – Travel Times			
GEH			Percentage Difference			Percentage Difference		Actual Difference	
Measure	Count	%	Measure	Count	%	Measure	%	Measure	%
TOTAL	99		TOTAL	99		**99** TOTAL		**99** TOTAL	
GEH <=3	99	100%	GEH <=3	85	86%	**82** <>5%	83%	**79** <>5%	96%
GEH <=5	99	100%	GEH <=5	93	94%	**92** <>10%	93%	**85** <>10%	100%
GEH <=10	99	100%	GEH <=10	99	100%	**96** <>15%	97%	**86** <>15%	100%

TABLE 2.4: PM SUMMARY DATA – TRAVEL TIME ROUTE VOLUMES & TIMES

2.2.4 Although there is some variation, likely as a result of revisions made default vehicle size and performance parameters, along with changes to the random seed algorithms, performance is still comparable.

2.3 Changes to Network Extents

2.3.1 As there was only a need for testing of effects to the operation of the A49 corridor itself, it was decided that it would be more efficient to cordon the network, as shown in Figure 1.1. In order to ensure that the traffic assignment remained the same, effectively frozen, the model was firstly transformed from a dynamic assignment model to a static assignment model. As there was to be no route choice in the newly cordoned area, this approach would still leave a perfectly functional model for the proposed testing.

2.3.2 In the same manner as previously, a comparison of key model performance indicators was carried out to ensure that turning volumes, route volumes and travel times were acceptably similar after the process of conversion to static assignment and cordoning of network extents and the subsequent adjustment to all vehicle routing had been completed.

2.3.3 Tables 2.5 and 2.6 show a comparison between turning volumes at each junction:

AM PEAK	Nodes – Average volume comparison per movement/ time period							
	VEHS (ALL)		VEHS (Car)		VEHS (LGV)		VEHS (HGV)	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
TOTAL	642		642		642		642	
GEH <=3	627	97.7%	627	97.7%	640	97.7%	642	100.0%
GEH <=5	638	99.4%	638	99.4%	642	100.0%	642	100.0%
GEH <=10	642	100.0%	642	100.0%	642	100.0%	642	100.0%

TABLE 2.5: AM SUMMARY DATA – VOLUME COMPARISON PER MOVEMENT

PM PEAK	Nodes – Average volume comparison per movement/ time period							
	VEHS (ALL)		VEHS (Car)		VEHS (LGV)		VEHS (HGV)	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
TOTAL	642		642		642		642	
GEH <=3	584	91.0%	582	90.7%	637	99.2%	637	99.2%
GEH <=5	614	95.6%	614	95.6%	642	100.0%	642	100.0%
GEH <=10	640	99.7%	640	99.7%	642	100.0%	642	100.0%

TABLE 2.6: PM SUMMARY DATA – VOLUME COMPARISON PER MOVEMENT

2.3.4 As can be seen, volumes of all vehicle types, at all junctions in the newly cordoned area remained almost directly comparable. Analysis of journey time data was also carried out – a summary of results is shown in Tables 2.7 and 2.8:

AM PEAK – Travel Time Route Volumes						AM Peak – Travel Times			
GEH			Percentage Difference			Percentage Difference		Actual Difference	
Measure	Count	%	Measure	Count	%	Measure	%	Measure	%
TOTAL	54		TOTAL	54		**54** TOTAL		**54** TOTAL	
GEH <=3	51	94%	GEH <=3	51	94%	**47** <>5%	87%	**52** <>5%	96%
GEH <=5	54	100%	GEH <=5	53	98%	**47** <>10%	87%	**52** <>10%	96%
GEH <=10	54	100%	GEH <=10	53	98%	**50** <>15%	93%	**52** <>15%	96%

TABLE 2.7: AM SUMMARY DATA – TRAVEL TIME ROUTE VOLUMES & TIME

TABLE 2.8: PM SUMMARY DATA – TRAVEL TIME ROUTE VOLUMES & TIME

PM PEAK – Travel Time Route Volumes						PM Peak – Travel Times			
GEH			Percentage Difference			Percentage Difference		Actual Difference	
Measure	Count	%	Measure	Count	%	Measure	%	Measure	%
TOTAL	54		TOTAL	54		**54** TOTAL		**54** TOTAL	
GEH <=3	34	63%	GEH <=3	37	69%	**39** <>5%	72%	**44** <>5%	81%
GEH <=5	46	85%	GEH <=5	43	80%	**43** <>10%	80%	**52** <>10%	96%
GEH <=10	53	98%	GEH <=10	50	93%	**49** <>15%	91%	**53** <>15%	98%

2.4 Updating of Modelled Year

2.4.1 As a result of the original inherited AECOM model having a base year of 2015, it was decided that testing needed to be carried out against an up to date dataset in order to ensure that the model was representative of current onsite conditions, and therefore a suitably robust platform for testing of proposed scenarios.

2.4.2 Manual Classified Count data had already been collected in April 2019 for the locations shown in Figure 2.2. To complement this, historical travel time data was also collated for the corridor (Streetwise - TomTom data) for neutral days (Tuesday, Wednesday & Thursday) for the month of April 2019 – shown in Figure 2.3.

FIGURE 2.2: APRIL 2019 MANUAL CLASSIFIED COUNT SITES

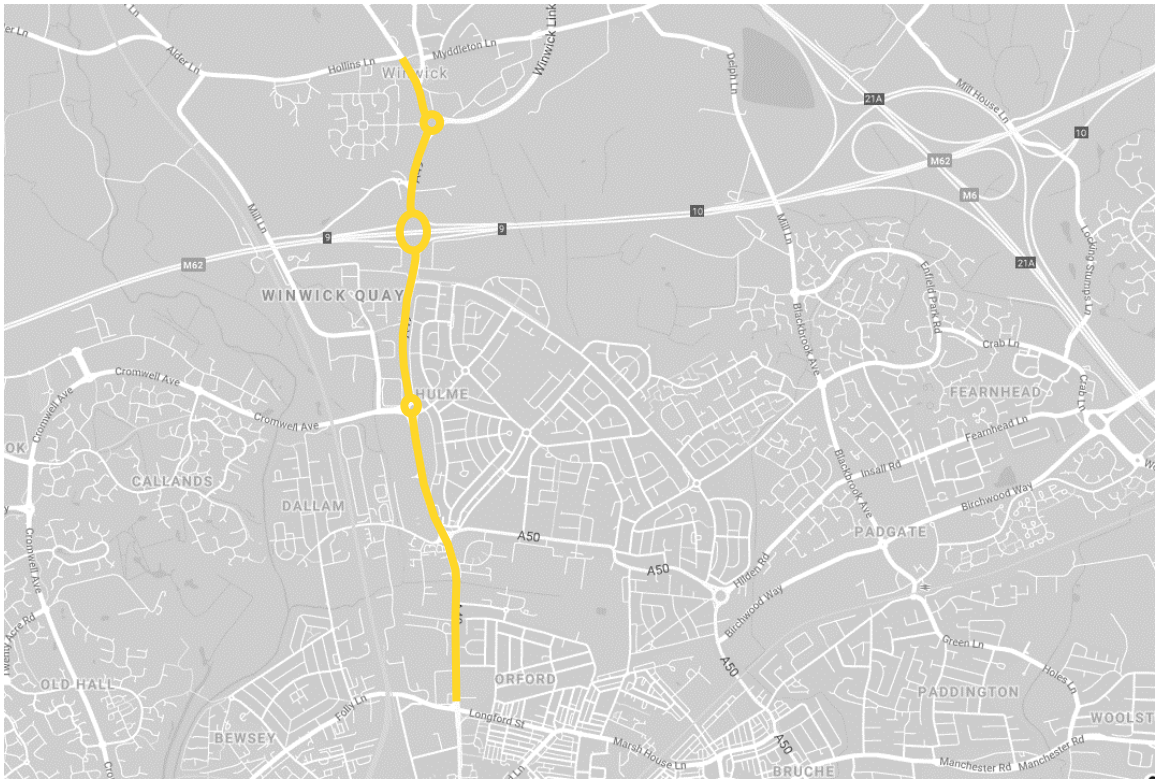

FIGURE 2.3: APRIL 2019 HISTORICAL TOMTOM DATA TRAVEL TIME ROUTE (NORTH & SOUTH)

FIGURE 2.4: APRIL 2019 HISTORICAL TOMTOM DATA TRAVEL TIME ROUTES (EAST & WEST)

2.4.3 However, when initial results were run, it was clear that the models did not validate well to 2019 data, meaning that there had clearly been some changes in local conditions, flow profiles and route choice in the area.

2.4.4 Tables 2.9 and 2.10 show the summary turning count validation data for the AM and PM peak models respectively. Further details can be found in Appendix A, but it was clear that some additional refining of the models would be needed in order to ensure that they were broadly representative of current conditions.

AM PEAK (08:00-09:00) TURNING COUNT VALIDATION	
Total number of counts considered	40
VISSIM model counts with GEH <=3	14
% of VISSIM counts with GEH <=3	**35.5%**
VISSIM model counts with GEH <=5	20
% of VISSIM counts with GEH <=5	**50.0%**
VISSIM model counts with GEH <=10	31
% of VISSIM counts with GEH <=10	**77.5%**
VISSIM model counts meeting WebTAG Unit 3.1 criteria	28
% of VISSIM model counts meeting WebTAG Unit 3.1 criteria	**70.0%**

TABLE 2.9: SUMMARY DATA – VOLUME COMPARISON PER MOVEMENT

PM PEAK (17:00-18:00) TURNING COUNT VALIDATION	
Total number of counts considered	40
VISSIM model counts with GEH <=3	13
% of VISSIM counts with GEH <=3	**32.5%**
VISSIM model counts with GEH <=5	21
% of VISSIM counts with GEH <=5	**52.5%**
VISSIM model counts with GEH <=10	30
% of VISSIM counts with GEH <=10	**75.0%**
VISSIM model counts meeting WebTAG Unit 3.1 criteria	25
% of VISSIM model counts meeting WebTAG Unit 3.1 criteria	**62.5%**

TABLE 2.10: SUMMARY DATA – AVERAGE VOLUME COMPARISON PER MOVEMENT

2.5 Traffic Signals

2.5.1 The modelled network includes the following signal-controlled junctions:

- Site 1156 – Winwick Link
- Site 1150 – Delph Lane (B&Q)
- Site 1146 – M62 J9 South
- Site 1147 – M62 J9 North
- Site 1083 – Winwick Road/ Cromwell Avenue
- Site 1204 – Calver Road
- Site 1216 – J9 Retail Park
- Site 1077 – Long Lane

2.5.2 As the existing signal controllers in the model were set-up as fixed time controllers, this same set-up has been carried through to the updated models. Warrington UTMC has provided some updated controller specification and average stage and cycle time captures, which has been used to modify the signal controllers where necessary to aid in achieving validation.

Model Assignment

2.5.3 The network modelled has no real route choice as the focus is on the A49 corridor. As a result, and as a result of the methodology to freeze the previous 2015 assignment volumes into the model during the cordoning exercise, the model has been setup using static routing assignment.

2.5.4 During the process to convert the original model from dynamic assignment to static assignment, an option to remove any routes with less than 0.02 relative volume and/or less than 2 absolute minimum volume was selected in an attempt to minimise the subsequent total amount of static routes to work with. Otherwise though, all routes are as per the original models.

2.6 Driving Behaviour Parameters

2.6.1 As a large number of custom behaviours had been created in the original 2015 AECOM model set-up, for specific areas of the model, these were largely left with the same set-up in lieu of any better information to inform changes or updates since the AECOM modelling and validation exercise.

2.6.2 However, after reviewing model behaviour, driver behaviour number 1, which is the general Urban (motorized) behaviour in use in most of the model, was altered to improve on the car following settings. This involved increasing the minimum look ahead and minimum look back distances to 30m and 20m respectively, to improve vehicle to vehicle interaction.

2.6.3 As a result of the available refinement to individually define the number of interaction objects and interaction vehicles since VISSIM version 8, this was also changed to 10 interaction objects and 4 interaction vehicles. These values are based on experience taken from other projects when modelling congested urban scenarios.

2.6.4 Cooperative lane change was also turned off for driver behaviour number 1. Previous experience modelling congested urban scenarios has showed that Advanced merging and cooperative lane changing can seem to cancel each other out slightly, so we tend to use Advanced merging as the general behaviour and have cooperative lane changing setup for links with more localised merging, such as lane drops.

2.7 Base Data – Functions

2.7.1 During model audits, it was noticed that an error had been carried forwards from VISSIM version 8 relating to the acceleration and deceleration functions for HGV. As a result, all default values for Maximum Acceleration & Deceleration, and Desired Acceleration and Deceleration for HGV has been updated to match the default values found in the very latest version of VISSIM, which is now version 2020.

2.8 Model Specification

VISSIM Version – 11.00-13.

Base Year – 2019.

Model Time Periods

- Weekday AM – 07:00-08:00 (warm-up), 08:00-09:00 (peak period), 09:00-09:30 (cool-down).
- Weekday PM – 16:00-17:00 (warm-up), 17:00-18:00 (peak period), 18:00-18:30 (cool-down).
- Vehicle Types
- Cars
- LGVs
- HGVs
- PT Buses (static routes)

2.8.1 Results have been output with a model simulation resolution of 5-time steps / second, as per the original modelling. Random seeds were set at 5 with an increase per run of 5, as per the original models (meaning seeds 5,10, 15, 20 etc were used).

3 MODEL CALIBRATION

This section summarises the calibration process undertaken and identifies sources of traffic flow data used to check and refine the flow profiles within the VISSIM model.

3.1 Traffic Flow Sources

3.1.1 Manual classified count (MCC) surveys were undertaken on Wednesday 3rd April 2019 at the locations highlighted in Figure 3.1. These include:

- A49/ Delph Lane
- A49/ Woburn Road
- A49/ Cromwell Avenue/ Sandy Lane
- A49/ Junction Nine Retail Park
- A49/ Hawleys Lane/ Long Lane

3.1.2 Link counts (April 2019) from the Hatris Database for were checked for the sections of motorway included in the model, taken from the following site locations (see Figure 3.2):

- M62 Westbound Mainline (M62/1260B) – west of junction 9
- M62 Eastbound Mainline (M62/1260A) – west of junction 9
- M62 Westbound Mainline (M62/1270B) – east of junction 9
- M62 Eastbound Mainline (M62/1269A) – east of junction 9
- M62 Westbound Mainline (M62/1275B) – east of junction 9
- M62 Eastbound Mainline (M62/1274A) – east of junction 9
- Link from M62 Eastbound to M6 (M6/7073K)

FIGURE 3.1: AVAILABLE 2019 TRAFFIC DATA

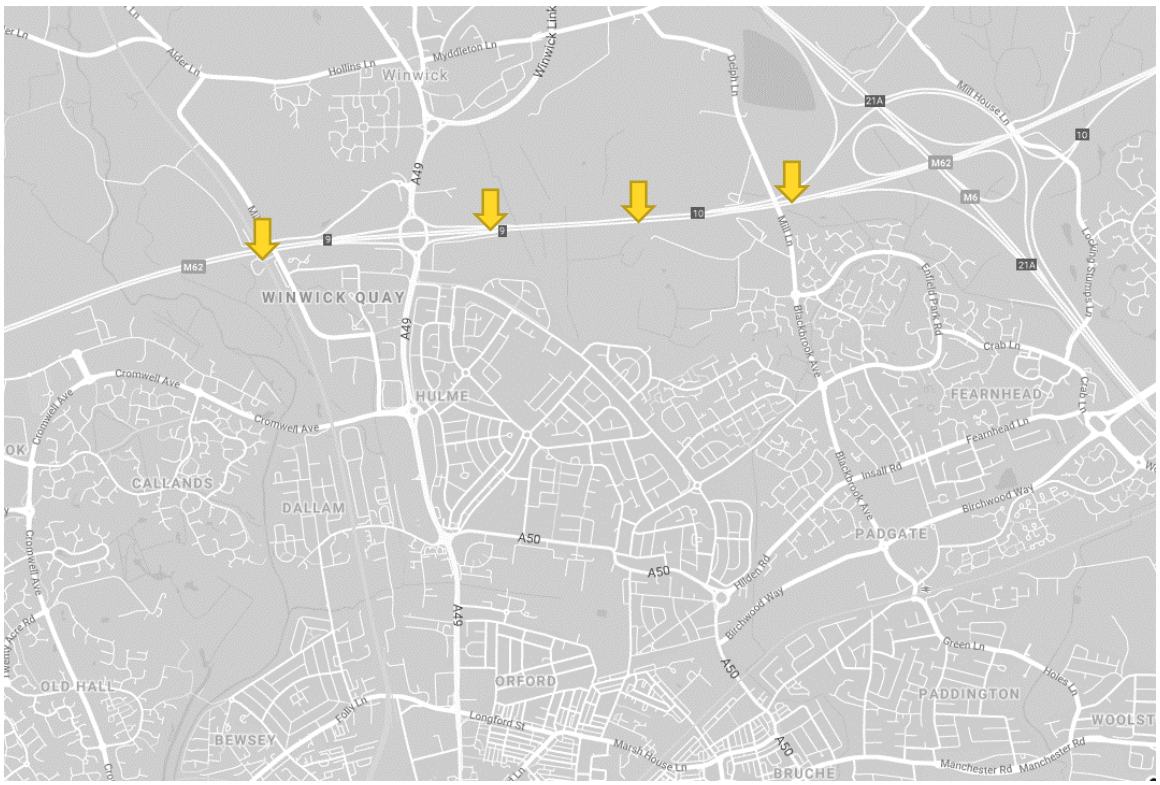

FIGURE 3.2: AVAILABLE HATRIS TRAFFIC DATA

3.2 Changes in Flows 2015 – 2019

3.2.1 Initially, it was found that at these locations traffic flows had changed, in some places considerably, between 2015 and 2019 with differences for individual movements up to 400-500 vehicles/ hour.

3.2.2 As the base model needs to be used to test in current and future years, and therefore needs to be shown to robustly represent current conditions a decision had to be made regarding how to manage this difference in flow, as described in the options below:

1. Scale up the 2015 model flow globally in an attempt to match the link counts provided, which would essentially increase either the flow or levels of congestion, or both, throughout the whole model; or
2. Limit any scaling of traffic to specific movements and key routes, in an attempt to, as far as possible, keep all other movements / proportions consistent with those in the 2015 model.

3.2.3 Option 2 above was considered the best way forward as it had the least impact on the distribution of flows around the cordoned network. This option was taken forward as current 2019 data is not available for all junctions modelled in the network. This creates the possibility of updating the model without the need for a full rebuild and validation exercise.

3.3 Traffic Compositions

As with the original models, three traffic compositions were used in the model: Cars, LGVs and HGVs. As Cars made up the vast majority of the overall volume in both peaks, tweaks to volumes and routing were primarily focussed here when carrying out the recalibration and validation exercise.

Vehicle Type	AM % Distribution	PM % Distribution
Car	83.7%	91.7%
LGV	8.4%	4.2%
HGV	7.9%	4.1%

TABLE 3.1: TRAFFIC COMPOSITION SUMMARY

3.4 Flow Calibration

The process of flow calibration has involved multiple iterations of minor adjustments to both the vehicle inputs and static routing proportions at key locations and on key routes. The calculated GEH statistic for the observed and modelled flows was considered for each of the junction turning counts in accordance with the criteria stated in WebTAG Unit 3.1. To consider day to day variation in driver behaviour, the models were run, and results averaged over twenty random seeds. Table 3.2 summarises the flow calibration results.

	AM Peak	PM Peak
Criteria	08:00-09:00	17:00-18:00
85% of VISSIM counts with GEH <=3	**92.50%**	**95.0%**
85% of VISSIM counts with GEH <=5	**100.0%**	**100.0%**
100% of VISSIM counts with GEH <=10	**100.0%**	**100.0%**
85% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	**100.0%**	**100.0%**

TABLE 3.2: FLOW CALIBRATION SUMMARY

3.4.1 For transparency, completeness and robustness, these results also include a comparison against the TfL criteria for key links, using a GEH value of 3 or under. It has now been possible to achieve the ideal minimum 85% count, demonstrating that a strong flow calibration result has been achieved. A full breakdown of model calibration results can be found in Appendix A.

3.5 Signal Recalibration

3.5.1 Another element which was suspected to have likely changed on the ground since the 2015 model construction and validation was the traffic signal set-up and timing configuration. Subsequently, traffic signal specifications and drawings were obtained from Warrington UTMC for the following junctions:

- Site 1156 Winwick Link
- Site 1150 Delph Lane (B&Q)
- Site 1146 M62 J9 South
- Site 1147 M62 J9 North
- Site 1083 Cromwell Aveune / Winwick Road
- Site 1204 Calver Road
- Site 1216 J9 Retail Park
- Site 1077 Long Lane

3.5.2 Additionally, a capture of 1 weeks' worth of phase, stage and cycle timing data was carried out for each of the following nodes (with the exception of those highlighted):

- Site 1156 Winwick Link
- Site 1150 Delph Lane (B&Q)
- Site 1146 M62 J9 South – No comms to site
- Site 1147 M62 J9 North – No comms to site
- Site 1083 Cromwell Avenue / Winwick Road
- Site 1204 Calver Road
- Site 1216 J9 Retail Park - Unavailable due to roadworks
- Site 1077 Long Lane

3.5.3 The signal data showed that although some locations were running with exactly the same setup and timings as found in the 2015 model, most key signal controllers required timings to be recalibrated in line with current operation.

3.6 Calibration Summary

3.6.1 Overall, based on the flow comparison results highlighted in section 3.2, a good fit between observed and modelled traffic flows has been achieved.

4 MODEL VALIDATION

This section summarises the goodness of fit between modelled and observed outputs, independently collected.

4.1 Journey Time Validation

4.1.1 The journey time validation has been carried out using TomTom data collected for the network. This was chosen as it provides a high sample rate dataset which improves the overall robustness of the validation comparison. The data is provided in small link sections, so these were combined into more reasonable lengths from junction to junction in the network, which assisted the calibration of the model. The journey time data is averaged over April 2019, for Tuesdays, Wednesdays and Thursdays. The Easter break period was considered, and the date range removed from the travel time dataset (Easter holidays in Warrington were 6th April 2019 – 22nd April 2019*)

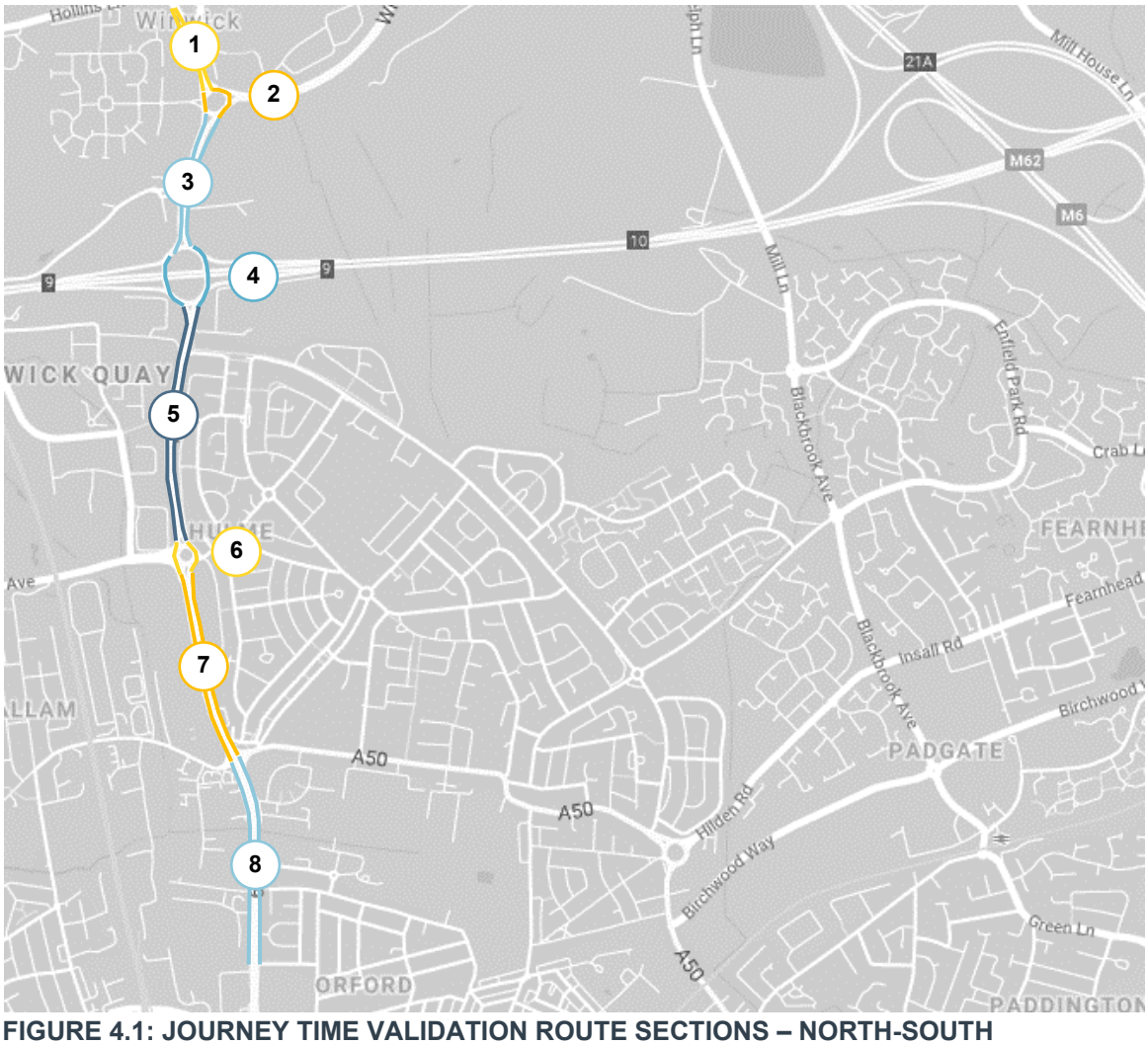

FIGURE 4.1: JOURNEY TIME VALIDATION ROUTE SECTIONS – NORTH-SOUTH

**2019 Warrington term dates taken from www.familiesonline.co.uk – click link for details*

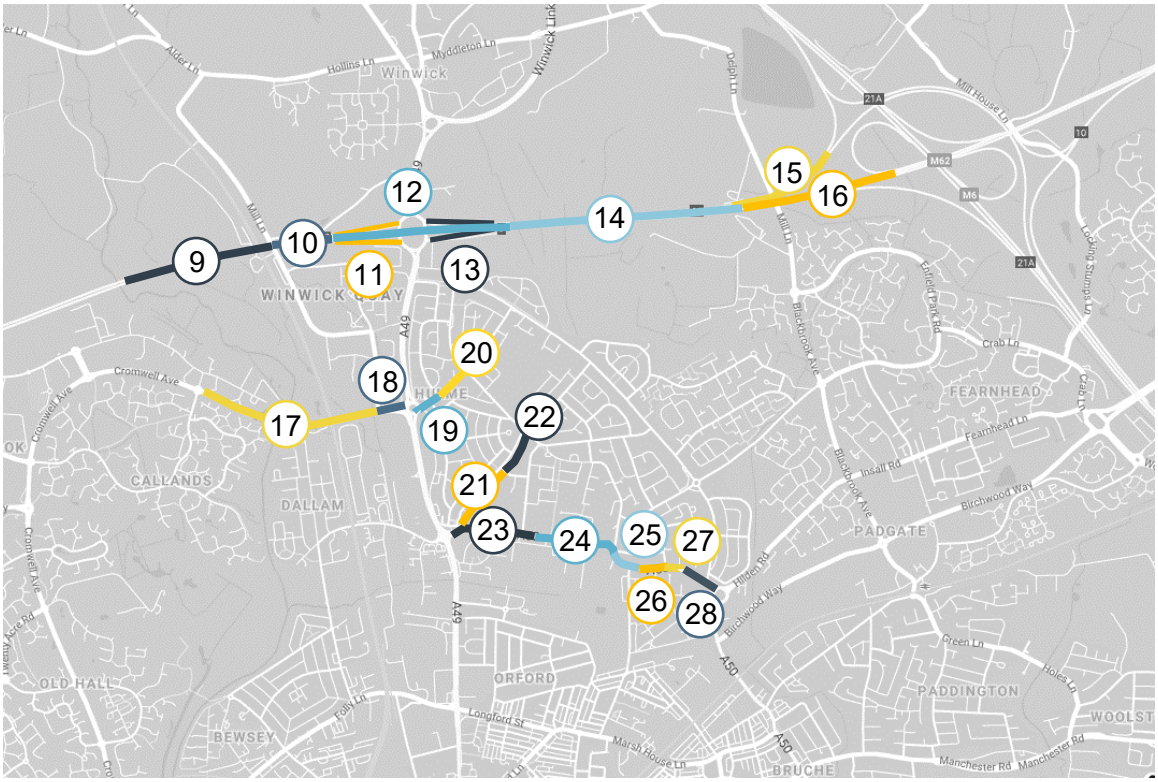

FIGURE 4.2: JOURNEY TIME VALIDATION ROUTE SECTIONS – EAST-WEST

4.2 Journey Time Data

4.2.1 Table 4.1 below shows the overall summary for all journey time routes and sections for the network. On the following pages, Tables 4.2 – 4.13 show a more detailed breakdown of that data:

Whole Routes	AM Peak	PM Peak
Criteria	08:00-09:00	17:00-18:00
85% of measures within 15%	91%	91%
85% of measures within 60 seconds	100%	100%

Route Sections	AM Peak	PM Peak
Criteria	08:00-09:00	17:00-18:00
85% of measures within 15%	79%	77%
85% of measures within 60 seconds	100%	100%

TABLE 4.1: OVERALL NETWORK PERFORMANCE OF ROUTES & SECTIONS

Section	Direction	Description			Observed		Modelled			AM Peak 08:00 - 09:00 Validation - Northbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
1	NB	Winwick Link Rd	-	Hollins Ln	384m	75	67	73	81	-2	-3%	✓	✓	✓
2	*NB*	*Roundabout*			*43m*	*6*	*6*	*6*	*7*	1	14%	✓	✓	✓
3	NB	M62 Junction 9	-	Winwick Link Rd	447m	81	75	90	121	9	11%	✓	✓	✓
4	NB	M62 Junction 9			254m	36	36	38	41	2	5%	✓	✓	✓
5	NB	Cromwell Ave	-	M62 Junction 9	810m	68	73	73	74	5	8%	✓	✓	✓
6	*NB*	*Roundabout*			*63m*	*5*	*6*	*7*	*7*	1	20%	×	✓	✓
7	NB	Hawleys Ln	-	Cromwell Ave	645m	94	84	93	106	-1	-1%	✓	✓	✓
8	NB	Ireland St	-	Hawleys Ln	720m	104	107	111	118	7	7%	✓	✓	✓
TOTAL	**NB**	**Ireland St**	**-**	**Hollins Ln**	**3364m**	**468**	**469**	**491**	**530**	23	5%	✓	✓	✓

Section	Direction	Description			Observed		Modelled			AM Peak 08:00 - 09:00 Validation - Southbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
1	SB	Hollins Ln	-	Winwick Link Rd	356m	64	65	72	80	8	12%	✓	✓	✓
2	*SB*	*Roundabout*			*110m*	*21*	*19*	*22*	*27*	1	6%	✓	✓	✓
3	SB	Winwick Link Rd	-	M62 Junction 9	492m	115	117	130	148	15	13%	✓	✓	✓
4	SB	M62 Junction 9			232m	42	42	44	47	2	5%	✓	✓	✓
5	SB	M62 Junction 9	-	Sandy Ln	811m	158	124	164	200	5	3%	✓	✓	✓
6	*SB*	*Roundabout*			*68m*	*11*	*12*	*13*	*14*	2	24%	×	✓	✓
7	SB	Sandy Ln	-	Long Ln	650m	144	154	171	182	27	19%	×	✓	✓
8	SB	Long Ln	-	Ireland St	725m	82	77	80	83	-2	-3%	✓	✓	✓
TOTAL	**SB**	**Hollins Ln**	**-**	**Ireland St**	**3444m**	**637**	**618**	**696**	**763**	59	9%	✓	✓	✓

TABLE 4.2: NORTH-SOUTH A49 JOURNEY TIME SECTIONS – AM PEAK

Section	Direction	Description			Observed		Modelled			AM Peak 08:00 - 09:00 Validation - Eastbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
9	EB	EB M62	-	EB M62	1313m	58	62	62	62	4	6%	✓	✓	✓
10	EB	EB M62	-	EB M62 offslip	347m	16	16	16	16	0	0%	✓	✓	✓
11	EB	EB M62 offslip	-	M62 J9	291m	71	53	71	108	1	1%	✓	✓	✓
12	EB	EB M62 @ J9	-	EB M62 @ J9	869m	47	41	41	41	-6	-12%	✓	✓	✓
13	EB	M62 J9	-	EB M62 onslip	433m	30	27	27	27	-4	-12%	✓	✓	✓
14	EB	EB M62 onslip	-	EB M62	1074m	65	51	60	85	-5	-8%	✓	✓	✓
15	EB	EB M62/M6	-	M6	624m	28	31	32	33	4	15%	✓	✓	✓
16	EB	EB M62	-	EB M62	1115m	256	125	248	381	-7	-3%	✓	✓	✓
TOTAL	**EB**	**EB M62**	**-**	**EB M62**	**6065m**	**570**	**406**	**557**	**753**	-13	-2%	✓	✓	✓

Section	Direction	Description			Observed		Modelled			AM Peak 08:00 - 09:00 Validation - Westbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
16	WB	WB M62	-	WB M62	454m	16	17	17	17	1	6%	✓	✓	✓
14	WB	WB M62	-	WB M62 offslip	1739m	63	67	68	69	5	8%	✓	✓	✓
13	WB	WB M62 offslip	-	M62 J9	413m	110	77	105	138	-4	-4%	✓	✓	✓
12	WB	WB M62 @ J9	-	WB M62 @ J9	958m	31	35	36	36	4	14%	✓	✓	✓
11	WB	M62 J9	-	WB M62 onslip	399m	21	21	21	21	1	3%	✓	✓	✓
10	WB	WB M62 onslip	-	WB M62	220m	9	8	8	8	-1	-11%	✓	✓	✓
9	WB	WB M62	-	WB M62	1344m	60	61	61	62	1	3%	✓	✓	✓
TOTAL	**WB**	**WB M62**	**-**	**WB M62**	**5527m**	**309**	**288**	**316**	**349**	7	2%	✓	✓	✓

TABLE 4.3: EAST-WEST M62 JOURNEY TIME SECTIONS – AM PEAK

Section	Direction	Description			Observed		Modelled			AM Peak 08:00 - 09:00 Validation - Northbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
17	EB	Callands Rd	-	Calver Rd	901m	106	115	117	122	11	11%	✓	✓	✓
18a	EB	Calver Rd	-	Cromwell Ave LT	153m	35	28	28	28	-6	-19%	×	✓	✓
18b	EB	Calver Rd	-	Cromwell Ave RT	156m	34	31	31	32	-3	-8%	✓	✓	✓
TOTAL	**EB**	**Callands Rd**	**-**	**A49 Winwick Rd**	**1210m**	**174**	**174**	**176**	**182**	2	1%	✓	✓	✓

Section	Direction	Description			Observed		Modelled			AM Peak 08:00 - 09:00 Validation - Northbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
18	WB	A49 Winwick Rd	-	Calver Rd	107m	14	15	16	17	2	14%	✓	✓	✓
17	WB	Calver Rd	-	Callands Rd	958m	64	55	56	57	-8	-13%	✓	✓	✓
TOTAL	**WB**	**A49 Winwick Rd**	**-**	**Callands Rd**	**1065m**	**79**	**71**	**72**	**74**	-6	-8%	✓	✓	✓

TABLE 4.4: EAST-WEST CROMWELL AVENUE JOURNEY TIME SECTIONS – AM PEAK

Section	Direction	Description			Observed		Modelled			AM Peak 08:00 - 09:00 Validation - Northbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
19	*EB*	*A49 Winwick Rd*	-	*Chiltern Rd*	117m	22	17	18	19	-4	-18%	×	✓	✓
20	EB	Chiltern Rd	-	Sandy Lane	179m	24	24	24	24	1	2%	✓	✓	✓
TOTAL	**EB**	**A49 Winwick Rd**	**-**	**Sandy Lane**	**296m**	**45**	**41**	**42**	**43**	-3	-7%	✓	✓	✓

Section	Direction	Description			Observed		Modelled			AM Peak 08:00 - 09:00 Validation - Northbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
20	WB	Sandy Lane	-	Chiltern Rd	187m	166	100	130	151	-36	-21%	×	✓	✓
19	*WB*	*Chiltern Rd*	-	*A49 Winwick Rd*	115m	70	75	79	82	8	12%	✓	✓	✓
TOTAL	**WB**	**Sandy Lane**	**-**	**A49 Winwick Rd**	**302m**	**236**	**175**	**209**	**232**	-27	-11%	✓	✓	✓

TABLE 4.5: EAST-WEST SANDY LANE WEST JOURNEY TIME SECTIONS – AM PEAK

Section	Direction	Description			Observed		Modelled			AM Peak 08:00 - 09:00 Validation - Northbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
21	WB	Sandy Lane	-	Clough Ave	260m	32	28	29	29	-3	-11%	✓	✓	✓
22	WB	Clough Ave	-	A50 Long Lane	344m	89	66	72	84	-16	-18%	×	✓	✓
TOTAL	**WB**	**Sandy Lane**	**-**	**A50 Long Lane**	**604m**	**121**	**95**	**101**	**113**	-20	-16%	×	✓	✓

TABLE 4.6: WESTBOUND NORTHWAY JOURNEY TIME SECTIONS – AM PEAK

Section	Direction	Description			Observed		Modelled			AM Peak 08:00 - 09:00 Validation - Northbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
23	EB	A49 Winwick Rd	-	Fisher Ave	399m	39	41	42	42	2	5%	✓	✓	✓
24	EB	Fisher Ave	-	Birtles Rd	486m	67	65	69	75	2	3%	✓	✓	✓
25	EB	Birtles Rd	-	Hallfields Rd	129m	47	41	44	48	-4	-8%	✓	✓	✓
26	EB	Hallfields Rd	-	Birtles Rd	203m	19	21	22	22	3	15%	✓	✓	✓
27	*EB*	*Birtles Rd*	-	*Bruce Ave*	67m	7	7	7	7	0	3%	✓	✓	✓
28	EB	Bruce Ave	-	Poplars Ave	145m	20	19	19	20	-1	-6%	✓	✓	✓
TOTAL	**EB**	**A49 Winwick Rd**	**-**	**Poplars Ave**	**1429m**	**200**	**197**	**202**	**213**	2	1%	✓	✓	✓

Section	Direction	Description			Observed		Modelled			AM Peak 08:00 - 09:00 Validation - Northbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
28	WB	Poplars Ave	-	Bruce Ave	145m	29	18	20	22	-9	-32%	×	✓	✓
27	*WB*	*Bruce Ave*	-	*Birtles Rd*	65m	9	7	7	8	-2	-22%	×	✓	✓
26	WB	Birtles Rd	-	Hallfields Rd	205m	50	44	46	47	-4	-8%	✓	✓	✓
25	WB	Hallfields Rd	-	Birtles Rd	132m	21	25	27	29	7	32%	×	✓	✓
24	WB	Birtles Rd	-	Fisher Ave	483m	74	67	73	78	-1	-1%	✓	✓	✓
23	WB	Fisher Ave	-	A49 Winwick Rd	397m	72	72	78	87	6	9%	✓	✓	✓
TOTAL	**WB**	**Poplars Ave**	**-**	**A49 Winwick Rd**	**1426m**	**255**	**234**	**252**	**267**	-3	-1%	✓	✓	✓

