SWALE HIGHWAY MODEL

LOCAL MODEL VALIDATION REPORT – FINAL DRAFT

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SWECO UK LIMITED

Change List

VER.	DATE	STATUS	PREPARED	REVIEWED	APPROVED
	05/06/18	FINAL DRAFT	DH	MF	FN

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1 Introduction

1.1 Background

The new Swale Highway Model (SHM) has been developed by SWECO to test the traffic impacts of both new developments and transport infrastructure across Swale. The model will be used to provide an independent evidence base for the assessment of the emerging Local Plan by Swale Borough Council (SBC). In addition to this, the model will also be used as the basis for the Transport Assessments of the Quinn Estates Kent Limited (QE) development sites including Kent Science Park.

1.2 Context

A strategic highway assignment model represents a simplified version of the real-life situation. The structure and level of detail required for a particular application is determined by a consideration of the ultimate use of the model. As models serve a variety of functions, the nature of models is similarly varied, ranging from highly detailed urban situations to more strategic regional and inter urban contexts.

In this instance the model has been designed to cover a sufficiently wide area to capture the strategic impacts within the Swale district. Given the strategic nature of the model, detailed route choice between (and through) the key centres in Kent and Swale is the primary consideration. The validation of the model reflects this with a focus on ensuring that the following are adequately replicated:

- Representation of the mix of vehicle types and purposes;
- Route choice between key towns within the Swale district;
- Traffic flows on major links / routes; and
- Current travel times on the network.

1.3 Purpose of this Report

The Local Model Validation Report (LMVR) is intended to document all key aspects of the base year model development and demonstrate that the model has been calibrated and validated to a level appropriate for its subsequent use for future year demand forecasting. The LMVR contents are determined by the standards and the guidance provided by the Department for Transport (DfT) within WebTAG.

It is intended that the LMVR is a free-standing document that covers all aspects of the model development. However, more detail on many aspects of the process can be found in the appropriate reports and technical notes prepared during the course of the study. In such cases, where additional information is available, this is indicated in the text of this report.

1.4 Report Structure

This report summarises the development of the base year Swale Highway Model and its subsequent validation. Following the introduction this LMVR is structured as follows:

Chapter 2 provides an overview of the extent of the study area and the modelling approach;

Chapter 3 describes the observed data used in the model development;

Chapter 4 provides an overview of the development of the model network;

Chapter 5 outlines the development of the model demand matrices;

Chapter 6 discusses the model assignment methodology;

Chapter 7 summarises the calibration process undertaken;

Chapter 8 presents the results of the model validation process by comparing observed and modelled data; and

Chapter 9 contains a concluding summary.

2 Model Description

2.1 Model Requirements

The key requirement of the Swale Highway Model (SHM) is that it should be capable of representing the existing traffic patterns on the strategic road network within the study area. This would then provide a sound basis for future year forecasts which need to be sensitive to route choice; not just for the A2, M2 and A249 but also other significant roads in the surrounding road network.

The traffic model will play an important role in scheme assessment by providing forecasts of traffic flows, conditions for environmental appraisal, highway and junction design.

2.2 Donor Models

2.2.1 South-East Regional Traffic Model (SERTM)

Highways England are developing a series of regional traffic models under a consistent framework to support the delivery of the schemes identified in the RIS. The entire Strategic Road Network (SRN) and major associated links in England will be represented in five strategic models representing the North, the trans-Pennine South, the Midlands, the South West and the South East (SERTM).

Provisional SERTM trip matrices have been constructed using mobile phone data, collected for 20 weekdays in March 2015. The data provides better resolution for long distance trips so synthetic matrices have been constructed to infill short distance trips.

2.3 Modelled Area

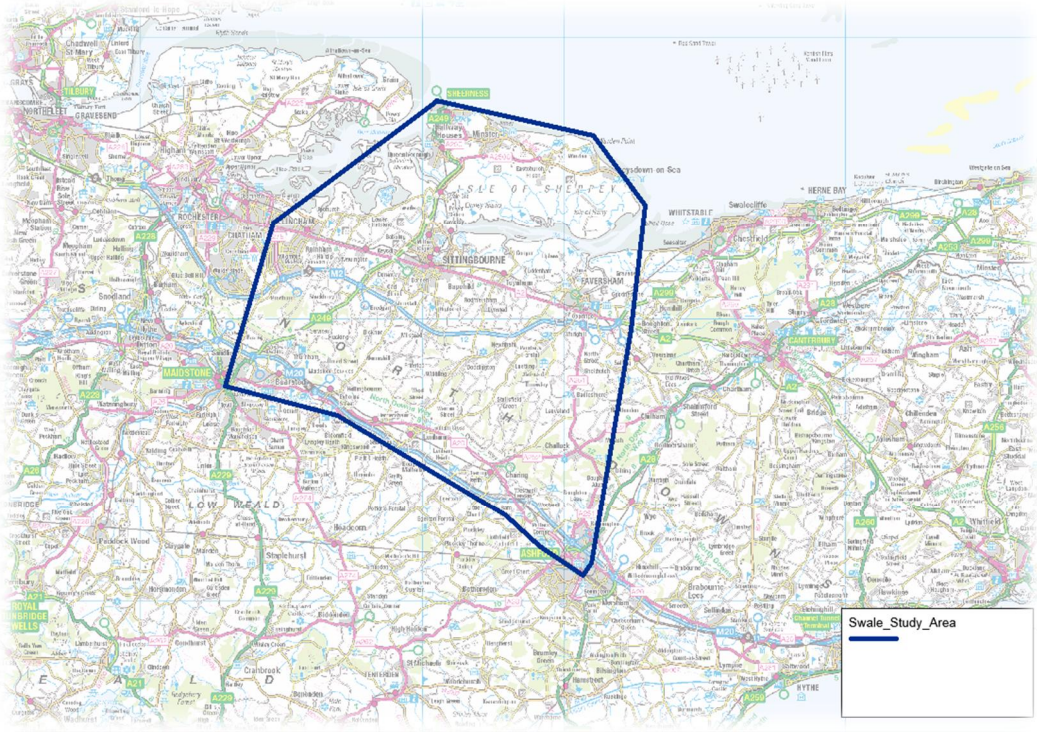
The extent of the detailed highway network is shown in

Figure 2-1. This area was chosen to cover the proposed residential, employment and commercial centre development sites, Sittingbourne and Faversham town centre and the Isle of Sheppey. In addition to the detailed network, a skeletal strategic network was included for the wider region covering the extent of the network to the Kent County boundary. This enabled the accurate routing of the vast majority of long distance trips into

the core study area. The modelled network in the surrounding area can be seen in Chapter 4

Figure 4-2.

Figure 2-1: Swale Core Study Area



2.4 Demand Segmentation and Modelled Periods

Different types of journeys are likely to display different characteristics in terms of trip distribution, mode sensitivity, travel time sensitivity and growth patterns. For this reason, the base year model trip matrices were split into five different 'user classes', and built in terms of Passenger Car Units (PCUs). Table 2-1 lists the modelled user classes and their associated PCU factor. The Swale Highway Model uses five User Classes that are consistent with the SERTM user classes. These user classes have been selected to meet current WebTAG guidance and for suitability for subsequent forecast demand modelling.

Table 2-1: Modelled User Classes and PCU factors

User Class	Vehicle Type/ Purpose	PCU factor
1	Car - Employer's Business	1
2	Car - Home-based Work	1
3	Car - Other	1
4	Light Goods Vehicles (LGV)	1
5	Heavy Goods Vehicles (HGV)	2

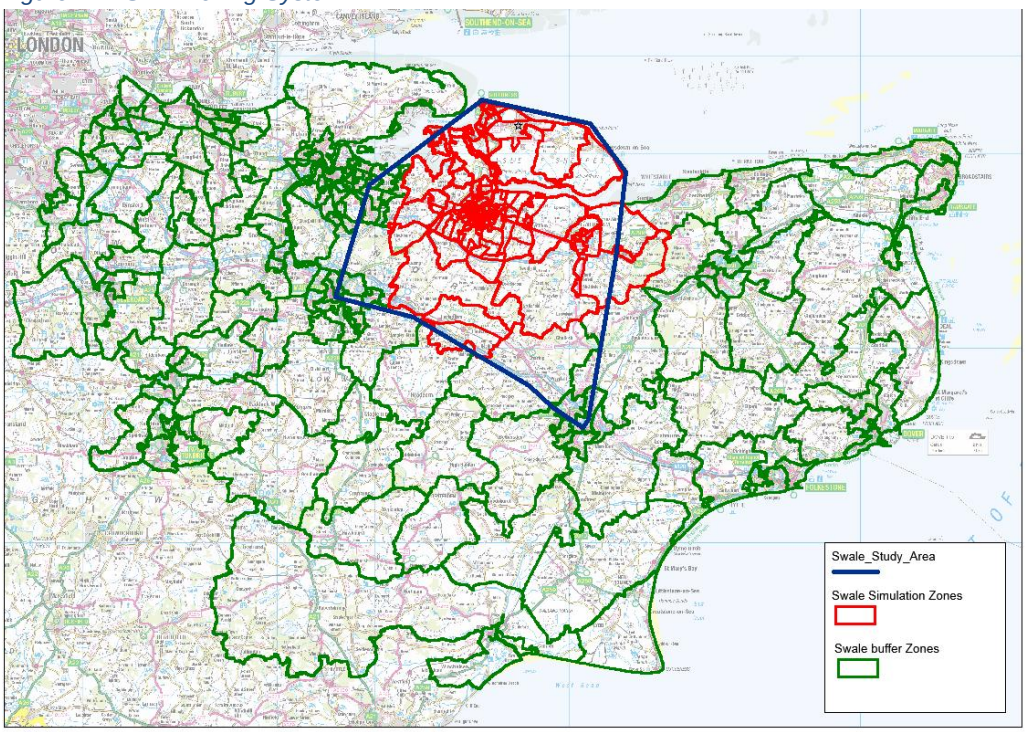
Three representative weekday single hours are modelled that cover the most important periods of traffic flow. The selected modelled time periods for Swale Model were as followed which are also consistent with SERTM:

- AM peak hour: 0800 – 0900;
- Average IP hour: 1100 – 1400; and
- PM Peak hour: 1700 – 1800.

2.5 Zoning System

The model zoning system was inherited from the SERTM model that also provided the corresponding prior matrix data. Zones were split on the basis of proportion of land uses within the zone, and by the lower layer super output area (LSOA) spatial definitions. Analysis of census data was used to identify the proportions of each newly split zone from their donor zone. Figure 2-2 shows the SHM zoning system.

Figure 2-2: SHM Zoning System

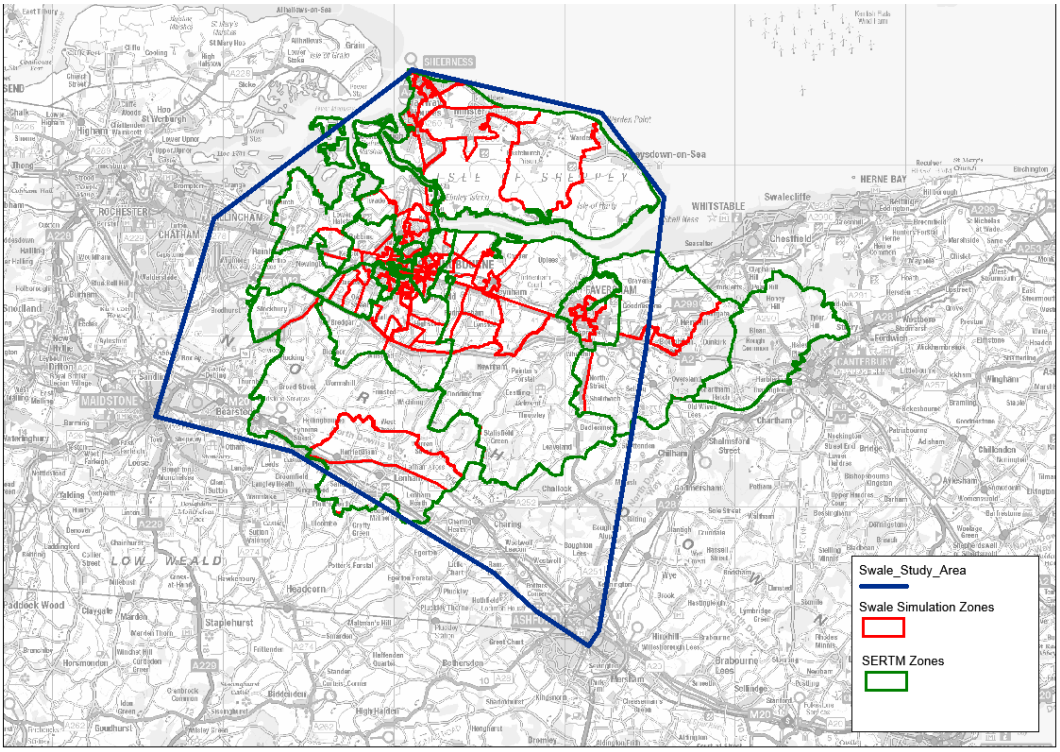


The number of zones was increased from the initial SERTM zoning to 321 zones of which 126 zones are within the (detailed) simulation area. SERTM zones were split within the simulation area:

- For the finer zones where using LSOAs to disaggregate was considered too coarse, zones were split further. Car, LGV and HGV trips were split between the split zones based on land use densities (residential or employment), and where sources of trips are known (such as carparks, supermarkets and business parks) as indicated by Google Maps.
- As the Isle of Sheppey is represented by a single large SERTM zone, it has been disaggregated the zone to 12 finer zones. These were based on LSOA boundaries, however where the LSOA were considered too fine, several zones were aggregated to form the final zone.

The disaggregated zones are illustrated in Figure 2-3.

Figure 2-3: SHM Disaggregated simulation area zones



2.6 Software

The Swale Highway Model uses SATURN (Simulation and Assignment of Traffic to Urban Road Networks), which is a 'congested assignment' software suite that has been developed over a period of more than 30 years by the Institute for Transport Studies at the University of Leeds. It is recognised as an "industry standard" traffic assignment model that satisfies the requirements for modelling highway networks as set out in WebTAG unit 3.1.2.

The way in which networks are coded and manipulated distinguishes SATURN from other assignment "industry standard" software. SATURN networks may be coded at two levels of detail:

- A simulation network in which considerable junction-based data in addition to road-based data must be provided; and
- A buffer network, normally surrounding the simulation network, which only requires data to describe the roads as opposed to the junctions.

Typically, the simulation network is used where the impacts are most significant, while the buffer network is used to describe, for example, the inter-urban roads surrounding a town where the impacts are less critical. The Swale Study area has been modelled in the simulation network detail. Within the buffer area of the Swale Highway Model, the network

characteristics are represented by speed flow curves for 10 km. These provide a more simplified representation of how traffic speeds alter on a link in reaction to changing levels of flow on the link. Within the simulation area speed flow curves have been applied to a number of links and, where used, are consistent with those used in the buffer network. However, it is standard practice to code of fixed speeds on links and the use of junction modelling to reflect the operational characteristics and delays of the network within the simulation network coding.

3 Traffic Data Collection Summary

3.1 Model Data Sources

Model data was obtained from a variety of available sources. As much use was made of readily available data as possible including existing count data from a year that is sufficiently close to the 2017 model base year. For journey time surveys, pre-existing TrafficMaster data was obtained that was processed as required for the Swale Highway Model providing significant coverage within the model simulation area.

3.2 Traffic Counts

All available existing traffic counts located within the study area have been reviewed and used where they were suitable. Kent County Council (KCC) provided a set of "ad-hoc" traffic counts that had been collected for various individual studies. These locations were solely from 2015 and 2016 and are shown in Figure 3-1. It should be noted that most of 2015/2016 counts do not cover the Interpeak (IP) although these are relatively few in number. KCC also provided counts for several key links on the Isle of Sheppey for 2017. It should be noted that the surveys occurred after changes at Barton Hill Drive/A2500. Based on this network change, the counts are slightly inconsistent with other KCC 2016 counts.

After the existing data review had been undertaken, new Manual Classified Count (MCC) and Automatic Traffic Count (ATC) survey location were specified and these were undertaken in June 2017. These new survey locations are also shown in Figure 3-1. Within Figure 3-1 the inner study area cordon represents Sittingbourne town centre and the larger outer study area cordon represents the main study area. Originally the main study area broadly covered Sittingbourne, Faversham, Isle of Sheppey and southward on the A49/M2 and was later extended eastwards to include the A2/A2050 and A28. MCCs were undertaken for both link and turning locations on Tuesday 20th June 2017, with the ATCs over a 19-day period from 17th June 2017 to the 5th July 2017 inclusive. Table 3-1 summarises the total number of traffic counts by data source.

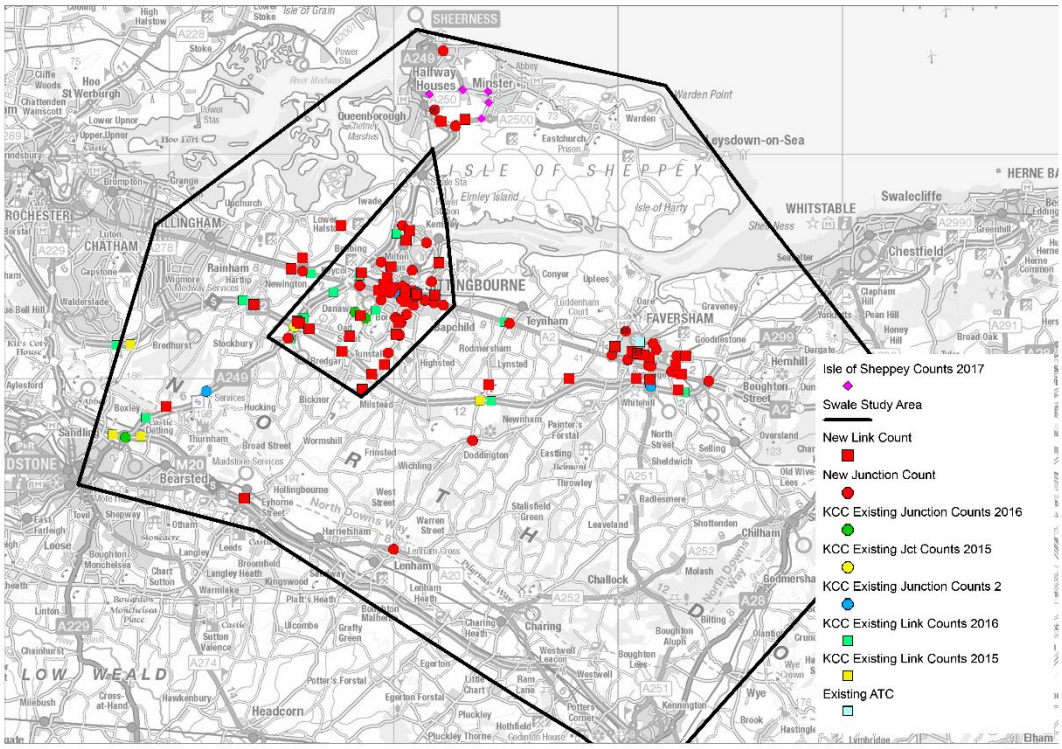
As it can been seen from Table 3-1 in total 137 sites have been utilised in the model development. Details of the count data sources are summarised as follows:

- Out of the 137 sites 99 are taken the new counts collected in June 2017 which were undertaken specifically for the Swale model. All the ATC sites (about 50 new counts- 2way) were collected for 2 weeks whereas the junction counts (49 new counts) were done only for one day, mostly on 20th June.
- A few of the ATC's were on the links where the junction counts were collected in order to check the quality of the one day counts and to ensure that they were not affected by any roadworks/incidents.
- The remaining sites (38 sites) were the existing sites which were supplied by KCC/Swale. Most of the existing sites were 2016 data with the exception of the Isle of Sheppey counts (5 sites) which were 2017 data.
- No adjustments were made to the 2016 counts as it was considered that a difference of one year would have minimal impact on the observed flow.

Table 3-1: Total number of counts and their sources

	Number	Year
New Junction Counts	49	2017
New Link Counts	50	2017
Existing Junction Counts	31	2016
Existing Link Counts	2	2016
Extra Isle of Sheppey Counts	5	2017
Total		**137**

Figure 3-1: Individual Count locations and their sources



3.3 Journey Time Data

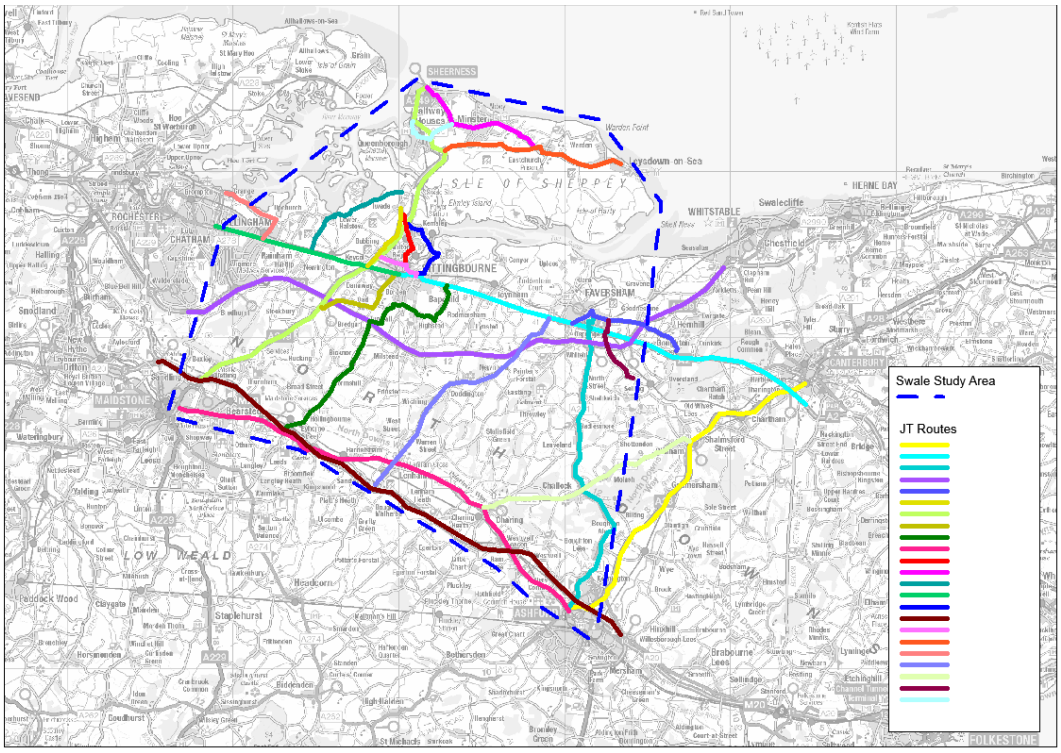
Observed travel times were derived from existing TrafficMaster data. The dataset used covered the period from April 2016 to August 2016 inclusive. Data was extracted for the following time periods where weekends and school holidays were excluded;

- AM – 0800 – 0900;
- IP – 1000 – 1600; and
- PM – 1700 – 1800.

In order to assess the journey times and delays produced by the Swale model, a series of journey time routes were defined. As the TrafficMaster data is mapped to ITN links, these individual link times were grouped together to provide longer route journey times. These journey time routes provide coverage of all the main routes in the Swale study area. In total, 23 two-way routes have been defined as shown in Figure 3-2.

The model summary dashboard provides a comparison of modelled and observed times along each route. In addition, for each route, the dashboard provides a plot showing the cumulative comparison of modelled and observed times along a route to allow the distance-time profile to be compared as well as the headline total time comparison.

Figure 3-2: TrafficMaster Journey Time routes.

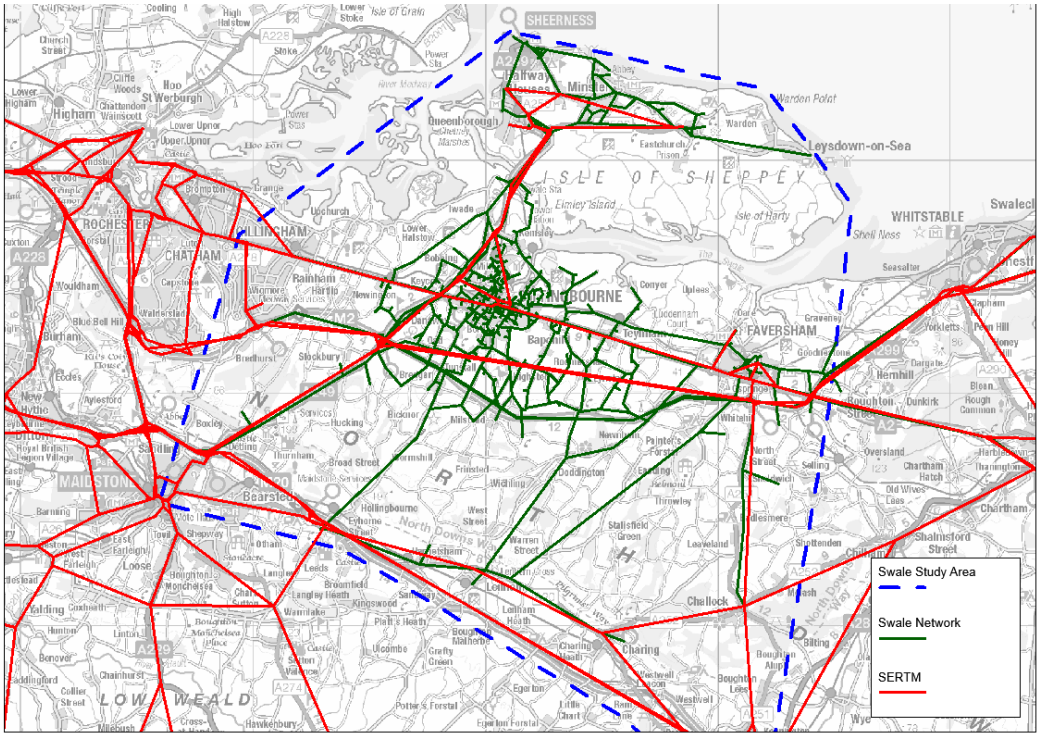


4 Model Network Development

4.1 Use of Existing Sources

The main source for the model network that formed the basis of the Swale Highway Model was the SERTM model. However, as it is a primarily strategic model covering the whole of the South East in simulated detail, with national buffer network coverage, the detail within the Swale Study area was insufficient. As such a detailed simulation highway network was coded, to include all A roads and B roads in the region, as well as all strategically important local roads in Sittingbourne, Faversham and the Isle of Sheppey. The difference between the final Swale Highway Model network and the initial skeletal SERTM network can be seen in Figure 4-1. In order to finalise the network coverage, decisions had to be made as to which links were likely to carry a minimum threshold of trips and for which the quality and capacity of the road meant that it was suitable for inclusion in a strategic model. The decisions of which roads to included and exclude were also constrained by the nearby zoning detail present; where only more strategically important links are appropriate where larger zones are present (as a result of the reduced number of local trips). Based on such judgements, narrow roads such as Bexon Lane were excluded.

Figure 4-1: Comparison of SERTM and SHM networks in the Swale Study Area

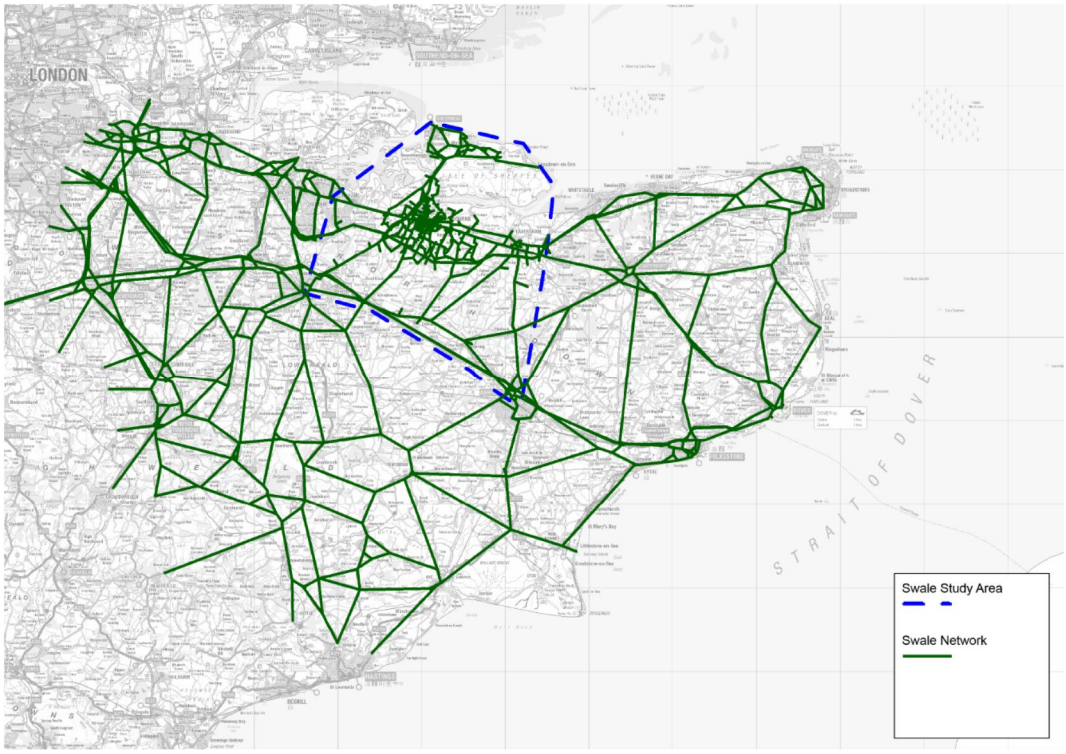


4.2 Buffer and External Area Network

For the buffer/external area SERTM model network coding has been used. As the SERTM model has a national extent, the network was cut down to an extent of the Kent County boundary. The SERTM network outside of the Swale Study area was taken exactly as it was coded in the SERTM model. No fixed speeds were used as the decision was made to prioritise the simulation area coding above the modifications to coding of the extremities of the modelled network. The buffer links included in the Swale Highway model as represented within SERTM are shown in

Figure 4-2.

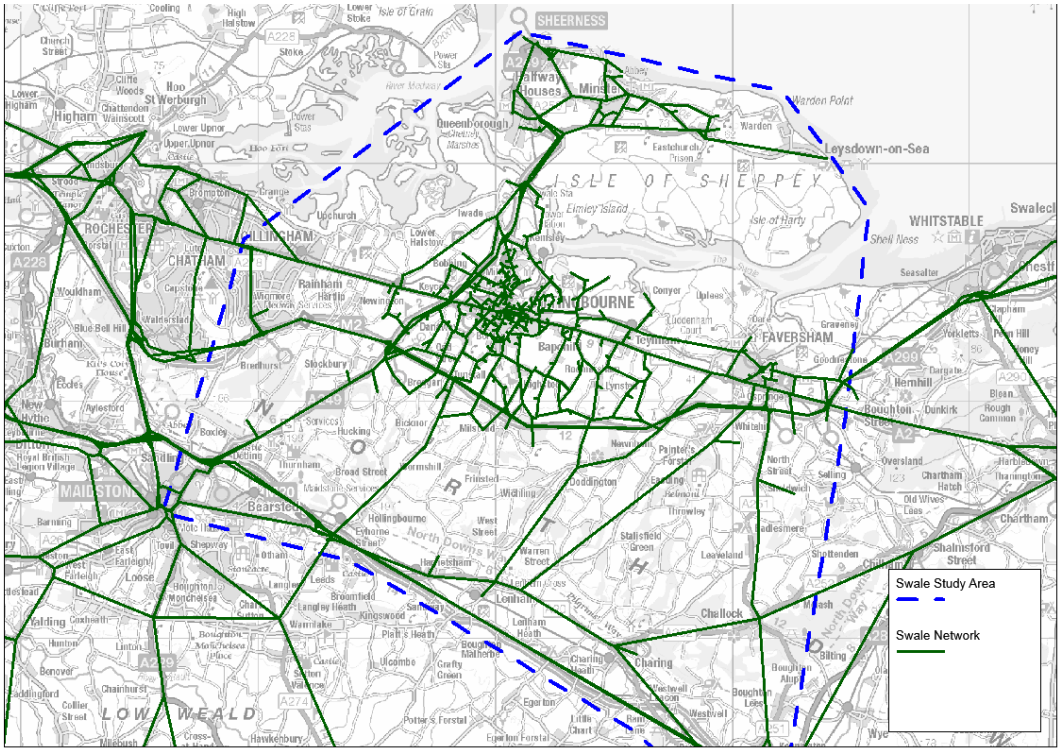
Figure 4-2: SHM buffer network (outside of blue simulation region)



4.3 Simulation Network

As part of the model development a detailed simulation highway network was coded directly from raw data. Figure 4-3 below shows the extent of the detailed simulation network which includes all A roads and B roads in the region as well as all strategically important local roads in Sittingbourne, Faversham and the Isle of Sheppey.

Figure 4-3: Comparison of SERTM and SHM networks sources



The data sources used to inform the simulation network development include site visits by the transport modelling team, Google Maps imagery and traffic data, Intelligent Transport Network data (ITN) as well as signal timing sheet information.

The development of the SHM simulation network was conducted according to the following sub-tasks:

1) Develop a buffer network of the area with an ITN base;
2) Overlay SATURN simulation coding junction by junction across the area;
3) Connect zones to the network at suitable locations to reflect how traffic will access the highway network; and
4) Conduct network coding consistency checks;

The following components of the network were reviewed whilst undertaking the network consistency checks:

- Distance;
- Priority junction saturation flows;
- Signalised junction saturation flows;
- Roundabout saturation flows;
- Roundabout circulation capacities;
- Gap acceptance;
- Cruise speeds;
- Cycle times;
- Connectors;
- Speed flow curve relationships;
- Fixed speeds; and
- Route choice.

4.4 Speed flow curves

Speed flow curves were applied to all major A-roads, B-roads and other strategically significant major roads (as required) to restrict capacity and to reflect a realistic speed at a given level of traffic volume. Some example SATURN speed flow curves as used within the SATURN model are shown in Table 4-1.

Table 4-1: SATURN Speed flow curve examples

Road name	No. of lanes	Free-flow speed	Speed at Capacity	Capacity	Power
M2	2	112	45	4860	3.85
A249	2	112	73	4200	2.8
A2 (Boughton bypass)	2	112	73	4200	2.8
M20 weaving sections	3	112	45	5440	3.85
A299 Dual carriageway	2	115	89	4200	2.8

5 Model Demand Development

5.1 Overview of Existing Sources

In a consistent fashion with the primary source of the network coding, the primary source of matrix data was also the SERTM model. The SERTM matrices provide a nationally consistent set of demand matrices and provide a readily available data source as a start point for matrix development for strategic models derived from SERTM, or with a compatible geographical scope and zoning.

5.2 Matrix Disaggregation and In-Filling

The SERTM matrix has intra-zonal trips for the Isle of Sheppey and Faversham where the large SERTM zones cover a wide area. Where these zones have been disaggregated (as shown in
Figure 2-3) the intra-zonal demand needs to be reallocated to movements where both the origin and destination zones are both in zones within the previous SERTM zone. To achieve this, rather than just rely on the relative zone sizes, the main trip generators and attractors within each new SHM zone was reviewed. Trips from the stations, leisure centres and locations such as large supermarkets were used to distribute the demand in a realistic fashion.

The resultant total trip ends for the disaggregated matrix were checked to ensure the totals were the same as SERTM trip ends (except for the seeded trips in Isle of Sheppey and Faversham). This check was part of zone/matrix disaggregation process.

6 Model Assignment Process

6.1 Modelling Assumptions and Parameters

The generalised cost parameters (Value of Time and Vehicle Operating Cost) used in the Stage 3 base model were derived from WebTAG data book (July 2017), in line with the v1.8 WebTAG release. The derived values are shown in Table 6-1 and Table 6-2 which are calculated in 2017 prices.

Table 6-1: Value of time assumptions, pence per minute (PPM, 2017 prices, 2017 values)

User Class	PPM		
	AM	IP	PM
Car - Employer's Business	30.49	31.24	30.93
Car - Commuting	20.45	20.78	20.52
Car - Other	14.11	15.03	14.77
LGV	21.55	21.55	21.55
HGV	50.32	50.32	50.32

Table 6-2: Value of Vehicle operating cost assumptions, pence per kilometre (PPK, 2017 prices, 2017 values)

User Class	PPK (same for all time periods)
Car - Employer's Business	12.05
Car - Commuting	5.51
Car - Other	5.51
LGV	13.19
HGV	39.88

6.2 WebTAG Model Acceptability Guidelines

The WebTAG criteria used to determine the suitability of the calibration and validation processes are summarised in this section.

6.2.1 Screenline Flow Criterion and Acceptability Guidelines

WebTAG sets out criteria for screenlines as shown in Table 6-3.

Table 6-3: Screenline Flow criterion and acceptability guideline

Criteria	Acceptability Guideline
Differences between modelled flow and counts should be less than 5% of the counts	All or nearly all screenlines

6.2.2 Link Flow Criterion and Acceptability Guidelines

The criteria for the link flow calibration and validation is set out within WebTAG unit M3.1 and can be seen in Table 6-4. WebTAG states that if both criteria 1 and 2 are met the link or turn should be regarded as passing the acceptability criteria

Table 6-4: Link flow and turning movement validation criteria and acceptability guidelines

Criteria	Description of Criteria	Acceptability Guideline
1	Individual flows within 100 veh/h of counts for flows less than 700 veh/h	>85% of cases
	Individual flows within 15% of counts for flows from 700 to 2,700 veh/h	
	Individual flows within 400 veh/h of counts for flows more than 2,700 veh/h	
2	GEH <5 for individual flows	

6.2.3 Journey Time Criterion and Acceptability Guidelines

WebTAG sets out the criteria for journey times in unit M3.1. The criteria can be seen in Table 6-5.

Table 6-5: Journey time validation criterion and acceptability guideline

Criteria	Acceptability Guideline
Modelled times along routes should be within 15% of surveyed times (or 1 minute, if higher than 15%)	>85% of routes

6.3 SATURN Model Details and Convergence Criteria

The SATURN deterministic assignment method was implemented for its runtime benefits given the significant number of scenarios requiring testing. The parameters controlling the stopping criteria for the final assignment runs of the Swale Highway Model are defined and shown in Table *6-6*, with the proximity (%Gap) target set by the STPGAP parameter in SATURN. *Table 6-6: Primary model convergence criteria: final assignment*

SATURN Parameter	Value	Description
STPGAP	0.025	Critical %Gap value to stop assignment loops
UNCRTS	0.015	Wardrop assignment parameter monitoring epsilon
NISTOP	4	The number of successive loops which must satisfy RSTOP
RSTOP	99	Stopping criteria for assignment/simulation loops
PCNEAR	1	Percentage change in flows in successive assignments
KONSTP	5	KONtrol of StoPping Criteria - STPGAP AND RSTOP

The Swale Highway Model convergence was judged directly against meeting the %Gap and RSTOP criterion on four (NISTOP) successive iterations, consistent with the choice of KONSTP equal to 5 in the SATURN parameters.

The RSTOP test for convergence of the assignment/simulation loops stops the assignment automatically if RSTOP (%Flows) of the link flows change by less than “PCNEAR” percent (default 1%) from one assignment to the next. In addition to these values, a minimum number of twenty-five assignment-simulation loops were defined by setting the MASL_M parameter to 25. The models “STPGAP” (stopping criteria) for assignment convergence has been reduced from the suggested WebTAG guidance of 0.05 to 0.025 to achieve a high level of convergence and reduce any possible model noise.

Table 6-7 to Table 6-9 show that stable assignment convergence has been achieved for the AM Peak, Inter Peak and PM Peak Swale Highway models.

Table 6-7: AM Peak convergence – final 4 iterations

Loop	Delta (δ)	%Flows	%Delays	%Gap
22	0.0005	99.9	99.9	0.00027
23	0.0006	99.9	99.9	0.00024
24	0.0004	99.8	100	0.00026
25	0.0002	99.9	99.9	0.00035

Table 6-8: Inter-peak convergence – final 4 iterations

Loop	Delta (δ)	%Flows	%Delays	%Gap
22	0.0000	100	100	0.00002
23	0.0000	100	100	0.00002
24	0.0000	100	100	0.00001
25	0.0000	100	100	0.00002

Table 6-9: PM Peak convergence – final 4 iterations

Loop	Delta (δ)	%Flows	%Delays	%Gap

42	0.0062	99.6	99.7	0.0026
43	0.004	99.3	99.7	0.0031
44	0.0057	99.7	99.7	0.0022
45	0.0016	99.3	99.7	0.006

The results in Table 6-7 to Table 6-9 show high levels of convergence throughout with both the %Gap and %Flows significantly lower better converged than the STPGAP and RSTOP targets. This was possible primarily due to setting MASL_M=25, which in effect overrides the stopping criteria in each model. Of the three time periods, the IP assignment convergences to the tightest level and the PM is the least converged although still satisfies the required level of convergence comfortably. The level of convergence is closely related to the level of congestion with the IP assignment with the least demand and the PM with the most demand in the key congested areas. Guidance in the SATURN User Guide suggests that convergence is deemed satisfactory if either flow or delay stability is achieved to these levels.

7 Model Calibration

7.1 Overview of Calibration

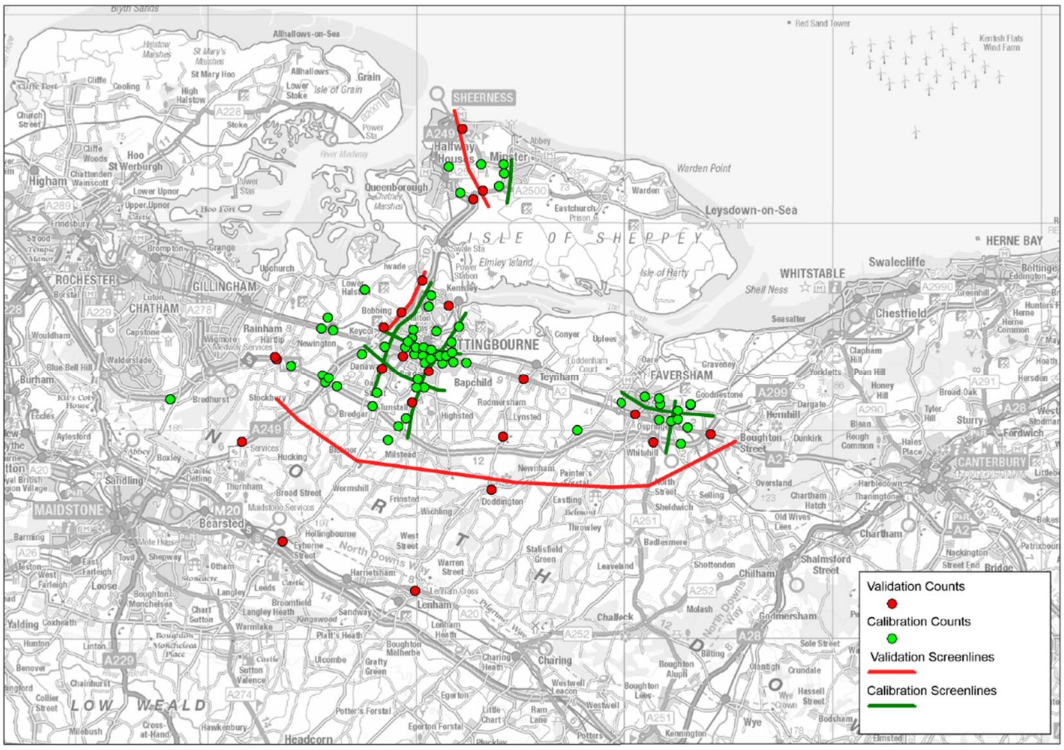
This section describes the calibration of the traffic model. This stage, along with validation in the subsequent chapter, represents the fine tuning of the model inputs and parameters, and the processes involved in ensuring and demonstrating that the base year model is accurately defined and thus a suitable tool for testing and forecasting.

The calibration procedure involved the following activities:

- Adjustment and checking of the network to ensure plausible and realistic routing of traffic in the model. Examples of the comparative routeings represented by the model and from Google Maps (using real data) are shown in Appendix D; and
- Comparison of observed against modelled flows across screenlines, cordons and at other locations.

Figure 7-1 shows the locations of the traffic counts and screenlines used for model calibration and validation.

Figure 7-1: Location of calibration and validation counts and screenlines



7.2 Matrix Estimation

Matrix Estimation (ME) was undertaken to adjust the prior origin-destination (OD) matrix so that the assignment flows in the model on the road network matched as closely as possible to observed flows. This process should only result in fine tuning of the matrix to the observed data and should not result in a significant change in prior matrix distribution. In order to constrain the impact of ME an XAMAX value of 5 was adopted. XAMAX is a user defined SATURN input balancing factor which is used to limit excessive change to the input prior matrix. It is considered that this approach is sufficient to allow SATURNs SATME2 module to achieve a good match with the observed counts whilst not distorting the prior matrix distribution.

This section details the analysis of the consistency of the post matrix estimation (post matrix) compared to the input prior matrix with respect to changes in the following:

- Matrix totals
- Trip-ends
- Individual cells
- Sector to sector movements

From these analyses it can be seen that applying an XAMAX of 5 has been successful in both allowing the ME to match the local swale count data as well as preserving the integrity of the prior SERTM regional prior matrices.

7.2.1 Matrix Totals

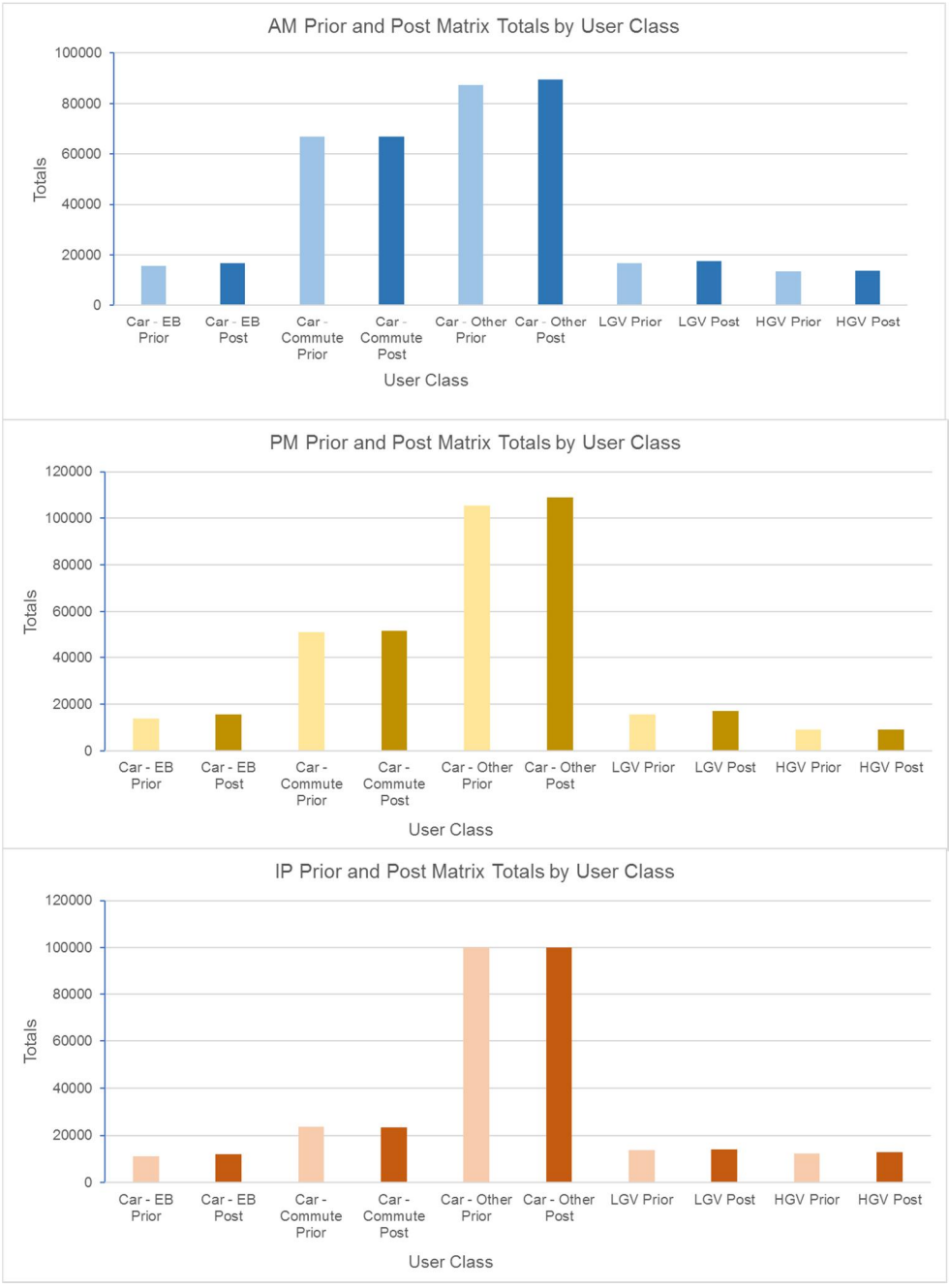
Differences between the adjusted and prior OD matrices were examined to double check whether the process adversely altered the trip distribution in the prior matrices. A comparison between the prior and post matrices adjustments for AM, IP and PM for various demand segments is presented in Table 7-1 and Figure 7-2 below.

Table 7-1: Matrix totals pre and post Matrix Estimation

	Prior Matrices			Post Matrices			% Change		
	AM	IP	PM	AM	IP	PM	AM	IP	PM
Car - EB	15660	11014	13671	16770	11907	15570	7%	8%	14%
Car - Commute	66771	23655	51067	66857	23408	51721	0%	-1%	1%

Car - Other	87264	99998	105429	89410	99922	108892	2%	0%	3%
LGV	16798	13710	15545	17627	13924	16966	5%	2%	9%
HGV	13440	12435	9110	13636	12985	9042	1%	4%	-1%
Total	199933	160812	194822	204300	162146	202191	2%	1%	4%

Figure 7-2: Prior and Post Matrix totals by User Class



From Table 7-1 and Figure 7-2, there is small variation in car (employer's business) journey purposes for the AM peak and IP whereas in PM peak is increased by 14%.

7.2.2 **Matrix Zonal Values**

Matrix zonal changes, by time period are presented in Table 7-2 below. In all cases, the criteria are met for R^2 values. For Matrix zonal cell values, all three criteria are met.

For the matrix zonal trip ends in all time periods, the R^2 values and the slope criteria are met. This with the exception of the Interpeak where the slope is slightly less (0.01) than the criteria however the R^2 criteria is met. The Matrix zonal intercept WebTAG guidance is that the 'Intercept near zero'. As on average the matrix total trip ends for the SHM are around 600 trips it is considered that a deviation of around 2 to 5 trips is suitably close to the zero intercept.

Table 7-2 Matrix Zonal changes by time period

Measure		Significance Criteria	AM	IP	PM
Matrix zonal cell values	Slope	Slope within 0.98 and 1.02	1.00	0.99	1.00
	Intercept	Intercept near zero	0.01	0.01	0.02
	R^2	R^2 in excess of 0.95	0.98	0.98	0.98
Matrix zonal trip ends	Slope	Slope within 0.99 and 1.01	0.99	0.98	0.99
	Intercept	Intercept near zero	4.24	2.62	5.35
	R^2	R^2 in excess of 0.98	0.99	0.99	0.99

7.2.3 **Matrix trip length distribution**

As shown in Figures 7-3 to 7-5 below, the matrix estimation process has not resulted in a significant change in the trip length distribution.

Figure 7-3: Trip length distribution comparison - AM

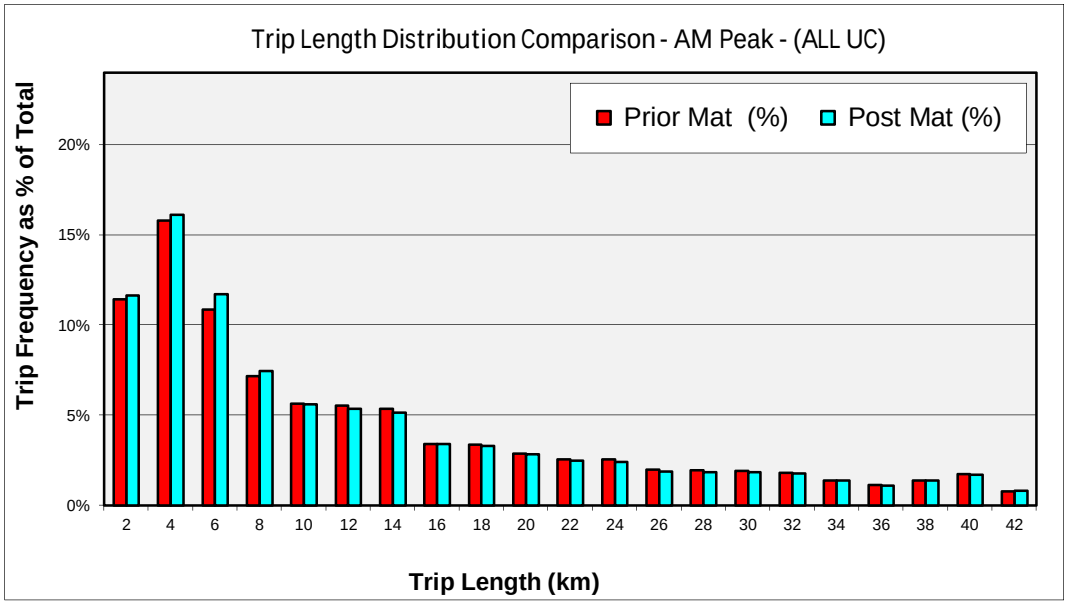


Figure 7-4: Trip length distribution comparison - IP

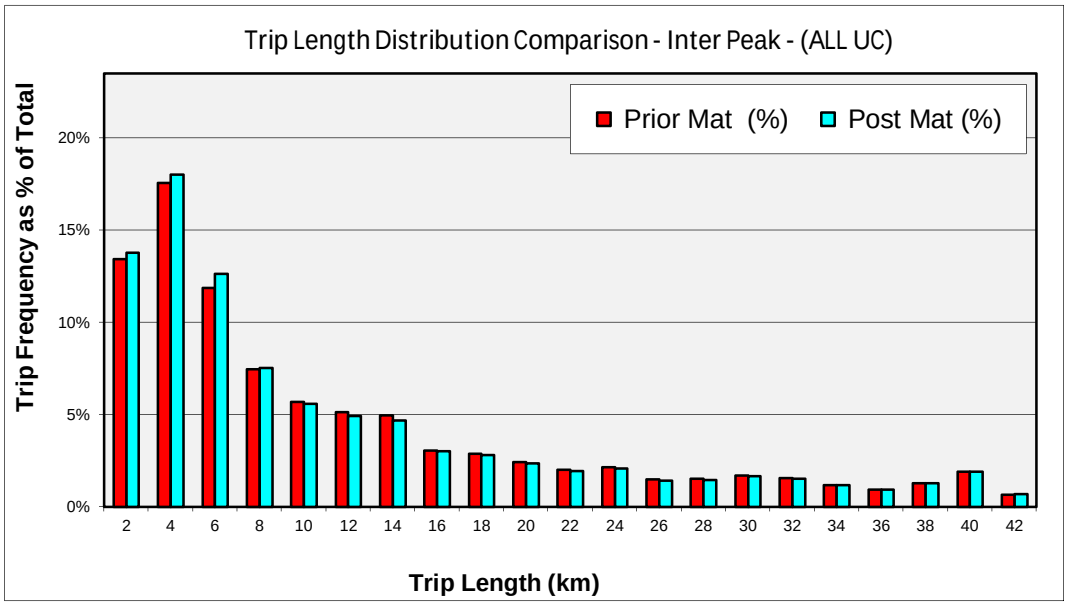
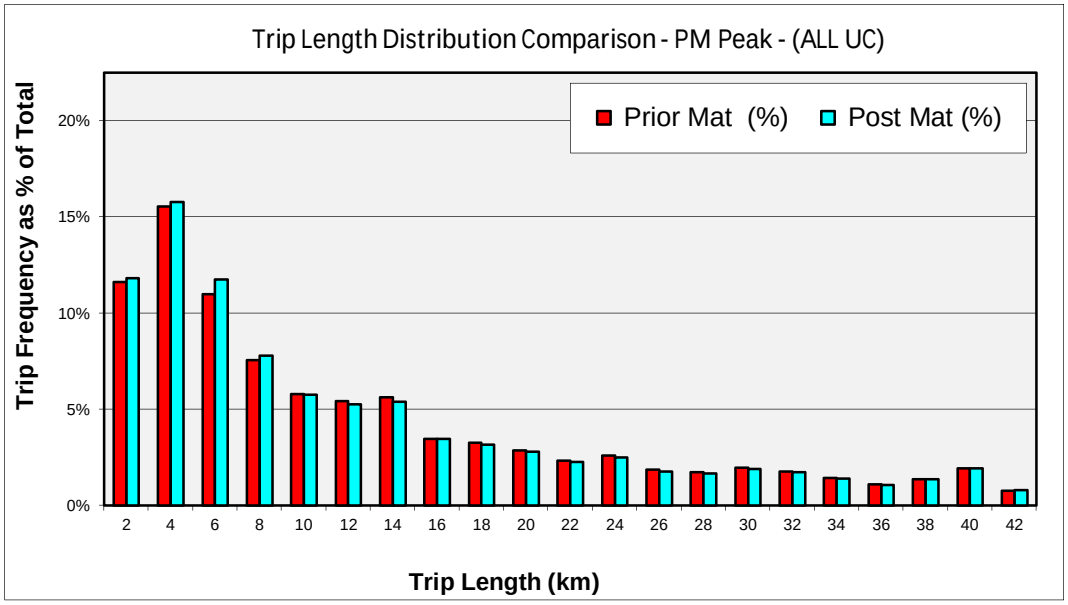


Figure 7-5: Trip length distribution comparison – PM

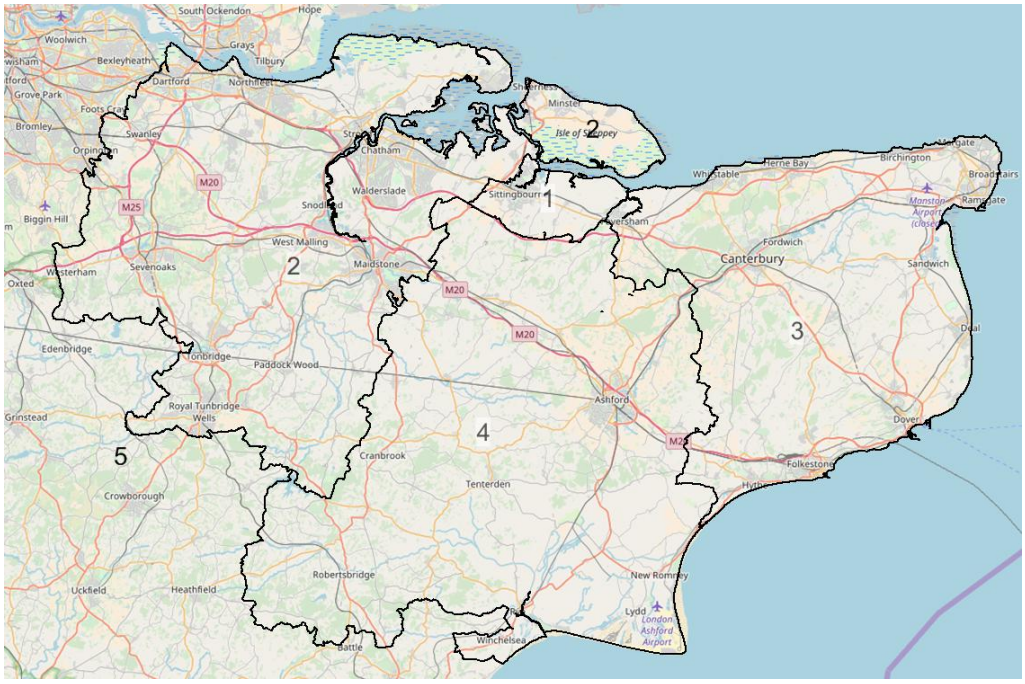


7.2.4 **Sector changes**

In this analysis, the impact of matrix estimation in terms of absolute difference of trips and percentage difference at a sector to sector level is assessed. The sectors defined in this analysis, as shown in Figure 7-6, are listed as follows:

1. Sittingbourne/Teynham
2. North (Isle of Sheppey) and West (Iwade/Medway/Tunbridge wells)
3. East (Faversham/Selling/Canterbury/Dover)
4. South (Newnham/Hollingbourne) and South West (Ashford/Tenterden)
5. External

Figure 7-6 Sectors



Full 5x5 sector results can be seen in Appendix F, these are summarised as follows:
AM peak

- Approximately 55% of movements are within 5% or 100 trips difference from the prior
- Approximately 90% of movements are within 15% or 350 trips difference from the prior

IP peak

- Approximately 75% of movements are within 5% or 100 trips difference from the prior
- Approximately 100% of movements are within 15% or 350 trips difference from the prior

PM peak

- Approximately 65% of movements are within 5% or 100 trips difference from the prior
- Approximately 95% of movements are within 15% or 350 trips difference from the prior

Overall the majority of movements differ by a relatively small amount in either percentage or magnitude terms. However, it can be seen that some movements such as trips coming from\going to sector 1 (Sittingbourne/Teynham) from\to either sector 3 (East) or sector 2 (West) show relatively higher changes. This can be attributed to a lack trips in the prior SERTM matrix where the zone sizes are relatively large. It is therefore expected that these movements should be effected by relatively larger changes from ME due to the zonal disaggregation, the additional network detail and additional count data in the area

7.3 Screenline Performance

The full set of calibration/validation screenlines used in the modelling are shown in Figure 7-7 where the distinct colours show which screenlines were used for the distinct stages of Calibration and Validation. Individual screenlines identification is shown in Figure 7-8; there are two Calibration screenlines that have less than 4 counts Faversham N-S (light green) and Minster N-S (Brown).

