Tritax Symmetry (Hinckley) Limited

HINCKLEY NATIONAL RAIL FREIGHT INTERCHANGE

The Hinckley National Rail Freight Interchange Development Consent Order

Project reference TR050007

Environmental Statement
Volume 2: Appendices

Appendix 8.1: Transport Assessment [part 10 of 20] VISSIM LMVR Base Models

Document reference: 6.2.8.1

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November 2022

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 Regulation 5(2)(a)

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 Regulation 14

This document forms a part of the Environmental Statement for the Hinckley National Rail Freight Interchange project.

Tritax Symmetry (Hinckley) Limited (TSH) has applied to the Secretary of State for Transport for a Development Consent Order (DCO) for the Hinckley National Rail Freight Interchange (HNRFI).

To help inform the determination of the DCO application, TSH has undertaken an environmental impact assessment (EIA) of its proposals. EIA is a process that aims to improve the environmental design of a development proposal, and to provide the decision maker with sufficient information about the environmental effects of the project to make a decision.

The findings of an EIA are described in a written report known as an Environmental Statement (ES). An ES provides environmental information about the scheme, including a description of the development, its predicted environmental effects and the measures proposed to ameliorate any adverse effects.

Further details about the proposed Hinckley National Rail Freight Interchange are available on the project website:

[redacted]

The DCO application and documents relating to the examination of the proposed development can be viewed on the Planning Inspectorate's National Infrastructure Planning website:

https://infrastructure.planninginspectorate.gov.uk/projects/east-midlands/hinckley-national-rail-freight-interchange/

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Tritax Symmetry Ltd
Hinckley National Rail Freight Interchange
M69 Junction 1 VISSIM
Local Model Validation Report

TRANSPORT & INFRASTRUCTURE PLANNING

Tritax Symmetry Ltd

Hinckley National Rail Freight Interchange

M69 Junction 1 VISSIM

Local Model Validation Report

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Notice

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1. INTRODUCTION

Instruction

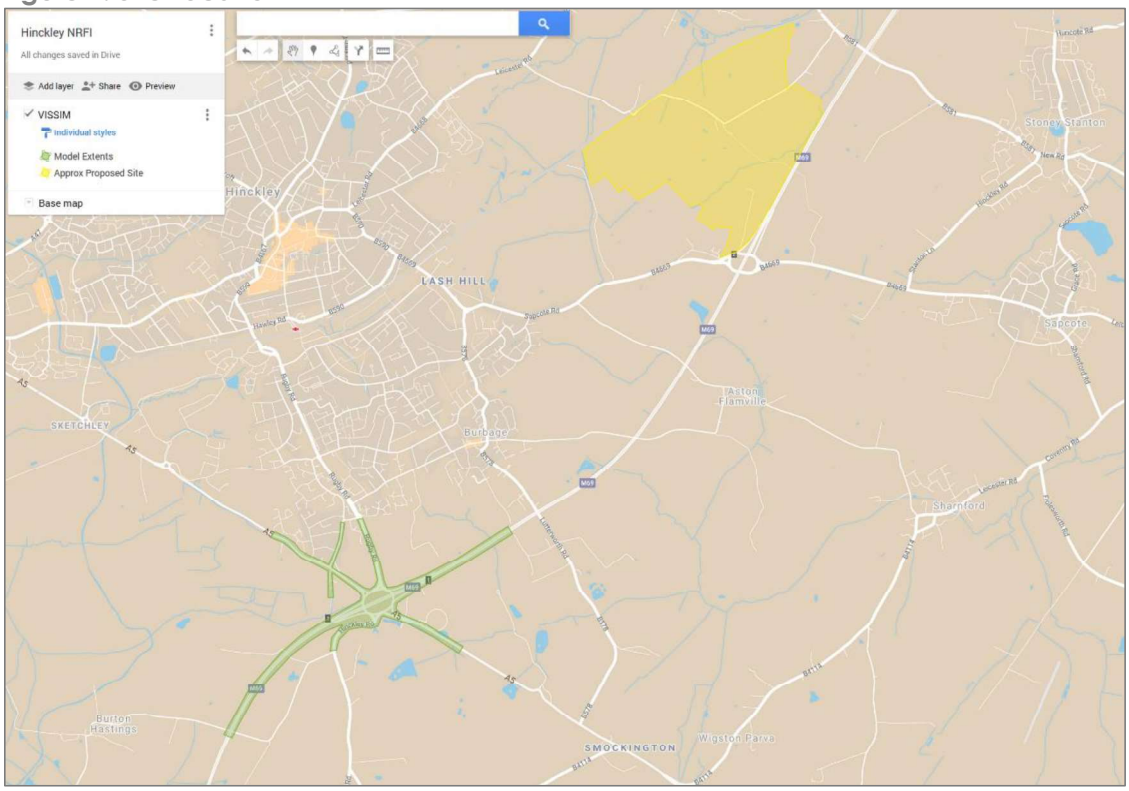
BWB Consulting has been commissioned as part a wider project scope by Tritax Symmetry Ltd to develop a series of highway models capable assessing any highway impacts resultant of the proposed Hinckley National Rail Freight Interchange (HNRFI) development. It is understood that the site will be developed serving a maximum of 850,000sqm of B8 warehousing/distribution uses, with access served directly onto M69 Junction 2.

The model purpose is to provide a robust platform on which the proposed development can be tested, allowing any impacts on the junction and surrounding highway network to be assessed.

Site Location

1.1 **Figure 1** below displays the indicative location of the proposed development, as well as the relative position of the highway model extents.

Figure 1: Site Location



Report Purpose

1.2 Due to the scale of the proposed development and the likely vehicular trips that it will generate, a comprehensive micro-simulation model of the M69 Junction 1 gyratory has been developed using PTV Group's VISSIM software.

1.3 The following Local Model Validation Report (LMVR) 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 Following the completion of the validation process, the model will be submitted for approval to Highways England (HE) and Leicestershire County Council (LCC) as the Local Highway Authority (LHA), for review, comment, and agreement.

1.5 This LMVR seeks to define in detail the process and procedures followed in the development of the modelled network and the methods applied in the traffic modelling itself.

2. 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 a comparison of the previous model with this 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.

3. BASE MODEL DEVELOPMENT

Model Specification

3.1 VISSIM Version – 20.00-14

3.2 Model Base Year – 2019

3.3 Model Time Periods:

- Weekday AM – 07:00-07:30 (warm-up), 07:30-09:30 (peak period/s), 09:30-10:00 (cool-down)
- Weekday PM – 16:00-16:30 (warm-up), 16:30-18:30 (peak period/s), 18:30-19:00 (cool-down)

3.4 Model units have been specified as:

- Metres (m);
- Kilometres (km);
- Miles per hour (mph); and
- Metres / second squared (m/s^2).

3.5 Vehicle Types Used:

- Cars
- LGV
- HGV (OGV1 & OGV2)
- Coaches
- Motorcycles

3.6 Geometric calculations for base model construction were derived from OS Master mapping in combination with high resolution aerial imagery, overlaid. A check on the accuracy of the base map was undertaken against online satellite imagery and Google Street view, and where discrepancies were identified this was accounted for in network coding within VISSIM. These calculations have informed the lane width, link length and number of lane parameters within the model.

3.7 The emergency stop and lane change parameters have been used to model lane change behaviour. These were determined by reviewing the physical characteristics of specific parts of the network. The values used depend on a number of factors including positioning of signing, type of junction, general visibility and proximity of other junctions. The emergency stop distance specifies the last possible position value for a vehicle to change lanes. The emergency stop value has been left at a default value of 5m except where longer queue lengths are modelled.

3.8 Results have been output with a model resolution of 10-time steps per second, as a result of the requirements of the external signal control module, PC MOVA. Random seeds used were set with a starting seed of 42, with an incremental increase of 41.

Base Data – Changes from Default Driving Behaviour Parameters

3.9 The base year network primarily makes use of three driver behaviour profiles:

- 1 – Urban (motorized)
    - Driver behaviour profile 1 is largely left as per the PTV default settings. As a result of previous experience and reference to TfL guidelines for urban roads, two changes have been made to the **Following** rules. As a result of the more complex set-up of physical elements within combined junctions, the number of interaction objects has been increased to **8**. The number of interaction vehicles has been reduced to **4**, as this is considered more realistic in an urban setting. Look ahead and look back distances have also been updated to allow for more realistic behaviour in congested conditions.
- 2 – Left-side rule (motorized)
    - Driver behaviour profile 2 is left as per the PTV default settings.
- 7 – Urban (Aggressive merge)
    - Driver behaviour profile 7 is a bespoke behaviour created to allow more aggressive merging behaviour. The template used is Driver behaviour profile 1. Changes include a decrease to the Number of interaction vehicles from **4** to **2**, a reduction of average standstill distance from **2m** to 1**.5m**, and the use of Co-operative lane change, rather than advanced merging. Maximum deceleration for co-operative braking has been increased to **-9.00 m/s²**.

Base Data – Changes from Default Desired Speed Profiles

3.10 Distribution profiles for the 20mph, 30mph, 40mph, 50mph, National Speed Limit (NSL) Single Carriageway, NSL Dual Carriageway, and NSL motorway have been taken from the latest available DfT National Speed statistics.

3.11 Distribution profiles have also been created for use with Reduced Speed Area controls (RSA) on corners, as well as to control saturation flow rates at signal stop lines. Reduced Speed Areas are used throughout the model in locations where a bend is of such a radius that it will always require a motorist to brake when negotiating it. It is important to understand that a Reduced Speed Area upon a bend will actually result in a vehicle decelerating on the approach to the bend, rather than upon it.

Model Assignment

3.12 Although the network has no route choice, the dynamic assignment module was chosen for model assignment due to the relative ease of entering traffic flows via Origin-Destination (OD) matrices for both the base development and the addition of future year growth at a later stage.

3.13 To provide an accurate traffic profile, traffic OD matrices have been created per vehicle type, for each 15-minute interval, in line with the collected data. It should be

noted that although the traffic has been separated into 15-minute intervals, the model has been validated hourly for each of the two busiest hours in each peak period.

3.14 As there is no route choice in the model, there is not judged to be any need for the process of route convergence, however the path and cost files used were run at least 20 times in order to ensure stability.

4. BASE 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.

TRAFFIC FLOW SOURCES

4.1 Manual Classified Count (MCC) surveys were undertaken on 10th April 2019 at the following locations:

- M69 Junction 1
- A5/Wolvey Road Junction

4.2 Link counts (10th April 2019) have been acquired from the WebTRIS database at the following site locations:

- M69 mainline flow (3540) – northbound, north of M69 Junction 1
- M69 mainline flow (4566) – southbound, north of M69 Junction 1
- M69 mainline flow (5024) – northbound, south of M69 Junction 1
- M69 mainline flow (4189) – southbound, south of M69 Junction 1

Figure 2: Traffic Flow Source Location

TRAFFIC FLOW CALIBRATION

4.3 The process of flow calibration has involved multiple iterations of minor adjustments to priority control 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 TAG Unit 3.1. To consider day to day variation in driver behaviour, the models were run, and results averaged over twenty random seeds, as per the original model specification. **Tables 1-6** summarise the flow calibration results.

4.4 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**.

Table 1: AM Flow Calibration – 0730-0830hrs

AM Peak (07:30-08:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 2: AM Flow Calibration – 0830-0930hrs

AM Peak (08:30-09:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 3: AM Flow Calibration – 0730-0930hrs

AM Peak (07:30-09:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 4: PM Flow Calibration – 1630-1730hrs

PM Peak (16:30-17:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 5: PM Flow Calibration – 1730-1830hrs

PM Peak (17:30-18:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 6: PM Flow Calibration – 1630-1830hrs

PM Peak (16:30-18:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TRAFFIC SIGNAL CALIBRATION

4.5 Traffic signals have been modelled using the PC MOVA emulation module. MOVA config files had been provided by HE, however it was identified that there were some compatibility issues as a result of differences between what the MOVA kernel can do, and the functions available to PC MOVA.

4.6 A new PC MOVA config was therefore created in order to allow full co-ordination between the three separate controllers, as is found on-site.

5. BASE MODEL VALIDATION

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

VEHICLE JOURNEY TIME VALIDATION

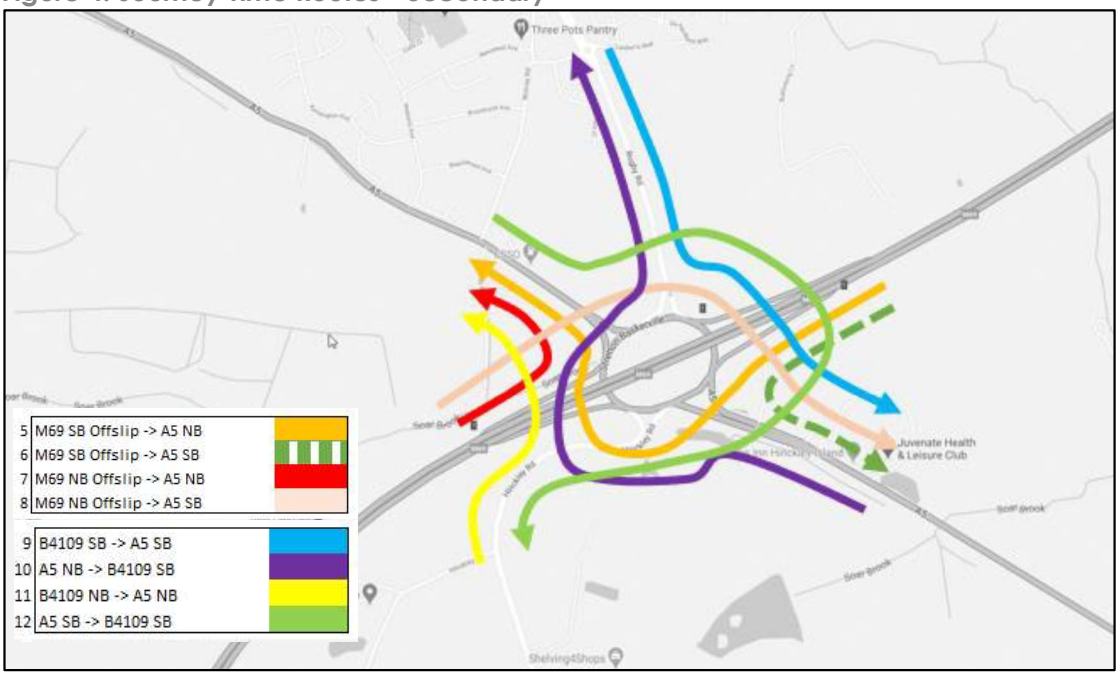
5.1 The journey time validation has been carried out using TomTom data collected for the network. This was chosen as it provides a high sample rate dataset which improves the overall robustness of the validation comparison.

5.2 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. For the purpose of providing journey time validation, multiple sections have been combined into longer journey routes, covering all major movements at key locations.

5.3 A total of 12 journey time routes have been prepared for the purpose of model validation. **Figure 3** shows the location of four, primary through routes. **Figure 4** shows the location of eight secondary turning routes.

Figure 3: Journey Time Routes - Primary

Figure 4: Journey Time Routes - Secondary



JOURNEY TIME DATA

5.4 **Tables 7 and 8** below shows the overall summary for all journey time routes and sections for the network. See **Appendix B** for more detailed tables for each route.

Table 7: AM Journey Time Validation

Whole Routes	AM Peak		
Criteria	07:30-08:30	08:30-09:30	07:30-09:30
85% of measures within 15%	83%	100%	92%
85% of measures within 60 seconds	100%	100%	100%

Table 8: PM Journey Time Validation

Whole Routes	PM Peak		
Criteria	16:30-17:30	17:30-18:30	16:30-18:30
85% of measures within 15%	100%	83%	100%
85% of measures within 60 seconds	100%	100%	100%

5.5 In accordance with TAG 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 and under 15km in length) it can be seen from **Tables 7 and 8** that all routes meet one or both criteria in the AM and PM peak models.

5.6 In the AM peak, the 0830-0930hrs and 0730-0930hrs time periods both meet the TAG criteria, with over 85% of the routes being within 15% and 60s. In the 0730-0830hrs time period, there are two routes which fall outside of the 15% difference (one having a 16% difference) and 12/12 routes are within 60s. Given how close the non-validating route is to 15% difference, the model is still considered representative of on-street conditions.

5.7 In the PM peak, 12/12 routes are within 15% and 60s for the 1630-1730hrs and 1630-1830hrs time periods. In the 1730-1830hrs time period, there are two routes which fall outside of the 15% difference (the two routes having an 18% and 20% difference) and 12/12 routes are within 60s. Given how close the non-validating routes are to 15% difference, the model is still considered representative of on-street conditions.

5.8 Overall, this is a robust validation result, indicative of a good likeness between modelled performance and on-street conditions.

6. SUMMARY AND CONCLUSIONS

SUMMARY

6.1 This LMVR documents the development of the base model and demonstrates that it is an acceptable representation of the highway network within the study area and is fit for the purpose of developing traffic forecasts to assess the impact of development proposal scheme on the M69 Junction 1 gyratory.

6.2 The purpose of model calibration is to ensure that the model assignments are appropriate. The main emphasis of the calibration is to ensure that the model accurately reflects existing conditions during the modelling period with regard to:

- Traffic patterns;
- Key junctions; and
- Traffic volumes and routing.

6.3 In regard to the traffic turning and flow counts at the surveyed sites the model exceeds the 85% criteria set by TAG Unit 3.1.

6.4 The model has been validated to observed journey times within the extents of the network. The data has been provided as 15-minute intervals and an average one-hour journey time for each of the peak network periods.

6.5 The journey time comparisons show consistency between the modelled and observed journey time profiles across the majority of the journey time routes. In the AM and PM peaks, there are two routes which fall outside of the 15% range (0730-08hrs and 1730-1830hrs). However, all of the routes are within 60s and as such, the journey times are considered representative.

6.6 Given that the traffic flows and journey times compare well with on-site conditions, it should be considered a successful calibration and validation exercise.

CONCLUSION

6.7 It is understood that as these conditions are met and are of a sufficient quality to represent real world conditions the M69 Junction 1 gyratory VISSIM model is considered robust and acceptable for testing of the proposed development.

APPENDICES

APPENDIX 1: Flow Calibration

PM Peak (16:30-17:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
1800-5400	M69 Junction 1	B4109 Rugby Road	M69 Eastbound	62	63	1	2%	Y	0.13	•	•			
1800-5400			A5 Southbound	129	127	-2	-2%	Y	0.18	•	•			
1800-5400			B4109 Hinckley Road	138	134	-4	-3%	Y	0.34	•	•			
1800-5400			M69 Westbound	206	198	-8	-4%	Y	0.56	•	•			
1800-5400			A5 Northbound	14	14	0	0%	Y	0.00	•	•			
1800-5400		M69 Westbound	A5 Southbound	40	40	0	0%	Y	0.00	•	•			
1800-5400			B4109 Hinckley Road	203	204	1	3%	Y	0.09	•	•			
1800-5400			M69 Westbound	1645	1646	1	1%	Y	0.03	•	•			
1800-5400			A5 Northbound	206	201	-5	0%	Y	0.17	•	•	• •		
1800-5400			B4109 Rugby Road	84	83	-1	-1%	Y	0.09	•	•			
1800-5400		A5 Northbound	B4109 Hinckley Road	7	7	0	0%	Y	0.00	•	•			
1800-5400			M69 Westbound	135	138	3	2%	Y	0.26	•	•			
1800-5400			A5 Northbound	410	403	-7	-2%	Y	0.36	•	•			
1800-5400			B4109 Rugby Road	209	210	1	0%	Y	0.07	•	•			
1800-5400			M69 Eastbound	28	28	0	0%	Y	0.00	•	•			
1800-5400		B4109 Hinckley Road	M69 Westbound	19	19	0	0%	Y	0.00	•	•			
1800-5400			A5 Northbound	102	103	1	1%	Y	0.10	•	•			
1800-5400			B4109 Rugby Road	196	197	1	1%	Y	0.07	•	•			
1800-5400			M69 Eastbound	111	111	0	0%	Y	0.00	•	•			
1800-5400			A5 Southbound	5	5	0	0%	Y	0.00	•	•			
1800-5400		M69 Eastbound	A5 Northbound	325	318	-7	-2%	Y	0.39	•	•			
1800-5400			B4109 Rugby Road	670	660	-10	-1%	Y	0.39	•	•			
1800-5400			M69 Eastbound	2369	2380	11	0%	Y	0.23	•	•	• •		
1800-5400			A5 Southbound	360	346	-14	-4%	Y	0.75	•	•			
1800-5400			B4109 Hinckley Road	20	20	0	0%	Y	0.00	•	•			
1800-5400		A5 Southbound	B4109 Rugby Road	20	20	0	0%	Y	0.00	•	•			
1800-5400			M69 Eastbound	254	255	1	0%	Y	0.06	•	•			
1800-5400			A5 Southbound	524	510	-14	-3%	Y	0.62	•	•			
1800-5400			B4109 Hinckley Road	46	44	-2	-4%	Y	0.30	•	•			
1800-5400			M69 Westbound	270	264	-6	-2%	Y	0.37	•	•			
1800-5400	A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	30	27	-3	-10%	Y	0.56	•	•			
1800-5400			Wolvey Road Southbound	0	0	0	-	N	0.00	•	•			
1800-5400			A5 Watling Street Westbound	19	19	0	0%	Y	0.00	•	•			
1800-5400		A5 Watling Street Westbound	Wolvey Road Southbound	0	0	0	-	Y	0.00	•	•			
1800-5400			A5 Watling Street Westbound	943	987	44	5%	Y	1.42	•	•	• •		
1800-5400			Wolvey Road Northbound	53	55	2	4%	Y	0.27	•	•			
1800-5400		Wolvey Road Northbound	A5 Watling Street Westbound	0	0	0	-	N	0.00	•	•			
1800-5400			Wolvey Road Northbound	0	0	0	-	N	0.00	•	•			
1800-5400			A5 Watling Street Eastbound	0	0	0	-	N	0.00	•	•			
1800-5400		A5 Watling Street Eastbound	Wolvey Road Northbound	174	171	-3	-2%	Y	0.23	•	•			
1800-5400			A5 Watling Street Eastbound	1071	1076	5	0%	Y	0.15	•	•	• •		
1800-5400			A5 Watling Street Westbound	0	0	0	-	Y	0.00	•	•			

PM Peak (17:30-18:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
5400-9000	M69 Junction 1	B4109 Rugby Road	M69 Eastbound	55	54	-1	-2%	N	0.14	•	•			
5400-9000			A5 Southbound	106	109	3	3%	N	0.29	•	•			
5400-9000			B4109 Hinckley Road	101	105	4	4%	N	0.39	•	•			
5400-9000			M69 Westbound	181	165	-16	-9%	N	1.22	•	•			
5400-9000			A5 Northbound	18	17	-1	-6%	N	0.24	•	•			
5400-9000		M69 Westbound	A5 Southbound	24	25	1	4%	N	0.20	•	•			
5400-9000			B4109 Hinckley Road	174	176	2	1%	N	0.15	•	•			
5400-9000			M69 Westbound	1507	1509	2	0%	N	0.05	•	•	• •		
5400-9000			A5 Northbound	250	253	3	1%	N	0.19	•	•			
5400-9000			B4109 Rugby Road	95	95	0	0%	N	0.00	•	•			
5400-9000		A5 Northbound	B4109 Hinckley Road	8	8	0	0%	N	0.00	•	•			
5400-9000			M69 Westbound	130	129	-1	-1%	N	0.09	•	•			
5400-9000			A5 Northbound	377	363	-14	-4%	N	0.75	•	•			
5400-9000			B4109 Rugby Road	196	192	-4	-2%	N	0.29	•	•			
5400-9000			M69 Eastbound	16	17	1	6%	N	0.25	•	•			
5400-9000		B4109 Hinckley Road	M69 Westbound	8	8	0	0%	N	0.00	•	•			
5400-9000			A5 Northbound	90	90	0	0%	N	0.00	•	•			
5400-9000			B4109 Rugby Road	177	179	2	1%	N	0.15	•	•			
5400-9000			M69 Eastbound	70	74	4	6%	N	0.47	•	•			
5400-9000			A5 Southbound	9	9	0	0%	N	0.00	•	•			
5400-9000		M69 Eastbound	A5 Northbound	422	425	3	1%	N	0.15	•	•			
5400-9000			B4109 Rugby Road	588	602	14	2%	N	0.57	•	•			
5400-9000			M69 Eastbound	2147	2150	3	0%	N	0.06	•	•	• •		
5400-9000			A5 Southbound	321	336	15	5%	N	0.83	•	•			
5400-9000			B4109 Hinckley Road	14	14	0	0%	N	0.00	•	•			
5400-9000		A5 Southbound	B4109 Rugby Road	12	12	0	0%	N	0.00	•	•			
5400-9000			M69 Eastbound	202	203	1	0%	N	0.07	•	•			
5400-9000			A5 Southbound	382	395	13	3%	N	0.66	•	•			
5400-9000			B4109 Hinckley Road	40	32	-8	-20%	N	1.33	•	•			
5400-9000			M69 Westbound	203	206	3	1%	N	0.21	•	•			
5400-9000	A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	22	22	0	0%	Y	0.00	•	•			
5400-9000			Wolvey Road Southbound	1	1	0	0%	N	0.00	•	•			
5400-9000			A5 Watling Street Westbound	22	22	0	0%	Y	0.00	•	•			
5400-9000		A5 Watling Street Westbound	Wolvey Road Southbound	1	0	-1	-100%	Y	1.41	•	•			
5400-9000			A5 Watling Street Westbound	1087	1108	21	2%	Y	0.63	•	•	• •		
5400-9000			Wolvey Road Northbound	40	36	-4	-10%	Y	0.65	•	•			
5400-9000		Wolvey Road Northbound	A5 Watling Street Westbound	1	1	0	0%	N	0.00	•	•			
5400-9000			Wolvey Road Northbound	0	0	0	-	N	0.00	•	•			
5400-9000			A5 Watling Street Eastbound	1	0	-1	-100%	N	1.41	•	•			
5400-9000		A5 Watling Street Eastbound	Wolvey Road Northbound	126	126	0	0%	Y	0.00	•	•			
5400-9000			A5 Watling Street Eastbound	796	807	11	1%	Y	0.39	•	•	• •		
5400-9000			A5 Watling Street Westbound	0	0	0	-	Y	0.00	•	•			

PM Peak (16:30-17:30) Summary - LIGHTS	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
1800-5400	M69 Junction 1	B4109 Rugby Road	M69 Eastbound	61	62	1	2%	Y	0.13	•	•			
1800-5400			A5 Southbound	127	126	-1	-1%	Y	0.09	•	•			
1800-5400			B4109 Hinckley Road	136	132	-4	-3%	Y	0.35	•	•			
1800-5400			M69 Westbound	205	197	-8	-4%	Y	0.56	•	•			
1800-5400			A5 Northbound	14	14	0	0%	Y	0.00	•	•			
1800-5400		M69 Westbound	A5 Southbound	34	34	0	0%	Y	0.00	•	•			
1800-5400			B4109 Hinckley Road	198	199	1	1%	Y	0.07	•	•			
1800-5400			M69 Westbound	1501	1502	1	0%	Y	0.03	•	•	• •		
1800-5400			A5 Northbound	193	191	-2	-1%	Y	0.14	•	•			
1800-5400			B4109 Rugby Road	83	83	0	0%	Y	0.00	•	•			
1800-5400		A5 Northbound	B4109 Hinckley Road	7	7	0	0%	Y	0.00	•	•			
1800-5400			M69 Westbound	126	129	3	2%	Y	0.27	•	•			
1800-5400			A5 Northbound	345	346	1	0%	Y	0.05	•	•			
1800-5400			B4109 Rugby Road	204	205	1	0%	Y	0.07	•	•			
1800-5400			M69 Eastbound	27	26	-1	-4%	Y	0.19	•	•			
1800-5400		B4109 Hinckley Road	M69 Westbound	19	19	0	0%	Y	0.00	•	•			
1800-5400			A5 Northbound	100	101	1	1%	Y	0.10	•	•			
1800-5400			B4109 Rugby Road	195	196	1	1%	Y	0.07	•	•			
1800-5400			M69 Eastbound	110	110	0	0%	Y	0.00	•	•			
1800-5400			A5 Southbound	5	5	0	0%	Y	0.00	•	•			
1800-5400		M69 Eastbound	A5 Northbound	299	299	0	0%	Y	0.00	•	•			
1800-5400			B4109 Rugby Road	668	659	-9	-1%	Y	0.35	•	•			
1800-5400			M69 Eastbound	2206	2217	11	0%	Y	0.23	•	•	• •		
1800-5400			A5 Southbound	341	327	-14	-4%	Y	0.77	•	•			
1800-5400			B4109 Hinckley Road	19	19	0	0%	Y	0.00	•	•			
1800-5400		A5 Southbound	B4109 Rugby Road	20	20	0	0%	Y	0.00	•	•			
1800-5400			M69 Eastbound	240	241	1	0%	Y	0.06	•	•			
1800-5400			A5 Southbound	481	467	-14	-3%	Y	0.64	•	•			
1800-5400			B4109 Hinckley Road	44	42	-2	-5%	Y	0.30	•	•			
1800-5400			M69 Westbound	251	245	-6	-2%	Y	0.38	•	•			
1800-5400	A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	28	25	-3	-11%	Y	0.58	•	•			
1800-5400			Wolvey Road Southbound	0	0	0	-	N	0.00	•	•			
1800-5400			A5 Watling Street Westbound	18	19	1	6%	Y	0.23	•	•			
1800-5400		A5 Watling Street Westbound	Wolvey Road Southbound	0	0	0	-	Y	0.00	•	•			
1800-5400			A5 Watling Street Westbound	837	899	62	7%	Y	2.10	•	•	• •		
1800-5400			Wolvey Road Northbound	52	55	3	6%	Y	0.41	•	•			
1800-5400		Wolvey Road Northbound	A5 Watling Street Westbound	0	0	0	-	N	0.00	•	•			
1800-5400			Wolvey Road Northbound	0	0	0	-	N	0.00	•	•			
1800-5400			A5 Watling Street Eastbound	0	0	0	-	N	0.00	•	•			
1800-5400		A5 Watling Street Eastbound	Wolvey Road Northbound	172	169	-3	-2%	Y	0.23	•	•			
1800-5400			A5 Watling Street Eastbound	997	1000	3	0%	Y	0.09	•	•	• •		
1800-5400			A5 Watling Street Westbound	0	0	0	-	Y	0.00	•	•			