TABLE 4.7: EAST-WEST A50 LONG LANE JOURNEY TIME SECTIONS – AM PEAK

Section	Direction	Description			Observed		Modelled			PM Peak 17:00 - 18:00 Validation - Northbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
1	NB	Winwick Link Rd	-	Hollins Ln	384m	84	83	87	93	3	3%	✓	✓	✓
2	*NB*	*Roundabout*			*43m*	*5*	*6*	*6*	*7*	1	13%	✓	✓	✓
3	NB	M62 Junction 9	-	Winwick Link Rd	447m	105	88	101	109	-4	-4%	✓	✓	✓
4	NB	M62 Junction 9			254m	40	38	42	45	2	5%	✓	✓	✓
5	NB	Cromwell Ave	-	M62 Junction 9	810m	86	80	82	85	-4	-5%	✓	✓	✓
6	*NB*	*Roundabout*			*63m*	*6*	*6*	*6*	*6*	0	-3%	✓	✓	✓
7	NB	Hawleys Ln	-	Cromwell Ave	645m	137	115	123	132	-15	-11%	✓	✓	✓
8	NB	Ireland St	-	Hawleys Ln	720m	251	242	264	274	12	5%	✓	✓	✓
TOTAL	**NB**	**Ireland St**	**-**	**Hollins Ln**	**3364m**	**716**	**666**	**711**	**734**	-5	-1%	✓	✓	✓

Section	Direction	Description			Observed		Modelled			PM Peak 17:00 - 18:00 Validation - Southbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
1	SB	Hollins Ln	-	Winwick Link Rd	356m	64	62	63	66	-1	-1%	✓	✓	✓
2	*SB*	*Roundabout*			*110m*	*17*	*17*	*17*	*17*	0	3%	✓	✓	✓
3	SB	Winwick Link Rd	-	M62 Junction 9	492m	114	100	112	120	-2	-2%	✓	✓	✓
4	SB	M62 Junction 9			232m	30	32	32	32	2	6%	✓	✓	✓
5	SB	M62 Junction 9	-	Sandy Ln	811m	94	87	88	91	-6	-6%	✓	✓	✓
6	*SB*	*Roundabout*			*68m*	*15*	*12*	*12*	*12*	-3	-22%	×	✓	✓
7	SB	Sandy Ln	-	Long Ln	650m	97	95	101	112	4	4%	✓	✓	✓
8	SB	Long Ln	-	Ireland St	725m	75	70	71	73	-4	-5%	✓	✓	✓
TOTAL	**SB**	**Hollins Ln**	**-**	**Ireland St**	**3444m**	**507**	**479**	**497**	**508**	-9	-2%	✓	✓	✓

TABLE 4.8: NORTH-SOUTH A49 JOURNEY TIME SECTIONS – PM PEAK

Section	Direction	Description			Observed		Modelled			PM Peak 17:00 - 18:00 Validation - Eastbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
9	EB	EB M62	-	EB M62	1313m	56	63	63	64	7	13%	✓	✓	✓
10	EB	EB M62	-	EB M62 offslip	347m	17	17	17	17	0	1%	✓	✓	✓
11	EB	EB M62 offslip	-	M62 J9	291m	169	107	159	206	-10	-6%	✓	✓	✓
12	EB	EB M62 @ J9	-	EB M62 @ J9	869m	35	42	43	44	8	23%	×	✓	✓
13	EB	M62 J9	-	EB M62 onslip	433m	25	26	26	26	1	3%	✓	✓	✓
14	EB	EB M62 onslip	-	EB M62	1074m	42	51	52	53	10	24%	×	✓	✓
15	EB	EB M62/M6	-	M6	624m	26	30	31	32	6	21%	×	✓	✓
16	EB	EB M62	-	EB M62	1115m	65	67	70	74	5	8%	✓	✓	✓
TOTAL	**EB**	**EB M62**	**-**	**EB M62**	**6065m**	**434**	**416**	**462**	**503**	**27**	**6%**	✓	✓	✓

Section	Direction	Description			Observed		Modelled			PM Peak 17:00 - 18:00 Validation - Westbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
16	WB	WB M62	-	WB M62	454m	16	17	17	17	1	7%	✓	✓	✓
14	WB	WB M62	-	WB M62 offslip	1739m	66	68	69	70	4	5%	✓	✓	✓
13	WB	WB M62 offslip	-	M62 J9	413m	53	54	55	56	1	3%	✓	✓	✓
12	WB	WB M62 @ J9	-	WB M62 @ J9	958m	32	37	37	38	5	15%	✓	✓	✓
11	WB	M62 J9	-	WB M62 onslip	399m	22	20	20	20	-1	-6%	✓	✓	✓
10	WB	WB M62 onslip	-	WB M62	220m	10	9	9	9	-1	-7%	✓	✓	✓
9	WB	WB M62	-	WB M62	1344m	63	65	65	66	2	3%	✓	✓	✓
TOTAL	**WB**	**WB M62**	**-**	**WB M62**	**5527m**	**262**	**272**	**273**	**273**	**11**	**4%**	✓	✓	✓

TABLE 4.9: EAST-WEST M62 JOURNEY TIME SECTIONS – PM PEAK

Section	Direction	Description			Observed		Modelled			PM Peak 17:00 - 18:00 Validation - Eastbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
17	EB	Callands Rd	-	Calver Rd	901m	154	141	156	170	3	2%	✓	✓	✓
18a	EB	Calver Rd	-	Cromwell Ave LT	153m	30	32	32	33	3	10%	✓	✓	✓
18b	EB	Calver Rd	-	Cromwell Ave RT	156m	31	35	35	36	4	13%	✓	✓	✓
TOTAL	**EB**	**Callands Rd**	**-**	**A49 Winwick Rd**	**1210m**	**215**	**211**	**224**	**238**	10	4%	✓	✓	✓

Section	Direction	Description			Observed		Modelled			PM Peak 17:00 - 18:00 Validation - Westbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
18	WB	A49 Winwick Rd	-	Calver Rd	107m	14	12	12	13	-2	-13%	✓	✓	✓
17	WB	Calver Rd	-	Callands Rd	958m	65	58	59	59	-7	-10%	✓	✓	✓
TOTAL	**WB**	**A49 Winwick Rd**	**-**	**Callands Rd**	**1065m**	**80**	**71**	**71**	**71**	-9	-11%	✓	✓	✓

TABLE 4.10: EAST-WEST CROMWELL AVENUE JOURNEY TIME SECTIONS – PM PEAK

Section	Direction	Description			Observed		Modelled			PM Peak 17:00 - 18:00 Validation - Eastbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
19	EB	A49 Winwick Rd	-	Chiltern Rd	117m	21	17	18	19	-3	-16%	×	✓	✓
20	EB	Chiltern Rd	-	Sandy Lane	179m	25	24	24	24	-1	-3%	✓	✓	✓
TOTAL	**EB**	**A49 Winwick Rd**	**-**	**Sandy Lane**	**296m**	**46**	**41**	**42**	**43**	-4	-9%	✓	✓	✓

Section	Direction	Description			Observed		Modelled			PM Peak 17:00 - 18:00 Validation - Westbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
20	WB	Sandy Lane	-	Chiltern Rd	187m	70	44	87	122	17	24%	×	✓	✓
19	WB	Chiltern Rd	-	A49 Winwick Rd	115m	47	55	69	77	22	46%	×	✓	✓
TOTAL	**WB**	**Sandy Lane**	**-**	**A49 Winwick Rd**	**302m**	**117**	**99**	**156**	**199**	39	33%	×	✓	✓

TABLE 4.11: EAST-WEST SANDY LANE WEST JOURNEY TIME SECTIONS – PM PEAK

Section	Direction	Description			Observed		Modelled			PM Peak 17:00 - 18:00 Validation - Westbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
21	WB	Sandy Lane	-	Clough Ave	260m	24	27	27	27	2	10%	✓	✓	✓
22	WB	Clough Ave	-	A50 Long Lane	344m	65	48	55	68	-10	-15%	✓	✓	✓
TOTAL	**WB**	**Sandy Lane**	**-**	**A50 Long Lane**	**604m**	**90**	**75**	**82**	**95**	-8	-9%	✓	✓	✓

TABLE 4.12: WESTBOUND NORTHWAY JOURNEY TIME SECTIONS – PM PEAK

Section	Direction	Description			Observed		Modelled			PM Peak 17:00 - 18:00 Validation - Eastbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
23	EB	A49 Winwick Rd	-	Fisher Ave	399m	34	39	41	43	7	20%	×	✓	✓
24	EB	Fisher Ave	-	Birtles Rd	486m	57	60	62	63	5	8%	✓	✓	✓
25	EB	Birtles Rd	-	Hallfields Rd	129m	45	39	40	42	-5	-11%	✓	✓	✓
26	EB	Hallfields Rd	-	Birtles Rd	203m	18	21	21	22	3	16%	×	✓	✓
27	EB	Birtles Rd	-	Bruce Ave	67m	8	8	8	8	0	-4%	✓	✓	✓
28	EB	Bruce Ave	-	Poplars Ave	145m	20	20	20	20	0	-1%	✓	✓	✓
TOTAL	**EB**	**A49 Winwick Rd**	**-**	**Poplars Ave**	**1429m**	**182**	**188**	**191**	**195**	**9**	**5%**	✓	✓	✓

Section	Direction	Description			Observed		Modelled			PM Peak 17:00 - 18:00 Validation - Westbound				
		From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates
28	WB	Poplars Ave	-	Bruce Ave	145m	25	19	20	23	-4	-18%	×	✓	✓
27	WB	Bruce Ave	-	Birtles Rd	65m	10	7	8	9	-2	-20%	×	✓	✓
26	WB	Birtles Rd	-	Hallfields Rd	205m	59	48	52	56	-7	-12%	✓	✓	✓
25	WB	Hallfields Rd	-	Birtles Rd	132m	24	25	27	30	3	11%	✓	✓	✓
24	WB	Birtles Rd	-	Fisher Ave	483m	84	71	78	91	-6	-7%	✓	✓	✓
23	WB	Fisher Ave	-	A49 Winwick Rd	397m	119	70	105	153	-14	-12%	✓	✓	✓
TOTAL	**WB**	**Poplars Ave**	**-**	**A49 Winwick Rd**	**1426m**	**320**	**239**	**289**	**361**	**-31**	**-10%**	✓	✓	✓

TABLE 4.13: EAST-WEST A50 LONG LANE JOURNEY TIME SECTIONS – PM PEAK

4.2.2 In accordance with WebTAG Unit 3.1 criteria, which recommends that the difference between observed and modelled journey times should be within 15% (or 1 minute if higher) for at least 85% of the routes evaluated (although that criteria is ideally designed for route sections over 3km in length). Tables 4.2 – 4.13 (on the preceding pages) shows that in total 75/96 route sections (78.1%) are within 15% and all route sections are within 60 seconds of the observed.

4.2.3 Quite a few route sections are very short in length (in each peak, 13 out of 48 are under 150m – if each of these was combined with the next journey time section to make more reasonable section lengths, only 1 section per peak would have a result over 15%), meaning that the percentage difference generally represents a very low actual difference, in seconds. The only route sections which proved particularly difficult to closely validate where the two westbound sections of Sandy Lane West. In both instances, the combination of small route section lengths and missing side roads which we have no data for likely affect the exact split of where delay occurs. However, the overall route time was very close to within 15% for this route in the morning peak, and well under 60 seconds in the evening peak. This may need to just have extra consideration when it comes to analysing the future year results.

4.2.4 Further details can be found in Appendix B.

4.3 Link Validation

4.3.1 The modelled flows have been compared to the motorway flows from the HATRIS Database not used in the flow calibration process. Together these provide an independent dataset to determine the robustness of the model.

	AM Peak	PM Peak
Criteria	08:00-09:00	17:00-18:00
85% of VISSIM counts with GEH <=3	57.1%	**100.0%**
85% of VISSIM counts with GEH <=5	**100.0%**	**100.0%**
100% of VISSIM counts with GEH <=10	**100.0%**	**100.0%**
85% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	**100.0%**	**100.0%**

TABLE 4.14: LINK VALIDATION SUMMARY

4.3.2 The results in Table 4.3 show that overall, for each of the peak hours modelled, the GEH is less than five for 100% of cases. Furthermore, WebTAG Unit 3.1 flow criteria is also met.

4.3.3 Appendix C shows the Link Validation in more detail.

4.4 Validation Summary

4.4.1 Overall, based on the journey time and link validation results above, a good fit between observed and modelled results has been achieved. 91% of AM and PM peak complete journey time routes validated within the 15% criteria, with 100% of full routes and route sections falling within the 60 second criteria.

4.4.2 In the AM peak, 92.5% of turning counts achieve a GEH value of under 3. In the PM peak, 95% of turning counts achieve a GEH value under 3, with the remaining 5% all achieving a value under 5. For the seven link count sites on the motorway, all achieve a GEH value of under 5%.

4.4.3 Based on the fact that this model has been created from a hybrid of different data sources, considering all audit comments received regarding current levels of queuing and delay within the network (typical data drawn from current Big Data sources such as Google Traffic or anecdotal evidence taken from local knowledge), it is felt that large amounts of time have been spend attempting to make the best of bridging the gaps between different sources. Spending further time making minute tweaks to traffic volume and routing data is therefore not believed to be likely to bring any real further benefit, particularly considering that all future year testing will use altered traffic flows anyway. The model is therefore considered to be fit for purpose.

5 SUMMARY & RECOMMENDATIONS

5.1.1 In summary, the results demonstrate a suitable fit between modelled and observed flows with an accurate distribution of traffic and delays around the network, representative of a typical weekday in April 2019. As such, the base models are considered an appropriate starting point to test future changes in traffic patterns.

APPENDIX A:

TURNING COUNT CALIBRATION RESULTS

AM Peak (08:00-09:00) Summary	
Total number of counts considered	40
VISSIM model counts with GEH <3	37
% of VISSIM counts with GEH <3	92.50%
VISSIM model counts with GEH <5	40
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	40
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	40
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
Junction	Approach	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 - 2700	>2700
A49 Newton Road/ Delph Lane	A49 NB	1266	1249	-17	-1%	N	0.48	✓	✓			
	A49 NB to Delp Ln	179	194	15	8%	N	1.10	✓	✓			
	A49 SB	1699	1706	7	0%	N	0.17	✓	✓			
	A49 SB to Delph Ln	64	65	1	2%	N	0.12	✓	✓			
	Delph Ln to A49 NB	87	106	19	22%	N	1.93	✓	✓			
	Delph Ln to A49 SB	192	216	24	13%	N	1.68	✓	✓			
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	16	27	11	69%	N	2.37	✓	✓			
	A49 NB	1220	1325	105	9%	N	2.94	✓	✓			
	A49 SB	1650	1782	132	8%	N	3.19	✓	✓			
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln	154	169	15	10%	N	1.18	✓	✓			
	A49 SB	1277	1280	3	0%	N	0.08	✓	✓			
	A49 SB to Cromwell Ave	243	277	34	14%	N	2.11	✓	✓			
	Cromwell Ave to A49 NB	250	275	25	10%	N	1.54	✓	✓			
	Cromwell Ave to Sandy Ln	314	351	37	12%	N	2.03	✓	✓			
	Cromwell Ave to A49 SB	645	616	-29	-4%	N	1.15	✓	✓			
	Cromwell Ave to Cromwell Ave (U-turn)	55	54	-1	-2%	N	0.14	✓	✓			
	A49 NB	776	823	47	6%	N	1.66	✓	✓			
	A49 NB to Sandy Ln	71	76	5	7%	N	0.58	✓	✓			
	A49 NB to Cromwell Ave	424	425	1	0%	N	0.05	✓	✓			
	Sandy Ln to A49 NB	210	231	21	10%	N	1.41	✓	✓			
	Sandy Ln to Sandy Ln (U-turn	0	0	0	-	N	0.00	✓	✓			
	Sandy Ln to A49 SB	81	116	35	43%	N	3.53	✓	✓			
	Sandy Ln to Cromwell Ave	203	252	49	24%	N	3.25	✓	✓			
A49 Winwick Road @ Junction NINE Retail Park	A49 SB	1888	1877	-11	-1%	N	0.25	✓	✓			
	A49 SB to Junction NINE Retail	115	120	5	4%	N	0.46	✓	✓			
	A49 NB	1199	1252	53	4%	N	1.51	✓	✓			
	Junction NINE Retail to A49 SB	16	20	4	25%	N	0.94	✓	✓			
	Junction NINE Retail to A49 NB	72	75	3	4%	N	0.35	✓	✓			
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	199	227	28	14%	N	1.92	✓	✓			
	A49 SB to Long Lane	258	276	18	7%	N	1.10	✓	✓			
	A49 SB	1447	1385	-62	-4%	N	1.65	✓	✓			
	A49 NB to Hawleys Lane	77	78	1	1%	N	0.11	✓	✓			
	A49 NB to Long Lane	236	196	-40	-17%	N	2.72	✓	✓			
	A49 NB	805	792	-13	-2%	N	0.46	✓	✓			
	Long Lane to A49 SB	390	402	12	3%	N	0.60	✓	✓			
	Long Lane to Hawleys Lane	134	162	28	21%	N	2.30	✓	✓			
	Long Lane to A49 NB	239	273	34	14%	N	2.13	✓	✓			
	Hawleys Lane to Long Lane	113	92	-21	-19%	N	2.07	✓	✓			
	Hawleys Lane to A49 SB	58	52	-6	-10%	N	0.81	✓	✓			
	Hawleys Lane to A49 NB	174	170	-4	-2%	N	0.30	✓	✓			

PM Peak (17:00-18:00) Summary	
Total number of counts considered	40
VISSIM model counts with GEH <3	38
% of VISSIM counts with GEH <3	95.00%
VISSIM model counts with GEH <5	40
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	40
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	40
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
Junction	Approach	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 - 2700	>2700
A49 Newton Road/ Delph Lane	A49 NB	1739	1765	26	1%	N	0.62	✓	✓			
	A49 NB to Delp Ln	203	216	13	6%	N	0.90	✓	✓			
	A49 SB	1273	1281	8	1%	N	0.22	✓	✓			
	A49 SB to Delph Ln	111	119	8	7%	N	0.75	✓	✓			
	Delph Ln to A49 NB	195	189	-6	-3%	N	0.43	✓	✓			
	Delph Ln to A49 SB	169	197	28	17%	N	2.07	✓	✓			
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	23	14	-9	-39%	N	2.09	✓	✓			
	A49 NB	2008	2061	53	3%	N	1.18	✓	✓			
	A49 SB	1345	1319	-26	-2%	N	0.71	✓	✓			
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln	233	214	-19	-8%	N	1.27	✓	✓			
	A49 SB	822	803	-19	-2%	N	0.67	✓	✓			
	A49 SB to Cromwell Ave	306	288	-18	-6%	N	1.04	✓	✓			
	Cromwell Ave to A49 NB	403	369	-34	-8%	N	1.73	✓	✓			
	Cromwell Ave to Sandy Ln	259	302	43	17%	N	2.57	✓	✓			
	Cromwell Ave to A49 SB	517	505	-12	-2%	N	0.53	✓	✓			
	Cromwell Ave to Cromwell Ave (U-turn	96	86	-10	-10%	N	1.05	✓	✓			
	A49 NB	1423	1526	103	7%	N	2.68	✓	✓			
	A49 NB to Sandy Ln	104	117	13	13%	N	1.24	✓	✓			
	A49 NB to Cromwell Ave	657	683	26	4%	N	1.00	✓	✓			
	Sandy Ln to A49 NB	205	181	-24	-12%	N	1.73	✓	✓			
	Sandy Ln to Sandy Ln (U-turn	0	0	0	-	N	0.00	✓	✓			
	Sandy Ln to A49 SB	103	109	6	6%	N	0.58	✓	✓			
	Sandy Ln to Cromwell Ave	260	238	-22	-8%	N	1.39	✓	✓			
A49 Winwick Road @ Junction NINE Retail Park	A49 SB	1309	1291	-18	-1%	N	0.50	✓	✓			
	A49 SB to Junction NINE Retail	133	124	-9	-7%	N	0.79	✓	✓			
	A49 NB	1923	2060	137	7%	N	3.07	✓	✓			
	Junction NINE Retail to A49 SB	103	104	1	1%	N	0.10	✓	✓			
	Junction NINE Retail to A49 NB	261	261	0	0%	N	0.00	✓	✓			
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	189	199	10	5%	N	0.72	✓	✓			
	A49 SB to Long Lane	319	341	22	7%	N	1.21	✓	✓			
	A49 SB	904	844	-60	-7%	N	2.03	✓	✓			
	A49 NB to Hawleys Lane	70	56	-14	-20%	N	1.76	✓	✓			
	A49 NB to Long Lane	215	171	-44	-20%	N	3.17	✓	✓			
	A49 NB	1357	1455	98	7%	N	2.61	✓	✓			
	Long Lane to A49 SB	246	275	29	12%	N	1.80	✓	✓			
	Long Lane to Hawleys Lane	158	182	24	15%	N	1.84	✓	✓			
	Long Lane to A49 NB	298	321	23	8%	N	1.31	✓	✓			
	Hawleys Lane to Long Lane	134	118	-16	-12%	N	1.43	✓	✓			
	Hawleys Lane to A49 SB	65	81	16	25%	N	1.87	✓	✓			
	Hawleys Lane to A49 NB	353	408	55	16%	N	2.82	✓	✓			

APPENDIX B:

JOURNEY TIME VALIDATION RESULTS

AM Journey Time (s)

Section	0730-0745				0745-0800				0800-0815				0815-0830				0830-0845				0845-0900				0800-0900				0900-0915				0915-0930			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
1 NB	113	88	-25	-22%	124	94	-30	-24%	86	76	-10	-11%	80	81	2	2%	74	68	-6	-7%	61	67	6	10%	75	73	-2	-3%	53	68	15	28%	49	58	9	18%
2 NB	6	7	2	29%	6	8	2	34%	6	7	1	20%	5	6	0	7%	6	6	1	9%	6	7	1	20%	6	6	1	14%	5	6	1	23%	4	5	1	15%
3 NB	112	100	-13	-11%	110	128	18	17%	83	121	38	46%	88	75	-13	-14%	84	75	-9	-11%	70	89	20	28%	81	90	9	11%	58	85	27	47%	67	65	-2	-3%
4 NB	38	36	-1	-3%	37	39	2	7%	35	41	6	18%	37	36	-1	-3%	35	36	0	1%	36	38	2	6%	36	38	2	5%	37	37	0	1%	35	35	0	-1%
5 NB	81	71	-10	-12%	74	74	1	1%	71	74	3	4%	72	73	1	2%	64	73	9	14%	65	73	9	13%	68	73	5	8%	61	73	12	19%	63	70	7	11%
6 NB	5	6	1	23%	6	6	1	14%	5	7	1	28%	5	7	1	26%	6	6	1	12%	6	7	1	15%	5	7	1	20%	5	6	1	19%	5	6	1	10%
7 NB	94	80	-15	-16%	96	98	2	2%	91	97	5	6%	97	84	-13	-14%	93	106	13	14%	93	85	-8	-8%	94	93	-1	-1%	93	79	-14	-15%	91	74	-18	-19%
8 NB	84	91	7	8%	90	101	11	12%	95	108	13	13%	117	107	-10	-9%	104	110	7	7%	99	118	19	19%	104	111	7	7%	105	97	-8	-8%	114	88	-27	-23%
	533	479	-53.64	-10%	542	549	7.28	1%	472	530	58.16	12%	502	469	-32.8	-7%	464	480	16.04	3%	435	484	48.99	11%	**468**	**491**	**22.6**	5%	416	450	34.09	8%	430	400	-30.16	-7%

Section	0730-0745				0745-0800				0800-0815				0815-0830				0830-0845				0845-0900				0800-0900				0900-0915				0915-0930			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
1 SB	71	54	-17	-23%	76	61	-15	-19%	72	65	-7	-9%	69	72	3	5%	59	80	21	36%	58	71	13	21%	64	72	8	12%	48	56	8	17%	47	49	2	4%
2 SB	15	17	3	18%	19	17	-2	-9%	22	19	-3	-14%	20	19	-2	-8%	22	23	0	1%	18	27	10	55%	21	22	1	6%	13	23	10	77%	13	18	4	31%
3 SB	89	88	-1	-1%	118	111	-8	-7%	121	119	-2	-1%	117	117	0	0%	130	135	5	4%	93	148	55	60%	115	130	15	13%	71	125	54	76%	64	84	20	32%
4 SB	25	41	16	63%	27	42	15	57%	33	43	10	30%	37	42	5	14%	53	43	-10	-19%	45	47	3	7%	42	44	2	5%	29	44	14	48%	32	42	9	29%
5 SB	78	83	5	6%	89	90	1	2%	115	124	9	8%	146	151	5	4%	187	181	-6	-3%	187	200	13	7%	158	164	5	3%	146	166	20	14%	125	115	-10	-8%
6 SB	8	10	1	16%	9	10	2	18%	9	13	4	46%	10	12	2	23%	13	14	2	12%	11	13	2	20%	11	13	2	24%	11	12	1	8%	10	12	2	20%
7 SB	95	93	-2	-2%	108	125	18	17%	112	154	43	38%	148	171	23	15%	157	182	25	16%	158	178	20	13%	144	171	27	19%	144	203	59	41%	131	181	50	38%
8 SB	71	71	0	0%	70	76	6	9%	78	81	3	4%	87	77	-10	-12%	80	83	3	4%	84	79	-5	-6%	82	80	-2	-3%	83	88	5	6%	81	80	-1	-1%
	452	458	5.5	1%	516	534	18.4	4%	560	618	57.84	10%	634	661	27.01	4%	701	741	39.39	6%	653	763	110.16	17%	**637**	**696**	**58.6**	9%	546	717	171.1	31%	503	579	76.24	15%

Section	0730-0745				0745-0800				0800-0815				0815-0830				0830-0845				0845-0900				0800-0900				0900-0915				0915-0930			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P3_1E	96	64	-32	-33%	91	63	-28	-31%	65	62	-3	-5%	62	62	-1	-1%	55	62	7	13%	50	62	11	23%	58	62	4	6%	51	61	10	20%	51	61	10	21%
P3_2E	33	17	-17	-50%	28	16	-12	-42%	19	16	-3	-16%	17	16	-1	-6%	17	16	-1	-6%	11	16	5	47%	16	16	0	0%	11	16	5	47%	11	16	5	44%
P3_3E	137	142	6	4%	124	146	22	17%	87	108	21	24%	82	65	-18	-21%	59	60	1	1%	54	53	-1	-1%	71	71	1	1%	36	46	9	25%	49	43	-5	-11%
P3_4E	91	43	-48	-53%	68	42	-26	-38%	56	41	-14	-26%	55	41	-14	-26%	42	41	-1	-3%	34	41	7	22%	47	41	-6	-12%	34	41	7	21%	37	41	4	10%
P3_6E	54	26	-28	-52%	36	26	-10	-28%	34	27	-7	-21%	32	27	-5	-17%	29	27	-2	-8%	27	27	0	0%	30	27	-4	-12%	27	26	-1	-3%	27	25	-2	-7%
P3_7E	121	115	-6	-5%	86	104	19	22%	83	85	3	4%	76	55	-21	-28%	57	51	-6	-11%	46	51	5	11%	65	60	-5	-8%	45	50	5	11%	59	50	-9	-15%
P3_8E	28	34	5	18%	28	33	5	19%	27	33	6	21%	29	31	3	9%	28	31	3	11%	26	31	5	18%	28	32	4	15%	26	30	4	17%	26	30	4	16%
P3_11E	392	408	16	4%	347	410	63	18%	326	381	55	17%	276	304	28	10%	239	183	-56	-24%	181	125	-56	-31%	256	248	-7	-3%	134	114	-20	-15%	141	107	-34	-24%
	952	848	-103.99	-11%	808	841	32.67	4%	697	753	56.7	8%	630	600	-29.7	-5%	526	470	-56.18	-11%	429	406	-22.78	-5%	**570**	**557**	**-13**	-2%	363	384	20.79	6%	400	374	-26.26	-7%

Section	0730-0745				0745-0800				0800-0815				0815-0830				0830-0845				0845-0900				0800-0900				0900-0915				0915-0930			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P3_11W	15	17	1	8%	15	17	1	8%	16	17	1	7%	16	17	1	7%	16	17	1	6%	16	17	1	6%	16	17	1	6%	16	17	1	4%	16	17	1	4%
P3_7W	62	68	6	9%	62	68	6	9%	63	67	5	7%	63	68	5	8%	63	68	4	7%	64	69	5	8%	63	68	5	8%	63	68	4	7%	63	67	4	6%
P3_6W	52	56	4	8%	63	65	2	3%	66	77	11	16%	70	106	36	52%	124	100	-24	-19%	178	138	-40	-22%	110	105	-4	-4%	107	108	1	1%	77	61	-16	-20%
P3_4W	31	36	6	19%	31	36	6	19%	31	36	5	16%	31	36	5	16%	31	36	5	15%	32	35	3	11%	31	36	4	14%	31	36	5	15%	31	36	5	16%
P3_3W	21	21	1	3%	20	21	1	6%	21	21	1	4%	20	21	1	4%	21	21	0	2%	21	21	0	2%	21	21	1	3%	20	21	1	3%	20	21	0	1%
P3_2W	9	8	-1	-8%	9	8	-1	-8%	9	8	-1	-11%	9	8	-1	-9%	9	8	-1	-10%	10	8	-1	-14%	9	8	-1	-11%	9	8	-1	-11%	9	8	-1	-9%
P3_1W	59	63	3	6%	59	62	4	6%	59	61	2	4%	59	61	2	4%	60	62	2	3%	61	61	0	0%	60	61	1	3%	60	62	2	2%	59	61	2	3%
	249	270	20.07	8%	259	278	18.68	7%	265	288	22.92	9%	268	317	49.57	19%	324	312	-12.59	-4%	380	349	-31.24	-8%	**309**	**316**	**7.165**	2%	307	319	11.71	4%	275	270	-4.87	-2%

Section	0730-0745				0745-0800				0800-0815				0815-0830				0830-0845				0845-0900				0800-0900				0900-0915				0915-0930			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P2_2E	110	117	7	7%	121	127	6	5%	116	122	6	5%	115	115	1	0%	96	115	19	19%	95	115	20	21%	106	117	11	11%	93	109	16	18%	87	104	17	20%
P2_3E	30	28	-2	-7%	32	29	-3	-9%	35	28	-6	-18%	36	28	-8	-22%	36	28	-8	-21%	32	28	-4	-12%	35	28	-6	-19%	34	27	-6	-18%	29	29	-1	-2%
P2_4E	31	31	0	-1%	35	32	-2	-7%	33	32	-1	-4%	36	31	-5	-14%	34	32	-2	-6%	33	31	-2	-6%	34	31	-3	-8%	34	29	-5	-15%	28	28	0	0%
	170	176	5	3%	188	189	1	1%	184	182	-2	-1%	187	175	-13	-7%	166	175	9	5%	160	174	14	9%	**174**	**176**	**2.213**	1%	160	165	5	3%	145	161	17	11%

Section	0730-0745				0745-0800				0800-0815				0815-0830				0830-0845				0845-0900				0800-0900				0900-0915				0915-0930			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P2_1W	12	16	4	36%	14	16	2	16%	12	15	3	25%	16	16	0	-2%	13	16	4	28%	15	17	1	9%	14	16	2	14%	14	15	1	7%	13	16	3	23%
P2_2W	62	56	-6	-10%	64	55	-9	-15%	67	56	-11	-17%	64	56	-8	-12%	64	55	-9	-14%	63	57	-6	-9%	64	56	-8	-13%	63	56	-7	-10%	63	55	-7	-12%
	74	72	-2	-3%	78	71	-7	-9%	79	71	-8	-10%	80	72	-8	-10%	77	71	-5	-7%	78	74	-4	-5%	**79**	**72**	**-6.38**	**-8%**	77	71	-6	-7%	76	71	-4	-6%

Section	0730-0745				0745-0800				0800-0815				0815-0830				0830-0845				0845-0900				0800-0900				0900-0915				0915-0930			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P1_1E	24	17	-7	-30%	20	17	-3	-14%	26	18	-8	-32%	21	17	-4	-18%	20	19	-1	-5%	21	18	-2	-11%	22	18	-4	-18%	21	18	-3	-15%	20	17	-2	-13%
P1_2E	29	24	-5	-16%	23	24	1	6%	27	24	-2	-9%	22	24	1	6%	23	24	2	8%	23	24	1	6%	24	24	1	2%	23	24	0	1%	22	24	1	5%
	53	41	-12	-23%	42	41	-1	-3%	53	42	-11	-21%	43	41	-2	-5%	42	43	1	2%	43	43	-1	-2%	**45**	**42**	**-3.35**	**-7%**	44	41	-3	-7%	42	41	-1	-3%

Section	0730-0745				0745-0800				0800-0815				0815-0830				0830-0845				0845-0900				0800-0900				0900-0915				0915-0930			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P1_2W	81	130	48	60%	247	104	-143	-58%	175	100	-75	-43%	146	131	-15	-10%	151	151	0	0%	192	140	-52	-27%	166	130	-36	-21%	60	143	83	138%	51	147	96	188%
P1_1W	60	74	14	23%	76	73	-3	-4%	73	75	2	2%	63	81	18	29%	71	82	11	16%	75	78	3	4%	70	79	8	12%	59	81	22	38%	71	81	11	15%
	141	203	62	44%	323	176	-146	-45%	249	175	-74	-30%	209	212	3	2%	222	232	11	5%	267	218	-49	-18%	**236**	**209**	**-27.2**	**-11%**	119	225	105	88%	122	228	106	87%

Section	0730-0745				0745-0800				0800-0815				0815-0830				0830-0845				0845-0900				0800-0900				0900-0915				0915-0930			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P1_3W	26	28	2	10%	29	29	0	0%	30	29	-2	-5%	34	29	-5	-16%	33	28	-5	-15%	31	29	-2	-6%	32	29	-3	-11%	25	30	4	16%	26	29	3	13%
P1_4W	54	54	0	1%	48	54	5	11%	87	84	-3	-3%	87	71	-16	-19%	79	69	-10	-13%	102	66	-36	-35%	89	72	-16	-18%	91	77	-15	-16%	34	54	20	57%
	79	82	3	4%	77	82	5	7%	117	113	-5	-4%	121	99	-22	-18%	112	97	-15	-14%	133	95	-37	-28%	**121**	**101**	**-19.8**	-16%	117	106	-10	-9%	60	83	23	38%

Section	0730-0745				0745-0800				0800-0815				0815-0830				0830-0845				0845-0900				0800-0900				0900-0915				0915-0930			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P1_6E	36	42	6	15%	38	42	4	10%	38	41	3	9%	47	41	-5	-11%	36	42	6	17%	37	42	5	12%	39	42	2	5%	35	41	6	17%	31	41	10	33%
P1_7E	47	81	35	74%	62	96	34	56%	63	68	6	9%	86	66	-20	-24%	55	65	11	20%	64	75	11	18%	67	69	2	3%	50	69	19	38%	48	65	16	34%
P1_8E	30	58	29	98%	30	57	27	90%	41	42	1	3%	44	41	-3	-7%	44	43	-2	-4%	59	48	-11	-19%	47	44	-4	-8%	38	48	9	25%	28	44	16	57%
P1_9E	18	23	5	30%	18	23	4	23%	17	21	4	23%	20	22	2	11%	21	22	1	5%	17	21	4	22%	19	22	3	15%	17	20	3	19%	18	21	3	14%
P1_10E	7	7	0	5%	7	7	1	8%	6	7	1	14%	8	7	0	-5%	8	7	-1	-9%	6	7	1	17%	7	7	0	3%	7	7	1	9%	6	7	1	13%
P1_11E	17	18	2	9%	17	19	2	11%	18	19	1	6%	19	20	0	1%	27	19	-8	-30%	17	19	2	14%	20	19	-1	-6%	16	19	3	15%	25	19	-6	-25%
	154	230	76.32	50%	172	243	71.58	42%	184	200	16.12	9%	224	197	-27.14	-12%	191	198	7.51	4%	201	213	11.99	6%	**200**	**202**	**2.12**	1%	164	205	40.78	25%	157	196	39.52	25%

Section	0730-0745				0745-0800				0800-0815				0815-0830				0830-0845				0845-0900				0800-0900				0900-0915				0915-0930			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P1_11W	22	15	-7	-32%	22	17	-6	-25%	21	19	-2	-8%	21	22	1	3%	36	18	-18	-51%	37	19	-18	-48%	29	20	-9	-32%	22	14	-8	-37%	21	13	-8	-36%
P1_10W	9	9	0	0%	14	9	-5	-35%	7	8	0	3%	7	8	1	8%	10	7	-2	-26%	13	7	-6	-49%	9	7	-2	-22%	12	6	-6	-48%	8	6	-2	-28%
P1_9W	37	53	17	46%	47	54	7	15%	47	47	0	1%	48	46	-2	-4%	50	47	-3	-6%	55	44	-12	-21%	50	46	-4	-8%	56	46	-10	-18%	40	40	-1	-1%
P1_8W	16	31	15	91%	21	31	11	50%	19	28	9	47%	22	29	7	33%	19	27	8	40%	22	25	3	12%	21	27	7	32%	20	25	6	28%	19	24	5	27%
P1_7W	51	83	32	63%	70	81	11	16%	65	78	13	20%	106	75	-31	-29%	63	74	11	17%	61	67	5	9%	74	73	-1	-1%	63	73	10	15%	56	68	12	21%
P1_6W	34	66	32	92%	73	66	-7	-10%	63	87	25	39%	72	75	3	4%	66	79	13	20%	88	72	-16	-18%	72	78	6	9%	70	73	3	5%	49	61	12	25%
	168	256	88.01	52%	246	257	11.3	5%	222	267	45.38	20%	276	255	-21.3	-8%	244	252	7.84	3%	277	234	-43.42	-16%	**255**	**252**	**-2.88**	-1%	244	238	-6.08	-2%	194	212	18.44	10%

PM Journey Time (s)

Section	1630-1645				1645-1700				1700-1715				1715-1730				1730-1745				1745-1800				1700-1800				1800-1815				1815-1830			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
1 NB	76	80	4	6%	87	77	-9	-11%	86	83	-2	-3%	96	85	-11	-11%	80	93	13	16%	76	88	12	16%	84	87	3	3%	58	71	13	23%	49	59	10	20%
2 NB	5	5	0	2%	6	5	-1	-15%	6	6	0	0%	5	6	1	14%	5	7	2	30%	6	6	1	11%	5	6	1	13%	4	5	0	10%	5	4	0	-9%
3 NB	105	87	-18	-17%	104	81	-23	-22%	109	88	-21	-19%	117	100	-18	-15%	95	109	13	14%	98	106	8	8%	105	101	-4	-4%	86	80	-6	-7%	69	72	3	4%
4 NB	44	36	-7	-17%	42	37	-4	-10%	43	38	-6	-13%	40	44	4	10%	36	45	9	24%	41	42	1	3%	40	42	2	5%	38	37	-1	-2%	33	36	2	7%
5 NB	76	79	4	5%	90	80	-10	-11%	90	80	-10	-11%	87	85	-2	-3%	89	82	-7	-8%	80	83	3	3%	86	82	-4	-5%	75	82	8	10%	63	79	16	25%
6 NB	6	6	1	10%	7	6	-1	-12%	7	6	-1	-14%	6	6	0	0%	6	6	0	-5%	6	6	1	11%	6	6	0	-3%	5	6	1	14%	5	6	1	12%
7 NB	117	119	2	1%	124	115	-9	-7%	157	124	-33	-21%	140	121	-19	-14%	133	115	-18	-14%	120	132	12	10%	137	123	-15	-11%	106	102	-4	-4%	94	102	7	8%
8 NB	240	110	-130	-54%	215	162	-53	-25%	290	242	-48	-17%	269	267	-2	-1%	235	274	39	17%	211	271	60	28%	251	264	12	5%	138	253	115	84%	97	163	66	68%
	668	522	-145.36	-22%	674	563	-110.9	-16%	787	666	-120.33	-15%	761	713	-47.77	-6%	679	729	50.03	7%	638	734	96.14	15%	**716**	**711**	**-5.483**	-1%	509	636	127.08	25%	415	519	104.33	25%