Figure 7-7: Calibration and Validation screenline locations (by type)

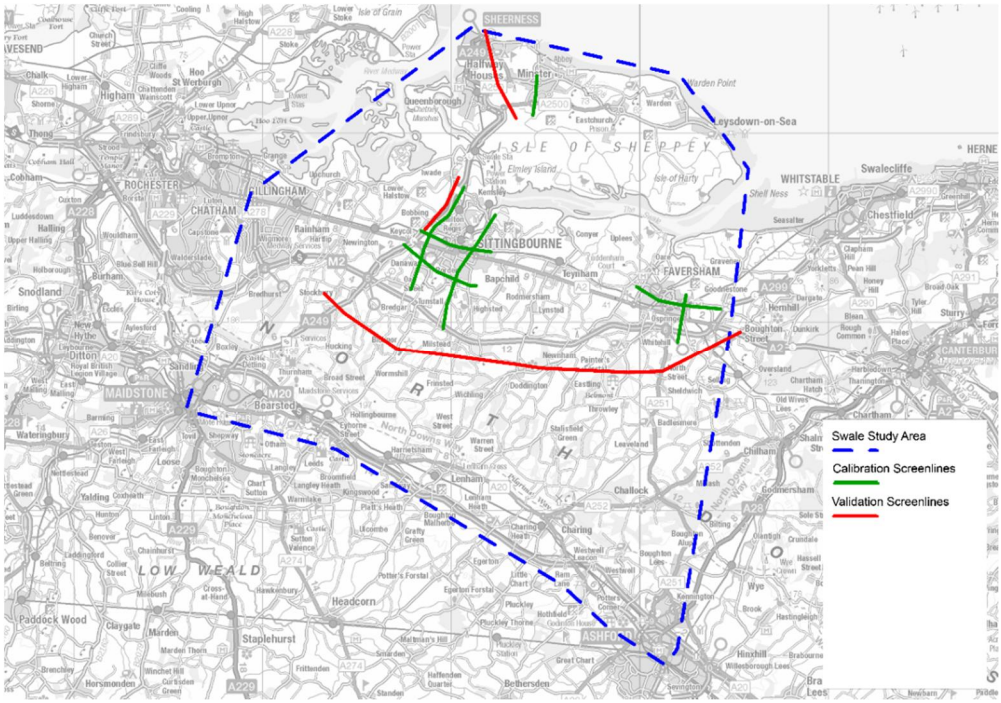
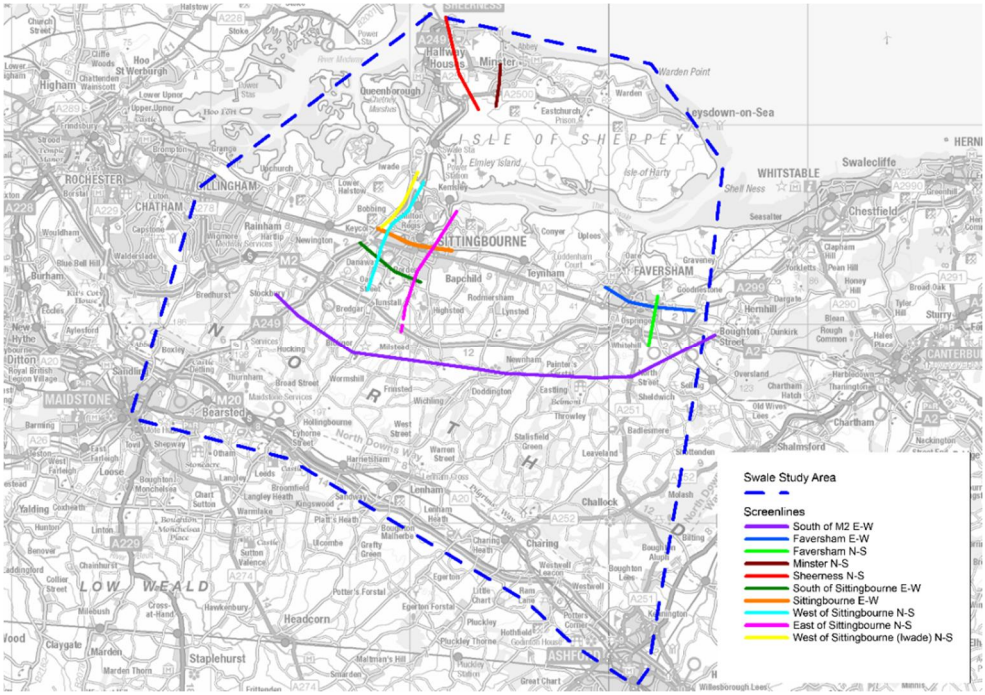


Figure 7-8: Calibration and Validation screenline locations (by reference)



Overall, the model also showed excellent calibration screenline results as shown in Table 7-3 to Table 7-5 satisfying the WebTAG acceptability criteria outlined in Section 6.2.1. The full breakdown of screenline calibration and validation for each time period can be seen in Appendix A.

Table 7-3: AM Peak Calibration Screenline Summary Results

Name	Colour	Dir.	Obs.	Model	Diff	% Diff	GEH	GEH Pass	Flow pass
Faversham E-W	Dark Blue	NB	1070	978	-91	-9%	3	✓	×
	Dark Blue	SB	901	882	-19	-2%	1	✓	×
South of Sittingbourne E-W	Green	NB	2880	2866	-14	0%	0	✓	✓
	Green	SB	3006	3022	16	1%	0	✓	✓
Sittingbourne E-W	Orange	NB	2155	2147	-8	0%	0	✓	✓
	Orange	SB	3121	3119	-2	0%	0	✓	✓
West of Sittingbourne N-S	Light Blue	EB	2871	2923	52	2%	1	✓	✓
	Light Blue	WB	2531	2501	-29	-1%	1	✓	✓
East of Sittingbourne N-S	Pink	EB	3434	3428	-6	0%	0	✓	✓
	Pink	WB	2848	2800	-48	-2%	1	✓	✓
Minster N-S	Brown	EB	1478	1336	-142	-10%	4	×	×
	Brown	WB	2019	2049	30	2%	1	✓	✓
Faversham N-S	Light Green	EB	3610	3326	-283	-8%	5	×	×
	Light Green	WB	3319	3312	-7	0%	0	✓	✓

Table 7-4: Inter Peak Calibration Screenline Summary Results

Name	Colour	Dir.	Obs.	Model	Diff	% Diff	GEH	GEH Pass	Flow PASS
Faversham E-W	Dark Blue	NB	744	711	-33	-4.4%	1	✓	✓
	Dark Blue	SB	778	789	12	1.5%	0	✓	✓
South of Sittingbourne E-W	Green	NB	2251	2187	-64	-2.8%	1	✓	✓
	Green	SB	2190	2098	-92	-4.2%	2	✓	✓
Sittingbourne E-W	Orange	NB	1864	1928	64	3.4%	1	✓	✓
	Orange	SB	1717	1899	182	10.6%	4	×	×
West of Sittingbourne N-S	Light Blue	EB	1832	1877	44	2.4%	1	✓	✓
	Light Blue	WB	1754	1753	-1	-0.1%	0	✓	✓
East of Sittingbourne N-S	Pink	EB	2089	2056	-33	-1.6%	1	✓	✓
	Pink	WB	2090	2019	-71	-3.4%	2	✓	✓
	Brown	EB	1155	1086	-69	-6.0%	2	✓	×

Name	Colour	Dir.	Obs.	Model	Diff	% Diff	GEH	GEH Pass	Flow PASS
Minster N-S	Brown	WB	1477	1459	-18	-1.2%	0	✓	✓
Faversham N-S	Light Green	EB	2445	2490	44	1.8%	1	✓	✓
	Light Green	WB	2468	2476	8	0.3%	0	✓	✓

Table 7-5: PM Peak Calibration Screenline Summary Results

Name	Colour	Dir.	Obs.	Model	Diff	% Diff	GEH	GEH Pass	Flow PASS
Faversham E-W	Dark Blue	NB	1016	899	-117	-11.5%	4	×	×
	Dark Blue	SB	926	926	0	0.0%	0	✓	✓
South of Sittingbourne E-W	Green	NB	3944	3977	33	0.8%	1	✓	✓
	Green	SB	2676	2744	67	2.5%	1	✓	✓
Sittingbourne E-W	Orange	NB	2666	2536	-130	-4.9%	3	✓	✓
	Orange	SB	2640	2687	47	1.8%	1	✓	✓
West of Sittingbourne N-S	Light Blue	EB	3094	3212	118	3.8%	2	✓	✓
	Light Blue	WB	2725	2701	-24	-0.9%	0	✓	✓
East of Sittingbourne N-S	Pink	EB	2790	2748	-42	-1.5%	1	✓	✓
	Pink	WB	3125	3141	16	0.5%	0	✓	✓
Minster N-S	Brown	EB	1653	1527	-126	-7.6%	3	✓	×
	Brown	WB	1217	1184	-33	-2.7%	1	✓	✓
Faversham N-S	Light Green	EB	3366	3436	70	2.1%	1	✓	✓
	Light Green	WB	3968	3827	-142	-3.6%	2	✓	✓

7.4 Individual Flows

The results for the individual flow count calibration are shown in Table 7-6. The WebTAG acceptability criteria as outlined in Section 6.2 are exceeded comfortably for all time periods for both link and turn flows.

Table 7-6 AM Peak, Inter-Peak and PM Peak Individual Flow Calibration Summary

	AM	
Criteria	No of Counts	PASS
Individual Link flow	418	92%
Individual Turn flow	405	89%
	IP	
Criteria	No of Counts	PASS
Individual Link flow	329	97%
Individual Turn flow	326	98%
	PM	
Criteria	No of Counts	PASS
Individual Link flow	418	93%
Individual Turn flow	405	91%

The results in Table 7-6 show results the results in summary, however the calibration results have been isolated for several key junctions of interest. The calibration for these key junctions can be seen in Appendix E.

8 Model Validation

8.1 Overview of Assignment Flow Validation

The validation procedure involved the following activities:

- Network validation, in terms of range checking and routing;
- Checking assignment model convergence;
- Comparison of modelled flows against independent observed flows (i.e. those not used in the matrix building process) across screenlines and cordons; and
- Comparison of observed and modelled journey time routes.

The locations of the traffic counts and screenlines used for model validation are shown above in Figure 7-1.

Three out of a total of ten screenlines have been used for the validation. With regards to maintaining the integrity of the validation counts, independent screenlines across central locations to the model have been utilised The calibration and the validation screenlines along the A249 appear to be close together, however as they are situated either side of the strategic A249 route the two screenlines capture different traffic/movements.

In addition to the validation screenlines, 11 ad-hoc sites have also been used for the validation purposes. As can be seen from Figure 7-1., the ad-hoc sites are spread across the fully modelled area and are not situated close to any of the calibration counts.

8.2 Screenline Performance

The model validation screenline results are shown in Table 8-1 to Table 8-3. Overall the results are considered to satisfy the WebTAG acceptability criteria outlined in Section 6.2.1. Despite two screenlines not passing the Flow criteria in the AM, these were only narrowly missed and therefore not considered to be material. For the PM validation screenline results only one screenline didn't pass flow criteria. The full breakdown of screenline calibration and validation for each time period can be seen in Appendix A.

Table 8-1: AM Peak Validation Screenline Summary Results

Name	Colour	Dir.	Obs.	Model	Diff	% Diff	GEH	GEH Pass	Flow PASS
Sheerness N-S	Red	EB	1979	1938	-41	-2.1%	1	✓	✓
	Red	WB	1246	1177	-69	-5.5%	2	✓	×
West of Sittingbourne (Iwade) N-S	Yellow	EB	1527	1495	-32	-2.1%	1	✓	✓
	Yellow	WB	1111	1099	-12	-1.1%	0	✓	✓
South of M2 E-W	Purple	NB	2425	2433	7	0.3%	0	✓	✓
	Purple	SB	3125	2938	-187	-6.0%	3	✓	×

Table 8-2: Inter Peak Validation Screenline Summary Results

Name	Colour	Dir.	Obs.	Model	Diff	% Diff	GEH	GEH Pass	Flow PASS
Sheerness N-S	Red	EB	1655	1592	-63	-3.8%	2	✓	✓
	Red	WB	1214	1099	-115	-9.5%	3	✓	×
West of Sittingbourne (Iwade) N-S	Yellow	EB	921	925	4	0.4%	0	✓	✓
	Yellow	WB	1018	988	-30	-2.9%	1	✓	✓
South of M2 E-W	Purple	NB	2160	2264	104	4.8%	2	✓	✓
	Purple	SB	2224	2271	47	2.1%	1	✓	✓

Table 8-3: PM Peak Validation Screenline Summary Results

Name	Colour	Dir.	Obs.	Model	Diff	% Diff	GEH	GEH Pass	Flow PASS
Sheerness N-S	Red	EB	1703	1666	-37	-2.2%	1	✓	✓
	Red	WB	2232	2110	-122	-5.5%	3	✓	×
West of Sittingbourne (Iwade) N-S	Yellow	EB	1340	1403	63	4.7%	2	✓	✓
	Yellow	WB	1492	1499	7	0.5%	0	✓	✓
South of M2 E-W	Purple	NB	3397	3364	-33	-1.0%	1	✓	✓
	Purple	SB	2181	2276	95	4.4%	2	✓	✓

8.3 Individual Flows

The results for the individual flow count validation are shown in Table 8-4. The WebTAG acceptability criteria as outlined in 6.2.2 are exceeded comfortably for all time periods for both link and turn flows.

Table 8-4: AM Peak, Inter-Peak and PM Peak Individual Flow Validation Summary

	AM	
Criteria	No of Counts	PASS
Individual Link flow	29	90%
Individual Turn flow	57	86%
	IP	
Criteria	No of Counts	PASS
Individual Link flow	50	86%
Individual Turn flow	28	96%
	PM	
Criteria	No of Counts	PASS
Individual Link flow	29	97%
Individual Turn flow	57	93%

8.4 Journey Time Validation Results

Overall, 46 routes have been defined in study area. The routes for the validation of journey times cover Fully Modelled Area. The routes cover all the Motorways, A roads and main roads in study area. All the routes are longer than 3 km, and there are a few routes that are longer than 15 km (A20, M2, A249 and M20 Routes). However, all the routes have been checked at the link level and segments of the route as well (Appendix B).

Modelled journey times for identified routes have been compared to observed journey times taken from the Traffic Master database. TrafficMaster-based journey time routes can be seen in Figure 8.1. The target, as defined in Section 6.2.3, is for the model to produce modelled times which are within 15% of the observed for at least 85% of routes or within 1 minute of the observed.

The proportion of journey times which meet the DMRB criteria in the AM peak, inter-peak and PM peak are 96%, 96% and 98% respectively. The journey time validation results are summarised in Table 8-5. The graphs for each of the journey time routes are in Appendix B. The graphs show that any queues and therefore delays which would have been observed have been reflected within the modelled journey time runs.

Figure 8-1: Swale Highway Model TrafficMaster-based Journey Time Routes

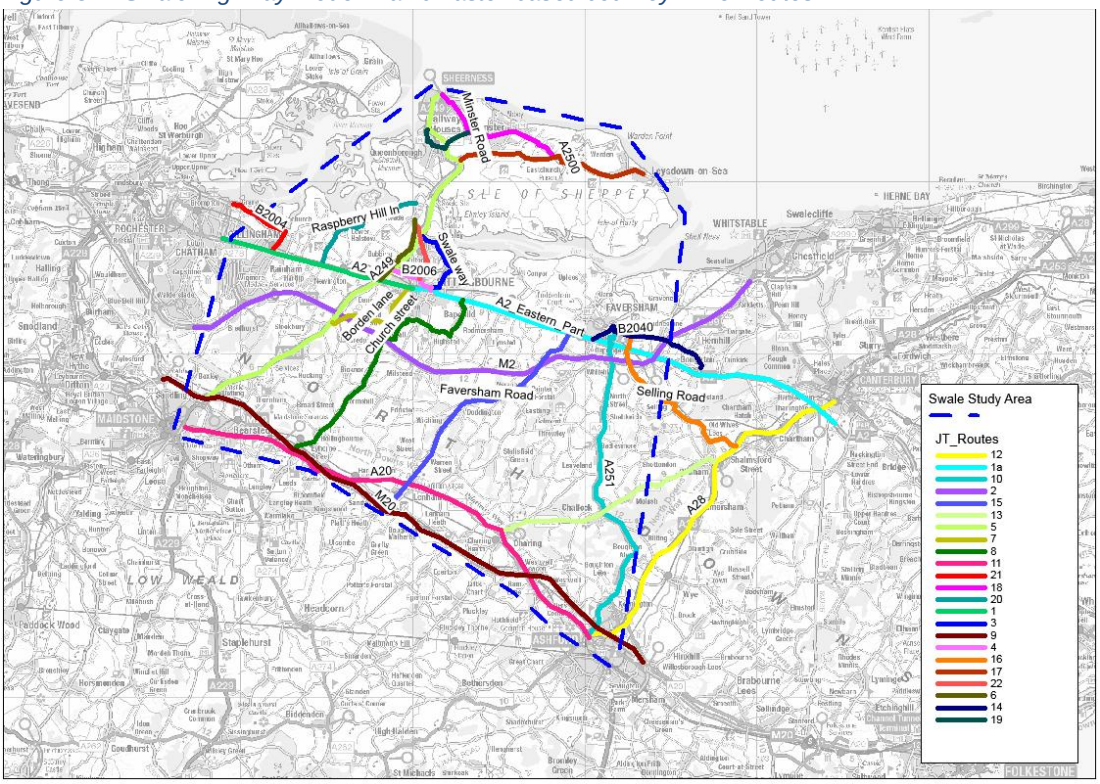


Table 8-5: AM Peak, Inter-Peak and PM Peak Journey Time route Validation Summary

	AM	
Criteria	No of Routes	PASS
Journey Time	46	96%
	IP	
Criteria	No of Routes	PASS
Journey Time	46	96%
	PM	
Criteria	No of Routes	PASS
Journey Time	46	98%

Table 8-6: Comparison of modelled and observed journey times – AM Peak

Map	Route	Route Name	Observed	Modelled	% Diff	Pass
1	R1	A2_EB	1139	1112	-2.4%	✓
1	R2	A2_WB	1241	1040	-16.2%	×
2	R3	M2_EB	1325	1373	3.7%	✓
2	R4	M2_WB	1323	1391	5.1%	✓
3	R5	Swale Way NB	372	414	11.2%	✓
3	R6	Swale Way SB	406	435	7.0%	✓
4	R7	B2006 EB	395	431	9.2%	✓
4	R8	B2006 WB	327	306	-6.3%	✓
5	R9	A249 NB	1190	1107	-7.0%	✓
5	R10	S249 SB	1748	1652	-5.5%	✓
6	R11	Sheppey Way NB	300	327	9.2%	✓
6	R12	Sheppey Way SB	306	348	13.6%	✓
7	R13	Borden Lane NB	500	504	0.8%	✓
7	R14	Borden Lane SB	502	489	-2.7%	✓
8	R15	Church Street NB	1392	1255	-9.8%	✓
8	R16	Church Street SB	1343	1247	-7.2%	✓
9	R17	M20 EB	1094	1149	5.1%	✓
9	R18	M20 WB	1120	1152	2.8%	✓
10	R19	A251 AM NB	1478	1363	-7.7%	✓
10	R20	A251 AM SB	1438	1350	-6.1%	✓
11	R21	A20 EB	1676	1631	-2.7%	✓
11	R22	A20 WB	1723	1743	1.1%	✓
12	R23	A28 NB	1695	1578	-6.9%	✓
12	R24	A28 SB	1488	1550	4.2%	✓
13	R25	A252 EB	699	747	6.9%	✓
13	R26	A252 WB	714	803	12.4%	✓
14	R27	B2040 EB	489	498	1.9%	✓
14	R28	B2040 WB	569	512	-10.1%	✓
15	R29	Faversham Road NB	1032	966	-6.4%	✓
15	R30	Faversham Road SB	1015	997	-1.8%	✓
16	R31	Selling Road NB	245	231	-5.6%	✓
16	R32	Selling Road SB	222	224	1.1%	✓
17	R33	A2500 EB	739	716	-3.0%	✓
17	R34	A2500 WB	700	767	9.4%	✓

Map	Route	Route Name	Observed	Modelled	% Diff	Pass
18	R35	Minster Road EB	889	1036	16.6%	✗
18	R36	Minster Road WB	830	925	11.5%	✓
19	R37	Queenborough Road EB	385	419	9.0%	✓
19	R38	Queenborough Road WB	340	362	6.6%	✓
20	R39	Raspberry Hill NB	618	660	6.8%	✓
20	R40	Raspberry Hill SB	587	671	14.4%	✓
21	R41	B2004 EB	530	525	-1.0%	✓
21	R42	B2004 WB	564	525	-6.9%	✓
22	R43	Grovehurst SB	368	406	10.2%	✓
22	R44	Grovehurst NB	393	388	-1.2%	✓
1a	R1a	A2_EB (Eastern Part)	1786	1940	8.6%	✓
1a	R2a	A2_WB (Eastern Part)	1787	1861	4.2%	✓

Table 8-7: IP Route Report

Map	Route	Route Name	Observed	Modelled	% Diff	Pass
1	R1	A2_EB	1111	1061	-4.5%	✓
1	R2	A2_WB	1128	1028	-8.9%	✓
2	R3	M2_EB	1325	1333	0.6%	✓
2	R4	M2_WB	1333	1367	2.6%	✓
3	R5	Swale Way NB	359	408	13.8%	✓
3	R6	Swale Way SB	377	409	8.5%	✓
4	R7	B2006 EB	418	370	-11.5%	✓
4	R8	B2006 WB	307	311	1.5%	✓
5	R9	A249 NB	1215	1068	-12.1%	✓
5	R10	S249 SB	1279	1277	-0.2%	✓
6	R11	Sheppey Way NB	290	326	12.3%	✓
6	R12	Sheppey Way SB	301	334	11.1%	✓
7	R13	Borden Lane NB	468	488	4.4%	✓
7	R14	Borden Lane SB	475	481	1.2%	✓
8	R15	Church Street NB	1306	1244	-4.7%	✓
8	R16	Church Street SB	1315	1242	-5.6%	✓
9	R17	M20 EB	1089	1148	5.5%	✓
9	R18	M20 WB	1086	1149	5.8%	✓
10	R19	A251 AM NB	1408	1212	-13.9%	✓

Map	Route	Route Name	Observed	Modelled	% Diff	Pass
10	R20	A251 AM SB	1384	1247	-9.9%	✓
11	R21	A20 EB	1604	1592	-0.8%	✓
11	R22	A20 WB	1615	1653	2.3%	✓
12	R23	A28 NB	1535	1569	2.2%	✓
12	R24	A28 SB	1493	1548	3.6%	✓
13	R25	A252 EB	711	734	3.2%	✓
13	R26	A252 WB	726	761	4.8%	✓
14	R27	B2040 EB	492	444	-9.6%	✓
14	R28	B2040 WB	574	473	-17.6%	×
15	R29	Faversham Road NB	1042	951	-8.7%	✓
15	R30	Faversham Road SB	1059	981	-7.3%	✓
16	R31	Selling Road NB	229	227	-1.0%	✓
16	R32	Selling Road SB	230	223	-3.0%	✓
17	R33	A2500 EB	835	703	-15.7%	×
17	R34	A2500 WB	725	720	-0.8%	✓
18	R35	Minster Road EB	917	892	-2.7%	✓
18	R36	Minster Road WB	846	867	2.5%	✓
19	R37	Queenborough Road EB	414	402	-3.0%	✓
19	R38	Queenborough Road WB	342	361	5.6%	✓
20	R39	Raspberry Hill NB	606	659	8.8%	✓
20	R40	Raspberry Hill SB	631	667	5.7%	✓
21	R41	B2004 EB	506	525	3.8%	✓
21	R42	B2004 WB	541	525	-3.0%	✓
22	R43	Grovehurst SB	344	391	13.7%	✓
22	R44	Grovehurst NB	379	387	1.9%	✓
1a	R1a	A2_EB (Eastern Part)	1672	1842	10.2%	✓
1a	R2a	A2_WB (Eastern Part)	1685	1739	3.2%	✓

Table 8-8: Comparison of modelled and observed journey times – PM Peak

Map	Route	Route Name	Observed	Modelled	% Diff	Pass
1	R1	A2_EB	1236	1091	-11.7%	✓
1	R2	A2_WB	1261	1198	-5.0%	✓
2	R3	M2_EB	1365	1397	2.3%	✓
2	R4	M2_WB	1323	1479	11.8%	✓
3	R5	Swale Way NB	375	432	15.2%	✓
3	R6	Swale Way SB	472	412	-12.8%	✓
4	R7	B2006 EB	455	427	-6.2%	✓
4	R8	B2006 WB	305	354	16.2%	✓
5	R9	A249 NB	1318	1216	-7.8%	✓
5	R10	S249 SB	1466	1648	12.4%	✓
6	R11	Sheppey Way NB	288	329	14.2%	✓
6	R12	Sheppey Way SB	309	349	12.8%	✓
7	R13	Borden Lane NB	469	500	6.5%	✓
7	R14	Borden Lane SB	488	525	7.7%	✓
8	R15	Church Street NB	1266	1249	-1.4%	✓
8	R16	Church Street SB	1373	1244	-9.4%	✓
9	R17	M20 EB	1067	1152	8.0%	✓
9	R18	M20 WB	1063	1147	7.8%	✓
10	R19	A251 AM NB	1527	1364	-10.7%	✓
10	R20	A251 AM SB	1425	1258	-11.7%	✓
11	R21	A20 EB	1767	1627	-7.9%	✓
11	R22	A20 WB	1700	1681	-1.1%	✓
12	R23	A28 NB	1702	1530	-10.1%	✓
12	R24	A28 SB	1538	1467	-4.6%	✓
13	R25	A252 EB	668	766	14.6%	✓
13	R26	A252 WB	696	768	10.4%	✓
14	R27	B2040 EB	513	497	-3.1%	✓
14	R28	B2040 WB	577	532	-7.8%	✓
15	R29	Faversham Road NB	1023	974	-4.8%	✓
15	R30	Faversham Road SB	1018	988	-3.0%	✓
16	R31	Selling Road NB	260	237	-9.1%	✓
16	R32	Selling Road SB	235	231	-1.5%	✓
17	R33	A2500 EB	913	825	-9.7%	✓
17	R34	A2500 WB	694	698	0.6%	✓
18	R35	Minster Road EB	893	967	8.2%	✓
18	R36	Minster Road WB	850	859	1.0%	✓
19	R37	Queenborough Road EB	600	448	-25.3%	✗
19	R38	Queenborough Road WB	342	365	6.7%	✓
20	R39	Raspberry Hill NB	595	659	10.8%	✓
20	R40	Raspberry Hill SB	645	672	4.2%	✓
21	R41	B2004 EB	571	525	-8.0%	✓

Map	Route	Route Name	Observed	Modelled	% Diff	Pass
21	R42	B2004 WB	618	525	-15.0%	✓
22	R43	Grovehurst SB	348	400	15.0%	✓
22	R44	Grovehurst NB	387	393	1.6%	✓
1a	R1a	A2_EB (Eastern Part)	1720	1883	9.4%	✓
1a	R2a	A2_WB (Eastern Part)	1838	1804	-1.8%	✓

8.5 Network Stress Tests

WebTAG recommends performing a stress test on the network to check how the model behaves under artificially inflated traffic demand. This test is intended to uncover issues in the model that may not have previously been detected during calibration with base year traffic demand, but would cause problems during the forecasting stage such as unrealistic delays and route choice.

WebTAG recommends increasing the number of trips in the network by 10% or 20%. It was decided to increase the number of trips by 20% as this was in line with the level of growth forecast for Swale in TEMPro for a future year of 2037 and 2042.

The assignment with the increase traffic demand was reviewed, in particular to find locations in the network where there were significant new delays. Where increases to delay were significant and caused by network coding issues, adjustments were made to the network to resolve them. However, where increases in delay were a reasonable consequence of increasing traffic flows, no change was made.

9 Conclusion

9.1 Model Summary

This report describes the 2017 base year validation of the Swale Highway Model (SHM) for the Swale district. The following time periods have been modelled:

- AM peak hour: 0800 – 0900;
- Average IP hour: 1100 – 1400; and
- PM Peak hour: 1700 – 1800.

The assignment model uses SATURN which is one of the most commonly used assignment package in the UK. SATURN enables two distinct levels of network detail to be applied,

- Simulation - incorporating detailed junction modelling; and
- Buffer - based on link based speed flow curves.

This structure is ideal for the SHM where the simulation encompasses the key urban areas of Sittingbourne and Faversham surrounded by relatively strategic rural network where speed-flow curves are suitable such as for the M2 and M20.

A focussed data collection exercise was undertaken to supplement the available existing count data. The counts and journey time data allowed count screenlines to be formed across the core study area in both north/south and east/west directions with additional counts remaining to provide the supplementary “ad-hoc” locations that provide confidence in the model over a wider, less focussed area. The use of TrafficMaster data for journey time routes has enabled the model to be tested against twenty-three routes by direction in each time period. This data set has allowed a sufficient dataset to allow the calibration and validation exercises to be completed sufficiently.

The main basis of the trip matrices remains from the SERTM matrices infilled mobile phone data that was collected during March 2015. This has been brought up to date by a significant volume of new traffic count data in the study area to allow the trip matrices to be updated to a 2017 base.

The demand has been split into five user classes, which are compatible with guidance recommendation and facilitating compatibility with the DfT’s National Trip End Model (TEMPro), for use in traffic forecasting. The base model therefore needed to be tested to ensure that it responds realistically to given changes in travel costs.

The model does not have any significant limitations beyond those that are intrinsic to models of this type. One notable assumption is that the source of the matrices is the SERTM prior demand matrices which do not contain intrazonal demand. This has been infilled by a seeding process based upon judgement based on the estimated level of demand derived from observations from Google Maps and other available sources. It

should be noted however that this limitation is not observable in the current model structure as the intrazonal trips are not assigned.

9.2 Validation summary

The Swale Highway Model has been designed with reference to current best practice guidance as set out in the Department for Transport's WebTAG site.

The performance of the model has been assessed in the two standard fundamental areas: the ability to replicate traffic flows either at screenline or link level across the model area and the ability to reflect observed journey times (which in turn reflect travel costs).

The robustness of the highway model as a forecasting tool was measured by comparing link flows and journey times against observations. The comparisons were benchmarked against WebTAG calibration and validation standards. Whilst the WebTAG criteria is missed slightly for a few individual calibration and validation screenlines, the final highway model validates very well against the link flow criteria and modelled journey times exceed WebTAG acceptability guidance in both the AM and PM peaks. These results were achieved without excessive matrix estimation.

Sweco believe that the information presented in this LMVR is sufficient evidence that the model is a robust and reliable modelling tool on which to base the trip forecasting. The top line stats for the model can be found in Appendix C.

10 Appendix A

AM Screenline Calibration

AM ScreenLine2-Northbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL2	Dark Blue	Western Link	NB	5276	5277	334	339	5	1.4%	0	1	1	1	✓	✓
SL2	Dark Blue	Ospringe Road	NB	5280	5980	130	127	-3	-2.1%	0	1	1	1	✓	✓
SL2	Dark Blue	B2041	NB	5292	5294	296	241	-55	-18.6%	3	1	1	1	✓	✓
SL2	Dark Blue	Love Lane	NB	5297	5298	265	272	7	2.5%	0	1	1	1	✓	✓
SL2	Dark Blue	Homestall lane	NB	5906	5905	45	0	-45	-100%	9	1	0	0	×	✓
					Total	1070	978	-91	-8.5%	3	0	1		✓	×
					No of counts									5	5
					%Pass									80%	100%

AM Screenline 2- Southbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL2	Dark Blue	Western Link	SB	5277	5276	281	277	-4	-1.3%	0	1	1	1	✓	✓
SL2	Dark Blue	Ospringe Road	SB	5980	5280	144	133	-11	-7.7%	1	1	1	1	✓	✓
SL2	Dark Blue	B2041	SB	5294	5292	160	223	63	39.5%	5	1	1	1	✓	✓
SL2	Dark Blue	Love Lane	SB	5298	5297	170	105	-65	-38.1%	6	1	0	1	×	✓
SL2	Dark Blue	Homestall lane	SB	5905	5906	146	143	-3	-2.1%	0	1	1	1	✓	✓
					Total	901	882	-19	-2.1%	1	1	1		✓	✓
					No of counts									5	5
					%Pass									80%	100%

AM ScreenLine 3-Northbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL3	Green	A249	NB	5635	5050	2073	2058	-16	-0.7%	0	1	1	1	✓	✓
SL3	Green	Chestnut street	NB	5432	5057	96	141	46	48.1%	4	1	1	1	✓	✓
SL3	Green	Wise Lane	NB	5443	5665	70	27	-43	-61.4%	6	1	0	1	×	✓
SL3	Green	Borden Lane	NB	5446	5369	251	255	4	1.6%	0	1	1	1	✓	✓
SL3	Green	Woodstock Road	NB	5764	5362	390	385	-5	-1.3%	0	1	1	1	✓	✓
					Total	2880	2866	-14	-0.5%	0	1	1		✓	✓
					No of counts									5	5
					%Pass									80%	100%

AM Screenline 3- Southbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL3	Green	A249	SB	5050	5635	1752	1707	-45	-2.6%	1	1	1	1	✓	✓
SL3	Green	Chestnut street	SB	5057	5432	333	347	15	4.4%	1	1	1	1	✓	✓
SL3	Green	Wise Lane	SB	5665	5443	148	146	-2	-1.1%	0	1	1	1	✓	✓
SL3	Green	Borden Lane	SB	5369	5446	284	330	46	16.1%	3	1	1	1	✓	✓
SL3	Green	Woodstock Road	SB	5362	5764	489	491	2	0.5%	0	1	1	1	✓	✓
					Total	3006	3022	16	0.5%	0	1	1		✓	✓
					No of counts									5	5
					%Pass									100%	100%

AM ScreenLine 4-Northbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL4	Orange	Sheppey way	NB	5055	5068	560	577	17	3.0%	1	1	1	1	✓	✓
SL4	Orange	Staplehurst Road	NB	5117	5339	66	66	0	0.6%	0	1	1	1	✓	✓
SL4	Orange	Vellum Dr	NB	5737	5736	30	35	6	19.6%	1	1	1	1	✓	✓
SL4	Orange	Chalrkwell Road	NB	5737	5736	195	237	42	21.7%	3	1	1	1	✓	✓
SL4	Orange	Milton Road	NB	5118	5165	449	421	-28	-6.2%	1	1	1	1	✓	✓
SL4	Orange	Crown Quay lane	NB	5625	5154	494	469	-24	-4.9%	1	1	1	1	✓	✓
SL4	Orange	Murston road	NB	5144	5146	362	342	-20	-5.6%	1	1	1	1	✓	✓
					Total	2155	2147	-7	-0.3%	0	1	1		✓	✓
					No of counts									7	7
					%Pass									100%	100%

AM Screenline 4- Southbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL4	Orange	Sheppey way	SB	5068	5055	855	864	10	1.2%	0	1	1	1	✓	✓
SL4	Orange	Vellum Dr	SB	5736	5737	107	106	-1	-1.0%	0	1	1	1	✓	✓
SL4	Orange	Staplehurst Road	SB	5736	5737	64	131	67	103.9%	7	1	0	1	×	✓
SL4	Orange	Chalrkwell Road	SB	5339	5117	424	417	-7	-1.7%	0	1	1	1	✓	✓
SL4	Orange	Milton Road	SB	5165	5118	538	492	-46	-8.5%	2	1	1	1	✓	✓
SL4	Orange	Crown Quay lane	SB	5154	5625	668	721	54	8.0%	2	1	1	1	✓	✓
SL4	Orange	Murston road	SB	5146	5144	466	388	-78	-16.7%	4	1	1	1	✓	✓
					Total	3121	3119	-2	-0.1%	0	1	1		✓	✓
					No of counts									6	6
					%Pass									83%	100%

AM ScreenLine 5- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL5	Light Blue	B2005	EB	5074	5049	460	460	0	-0.1%	0	1	1	1	✓	✓
SL5	Light Blue	Quinton Road	EB	5730	5731	229	220	-8	-3.6%	1	1	1	1	✓	✓
SL5	Light Blue	B2006	EB	5736	5348	910	912	3	0.3%	0	1	1	1	✓	✓
SL5	Light Blue	A2	EB	5056	5106	908	954	46	5.1%	2	1	1	1	✓	✓
SL5	Light Blue	Cryalls Lane	EB	5442	5443	146	103	-43	-29.5%	4	1	1	1	✓	✓
SL5	Light Blue	The St	EB	5550	5449	219	274	55	25.3%	4	1	1	1	✓	✓
					Total	2871	2923	52	1.8%	1	1	1		✓	✓
					No of counts									6	6
					%Pass									100%	100%

AM Screenline 5- WestBound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL5	Light Blue	Quinton Road	WB	5731	5730	182	182	0	-0.1%	0	1	1	1	✓	✓
SL5	Light Blue	B2006	WB	5348	5736	480	473	-6	-1.3%	0	1	1	1	✓	✓
SL5	Light Blue	A2	WB	5106	5056	934	926	-8	-0.9%	0	1	1	1	✓	✓
SL5	Light Blue	Cryalls Lane	WB	5443	5442	185	179	-6	-3.4%	0	1	1	1	✓	✓
SL5	Light Blue	The St	WB	5449	5550	233	223	-10	-4.2%	1	1	1	1	✓	✓
SL5	Light Blue	B2005	WB	5049	5074	518	519	1	0.3%	0	1	1	1	✓	✓
					Total	2531	2501	-29	-1.2%	1	1	1		✓	✓
					No of counts									6	6
					%Pass									100%	100%

AM ScreenLine 6- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL6	Pink	Swale Way	EB	5707	5322	820	818	-2	-0.2%	0	1	1	1	✓	✓
SL6	Pink	B2006	EB	5152	5146	681	758	77	11.2%	3	1	1	1	✓	✓
SL6	Pink	A2	EB	5128	5144	455	413	-42	-9.3%	2	1	1	1	✓	✓
SL6	Pink	Avenue of Remeberan	EB	5337	5140	401	360	-41	-10.3%	2	1	1	1	✓	✓
Ref	Pink	Capel Road	EB	5367	5366	122	111	-11	-8.8%	1	1	1	1	✓	✓
SL6	Pink	Gore Crest Lane	EB	5357	5362	498	494	-4	-0.8%	0	1	1	1	✓	✓
SL6	Pink	Park Avenue	EB	5355	5362	152	167	15	9.7%	1	1	1	1	✓	✓
SL6	Pink	Tunstall Road	EB	5573	5575	305	308	3	1.0%	0	1	1	1	✓	✓
					Total	3434	3428	-6	-0.2%	0	1	1		✓	✓
					No of counts									8	8
					%Pass									100%	100%

AM Screenline 6- Westbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL6	Pink	Swale Way	WB	5322	5707	471	472	1	0.3%	0	1	1	1	✓	✓
SL6	Pink	B2006	WB	5146	5152	405	417	12	3.0%	1	1	1	1	✓	✓
SL6	Pink	A2	WB	5144	5128	570	548	-22	-3.8%	1	1	1	1	✓	✓
SL6	Pink	Avenue of Remeberan	WB	5140	5337	499	475	-24	-4.8%	1	1	1	1	✓	✓
SL6	Pink	Capel Road	WB	5366	5367	116	97	-19	-16.2%	2	1	1	1	✓	✓
SL6	Pink	Gore Crest Lane	WB	5362	5357	317	381	64	20.1%	3	1	1	1	✓	✓
SL6	Pink	Park Avenue	WB	5362	5355	172	147	-25	-14.4%	2	1	1	1	✓	✓
SL6	Pink	Tunstall Road	WB	5575	5573	298	262	-36	-12.0%	2	1	1	1	✓	✓
					Total	2848	2800	-48	-1.7%	1	1	1		✓	✓
					No of counts									8	8
					%Pass									100%	100%

AM ScreenLine 9- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL9	Brown	Minster Road	EB	5526	5812	368	347	-21	-5.7%	1	1	1	1	✓	✓
SL9	Brown	Plover Road	EB	5962	5963	428	364	-64	-14.9%	3	1	1	1	✓	✓
SL9	Brown	A2500	EB	5961	5964	682	625	-57	-8.3%	2	1	1	1	✓	✓
					Total	1478	1336	-142	-9.6%	4	0	1		✓	×
					No of counts									3	3
					%Pass									100%	100%

AM ScreenLine 9- Westbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL9	Brown	Minster Road	WB	5812	5526	536	612	76	14.1%	3	1	1	1	✓	✓
SL9	Brown	Plover Road	WB	5963	5962	292	246	-46	-15.9%	3	1	1	1	✓	✓
SL9	Brown	A2500	WB	5964	5961	1191	1192	1	0.1%	0	1	1	1	✓	✓
					Total	2019	2049	30	1.5%	1	1	1		✓	✓
					No of counts									3	3
					%Pass									100%	100%

AM ScreenLine 10- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL1	light														
0	Green	East street	EB	5294	5298	623	510	-113	-18.2%	5	0	1	1	✓	×
SL1	light														
0	Green	Canterbury Road	EB	5290	5295	610	626	16	2.7%	1	1	1	1	✓	✓
SL1	light														
0	Green	M2	EB	5024	5029	2377	2190	-186	-7.8%	4	1	1	1	✓	✓
					Total	3610	3326	-283	-7.8%	5	0	0		×	×
					No of counts									3	3
					%Pass									100%	67%

AM ScreenLine 10 Westbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL1	light														
0	Green	East street	WB	5298	5294	399	471	72	18.1%	3	1	1	1	✓	✓
SL1	light														
0	Green	Canterbury Road	WB	5295	5290	779	699	-80	-10.3%	3	1	1	1	✓	✓
SL1	light														
0	Green	M2	WB	5030	5027	2141	2142	2	0.1%	0	1	1	1	✓	✓
					Total	3319	3312	-7	-0.2%	0	1	1		✓	✓
					No of counts									3	3
					%Pass									100%	100%

AM ScreenLine 6- Eastbound with M2

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL6	Pink	Swale Way	EB	5707	5322	820	818	-2	-0.2%	0	1	1	1	✓	✓
SL6	Pink	B2006	EB	5152	5146	681	758	77	11.2%	3	1	1	1	✓	✓
SL6	Pink	A2	EB	5128	5144	455	413	-42	-9.3%	2	1	1	1	✓	✓
SL6	Pink	Avenue of Remeberan	EB	5337	5140	401	360	-41	-10.3%	2	1	1	1	✓	✓
Ref	Pink	Capel Road	EB	5367	5366	122	111	-11	-8.8%	1	1	1	1	✓	✓
SL6	Pink	Gore Crest Lane	EB	5357	5362	498	494	-4	-0.8%	0	1	1	1	✓	✓
SL6	Pink	Park Avenue	EB	5355	5362	152	167	15	9.7%	1	1	1	1	✓	✓
SL6	Pink	Tunstall Road	EB	5573	5575	305	308	3	1.0%	0	1	1	1	✓	✓
SL6	Pink	M2	EB	5020	5022	2228	2246	19	0.8%	0	1	1	1	✓	✓
					Total	5662	5675	13	0.2%	0	1	1		✓	✓
					No of counts									9	9
					%Pass									100%	100%

AM Screenline 6-
Westbound with M2

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL6	Pink	Swale Way	WB	5322	5707	471	472	1	0.3%	0	1	1	1	✓	✓
SL6	Pink	B2006	WB	5146	5152	405	417	12	3.0%	1	1	1	1	✓	✓
SL6	Pink	A2	WB	5144	5128	570	548	-22	-3.8%	1	1	1	1	✓	✓
SL6	Pink	Avenue of Remeberan	WB	5140	5337	499	475	-24	-4.8%	1	1	1	1	✓	✓
SL6	Pink	Capel Road	WB	5366	5367	116	97	-19	-16.2%	2	1	1	1	✓	✓
SL6	Pink	Gore Crest Lane	WB	5362	5357	317	381	64	20.1%	3	1	1	1	✓	✓
SL6	Pink	Park Avenue	WB	5362	5355	172	147	-25	-14.4%	2	1	1	1	✓	✓
SL6	Pink	Tunstall Road	WB	5575	5573	298	262	-36	-12.0%	2	1	1	1	✓	✓
SL6	Pink	M2	WB	5025	5021	2081	2077	-4	-0.2%	0	1	1	1	✓	✓
					Total	4929	4877	-52	-1.0%	1	1	1		✓	✓
					No of counts									9	9
					%Pass									100%	100%

IP Screenline Calibration

IP ScreenLine2-Northbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL2	Dark Blue	Western Link	NB	5276	5277	245	253	8	3.4%	1	1	1	1	✓	✓
SL2	Dark Blue	Ospringe Road	NB	5280	5980	71	71	0	-0.6%	0	1	1	1	✓	✓
SL2	Dark Blue	B2041	NB	5292	5294	204	200	-4	-2.0%	0	1	1	1	✓	✓
SL2	Dark Blue	Love Lane	NB	5297	5298	187	178	-9	-4.8%	1	1	1	1	✓	✓
SL2	Dark Blue	Homestall lane	NB	5906	5905	37	9	-28	-75%	6	1	0	1	×	✓
					Total	744	711	-33	-4.4%	1	1	1		✓	✓
					No of counts									5	5
					%Pass									80%	100%

IP Screenline 2- Southbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL2	Dark Blue	Western Link	SB	5277	5276	293	291	-2	-0.5%	0	1	1	1	✓	✓
SL2	Dark Blue	Ospringe Road	SB	5980	5280	117	119	2	1.8%	0	1	1	1	✓	✓
SL2	Dark Blue	B2041	SB	5294	5292	179	181	2	1.0%	0	1	1	1	✓	✓
SL2	Dark Blue	Love Lane	SB	5298	5297	126	137	11	8.5%	1	1	1	1	✓	✓
SL2	Dark Blue	Homestall lane	SB	5905	5906	63	62	-1	-1.8%	0	1	1	1	✓	✓
					Total	778	789	12	1.5%	0	1	1		✓	✓
					No of counts									5	5
					%Pass									100%	100%

IP ScreenLine 3-Northbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL3	Green	A249	NB	5635	5050	1734	1735	1	0.1%	0	1	1	1	✓	✓
SL3	Green	Chestnut street	NB	5432	5057	86	81	-5	-5.7%	1	1	1	1	✓	✓
SL3	Green	Wise Lane	NB	5443	5665	51	8	-43	-84.1%	8	1	0	0	×	✓
SL3	Green	Borden Lane	NB	5446	5369	157	150	-7	-4.6%	1	1	1	1	✓	✓
SL3	Green	Woodstock Road	NB	5764	5362	223	213	-10	-4.4%	1	1	1	1	✓	✓
					Total	2251	2187	-64	-2.8%	1	1	1		✓	✓
					No of counts									5	5
					%Pass									80%	100%

IP Screenline 3- Southbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL3	Green	A249	SB	5050	5635	1558	1556	-2	-0.1%	0	1	1	1	✓	✓
SL3	Green	Chestnut street	SB	5057	5432	216	88	-128	-59.2%	10	0	0	0	×	×
SL3	Green	Wise Lane	SB	5665	5443	50	66	16	31.7%	2	1	1	1	✓	✓
SL3	Green	Borden Lane	SB	5369	5446	175	201	27	15.2%	2	1	1	1	✓	✓
SL3	Green	Woodstock Road	SB	5362	5764	191	186	-5	-2.4%	0	1	1	1	✓	✓
					Total	2190	2098	-92	-4.2%	2	1	1		✓	✓
					No of counts									5	5
					%Pass									80%	80%

IP ScreenLine 4-Northbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL4	Orange	Sheppey way	NB	5055	5068	257	343	85	33.2%	5	1	1	1	✓	✓
SL4	Orange	Staplehurst Road	NB	5117	5339	21	21	0	0.0%	0	1	1	1	✓	✓
SL4	Orange	Vellum Dr	NB	5737	5736	60	46	-14	-22.8%	2	1	1	1	✓	✓
SL4	Orange	Chalrkwell Road	NB	5737	5736	226	240	14	6.2%	1	1	1	1	✓	✓
SL4	Orange	Milton Road	NB	5118	5165	501	482	-19	-3.8%	1	1	1	1	✓	✓
SL4	Orange	Crown Quay lane	NB	5625	5154	370	508	138	37.2%	7	0	0	1	×	×
SL4	Orange	Murston road	NB	5144	5146	281	259	-22	-7.8%	1	1	1	1	✓	✓
					Total	1717	1899	182	10.6%	4	0	0		×	×
					No of counts									7	7
					%Pass									86%	86%

IP Screenline 4- Southbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL4	Orange	Sheppey way	SB	5068	5055	310	234	-76	-24.4%	5	1	1	1	✓	✓
SL4	Orange	Vellum Dr	SB	5736	5737	46	56	10	22.2%	1	1	1	1	✓	✓
SL4	Orange	Staplehurst Road	SB	5736	5737	59	58	-1	-1.7%	0	1	1	1	✓	✓
SL4	Orange	Chalrkwell Road	SB	5339	5117	185	184	-1	-0.6%	0	1	1	1	✓	✓
SL4	Orange	Milton Road	SB	5165	5118	451	451	0	0.0%	0	1	1	1	✓	✓
SL4	Orange	Crown Quay lane	SB	5154	5625	515	656	141	27.4%	6	0	0	1	×	×
SL4	Orange	Murston road	SB	5146	5144	299	290	-9	-3.0%	1	1	1	1	✓	✓
					Total	1864	1928	64	3.4%	1	1	1		✓	✓
					No of counts									6	6
					%Pass									83%	83%

IP ScreenLine 5- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL5	Light Blue	B2005	EB	5074	5049	271	294	23	8.4%	1	1	1	1	✓	✓
SL5	Light Blue	Quinton Road	EB	5730	5731	152	47	-105	-69.2%	11	0	0	0	×	×
SL5	Light Blue	B2006	EB	5736	5348	591	682	91	15.4%	4	1	1	1	✓	✓
SL5	Light Blue	A2	EB	5056	5106	704	761	58	8.2%	2	1	1	1	✓	✓
SL5	Light Blue	Cryalls Lane	EB	5442	5443	90	58	-32	-35.4%	4	1	1	1	✓	✓
SL5	Light Blue	The St	EB	5550	5449	25	35	10	38.7%	2	1	1	1	✓	✓
					Total	1832	1877	44	2.4%	1	1	1		✓	✓
					No of counts									6	6
					%Pass									83%	83%

IP Screenline 5- WestBound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL5	Light Blue	Quinton Road	WB	5731	5730	93	26	-67	-72.1%	9	1	0	0	×	✓
SL5	Light Blue	B2006	WB	5348	5736	596	592	-5	-0.8%	0	1	1	1	✓	✓
SL5	Light Blue	A2	WB	5106	5056	646	668	21	3.3%	1	1	1	1	✓	✓
SL5	Light Blue	Cryalls Lane	WB	5443	5442	106	103	-3	-2.7%	0	1	1	1	✓	✓
SL5	Light Blue	The St	WB	5449	5550	67	72	5	6.7%	1	1	1	1	✓	✓
SL5	Light Blue	B2005	WB	5049	5074	246	294	48	19.4%	3	1	1	1	✓	✓
					Total	1754	1753	-1	-0.1%	0	1	1		✓	✓
					No of counts									6	6
					%Pass									83%	100%

IP ScreenLine 6- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL6	Pink	Swale Way	EB	5707	5322	348	340	-8	-2.3%	0	1	1	1	✓	✓
SL6	Pink	B2006	EB	5152	5146	647	665	18	2.8%	1	1	1	1	✓	✓
SL6	Pink	A2	EB	5128	5144	372	344	-28	-7.6%	1	1	1	1	✓	✓
SL6	Pink	Avenue of Remeberan	EB	5337	5140	364	352	-12	-3.4%	1	1	1	1	✓	✓
Ref	Pink	Capel Road	EB	5367	5366	40	39	-1	-2.2%	0	1	1	1	✓	✓
SL6	Pink	Gore Crest Lane	EB	5357	5362	193	194	1	0.5%	0	1	1	1	✓	✓
SL6	Pink	Park Avenue	EB	5355	5362	37	34	-3	-7.6%	0	1	1	1	✓	✓
SL6	Pink	Tunstall Road	EB	5573	5575	88	89	1	0.8%	0	1	1	1	✓	✓
					Total	2089	2056	-33	-1.6%	1	1	1		✓	✓
					No of counts									8	8
					%Pass									100%	100%

IP Screenline 6- Westbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL6	Pink	Swale Way	WB	5322	5707	319	319	0	0.0%	0	1	1	1	✓	✓
SL6	Pink	B2006	WB	5146	5152	521	528	7	1.3%	0	1	1	1	✓	✓
SL6	Pink	A2	WB	5144	5128	485	414	-72	-14.8%	3	1	1	1	✓	✓
SL6	Pink	Avenue of Remeberan	WB	5140	5337	391	394	3	0.8%	0	1	1	1	✓	✓
SL6	Pink	Capel Road	WB	5366	5367	49	45	-5	-9.2%	1	1	1	1	✓	✓
SL6	Pink	Gore Crest Lane	WB	5362	5357	170	169	-1	-0.6%	0	1	1	1	✓	✓
SL6	Pink	Park Avenue	WB	5362	5355	78	73	-5	-6.6%	1	1	1	1	✓	✓
SL6	Pink	Tunstall Road	WB	5575	5573	77	78	1	1.4%	0	1	1	1	✓	✓
					Total	2090	2019	-71	-3.4%	2	1	1		✓	✓
					No of counts									8	8
					%Pass									100%	100%

IP ScreenLine 9- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL9	Brown	Minster Road	EB	5526	5812	296	267	-29	-9.9%	2	1	1	1	✓	✓
SL9	Brown	Plover Road	EB	5962	5963	262	222	-40	-15.4%	3	1	1	1	✓	✓
SL9	Brown	A2500	EB	5961	5964	597	598	1	0.1%	0	1	1	1	✓	✓
					Total	1155	1086	-69	-6.0%	2	0	1		✓	×
					No of counts									3	3
					%Pass									100%	100%

IP ScreenLine 9- Westbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL9	Brown	Minster Road	WB	5812	5526	413	445	32	7.8%	2	1	1	1	✓	✓
SL9	Brown	Plover Road	WB	5963	5962	179	160	-19	-10.5%	1	1	1	1	✓	✓
SL9	Brown	A2500	WB	5964	5961	885	854	-31	-3.5%	1	1	1	1	✓	✓
					Total	1477	1459	-18	-1.2%	0	1	1		✓	✓
					No of counts									3	3
					%Pass									100%	100%

IP ScreenLine 10- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL10	light Green	East street	EB	5294	5298	328	333	5	1.5%	0	1	1	1	✓	✓
SL10	light Green	Canterbury Road	EB	5290	5295	413	423	10	2.3%	0	1	1	1	✓	✓
SL10	light Green	M2	EB	5024	5029	1704	1734	30	1.8%	1	1	1	1	✓	✓
					Total	2445	2490	44	1.8%	1	1	1		✓	✓
					No of counts									3	3
					%Pass									100%	100%