PM Peak (17:30-18:30) Summary - LIGHTS	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
5400-9000	M69 Junction 1	B4109 Rugby Road	M69 Eastbound	53	52	-1	-2%	N	0.14	•	•			
5400-9000			A5 Southbound	103	106	3	3%	N	0.29	•	•			
5400-9000			B4109 Hinckley Road	100	103	3	3%	N	0.30	•	•			
5400-9000			M69 Westbound	179	163	-16	-9%	N	1.22	•	•			
5400-9000			A5 Northbound	17	16	-1	-6%	N	0.25	•	•			
5400-9000		M69 Westbound	A5 Southbound	23	24	1	4%	N	0.21	•	•			
5400-9000			B4109 Hinckley Road	171	173	2	1%	N	0.15	•	•			
5400-9000			M69 Westbound	1339	1340	1	0%	N	0.03	•	•	• •		
5400-9000			A5 Northbound	231	232	1	0%	N	0.07	•	•			
5400-9000			B4109 Rugby Road	94	94	0	0%	N	0.00	•	•			
5400-9000		A5 Northbound	B4109 Hinckley Road	7	7	0	0%	N	0.00	•	•			
5400-9000			M69 Westbound	116	114	-2	-2%	N	0.19	•	•			
5400-9000			A5 Northbound	334	315	-19	-6%	N	1.05	•	•			
5400-9000			B4109 Rugby Road	196	192	-4	-2%	N	0.29	•	•			
5400-9000			M69 Eastbound	16	17	1	6%	N	0.25	•	•			
5400-9000		B4109 Hinckley Road	M69 Westbound	8	8	0	0%	N	0.00	•	•			
5400-9000			A5 Northbound	86	86	0	0%	N	0.00	•	•			
5400-9000			B4109 Rugby Road	176	178	2	1%	N	0.15	•	•			
5400-9000			M69 Eastbound	69	72	3	4%	N	0.36	•	•			
5400-9000			A5 Southbound	8	8	0	0%	N	0.00	•	•			
5400-9000		M69 Eastbound	A5 Northbound	382	379	-3	-1%	N	0.15	•	•			
5400-9000			B4109 Rugby Road	585	600	15	3%	N	0.62	•	•			
5400-9000			M69 Eastbound	2012	2014	2	0%	N	0.04	•	•	• •		
5400-9000			A5 Southbound	306	321	15	5%	N	0.85	•	•			
5400-9000			B4109 Hinckley Road	14	14	0	0%	N	0.00	•	•			
5400-9000		A5 Southbound	B4109 Rugby Road	12	12	0	0%	N	0.00	•	•			
5400-9000			M69 Eastbound	184	186	2	1%	N	0.15	•	•			
5400-9000			A5 Southbound	334	348	14	4%	N	0.76	•	•			
5400-9000			B4109 Hinckley Road	40	32	-8	-20%	N	1.33	•	•			
5400-9000			M69 Westbound	192	195	3	2%	N	0.22	•	•			
5400-9000	A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	22	22	0	0%	Y	0.00	•	•			
5400-9000			Wolvey Road Southbound	1	1	0	0%	N	0.00	•	•			
5400-9000			A5 Watling Street Westbound	22	22	0	0%	Y	0.00	•	•			
5400-9000		A5 Watling Street Westbound	Wolvey Road Southbound	1	0	-1	-100%	Y	1.41	•	•			
5400-9000			A5 Watling Street Westbound	979	988	9	1%	Y	0.29	•	•	• •		
5400-9000			Wolvey Road Northbound	39	36	-3	-8%	Y	0.49	•	•			
5400-9000		Wolvey Road Northbound	A5 Watling Street Westbound	1	1	0	0%	N	0.00	•	•			
5400-9000			Wolvey Road Northbound	0	0	0	-	N	0.00	•	•			
5400-9000			A5 Watling Street Eastbound	1	0	-1	-100%	N	1.41	•	•			
5400-9000		A5 Watling Street Eastbound	Wolvey Road Northbound	125	125	0	0%	Y	0.00	•	•			
5400-9000			A5 Watling Street Eastbound	720	732	12	2%	Y	0.45	•	•	• •		
5400-9000			A5 Watling Street Westbound	0	0	0	-	Y	0.00	•	•			

PM Peak (16:30-17:30) Summary - HEAVIES	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
1800-5400	M69 Junction 1	B4109 Rugby Road	M69 Eastbound	1	1	0	0%	Y	0.00	•	•			
1800-5400			A5 Southbound	2	1	-1	-50%	Y	0.82	•	•			
1800-5400			B4109 Hinckley Road	2	2	0	0%	Y	0.00	•	•			
1800-5400			M69 Westbound	1	1	0	0%	Y	0.00	•	•			
1800-5400			A5 Northbound	0	0	0	-	Y	0.00	•	•			
1800-5400		M69 Westbound	A5 Southbound	6	6	0	0%	Y	0.00	•	•			
1800-5400			B4109 Hinckley Road	5	5	0	0%	Y	0.00	•	•			
1800-5400			M69 Westbound	144	144	0	0%	Y	0.00	•	•			
1800-5400			A5 Northbound	13	10	-3	-23%	Y	0.88	•	•			
1800-5400			B4109 Rugby Road	1	0	-1	-100%	Y	1.41	•	•			
1800-5400		A5 Northbound	B4109 Hinckley Road	0	0	0	-	Y	0.00	•	•			
1800-5400			M69 Westbound	9	9	0	0%	Y	0.00	•	•			
1800-5400			A5 Northbound	65	57	-8	-12%	Y	1.02	•	•			
1800-5400			B4109 Rugby Road	5	5	0	0%	Y	0.00	•	•			
1800-5400			M69 Eastbound	1	2	1	100%	Y	0.82	•	•			
1800-5400		B4109 Hinckley Road	M69 Westbound	0	0	0	-	Y	0.00	•	•			
1800-5400			A5 Northbound	2	2	0	0%	Y	0.00	•	•			
1800-5400			B4109 Rugby Road	1	1	0	0%	Y	0.00	•	•			
1800-5400			M69 Eastbound	1	1	0	0%	Y	0.00	•	•			
1800-5400			A5 Southbound	0	0	0	-	Y	0.00	•	•			
1800-5400		M69 Eastbound	A5 Northbound	26	19	-7	-27%	Y	1.48	•	•			
1800-5400			B4109 Rugby Road	2	1	-1	-50%	Y	0.82	•	•			
1800-5400			M69 Eastbound	163	163	0	0%	Y	0.00	•	•			
1800-5400			A5 Southbound	19	19	0	0%	Y	0.00	•	•			
1800-5400			B4109 Hinckley Road	1	1	0	0%	Y	0.00	•	•			
1800-5400		A5 Southbound	B4109 Rugby Road	0	0	0	-	Y	0.00	•	•			
1800-5400			M69 Eastbound	14	14	0	0%	Y	0.00	•	•			
1800-5400			A5 Southbound	43	43	0	0%	Y	0.00	•	•			
1800-5400			B4109 Hinckley Road	2	2	0	0%	Y	0.00	•	•			
1800-5400			M69 Westbound	19	19	0	0%	Y	0.00	•	•			
1800-5400	A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	2	2	0	0%	Y	0.00	•	•			
1800-5400			Wolvey Road Southbound	0	0	0	-	N	0.00	•	•			
1800-5400			A5 Watling Street Westbound	1	0	-1	-100%	Y	1.41	•	•			
1800-5400		A5 Watling Street Westbound	Wolvey Road Southbound	0	0	0	-	Y	0.00	•	•			
1800-5400			A5 Watling Street Westbound	106	88	-18	-17%	Y	1.83	•	•			
1800-5400			Wolvey Road Northbound	1	0	-1	-100%	Y	1.41	•	•			
1800-5400		Wolvey Road Northbound	A5 Watling Street Westbound	0	0	0	-	N	0.00	•	•			
1800-5400			Wolvey Road Northbound	0	0	0	-	N	0.00	•	•			
1800-5400			A5 Watling Street Eastbound	0	0	0	-	N	0.00	•	•			
1800-5400		A5 Watling Street Eastbound	Wolvey Road Northbound	2	2	0	0%	Y	0.00	•	•			
1800-5400			A5 Watling Street Eastbound	74	76	2	3%	Y	0.23	•	•			
1800-5400			A5 Watling Street Westbound	0	0	0	-	Y	0.00	•	•			

PM Peak (17:30-18:30) Summary - HEAVIES	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
5400-9000	M69 Junction 1	B4109 Rugby Road	M69 Eastbound	2	2	0	0%	Y	0.00	•	•			
5400-9000			A5 Southbound	3	3	0	0%	Y	0.00	•	•			
5400-9000			B4109 Hinckley Road	1	2	1	100%	Y	0.82	•	•			
5400-9000			M69 Westbound	2	2	0	0%	Y	0.00	•	•			
5400-9000			A5 Northbound	1	1	0	0%	Y	0.00	•	•			
5400-9000		M69 Westbound	A5 Southbound	1	1	0	0%	Y	0.00	•	•			
5400-9000			B4109 Hinckley Road	3	3	0	0%	Y	0.00	•	•			
5400-9000			M69 Westbound	168	169	1	1%	Y	0.08	•	•			
5400-9000			A5 Northbound	19	21	2	11%	Y	0.45	•	•			
5400-9000			B4109 Rugby Road	1	1	0	0%	Y	0.00	•	•			
5400-9000		A5 Northbound	B4109 Hinckley Road	1	1	0	0%	Y	0.00	•	•			
5400-9000			M69 Westbound	14	15	1	7%	Y	0.26	•	•			
5400-9000			A5 Northbound	43	48	5	12%	Y	0.74	•	•			
5400-9000			B4109 Rugby Road	0	0	0	-	Y	0.00	•	•			
5400-9000			M69 Eastbound	0	0	0	-	Y	0.00	•	•			
5400-9000		B4109 Hinckley Road	M69 Westbound	0	0	0	-	Y	0.00	•	•			
5400-9000			A5 Northbound	4	4	0	0%	Y	0.00	•	•			
5400-9000			B4109 Rugby Road	1	1	0	0%	Y	0.00	•	•			
5400-9000			M69 Eastbound	1	2	1	100%	Y	0.82	•	•			
5400-9000			A5 Southbound	1	1	0	0%	Y	0.00	•	•			
5400-9000		M69 Eastbound	A5 Northbound	40	46	6	15%	Y	0.91	•	•			
5400-9000			B4109 Rugby Road	3	2	-1	-33%	Y	0.63	•	•			
5400-9000			M69 Eastbound	135	136	1	1%	Y	0.09	•	•			
5400-9000			A5 Southbound	15	15	0	0%	Y	0.00	•	•			
5400-9000			B4109 Hinckley Road	0	0	0	-	Y	0.00	•	•			
5400-9000		A5 Southbound	B4109 Rugby Road	0	0	0	-	Y	0.00	•	•			
5400-9000			M69 Eastbound	18	17	-1	-6%	Y	0.24	•	•			
5400-9000			A5 Southbound	48	47	-1	-2%	Y	0.15	•	•			
5400-9000			B4109 Hinckley Road	0	0	0	-	Y	0.00	•	•			
5400-9000			M69 Westbound	11	11	0	0%	Y	0.00	•	•			
5400-9000	A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	0	0	0	-	Y	0.00	•	•			
5400-9000			Wolvey Road Southbound	0	0	0	-	N	0.00	•	•			
5400-9000			A5 Watling Street Westbound	0	0	0	-	Y	0.00	•	•			
5400-9000		A5 Watling Street Westbound	Wolvey Road Southbound	0	0	0	-	Y	0.00	•	•			
5400-9000			A5 Watling Street Westbound	108	120	12	11%	Y	1.12	•	•			
5400-9000			Wolvey Road Northbound	1	0	-1	-100%	Y	1.41	•	•			
5400-9000		Wolvey Road Northbound	A5 Watling Street Westbound	0	0	0	-	N	0.00	•	•			
5400-9000			Wolvey Road Northbound	0	0	0	-	N	0.00	•	•			
5400-9000			A5 Watling Street Eastbound	0	0	0	-	N	0.00	•	•			
5400-9000		A5 Watling Street Eastbound	Wolvey Road Northbound	1	1	0	0%	Y	0.00	•	•			
5400-9000			A5 Watling Street Eastbound	76	75	-1	-1%	Y	0.12	•	•			
5400-9000			A5 Watling Street Westbound	0	0	0	-	Y	0.00	•	•			

PM Peak (16:30-18:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
	Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
M69 Junction 1	B4109 Rugby Road	M69 Eastbound	117	117	0	0%	N	0.00	*	*			
		A5 Southbound	235	236	1	0%	N	0.07	*	*			
		B4109 Hinckley Road	239	239	0	0%	N	0.00	*	*			
		M69 Westbound	387	363	-24	-6%	N	1.24	*	*			
		A5 Northbound	32	31	-1	-3%	N	0.18	*	*			
	M69 Westbound	A5 Southbound	64	65	1	2%	N	0.13	*	*			
		B4109 Hinckley Road	377	380	3	1%	N	0.16	*	*			
		M69 Westbound	3152	3155	3	0%	N	0.05	*	*	*	*	
		A5 Northbound	456	454	-2	0%	N	0.10	*	*			
		B4109 Rugby Road	179	178	-1	-1%	N	0.08	*	*			
	A5 Northbound	B4109 Hinckley Road	15	15	0	0%	N	0.00	*	*			
		M69 Westbound	265	267	2	1%	N	0.13	*	*			
		A5 Northbound	787	766	-21	-3%	N	0.78	*	*			
		B4109 Rugby Road	405	402	-3	-1%	N	0.15	*	*			
		M69 Eastbound	44	45	1	2%	N	0.15	*	*			
	B4109 Hinckley Road	M69 Westbound	27	27	0	0%	N	0.00	*	*			
		A5 Northbound	192	193	1	1%	N	0.07	*	*			
		B4109 Rugby Road	373	376	3	1%	N	0.16	*	*			
		M69 Eastbound	181	185	4	2%	N	0.30	*	*			
		A5 Southbound	14	14	0	0%	N	0.00	*	*			
	M69 Eastbound	A5 Northbound	747	743	-4	-1%	N	0.15	*	*	*	*	
		B4109 Rugby Road	1258	1262	4	0%	N	0.11	*	*	*	*	
		M69 Eastbound	4516	4530	14	0%	N	0.21	*	*	*	*	
		A5 Southbound	681	682	1	0%	N	0.04	*	*			
		B4109 Hinckley Road	34	34	0	0%	N	0.00	*	*			
	A5 Southbound	B4109 Rugby Road	32	32	0	0%	N	0.00	*	*			
		M69 Eastbound	456	458	2	0%	N	0.09	*	*			
		A5 Southbound	906	905	-1	0%	N	0.03	*	*	*	*	
		B4109 Hinckley Road	86	76	-10	-12%	N	1.11	*	*			
		M69 Westbound	473	470	-3	-1%	N	0.14	*	*			
A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	52	49	-3	-6%	Y	0.42	*	*			
		Wolvey Road Southbound	1	1	0	0%	N	0.00	*	*			
		A5 Watling Street Westbound	41	41	0	0%	Y	0.00	*	*			
	A5 Watling Street Westbound	Wolvey Road Southbound	1	0	-1	-100%	Y	1.41	*	*			
		A5 Watling Street Westbound	2030	2095	65	3%	Y	1.43	*	*	*	*	
		Wolvey Road Northbound	93	91	-2	-2%	Y	0.21	*	*			
	Wolvey Road Northbound	A5 Watling Street Westbound	1	1	0	0%	N	0.00	*	*			
		Wolvey Road Northbound	0	0	0	-	N	0.00	*	*			
		A5 Watling Street Eastbound	1	0	-1	-100%	N	1.41	*	*			
	A5 Watling Street Eastbound	Wolvey Road Northbound	300	297	-3	-1%	Y	0.17	*	*			
		A5 Watling Street Eastbound	1867	1883	16	1%	Y	0.37	*	*	*	*	
		A5 Watling Street Westbound	0	0	0	-	Y	0.00	*	*			

PM Peak (16:30-18:30) Summary - LIGHTS	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
	Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
M69 Junction 1	B4109 Rugby Road	M69 Eastbound	114	114	0	0%	N	0.00	*	*			
		A5 Southbound	230	232	2	1%	N	0.13	*	*			
		B4109 Hinckley Road	236	235	-1	0%	N	0.07	*	*			
		M69 Westbound	384	360	-24	-6%	N	1.24	*	*			
		A5 Northbound	31	30	-1	-3%	N	0.18	*	*			
	M69 Westbound	A5 Southbound	57	58	1	2%	N	0.13	*	*			
		B4109 Hinckley Road	369	372	3	1%	N	0.16	*	*			
		M69 Westbound	2840	2842	2	0%	N	0.04	*	*	*	*	
		A5 Northbound	424	423	-1	0%	N	0.05	*	*			
		B4109 Rugby Road	177	177	0	0%	N	0.00	*	*			
	A5 Northbound	B4109 Hinckley Road	14	14	0	0%	N	0.00	*	*			
		M69 Westbound	242	243	1	0%	N	0.06	*	*			
		A5 Northbound	679	661	-18	-3%	N	0.70	*	*			
		B4109 Rugby Road	400	397	-3	-1%	N	0.15	*	*			
		M69 Eastbound	43	43	0	0%	N	0.00	*	*			
	B4109 Hinckley Road	M69 Westbound	27	27	0	0%	N	0.00	*	*			
		A5 Northbound	186	187	1	1%	N	0.07	*	*			
		B4109 Rugby Road	371	374	3	1%	N	0.16	*	*			
		M69 Eastbound	179	182	3	2%	N	0.22	*	*			
		A5 Southbound	13	13	0	0%	N	0.00	*	*			
	M69 Eastbound	A5 Northbound	681	678	-3	0%	N	0.12	*	*			
		B4109 Rugby Road	1253	1259	6	0%	N	0.17	*	*	*	*	
		M69 Eastbound	4216	4231	13	0%	N	0.20	*	*	*	*	
		A5 Southbound	647	648	1	0%	N	0.04	*	*			
		B4109 Hinckley Road	33	33	0	0%	N	0.00	*	*			
	A5 Southbound	B4109 Rugby Road	32	32	0	0%	N	0.00	*	*			
		M69 Eastbound	424	427	3	1%	N	0.15	*	*			
		A5 Southbound	815	815	0	0%	N	0.00	*	*	*	*	
		B4109 Hinckley Road	84	74	-10	-12%	N	1.13	*	*			
		M69 Westbound	443	440	-3	-1%	N	0.14	*	*			
A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	50	47	-3	-6%	Y	0.43	*	*			
		Wolvey Road Southbound	1	1	0	0%	N	0.00	*	*			
		A5 Watling Street Westbound	40	41	1	3%	Y	0.16	*	*			
	A5 Watling Street Westbound	Wolvey Road Southbound	1	0	-1	-100%	Y	1.41	*	*			
		A5 Watling Street Westbound	1816	1887	71	4%	Y	1.65	*	*	*	*	
		Wolvey Road Northbound	91	91	0	0%	Y	0.00	*	*			
	Wolvey Road Northbound	A5 Watling Street Westbound	1	1	0	0%	N	0.00	*	*			
		Wolvey Road Northbound	0	0	0	-	N	0.00	*	*			
		A5 Watling Street Eastbound	1	0	-1	-100%	N	1.41	*	*			
	A5 Watling Street Eastbound	Wolvey Road Northbound	297	294	-3	-1%	Y	0.17	*	*			
		A5 Watling Street Eastbound	1717	1732	15	1%	Y	0.36	*	*	*	*	
		A5 Watling Street Westbound	0	0	0	-	Y	0.00	*	*			

PM Peak (16:30-18:30) Summary - HEAVIES	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
	Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
M69 Junction 1	B4109 Rugby Road	M69 Eastbound	3	3	0	0%	Y	0.00	*	*			
		A5 Southbound	5	4	-1	-20%	Y	0.47	*	*			
		B4109 Hinckley Road	3	4	1	33%	Y	0.53	*	*			
		M69 Westbound	3	3	0	0%	Y	0.00	*	*			
		A5 Northbound	1	1	0	0%	Y	0.00	*	*			
	M69 Westbound	A5 Southbound	7	7	0	0%	Y	0.00	*	*			
		B4109 Hinckley Road	8	8	0	0%	Y	0.00	*	*			
		M69 Westbound	312	313	1	0%	Y	0.06	*	*			
		A5 Northbound	32	31	-1	-3%	Y	0.18	*	*			
		B4109 Rugby Road	2	1	-1	-50%	Y	0.82	*	*			
	A5 Northbound	B4109 Hinckley Road	1	1	0	0%	Y	0.00	*	*			
		M69 Westbound	23	24	1	4%	Y	0.21	*	*			
		A5 Northbound	108	105	-3	-3%	Y	0.29	*	*			
		B4109 Rugby Road	5	5	0	0%	Y	0.00	*	*			
		M69 Eastbound	1	2	1	100%	Y	0.82	*	*			
		M69 Westbound	0	0	0	-	Y	0.00	*	*			
	B4109 Hinckley Road	A5 Northbound	6	6	0	0%	Y	0.00	*	*			
		B4109 Rugby Road	2	2	0	0%	Y	0.00	*	*			
		M69 Eastbound	2	3	1	50%	Y	0.63	*	*			
		A5 Southbound	1	1	0	0%	Y	0.00	*	*			
	M69 Eastbound	A5 Northbound	66	65	-1	-2%	Y	0.12	*	*			
		B4109 Rugby Road	5	3	-2	-40%	Y	1.00	*	*			
		M69 Eastbound	298	299	1	0%	Y	0.06	*	*			
		A5 Southbound	34	34	0	0%	Y	0.00	*	*			
		B4109 Hinckley Road	1	1	0	0%	Y	0.00	*	*			
	A5 Southbound	B4109 Rugby Road	0	0	0	-	Y	0.00	*	*			
		M69 Eastbound	32	31	-1	-3%	Y	0.18	*	*			
		A5 Southbound	91	90	-1	-1%	Y	0.11	*	*			
		B4109 Hinckley Road	2	2	0	0%	Y	0.00	*	*			
		M69 Westbound	30	30	0	0%	Y	0.00	*	*			
A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	2	2	0	0%	Y	0.00	*	*			
		Wolvey Road Southbound	0	0	0	-	N	0.00	*	*			
		A5 Watling Street Westbound	1	0	-1	-100%	Y	1.41	*	*			
	A5 Watling Street Westbound	Wolvey Road Southbound	0	0	0	-	Y	0.00	*	*			
		A5 Watling Street Westbound	214	208	-6	-3%	Y	0.41	*	*			
		Wolvey Road Northbound	2	0	-2	-100%	Y	2.00	*	*			
	Wolvey Road Northbound	A5 Watling Street Westbound	0	0	0	-	N	0.00	*	*			
		Wolvey Road Northbound	0	0	0	-	N	0.00	*	*			
		A5 Watling Street Eastbound	0	0	0	-	N	0.00	*	*			
	A5 Watling Street Eastbound	Wolvey Road Northbound	3	3	0	0%	Y	0.00	*	*			
		A5 Watling Street Eastbound	150	151	1	1%	Y	0.08	*	*			
		A5 Watling Street Westbound	0	0	0	-	Y	0.00	*	*			

AM Peak (07:30-08:30) Summary - ALL

Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement: Approach	Exit/movement	Vehicle Flow: Observed	Modelled	Difference: Actual	%	GEH Criteria Met: Critical	GEH	Pass	Flow Criteria Met: FLOW	<700	700 – 2700	>2700
1800-5400	M69 Junction 1	B4109 Rugby Road	M69 Eastbound	134	135	1	1%	Y	0.09	•	•			
1800-5400			A5 Southbound	202	207	5	2%	Y	0.35	•	•			
1800-5400			B4109 Hinckley Road	325	326	1	0%	Y	0.06	•	•			
1800-5400			M69 Westbound	681	698	17	2%	Y	0.65	•	•			
1800-5400			A5 Northbound	37	36	-1	-3%	Y	0.17	•	•			
1800-5400		M69 Westbound	A5 Southbound	49	49	0	0%	Y	0.00	•	•			
1800-5400			B4109 Hinckley Road	241	240	-1	0%	Y	0.06	•	•			
1800-5400			M69 Westbound	2261	2280	19	1%	Y	0.40	•	•	• •		
1800-5400			A5 Northbound	300	304	4	1%	Y	0.23	•	•			
1800-5400			B4109 Rugby Road	37	36	-1	-3%	Y	0.17	•	•			
1800-5400		A5 Northbound	B4109 Hinckley Road	15	15	0	0%	Y	0.00	•	•			
1800-5400			M69 Westbound	248	249	1	0%	Y	0.06	•	•			
1800-5400			A5 Northbound	449	436	-13	-3%	Y	0.62	•	•			
1800-5400			B4109 Rugby Road	89	89	0	0%	Y	0.00	•	•			
1800-5400			M69 Eastbound	41	41	0	0%	Y	0.00	•	•			
1800-5400		B4109 Hinckley Road	M69 Westbound	7	7	0	0%	Y	0.00	•	•			
1800-5400			A5 Northbound	100	100	0	0%	Y	0.00	•	•			
1800-5400			B4109 Rugby Road	103	102	-1	-1%	Y	0.10	•	•			
1800-5400			M69 Eastbound	190	197	7	4%	Y	0.50	•	•			
1800-5400			A5 Southbound	5	6	1	20%	Y	0.43	•	•			
1800-5400		M69 Eastbound	A5 Northbound	298	295	-3	-1%	Y	0.17	•	•			
1800-5400			B4109 Rugby Road	190	189	-1	-1%	Y	0.07	•	•			
1800-5400			M69 Eastbound	1649	1653	4	0%	Y	0.10	•	•	• •		
1800-5400			A5 Southbound	135	134	-1	-1%	Y	0.09	•	•			
1800-5400			B4109 Hinckley Road	14	14	0	0%	Y	0.00	•	•			
1800-5400		A5 Southbound	B4109 Rugby Road	5	6	1	20%	Y	0.43	•	•			
1800-5400			M69 Eastbound	253	261	8	3%	Y	0.50	•	•			
1800-5400			A5 Southbound	386	399	13	3%	Y	0.66	•	•			
1800-5400			B4109 Hinckley Road	116	118	2	2%	Y	0.18	•	•			
1800-5400			M69 Westbound	355	369	14	4%	Y	0.74	•	•			
1800-5400	A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	114	113	-1	-1%	Y	0.09	•	•			
1800-5400			Wolvey Road Southbound	1	1	0	0%	N	0.00	•	•			
1800-5400			A5 Watling Street Westbound	45	45	0	0%	Y	0.00	•	•			
1800-5400		A5 Watling Street Westbound	Wolvey Road Southbound	2	1	-1	-50%	Y	0.82	•	•			
1800-5400			A5 Watling Street Westbound	1146	1158	12	1%	Y	0.35	•	•	• •		
1800-5400			Wolvey Road Northbound	17	15	-2	-12%	Y	0.50	•	•			
1800-5400		Wolvey Road Northbound	A5 Watling Street Westbound	1	1	0	0%	N	0.00	•	•			
1800-5400			Wolvey Road Northbound	1	0	-1	-100%	N	1.41	•	•			
1800-5400			A5 Watling Street Eastbound	2	1	-1	-50%	N	0.82	•	•			
1800-5400		A5 Watling Street Eastbound	Wolvey Road Northbound	32	31	-1	-3%	Y	0.18	•	•			
1800-5400			A5 Watling Street Eastbound	989	1017	28	3%	Y	0.88	•	•	• •		
1800-5400			A5 Watling Street Westbound	0	0	0	-	Y	0.00	•	•			

AM Peak (08:30-09:30) Summary - ALL

Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement: Approach	Exit/movement	Vehicle Flow: Observed	Modelled	Difference: Actual	%	GEH Criteria Met: Critical	GEH	Pass	Flow Criteria Met: FLOW	<700	700 – 2700	>2700
5400-9000	M69 Junction 1	Zone A - B4109 Rugby Road	Zone B - M69 Eastbound	118	118	0	0%	N	0.00	•	•			
5400-9000			Zone C - A5 Southbound	185	185	0	0%	N	0.00	•	•			
5400-9000			Zone D - B4109 Hinckley Road	168	172	4	2%	N	0.31	•	•			
5400-9000			Zone E - M69 Westbound	403	413	10	2%	N	0.50	•	•			
5400-9000			Zone F - A5 Northbound	47	49	2	4%	N	0.29	•	•			
5400-9000		Zone B - M69 Westbound	Zone C - A5 Southbound	64	64	0	0%	N	0.00	•	•			
5400-9000			Zone D - B4109 Hinckley Road	149	155	6	4%	N	0.49	•	•			
5400-9000			Zone E - M69 Westbound	1744	1764	20	1%	N	0.48	•	•	• •		
5400-9000			Zone F - A5 Northbound	199	211	12	6%	N	0.84	•	•			
5400-9000			Zone A - B4109 Rugby Road	38	37	-1	-3%	N	0.16	•	•			
5400-9000		Zone C - A5 Northbound	Zone D - B4109 Hinckley Road	8	8	0	0%	N	0.00	•	•			
5400-9000			Zone E - M69 Westbound	200	202	2	1%	N	0.14	•	•			
5400-9000			Zone F - A5 Northbound	399	437	38	10%	N	1.86	•	•			
5400-9000			Zone A - B4109 Rugby Road	95	96	1	1%	N	0.10	•	•			
5400-9000			Zone B - M69 Eastbound	32	32	0	0%	N	0.00	•	•			
5400-9000		Zone D - B4109 Hinckley Road	Zone E - M69 Westbound	17	17	0	0%	N	0.00	•	•			
5400-9000			Zone F - A5 Northbound	79	82	3	4%	N	0.33	•	•			
5400-9000			Zone A - B4109 Rugby Road	112	112	0	0%	N	0.00	•	•			
5400-9000			Zone B - M69 Eastbound	93	98	5	5%	N	0.51	•	•			
5400-9000			Zone C - A5 Southbound	6	6	0	0%	N	0.00	•	•			
5400-9000		Zone E - M69 Eastbound	Zone F - A5 Northbound	251	267	16	6%	N	0.99	•	•			
5400-9000			Zone A - B4109 Rugby Road	141	142	1	1%	N	0.08	•	•			
5400-9000			Zone B - M69 Eastbound	1278	1281	3	0%	N	0.08	•	•	• •		
5400-9000			Zone C - A5 Southbound	109	112	3	3%	N	0.29	•	•			
5400-9000			Zone D - B4109 Hinckley Road	11	11	0	0%	N	0.00	•	•			
5400-9000		Zone F - A5 Southbound	Zone A - B4109 Rugby Road	11	11	0	0%	N	0.00	•	•			
5400-9000			Zone B - M69 Eastbound	228	226	-2	-1%	N	0.13	•	•			
5400-9000			Zone C - A5 Southbound	444	445	1	0%	N	0.05	•	•			
5400-9000			Zone D - B4109 Hinckley Road	54	56	2	4%	N	0.27	•	•			
5400-9000			Zone E - M69 Westbound	291	289	-2	-1%	N	0.12	•	•			
5400-9000	A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	42	39	-3	-7%	Y	0.47	•	•			
5400-9000			Wolvey Road Southbound	0	0	0	-	N	0.00	•	•			
5400-9000			A5 Watling Street Westbound	40	40	0	0%	Y	0.00	•	•			
5400-9000		A5 Watling Street Westbound	Wolvey Road Southbound	1	3	2	200%	Y	1.41	•	•			
5400-9000			A5 Watling Street Westbound	988	1035	47	5%	Y	1.48	•	•	• •		
5400-9000			Wolvey Road Northbound	17	12	-5	-29%	Y	1.31	•	•			
5400-9000		Wolvey Road Northbound	A5 Watling Street Westbound	0	0	0	-	N	0.00	•	•			
5400-9000			Wolvey Road Northbound	3	0	-3	-100%	N	2.45	•	•			
5400-9000			A5 Watling Street Eastbound	0	3	3	-	N	2.45	•	•			
5400-9000		A5 Watling Street Eastbound	Wolvey Road Northbound	46	46	0	0%	Y	0.00	•	•			
5400-9000			A5 Watling Street Eastbound	984	985	1	0%	Y	0.03	•	•	• •		
5400-9000			A5 Watling Street Westbound	1	1	0	0%	Y	0.00	•	•			