Section	1630-1645				1645-1700				1700-1715				1715-1730				1730-1745				1745-1800				1700-1800				1800-1815				1815-1830			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
1 SB	63	61	-3	-4%	61	59	-2	-4%	60	63	3	5%	70	62	-7	-10%	64	62	-2	-3%	62	66	4	6%	64	63	-1	-1%	54	66	12	22%	54	65	11	21%
2 SB	15	17	2	16%	16	16	0	-2%	19	17	-2	-8%	16	17	1	8%	16	17	1	3%	16	17	1	10%	17	17	0	3%	13	18	6	45%	14	17	3	18%
3 SB	120	100	-21	-17%	118	87	-31	-26%	102	100	-2	-2%	127	120	-7	-6%	113	114	1	1%	113	115	2	2%	114	112	-2	-2%	76	105	29	39%	61	92	31	52%
4 SB	31	32	0	1%	30	31	2	6%	30	32	2	5%	30	32	2	6%	31	32	2	5%	30	32	2	7%	30	32	2	6%	29	32	4	13%	28	32	4	13%
5 SB	76	87	11	15%	77	87	10	12%	85	88	2	3%	81	87	5	7%	97	88	-9	-10%	112	91	-21	-19%	94	88	-6	-6%	105	92	-13	-13%	77	90	14	18%
6 SB	15	12	-3	-18%	13	12	-2	-11%	15	12	-3	-20%	14	12	-2	-15%	17	12	-5	-30%	16	12	-3	-22%	15	12	-3	-22%	15	13	-2	-13%	13	13	0	-2%
7 SB	100	81	-19	-19%	100	87	-13	-13%	100	95	-5	-5%	94	97	3	4%	90	112	22	24%	104	101	-4	-4%	97	101	4	4%	97	88	-9	-9%	93	101	8	9%
8 SB	81	70	-10	-13%	75	72	-2	-3%	80	73	-8	-10%	76	70	-6	-8%	73	71	-2	-2%	71	71	0	1%	75	71	-4	-5%	73	70	-3	-4%	72	70	-1	-2%
	501	460	-41.38	-8%	490	451	-39.16	-8%	492	479	-12.95	-3%	508	497	-11.02	-2%	501	508	6.31	1%	524	506	-18.96	-4%	**507**	**497**	**-9.155**	-2%	462	485	22.95	5%	411	480	69.08	17%

Section	1630-1645				1645-1700				1700-1715				1715-1730				1730-1745				1745-1800				1700-1800				1800-1815				1815-1830			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P3_1E	53	66	13	24%	58	64	6	11%	59	64	5	9%	57	63	6	11%	57	63	7	12%	52	63	11	20%	56	63	7	13%	51	63	12	23%	50	62	12	25%
P3_2E	16	18	2	14%	19	17	-2	-11%	17	17	0	2%	18	17	-1	-6%	18	17	-1	-6%	14	17	2	17%	17	17	0	1%	13	16	3	21%	16	16	1	6%
P3_3E	195	112	-83	-43%	247	91	-155	-63%	209	107	-103	-49%	192	150	-42	-22%	171	172	0	0%	101	206	105	104%	169	159	-10	-6%	112	160	48	43%	157	104	-52	-33%
P3_4E	36	46	11	30%	36	44	8	21%	36	44	8	23%	36	43	8	21%	35	43	8	23%	34	42	8	24%	35	43	8	23%	34	41	8	23%	33	42	9	27%
P3_6E	27	26	-1	-4%	25	26	0	1%	25	26	1	3%	25	26	1	3%	25	26	1	2%	25	26	1	4%	25	26	1	3%	24	26	2	6%	24	25	1	4%
P3_7E	45	56	11	23%	44	53	10	22%	43	53	11	25%	43	52	10	23%	42	52	10	25%	41	51	10	25%	42	52	10	24%	41	50	10	24%	40	51	11	26%
P3_8E	27	34	7	24%	26	32	6	22%	26	32	6	22%	26	32	6	23%	26	31	5	21%	25	30	5	20%	26	31	6	21%	25	30	6	23%	25	30	5	21%
P3_11E	137	80	-57	-42%	103	76	-27	-26%	65	74	9	14%	76	69	-7	-10%	63	70	7	11%	55	67	12	23%	65	70	5	8%	54	65	11	21%	53	66	12	23%
	535	437	-98.31	-18%	558	403	-155.5	-28%	479	416	-63.02	-13%	473	453	-20.03	-4%	438	475	36.97	8%	347	503	155.35	45%	**434**	**462**	**27.318**	6%	353	452	98.85	28%	398	396	-1.35	0%

Section	1630-1645				1645-1700				1700-1715				1715-1730				1730-1745				1745-1800				1700-1800				1800-1815				1815-1830			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P3_11W	16	17	1	8%	16	17	1	5%	16	17	1	9%	16	17	1	6%	16	17	1	6%	16	17	1	7%	16	17	1	7%	16	17	1	8%	16	17	1	8%
P3_7W	64	70	5	8%	65	68	3	4%	65	69	5	7%	68	70	2	3%	65	69	4	6%	65	68	3	5%	66	69	4	5%	64	68	4	7%	64	67	3	5%
P3_6W	55	56	1	1%	63	55	-8	-13%	55	55	0	0%	61	54	-8	-13%	50	54	4	7%	47	56	10	21%	53	55	1	3%	50	54	4	8%	40	54	15	37%
P3_4W	32	37	5	16%	32	37	4	13%	32	37	5	16%	33	38	4	13%	32	38	5	17%	32	37	5	16%	32	37	5	15%	31	37	5	17%	31	36	5	17%
P3_3W	22	20	-1	-7%	21	20	-1	-6%	21	20	-1	-5%	22	20	-2	-8%	22	20	-1	-7%	21	20	-1	-4%	22	20	-1	-6%	21	20	-1	-3%	20	20	0	-1%
P3_2W	10	9	-1	-6%	10	9	-1	-9%	10	9	-1	-8%	10	9	-1	-8%	10	9	-1	-6%	9	9	-1	-7%	10	9	-1	-7%	9	9	-1	-7%	9	9	-1	-7%
P3_1W	62	65	4	6%	62	64	2	3%	62	65	3	4%	65	66	1	2%	63	66	2	4%	62	65	2	4%	63	65	2	3%	61	64	3	5%	59	63	3	6%
	260	274	13.93	5%	270	269	-0.94	0%	261	273	11.85	5%	275	273	-1.76	-1%	258	273	14.18	5%	252	272	19.82	8%	**262**	**273**	**11.023**	4%	251	268	16.55	7%	239	266	27.02	11%

Section	1630-1645				1645-1700				1700-1715				1715-1730				1730-1745				1745-1800				1700-1800				1800-1815				1815-1830			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P2_2E	113	124	10	9%	108	130	22	20%	191	152	-39	-21%	202	163	-39	-19%	126	170	44	35%	95	141	46	48%	154	156	3	2%	88	119	31	35%	87	124	37	43%
P2_3E	27	34	7	27%	29	33	4	15%	28	33	4	15%	28	32	3	11%	33	32	-1	-4%	28	33	5	18%	30	32	3	10%	24	33	9	40%	26	33	7	28%
P2_4E	29	37	8	26%	29	36	7	23%	33	35	2	6%	30	35	4	14%	30	36	5	17%	32	36	4	13%	31	35	4	13%	22	36	14	63%	21	35	14	64%
	170	195	25	15%	166	199	33	20%	252	219	-33	-13%	260	229	-32	-12%	190	238	48	25%	156	211	55	35%	**215**	**224**	**9.5875**	4%	134	189	54	40%	135	193	58	43%

Section	1630-1645				1645-1700				1700-1715				1715-1730				1730-1745				1745-1800				1700-1800				1800-1815				1815-1830			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P2_1W	14	12	-1	-10%	15	12	-2	-14%	15	12	-2	-16%	15	13	-2	-15%	15	12	-2	-16%	13	12	-1	-6%	14	12	-2	-13%	13	13	-1	-5%	13	12	-1	-4%
P2_2W	67	60	-7	-10%	67	59	-8	-12%	69	59	-10	-15%	65	59	-6	-9%	64	59	-5	-7%	64	58	-6	-9%	65	59	-7	-10%	64	58	-6	-9%	63	58	-5	-7%
	81	72	-8	-10%	81	71	-10	-12%	83	71	-12	-15%	80	71	-8	-10%	78	71	-7	-9%	77	71	-7	-9%	**80**	**71**	**-8.565**	-11%	77	71	-7	-8%	76	71	-5	-7%

Section	1630-1645				1645-1700				1700-1715				1715-1730				1730-1745				1745-1800				1700-1800				1800-1815				1815-1830			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P1_1E	21	17	-4	-21%	20	17	-2	-11%	22	19	-4	-16%	21	18	-2	-12%	21	17	-4	-19%	20	17	-4	-18%	21	18	-3	-16%	21	16	-6	-26%	19	16	-3	-17%
P1_2E	26	23	-2	-9%	24	24	0	0%	24	24	-1	-2%	27	24	-3	-12%	26	24	-2	-7%	22	24	2	11%	25	24	-1	-3%	23	24	1	4%	23	24	1	5%
	47	40	-7	-14%	44	41	-2	-5%	47	43	-4	-9%	48	42	-6	-12%	47	41	-6	-12%	42	41	-1	-3%	**46**	**42**	**-4.255**	-9%	44	40	-5	-11%	42	40	-2	-5%

Section	1630-1645				1645-1700				1700-1715				1715-1730				1730-1745				1745-1800				1700-1800				1800-1815				1815-1830			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P1_2W	56	78	22	40%	65	117	53	82%	68	122	54	80%	61	104	43	70%	59	77	17	30%	91	44	-47	-51%	70	87	17	24%	33	34	1	4%	35	33	-2	-5%
P1_1W	48	75	27	56%	52	82	30	58%	47	77	30	63%	49	75	26	54%	43	69	26	61%	50	55	5	10%	47	69	22	46%	34	52	18	53%	40	52	12	31%
	104	153	49	47%	116	199	83	71%	115	199	84	73%	110	179	69	63%	102	146	44	43%	140	99	-42	-30%	**117**	**156**	**38.813**	33%	67	86	19	29%	75	86	11	14%

Section	1630-1645				1645-1700				1700-1715				1715-1730				1730-1745				1745-1800				1700-1800				1800-1815				1815-1830			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P1_3W	25	27	1	5%	26	27	0	1%	26	27	1	4%	22	27	5	23%	25	27	2	9%	26	27	1	5%	24	27	2	10%	27	27	0	0%	34	27	-7	-21%
P1_4W	71	51	-20	-29%	102	69	-32	-32%	69	68	0	0%	56	54	-2	-3%	60	48	-12	-20%	77	51	-26	-34%	65	55	-10	-15%	59	46	-14	-23%	44	48	4	9%
	97	78	-19	-20%	128	96	-32	-25%	94	95	1	1%	77	81	3	4%	85	75	-10	-12%	103	78	-25	-24%	**90**	**82**	**-7.728**	-9%	86	73	-14	-16%	78	75	-3	-4%

Section	1630-1645				1645-1700				1700-1715				1715-1730				1730-1745				1745-1800				1700-1800				1800-1815				1815-1830			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P1_6E	32	40	8	25%	32	42	11	33%	34	39	5	14%	31	41	11	34%	35	41	6	18%	37	43	6	17%	34	41	7	20%	31	41	10	31%	30	41	11	35%
P1_7E	53	61	8	15%	57	62	5	9%	66	62	-5	-7%	57	62	5	9%	52	60	8	15%	53	63	10	20%	57	62	5	8%	56	59	3	5%	47	62	15	31%
P1_8E	40	37	-3	-8%	52	42	-10	-19%	51	42	-10	-19%	39	39	1	2%	45	39	-7	-15%	46	41	-5	-11%	45	40	-5	-11%	45	41	-4	-10%	39	36	-3	-9%
P1_9E	18	21	3	20%	20	21	1	6%	18	22	4	21%	17	21	4	21%	20	21	2	8%	18	21	3	16%	18	21	3	16%	18	21	3	19%	19	21	2	12%
P1_10E	7	7	1	12%	7	7	0	5%	7	8	1	10%	10	8	-2	-23%	8	8	-1	-7%	6	8	1	17%	8	8	0	-4%	7	8	1	12%	8	8	0	-1%
P1_11E	18	20	2	12%	19	20	1	3%	22	20	-2	-11%	17	20	3	16%	22	20	-2	-8%	19	20	1	6%	20	20	0	-1%	19	20	1	5%	16	20	4	23%
	168	187	19.15	11%	187	195	7.88	4%	199	191	-7.51	-4%	170	191	20.59	12%	182	188	6.63	4%	179	195	16.5	9%	**182**	**191**	**9.0525**	5%	176	189	13.21	8%	159	187	27.82	18%

Section	0730-0745				0745-0800				0800-0815				0815-0830				0830-0845				0845-0900				0800-0900				0900-0915				0915-0930			
	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%	Obs	Model	Diff	%
P1_11W	22	38	16	71%	31	29	-2	-7%	25	23	-2	-9%	23	20	-3	-14%	25	20	-5	-21%	25	19	-7	-27%	25	20	-4	-18%	41	15	-27	-64%	22	14	-9	-38%
P1_10W	7	16	9	135%	10	12	2	21%	7	9	2	22%	10	9	-1	-10%	12	7	-5	-40%	10	7	-4	-35%	10	8	-2	-20%	14	6	-8	-57%	7	6	-1	-13%
P1_9W	52	71	20	38%	63	63	0	0%	63	56	-7	-11%	54	53	-1	-1%	54	50	-4	-8%	64	48	-16	-25%	59	52	-7	-12%	50	43	-7	-14%	43	42	-1	-2%
P1_8W	20	27	7	34%	20	30	10	49%	27	30	3	12%	20	26	6	31%	23	25	2	10%	27	26	-1	-4%	24	27	3	11%	25	25	0	1%	21	25	4	20%
P1_7W	63	81	19	30%	70	87	17	24%	69	91	21	31%	78	75	-3	-4%	97	75	-22	-22%	92	71	-22	-24%	84	78	-6	-7%	75	66	-9	-12%	51	71	20	38%
P1_6W	70	139	69	99%	112	185	73	66%	128	153	25	20%	152	114	-38	-25%	105	81	-25	-23%	90	70	-20	-22%	119	105	-14	-12%	68	62	-6	-9%	47	64	17	37%
	233	373	139.25	60%	306	406	100.01	33%	319	361	41.88	13%	337	298	-39.51	-12%	317	258	-58.25	-18%	309	239	-69.64	-23%	**320**	**289**	**-31.38**	-10%	273	216	-56.26	-21%	190	221	30.95	16%

APPENDIX C:

HATRIS MOTORWAY COUNT VALIDATION RESULTS

		OBSERVED - AM HATRIS					
		07:00-08:00		08:00-09:00		09:00-09:30	
	#	#Veh	Mph	#Veh	Mph	#Veh	Mph
EB_M62_WestOfJ9	13	4844	53.5	4413	55	1979	58
WB_M62_WestOfJ9	14	4661	62	4337	59.25	2124	61
EB_M62_J9	15	3577	38	3150	44.75	1418	58
WB_M62_J9	16	3395	65.75	3278	62	1589	64.5
EB_M62_EastOfJ9	17	4291	34.75	3697	39	1676	56.5
WB_M62_EastOfJ9	18	3908	64.75	3940	62.5	1890	63
EB_M62-M6link	19	2065	43.75	2207	43.75	955	43.5

		OBSERVED - PM HATRIS					
		16:00-17:00		17:00-18:00		18:00-18:30	
	#	#Veh	Mph	#Veh	Mph	#Veh	Mph
EB_M62_WestOfJ9	13	5205	59.75	4826	61	2137	59
WB_M62_WestOfJ9	14	5658	51.75	5935	61.5	2713	62
EB_M62_J9	15	4219	59.25	3879	60	1618	60
WB_M62_J9	16	4569	53.5	4720	64	2253	64
EB_M62_EastOfJ9	17	5120	58	4748	58	1951	59
WB_M62_EastOfJ9	18	5410	52.75	5574	63	2610	63
EB_M62-M6link	19	2614	47.75	2286	54.75	979	55

		MODELLED - AM VISSIM					
		07:00-08:00		08:00-09:00		09:00-09:30	
	#	#Veh	Mph	#Veh	Mph	#Veh	Mph
EB_M62_WestOfJ9	13	4898	46.61	4150	48.18	1930	48.8
WB_M62_WestOfJ9	14	4381	49.65	4303	50.17	2137	50.1
EB_M62_J9	15	3828	46.84	3286	48.82	1577	48.9
WB_M62_J9	16	3445	61.48	3105	62.21	1585	62
EB_M62_EastOfJ9	17	4267	44.97	3983	46.92	1877	47.8
WB_M62_EastOfJ9	18	4177	58.57	4039	58.38	1959	58.9
EB_M62-M6link	19	2118	45.33	2270	46.38	974	48.6

		MODELLED - PM VISSIM					
		16:00-17:00		17:00-18:00		18:00-18:30	
	#	#Veh	Mph	#Veh	Mph	#Veh	Mph
EB_M62_WestOfJ9	13	5432	45.84	4889	47.03	2132	48.3
WB_M62_WestOfJ9	14	5506	47.98	5898	47.28	2663	48.7
EB_M62_J9	15	4479	45.04	4004	46.87	1754	48.4
WB_M62_J9	16	4622	60.45	4769	59.92	2144	61.1
EB_M62_EastOfJ9	17	4984	42.89	4667	45.15	2063	47.4
WB_M62_EastOfJ9	18	5325	56.39	5473	56.2	2502	57.7
EB_M62-M6link	19	2583	45.04	2310	46.99	994	48.4

		DIFFERENCE - AM ACTUAL					
		07:00-08:00		08:00-09:00		09:00-09:30	
	#	#Veh	Mph	#Veh	Mph	#Veh	Mph
EB_M62_WestOfJ9	13	54	-6.9	-263	-6.8	-49	-9.2
WB_M62_WestOfJ9	14	-280	-12	-34	-9.1	13	-11
EB_M62_J9	15	251	8.84	136	4.07	159	-9.1
WB_M62_J9	16	50	-4.3	-173	0.21	-4	-2.6
EB_M62_EastOfJ9	17	-24	10.2	286	7.92	201	-8.7
WB_M62_EastOfJ9	18	269	-6.2	99	-4.1	69	-4.1
EB_M62-M6link	19	53	1.58	63	2.63	19	5.14

		DIFFERENCE - PM ACTUAL					
		16:00-17:00		17:00-18:00		18:00-18:30	
	#	#Veh	Mph	#Veh	Mph	#Veh	Mph
EB_M62_WestOfJ9	13	227	-14	63	-14	-5	-11
WB_M62_WestOfJ9	14	-152	-3.8	-37	-14	-50	-13
EB_M62_J9	15	260	-14	125	-13	136	-12
WB_M62_J9	16	53	6.95	49	-4.1	-109	-3
EB_M62_EastOfJ9	17	-136	-15	-81	-13	112	-12
WB_M62_EastOfJ9	18	-85	3.64	-101	-6.8	-108	-5.3
EB_M62-M6link	19	-31	-2.7	24	-7.8	15	-6.6

		DIFFERENCE - AM PERCENTAGE					
		07:00-08:00		08:00-09:00		09:00-09:30	
	#	#Veh	Mph	#Veh	Mph	#Veh	Mph
EB_M62_WestOfJ9	13	1%	-13%	-6%	-12%	-2%	-16%
WB_M62_WestOfJ9	14	-6%	-20%	-1%	-15%	1%	-18%
EB_M62_J9	15	7%	23%	4%	9%	11%	-16%
WB_M62_J9	16	1%	-6%	-5%	0%	0%	-4%
EB_M62_EastOfJ9	17	-1%	29%	8%	20%	12%	-15%
WB_M62_EastOfJ9	18	7%	-10%	3%	-7%	4%	-6%
EB_M62-M6link	19	3%	4%	3%	6%	2%	12%

		DIFFERENCE - PM PERCENTAGE					
		16:00-17:00		17:00-18:00		18:00-18:30	
	#	#Veh	Mph	#Veh	Mph	#Veh	Mph
EB_M62_WestOfJ9	13	4%	-23%	1%	-23%	0%	-18%
WB_M62_WestOfJ9	14	-3%	-7%	-1%	-23%	-2%	-21%
EB_M62_J9	15	6%	-24%	3%	-22%	8%	-19%
WB_M62_J9	16	1%	13%	1%	-6%	-5%	-5%
EB_M62_EastOfJ9	17	-3%	-26%	-2%	-22%	6%	-20%
WB_M62_EastOfJ9	18	-2%	7%	-2%	-11%	-4%	-8%
EB_M62-M6link	19	-1%	-6%	1%	-14%	2%	-12%

		DIFFERENCE - AM GEH (VOLUME)					
		07:00-08:00		08:00-09:00		09:00-09:30	
	#	#Veh	Mph	#Veh	Mph	#Veh	Mph
EB_M62_WestOfJ9	13	0.77	-13%	4.02	-12%	1.11	-16%
WB_M62_WestOfJ9	14	4.16	-20%	0.52	-15%	0.28	-18%
EB_M62_J9	15	4.13	23%	2.40	9%	4.11	-16%
WB_M62_J9	16	0.85	-6%	3.06	0%	0.10	-4%
EB_M62_EastOfJ9	17	0.37	29%	4.62	20%	4.77	-15%
WB_M62_EastOfJ9	18	4.23	-10%	1.57	-7%	1.57	-6%
EB_M62-M6link	19	1.16	4%	1.33	6%	0.61	12%

		DIFFERENCE - PM GEH (VOLUME)					
		16:00-17:00		17:00-18:00		18:00-18:30	
	#	#Veh	Mph	#Veh	Mph	#Veh	Mph
EB_M62_WestOfJ9	13	3.11	-23%	0.90	-23%	0.11	-18%
WB_M62_WestOfJ9	14	2.03	-7%	0.48	-23%	0.96	-21%
EB_M62_J9	15	3.94	-24%	1.99	-22%	3.31	-19%
WB_M62_J9	16	0.78	13%	0.71	-6%	2.32	-5%
EB_M62_EastOfJ9	17	1.91	-26%	1.18	-22%	2.50	-20%
WB_M62_EastOfJ9	18	1.16	7%	1.36	-11%	2.14	-8%
EB_M62-M6link	19	0.61	-6%	0.50	-14%	0.48	-12%

MODELLING GROUP

Access Strategy A

MG0123 – A49 Corridor VISSIM, Warrington

Luke Best

04 August 2020

DOCUMENT CONTROL ISSUE SHEET

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3	04/08/2020	Luke Best		Carl Moreno	04/08/2020

1. INTRODUCTION

1.1 Background

1.1.1 Modelling Group Ltd has previously developed a base-year microsimulation model of the A49 corridor for the area to the north of Warrington, surrounding the M62 junction 9. For further detailed information relating to this exercise, please refer to '*MG0123_A49WarringCorridor_BaseModellingReport_v4*'.

1.1.2 The aim of this model has been to provide a robust platform on which the proposed development (Peel Hall) can be tested and impact upon the highway network assessed in the future years 2022, 2027 and 2032.

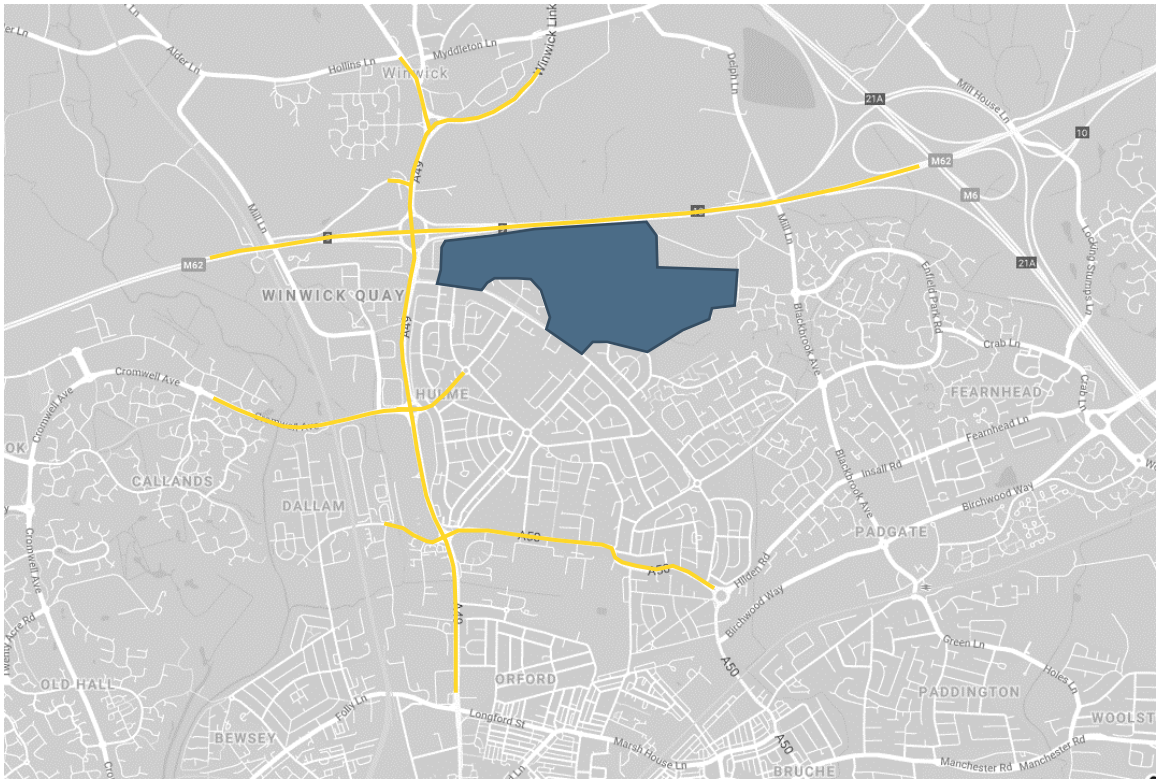


FIGURE 1.1: NETWORK EXTENTS AND APPROXIMATE LOCATION OF DEVELOPMENT

1.2 Report Purpose

1.2.1 The following report summarises the methodology used to build and test the model, as well as the results obtained to determine the comparative performance impacts of Peel Hall Access Strategy A flows within the future year networks.

1.4 Report Structure

The report is structured as follows:

- **Section 2: Methodology**, including information on the model development and scenarios tested;
- **Section 3: Model Performance,** including network performance statistics, queue lengths and journey times; and
- Section 4: Summary and Recommendations.

2 METHODOLOGY

2.1 Overview

2.1.1 The model extent used is consistent with the 2019 base model as highlighted in Figure 2.1. As a result of levels of queueing found during the development of future year models, some links have been extended in an attempt to ensure that all demand is able to enter the model.

2.1.2 Also consistent with the 2019 base year modelling, the 2022, 2027 and 2032 models are modelled to cover a 2.5-hour period, for the AM and PM traffic peaks.

2.1.3 In the AM, this period covers 07:00-09:30, with an hour 'warm-up' from 07:00-08:00, and a half-hour 'cool-down' from 09:00-09:30. In the PM, this period covers 16:00-18:30, with an hour 'warm-up' from 16:00-17:00, and a half-hour 'cool-down' from 18:00-18:30.

2.1.4 The model has been developed using the same version of the software as used for the validated base model (PTV VISSIM 11.00-13). Results have been output with a model resolution of 5-time steps per second, as was used in the base model. The same random seeds have also been used (starting from 5, increasing by 5 each run, for 10 runs).

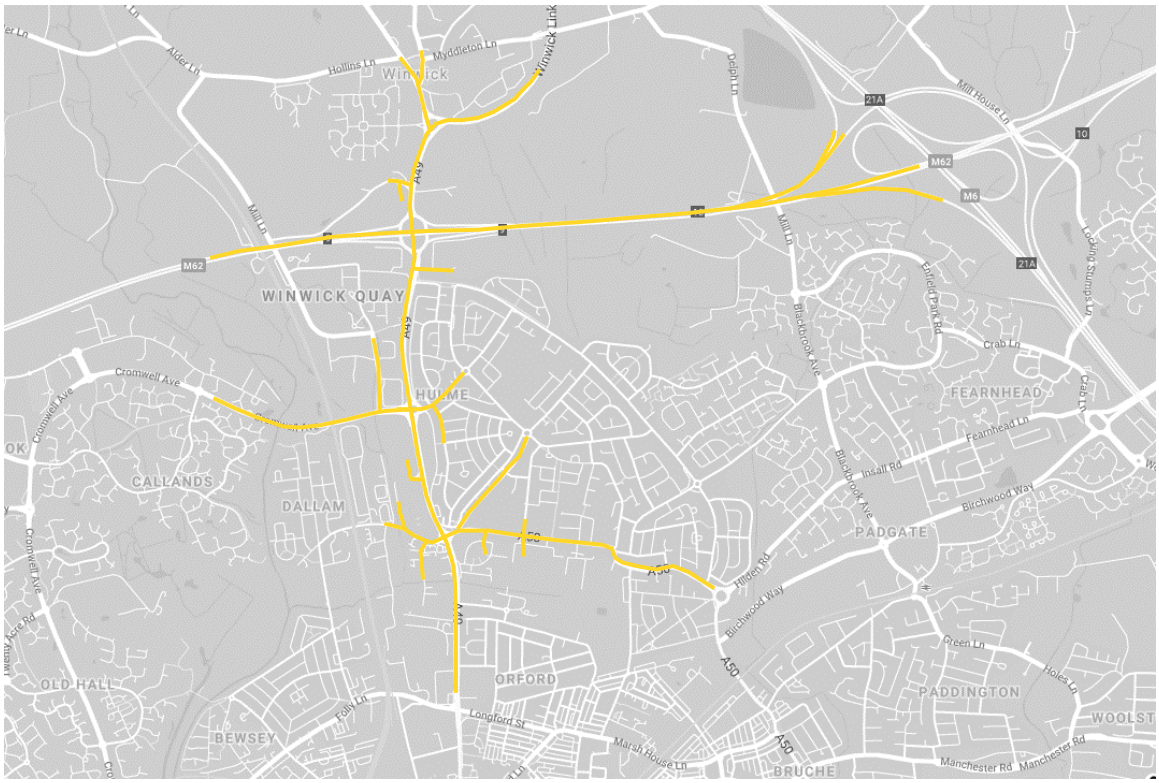


FIGURE 2.1: VALIDATED 2019 MODEL EXTENTS

2.2 Scenarios Tested

2.2.1 The scenarios tested in the model were:

- **2022** Background & Committed Traffic Growth Only (Reference Case)
- **2022** Background & Committed Growth + Peel Hall Development Traffic (Full Development Scenario)
- **2022** Background & Committed Traffic Growth + Committed Mitigation Measures
- **2022** Background & Committed Traffic Growth + Committed & Proposed Mitigation Measures
- **2022** Background & Committed Growth + Peel Hall Development Traffic (Full Development Scenario) + Committed Mitigation Measures
- **2022** Background & Committed Growth + Peel Hall Development Traffic (Full Development Scenario) + Committed & Proposed Mitigation Measures
- **2027** Background & Committed Traffic Growth Only (Reference Case)
- **2027** Background & Committed Growth + Peel Hall Development Traffic
- **2027** Background & Committed Traffic Growth + Committed Mitigation Measures
- **2027** Background & Committed Traffic Growth + Committed & Proposed Mitigation Measures
- **2027** Background & Committed Growth + Peel Hall Development Traffic + Committed Mitigation Measures
- **2027** Background & Committed Growth + Peel Hall Development Traffic + Committed & Proposed Mitigation Measures
- **2032** Background & Committed Traffic Growth Only (Reference Case)
- **2032** Background & Committed Growth + Peel Hall Development Traffic (Full Development Scenario)
- **2032** Background & Committed Traffic Growth + Committed Mitigation Measures
- **2032** Background & Committed Traffic Growth + Committed & Proposed Mitigation Measures
- **2032** Background & Committed Growth + Peel Hall Development Traffic (Full Development Scenario) + Committed Mitigation Measures
- **2032** Background & Committed Growth + Peel Hall Development Traffic (Full Development Scenario) + Committed & Proposed Mitigation Measures

2.2.2 The flows for each scenario were provided by Highgate Transportation in the spreadsheet '*Peel Hall Access Strategy A - Flow Diagram Spreadsheet - REISSUE 200120.xlsm*'. The flow diagrams within this were developed using the SATURN model (WMMTM16) outputs provided by AECOM.

2.2.3 In order to ensure a fully transparent and traceable process in the conversion of these flows into a useable format for entry into the VISSIM models, the matrices creation module in LinSig 3 was used to develop Origin-Destination matrices for each vehicle type.

2.2.4 The current model area does not have any route choice, hence the choice of LinSig was considered appropriate to evaluate the routing for both lights and heavies. A total of 15 different scenarios for Lights and Heavies have been processed. A skeleton model of the area was constructed and turning counts were imported at each junction for validation purposes.

2.2.5 Flow consistency checks were undertaken on the SATURN flow diagrams provided to make sure that the number of vehicles leaving one junction were equal to the number of vehicles entering the next one. It was concluded that the flow provided was consistent and could be used for flow estimation in LinSig. Traffic data was processed by LinSig and it was concluded that 100% of the GEH values for all scenarios were below a threshold of 3.

2.2.6 The LinSig model has been provided for review as part of the final model submission for Option A, and is detailed further in Appendix B.

2.2.7 Further Processing has been carried out to then link the flows taken from the WMMTM16 (SATURN) model to the validated VISSIM base model flows. This process involved creating proportional comparisons between the SATURN base model and the various modelled future year scenarios, then applying those differences as percentage changes to the VISSIM model flows in order to create future scenario origin-destination values.

2.2.8 Where percentage changes between certain origin-destination pairings seemed disproportionately large, the actual difference values were substituted. The only origin-destination pairing which had this approach was between Winwick Link Road and A49 Newton Road.

2.2.9 Exact details of this calculation methodology and all workings can be found in the spreadsheet '*MG0123_Full-Matrices-And-Future-Year-Conversion_FY_v6.xlsx*'.

2.3 Network Development

2.3.1 Several changes have been made to the model network to reflect planned improvements in the area. These include:

- **A49 Newton Rd/Hollins Lane Junction** – although this junction is outside of the modelled network extents, the effects of delays caused there form part of the base model validation (through the use of reduced speed areas on the exiting link to replicate vehicle speeds/delays). As a result of committed future mitigation measures in this location, modelling results from the document '*Former Parkside Colliery, Newton-le-Willows WPC Post Submission Highway Response 1*' were used to alter the reduced speed area profiles, in order to match the stated improvement to northbound capacity through the junction as a result of a left-turn filter lane being added and the junction being optimised.
- **A49 Newton Road/ Winwick Link Road Junction (Winwick Island)** – Widening of the northbound and southbound approaches on Newton Road, widening of the westbound approach from Winwick Link Road including the creation of a segregated left turn lane. Also included, is widening of the circulatory carriageway.
- **A49 Newton Road / Delph Lane Junction** – Additional lane for Newton Road northbound, including widened exit merge.
- **A49 Winwick Road/ Junction Nine Retail Park Junction** – Widening of Winwick Road northbound to facilitate a dedicated left turn lane into the retail park, Widening of Winwick Road southbound to extend the existing dedicated right turn lane into the retail park.

2.3.2 As a result of the level of change these committed developments made to flow patterns around the network, it was reasoned to be an acceptable approach to carry out signal optimisation where needed, in each future year scenario. This optimisation was carried out in the Committed Mitigation scenarios, then all timings were kept the same in the scenarios also including Peel Hall Development traffic, in order to provide a fair comparison.

2.3.3 Additionally, as a result of impacts to network performance in future year scenarios, particularly in 2032, a further two mitigation proposals were also tested in all **Proposed Mitigation Measures** models. These were as follows:

- **A49 Newton Road/ Golborne Road Junction** – Improvements were made to the existing road widths and layout at this junction in order to increase queuing capacity, particularly for right turning vehicles which contribute heavily to the wider impact on the surrounding network.
- **A49 Winwick Road/ A50 Long Lane/ Hawley's Lane Junction** – A much more detailed and responsive signal controller was created at this location, in order to allow a more accurate understanding of the potential impacts of planned physical upgrades and improvements to the current vehicle actuated signal control setup.

2.3.4 Detailed drawings used to model junction mitigations are shown in Appendix C.

2.3.5 Additional changes were also made to remove/ rationalise/ improve on some priority rules at the A49/ Sandy Lane West/ Cromwell Avenue roundabout, as it became apparent that the increase in overall traffic volume in the future as a result of traffic growth caused the network to 'lock up' on some model runs, in a manner which was judged to be entirely unrealistic.

2.4 Traffic Compositions

As with the original models, three primary traffic compositions were used in the models: Cars, LGVs and HGVs. However, when modelling the 'Do Something' scenario models, additional development related traffic was added as a separate vehicle type, based on the Cars composition.

3 MODEL PERFORMANCE

3.1 Overview

3.1.1 The impact of the development on the local highway network has been assessed in 2022, 2027, and 2032, using the following model outputs:

- Overall network performance statistics; including average per vehicle delay/speed, total network delay, latent demand;
- Average journey times and volumes along key routes.

3.1.2 All modelled scenario results are averaged over 10 random seed runs, to reflect daily fluctuations in arrival patterns.

3.2 Network Performance Statistics

3.2.1 This section summarises the network performance statistics. Network performance data is split into two main types – average per vehicle data, and total network statistics (taken over the peak hour).

3.2.2 Data is then further broken down as follows:

- Per Trip Average Per Vehicle Data:
  - **Delay** – defined (in seconds) as average time spent in a delay state (i.e. being held below desired speed due to network conditions);
  - **Stops** – defined as the average number of times each vehicle comes to a full stop;
  - **Speed** – defined as the overall average speed per trip, in miles per hour;
  - **Stopped Delay** – defined as the average amount of time spent in an unwanted, stopped state
- Total Network Data
  - **Distance** – defined as the total cumulative distance travelled by all vehicles completing trips within the peak hour;
  - **Travel Time** – defined (in seconds) as the total cumulative travel time of all vehicles completing trips within the peak hour;
  - **Delay Time** – defined as the total cumulative time spent in a delay state by all vehicles during the peak hour;
  - **Stops** – defined as the total cumulative number of vehicle stops within the network during the peak hour;
  - **Stopped Delay** – defined as the total cumulative amount of time spent in an unwanted, stopped state by all vehicles during the peak hour;
  - **Vehicles Active** – defined as the total number of vehicles still active within the network at the end of the peak hour;
  - **Vehicles Arrived** – defined as the total number of completed trips by the end of the peak hour;
  - **Latent Delay** – defined as the total amount of delay stored outside of the network (i.e. experienced by **Latent Demand** – see below, and therefore not counted in the **Delay Time** statistic defined above) at the end of the evaluation interval;
  - **Latent Demand** – defined as the total number of vehicles (demand) stuck outside of the network at the end of the evaluation interval (generally due to queueing and delays).