IP ScreenLine 10 Westbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL10	light Green	East street	WB	5298	5294	317	283	-34	-10.9%	2	1	1	1	✓	✓
SL10	light Green	Canterbury Road	WB	5295	5290	538	514	-24	-4.6%	1	1	1	1	✓	✓
SL10	light Green	M2	WB	5030	5027	1613	1680	67	4.1%	2	1	1	1	✓	✓
					Total	2468	2476	8	0.3%	0	1	1		✓	✓
					No of counts									3	3
					%Pass									100%	100%

IP ScreenLine 6- Eastbound with M2

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL6	Pink	Swale Way	EB	5707	5322	348	340	-8	-2.3%	0	1	1	1	✓	✓
SL6	Pink	B2006	EB	5152	5146	647	665	18	2.8%	1	1	1	1	✓	✓
SL6	Pink	A2	EB	5128	5144	372	344	-28	-7.6%	1	1	1	1	✓	✓
SL6	Pink	Avenue of Remeberan	EB	5337	5140	364	352	-12	-3.4%	1	1	1	1	✓	✓
Ref	Pink	Capel Road	EB	5367	5366	40	39	-1	-2.2%	0	1	1	1	✓	✓
SL6	Pink	Gore Crest Lane	EB	5357	5362	193	194	1	0.5%	0	1	1	1	✓	✓
SL6	Pink	Park Avenue	EB	5355	5362	37	34	-3	-7.6%	0	1	1	1	✓	✓
SL6	Pink	Tunstall Road	EB	5573	5575	88	89	1	0.8%	0	1	1	1	✓	✓
SL6	Pink	M2	EB	5020	5022	1725	1766	41	2.4%	1	1	1	1	✓	✓
					Total	319	319	0	0.0%	0	1	1		✓	✓
					No of counts									9	9
					%Pass									100%	100%

IP Screenline 6- Westbound with M2

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL6	Pink	Swale Way	WB	5322	5707	319	319	0	0.0%	0	1	1	1	✓	✓
SL6	Pink	B2006	WB	5146	5152	521	528	7	1.3%	0	1	1	1	✓	✓
SL6	Pink	A2	WB	5144	5128	485	414	-72	-14.8%	3	1	1	1	✓	✓
SL6	Pink	Avenue of Remeberan	WB	5140	5337	391	394	3	0.8%	0	1	1	1	✓	✓
SL6	Pink	Capel Road	WB	5366	5367	49	45	-5	-9.2%	1	1	1	1	✓	✓
SL6	Pink	Gore Crest Lane	WB	5362	5357	170	169	-1	-0.6%	0	1	1	1	✓	✓
SL6	Pink	Park Avenue	WB	5362	5355	78	73	-5	-6.6%	1	1	1	1	✓	✓
SL6	Pink	Tunstall Road	WB	5575	5573	77	78	1	1.4%	0	1	1	1	✓	✓
SL6	Pink	M2	WB	5025	5021	1565	1696	131	8.4%	3	1	1	1	✓	✓
					Total	2090	2019	-71	-3.4%	2	1	1		✓	✓
					No of counts									9	9
					%Pass									100%	100%

PM Screenline Calibration

PM ScreenLine2-Northbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL2	Dark Blue	Western Link	NB	5276	5277	323	326	3	1.0%	0	1	1	1	✓	✓
SL2	Dark Blue	Ospringe Road	NB	5280	5980	102	107	5	4.7%	0	1	1	1	✓	✓
SL2	Dark Blue	B2041	NB	5292	5294	251	175	-76	-30.4%	5	1	0	1	×	✓
SL2	Dark Blue	Love Lane	NB	5297	5298	300	291	-9	-3.1%	1	1	1	1	✓	✓
SL2	Dark Blue	Homestall lane	NB	5906	5905	40	0	-40	-100%	9	1	0	0	×	✓
					Total	1016	899	-117	-11.5%	4	0	1		✓	×
					No of counts									5	5
					%Pass									60%	100%

PM Screenline 2- Southbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL2	Dark Blue	Western Link	SB	5277	5276	368	365	-3	-0.8%	0	1	1	1	✓	✓
SL2	Dark Blue	Ospringe Road	SB	5980	5280	142	141	-1	-0.9%	0	1	1	1	✓	✓
SL2	Dark Blue	B2041	SB	5294	5292	171	229	58	34.0%	4	1	1	1	✓	✓
SL2	Dark Blue	Love Lane	SB	5298	5297	190	121	-69	-36.5%	6	1	0	1	×	✓
SL2	Dark Blue	Homestall lane	SB	5905	5906	55	70	16	28.4%	2	1	1	1	✓	✓
					Total	926	926	0	0.0%	0	1	1		✓	✓
					No of counts									5	5
					%Pass									80%	100%

PM ScreenLine 3-Northbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL3	Green	A249	NB	5635	5050	3019	3019	1	0.0%	0	1	1	1	✓	✓
SL3	Green	Chestnut street	NB	5432	5057	149	169	20	13.2%	2	1	1	1	✓	✓
SL3	Green	Wise Lane	NB	5443	5665	65	32	-33	-50.6%	5	1	1	1	✓	✓
SL3	Green	Borden Lane	NB	5446	5369	272	344	72	26.5%	4	1	1	1	✓	✓
SL3	Green	Woodstock Road	NB	5764	5362	439	412	-27	-6.1%	1	1	1	1	✓	✓
					Total	3944	3977	33	0.8%	1	1	1		✓	✓
					No of counts									5	5
					%Pass									100%	100%

PM Screenline 3- Southbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL3	Green	A249	SB	5050	5635	1897	1808	-90	-4.7%	2	1	1	1	✓	✓
SL3	Green	Chestnut street	SB	5057	5432	284	290	6	2.1%	0	1	1	1	✓	✓
SL3	Green	Wise Lane	SB	5665	5443	50	128	78	156.4%	8	1	0	0	×	✓
SL3	Green	Borden Lane	SB	5369	5446	153	233	80	52.3%	6	1	0	1	×	✓
SL3	Green	Woodstock Road	SB	5362	5764	292	285	-7	-2.4%	0	1	1	1	✓	✓
					Total	2676	2744	67	2.5%	1	1	1		✓	✓
					No of counts									5	5
					%Pass									60%	100%

PM ScreenLine 4-Northbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL4	Orange	Sheppey way	NB	5055	5068	727	676	-51	-7.0%	2	1	1	1	✓	✓
SL4	Orange	Staplehurst Road	NB	5117	5339	62	62	0	0.6%	0	1	1	1	✓	✓
SL4	Orange	Vellum Dr	NB	5737	5736	121	121	1	0.8%	0	1	1	1	✓	✓
SL4	Orange	Chalrkwell Road	NB	5737	5736	278	328	50	17.9%	3	1	1	1	✓	✓
SL4	Orange	Milton Road	NB	5118	5165	582	537	-45	-7.8%	2	1	1	1	✓	✓
SL4	Orange	Crown Quay lane	NB	5625	5154	453	416	-37	-8.1%	2	1	1	1	✓	✓
SL4	Orange	Murston road	NB	5144	5146	444	395	-49	-11.0%	2	1	1	1	✓	✓
					Total	2666	2536	-130	-4.9%	3	1	1		✓	✓
					No of counts									7	7
					%Pass									100%	100%

PM Screenline 4- Southbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL4	Orange	Sheppey way	SB	5068	5055	695	732	37	5.3%	1	1	1	1	✓	✓
SL4	Orange	Vellum Dr	SB	5736	5737	23	23	-1	-2.2%	0	1	1	1	✓	✓
SL4	Orange	Staplehurst Road	SB	5736	5737	65	79	14	21.7%	2	1	1	1	✓	✓
SL4	Orange	Chalrkwell Road	SB	5339	5117	226	258	32	14.4%	2	1	1	1	✓	✓
SL4	Orange	Milton Road	SB	5165	5118	504	499	-5	-0.9%	0	1	1	1	✓	✓
SL4	Orange	Crown Quay lane	SB	5154	5625	642	682	40	6.2%	2	1	1	1	✓	✓
SL4	Orange	Murston road	SB	5146	5144	485	414	-71	-14.6%	3	1	1	1	✓	✓
					Total	2640	2687	47	1.8%	1	1	1		✓	✓
					No of counts									6	6
					%Pass									100%	100%

PM ScreenLine 5- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL5	Light Blue	B2005	EB	5074	5049	624	610	-14	-2.3%	1	1	1	1	✓	✓
SL5	Light Blue	Quinton Road	EB	5730	5731	206	219	13	6.4%	1	1	1	1	✓	✓
SL5	Light Blue	B2006	EB	5736	5348	806	879	74	9.1%	3	1	1	1	✓	✓
SL5	Light Blue	A2	EB	5056	5106	1102	1133	31	2.8%	1	1	1	1	✓	✓
SL5	Light Blue	Cryalls Lane	EB	5442	5443	153	140	-13	-8.5%	1	1	1	1	✓	✓
SL5	Light Blue	The St	EB	5550	5449	204	231	27	13.4%	2	1	1	1	✓	✓
					Total	3094	3212	118	3.8%	2	1	1		✓	✓
					No of counts									6	6
					%Pass									100%	100%

PM Screenline 5- WestBound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL5	Light Blue	Quinton Road	WB	5731	5730	130	130	0	0.2%	0	1	1	1	✓	✓
SL5	Light Blue	B2006	WB	5348	5736	1012	972	-39	-3.9%	1	1	1	1	✓	✓
SL5	Light Blue	A2	WB	5106	5056	913	897	-16	-1.7%	1	1	1	1	✓	✓
SL5	Light Blue	Cryalls Lane	WB	5443	5442	79	120	41	52.0%	4	1	1	1	✓	✓
SL5	Light Blue	The St	WB	5449	5550	127	131	4	3.4%	0	1	1	1	✓	✓
SL5	Light Blue	B2005	WB	5049	5074	466	451	-15	-3.2%	1	1	1	1	✓	✓
					Total	2725	2701	-24	-0.9%	0	1	1		✓	✓
					No of counts									6	6
					%Pass									100%	100%

PM ScreenLine 6- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL6	Pink	Swale Way	EB	5707	5322	504	501	-3	-0.5%	0	1	1	1	✓	✓
SL6	Pink	B2006	EB	5152	5146	649	707	58	9.0%	2	1	1	1	✓	✓
SL6	Pink	A2	EB	5128	5144	475	425	-50	-10.4%	2	1	1	1	✓	✓
SL6	Pink	Avenue of Remeberan	EB	5337	5140	496	443	-53	-10.8%	2	1	1	1	✓	✓
Ref	Pink	Capel Road	EB	5367	5366	62	52	-10	-15.5%	1	1	1	1	✓	✓
SL6	Pink	Gore Crest Lane	EB	5357	5362	330	362	32	9.7%	2	1	1	1	✓	✓
SL6	Pink	Park Avenue	EB	5355	5362	86	69	-17	-20.0%	2	1	1	1	✓	✓
SL6	Pink	Tunstall Road	EB	5573	5575	188	188	0	0.1%	0	1	1	1	✓	✓
					Total	2790	2748	-42	-1.5%	1	1	1		✓	✓
					No of counts									8	8
					%Pass									100%	100%

PM Screenline 6- Westbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL6	Pink	Swale Way	WB	5322	5707	625	665	40	6.4%	2	1	1	1	✓	✓
SL6	Pink	B2006	WB	5146	5152	710	752	42	5.9%	2	1	1	1	✓	✓
SL6	Pink	A2	WB	5144	5128	643	578	-65	-10.1%	3	1	1	1	✓	✓
SL6	Pink	Avenue of Remeberan	WB	5140	5337	402	372	-30	-7.4%	2	1	1	1	✓	✓
SL6	Pink	Capel Road	WB	5366	5367	87	77	-10	-11.1%	1	1	1	1	✓	✓
SL6	Pink	Gore Crest Lane	WB	5362	5357	331	349	18	5.3%	1	1	1	1	✓	✓
SL6	Pink	Park Avenue	WB	5362	5355	114	134	20	17.4%	2	1	1	1	✓	✓
SL6	Pink	Tunstall Road	WB	5575	5573	213	215	2	1.1%	0	1	1	1	✓	✓
					Total	3125	3141	16	0.5%	0	1	1		✓	✓
					No of counts									8	8
					%Pass									100%	100%

PM ScreenLine 9- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL9	Brown	Minster Road	EB	5526	5812	465	473	8	1.7%	0	1	1	1	✓	✓
SL9	Brown	Plover Road	EB	5962	5963	287	310	23	8.0%	1	1	1	1	✓	✓
SL9	Brown	A2500	EB	5961	5964	901	745	-156	-17.3%	5	0	0	1	×	×
					Total	1653	1527	-126	-7.6%	3	0	1		✓	×
					No of counts									3	3
					%Pass									67%	67%

PM ScreenLine 9- Westbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL9	Brown	Minster Road	WB	5812	5526	308	308	0	0.0%	0	1	1	1	✓	✓
SL9	Brown	Plover Road	WB	5963	5962	237	197	-40	-16.9%	3	1	1	1	✓	✓
SL9	Brown	A2500	WB	5964	5961	672	679	7	1.1%	0	1	1	1	✓	✓
					Total	1217	1184	-33	-2.7%	1	1	1		✓	✓
					No of counts									3	3
					%Pass									100%	100%

PM ScreenLine 10- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL10	light Green	East street	EB	5294	5298	539	422	-117	-21.8%	5	0	0	1	×	×
SL10	light Green	Canterbury Road	EB	5290	5295	943	904	-39	-4.2%	1	1	1	1	✓	✓
SL10	light Green	M2	EB	5024	5029	1884	2110	226	12.0%	5	1	0	1	×	✓
					Total	3366	3436	70	2.1%	1	1	1		✓	✓
					No of counts									3	3
					%Pass									33%	67%

PM ScreenLine 10 Westbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL10	light Green	East street	WB	5298	5294	438	482	44	10.0%	2	1	1	1	✓	✓
SL10	light Green	Canterbury Road	WB	5295	5290	760	773	13	1.8%	0	1	1	1	✓	✓
SL10	light Green	M2	WB	5030	5027	2770	2571	-199	-7.2%	4	1	1	1	✓	✓
					Total	3968	3827	-142	-3.6%	2	1	1		✓	✓
					No of counts									3	3
					%Pass									100%	100%

PM ScreenLine 6- Eastbound with M2

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL6	Pink	Swale Way	EB	5707	5322	504	501	-3	-0.5%	0	1	1	1	✓	✓
SL6	Pink	B2006	EB	5152	5146	649	707	58	9.0%	2	1	1	1	✓	✓
SL6	Pink	A2	EB	5128	5144	475	425	-50	-10.4%	2	1	1	1	✓	✓
SL6	Pink	Avenue of Remeberan	EB	5337	5140	496	443	-53	-10.8%	2	1	1	1	✓	✓
Ref	Pink	Capel Road	EB	5367	5366	62	52	-10	-15.5%	1	1	1	1	✓	✓
SL6	Pink	Gore Crest Lane	EB	5357	5362	330	362	32	9.7%	2	1	1	1	✓	✓
SL6	Pink	Park Avenue	EB	5355	5362	86	69	-17	-20.0%	2	1	1	1	✓	✓
SL6	Pink	Tunstall Road	EB	5573	5575	188	188	0	0.1%	0	1	1	1	✓	✓
SL6	Pink	M2	EB	5020	5022	2084	2087	3	0.2%	0	1	1	1	✓	✓
					Total	4874	4835	-39	-0.8%	1	1	1		✓	✓
					No of counts									9	9
					%Pass									100%	100%

PM Screenline 6- Westbound with M2

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL6	Pink	Swale Way	WB	5322	5707	625	665	40	6.4%	2	1	1	1	✓	✓
SL6	Pink	B2006	WB	5146	5152	710	752	42	5.9%	2	1	1	1	✓	✓
SL6	Pink	A2	WB	5144	5128	643	578	-65	-10.1%	3	1	1	1	✓	✓
SL6	Pink	Avenue of Remeberan	WB	5140	5337	402	372	-30	-7.4%	2	1	1	1	✓	✓
SL6	Pink	Capel Road	WB	5366	5367	87	77	-10	-11.1%	1	1	1	1	✓	✓
SL6	Pink	Gore Crest Lane	WB	5362	5357	331	349	18	5.3%	1	1	1	1	✓	✓
SL6	Pink	Park Avenue	WB	5362	5355	114	134	20	17.4%	2	1	1	1	✓	✓
SL6	Pink	Tunstall Road	WB	5575	5573	213	215	2	1.1%	0	1	1	1	✓	✓
SL6	Pink	M2	WB	5025	5021	2685	2683	-2	-0.1%	0	1	1	1	✓	✓
					Total	5810	5824	15	0.3%	0	1	1		✓	✓
					No of counts									9	9
					%Pass									100%	100%

AM Screenline Validation

AM ScreenLine 1-NorthBound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL1	Purple	A249	NB	5803	5002	1599	1599	0	0.0%	0	1	1	1	✓	✓
SL1	Purple	Hollingbourne Hill	NB	5698	5699	169	193	24	14.3%	2	1	1	1	✓	✓
SL1	Purple	Chequers Hill	NB	5693	5273	42	29	-13	-29.9%	2	1	1	1	✓	✓
SL1	Purple	The Street	NB	5693	5692	65	53	-12	-18.5%	2	1	1	1	✓	✓
SL1	Purple	Eastling Road	NB	5281	5286	112	115	3	2.7%	0	1	1	1	✓	✓
SL1	Purple	A251	NB	6160	5691	300	452	152	50.8%	8	0	0	0	×	×
SL1	Purple	Boughton Bypass	NB	17537	17271	863	818	-45	-5.2%	2	1	1	1	✓	✓
					Total	3150	3260	110	3.5%	2	1	1		✓	✓
					No of counts									7	7
					%Pass									86%	86%

AM Screenline 1- Southbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL1	Purple	A249	SB	5002	5803	1866	1654	-212	-11.4%	5	1	0	1	×	✓
SL1	Purple	Hollingbourne Hill	SB	5699	5698	346	442	96	27.7%	5	1	1	1	✓	✓
SL1	Purple	Chequers Hill	SB	5273	5693	61	49	-12	-20.2%	2	1	1	1	✓	✓
SL1	Purple	The Street	SB	5692	5693	87	77	-10	-11.9%	1	1	1	1	✓	✓
SL1	Purple	Eastling Road	SB	5286	5281	135	113	-22	-16.3%	2	1	1	1	✓	✓
SL1	Purple	A251	SB	5691	6160	519	638	119	23.0%	5	0	1	1	✓	×
SL1	Purple	Boughton Bypass	SB	17272	17252	663	597	-66	-9.9%	3	1	1	1	✓	✓
					Total	3677	3570	-107	-2.9%	2	1	1		✓	✓
					No of counts									7	7
					%Pass									86%	86%

AM ScreenLine 7- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL7	Red	Queenborough Rd	EB	16585	18633	569	446	-123	-21.6%	5	0	0	1	×	×
SL7	Red	A2500	EB	5961	16800	1163	1192	29	2.5%	1	1	1	1	✓	✓
SL7	Red	Bridge Road	EB	5883	5882	247	199	-48	-19.6%	3	1	1	1	✓	✓
					Total	1979	1837	-142	-7.2%	3	0	1		✓	×
					No of counts									3	3
					%Pass									67%	67%

AM ScreenLine 7- Westbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL7	Red	Queenborough Rd	WB	5882	5883	334	243	-91	-27.2%	5	1	0	1	×	✓
SL7	Red	A2500	WB	18632	5815	665	665	0	-0.1%	0	1	1	1	✓	✓
SL7	Red	Bridge Road	WB	5882	5883	563	629	66	11.7%	3	1	1	1	✓	✓
					Total	1562	1537	-25	-1.6%	1	1	1		✓	✓
					No of counts									3	3
					%Pass									67%	100%

AM ScreenLine 8- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS

SL8	Yellow	Grovehurst Road	EB	5092	5073	426	426	0	0.0%	0	1	1	1	✓	✓
SL8	Yellow	B2006	EB	5066	5736	937	917	-19	-2.1%	1	1	1	1	✓	✓
SL8	Yellow	Quinton Road	EB	5096	5730	165	159	-6	-3.5%	0	1	1	1	✓	✓
					Total	1527	1502	-25	-1.6%	1	1	1		✓	✓
					No of counts									3	3
					%Pass									100%	100%

AM ScreenLine 8- Westbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL8	Yellow	Grovehurst Road	WB	5073	5092	201	203	2	1.1%	0	1	1	1	✓	✓
SL8	Yellow	B2006	WB	5736	5066	719	689	-30	-4.2%	1	1	1	1	✓	✓
SL8	Yellow	Quinton Road	WB	5730	5096	192	196	5	2.6%	0	1	1	1	✓	✓
					Total	1111	1088	-23	-2.0%	1	1	1		✓	✓
					No of counts									3	3
					%Pass									100%	100%

IP Screenline Validation

IP ScreenLine 7- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL7	Red	Queenborough Rd	EB	16585	18633	279	321	42	14.9%	2	1	1	1	✓	✓
SL7	Red	A2500	EB	5961	16800	884	854	-30	-3.4%	1	1	1	1	✓	✓
SL7	Red	Bridge Road	EB	5883	5882	492	417	-75	-15.2%	4	1	1	1	✓	✓
					Total	1655	1592	-63	-3.8%	2	1	1		✓	✓
					No of counts									3	3
					%Pass									100%	100%

IP ScreenLine 2- Westbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL7	Red	Queenborough Rd	WB	5882	5883	213	124	-89	-41.6%	7	1	0	1	×	✓
SL7	Red	A2500	WB	18632	5815	612	628	16	2.6%	1	1	1	1	✓	✓
SL7	Red	Bridge Road	WB	5882	5883	389	347	-42	-10.9%	2	1	1	1	✓	✓
					Total	1214	1099	-115	-9.5%	3	0	1		✓	×
					No of counts									3	3
					%Pass									67%	100%

IP ScreenLine 8- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL8	Yellow	Grovehurst Road	EB	5092	5073	222	149	-73	-32.9%	5	1	0	1	×	✓
SL8	Yellow	B2006	EB	5066	5736	764	821	58	7.5%	2	1	1	1	✓	✓
SL8	Yellow	Quinton Road	EB	5096	5730	32	17	-15	-45.7%	3	1	1	1	✓	✓
					Total	1018	988	-30	-2.9%	1	1	1		✓	✓
					No of counts									3	3
					%Pass									67%	100%

IP ScreenLine 8- Westbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL8	Yellow	Grovehurst Road	WB	5073	5092	211	221	10	4.5%	1	1	1	1	✓	✓
SL8	Yellow	B2006	WB	5736	5066	680	695	15	2.2%	1	1	1	1	✓	✓
SL8	Yellow	Quinton Road	WB	5730	5096	31	10	-20	-67.1%	5	1	1	1	✓	✓
					Total	921	925	4	0.4%	0	1	1		✓	✓
					No of counts									3	3
					%Pass									100%	100%

IP ScreenLine 1-NorthBound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL1	Purple	A249	NB	5803	5002	1201	1254	53	4.4%	2	1	1	1	✓	✓
SL1	Purple	Hollingbourne Hill	NB	5698	5699	84	94	10	11.8%	1	1	1	1	✓	✓
SL1	Purple	Chequers Hill	NB	5693	5273	49	27	-22	-44.9%	4	1	1	1	✓	✓
SL1	Purple	The Street	NB	5693	5692	50	36	-14	-27.5%	2	1	1	1	✓	✓
SL1	Purple	Eastling Road	NB	5281	5286	9	41	32	359.6%	6	1	0	1	×	✓
SL1	Purple	A251	NB	6160	5691	225	270	45	20.1%	3	1	1	1	✓	✓
SL1	Purple	Boughton Bypass	NB	17537	17271	542	542	0	0.0%	0	1	1	1	✓	✓
					Total	2160	2264	104	4.8%	2	1	1		✓	✓
					No of counts									7	7
					%Pass									86%	100%

IP Screenline 1- Southbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL1	Purple	A249	SB	5002	5803	1216	1239	23	1.9%	1	1	1	1	✓	✓
SL1	Purple	Hollingbourne Hill	SB	5699	5698	29	134	105	360.7%	12	0	0	0	×	×
SL1	Purple	Chequers Hill	SB	5273	5693	45	33	-12	-26.1%	2	1	1	1	✓	✓
SL1	Purple	The Street	SB	5692	5693	60	38	-22	-36.7%	3	1	1	1	✓	✓
SL1	Purple	Eastling Road	SB	5286	5281	73	58	-15	-20.8%	2	1	1	1	✓	✓
SL1	Purple	A251	SB	5691	6160	324	294	-30	-9.4%	2	1	1	1	✓	✓
SL1	Purple	Boughton Bypass	SB	17272	17252	477	476	-1	-0.2%	0	1	1	1	✓	✓
					Total	2224	2271	47	2.1%	1	1	1		✓	✓
					No of counts									7	7
					%Pass									86%	86%

PM Screenline Validation

PM ScreenLine 1-NorthBound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL1	Purple	A249	NB	5803	5002	2485	2587	102	4.1%	2	1	1	1	✓	✓
SL1	Purple	Hollingbourne Hill	NB	5698	5699	252	175	-77	-30.5%	5	1	0	1	×	✓
SL1	Purple	Chequers Hill	NB	5693	5273	78	60	-18	-22.5%	2	1	1	1	✓	✓
SL1	Purple	The Street	NB	5693	5692	96	75	-21	-21.4%	2	1	1	1	✓	✓
SL1	Purple	Eastling Road	NB	5281	5286	102	102	0	-0.4%	0	1	1	1	✓	✓
SL1	Purple	A251	NB	6160	5691	472	404	-68	-14.5%	3	1	1	1	✓	✓
SL1	Purple	Boughton Bypass	NB	17537	17271	867	868	1	0.1%	0	1	1	1	✓	✓
					Total	4352	4271	-81	-1.9%	1	1	1		✓	✓
					No of counts									7	7
					%Pass									86%	100%

PM Screenline 1- Southbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL1	Purple	A249	SB	5002	5803	1592	1381	-211	-13.3%	5	1	0	1	×	✓
SL1	Purple	Hollingbourne Hill	SB	5699	5698	122	299	177	145.3%	12	0	0	0	×	×
SL1	Purple	Chequers Hill	SB	5273	5693	63	45	-18	-27.9%	2	1	1	1	✓	✓
SL1	Purple	The Street	SB	5692	5693	61	47	-14	-23.7%	2	1	1	1	✓	✓
SL1	Purple	Eastling Road	SB	5286	5281	79	59	-20	-25.8%	2	1	1	1	✓	✓
SL1	Purple	A251	SB	5691	6160	410	342	-68	-16.6%	4	1	1	1	✓	✓
SL1	Purple	Boughton Bypass	SB	17272	17252	717	719	2	0.3%	0	1	1	1	✓	✓
					Total	3044	2892	-152	-5.0%	3	1	1		✓	✓
					No of counts									7	7
					%Pass									71%	86%

PM ScreenLine 7- Eastbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL7	Red	Queenborough Rd	EB	16585	18633	405	393	-12	-3.0%	1	1	1	1	✓	✓
SL7	Red	A2500	EB	5961	16800	675	679	4	0.6%	0	1	1	1	✓	✓
SL7	Red	Bridge Road	EB	5883	5882	623	566	-57	-9.2%	2	1	1	1	✓	✓
					Total	1703	1638	-65	-3.8%	2	1	1		✓	✓
					No of counts									3	3
					%Pass									100%	100%

PM ScreenLine 7- Westbound

Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL7	Red	Queenborough Rd	WB	5882	5883	560	442	-118	-21.0%	5	0	0	1	×	×
SL7	Red	A2500	WB	18632	5815	1049	1044	-5	-0.5%	0	1	1	1	✓	✓
SL7	Red	Bridge Road	WB	5882	5883	361	395	34	9.5%	2	1	1	1	✓	✓
					Total	1970	1881	-89	-4.5%	2	1	1		✓	✓
					No of counts									3	3
					%Pass									67%	67%

PM ScreenLine 8- Eastbound

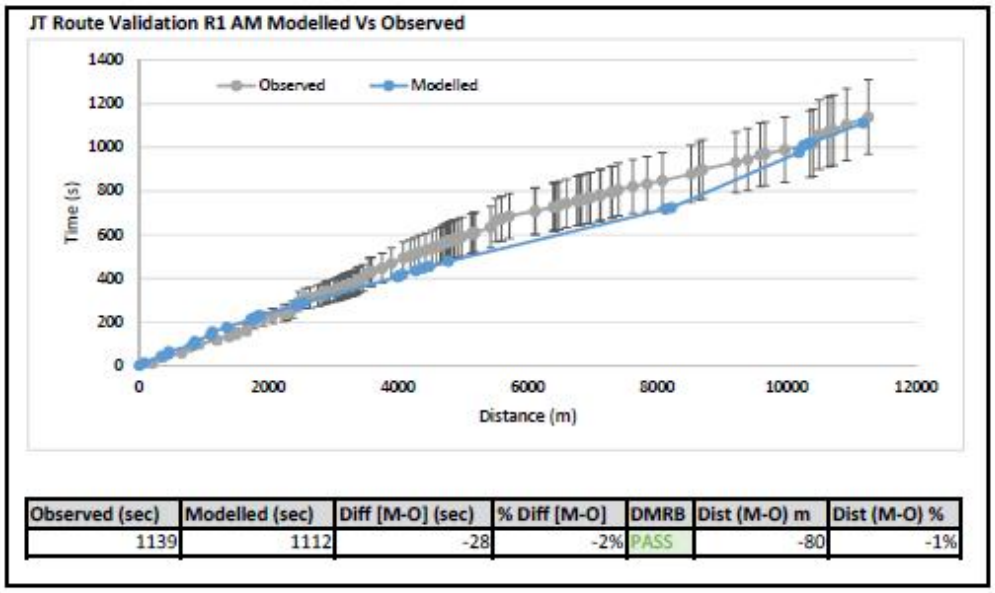
Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL8	Yellow	Grovehurst Road	EB	5092	5073	209	207	-1	-0.7%	0	1	1	1	✓	✓
SL8	Yellow	B2006	EB	5066	5736	973	1026	53	5.5%	2	1	1	1	✓	✓
SL8	Yellow	Quinton Road	EB	5096	5730	159	172	13	8.0%	1	1	1	1	✓	✓
					Total	1340	1405	65	4.8%	2	1	1		✓	✓
					No of counts									3	3
					%Pass									100%	100%

PM ScreenLine 8- Westbound

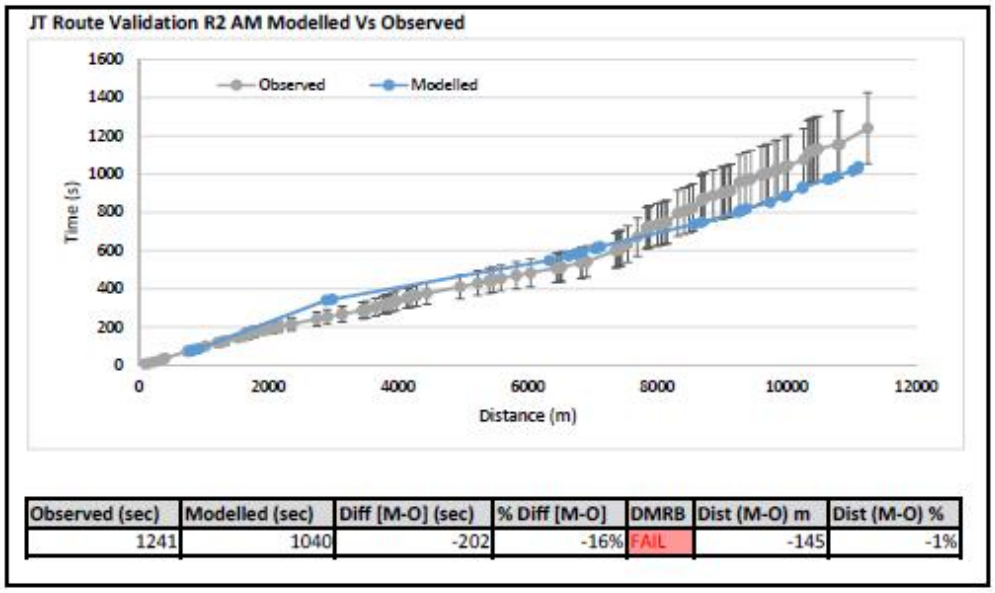
Ref	Name	Description	Dir.	A Node	B Node	Observed	Modelled	Diff	% Diff	GEH	DMRB	GEH < 5	GEH < 7.5	GEH Pass	Flow PASS
SL8	Yellow	Grovehurst Road	WB	5073	5092	402	403	1	0.2%	0	1	1	1	✓	✓
SL8	Yellow	B2006	WB	5736	5066	993	984	-9	-0.9%	0	1	1	1	✓	✓
SL8	Yellow	Quinton Road	WB	5730	5096	97	98	1	1.3%	0	1	1	1	✓	✓
					Total	1492	1484	-7	-0.5%	0	1	1		✓	✓
					No of counts									3	3
					%Pass									100%	100%

11 Appendix B

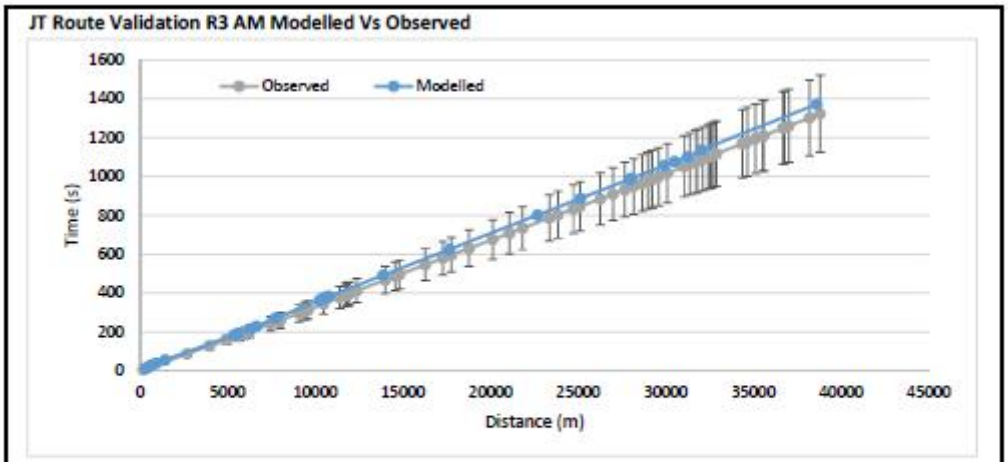
AM JT Route Validation



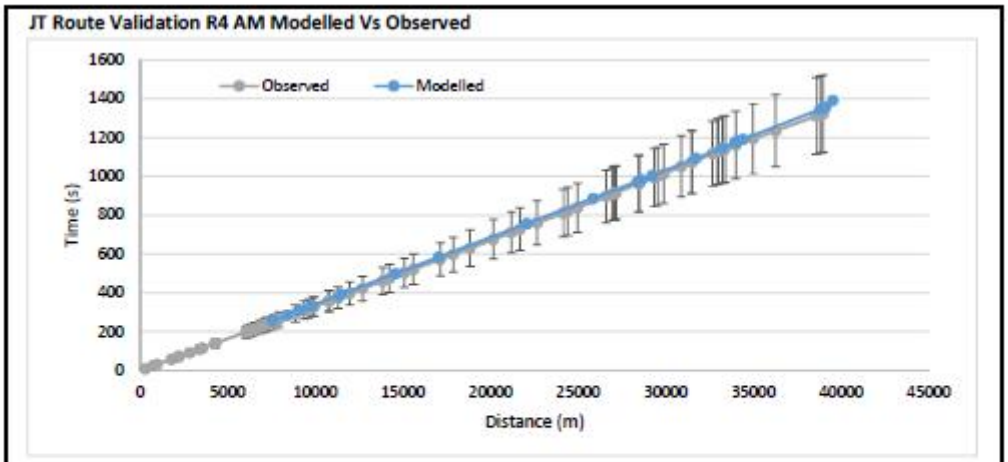
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1139	1112	-28	-2%	PASS	-80	-1%



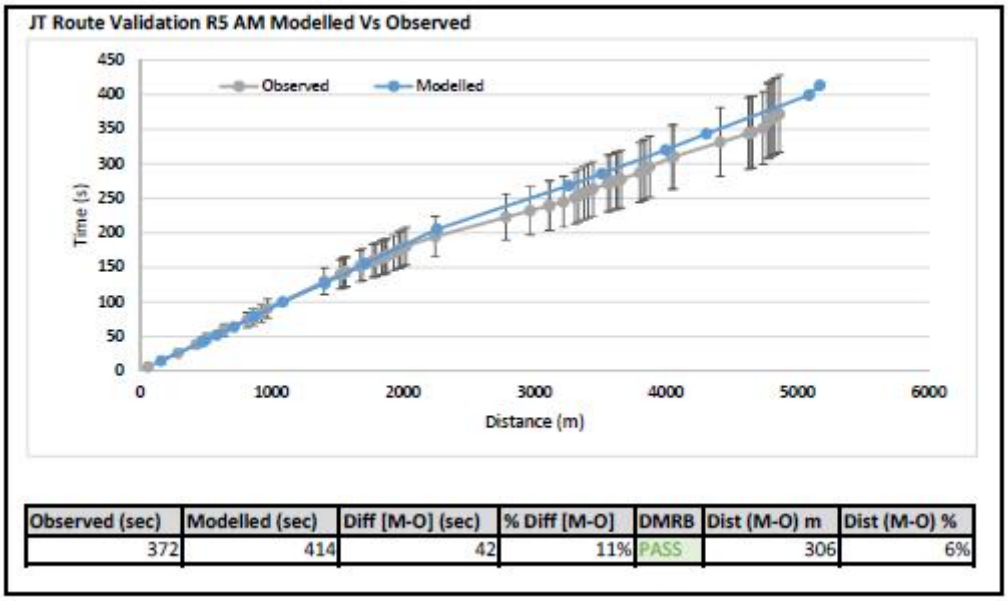
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1241	1040	-202	-16%	FAIL	-145	-1%



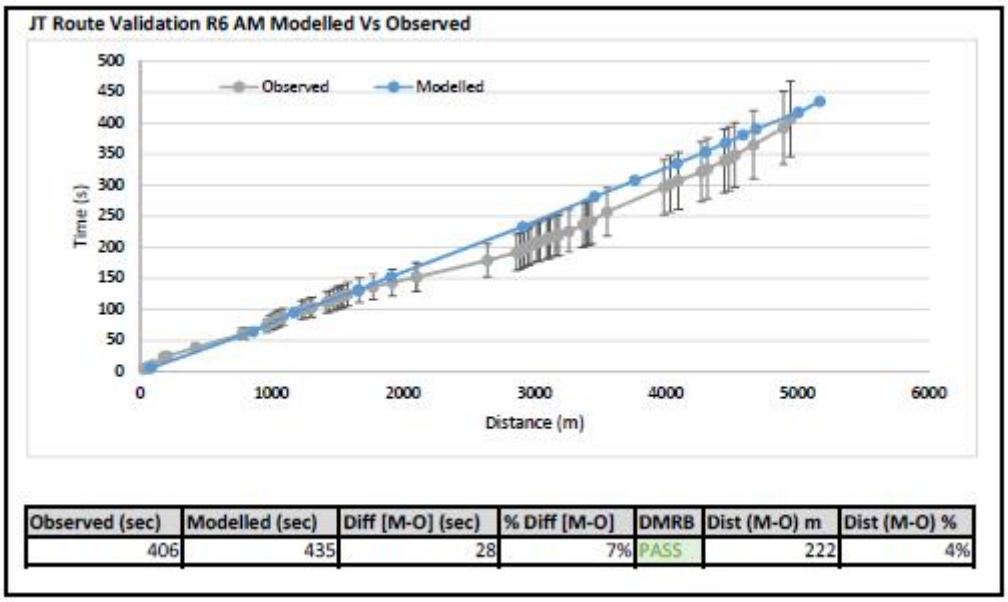
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1325	1373	48	4%	PASS	-185	0%



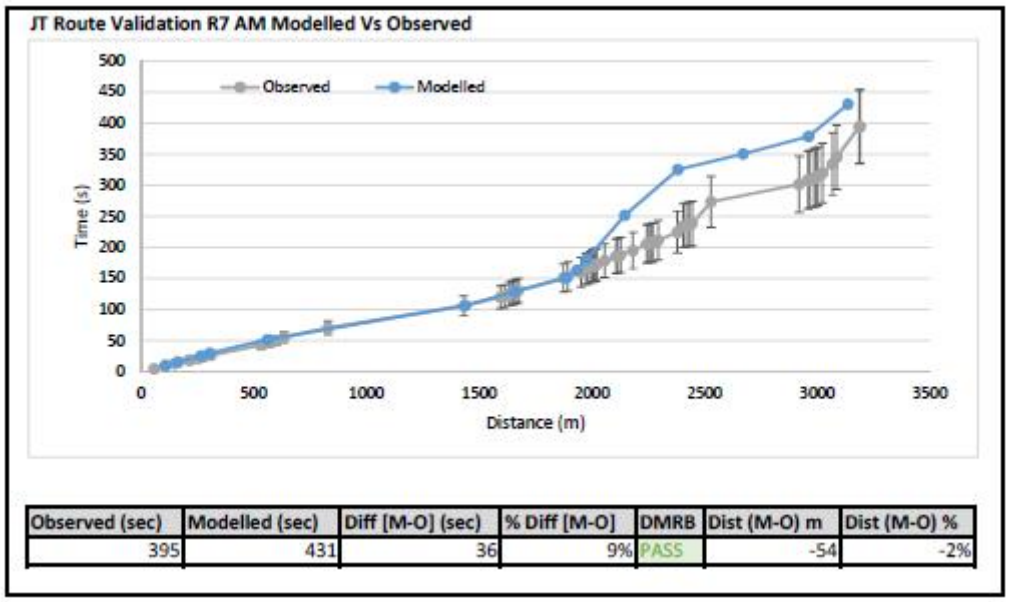
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1323	1391	68	5%	PASS	551	1%



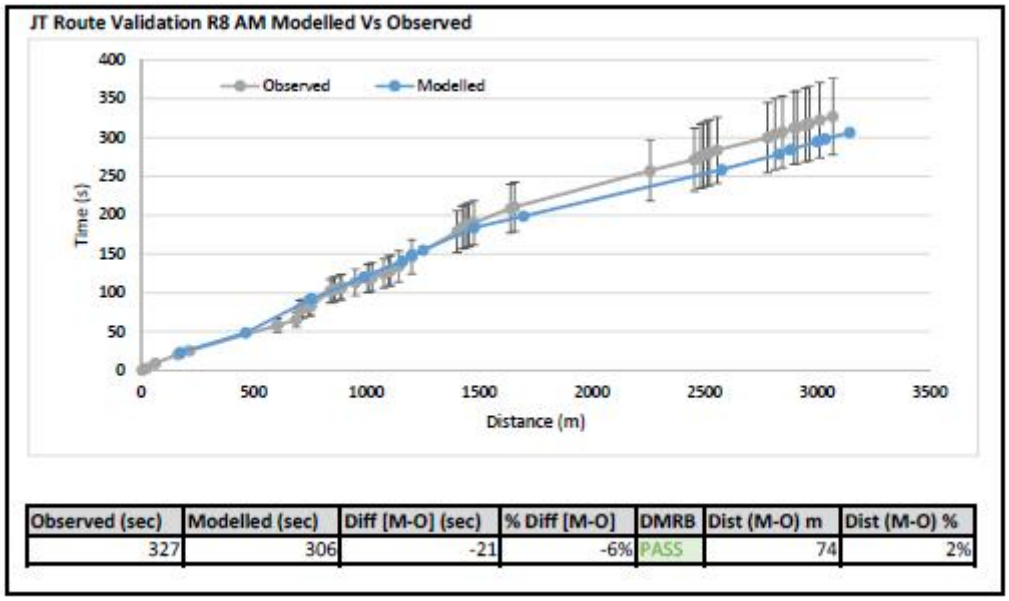
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
372	414	42	11%	PASS	306	6%



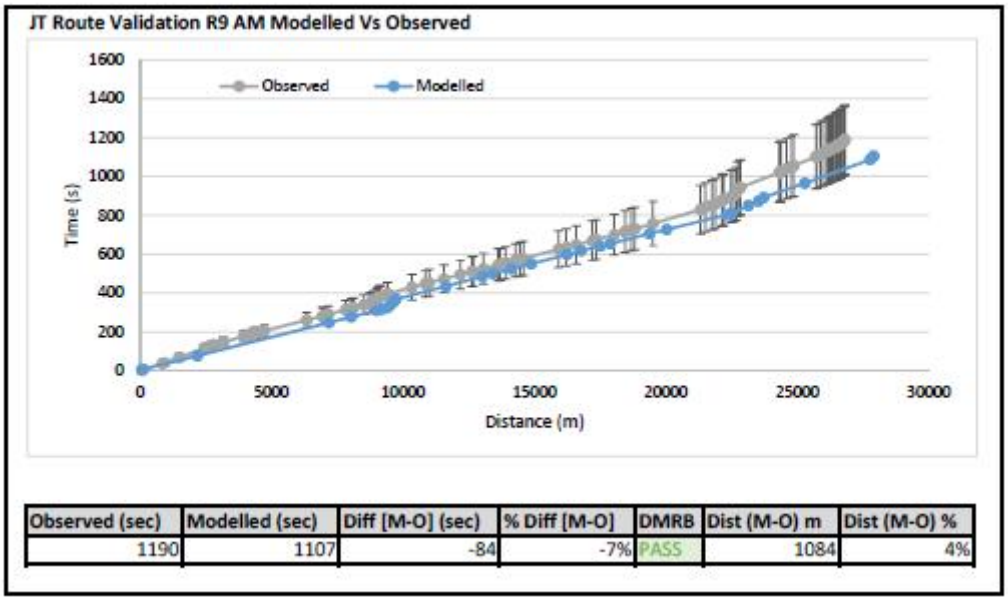
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
406	435	28	7%	PASS	222	4%



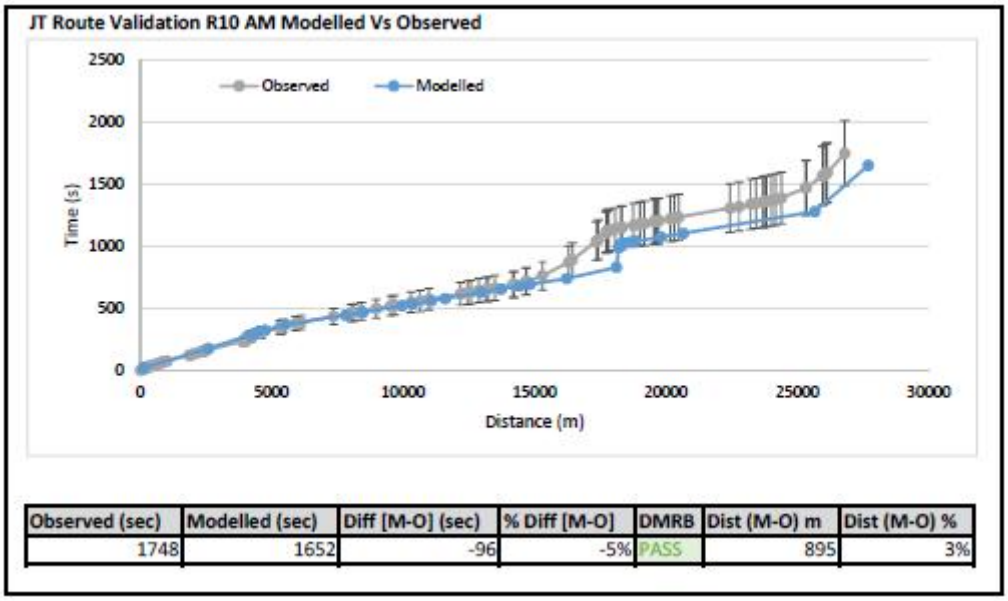
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
395	431	36	9%	PASS	-54	-2%



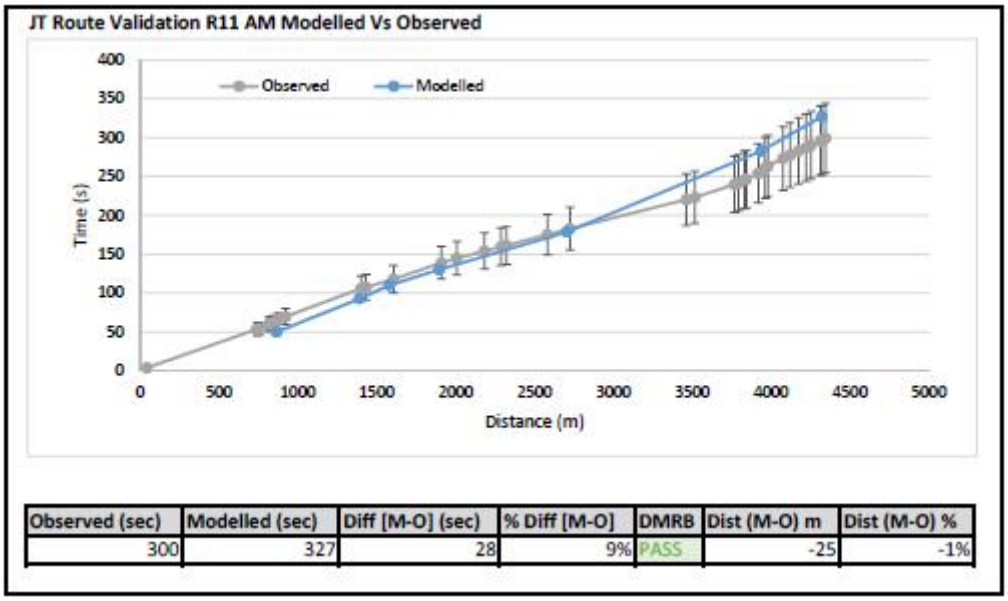
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
327	306	-21	-6%	PASS	74	2%



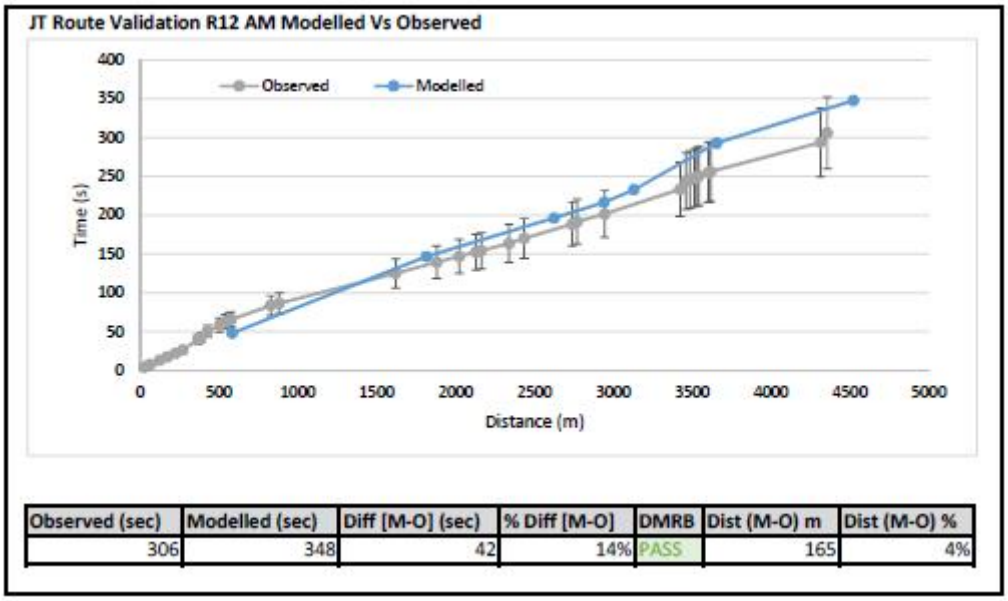
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1190	1107	-84	-7%	PASS	1084	4%



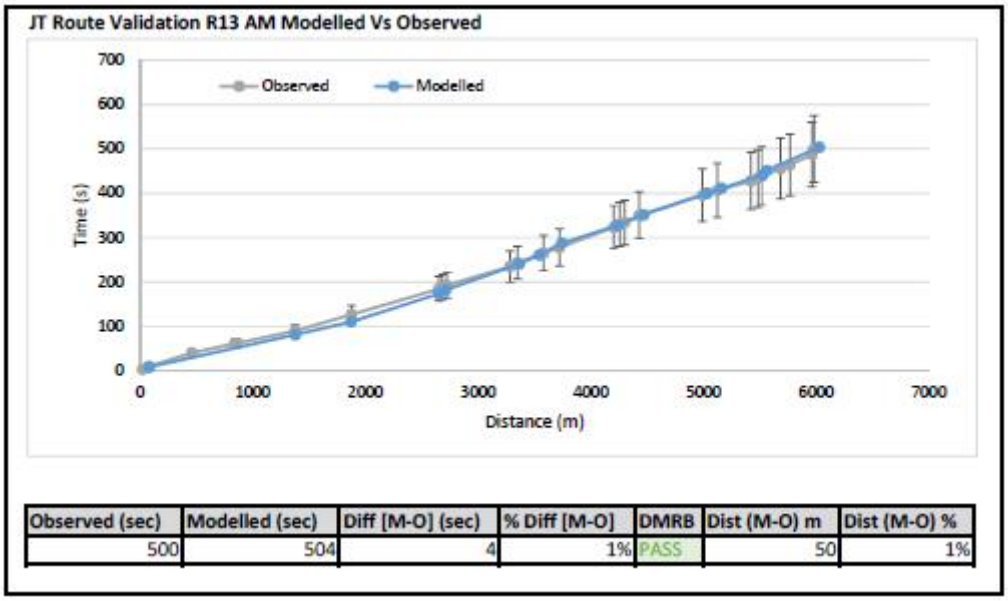
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1748	1652	-96	-5%	PASS	895	3%



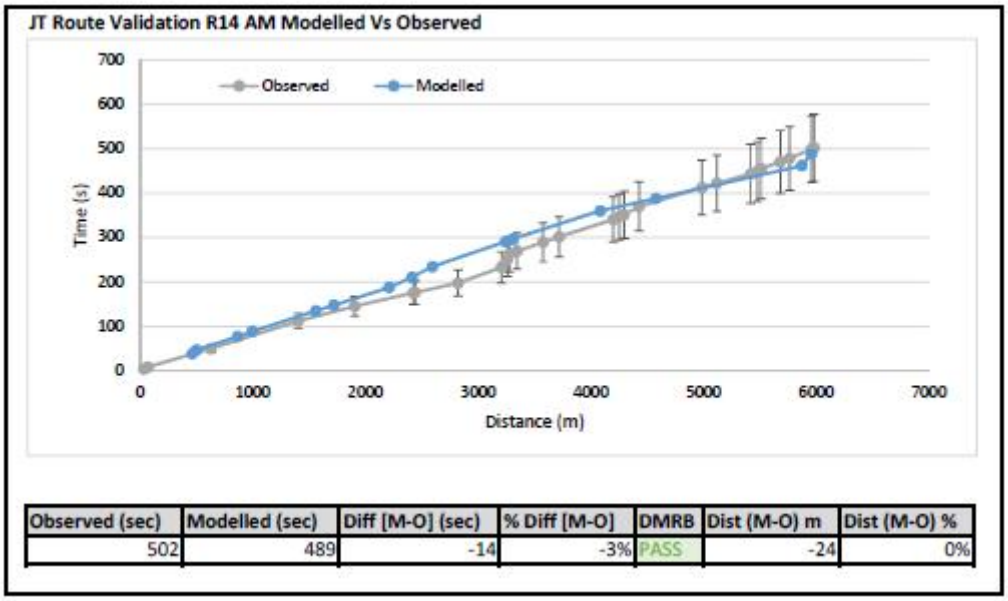
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
300	327	28	9%	PASS	-25	-1%



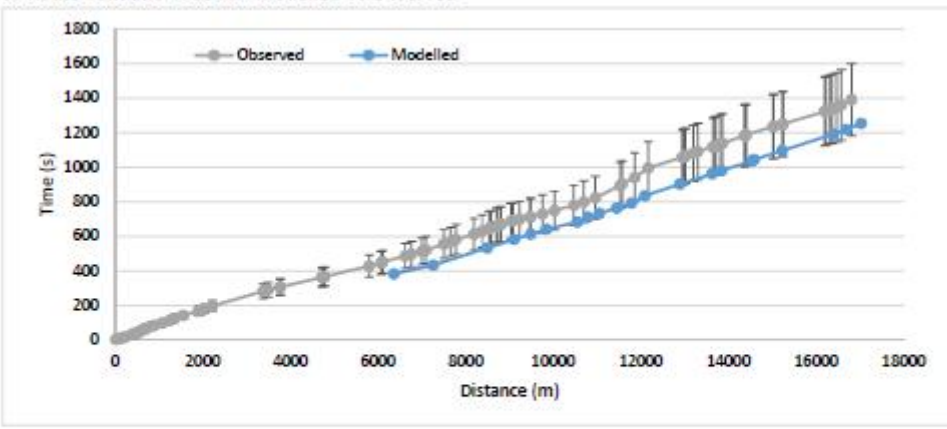
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
306	348	42	14%	PASS	165	4%



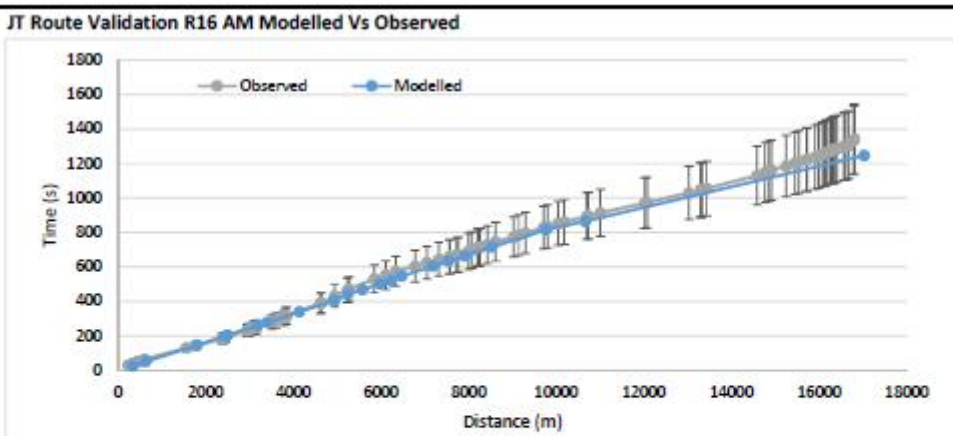
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
500	504	4	1%	PASS	50	1%