AM Peak (07:30-08:30) Summary - LIGHTS

Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement: Approach	Exit/movement	Vehicle Flow: Observed	Modelled	Difference: Actual	%	GEH Criteria Met: Critical	GEH	Pass	Flow Criteria Met: FLOW	<700	700 – 2700	>2700
1800-5400	M69 Junction 1	B4109 Rugby Road	M69 Eastbound	134	135	1	1%	Y	0.09	•	•			
1800-5400			A5 Southbound	191	196	5	3%	Y	0.36	•	•			
1800-5400			B4109 Hinckley Road	319	320	1	0%	Y	0.06	•	•			
1800-5400			M69 Westbound	673	690	17	3%	Y	0.65	•	•			
1800-5400			A5 Northbound	37	36	-1	-3%	Y	0.17	•	•			
1800-5400		M69 Westbound	A5 Southbound	36	36	0	0%	Y	0.00	•	•			
1800-5400			B4109 Hinckley Road	237	235	-2	-1%	Y	0.13	•	•			
1800-5400			M69 Westbound	2026	2045	19	1%	Y	0.42	•	•	• •		
1800-5400			A5 Northbound	274	283	9	3%	Y	0.54	•	•			
1800-5400			B4109 Rugby Road	31	30	-1	-3%	Y	0.18	•	•			
1800-5400		A5 Northbound	B4109 Hinckley Road	14	14	0	0%	Y	0.00	•	•			
1800-5400			M69 Westbound	217	218	1	0%	Y	0.07	•	•			
1800-5400			A5 Northbound	390	388	-2	-1%	Y	0.10	•	•			
1800-5400			B4109 Rugby Road	87	87	0	0%	Y	0.00	•	•			
1800-5400			M69 Eastbound	35	35	0	0%	Y	0.00	•	•			
1800-5400		B4109 Hinckley Road	M69 Westbound	7	7	0	0%	Y	0.00	•	•			
1800-5400			A5 Northbound	96	96	0	0%	Y	0.00	•	•			
1800-5400			B4109 Rugby Road	100	99	-1	-1%	Y	0.10	•	•			
1800-5400			M69 Eastbound	187	194	7	4%	Y	0.51	•	•			
1800-5400			A5 Southbound	4	4	0	0%	Y	0.00	•	•			
1800-5400		M69 Eastbound	A5 Northbound	276	277	1	0%	Y	0.06	•	•			
1800-5400			B4109 Rugby Road	182	181	-1	-1%	Y	0.07	•	•			
1800-5400			M69 Eastbound	1473	1477	4	0%	Y	0.10	•	•	• •		
1800-5400			A5 Southbound	120	118	-2	-2%	Y	0.18	•	•			
1800-5400			B4109 Hinckley Road	13	13	0	0%	Y	0.00	•	•			
1800-5400		A5 Southbound	B4109 Rugby Road	4	4	0	0%	Y	0.00	•	•			
1800-5400			M69 Eastbound	228	236	8	4%	Y	0.53	•	•			
1800-5400			A5 Southbound	314	324	10	3%	Y	0.56	•	•			
1800-5400			B4109 Hinckley Road	113	115	2	2%	Y	0.19	•	•			
1800-5400			M69 Westbound	334	349	15	4%	Y	0.81	•	•			
1800-5400	A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	110	112	2	2%	Y	0.19	•	•			
1800-5400			Wolvey Road Southbound	1	1	0	0%	N	0.00	•	•			
1800-5400			A5 Watling Street Westbound	44	44	0	0%	Y	0.00	•	•			
1800-5400		A5 Watling Street Westbound	Wolvey Road Southbound	2	1	-1	-50%	Y	0.82	•	•			
1800-5400			A5 Watling Street Westbound	1015	1066	51	5%	Y	1.58	•	•	• •		
1800-5400			Wolvey Road Northbound	17	15	-2	-12%	Y	0.50	•	•			
1800-5400		Wolvey Road Northbound	A5 Watling Street Westbound	1	1	0	0%	N	0.00	•	•			
1800-5400			Wolvey Road Northbound	1	0	-1	-100%	N	1.41	•	•			
1800-5400			A5 Watling Street Eastbound	2	1	-1	-50%	N	0.82	•	•			
1800-5400		A5 Watling Street Eastbound	Wolvey Road Northbound	30	29	-1	-3%	Y	0.18	•	•			
1800-5400			A5 Watling Street Eastbound	871	895	24	3%	Y	0.81	•	•	• •		
1800-5400			A5 Watling Street Westbound	0	0	0	-	Y	0.00	•	•			

AM Peak (08:30-09:30) Summary - LIGHTS

Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement: Approach	Exit/movement	Vehicle Flow: Observed	Modelled	Difference: Actual	%	GEH Criteria Met: Critical	GEH	Pass	Flow Criteria Met: FLOW	<700	700 – 2700	>2700
5400-9000	M69 Junction 1	Zone A - B4109 Rugby Road	Zone B - M69 Eastbound	114	114	0	0%	N	0.00	•	•			
5400-9000			Zone C - A5 Southbound	178	178	0	0%	N	0.00	•	•			
5400-9000			Zone D - B4109 Hinckley Road	164	168	4	2%	N	0.31	•	•			
5400-9000			Zone E - M69 Westbound	395	405	10	3%	N	0.50	•	•			
5400-9000			Zone F - A5 Northbound	46	47	1	2%	N	0.15	•	•			
5400-9000		Zone B - M69 Westbound	Zone C - A5 Southbound	44	44	0	0%	N	0.00	•	•			
5400-9000			Zone D - B4109 Hinckley Road	143	150	7	5%	N	0.58	•	•			
5400-9000			Zone E - M69 Westbound	1502	1521	19	1%	N	0.49	•	•	• •		
5400-9000			Zone F - A5 Northbound	163	164	1	1%	N	0.08	•	•			
5400-9000			Zone A - B4109 Rugby Road	36	36	0	0%	N	0.00	•	•			
5400-9000		Zone C - A5 Northbound	Zone D - B4109 Hinckley Road	6	6	0	0%	N	0.00	•	•			
5400-9000			Zone E - M69 Westbound	175	176	1	1%	N	0.08	•	•			
5400-9000			Zone F - A5 Northbound	293	298	5	2%	N	0.29	•	•			
5400-9000			Zone A - B4109 Rugby Road	93	94	1	1%	N	0.10	•	•			
5400-9000			Zone B - M69 Eastbound	27	27	0	0%	N	0.00	•	•			
5400-9000		Zone D - B4109 Hinckley Road	Zone E - M69 Westbound	17	17	0	0%	N	0.00	•	•			
5400-9000			Zone F - A5 Northbound	72	73	1	1%	N	0.12	•	•			
5400-9000			Zone A - B4109 Rugby Road	110	110	0	0%	N	0.00	•	•			
5400-9000			Zone B - M69 Eastbound	87	91	4	5%	N	0.42	•	•			
5400-9000			Zone C - A5 Southbound	5	5	0	0%	N	0.00	•	•			
5400-9000		Zone E - M69 Eastbound	Zone F - A5 Northbound	206	208	2	1%	N	0.14	•	•			
5400-9000			Zone A - B4109 Rugby Road	137	137	0	0%	N	0.00	•	•			
5400-9000			Zone B - M69 Eastbound	1127	1129	2	0%	N	0.06	•	•	• •		
5400-9000			Zone C - A5 Southbound	90	93	3	3%	N	0.31	•	•			
5400-9000			Zone D - B4109 Hinckley Road	11	11	0	0%	N	0.00	•	•			
5400-9000		Zone F - A5 Southbound	Zone A - B4109 Rugby Road	11	11	0	0%	N	0.00	•	•			
5400-9000			Zone B - M69 Eastbound	187	186	-1	-1%	N	0.07	•	•			
5400-9000			Zone C - A5 Southbound	339	338	-1	0%	N	0.05	•	•			
5400-9000			Zone D - B4109 Hinckley Road	51	53	2	4%	N	0.28	•	•			
5400-9000			Zone E - M69 Westbound	245	244	-1	0%	N	0.06	•	•			
5400-9000	A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	41	38	-3	-7%	Y	0.48	•	•			
5400-9000			Wolvey Road Southbound	0	0	0	-	N	0.00	•	•			
5400-9000			A5 Watling Street Westbound	38	38	0	0%	Y	0.00	•	•			
5400-9000		A5 Watling Street Westbound	Wolvey Road Southbound	1	3	2	200%	Y	1.41	•	•			
5400-9000			A5 Watling Street Westbound	799	782	-17	-2%	Y	0.60	•	•	• •		
5400-9000			Wolvey Road Northbound	16	11	-5	-31%	Y	1.36	•	•			
5400-9000		Wolvey Road Northbound	A5 Watling Street Westbound	0	0	0	-	N	0.00	•	•			
5400-9000			Wolvey Road Northbound	3	0	-3	-100%	N	2.45	•	•			
5400-9000			A5 Watling Street Eastbound	0	3	3	-	N	2.45	•	•			
5400-9000		A5 Watling Street Eastbound	Wolvey Road Northbound	45	45	0	0%	Y	0.00	•	•			
5400-9000			A5 Watling Street Eastbound	790	791	1	0%	Y	0.04	•	•	• •		
5400-9000			A5 Watling Street Westbound	1	1	0	0%	Y	0.00	•	•			

AM Peak (07:30-08:30) Summary - HEAVIES

Total number of counts considered	42
VISSIM model counts with GEH <3	41
% of VISSIM counts with GEH <3	97.62%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement: Approach	Exit/movement	Vehicle Flow: Observed	Modelled	Difference: Actual	%	GEH Criteria Met: Critical	GEH	Pass	Flow Criteria Met: FLOW	<700	700 – 2700	>2700
1800-5400	M69 Junction 1	B4109 Rugby Road	M69 Eastbound	0	0	0	-	Y	0.00	•	•			
1800-5400			A5 Southbound	11	11	0	0%	Y	0.00	•	•			
1800-5400			B4109 Hinckley Road	6	6	0	0%	Y	0.00	•	•			
1800-5400			M69 Westbound	8	8	0	0%	Y	0.00	•	•			
1800-5400			A5 Northbound	0	0	0	-	Y	0.00	•	•			
1800-5400		M69 Westbound	A5 Southbound	13	13	0	0%	Y	0.00	•	•			
1800-5400			B4109 Hinckley Road	4	5	1	25%	Y	0.47	•	•			
1800-5400			M69 Westbound	235	235	0	0%	Y	0.00	•	•			
1800-5400			A5 Northbound	26	21	-5	-19%	Y	1.03	•	•			
1800-5400			B4109 Rugby Road	6	6	0	0%	Y	0.00	•	•			
1800-5400		A5 Northbound	B4109 Hinckley Road	1	1	0	0%	Y	0.00	•	•			
1800-5400			M69 Westbound	31	31	0	0%	Y	0.00	•	•			
1800-5400			A5 Northbound	59	48	-11	-19%	Y	1.50	•	•			
1800-5400			B4109 Rugby Road	2	2	0	0%	Y	0.00	•	•			
1800-5400			M69 Eastbound	6	6	0	0%	Y	0.00	•	•			
1800-5400		B4109 Hinckley Road	M69 Westbound	0	0	0	-	Y	0.00	•	•			
1800-5400			A5 Northbound	4	4	0	0%	Y	0.00	•	•			
1800-5400			B4109 Rugby Road	3	3	0	0%	Y	0.00	•	•			
1800-5400			M69 Eastbound	3	3	0	0%	Y	0.00	•	•			
1800-5400			A5 Southbound	1	2	1	100%	Y	0.82	•	•			
1800-5400		M69 Eastbound	A5 Northbound	22	18	-4	-18%	Y	0.89	•	•			
1800-5400			B4109 Rugby Road	8	8	0	0%	Y	0.00	•	•			
1800-5400			M69 Eastbound	176	176	0	0%	Y	0.00	•	•			
1800-5400			A5 Southbound	15	16	1	7%	Y	0.25	•	•			
1800-5400			B4109 Hinckley Road	1	1	0	0%	Y	0.00	•	•			
1800-5400		A5 Southbound	B4109 Rugby Road	1	2	1	100%	Y	0.82	•	•			
1800-5400			M69 Eastbound	25	25	0	0%	Y	0.00	•	•			
1800-5400			A5 Southbound	72	75	3	4%	Y	0.35	•	•			
1800-5400			B4109 Hinckley Road	3	3	0	0%	Y	0.00	•	•			
1800-5400			M69 Westbound	21	20	-1	-5%	Y	0.22	•	•			
1800-5400	A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	4	1	-3	-75%	Y	1.90	•	•			
1800-5400			Wolvey Road Southbound	0	0	0	-	N	0.00	•	•			
1800-5400			A5 Watling Street Westbound	1	1	0	0%	Y	0.00	•	•			
1800-5400		A5 Watling Street Westbound	Wolvey Road Southbound	0	0	0	-	Y	0.00	•	•			
1800-5400			A5 Watling Street Westbound	131	92	-39	-30%	Y	3.69	•	•			
1800-5400			Wolvey Road Northbound	0	0	0	-	Y	0.00	•	•			
1800-5400		Wolvey Road Northbound	A5 Watling Street Westbound	0	0	0	-	N	0.00	•	•			
1800-5400			Wolvey Road Northbound	0	0	0	-	N	0.00	•	•			
1800-5400			A5 Watling Street Eastbound	0	0	0	-	N	0.00	•	•			
1800-5400		A5 Watling Street Eastbound	Wolvey Road Northbound	2	2	0	0%	Y	0.00	•	•			
1800-5400			A5 Watling Street Eastbound	118	122	4	3%	Y	0.37	•	•			
1800-5400			A5 Watling Street Westbound	0	0	0	-	Y	0.00	•	•			

AM Peak (08:30-09:30) Summary - HEAVIES

Total number of counts considered	42
VISSIM model counts with GEH <3	41
% of VISSIM counts with GEH <3	97.62%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement: Approach	Exit/movement	Vehicle Flow: Observed	Modelled	Difference: Actual	%	GEH Criteria Met: Critical	GEH	Pass	Flow Criteria Met: FLOW	<700	700 – 2700	>2700
5400-9000	M69 Junction 1	Zone A - B4109 Rugby Road	Zone B - M69 Eastbound	4	4	0	0%	N	0.00	•	•			
5400-9000			Zone C - A5 Southbound	7	7	0	0%	N	0.00	•	•			
5400-9000			Zone D - B4109 Hinckley Road	4	4	0	0%	N	0.00	•	•			
5400-9000			Zone E - M69 Westbound	8	8	0	0%	N	0.00	•	•			
5400-9000			Zone F - A5 Northbound	1	2	1	100%	N	0.82	•	•			
5400-9000		Zone B - M69 Westbound	Zone C - A5 Southbound	20	20	0	0%	N	0.00	•	•			
5400-9000			Zone D - B4109 Hinckley Road	6	5	-1	-17%	N	0.43	•	•			
5400-9000			Zone E - M69 Westbound	242	243	1	0%	N	0.06	•	•			
5400-9000			Zone F - A5 Northbound	36	47	11	31%	N	1.71	•	•			
5400-9000			Zone A - B4109 Rugby Road	2	1	-1	-50%	N	0.82	•	•			
5400-9000		Zone C - A5 Northbound	Zone D - B4109 Hinckley Road	2	2	0	0%	N	0.00	•	•			
5400-9000			Zone E - M69 Westbound	25	26	1	4%	N	0.20	•	•			
5400-9000			Zone F - A5 Northbound	106	139	33	31%	N	2.98	•	•			
5400-9000			Zone A - B4109 Rugby Road	2	2	0	0%	N	0.00	•	•			
5400-9000			Zone B - M69 Eastbound	5	5	0	0%	N	0.00	•	•			
5400-9000		Zone D - B4109 Hinckley Road	Zone E - M69 Westbound	0	0	0	-	N	0.00	•	•			
5400-9000			Zone F - A5 Northbound	7	9	2	29%	N	0.71	•	•			
5400-9000			Zone A - B4109 Rugby Road	2	2	0	0%	N	0.00	•	•			
5400-9000			Zone B - M69 Eastbound	6	7	1	17%	N	0.39	•	•			
5400-9000			Zone C - A5 Southbound	1	1	0	0%	N	0.00	•	•			
5400-9000		Zone E - M69 Eastbound	Zone F - A5 Northbound	45	59	14	31%	N	1.94	•	•			
5400-9000			Zone A - B4109 Rugby Road	4	5	1	25%	N	0.47	•	•			
5400-9000			Zone B - M69 Eastbound	151	152	1	1%	N	0.08	•	•			
5400-9000			Zone C - A5 Southbound	19	19	0	0%	N	0.00	•	•			
5400-9000			Zone D - B4109 Hinckley Road	0	0	0	-	N	0.00	•	•			
5400-9000		Zone F - A5 Southbound	Zone A - B4109 Rugby Road	0	0	0	-	N	0.00	•	•			
5400-9000			Zone B - M69 Eastbound	41	40	-1	-2%	N	0.16	•	•			
5400-9000			Zone C - A5 Southbound	105	107	2	2%	N	0.19	•	•			
5400-9000			Zone D - B4109 Hinckley Road	3	3	0	0%	N	0.00	•	•			
5400-9000			Zone E - M69 Westbound	46	45	-1	-2%	N	0.15	•	•			
5400-9000	A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	1	1	0	0%	Y	0.00	•	•			
5400-9000			Wolvey Road Southbound	0	0	0	-	N	0.00	•	•			
5400-9000			A5 Watling Street Westbound	2	2	0	0%	Y	0.00	•	•			
5400-9000		A5 Watling Street Westbound	Wolvey Road Southbound	0	0	0	-	Y	0.00	•	•			
5400-9000			A5 Watling Street Westbound	189	253	64	34%	Y	4.31	•	•			
5400-9000			Wolvey Road Northbound	1	1	0	0%	Y	0.00	•	•			
5400-9000		Wolvey Road Northbound	A5 Watling Street Westbound	0	0	0	-	N	0.00	•	•			
5400-9000			Wolvey Road Northbound	0	0	0	-	N	0.00	•	•			
5400-9000			A5 Watling Street Eastbound	0	0	0	-	N	0.00	•	•			
5400-9000		A5 Watling Street Eastbound	Wolvey Road Northbound	1	1	0	0%	Y	0.00	•	•			
5400-9000			A5 Watling Street Eastbound	194	194	0	0%	Y	0.00	•	•			
5400-9000			A5 Watling Street Westbound	0	0	0	-	Y	0.00	•	•			

AM Peak (07:30-09:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met		Flow Criteria Met				
	Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
M69 Junction 1	Zone A - B4109 Rugby Road	Zone B - M69 Eastbound	252	253	1	0%	N	0.06	*	*			
		Zone C - A5 Southbound	387	392	5	1%	N	0.25	*	*			
		Zone D - B4109 Hinckley Road	493	498	5	1%	N	0.22	*	*			
		Zone E - M69 Westbound	1084	1111	27	2%	N	0.82	*	*	*	*	
		Zone F - A5 Northbound	84	85	1	1%	N	0.11	*	*			
	Zone B - M69 Westbound	Zone C - A5 Southbound	113	113	0	0%	N	0.00	*	*			
		Zone D - B4109 Hinckley Road	390	395	5	1%	N	0.25	*	*			
		Zone E - M69 Westbound	4005	4044	39	1%	N	0.61	*	*	*	*	
		Zone F - A5 Northbound	499	515	16	3%	N	0.71	*	*			
		Zone A - B4109 Rugby Road	75	73	-2	-3%	N	0.23	*	*			
	Zone C - A5 Northbound	Zone D - B4109 Hinckley Road	23	23	0	0%	N	0.00	*	*			
		Zone E - M69 Westbound	448	451	3	1%	N	0.14	*	*			
		Zone F - A5 Northbound	848	873	25	3%	N	0.85	*	*	*	*	
		Zone A - B4109 Rugby Road	184	185	1	1%	N	0.07	*	*			
		Zone B - M69 Eastbound	73	73	0	0%	N	0.00	*	*			
	Zone D - B4109 Hinckley Road	Zone E - M69 Westbound	24	24	0	0%	N	0.00	*	*			
		Zone F - A5 Northbound	179	182	3	2%	N	0.22	*	*			
		Zone A - B4109 Rugby Road	215	214	-1	0%	N	0.07	*	*			
		Zone B - M69 Eastbound	283	295	12	4%	N	0.71	*	*			
		Zone C - A5 Southbound	11	12	1	9%	N	0.29	*	*			
	Zone E - M69 Eastbound	Zone F - A5 Northbound	549	562	13	2%	N	0.55	*	*			
		Zone A - B4109 Rugby Road	331	331	0	0%	N	0.00	*	*			
		Zone B - M69 Eastbound	2927	2934	7	0%	N	0.13	*	*	*	*	
		Zone C - A5 Southbound	244	246	2	1%	N	0.13	*	*			
		Zone D - B4109 Hinckley Road	25	25	0	0%	N	0.00	*	*			
	Zone F - A5 Southbound	Zone A - B4109 Rugby Road	16	17	1	6%	N	0.25	*	*			
		Zone B - M69 Eastbound	481	487	6	1%	N	0.27	*	*			
		Zone C - A5 Southbound	830	844	14	2%	N	0.48	*	*	*	*	
		Zone D - B4109 Hinckley Road	170	174	4	2%	N	0.30	*	*			
		Zone E - M69 Westbound	646	658	12	2%	N	0.47	*	*			
A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	156	152	-4	-3%	Y	0.32	*	*			
		Wolvey Road Southbound	1	1	0	0%	N	0.00	*	*			
	A5 Watling Street Westbound	A5 Watling Street Westbound	85	85	0	0%	Y	0.00	*	*			
		Wolvey Road Southbound	3	4	1	33%	Y	0.53	*	*			
		A5 Watling Street Westbound	2134	2193	59	3%	Y	1.27	*	*	*	*	
	Wolvey Road Northbound	Wolvey Road Northbound	34	27	-7	-21%	Y	1.27	*	*			
		A5 Watling Street Westbound	1	1	0	0%	N	0.00	*	*			
		Wolvey Road Northbound	4	0	-4	-100%	N	2.83	*	*			
		A5 Watling Street Eastbound	2	4	2	100%	N	1.15	*	*			
	A5 Watling Street Eastbound	Wolvey Road Northbound	78	77	-1	-1%	Y	0.11	*	*			
		A5 Watling Street Eastbound	1973	2002	29	1%	Y	0.65	*	*	*	*	
		A5 Watling Street Westbound	1	1	0	0%	Y	0.00	*	*			

AM Peak (07:30-09:30) Summary - LIGHTS	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met		Flow Criteria Met				
	Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
M69 Junction 1	Zone A - B4109 Rugby Road	Zone B - M69 Eastbound	248	249	1	0%	N	0.06	*	*			
		Zone C - A5 Southbound	369	374	5	1%	N	0.26	*	*			
		Zone D - B4109 Hinckley Road	483	488	5	1%	N	0.23	*	*			
		Zone E - M69 Westbound	1068	1095	27	3%	N	0.82	*	*	*	*	
		Zone F - A5 Northbound	83	83	0	0%	N	0.00	*	*			
	Zone B - M69 Westbound	Zone C - A5 Southbound	80	80	0	0%	N	0.00	*	*			
		Zone D - B4109 Hinckley Road	380	385	5	1%	N	0.26	*	*			
		Zone E - M69 Westbound	3528	3566	38	1%	N	0.64	*	*	*	*	
		Zone F - A5 Northbound	437	447	10	2%	N	0.48	*	*			
		Zone A - B4109 Rugby Road	67	66	-1	-1%	N	0.12	*	*			
	Zone C - A5 Northbound	Zone D - B4109 Hinckley Road	20	20	0	0%	N	0.00	*	*			
		Zone E - M69 Westbound	392	394	2	1%	N	0.10	*	*			
		Zone F - A5 Northbound	683	686	3	0%	N	0.11	*	*			
		Zone A - B4109 Rugby Road	180	181	1	1%	N	0.07	*	*			
		Zone B - M69 Eastbound	62	62	0	0%	N	0.00	*	*			
	Zone D - B4109 Hinckley Road	Zone E - M69 Westbound	24	24	0	0%	N	0.00	*	*			
		Zone F - A5 Northbound	168	169	1	1%	N	0.08	*	*			
		Zone A - B4109 Rugby Road	210	209	-1	0%	N	0.07	*	*			
		Zone B - M69 Eastbound	274	285	11	4%	N	0.66	*	*			
		Zone C - A5 Southbound	9	9	0	0%	N	0.00	*	*			
	Zone E - M69 Eastbound	Zone F - A5 Northbound	482	485	3	1%	N	0.14	*	*			
		Zone A - B4109 Rugby Road	319	318	-1	0%	N	0.06	*	*			
		Zone B - M69 Eastbound	2600	2606	6	0%	N	0.12	*	*	*	*	
		Zone C - A5 Southbound	210	211	1	0%	N	0.07	*	*			
		Zone D - B4109 Hinckley Road	24	24	0	0%	N	0.00	*	*			
	Zone F - A5 Southbound	Zone A - B4109 Rugby Road	15	15	0	0%	N	0.00	*	*			
		Zone B - M69 Eastbound	415	422	7	2%	N	0.34	*	*			
		Zone C - A5 Southbound	653	662	9	1%	N	0.35	*	*			
		Zone D - B4109 Hinckley Road	164	168	4	2%	N	0.31	*	*			
		Zone E - M69 Westbound	579	593	14	2%	N	0.58	*	*			
A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	151	150	-1	-1%	Y	0.08	*	*			
		Wolvey Road Southbound	1	1	0	0%	N	0.00	*	*			
	A5 Watling Street Westbound	A5 Watling Street Westbound	82	82	0	0%	Y	0.00	*	*			
		Wolvey Road Southbound	3	4	1	33%	Y	0.53	*	*			
		A5 Watling Street Westbound	1814	1848	34	2%	Y	0.79	*	*	*	*	
	Wolvey Road Northbound	Wolvey Road Northbound	33	26	-7	-21%	Y	1.29	*	*			
		A5 Watling Street Westbound	1	1	0	0%	N	0.00	*	*			
		Wolvey Road Northbound	4	0	-4	-100%	N	2.83	*	*			
		A5 Watling Street Eastbound	2	4	2	100%	N	1.15	*	*			
	A5 Watling Street Eastbound	Wolvey Road Northbound	75	74	-1	-1%	Y	0.12	*	*			
		A5 Watling Street Eastbound	1661	1686	25	2%	Y	0.61	*	*	*	*	
		A5 Watling Street Westbound	1	1	0	0%	Y	0.00	*	*			

AM Peak (07:30-09:30) Summary - HEAVIES	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met		Flow Criteria Met				
	Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
M69 Junction 1	Zone A - B4109 Rugby Road	Zone B - M69 Eastbound	4	4	0	0%	N	0.00	*	*			
		Zone C - A5 Southbound	18	18	0	0%	N	0.00	*	*			
		Zone D - B4109 Hinckley Road	10	10	0	0%	N	0.00	*	*			
		Zone E - M69 Westbound	16	16	0	0%	N	0.00	*	*			
		Zone F - A5 Northbound	1	2	1	100%	N	0.82	*	*			
	Zone B - M69 Westbound	Zone C - A5 Southbound	33	33	0	0%	N	0.00	*	*			
		Zone D - B4109 Hinckley Road	10	10	0	0%	N	0.00	*	*			
		Zone E - M69 Westbound	477	478	1	0%	N	0.05	*	*			
		Zone F - A5 Northbound	62	68	6	10%	N	0.74	*	*			
		Zone A - B4109 Rugby Road	8	7	-1	-13%	N	0.37	*	*			
	Zone C - A5 Northbound	Zone D - B4109 Hinckley Road	3	3	0	0%	N	0.00	*	*			
		Zone E - M69 Westbound	56	57	1	2%	N	0.13	*	*			
		Zone F - A5 Northbound	165	187	22	13%	N	1.66	*	*			
		Zone A - B4109 Rugby Road	4	4	0	0%	N	0.00	*	*			
		Zone B - M69 Eastbound	11	11	0	0%	N	0.00	*	*			
	Zone D - B4109 Hinckley Road	Zone E - M69 Westbound	0	0	0	-	N	0.00	*	*			
		Zone F - A5 Northbound	11	13	2	18%	N	0.58	*	*			
		Zone A - B4109 Rugby Road	5	5	0	0%	N	0.00	*	*			
		Zone B - M69 Eastbound	9	10	1	11%	N	0.32	*	*			
		Zone C - A5 Southbound	2	3	1	50%	N	0.63	*	*			
	Zone E - M69 Eastbound	Zone F - A5 Northbound	67	77	10	15%	N	1.18	*	*			
		Zone A - B4109 Rugby Road	12	13	1	8%	N	0.28	*	*			
		Zone B - M69 Eastbound	327	328	1	0%	N	0.06	*	*			
		Zone C - A5 Southbound	34	35	1	3%	N	0.17	*	*			
		Zone D - B4109 Hinckley Road	1	1	0	0%	N	0.00	*	*			
	Zone F - A5 Southbound	Zone A - B4109 Rugby Road	1	2	1	100%	N	0.82	*	*			
		Zone B - M69 Eastbound	66	65	-1	-2%	N	0.12	*	*			
		Zone C - A5 Southbound	177	182	5	3%	N	0.37	*	*			
		Zone D - B4109 Hinckley Road	6	6	0	0%	N	0.00	*	*			
		Zone E - M69 Westbound	67	65	-2	-3%	N	0.25	*	*			
A5/Wolvey Road	Wolvey Road Southbound	A5 Watling Street Eastbound	5	2	-3	-60%	Y	1.60	*	*			
		Wolvey Road Southbound	0	0	0	-	N	0.00	*	*			
		A5 Watling Street Westbound	3	3	0	0%	Y	0.00	*	*			
	A5 Watling Street Westbound	Wolvey Road Southbound	0	0	0	-	Y	0.00	*	*			
		A5 Watling Street Westbound	320	345	25	8%	Y	1.37	*	*			
	Wolvey Road Northbound	Wolvey Road Northbound	1	1	0	0%	Y	0.00	*	*			
		A5 Watling Street Westbound	0	0	0	-	N	0.00	*	*			
		Wolvey Road Northbound	0	0	0	-	N	0.00	*	*			
		A5 Watling Street Eastbound	0	0	0	-	N	0.00	*	*			
	A5 Watling Street Eastbound	Wolvey Road Northbound	3	3	0	0%	Y	0.00	*	*			
		A5 Watling Street Eastbound	312	316	4	1%	Y	0.23	*	*			
		A5 Watling Street Westbound	0	0	0	-	Y	0.00	*	*			