3.2.3 Tables 3.1 and 3.2 show the summary data for the AM and PM modelled peaks respectively.

3.2.4 It is clear that without any mitigation measures, the addition of background and committed development traffic and development traffic specifically associated with the Peel Hall scheme create progressively larger increases in delay in each subsequent future year, which ultimately lead to increases in latent demand and delay (i.e. vehicles trapped outside the network throughout the simulated period).

3.2.5 The committed mitigation measures, along with the associated signal timing optimisation carried out to rebalance each future year scenario, create a significant reduction in per vehicle delay. This is also reflected in a significant drop in latent demand and delay, meaning the network is much closer to dealing with the level of demand in each future year scenario.

3.2.6 When Peel Hall development traffic is added to the network, there is a clear impact on levels of congestion, obvious through increased delay, reduced speeds and increased latent demand. However, with the mitigation measures, levels of per vehicle delay are very similar to those experienced without the Peel Hall Development trips. Also, future years show a reduction in latent demand with the addition of proposed mitigation measures.

3.2.7 The combination of committed and proposed mitigation measures creates a network able to absorb the projected Peel Hall Development traffic whilst maintaining a broadly similar level of network wide performance in both tested peaks clearly in 2027, and with relative clarity in 2022 and 2032.

	Average Per/Vehicle				Total Network Statistics								
	Delay	Stops	Speed	Stopped Delay	Distance	Travel Time	Delay Time	Stops	Stopped Delay	Vehicles Active	Vehicles Arrived	Latent Delay	Latent Demand
AM 2022 Background & Committed Traffic Growth Only	319	22	15	148	61716	9028329	5892314	414001	2729293	2686	15800	1873231	1111
AM 2022 Background & Committed Growth + Peel Hall Development Traffic	383	31	13	193	57998	9687099	6725635	544079	3382345	2857	14743	3775165	2424
AM 2022 Background & Committed Traffic Growth + Committed Mitigation Measures	197	10	21	84	65227	7011349	3695690	185240	1578518	2015	16748	744180	362
AM 2022 Background & Committed Traffic Growth + Committed & Proposed Mitigation Measures	216	11	20	98	64536	7320197	4046287	204892	1833086	2241	16527	724395	365
AM 2022 Background & Committed Growth + Peel Hall Development Traffic + Committed Mitigation Measures	204	9	21	97	65510	7131289	3809628	169584	1804087	2139	16541	1631309	733
AM 2022 Background & Committed Growth + Peel Hall Development Traffic + Committed & Proposed Mitigation Measures	230	11	19	115	64673	7572642	4303381	197539	2142025	2417	16275	1597783	725
AM 2027 Background & Committed Traffic Growth Only	599	58	9	326	46853	12218906	9780387	945279	5326731	3815	12546	9837267	5172
AM 2027 Background & Committed Growth + Peel Hall Development Traffic	624	62	8	353	45401	12272701	9916758	978040	5613965	3970	11930	11819452	5834
AM 2027 Background & Committed Traffic Growth + Committed Mitigation Measures	253	13	18	114	66403	8320197	4951841	247888	2234745	2397	17189	1403039	765
AM 2027 Background & Committed Traffic Growth + Committed & Proposed Mitigation Measures	258	13	18	119	66281	8417375	5058957	255881	2328451	2500	17103	1377337	726
AM 2027 Background & Committed Growth + Peel Hall Development Traffic + Committed Mitigation Measures	235	11	19	111	66697	7950463	4571950	210240	2153387	2402	17022	1802689	861
AM 2027 Background & Committed Growth + Peel Hall Development Traffic + Committed & Proposed Mitigation Measures	250	12	18	121	66242	8226591	4876368	231603	2358211	2560	16908	1695385	816
AM 2032 Background & Committed Traffic Growth Only	666	63	8	378	44969	13084544	10747846	1015045	6102329	4113	12025	13875205	6747
AM 2032 Background & Committed Growth + Peel Hall Development Traffic	634	57	8	369	46109	12475288	10090604	907414	5871018	3905	12013	15462144	7229
AM 2032 Background & Committed Traffic Growth + Committed Mitigation Measures	299	15	16	140	66452	9314213	5952723	299155	2789643	2750	17181	2892020	1418
AM 2032 Background & Committed Traffic Growth + Committed & Proposed Mitigation Measures	296	15	16	139	66693	9318925	5941336	299303	2795731	2798	17273	2806332	1304
AM 2032 Background & Committed Growth + Peel Hall Development Traffic + Committed Mitigation Measures	302	15	16	147	66092	9252738	5915787	287200	2893400	2820	16799	3639732	1767
AM 2032 Background & Committed Growth + Peel Hall Development Traffic + Committed & Proposed Mitigation Measures	306	15	16	151	66231	9385209	6038662	292976	2971307	2892	16829	3573140	1671

TABLE 3.1: AM PEAK NETWORK PERFORMANCE STATISTICS SUMMARY

	Average Per/Vehicle				Total Network Statistics								
	Delay	Stops	Speed	Stopped Delay	Distance	Travel Time	Delay Time	Stops	Stopped Delay	Vehicles Active	Vehicles Arrived	Latent Delay	Latent Demand
PM 2022 Background & Committed Traffic Growth Only	255	10	19	153	74656	8827583	5250472	201904	3152838	2517	18083	6876936	2587
PM 2022 Background & Committed Growth + Peel Hall Development Traffic	278	14	18	152	75024	9421386	5836719	288706	3186380	2743	18279	8031759	3018
PM 2022 Background & Committed Traffic Growth + Committed Mitigation Measures	253	13	19	101	76514	9096887	5394472	287453	2160748	2597	18725	3919598	1439
PM 2022 Background & Committed Traffic Growth + Committed & Proposed Mitigation Measures	266	14	18	109	76379	9364413	5672858	300532	2311343	2670	18632	3759796	1444
PM 2022 Background & Committed Growth + Peel Hall Development Traffic + Committed Mitigation Measures	287	16	17	120	76879	10019173	6301917	344406	2628123	3049	18935	3925007	1460
PM 2022 Background & Committed Growth + Peel Hall Development Traffic + Committed & Proposed Mitigation Measures	300	16	17	128	76688	10310766	6606696	358952	2823478	3158	18840	3705497	1431
PM 2027 Background & Committed Traffic Growth Only	270	12	18	152	75414	9245924	5638075	252304	3183928	2649	18266	10328115	3917
PM 2027 Background & Committed Growth + Peel Hall Development Traffic	271	13	18	150	75561	9281264	5674482	266208	3132215	2646	18290	10752942	4083
PM 2027 Background & Committed Traffic Growth + Committed Mitigation Measures	277	14	18	115	76984	9696770	5987691	313543	2490825	2770	18865	7203220	2712
PM 2027 Background & Committed Traffic Growth + Committed & Proposed Mitigation Measures	286	15	17	121	76805	9891894	6193621	327570	2614673	2877	18816	6946466	2649
PM 2027 Background & Committed Growth + Peel Hall Development Traffic + Committed Mitigation Measures	286	16	17	117	77626	10010653	6264722	341325	2566216	2887	19028	6294349	2423
PM 2027 Background & Committed Growth + Peel Hall Development Traffic + Committed & Proposed Mitigation Measures	299	16	17	124	77598	10317727	6574055	358075	2728638	3034	18982	6029906	2317
PM 2032 Background & Committed Traffic Growth Only	428	20	15	283	71326	11225636	7830956	379933	4907527	3264	17184	14937390	6109
PM 2032 Background & Committed Growth + Peel Hall Development Traffic	377	24	14	199	70573	11149543	7757899	498376	4099036	3230	17371	15661651	6622
PM 2032 Background & Committed Traffic Growth + Committed Mitigation Measures	294	15	17	131	76830	10062218	6375177	328459	2844813	2884	18790	11092121	4217
PM 2032 Background & Committed Traffic Growth + Committed & Proposed Mitigation Measures	307	16	17	136	76575	10376374	6704884	358227	2972095	3069	18780	10506709	4019
PM 2032 Background & Committed Growth + Peel Hall Development Traffic + Committed Mitigation Measures	302	15	17	139	77653	10415761	6684044	341000	3068960	3009	19149	11447142	4330
PM 2032 Background & Committed Growth + Peel Hall Development Traffic + Committed & Proposed Mitigation Measures	330	17	16	156	77117	11006273	7305892	368422	3455271	3369	18894	10574547	4153

TABLE 3.2: PM PEAK NETWORK PERFORMANCE STATISTICS SUMMARY

3.3 Journey Times Comparison

3.3.1 Consistent with the base year modelling, average journey times have been extracted and analysed for a single evaluation interval covering the peak hour for both the AM (08:00-09:00) and PM (17:00-18:00) scenario models. The separate routes used for evaluation of the north-south A49 route, the east-west M62 route, and the east-west local road routes were as follows:

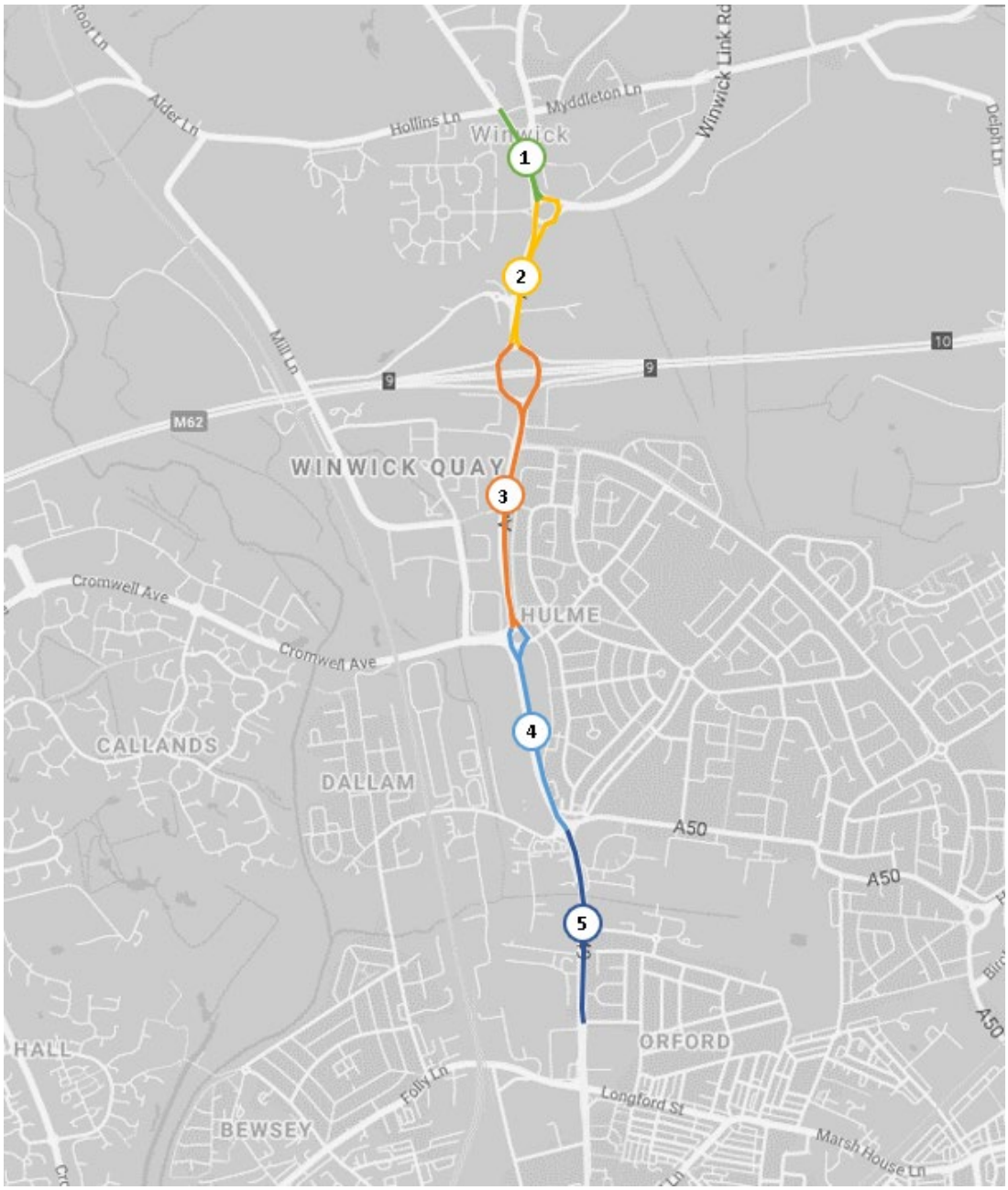


FIGURE 3.1: JOURNEY TIME SECTIONS (A49) ASSESSED

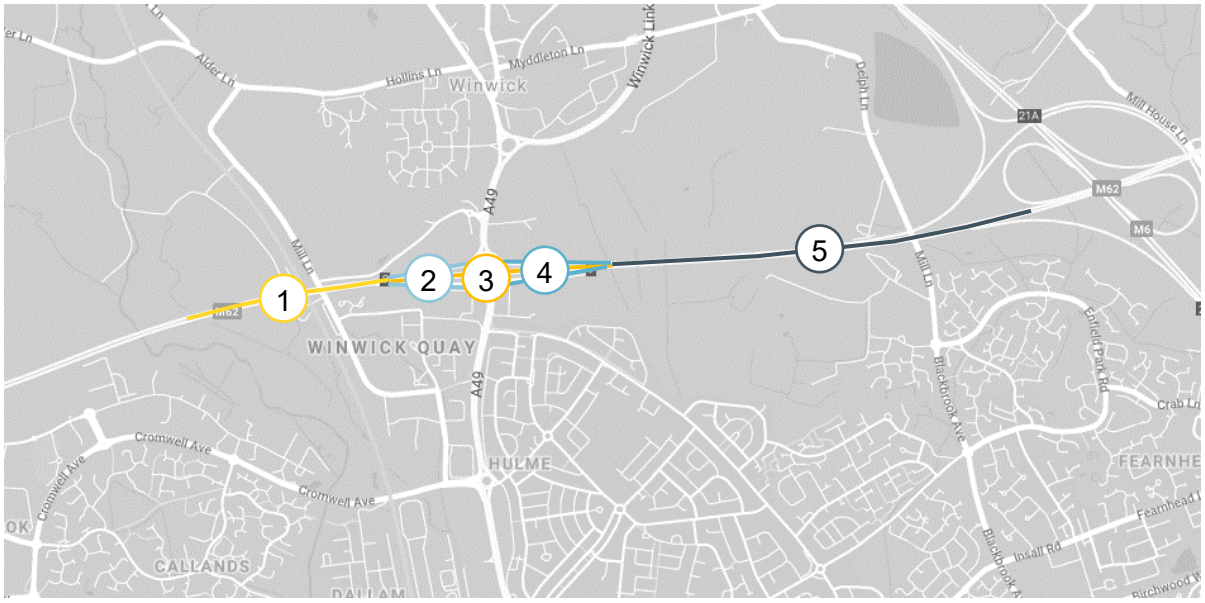


FIGURE 3.2: JOURNEY TIME SECTIONS (M62) ASSESSED

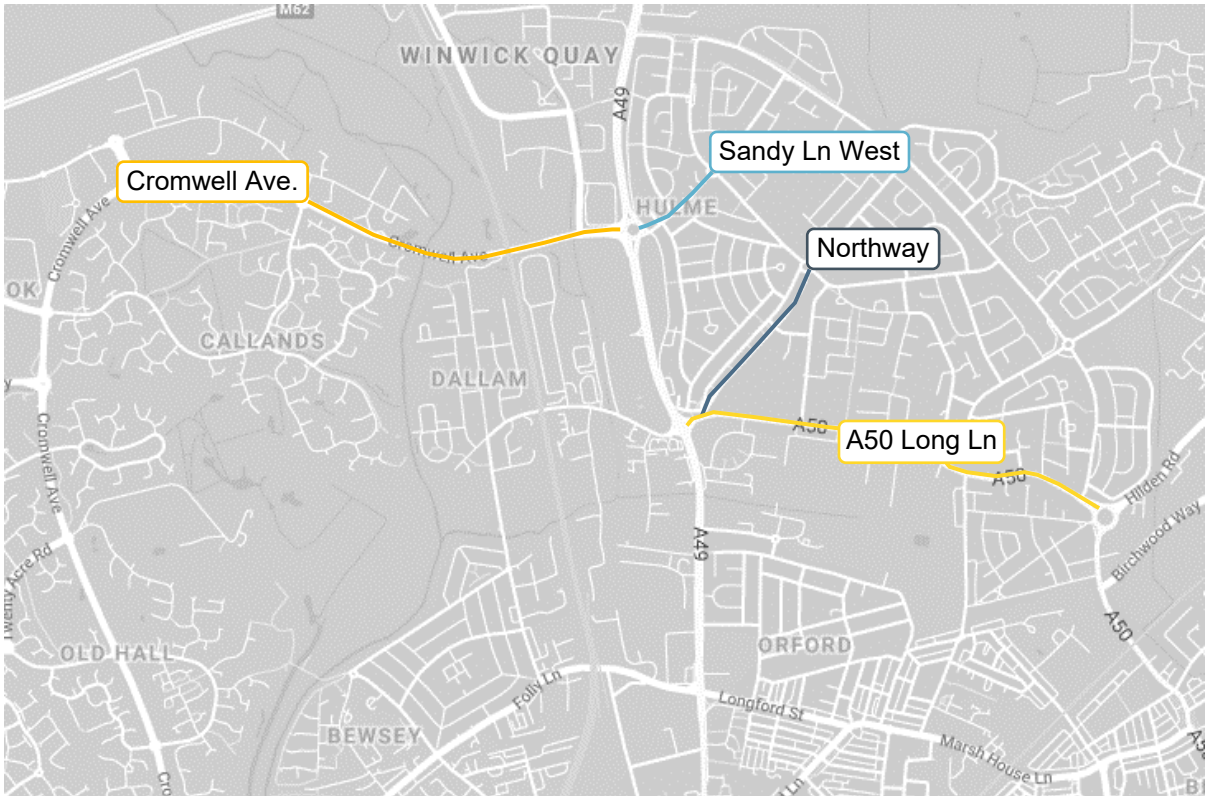


FIGURE 3.3: JOURNEY TIME SECTIONS (LOCAL ROADS) ASSESSED

3.3.2 Tables 3.3 – 3.5 summarise the comparative average peak hour journey times for traffic on all routes during the AM peak, for each future year scenario.

3.3.3 In 2022 (Table 3.3), it is possible to maintain a comparative level of congestion for north and southbound traffic on the A49, even with the addition of Peel Hall traffic, as long as mitigation measures are put in place. The only area where this is not true is for southbound traffic in the northern half of the model. This is mainly as a result of the knock-on effect stemming from the signalised roundabout at the junction with Sandy Lane West/A49/Cromwell Avenue. This has an increasing impact with each future year scenario due to the inherent lack of capacity/space in this location.

3.3.4 In 2022, the main issue in the morning peak is with traffic accessing the A49 from both Northway and/or A50 Long Lane. It is very difficult to allow this arm enough time in the signal configuration, and even with vehicle actuated signals, it was found that because of the conflict between Northway and Long Lane, gaps are often created which trigger the signals to switch to another stage.

	AM 2022											
Section	Back+ Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Section 1 SB	204	232	28	14%	65	78	13	20%	97	130	33	34%
A49 Section 2 SB	207	208	0	0%	152	178	26	17%	203	245	42	21%
A49 Section 3 SB	214	209	-6	-3%	252	273	21	8%	325	346	20	6%
A49 Section 4 SB	104	111	8	8%	155	159	4	3%	222	227	5	2%
A49 Section 5 SB	77	84	6	8%	94	98	4	4%	79	79	1	1%
A49 Section 5 NB	236	163	-73	-31%	179	114	-65	-36%	102	92	-10	-10%
A49 Section 4 NB	193	205	12	6%	99	102	3	3%	102	104	3	3%
A49 Section 3 NB	133	141	8	6%	148	152	4	3%	159	169	11	7%
A49 Section 2 NB	175	212	37	21%	64	64	0	0%	63	64	1	1%
A49 Section 1 NB	115	125	10	8%	48	48	0	0%	47	48	1	2%
M62 Section 1 EB	330	726	396	120%	78	79	1	1%	78	79	1	1%
M62 Section 2 EB	330	410	80	24%	45	53	8	18%	64	72	8	13%
M62 Section 3 EB	41	40	-1	-1%	41	41	0	1%	41	41	0	1%
M62 Section 4 EB	27	27	0	0%	26	27	0	1%	26	27	0	0%
M62 Section 5 EB	328	250	-78	-24%	380	339	-40	-11%	374	326	-48	-13%
M62 Section 5 WB	128	109	-19	-15%	85	86	1	1%	105	108	3	3%
M62 Section 4 WB	256	243	-13	-5%	99	121	23	23%	185	202	17	9%
M62 Section 3 WB	36	36	0	-1%	35	35	0	0%	36	36	0	0%
M62 Section 2 WB	21	22	0	2%	21	21	0	1%	21	21	0	1%
M62 Section 1 WB	69	69	0	0%	69	69	0	0%	69	69	0	0%
Cromwell Ave EB	230	230	0	0%	226	222	-4	-2%	230	232	2	1%
Cromwell Ave WB	75	75	0	0%	78	79	1	1%	78	78	1	1%
Sandy Lane EB	45	44	-1	-2%	44	44	-1	-1%	45	43	-1	-3%
Sandy Lane WB	236	184	-51	-22%	194	150	-45	-23%	200	155	-46	-23%
Northway SWB	885	1240	355	40%	641	1334	693	108%	420	1222	802	191%
A50 Section 1 EB	119	114	-5	-4%	119	111	-9	-7%	119	107	-12	-10%
A50 Section 2 EB	94	93	0	0%	94	91	-3	-3%	98	93	-6	-6%
A50 Section 2 WB	124	310	186	150%	114	199	86	75%	111	183	73	66%
A50 Section 1 WB	315	495	180	57%	208	326	118	57%	173	239	65	38%

TABLE 3.3: AM PEAK 2022 JOURNEY TIME COMPARISON

3.3.6 In Table 3.4, the journey time comparison for the 2027 morning scenarios is shown. It is clear that the delays caused by the lack of sufficient capacity for southbound traffic at the Sandy Lane West/A49/Cromwell Avenue junction are, although still present, not enough to cause the knock-on effects throughout the northern half of the study area.

3.3.7 It is clear that without network-wide signal optimisation and junction mitigation, significant delays are likely on both the eastbound and westbound off-slips at M62 Junction 9 (as can be seen in the first two columns, on rows 'M62 Section 1+2 EB' and 'M62 Section 4 WB'). With the combined effects of junction mitigation and signal optimisation, it is possible to almost entirely get rid of these impacts.

3.3.8 In a similar (but less impactful) manner as is found in the 2022 scenario, the other area which experiences impacts is the western half of A50 Long Lane WB, and traffic joining the A50 from Northway. This is the same issue as found in the other future year scenarios – it is very difficult to create enough useful time for this stage without it having significant knock-on effects to traffic on the A49.

	AM 2027											
Section	Back+ Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Section 1 SB	191	215	24	12%	152	128	-24	-16%	155	141	-14	-9%
A49 Section 2 SB	206	225	20	10%	247	230	-17	-7%	254	261	6	2%
A49 Section 3 SB	135	129	-6	-5%	215	264	49	23%	255	291	35	14%
A49 Section 4 SB	92	91	-1	-1%	122	133	11	9%	204	220	16	8%
A49 Section 5 SB	75	76	1	1%	151	168	18	12%	101	103	2	2%
A49 Section 5 NB	423	374	-49	-12%	261	153	-107	-41%	141	103	-37	-27%
A49 Section 4 NB	237	241	4	2%	105	111	6	6%	111	124	13	12%
A49 Section 3 NB	243	301	58	24%	145	171	26	18%	153	153	1	0%
A49 Section 2 NB	268	278	10	4%	87	85	-1	-1%	73	72	-1	-2%
A49 Section 1 NB	132	132	-1	0%	67	68	0	0%	62	59	-3	-4%
M62 Section 1 EB	1941	2051	110	6%	79	79	0	0%	79	79	0	0%
M62 Section 2 EB	749	832	83	11%	43	61	17	40%	45	54	10	21%
M62 Section 3 EB	39	39	0	-1%	41	41	0	-1%	42	41	-1	-1%
M62 Section 4 EB	27	27	0	1%	26	26	0	0%	26	26	0	0%
M62 Section 5 EB	124	109	-14	-11%	391	356	-34	-9%	395	350	-45	-11%
M62 Section 5 WB	367	353	-14	-4%	86	87	1	1%	97	91	-6	-6%
M62 Section 4 WB	399	558	159	40%	109	116	7	6%	145	134	-11	-8%
M62 Section 3 WB	39	39	-1	-1%	35	36	0	0%	36	36	0	0%
M62 Section 2 WB	22	22	0	1%	21	21	0	0%	21	21	0	-1%
M62 Section 1 WB	70	70	0	0%	70	70	0	0%	70	69	0	0%
Cromwell Ave EB	233	237	4	2%	246	247	1	0%	249	254	5	2%
Cromwell Ave WB	73	72	-1	-1%	79	79	0	1%	79	79	1	1%
Sandy Lane EB	46	45	-1	-3%	46	44	-2	-4%	46	45	-1	-3%
Sandy Lane WB	240	190	-50	-21%	219	141	-78	-36%	223	173	-50	-22%
Northway SWB	1136	1257	121	11%	976	1302	326	33%	870	1100	230	26%
A50 Section 1 EB	100	100	0	0%	108	101	-7	-7%	103	102	-1	-1%
A50 Section 2 EB	88	92	4	5%	88	90	2	2%	88	91	2	2%
A50 Section 2 WB	386	447	61	16%	138	215	77	56%	137	189	52	38%
A50 Section 1 WB	649	663	14	2%	256	338	82	32%	206	269	63	31%

TABLE 3.4: AM PEAK 2027 JOURNEY TIME COMPARISON

3.3.9 In Table 3.5, there is a similar picture as found in the other future year scenarios. With the increased throughput from the rest of the model, there are generally two pinch-points in the network. The signalised roundabout at Sandy Lane West/A49/Cromwell Avenue, and the westbound approach to the A49/A50 signalised junction.

3.3.10 What is apparent though is that, perhaps as a result of reaching a tipping point with the background levels of traffic growth, that the proposed mitigation measures have more of an obvious effect. In the south of the modelled area, at the junction with A49/A50, there is a lower percentage impact to both A50 Long Lane and to traffic accessing Long Lane from Northway. Added to this, there is a big improvement for northbound traffic on the A49 and little impact to journey times for southbound traffic.

	AM 2032											
Section	Back+ Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Section 1 SB	201	209	8	4%	168	193	25	15%	172	188	16	9%
A49 Section 2 SB	226	219	-7	-3%	257	285	28	11%	261	286	25	9%
A49 Section 3 SB	138	137	-1	-1%	240	294	54	22%	260	301	41	16%
A49 Section 4 SB	89	92	3	3%	137	155	19	14%	196	206	10	5%
A49 Section 5 SB	76	82	7	9%	184	200	17	9%	141	159	18	13%
A49 Section 5 NB	499	455	-44	-9%	373	262	-111	-30%	233	155	-77	-33%
A49 Section 4 NB	245	242	-3	-1%	108	123	15	14%	139	152	13	9%
A49 Section 3 NB	295	324	29	10%	164	168	4	3%	179	175	-5	-3%
A49 Section 2 NB	280	284	4	2%	75	81	6	8%	72	79	7	10%
A49 Section 1 NB	133	142	10	7%	66	65	-1	-2%	62	63	1	1%
M62 Section 1 EB	2072	2186	114	6%	79	80	1	1%	79	80	1	1%
M62 Section 2 EB	854	912	58	7%	43	70	27	63%	45	74	29	66%
M62 Section 3 EB	39	39	0	-1%	46	41	-4	-9%	42	41	-1	-2%
M62 Section 4 EB	27	27	0	2%	26	27	0	2%	26	27	0	2%
M62 Section 5 EB	110	109	-1	-1%	413	356	-57	-14%	417	362	-54	-13%
M62 Section 5 WB	436	276	-160	-37%	94	95	1	1%	97	100	3	3%
M62 Section 4 WB	464	491	27	6%	135	152	17	12%	145	167	21	15%
M62 Section 3 WB	40	37	-3	-7%	36	35	0	0%	36	36	0	0%
M62 Section 2 WB	22	22	0	-1%	21	21	0	-2%	21	21	0	-2%
M62 Section 1 WB	70	70	0	0%	70	69	0	-1%	70	69	0	-1%
Cromwell Ave EB	241	258	17	7%	266	277	11	4%	272	281	9	3%
Cromwell Ave WB	72	74	2	2%	79	80	1	2%	79	80	1	1%
Sandy Lane EB	46	45	-1	-3%	47	45	-2	-3%	46	45	0	0%
Sandy Lane WB	251	187	-63	-25%	226	168	-58	-26%	223	169	-53	-24%
Northway SWB	1236	1356	120	10%	1276	1561	286	22%	1193	1369	175	15%
A50 Section 1 EB	98	100	2	2%	97	96	-1	-1%	98	100	2	2%
A50 Section 2 EB	83	88	5	6%	84	82	-1	-1%	84	85	1	2%
A50 Section 2 WB	432	452	20	5%	187	272	84	45%	165	238	73	44%
A50 Section 1 WB	674	628	-47	-7%	324	401	77	24%	255	361	106	42%

TABLE 3.5: AM PEAK 2032 JOURNEY TIME COMPARISON

3.3.11 In a similar manner to that found in the AM scenario, when we analyse the PM 2022 journey time data (Table 3.6) it is clear that with the improvements to southbound flow created with mitigation and optimisation in the northern junctions of the modelled area, the pinch point found at the A49/Sandy Lane West/Cromwell Avenue junction is responsible for knock-on delays for all southbound traffic up to this point.

3.3.12 As a result of this southbound delay now being moved much further south through the model, there is more impact felt at M62 junction 9, particularly for the heavier westbound flow exiting the motorway at the westbound off-slip (M62 Section 4 WB).

3.3.13 The junction with A49/A50 operates much better in the evening peak, with both the committed and the committed + proposed mitigation scenarios showing improved journey times.

	PM 2022											
Section	Back+ Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+Comm Traff.+ Comm& Prop Mit.	Back+Comm+ Peel Hall Traff.+Comm& Prop Mit.	Diff	%
A49 Section 1 SB	106	118	12	12%	71	138	67	95%	74	116	43	58%
A49 Section 2 SB	287	269	-18	-6%	132	223	91	69%	143	229	86	60%
A49 Section 3 SB	125	148	23	18%	144	319	175	121%	227	341	114	50%
A49 Section 4 SB	97	99	2	2%	98	115	17	17%	116	114	-2	-2%
A49 Section 5 SB	72	72	0	0%	70	71	0	1%	70	70	-1	-1%
A49 Section 5 NB	383	391	9	2%	381	324	-58	-15%	309	316	7	2%
A49 Section 4 NB	171	174	3	2%	143	142	-1	-1%	145	147	2	2%
A49 Section 3 NB	110	106	-3	-3%	155	183	28	18%	197	231	34	17%
A49 Section 2 NB	86	82	-4	-5%	70	72	2	3%	67	73	6	9%
A49 Section 1 NB	66	88	22	33%	57	66	9	16%	53	65	12	23%
M62 Section 1 EB	85	157	72	84%	84	85	1	1%	85	85	0	0%
M62 Section 2 EB	249	249	0	0%	47	68	22	46%	45	69	24	55%
M62 Section 3 EB	44	43	-1	-3%	46	70	24	53%	74	76	2	3%
M62 Section 4 EB	25	25	0	2%	25	25	0	0%	25	25	0	-1%
M62 Section 5 EB	127	124	-2	-2%	453	607	154	34%	616	608	-8	-1%
M62 Section 5 WB	86	86	0	0%	87	90	3	3%	86	91	5	6%
M62 Section 4 WB	71	93	22	31%	55	153	98	177%	80	159	79	99%
M62 Section 3 WB	37	37	0	0%	37	37	0	-1%	37	37	0	0%
M62 Section 2 WB	21	21	0	1%	20	20	-1	-2%	20	20	0	-1%
M62 Section 1 WB	73	73	0	0%	74	73	-1	-1%	73	73	0	0%
Cromwell Ave EB	344	347	3	1%	385	368	-17	-4%	395	368	-27	-7%
Cromwell Ave WB	75	77	2	2%	80	80	0	-1%	79	80	1	1%
Sandy Lane EB	44	45	1	2%	41	43	2	5%	42	44	2	4%
Sandy Lane WB	228	236	8	4%	74	128	54	73%	74	127	53	71%
Northway SWB	72	70	-2	-2%	71	70	-1	-2%	70	70	-1	-1%
A50 Section 1 EB	100	98	-3	-3%	102	101	-1	-1%	103	100	-2	-2%
A50 Section 2 EB	88	83	-5	-5%	84	89	5	5%	89	90	0	0%
A50 Section 2 WB	329	301	-28	-9%	175	181	6	3%	194	205	12	6%
A50 Section 1 WB	586	505	-81	-14%	200	173	-26	-13%	276	231	-45	-16%

TABLE 3.6: PM PEAK 2022 JOURNEY TIME COMPARISON

3.3.14 Table 3.7 shows comparative journey time performance in the evening peak in all 2027 scenarios. This shows that other than a minor impact for north and southbound traffic on the A49 at the A49/Sandy Lane West/Cromwell Avenue junction, the network performs well, even with the addition of development traffic.

Section	PM 2027											
	Back+ Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Section 1 SB	280	287	7	3%	124	130	6	5%	104	110	6	6%
A49 Section 2 SB	268	261	-7	-3%	272	260	-12	-5%	284	272	-12	-4%
A49 Section 3 SB	149	136	-14	-9%	140	186	47	33%	137	196	59	43%
A49 Section 4 SB	99	98	0	0%	97	105	8	8%	94	97	4	4%
A49 Section 5 SB	71	72	1	1%	71	71	1	1%	70	70	1	1%
A49 Section 5 NB	391	401	10	2%	395	352	-43	-11%	367	335	-33	-9%
A49 Section 4 NB	175	178	3	2%	164	153	-12	-7%	164	157	-7	-5%
A49 Section 3 NB	107	107	0	0%	128	162	34	26%	141	210	70	50%
A49 Section 2 NB	79	83	4	5%	67	69	3	4%	68	70	2	3%
A49 Section 1 NB	77	82	4	6%	59	61	2	4%	60	62	2	3%
M62 Section 1 EB	129	151	22	17%	87	86	-1	-1%	88	87	-1	-1%
M62 Section 2 EB	245	251	6	2%	62	65	3	5%	65	67	2	3%
M62 Section 3 EB	44	43	0	-1%	76	77	1	1%	77	79	2	3%
M62 Section 4 EB	25	25	0	0%	25	25	0	1%	25	25	1	2%
M62 Section 5 EB	126	125	0	0%	608	609	1	0%	608	611	3	0%
M62 Section 5 WB	86	86	0	0%	86	86	0	0%	86	86	0	0%
M62 Section 4 WB	121	126	6	5%	56	61	4	7%	57	58	2	3%
M62 Section 3 WB	37	37	0	0%	37	37	0	0%	37	37	0	0%
M62 Section 2 WB	21	21	0	1%	21	21	0	0%	21	21	0	0%
M62 Section 1 WB	73	73	0	0%	74	74	0	0%	73	74	0	0%
Cromwell Ave EB	349	349	0	0%	545	387	-158	-29%	550	404	-146	-27%
Cromwell Ave WB	76	78	2	3%	81	82	1	1%	81	84	3	4%
Sandy Lane EB	46	45	-1	-2%	45	43	-1	-3%	44	44	-1	-1%
Sandy Lane WB	235	235	0	0%	132	151	20	15%	134	151	16	12%
Northway SWB	71	71	-1	-1%	72	70	-2	-3%	71	70	-2	-2%
A50 Section 1 EB	97	97	0	0%	98	102	4	4%	98	104	6	6%
A50 Section 2 EB	85	83	-2	-2%	86	90	4	5%	85	92	6	7%
A50 Section 2 WB	361	311	-50	-14%	205	192	-13	-6%	203	203	0	0%
A50 Section 1 WB	573	506	-67	-12%	293	220	-73	-25%	321	246	-74	-23%

TABLE 3.7: PM PEAK 2027 JOURNEY TIME COMPARISON

3.3.15 The final journey times table (Table 3.8) shows that by 2032, there are some additional impacts around the network. The previous LinSig study showed that the improved capacity for northbound traffic was 1280 PCU per hour. In 2032, the northbound flow is very near this point, which is enough to cause knock-on delays which reach back to M62 Junction 9.

3.3.16 Added to this, the additional southbound flow able to get through and arrive at the junction with A49/Sandy Lane West/Cromwell Ave is enough to cause this approach to be over capacity, causing knock-on delays that also reach back to M62 Junction 9.

3.3.17 Part of the issue found with all PM peak scenarios, in all future years, was that the flow at this junction is made up of a high proportion of straight ahead and right-turn turns from each approach. With a signalised roundabout with this little internal storage, this made it very difficult to maximise the volume of traffic able to get through the junction during each cycle, whilst avoiding the possibility of blocking the junction with conflicting movements.

	PM 2032											
Section	Back+ Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Section 1 SB	292	277	-15	-5%	205	193	-12	-6%	131	185	53	41%
A49 Section 2 SB	282	277	-5	-2%	252	240	-12	-5%	248	252	4	2%
A49 Section 3 SB	164	177	14	8%	133	197	63	47%	136	282	146	108%
A49 Section 4 SB	99	98	-1	-1%	96	106	11	11%	92	142	51	55%
A49 Section 5 SB	72	73	1	1%	71	72	1	1%	70	70	0	0%
A49 Section 5 NB	398	403	5	1%	519	641	122	24%	454	446	-8	-2%
A49 Section 4 NB	201	178	-22	-11%	197	226	29	15%	186	192	6	3%
A49 Section 3 NB	113	108	-4	-4%	120	127	8	6%	139	238	99	72%
A49 Section 2 NB	78	105	27	35%	66	137	71	107%	69	180	111	160%
A49 Section 1 NB	77	100	23	30%	60	80	21	35%	61	140	79	129%
M62 Section 1 EB	236	397	161	68%	83	83	0	0%	89	89	0	0%
M62 Section 2 EB	251	256	5	2%	59	145	86	145%	58	163	105	182%
M62 Section 3 EB	43	41	-1	-3%	69	59	-10	-14%	76	64	-12	-15%
M62 Section 4 EB	25	25	0	-1%	25	24	-1	-2%	25	25	0	-1%
M62 Section 5 EB	124	121	-3	-2%	605	590	-15	-3%	602	595	-7	-1%
M62 Section 5 WB	100	95	-6	-6%	86	87	1	1%	86	89	3	3%
M62 Section 4 WB	172	247	75	44%	59	87	28	47%	62	113	51	83%
M62 Section 3 WB	37	37	0	-1%	37	37	0	-1%	37	37	0	0%
M62 Section 2 WB	21	21	0	2%	21	21	0	0%	21	20	0	-2%
M62 Section 1 WB	73	73	0	0%	74	73	0	0%	74	73	0	-1%
Cromwell Ave EB	351	353	3	1%	659	408	-251	-38%	664	416	-248	-37%
Cromwell Ave WB	82	76	-6	-7%	81	81	0	0%	83	82	-2	-2%
Sandy Lane EB	46	47	1	2%	45	46	1	2%	45	45	1	1%
Sandy Lane WB	249	245	-5	-2%	142	141	0	0%	142	139	-3	-2%
Northway SWB	72	70	-2	-3%	71	70	-1	-2%	71	71	0	0%
A50 Section 1 EB	97	98	1	1%	94	99	5	5%	96	100	4	4%
A50 Section 2 EB	83	84	1	2%	83	85	2	3%	85	88	3	3%
A50 Section 2 WB	306	342	36	12%	220	257	37	17%	227	237	10	4%
A50 Section 1 WB	484	504	20	4%	320	388	68	21%	330	350	20	6%

TABLE 3.8: PM PEAK 2027 JOURNEY TIME COMPARISON

4 SUMMARY AND RECOMMENDATIONS

4.1.1 Building on the 2019 Base Year Model, 2022, 2027 and 2032 model scenarios have been produced to act as reference case models for the purposes of comparison, with the aim of assessing the impact of traffic flow changes associated with the proposed Peel Hall development. These models contain background traffic growth and traffic growth associated with known committed development schemes in the area.