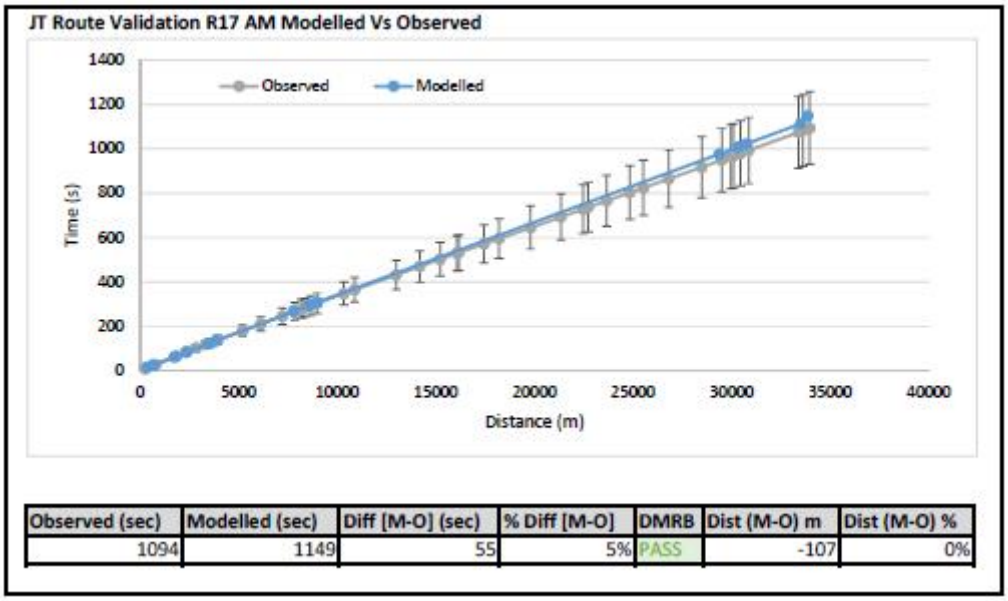
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
502	489	-14	-3%	PASS	-24	0%



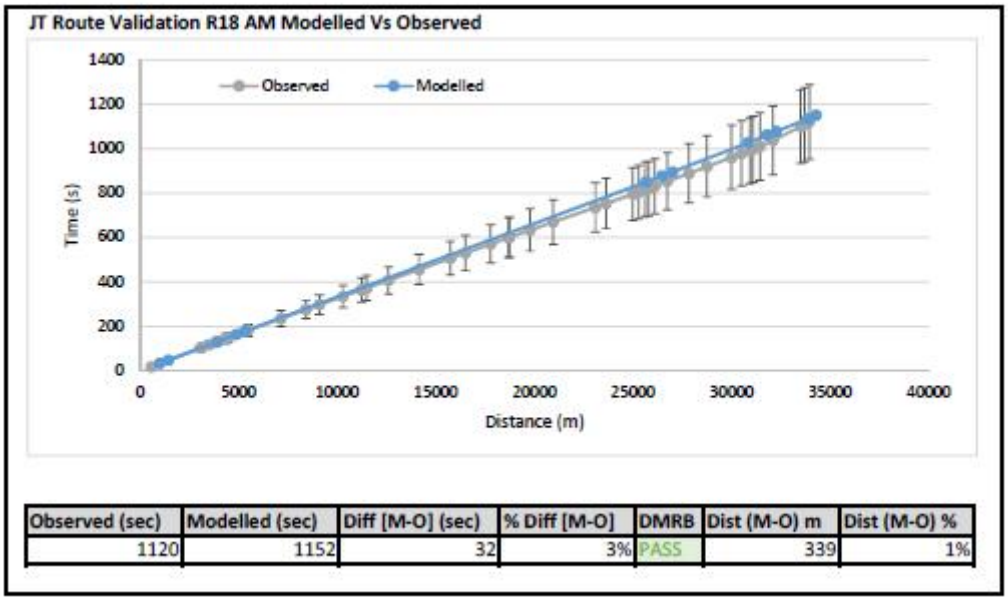
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1392	1255	-137	-10%	PASS	223	1%



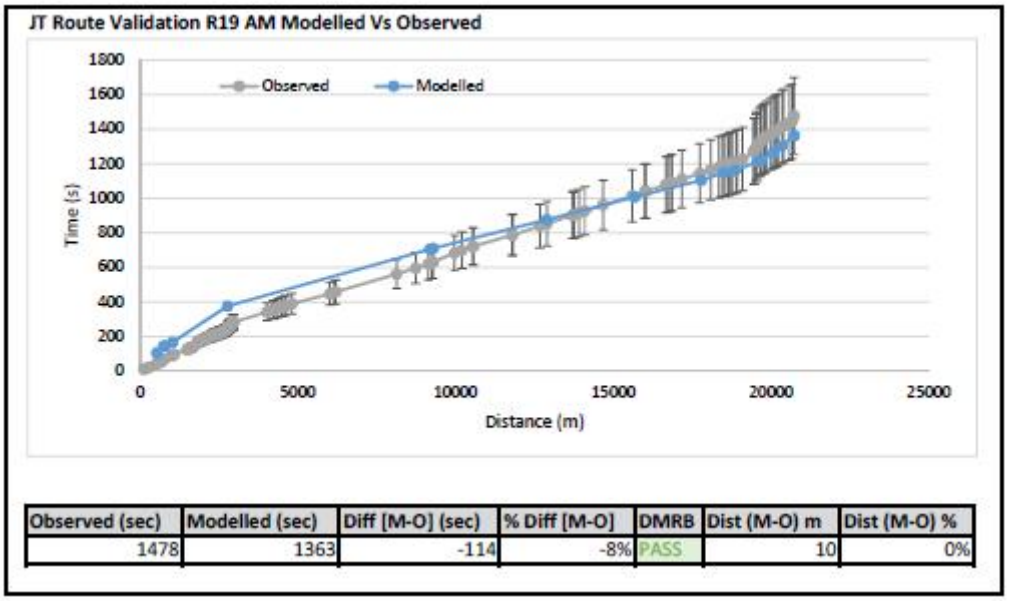
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1343	1247	-97	-7%	PASS	222	1%



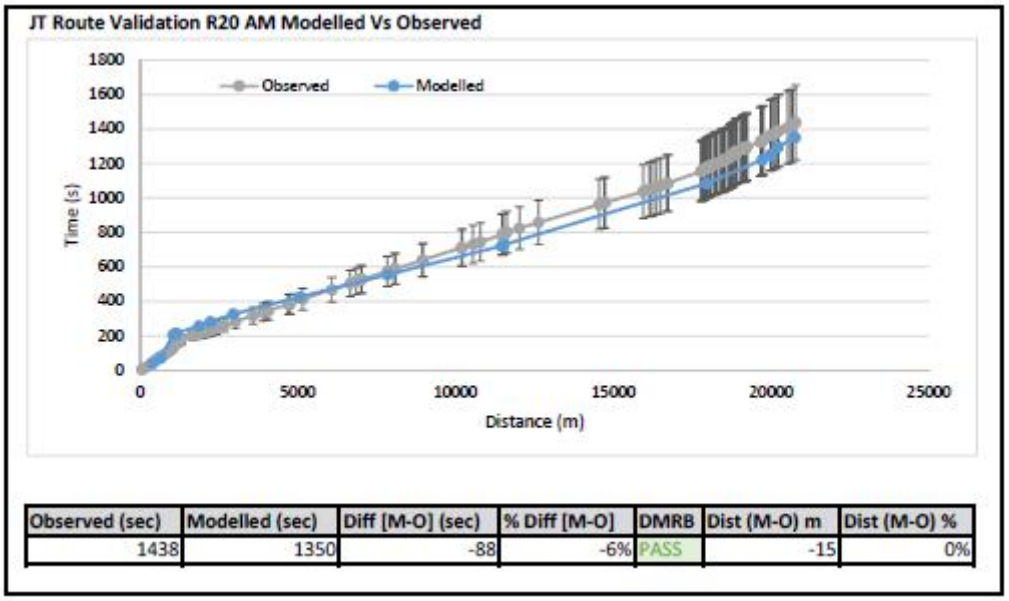
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1094	1149	55	5%	PASS	-107	0%



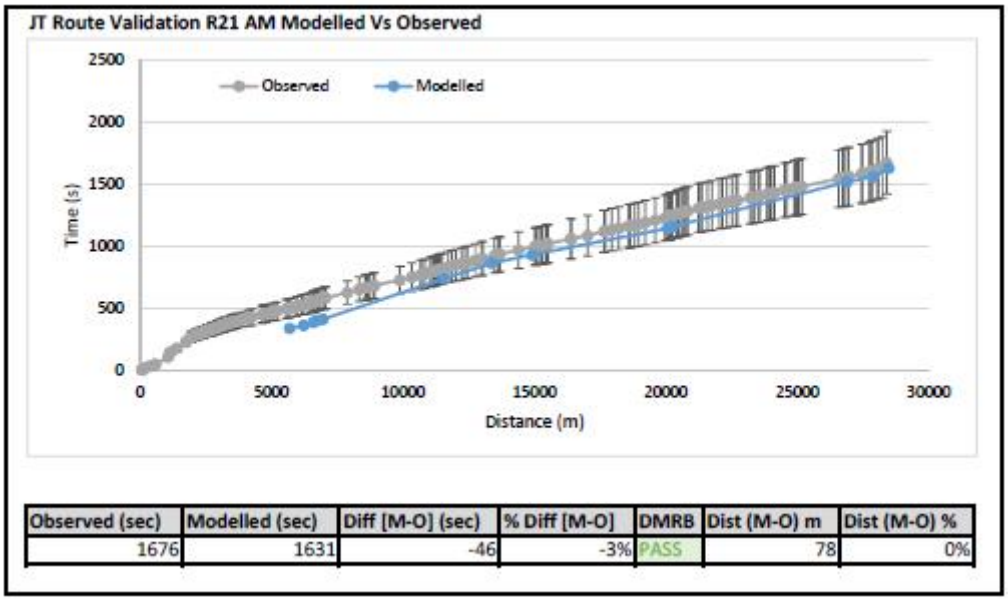
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1120	1152	32	3%	PASS	339	1%



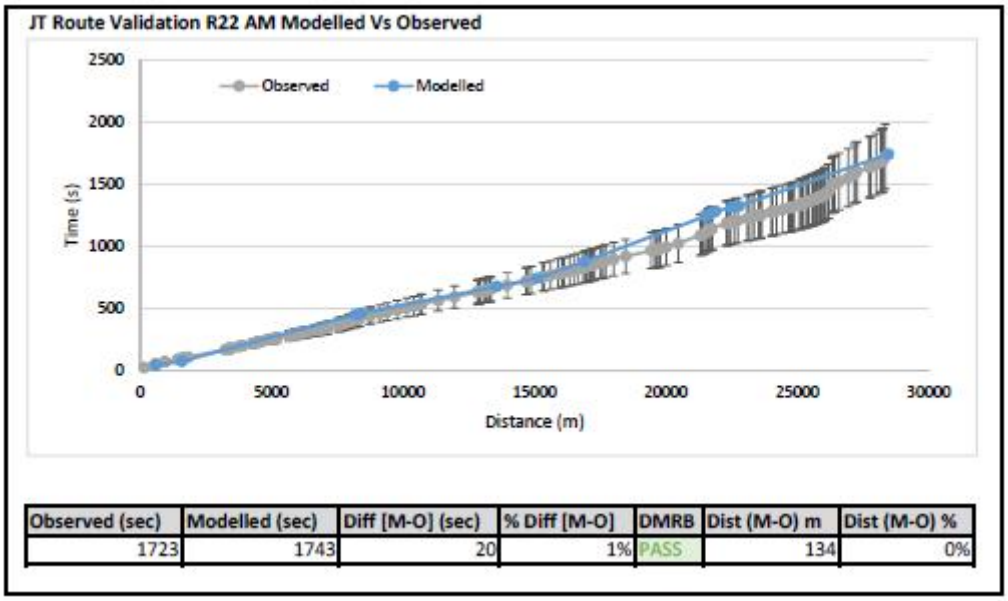
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1478	1363	-114	-8%	PASS	10	0%



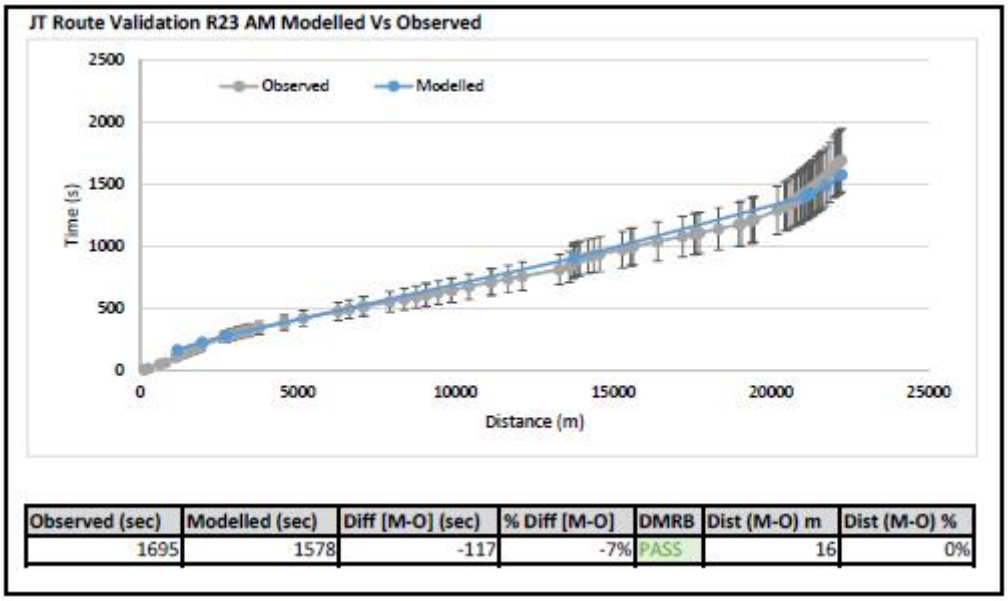
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1438	1350	-88	-6%	PASS	-15	0%



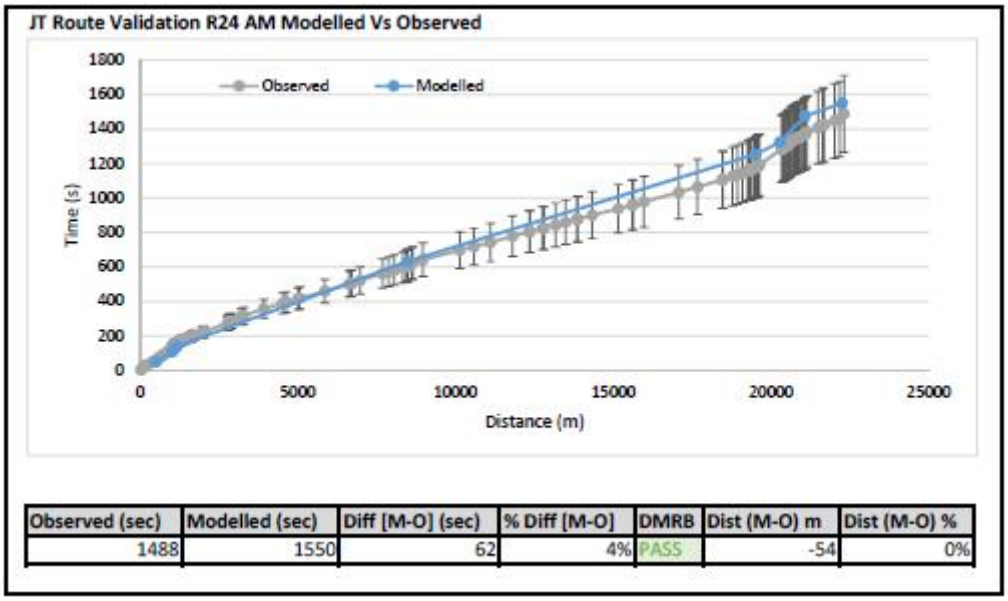
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1676	1631	-46	-3%	PASS	78	0%



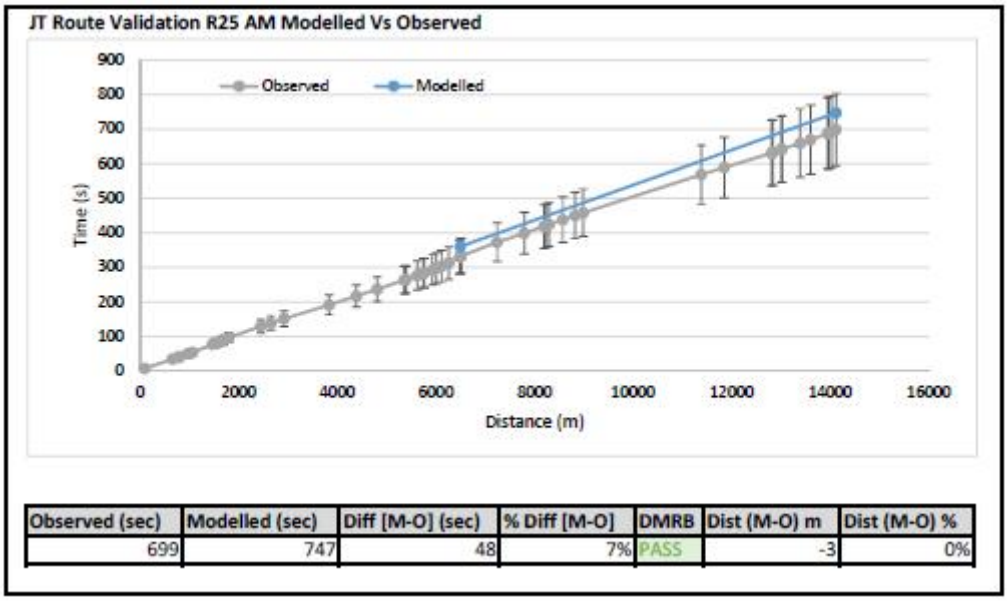
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1723	1743	20	1%	PASS	134	0%



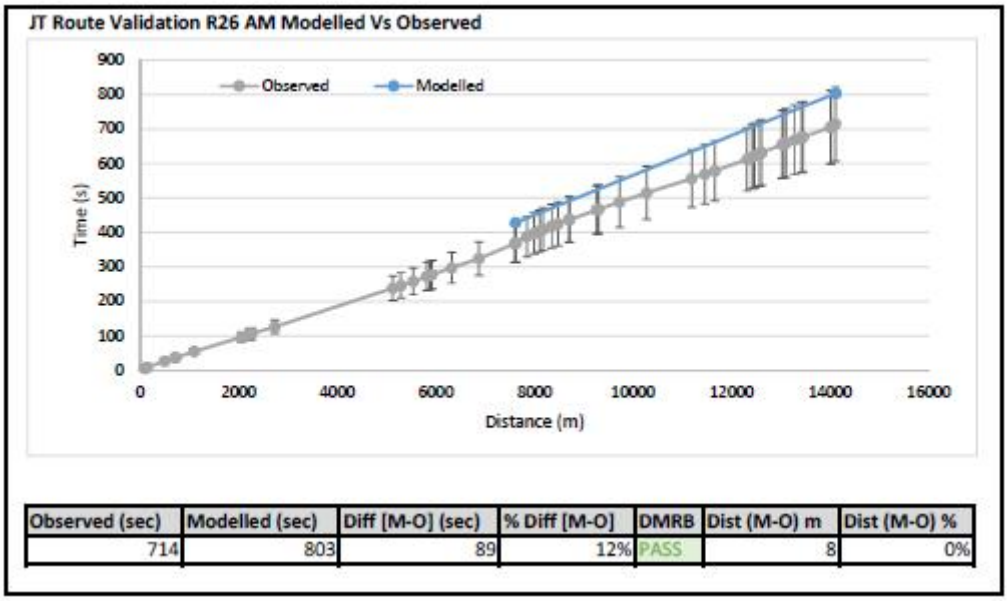
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1695	1578	-117	-7%	PASS	16	0%



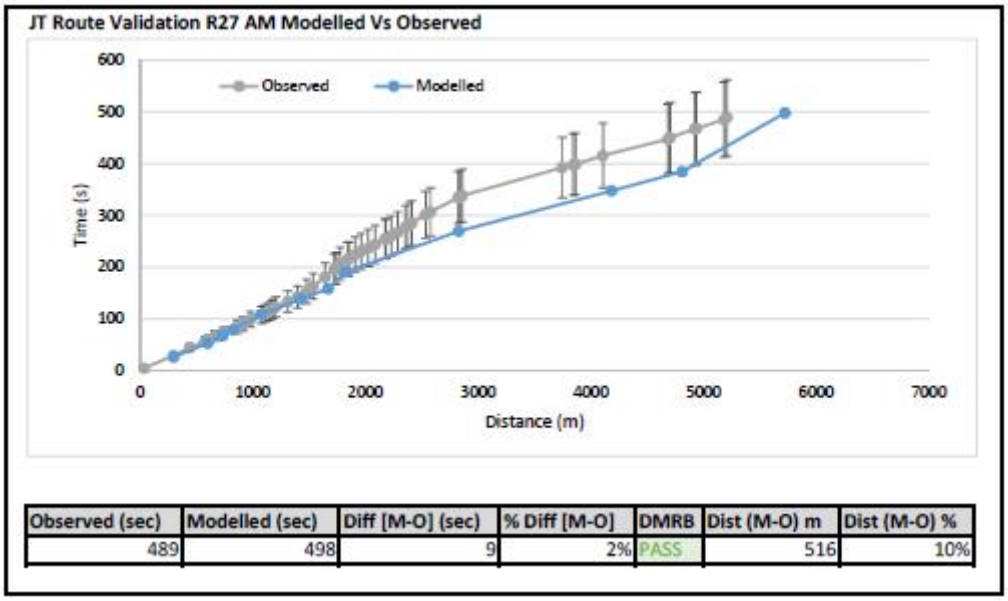
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1488	1550	62	4%	PASS	-54	0%



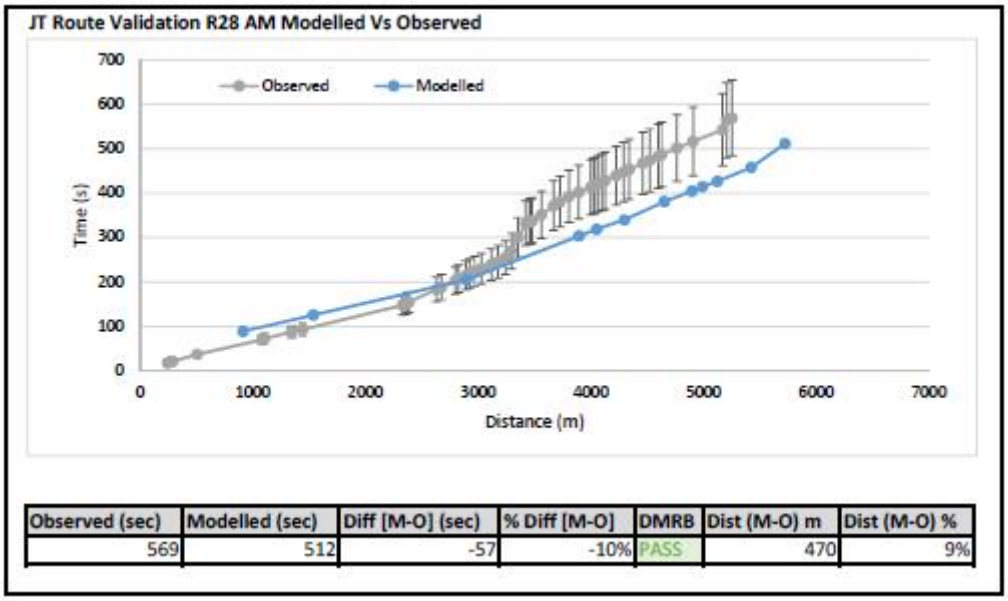
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
699	747	48	7%	PASS	-3	0%



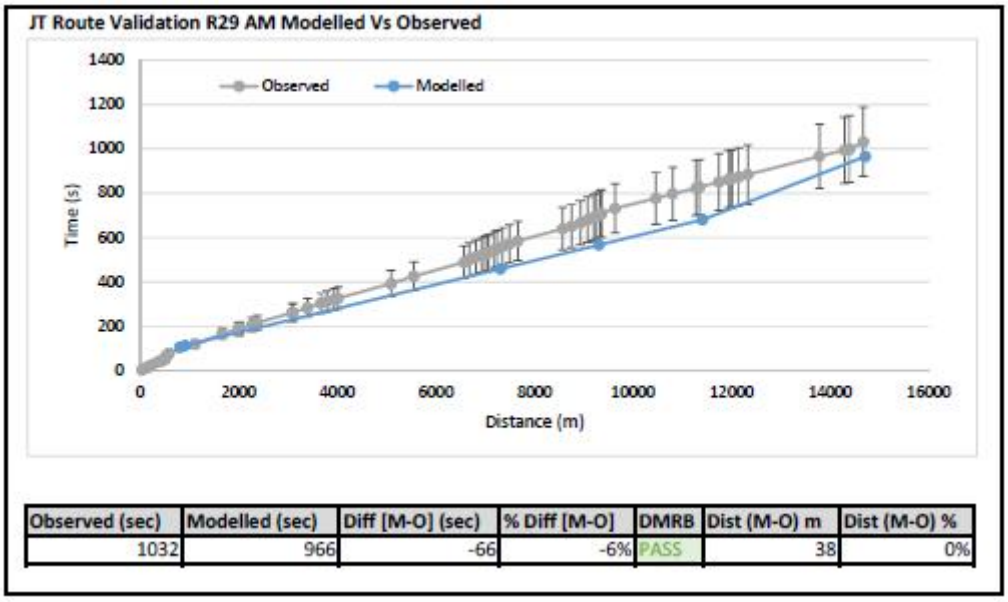
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
714	803	89	12%	PASS	8	0%



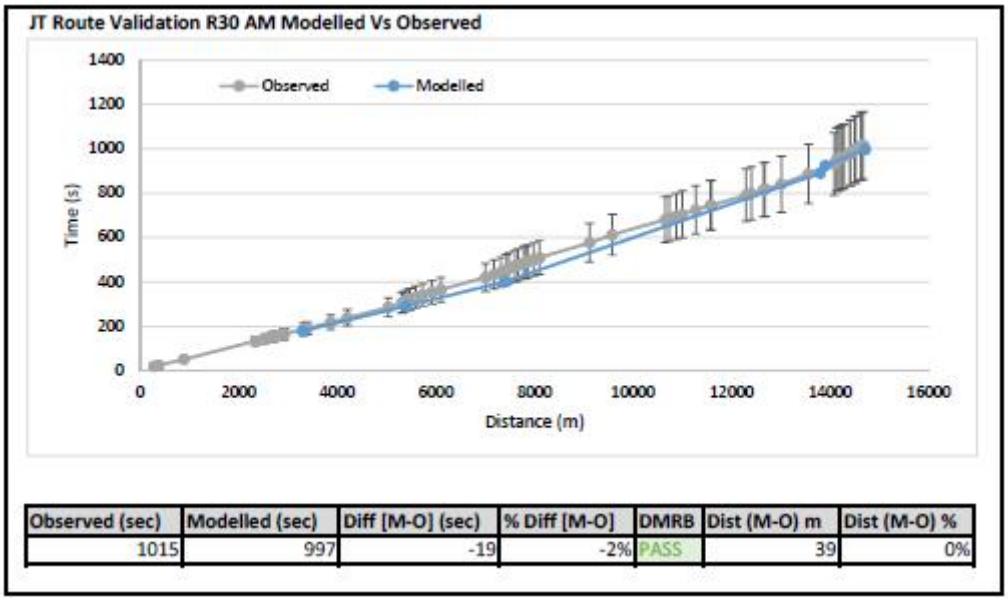
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
489	498	9	2%	PASS	516	10%



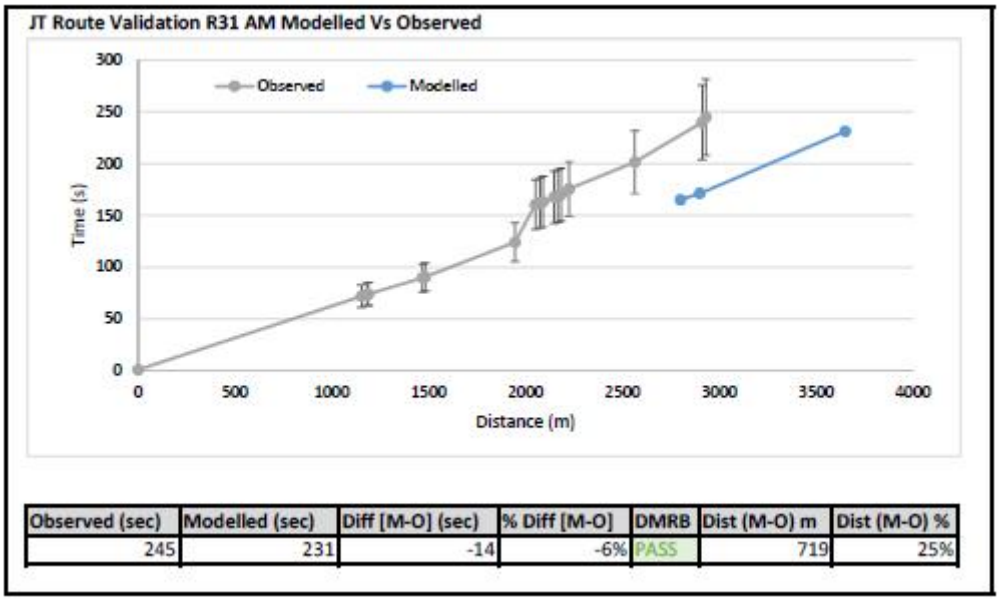
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
569	512	-57	-10%	PASS	470	9%



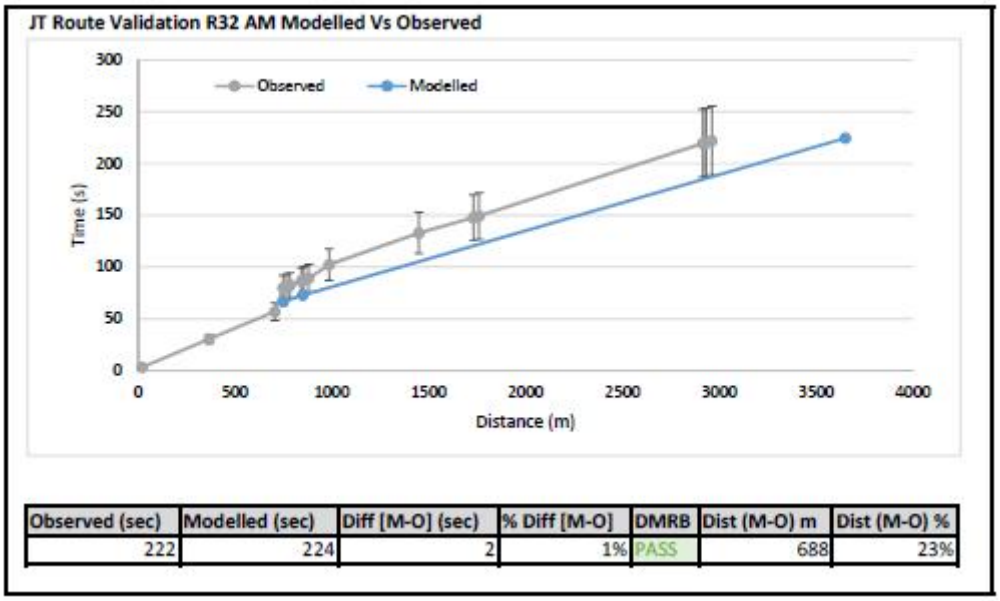
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1032	966	-66	-6%	PASS	38	0%



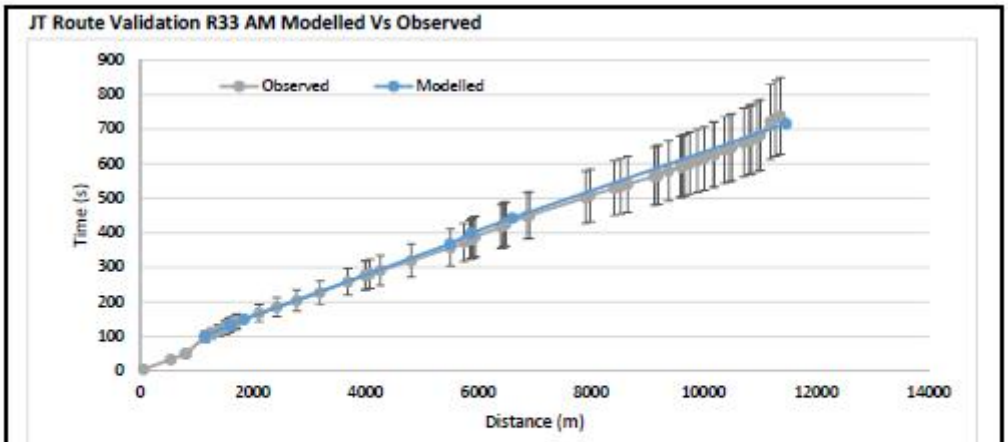
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1015	997	-19	-2%	PASS	39	0%



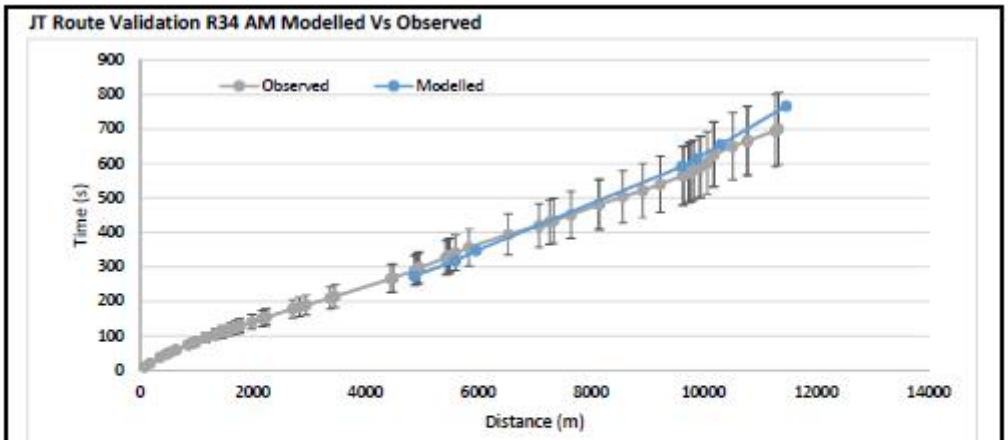
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
245	231	-14	-6%	PASS	719	25%



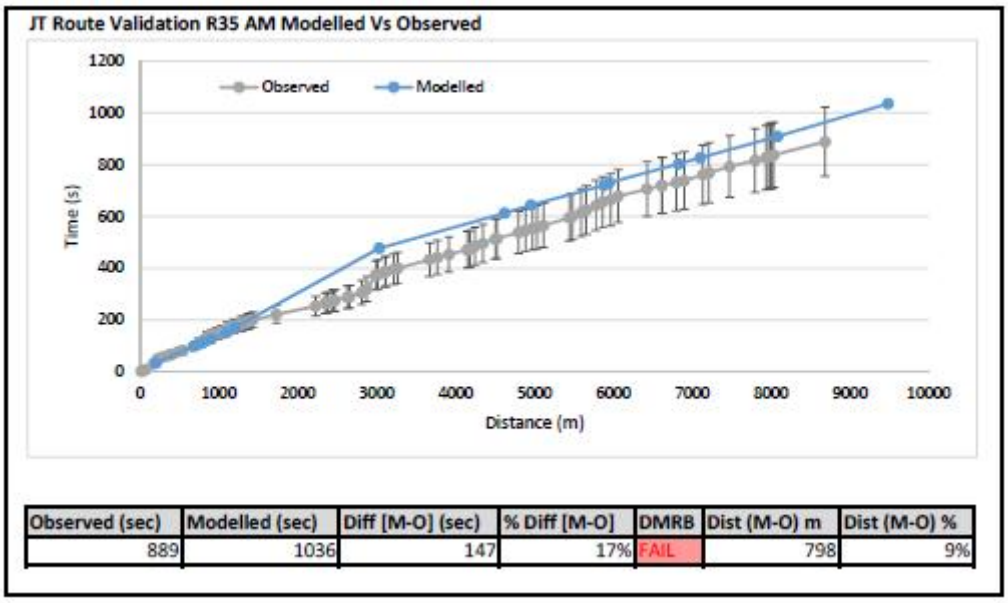
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
222	224	2	1%	PASS	688	23%



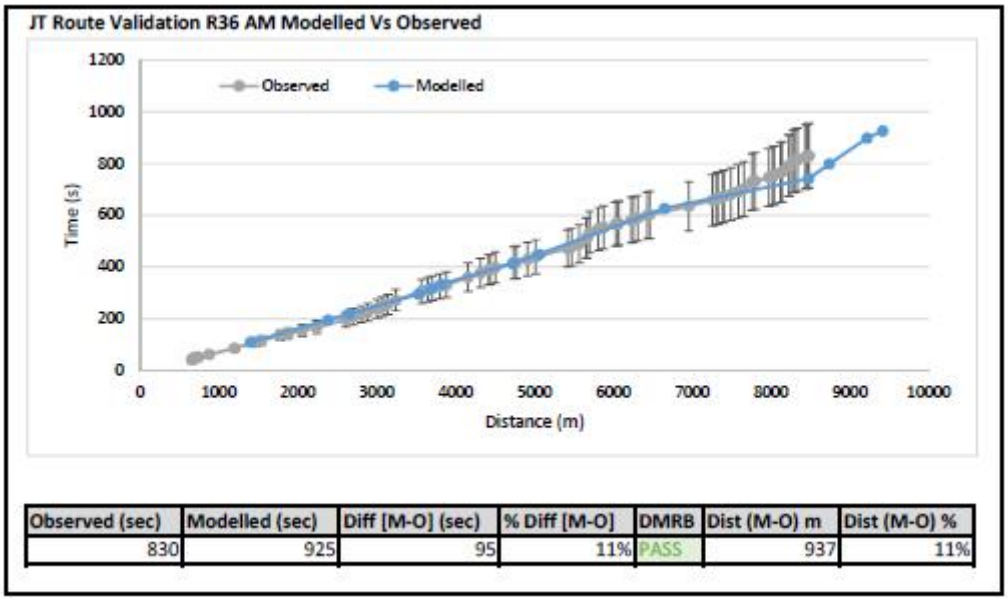
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
739	716	-22	-3%	PASS	104	1%



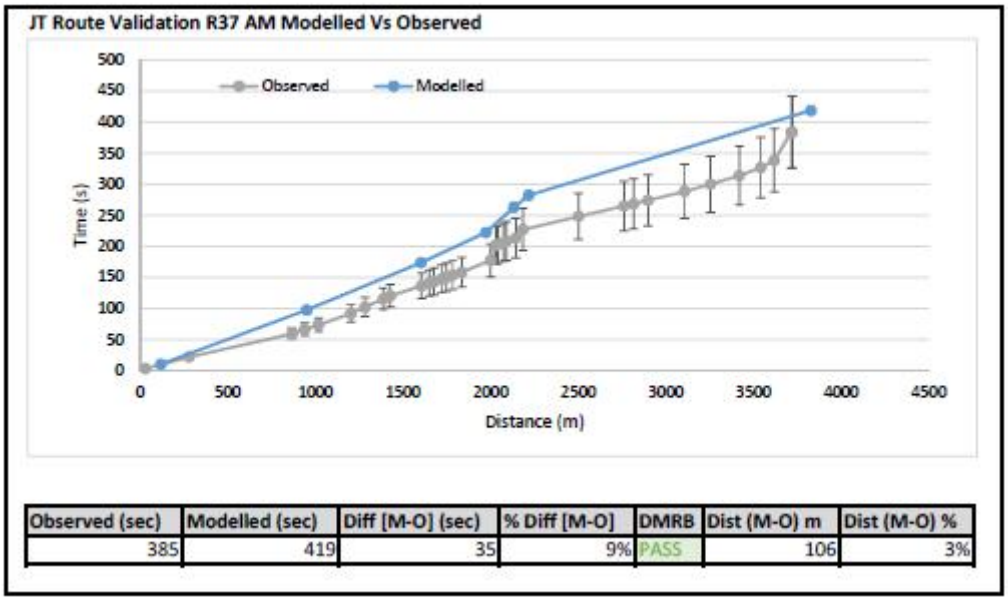
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
700	767	66	9%	PASS	136	1%



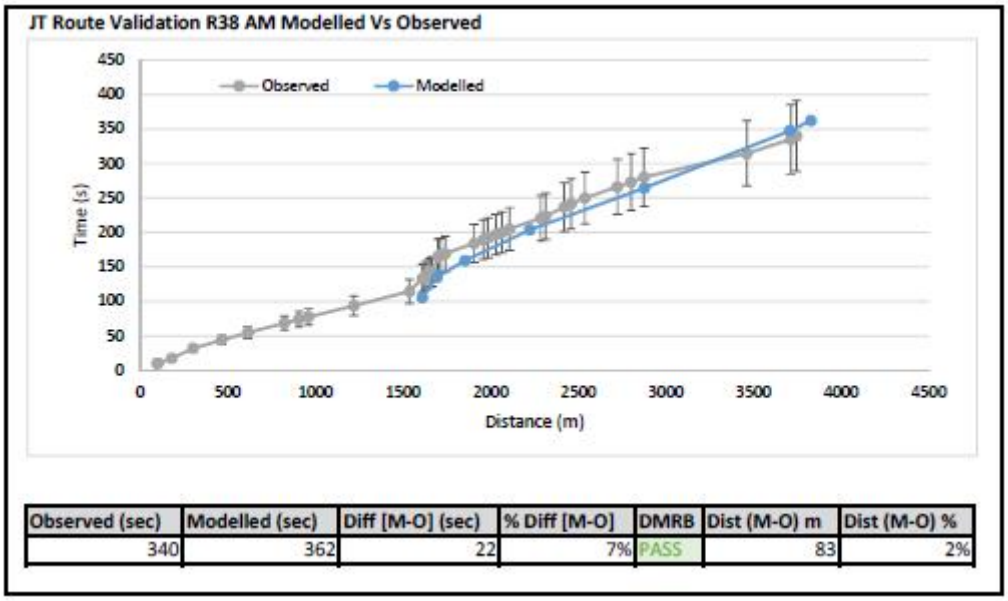
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
889	1036	147	17%	FAIL	798	9%



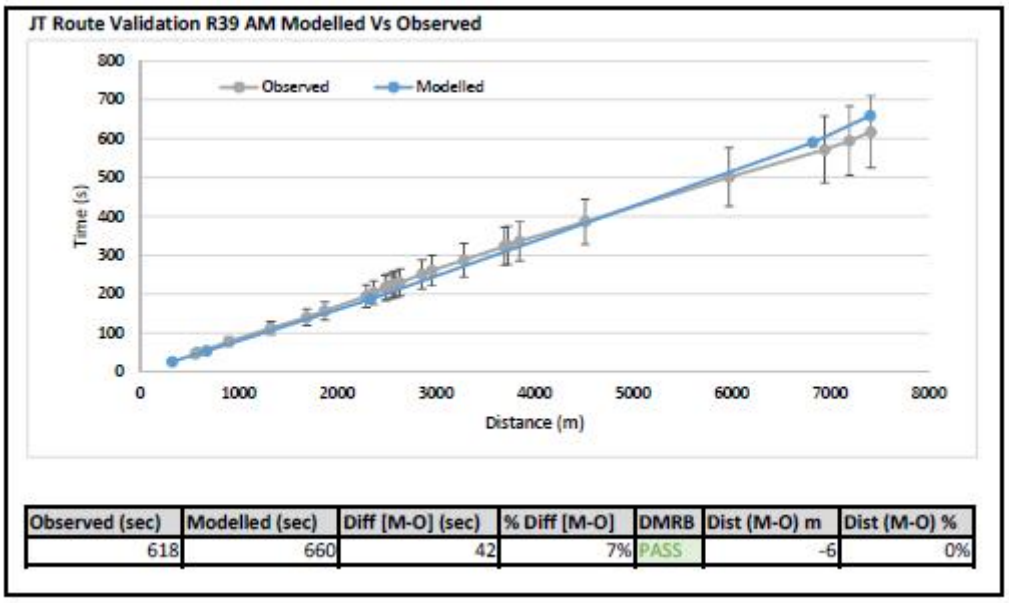
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
830	925	95	11%	PASS	937	11%



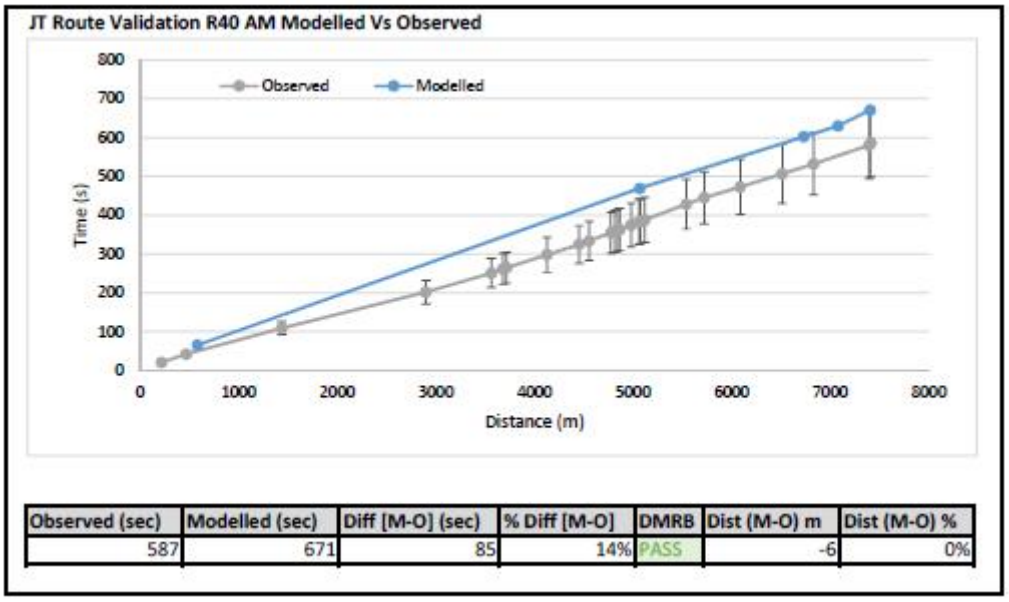
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
385	419	35	9%	PASS	106	3%



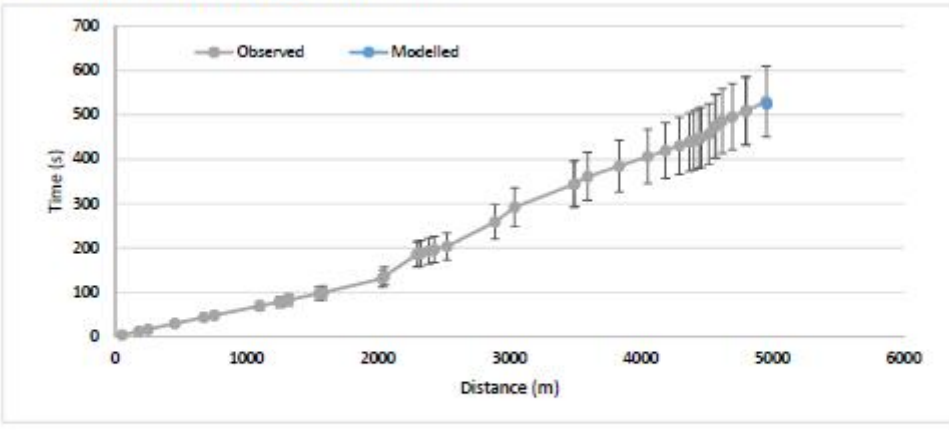
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
340	362	22	7%	PASS	83	2%



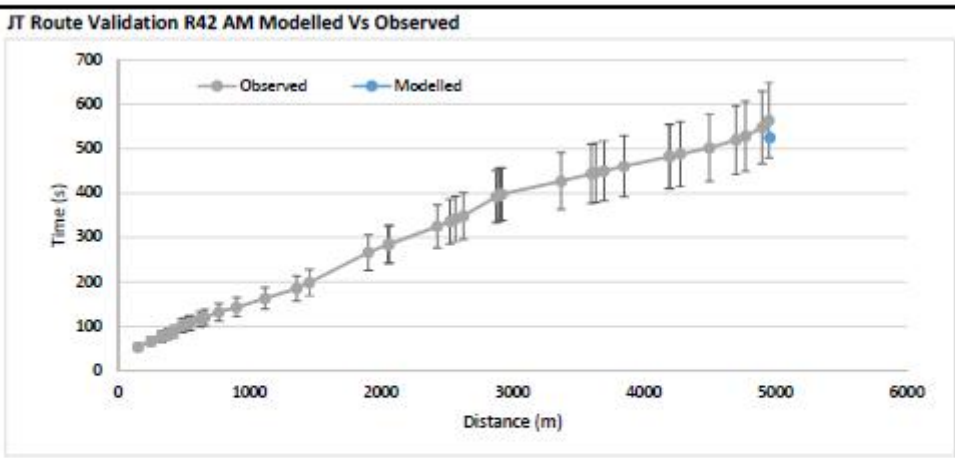
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
618	660	42	7%	PASS	-6	0%



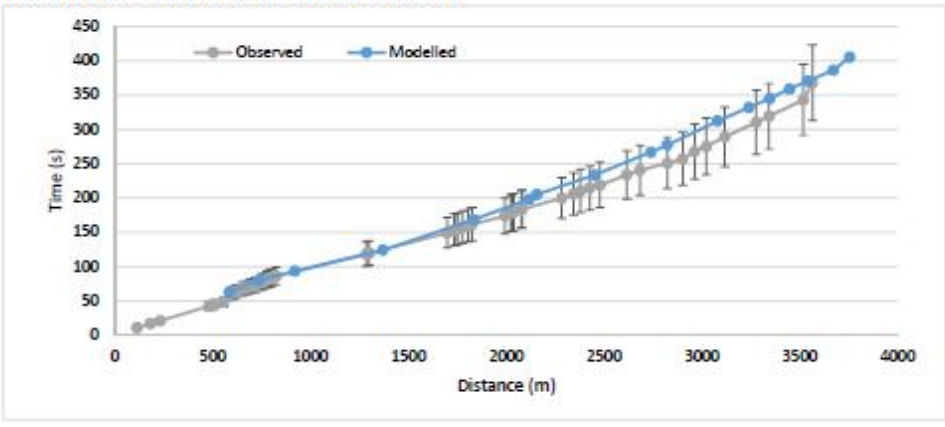
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
587	671	85	14%	PASS	-6	0%



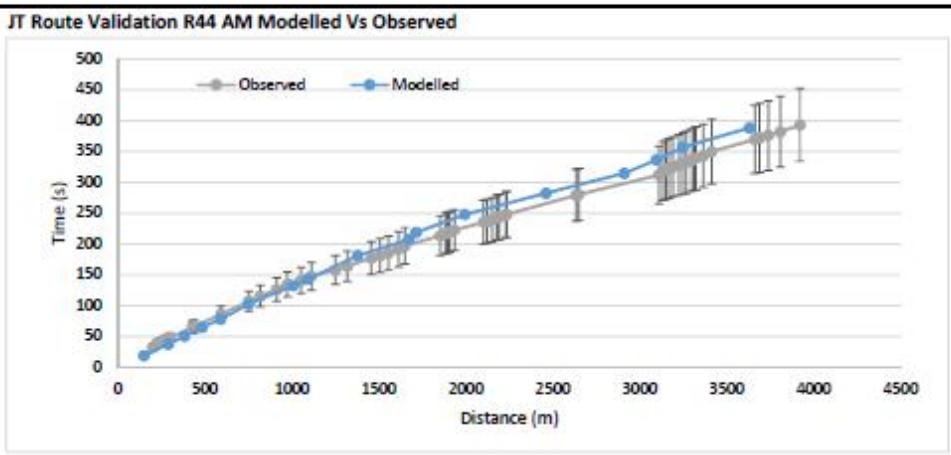
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
530	525	-5	-1%	PASS	5	0%



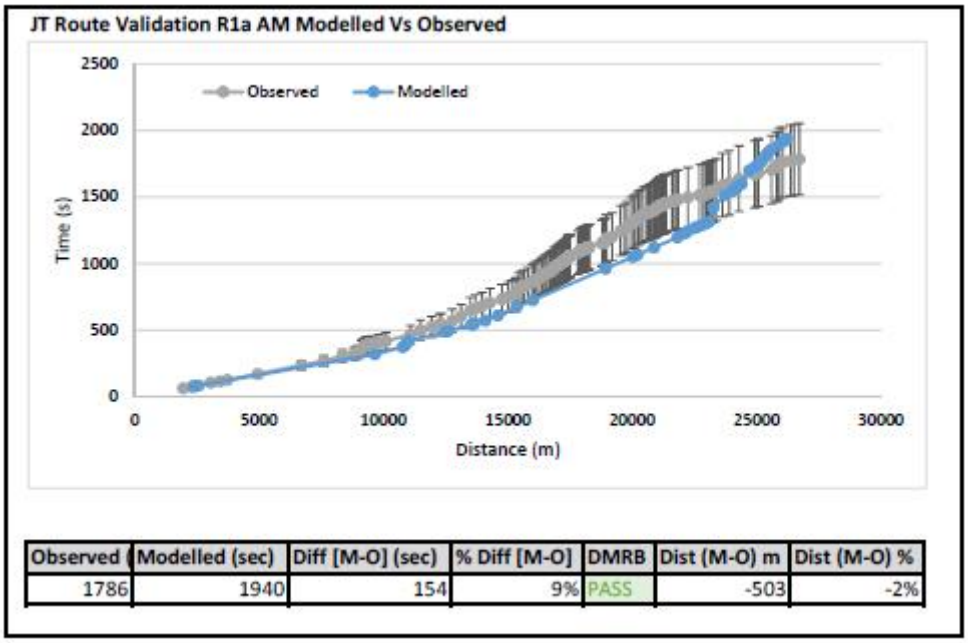
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
564	525	-39	-7%	PASS	8	0%



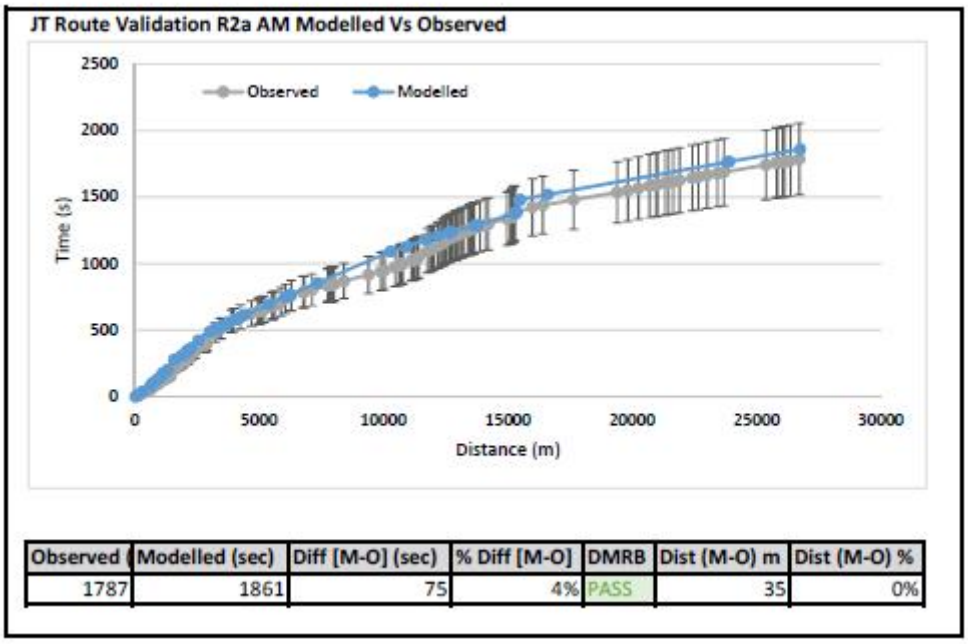
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
368	406	38	10%	PASS	191	5%



Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
393	388	-5	-1%	PASS	-290	-7%

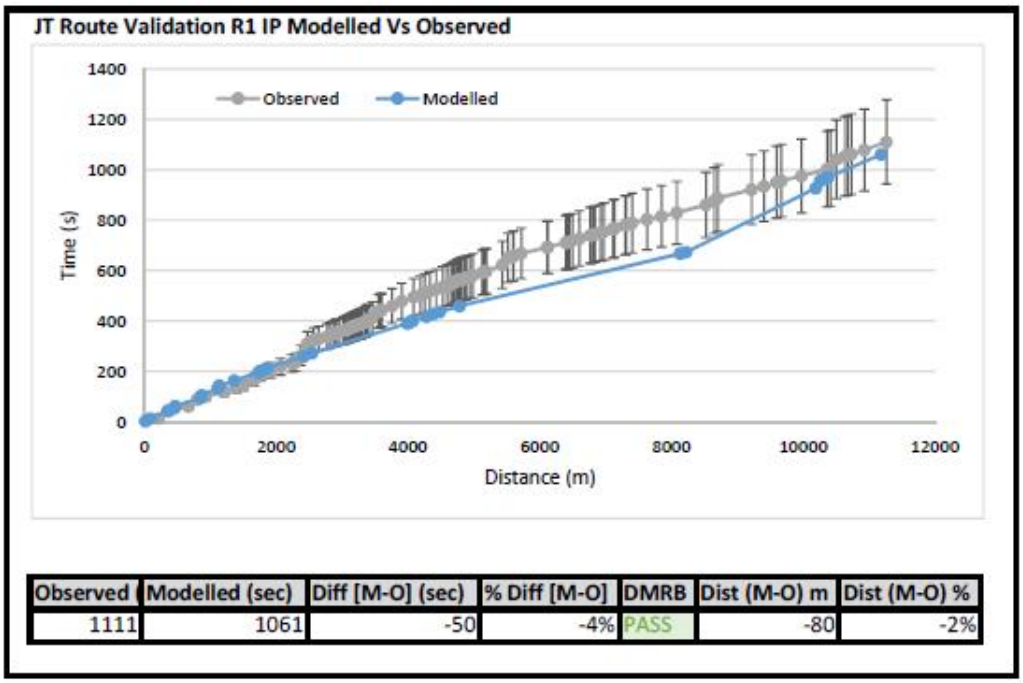


Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1786	1940	154	9%	PASS	-503	-2%