APPENDIX 2: Journey Time Validation

	From	-	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 1	Within 1 min	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 1	Within 1 min	Validates
1	Watling Street (North of Wolvey Rd)	–	Wolvey Road	898m	61	54	60	66	+1																					

				07:30 - 08:30									08:30 - 0930									08:30 - 0930								
	Description		Observed		Modelled			Validation						Modelled			Validation						Modelled			Validation				
Section	From	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates
1	Watling Street (North of Wolvey Rd)	Wolvey Road	898m	87	59	87	104	1	1 %	✔	✔	✔	64	55	56	57	-8	-13%	✔	✔	✔	75	55	72	104	-4	-5%	✔	✔	✔
5	A5 Watling Rd SB - Jct Wolvey	A5 Watling Rd SB - Jct MW RAB	394m	92	59	93	115	2	2 %	✔	✔	✔	72	45	47	50	-25	-35%	×	✔	✔	82	45	70	115	-12	-14%	✔	✔	✔
15	RAB - Stopline A5 Watling (N) to Rugby Rd		43m	7	4	5	5	-3	-36%	×	✔	✔	5	4	4	4	-1	-29%	×	✔	✔	6	4	4	5	-2	-33%	×	✔	✔
16	RAB Circ RugbyRd		71m	13	14	21	24	8	60%	×	✔	✔	9	8	9	11	0	1 %	✔	✔	✔	11	8	15	24	4	36%	×	✔	✔
17	RAB Rugby Road Jct to M69 NB Onslip		15m	2	5	6	6	4	169%	×	✔	✔	2	4	4	4	2	114%	×	✔	✔	2	4	5	6	3	143%	×	✔	✔
18	RAB Circ M69 N On to M68 S Off		68m	10	14	15	16	5	45%	×	✔	✔	9	12	12	13	3	36%	×	✔	✔	10	12	13	16	4	41%	×	✔	✔
19	RAB M69 SB Off to Watling Rd SB		13m	2	2	2	2	0	-6%	✔	✔	✔	2	2	2	2	0	-5%	✔	✔	✔	2	2	2	2	0	-6%	✔	✔	✔
9	A5 Watling Rd SB MW RAB (S)	A5 Watling Rd SB (S)	743m	46	44	44	45	-2	-3%	✔	✔	✔	47	45	45	45	-2	-4%	✔	✔	✔	46	44	45	45	-2	-4%	✔	✔	✔
TOTAL	**Watling Street (North of Wolvey Rd)**	**A5 Watling Rd SB (S)**	**2246m**	**259**	**200**	**273**	**316**	14	6 %	✔	✔	✔	**210**	**173**	**179**	**186**	-31	-15%	✔	✔	✔	**234**	**172**	**226**	**317**	-8	-4%	✔	✔	✔

				07:30 - 08:30									08:30 - 0930									16:30 - 18:30								
	Description		Observed		Modelled			Validation						Modelled			Validation						Modelled			Validation				
Section	From	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates
10	A5 Watling Rd NB (S)	A5 Watling Rd NB MW RAB (S)	748m	102	85	90	92	-12	-12%	✔	✔	✔	78	86	91	96	13	16%	×	✔	✔	90	85	90	96	0	0 %	✔	✔	✔
21	RAB Watling S to Hinkley Rd SB		27m	2	2	2	2	0	6 %	✔	✔	✔	2	2	2	2	0	-1%	✔	✔	✔	2	2	2	2	0	2 %	✔	✔	✔
22	RAB Circ Hinkley		82m	6	7	8	9	2	25%	×	✔	✔	6	6	7	7	0	7 %	✔	✔	✔	6	6	7	9	1	16%	×	✔	✔
23	RAB Hinkley Rd to M68 SB		16m	2	1	1	1	0	-7%	✔	✔	✔	1	1	1	1	0	13%	✔	✔	✔	1	1	1	1	0	2 %	✔	✔	✔
24	RAB Circ M65 S		104m	17	12	13	14	-3	-21%	×	✔	✔	13	12	12	12	-1	-7%	✔	✔	✔	15	12	13	14	-2	-15%	✔	✔	✔
25	M69 Jct Roundabout		34m	4	3	3	3	-2	-36%	×	✔	✔	5	3	3	3	-2	-40%	×	✔	✔	5	3	3	3	-2	-38%	×	✔	✔
6	Rugby Road NB - Jct MW RAB	Rugby Road NB - Jct Smll RAB	382m	39	38	39	39	0	0 %	✔	✔	✔	39	37	39	41	-1	-1%	✔	✔	✔	39	37	39	41	0	-1%	✔	✔	✔
2	Rugby Road NB - Jct Smll RAB	A5 Watling St NB - Field 2	904m	56	60	60	60	4	8 %	✔	✔	✔	56	59	59	59	3	6 %	✔	✔	✔	56	59	59	60	4	7 %	✔	✔	✔
TOTAL	**A5 Watling Rd NB (S)**	**A5 Watling St NB - Field 2**	**2299m**	**227**	**209**	**216**	**221**	-12	-5%	✔	✔	✔	**200**	**206**	**213**	**221**	13	7 %	✔	✔	✔	**214**	**205**	**215**	**226**	1	0 %	✔	✔	✔

				07:30 - 08:30									08:30 - 0930									16:30 - 18:30								
	Description		Observed		Modelled			Validation						Modelled			Validation						Modelled			Validation				
Section	From	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates
31	M69 NB - Powerlines	M69 NB Offslip	867m	28	31	31	32	3	11%	✔	✔	✔	29	31	31	31	3	9 %	✔	✔	✔	29	31	31	32	3	10%	✔	✔	✔
32	M69 NB Offslip	M69 NB Under	977m	31	34	34	34	3	10%	✔	✔	✔	31	34	34	34	3	9 %	✔	✔	✔	31	34	34	34	3	10%	✔	✔	✔
33	M69 NB Onslip	M69 NB XXX	1724m	56	60	61	61	5	9 %	✔	✔	✔	55	60	60	60	5	9 %	✔	✔	✔	55	60	60	61	5	9 %	✔	✔	✔
TOTAL	**M69 NB - Powerlines**	**0 M69 NB XXX**	**3568m**	**115**	**125**	**126**	**127**	11	10%	✔	✔	✔	**115**	**125**	**125**	**126**	11	9 %	✔	✔	✔	**115**	**125**	**126**	**127**	11	9 %	✔	✔	✔

				07:30 - 08:30									08:30 - 0930									16:30 - 18:30								
	Description		Observed		Modelled			Validation						Modelled			Validation						Modelled			Validation				
Section	From	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates
34	M69 SB XXX	M69 SB Offslip	1830m	58	67	67	67	9	15%	✔	✔	✔	60	66	66	67	6	11%	✔	✔	✔	59	66	67	67	8	13%	✔	✔	✔
35	M69 Under	M69 SB Onslip	871m	27	31	31	31	4	15%	✔	✔	✔	28	30	31	31	3	10%	✔	✔	✔	27	30	31	31	3	12%	✔	✔	✔
36	M69 SB Onslip	M69 SB Powerlines	857m	28	31	31	32	3	12%	✔	✔	✔	28	31	31	31	3	9 %	✔	✔	✔	28	31	31	32	3	11%	✔	✔	✔
TOTAL	**M69 SB XXX**	**0 M69 SB Powerlines**	**3558m**	**113**	**129**	**129**	**130**	16	14%	✔	✔	✔	**116**	**127**	**128**	**129**	12	10%	✔	✔	✔	**115**	**127**	**129**	**130**	14	12%	✔	✔	✔

				07:30 - 08:30									08:30 - 0930									16:30 - 18:30								
	Description		Observed		Modelled			Validation						Modelled			Validation						Modelled			Validation				
Section	From	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates		Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates
28	M69 SB OffSlip	M69 SB OffSlip	333m	50	49	52	53	2	4 %	✔	✔	✔	42	41	44	46	1	3 %	✔	✔	✔	46	41	48	53	2	3 %	✔	✔	✔
19	RAB M69 SB Off to Watling Rd SB		13m	2	2	2	2	0	-6%	✔	✔	✔	2	2	2	2	0	-5%	✔	✔	✔	2	2	2	2	0	-6%	✔	✔	✔
20	RAB CIRC Watling Road		103m	16	14	14	14	-2	-12%	✔	✔	✔	15	13	13	14	-2	-12%	✔	✔	✔	15	13	14	14	-2	-12%	✔	✔	✔
21	RAB Watling S to Hinkley Rd SB		27m	2	2	2	2	0	6 %	✔	✔	✔	2	2	2	2	0	-1%	✔	✔	✔	2	2	2	2	0	2 %	✔	✔	✔
22	RAB Circ Hinkley		82m	6	7	8	9	2	25%	×	✔	✔	6	6	7	7	0	7 %	✔	✔	✔	6	6	7	9	1	16%	×	✔	✔
23	RAB Hinkley Rd to M68 SB		16m	2	1	1	1	0	-7%	✔	✔	✔	1	1	1	1	0	13%	✔	✔	✔	1	1	1	1	0	2 %	✔	✔	✔
24	RAB Circ M65 S		104m	17	12	13	14	-3	-21%	×	✔	✔	13	12	12	12	-1	-7%	✔	✔	✔	15	12	13	14	-2	-15%	✔	✔	✔
25	RAB M69 NB Off to Waling N		34m	4	3	3	3	-2	-36%	×	✔	✔	5	3	3	3	-2	-40%	×	✔	✔	5	3	3	3	-2	-38%	×	✔	✔
6	A5 Watling Rd NB - Jct MW RAB	A5 Watling Rd NB - Jct Wolvey	382m	39	38	39	39	0	0 %	✔	✔	✔	39	37	39	41	-1	-1%	✔	✔	✔	39	37	39	41	0	-1%	✔	✔	✔
TOTAL	**M69 SB OffSlip**	**A5 Watling Rd NB - Jct Wolvey**	**1095m**	**137**	**129**	**134**	**137**	-4	-3%	✔	✔	✔	**125**	**117**	**122**	**127**	-3	-3%	✔	✔	✔	**131**	**117**	**128**	**139**	-3	-3%	✔	✔	✔

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	Description		Observed		Modelled			Validation						Modelled			Validation						Modelled			Validation				
Section	From	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates
28	M69 SB OffSlip		333m	50	49	52	53	2	4 %	✔	✔	✔	42	41	44	46	1	3 %	✔	✔	✔	46	41	48	53	2	3 %	✔	✔	✔
19	RAB M69 SB Off to Watling Rd SB		13m	2	2	2	2	0	-6%	✔	✔	✔	2	2	2	2	0	-5%	✔	✔	✔	2	2	2	2	0	-6%	✔	✔	✔
9	A5 Watling Rd SB MW RAB (S)	A5 Watling Rd SB (S)	743m	46	44	44	45	-2	-3%	✔	✔	✔	47	45	45	45	-2	-4%	✔	✔	✔	46	44	45	45	-2	-4%	✔	✔	✔
TOTAL	**M69 SB OffSlip**	**A5 Watling Rd SB (S)**	**1089m**	**98**	**95**	**98**	**100**	0	0 %	✔	✔	✔	**91**	**87**	**90**	**92**	-1	-1%	✔	✔	✔	**94**	**86**	**94**	**100**	0	0 %	✔	✔	✔

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	Description		Observed		Modelled			Validation						Modelled			Validation						Modelled			Validation				
Section	From	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates
30	M69 NB Offslip		332m	48	45	56	63	8	17%	×	✔	✔	43	39	41	43	-3	-6%	✔	✔	✔	46	39	48	63	3	6 %	✔	✔	✔
26	RAB Circ Watling N		56m	9	6	13	18	4	44%	×	✔	✔	10	5	5	6	-4	-45%	×	✔	✔	9	5	9	18	0	-2%	✔	✔	✔
6	A5 Watling Rd NB - Jct MW RAB	A5 Watling Rd NB - Jct Wolvey	382m	39	38	39	39	0	0 %	✔	✔	✔	39	37	39	41	-1	-1%	✔	✔	✔	39	37	39	41	0	-1%	✔	✔	✔
TOTAL	**M69 NB Offslip**	**A5 Watling Rd NB - Jct Wolvey**	**770m**	**96**	**89**	**108**	**120**	12	13%	✔	✔	✔	**92**	**80**	**85**	**90**	-7	-8%	✔	✔	✔	**94**	**80**	**96**	**121**	2	3 %	✔	✔	✔

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	Description		Observed		Modelled			Validation						Modelled			Validation						Modelled			Validation				
Section	From	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates
30	M69 NB Offslip		332m	48	45	56	63	8	17%	×	✔	✔	43	39	41	43	-3	-6%	✔	✔	✔	46	39	48	63	3	6 %	✔	✔	✔
25	RAB M69 NB Off to Waling N		34m	4	3	3	3	-2	-36%	×	✔	✔	5	3	3	3	-2	-40%	×	✔	✔	5	3	3	3	-2	-38%	×	✔	✔
26	RAB Circ Watling N		56m	9	6	13	18	4	44%	×	✔	✔	10	5	5	6	-4	-45%	×	✔	✔	9	5	9	18	0	-2%	✔	✔	✔
15	RAB - Stopline A5 Watling (N) to Rugby Rd		43m	7	4	5	5	-3	-36%	×	✔	✔	5	4	4	4	-1	-29%	×	✔	✔	6	4	4	5	-2	-33%	×	✔	✔
16	RAB Circ RugbyRd		71m	13	14	21	24	8	60%	×	✔	✔	9	8	9	11	0	1 %	✔	✔	✔	11	8	15	24	4	36%	×	✔	✔
17	RAB Rugby Road Jct to M69 NB Onslip		15m	2	5	6	6	4	169%	×	✔	✔	2	4	4	4	2	114%	×	✔	✔	2	4	5	6	3	143%	×	✔	✔
18	RAB Circ M69 N On to M68 S Off		68m	10	14	15	16	5	45%	×	✔	✔	9	12	12	13	3	36%	×	✔	✔	10	12	13	16	4	41%	×	✔	✔
19	RAB M69 SB Off to Watling Rd SB		13m	2	2	2	2	0	-6%	✔	✔	✔	2	2	2	2	0	-5%	✔	✔	✔	2	2	2	2	0	-6%	✔	✔	✔
9	A5 Watling Rd SB MW RAB (S)	A5 Watling Rd SB (S)	743m	46	44	44	45	-2	-3%	✔	✔	✔	47	45	45	45	-2	-4%	✔	✔	✔	46	44	45	45	-2	-4%	✔	✔	✔
TOTAL	**M69 NB Offslip**	**A5 Watling Rd SB (S)**	**1376m**	**142**	**136**	**164**	**181**	23	15%	✖	✔	✔	**131**	**120**	**125**	**130**	-7	-5%	✔	✔	✔	**136**	**119**	**144**	**182**	8	6 %	✔	✔	✔

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	Description		Observed		Modelled			Validation						Modelled			Validation						Modelled			Validation				
Section	From	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates
8	Rugby Road SB - Jct Smll RAB	Rugby Road SB - Jct MWRAB	631m	75	78	88	96	13	17%	×	✔	✔	66	67	68	69	1	2 %	✔	✔	✔	70	67	78	96	8	11%	✔	✔	✔
17	RAB Rugby Road Jct to M69 NB Onslip		15m	2	5	6	6	4	160%	×	✔	✔	2	4	4	4	2	114%	×	✔	✔	2	4	5	6	3	143%	×	✔	✔
18	RAB Circ M69 N On to M68 S Off		68m	10	14	15	16	5	48%	×	✔	✔	9	12	12	13	3	36%	×	✔	✔	10	12	13	16	4	41%	×	✔	✔
19	RAB M69 SB Off to Watling Rd SB		13m	2	2	2	2	0	-11%	✔	✔	✔	2	2	2	2	0	-5%	✔	✔	✔	2	2	2	2	0	-6%	✔	✔	✔
9	A5 Watling Rd SB MW RAB (S)	A5 Watling Rd SB (S)	743m	45	44	44	45	0	-1%	✔	✔	✔	47	45	45	45	-2	-4%	✔	✔	✔	46	44	45	45	-2	-4%	✔	✔	✔
TOTAL	**Rugby Road SB - Jct Smll RAB**	**A5 Watling Rd SB (S)**	**1470m**	**133**	**142**	**154**	**164**	21	16%	✖	✔	✔	**126**	**129**	**130**	**133**	5	4 %	✔	✔	✔	**130**	**127**	**142**	**165**	13	10%	✔	✔	✔

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	Description		Observed		Modelled			Validation						Modelled			Validation						Modelled			Validation				
Section	From	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates
10	A5 Watling Rd NB (S)	A5 Watling Rd NB MW RAB (S)	748m	102	85	90	92	-12	-12%	✔	✔	✔	78	86	91	96	13	16%	×	✔	✔	90	85	90	96	0	0 %	✔	✔	✔
21	RAB Watling S to Hinkley Rd SB		27m	2	2	2	2	0	6 %	✔	✔	✔	2	2	2	2	0	-1%	✔	✔	✔	2	2	2	2	0	2 %	✔	✔	✔
22	RAB Circ Hinkley		82m	6	7	8	9	2	25%	×	✔	✔	6	6	7	7	0	7 %	✔	✔	✔	6	6	7	9	1	16%	×	✔	✔
23	RAB Hinkley Rd to M68 SB		16m	2	1	1	1	0	-7%	✔	✔	✔	1	1	1	1	0	13%	✔	✔	✔	1	1	1	1	0	2 %	✔	✔	✔
24	RAB Circ M65 S		104m	17	12	13	14	-3	-21%	×	✔	✔	13	12	12	12	-1	-7%	✔	✔	✔	15	12	13	14	-2	-15%	✔	✔	✔
25	RAB M69 NB Off to Waling N		34m	4	3	3	3	-2	-36%	×	✔	✔	5	3	3	3	-2	-40%	×	✔	✔	5	3	3	3	-2	-38%	×	✔	✔
26	RAB Circ Watling N		56m	9	6	13	18	4	44%	×	✔	✔	10	5	5	6	-4	-45%	×	✔	✔	9	5	9	18	0	-2%	✔	✔	✔
15	RAB - Stopline A5 Watling (N) to Rugby Rd		43m	7	4	5	5	-3	-36%	×	✔	✔	5	4	4	4	-1	-29%	×	✔	✔	6	4	4	5	-2	-33%	×	✔	✔
7	Rugby Road NB - Jct MW RAB	Rugby Road NB - Jct Smll RAB	644m	42	46	47	47	5	12%	✔	✔	✔	43	44	45	46	2	5 %	✔	✔	✔	42	44	46	47	4	8 %	✔	✔	✔
TOTAL	**A5 Watling Rd NB (S)**	**Rugby Road NB - Jct Smll RAB**	**1755m**	**191**	**167**	**181**	**192**	-10	-5%	✔	✔	✔	**163**	**163**	**170**	**177**	7	4 %	✔	✔	✔	**177**	**162**	**176**	**196**	-1	-1%	✔	✔	✔

				07:30 - 08:30									08:30 - 0930									16:30 - 18:30								
	Description		Observed		Modelled			Validation						Modelled			Validation						Modelled			Validation				
Section	From	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates
14	Hinkley Road NB JCt Hinkley Road	Hinkley Road NB JCt MW RAB	546m	69	94	129	177	60	88%	×	×	×	49	52	56	59	6	13%	✔	✔	✔	62	52	92	177	30	48%	×	✔	✔
23	RAB Hinkley Rd to M68 SB		16m	1	1	1	1	0	-2%	✔	✔	✔	1	1	1	1	0	13%	✔	✔	✔	1	1	1	1	0	2 %	✔	✔	✔
24	RAB Circ M65 S		104m	15	12	13	14	-2	-16%	×	✔	✔	13	12	12	12	-1	-7%	✔	✔	✔	15	12	13	14	-2	-15%	✔	✔	✔
25	RAB M69 NB Off to Waling N		34m	5	3	3	3	-2	-38%	×	✔	✔	5	3	3	3	-2	-40%	×	✔	✔	5	3	3	3	-2	-38%	×	✔	✔
6	A5 Watling Rd NB - Jct MW RAB	A5 Watling Rd NB - Jct Wolvey	382m	39	38	39	39	-1	-2%	✔	✔	✔	39	37	39	41	-1	-1%	✔	✔	✔	39	37	39	41	0	-1%	✔	✔	✔
TOTAL	**Hinkley Road NB JCt Hinkley Road**	**A5 Watling Rd NB - Jct Wolvey**	**1083m**	**130**	**149**	**185**	**234**	56	43%	✖	✔	✔	**108**	**105**	**111**	**116**	3	3 %	✔	✔	✔	**122**	**105**	**148**	**235**	26	21%	✖	✔	✔

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	Description		Observed		Modelled			Validation						Modelled			Validation						Modelled			Validation				
Section	From	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates	Avg.	Min.	Avg.	Max.	Actual D	% Diff.	Within 15%	Within 1	Validates
5	A5 Watling Rd SB - Jct Wolvey	A5 Watling Rd SB - Jct MW RAB	394m	92	59	93	115	2	2 %	✔	✔	✔	72	45	47	50	-25	-35%	×	✔	✔	82	45	70	115	-12	-14%	✔	✔	✔
15	RAB - Stopline A5 Watling (N) to Rugby Rd		43m	7	4	5	5	-3	-36%	×	✔	✔	5	4	4	4	-1	-29%	×	✔	✔	6	4	4	5	-2	-33%	×	✔	✔
16	RAB Circ RugbyRd		71m	13	14	21	24	8	60%	×	✔	✔	9	8	9	11	0	1 %	✔	✔	✔	11	8	15	24	4	36%	×	✔	✔
17	RAB Rugby Road Jct to M69 NB Onslip		15m	2	5	6	6	4	169%	×	✔	✔	2	4	4	4	2	114%	×	✔	✔	2	4	5	6	3	143%	×	✔	✔
18	RAB Circ M69 N On to M68 S Off		68m	10	14	15	16	5	45%	×	✔	✔	9	12	12	13	3	36%	×	✔	✔	10	12	13	16	4	41%	×	✔	✔
19	RAB M69 SB Off to Watling Rd SB		13m	2	2	2	2	0	-6%	✔	✔	✔	2	2	2	2	0	-5%	✔	✔	✔	2	2	2	2	0	-6%	✔	✔	✔
20	RAB CIRC Watling Road		103m	16	14	14	14	-2	-12%	✔	✔	✔	15	13	13	14	-2	-12%	✔	✔	✔	15	13	14	14	-2	-12%	✔	✔	✔
21	RAB Watling S to Hinkley Rd SB		27m	2	2	2	2	0	6 %	✔	✔	✔	2	2	2	2	0	-1%	✔	✔	✔	2	2	2	2	0	2 %	✔	✔	✔
11	Hinkley Road SB JCt MW RAB	Hinkley Road SB JCt Hinkley Road	575m	38	46	48	48	9	24%	×	✔	✔	37	43	44	46	7	20%	×	✔	✔	37	43	46	48	8	22%	×	✔	✔
TOTAL	**A5 Watling Rd SB - Jct Wolvey**	**Hinkley Road SB JCt Hinkley Road**	**1310m**	**182**	**160**	**205**	**233**	23	12%	✔	✔	✔	**153**	**131**	**137**	**145**	-16	-10%	✔	✔	✔	**168**	**131**	**171**	**233**	4	2 %	✔	✔	✔

BWB

BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

[redacted]

Project Name	Hinckley National Rail Freight Interchange		
Document Number	HNRFI-BWB-GEN-XX-RP-TR-0005-M69 J2 Updated LMVR	BWB Ref	NTT2814
Author	DB	Status	S4
Checked	LB	Revision	P01
Approved	LB	Date	05/01/2021

1. INTRODUCTION

1.1 This Technical Note (TN) details microsimulation modelling undertaken by BWB to review and update an existing M69 J2 VISSIM model in support of the proposed National Rail Freight Interchange (NRFI) in Hinckley, Leicestershire.

1.2 The proposed development location is shown in **Figure 1**.

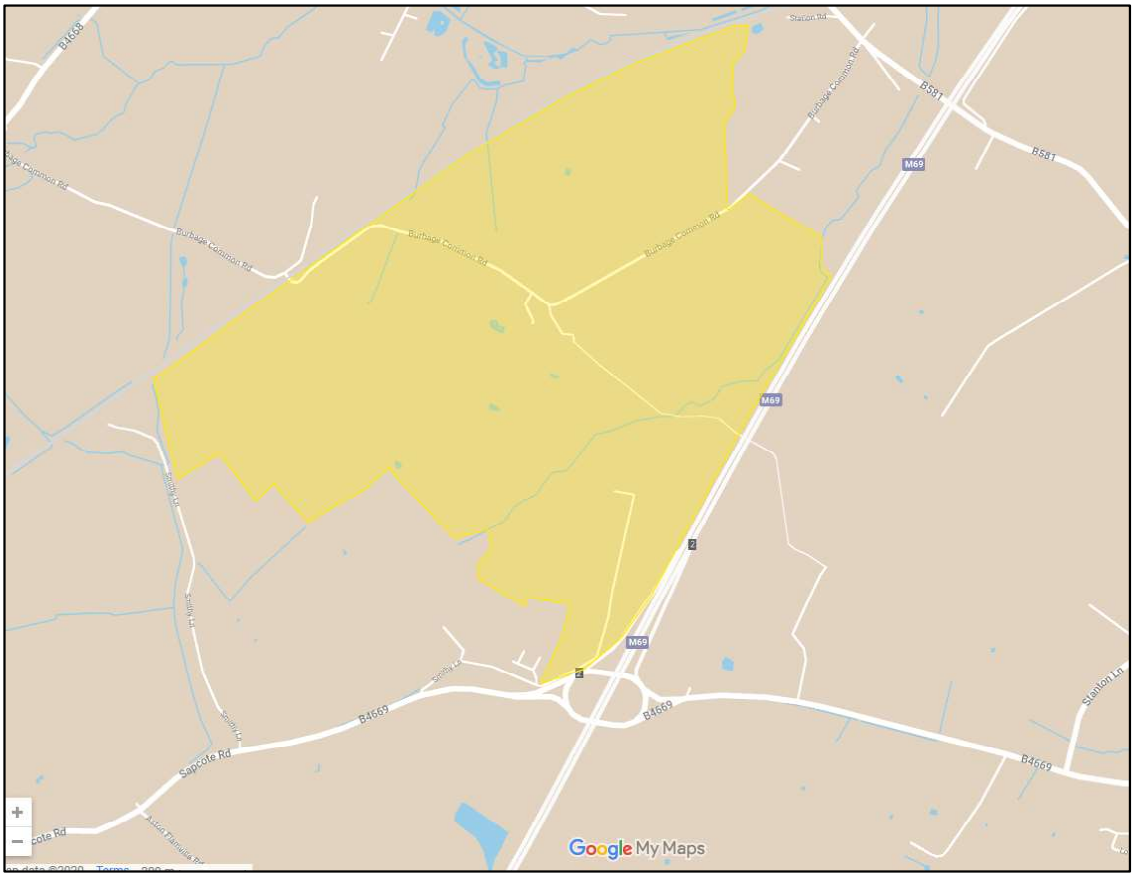


Figure 1 – Proposed NRFI Site Location

2. EXISTING M69 J2 VISSIM MODEL

2.1 BWB have received a VISSIM model of M69 J2 that has been approved for use by both Highways England (HE) and Leicestershire County Council (LCC). The extents of the model are shown in **Figure 2**.