4.1.2 The following scenarios, with and without additional traffic associated with the Peel Hall Development, were then compared against their associated reference cases:

- 2022 (Full Development Scenario) with & without committed mitigation measures.
- 2022 (Full Development Scenario) with & without committed mitigation measures and additional proposed mitigation measures.
- 2027 Do Something (Part Development Scenario) with & without committed mitigation measures.
- 2027 Do Something (Part Development Scenario) with & without committed mitigation measures and additional proposed mitigation measures.
- 2032 (Full Development Scenario) with & without committed mitigation measures.
- 2032 (Full Development Scenario) with & without committed mitigation measures and additional proposed mitigation measures.

4.1.3 There are some relatively minor, steady increases to delay, queue lengths etc. as a result of the growth in both background traffic and specific development related traffic. However, there are some notable areas where higher levels of delay are apparent. These are primarily the following locations:

- A49 Winwick Road/A574 Cromwell Avenue/Sandy Lane West – this junction is very sensitive to traffic growth, runs very tight, fixed-time signal plans, and is particularly physically constrained. The optimised signal setup used within all committed mitigation scenario models was an attempt to allow the increased flow from all approaches through with as minimal an impact as was possible. There is however an inherent constraint at this location, with the potential to cause knock-on delays which can easily affect the operation of other nearby junctions.
- A49 Winwick Road/Hawleys Lane/A50 Long Lane – this junction is modelled with simple, varying signal plans, as in the base, then with a more responsive, vehicle actuated controller in the Proposed Mitigation scenarios, in an attempt to assess the possible impact of upgrading and re-optimising this junction controller. The results do show that improvements are possible, particularly in the PM peak. However, the heavy westbound flow on A50 Long Lane and its interaction with traffic joining from Northway, make it difficult to effectively optimise this approach.

APPENDIX A:

TURNING VOLUME CALIBRATION CHECKS

AM 2022 VOLUME COMPARISON – 07:00-08:00 (WARM-UP PERIOD)

Junction/ Movement		07:00-08:00											
		2022											
		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	5	5	0	0%	5	5	0	0%	5	5	0	0%
	A49 NB	821	830	9	1%	960	1013	53	6%	960	1012	52	5%
	A49 NB to Winwick Link Rd	533	519	-14	-3%	604	614	10	2%	604	613	9	1%
	Winwick Park Ave to A49 NB	85	85	0	0%	86	87	1	1%	86	87	1	1%
	Winwick Park Ave to Winwick Link Rd	30	30	0	0%	30	30	0	0%	30	30	0	0%
	Winwick Park Ave to A49 SB	51	54	3	6%	52	55	3	6%	53	55	2	4%
	A49 SB to Winwick Link Rd	0	0	0	-	85	89	4	5%	85	89	4	5%
	A49 SB	663	664	1	0%	693	694	1	0%	693	693	0	0%
	A49 SB to Winwick Park Ave	21	21	0	0%	21	22	1	5%	21	22	1	5%
	Winwick Link Rd to A49 SB	875	877	2	0%	894	899	5	1%	895	897	2	0%
	Winwick Link Rd to Winwick Park Ave	0	0	0	-	0	0	0	-	0	0	0	-
	Winwick Link Rd to A49 NB	61	62	1	2%	63	64	1	2%	63	64	1	2%
A49 Newton Road/ Delph Lane	A49 NB	1310	1307	-3	0%	1492	1557	65	4%	1492	1554	62	4%
	A49 NB to Delp Ln	207	222	15	7%	241	283	42	17%	241	283	42	17%
	A49 SB	1515	1517	2	0%	1564	1570	6	0%	1568	1569	1	0%
	A49 SB to Delph Ln	45	46	1	2%	46	48	2	4%	46	48	2	4%
	Delph Ln to A49 NB	97	95	-2	-2%	100	97	-3	-3%	100	97	-3	-3%
	Delph Ln to A49 SB	193	211	18	9%	195	211	16	8%	195	211	16	8%
M62 Junction 9	A49 NB to M62 WB	292	215	-77	-26%	303	231	-72	-24%	305	231	-74	-24%
	A49 NB	604	604	0	0%	639	643	4	1%	639	643	4	1%
	A49 NB to M62 EB	245	238	-7	-3%	250	243	-7	-3%	251	244	-7	-3%
	A49 NB to A49 SB (U-Turn)	3	6	3	100%	3	6	3	100%	3	6	3	100%
	M62 EB to A49 NB	694	713	19	3%	834	947	113	14%	834	947	113	14%
	M62 EB Mainline	3830	3787	-43	-1%	3834	3817	-17	0%	3834	3817	-17	0%
	M62 EB to A49 SB	197	190	-7	-4%	272	288	16	6%	272	287	15	6%
	A49 SB to M62 EB	257	266	9	4%	264	272	8	3%	264	271	7	3%
	A49 SB	634	637	3	0%	654	655	1	0%	655	655	0	0%
	A49 SB to M62 WB	762	771	9	1%	783	793	10	1%	783	792	9	1%
	M62 WB to A49 SB	526	541	15	3%	533	550	17	3%	533	550	17	3%
	M62 WB Mainline	3313	3346	33	1%	3313	3346	33	1%	3313	3346	33	1%
	M62 WB to A49 NB	261	250	-11	-4%	269	259	-10	-4%	268	258	-10	-4%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	5	9	4	80%	6	9	3	50%	5	9	4	80%
	Birch Rd to A49 SB	48	54	6	13%	48	54	6	13%	48	54	6	13%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	14	13	-1	-7%	14	13	-1	-7%	15	13	-2	-13%
	A49 NB	1181	1097	-84	-7%	1243	1170	-73	-6%	1249	1169	-80	-6%
	A49 SB	1397	1412	15	1%	1498	1536	38	3%	1499	1535	36	2%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	147	146	-1	-1%	148	148	0	0%	148	148	0	0%
	A49 SB	964	973	9	1%	1013	1029	16	2%	1010	1029	19	2%
	A49 SB to Cromwell Ave	231	235	4	2%	259	275	16	6%	258	275	17	7%
	Cromwell Ave to A49 NB	259	223	-36	-14%	280	241	-39	-14%	277	241	-36	-13%
	Cromwell Ave to Sandy Ln West	464	462	-2	0%	497	486	-11	-2%	494	487	-7	-1%
	Cromwell Ave to A49 SB	509	512	3	1%	535	531	-4	-1%	533	529	-4	-1%
	Cromwell Ave to Cromwell Ave (U-turn	40	40	0	0%	40	40	0	0%	40	40	0	0%
	A49 NB	673	622	-51	-8%	705	662	-43	-6%	710	664	-46	-6%
	A49 NB to Sandy Ln West	38	42	4	11%	39	44	5	13%	39	44	5	13%
	A49 NB to Cromwell Ave	458	464	6	1%	494	511	17	3%	496	515	19	4%
	Sandy Ln West to A49 NB	272	270	-2	-1%	292	295	3	1%	292	295	3	1%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	99	67	-32	-32%	104	71	-33	-32%	104	71	-33	-32%
	Sandy Ln West to Cromwell Ave	238	266	28	12%	256	286	30	12%	256	286	30	12%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	1106	1068	-38	-3%	1152	1134	-18	-2%	1162	1143	-19	-2%
	A49 NB to Junction NINE Retail	2	4	2	100%	2	5	3	150%	3	5	2	67%
	Junction NINE Retail to A49 SB	19	21	2	11%	20	22	2	10%	20	22	2	10%
	Junction NINE Retail to A49 NB	97	93	-4	-4%	100	99	-1	-1%	100	99	-1	-1%
	A49 SB	1436	1434	-2	0%	1500	1500	0	0%	1490	1489	-1	0%
	A49 SB to Junction NINE Retail	122	104	-18	-15%	129	110	-19	-15%	129	110	-19	-15%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	142	136	-6	-4%	156	154	-2	-1%	153	151	-2	-1%
	A49 SB to Long Lane	188	200	12	6%	195	209	14	7%	194	207	13	7%
	A49 SB	1089	1075	-14	-1%	1113	1106	-7	-1%	1098	1094	-4	0%
	A49 NB to Hawleys Lane	85	79	-6	-7%	85	80	-5	-6%	85	80	-5	-6%
	A49 NB to Long Lane	170	153	-17	-10%	169	153	-16	-9%	167	150	-17	-10%
	A49 NB	644	594	-50	-8%	652	609	-43	-7%	646	608	-38	-6%
	Long Lane to A49 SB	421	448	27	6%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	127	114	-13	-10%	128	118	-10	-8%	129	117	-12	-9%
	Long Lane to A49 NB	309	326	17	6%	314	339	25	8%	313	337	24	8%
	Hawleys Lane to Long Lane	54	53	-1	-2%	54	54	0	0%	54	54	0	0%
	Hawleys Lane to A49 SB	56	56	0	0%	56	57	1	2%	57	57	0	0%
	Hawleys Lane to A49 NB	222	223	1	0%	228	231	3	1%	229	233	4	2%

AM 2027 VOLUME COMPARISON – 07:00-08:00 (WARM-UP PERIOD)

		07:00-08:00											
		2027											
Junction/ Movement		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	4	5	1	25%	5	6	1	20%	6	5	-1	-17%
	A49 NB	746	765	19	3%	1074	1123	49	5%	1079	1128	49	5%
	A49 NB to Winwick Link Rd	451	454	3	1%	637	651	14	2%	635	645	10	2%
	Winwick Park Ave to A49 NB	107	105	-2	-2%	109	109	0	0%	108	109	1	1%
	Winwick Park Ave to Winwick Link Rd	33	32	-1	-3%	33	33	0	0%	33	33	0	0%
	Winwick Park Ave to A49 SB	52	52	0	0%	53	54	1	2%	53	53	0	0%
	A49 SB to Winwick Link Rd	0	0	0	-	108	108	0	0%	108	108	0	0%
	A49 SB	690	693	3	0%	734	729	-5	-1%	736	722	-14	-2%
	A49 SB to Winwick Park Ave	19	18	-1	-5%	19	18	-1	-5%	19	19	0	0%
	Winwick Link Rd to A49 SB	885	883	-2	0%	938	934	-4	0%	942	929	-13	-1%
	Winwick Link Rd to Winwick Park Ave	0	0	0	-	0	0	0	-	0	0	0	-
	Winwick Link Rd to A49 NB	168	171	3	2%	180	182	2	1%	183	184	1	1%
A49 Newton Road/ Delph Lane	A49 NB	1157	1179	22	2%	1657	1728	71	4%	1654	1720	66	4%
	A49 NB to Delp Ln	201	204	3	1%	337	349	12	4%	337	350	13	4%
	A49 SB	1551	1552	1	0%	1647	1634	-13	-1%	1651	1626	-25	-2%
	A49 SB to Delph Ln	45	44	-1	-2%	47	48	1	2%	47	47	0	0%
	Delph Ln to A49 NB	92	94	2	2%	95	96	1	1%	95	96	1	1%
	Delph Ln to A49 SB	213	219	6	3%	214	220	6	3%	214	220	6	3%
M62 Junction 9	A49 NB to M62 WB	301	213	-88	-29%	320	237	-83	-26%	322	232	-90	-28%
	A49 NB	609	626	17	3%	686	714	28	4%	685	702	17	2%
	A49 NB to M62 EB	239	233	-6	-3%	261	253	-8	-3%	261	253	-8	-3%
	A49 NB to A49 SB (U-Turn)	2	4	2	100%	2	5	3	150%	2	5	3	150%
	M62 EB to A49 NB	525	539	14	3%	1015	1098	83	8%	1015	1100	85	8%
	M62 EB Mainline	3505	3244	-261	-7%	3838	3832	-6	0%	3838	3832	-6	0%
	M62 EB to A49 SB	111	108	-3	-3%	253	243	-10	-4%	253	246	-7	-3%
	A49 SB to M62 EB	264	265	1	0%	275	275	0	0%	276	273	-3	-1%
	A49 SB	632	631	-1	0%	668	661	-7	-1%	669	657	-12	-2%
	A49 SB to M62 WB	801	814	13	2%	857	857	0	0%	860	852	-8	-1%
	M62 WB to A49 SB	543	564	21	4%	577	586	9	2%	577	584	7	1%
	M62 WB Mainline	3319	3348	29	1%	3320	3348	28	1%	3320	3348	28	1%
	M62 WB to A49 NB	270	262	-8	-3%	303	280	-23	-8%	301	280	-21	-7%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	4	8	4	100%	4	9	5	125%	4	9	5	125%
	Birch Rd to A49 SB	48	53	5	10%	48	53	5	10%	48	53	5	10%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	9	9	0	0%	10	10	0	0%	9	10	1	11%
	A49 NB	1220	1140	-80	-7%	1314	1254	-60	-5%	1319	1241	-78	-6%
	A49 SB	1328	1347	19	1%	1538	1533	-5	0%	1539	1530	-9	-1%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	197	204	7	4%	203	213	10	5%	203	213	10	5%
	A49 SB	888	893	5	1%	991	984	-7	-1%	991	984	-7	-1%
	A49 SB to Cromwell Ave	199	199	0	0%	267	261	-6	-2%	266	261	-5	-2%
	Cromwell Ave to A49 NB	264	227	-37	-14%	281	243	-38	-14%	281	241	-40	-14%
	Cromwell Ave to Sandy Ln West	480	475	-5	-1%	508	498	-10	-2%	507	496	-11	-2%
	Cromwell Ave to A49 SB	519	534	15	3%	540	550	10	2%	541	549	8	1%
	Cromwell Ave to Cromwell Ave (U-turn	41	43	2	5%	41	43	2	5%	41	43	2	5%
	A49 NB	692	651	-41	-6%	760	721	-39	-5%	764	726	-38	-5%
	A49 NB to Sandy Ln West	47	50	3	6%	52	56	4	8%	53	56	3	6%
	A49 NB to Cromwell Ave	466	468	2	0%	536	554	18	3%	538	554	16	3%
	Sandy Ln West to A49 NB	290	281	-9	-3%	307	318	11	4%	308	301	-7	-2%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	79	64	-15	-19%	83	71	-12	-14%	84	68	-16	-19%
	Sandy Ln West to Cromwell Ave	238	257	19	8%	252	286	34	13%	254	272	18	7%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	1126	1090	-36	-3%	1248	1237	-11	-1%	1260	1241	-19	-2%
	A49 NB to Junction NINE Retail	3	3	0	0%	3	4	1	33%	3	4	1	33%
	Junction NINE Retail to A49 SB	19	16	-3	-16%	19	16	-3	-16%	19	16	-3	-16%
	Junction NINE Retail to A49 NB	111	113	2	2%	118	121	3	3%	118	121	3	3%
	A49 SB	1344	1366	22	2%	1459	1467	8	1%	1455	1459	4	0%
	A49 SB to Junction NINE Retail	127	112	-15	-12%	137	120	-17	-12%	137	120	-17	-12%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	119	113	-6	-5%	150	140	-10	-7%	146	139	-7	-5%
	A49 SB to Long Lane	149	147	-2	-1%	154	155	1	1%	153	152	-1	-1%
	A49 SB	1070	1086	16	1%	1127	1136	9	1%	1110	1130	20	2%
	A49 NB to Hawleys Lane	96	86	-10	-10%	99	88	-11	-11%	99	89	-10	-10%
	A49 NB to Long Lane	169	151	-18	-11%	170	154	-16	-9%	165	152	-13	-8%
	A49 NB	670	628	-42	-6%	702	663	-39	-6%	700	663	-37	-5%
	Long Lane to A49 SB	433	407	-26	-6%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	117	109	-8	-7%	129	116	-13	-10%	129	119	-10	-8%
	Long Lane to A49 NB	291	297	6	2%	318	344	26	8%	318	342	24	8%
	Hawleys Lane to Long Lane	38	36	-2	-5%	40	38	-2	-5%	41	38	-3	-7%
	Hawleys Lane to A49 SB	59	55	-4	-7%	61	58	-3	-5%	62	59	-3	-5%
	Hawleys Lane to A49 NB	243	241	-2	-1%	275	285	10	4%	277	287	10	4%

AM 2032 VOLUME COMPARISON – 07:00-08:00 (WARM-UP PERIOD)

		07:00-08:00											
		2032											
Junction/ Movement		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm + Peel Hall Traff.+ Comm & Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	4	4	0	0%	5	6	1	20%	5	6	1	20%
	A49 NB	728	742	14	2%	1101	1139	38	3%	1102	1145	43	4%
	A49 NB to Winwick Link Rd	450	466	16	4%	660	676	16	2%	659	676	17	3%
	Winwick Park Ave to A49 NB	119	114	-5	-4%	123	116	-7	-6%	124	116	-8	-6%
	Winwick Park Ave to Winwick Link Rd	34	35	1	3%	34	35	1	3%	34	35	1	3%
	Winwick Park Ave to A49 SB	55	60	5	9%	56	60	4	7%	56	60	4	7%
	A49 SB to Winwick Link Rd	0	0	0	-	104	112	8	8%	105	112	7	7%
	A49 SB	706	700	-6	-1%	756	736	-20	-3%	757	735	-22	-3%
	A49 SB to Winwick Park Ave	18	18	0	0%	19	18	-1	-5%	19	18	-1	-5%
	Winwick Link Rd to A49 SB	892	902	10	1%	959	963	4	0%	955	964	9	1%
	Winwick Link Rd to Winwick Park Ave	0	0	0	-	0	0	0	-	0	0	0	-
	Winwick Link Rd to A49 NB	160	163	3	2%	178	178	0	0%	179	177	-2	-1%
A49 Newton Road/ Delph Lane	A49 NB	1143	1169	26	2%	1704	1769	65	4%	1704	1767	63	4%
	A49 NB to Delp Ln	192	164	-28	-15%	354	318	-36	-10%	354	318	-36	-10%
	A49 SB	1575	1582	7	0%	1689	1676	-13	-1%	1688	1676	-12	-1%
	A49 SB to Delph Ln	46	47	1	2%	49	49	0	0%	49	49	0	0%
	Delph Ln to A49 NB	92	96	4	4%	98	98	0	0%	98	98	0	0%
	Delph Ln to A49 SB	214	224	10	5%	217	224	7	3%	217	224	7	3%
M62 Junction 9	A49 NB to M62 WB	324	215	-109	-34%	346	234	-112	-32%	347	233	-114	-33%
	A49 NB	635	660	25	4%	725	741	16	2%	726	741	15	2%
	A49 NB to M62 EB	233	232	-1	0%	260	251	-9	-3%	262	250	-12	-5%
	A49 NB to A49 SB (U-Turn)	2	5	3	150%	3	6	3	100%	3	6	3	100%
	M62 EB to A49 NB	503	524	21	4%	1079	1153	74	7%	1079	1150	71	7%
	M62 EB Mainline	3209	2994	-215	-7%	3837	3831	-6	0%	3835	3831	-4	0%
	M62 EB to A49 SB	110	114	4	4%	273	279	6	2%	273	277	4	1%
	A49 SB to M62 EB	282	294	12	4%	297	303	6	2%	297	303	6	2%
	A49 SB	625	636	11	2%	663	669	6	1%	662	668	6	1%
	A49 SB to M62 WB	819	816	-3	0%	884	867	-17	-2%	884	867	-17	-2%
	M62 WB to A49 SB	606	634	28	5%	630	658	28	4%	631	659	28	4%
	M62 WB Mainline	3316	3348	32	1%	3316	3348	32	1%	3316	3348	32	1%
	M62 WB to A49 NB	244	195	-49	-20%	263	208	-55	-21%	263	208	-55	-21%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	4	9	5	125%	4	10	6	150%	4	10	6	150%
	Birch Rd to A49 SB	48	23	-25	-52%	48	23	-25	-52%	48	23	-25	-52%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	7	7	0	0%	7	7	0	0%	7	7	0	0%
	A49 NB	1272	1169	-103	-8%	1387	1280	-107	-8%	1392	1279	-113	-8%
	A49 SB	1383	1398	15	1%	1605	1616	11	1%	1605	1616	11	1%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	239	227	-12	-5%	247	235	-12	-5%	246	234	-12	-5%
	A49 SB	872	880	8	1%	980	975	-5	-1%	972	974	2	0%
	A49 SB to Cromwell Ave	225	239	14	6%	302	322	20	7%	302	320	18	6%
	Cromwell Ave to A49 NB	278	237	-41	-15%	292	249	-43	-15%	291	250	-41	-14%
	Cromwell Ave to Sandy Ln West	476	479	3	1%	501	503	2	0%	502	506	4	1%
	Cromwell Ave to A49 SB	547	542	-5	-1%	562	553	-9	-2%	560	555	-5	-1%
	Cromwell Ave to Cromwell Ave (U-turn	44	45	1	2%	44	44	0	0%	43	45	2	5%
	A49 NB	703	667	-36	-5%	796	749	-47	-6%	798	748	-50	-6%
	A49 NB to Sandy Ln West	56	61	5	9%	64	67	3	5%	65	67	2	3%
	A49 NB to Cromwell Ave	464	470	6	1%	554	566	12	2%	552	561	9	2%
	Sandy Ln West to A49 NB	314	283	-31	-10%	333	303	-30	-9%	333	305	-28	-8%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	73	64	-9	-12%	78	68	-10	-13%	78	68	-10	-13%
	Sandy Ln West to Cromwell Ave	234	257	23	10%	250	271	21	8%	249	271	22	9%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	1141	1117	-24	-2%	1307	1276	-31	-2%	1312	1275	-37	-3%
	A49 NB to Junction NINE Retail	2	5	3	150%	2	6	4	200%	2	6	4	200%
	Junction NINE Retail to A49 SB	15	14	-1	-7%	15	15	0	0%	15	15	0	0%
	Junction NINE Retail to A49 NB	119	115	-4	-3%	133	132	-1	-1%	132	132	0	0%
	A49 SB	1347	1356	9	1%	1458	1452	-6	0%	1446	1449	3	0%
	A49 SB to Junction NINE Retail	132	118	-14	-11%	142	126	-16	-11%	143	126	-17	-12%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	121	123	2	2%	156	154	-2	-1%	152	154	2	1%
	A49 SB to Long Lane	123	119	-4	-3%	128	124	-4	-3%	127	123	-4	-3%
	A49 SB	1087	1096	9	1%	1143	1145	2	0%	1121	1133	12	1%
	A49 NB to Hawleys Lane	106	94	-12	-11%	110	98	-12	-11%	111	98	-13	-12%
	A49 NB to Long Lane	166	154	-12	-7%	170	157	-13	-8%	167	154	-13	-8%
	A49 NB	680	649	-31	-5%	731	685	-46	-6%	733	681	-52	-7%
	Long Lane to A49 SB	451	450	-1	0%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	106	98	-8	-8%	118	109	-9	-8%	115	109	-6	-5%
	Long Lane to A49 NB	272	272	0	0%	314	333	19	6%	311	323	12	4%
	Hawleys Lane to Long Lane	29	31	2	7%	32	33	1	3%	32	34	2	6%
	Hawleys Lane to A49 SB	56	50	-6	-11%	60	54	-6	-10%	60	55	-5	-8%
	Hawleys Lane to A49 NB	264	274	10	4%	316	327	11	3%	317	335	18	6%

AM 2022 VOLUME COMPARISON – 08:00-09:00 (PEAK PERIOD)

Junction/ Movement		08:00-09:00											
		2022											
		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	5	6	1	20%	5	6	1	20%	5	6	1	20%
	A49 NB	879	866	-13	-1%	908	950	42	5%	885	929	44	5%
	A49 NB to Winwick Link Rd	531	506	-25	-5%	569	546	-23	-4%	554	535	-19	-3%
	Winwick Park Ave to A49 NB	125	124	-1	-1%	123	122	-1	-1%	123	122	-1	-1%
	Winwick Park Ave to Winwick Link Rd	42	41	-1	-2%	41	41	0	0%	41	41	0	0%
	Winwick Park Ave to A49 SB	69	71	2	3%	66	69	3	5%	65	68	3	5%
	A49 SB to Winwick Link Rd	0	0	0	-	96	105	9	9%	90	91	1	1%
	A49 SB	747	756	9	1%	879	890	11	1%	826	807	-19	-2%
	A49 SB to Winwick Park Ave	25	22	-3	-12%	27	27	0	0%	26	25	-1	-4%
	Winwick Link Rd to A49 SB	943	942	-1	0%	958	939	-19	-2%	891	873	-18	-2%
	Winwick Link Rd to Winwick Park Ave	0	1	1	-	0	1	1	-	0	1	1	-
	Winwick Link Rd to A49 NB	72	70	-2	-3%	73	73	0	0%	70	67	-3	-4%
A49 Newton Road/ Delph Lane	A49 NB	1287	1267	-20	-2%	1363	1381	18	1%	1325	1352	27	2%
	A49 NB to Delp Ln	195	213	18	9%	222	259	37	17%	217	251	34	16%
	A49 SB	1668	1676	8	0%	1819	1810	-9	0%	1698	1661	-37	-2%
	A49 SB to Delph Ln	64	67	3	5%	63	66	3	5%	59	60	1	2%
	Delph Ln to A49 NB	112	108	-4	-4%	111	110	-1	-1%	110	110	0	0%
	Delph Ln to A49 SB	233	245	12	5%	233	247	14	6%	231	247	16	7%
M62 Junction 9	A49 NB to M62 WB	336	269	-67	-20%	353	282	-71	-20%	352	284	-68	-19%
	A49 NB	704	750	46	7%	740	773	33	4%	728	759	31	4%
	A49 NB to M62 EB	340	349	9	3%	352	356	4	1%	353	352	-1	0%
	A49 NB to A49 SB (U-Turn)	3	5	2	67%	3	5	2	67%	3	6	3	100%
	M62 EB to A49 NB	478	448	-30	-6%	547	595	48	9%	545	592	47	9%
	M62 EB Mainline	2980	2181	-799	-27%	3295	3299	4	0%	3295	3299	4	0%
	M62 EB to A49 SB	331	247	-84	-25%	424	412	-12	-3%	415	405	-10	-2%
	A49 SB to M62 EB	363	381	18	5%	400	420	20	5%	382	396	14	4%
	A49 SB	697	695	-2	0%	740	729	-11	-1%	686	662	-24	-3%
	A49 SB to M62 WB	839	845	6	1%	907	905	-2	0%	856	845	-11	-1%
	M62 WB to A49 SB	643	688	45	7%	733	735	2	0%	667	675	8	1%
	M62 WB Mainline	2962	2986	24	1%	2969	2990	21	1%	2967	2985	18	1%
	M62 WB to A49 NB	281	268	-13	-5%	311	283	-28	-9%	284	259	-25	-9%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	5	8	3	60%	5	9	4	80%	5	9	4	80%
	Birch Rd to A49 SB	52	58	6	12%	46	42	-4	-9%	31	30	-1	-3%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	18	17	-1	-6%	20	17	-3	-15%	18	17	-1	-6%
	A49 NB	1371	1368	-3	0%	1440	1420	-20	-1%	1436	1414	-22	-2%
	A49 SB	1704	1673	-31	-2%	1919	1898	-21	-1%	1776	1749	-27	-2%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	159	144	-15	-9%	179	170	-9	-5%	160	153	-7	-4%
	A49 SB	1193	1183	-10	-1%	1353	1342	-11	-1%	1246	1221	-25	-2%
	A49 SB to Cromwell Ave	275	272	-3	-1%	337	342	5	1%	316	321	5	2%
	Cromwell Ave to A49 NB	290	268	-22	-8%	308	284	-24	-8%	304	276	-28	-9%
	Cromwell Ave to Sandy Ln West	489	487	-2	0%	527	528	1	0%	531	519	-12	-2%
	Cromwell Ave to A49 SB	535	555	20	4%	564	592	28	5%	561	587	26	5%
	Cromwell Ave to Cromwell Ave (U-turn	56	53	-3	-5%	56	52	-4	-7%	56	52	-4	-7%
	A49 NB	854	856	2	0%	876	861	-15	-2%	890	870	-20	-2%
	A49 NB to Sandy Ln West	89	92	3	3%	93	93	0	0%	94	95	1	1%
	A49 NB to Cromwell Ave	519	513	-6	-1%	553	575	22	4%	555	578	23	4%
	Sandy Ln West to A49 NB	233	254	21	9%	253	278	25	10%	249	275	26	10%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	75	47	-28	-37%	82	49	-33	-40%	81	49	-32	-40%
	Sandy Ln West to Cromwell Ave	297	318	21	7%	328	351	23	7%	322	344	22	7%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	1359	1354	-5	0%	1433	1442	9	1%	1450	1455	5	0%
	A49 NB to Junction NINE Retail	2	7	5	250%	3	7	4	133%	3	8	5	167%
	Junction NINE Retail to A49 SB	17	21	4	24%	17	20	3	18%	16	20	4	25%
	Junction NINE Retail to A49 NB	100	104	4	4%	97	97	0	0%	97	97	0	0%
	A49 SB	1690	1683	-7	0%	1858	1851	-7	0%	1735	1723	-12	-1%
	A49 SB to Junction NINE Retail	110	98	-12	-11%	134	125	-9	-7%	132	119	-13	-10%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	184	168	-16	-9%	225	235	10	4%	212	224	12	6%
	A49 SB to Long Lane	222	220	-2	-1%	241	240	-1	0%	235	230	-5	-2%
	A49 SB	1295	1323	28	2%	1407	1398	-9	-1%	1304	1279	-25	-2%
	A49 NB to Hawleys Lane	94	94	0	0%	96	95	-1	-1%	99	96	-3	-3%
	A49 NB to Long Lane	193	187	-6	-3%	195	187	-8	-4%	194	189	-5	-3%
	A49 NB	800	809	9	1%	822	811	-11	-1%	858	833	-25	-3%
	Long Lane to A49 SB	383	426	43	11%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	130	101	-29	-22%	142	109	-33	-23%	154	117	-37	-24%
	Long Lane to A49 NB	303	287	-16	-5%	325	349	24	7%	331	368	37	11%
	Hawleys Lane to Long Lane	74	76	2	3%	74	77	3	4%	73	77	4	5%
	Hawleys Lane to A49 SB	64	62	-2	-3%	64	63	-1	-2%	63	62	-1	-2%
	Hawleys Lane to A49 NB	268	272	4	1%	270	279	9	3%	267	272	5	2%

AM 2027 VOLUME COMPARISON – 08:00-09:00 (PEAK PERIOD)

		08:00-09:00											
		2027											
Junction/ Movement		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	5	5	0	0%	6	6	0	0%	6	6	0	0%
	A49 NB	746	725	-21	-3%	997	1083	86	9%	988	1064	76	8%
	A49 NB to Winwick Link Rd	472	473	1	0%	573	572	-1	0%	583	564	-19	-3%
	Winwick Park Ave to A49 NB	151	152	1	1%	157	156	-1	-1%	158	157	-1	-1%
	Winwick Park Ave to Winwick Link Rd	45	45	0	0%	46	45	-1	-2%	46	45	-1	-2%
	Winwick Park Ave to A49 SB	68	67	-1	-1%	68	65	-3	-4%	68	65	-3	-4%
	A49 SB to Winwick Link Rd	0	0	0	-	108	112	4	4%	101	103	2	2%
	A49 SB	773	752	-21	-3%	889	886	-3	0%	877	853	-24	-3%
	A49 SB to Winwick Park Ave	24	23	-1	-4%	25	25	0	0%	25	23	-2	-8%
	Winwick Link Rd to A49 SB	860	815	-45	-5%	916	931	15	2%	903	904	1	0%
	Winwick Link Rd to Winwick Park Ave	0	0	0	-	0	0	0	-	0	0	0	-
	Winwick Link Rd to A49 NB	216	209	-7	-3%	190	199	9	5%	181	183	2	1%
A49 Newton Road/ Delph Lane	A49 NB	1124	1106	-18	-2%	1460	1540	80	5%	1464	1514	50	3%
	A49 NB to Delp Ln	166	145	-21	-13%	311	335	24	8%	308	334	26	8%
	A49 SB	1615	1550	-65	-4%	1790	1803	13	1%	1768	1740	-28	-2%
	A49 SB to Delph Ln	60	59	-1	-2%	61	61	0	0%	59	59	0	0%
	Delph Ln to A49 NB	104	101	-3	-3%	107	107	0	0%	107	107	0	0%
	Delph Ln to A49 SB	247	248	1	0%	252	257	5	2%	252	256	4	2%
M62 Junction 9	A49 NB to M62 WB	346	259	-87	-25%	358	280	-78	-22%	364	273	-91	-25%
	A49 NB	744	801	57	8%	777	842	65	8%	790	825	35	4%
	A49 NB to M62 EB	334	338	4	1%	358	364	6	2%	369	367	-2	-1%
	A49 NB to A49 SB (U-Turn)	4	5	1	25%	4	6	2	50%	4	6	2	50%
	M62 EB to A49 NB	300	285	-15	-5%	655	725	70	11%	655	724	69	11%
	M62 EB Mainline	540	439	-101	-19%	3288	3293	5	0%	3288	3293	5	0%
	M62 EB to A49 SB	86	67	-19	-22%	396	386	-10	-3%	395	382	-13	-3%
	A49 SB to M62 EB	362	357	-5	-1%	403	408	5	1%	405	404	-1	0%
	A49 SB	656	625	-31	-5%	700	696	-4	-1%	677	655	-22	-3%
	A49 SB to M62 WB	843	811	-32	-4%	944	957	13	1%	937	933	-4	0%
	M62 WB to A49 SB	512	415	-97	-19%	813	811	-2	0%	779	790	11	1%
	M62 WB Mainline	2712	2704	-8	0%	2976	2992	16	1%	2975	2990	15	1%
	M62 WB to A49 NB	236	159	-77	-33%	354	317	-37	-10%	340	310	-30	-9%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	5	8	3	60%	6	10	4	67%	6	9	3	50%
	Birch Rd to A49 SB	63	69	6	10%	58	52	-6	-10%	49	45	-4	-8%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	9	10	1	11%	13	12	-1	-8%	13	12	-1	-8%
	A49 NB	1437	1414	-23	-2%	1483	1499	16	1%	1521	1471	-50	-3%
	A49 SB	1315	1174	-141	-11%	1956	1921	-35	-2%	1876	1849	-27	-1%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	203	179	-24	-12%	248	239	-9	-4%	234	228	-6	-3%
	A49 SB	935	861	-74	-8%	1316	1290	-26	-2%	1254	1228	-26	-2%
	A49 SB to Cromwell Ave	169	140	-29	-17%	351	345	-6	-2%	340	337	-3	-1%
	Cromwell Ave to A49 NB	299	267	-32	-11%	296	273	-23	-8%	309	271	-38	-12%
	Cromwell Ave to Sandy Ln West	512	493	-19	-4%	546	520	-26	-5%	527	513	-14	-3%
	Cromwell Ave to A49 SB	537	566	29	5%	550	587	37	7%	544	579	35	6%
	Cromwell Ave to Cromwell Ave (U-turn	62	55	-7	-11%	61	55	-6	-10%	61	55	-6	-10%
	A49 NB	906	899	-7	-1%	919	925	6	1%	947	930	-17	-2%
	A49 NB to Sandy Ln West	101	111	10	10%	107	120	13	12%	110	121	11	10%
	A49 NB to Cromwell Ave	513	512	-1	0%	595	615	20	3%	600	625	25	4%
	Sandy Ln West to A49 NB	252	266	14	6%	260	305	45	17%	258	276	18	7%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	48	45	-3	-6%	50	50	0	0%	49	46	-3	-6%
	Sandy Ln West to Cromwell Ave	310	303	-7	-2%	323	351	28	9%	321	319	-2	-1%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	1392	1394	2	0%	1516	1543	27	2%	1549	1563	14	1%
	A49 NB to Junction NINE Retail	2	5	3	150%	2	5	3	150%	2	5	3	150%
	Junction NINE Retail to A49 SB	15	13	-2	-13%	14	12	-2	-14%	14	12	-2	-14%
	Junction NINE Retail to A49 NB	124	125	1	1%	113	115	2	2%	114	115	1	1%
	A49 SB	1413	1376	-37	-3%	1777	1793	16	1%	1701	1710	9	1%
	A49 SB to Junction NINE Retail	107	94	-13	-12%	135	126	-9	-7%	129	124	-5	-4%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	125	117	-8	-6%	217	209	-8	-4%	207	198	-9	-4%
	A49 SB to Long Lane	154	155	1	1%	166	165	-1	-1%	160	159	-1	-1%
	A49 SB	1141	1123	-18	-2%	1416	1428	12	1%	1359	1354	-5	0%
	A49 NB to Hawleys Lane	100	99	-1	-1%	107	105	-2	-2%	111	107	-4	-4%
	A49 NB to Long Lane	188	180	-8	-4%	196	186	-10	-5%	197	191	-6	-3%
	A49 NB	805	819	14	2%	852	865	13	2%	907	895	-12	-1%
	Long Lane to A49 SB	371	423	52	14%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	101	86	-15	-15%	133	111	-22	-17%	140	120	-20	-14%
	Long Lane to A49 NB	252	240	-12	-5%	335	338	3	1%	341	362	21	6%
	Hawleys Lane to Long Lane	53	51	-2	-4%	51	52	1	2%	51	52	1	2%
	Hawleys Lane to A49 SB	68	65	-3	-4%	68	65	-3	-4%	67	64	-3	-4%
	Hawleys Lane to A49 NB	338	344	6	2%	328	338	10	3%	324	331	7	2%

AM 2032 VOLUME COMPARISON – 08:00-09:00 (PEAK PERIOD)