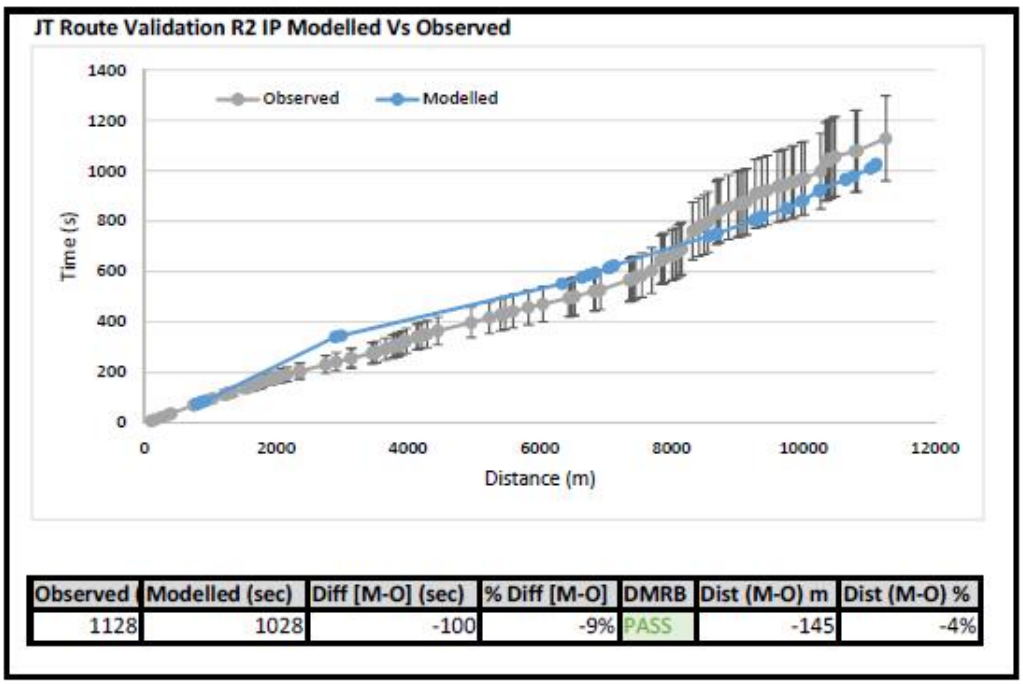


Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1787	1861	75	4%	PASS	35	0%

IP JT Route Validation

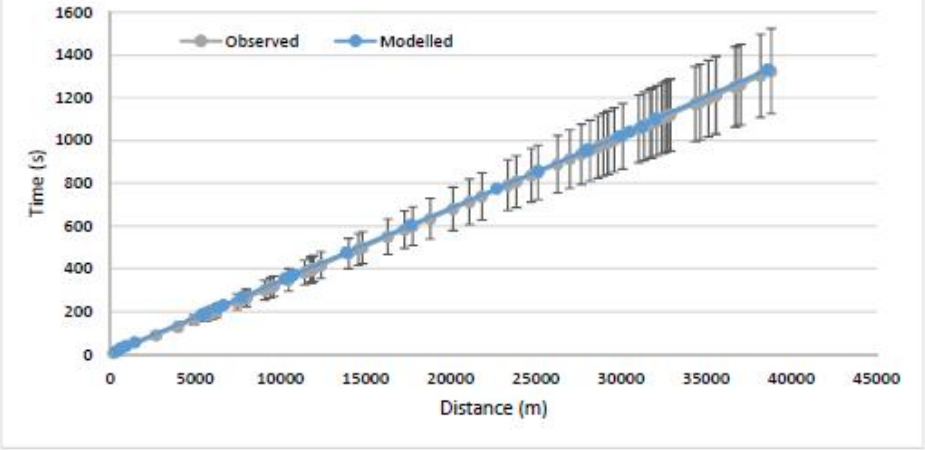


Observed (	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1111	1061	-50	-4%	PASS	-80	-2%



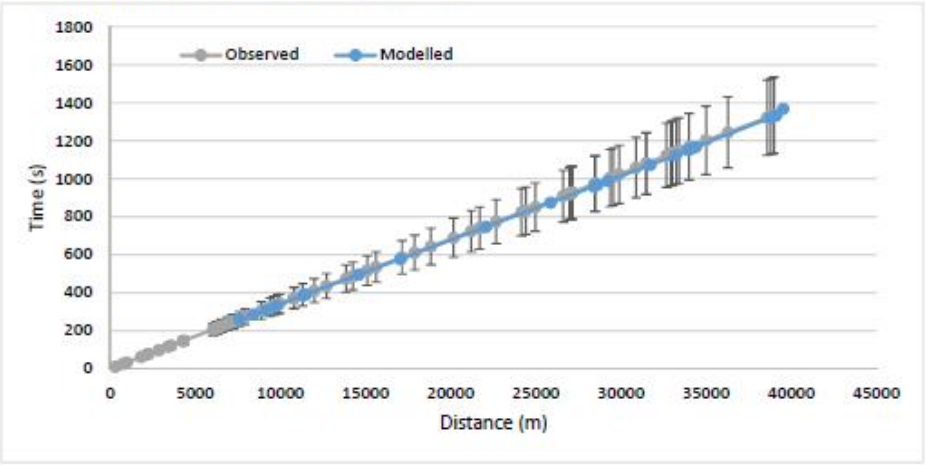
Observed (	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1128	1028	-100	-9%	PASS	-145	-4%

JT Route Validation R3 IP Modelled Vs Observed

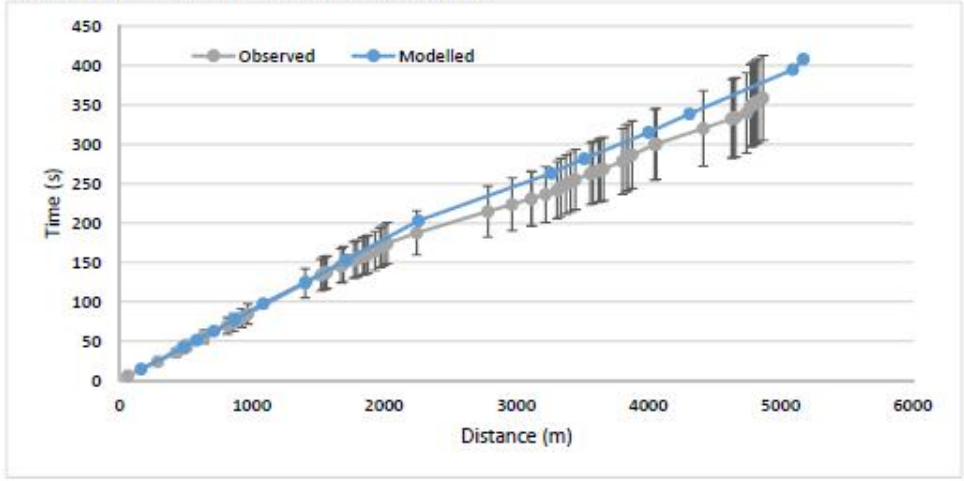


Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1325	1333	8	1%	PASS	-185	-1%

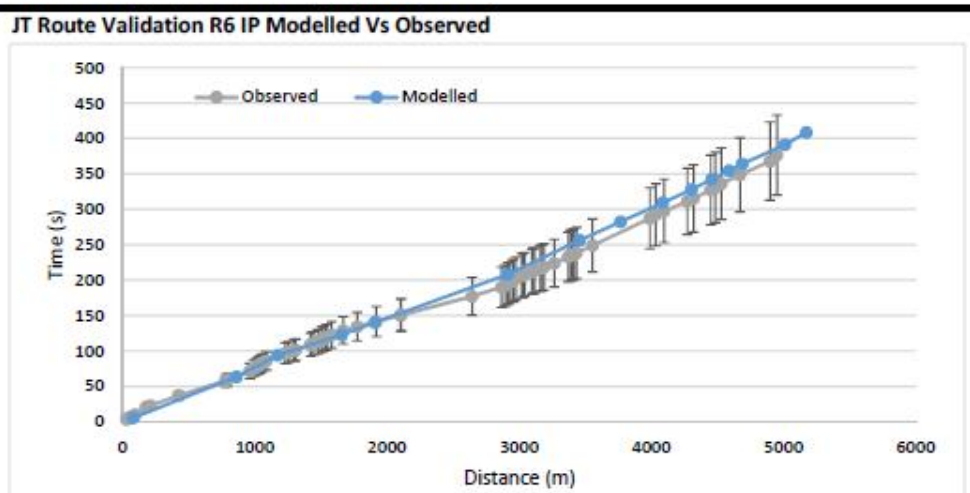
JT Route Validation R4 IP Modelled Vs Observed



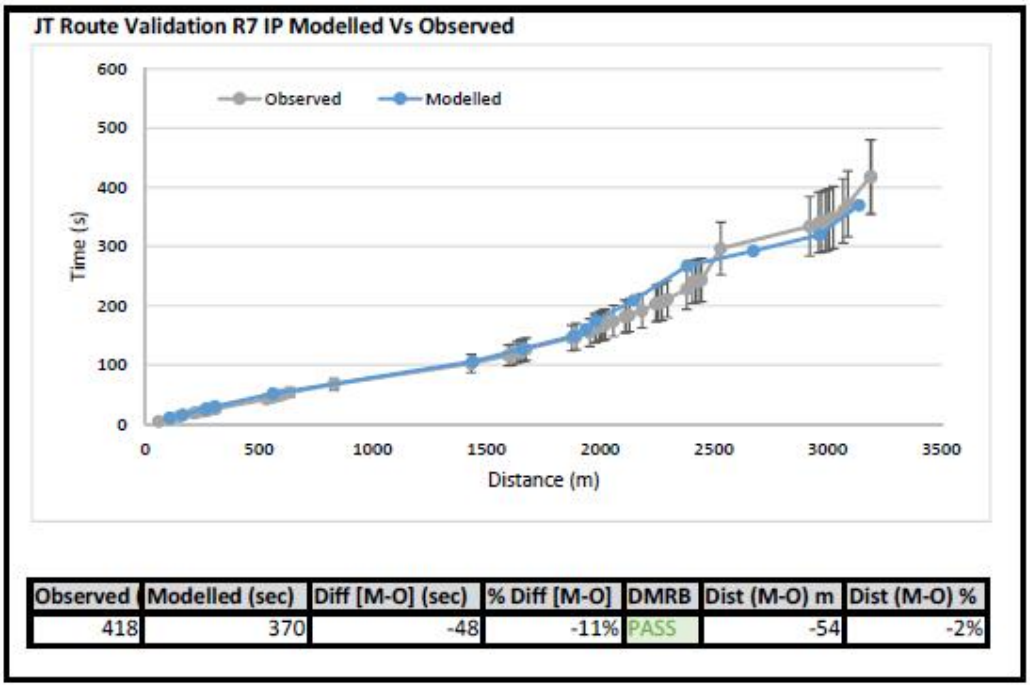
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1333	1367	34	3%	PASS	551	2%



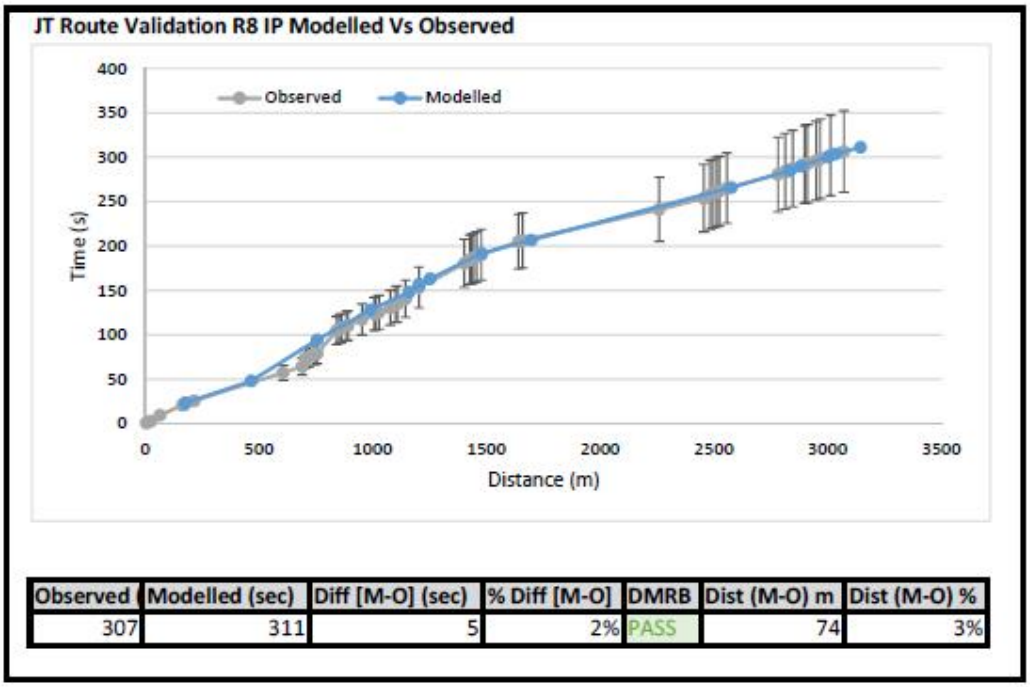
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
359	408	49	14%	PASS	306	8%



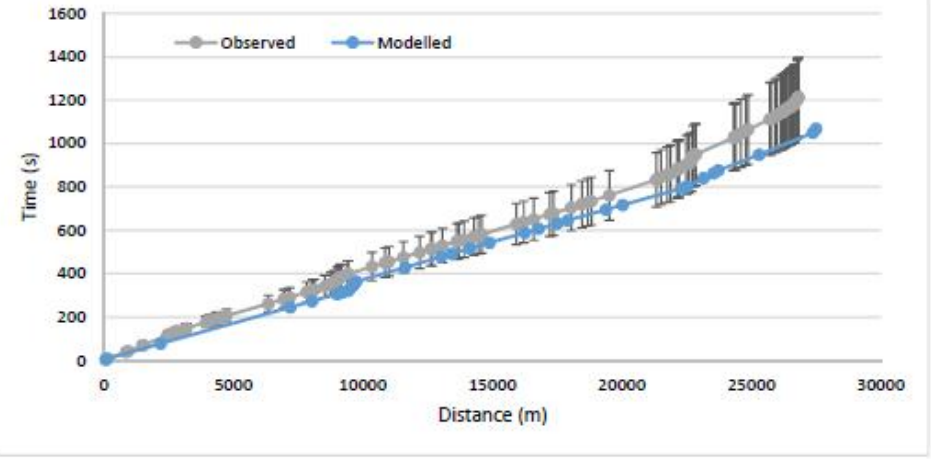
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
377	409	32	9%	PASS	222	7%



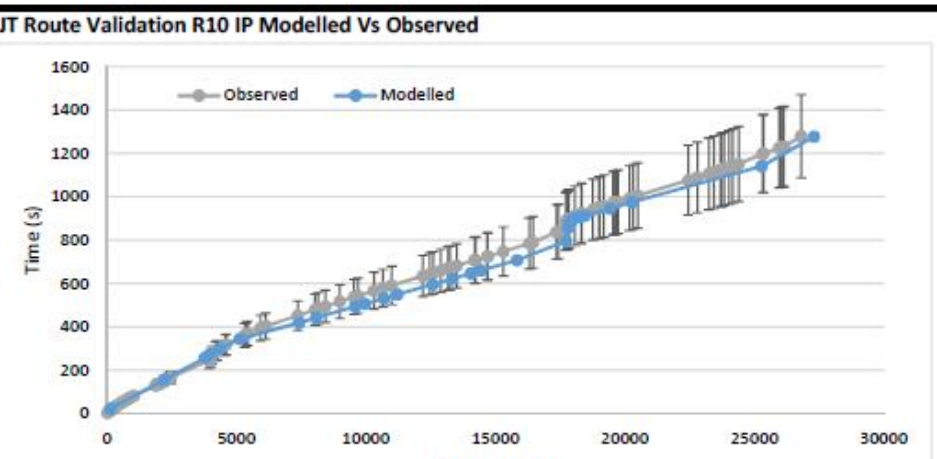
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
418	370	-48	-11%	PASS	-54	-2%



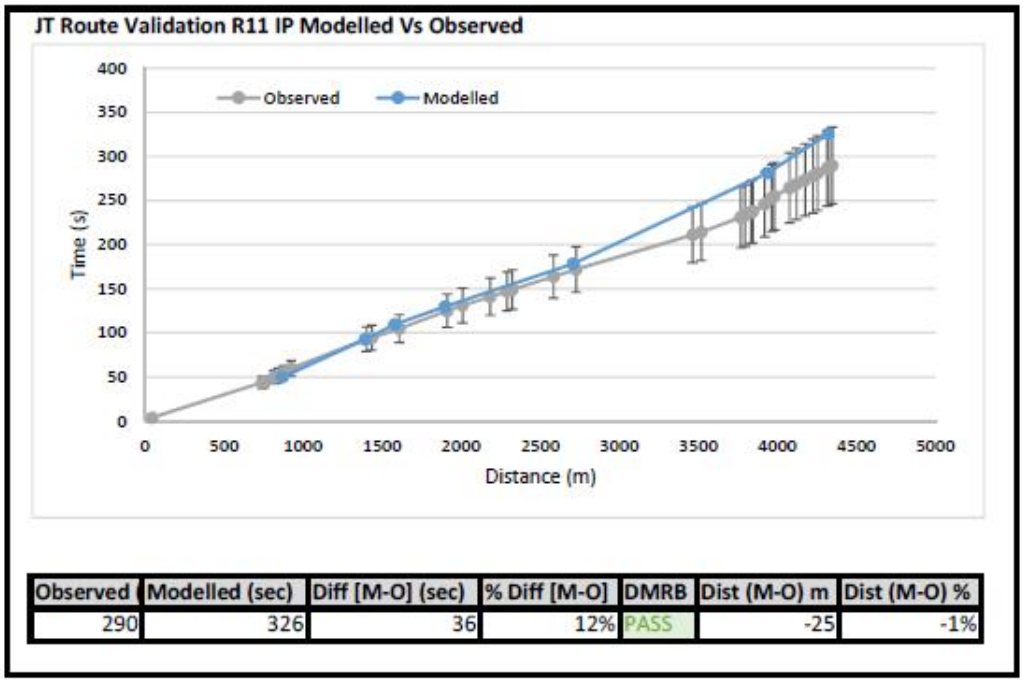
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
307	311	5	2%	PASS	74	3%



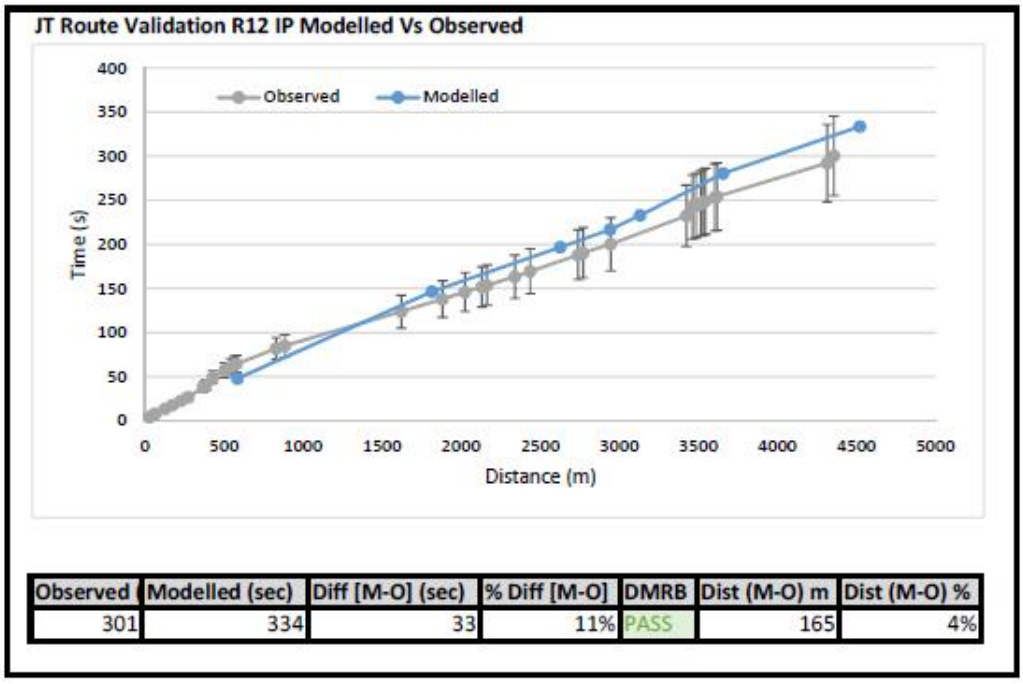
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1215	1068	-146	-12%	PASS	684	5%



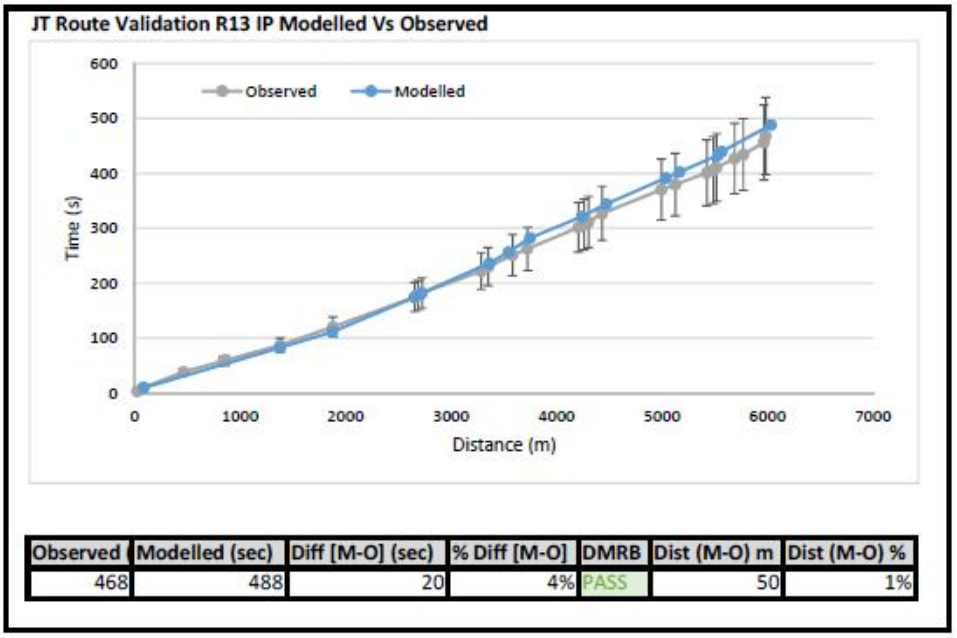
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1279	1277	-2	0%	PASS	495	6%



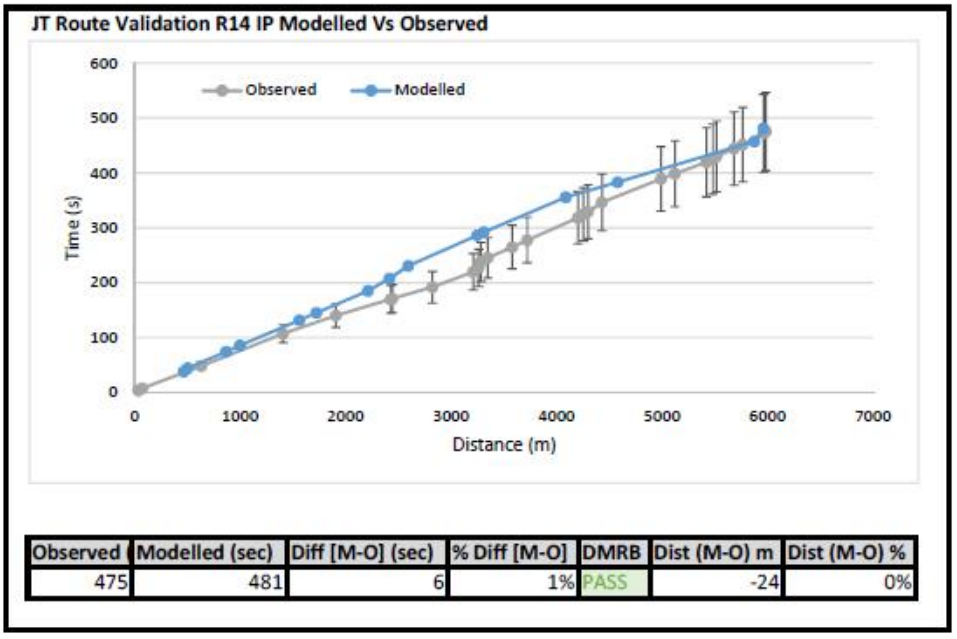
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
290	326	36	12%	PASS	-25	-1%



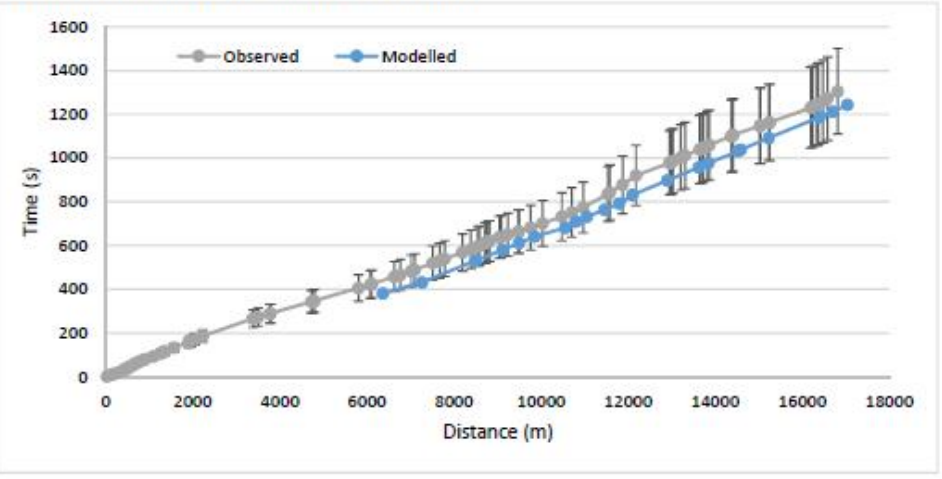
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
301	334	33	11%	PASS	165	4%



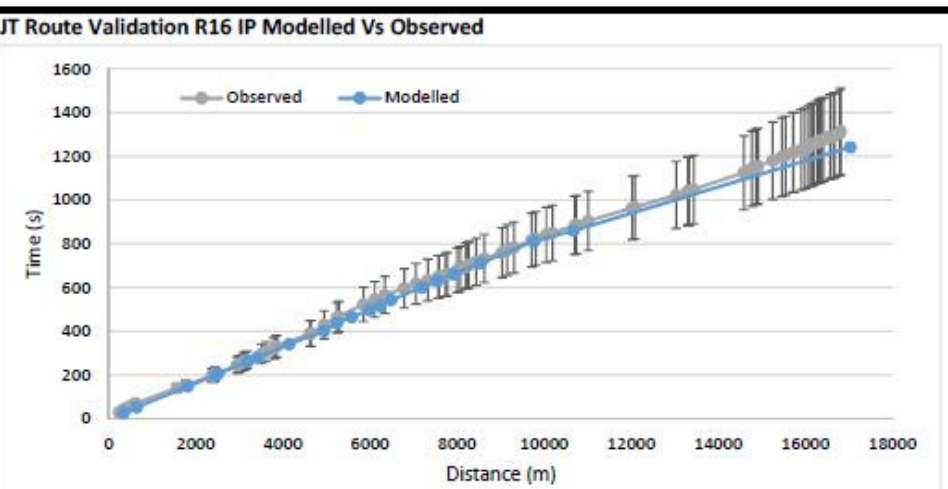
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
468	488	20	4%	PASS	50	1%



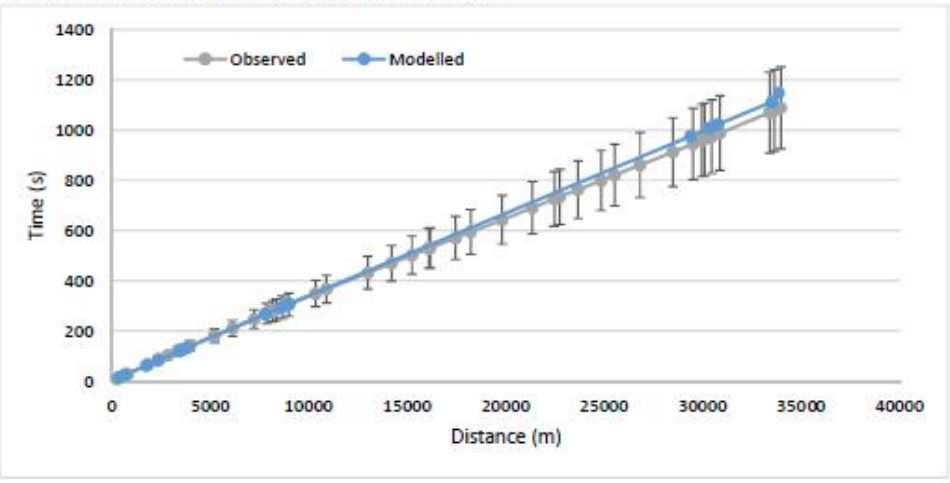
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
475	481	6	1%	PASS	-24	0%



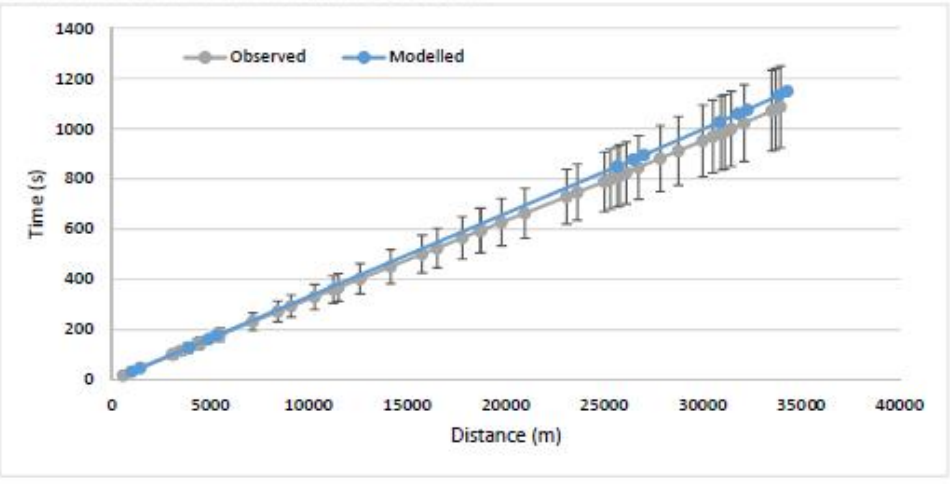
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1306	1244	-62	-5%	PASS	223	3%



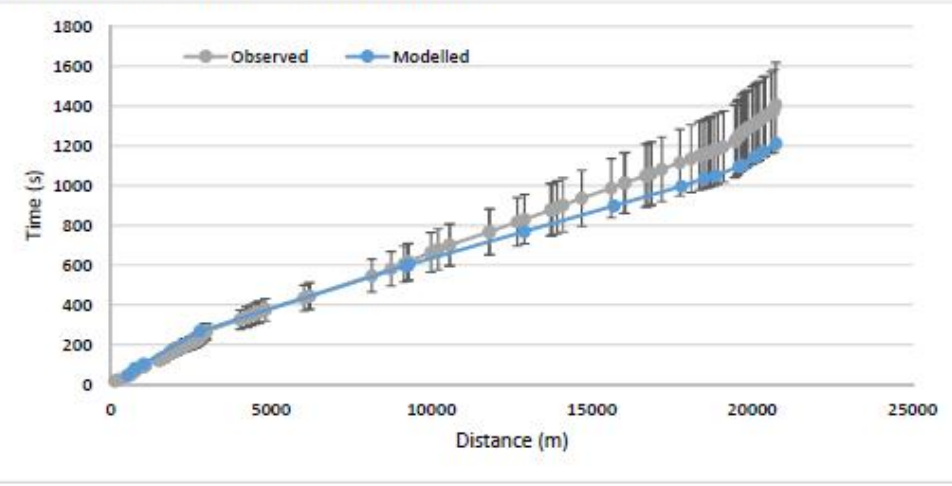
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1315	1242	-73	-6%	PASS	222	2%



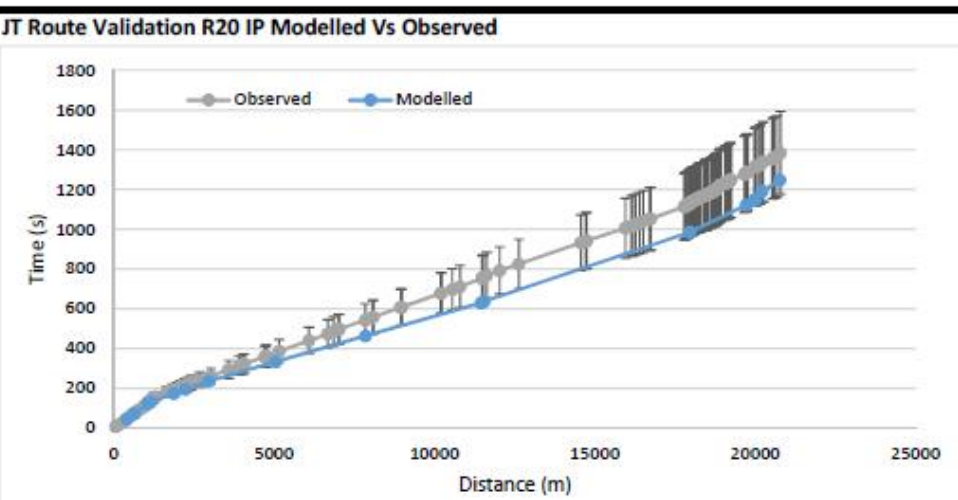
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1089	1148	60	5%	PASS	-107	0%



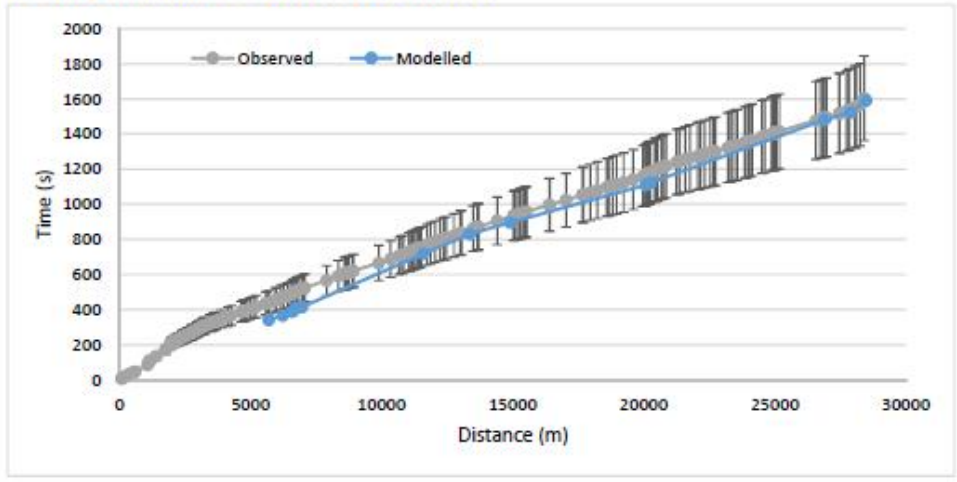
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1086	1149	63	6%	PASS	339	1%



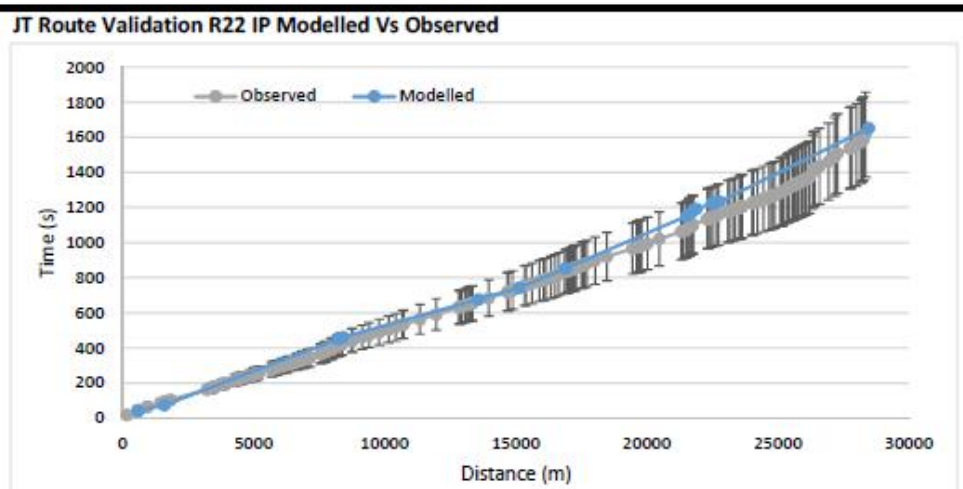
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1408	1212	-196	-14%	PASS	10	0%



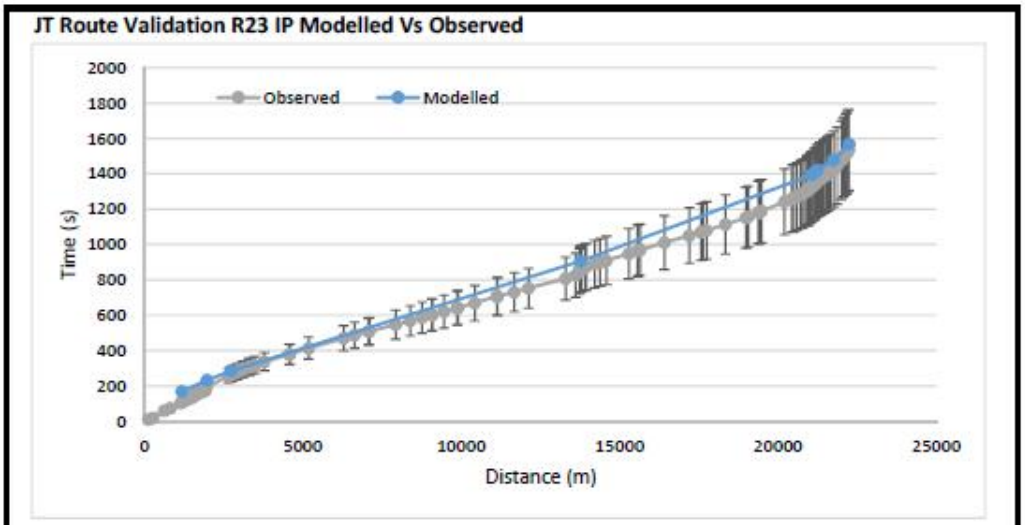
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1384	1247	-137	-10%	PASS	-15	0%



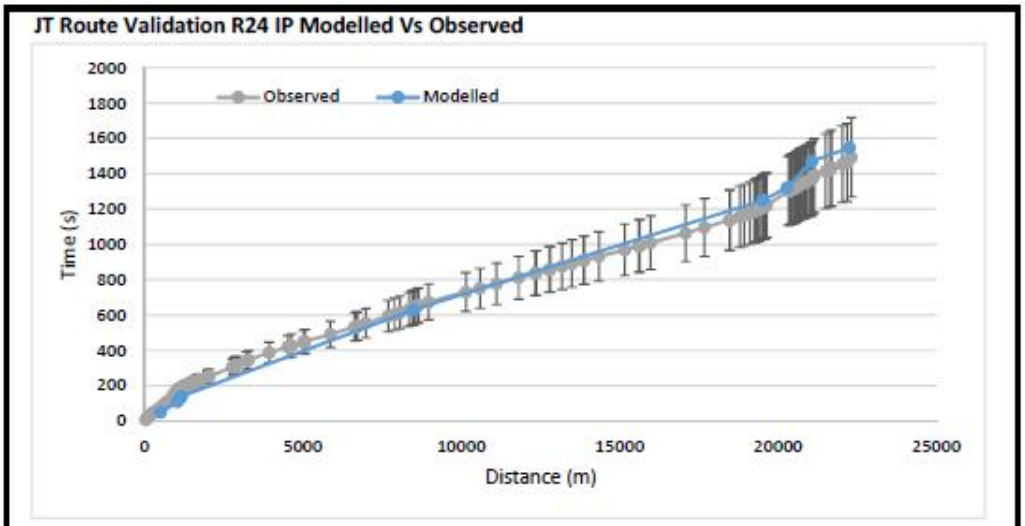
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1604	1592	-12	-1%	PASS	78	2%



Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1615	1653	37	2%	PASS	134	2%

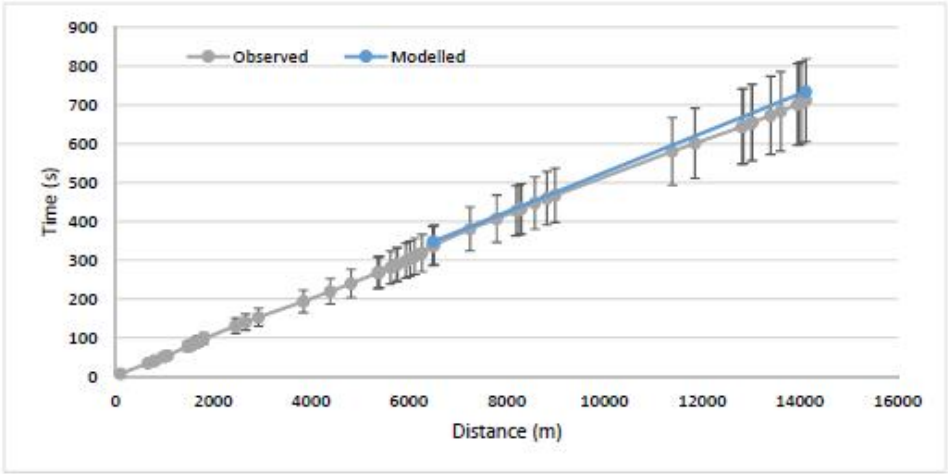


Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1535	1569	33	2%	PASS	16	0%



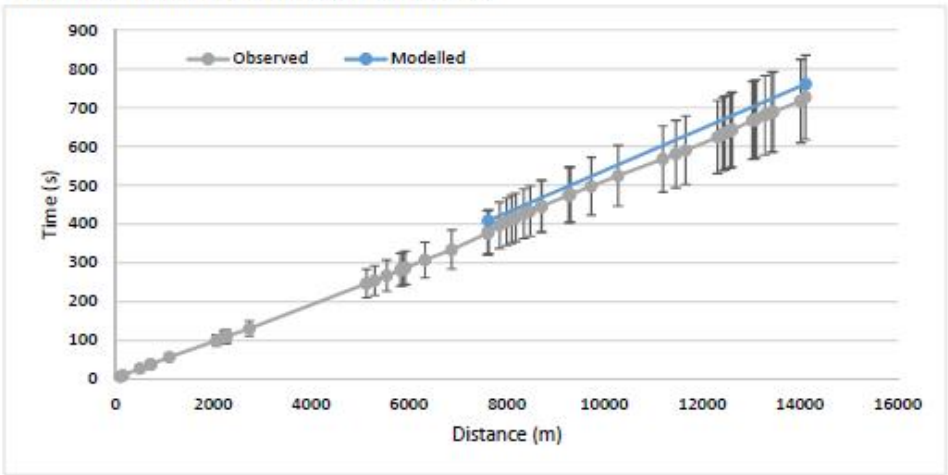
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1493	1548	54	4%	PASS	-54	-2%

JT Route Validation R25 IP Modelled Vs Observed

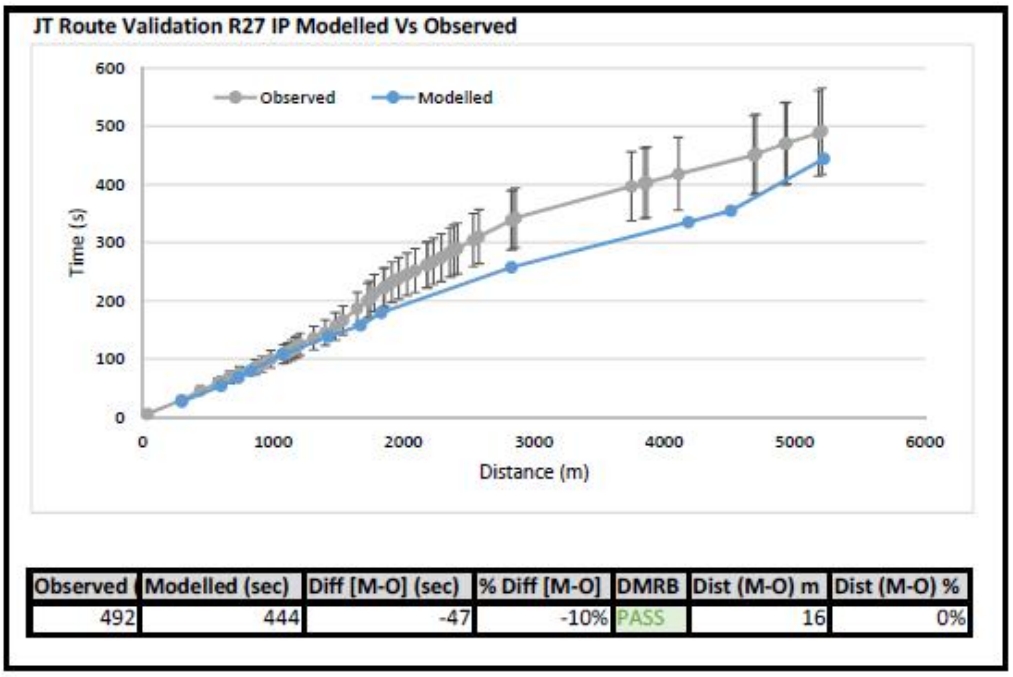


Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
711	734	23	3%	PASS	-3	0%

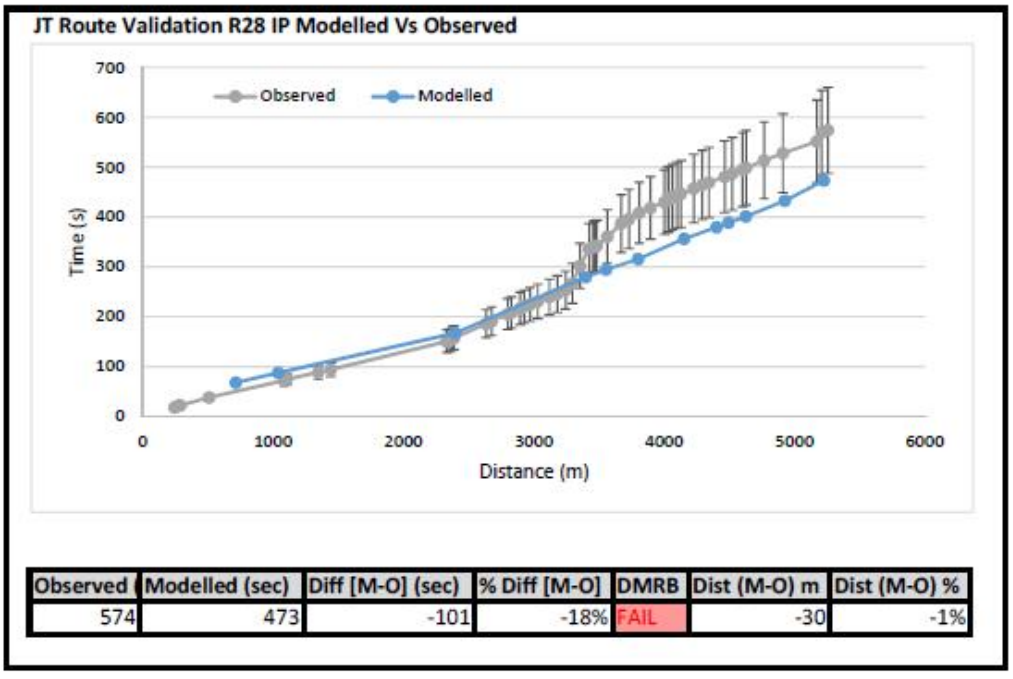
JT Route Validation R26 IP Modelled Vs Observed



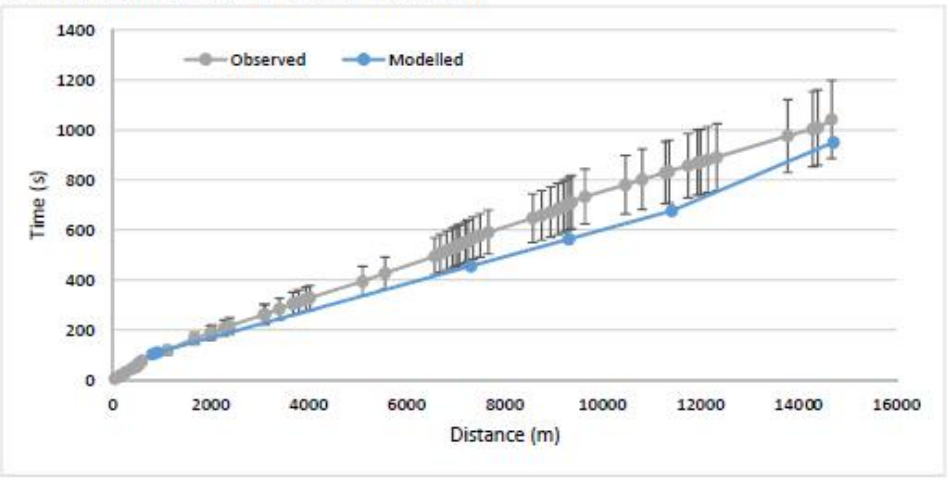
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
726	761	35	5%	PASS	8	0%



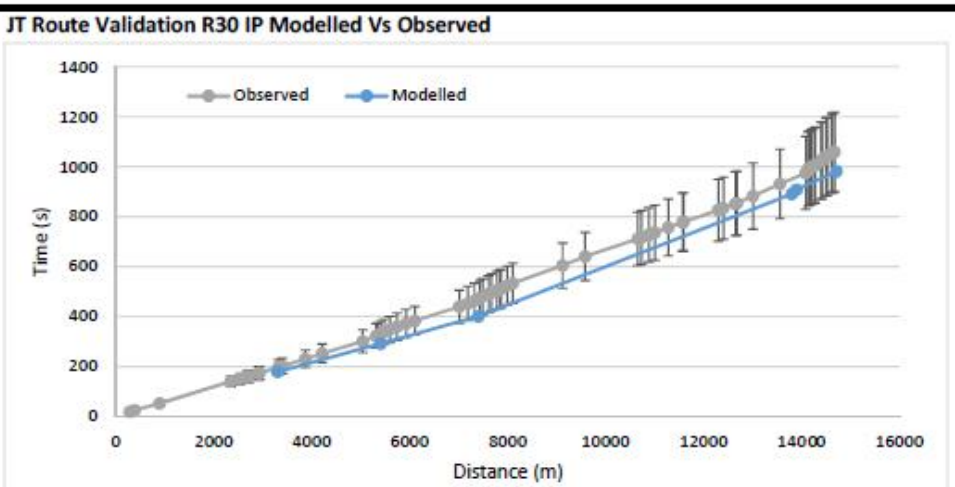
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
492	444	-47	-10%	PASS	16	0%



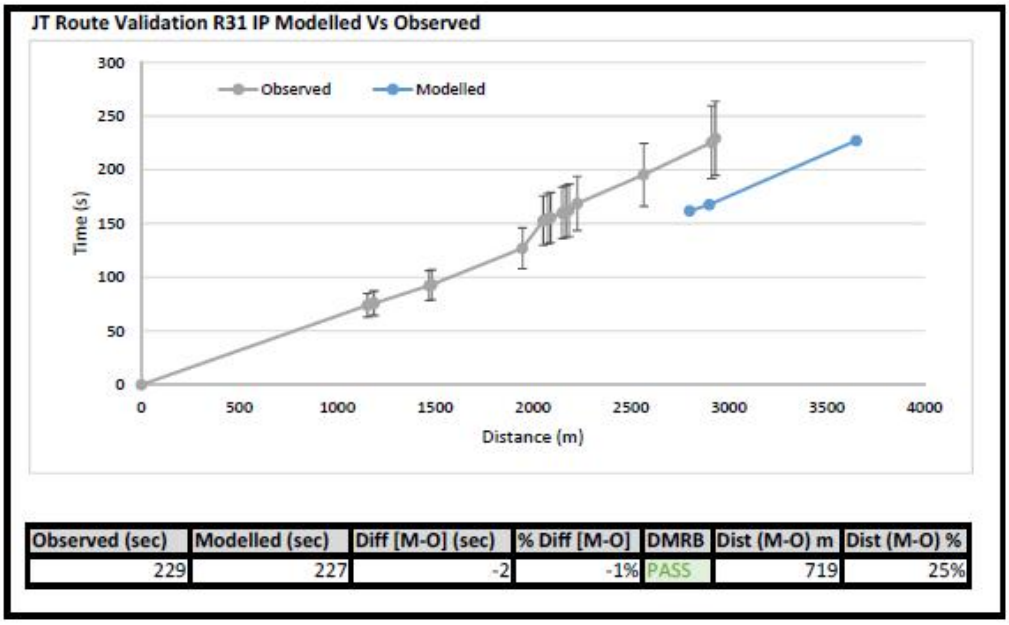
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
574	473	-101	-18%	FAIL	-30	-1%



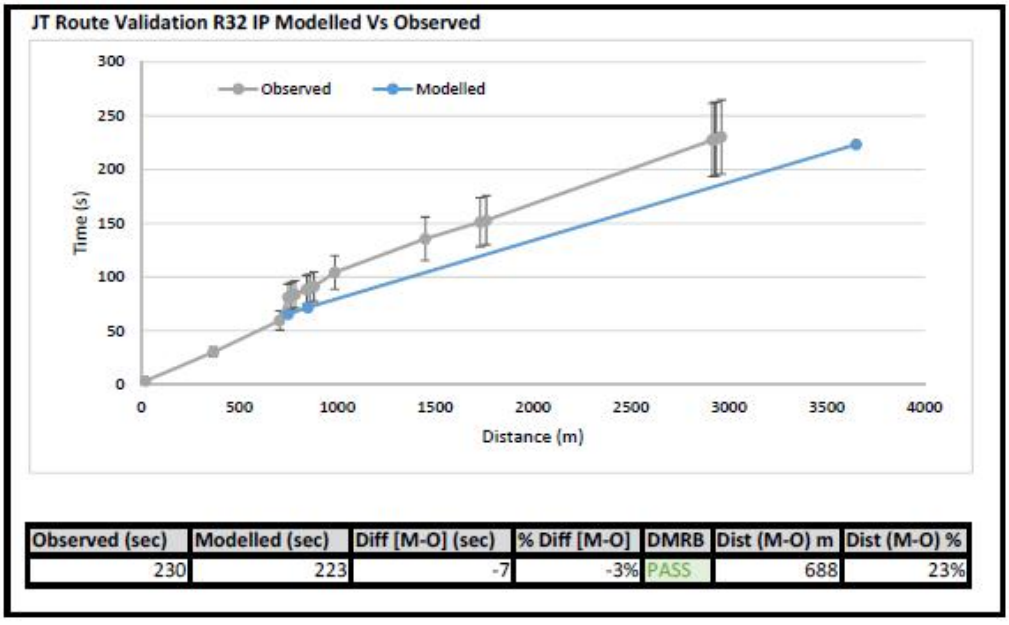
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1042	951	-91	-9%	PASS	38	0%



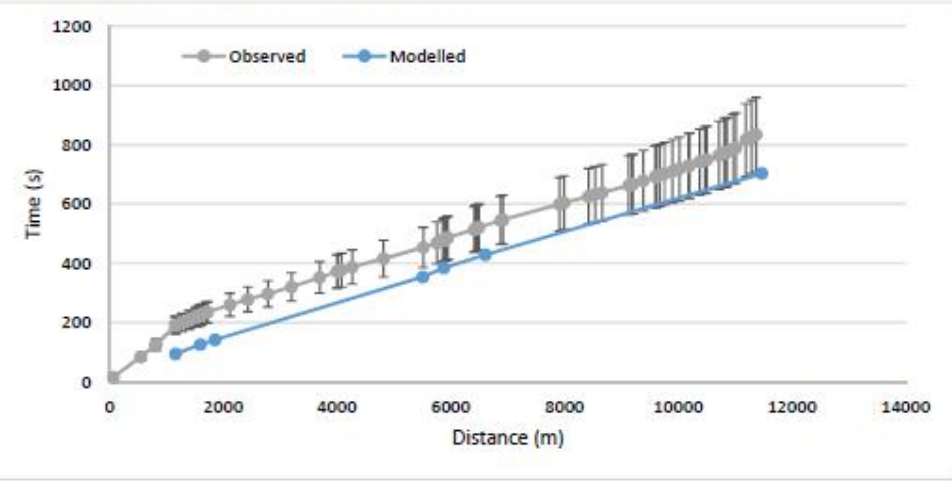
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1059	981	-78	-7%	PASS	39	0%



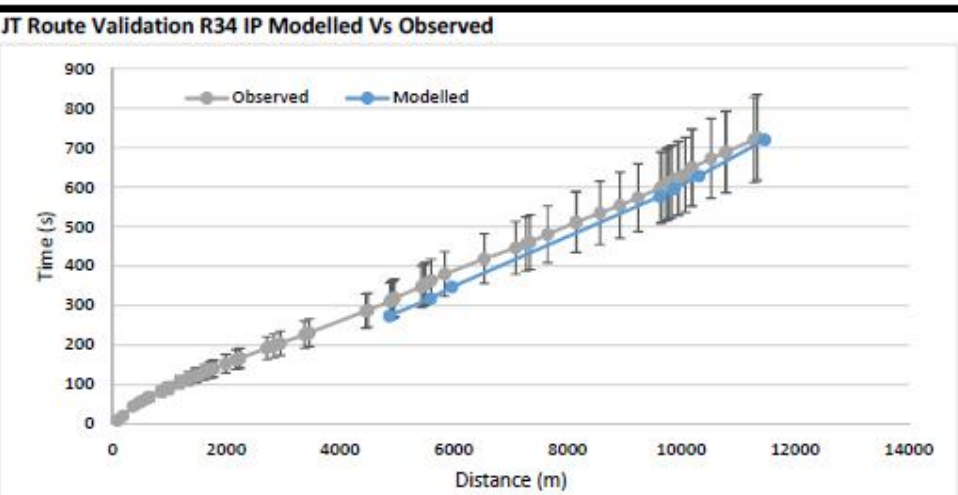
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
229	227	-2	-1%	PASS	719	25%