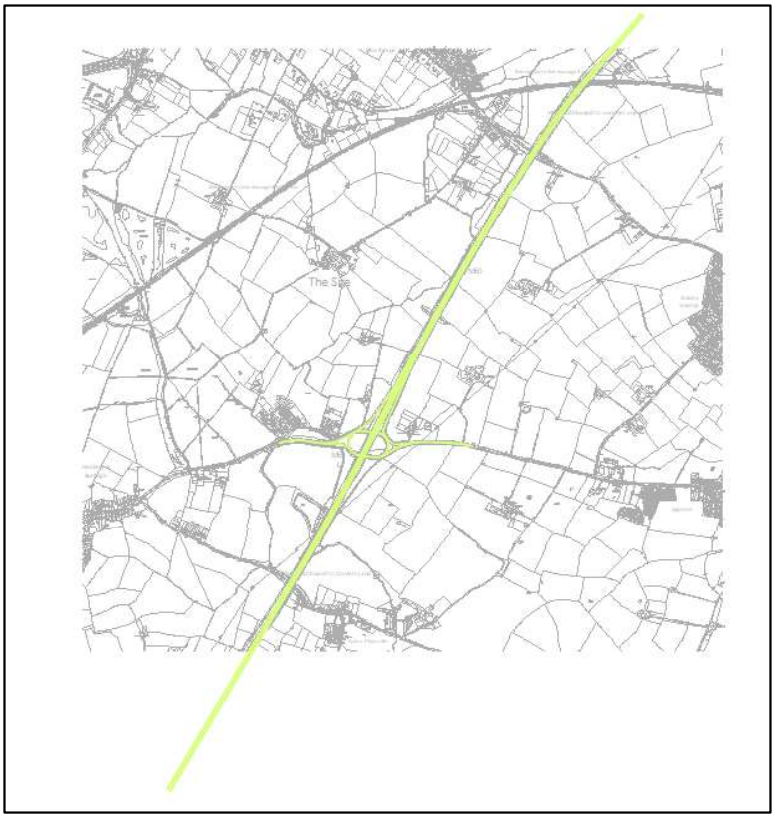


Figure 2 – M69 J2 VISSIM Model

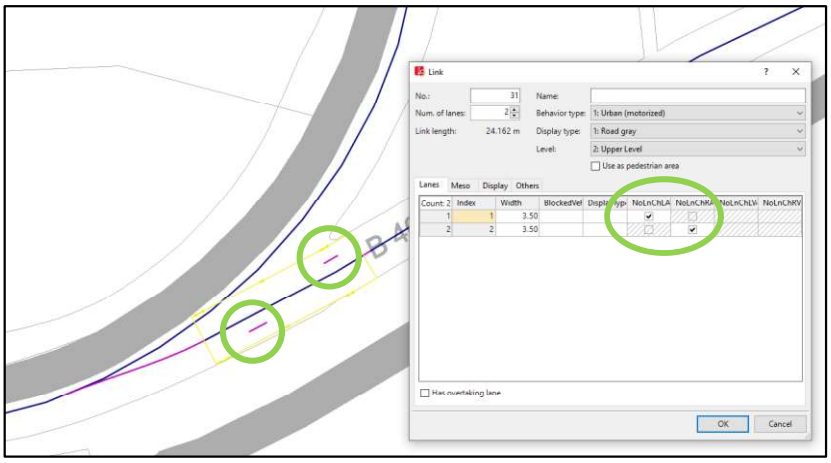
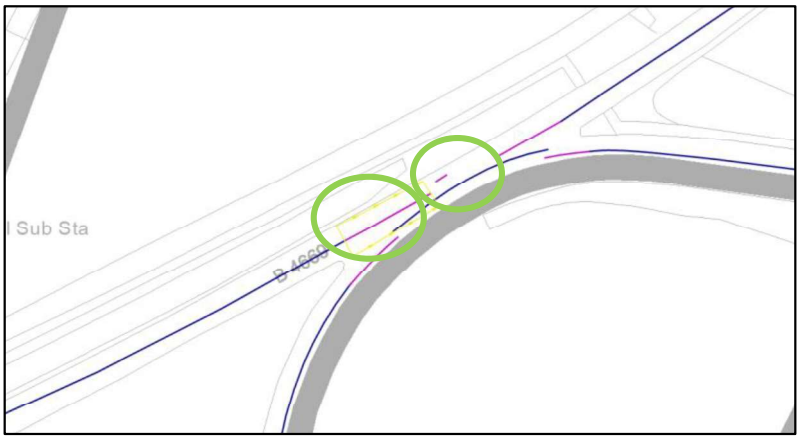
2.2 However, before this model has been adopted for use, a review of the model has been undertaken. This has been done to ensure that BWB are content with the model build and levels of calibration and validation prior to being used in support of the Hinckley NRFI.

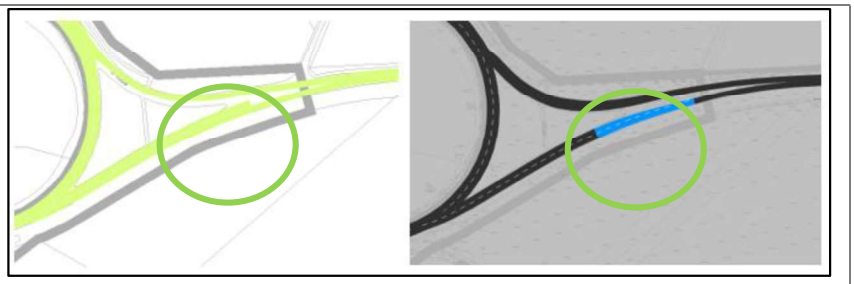
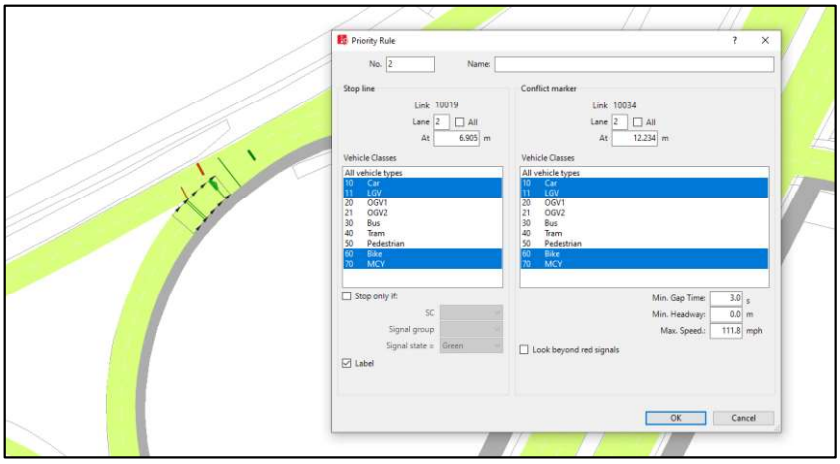
Model Review

2.3 BWB's review of the M69 J2 model has identified a number of elements within the model which could be further improved upon. These would help both with the base model calibration and validation and the future year testing.

2.4 The elements for further improvement are detailed in **Table 1**.

Table 1 – Existing Model Elements to Improve

No.	Model Element	Comments
1	Links / Connectors	Use of 'Right-Side Rule' on the circulatory links – these should be set to 'Urban (motorised)' Link/Connector set-up on the South-East and North-West sections where the approaches meet the circulatory could be improved by removing the mix of 'no lane change' on links and use of small connectors to control lane usage and on the North-West approach, ensuring the connectors match the lane markings. Examples of these elements are shown below.  *Mix of 'No Lane Change' & Small Connectors for Lane Use*  *Small Connectors for Lane Use & Connector Set-Up on NW Approach* The flares and merges in the model can be improved by the use of the 0.1m lane method. This provides a more natural progression of vehicles when either merging or diverging. An example of this change is shown below.

		
2	Reduced Speed Areas	There are a number of long Reduced Speed Areas on the circulatory, which have been used to control the speed of vehicles. RSAs should be limited to smaller sections and the use of Desired Speed Decision markers is considered a better form of vehicle speed over long sections. 
3	Priority Rules	The configuration of the priority rules are different to normal modelling practice, with the conflict markers being applied to specific vehicles, rather than 'All Vehicles'. An example for Light Vehicles on the B4669 West approach is shown below. To ensure a more simplified approach (and to avoid any potential issues in the future year modelling), the priority rules will be split into Lights and Heavies and the conflict markers will apply to 'All Vehicles'. 

4	Journey Time Validation	Journey time validation has been based on a WiFi survey, undertaken in November 2017. However, within the Local Model Validation Report (LMVR), no details are provided on the sample size of these surveys. To reduce any risks in using this data, historic TomTom data has been obtained and a new journey time validation exercise will be undertaken to ensure the model validates against these times.

3. UPDATED M69 J2 VISSIM MODEL

3.1 As a result of the model review undertaken, an updated version of the M69 J2 model has been developed that addresses the modelling elements noted.

3.2 These changes have also been made in line with a new VISSIM model being developed for M69 J1, as part of the same project. This has ensured consistency between the models in terms of the base data and parameters used.

Model Changes

3.3 A detailed breakdown of all of the changes made to the model is provided in the VISSIM Log in **Appendix A**. As a summary, the main changes in the model include:

- The model has been updated to the latest stable version of VISSIM – VISSIM 2020 (SP09).
- The PM period simulated has been amended to 1600-1900hrs, with 1630-1730hrs and 1730-1830hrs identified as the network-wide peak hours. As a result, updated Vehicle Inputs and Static Route flows have been calculated to suit the new simulation period.
- A number of Base Data elements have been updated to match the M69 J1 model. These notably include 2D/3D models, Time/Desired Speed and 2D/3D Model Distributions, Driver Behaviour, Vehicle Types/Classes/Compositions and Link Behaviour Types.
- The link and connector structure on the circulatory has been reviewed and updated based on OS and Topographical mapping. This has included a review of the B4669 West approach to better suit the lane markings and the inclusion of separate connectors on the M69 North and B4669 East approaches, to help with realistic lane use both on the approach and the circulatory. The behaviour has also been amended from 'Right-Side Rule' to 'Urban (motorised)' on the circulatory links as this is considered a more suitable behaviour.
- An update of the Reduced Speed Areas (RSAs) has been undertaken. RSAs now only feature on the junction approaches and the B4669 East and West exit bends. The circulatory speed is now controlled by new Desired Speed Decision markers on the M69 and B4669 entries to the circulatory.
- The Priority Rules (PRs) have been reconfigured to a more conventional set-up, with gap times for Light and Heavy Vehicles of 3.0s and 3.5s respectively.
- During the calibration and validation process, it was necessary to amend the Desired Speed Distributions for the 60mph National Speed Limit (Single Carriageway) and the 70mph Motorway profiles. This was a result of the

distributions leading to journey times which were too slow on certain sections of the network. Therefore, a new set of Speed Distributions (No. 10000-10006 & 11000-11005) have been created and used, where the lower speed bands have been removed (see **Appendix B** for the changes). This approach is considered reasonable as the very low speeds are unrealistic for a vehicle travelling in free-flow conditions for the given speed limits.

Model Specification

3.4 The specification for the updated M69 J2 VISSIM model is as follows:

- VISSIM Version – 2020 (SP09)
- Model Base Year – 2017
- Model Time Periods:
  - Weekday AM – 07:00-07:30 (warm-up), 07:30-09:30 (peak period/s), 09:30-10:00 (cool-down)
  - Weekday PM – 16:00-16:30 (warm-up), 16:30-18:30 (peak period/s), 18:30-19:00 (cool-down)
- Vehicle Types Used:
  - Cars
  - LGV
  - OGV1 & OGV2
  - Buses & Coaches
  - Motorcycles

Model Calibration

3.5 Having made a number of changes to the model, a recalibration exercise was required to ensure that the model still performed as observed traffic conditions. For this model, traffic flows and maximum (average) queue lengths have been used as calibration measures.

Traffic Flows

3.6 Manual Classified Count (MCC) surveys were previously undertaken on 23rd November 2017 at M69 J2 and these have been used to inform the flows in the model.

3.7 Link counts from 23rd November 2017 have been collected from HE's Webtris website at the following site locations:

- M69 Mainline (M69/8147A) – Northbound
- M69 Mainline (M69/8147B) – Southbound
- M69 J2 On-Slip (M69/8147K) – Northbound
- M69 J2 Off-Slip (M69/8147L) - Southbound

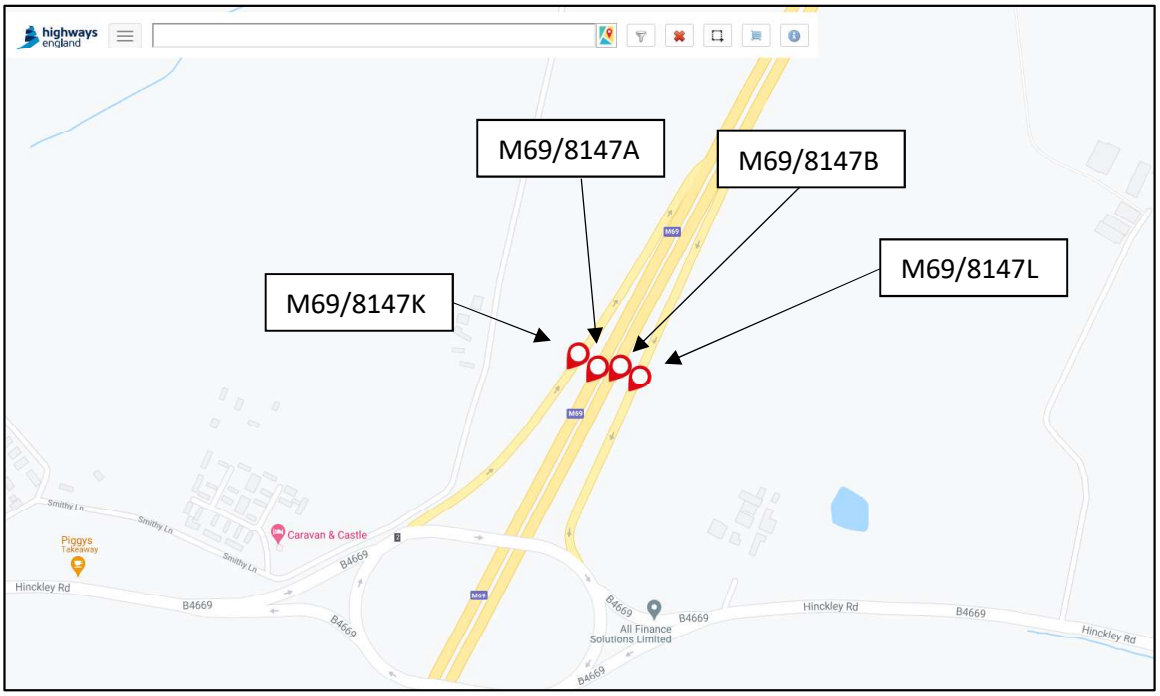


Figure 3 – Link Count Locations

3.8 For this model update, the M69 mainline flows have formed part of the flow calibration and the slip road flows were used a validation measure.

3.9 The process of flow calibration has involved iterations of minor adjustments to priority control and approach behaviour at key locations and on key routes. The calculated GEH statistic for the observed and modelled flows was considered for both the junction turning count and M69 mainline counts in accordance with the criteria stated in TAG Unit 3.1. To consider day to day variation in driver behaviour, the models were run, and results averaged over twenty random seeds. **Tables 2-7** summarise the flow calibration results for the AM and PM peak periods assessed.

3.10 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. The results show that all peak periods assessed achieves 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 C**.

Table 2 – AM Flow Calibration – 0730-0830hrs

AM Peak (07:30-08:30) Summary - ALL	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 3 – AM Flow Calibration – 0830-0930hrs

AM Peak (08:30-09:30) Summary - ALL	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 4 – AM Flow Calibration – 0730-0930hrs

AM Peak (07:30-09:30) Summary - ALL	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 5 – PM Flow Calibration – 1630-1730hrs

PM Peak (16:30-17:30) Summary - ALL	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 6 – PM Flow Calibration – 1730-1830hrs

PM Peak (17:30-18:30) Summary - ALL	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 7 – PM Flow Calibration – 1630-1830hrs

PM Peak (17:30-18:30) Summary - ALL	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Queue Lengths

3.11 Queue length surveys were carried out at M69 J2 at the same time as the turning counts.

3.12 Queue comparisons are used as a calibration aid rather than validation criteria as a result of the subjective nature of human queue measurement within the survey data and the technical difference with how queue lengths are measured within VISSIM. This is particularly true when measuring queue lengths from a give-way line rather than from a signal stop line, as this will usually result in a harder to define rolling queue condition.

3.13 The observed queue lengths were recorded in vehicles for each approach; however, the survey data did not distinguish between light and heavy vehicles. Therefore, as the majority of the queuing vehicles were likely to be light vehicles, a factor of 6 has been applied to the survey data counts.

3.14 Queue lengths were output from the VISSIM model using the default queue criteria and average over 20 random seeds for both peak periods.

3.15 Overall, the results show that the modelled queues are broadly comparable with the observed data, although there are some variations. Some of this is down to inherent differences between the human onsite measures and software measures within the models, suggesting there is a subjective and difficult to define nature to queue length measurements.

3.16 Graphical comparisons of the maximum (average) queue lengths are provided in **Appendix D**.

Model Validation

3.17 As well as model calibration, a validation exercise has also been undertaken. This summarises the goodness of fit between modelled and observed outputs against independently collected data.

3.18 For this model, two independent datasets have been used:

- M69 Slip Road Link Counts from HE's Webtris website
- Journey Time data from TomTom

Link Validation

3.19 As detailed in Paragraph 3.7, slip road data from 23rd November 2017 has been collected and used as a flow validation measure. This has been subject to the same GEH statistic comparisons as detailed in TAG Unit 3.1, as well as a comparison against TfL's criteria for critical links. The results of the Slip Road Flow Validation are shown in **Tables 8-13**, with more detailed results provided in **Appendix E**.

3.20 The link validation shows that in both peak periods, the M69 off-slip flow falls outside of TfL's critical link GEH criteria of 3, but is still within 5 as required by TAG.

Table 8 – AM Link Validation – 0730-0830hrs

AM Peak (07:30-08:30) Summary - ALL	
Total number of counts considered	2
VISSIM model counts with GEH <3	2
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	2
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	2
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	2
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 9 – AM Link Validation – 0830-0930hrs

AM Peak (08:30-09:30) Summary - ALL	
Total number of counts considered	2
VISSIM model counts with GEH <3	2
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	2
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	2
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	2
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 10 – AM Link Validation – 0730-0930hrs

AM Peak (07:30-09:30) Summary - ALL	
Total number of counts considered	2
VISSIM model counts with GEH <3	1
% of VISSIM counts with GEH <3	50.00%
VISSIM model counts with GEH <5	2
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	2
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	2
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 11 – PM Flow Validation – 1630-1730hrs

PM Peak (16:30-17:30) Summary - ALL	
Total number of counts considered	2
VISSIM model counts with GEH <3	1
% of VISSIM counts with GEH <3	50.00%
VISSIM model counts with GEH <5	2
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	2
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	2
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 12 – PM Flow Validation – 1730-1830hrs

PM Peak (17:30-18:30) Summary - ALL	
Total number of counts considered	2
VISSIM model counts with GEH <3	2
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	2
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	2
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	2
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 13 – PM Flow Validation – 1630-1830hrs

PM Peak (16:30-18:30) Summary - ALL	
Total number of counts considered	2
VISSIM model counts with GEH <3	1
% of VISSIM counts with GEH <3	50.00%
VISSIM model counts with GEH <5	2
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	2
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	2
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Journey Time Validation

3.21 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.

3.22 The TomTom data is from April 2019, with 10th April 2019 the specific day-data. This was extracted for both M69 J1 and M69 J2. Whilst the data could have been extracted for November 2017 to tie in with the existing counts, the different dates allowed a more robust validation exercise to be undertaken.

3.23 The data is provided in small link sections, so for the purpose of providing journey time validation, multiple sections have been combined into longer journey routes, covering all major movements at key locations.

3.24 A total of 8 journey time routes have been prepared for the purpose of model validation. **Figure 4** shows the location of four, primary through routes. **Figure 5** shows the location of four secondary turning routes.

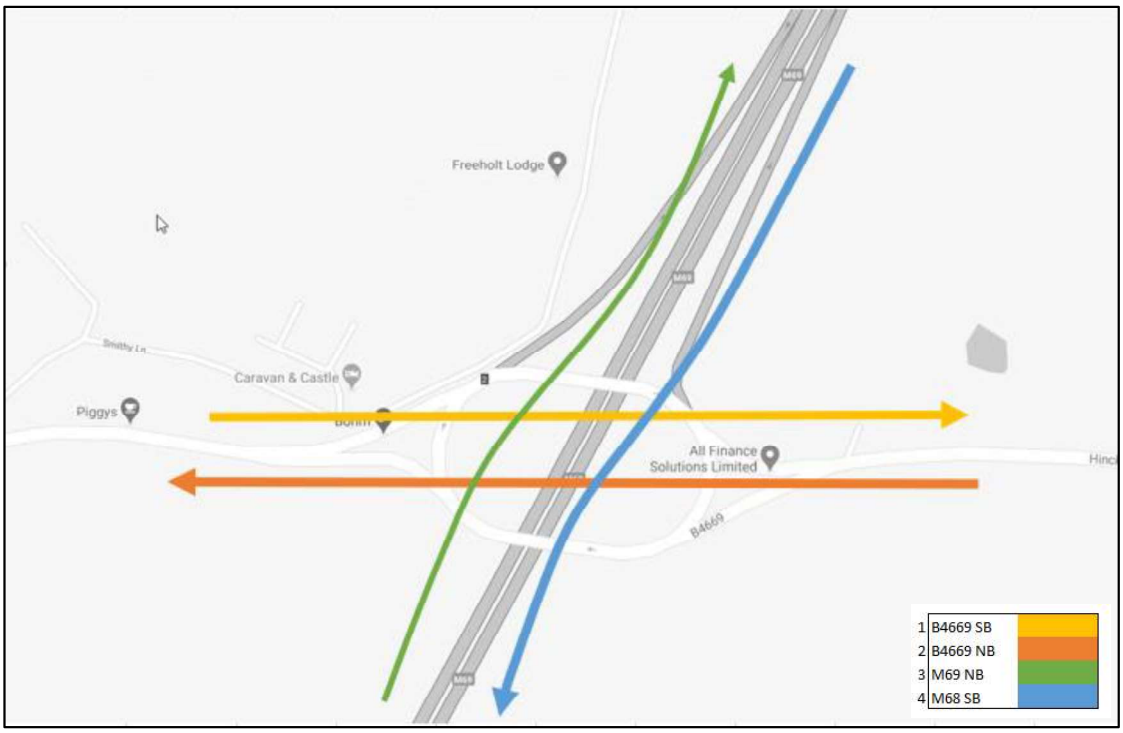


Figure 4 – TomTom Journey Time Routes – Primary Through Routes

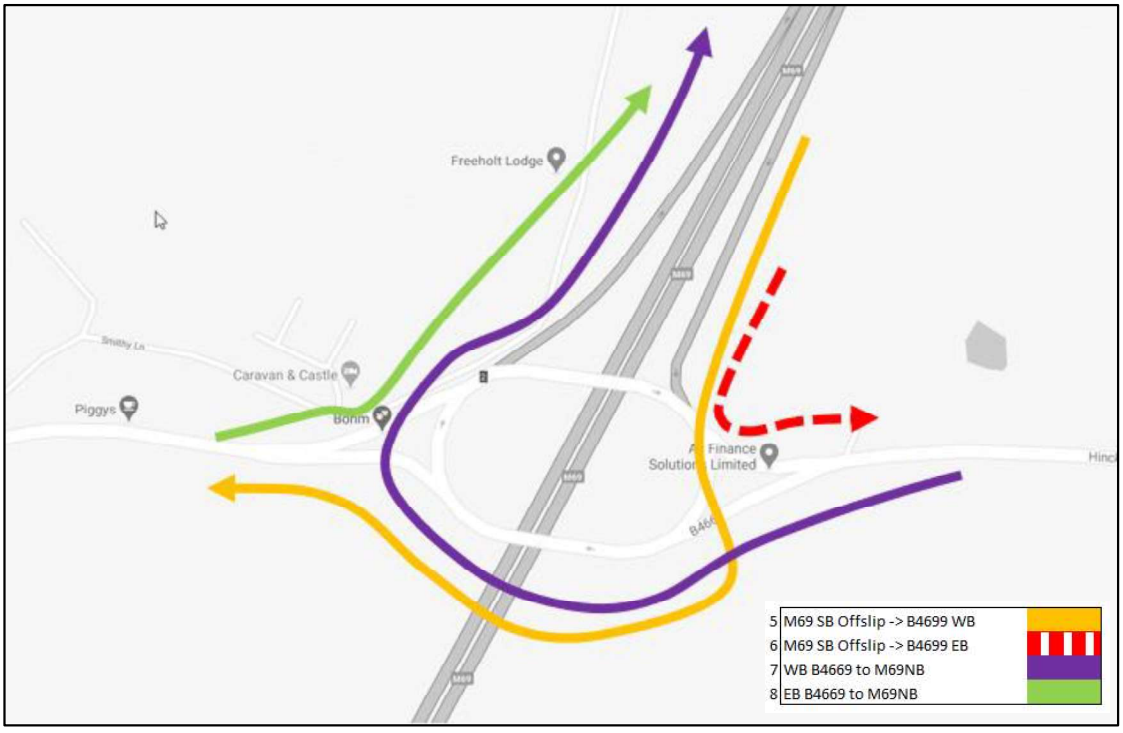


Figure 5 – TomTom Journey Time Routes – Secondary Turning Routes

3.25 **Tables 14 and 15** show the overall summary for all journey time routes and sections for the network. A more detailed breakdown of the journey time results can be found in **Appendix F**.

Table 14 – AM Journey Time Validation

Whole Routes	AM Peak		
Criteria	07:30-08:30	08:30-09:30	07:30-09:30
85% of measures within 15%	100%	100%	100%
85% of measures within 60 seconds	100%	100%	100%

Table 15 – PM Journey Time Validation

Whole Routes	PM Peak		
Criteria	16:30-17:30	17:30-18:30	16:30-18:30
85% of measures within 15%	88%	88%	88%
85% of measures within 60 seconds	100%	100%	100%

3.26 In accordance with TAG 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 and under 15km in length) it can be seen from **Tables 14 and 15** that both the AM and PM peak models meet the validation criteria.

3.27 In the AM peak, across the time periods 0730-0830hrs and 0830-0930hrs, 16/16 routes are within 15% and 60s. Across the full AM period of 0730-0930hrs, 8/8 routes are within 15% and 60s. In the PM peak, across the time periods 1630-1730hrs and 1730-1830hrs, 15/16 routes are within 15% and 16/16 routes are within 60s. The only route that is not within 15% is the M69 Northbound, where the model is slightly slower and has a 17% difference. Across the full PM period of 1630-1830hrs, 7/8 of the routes are within 15% and 8/8 routes are within 60s. The route that is again outside of the 15% difference is the M69 Northbound, where the difference is 17%. in total.

3.28 Overall, this is a very robust validation result, indicative of a good likeness between modelled performance and on-street conditions.

4. SUMMARY & CONCLUSIONS

Summary

4.1 This TN details the review of an existing M69 J2 VISSIM model and the subsequent model updates, recalibration and revalidation to demonstrate that the model is an accurate representation of the highway network within the study area and is fit for purpose for testing impacts associated with the proposed National Rail Freight Interchange (NRFI) in Hinckley, Leicestershire.

4.2 The updates to the model have been made to adopt more standard modelling practices, as well as to ensure the model is representative of on-site conditions and lane markings.

4.3 The recalibration and revalidation exercise has been undertaken to ensure that the changes made accurately reflects existing conditions with regards to:

- Traffic patterns;
- Key junctions; and
- Traffic volumes and routing.

4.4 In regard to the traffic turning and flow counts, the model exceeds the 85% criteria set by DMRB. Comparisons have also been made to queue lengths and these are broadly comparable with the observed data.

4.5 The model has also been validated to slip road flows and observed journey times within the extents of the network. Whilst the slip road flows fall outside of TfL's GEH criteria, they are within TAG's GEH criteria and are considered representative.

4.6 The journey time data has been provided as 15-minute intervals and an average one-hour journey time intervals have been used foreach of the peak periods. The journey time comparisons show consistency between the modelled and observed journey time profiles across all of the journey time routes in the AM peak. In the PM peak, only one route out of the eight assessed falls outside of the 15% range. However, all of the routes are within 60s and as such, the journey times are considered representative.

4.7 Given that the traffic flows and journey times compare well with on-site conditions, it should be considered a successful calibration and validation exercise.

Conclusions

4.8 It is understood that as these conditions are met and are of a sufficient quality to represent real world conditions, the updated M69 Junction 2 VISSIM model is considered robust and acceptable for testing of the proposed development.

BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

APPENDICES

BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

APPENDIX 1: VISSIM Changes Log

Hinckley – M69 J2 – VISSIM MODEL UPDATE LOG

Base Network

2D/3D Models

- Updated to match M69 J1 model
    - Added:
        - No. 16 – 'LGV - Toyota Pickup'
        - No. 33 – 'Bus - C2 Standard 2-doors left'
        - No. 64 – 'Bike - Cycle Woman'
    - Edited
        - No. 15 – 'LGV – Ford Pickup' – updated v3d reference
        - No. 17 – 'Ford Van' to 'Chevy Van' – updated v3d reference & axle position
        - No. 21 – 'OGV1 - 2ax Rigid' – updated v3d reference
        - No. 22 – 'OGV1 - 3ax Rigid' – updated v3d reference
        - No. 23 – 'OGV2 - 3ax Articulated' – updated v3d reference
        - No. 24 – 'OGV2 - 4ax Articulated' – updated v3d reference
        - No. 32 – 'Bus – Coach' – updated v3d reference

Distributions

- Time - Updated all distributions to match those in M69 J1 model
- Desired Speeds
    - Updated 20mph, 30mph, 60mph [Single CWay] (except LGV), 70mph [MWay] – (except Bus) distributions to match those in M69 J1 model
    - Added 50mph profiles – based on M69 J1 model
    - Capping of 60mph [Single CWay] and 70mph [MWay] as part of Journey Time validation
- 2D/3D Model Distributions – Updated to match M69 J1 model
    - Updated No. 11 - LGV
    - Added No. 31 – Coach
    - Updated No. 61 - Bike

Driving Behaviour

- Updated the following to match M69 J1 model:
    - 'Urban (motorised)'
        - Following, Lateral, Signal Control tabs
    - 'Right-side rule (motorized)'
        - Updated name to 'Left-side rule (motorized)', amended Lane Change, Signal Control tabs
    - 'Freeway (free lane selection)'
        - Lane Change, Signal Control
    - 'Footpath (no interaction)'
        - Lane Change, Signal Control
    - 'Cycle-Track (free overtaking)'
        - Lane Change, Signal Control
- Created the following behaviours, based on M69 J1 model:
    - No. 6 – Urban (cyclists)
    - No. 7 – Urban (Aggressive merge)
    - No. 9 – Urban (aggressive merge)

Vehicle Types

- Updated Color Dist1, OccupDist and Capacity values to match M69 J1
- Added No. 310 – Coach

Vehicle Classes

- Created No. 22 HGV, No. 31 – Coach, No. 101 – Lights (Controls) and No. 102 Heavies (Controls)
- Updated VehTypes assignment to match M69 J1 model

Link Behaviour Types

- Added specific driver behaviour to Vehicle Classes for 'Urban (motorized)'
- Renamed No. 2 – 'M69 Left-side rule (motorized)'
- Added No. 6 – 'Urban (merge/diverge)'

Display Types

- Updated No. 1 'Road (Urban) to match M69 J1 model
- Added No. 2 – 'Road (Urban merge/diverge)' and No. 3 – 'Road (M69)'

Levels

- Added No. 3 – 'Mapping'

Vehicle Compositions

- Added No. 22 – HGV, No. 31 – Coach, No. 61 – PCY

Background Images

- Removed current DWG and added:
    - 07700-HYD-A-00-M2-D-0003 - OS.dwg
    - 07700-HYD-A-00-M2-D-0006 - Topo.dwg

Links

- Updated M69 mainline and merge/diverge sections
    - Better tie to mapping
    - Updated to using 0.1m lane for merge/diverge sections
- Reconfigured approach and circulatory sections to match road markings
    - Better tie to mapping
    - Removal of small connectors and 'No Lane Change'. Instead, split connectors on North and East approaches to control lane use
    - Adjusted West approach to better match lane markings
- Link 10020 – amended from 20/150 to 5/200 (stop/lane change)
- Link 10018 – amended lane change from 100 to 200m
- Link 10052 – Lane change 200 to 120m
- Link 10018 – Lane change 200 to 120m
- Link 10071 – Lane change 200 to 90m
- Link 10076 – Lane change 200 to 90m
- Link 10068 – Lane change 200 to 90m
- Link 10073 – Lane change 200 to 90m

Desired Speed Decisions

- Updated all markers to include Coach
- Added new 40mph speed markers on circulatory entry and 60mph speed markers on East and West exits

Reduced Speed Areas

- Deleted all RSAs in the network
- Introduced new RSAs on approaches and on East and West exit bends

Priority Rules

- Deleted all PRs in the network
- Added new PRs, using 'Lights' and 'Heavies' as control – used default values of 3.0s and 3.5s

Vehicle Inputs

- Added names to inputs

Static Routes

- Added names to routes & repositioned points to start and end of network
- Added static routes for M69 N for MCY
- Updated static routes to account for 1600-1900hrs time period (with 1630-1830hrs assessment)
- Updated static routes to account for North and East approach connectors being split

Journey Time Markers

- Deleted current markers
- Added new markers to suit TomTom data locations (Sections 1-18)

Queue Markers

- Added new markers to North, East and West approaches at J2.