		08:00-09:00											
		2032											
Junction/ Movement		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm + Peel Hall Traff.+ Comm & Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	5	5	0	0%	5	5	0	0%	5	5	0	0%
	A49 NB	706	723	17	2%	996	1073	77	8%	1002	1061	59	6%
	A49 NB to Winwick Link Rd	480	469	-11	-2%	593	583	-10	-2%	598	586	-12	-2%
	Winwick Park Ave to A49 NB	174	153	-21	-12%	173	168	-5	-3%	175	169	-6	-3%
	Winwick Park Ave to Winwick Link Rd	44	41	-3	-7%	45	45	0	0%	45	45	0	0%
	Winwick Park Ave to A49 SB	74	75	1	1%	72	79	7	10%	72	80	8	11%
	A49 SB to Winwick Link Rd	0	0	0	-	108	112	4	4%	104	102	-2	-2%
	A49 SB	734	764	30	4%	869	829	-40	-5%	860	819	-41	-5%
	A49 SB to Winwick Park Ave	23	23	0	0%	26	23	-3	-12%	26	23	-3	-12%
	Winwick Link Rd to A49 SB	816	833	17	2%	910	859	-51	-6%	905	858	-47	-5%
	Winwick Link Rd to Winwick Park Ave	0	0	0	-	0	0	0	-	0	0	0	-
	Winwick Link Rd to A49 NB	197	197	0	0%	175	167	-8	-5%	178	161	-17	-10%
A49 Newton Road/ Delph Lane	A49 NB	1081	1099	18	2%	1478	1532	54	4%	1488	1529	41	3%
	A49 NB to Delp Ln	138	119	-19	-14%	313	299	-14	-4%	313	299	-14	-4%
	A49 SB	1542	1587	45	3%	1769	1685	-84	-5%	1758	1678	-80	-5%
	A49 SB to Delph Ln	56	61	5	9%	59	61	2	3%	58	60	2	3%
	Delph Ln to A49 NB	108	104	-4	-4%	110	108	-2	-2%	110	108	-2	-2%
	Delph Ln to A49 SB	251	249	-2	-1%	258	258	0	0%	257	257	0	0%
M62 Junction 9	A49 NB to M62 WB	368	270	-98	-27%	381	287	-94	-25%	388	293	-95	-24%
	A49 NB	782	824	42	5%	808	858	50	6%	821	862	41	5%
	A49 NB to M62 EB	323	313	-10	-3%	342	343	1	0%	358	354	-4	-1%
	A49 NB to A49 SB (U-Turn)	4	6	2	50%	4	7	3	75%	4	7	3	75%
	M62 EB to A49 NB	257	253	-4	-2%	698	757	59	8%	698	757	59	8%
	M62 EB Mainline	459	414	-45	-10%	3287	3300	13	0%	3290	3300	10	0%
	M62 EB to A49 SB	64	65	1	2%	427	436	9	2%	427	440	13	3%
	A49 SB to M62 EB	366	398	32	9%	423	432	9	2%	420	433	13	3%
	A49 SB	600	628	28	5%	664	639	-25	-4%	652	627	-25	-4%
	A49 SB to M62 WB	824	798	-26	-3%	942	867	-75	-8%	942	873	-69	-7%
	M62 WB to A49 SB	469	547	78	17%	857	861	4	0%	847	848	1	0%
	M62 WB Mainline	2622	2837	215	8%	2976	2996	20	1%	2976	2995	19	1%
	M62 WB to A49 NB	171	134	-37	-22%	301	223	-78	-26%	295	218	-77	-26%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	7	9	2	29%	8	11	3	38%	7	11	4	57%
	Birch Rd to A49 SB	63	29	-34	-54%	56	26	-30	-54%	51	27	-24	-47%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	8	8	0	0%	12	9	-3	-25%	11	10	-1	-9%
	A49 NB	1474	1440	-34	-2%	1524	1495	-29	-2%	1553	1515	-38	-2%
	A49 SB	1193	1267	74	6%	1984	1945	-39	-2%	1954	1923	-31	-2%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	217	202	-15	-7%	280	246	-34	-12%	276	243	-33	-12%
	A49 SB	815	865	50	6%	1266	1247	-19	-2%	1256	1220	-36	-3%
	A49 SB to Cromwell Ave	156	189	33	21%	389	408	19	5%	387	407	20	5%
	Cromwell Ave to A49 NB	315	281	-34	-11%	307	268	-39	-13%	301	272	-29	-10%
	Cromwell Ave to Sandy Ln West	506	481	-25	-5%	515	495	-20	-4%	513	484	-29	-6%
	Cromwell Ave to A49 SB	558	564	6	1%	549	571	22	4%	541	563	22	4%
	Cromwell Ave to Cromwell Ave (U-turn	63	59	-4	-6%	60	58	-2	-3%	60	57	-3	-5%
	A49 NB	912	917	5	1%	922	947	25	3%	959	968	9	1%
	A49 NB to Sandy Ln West	109	129	20	18%	125	147	22	18%	132	153	21	16%
	A49 NB to Cromwell Ave	511	510	-1	0%	617	621	4	1%	625	625	0	0%
	Sandy Ln West to A49 NB	271	272	1	0%	285	288	3	1%	288	284	-4	-1%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	44	45	1	2%	46	46	0	0%	46	46	0	0%
	Sandy Ln West to Cromwell Ave	301	303	2	1%	314	316	2	1%	316	317	1	0%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	1386	1405	19	1%	1541	1588	47	3%	1592	1620	28	2%
	A49 NB to Junction NINE Retail	2	8	6	300%	2	7	5	250%	2	8	6	300%
	Junction NINE Retail to A49 SB	13	14	1	8%	12	13	1	8%	12	13	1	8%
	Junction NINE Retail to A49 NB	139	148	9	6%	124	129	5	4%	124	128	4	3%
	A49 SB	1310	1376	66	5%	1721	1726	5	0%	1700	1692	-8	0%
	A49 SB to Junction NINE Retail	104	95	-9	-9%	133	123	-10	-8%	134	124	-10	-7%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	117	117	0	0%	216	217	1	0%	213	211	-2	-1%
	A49 SB to Long Lane	123	118	-5	-4%	127	122	-5	-4%	129	120	-9	-7%
	A49 SB	1077	1160	83	8%	1391	1376	-15	-1%	1374	1360	-14	-1%
	A49 NB to Hawleys Lane	102	99	-3	-3%	113	111	-2	-2%	122	118	-4	-3%
	A49 NB to Long Lane	175	166	-9	-5%	185	174	-11	-6%	192	191	-1	-1%
	A49 NB	784	800	16	2%	838	873	35	4%	919	943	24	3%
	Long Lane to A49 SB	414	471	57	14%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	85	79	-6	-7%	119	91	-28	-24%	127	103	-24	-19%
	Long Lane to A49 NB	228	218	-10	-4%	323	290	-33	-10%	343	317	-26	-8%
	Hawleys Lane to Long Lane	40	40	0	0%	39	41	2	5%	38	39	1	3%
	Hawleys Lane to A49 SB	67	63	-4	-6%	68	63	-5	-7%	67	61	-6	-9%
	Hawleys Lane to A49 NB	380	398	18	5%	376	401	25	7%	360	380	20	6%

AM 2022 VOLUME COMPARISON – 09:00-09:30 (COOL-DOWN PERIOD)

Junction/ Movement		09:00-09:30											
		2022											
		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	3	3	0	0%	3	3	0	0%	4	3	-1	-25%
	A49 NB	401	415	14	3%	411	427	16	4%	407	419	12	3%
	A49 NB to Winwick Link Rd	297	293	-4	-1%	315	307	-8	-3%	320	311	-9	-3%
	Winwick Park Ave to A49 NB	53	53	0	0%	53	53	0	0%	53	53	0	0%
	Winwick Park Ave to Winwick Link Rd	17	17	0	0%	17	17	0	0%	17	17	0	0%
	Winwick Park Ave to A49 SB	30	32	2	7%	31	33	2	6%	31	33	2	6%
	A49 SB to Winwick Link Rd	0	0	0	-	46	50	4	9%	51	54	3	6%
	A49 SB	348	358	10	3%	358	394	36	10%	399	412	13	3%
	A49 SB to Winwick Park Ave	12	13	1	8%	14	14	0	0%	15	16	1	7%
	Winwick Link Rd to A49 SB	459	462	3	1%	486	491	5	1%	458	440	-18	-4%
	Winwick Link Rd to Winwick Park Ave	0	0	0	-	0	0	0	-	0	0	0	-
	Winwick Link Rd to A49 NB	33	32	-1	-3%	34	34	0	0%	31	29	-2	-6%
A49 Newton Road/ Delph Lane	A49 NB	679	668	-11	-2%	701	711	10	1%	701	706	5	1%
	A49 NB to Delp Ln	102	116	14	14%	109	127	18	17%	106	123	17	16%
	A49 SB	820	836	16	2%	877	903	26	3%	867	866	-1	0%
	A49 SB to Delph Ln	29	31	2	7%	32	33	1	3%	31	30	-1	-3%
	Delph Ln to A49 NB	42	44	2	5%	43	43	0	0%	43	43	0	0%
	Delph Ln to A49 SB	119	123	4	3%	120	128	8	7%	121	127	6	5%
M62 Junction 9	A49 NB to M62 WB	175	132	-43	-25%	166	137	-29	-17%	165	135	-30	-18%
	A49 NB	384	381	-3	-1%	391	402	11	3%	391	404	13	3%
	A49 NB to M62 EB	177	170	-7	-4%	167	171	4	2%	166	172	6	4%
	A49 NB to A49 SB (U-Turn)	2	4	2	100%	2	3	1	50%	2	3	1	50%
	M62 EB to A49 NB	261	264	3	1%	238	262	24	10%	240	265	25	10%
	M62 EB Mainline	1539	1685	146	9%	1579	1581	2	0%	1579	1581	2	0%
	M62 EB to A49 SB	202	188	-14	-7%	167	175	8	5%	174	181	7	4%
	A49 SB to M62 EB	154	164	10	6%	163	177	14	9%	171	186	15	9%
	A49 SB	374	374	0	0%	397	400	3	1%	379	367	-12	-3%
	A49 SB to M62 WB	419	419	0	0%	460	464	4	1%	443	448	5	1%
	M62 WB to A49 SB	305	304	-1	0%	354	384	30	8%	349	362	13	4%
	M62 WB Mainline	1497	1507	10	1%	1502	1509	7	0%	1501	1510	9	1%
	M62 WB to A49 NB	138	131	-7	-5%	172	167	-5	-3%	166	154	-12	-7%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	3	6	3	100%	4	6	2	50%	4	5	1	25%
	Birch Rd to A49 SB	41	33	-8	-20%	52	35	-17	-33%	24	24	0	0%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	9	8	-1	-11%	12	10	-2	-17%	11	9	-2	-18%
	A49 NB	741	692	-49	-7%	723	699	-24	-3%	707	693	-14	-2%
	A49 SB	916	885	-31	-3%	979	988	9	1%	924	932	8	1%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	77	70	-7	-9%	86	70	-16	-19%	77	72	-5	-6%
	A49 SB	643	628	-15	-2%	694	685	-9	-1%	646	649	3	0%
	A49 SB to Cromwell Ave	178	172	-6	-3%	194	214	20	10%	182	198	16	9%
	Cromwell Ave to A49 NB	185	168	-17	-9%	203	195	-8	-4%	200	192	-8	-4%
	Cromwell Ave to Sandy Ln West	250	254	4	2%	296	291	-5	-2%	287	288	1	0%
	Cromwell Ave to A49 SB	217	215	-2	-1%	244	245	1	0%	241	241	0	0%
	Cromwell Ave to Cromwell Ave (U-turn	23	19	-4	-17%	24	20	-4	-17%	24	20	-4	-17%
	A49 NB	444	415	-29	-7%	404	383	-21	-5%	385	381	-4	-1%
	A49 NB to Sandy Ln West	25	26	1	4%	22	22	0	0%	20	22	2	10%
	A49 NB to Cromwell Ave	258	257	-1	0%	248	285	37	15%	247	297	50	20%
	Sandy Ln West to A49 NB	105	104	-1	-1%	114	115	1	1%	113	116	3	3%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	41	30	-11	-27%	44	31	-13	-30%	42	31	-11	-26%
	Sandy Ln West to Cromwell Ave	164	175	11	7%	182	192	10	5%	176	192	16	9%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	677	650	-27	-4%	607	628	21	3%	581	633	52	9%
	A49 NB to Junction NINE Retail	2	3	1	50%	2	3	1	50%	2	3	1	50%
	Junction NINE Retail to A49 SB	8	10	2	25%	8	10	2	25%	8	10	2	25%
	Junction NINE Retail to A49 NB	55	56	1	2%	53	53	0	0%	53	53	0	0%
	A49 SB	833	813	-20	-2%	909	901	-8	-1%	861	864	3	0%
	A49 SB to Junction NINE Retail	72	63	-9	-13%	80	68	-12	-15%	78	70	-8	-10%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	100	105	5	5%	94	96	2	2%	96	98	2	2%
	A49 SB to Long Lane	102	107	5	5%	117	126	9	8%	115	127	12	10%
	A49 SB	644	614	-30	-5%	693	678	-15	-2%	664	648	-16	-2%
	A49 NB to Hawleys Lane	31	29	-2	-6%	28	27	-1	-4%	26	26	0	0%
	A49 NB to Long Lane	96	94	-2	-2%	96	95	-1	-1%	98	96	-2	-2%
	A49 NB	380	344	-36	-9%	350	326	-24	-7%	325	310	-15	-5%
	Long Lane to A49 SB	210	216	6	3%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	60	45	-15	-25%	91	55	-36	-40%	91	56	-35	-38%
	Long Lane to A49 NB	119	125	6	5%	118	156	38	32%	117	168	51	44%
	Hawleys Lane to Long Lane	31	33	2	6%	30	31	1	3%	30	30	0	0%
	Hawleys Lane to A49 SB	34	34	0	0%	34	33	-1	-3%	33	33	0	0%
	Hawleys Lane to A49 NB	136	147	11	8%	128	134	6	5%	129	137	8	6%

AM 2027 VOLUME COMPARISON – 09:00-09:30 (COOL-DOWN PERIOD)

		09:00-09:30											
		2027											
Junction/ Movement		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	3	3	0	0%	4	4	0	0%	4	4	0	0%
	A49 NB	373	356	-17	-5%	461	490	29	6%	457	474	17	4%
	A49 NB to Winwick Link Rd	274	260	-14	-5%	314	321	7	2%	312	312	0	0%
	Winwick Park Ave to A49 NB	74	76	2	3%	69	70	1	1%	69	70	1	1%
	Winwick Park Ave to Winwick Link Rd	19	19	0	0%	18	17	-1	-6%	18	17	-1	-6%
	Winwick Park Ave to A49 SB	35	34	-1	-3%	33	35	2	6%	32	35	3	9%
	A49 SB to Winwick Link Rd	0	0	0	-	64	67	3	5%	61	64	3	5%
	A49 SB	357	353	-4	-1%	423	427	4	1%	414	415	1	0%
	A49 SB to Winwick Park Ave	13	12	-1	-8%	13	15	2	15%	14	15	1	7%
	Winwick Link Rd to A49 SB	424	427	3	1%	458	477	19	4%	450	447	-3	-1%
	Winwick Link Rd to Winwick Park Ave	0	0	0	-	0	0	0	-	0	0	0	-
	Winwick Link Rd to A49 NB	74	79	5	7%	89	112	23	26%	93	87	-6	-6%
A49 Newton Road/ Delph Lane	A49 NB	614	583	-31	-5%	741	772	31	4%	741	752	11	1%
	A49 NB to Delp Ln	89	79	-10	-11%	149	155	6	4%	147	154	7	5%
	A49 SB	799	795	-4	-1%	890	915	25	3%	875	876	1	0%
	A49 SB to Delph Ln	31	33	2	6%	33	36	3	9%	33	35	2	6%
	Delph Ln to A49 NB	45	42	-3	-7%	42	45	3	7%	42	45	3	7%
	Delph Ln to A49 SB	126	125	-1	-1%	127	131	4	3%	126	132	6	5%
M62 Junction 9	A49 NB to M62 WB	190	133	-57	-30%	183	141	-42	-23%	182	135	-47	-26%
	A49 NB	413	408	-5	-1%	401	435	34	8%	402	416	14	3%
	A49 NB to M62 EB	165	168	3	2%	176	175	-1	-1%	174	172	-2	-1%
	A49 NB to A49 SB (U-Turn)	2	4	2	100%	2	4	2	100%	2	4	2	100%
	M62 EB to A49 NB	167	143	-24	-14%	284	299	15	5%	283	298	15	5%
	M62 EB Mainline	756	659	-97	-13%	1571	1587	16	1%	1571	1587	16	1%
	M62 EB to A49 SB	77	59	-18	-23%	153	155	2	1%	154	158	4	3%
	A49 SB to M62 EB	163	158	-5	-3%	176	181	5	3%	175	179	4	2%
	A49 SB	335	335	0	0%	366	378	12	3%	362	362	0	0%
	A49 SB to M62 WB	440	430	-10	-2%	479	493	14	3%	474	477	3	1%
	M62 WB to A49 SB	246	241	-5	-2%	368	382	14	4%	380	390	10	3%
	M62 WB Mainline	889	764	-125	-14%	1510	1513	3	0%	1511	1515	4	0%
	M62 WB to A49 NB	112	101	-11	-10%	193	180	-13	-7%	192	179	-13	-7%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	3	6	3	100%	4	6	2	50%	4	6	2	50%
	Birch Rd to A49 SB	49	54	5	10%	54	54	0	0%	53	46	-7	-13%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	4	4	0	0%	7	6	-1	-14%	6	6	0	0%
	A49 NB	749	718	-31	-4%	768	749	-19	-2%	757	722	-35	-5%
	A49 SB	705	686	-19	-3%	946	978	32	3%	963	958	-5	-1%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	103	99	-4	-4%	113	104	-9	-8%	115	100	-15	-13%
	A49 SB	479	473	-6	-1%	647	652	5	1%	643	637	-6	-1%
	A49 SB to Cromwell Ave	106	97	-9	-8%	203	209	6	3%	200	205	5	3%
	Cromwell Ave to A49 NB	176	163	-13	-7%	199	187	-12	-6%	199	182	-17	-9%
	Cromwell Ave to Sandy Ln West	281	275	-6	-2%	295	297	2	1%	294	291	-3	-1%
	Cromwell Ave to A49 SB	224	226	2	1%	239	243	4	2%	238	243	5	2%
	Cromwell Ave to Cromwell Ave (U-turn	23	20	-3	-13%	24	21	-3	-13%	24	21	-3	-13%
	A49 NB	437	438	1	0%	452	435	-17	-4%	436	425	-11	-3%
	A49 NB to Sandy Ln West	32	36	4	13%	27	32	5	19%	24	31	7	29%
	A49 NB to Cromwell Ave	258	255	-3	-1%	294	307	13	4%	290	314	24	8%
	Sandy Ln West to A49 NB	120	107	-13	-11%	121	126	5	4%	123	108	-15	-12%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	30	29	-1	-3%	31	32	1	3%	32	31	-1	-3%
	Sandy Ln West to Cromwell Ave	164	172	8	5%	168	198	30	18%	170	179	9	5%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	676	673	-3	0%	706	708	2	0%	676	706	30	4%
	A49 NB to Junction NINE Retail	1	2	1	100%	1	2	1	100%	1	2	1	100%
	Junction NINE Retail to A49 SB	8	7	-1	-13%	8	7	-1	-13%	9	7	-2	-22%
	Junction NINE Retail to A49 NB	60	68	8	13%	61	64	3	5%	61	64	3	5%
	A49 SB	669	670	1	0%	843	857	14	2%	844	846	2	0%
	A49 SB to Junction NINE Retail	69	63	-6	-9%	81	75	-6	-7%	81	74	-7	-9%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	72	70	-2	-3%	87	89	2	2%	89	92	3	3%
	A49 SB to Long Lane	77	78	1	1%	79	85	6	8%	81	82	1	1%
	A49 SB	533	527	-6	-1%	670	684	14	2%	681	684	3	0%
	A49 NB to Hawleys Lane	37	35	-2	-5%	35	32	-3	-9%	32	30	-2	-6%
	A49 NB to Long Lane	89	87	-2	-2%	90	94	4	4%	96	95	-1	-1%
	A49 NB	387	379	-8	-2%	398	374	-24	-6%	366	350	-16	-4%
	Long Lane to A49 SB	165	149	-16	-10%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	47	42	-5	-11%	68	54	-14	-21%	76	60	-16	-21%
	Long Lane to A49 NB	100	88	-12	-12%	127	154	27	21%	125	162	37	30%
	Hawleys Lane to Long Lane	24	28	4	17%	24	23	-1	-4%	23	23	0	0%
	Hawleys Lane to A49 SB	38	37	-1	-3%	36	34	-2	-6%	35	33	-2	-6%
	Hawleys Lane to A49 NB	171	187	16	9%	153	157	4	3%	154	159	5	3%

AM 2032 VOLUME COMPARISON – 09:00-09:30 (COOL-DOWN PERIOD)

		09:00-09:30											
		2032											
Junction/ Movement		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm + Peel Hall Traff.+ Comm & Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	3	2	-1	-33%	3	3	0	0%	3	3	0	0%
	A49 NB	350	344	-6	-2%	464	473	9	2%	459	465	6	1%
	A49 NB to Winwick Link Rd	262	265	3	1%	313	313	0	0%	305	320	15	5%
	Winwick Park Ave to A49 NB	86	88	2	2%	86	76	-10	-12%	83	76	-7	-8%
	Winwick Park Ave to Winwick Link Rd	21	23	2	10%	21	21	0	0%	21	20	-1	-5%
	Winwick Park Ave to A49 SB	35	42	7	20%	34	35	1	3%	33	35	2	6%
	A49 SB to Winwick Link Rd	0	0	0	-	60	64	4	7%	59	59	0	0%
	A49 SB	360	350	-10	-3%	422	406	-16	-4%	422	389	-33	-8%
	A49 SB to Winwick Park Ave	15	12	-3	-20%	15	16	1	7%	16	15	-1	-6%
	Winwick Link Rd to A49 SB	436	437	1	0%	454	428	-26	-6%	455	420	-35	-8%
	Winwick Link Rd to Winwick Park Ave	0	0	0	-	0	0	0	-	0	0	0	-
	Winwick Link Rd to A49 NB	74	75	1	1%	92	90	-2	-2%	86	84	-2	-2%
A49 Newton Road/ Delph Lane	A49 NB	582	574	-8	-1%	737	752	15	2%	723	752	29	4%
	A49 NB to Delp Ln	82	63	-19	-23%	146	135	-11	-8%	145	134	-11	-8%
	A49 SB	814	810	-4	0%	889	848	-41	-5%	887	823	-64	-7%
	A49 SB to Delph Ln	32	32	0	0%	33	32	-1	-3%	33	30	-3	-9%
	Delph Ln to A49 NB	42	40	-2	-5%	46	45	-1	-2%	46	43	-3	-7%
	Delph Ln to A49 SB	122	121	-1	-1%	128	130	2	2%	129	128	-1	-1%
M62 Junction 9	A49 NB to M62 WB	190	141	-49	-26%	195	150	-45	-23%	188	146	-42	-22%
	A49 NB	397	423	26	7%	409	435	26	6%	395	436	41	10%
	A49 NB to M62 EB	148	153	5	3%	173	178	5	3%	160	179	19	12%
	A49 NB to A49 SB (U-Turn)	1	4	3	300%	2	4	2	100%	3	4	1	33%
	M62 EB to A49 NB	157	130	-27	-17%	295	311	16	5%	295	314	19	6%
	M62 EB Mainline	574	419	-155	-27%	1579	1589	10	1%	1579	1589	10	1%
	M62 EB to A49 SB	66	49	-17	-26%	169	188	19	11%	170	184	14	8%
	A49 SB to M62 EB	175	187	12	7%	192	195	3	2%	194	191	-3	-2%
	A49 SB	328	335	7	2%	348	350	2	1%	351	329	-22	-6%
	A49 SB to M62 WB	441	420	-21	-5%	482	442	-40	-8%	478	434	-44	-9%
	M62 WB to A49 SB	295	278	-17	-6%	402	433	31	8%	408	418	10	2%
	M62 WB Mainline	693	968	275	40%	1514	1517	3	0%	1515	1517	2	0%
	M62 WB to A49 NB	101	75	-26	-26%	168	131	-37	-22%	168	125	-43	-26%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	3	5	2	67%	4	6	2	50%	5	6	1	20%
	Birch Rd to A49 SB	49	26	-23	-47%	53	29	-24	-45%	48	27	-21	-44%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	4	3	-1	-25%	5	5	0	0%	6	5	-1	-17%
	A49 NB	728	714	-14	-2%	793	767	-26	-3%	760	764	4	1%
	A49 SB	735	686	-49	-7%	981	994	13	1%	980	960	-20	-2%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	119	103	-16	-13%	126	106	-20	-16%	120	106	-14	-12%
	A49 SB	480	463	-17	-4%	632	615	-17	-3%	624	605	-19	-3%
	A49 SB to Cromwell Ave	120	116	-4	-3%	225	255	30	13%	223	247	24	11%
	Cromwell Ave to A49 NB	192	178	-14	-7%	205	195	-10	-5%	201	195	-6	-3%
	Cromwell Ave to Sandy Ln West	261	263	2	1%	275	282	7	3%	283	286	3	1%
	Cromwell Ave to A49 SB	230	225	-5	-2%	250	243	-7	-3%	252	249	-3	-1%
	Cromwell Ave to Cromwell Ave (U-turn	24	21	-3	-13%	26	23	-3	-12%	27	24	-3	-11%
	A49 NB	385	390	5	1%	466	455	-11	-2%	440	442	2	0%
	A49 NB to Sandy Ln West	40	44	4	10%	43	45	2	5%	37	40	3	8%
	A49 NB to Cromwell Ave	254	257	3	1%	311	295	-16	-5%	312	313	1	0%
	Sandy Ln West to A49 NB	131	114	-17	-13%	131	113	-18	-14%	132	116	-16	-12%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	25	28	3	12%	28	28	0	0%	29	28	-1	-3%
	Sandy Ln West to Cromwell Ave	157	170	13	8%	166	178	12	7%	163	175	12	7%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	629	634	5	1%	756	727	-29	-4%	727	723	-4	-1%
	A49 NB to Junction NINE Retail	1	3	2	200%	2	5	3	150%	2	4	2	100%
	Junction NINE Retail to A49 SB	6	6	0	0%	7	7	0	0%	7	6	-1	-14%
	Junction NINE Retail to A49 NB	61	66	5	8%	68	69	1	1%	70	70	0	0%
	A49 SB	672	655	-17	-3%	842	823	-19	-2%	828	822	-6	-1%
	A49 SB to Junction NINE Retail	70	67	-3	-4%	81	77	-4	-5%	82	77	-5	-6%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	70	67	-3	-4%	89	95	6	7%	93	98	5	5%
	A49 SB to Long Lane	60	60	0	0%	62	62	0	0%	61	65	4	7%
	A49 SB	559	530	-29	-5%	681	671	-10	-1%	682	670	-12	-2%
	A49 NB to Hawleys Lane	34	34	0	0%	40	39	-1	-3%	33	34	1	3%
	A49 NB to Long Lane	83	80	-3	-4%	92	88	-4	-4%	95	94	-1	-1%
	A49 NB	338	336	-2	-1%	425	419	-6	-1%	375	378	3	1%
	Long Lane to A49 SB	130	155	25	19%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	39	39	0	0%	51	40	-11	-22%	53	47	-6	-11%
	Long Lane to A49 NB	76	72	-4	-5%	139	132	-7	-5%	139	136	-3	-2%
	Hawleys Lane to Long Lane	20	21	1	5%	19	20	1	5%	19	19	0	0%
	Hawleys Lane to A49 SB	40	36	-4	-10%	35	32	-3	-9%	35	31	-4	-11%
	Hawleys Lane to A49 NB	210	222	12	6%	175	182	7	4%	186	191	5	3%

PM 2022 VOLUME COMPARISON – 16:00-17:00 (WARM-UP PERIOD)

		16:00-17:00											
		2022											
Junction/ Movement		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	69	68	-1	-1%	75	76	1	1%	80	79	-1	-1%
	A49 NB	1015	973	-42	-4%	1113	1107	-6	-1%	1120	1112	-8	-1%
	A49 NB to Winwick Link Rd	631	619	-12	-2%	676	672	-4	-1%	687	683	-4	-1%
	Winwick Park Ave to A49 NB	34	164	130	382%	34	211	177	521%	34	210	176	518%
	Winwick Park Ave to Winwick Link Rd	4	3	-1	-25%	4	4	0	0%	4	4	0	0%
	Winwick Park Ave to A49 SB	34	52	18	53%	35	64	29	83%	35	64	29	83%
	A49 SB to Winwick Link Rd	0	0	0	-	58	85	27	47%	58	85	27	47%
	A49 SB	582	570	-12	-2%	608	593	-15	-2%	608	593	-15	-2%
	A49 SB to Winwick Park Ave	42	43	1	2%	43	43	0	0%	43	43	0	0%
	Winwick Link Rd to A49 SB	675	686	11	2%	755	725	-30	-4%	754	725	-29	-4%
	Winwick Link Rd to Winwick Park Ave	0	0	0	-	0	0	0	-	0	0	0	-
	Winwick Link Rd to A49 NB	132	139	7	5%	145	144	-1	-1%	145	144	-1	-1%
A49 Newton Road/ Delph Lane	A49 NB	1548	1481	-67	-4%	1683	1673	-10	-1%	1707	1694	-13	-1%
	A49 NB to Delp Ln	249	251	2	1%	277	298	21	8%	276	297	21	8%
	A49 SB	1144	1159	15	1%	1260	1245	-15	-1%	1262	1244	-18	-1%
	A49 SB to Delph Ln	105	108	3	3%	116	115	-1	-1%	116	115	-1	-1%
	Delph Ln to A49 NB	207	217	10	5%	214	221	7	3%	214	221	7	3%
	Delph Ln to A49 SB	209	200	-9	-4%	215	203	-12	-6%	215	202	-13	-6%
M62 Junction 9	A49 NB to M62 WB	226	231	5	2%	252	264	12	5%	249	256	7	3%
	A49 NB	934	913	-21	-2%	1041	1042	1	0%	1068	1061	-7	-1%
	A49 NB to M62 EB	280	283	3	1%	302	310	8	3%	315	320	5	2%
	A49 NB to A49 SB (U-Turn)	3	9	6	200%	3	11	8	267%	3	11	8	267%
	M62 EB to A49 NB	611	573	-38	-6%	666	686	20	3%	666	685	19	3%
	M62 EB Mainline	4541	4542	1	0%	4541	4541	0	0%	4541	4541	0	0%
	M62 EB to A49 SB	322	370	48	15%	358	448	90	25%	357	448	91	25%
	A49 SB to M62 EB	188	177	-11	-6%	206	188	-18	-9%	206	187	-19	-9%
	A49 SB	448	474	26	6%	502	516	14	3%	502	515	13	3%
	A49 SB to M62 WB	673	664	-9	-1%	723	699	-24	-3%	719	698	-21	-3%
	M62 WB to A49 SB	564	611	47	8%	566	615	49	9%	564	617	53	9%
	M62 WB Mainline	4583	4587	4	0%	4583	4587	4	0%	4583	4587	4	0%
	M62 WB to A49 NB	267	256	-11	-4%	266	256	-10	-4%	262	256	-6	-2%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	6	14	8	133%	6	16	10	167%	6	16	10	167%
	Birch Rd to A49 SB	16	22	6	38%	16	22	6	38%	16	22	6	38%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	10	10	0	0%	11	11	0	0%	11	11	0	0%
	A49 NB	1475	1470	-5	0%	1657	1685	28	2%	1697	1710	13	1%
	A49 SB	1344	1468	124	9%	1433	1583	150	10%	1431	1583	152	11%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	256	378	122	48%	270	404	134	50%	270	403	133	49%
	A49 SB	628	636	8	1%	663	663	0	0%	661	659	-2	0%
	A49 SB to Cromwell Ave	415	396	-19	-5%	421	403	-18	-4%	422	402	-20	-5%
	Cromwell Ave to A49 NB	157	154	-3	-2%	163	162	-1	-1%	162	162	0	0%
	Cromwell Ave to Sandy Ln West	326	346	20	6%	361	396	35	10%	358	397	39	11%
	Cromwell Ave to A49 SB	404	387	-17	-4%	433	434	1	0%	431	436	5	1%
	Cromwell Ave to Cromwell Ave (U-turn	79	74	-5	-6%	76	71	-5	-7%	76	70	-6	-8%
	A49 NB	1153	1155	2	0%	1310	1321	11	1%	1367	1363	-4	0%
	A49 NB to Sandy Ln West	102	48	-54	-53%	121	52	-69	-57%	121	50	-71	-59%
	A49 NB to Cromwell Ave	712	711	-1	0%	815	822	7	1%	812	828	16	2%
	Sandy Ln West to A49 NB	194	190	-4	-2%	227	253	26	11%	227	252	25	11%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	117	118	1	1%	137	156	19	14%	137	156	19	14%
	Sandy Ln West to Cromwell Ave	201	202	1	0%	235	272	37	16%	235	271	36	15%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	1715	1682	-33	-2%	1899	1879	-20	-1%	1952	1929	-23	-1%
	A49 NB to Junction NINE Retail	129	122	-7	-5%	149	136	-13	-9%	148	139	-9	-6%
	Junction NINE Retail to A49 SB	77	68	-9	-12%	98	83	-15	-15%	98	83	-15	-15%
	Junction NINE Retail to A49 NB	289	265	-24	-8%	370	337	-33	-9%	370	337	-33	-9%
	A49 SB	1031	1019	-12	-1%	1111	1130	19	2%	1107	1125	18	2%
	A49 SB to Junction NINE Retail	110	112	2	2%	115	118	3	3%	114	118	4	4%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	176	177	1	1%	188	198	10	5%	185	195	10	5%
	A49 SB to Long Lane	297	278	-19	-6%	331	312	-19	-6%	332	313	-19	-6%
	A49 SB	601	598	-3	0%	647	658	11	2%	650	661	11	2%
	A49 NB to Hawleys Lane	44	46	2	5%	47	50	3	6%	49	52	3	6%
	A49 NB to Long Lane	151	154	3	2%	166	168	2	1%	177	177	0	0%
	A49 NB	1156	1155	-1	0%	1271	1280	9	1%	1356	1351	-5	0%
	Long Lane to A49 SB	243	296	53	22%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	100	98	-2	-2%	119	116	-3	-3%	120	116	-4	-3%
	Long Lane to A49 NB	276	265	-11	-4%	323	305	-18	-6%	324	306	-18	-6%
	Hawleys Lane to Long Lane	101	97	-4	-4%	108	106	-2	-2%	99	102	3	3%
	Hawleys Lane to A49 SB	74	76	2	3%	82	87	5	6%	77	83	6	8%
	Hawleys Lane to A49 NB	470	442	-28	-6%	510	485	-25	-5%	477	464	-13	-3%

PM 2027 VOLUME COMPARISON – 16:00-17:00 (WARM-UP PERIOD)

		16:00-17:00											
		2027											
Junction/ Movement		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	70	65	-5	-7%	70	70	0	0%	73	72	-1	-1%
	A49 NB	1016	1026	10	1%	1151	1186	35	3%	1156	1187	31	3%
	A49 NB to Winwick Link Rd	634	626	-8	-1%	681	688	7	1%	688	697	9	1%
	Winwick Park Ave to A49 NB	34	34	0	0%	34	34	0	0%	34	34	0	0%
	Winwick Park Ave to Winwick Link Rd	4	4	0	0%	4	4	0	0%	4	4	0	0%
	Winwick Park Ave to A49 SB	33	34	1	3%	34	35	1	3%	34	35	1	3%
	A49 SB to Winwick Link Rd	0	0	0	-	214	214	0	0%	214	214	0	0%
	A49 SB	539	542	3	1%	655	664	9	1%	650	664	14	2%
	A49 SB to Winwick Park Ave	40	38	-2	-5%	51	51	0	0%	51	52	1	2%
	Winwick Link Rd to A49 SB	733	736	3	0%	779	762	-17	-2%	775	763	-12	-2%
	Winwick Link Rd to Winwick Park Ave	1	1	0	0%	1	1	0	0%	1	1	0	0%
	Winwick Link Rd to A49 NB	156	160	4	3%	165	164	-1	-1%	165	164	-1	-1%
A49 Newton Road/ Delph Lane	A49 NB	1542	1534	-8	-1%	1695	1735	40	2%	1708	1743	35	2%
	A49 NB to Delp Ln	258	259	1	0%	308	310	2	1%	307	309	2	1%
	A49 SB	1160	1166	6	1%	1309	1307	-2	0%	1301	1305	4	0%
	A49 SB to Delph Ln	105	105	0	0%	121	119	-2	-2%	120	119	-1	-1%
	Delph Ln to A49 NB	217	225	8	4%	243	246	3	1%	243	247	4	2%
	Delph Ln to A49 SB	214	215	1	0%	228	227	-1	0%	229	226	-3	-1%
M62 Junction 9	A49 NB to M62 WB	227	225	-2	-1%	257	259	2	1%	252	253	1	0%
	A49 NB	906	914	8	1%	995	1036	41	4%	1011	1046	35	3%
	A49 NB to M62 EB	297	287	-10	-3%	304	307	3	1%	311	312	1	0%
	A49 NB to A49 SB (U-Turn)	2	7	5	250%	3	9	6	200%	3	8	5	167%
	M62 EB to A49 NB	617	605	-12	-2%	724	726	2	0%	723	726	3	0%
	M62 EB Mainline	4534	4531	-3	0%	4534	4534	0	0%	4534	4534	0	0%
	M62 EB to A49 SB	317	322	5	2%	379	392	13	3%	378	392	14	4%
	A49 SB to M62 EB	190	192	2	1%	215	217	2	1%	214	216	2	1%
	A49 SB	457	460	3	1%	494	490	-4	-1%	492	490	-2	0%
	A49 SB to M62 WB	684	685	1	0%	782	782	0	0%	779	779	0	0%
	M62 WB to A49 SB	585	589	4	1%	599	605	6	1%	599	605	6	1%
	M62 WB Mainline	4589	4585	-4	0%	4589	4585	-4	0%	4589	4585	-4	0%
	M62 WB to A49 NB	289	289	0	0%	296	296	0	0%	296	295	-1	0%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	5	11	6	120%	6	13	7	117%	6	13	7	117%
	Birch Rd to A49 SB	16	22	6	38%	16	22	6	38%	16	22	6	38%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	11	11	0	0%	11	13	2	18%	11	13	2	18%
	A49 NB	1464	1468	4	0%	1596	1660	64	4%	1622	1672	50	3%
	A49 SB	1369	1386	17	1%	1481	1500	19	1%	1477	1499	22	1%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	270	286	16	6%	299	315	16	5%	299	313	14	5%
	A49 SB	634	640	6	1%	681	678	-3	0%	680	674	-6	-1%
	A49 SB to Cromwell Ave	417	414	-3	-1%	438	431	-7	-2%	437	429	-8	-2%
	Cromwell Ave to A49 NB	142	142	0	0%	129	145	16	12%	129	145	16	12%
	Cromwell Ave to Sandy Ln West	354	349	-5	-1%	302	387	85	28%	309	381	72	23%
	Cromwell Ave to A49 SB	388	398	10	3%	333	431	98	29%	340	425	85	25%
	Cromwell Ave to Cromwell Ave (U-turn	81	82	1	1%	76	78	2	3%	75	78	3	4%
	A49 NB	1135	1134	-1	0%	1238	1291	53	4%	1271	1322	51	4%
	A49 NB to Sandy Ln West	179	73	-106	-59%	249	76	-173	-69%	246	77	-169	-69%
	A49 NB to Cromwell Ave	708	710	2	0%	821	821	0	0%	815	824	9	1%
	Sandy Ln West to A49 NB	211	221	10	5%	261	282	21	8%	263	283	20	8%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	102	92	-10	-10%	123	114	-9	-7%	125	115	-10	-8%
	Sandy Ln West to Cromwell Ave	202	210	8	4%	248	260	12	5%	249	261	12	5%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	1746	1675	-71	-4%	1831	1837	6	0%	1856	1874	18	1%
	A49 NB to Junction NINE Retail	123	136	13	11%	136	147	11	8%	137	152	15	11%
	Junction NINE Retail to A49 SB	47	78	31	66%	79	105	26	33%	79	105	26	33%
	Junction NINE Retail to A49 NB	314	276	-38	-12%	504	374	-130	-26%	504	375	-129	-26%
	A49 SB	1000	1004	4	0%	1004	1091	87	9%	1011	1084	73	7%
	A49 SB to Junction NINE Retail	116	116	0	0%	125	124	-1	-1%	125	124	-1	-1%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	156	161	5	3%	179	183	4	2%	181	183	2	1%
	A49 SB to Long Lane	247	288	41	17%	269	334	65	24%	274	335	61	22%
	A49 SB	610	596	-14	-2%	599	639	40	7%	610	640	30	5%
	A49 NB to Hawleys Lane	46	45	-1	-2%	46	49	3	7%	47	50	3	6%
	A49 NB to Long Lane	157	152	-5	-3%	156	165	9	6%	163	170	7	4%
	A49 NB	1161	1126	-35	-3%	1170	1220	50	4%	1220	1267	47	4%
	Long Lane to A49 SB	267	311	44	16%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	99	94	-5	-5%	113	109	-4	-4%	113	111	-2	-2%
	Long Lane to A49 NB	266	273	7	3%	301	308	7	2%	307	316	9	3%
	Hawleys Lane to Long Lane	97	97	0	0%	100	104	4	4%	98	103	5	5%
	Hawleys Lane to A49 SB	63	69	6	10%	71	81	10	14%	67	76	9	13%
	Hawleys Lane to A49 NB	500	469	-31	-6%	553	513	-40	-7%	520	499	-21	-4%