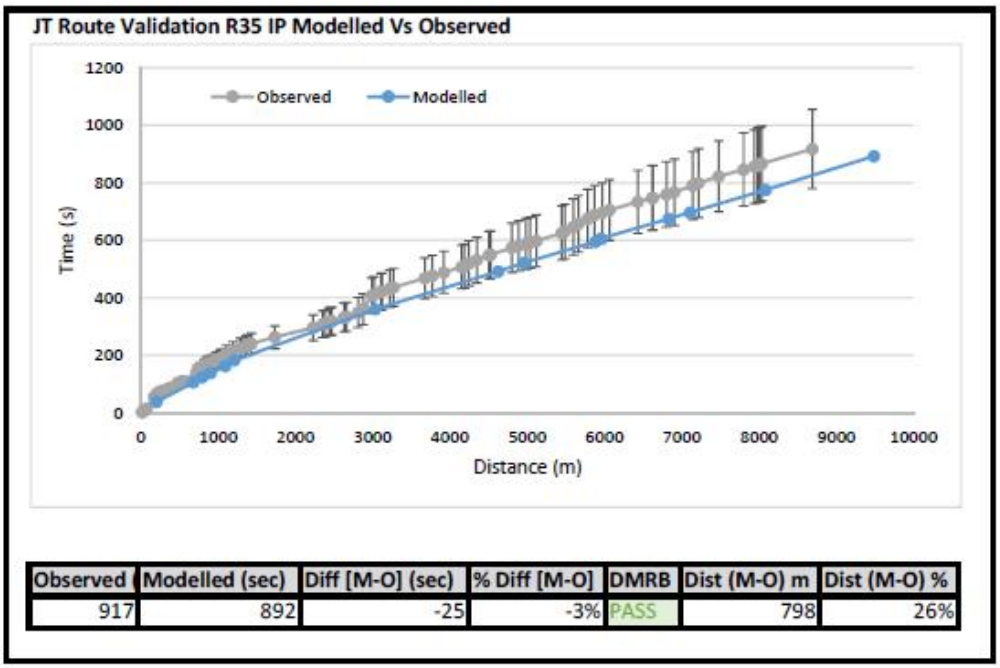
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
230	223	-7	-3%	PASS	688	23%



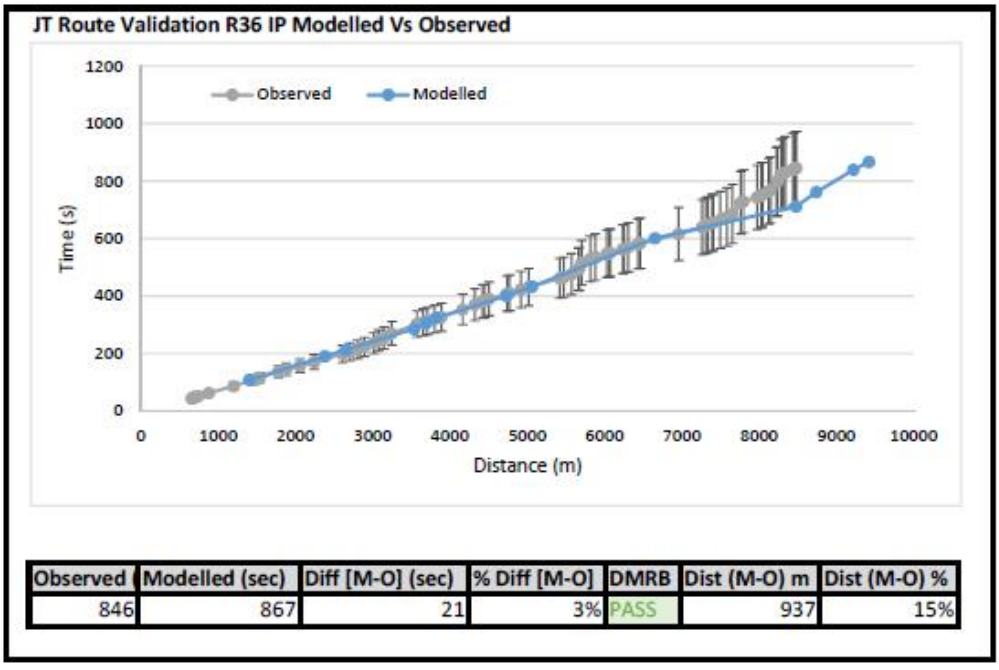
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
835	703	-131	-16%	FAIL	104	1%



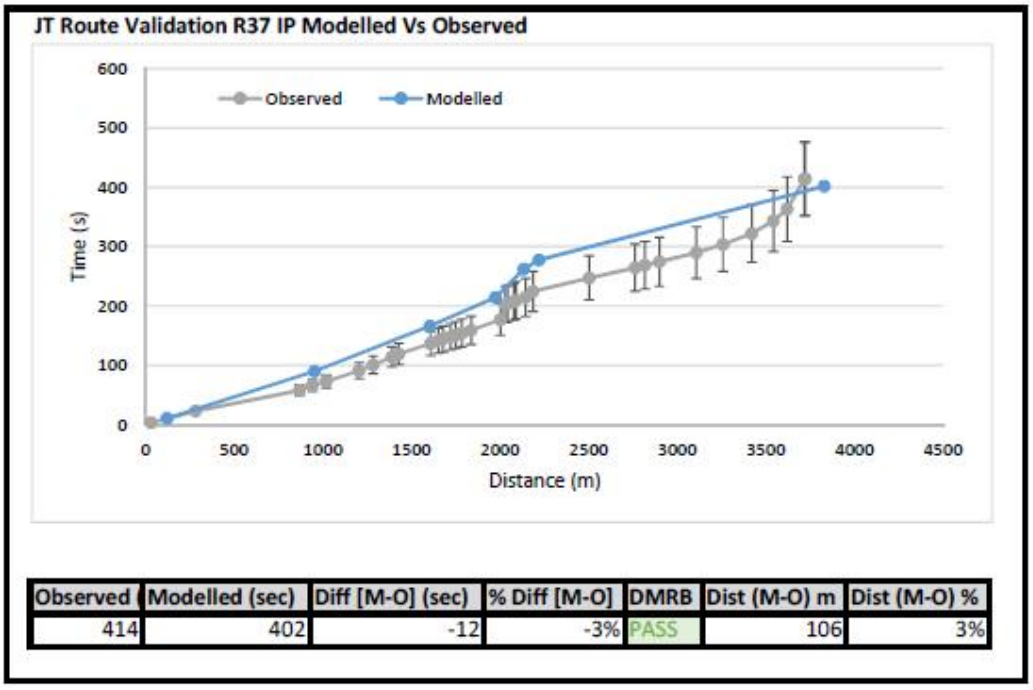
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
725	720	-6	-1%	PASS	136	2%



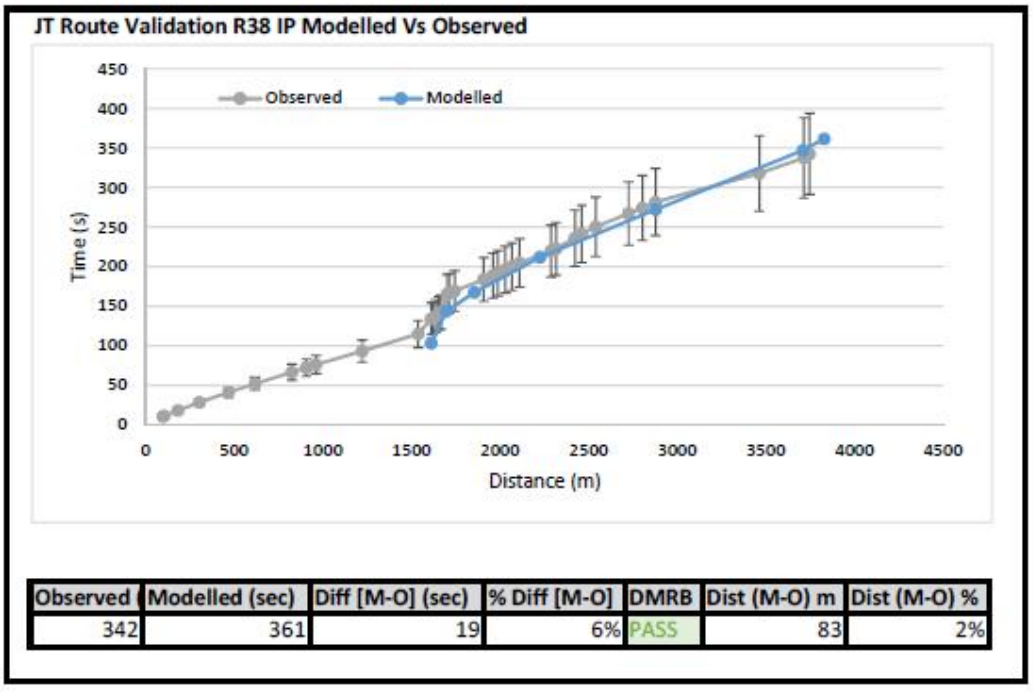
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
917	892	-25	-3%	PASS	798	26%



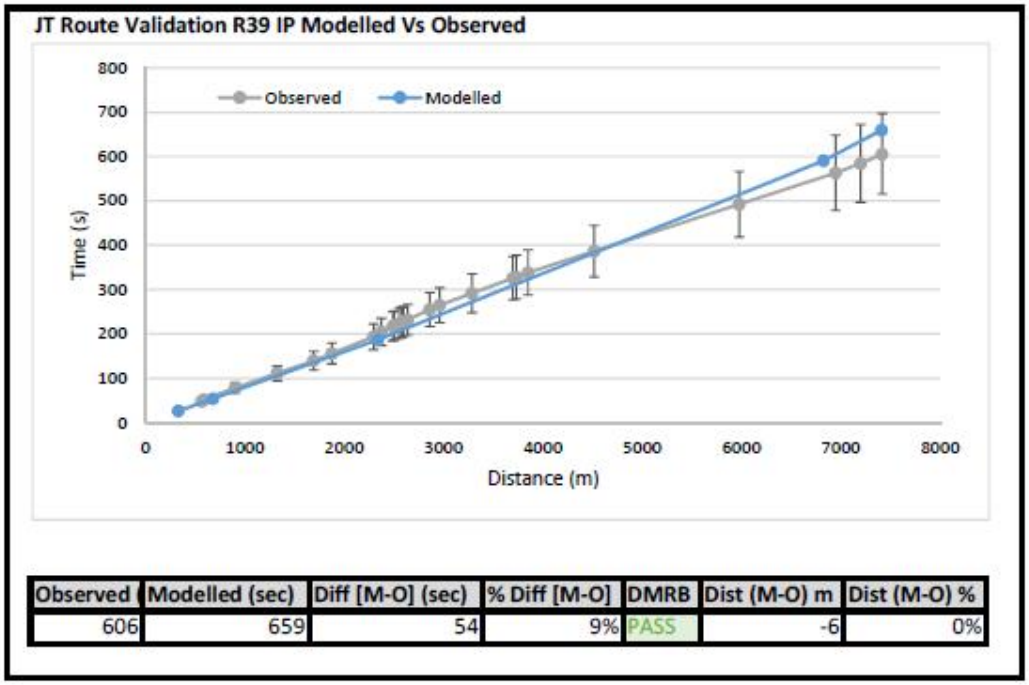
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
846	867	21	3%	PASS	937	15%



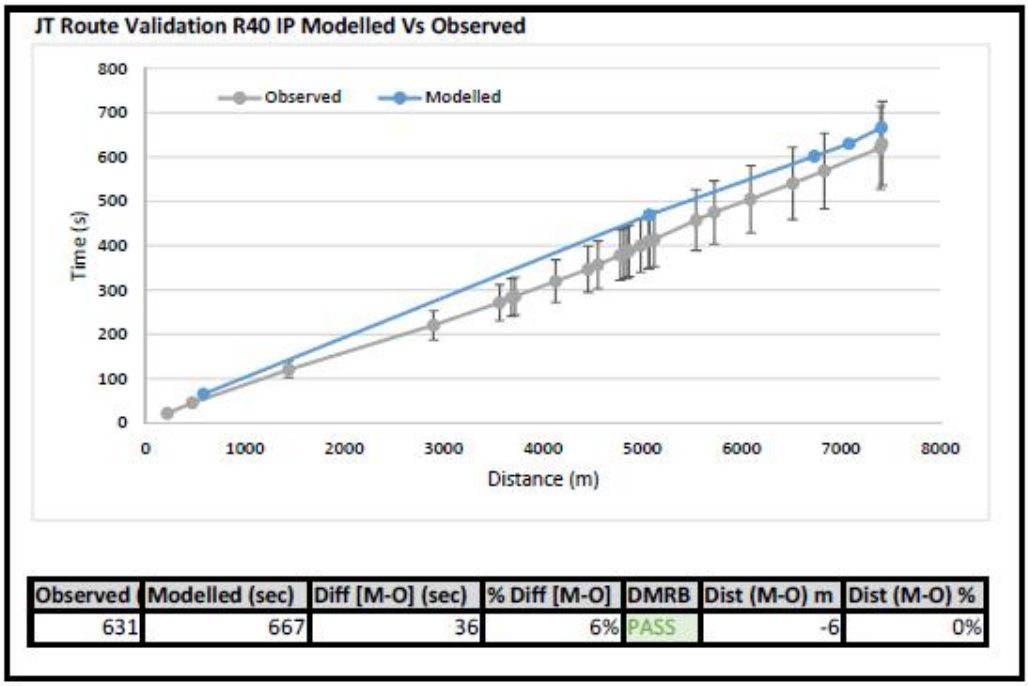
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
414	402	-12	-3%	PASS	106	3%



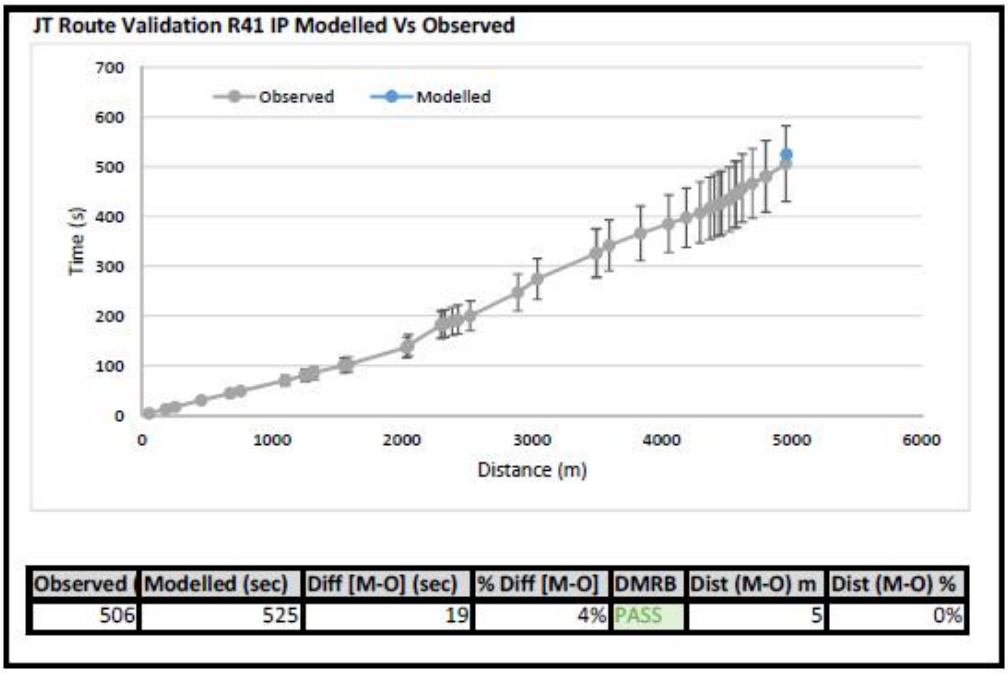
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
342	361	19	6%	PASS	83	2%



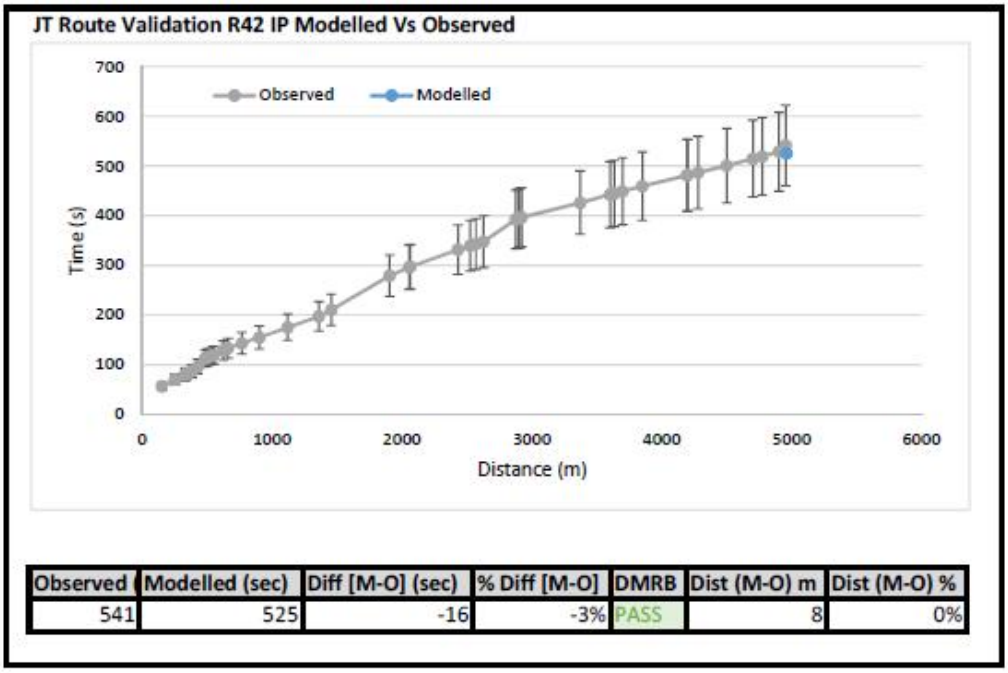
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
606	659	54	9%	PASS	-6	0%



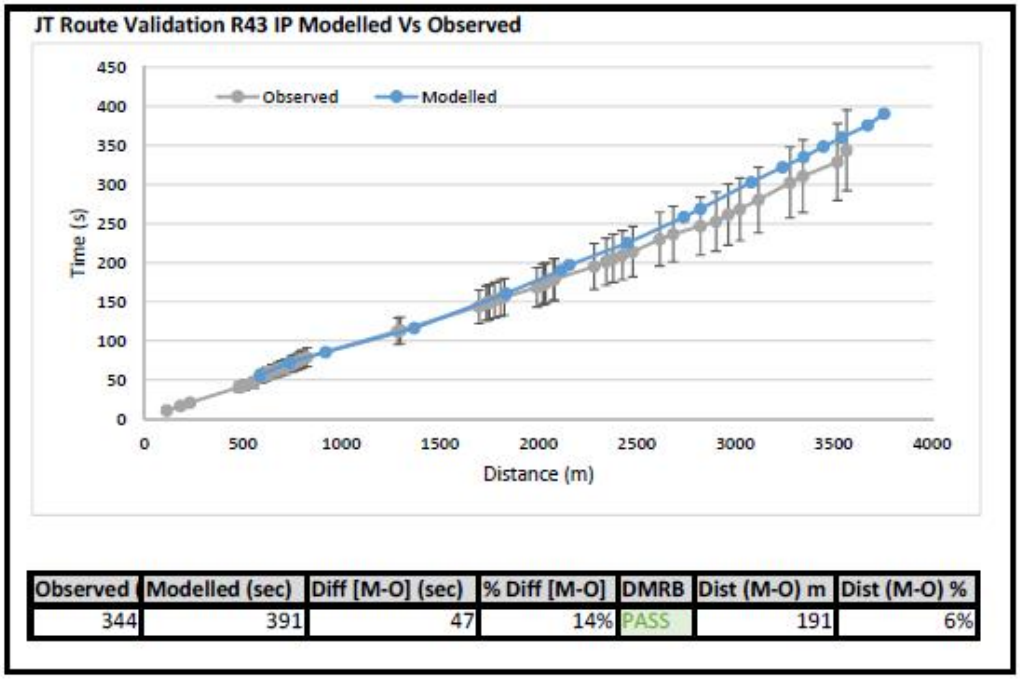
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
631	667	36	6%	PASS	-6	0%



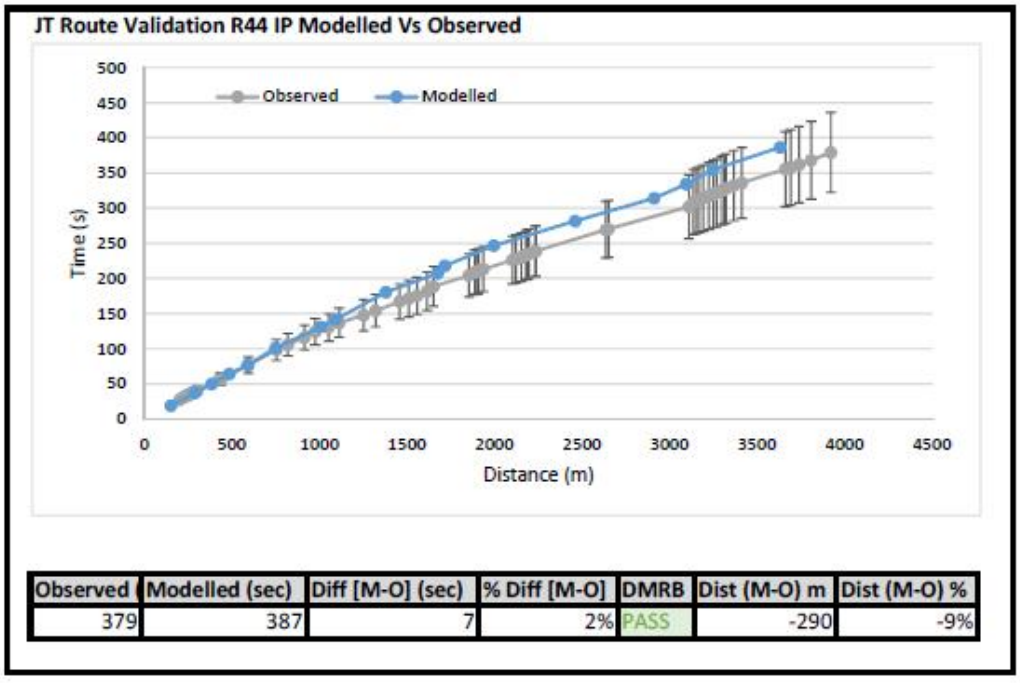
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
506	525	19	4%	PASS	5	0%



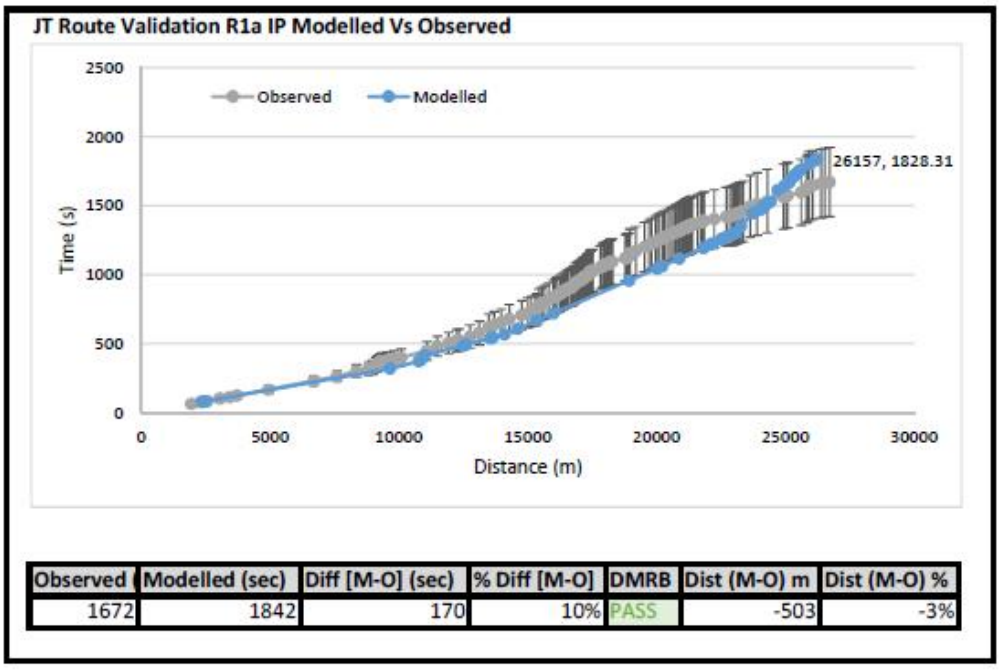
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
541	525	-16	-3%	PASS	8	0%



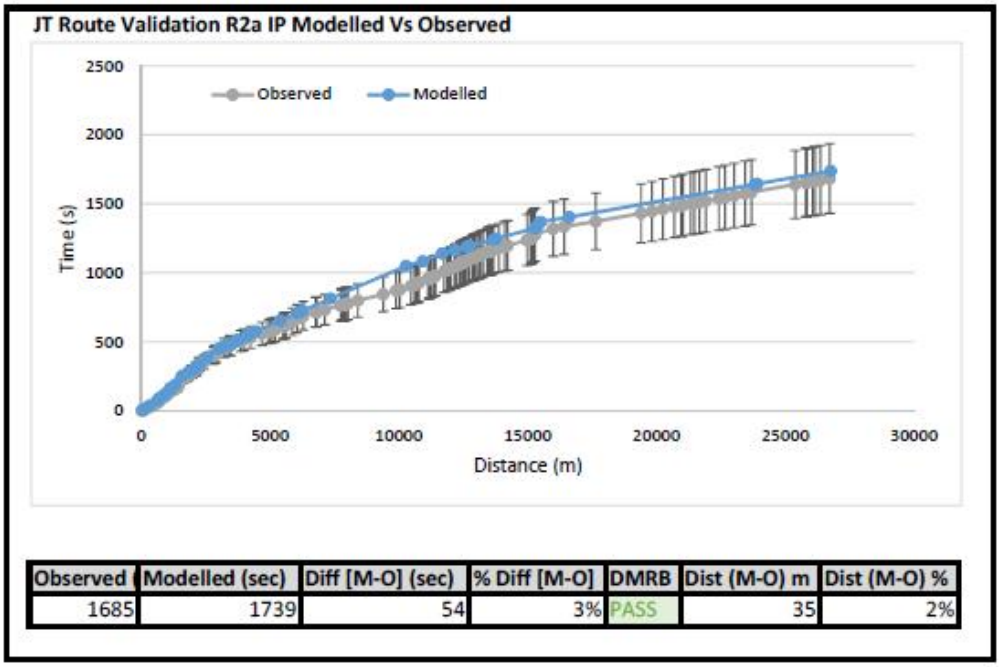
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
344	391	47	14%	PASS	191	6%



Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
379	387	7	2%	PASS	-290	-9%

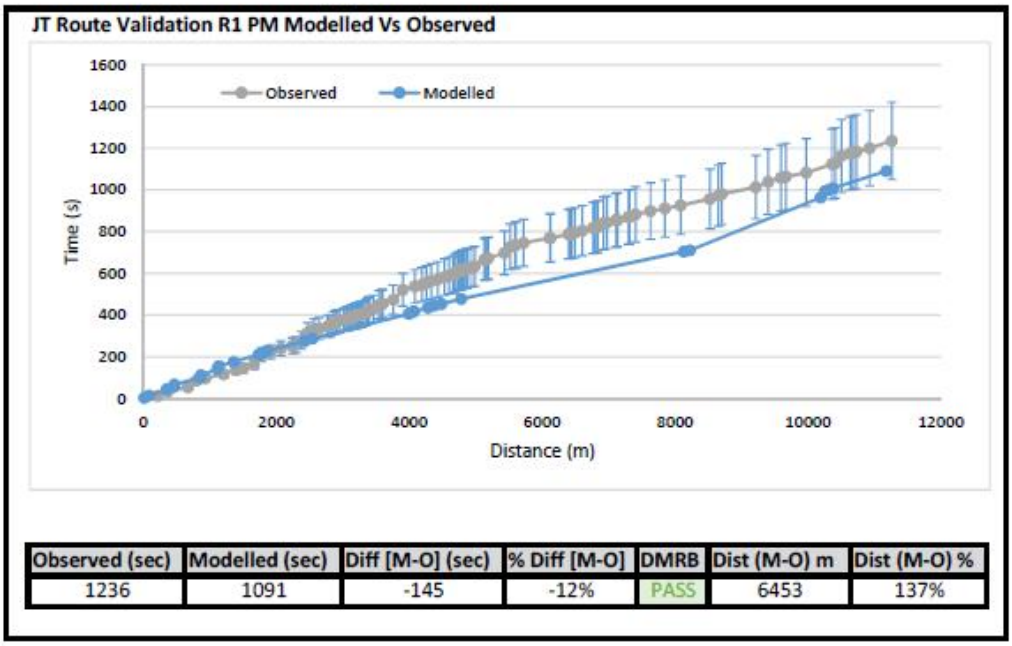


Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1672	1842	170	10%	PASS	-503	-3%

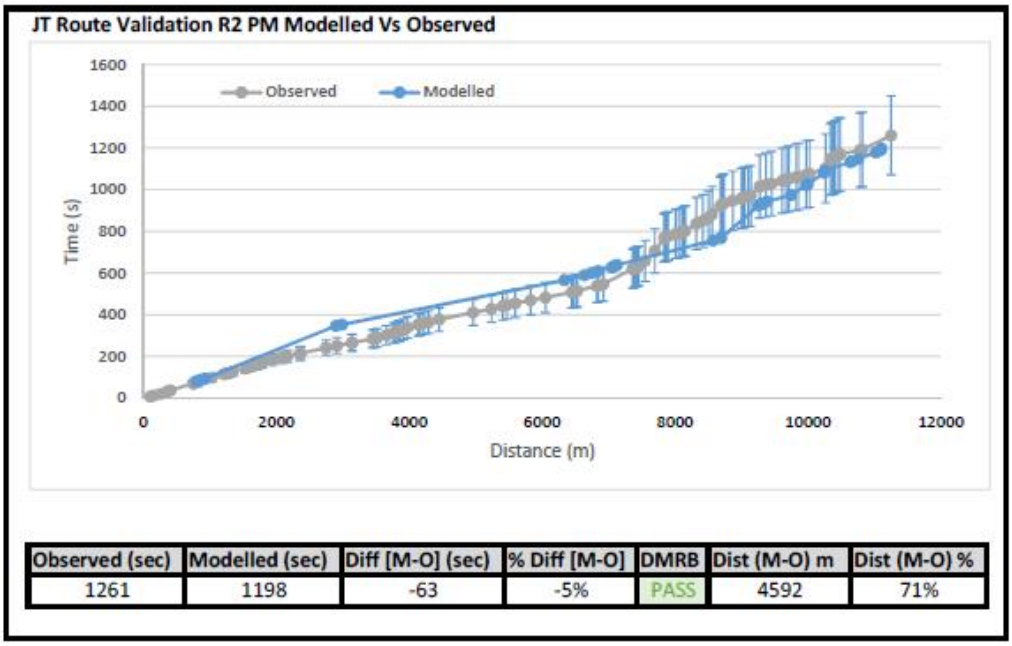


Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1685	1739	54	3%	PASS	35	2%

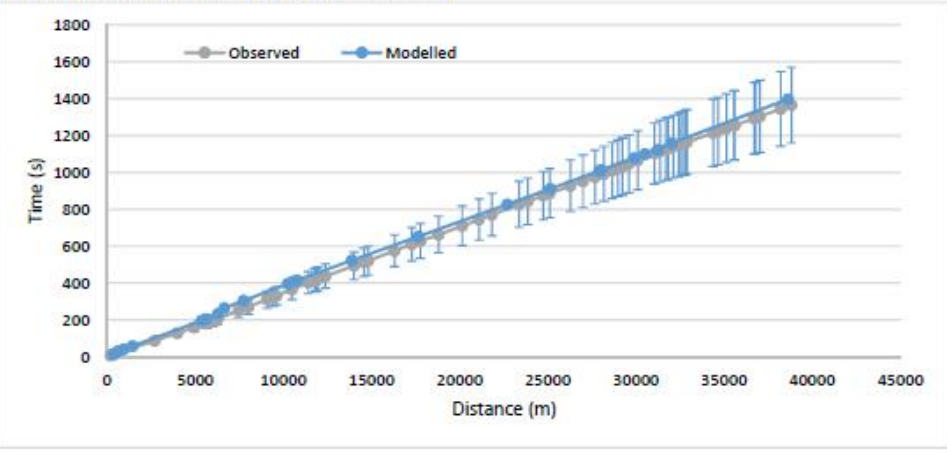
PM AM JT Route Validation



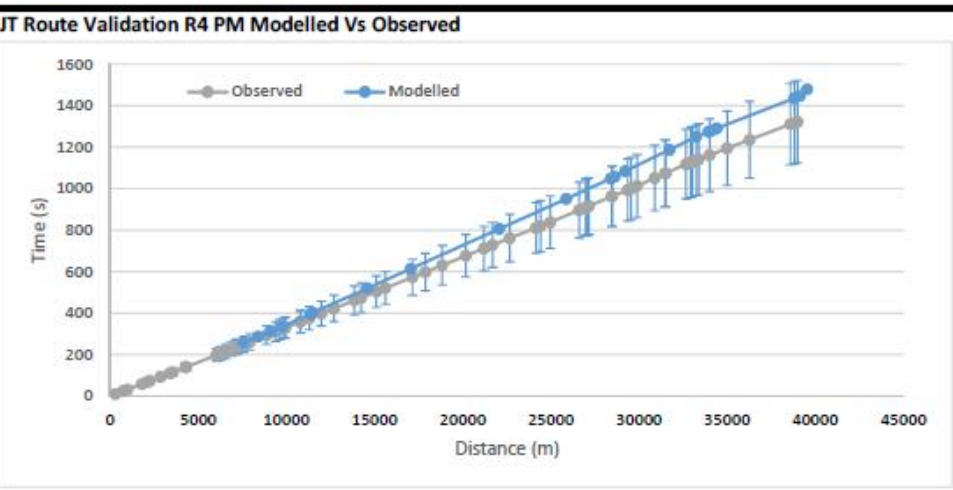
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1236	1091	-145	-12%	PASS	6453	137%



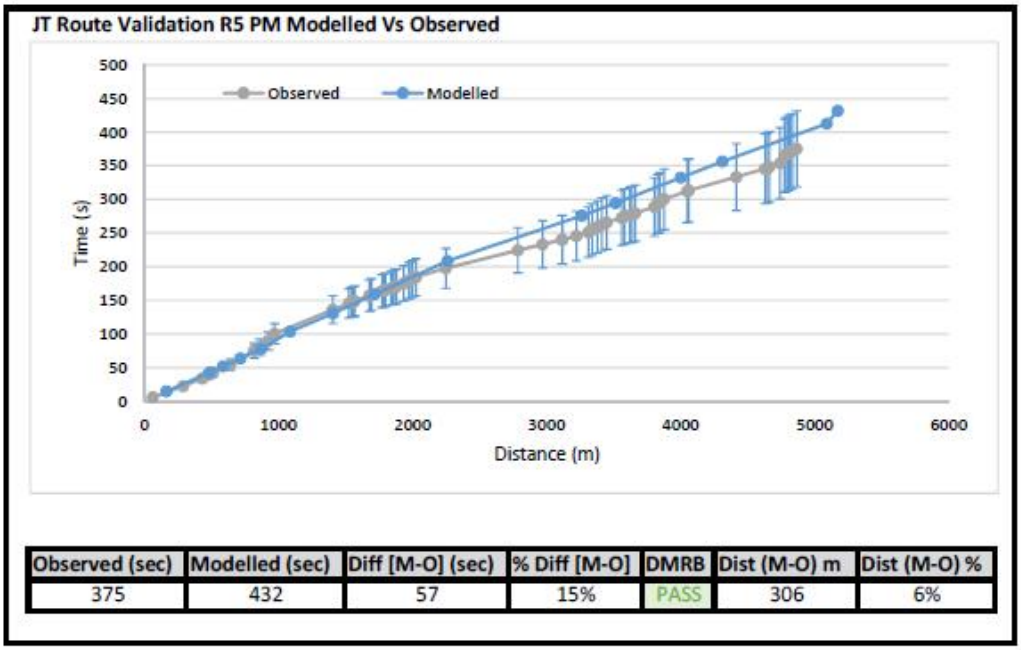
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1261	1198	-63	-5%	PASS	4592	71%



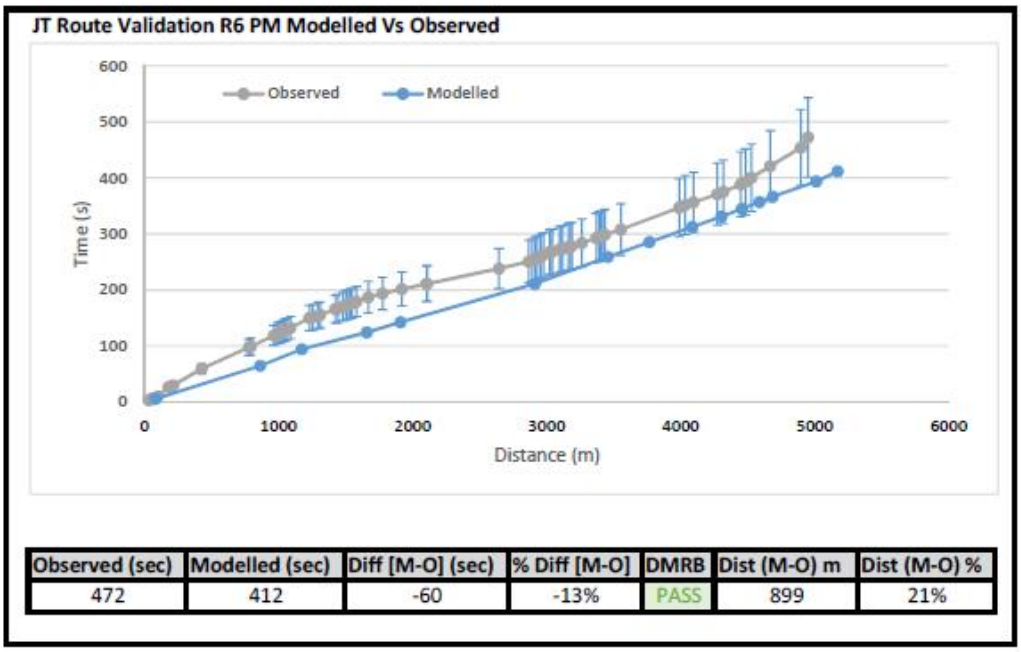
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1365	1397	32	2%	PASS	3045	9%



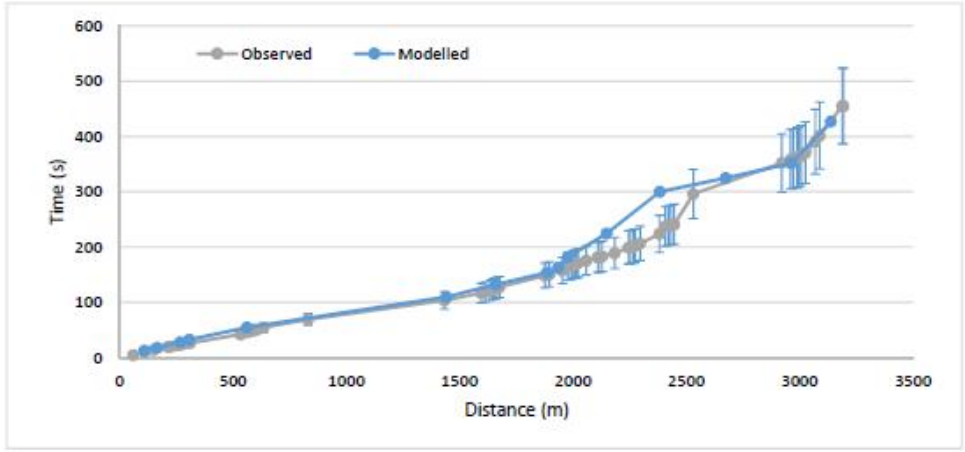
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1323	1479	156	12%	PASS	6145	18%



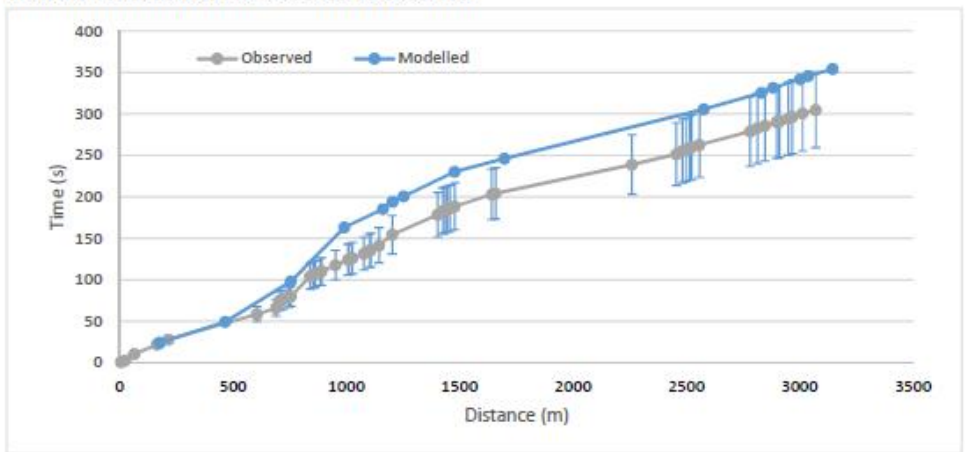
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
375	432	57	15%	PASS	306	6%



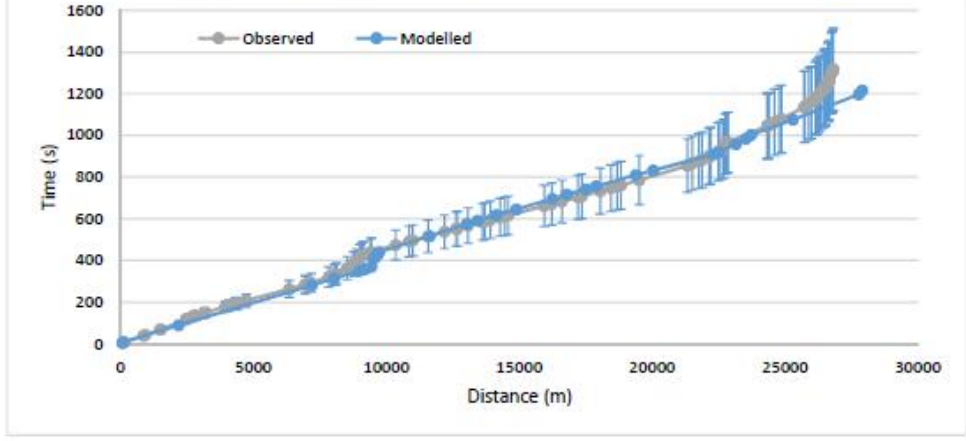
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
472	412	-60	-13%	PASS	899	21%



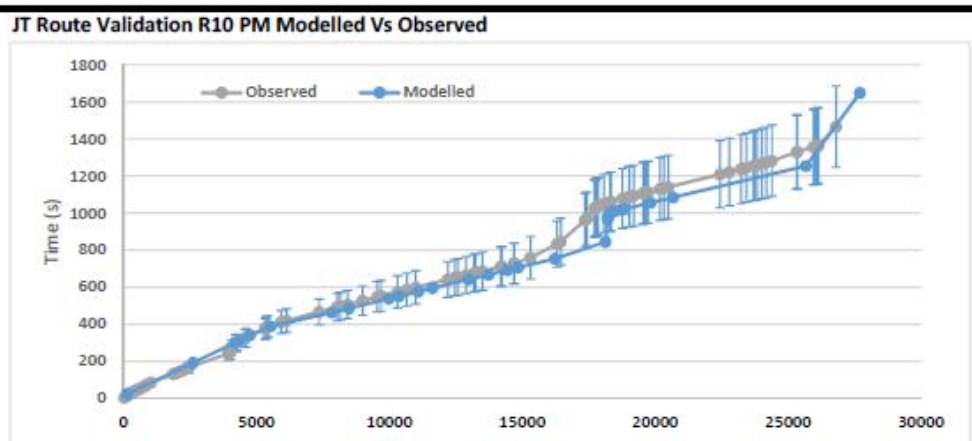
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
455	427	-28	-6%	PASS	-54	-2%



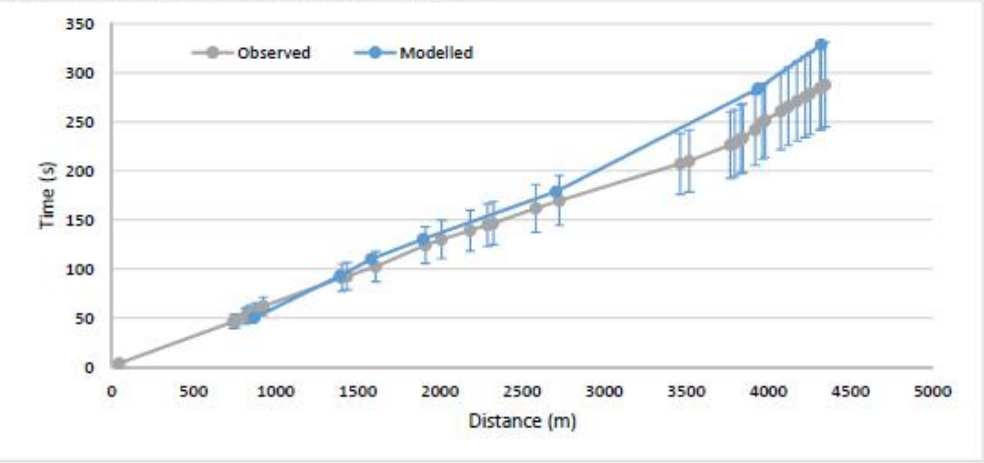
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
305	354	49	16%	PASS	74	2%



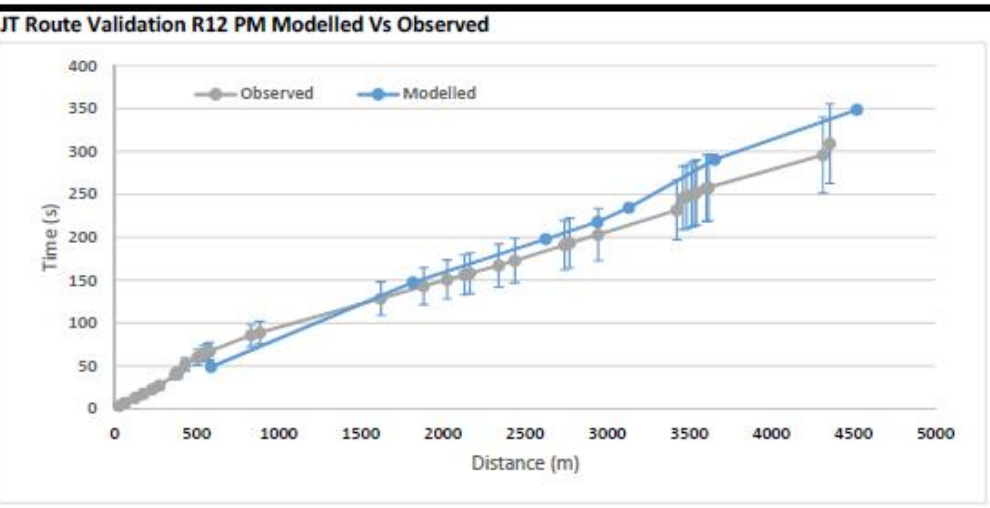
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1318	1216	-102	-8%	PASS	6393	30%



Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1466	1648	182	12%	PASS	12393	81%

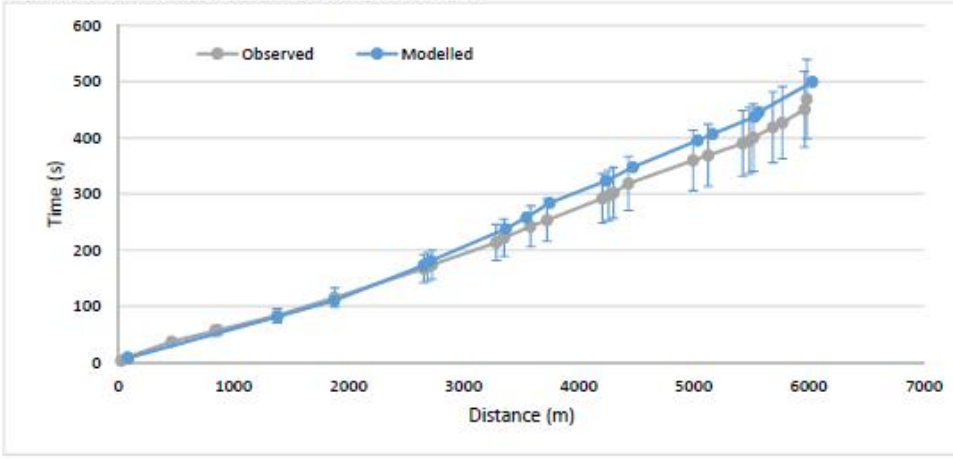


Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
288	329	41	14%	PASS	-25	-1%



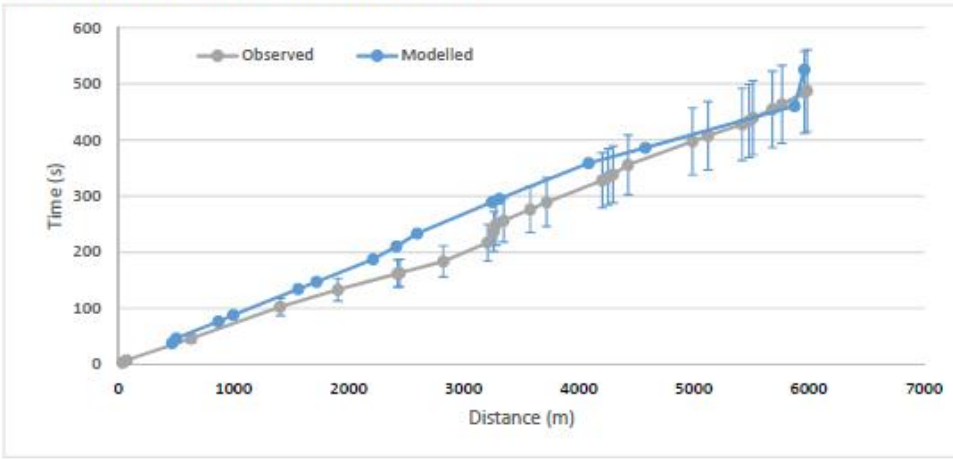
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
309	349	40	13%	PASS	165	4%

JT Route Validation R13 PM Modelled Vs Observed

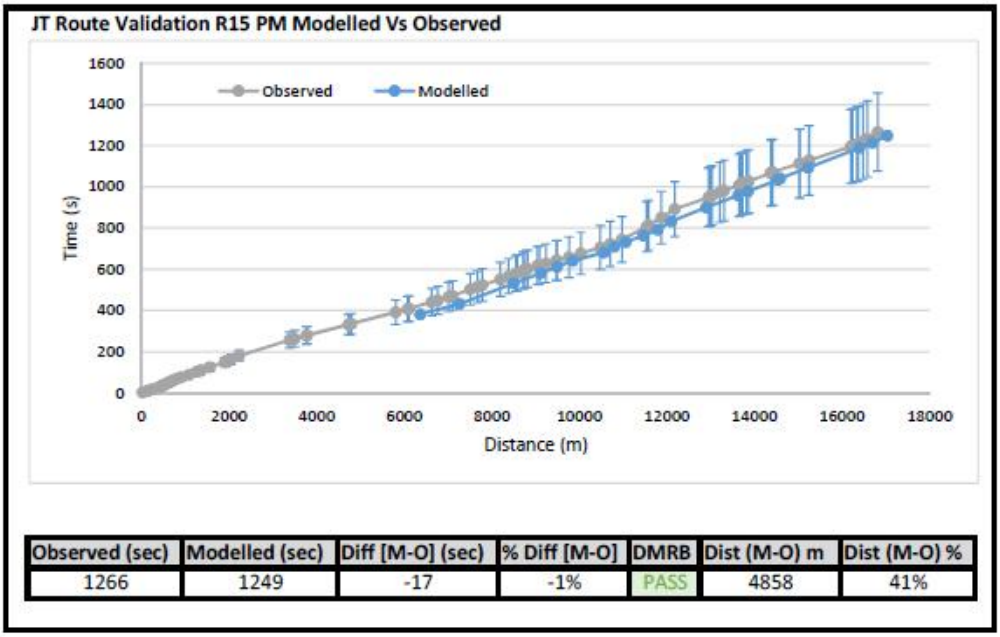


Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
469	500	31	7%	PASS	50	1%

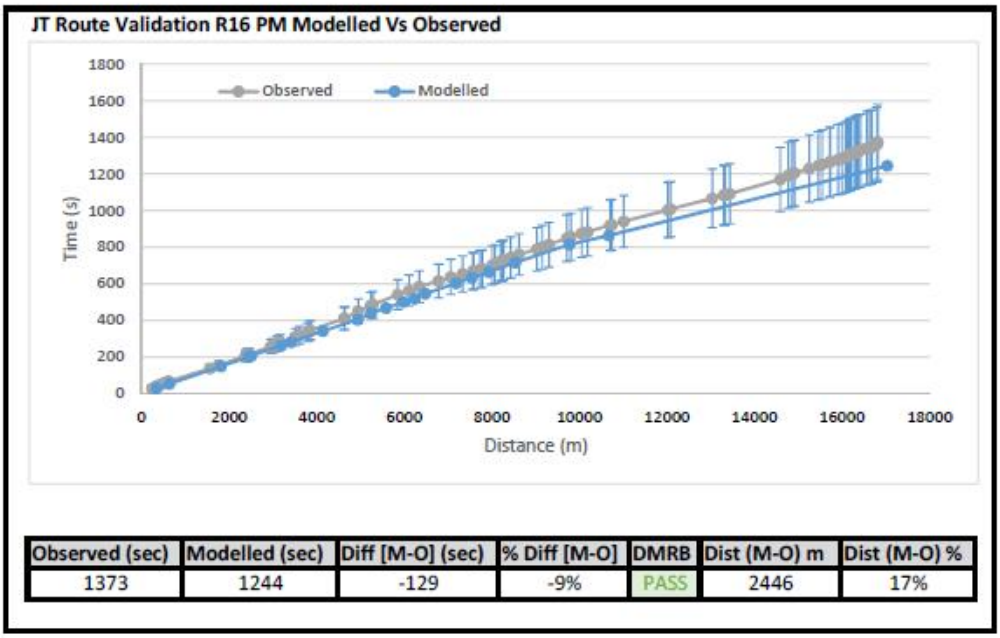
JT Route Validation R14 PM Modelled Vs Observed



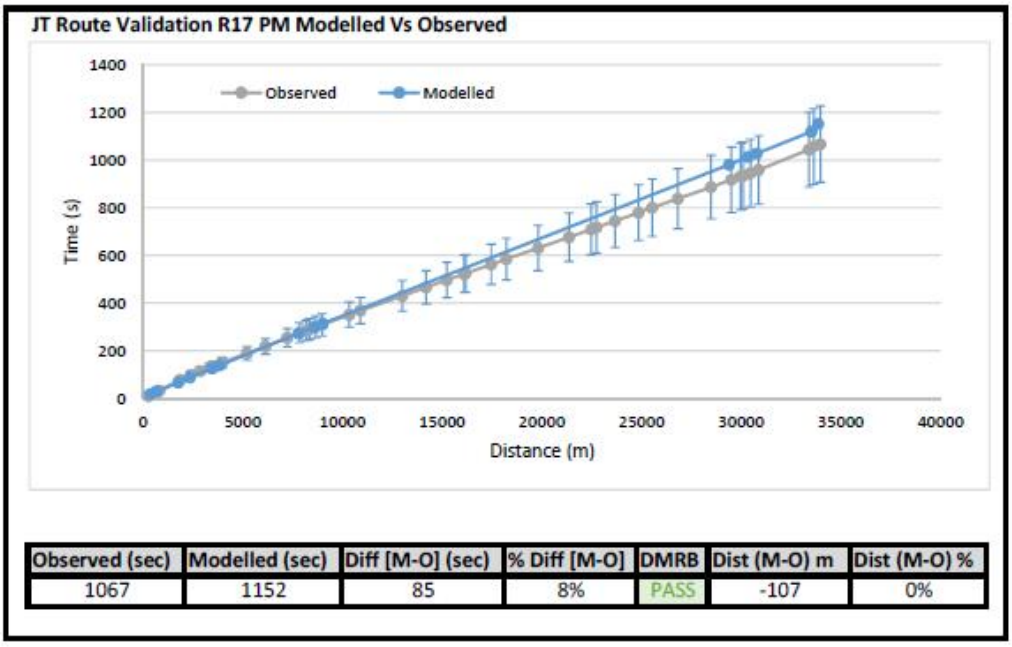
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
488	525	37	8%	PASS	-24	0%