Data Collection Points

- Added new markers and measurements for TRADS data comparisons – M69 mainline and slip roads

Modification 1 – AM Peak

Vehicle Inputs

- Updated to match MG calcs

Static Routes

- Updated to match MG calcs
- Made adjustments to Route 16 for better validation of TRADS slip road flow

Modification 2 – PM Peak

Vehicle Inputs

- Updated to match MG calcs

Static Routes

- Updated to match MG calcs
- Made adjustments to Route 16 for better validation of TRADS slip road flow

BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

APPENDIX 2: Desired Speed Distribution Changes

M69 J2 RECALIBRATION & REVALIDATION - DESIRED SPEED DISTRIBUTIONS - ADJUSTMENTS TO REMOVE LOWER SPEED BANDS

DESIRED SPEED DISTRIBUTIONS - INITIAL

NSL CAR [Single Cway] (2018 DfT Speed Compliance)

	X	FX
1	15	0
2	20	0
3	29	0.02
4	39	0.09
5	44	0.23
6	49	0.5
7	54	0.73
8	59	0.9
9	64	0.96
10	69	0.98
11	75	1

NSL LGV [Single Cway] (DfT 2015 Speed Survey)

	X	FX
1	20	0
2	29.12281	0.024911
3	38.94737	0.149466
4	44.03509	0.33452
5	49.12281	0.572954
6	54.03509	0.765125
7	58.97243	0.914591
8	63.98496	0.967972
9	70	1

NSL OGV1 [Single Cway] (2018 DfT Speed Compliance)

	X	FX
1	15	0
2	20	0
3	29	0.03
4	39	0.12
5	44	0.31
6	49	0.64
7	54	0.86
8	59	0.95
9	64	0.98
10	69	0.99
11	75	1

NSL OGV2 [Single Cway] (2018 DfT Speed Compliance)

	X	FX
1	15	0
2	20	0
3	29	0.02
4	39	0.17
5	44	0.44
6	49	0.79
7	54	0.96
8	59	1
9	64	1
10	69	1
11	75	1

NSL BUS[Short] [Single Cway] (2018 DfT Speed Compliance)

	X	FX
1	15	0
2	20	0
3	29	0.02
4	39	0.13
5	44	0.34
6	49	0.64
7	54	0.86
8	59	0.96
9	64	0.99
10	69	1
11	75	1

NSL BUS[Long] [Single Cway] (2018 DfT Speed Compliance)

	X	FX
1	15	0
2	20	0
3	29	0.01
4	39	0.13
5	44	0.36
6	49	0.69
7	54	0.89
8	59	0.98
9	64	1
10	69	1
11	75	1

NSL MCY [Single Cway] (2018 DfT Speed Compliance)

	X	FX
1	15	0
2	20	0
3	29	0.03
4	39	0.08
5	44	0.17
6	49	0.34
7	54	0.52
8	59	0.69
9	64	0.81
10	69	0.88
11	75	1

NSL CAR [Motorway] (2018 DfT Speed Compliance)

	X	FX
1	45	0
2	50	0.05
3	54	0.09
4	59	0.18
5	64	0.32
6	69	0.54
7	74	0.76
8	79	0.89
9	89	0.98
10	95	1

NSL LGV [Motorway] (2018 DfT Speed Compliance)

	X	FX
1	45	0
2	50	0.05
3	54	0.1
4	59	0.19
5	64	0.32
6	69	0.53
7	74	0.73
8	79	0.87
9	89	0.98
10	95	1

NSL OGV1 [Motorway] (2018 DfT Speed Compliance)

	X	FX
1	45	0
2	50	0.07
3	54	0.3
4	59	0.51
5	64	0.66
6	69	0.81
7	74	0.92
8	79	0.97
9	89	1
10	95	1

NSL OGV2 [Motorway] (2018 DfT Speed Compliance)

	X	FX
1	45	0
2	50	0.11
3	54	0.65
4	59	0.99
5	64	1
6	69	1
7	74	1
8	79	1
9	89	1
10	95	1

NSL BUS [Motorway] (DfT 2015 Speed Survey)

	X	FX
1	40	0
2	49.02256	0.067616
3	59.04762	0.551601
4	64.06015	0.683274
5	69.07268	0.818505
6	73.9599	0.921708
7	78.97243	0.97153
8	90	1

NSL MCY [Motorway] (2018 DfT Speed Compliance)

	X	FX
1	45	0
2	50	0.07
3	54	0.11
4	59	0.19
5	64	0.3
6	69	0.47
7	74	0.66
8	79	0.81
9	89	0.95
10	95	1

NEW DESIRED SPEED DISTRIBUTIONS - LOWER LEVELS CAPPED

NSL CAR [Single Cway] (2018 DfT Speed Compliance)(CAPPED)

	X	FX
	39	0
	44	0.23
	49	0.5
	54	0.73
	59	0.9
	64	0.96
	69	0.98
	75	1

NSL LGV [Single Cway] (DfT 2015 Speed Survey)(CAPPED)

	X	FX
1	38.94737	0
2	44.03509	0.33452
3	49.12281	0.572954
4	54.03509	0.765125
5	58.97243	0.914591
6	63.98496	0.967972
7	70	1

NSL OGV1 [Single Cway] (2018 DfT Speed Compliance)(CAPPED)

	X	FX
1	39	0
2	44	0.31
3	49	0.64
4	54	0.86
5	59	0.95
6	64	0.98
7	69	0.99
8	75	1

NSL OGV2 [Single Cway] (2018 DfT Speed Compliance)(CAPPED)

	X	FX
1	39	0
2	44	0.44
3	49	0.79
4	54	0.96
5	59	1
6	64	1
7	69	1
8	75	1

NSL BUS[Short] [Single Cway] (2018 DfT Speed Compliance)(CAPPED)

	X	FX
1	39	0
2	44	0.34
3	49	0.64
4	54	0.86
5	59	0.96
6	64	0.99
7	69	1
8	75	1

NSL BUS[Long] [Single Cway] (2018 DfT Speed Compliance)(CAPPED)

	X	FX
1	39	0
2	44	0.36
3	49	0.69
4	54	0.89
5	59	0.98
6	64	1
7	69	1
8	75	1

NSL MCY [Single Cway] (2018 DfT Speed Compliance)(CAPPED)

	X	FX
1	39	0
2	44	0.17
3	49	0.34
4	54	0.52
5	59	0.69
6	64	0.81
7	69	0.88
8	75	1

NSL CAR [Motorway] (2018 DfT Speed Compliance)(CAPPED)

	X	FX
1	59	0
2	64	0.32
3	69	0.54
4	74	0.76
5	79	0.89
6	89	0.98
7	95	1

NSL LGV [Motorway] (2018 DfT Speed Compliance)(CAPPED)

	X	FX
1	59	0
2	64	0.32
3	69	0.53
4	74	0.73
5	79	0.87
6	89	0.98
7	95	1

NSL OGV1 [Motorway] (2018 DfT Speed Compliance)(CAPPED)

	X	FX
1	54	0
2	59	0.51
3	64	0.66
4	69	0.81
5	74	0.92
6	79	0.97
7	89	1
8	95	1

NSL OGV2 [Motorway] (2018 DfT Speed Compliance)(CAPPED)

	X	FX
1	54	0
2	59	0.99
3	64	1
4	69	1
5	74	1
6	79	1
7	89	1
8	95	1

NSL BUS [Motorway] (DfT 2015 Speed Survey)(CAPPED)

	X	FX
1	59.04762	0
2	64.06015	0.683274
3	69.07268	0.818505
4	73.9599	0.921708
5	78.97243	0.97153
6	90	1

NSL MCY [Motorway] (2018 DfT Speed Compliance)(CAPPED)

	X	FX
1	59	0
2	64	0.3
3	69	0.47
4	74	0.66
5	79	0.81
6	89	0.95
7	95	1

BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

APPENDIX 3: Flow Calibration

AM Peak (07:30-08:30) Summary - ALL	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
1800-5400	M69 J2	M69 North	B4669 East	46	47	1	2%	Y	0.15	✓	✓			
1800-5400			B4669 West	197	221	24	12%	Y	1.66	✓	✓			
1800-5400		B4669 East	B4669 West	363	363	0	0%	Y	0.00	✓	✓			
1800-5400			M69 North	226	224	-2	-1%	Y	0.13	✓	✓			
1800-5400		B4669 West	M69 North	502	506	4	1%	Y	0.18	✓	✓			
1800-5400			B4669 East	195	193	-2	-1%	Y	0.14	✓	✓			
1800-5400	M69	M69 Mainline	Northbound	2253	2259	6	0%	Y	0.13	✓	✓			
1800-5400			Southbound	2847	2839	-8	0%	Y	0.15	✓	✓			

AM Peak (07:30-08:30) Summary - LIGHTS	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
1800-5400	M69 J2	M69 North	B4669 East	44	45	1	2%	Y	0.15	✓	✓			
1800-5400			B4669 West	188	213	25	13%	Y	1.77	✓	✓			
1800-5400		B4669 East	B4669 West	355	356	1	0%	Y	0.05	✓	✓			
1800-5400			M69 North	216	213	-3	-1%	Y	0.20	✓	✓			
1800-5400		B4669 West	M69 North	495	499	4	1%	Y	0.18	✓	✓			
1800-5400			B4669 East	191	189	-2	-1%	Y	0.15	✓	✓			
1800-5400	M69	M69 Mainline	Northbound	2049	2054	5	0%	Y	0.11	✓	✓			
1800-5400			Southbound	2599	2588	-11	0%	Y	0.22	✓	✓			

AM Peak (07:30-08:30) Summary - HEAVIES	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
1800-5400	M69 J2	M69 North	B4669 East	2	2	0	0%	Y	0.00	✓	✓			
1800-5400			B4669 West	9	9	0	0%	Y	0.00	✓	✓			
1800-5400		B4669 East	B4669 West	8	7	-1	-13%	Y	0.37	✓	✓			
1800-5400			M69 North	10	11	1	10%	Y	0.31	✓	✓			
1800-5400		B4669 West	M69 North	7	7	0	0%	Y	0.00	✓	✓			
1800-5400			B4669 East	4	4	0	0%	Y	0.00	✓	✓			
1800-5400	M69	M69 Mainline	Northbound	204	205	1	0%	Y	0.07	✓	✓			
1800-5400			Southbound	248	250	2	1%	Y	0.13	✓	✓			

AM Peak (08:30-09:30) Summary - ALL	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
5400-9000	M69 J2	M69 North	B4669 East	48	50	2	4%	N	0.29	✓	✓			
5400-9000			B4669 West	182	198	16	9%	N	1.16	✓	✓			
5400-9000		B4669 East	B4669 West	303	306	3	1%	N	0.17	✓	✓			
5400-9000			M69 North	114	114	0	0%	N	0.00	✓	✓			
5400-9000		B4669 West	M69 North	292	293	1	0%	N	0.06	✓	✓			
5400-9000			B4669 East	173	175	2	1%	N	0.15	✓	✓			
5400-9000	M69	M69 Mainline	Northbound	1994	1993	-1	0%	N	0.02	✓	✓			
5400-9000			Southbound	2302	2299	-3	0%	N	0.06	✓	✓			

AM Peak (08:30-09:30) Summary - LIGHTS	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
5400-9000	M69 J2	M69 North	B4669 East	38	39	1	3%	N	0.16	✓	✓			
5400-9000			B4669 West	173	190	17	10%	N	1.26	✓	✓			
5400-9000		B4669 East	B4669 West	291	294	3	1%	N	0.18	✓	✓			
5400-9000			M69 North	105	106	1	1%	N	0.10	✓	✓			
5400-9000		B4669 West	M69 North	287	288	1	0%	N	0.06	✓	✓			
5400-9000			B4669 East	171	173	2	1%	N	0.15	✓	✓			
5400-9000	M69	M69 Mainline	Northbound	1727	1728	1	0%	N	0.02	✓	✓			
5400-9000			Southbound	2044	2042	-2	0%	N	0.04	✓	✓			

AM Peak (08:30-09:30) Summary - HEAVIES	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
5400-9000	M69 J2	M69 North	B4669 East	10	11	1	10%	N	0.31	✓	✓			
5400-9000			B4669 West	9	8	-1	-11%	N	0.34	✓	✓			
5400-9000		B4669 East	B4669 West	12	12	0	0%	N	0.00	✓	✓			
5400-9000			M69 North	9	9	0	0%	N	0.00	✓	✓			
5400-9000		B4669 West	M69 North	5	5	0	0%	N	0.00	✓	✓			
5400-9000			B4669 East	2	2	0	0%	N	0.00	✓	✓			
5400-9000	M69	M69 Mainline	Northbound	267	266	-1	0%	N	0.06	✓	✓			
5400-9000			Southbound	258	257	-1	0%	N	0.06	✓	✓			

AM Peak (07:30-09:30) Summary - ALL	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
	Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
M69 J2	M69 North	B4669 East	94	97	3	3%	N	0.31	✓	✓			
		B4669 West	379	419	40	11%	N	2.00	✓	✓			
	B4669 East	B4669 West	666	669	3	0%	N	0.12	✓	✓			
		M69 North	340	338	-2	-1%	N	0.11	✓	✓			
	B4669 West	M69 North	794	799	5	1%	N	0.18	✓	✓			
		B4669 East	368	368	0	0%	N	0.00	✓	✓			
M69	M69 Mainline	Northbound	4247	4252	5	0%	N	0.08	✓	✓			
		Southbound	5149	5138	-11	0%	N	0.15	✓	✓			

AM Peak (07:30-09:30) Summary - LIGHTS	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
	Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
M69 J2	M69 North	B4669 East	82	84	2	2%	N	0.22	✓	✓			
		B4669 West	361	403	42	12%	N	2.15	✓	✓			
	B4669 East	B4669 West	646	650	4	1%	N	0.16	✓	✓			
		M69 North	321	319	-2	-1%	N	0.11	✓	✓			
	B4669 West	M69 North	782	787	5	1%	N	0.18	✓	✓			
		B4669 East	362	362	0	0%	N	0.00	✓	✓			
M69	M69 Mainline	Northbound	3776	3782	6	0%	N	0.10	✓	✓			
		Southbound	4643	4630	-13	0%	N	0.19	✓	✓			

AM Peak (07:30-09:30) Summary - HEAVIES	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
	Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
M69 J2	M69 North	B4669 East	12	13	1	8%	N	0.28	✓	✓			
		B4669 West	18	17	-1	-6%	N	0.24	✓	✓			
	B4669 East	B4669 West	20	19	-1	-5%	N	0.23	✓	✓			
		M69 North	19	20	1	5%	N	0.23	✓	✓			
	B4669 West	M69 North	12	12	0	0%	N	0.00	✓	✓			
		B4669 East	6	6	0	0%	N	0.00	✓	✓			
M69	M69 Mainline	Northbound	471	471	0	0%	N	0.00	✓	✓			
		Southbound	506	507	1	0%	N	0.04	✓	✓			

PM Peak (16:30-17:30) Summary - ALL	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
1800-5400	M69 J2	M69 North	B4669 East	165	177	12	7%	Y	0.92	✓	✓			
1800-5400			B4669 West	316	351	35	11%	Y	1.92	✓	✓			
1800-5400		B4669 East	B4669 West	228	231	3	1%	Y	0.20	✓	✓			
1800-5400			M69 North	22	22	0	0%	Y	0.00	✓	✓			
1800-5400		B4669 West	M69 North	157	158	1	1%	Y	0.08	✓	✓			
1800-5400			B4669 East	372	373	1	0%	Y	0.05	✓	✓			
1800-5400	M69	M69 Mainline	Northbound	2304	2313	9	0%	Y	0.19	✓	✓			
1800-5400			Southbound	2197	2147	-50	-2%	Y	1.07	✓	✓			

PM Peak (16:30-17:30) Summary - LIGHTS	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
1800-5400	M69 J2	M69 North	B4669 East	158	169	11	7%	Y	0.86	✓	✓			
1800-5400			B4669 West	293	327	34	12%	Y	1.93	✓	✓			
1800-5400		B4669 East	B4669 West	227	230	3	1%	Y	0.20	✓	✓			
1800-5400			M69 North	21	21	0	0%	Y	0.00	✓	✓			
1800-5400		B4669 West	M69 North	157	158	1	1%	Y	0.08	✓	✓			
1800-5400			B4669 East	369	370	1	0%	Y	0.05	✓	✓			
1800-5400	M69	M69 Mainline	Northbound	2154	2161	7	0%	Y	0.15	✓	✓			
1800-5400			Southbound	2027	1977	-50	-2%	Y	1.12	✓	✓			

PM Peak (16:30-17:30) Summary - HEAVIES	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
1800-5400	M69 J2	M69 North	B4669 East	7	9	2	29%	Y	0.71	✓	✓			
1800-5400			B4669 West	23	24	1	4%	Y	0.21	✓	✓			
1800-5400		B4669 East	B4669 West	1	1	0	0%	Y	0.00	✓	✓			
1800-5400			M69 North	1	1	0	0%	Y	0.00	✓	✓			
1800-5400		B4669 West	M69 North	0	0	0	-	Y	0.00	✓	✓			
1800-5400			B4669 East	3	3	0	0%	Y	0.00	✓	✓			
1800-5400	M69	M69 Mainline	Northbound	150	152	2	1%	Y	0.16	✓	✓			
1800-5400			Southbound	170	170	0	0%	Y	0.00	✓	✓			

PM Peak (17:30-18:30) Summary - ALL	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
5400-9000	M69 J2	M69 North	B4669 East	181	188	7	4%	N	0.52	✓	✓			
5400-9000			B4669 West	340	355	15	4%	N	0.80	✓	✓			
5400-9000		B4669 East	B4669 West	179	180	1	1%	N	0.07	✓	✓			
5400-9000			M69 North	22	21	-1	-5%	N	0.22	✓	✓			
5400-9000		B4669 West	M69 North	142	147	5	4%	N	0.42	✓	✓			
5400-9000			B4669 East	308	306	-2	-1%	N	0.11	✓	✓			
5400-9000	M69	M69 Mainline	Northbound	2164	2168	4	0%	N	0.09	✓	✓			
5400-9000			Southbound	2240	2231	-9	0%	N	0.19	✓	✓			

PM Peak (17:30-18:30) Summary - LIGHTS	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
5400-9000	M69 J2	M69 North	B4669 East	175	182	7	4%	N	0.52	✓	✓			
5400-9000			B4669 West	315	330	15	5%	N	0.84	✓	✓			
5400-9000		B4669 East	B4669 West	177	178	1	1%	N	0.08	✓	✓			
5400-9000			M69 North	22	21	-1	-5%	N	0.22	✓	✓			
5400-9000		B4669 West	M69 North	140	145	5	4%	N	0.42	✓	✓			
5400-9000			B4669 East	308	306	-2	-1%	N	0.11	✓	✓			
5400-9000	M69	M69 Mainline	Northbound	2026	2031	5	0%	N	0.11	✓	✓			
5400-9000			Southbound	2045	2035	-10	0%	N	0.22	✓	✓			

PM Peak (17:30-18:30) Summary - HEAVIES	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
5400-9000	M69 J2	M69 North	B4669 East	6	6	0	0%	Y	0.00	✓	✓			
5400-9000			B4669 West	25	25	0	0%	Y	0.00	✓	✓			
5400-9000		B4669 East	B4669 West	2	2	0	0%	Y	0.00	✓	✓			
5400-9000			M69 North	0	0	0	-	Y	0.00	✓	✓			
5400-9000		B4669 West	M69 North	2	2	0	0%	Y	0.00	✓	✓			
5400-9000			B4669 East	0	0	0	-	Y	0.00	✓	✓			
5400-9000	M69	M69 Mainline	Northbound	138	137	-1	-1%	Y	0.09	✓	✓			
5400-9000			Southbound	195	196	1	1%	Y	0.07	✓	✓			

PM Peak (17:30-18:30) Summary - ALL	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
	Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
M69 J2	M69 North	B4669 East	346	365	19	5%	N	1.01	✓	✓			
		B4669 West	656	706	50	8%	N	1.92	✓	✓			
	B4669 East	B4669 West	407	411	4	1%	N	0.20	✓	✓			
		M69 North	44	43	-1	-2%	N	0.15	✓	✓			
	B4669 West	M69 North	299	305	6	2%	N	0.35	✓	✓			
		B4669 East	680	679	-1	0%	N	0.04	✓	✓			
M69	M69 Mainline	Northbound	4468	4481	13	0%	N	0.19	✓	✓			
		Southbound	4437	4378	-59	-1%	N	0.89	✓	✓			

PM Peak (17:30-18:30) Summary - LIGHTS	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

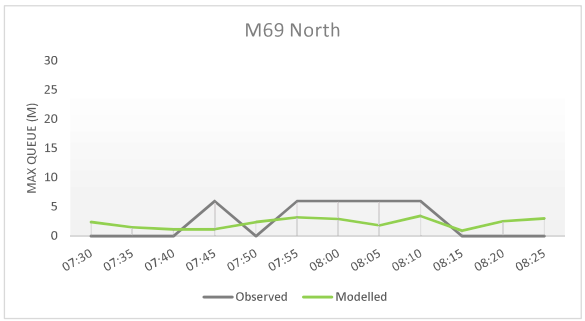
Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
	Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
M69 J2	M69 North	B4669 East	333	351	18	5%	N	0.97	✓	✓			
		B4669 West	608	657	49	8%	N	1.95	✓	✓			
	B4669 East	B4669 West	404	408	4	1%	N	0.20	✓	✓			
		M69 North	43	42	-1	-2%	N	0.15	✓	✓			
	B4669 West	M69 North	297	303	6	2%	N	0.35	✓	✓			
		B4669 East	677	676	-1	0%	N	0.04	✓	✓			
M69	M69 Mainline	Northbound	4180	4192	12	0%	N	0.19	✓	✓			
		Southbound	4072	4012	-60	-1%	N	0.94	✓	✓			

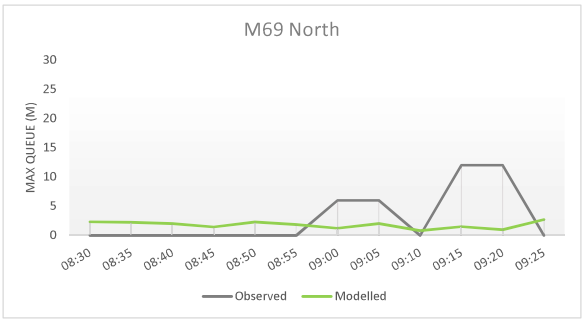
PM Peak (17:30-18:30) Summary - HEAVIES	
Total number of counts considered	8
VISSIM model counts with GEH <3	8
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	8
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	8
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	8
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

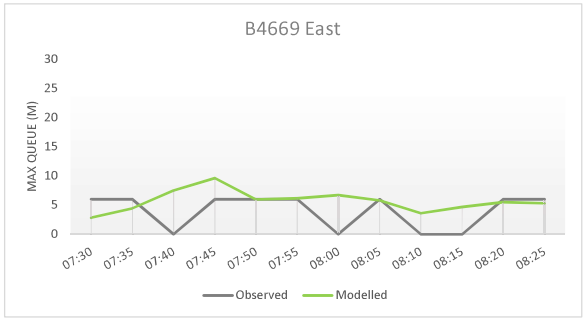
Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
	Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
M69 J2	M69 North	B4669 East	13	15	2	15%	Y	0.53	✓	✓			
		B4669 West	48	49	1	2%	Y	0.14	✓	✓			
	B4669 East	B4669 West	3	3	0	0%	Y	0.00	✓	✓			
		M69 North	1	1	0	0%	Y	0.00	✓	✓			
	B4669 West	M69 North	2	2	0	0%	Y	0.00	✓	✓			
		B4669 East	3	3	0	0%	Y	0.00	✓	✓			
M69	M69 Mainline	Northbound	288	289	1	0%	Y	0.06	✓	✓			
		Southbound	365	366	1	0%	Y	0.05	✓	✓			

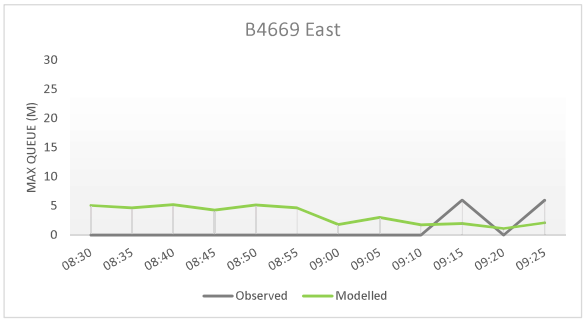
BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

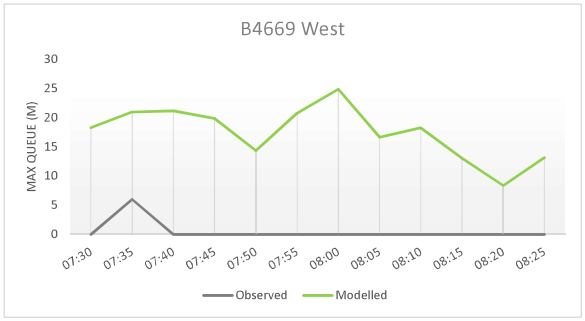
APPENDIX 4: Queue Comparisons

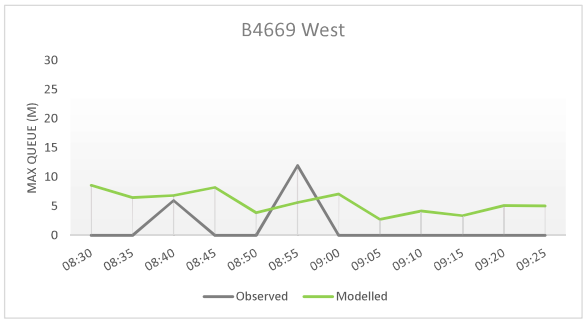

M69 North
MAX QUEUE (M)
30
25
20
15
10
5
0
07:30
07:35
07:40
07:45
07:50
07:55
08:00
08:05
08:10
08:15
08:20
08:25
Observed
Modelled

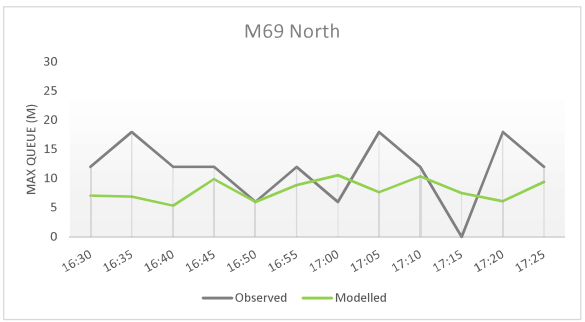

M69 North
MAX QUEUE (M)
30
25
20
15
10
5
0
08:30
08:35
08:40
08:45
08:50
08:55
09:00
09:05
09:10
09:15
09:20
09:25
Observed
Modelled

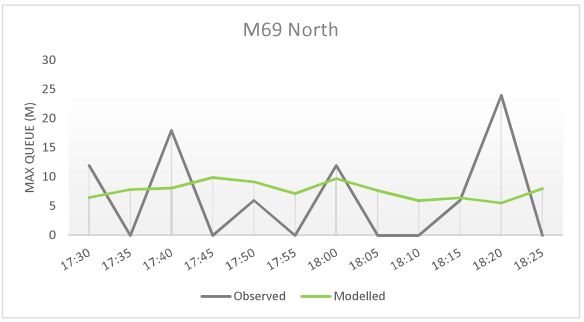

B4669 East
MAX QUEUE (M)
30
25
20
15
10
5
0
07:30
07:35
07:40
07:45
07:50
07:55
08:00
08:05
08:10
08:15
08:20
08:25
Observed
Modelled

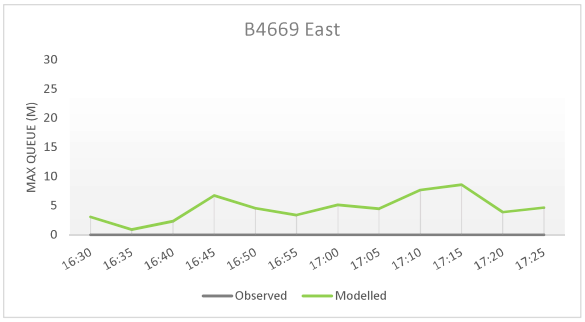

B4669 East
MAX QUEUE (M)
30
25
20
15
10
5
0
08:30
08:35
08:40
08:45
08:50
08:55
09:00
09:05
09:10
09:15
09:20
09:25
Observed
Modelled

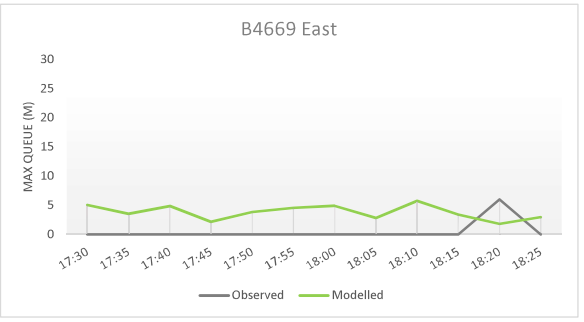

B4669 West
MAX QUEUE (M)
30
25
20
15
10
5
0
07:30
07:35
07:40
07:45
07:50
07:55
08:00
08:05
08:10
08:15
08:20
08:25
Observed
Modelled