PM 2032 VOLUME COMPARISON – 16:00-17:00 (WARM-UP PERIOD)

Junction/ Movement		16:00-17:00											
		2032											
		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm + Peel Hall Traff.+ Comm & Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	68	69	1	1%	59	58	-1	-2%	64	64	0	0%
	A49 NB	977	953	-24	-2%	1148	1103	-45	-4%	1165	1121	-44	-4%
	A49 NB to Winwick Link Rd	626	606	-20	-3%	665	610	-55	-8%	692	641	-51	-7%
	Winwick Park Ave to A49 NB	46	141	95	207%	47	214	167	355%	47	217	170	362%
	Winwick Park Ave to Winwick Link Rd	4	3	-1	-25%	4	4	0	0%	4	4	0	0%
	Winwick Park Ave to A49 SB	32	45	13	41%	33	63	30	91%	33	63	30	91%
	A49 SB to Winwick Link Rd	0	0	0	-	208	188	-20	-10%	204	188	-16	-8%
	A49 SB	528	558	30	6%	669	680	11	2%	669	682	13	2%
	A49 SB to Winwick Park Ave	39	39	0	0%	55	50	-5	-9%	56	51	-5	-9%
	Winwick Link Rd to A49 SB	704	707	3	0%	819	795	-24	-3%	819	795	-24	-3%
	Winwick Link Rd to Winwick Park Ave	0	0	0	-	0	0	0	-	0	0	0	-
	Winwick Link Rd to A49 NB	145	148	3	2%	165	161	-4	-2%	165	162	-3	-2%
A49 Newton Road/ Delph Lane	A49 NB	1495	1459	-36	-2%	1648	1619	-29	-2%	1698	1658	-40	-2%
	A49 NB to Delp Ln	264	245	-19	-7%	336	325	-11	-3%	334	321	-13	-4%
	A49 SB	1122	1168	46	4%	1359	1384	25	2%	1361	1385	24	2%
	A49 SB to Delph Ln	98	101	3	3%	122	119	-3	-2%	122	120	-2	-2%
	Delph Ln to A49 NB	221	218	-3	-1%	258	218	-40	-16%	261	232	-29	-11%
	Delph Ln to A49 SB	214	211	-3	-1%	237	212	-25	-11%	240	221	-19	-8%
M62 Junction 9	A49 NB to M62 WB	230	222	-8	-3%	244	233	-11	-5%	248	234	-14	-6%
	A49 NB	873	896	23	3%	915	947	32	3%	963	993	30	3%
	A49 NB to M62 EB	294	284	-10	-3%	278	262	-16	-6%	292	274	-18	-6%
	A49 NB to A49 SB (U-Turn)	2	9	7	350%	3	11	8	267%	2	10	8	400%
	M62 EB to A49 NB	611	543	-68	-11%	769	727	-42	-5%	770	725	-45	-6%
	M62 EB Mainline	4518	4465	-53	-1%	4533	4532	-1	0%	4533	4532	-1	0%
	M62 EB to A49 SB	315	376	61	19%	411	507	96	23%	411	503	92	22%
	A49 SB to M62 EB	181	183	2	1%	222	212	-10	-5%	223	216	-7	-3%
	A49 SB	444	468	24	5%	522	544	22	4%	521	545	24	5%
	A49 SB to M62 WB	664	685	21	3%	808	793	-15	-2%	810	793	-17	-2%
	M62 WB to A49 SB	584	631	47	8%	633	676	43	7%	633	667	34	5%
	M62 WB Mainline	4583	4601	18	0%	4586	4601	15	0%	4586	4601	15	0%
	M62 WB to A49 NB	290	283	-7	-2%	309	300	-9	-3%	309	293	-16	-5%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	6	13	7	117%	6	15	9	150%	6	15	9	150%
	Birch Rd to A49 SB	16	22	6	38%	16	22	6	38%	16	22	6	38%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	9	11	2	22%	10	11	1	10%	10	11	1	10%
	A49 NB	1432	1441	9	1%	1474	1479	5	0%	1549	1563	14	1%
	A49 SB	1347	1489	142	11%	1575	1737	162	10%	1574	1727	153	10%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	282	405	123	44%	343	483	140	41%	343	481	138	40%
	A49 SB	588	623	35	6%	703	720	17	2%	704	720	16	2%
	A49 SB to Cromwell Ave	399	402	3	1%	464	452	-12	-3%	462	449	-13	-3%
	Cromwell Ave to A49 NB	138	140	2	1%	124	141	17	14%	124	142	18	15%
	Cromwell Ave to Sandy Ln West	341	371	30	9%	270	406	136	50%	272	406	134	49%
	Cromwell Ave to A49 SB	371	378	7	2%	304	399	95	31%	307	402	95	31%
	Cromwell Ave to Cromwell Ave (U-turn	81	83	2	2%	77	80	3	4%	78	80	2	3%
	A49 NB	1113	1116	3	0%	1088	1080	-8	-1%	1166	1193	27	2%
	A49 NB to Sandy Ln West	208	81	-127	-61%	318	81	-237	-75%	311	76	-235	-76%
	A49 NB to Cromwell Ave	706	715	9	1%	761	768	7	1%	749	768	19	3%
	Sandy Ln West to A49 NB	206	216	10	5%	286	282	-4	-1%	288	284	-4	-1%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	90	92	2	2%	122	119	-3	-2%	122	120	-2	-2%
	Sandy Ln West to Cromwell Ave	188	213	25	13%	259	275	16	6%	261	277	16	6%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	1751	1669	-82	-5%	1644	1487	-157	-10%	1712	1591	-121	-7%
	A49 NB to Junction NINE Retail	124	132	8	6%	130	137	7	5%	128	140	12	9%
	Junction NINE Retail to A49 SB	32	57	25	78%	57	100	43	75%	58	100	42	72%
	Junction NINE Retail to A49 NB	318	277	-41	-13%	539	464	-75	-14%	534	468	-66	-12%
	A49 SB	933	969	36	4%	990	1097	107	11%	993	1103	110	11%
	A49 SB to Junction NINE Retail	110	114	4	4%	131	132	1	1%	131	131	0	0%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	145	155	10	7%	181	186	5	3%	181	185	4	2%
	A49 SB to Long Lane	212	246	34	16%	235	302	67	29%	238	304	66	28%
	A49 SB	579	594	15	3%	595	666	71	12%	607	675	68	11%
	A49 NB to Hawleys Lane	48	46	-2	-4%	42	39	-3	-7%	45	45	0	0%
	A49 NB to Long Lane	157	155	-2	-1%	136	132	-4	-3%	153	153	0	0%
	A49 NB	1145	1114	-31	-3%	1005	928	-77	-8%	1109	1087	-22	-2%
	Long Lane to A49 SB	308	320	12	4%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	103	95	-8	-8%	112	102	-10	-9%	112	106	-6	-5%
	Long Lane to A49 NB	271	263	-8	-3%	286	278	-8	-3%	290	288	-2	-1%
	Hawleys Lane to Long Lane	92	94	2	2%	93	94	1	1%	90	88	-2	-2%
	Hawleys Lane to A49 SB	52	58	6	12%	57	59	2	4%	51	53	2	4%
	Hawleys Lane to A49 NB	519	483	-36	-7%	545	483	-62	-11%	499	417	-82	-16%

PM 2022 VOLUME COMPARISON – 17:00-18:00 (PEAK PERIOD)

		17:00-18:00											
		2022											
Junction/ Movement		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	80	75	-5	-6%	81	76	-5	-6%	80	76	-4	-5%
	A49 NB	986	937	-49	-5%	1084	1047	-37	-3%	1088	1056	-32	-3%
	A49 NB to Winwick Link Rd	685	669	-16	-2%	716	689	-27	-4%	728	698	-30	-4%
	Winwick Park Ave to A49 NB	36	214	178	494%	36	255	219	608%	36	256	220	611%
	Winwick Park Ave to Winwick Link Rd	3	3	0	0%	3	3	0	0%	3	3	0	0%
	Winwick Park Ave to A49 SB	43	70	27	63%	42	71	29	69%	42	72	30	71%
	A49 SB to Winwick Link Rd	0	0	0	-	53	72	19	36%	53	68	15	28%
	A49 SB	672	658	-14	-2%	676	597	-79	-12%	671	588	-83	-12%
	A49 SB to Winwick Park Ave	48	49	1	2%	49	46	-3	-6%	48	46	-2	-4%
	Winwick Link Rd to A49 SB	617	612	-5	-1%	812	745	-67	-8%	808	744	-64	-8%
	Winwick Link Rd to Winwick Park Ave	0	0	0	-	0	0	0	-	0	0	0	-
	Winwick Link Rd to A49 NB	130	136	6	5%	182	169	-13	-7%	181	167	-14	-8%
A49 Newton Road/ Delph Lane	A49 NB	1546	1464	-82	-5%	1647	1565	-82	-5%	1660	1582	-78	-5%
	A49 NB to Delp Ln	236	234	-2	-1%	249	264	15	6%	248	264	16	6%
	A49 SB	1231	1232	1	0%	1403	1272	-131	-9%	1391	1260	-131	-9%
	A49 SB to Delph Ln	100	106	6	6%	122	115	-7	-6%	121	116	-5	-4%
	Delph Ln to A49 NB	200	213	13	7%	233	234	1	0%	232	231	-1	0%
	Delph Ln to A49 SB	215	213	-2	-1%	236	221	-15	-6%	236	219	-17	-7%
M62 Junction 9	A49 NB to M62 WB	281	279	-2	-1%	311	314	3	1%	299	307	8	3%
	A49 NB	1012	972	-40	-4%	1135	1081	-54	-5%	1139	1102	-37	-3%
	A49 NB to M62 EB	338	335	-3	-1%	373	355	-18	-5%	371	355	-16	-4%
	A49 NB to A49 SB (U-Turn)	3	11	8	267%	3	10	7	233%	3	9	6	200%
	M62 EB to A49 NB	533	498	-35	-7%	528	541	13	2%	528	541	13	2%
	M62 EB Mainline	4065	4052	-13	0%	3989	4011	22	1%	4001	3999	-2	0%
	M62 EB to A49 SB	409	435	26	6%	424	509	85	20%	425	506	81	19%
	A49 SB to M62 EB	228	217	-11	-5%	255	226	-29	-11%	253	226	-27	-11%
	A49 SB	461	479	18	4%	532	508	-24	-5%	533	508	-25	-5%
	A49 SB to M62 WB	759	751	-8	-1%	839	738	-101	-12%	834	728	-106	-13%
	M62 WB to A49 SB	645	705	60	9%	626	615	-11	-2%	629	602	-27	-4%
	M62 WB Mainline	4750	4762	12	0%	4750	4756	6	0%	4750	4756	6	0%
	M62 WB to A49 NB	232	225	-7	-3%	228	202	-26	-11%	233	197	-36	-15%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	7	17	10	143%	7	15	8	114%	7	15	8	114%
	Birch Rd to A49 SB	13	15	2	15%	13	15	2	15%	13	15	2	15%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	16	16	0	0%	18	16	-2	-11%	18	16	-2	-11%
	A49 NB	1636	1590	-46	-3%	1808	1773	-35	-2%	1804	1789	-15	-1%
	A49 SB	1524	1627	103	7%	1575	1632	57	4%	1585	1617	32	2%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	335	452	117	35%	321	461	140	44%	326	457	131	40%
	A49 SB	716	729	13	2%	749	729	-20	-3%	754	727	-27	-4%
	A49 SB to Cromwell Ave	452	434	-18	-4%	451	425	-26	-6%	454	424	-30	-7%
	Cromwell Ave to A49 NB	163	158	-5	-3%	171	172	1	1%	171	173	2	1%
	Cromwell Ave to Sandy Ln West	341	348	7	2%	364	403	39	11%	363	394	31	9%
	Cromwell Ave to A49 SB	454	440	-14	-3%	480	480	0	0%	476	468	-8	-2%
	Cromwell Ave to Cromwell Ave (U-turn	90	82	-8	-9%	90	83	-7	-8%	90	83	-7	-8%
	A49 NB	1283	1243	-40	-3%	1392	1352	-40	-3%	1379	1359	-20	-1%
	A49 NB to Sandy Ln West	106	56	-50	-47%	127	57	-70	-55%	128	58	-70	-55%
	A49 NB to Cromwell Ave	744	744	0	0%	853	874	21	2%	858	860	2	0%
	Sandy Ln West to A49 NB	207	205	-2	-1%	253	272	19	8%	253	275	22	9%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	96	98	2	2%	121	136	15	12%	120	137	17	14%
	Sandy Ln West to Cromwell Ave	246	251	5	2%	311	340	29	9%	310	342	32	10%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	1843	1777	-66	-4%	2029	1981	-48	-2%	2022	1969	-53	-3%
	A49 NB to Junction NINE Retail	150	139	-11	-7%	180	168	-12	-7%	161	154	-7	-4%
	Junction NINE Retail to A49 SB	80	69	-11	-14%	105	88	-17	-16%	105	88	-17	-16%
	Junction NINE Retail to A49 NB	282	261	-21	-7%	363	328	-35	-10%	364	328	-36	-10%
	A49 SB	1132	1127	-5	0%	1204	1200	-4	0%	1205	1190	-15	-1%
	A49 SB to Junction NINE Retail	130	137	7	5%	131	132	1	1%	132	131	-1	-1%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	197	199	2	1%	209	213	4	2%	214	219	5	2%
	A49 SB to Long Lane	320	299	-21	-7%	342	330	-12	-4%	347	326	-21	-6%
	A49 SB	692	691	-1	0%	756	742	-14	-2%	760	745	-15	-2%
	A49 NB to Hawleys Lane	48	49	1	2%	52	52	0	0%	56	54	-2	-4%
	A49 NB to Long Lane	153	155	2	1%	166	171	5	3%	165	172	7	4%
	A49 NB	1268	1232	-36	-3%	1344	1314	-30	-2%	1359	1343	-16	-1%
	Long Lane to A49 SB	278	328	50	18%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	128	121	-7	-5%	145	139	-6	-4%	128	126	-2	-2%
	Long Lane to A49 NB	346	321	-25	-7%	390	363	-27	-7%	333	327	-6	-2%
	Hawleys Lane to Long Lane	90	86	-4	-4%	99	97	-2	-2%	104	99	-5	-5%
	Hawleys Lane to A49 SB	60	59	-1	-2%	68	73	5	7%	66	71	5	8%
	Hawleys Lane to A49 NB	385	373	-12	-3%	466	469	3	1%	489	452	-37	-8%

PM 2027 VOLUME COMPARISON – 17:00-18:00 (PEAK PERIOD)

		17:00-18:00											
		2027											
Junction/ Movement		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	74	73	-1	-1%	75	74	-1	-1%	75	77	2	3%
	A49 NB	995	1018	23	2%	1082	1119	37	3%	1091	1137	46	4%
	A49 NB to Winwick Link Rd	689	689	0	0%	706	716	10	1%	717	730	13	2%
	Winwick Park Ave to A49 NB	36	37	1	3%	36	36	0	0%	36	36	0	0%
	Winwick Park Ave to Winwick Link Rd	3	3	0	0%	3	3	0	0%	3	3	0	0%
	Winwick Park Ave to A49 SB	43	43	0	0%	42	41	-1	-2%	41	41	0	0%
	A49 SB to Winwick Link Rd	0	0	0	-	179	183	4	2%	151	153	2	1%
	A49 SB	597	597	0	0%	668	683	15	2%	668	677	9	1%
	A49 SB to Winwick Park Ave	42	39	-3	-7%	55	55	0	0%	59	59	0	0%
	Winwick Link Rd to A49 SB	683	690	7	1%	830	824	-6	-1%	834	826	-8	-1%
	Winwick Link Rd to Winwick Park Ave	0	0	0	-	0	0	0	-	0	0	0	-
	Winwick Link Rd to A49 NB	152	160	8	5%	182	186	4	2%	184	191	7	4%
A49 Newton Road/ Delph Lane	A49 NB	1541	1556	15	1%	1609	1650	41	3%	1633	1694	61	4%
	A49 NB to Delp Ln	251	248	-3	-1%	273	279	6	2%	275	278	3	1%
	A49 SB	1224	1231	7	1%	1416	1422	6	0%	1421	1417	-4	0%
	A49 SB to Delph Ln	97	97	0	0%	120	123	3	3%	122	124	2	2%
	Delph Ln to A49 NB	211	212	1	0%	250	253	3	1%	248	250	2	1%
	Delph Ln to A49 SB	220	218	-2	-1%	246	246	0	0%	242	244	2	1%
M62 Junction 9	A49 NB to M62 WB	287	277	-10	-3%	306	308	2	1%	294	306	12	4%
	A49 NB	961	978	17	2%	1053	1094	41	4%	1073	1136	63	6%
	A49 NB to M62 EB	347	339	-8	-2%	350	365	15	4%	351	370	19	5%
	A49 NB to A49 SB (U-Turn)	3	10	7	233%	3	10	7	233%	3	11	8	267%
	M62 EB to A49 NB	567	561	-6	-1%	574	576	2	0%	574	577	3	1%
	M62 EB Mainline	4059	4054	-5	0%	3973	3975	2	0%	3974	3967	-7	0%
	M62 EB to A49 SB	404	401	-3	-1%	463	473	10	2%	464	472	8	2%
	A49 SB to M62 EB	227	227	0	0%	256	256	0	0%	261	261	0	0%
	A49 SB	459	464	5	1%	526	523	-3	-1%	525	517	-8	-2%
	A49 SB to M62 WB	758	759	1	0%	880	882	2	0%	876	877	1	0%
	M62 WB to A49 SB	692	696	4	1%	682	682	0	0%	682	684	2	0%
	M62 WB Mainline	4753	4758	5	0%	4753	4758	5	0%	4753	4758	5	0%
	M62 WB to A49 NB	259	259	0	0%	253	253	0	0%	253	253	0	0%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	6	14	8	133%	6	14	8	133%	6	15	9	150%
	Birch Rd to A49 SB	13	15	2	15%	13	15	2	15%	13	15	2	15%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	14	16	2	14%	13	17	4	31%	13	17	4	31%
	A49 NB	1597	1604	7	0%	1725	1774	49	3%	1716	1814	98	6%
	A49 SB	1564	1571	7	0%	1679	1682	3	0%	1680	1675	-5	0%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	342	355	13	4%	376	383	7	2%	373	379	6	2%
	A49 SB	729	741	12	2%	798	784	-14	-2%	802	784	-18	-2%
	A49 SB to Cromwell Ave	455	453	-2	0%	490	478	-12	-2%	491	479	-12	-2%
	Cromwell Ave to A49 NB	147	144	-3	-2%	143	152	9	6%	139	151	12	9%
	Cromwell Ave to Sandy Ln West	368	359	-9	-2%	297	380	83	28%	294	377	83	28%
	Cromwell Ave to A49 SB	442	439	-3	-1%	388	471	83	21%	385	465	80	21%
	Cromwell Ave to Cromwell Ave (U-turn	93	94	1	1%	96	95	-1	-1%	96	94	-2	-2%
	A49 NB	1244	1236	-8	-1%	1315	1317	2	0%	1290	1356	66	5%
	A49 NB to Sandy Ln West	181	85	-96	-53%	256	90	-166	-65%	262	90	-172	-66%
	A49 NB to Cromwell Ave	736	739	3	0%	845	863	18	2%	847	855	8	1%
	Sandy Ln West to A49 NB	226	239	13	6%	280	299	19	7%	278	299	21	8%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	84	73	-11	-13%	111	96	-15	-14%	109	96	-13	-12%
	Sandy Ln West to Cromwell Ave	243	245	2	1%	321	317	-4	-1%	319	318	-1	0%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	1855	1790	-65	-4%	1938	1925	-13	-1%	1922	1955	33	2%
	A49 NB to Junction NINE Retail	146	152	6	4%	164	184	20	12%	158	167	9	6%
	Junction NINE Retail to A49 SB	50	81	31	62%	83	113	30	36%	83	113	30	36%
	Junction NINE Retail to A49 NB	299	266	-33	-11%	501	367	-134	-27%	501	365	-136	-27%
	A49 SB	1107	1110	3	0%	1132	1192	60	5%	1131	1186	55	5%
	A49 SB to Junction NINE Retail	141	141	0	0%	151	145	-6	-4%	152	147	-5	-3%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	177	185	8	5%	197	204	7	4%	198	206	8	4%
	A49 SB to Long Lane	274	318	44	16%	286	351	65	23%	287	350	63	22%
	A49 SB	710	694	-16	-2%	733	753	20	3%	738	753	15	2%
	A49 NB to Hawleys Lane	50	51	1	2%	52	50	-2	-4%	52	54	2	4%
	A49 NB to Long Lane	152	166	14	9%	156	166	10	6%	156	176	20	13%
	A49 NB	1252	1221	-31	-2%	1250	1254	4	0%	1254	1316	62	5%
	Long Lane to A49 SB	303	352	49	16%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	127	116	-11	-9%	140	127	-13	-9%	131	118	-13	-10%
	Long Lane to A49 NB	347	329	-18	-5%	380	375	-5	-1%	335	336	1	0%
	Hawleys Lane to Long Lane	86	88	2	2%	92	96	4	4%	97	98	1	1%
	Hawleys Lane to A49 SB	55	55	0	0%	60	63	3	5%	58	63	5	9%
	Hawleys Lane to A49 NB	407	400	-7	-2%	471	484	13	3%	491	470	-21	-4%

PM 2032 VOLUME COMPARISON – 17:00-18:00 (PEAK PERIOD)

		17:00-18:00											
		2032											
Junction/ Movement		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm + Peel Hall Traff.+ Comm & Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	63	75	12	19%	67	58	-9	-13%	63	69	6	10%
	A49 NB	891	974	83	9%	1064	1109	45	4%	1066	1112	46	4%
	A49 NB to Winwick Link Rd	624	683	59	9%	683	652	-31	-5%	682	661	-21	-3%
	Winwick Park Ave to A49 NB	45	183	138	307%	49	239	190	388%	49	231	182	371%
	Winwick Park Ave to Winwick Link Rd	3	3	0	0%	3	5	2	67%	3	4	1	33%
	Winwick Park Ave to A49 SB	38	58	20	53%	43	70	27	63%	43	67	24	56%
	A49 SB to Winwick Link Rd	0	0	0	-	175	162	-13	-7%	143	131	-12	-8%
	A49 SB	543	614	71	13%	684	679	-5	-1%	690	662	-28	-4%
	A49 SB to Winwick Park Ave	35	40	5	14%	56	50	-6	-11%	66	56	-10	-15%
	Winwick Link Rd to A49 SB	608	645	37	6%	863	848	-15	-2%	867	821	-46	-5%
	Winwick Link Rd to Winwick Park Ave	0	0	0	-	1	1	0	0%	1	1	0	0%
	Winwick Link Rd to A49 NB	126	143	17	13%	189	200	11	6%	194	190	-4	-2%
A49 Newton Road/ Delph Lane	A49 NB	1387	1503	116	8%	1554	1539	-15	-1%	1547	1591	44	3%
	A49 NB to Delp Ln	236	233	-3	-1%	303	302	-1	0%	304	295	-9	-3%
	A49 SB	1102	1223	121	11%	1470	1460	-10	-1%	1477	1419	-58	-4%
	A49 SB to Delph Ln	87	97	10	11%	123	126	3	2%	122	120	-2	-2%
	Delph Ln to A49 NB	183	211	28	15%	255	245	-10	-4%	256	228	-28	-11%
	Delph Ln to A49 SB	195	219	24	12%	251	235	-16	-6%	255	221	-34	-13%
M62 Junction 9	A49 NB to M62 WB	260	281	21	8%	288	280	-8	-3%	280	267	-13	-5%
	A49 NB	862	967	105	12%	977	960	-17	-2%	970	1022	52	5%
	A49 NB to M62 EB	330	351	21	6%	315	278	-37	-12%	323	316	-7	-2%
	A49 NB to A49 SB (U-Turn)	3	10	7	233%	3	10	7	233%	3	9	6	200%
	M62 EB to A49 NB	513	501	-12	-2%	611	604	-7	-1%	611	591	-20	-3%
	M62 EB Mainline	3816	2910	-906	-24%	4012	4062	50	1%	3968	4035	67	2%
	M62 EB to A49 SB	361	445	84	23%	502	619	117	23%	503	595	92	18%
	A49 SB to M62 EB	195	215	20	10%	261	249	-12	-5%	272	244	-28	-10%
	A49 SB	418	474	56	13%	551	560	9	2%	547	536	-11	-2%
	A49 SB to M62 WB	682	750	68	10%	905	870	-35	-4%	911	852	-59	-6%
	M62 WB to A49 SB	656	736	80	12%	721	739	18	2%	721	720	-1	0%
	M62 WB Mainline	4608	4766	158	3%	4760	4772	12	0%	4760	4764	4	0%
	M62 WB to A49 NB	244	259	15	6%	268	253	-15	-6%	268	251	-17	-6%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	6	16	10	167%	6	15	9	150%	6	14	8	133%
	Birch Rd to A49 SB	12	15	3	25%	13	15	2	15%	13	14	1	8%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	12	13	1	8%	12	13	1	8%	11	13	2	18%
	A49 NB	1463	1609	146	10%	1590	1555	-35	-2%	1567	1624	57	4%
	A49 SB	1441	1655	214	15%	1781	1915	134	8%	1776	1845	69	4%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	345	476	131	38%	436	577	141	32%	429	549	120	28%
	A49 SB	656	682	26	4%	824	811	-13	-2%	821	772	-49	-6%
	A49 SB to Cromwell Ave	418	434	16	4%	512	492	-20	-4%	510	475	-35	-7%
	Cromwell Ave to A49 NB	135	143	8	6%	131	148	17	13%	132	144	12	9%
	Cromwell Ave to Sandy Ln West	334	395	61	18%	254	395	141	56%	260	383	123	47%
	Cromwell Ave to A49 SB	398	425	27	7%	344	437	93	27%	343	422	79	23%
	Cromwell Ave to Cromwell Ave (U-turn	86	95	9	10%	96	96	0	0%	95	93	-2	-2%
	A49 NB	1149	1252	103	9%	1176	1132	-44	-4%	1138	1200	62	5%
	A49 NB to Sandy Ln West	214	97	-117	-55%	323	95	-228	-71%	318	92	-226	-71%
	A49 NB to Cromwell Ave	683	736	53	8%	778	787	9	1%	783	762	-21	-3%
	Sandy Ln West to A49 NB	214	230	16	7%	303	299	-4	-1%	302	295	-7	-2%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	72	74	2	3%	106	99	-7	-7%	106	96	-10	-9%
	Sandy Ln West to Cromwell Ave	216	251	35	16%	329	341	12	4%	327	339	12	4%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	1754	1809	55	3%	1743	1565	-178	-10%	1713	1605	-108	-6%
	A49 NB to Junction NINE Retail	131	150	19	15%	150	159	9	6%	144	144	0	0%
	Junction NINE Retail to A49 SB	34	58	24	71%	58	109	51	88%	58	107	49	84%
	Junction NINE Retail to A49 NB	287	268	-19	-7%	559	470	-89	-16%	542	468	-74	-14%
	A49 SB	989	1047	58	6%	1103	1183	80	7%	1101	1128	27	2%
	A49 SB to Junction NINE Retail	128	133	5	4%	158	152	-6	-4%	157	145	-12	-8%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	161	170	9	6%	196	203	7	4%	196	191	-5	-3%
	A49 SB to Long Lane	223	266	43	19%	237	321	84	35%	244	313	69	28%
	A49 SB	641	669	28	4%	731	767	36	5%	725	744	19	3%
	A49 NB to Hawleys Lane	48	53	5	10%	46	40	-6	-13%	45	41	-4	-9%
	A49 NB to Long Lane	148	163	15	10%	139	132	-7	-5%	134	145	11	8%
	A49 NB	1176	1237	61	5%	1098	985	-113	-10%	1067	1078	11	1%
	Long Lane to A49 SB	318	370	52	16%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	120	117	-3	-3%	135	119	-16	-12%	130	103	-27	-21%
	Long Lane to A49 NB	313	333	20	6%	351	334	-17	-5%	321	296	-25	-8%
	Hawleys Lane to Long Lane	75	91	16	21%	84	83	-1	-1%	91	83	-8	-9%
	Hawleys Lane to A49 SB	46	54	8	17%	46	51	5	11%	50	40	-10	-20%
	Hawleys Lane to A49 NB	407	399	-8	-2%	440	406	-34	-8%	475	374	-101	-21%

PM 2022 VOLUME COMPARISON – 18:00-18:30 (COOL-DOWN PERIOD)

		18:00-18:30											
		2022											
Junction/ Movement		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	41	39	-2	-5%	50	40	-10	-20%	48	40	-8	-17%
	A49 NB	493	445	-48	-10%	517	421	-96	-19%	518	430	-88	-17%
	A49 NB to Winwick Link Rd	326	310	-16	-5%	337	270	-67	-20%	334	277	-57	-17%
	Winwick Park Ave to A49 NB	21	113	92	438%	21	120	99	471%	21	120	99	471%
	Winwick Park Ave to Winwick Link Rd	2	2	0	0%	2	2	0	0%	2	2	0	0%
	Winwick Park Ave to A49 SB	21	40	19	90%	20	36	16	80%	21	39	18	86%
	A49 SB to Winwick Link Rd	0	0	0	-	26	25	-1	-4%	25	23	-2	-8%
	A49 SB	337	322	-15	-4%	355	230	-125	-35%	358	223	-135	-38%
	A49 SB to Winwick Park Ave	23	24	1	4%	24	13	-11	-46%	24	20	-4	-17%
	Winwick Link Rd to A49 SB	307	311	4	1%	318	290	-28	-9%	323	304	-19	-6%
	Winwick Link Rd to Winwick Park Ave	0	0	0	-	0	0	0	-	0	0	0	-
	Winwick Link Rd to A49 NB	73	79	6	8%	61	59	-2	-3%	61	65	4	7%
A49 Newton Road/ Delph Lane	A49 NB	766	705	-61	-8%	798	655	-143	-18%	801	663	-138	-17%
	A49 NB to Delp Ln	124	113	-11	-9%	125	120	-5	-4%	126	124	-2	-2%
	A49 SB	606	619	13	2%	637	508	-129	-20%	645	517	-128	-20%
	A49 SB to Delph Ln	58	58	0	0%	58	49	-9	-16%	59	50	-9	-15%
	Delph Ln to A49 NB	97	100	3	3%	106	87	-19	-18%	105	93	-12	-11%
	Delph Ln to A49 SB	113	112	-1	-1%	124	100	-24	-19%	123	107	-16	-13%
M62 Junction 9	A49 NB to M62 WB	132	136	4	3%	160	128	-32	-20%	165	128	-37	-22%
	A49 NB	525	511	-14	-3%	572	455	-117	-20%	576	458	-118	-20%
	A49 NB to M62 EB	190	193	3	2%	206	162	-44	-21%	204	163	-41	-20%
	A49 NB to A49 SB (U-Turn)	2	6	4	200%	2	6	4	200%	2	5	3	150%
	M62 EB to A49 NB	261	213	-48	-18%	250	251	1	0%	250	257	7	3%
	M62 EB Mainline	1767	1726	-41	-2%	1820	1809	-11	-1%	1789	1833	44	2%
	M62 EB to A49 SB	219	249	30	14%	197	246	49	25%	197	255	58	29%
	A49 SB to M62 EB	96	90	-6	-6%	82	61	-21	-26%	84	67	-17	-20%
	A49 SB	240	271	31	13%	294	250	-44	-15%	291	254	-37	-13%
	A49 SB to M62 WB	379	364	-15	-4%	396	297	-99	-25%	400	298	-102	-26%
	M62 WB to A49 SB	345	373	28	8%	342	284	-58	-17%	346	282	-64	-18%
	M62 WB Mainline	2149	2156	7	0%	2149	2140	-9	0%	2149	2144	-5	0%
	M62 WB to A49 NB	102	98	-4	-4%	100	75	-25	-25%	100	74	-26	-26%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	3	8	5	167%	3	8	5	167%	3	8	5	167%
	Birch Rd to A49 SB	8	11	3	38%	8	11	3	38%	8	10	2	25%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	9	10	1	11%	10	7	-3	-30%	9	6	-3	-33%
	A49 NB	843	851	8	1%	936	750	-186	-20%	947	755	-192	-20%
	A49 SB	810	898	88	11%	836	774	-62	-7%	836	786	-50	-6%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	165	244	79	48%	169	216	47	28%	167	220	53	32%
	A49 SB	405	403	-2	0%	430	352	-78	-18%	439	367	-72	-16%
	A49 SB to Cromwell Ave	236	213	-23	-10%	238	185	-53	-22%	240	182	-58	-24%
	Cromwell Ave to A49 NB	88	87	-1	-1%	92	73	-19	-21%	92	68	-24	-26%
	Cromwell Ave to Sandy Ln West	180	189	9	5%	190	144	-46	-24%	193	136	-57	-30%
	Cromwell Ave to A49 SB	207	201	-6	-3%	227	154	-73	-32%	229	148	-81	-35%
	Cromwell Ave to Cromwell Ave (U-turn	43	41	-2	-5%	43	33	-10	-23%	43	33	-10	-23%
	A49 NB	636	644	8	1%	721	610	-111	-15%	730	614	-116	-16%
	A49 NB to Sandy Ln West	55	30	-25	-45%	61	25	-36	-59%	58	26	-32	-55%
	A49 NB to Cromwell Ave	359	362	3	1%	429	380	-49	-11%	417	378	-39	-9%
	Sandy Ln West to A49 NB	109	112	3	3%	126	127	1	1%	125	130	5	4%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	54	51	-3	-6%	60	64	4	7%	60	65	5	8%
	Sandy Ln West to Cromwell Ave	111	113	2	2%	118	124	6	5%	118	129	11	9%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	926	919	-7	-1%	1049	884	-165	-16%	1046	902	-144	-14%
	A49 NB to Junction NINE Retail	47	43	-4	-9%	62	54	-8	-13%	66	62	-4	-6%
	Junction NINE Retail to A49 SB	38	35	-3	-8%	40	35	-5	-13%	40	35	-5	-13%
	Junction NINE Retail to A49 NB	131	128	-3	-2%	142	127	-15	-11%	142	126	-16	-11%
	A49 SB	594	585	-9	-2%	645	513	-132	-20%	657	524	-133	-20%
	A49 SB to Junction NINE Retail	73	69	-4	-5%	73	63	-10	-14%	73	66	-7	-10%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	99	100	1	1%	105	92	-13	-12%	108	96	-12	-11%
	A49 SB to Long Lane	178	165	-13	-7%	182	145	-37	-20%	182	143	-39	-21%
	A49 SB	354	362	8	2%	387	320	-67	-17%	387	326	-61	-16%
	A49 NB to Hawleys Lane	29	28	-1	-3%	29	27	-2	-7%	30	27	-3	-10%
	A49 NB to Long Lane	87	82	-5	-6%	89	79	-10	-11%	85	79	-6	-7%
	A49 NB	641	648	7	1%	702	597	-105	-15%	704	602	-102	-14%
	Long Lane to A49 SB	84	118	34	40%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	36	44	8	22%	59	52	-7	-12%	63	60	-3	-5%
	Long Lane to A49 NB	100	104	4	4%	163	129	-34	-21%	180	161	-19	-11%
	Hawleys Lane to Long Lane	51	53	2	4%	53	48	-5	-9%	53	46	-7	-13%
	Hawleys Lane to A49 SB	34	31	-3	-9%	40	38	-2	-5%	40	37	-3	-8%
	Hawleys Lane to A49 NB	238	213	-25	-11%	255	225	-30	-12%	229	213	-16	-7%

PM 2027 VOLUME COMPARISON – 18:00-18:30 (COOL-DOWN PERIOD)