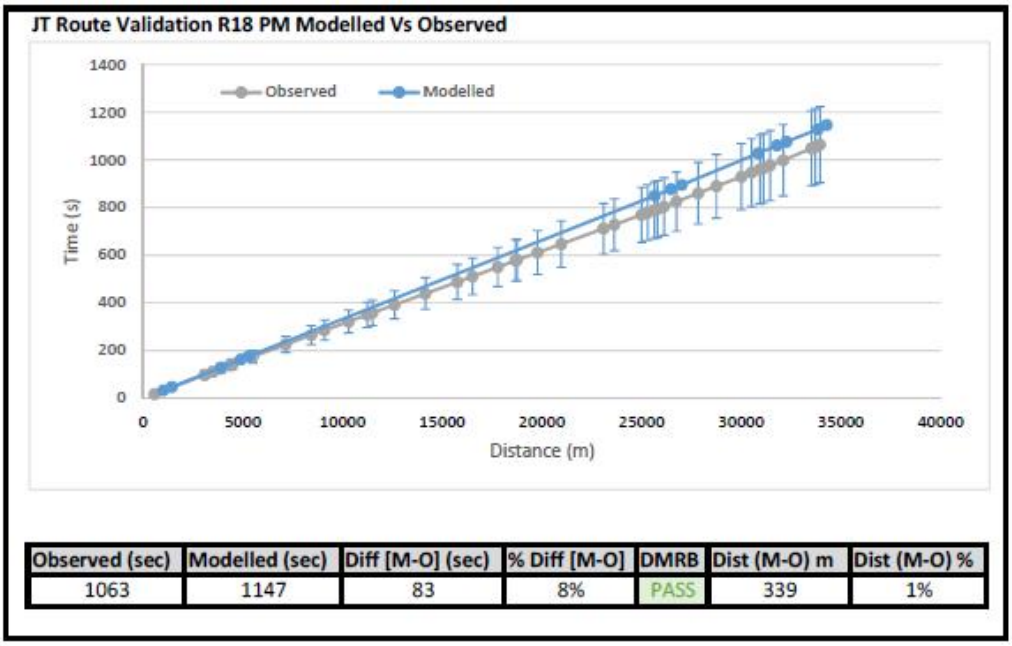
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1266	1249	-17	-1%	PASS	4858	41%



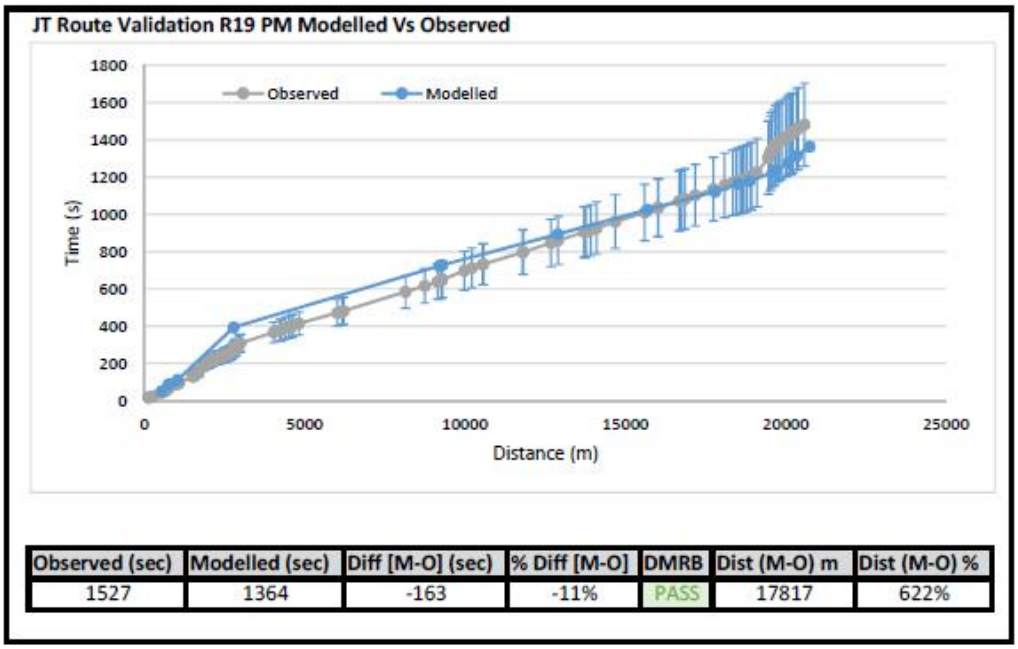
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1373	1244	-129	-9%	PASS	2446	17%



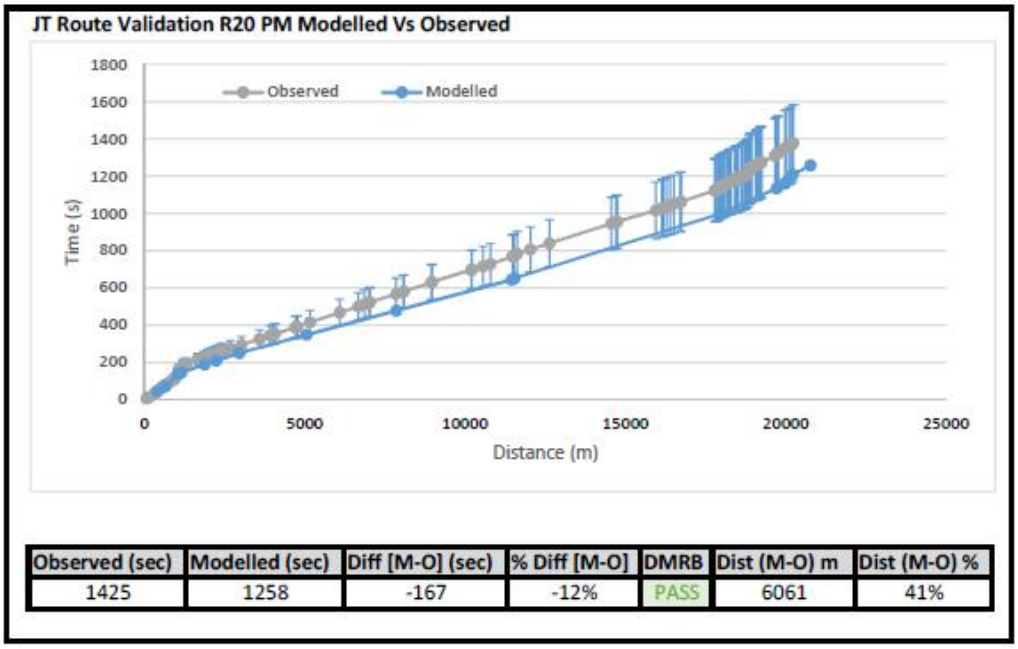
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1067	1152	85	8%	PASS	-107	0%



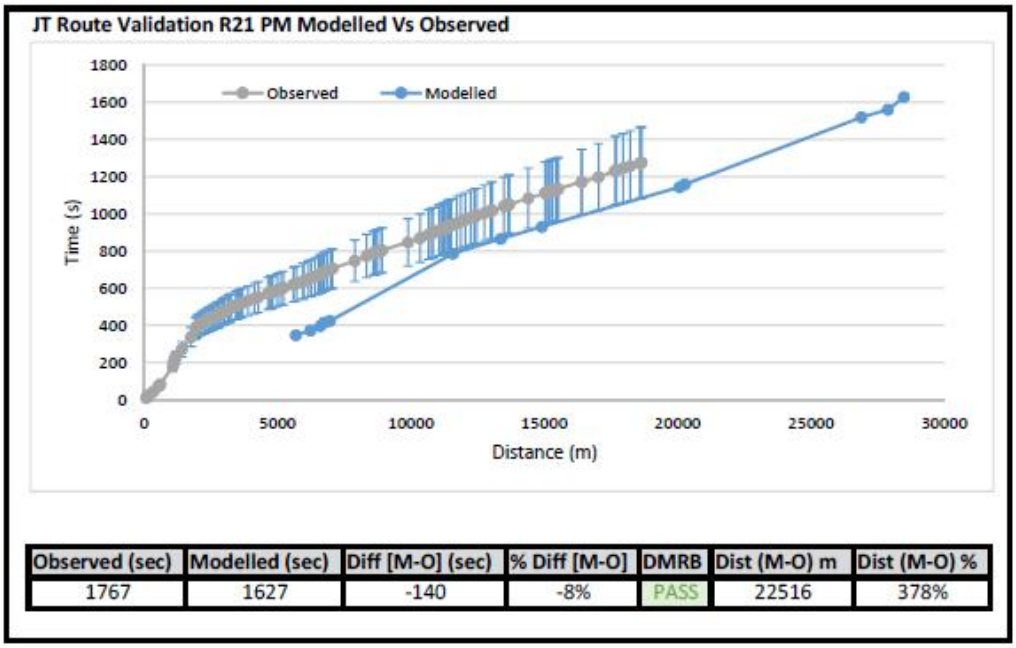
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1063	1147	83	8%	PASS	339	1%



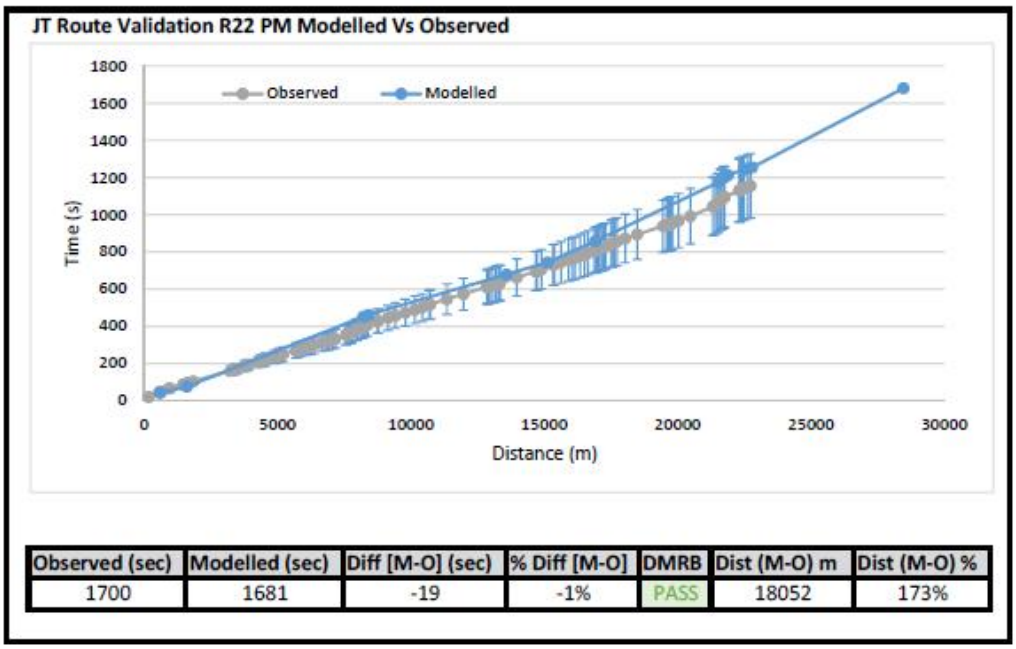
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1527	1364	-163	-11%	PASS	17817	622%



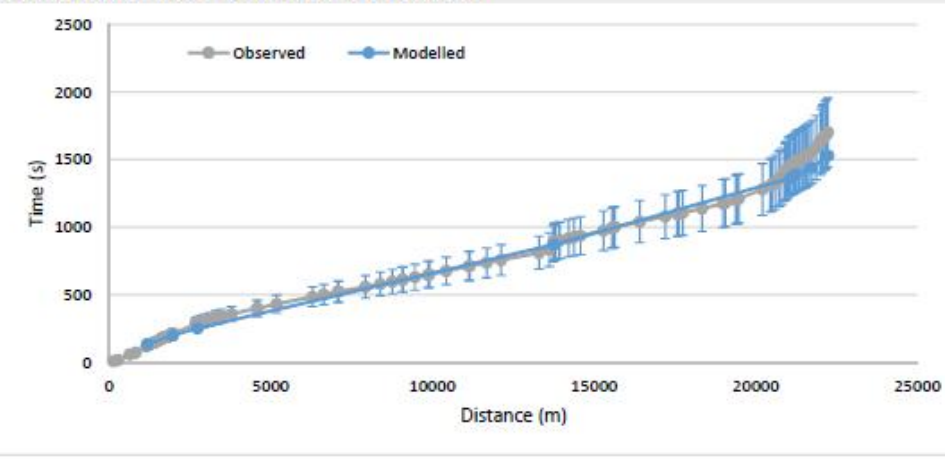
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1425	1258	-167	-12%	PASS	6061	41%



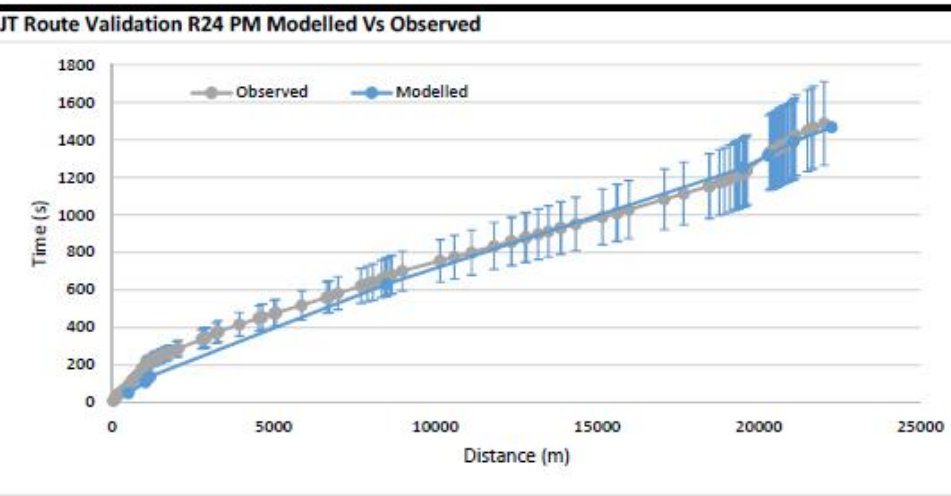
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1767	1627	-140	-8%	PASS	22516	378%



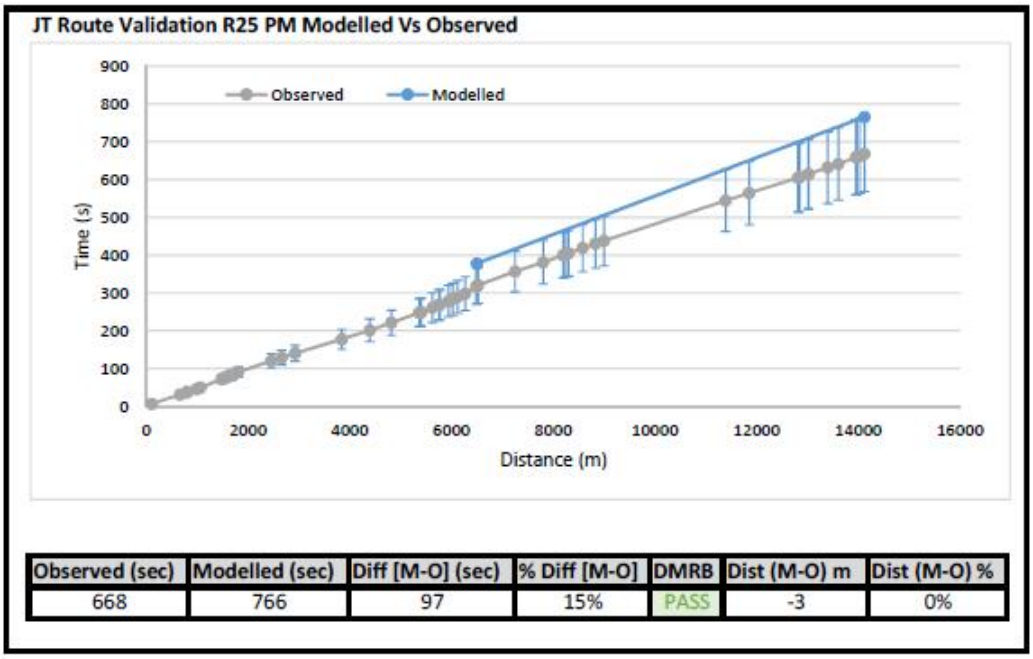
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1700	1681	-19	-1%	PASS	18052	173%



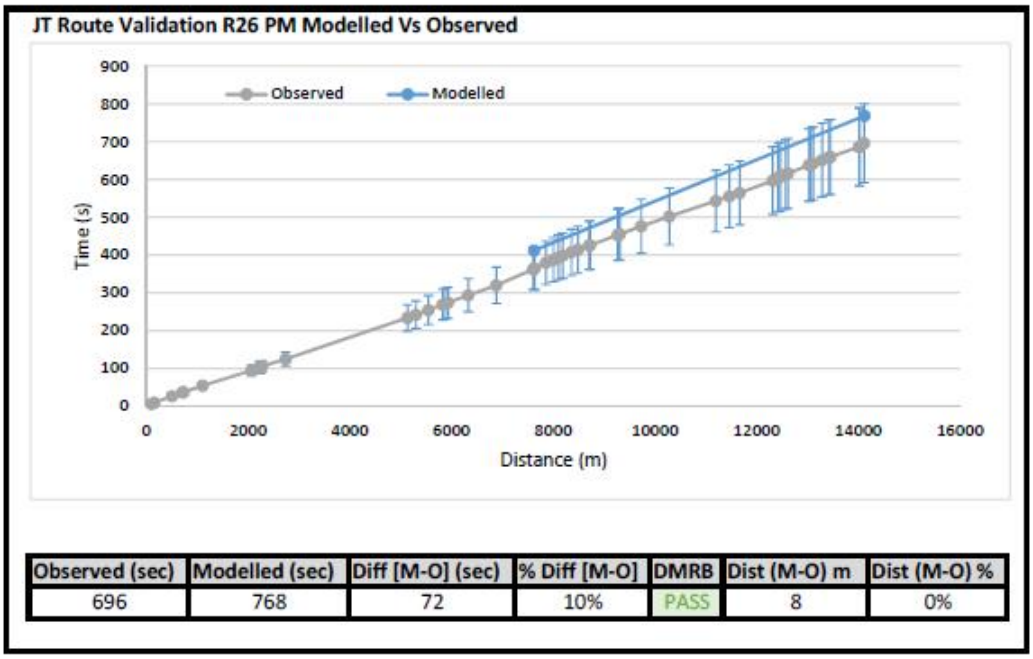
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1702	1530	-172	-10%	PASS	10127	87%



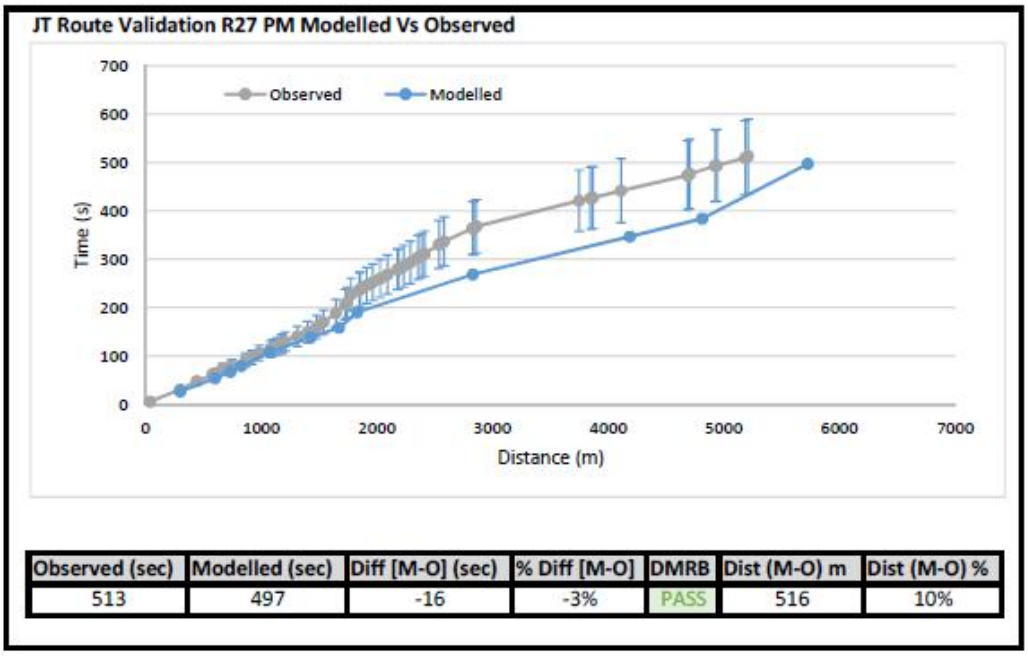
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1538	1467	-71	-5%	PASS	13783	163%



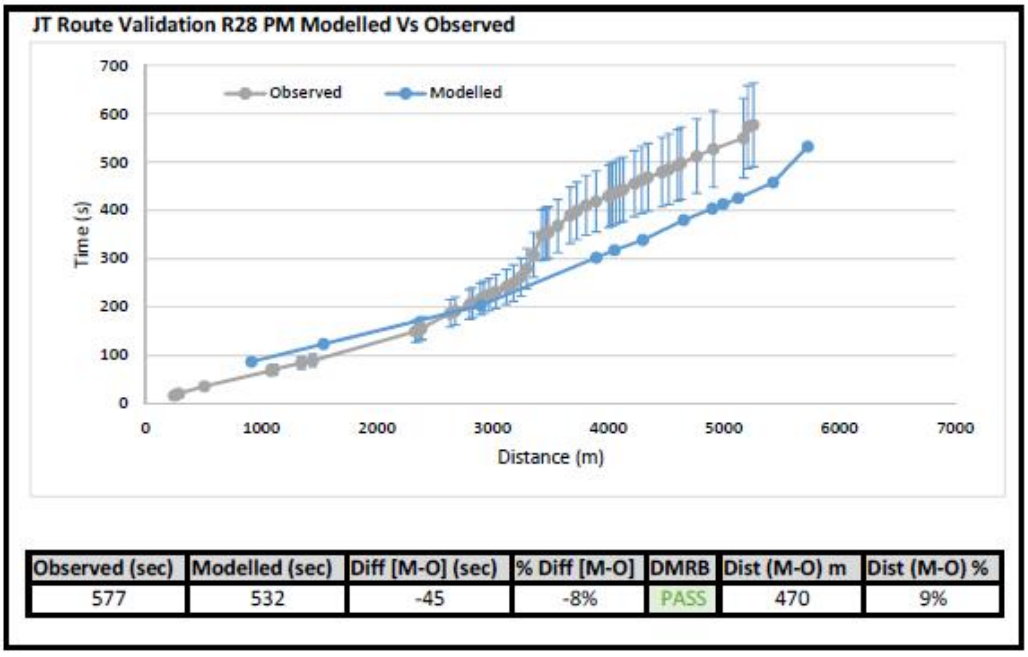
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
668	766	97	15%	PASS	-3	0%



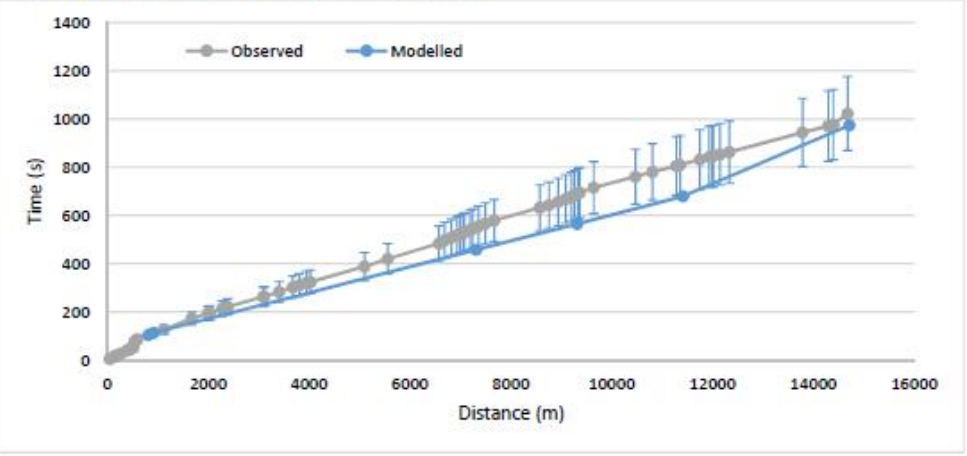
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
696	768	72	10%	PASS	8	0%



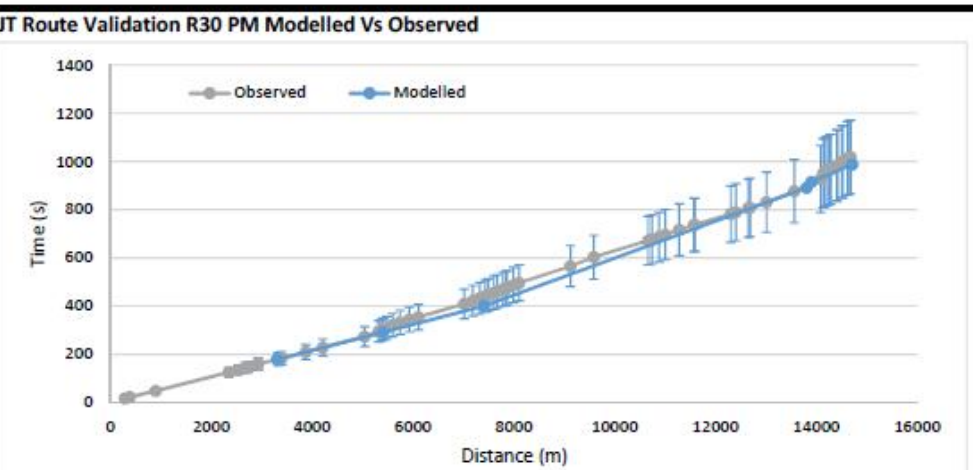
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
513	497	-16	-3%	PASS	516	10%



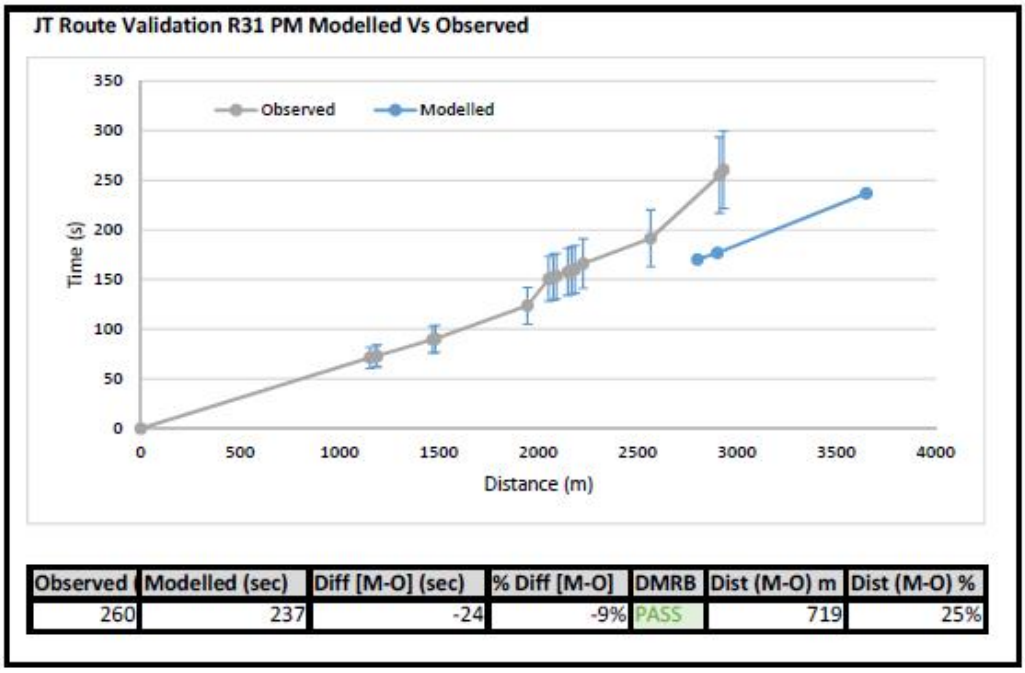
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
577	532	-45	-8%	PASS	470	9%



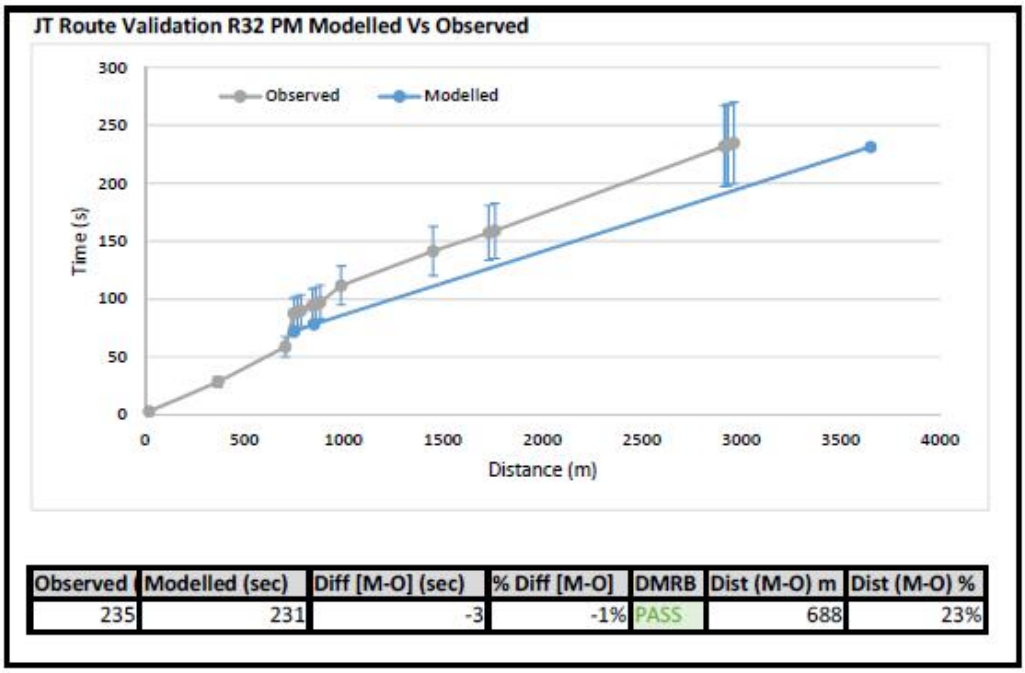
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1023	974	-49	-5%	PASS	38	0%



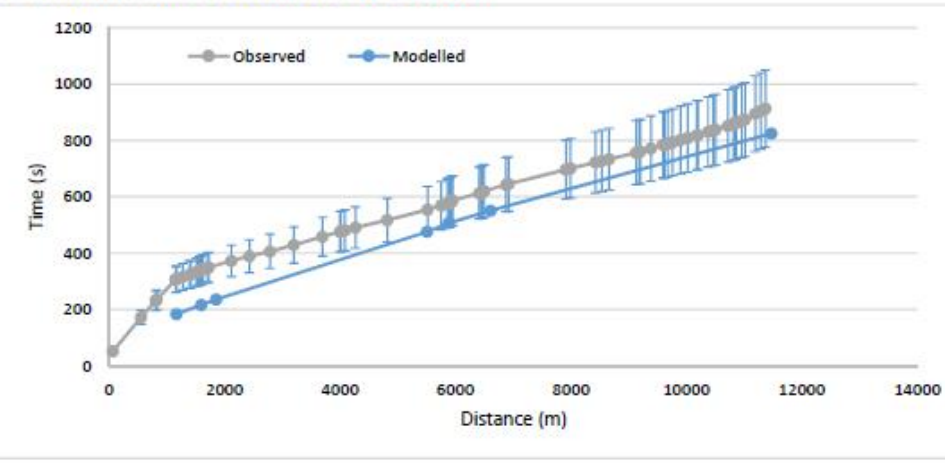
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1018	988	-30	-3%	PASS	39	0%



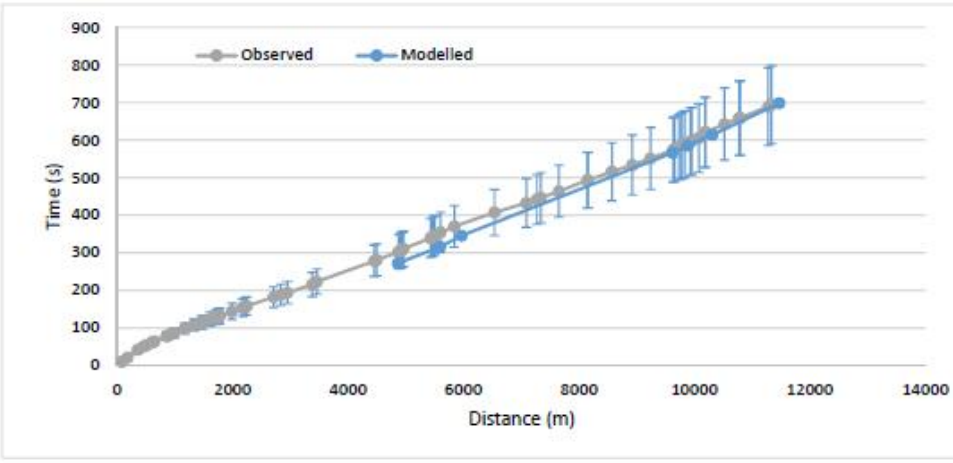
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
260	237	-24	-9%	PASS	719	25%



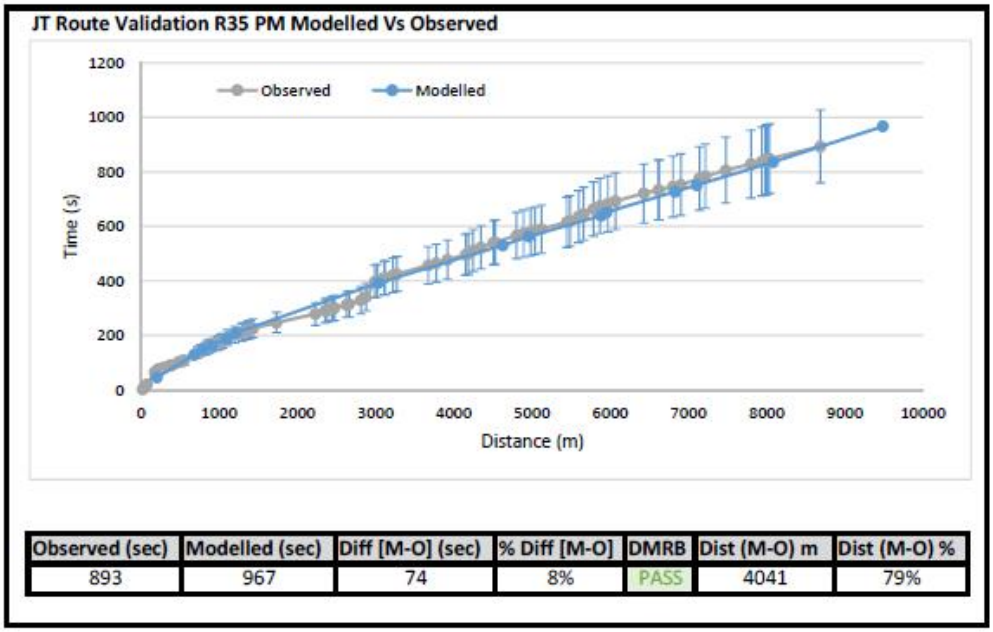
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
235	231	-3	-1%	PASS	688	23%



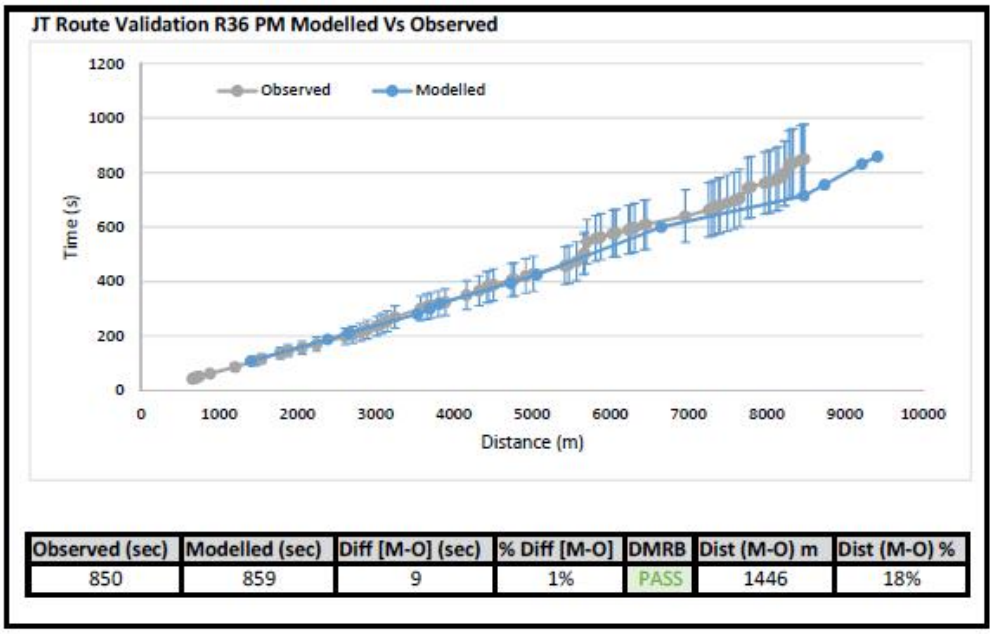
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
913	825	-88	-10%	PASS	753	7%



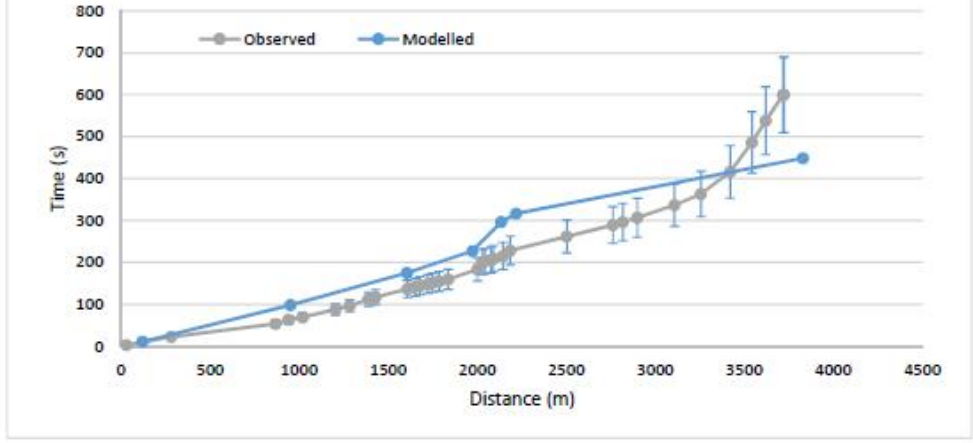
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
694	698	4	1%	PASS	950	9%



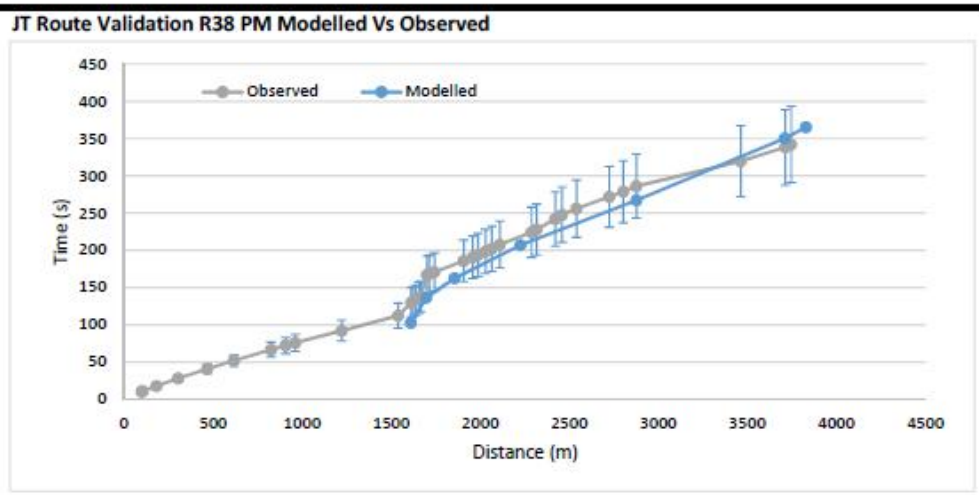
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
893	967	74	8%	PASS	4041	79%



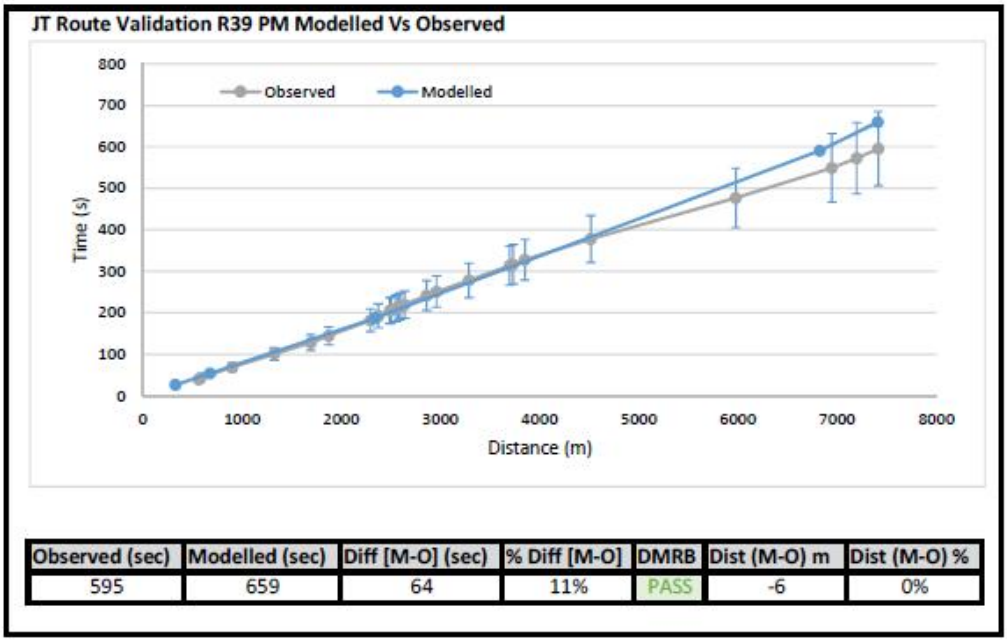
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
850	859	9	1%	PASS	1446	18%



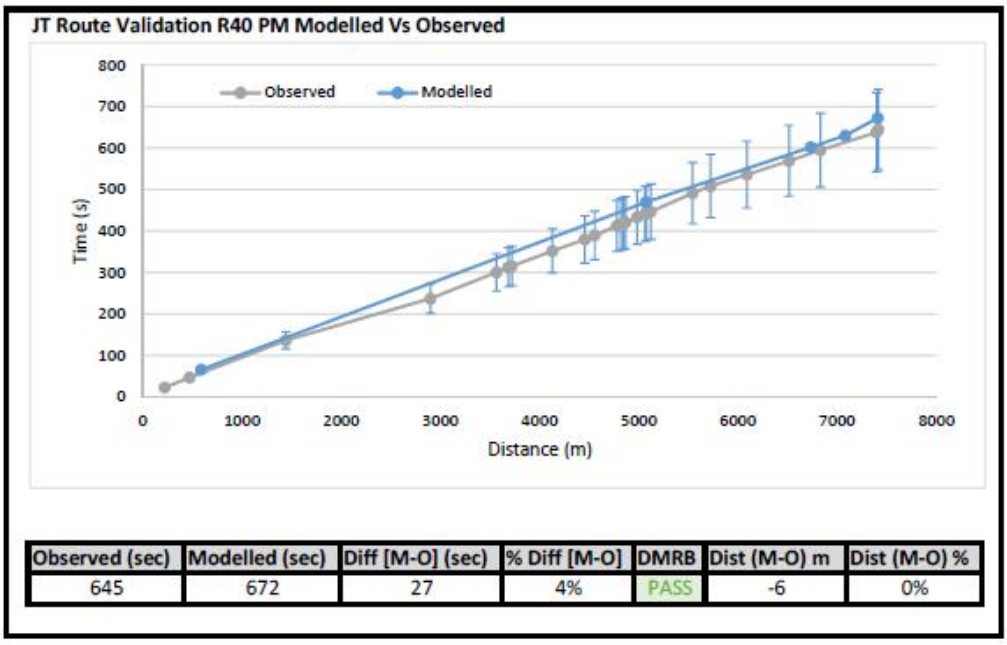
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
600	448	-152	-25%	FAIL	106	3%



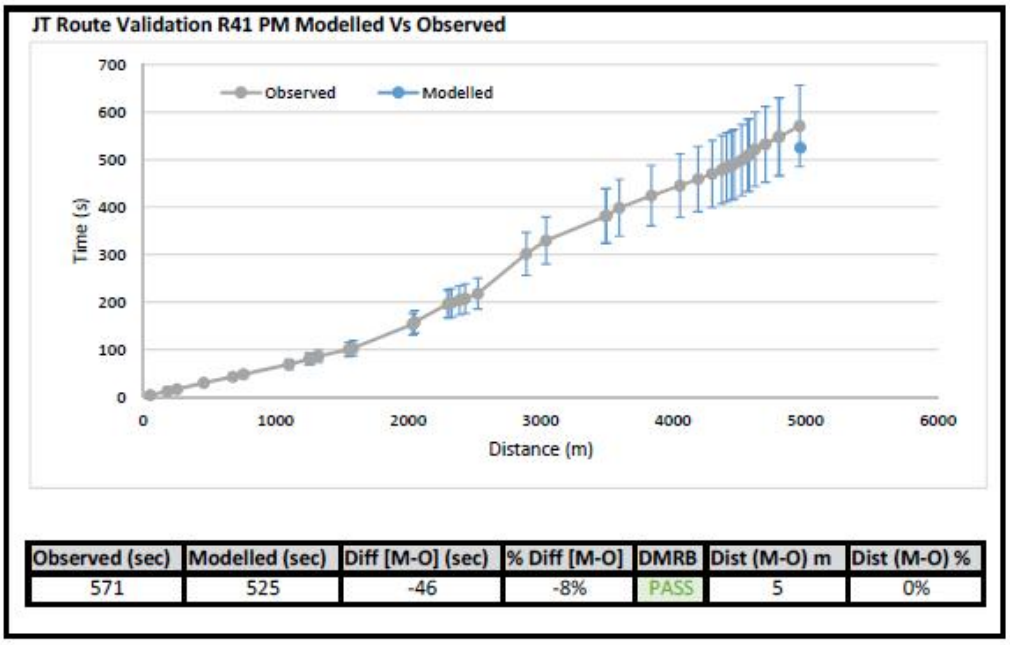
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
342	365	23	7%	PASS	83	2%



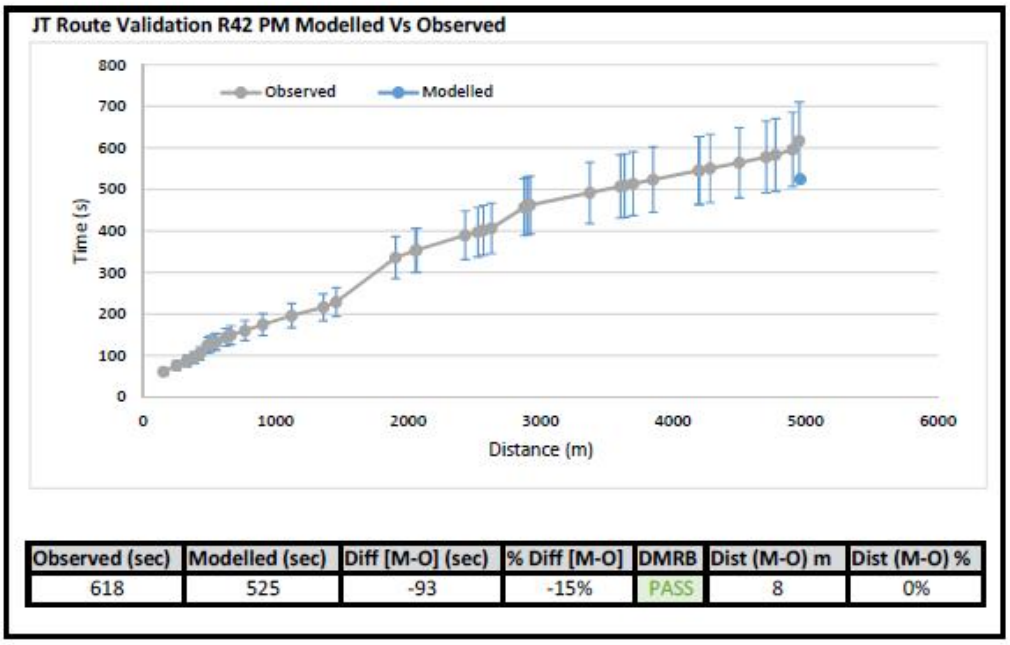
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
595	659	64	11%	PASS	-6	0%



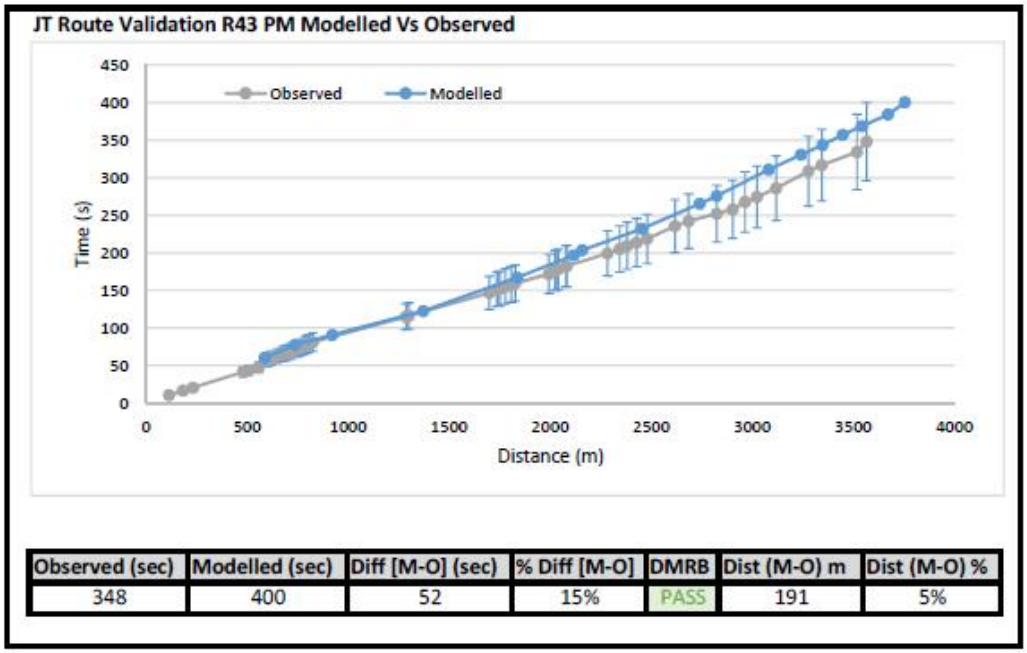
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
645	672	27	4%	PASS	-6	0%



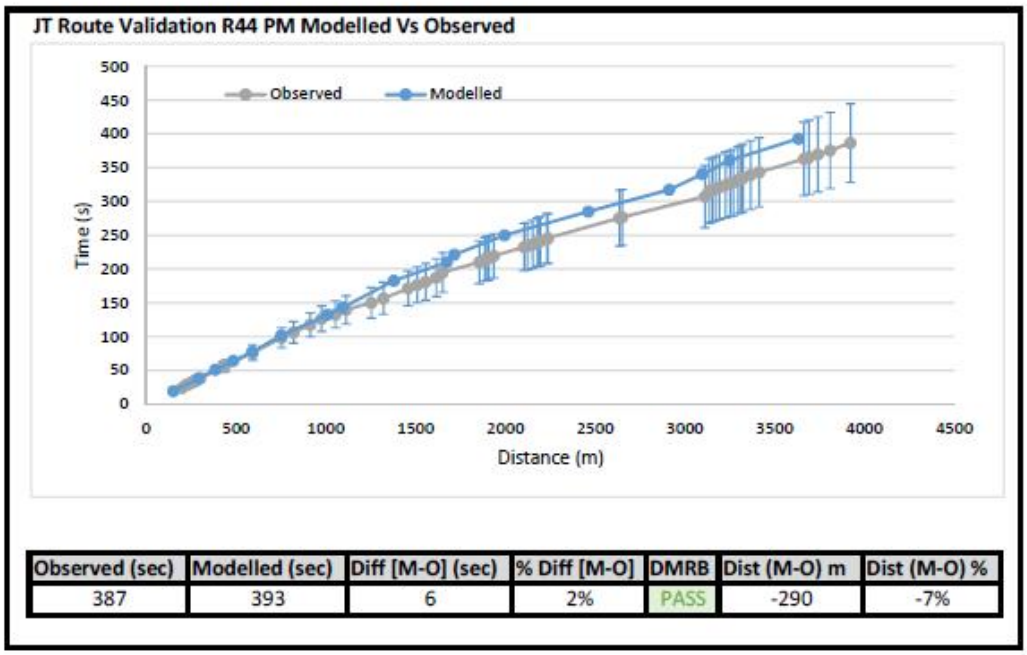
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
571	525	-46	-8%	PASS	5	0%



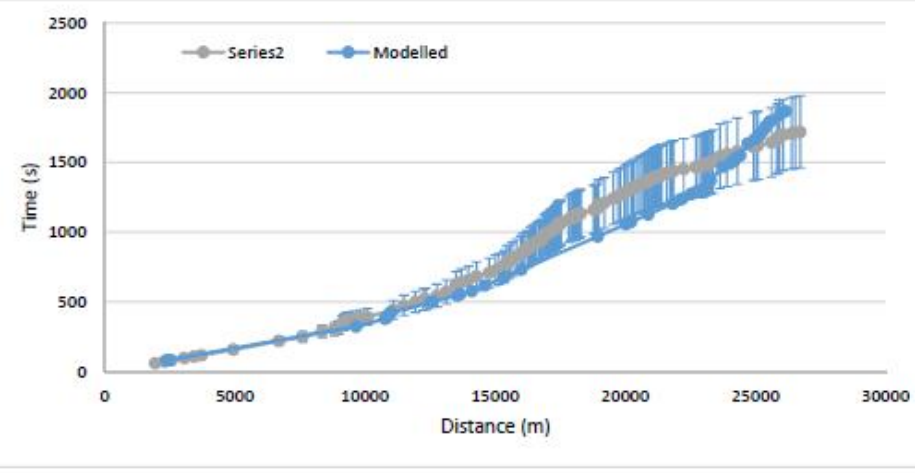
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
618	525	-93	-15%	PASS	8	0%



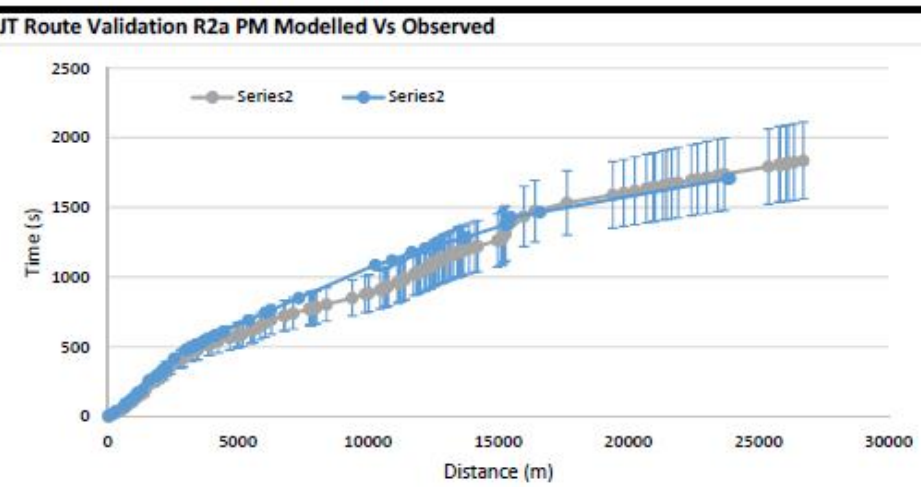
Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
348	400	52	15%	PASS	191	5%



Observed (sec)	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
387	393	6	2%	PASS	-290	-7%

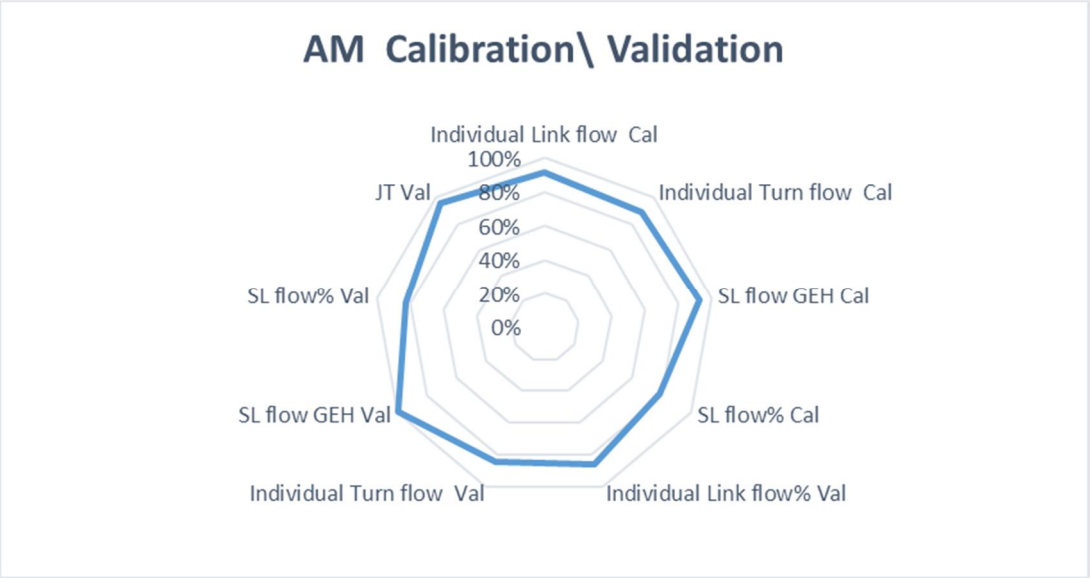


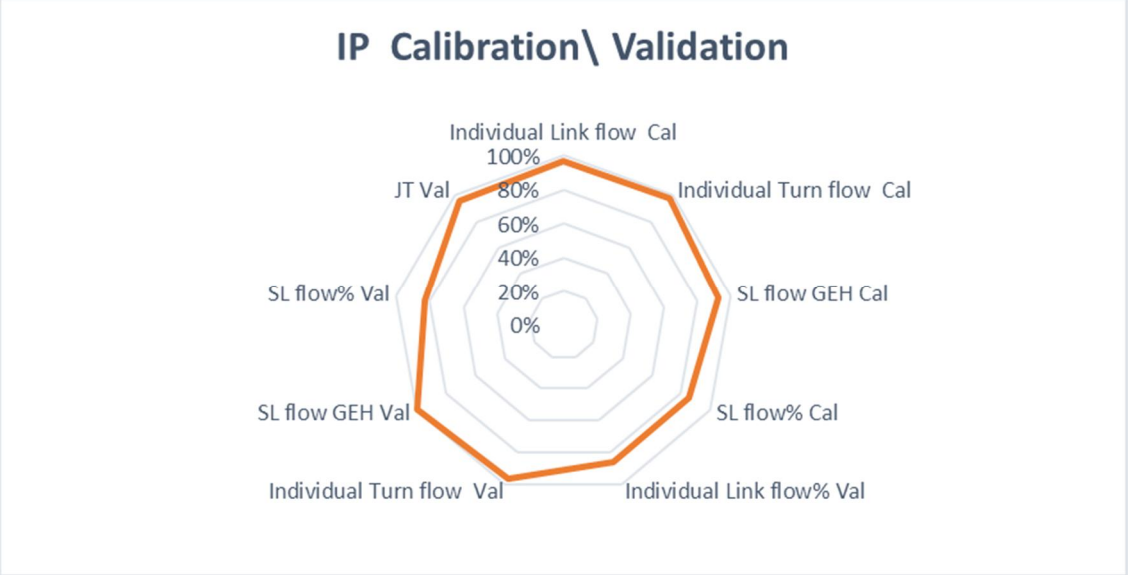
Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1720	1883	162	9%	PASS	-503	-3%