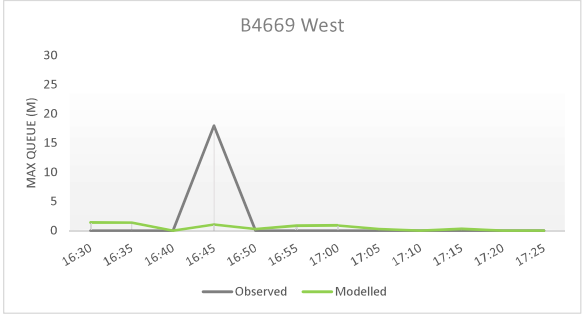

B4669 West
MAX QUEUE (M)
30
25
20
15
10
5
0
08:30
08:35
08:40
08:45
08:50
08:55
09:00
09:05
09:10
09:15
09:20
09:25
Observed
Modelled

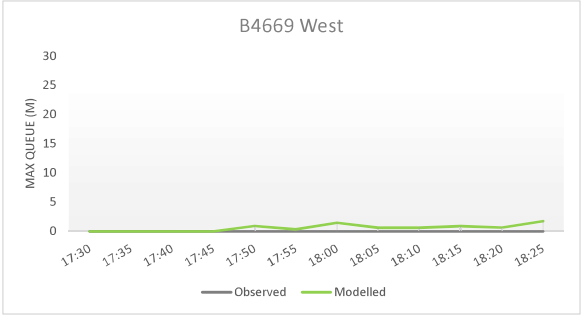

M69 North
MAX QUEUE (M)
30
25
20
15
10
5
0
16:30
16:35
16:40
16:45
16:50
16:55
17:00
17:05
17:10
17:15
17:20
17:25
Observed
Modelled


M69 North
MAX QUEUE (M)
30
25
20
15
10
5
0
17:30
17:35
17:40
17:45
17:50
17:55
18:00
18:05
18:10
18:15
18:20
18:25
Observed
Modelled


B4669 East
MAX QUEUE (M)
30
25
20
15
10
5
0
16:30
16:35
16:40
16:45
16:50
16:55
17:00
17:05
17:10
17:15
17:20
17:25
Observed
Modelled


B4669 East
MAX QUEUE (M)
30
25
20
15
10
5
0
17:30
17:35
17:40
17:45
17:50
17:55
18:00
18:05
18:10
18:15
18:20
18:25
Observed
Modelled


B4669 West
MAX QUEUE (M)
30
25
20
15
10
5
0
16:30
16:35
16:40
16:45
16:50
16:55
17:00
17:05
17:10
17:15
17:20
17:25
Observed
Modelled


B4669 West
MAX QUEUE (M)
30
25
20
15
10
5
0
17:30
17:35
17:40
17:45
17:50
17:55
18:00
18:05
18:10
18:15
18:20
18:25
Observed
Modelled

PM Peak (16:30-17:30) Summary - ALL	
Total number of counts considered	2
VISSIM model counts with GEH <3	1
% of VISSIM counts with GEH <3	50.00%
VISSIM model counts with GEH <5	2
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	2
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	2
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
TIMEINT	Link	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
1800-5400	M69 J2 Off-Slip	Southbound	601	529	-72	-12%	Y	3.03	✗	✓			
1800-5400	M69 J2 On-Slip	Northbound	182	180	-2	-1%	Y	0.15	✓	✓			

PM Peak (17:30-18:30) Summary - ALL	
Total number of counts considered	2
VISSIM model counts with GEH <3	2
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	2
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	2
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	2
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
TIMEINT	Link	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
5400-9000	M69 J2 Off-Slip	Southbound	610	542	-68	-11%	Y	2.83	✓	✓			
5400-9000	M69 J2 On-Slip	Northbound	175	167	-8	-5%	Y	0.61	✓	✓			

PM Peak (16:30-18:30) Summary - ALL	
Total number of counts considered	2
VISSIM model counts with GEH <3	1
% of VISSIM counts with GEH <3	50.00%
VISSIM model counts with GEH <5	2
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	2
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	2
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
	Link	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
	M69 J2 Off-Slip	Southbound	1211	1071	-140	-12%	Y	4.14	×	✓			
	M69 J2 On-Slip	Northbound	357	347	-10	-3%	Y	0.53	✓	✓			

BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

APPENDIX 5: Flow Validation

AM Peak (07:30-08:30) Summary - ALL	
Total number of counts considered	2
VISSIM model counts with GEH <3	2
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	2
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	2
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	2
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
1800-5400	M69	M69 J2 Off-Slip	Southbound	316	271	-45	-14%	Y	2.63	✓	✓			
1800-5400		M69 J2 On-Slip	Northbound	732	730	-2	0%	Y	0.07	✓	✓			

AM Peak (08:30-09:30) Summary - ALL	
Total number of counts considered	2
VISSIM model counts with GEH <3	2
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	2
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	2
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	2
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

TIMEINT	Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
		Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
5400-9000	M69	M69 J2 Off-Slip	Southbound	281	247	-34	-12%	Y	2.09	✓	✓			
5400-9000		M69 J2 On-Slip	Northbound	412	408	-4	-1%	Y	0.20	✓	✓			

AM Peak (07:30-09:30) Summary - ALL	
Total number of counts considered	2
VISSIM model counts with GEH <3	1
% of VISSIM counts with GEH <3	50.00%
VISSIM model counts with GEH <5	2
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	2
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	2
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
	Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 – 2700	>2700
M69	M69 J2 Off-Slip	Southbound	597	518	-79	-13%	Y	3.35	✗	✓			
	M69 J2 On-Slip	Northbound	1144	1138	-6	-1%	Y	0.18	✓	✓			

BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

APPENDIX 6: Journey Time Validation

			07:30 - 08:30										08:30 - 0930										08:30 - 0930									
	Description		Observed		Modelled				Validation				Modelled				Validation						Modelled				Validation					
Section	From -	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min	Validates			
1	B4669 WB Sapcote Rd - Woodside Garage	B4669 WB Sapcote Rd -	530m	27	29	29	29	3	9%	✓	✓	✓	27	29	29	29	1	5%	✓	✓	✓	27	29	29	29	2	7%	✓	✓	✓			
2	B4669 WB Sapcote Rd - Smithy Ln	B4669 WB Sapcote Rd -	476m	28	25	28	28	0	-1%	✓	✓	✓	25	25	25	26	0	2%	✓	✓	✓	26	25	27	29	0	1%	✓	✓	✓			
5	RAB B4669 EB	B4669 EB St-Stanton Ln	1268m	73	63	63	63	-10	-13%	✓	✓	✓	61	63	63	64	2	3%	✓	✓	✓	67	62	63	64	-4	-6%	✓	✓	✓			
TOTAL	**B4669 WB Sapcote Rd - Woodside Garage**	**B4669 EB St-Stanton Ln**	**2274m**	**127**	**118**	**120**	**121**	**-7**	**-6%**	✓	✓	✓	**114**	**117**	**117**	**118**	**0**	**0%**	✓	✓	✓	**120**	**117**	**119**	**121**	**-2**	**-2%**	✓	✓	✓			

			07:30 - 08:30										08:30 - 0930										08:30 - 0930									
	Description		Observed		Modelled				Validation				Modelled				Validation						Modelled				Validation					
Section	From -	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min	Validates			
6	B4669 WB St-Stanton Ln	B4669 EB RAB	1291m	71	67	67	68	-4	-5%	✓	✓	✓	66	66	66	67	0	0%	✓	✓	✓	69	66	67	68	-2	-3%	✓	✓	✓			
3	RAB 4669 EB Sapcote Rd	B4669 EB Sapcote Rd -	294m	27	25	25	25	-2	-9%	✓	✓	✓	33	25	25	25	-8	-24%	×	✓	✓	30	25	25	25	-5	-17%	×	✓	✓			
4	B4669 EB Sapcote Rd - Smithy Ln	B4669 EB Sapcote Rd -	487m	28	28	28	28	-1	-2%	✓	✓	✓	29	28	28	28	-2	-6%	✓	✓	✓	29	27	28	28	-1	-4%	✓	✓	✓			
TOTAL	**B4669 WB St-Stanton Ln -**	**B4669 EB Sapcote Rd -**	**2072m**	**127**	**120**	**120**	**121**	**-7**	**-5%**	✓	✓	✓	**128**	**118**	**119**	**120**	**-9**	**-7%**	✓	✓	✓	**128**	**118**	**119**	**121**	**-8**	**-6%**	✓	✓	✓			

			07:30 - 08:30										08:30 - 0930										08:30 - 0930									
	Description		Observed		Modelled				Validation				Modelled				Validation						Modelled				Validation					
Section	From -	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min	Validates			
15	M69 NB Lychgate Ln	M69 Onslip	2190m	69	80	80	80	11	16%	×	✓	✓	69	80	80	80	11	16%	×	✓	✓	69	80	80	81	11	16%	×	✓	✓			
16	M69 Onslip	M69 NB End	623m	20	22	23	23	3	14%	✓	✓	✓	20	22	22	22	3	13%	✓	✓	✓	20	22	23	23	3	13%	✓	✓	✓			
TOTAL	**M69 NB Lychgate Ln -**	**M69 NB End**	**2813m**	**89**	**103**	**103**	**103**	**14**	**15%**	✓	✓	✓	**89**	**102**	**103**	**103**	**14**	**15%**	✓	✓	✓	**89**	**102**	**103**	**103**	**14**	**15%**	✓	✓	✓			

			07:30 - 08:30										08:30 - 0930										08:30 - 0930									
	Description		Observed		Modelled				Validation				Modelled				Validation						Modelled				Validation					
Section	From -	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min	Validates			
17	M69 SB Start	M69 SB Offslip	603m	20	22	22	22	2	11%	✓	✓	✓	20	22	22	22	2	8%	✓	✓	✓	20	22	22	22	2	9%	✓	✓	✓			
18	M69 SB Offslip	M69 SB Lychgate Ln	2197m	69	76	77	77	7	11%	✓	✓	✓	71	76	76	76	5	7%	✓	✓	✓	70	76	76	77	6	9%	✓	✓	✓			
TOTAL	**M69 SB Start**	**0 M69 SB Lychgate Ln**	**2801m**	**89**	**98**	**98**	**99**	**10**	**11%**	✓	✓	✓	**91**	**97**	**97**	**98**	**6**	**7%**	✓	✓	✓	**90**	**97**	**98**	**99**	**8**	**9%**	✓	✓	✓			

			07:30 - 08:30										08:30 - 0930										08:30 - 0930									
	Description		Observed		Modelled				Validation				Modelled				Validation						Modelled				Validation					
Section	From -	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min	Validates			
13	NBOnslip	NBOnslip	472m	21	21	21	21	0	0%	✓	✓	✓	20	21	21	21	0	2%	✓	✓	✓	21	21	21	21	0	1%	✓	✓	✓			
9	RAB Circ SB M69 Offslip to B4699		16m	1	1	1	1	0	-24%	×	✓	✓	1	1	1	1	0	-23%	×	✓	✓	1	1	1	1	0	-23%	×	✓	✓			
10	RAB Circ SB		111m	8	7	7	7	-1	-8%	✓	✓	✓	8	7	7	7	0	-2%	✓	✓	✓	8	7	7	7	0	-5%	✓	✓	✓			
11	RAB Circ WB		218m	14	12	12	12	-2	-15%	✓	✓	✓	14	12	12	12	-2	-17%	×	✓	✓	14	12	12	12	-2	-16%	×	✓	✓			
3	RAB 4669 EB Sapcote Rd	B4669 EB Sapcote Rd -	294m	27	25	25	25	-2	-9%	✓	✓	✓	33	25	25	25	-8	-24%	×	✓	✓	30	25	25	25	-5	-17%	×	✓	✓			
TOTAL	**NBOnslip -**	**B4669 EB Sapcote Rd -**	**640m**	**71**	**65**	**66**	**66**	**-5**	**-8%**	✓	✓	✓	**76**	**65**	**66**	**66**	**-10**	**-14%**	✓	✓	✓	**73**	**65**	**66**	**66**	**-8**	**-11%**	✓	✓	✓			

			07:30 - 08:30										08:30 - 0930										08:30 - 0930									
	Description		Observed		Modelled				Validation				Modelled				Validation						Modelled				Validation					
Section	From -	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min	Validates			
13	NBOnslip	NBOnslip	472m	21	21	21	21	0	0%	✓	✓	✓	20	21	21	21	0	2%	✓	✓	✓	21	21	21	21	0	1%	✓	✓	✓			
9	RAB Circ SB M69 Offslip to B4699		16m	1	1	1	1	0	-24%	×	✓	✓	1	1	1	1	0	-23%	×	✓	✓	1	1	1	1	0	-23%	×	✓	✓			
5	RAB B4669 EB	B4669 EB St-Stanton Ln	1268m	73	63	63	63	-10	-13%	✓	✓	✓	63	63	63	64	1	1%	✓	✓	✓	68	62	63	64	-4	-7%	✓	✓	✓			
TOTAL	**NBOnslip -**	**B4669 EB St-Stanton Ln**	**1285m**	**94**	**84**	**85**	**85**	**-10**	**-10%**	✓	✓	✓	**84**	**85**	**85**	**85**	**1**	**1%**	✓	✓	✓	**89**	**84**	**85**	**85**	**-4**	**-5%**	✓	✓	✓			

			07:30 - 08:30										08:30 - 0930										08:30 - 0930									
	Description		Observed		Modelled				Validation				Modelled				Validation						Modelled				Validation					
Section	From -	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min	Validates			
2	B4669 WB Sapcote Rd - Smithy Ln	B4669 WB Sapcote Rd -	476m	28	26	28	29	0	-1%	✓	✓	✓	25	25	25	26	0	0%	✓	✓	✓	27	25	27	29	0	0%	✓	✓	✓			
7	RAB Circ B4669 W EB		15m	1	1	1	1	0	45%	×	✓	✓	1	1	1	1	0	42%	×	✓	✓	1	1	1	1	0	44%	×	✓	✓			
14	SB Offslip	SB Offslip	430m	24	23	23	23	-1	-2%	✓	✓	✓	23	23	23	23	0	-1%	✓	✓	✓	23	23	23	23	0	-1%	✓	✓	✓			
TOTAL	**B4669 WB Sapcote Rd - Smithy Ln -**	**SB Offslip**	**445m**	**52**	**50**	**52**	**53**	**0**	**-1%**	✓	✓	✓	**49**	**49**	**49**	**50**	**0**	**1%**	✓	✓	✓	**51**	**49**	**51**	**53**	**0**	**0%**	✓	✓	✓			

			07:30 - 08:30										08:30 - 0930										08:30 - 0930									
	Description		Observed		Modelled				Validation				Modelled				Validation						Modelled				Validation					
Section	From -	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min	Validates			
6	B4669 WB St-Stanton Ln	B4669 EB RAB	1291m	71	67	67	68	-4	-5%	✓	✓	✓	66	66	66	67	0	0%	✓	✓	✓	69	66	67	68	-2	-3%	✓	✓	✓			
11	RAB Circ WB		218m	14	12	12	12	-2	-15%	✓	✓	✓	14	12	12	12	-2	-17%	×	✓	✓	14	12	12	12	-2	-16%	×	✓	✓			
12	RAB Circ WB B4669 to EB		105m	7	9	9	9	2	33%	×	✓	✓	6	9	9	9	3	42%	×	✓	✓	6	9	9	9	2	37%	×	✓	✓			
7	RAB Circ B4669 W EB		15m	1	1	1	1	0	45%	×	✓	✓	1	1	1	1	0	42%	×	✓	✓	1	1	1	1	0	44%	×	✓	✓			
14	SB Offslip	SB Offslip	430m	24	23	23	23	-1	-2%	✓	✓	✓	23	23	23	23	0	-1%	✓	✓	✓	23	23	23	23	0	-1%	✓	✓	✓			
TOTAL	**B4669 WB St-Stanton Ln -**	**SB Offslip**	**768m**	**116**	**111**	**112**	**113**	**-4**	**-3%**	✓	✓	✓	**110**	**110**	**110**	**111**	**0**	**0%**	✓	✓	✓	**113**	**110**	**111**	**113**	**-2**	**-2%**	✓	✓	✓			

			16:30 - 17:30										17:30 - 18:30										16:30 - 18:30									
	Description		Observed		Modelled				Validation					Modelled				Validation					Modelled				Validation					
Section	From -	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates		
1	B4669 WB Sapcote Rd - Woodside G	B4669 WB Sapcote Rd -	530m	29	29	29	29	-1	-3%	✓	✓	✓	26	29	29	29	3	10%	✓	✓	✓	28	29	29	29	1	4%	✓	✓	✓		
2	B4669 WB Sapcote Rd - Smithy Ln	B4669 WB Sapcote Rd -	476m	25	24	25	25	0	0%	✓	✓	✓	24	24	24	25	0	1%	✓	✓	✓	24	24	25	25	0	1%	✓	✓	✓		
5	RAB B4669 EB	B4669 EB St-Stanton Ln	1268m	63	64	65	65	2	3%	✓	✓	✓	60	64	64	65	4	7%	✓	✓	✓	62	64	65	65	3	5%	✓	✓	✓		
TOTAL	**B4669 WB Sapcote Rd - Woodside Garage**	**B4669 EB St-Stanton Ln**	**2274m**	**117**	**118**	**118**	**118**	**1**	**1%**	✓	✓	✓	**110**	**117**	**118**	**118**	**0**	**0%**	✓	✓	✓	**114**	**117**	**118**	**118**	**4**	**4%**	✓	✓	✓		

			16:30 - 17:30										17:30 - 18:30										16:30 - 18:30									
	Description		Observed		Modelled				Validation					Modelled				Validation					Modelled				Validation					
Section	From -	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates		
6	B4669 WB St-Stanton Ln	B4669 EB RAB	1291m	66	65	66	66	0	0%	✓	✓	✓	64	65	65	65	1	1%	✓	✓	✓	65	65	65	66	0	0%	✓	✓	✓		
3	RAB 4669 EB Sapcote Rd	B4669 EB Sapcote Rd -	294m	24	25	25	25	0	2%	✓	✓	✓	24	25	25	25	1	5%	✓	✓	✓	24	25	25	25	1	3%	✓	✓	✓		
4	B4669 EB Sapcote Rd - Smithy Ln	B4669 EB Sapcote Rd -	487m	28	28	28	28	0	0%	✓	✓	✓	27	27	27	28	0	1%	✓	✓	✓	27	27	28	28	0	1%	✓	✓	✓		
TOTAL	**B4669 WB St-Stanton Ln**	**B4669 EB Sapcote Rd -**	**2072m**	**118**	**117**	**118**	**119**	**0**	**0%**	✓	✓	✓	**115**	**117**	**117**	**118**	**2**	**2%**	✓	✓	✓	**116**	**117**	**118**	**119**	**1**	**1%**	✓	✓	✓		

			16:30 - 17:30										17:30 - 18:30										16:30 - 18:30									
	Description		Observed		Modelled				Validation					Modelled				Validation					Modelled				Validation					
Section	From -	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates		
15	M69 NB Lychgate Ln	M69 Onslip	2190m	68	79	80	80	12	18%	×	✓	✓	67	79	80	80	12	18%	×	✓	✓	68	79	80	80	12	18%	×	✓	✓		
16	M69 Onslip	M69 NB End	623m	19	22	22	22	3	15%	✓	✓	✓	19	22	22	22	3	15%	✓	✓	✓	19	22	22	22	3	15%	✓	✓	✓		
TOTAL	**M69 NB Lychgate Ln**	**M69 NB End**	**2813m**	**87**	**101**	**102**	**102**	**15**	**17%**	**×**	✓	✓	**87**	**101**	**102**	**102**	**15**	**17%**	**×**	✓	✓	**87**	**101**	**102**	**102**	**15**	**17%**	✓	✓	✓		

			16:30 - 17:30										17:30 - 18:30										16:30 - 18:30									
	Description		Observed		Modelled				Validation					Modelled				Validation					Modelled				Validation					
Section	From -	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates		
17	M69 SB Start	M69 SB Offslip	603m	19	22	22	22	3	14%	✓	✓	✓	19	22	22	22	3	15%	✓	✓	✓	19	22	22	22	3	14%	✓	✓	✓		
18	M69 SB Offslip	M69 SB Lychgate Ln	2197m	68	75	75	76	8	11%	✓	✓	✓	68	75	76	76	8	12%	✓	✓	✓	68	75	75	76	8	11%	✓	✓	✓		
TOTAL	**M69 SB Start**	**M69 SB Lychgate Ln**	**2801m**	**87**	**97**	**97**	**97**	**10**	**12%**	✓	✓	✓	**87**	**97**	**97**	**98**	**11**	**12%**	✓	✓	✓	**87**	**97**	**97**	**98**	**11**	**12%**	✓	✓	✓		

			16:30 - 17:30										17:30 - 18:30										16:30 - 18:30									
	Description		Observed		Modelled				Validation					Modelled				Validation					Modelled				Validation					
Section	From -	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates		
13	NBOnslip	NBOnslip	472m	19	22	22	22	2	13%	✓	✓	✓	19	21	21	22	3	15%	✓	✓	✓	19	21	22	22	3	14%	✓	✓	✓		
9	RAB Circ SB M69 Offslip to B4699		16m	1	1	1	1	0	-18%	×	✓	✓	1	1	1	1	0	-23%	×	✓	✓	1	1	1	1	0	-20%	×	✓	✓		
10	RAB Circ SB		111m	8	7	7	8	0	-3%	✓	✓	✓	7	7	7	7	0	0%	✓	✓	✓	8	7	7	8	0	-2%	✓	✓	✓		
11	RAB Circ WB		218m	14	11	12	12	-2	-17%	×	✓	✓	13	11	11	12	-2	-15%	✓	✓	✓	14	11	12	12	-2	-16%	×	✓	✓		
3	RAB 4669 EB Sapcote Rd	B4669 EB Sapcote Rd -	294m	24	25	25	25	0	2%	✓	✓	✓	24	25	25	25	1	5%	✓	✓	✓	24	25	25	25	1	3%	✓	✓	✓		
TOTAL	**NBOnslip**	**B4669 EB Sapcote Rd -**	**1112m**	**66**	**66**	**67**	**67**	**0**	**0%**	✓	✓	✓	**65**	**66**	**66**	**67**	**2**	**2%**	✓	✓	✓	**66**	**66**	**66**	**67**	**1**	**1%**	✓	✓	✓		

			16:30 - 17:30										17:30 - 18:30										16:30 - 18:30									
	Description		Observed		Modelled				Validation					Modelled				Validation					Modelled				Validation					
Section	From -	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates		
13	NBOnslip	NBOnslip	472m	19	22	22	22	2	13%	✓	✓	✓	19	21	21	22	3	15%	✓	✓	✓	19	21	22	22	3	14%	✓	✓	✓		
9	RAB Circ SB M69 Offslip to B4699		16m	1	1	1	1	0	-18%	×	✓	✓	1	1	1	1	0	-23%	×	✓	✓	1	1	1	1	0	-20%	×	✓	✓		
5	RAB B4669 EB	B4669 EB St-Stanton Ln	1268m	63	64	65	65	2	3%	✓	✓	✓	60	64	64	65	4	7%	✓	✓	✓	62	64	65	65	3	5%	✓	✓	✓		
TOTAL	**NBOnslip**	**B4669 EB St-Stanton Ln**	**1757m**	**83**	**87**	**88**	**88**	**4**	**5%**	✓	✓	✓	**80**	**86**	**87**	**87**	**7**	**9%**	✓	✓	✓	**82**	**86**	**87**	**88**	**6**	**7%**	✓	✓	✓		

			16:30 - 17:30										17:30 - 18:30										16:30 - 18:30									
	Description		Observed		Modelled				Validation					Modelled				Validation					Modelled				Validation					
Section	From -	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates		
2	B4669 WB Sapcote Rd - Smithy Ln	B4669 WB Sapcote Rd -	476m	25	24	25	25	0	0%	✓	✓	✓	24	24	24	25	0	1%	✓	✓	✓	24	24	25	25	0	1%	✓	✓	✓		
7	RAB Circ B4669 W EB		15m	1	1	1	1	0	31%	×	✓	✓	1	1	1	1	0	32%	×	✓	✓	1	1	1	1	0	32%	×	✓	✓		
14	SB Offslip	SB Offslip	430m	23	22	22	22	-1	-4%	✓	✓	✓	23	22	22	22	-1	-5%	✓	✓	✓	23	22	22	22	-1	-4%	✓	✓	✓		
TOTAL	**B4669 WB Sapcote Rd - Smithy Ln**	**SB Offslip**	**921m**	**48**	**47**	**47**	**48**	**-1**	**-1%**	✓	✓	✓	**48**	**47**	**47**	**48**	**-1**	**-1%**	✓	✓	✓	**48**	**47**	**47**	**48**	**-1**	**-1%**	✓	✓	✓		

			16:30 - 17:30										17:30 - 18:30										16:30 - 18:30									
	Description		Observed		Modelled				Validation					Modelled				Validation					Modelled				Validation					
Section	From -	To	Dist.	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates	Avg.	Min.	Avg.	Max.	Actual Diff.	% Diff.	Within 15%	Within 1 min.	Validates		
6	B4669 WB St-Stanton Ln	B4669 EB RAB	1291m	66	65	66	66	0	0%	✓	✓	✓	64	65	65	65	1	1%	✓	✓	✓	65	65	65	66	0	0%	✓	✓	✓		
11	RAB Circ WB		218m	14	11	12	12	-2	-17%	×	✓	✓	13	11	11	12	-2	-15%	✓	✓	✓	14	11	12	12	-2	-16%	×	✓	✓		
12	RAB Circ WB B4669 to EB		105m	5	8	8	8	4	78%	×	✓	✓	4	8	8	8	4	91%	×	✓	✓	4	8	8	9	4	85%	×	✓	✓		
7	RAB Circ B4669 W EB		15m	1	1	1	1	0	31%	×	✓	✓	1	1	1	1	0	32%	×	✓	✓	1	1	1	1	0	32%	×	✓	✓		
14	SB Offslip	SB Offslip	430m	23	22	22	22	-1	-4%	✓	✓	✓	23	22	22	22	-1	-5%	✓	✓	✓	23	22	22	22	-1	-4%	✓	✓	✓		
TOTAL	**B4669 WB St-Stanton Ln**	**SB Offslip**	**2059m**	**108**	**108**	**108**	**109**	**0**	**0%**	✓	✓	✓	**106**	**108**	**108**	**108**	**2**	**2%**	✓	✓	✓	**107**	**108**	**108**	**110**	**1**	**1%**	✓	✓	✓		

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TRANSPORT & INFRASTRUCTURE PLANNING

Tritax Symmetry Ltd
Hinckley National Rail Freight Interchange
M69 Junction 1 & 2 VISSIM
Audit Response

TRANSPORT & INFRASTRUCTURE PLANNING

Tritax Symmetry Ltd

Hinckley National Rail Freight Interchange

M69 Junction 1 & 2 VISSIM

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Notice

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Table 5: AM Flow Calibration – 0730 – 0830 hrs

AM Peak (07:30-08:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 6: AM Flow Calibration – 0830 – 0930 hrs

AM Peak (08:30-09:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 7: AM Flow Calibration – 0730-0930 hrs

AM Peak (08:30-09:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 8: PM Flow Calibration - 1630-1730 hrs

PM Peak (16:30-17:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 9: PM Flow Calibration -1730-1830 hrs

PM Peak (17:30-18:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 10: PM Flow Calibration – 1630-1830 hrs

PM Peak (16:30-18:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

1. INTRODUCTION

Instruction

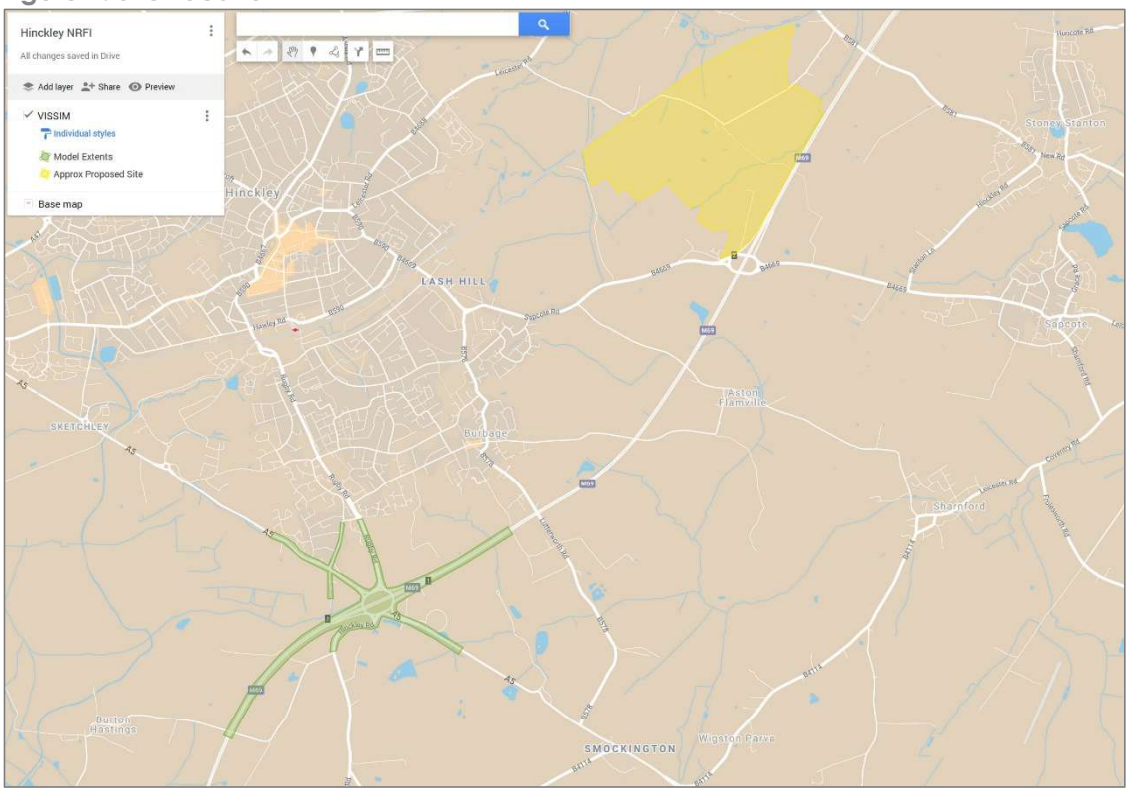
1.1 BWB Consulting has been commissioned as part a wider project scope by Tritax Symmetry Ltd to develop a series of highway models capable assessing any highway impacts resultant of the proposed Hinckley National Rail Freight Interchange (HNRFI) development. It is understood that the site will be developed serving a maximum of 850,000sqm of B8 warehousing/distribution uses, with access served directly onto M69 Junction 2.