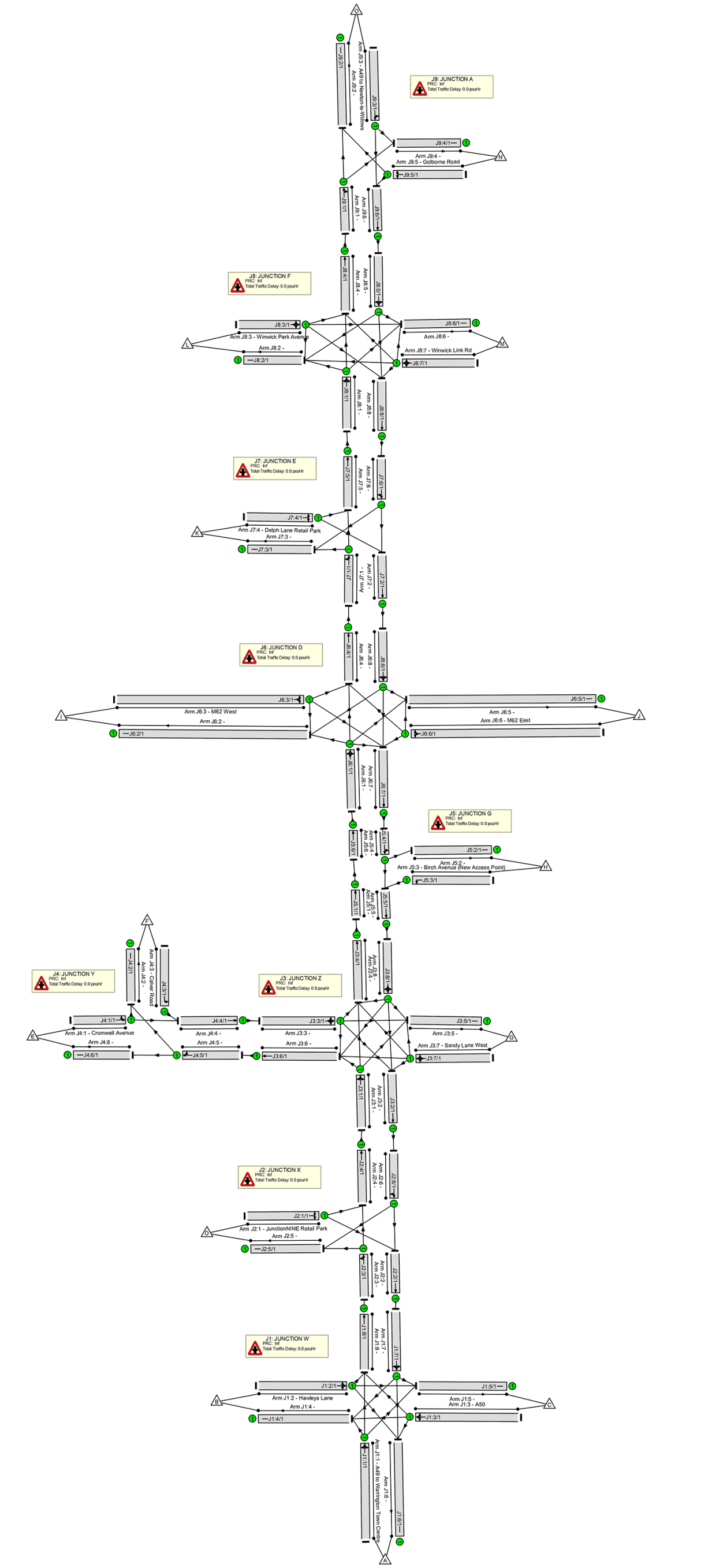
		18:00-18:30											
		2027											
Junction/ Movement		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm+ Peel Hall Traff.+ Comm& Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	42	41	-1	-2%	42	44	2	5%	39	43	4	10%
	A49 NB	467	483	16	3%	537	538	1	0%	526	531	5	1%
	A49 NB to Winwick Link Rd	321	317	-4	-1%	334	329	-5	-1%	315	323	8	3%
	Winwick Park Ave to A49 NB	21	21	0	0%	21	21	0	0%	21	21	0	0%
	Winwick Park Ave to Winwick Link Rd	2	2	0	0%	2	2	0	0%	2	2	0	0%
	Winwick Park Ave to A49 SB	20	20	0	0%	21	22	1	5%	22	21	-1	-5%
	A49 SB to Winwick Link Rd	0	0	0	-	79	81	2	3%	80	76	-4	-5%
	A49 SB	296	297	1	0%	381	381	0	0%	386	374	-12	-3%
	A49 SB to Winwick Park Ave	20	22	2	10%	28	28	0	0%	34	30	-4	-12%
	Winwick Link Rd to A49 SB	347	349	2	1%	357	345	-12	-3%	357	338	-19	-5%
	Winwick Link Rd to Winwick Park Ave	0	0	0	-	0	0	0	-	0	0	0	-
	Winwick Link Rd to A49 NB	93	96	3	3%	92	91	-1	-1%	91	83	-8	-9%
A49 Newton Road/ Delph Lane	A49 NB	741	750	9	1%	807	802	-5	-1%	779	790	11	1%
	A49 NB to Delp Ln	121	118	-3	-2%	138	140	2	1%	137	142	5	4%
	A49 SB	611	609	-2	0%	699	688	-11	-2%	698	677	-21	-3%
	A49 SB to Delph Ln	56	57	1	2%	61	57	-4	-7%	61	58	-3	-5%
	Delph Ln to A49 NB	95	96	1	1%	110	112	2	2%	104	107	3	3%
	Delph Ln to A49 SB	114	115	1	1%	125	125	0	0%	123	122	-1	-1%
M62 Junction 9	A49 NB to M62 WB	139	133	-6	-4%	155	156	1	1%	163	155	-8	-5%
	A49 NB	507	515	8	2%	559	565	6	1%	530	554	24	5%
	A49 NB to M62 EB	198	196	-2	-1%	201	199	-2	-1%	196	199	3	2%
	A49 NB to A49 SB (U-Turn)	2	4	2	100%	2	5	3	150%	2	5	3	150%
	M62 EB to A49 NB	247	241	-6	-2%	274	272	-2	-1%	274	272	-2	-1%
	M62 EB Mainline	1763	1767	4	0%	1819	1812	-7	0%	1834	1818	-16	-1%
	M62 EB to A49 SB	233	233	0	0%	205	212	7	3%	206	213	7	3%
	A49 SB to M62 EB	87	85	-2	-2%	89	88	-1	-1%	91	91	0	0%
	A49 SB	256	266	10	4%	303	300	-3	-1%	297	288	-9	-3%
	A49 SB to M62 WB	376	371	-5	-1%	432	430	-2	0%	436	420	-16	-4%
	M62 WB to A49 SB	362	367	5	1%	366	353	-13	-4%	366	351	-15	-4%
	M62 WB Mainline	2153	2147	-6	0%	2153	2147	-6	0%	2153	2147	-6	0%
	M62 WB to A49 NB	109	110	1	1%	111	107	-4	-4%	112	106	-6	-5%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	4	6	2	50%	5	7	2	40%	4	7	3	75%
	Birch Rd to A49 SB	8	11	3	38%	8	11	3	38%	8	11	3	38%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	6	7	1	17%	8	8	0	0%	6	8	2	33%
	A49 NB	843	842	-1	0%	911	931	20	2%	894	922	28	3%
	A49 SB	853	874	21	2%	882	861	-21	-2%	876	853	-23	-3%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	187	191	4	2%	180	187	7	4%	178	183	5	3%
	A49 SB	421	420	-1	0%	451	434	-17	-4%	452	432	-20	-4%
	A49 SB to Cromwell Ave	244	239	-5	-2%	241	228	-13	-5%	242	229	-13	-5%
	Cromwell Ave to A49 NB	77	76	-1	-1%	70	79	9	13%	71	78	7	10%
	Cromwell Ave to Sandy Ln West	193	195	2	1%	173	200	27	16%	173	190	17	10%
	Cromwell Ave to A49 SB	200	206	6	3%	181	216	35	19%	182	205	23	13%
	Cromwell Ave to Cromwell Ave (U-turn	46	47	1	2%	45	46	1	2%	45	45	0	0%
	A49 NB	638	639	1	0%	687	714	27	4%	675	719	44	7%
	A49 NB to Sandy Ln West	90	41	-49	-54%	108	42	-66	-61%	104	38	-66	-63%
	A49 NB to Cromwell Ave	360	361	1	0%	429	431	2	0%	436	423	-13	-3%
	Sandy Ln West to A49 NB	117	120	3	3%	159	161	2	1%	158	162	4	3%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	43	40	-3	-7%	57	53	-4	-7%	57	52	-5	-9%
	Sandy Ln West to Cromwell Ave	111	113	2	2%	136	143	7	5%	136	143	7	5%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	948	919	-29	-3%	1012	1028	16	2%	1002	1025	23	2%
	A49 NB to Junction NINE Retail	48	43	-5	-10%	58	65	7	12%	63	70	7	11%
	Junction NINE Retail to A49 SB	24	40	16	67%	31	42	11	35%	31	42	11	35%
	Junction NINE Retail to A49 NB	146	133	-13	-9%	196	143	-53	-27%	196	144	-52	-27%
	A49 SB	592	587	-5	-1%	622	633	11	2%	621	619	-2	0%
	A49 SB to Junction NINE Retail	75	75	0	0%	80	80	0	0%	80	79	-1	-1%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	94	96	2	2%	100	99	-1	-1%	98	100	2	2%
	A49 SB to Long Lane	143	164	21	15%	148	175	27	18%	151	175	24	16%
	A49 SB	374	365	-9	-2%	398	389	-9	-2%	397	379	-18	-5%
	A49 NB to Hawleys Lane	30	26	-4	-13%	29	31	2	7%	28	30	2	7%
	A49 NB to Long Lane	91	79	-12	-13%	89	89	0	0%	83	88	5	6%
	A49 NB	656	643	-13	-2%	657	673	16	2%	632	683	51	8%
	Long Lane to A49 SB	105	106	1	1%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	37	34	-3	-8%	48	50	2	4%	59	58	-1	-2%
	Long Lane to A49 NB	107	98	-9	-8%	139	145	6	4%	177	175	-2	-1%
	Hawleys Lane to Long Lane	51	52	1	2%	51	52	1	2%	47	50	3	6%
	Hawleys Lane to A49 SB	31	32	1	3%	32	37	5	16%	33	36	3	9%
	Hawleys Lane to A49 NB	242	225	-17	-7%	274	269	-5	-2%	260	231	-29	-11%

PM 2032 VOLUME COMPARISON – 18:00-18:30 (COOL-DOWN PERIOD)

		18:00-18:30											
		2032											
Junction/ Movement		Vehicle Flow		Difference		Vehicle Flow		Difference		Vehicle Flow		Difference	
Junction	Approach	Back+Comm Traff.	Back+ Comm+ Peel Hall Traff.	Diff	%	Back+ Comm Traff.+ Comm Mit.	Back+ Comm+ Peel Hall Traff.+ Comm Mit.	Diff	%	Back+ Comm Traff.+ Comm& Prop Mit.	Back+ Comm + Peel Hall Traff.+ Comm & Prop Mit.	Diff	%
A49 Newton Road/ A49 Winwick Link Road/ Winwick Park Avenue	A49 NB to Winwick Park Ave	37	38	1	3%	37	32	-5	-14%	32	27	-5	-16%
	A49 NB	417	431	14	3%	538	474	-64	-12%	528	434	-94	-18%
	A49 NB to Winwick Link Rd	291	309	18	6%	322	286	-36	-11%	295	260	-35	-12%
	Winwick Park Ave to A49 NB	26	106	80	308%	28	129	101	361%	28	130	102	364%
	Winwick Park Ave to Winwick Link Rd	2	1	-1	-50%	2	2	0	0%	2	2	0	0%
	Winwick Park Ave to A49 SB	18	43	25	139%	21	50	29	138%	21	47	26	124%
	A49 SB to Winwick Link Rd	0	0	0	-	77	61	-16	-21%	75	58	-17	-23%
	A49 SB	271	296	25	9%	385	294	-91	-24%	390	300	-90	-23%
	A49 SB to Winwick Park Ave	19	18	-1	-5%	29	18	-11	-38%	36	25	-11	-31%
	Winwick Link Rd to A49 SB	310	312	2	1%	391	345	-46	-12%	387	318	-69	-18%
	Winwick Link Rd to Winwick Park Ave	0	0	0	-	0	0	0	-	0	0	0	-
	Winwick Link Rd to A49 NB	80	82	2	3%	87	80	-7	-8%	83	74	-9	-11%
A49 Newton Road/ Delph Lane	A49 NB	662	691	29	4%	789	687	-102	-13%	743	622	-121	-16%
	A49 NB to Delp Ln	113	102	-11	-10%	155	136	-19	-12%	155	121	-34	-22%
	A49 SB	552	595	43	8%	732	636	-96	-13%	732	613	-119	-16%
	A49 SB to Delph Ln	46	49	3	7%	65	52	-13	-20%	67	53	-14	-21%
	Delph Ln to A49 NB	87	97	10	11%	112	108	-4	-4%	114	97	-17	-15%
	Delph Ln to A49 SB	103	109	6	6%	124	122	-2	-2%	128	111	-17	-13%
M62 Junction 9	A49 NB to M62 WB	121	133	12	10%	138	127	-11	-8%	152	128	-24	-16%
	A49 NB	451	493	42	9%	536	456	-80	-15%	491	422	-69	-14%
	A49 NB to M62 EB	175	191	16	9%	185	155	-30	-16%	169	143	-26	-15%
	A49 NB to A49 SB (U-Turn)	1	6	5	500%	2	5	3	150%	2	5	3	150%
	M62 EB to A49 NB	222	205	-17	-8%	288	274	-14	-5%	288	242	-46	-16%
	M62 EB Mainline	1590	1743	153	10%	1815	1775	-40	-2%	1855	1733	-122	-7%
	M62 EB to A49 SB	210	246	36	17%	225	297	72	32%	225	274	49	22%
	A49 SB to M62 EB	85	89	4	5%	83	72	-11	-13%	94	75	-19	-20%
	A49 SB	226	253	27	12%	324	314	-10	-3%	311	288	-23	-7%
	A49 SB to M62 WB	340	350	10	3%	449	374	-75	-17%	455	361	-94	-21%
	M62 WB to A49 SB	338	344	6	2%	381	346	-35	-9%	381	316	-65	-17%
	M62 WB Mainline	2016	2159	143	7%	2158	2165	7	0%	2158	2120	-38	-2%
	M62 WB to A49 NB	104	98	-6	-6%	119	92	-27	-23%	119	84	-35	-29%
A49 Winwick Rd/ Birch Ave	A49 SB to Birch Ave	2	8	6	300%	3	7	4	133%	3	7	4	133%
	Birch Rd to A49 SB	7	10	3	43%	8	11	3	38%	8	10	2	25%
A49 Winwick Road @ Poplars Avenue	A49 NB to Woburn Rd	5	7	2	40%	7	6	-1	-14%	7	6	-1	-14%
	A49 NB	749	832	83	11%	856	757	-99	-12%	817	707	-110	-13%
	A49 SB	777	847	70	9%	939	955	16	2%	928	873	-55	-6%
A49 Winwick Road/ A574 Cromwell Avenue/ Sandy Lane West	A49 SB to Sandy Ln West	181	244	63	35%	207	283	76	37%	203	253	50	25%
	A49 SB	369	384	15	4%	480	432	-48	-10%	475	402	-73	-15%
	A49 SB to Cromwell Ave	219	203	-16	-7%	251	222	-29	-12%	252	201	-51	-20%
	Cromwell Ave to A49 NB	71	75	4	6%	69	68	-1	-1%	68	65	-3	-4%
	Cromwell Ave to Sandy Ln West	174	205	31	18%	145	183	38	26%	147	170	23	16%
	Cromwell Ave to A49 SB	184	194	10	5%	153	184	31	20%	153	167	14	9%
	Cromwell Ave to Cromwell Ave (U-turn	43	46	3	7%	46	40	-6	-13%	45	38	-7	-16%
	A49 NB	562	620	58	10%	611	586	-25	-4%	578	548	-30	-5%
	A49 NB to Sandy Ln West	95	42	-53	-56%	156	45	-111	-71%	160	39	-121	-76%
	A49 NB to Cromwell Ave	321	362	41	13%	395	388	-7	-2%	400	356	-44	-11%
	Sandy Ln West to A49 NB	111	119	8	7%	172	158	-14	-8%	173	148	-25	-14%
	Sandy Ln West to Sandy Ln (U-turn	0	0	0	-	0	0	0	-	0	0	0	-
	Sandy Ln West to A49 SB	36	41	5	14%	57	55	-2	-4%	56	51	-5	-9%
	Sandy Ln West to Cromwell Ave	100	116	16	16%	139	145	6	4%	138	133	-5	-4%
A49 Winwick Road @ Junction NINE Retail Park	A49 NB	848	905	57	7%	874	835	-39	-4%	848	773	-75	-9%
	A49 NB to Junction NINE Retail	36	46	10	28%	46	48	2	4%	63	59	-4	-6%
	Junction NINE Retail to A49 SB	15	32	17	113%	31	42	11	35%	31	38	7	23%
	Junction NINE Retail to A49 NB	136	131	-5	-4%	264	180	-84	-32%	261	172	-89	-34%
	A49 SB	523	547	24	5%	616	604	-12	-2%	612	560	-52	-8%
	A49 SB to Junction NINE Retail	69	70	1	1%	83	79	-4	-5%	83	70	-13	-16%
A49 Winwick Road/ Hawleys Lane/ A50 Long Lane	A49 SB to Hawleys Lane	86	90	4	5%	105	97	-8	-8%	105	84	-21	-20%
	A49 SB to Long Lane	115	139	24	21%	137	157	20	15%	137	144	7	5%
	A49 SB	340	353	13	4%	393	395	2	1%	396	363	-33	-8%
	A49 NB to Hawleys Lane	28	29	1	4%	24	22	-2	-8%	22	19	-3	-14%
	A49 NB to Long Lane	77	84	7	9%	81	72	-9	-11%	68	69	1	1%
	A49 NB	585	627	42	7%	570	543	-27	-5%	506	517	11	2%
	Long Lane to A49 SB	88	115	27	31%	0	0	0	-	0	0	0	-
	Long Lane to Hawleys Lane	28	32	4	14%	40	33	-7	-18%	59	48	-11	-19%
	Long Lane to A49 NB	78	93	15	19%	91	98	7	8%	165	142	-23	-14%
	Hawleys Lane to Long Lane	43	50	7	16%	47	50	3	6%	45	41	-4	-9%
	Hawleys Lane to A49 SB	24	29	5	21%	28	31	3	11%	26	25	-1	-4%
	Hawleys Lane to A49 NB	223	233	10	4%	260	246	-14	-5%	238	181	-57	-24%

APPENDIX B:

LinSig NETWORK DIAGRAM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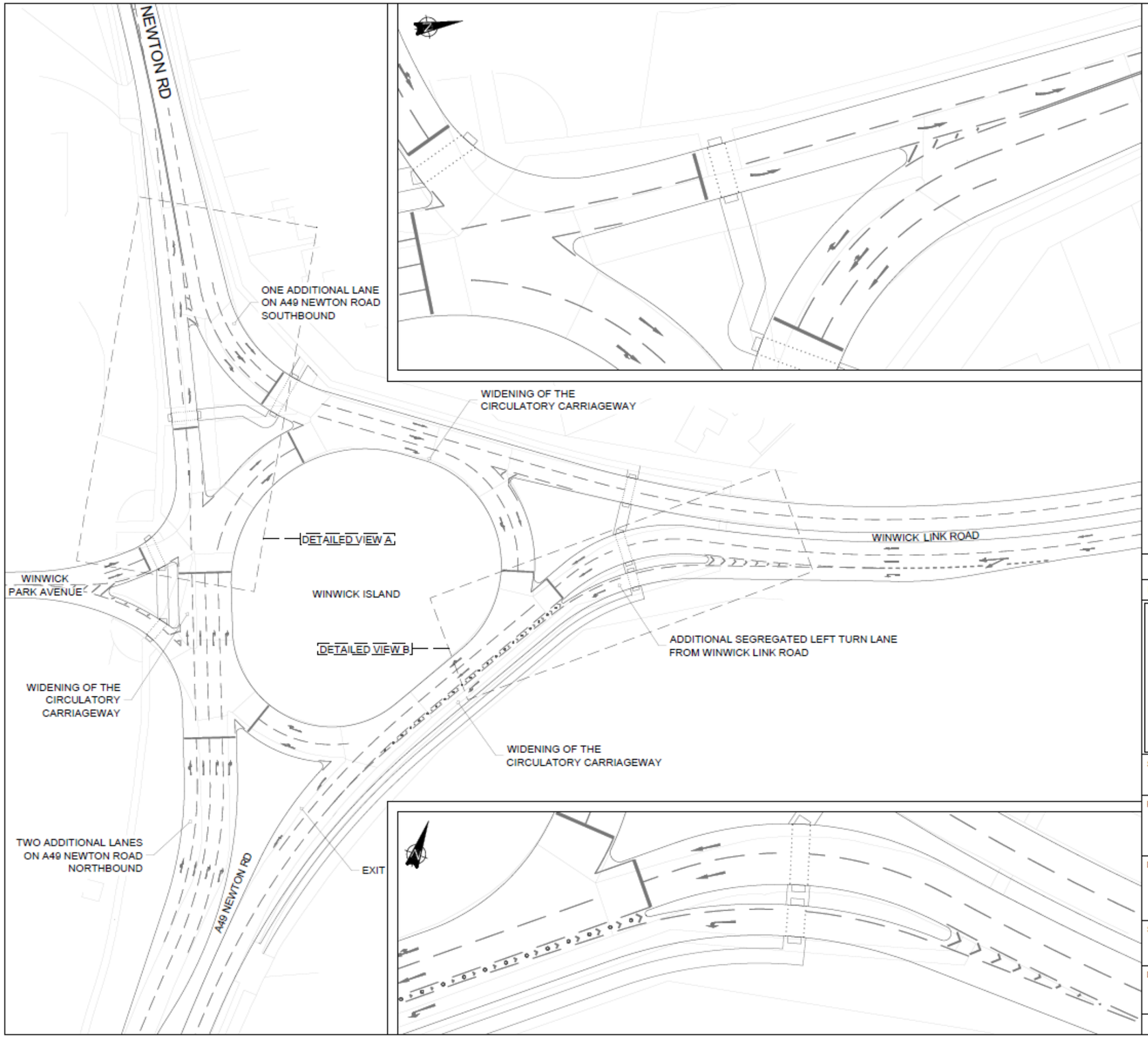
PRC: Inf
Total Traffic Delay: 0.0 pcuHr
J8: JUNCTION F
PRC: Inf
Total Traffic Delay: 0.0 pcuHr
J7: JUNCTION E
PRC: Inf
Total Traffic Delay: 0.0 pcuHr
J6: JUNCTION D
PRC: Inf
Total Traffic Delay: 0.0 pcuHr
J5: JUNCTION G
PRC: Inf
Total Traffic Delay: 0.0 pcuHr
J4: JUNCTION Y
PRC: Inf
Total Traffic Delay: 0.0 pcuHr
J3: JUNCTION Z
PRC: Inf
Total Traffic Delay: 0.0 pcuHr
J2: JUNCTION X
PRC: Inf
Total Traffic Delay: 0.0 pcuHr
J1: JUNCTION W
PRC: Inf
Total Traffic Delay: 0.0 pcuHr
Arm J9:3 - A49 to Newton-le-Willows
Arm J9:2 -
Arm J9:4 -
Arm J9:5 - Golborne Road
Arm J9:6 -
Arm J9:1 -
Arm J8:5 -
Arm J8:4 -
Arm J8:3 - Winwick Park Avenue
Arm J8:2 -
Arm J8:6 -
Arm J8:7 - Winwick Link Rd
Arm J8:1 -
Arm J8:8 -
Arm J7:5 -
Arm J7:6 -
Arm J7:4 - Delph Lane Retail Park
Arm J7:3 -
Arm J7:1 -
Arm J7:2 -
Arm J6:8 -
Arm J6:4 -
Arm J6:3 - M62 West
Arm J6:2 -
Arm J6:5 -
Arm J6:6 - M62 East
Arm J6:1 -
Arm J6:7 -
Arm J5:4 -
Arm J5:6 -
Arm J5:2 -
Arm J5:3 - Birch Avenue (New Access Point)
Arm J5:1 -
Arm J5:5 -
Arm J4:3 - Calver Road
Arm J4:2 -
Arm J4:1 - Cromwell Avenue
Arm J4:6 -
Arm J4:4 -
Arm J4:5 -
Arm J3:4 -
Arm J3:3 -
Arm J3:6 -
Arm J3:5 -
Arm J3:7 - Sandy Lane West
Arm J3:1 -
Arm J3:2 -
Arm J2:4 -
Arm J2:6 -
Arm J2:1 - JunctionNINE Retail Park
Arm J2:5 -
Arm J2:3 -
Arm J2:2 -
Arm J1:8 -
Arm J1:7 -
Arm J1:2 - Hawleys Lane
Arm J1:4 -
Arm J1:5 -
Arm J1:3 - A50
Arm J1:1 - A49 to Warrington Town Centre
Arm J1:6 -

APPENDIX C:

MITIGATION DESIGNS



NOTES:

Rev:	Description:	Date:	By:	Chkd:
A	Existing lines rendered under proposed	29/02/16	DD	KY

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Drg Title: JUNCTION IMPROVEMENT PROPOSAL JUNCTION 3 - WINWICK ISLAND

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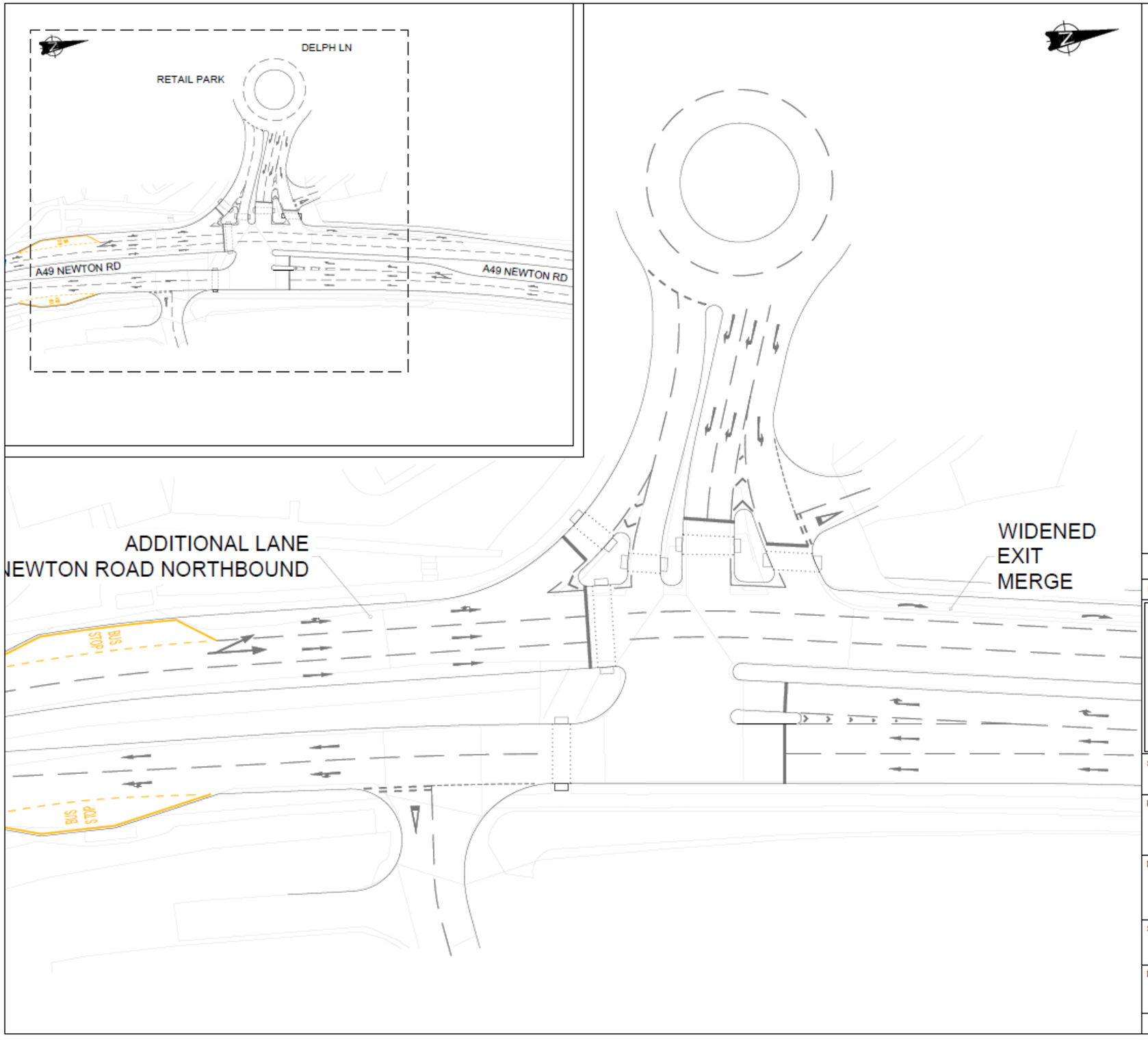
1:1000	A3	16/02/16	DD	JG

Drg No: TPMA1389-103

Rev: A



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Rev:	Description:	Date:	By:	Chkd:
A	Existing lines rendered under proposed	29/02/16	DD	NY

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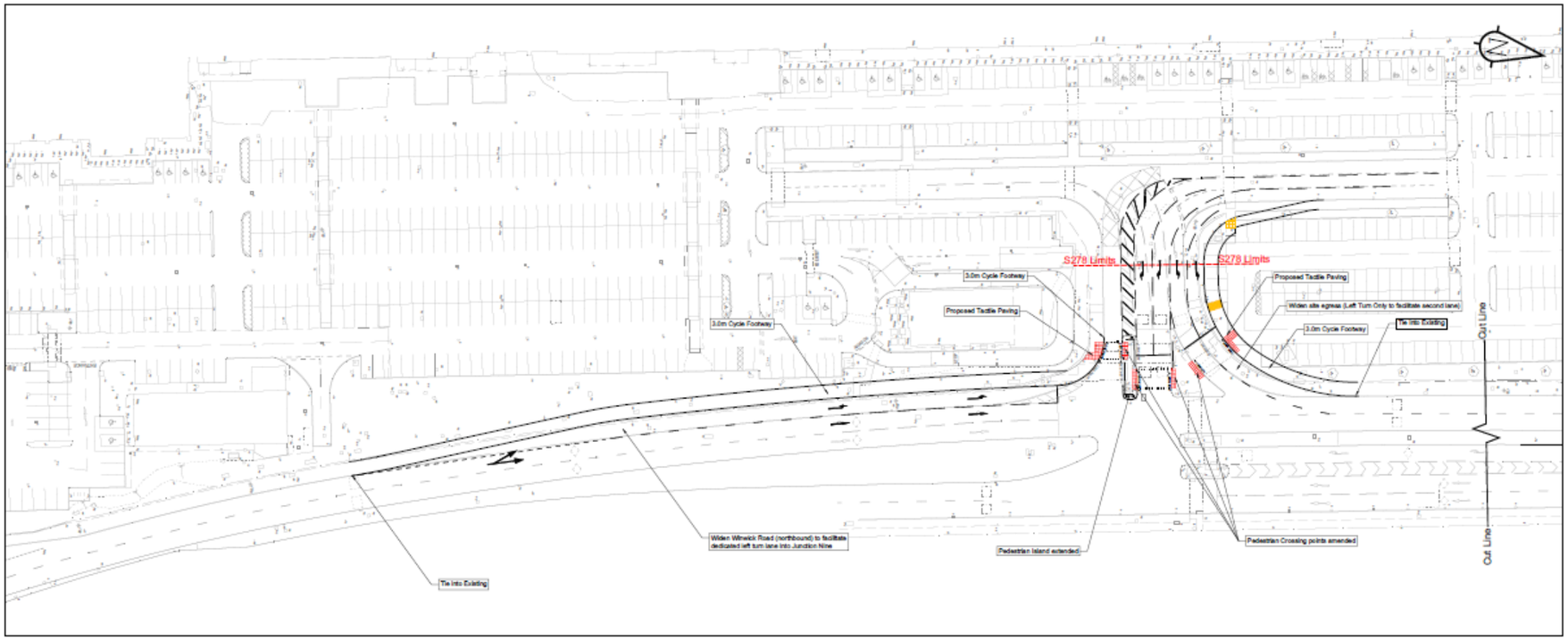
Project: PARKSIDE PHASE I

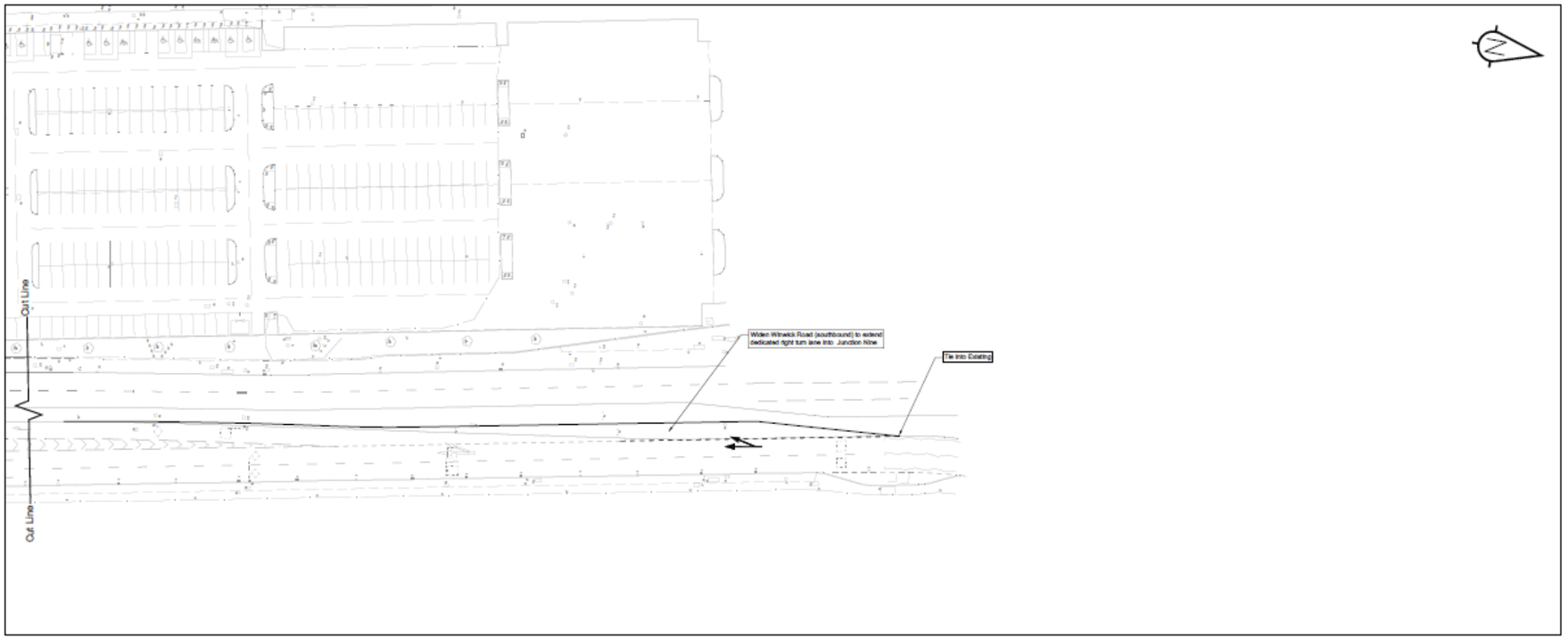
Drg Title: JUNCTION IMPROVEMENT PROPOSAL JUNCTION 2 - DELPH LANE

Scale:	Size:	First Issue:	Drawn:	Checked:
1:500	A3	16/02/16	DD	JG

Drg No: TPMA1389-102

Rev: A





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- Service connections are not shown but their presence should be anticipated.
- Reference to any third party equipment shown on this drawing was only relevant at the time the drawing was prepared.
- It is the client's responsibility to ensure that any equipment ordered meets the design.

Rev	Amendment	Drawn	Date	Checked

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Highways | Waste | Transportation | Water

Client
DERWENT CONSTRUCTION LIMITED

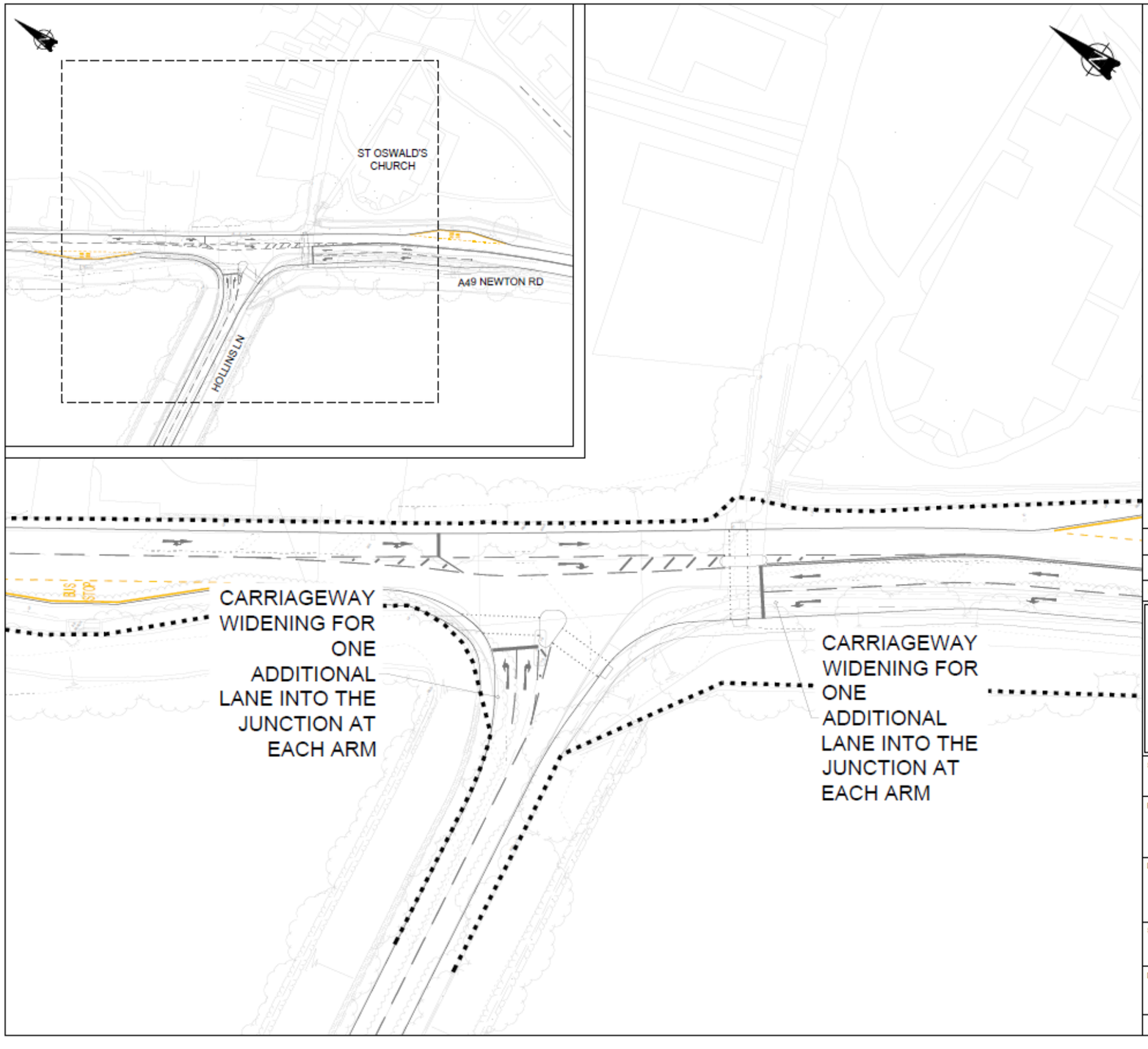
Project Title
JUNCTION NINE RETAIL PARK
WARRINGTON

Drawing Title
WINWICK ROAD S278 WORKS
GENERAL ARRANGEMENT

Scale: 1:500	Drawn By: DH
Drawing Size: A1	Checked By: PJM
Date: 19.02.19	Approved By: PJM

Drawing Number: 10733-100-001
Rev:

FILE REF:



NOTES:

Rev:	Description:	Date:	By:	Chkd:
B	Existing lines rendered under proposed	29/02/16	DD	KY
A	Changes in layout	22/02/16	DD	KY

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Project: PARKSIDE PHASE I

Drg Title: JUNCTION IMPROVEMENT PROPOSAL JUNCTION 5 - HOLLINS LANE

Scale:	Size:	First Issue:	Drawn:	Checked:
1:500	A3	16/02/16	DD	JG

Drg No: TPMA1389-105

Rev: B

NOTES:

North arrow indicative.

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ISSUE	REASON FOR REVISION	DATE
-	-	-

PROJECT:
PEEL HALL
WARRINGTON

CLIENT:
SATNAM MILLENNIUM LTD

PROJECT REFERENCE:	DRAWING NUMBER:	SCALE:
1901	08	1:500 @ A3

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TITLE:
PROPOSED A49 / GOLBOURNE ROAD
JUNCTION IMPROVEMENTS

DATE:	DRAWN BY:	CHECKED:
04/03/20	BGS	FB