The model purpose is to provide a robust platform on which the proposed development can be tested, allowing any impacts on the junction and surrounding highway network to be assessed.

Site Location

1.2 **Figure 1** below displays the indicative location of the proposed development, as well as the relative position of the highway model extents.

Figure 1: Site Location



Report Purpose

1.3 Due to the scale of the proposed development and the likely vehicular trips that it will generate, a comprehensive micro-simulation model of both the M69 Junction 1 and 2 gyratory has been developed using PTV Group's VISSIM software.

1.4 The following Local Model Validation Report (LMVR) 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.

1.5 Following the completion of the validation process, the model will be submitted for approval to Highways England (HE) and Leicestershire County Council (LCC) as the Local Highway Authority (LHA), for review, comment, and agreement. Once traffic outputs are available from the strategic LLITM (Leicester and Leicestershire Integrated Transport Model), the development proposals will be assessed.

1.6 This document provides commentary from Highways England, Leicestershire County Council & Warwickshire County Council after their review and comment. The comments and BWB's response are shown on the following pages.

2. REPORT STRUCTURE

The report is structured as follows:

- Section 3: Model review commentary from Highways England and BWB modelling response.
- Section 4: Model review commentary from Leicestershire County Council and BWB modelling response.
- Section 5: Model review commentary from Warwickshire County Council and BWB modelling response.
- Section 6: Observed Travel Time data interrogation

3. Model Review – Highways England

3.1 HE provided comments with regards to M69 Junction 1 modelling on 18/02/2021. BWB response has been provided in **Table 1** and **2**.

Table 1: Highways England Comments & BWB Response

Modelled Network	
Highways England Comment	**BWB Modelling Response**
Overlapping was observed on numerous occasions, where vehicles (both light and heavy) do not always give way from the B4109 south;	Priority Rules 31 & 32 amended to reduce this occurrence
Weaving issues have been identified at the M69 Southbound on-slip where most vehicles attempt a late merging manoeuvre. This may be caused by the coding of the circulatory (traffic travelling to the M69 southbound on slip comes around the roundabout in two lanes before merging) which differs from how the junction is marked on satellite imagery. This results in traffic waiting on the circulatory and then blocking traffic from exiting the B4109 south.	Connector 10045 Lane Change distance to be investigated. The lane merging is at the optimum location within the model - increasing the lane change distance causes issues to the circulating traffic whereas decreasing the distance makes more later merging and vehicle occurrences.
A proportion of traffic travelling from the A5 northwest to both the A5 southeast or B4109 south use the wrong lane (i.e. the offside lane) on approach to the junction and then weaves on the circulatory.	We will investigate this - there may be an opportunity to stop lane change on a number of the links namely: **15, 10109, 97** however we would want these to be as minimal as possible as we do not necessarily want to keep this arrangement in the future. Vehicles will inherently change lanes within the circulatory of a roundabout - by banning lane change we are forcing vehicles to stay in lanes where in reality they are allowed.
Vehicles travelling from the M69 northbound to the A5 northbound use both nearside lanes. Road markings on satellite imagery show that the nearside lane only should be used for this movement.	This is a valid manoeuvre - vehicles can make both movements from these lanes. See **Figure 2** overleaf which outlines all available movements in the model but also when referring to the lane markings on site.
The two nearside lanes are marked for the B4109 but in the model it is only possible to make this movement in the middle lane.	This manoeuvre is open to any lane - there are look back 'Lane Change Distance' parameters which dictate when vehicles start to change lanes to be at the correct location within the model. See **Figure 3** overleaf which provides details on which links and connectors each movement would use within the model.

Figure 2: M69 NB Offlsip to A5 NB or Circulatory

Figure 3: M69 NB Offslip Connectorsw

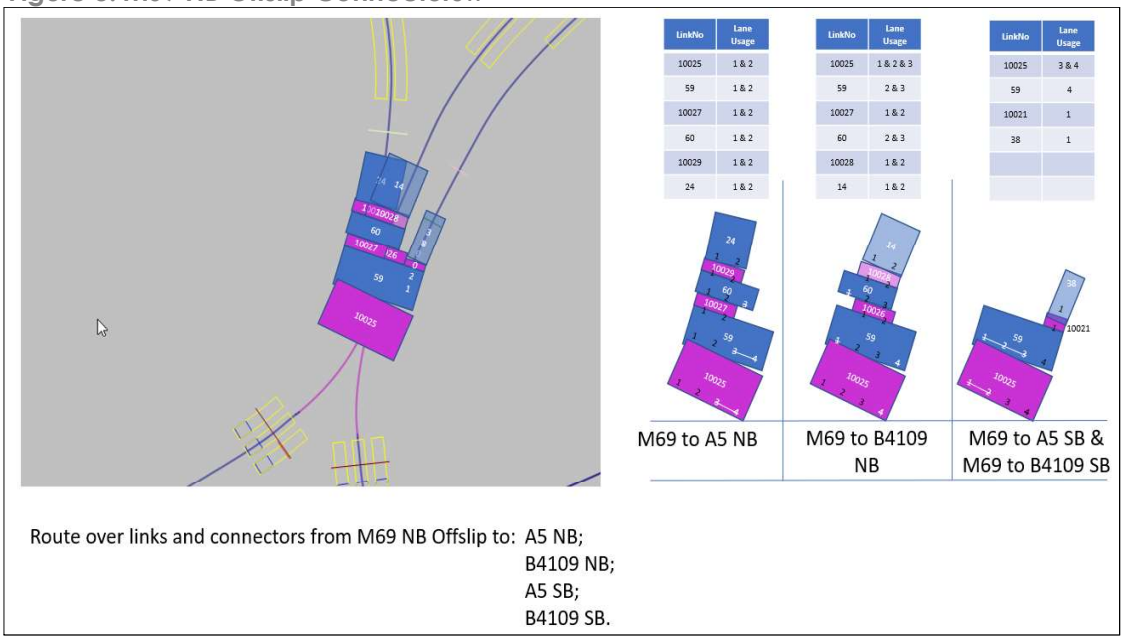


Table 2: HE Spreadsheet Audit Comments

Spreadsheet Audit Commentary	
Highways England Comment	**BWB Modelling Response**
In the 'SurveyChecks_JT_AM' the observed values are looking up the wrong time periods. For example, for the time period 0730-0745 the observed value in cell F7 reads 113 seconds. However, in the 'M69_TT_J1.xlsx' spreadsheet 113 seconds is for 0700-0715. It appears that the observed journey times in the CalVal spreadsheet are reading the data for 30 minutes before. This	Spreadsheet changed Cell F1 to 4 rather than 2 fixes this and refer to the correct travel time dataset. See below for further details related to travel times.

also occurs in the PM. This should be corrected, and validation of the models checked against the updated values and an updated LMVR provided.	
The hourly journey times for which the final validation is undertaken is calculated by averaging the four average 15-minute periods. Averaging an average can result in skewed results for the whole hour, therefore it is recommended that the 15-minute journey times are weighted by the 15-minute flow to calculate an hourly average.	Amended calculations to weight the travel times as suggested. All TT still validated as previous. Option available to turn Weighted Average On / Off.

3.2 It should be noted that no saturation flow data was made available. Model Specification. At each stopline within the model, there are Reduced Speed Areas coded to represent 'standard' traffic behaviour for vehicles crossing signal stop lines and thus standard saturation flows,

4. Model Review - Leicestershire County Council

Table 3: LCC Audit Comments

Modelled Network Junction 1	
Leicestershire County Council Comment	**BWB Modelling Response**
Route Convergence: it is unusual for a Dynamic Assignment model to not be run to convergence; admittedly there is limited route choice, but further clarity should be provided around the decision not to converge the model (noted that in LMVR section 3.14 there is a short section on this matter) and what impact would converging the model have on the validation?	*See Dynamic Assignment Clarification section*

Dynamic Assignment Clarification

4.1 Further to this question, and after review of the model HE commented that: Leicestershire County Council provided a model response on 19/02/21. See **Table 4** below for details:

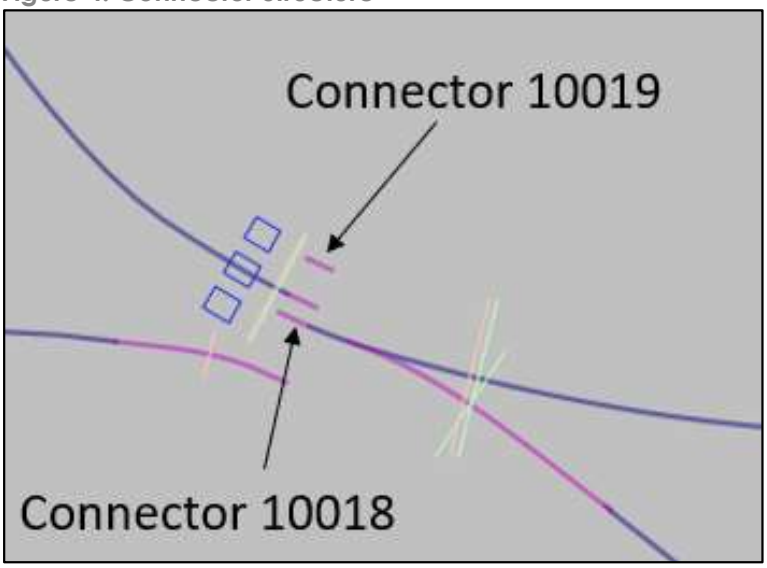
Table 4: Further Audit Response

HE Comment
Although it is not part of Highways England's previous comments, we note that LCC raised a query over model convergence not having been assessed. We would like to note that the model does have route choice as it stands. These route choices are inherently created as a result of connectors 10018 and 10019, which are open for all paths. Hence, creating multiple edges (for example, edges numbers 147, 148, 492 and 497) for the same movement. We therefore advise you review the open edges passing through these connectors or provide a convergence assessment, if applicable.

4.2 BWB acknowledge that in our response, it was stated that there was not any route choice for the modelled extent. This statement was made when looking at the network as a whole – there are no Origin / Destination pairs where there are two routes, and not looking at the specific network structure.

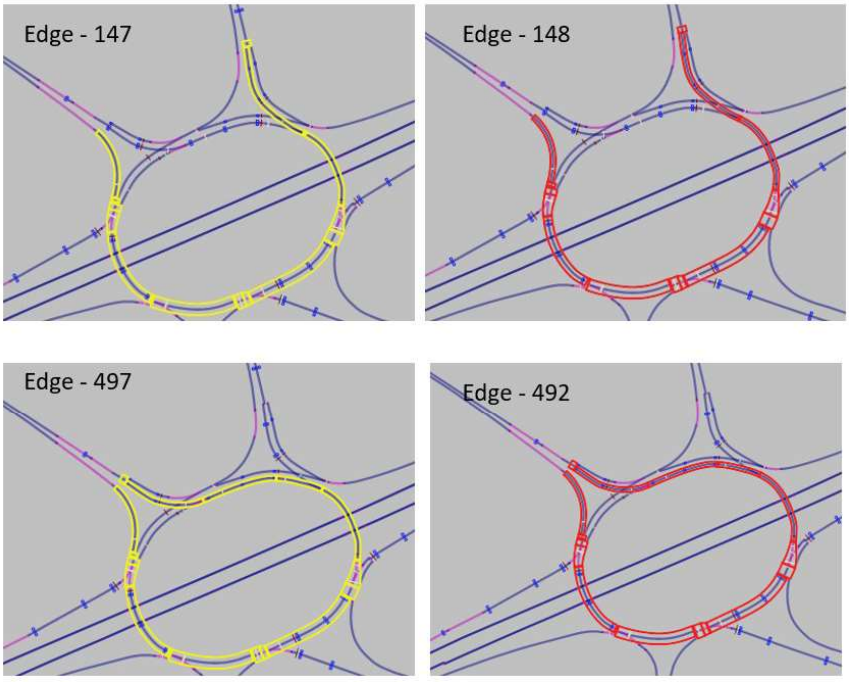
4.3 The statement made by LCC and HE are correct insomuch that there is route choice within the model as routes travelling around the gyratory could use either connector 10018 and 10019.

Figure 4: Connector Structure



4.4 When a VISSIM model is built to use Dynamic Assignment, when the traffic is assigned, an abstract network is automatically created. This abstract graph refers to junctions as nodes and links between junctions as edges. In the previously submitted model, edges 147 and 148 are used for travel between Rugby Road SB to the A5 northbound and edges 492 and 497 from Rugby Road SB to Wolvey Road NB.

Figure 5: Dynamic Assignment Edges



4.5 When the routing assignment is calculated, the network is simulated repetitively with the vehicles choosing their paths through the network based on the best path through the network. If there are multiple routes, vehicles are assigned to the routes – in the case of the M69 J1 model there should be no route choice available.

Re-convergence requirement

Multiple Routes

4.6 In order to stop the route choice within the model, one of the edges for each OD pair must be closed. Edges 148 and 492 are required to be closed. (see Figure 5). These edges use connector 10019 which is located on lane 3 of the gyratory and not the lanes that should be used for vehicles leaving the gyratory to the northbound A5 exit. With this edge open, vehicles would be in the incorrect lane to be able to safely leave the gyratory at the A5 northbound exit.

4.7 Whilst edges 148 and 192 have been closed, it should be noted that other routes are still able to use this connecter – specifically vehicles entering the gyratory from the B4109 Hinkley Road and making the movement to any exit other than the M69 WB or the A5 NB exits.

4.8 Unfortunately, closing an edge after compiling a Dynamic Assignment model does not automatically move modelled vehicles from the closed edge onto alternative edges. A full re-convergence of the model is therefore required where all potential routes are analysed. In doing a full re-convergence exercise, all available edges are assessed for each path between OD pairs and the vehicles are assigned accordingly. However, as there is now no route choice between OD pairs (due to the closure of edges 148 and 492), there will be one route between each OD pair and technically convergence calculations would be unnecessary.

4.9 For completeness and to satisfy the auditor query, a convergence assessment has been carried out for both the AM and PM base model. As there is a potential change in the traffic movement around the gyratory, the model validation will also be checked however there is envisaged to be no change to the status of the model.

Convergence Criteria

4.10 The Transport for London Modelling Guidelines suggest that the following convergence criteria are fulfilled:

- 95% of all path traffic volumes change by less than 5% for at least four consecutive iterations; and
- 95% of travel times on all paths change by less than 20% for at least four consecutive iterations.

4.11 And the DMRB TAG criteria adds:

- The percentage change in user costs or time spent within the network (V) should be less than 1% for four consecutive iterations.

4.12 Using the two criteria, BWB have analysed the convergence of the base models using Path Travel Times and Volumes for 30 iterations. The results are shown below.

4.13 As there is no route choice, the traffic volumes will have minimal difference between model iterations and the overall travel times between the iterations will also show minimal differences.

Figure 6: AM Model Convergence

AM

Run Number	Paths			Network Performance	
	Travel Times (0-20%)		Vol. Difference (0-5)	Total Travel Time (s)	Diff from prev. run
	Check 1 - ShrConvPathTT	Check 2 - Paths List - Converged = Yes			
1	100%	100%	98%	1218858.5	-
2	100%	100%	100%	1219514.5	0.1%
3	100%	100%	100%	1224328.2	0.4%
4	100%	100%	100%	1216447.4	-0.6%
5	98%	100%	100%	1220028.3	0.3%
6	100%	100%	100%	1218548.7	-0.1%
7	100%	100%	100%	1218877.6	0.0%
8	100%	100%	100%	1219728.6	0.1%
9	100%	100%	100%	1218737.4	-0.1%
10	100%	100%	100%	1219978	0.1%
11	100%	100%	100%	1218542.1	-0.1%
12	100%	100%	100%	1222335.8	0.3%
13	100%	100%	100%	1222748.8	0.0%
14	100%	100%	100%	1220483.4	-0.2%
15	100%	100%	100%	1223055.6	0.2%
16	100%	100%	100%	1217468.6	-0.5%
17	100%	100%	100%	1217206.3	0.0%
18	100%	100%	100%	1216967.3	0.0%
19	100%	100%	100%	1217347.3	0.0%

Most suitable run - BEW and WEG used for results reporting

Figure 7: PM Model Convergence

PM

Run Number	Paths			Network Performance	
	Travel Times (0-20%)		Vol. Difference (0-5)	Total Travel Time (s)	Diff from prev. run
	Check 1 - ShrConvPathTT	Check 2 - Paths List - Converged = Yes			
1	100%	100%	100%	1334536	-
2	100%	100%	98%	1347807.1	1.0%
3	100%	100%	98%	1338237.6	-0.7%
4	100%	100%	98%	1344255.1	0.4%
5	100%	100%	98%	1342350.1	-0.1%
6	100%	100%	98%	1343548	0.1%
7	100%	100%	98%	1341142	-0.2%
8	100%	100%	98%	1340436.6	-0.1%
9	100%	100%	98%	1343589	0.2%
10	100%	100%	98%	1361550.3	1.3%
11	100%	100%	98%	1341739.9	-1.5%
12	100%	100%	98%	1338824.6	-0.2%
13	100%	100%	98%	1335770	-0.2%
14	100%	100%	98%	1339773.2	0.3%
15	100%	100%	98%	1344630.5	0.4%
16	100%	100%	98%	1342177	-0.2%
17	100%	100%	98%	1335539.2	-0.5%
18	100%	100%	98%	1354537.3	1.4%
19	100%	100%	98%	1341573.3	-1.0%
20	100%	100%	98%	1343467.1	0.1%
21	100%	100%	98%	1325857.1	-1.3%
22	100%	100%	98%	1354584.3	2.2%
23	100%	100%	98%	1349711.9	-0.4%
24	100%	100%	98%	1344865.2	-0.4%
25	100%	100%	98%	1337004.1	-0.6%
26	100%	100%	98%	1344690.3	0.6%
27	100%	100%	98%	1339054.9	-0.4%
28	100%	100%	98%	1346476.1	0.6%
29	100%	100%	98%	1344987.8	-0.1%
30	100%	100%	98%	1343135	-0.1%

Most suitable run - BEW and WEG used for results reporting

Calibration & Validation of Model

4.14 The following tables provide a summary of the status of the model after the re-convergence exercise.

Flow Calibration

Table 5: AM Flow Calibration – 0730 – 0830 hrs

AM Peak (07:30-08:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 6: AM Flow Calibration – 0830 – 0930 hrs

AM Peak (08:30-09:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 7: AM Flow Calibration – 0730-0930 hrs

AM Peak (08:30-09:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 8: PM Flow Calibration - 1630-1730 hrs

PM Peak (16:30-17:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 9: PM Flow Calibration -1730-1830 hrs

PM Peak (17:30-18:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Table 10: PM Flow Calibration – 1630-1830 hrs

PM Peak (16:30-18:30) Summary - ALL	
Total number of counts considered	42
VISSIM model counts with GEH <3	42
% of VISSIM counts with GEH <3	100.00%
VISSIM model counts with GEH <5	42
% of VISSIM counts with GEH <5	100.00%
VISSIM model counts with GEH <10	42
% of VISSIM counts with GEH <10	100.00%
VISSIM model counts meeting WebTAG Unit 3.1 criteria	42
% of VISSIM counts meeting WebTAG Unit 3.1 flow criteria	100.00%

Vehicle Journey Time Validation

4.15 As before, the journey time validation has been carried out using TomTom data.

4.16 A total of 12 journey time routes have been prepared for the purpose of model validation. (Four primary routes and eight secondary routes).

Figure 8: Journey Time Routes - Primary

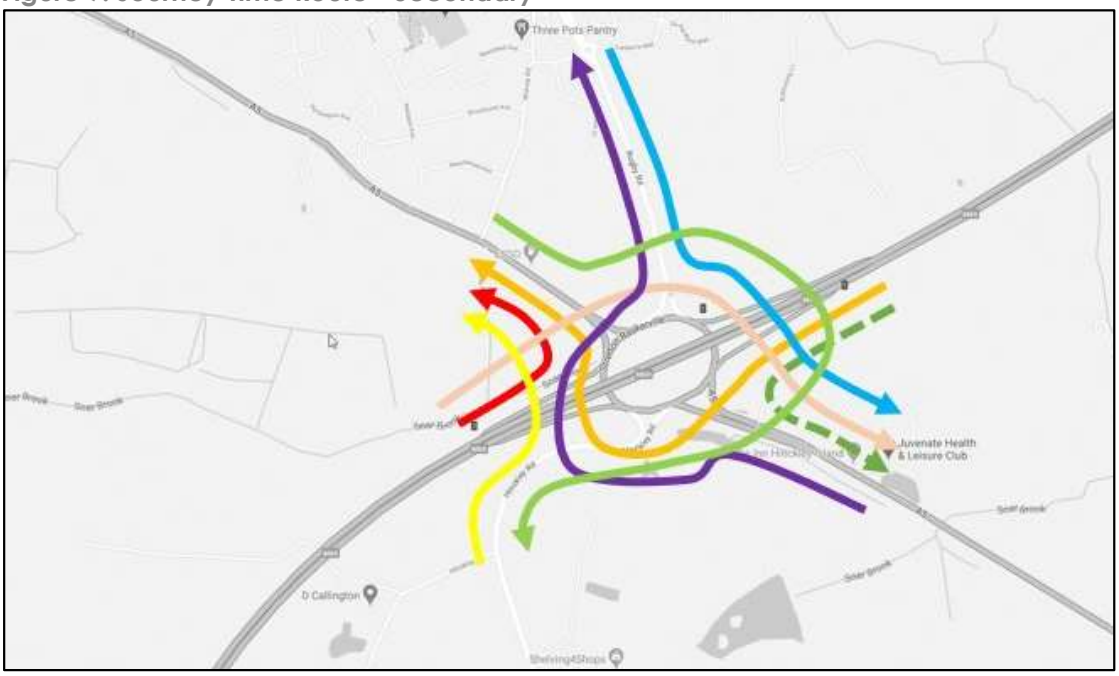
Table 11: AM Journey Time Validation

Whole Routes	AM Peak		
Criteria	07:30-08:30	08:30-09:30	07:30-09:30
85% of measures within 15%	83%	92%	100%
85% of measures within 60 seconds	100%	100%	100%

Table 12: PM Journey Time Validation

Whole Routes	PM Peak		
Criteria	16:30-17:30	17:30-18:30	16:30-18:30
85% of measures within 15%	100%	92%	100%
85% of measures within 60 seconds	100%	100%	100%

Figure 9: Journey Time Route - Secondary



4.17 In accordance with TAG Unit 3.1, 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 evaluations, it can be seen that all routes meet one of both criteria in the AM and PK peak models.

4.18 In the AM peak, the 0830-0930 hrs and 0730-0930 hors time periods both meet the TAG criteria with over 85% of the routes being within 15% and 60s. In the 0730-0830hrs time periods, there are two routes which fall outside of the 15% difference. (one having 16% difference) and 12/12 routes are within the 60s. Given how closed the non-validating route is to the 15% difference, the model is still considered representative of on-street conditions.

4.19 In the PM peak, all time periods are within 15& and 60s. Therefore, the PM model is considered representative of on-street conditions.

4.20 LCC provided further comments on 23/02/21, BWB modelling responses have been provided in **Table 13** and **14**.

Table 13: LCC M69 Junction 1 Comments

Modelled Network Junction 1	
Leicestershire County Council Comment	**BWB Modelling Response**
Reduced Speed Areas; suggest adding a RSA on A5 south east bound exit of M69 junction as this is a sharp turning.	Noted - added Reduced Speed Area No. 60 is on the A5 SB link
A5 section between Wolvey Road and M69 Roundabout should be National Speed Limit (both directions)?	Added Desired Speed Decisions (DSD) 45,47, 50,51, 53, 54,55 A5 NBSB NSL & 40mph Wolvey Rd & B4109 NB @ 50mph and SB @ NSL

A5 section South east of M69 junction should be National Speed Limit (both directions)?	Noted - added

Table 14: LCC M69 Junction 2 Comments

Modelled Network Junction 2	
Leicestershire County Council Comment	**BWB Modelling Response**
The vehicle behaviour around Link 50 should be improved. Currently vehicles observed to slow down to around 25kph on the approach to this link which impacts on the circulatory flow of the roundabout.	It is acknowledged that there is hesitancy with some vehicles as they travel around the circulatory travelling through Link 50. The link structure in this section was updated in an attempt to better reflect the lane markings and layout on site. In VISSIM, the use of the 0.1m lane technique has been used to model the flare from Lane 2 on the circulatory to 3 further downstream (highlighted in yellow below).

4.21 There is an argument that in reality, the flare should be from Lane 2 to Lane 2, rather than Lane 2 to Lane 3. However, in VISSIM, there is a limitation that the 0.1m lane cannot be included in the middle of the link without needing separate connectors. This approach was considered, but it was felt that this would fix the lane use too much to specific lanes, where the existing layout shows more lane choice.

4.22 It should also be noted that the flow calibration on this approach meets TAG guidance and the journey times that include this section are all within TAG criteria, indicating that the operation is not significant enough to affect the comparisons with observed data.

4.23 Finally, with reference to the observations by Leicestershire County Council for the Junction 2 model – we have further investigated this and have noticed that the observed TRADS data reports a different traffic flow on the slips when compared to the observed survey dataset of which it is more prevalent in the PM peak.

4.24 The observed MCC data for the J2 Onslip is 1002 vehs whereas the TRADS is 1211 vehs. The modelled is reporting as 1071 vehs.

Validation compared to MCC data:

Junction	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			Flow Criteria Met			
	Approach	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW	<700	700 - 2700	>2700
	M69 North	B4669 East	346	365	19	5%	N	1.01	✓	✓			
		B4669 West	656	706	50	8%	N	1.92	✓	✓			

Note – the slip flows in the MCC data are calculated using both the 364 and 706 values.

Validation compared to the TRADS dataset:

	Junction/ Movement		Vehicle Flow		Difference		GEH Criteria Met			
	Link	Exit/movement	Observed	Modelled	Actual	%	Critical	GEH	Pass	FLOW
	M69 J2 Off-Slip	Southbound	1211	1071	-140	-12%	Y	4.14	×	✓

4.25 We included the analysis within the LMVR for completeness as the flows are within 12% of the observed TRADS and are within TAG guidance. However if we look at the MCC validation the difference is 5% and a GEH if 1.01 for the east movement and 8% difference and a GEH of 1.92 for the west so validated very well.

5. Model Review - Warwickshire County Council

5.1 Warwickshire County Concil provided modelling review comments on 23/02/21, BWB response has been provided in **Table 15** below..

Table 15: WCC Modelling Comments

Modelled Network Junction 1	
Warwickshire County Council Comment	**BWB Modelling Response**
LMVR for M69 jct 1 and would just like clarification as to why the for the journey time assessment the B4109 Hinckley Rd (from Wolvey) is only considered to/from A5 Southbound (towards Dodwells)? We appreciate that when the revisions for the comments that HE and LCC have made that the results will be updated, however it would assist us to understand what the 'sections' are on the network and which 2 journey time routes are outside of the acceptability criteria	Noted. The travel time data provided by Tom Tom is for individual link segments. When compiling a route, each of the link segments are combined to create a full route. There are some sections – predominantly on the gyratory – where multiple routes traverse the same link segments. So that each of the individual segments are included in the model validation, we have selected routes that cover all segments at least once. We have expanded the text within the LMRV to read: *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. For the purpose of providing journey time validation, multiple sections have been combined into longer journey routes, covering all major movements at key locations.* *Within the gyratory, at least three full routes have been selected for each section.* *Again, we have expanded the LMVR to detail any Travel Time segments that do not validate and provide the differences.*

6. Model Review - Observed Travel Time data interrogation

6.1 When looking at the travel time segments within the model, it was seen that some of the observed data on one section did not make sense.

6.2 The section of interest was found on A5 NB route and was segment number 10. This segment contains a number of individual Tom Tom sections namely – id 492, 434, 93, 250, 270 and 560, as shown in the following image.

Figure 10: Journey Time Segment

6.3 The travel times shown from the TOM TOM dataset show that in the 0745-0800 period the travel time section took 192s to traverse where in the previous 3 15minutes periods the travel time was recorded as 76s, 73s and 67s respectively. Then for the remaining periods, the travel time drops to 94s and less. Clearly there was an incident or erroneous data capture.

	AM Journey Time (s)											
			x	x	x	x	x	x	x	x		
Section	0700-0715	0715-0730	0730-0745	0745-0800	0800-0815	0815-0830	0830-0845	0845-0900	0900-0915	0915-0930	0930-0945	0945-1000
10	76	73	67	192	94	87	54	58	55	53	60	52

6.4 The TomTOM data set contained the single day Wednesday 10th April 2019 data but also as an average for the month of May 2019. This dataset has been used to replace the erroneous data period for the whole segment for consistency. The travel time measurements now report the following:

	AM Journey Time (s)											
			x	x	x	x	x	x	x	x		
Section	0700-0715	0715-0730	0730-0745	0745-0800	0800-0815	0815-0830	0830-0845	0845-0900	0900-0915	0915-0930	0930-0945	0945-1000
10	81	74	80	69	88	69	58	69	63	56	60	52

6.5 So that both peaks are using the data dataset, the average monthly data has been used for the PM peak also.

7. SUMMARY AND CONCLUSIONS

SUMMARY

7.1 This LMVR Audit Response (and the associated revised LMVR) document(s) have been provided to show the development of the base model and further demonstrates that it is an acceptable representation of the highway network within the study area and is fit for the purpose of developing traffic forecasts to assess the impact of development proposal scheme on the M69 Junction 1 gyratory.

7.2 BWB have taken all comments onboard and where necessary updated the revised the model to reflect these changes.

7.3 The purpose of model calibration is to ensure that the model assignments are appropriate. The main emphasis of the calibration is to ensure that the model accurately reflects existing conditions during the modelling period with regard to:

- Traffic patterns;
- Key junctions; and
- Traffic volumes and routing.

7.4 In regard to the traffic turning and flow counts at the surveyed sites the model exceeds the 85% criteria set by TAG Unit 3.1.

7.5 The model has been validated to observed journey times within the extents of the network. The data has been provided as 15-minute intervals and an average one-hour journey time for each of the peak network periods.

7.6 The journey time comparisons show consistency between the modelled and observed journey time profiles across the majority of the journey time routes. In the AM and PM peaks, there are a number of routes which fall outside of the 15% range (0730-08hrs and 1730-1830hrs). However, all of the routes are **well** within 60s and as such, the journey times are considered representative.

7.7 Given that the traffic flows and journey times compare well with on-site conditions, it should be considered a successful calibration and validation exercise.

CONCLUSION

7.8 It is understood that as these conditions are met and are of a sufficient quality to represent real world conditions the M69 Junction 1 and Junction 2 gyratory VISSIM models are considered robust and acceptable for testing of the proposed development.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