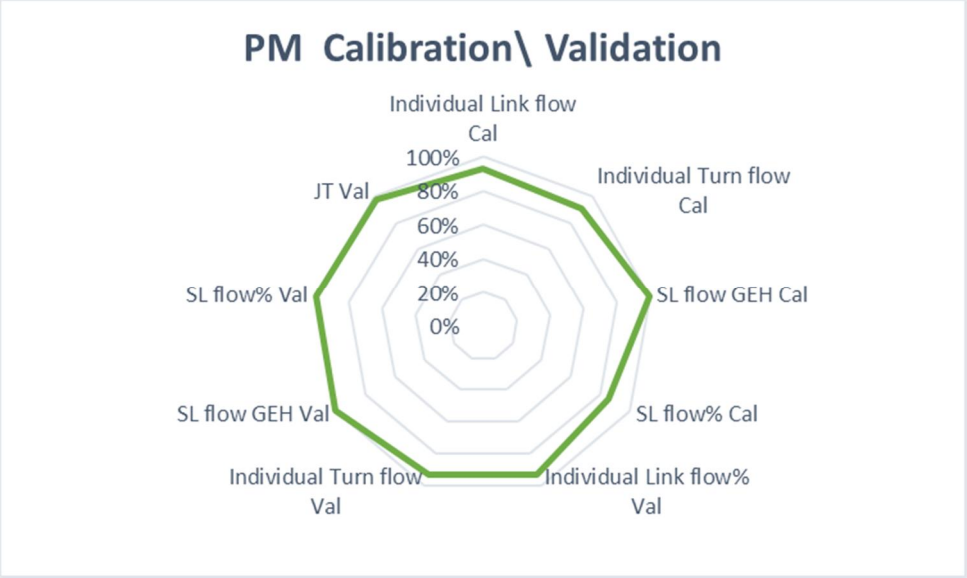


Observed	Modelled (sec)	Diff [M-O] (sec)	% Diff [M-O]	DMRB	Dist (M-O) m	Dist (M-O) %
1720	1883	162	9%	PASS	35	1%

12 Appendix C

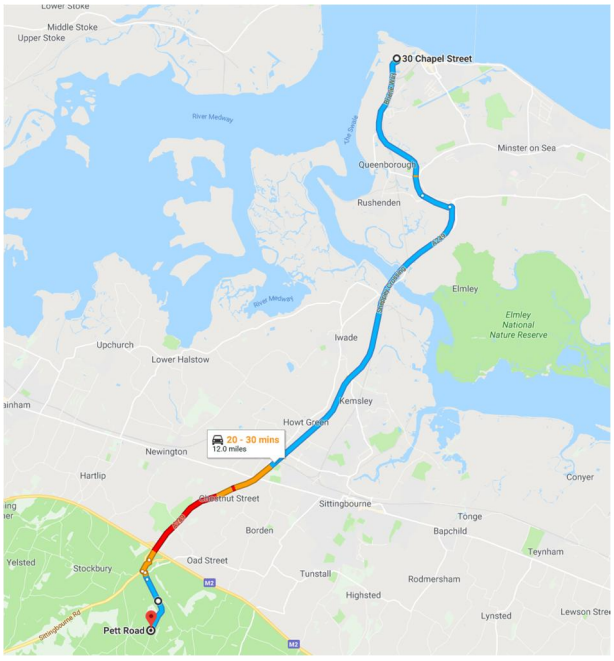




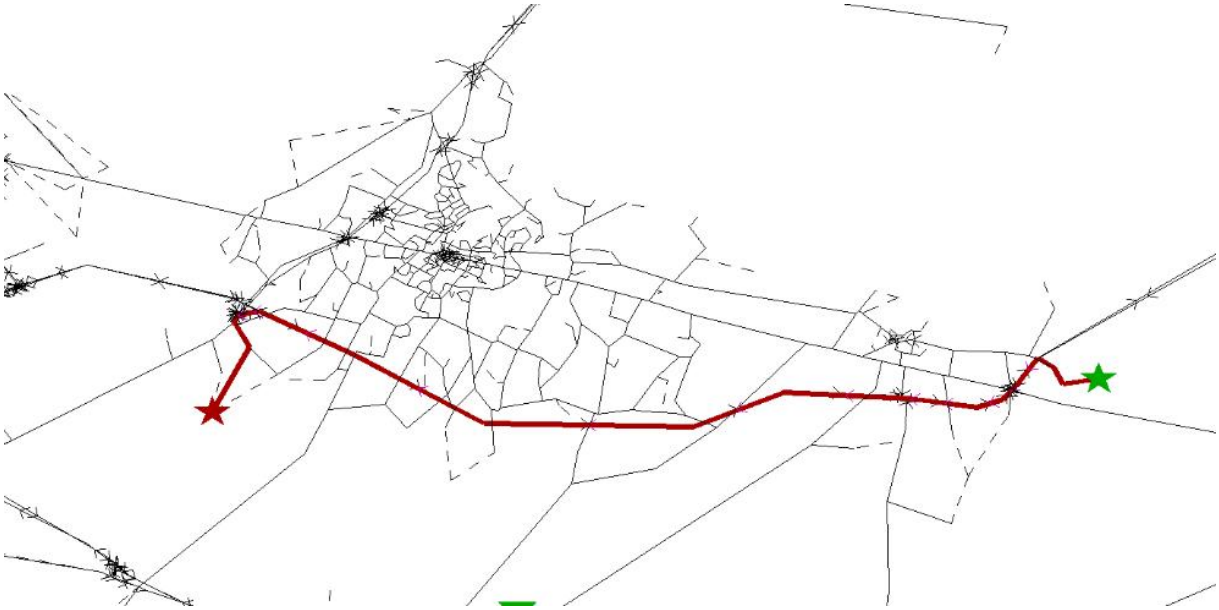

PM Calibration\ Validation
Individual Link flow Cal
Individual Turn flow Cal
SL flow GEH Cal
SL flow% Cal
Individual Link flow% Val
Individual Turn flow Val
SL flow GEH Val
SL flow% Val
JT Val
100%
80%
60%
40%
20%
0%

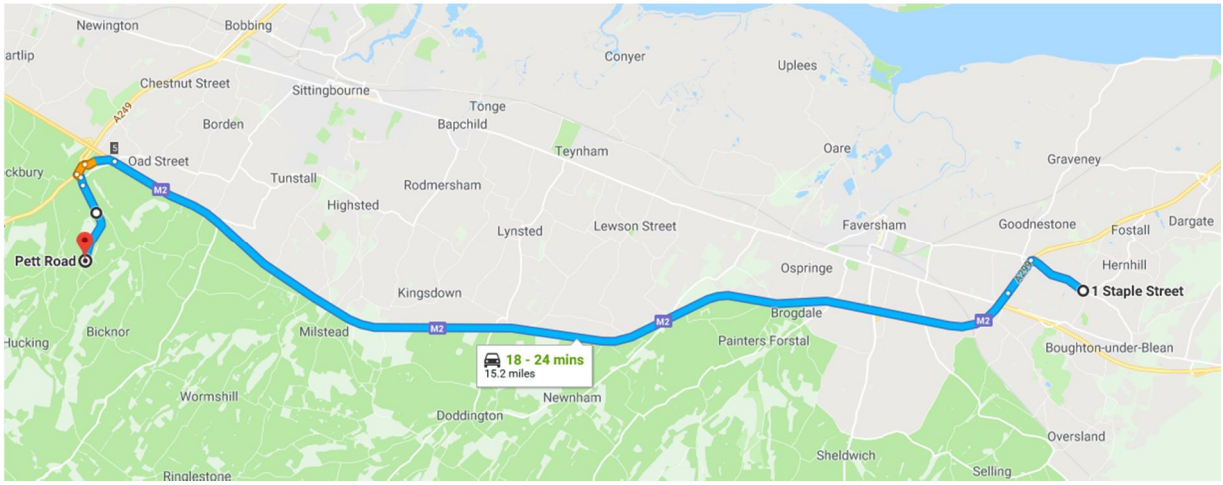
13 Appendix D

Route 1

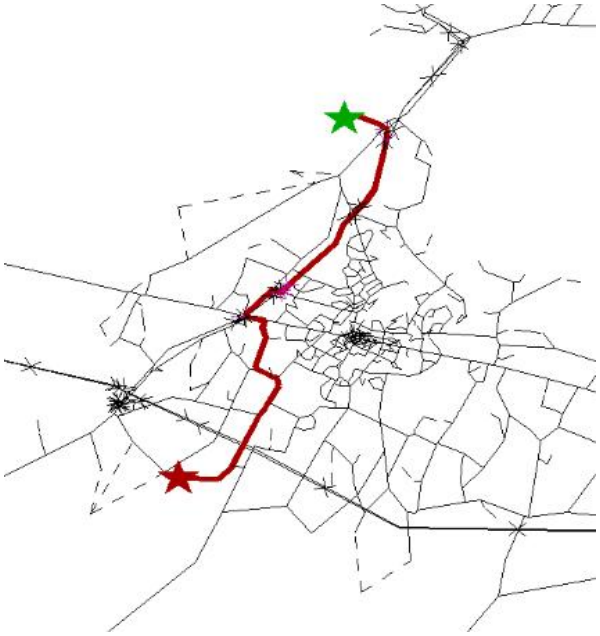


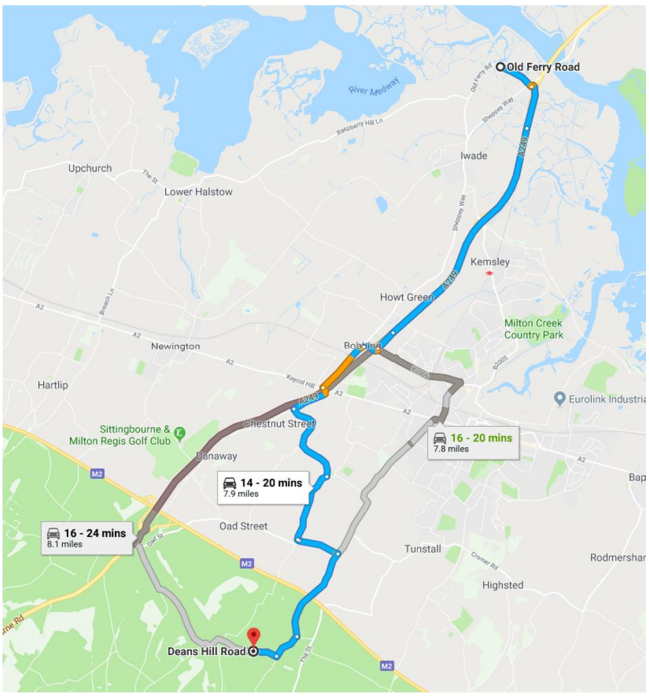
Route 2



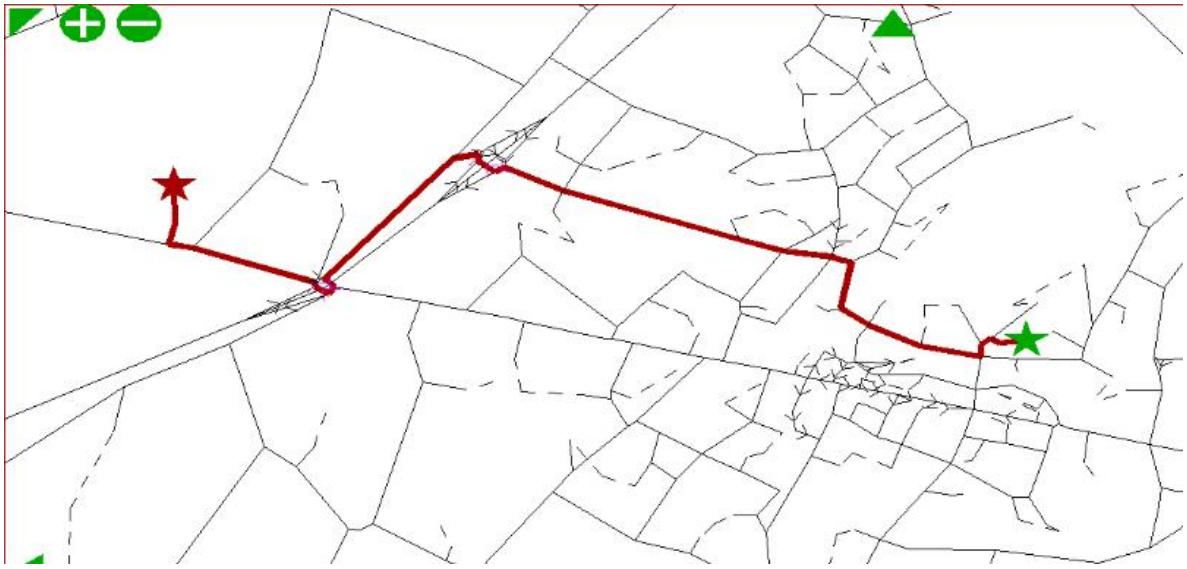

Newington
Bobbing
Conyer
Uplees
Chestnut Street
Sittingbourne
Tonge
Bapchild
Borden
Teynham
Oare
Graveney
Oad Street
Tunstall
Rodmersham
Highsted
Lynsted
Lewson Street
Faversham
Goodnestone
Fostall
Dargate
Pett Road
Ospringe
Hernhill
1 Staple Street
Kingsdown
Brogdale
Bicknor
Milstead
Painters Forstal
Boughton-under-Blean
18 - 24 mins
15.2 miles
Wormshill
Newnham
Doddington
Oversland
Sheldwich
Selling
Ringlestone
A249
M2

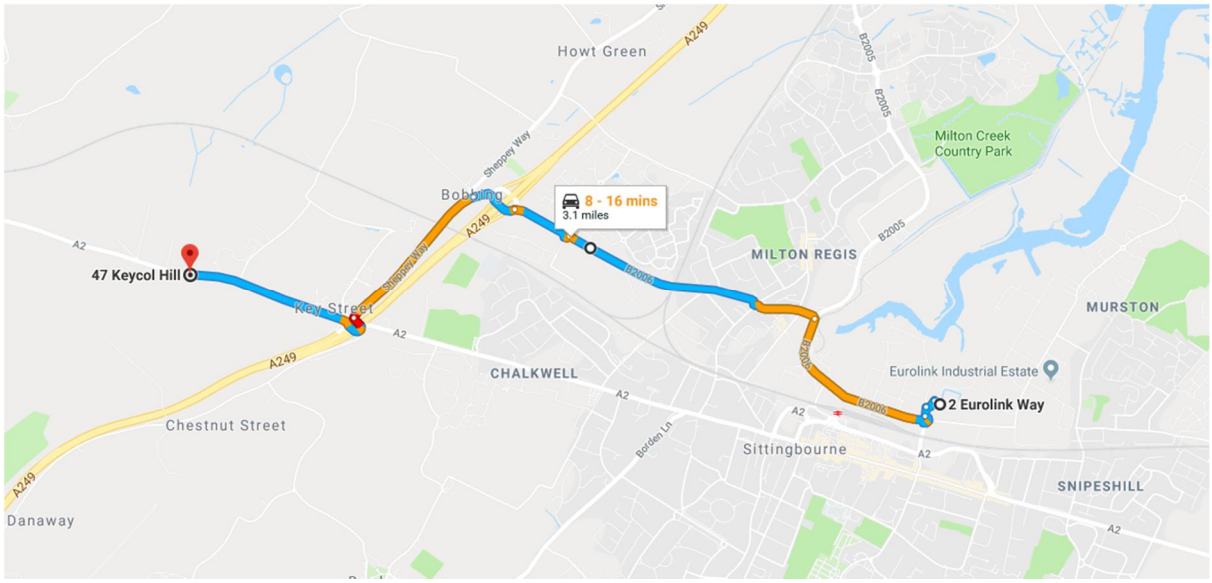
Route 3



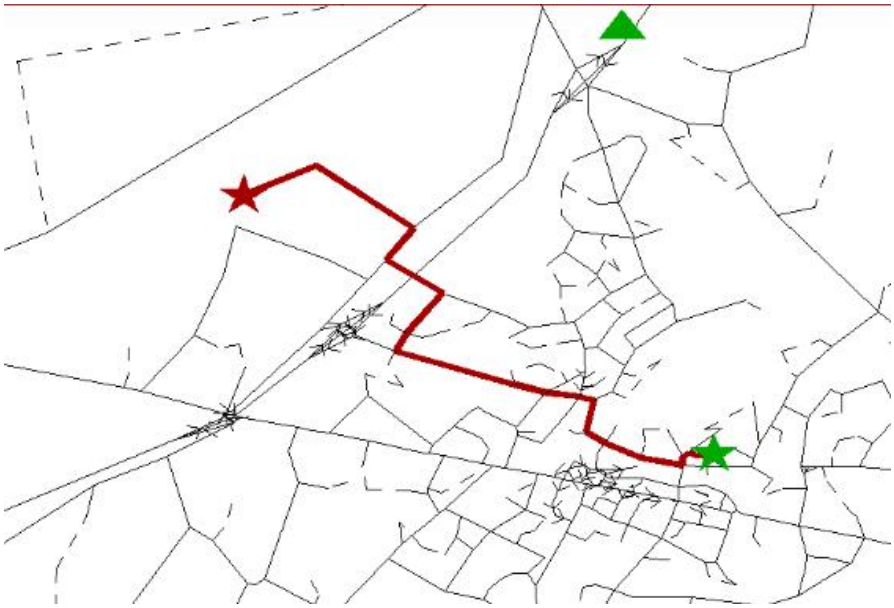

Old Ferry Road
River Medway
Upchurch
Lower Halstow
Iwade
Kemsley
Howt Green
Milton Creek Country Park
Newington
Hartlip
Sittingbourne & Milton Regis Golf Club
Chestnut Street
Bapnaway
Oad Street
Tunstall
Highsted
Rodmersham
Deans Hill Road
16 - 20 mins
7.8 miles
14 - 20 mins
7.9 miles
16 - 24 mins
8.1 miles

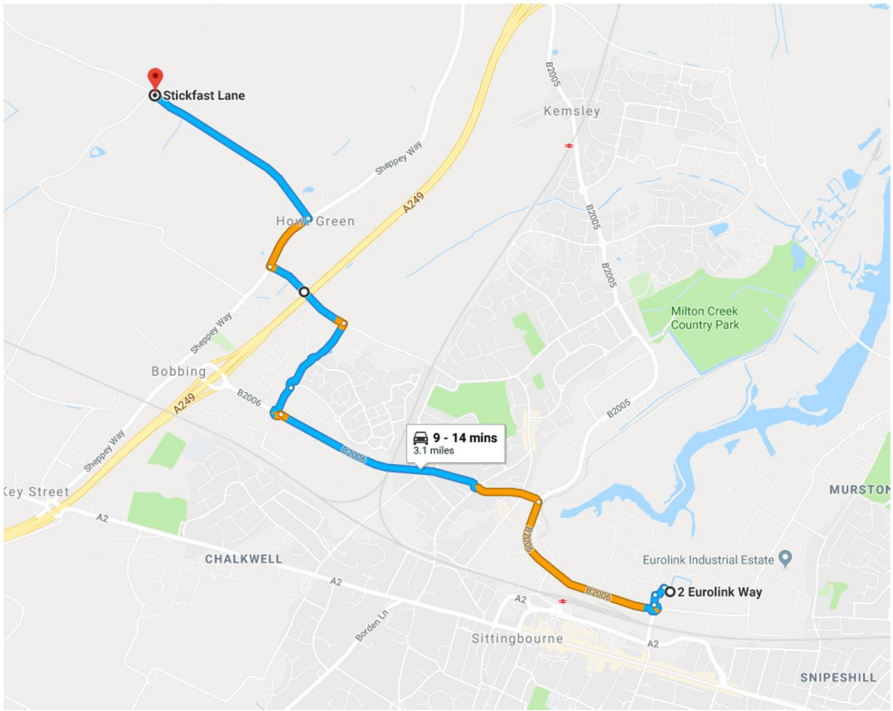
Route 4



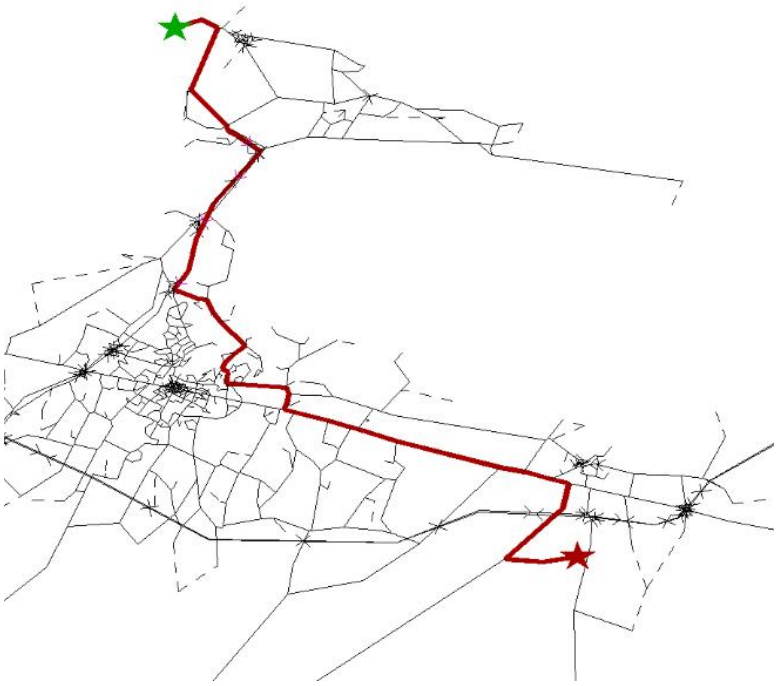

Howt Green
A249
B2005
Milton Creek Country Park
Bobbing
Sheppey Way
8 - 16 mins
3.1 miles
A249
A2
47 Keycol Hill
Key Street
Sittingbourne Rd
A2
MILTON REGIS
B2005
MURSTON
A249
CHALKWELL
A2
Eurolink Industrial Estate
B2006
2 Eurolink Way
Chestnut Street
A2
Borden Ln
Sittingbourne
A2
SNIPESHILL
A249
Danaway
A2

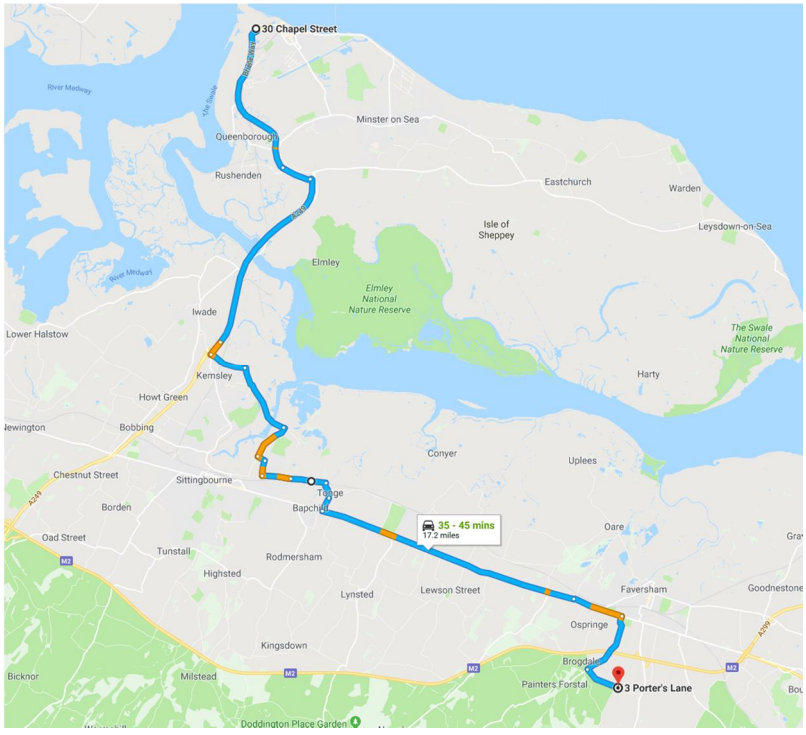
Route 5



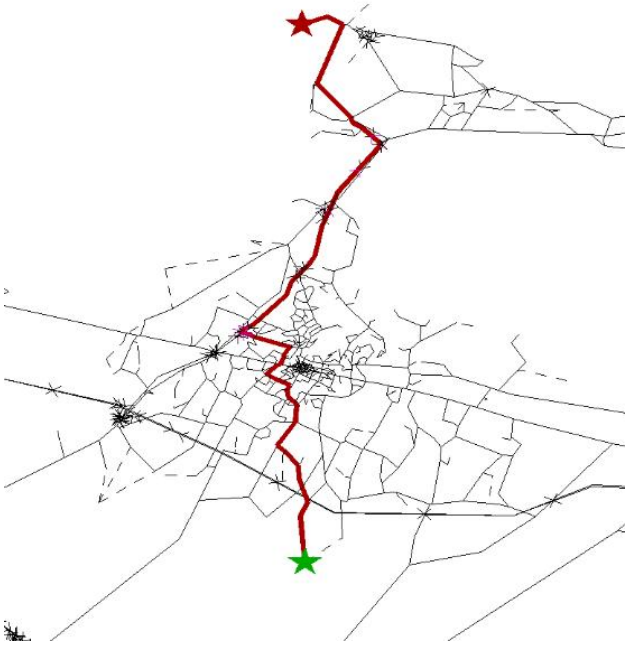

Stickfast Lane
Kemsley
Howt Green
Bobbing
Milton Creek Country Park
9 - 14 mins
3.1 miles
CHALKWELL
Eurolink Industrial Estate
2 Eurolink Way
Sittingbourne
SNIPESHILL
A249
A2
B2005
B2006
Sheppey Way

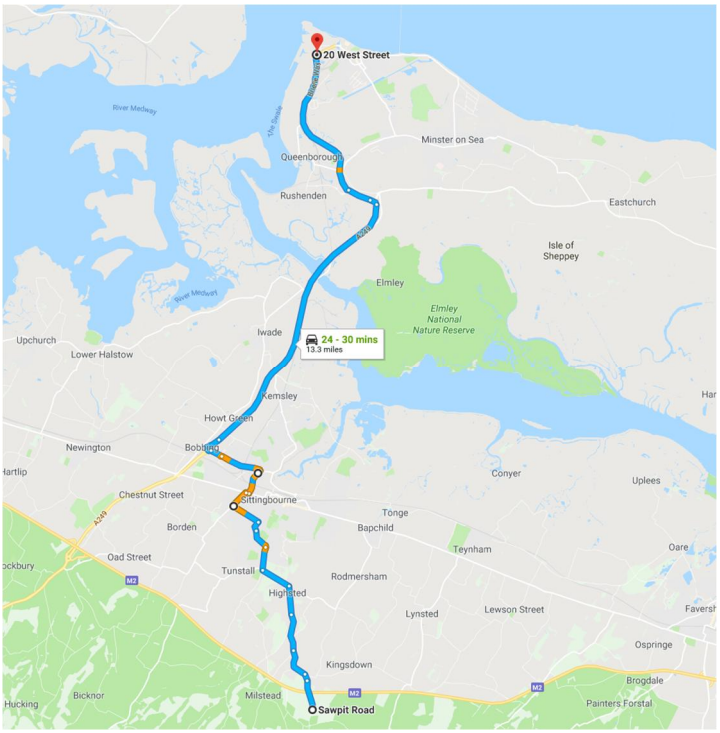
Route 6



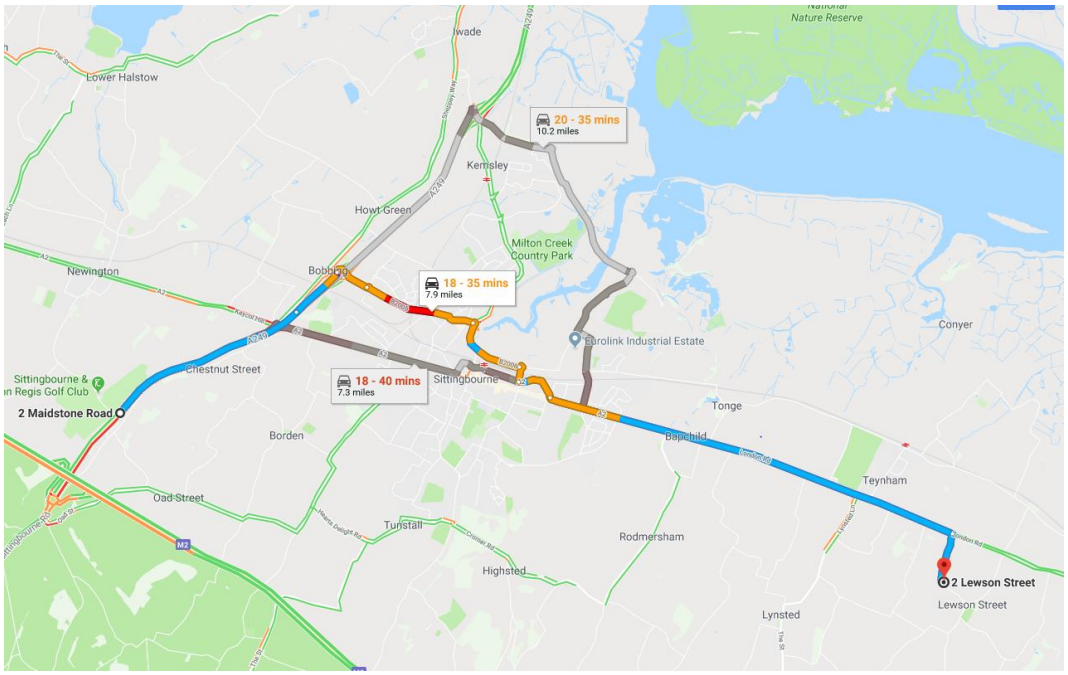

30 Chapel Street
River Medway
Minster on Sea
Queenborough
Rushenden
Eastchurch
Warden
Isle of Sheppey
Leysdown-on-Sea
Elmley
Elmley National Nature Reserve
Iwade
Lower Halstow
The Swale National Nature Reserve
Kemsley
Harty
Howt Green
Bobbing
Conyer
Uplees
Chestnut Street
Sittingbourne
Borden
Bapchild
35 - 45 mins
17.2 miles
Oare
Oad Street
Tunstall
Rodmersham
Highsted
Lynsted
Lewson Street
Faversham
Goodnestone
Ospringe
Kingsdown
Brogdale
Bicknor
Milstead
Painters Forstal
3 Porter's Lane
Doddington Place Garden

Route 7

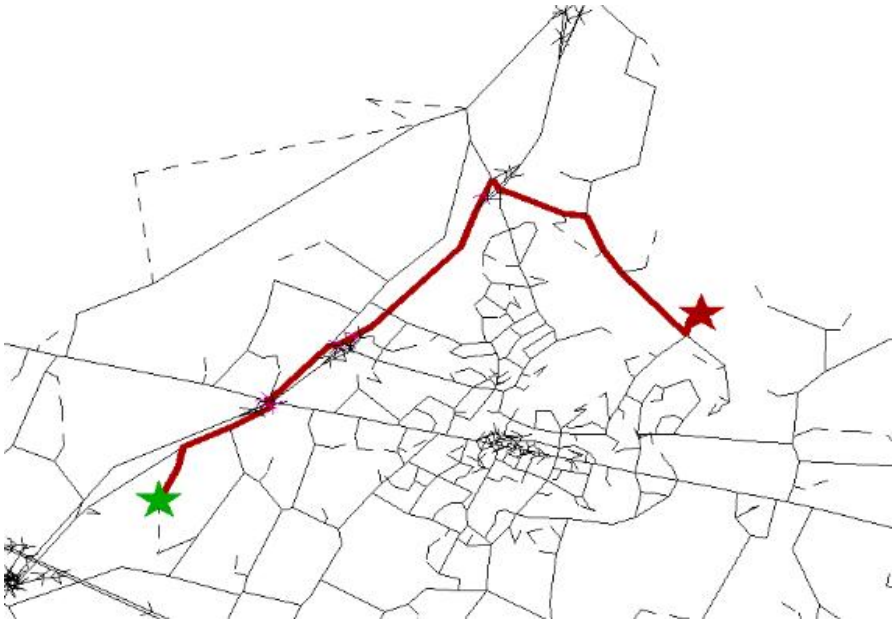


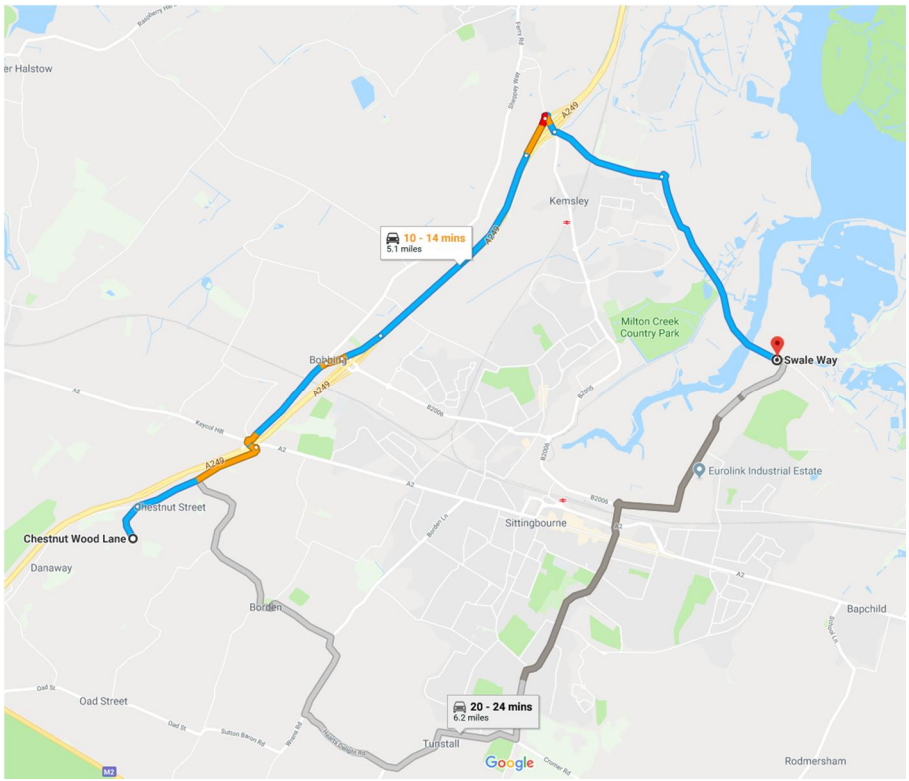

20 West Street
River Medway
Minster on Sea
Queenborough
Rushenden
Eastchurch
Isle of Sheppey
Elmley
Elmley National Nature Reserve
River Medway
Iwade
24 - 30 mins
13.3 miles
Upchurch
Lower Halstow
Kemsley
Howt Green
Newington
Bobbing
Conyer
Uplees
Chestnut Street
Sittingbourne
Tonge
Borden
Bapchild
Teynham
Oad Street
Tunstall
Rodmersham
Lynsted
Lewson Street
Ospringe
Kingsdown
Brogdale
Bicknor
Milstead
Sawpit Road
Painters Forstal
A249
M2

Route 8

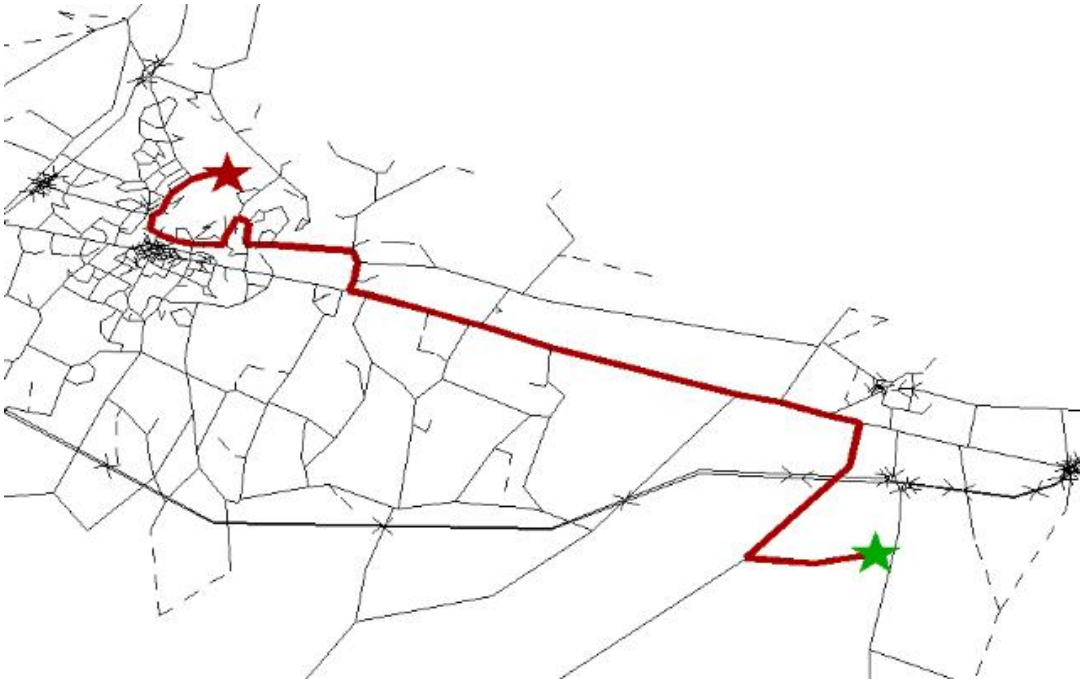

Iwade
Lower Halstow
20 - 35 mins
10.2 miles
Kemsley
Howt Green
Milton Creek
Country Park
Newington
Bobbing
18 - 35 mins
7.9 miles
Eurolink Industrial Estate
Conyer
Chestnut Street
Sittingbourne &
n Regis Golf Club
18 - 40 mins
7.3 miles
Sittingbourne
2 Maidstone Road
Tonge
Borden
Bapchild
Teynham
Oad Street
Tunstall
Rodmersham
Highsted
2 Lewson Street
Lewson Street
Lynsted

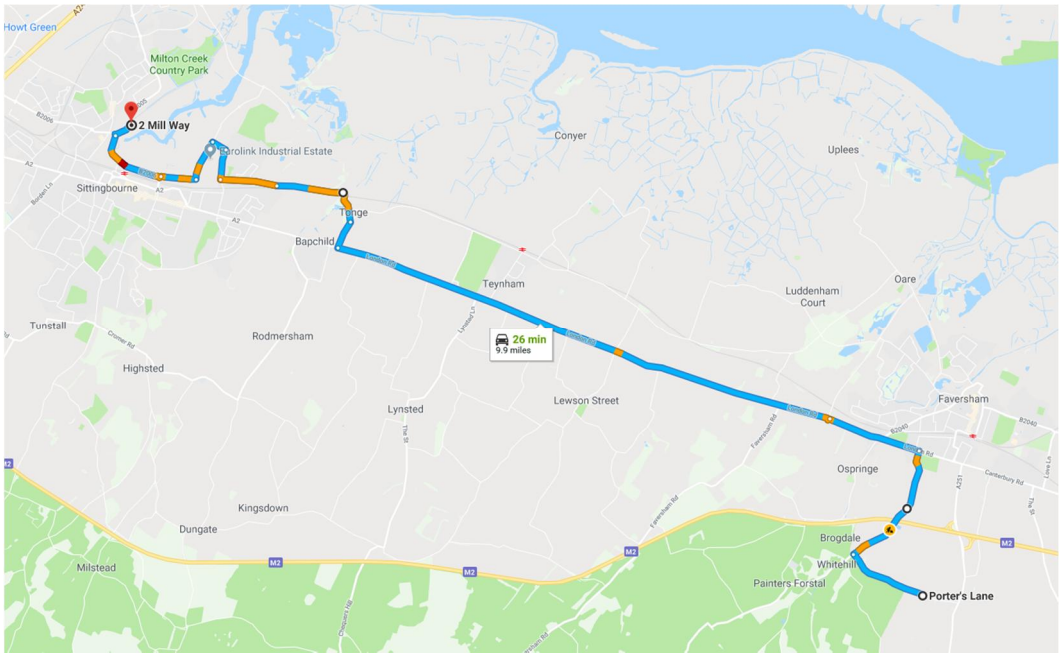
Route 9



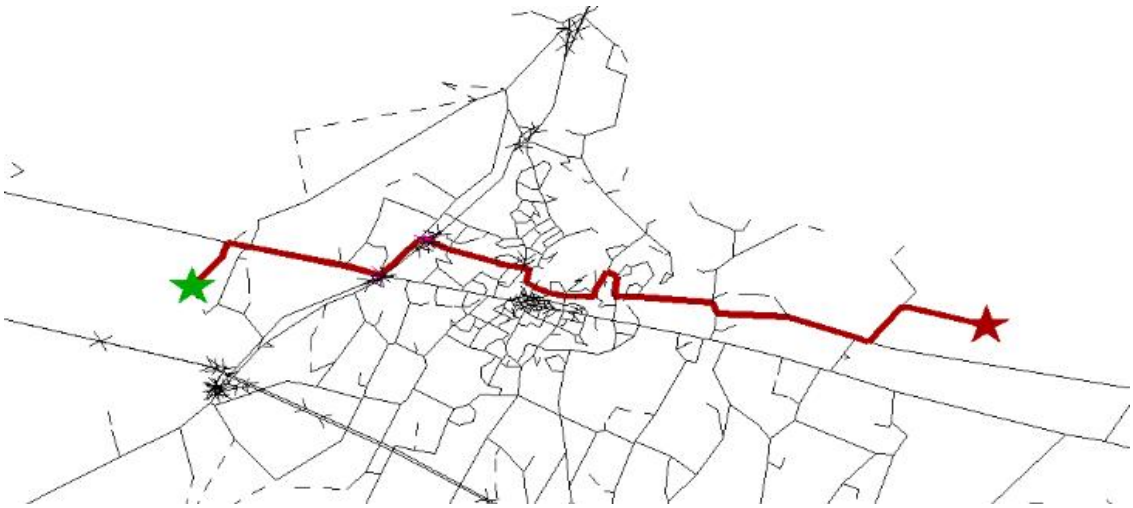

10 - 14 mins
5.1 miles
20 - 24 mins
6.2 miles
Chestnut Wood Lane
Chestnut Street
Danaway
Bobbing
Kemsley
Milton Creek Country Park
Swale Way
Eurolink Industrial Estate
Sittingbourne
Borden
Oad Street
Tunstall
Bapchild
Rodmersham
A249
A2
Google

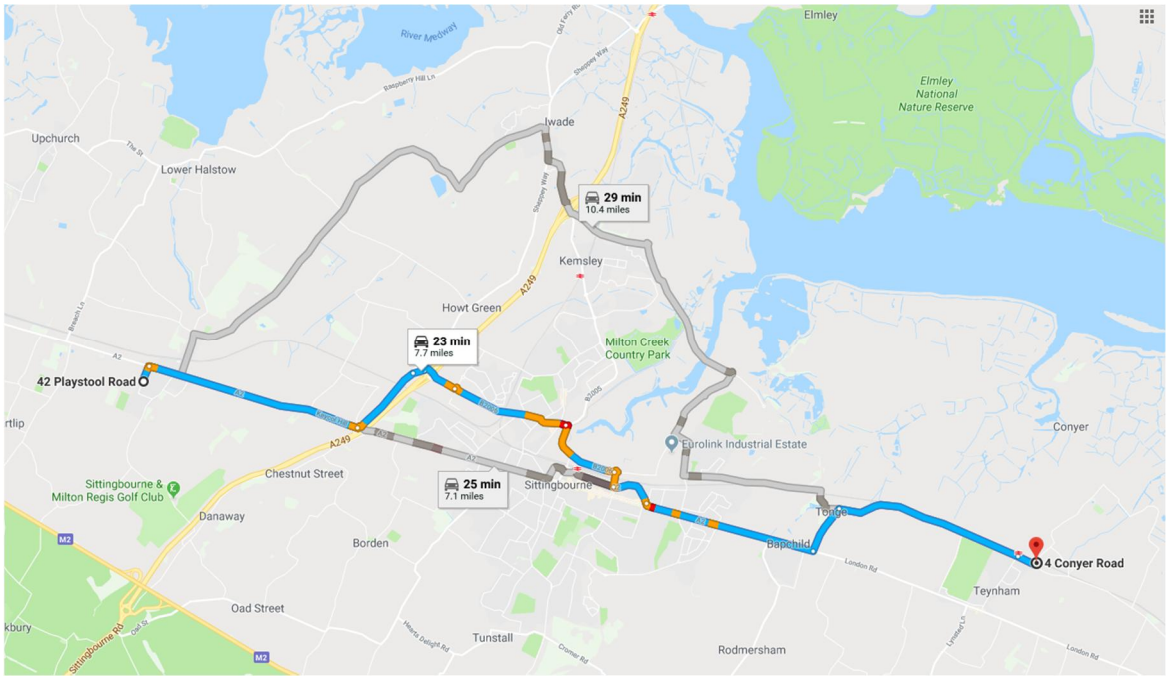
Route 10



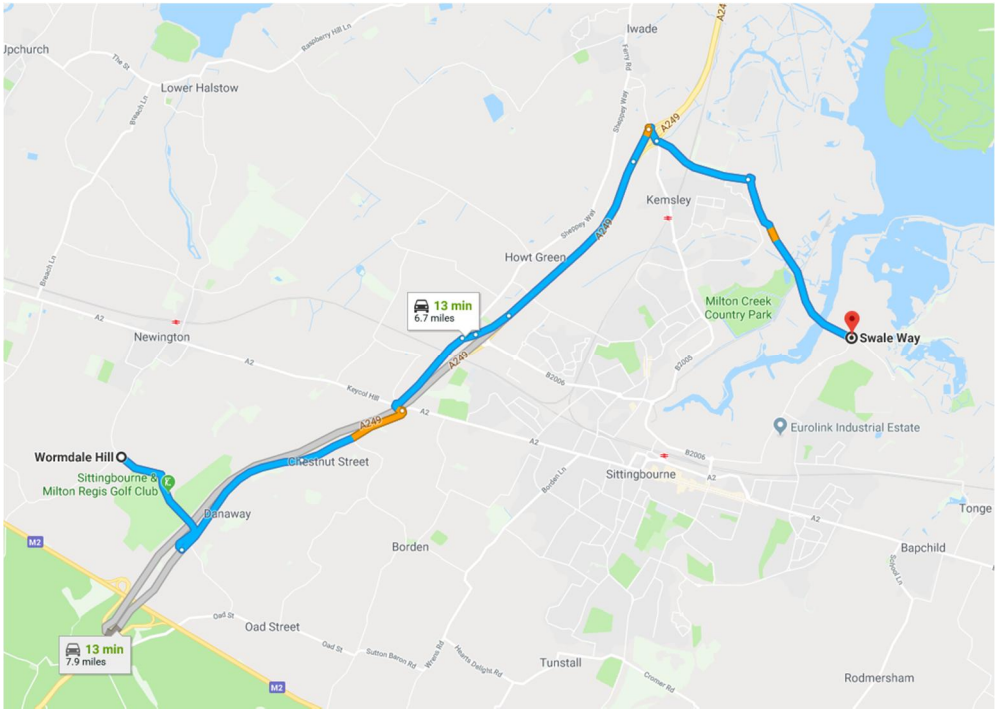

Howt Green
Milton Creek Country Park
2 Mill Way
Eurolink Industrial Estate
Sittingbourne
Tonge
Bapchild
Conyer
Uplees
Teynham
Luddenham Court
Oare
Tunstall
Rodmersham
Highsted
26 min
9.9 miles
Lynsted
Lewson Street
Faversham
Ospringe
Kingsdown
Dungate
Milstead
Brogdale
Whitehill
Painters Forstal
Porter's Lane

Route 11

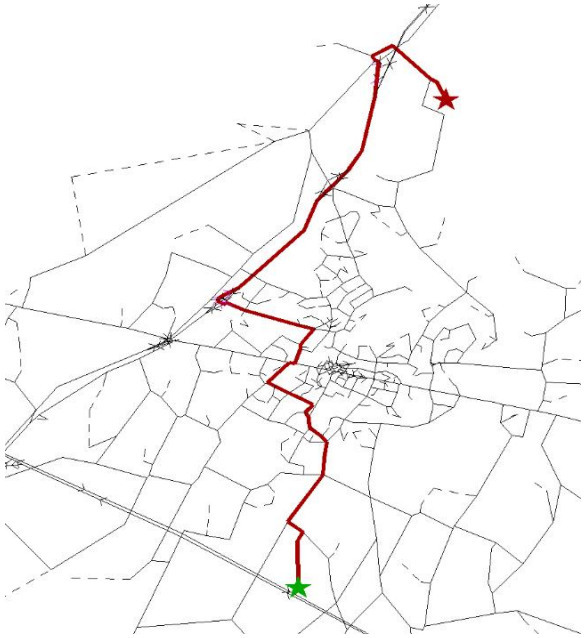


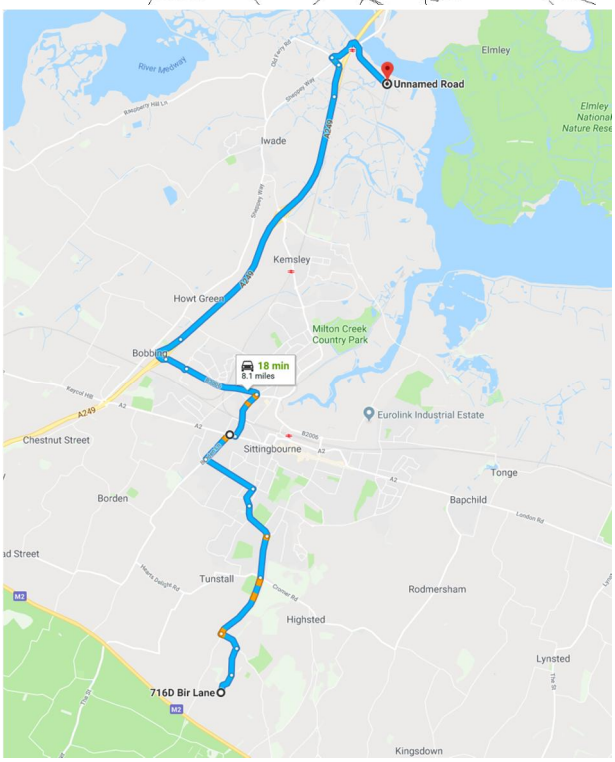

Elmley
Elmley National Nature Reserve
River Medway
Upchurch
Lower Halstow
Iwade
A249
29 min
10.4 miles
Kemsley
Howt Green
23 min
7.7 miles
Milton Creek Country Park
42 Playstool Road
Eurolink Industrial Estate
Conyer
Chestnut Street
Sittingbourne & Milton Regis Golf Club
25 min
7.1 miles
Sittingbourne
Danaway
Borden
Bapchild
4 Conyer Road
Teynham
Oad Street
Tunstall
Rodmersham
M2

Route 12

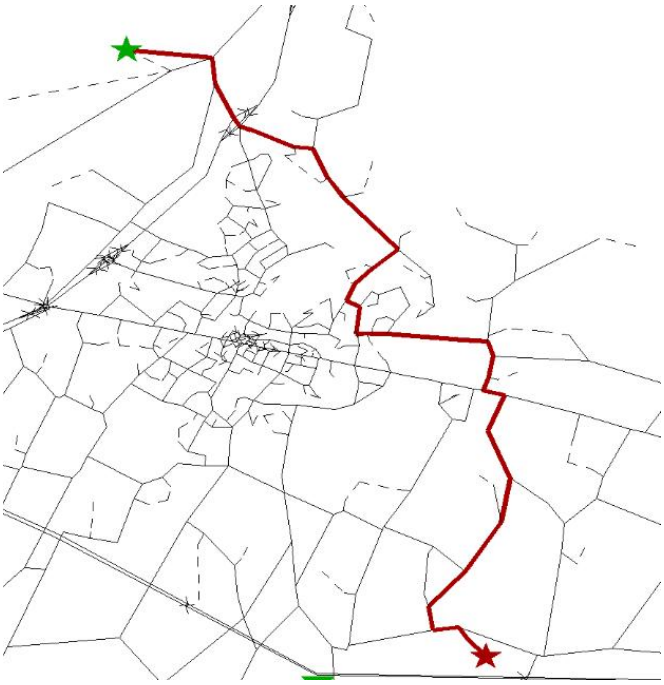

Iwade
Lower Halstow
Kemsley
Howt Green
Milton Creek Country Park
Swale Way
13 min
6.7 miles
Newington
Eurolink Industrial Estate
Wormdale Hill
Sittingbourne & Milton Regis Golf Club
Chestnut Street
Sittingbourne
Tonge
Bapchild
Borden
Oad Street
13 min
7.9 miles
Tunstall
Rodmersham
A249
A2
M2
B2006

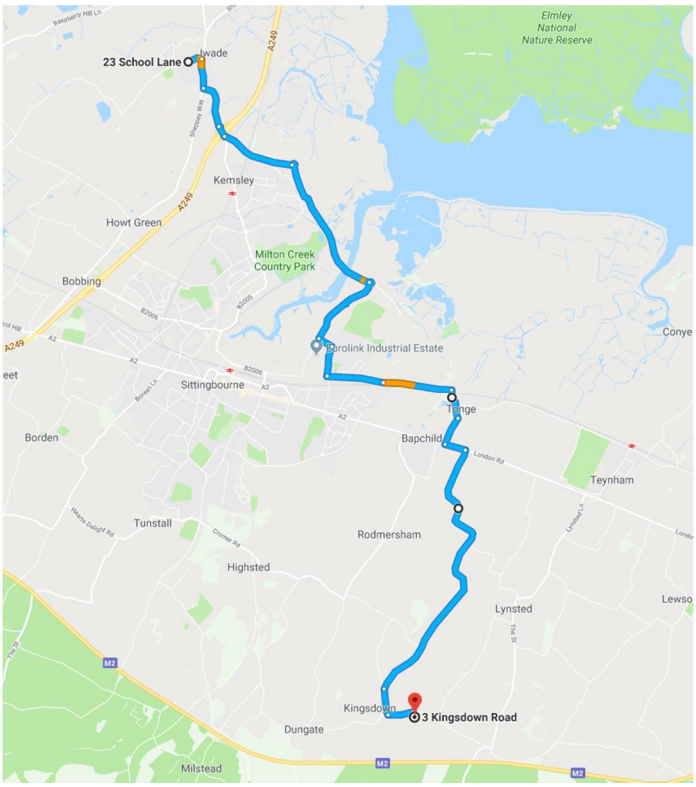
Route 13



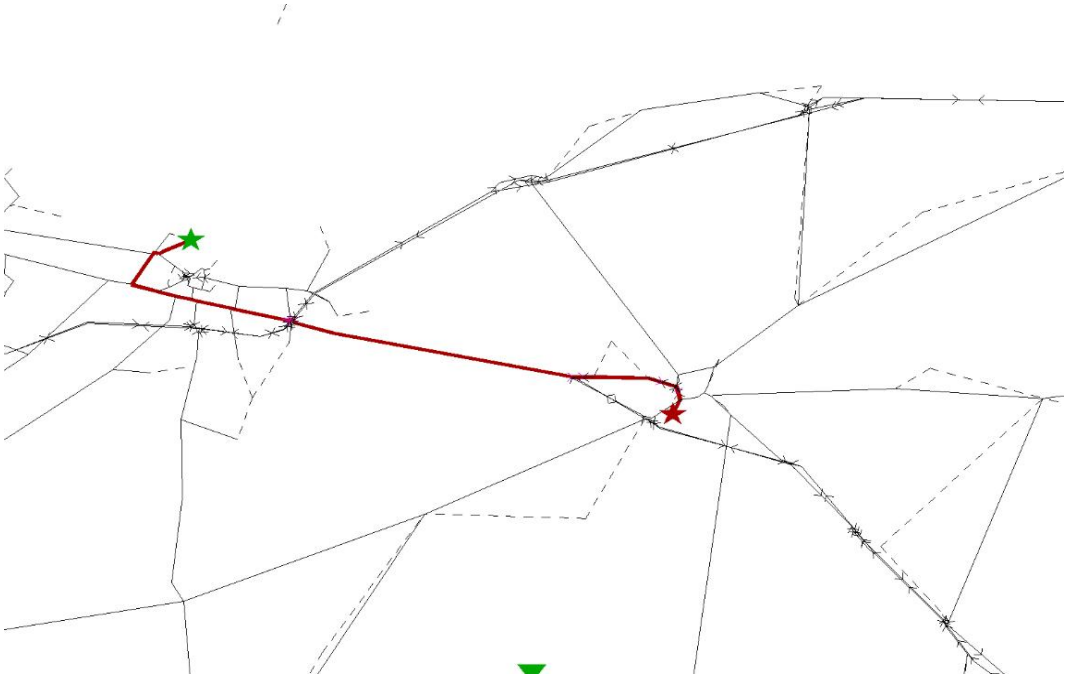

Unnamed Road
Elmley
Iwade
Kemsley
Howt Green
Bobbing
18 min
8.1 miles
Milton Creek
Country Park
Eurolink Industrial Estate
Chestnut Street
Sittingbourne
Tonge
Borden
Bapchild
Tunstall
Rodmersham
Highsted
Lynsted
716D Bir Lane
Kingsdown
A249
A2
M2

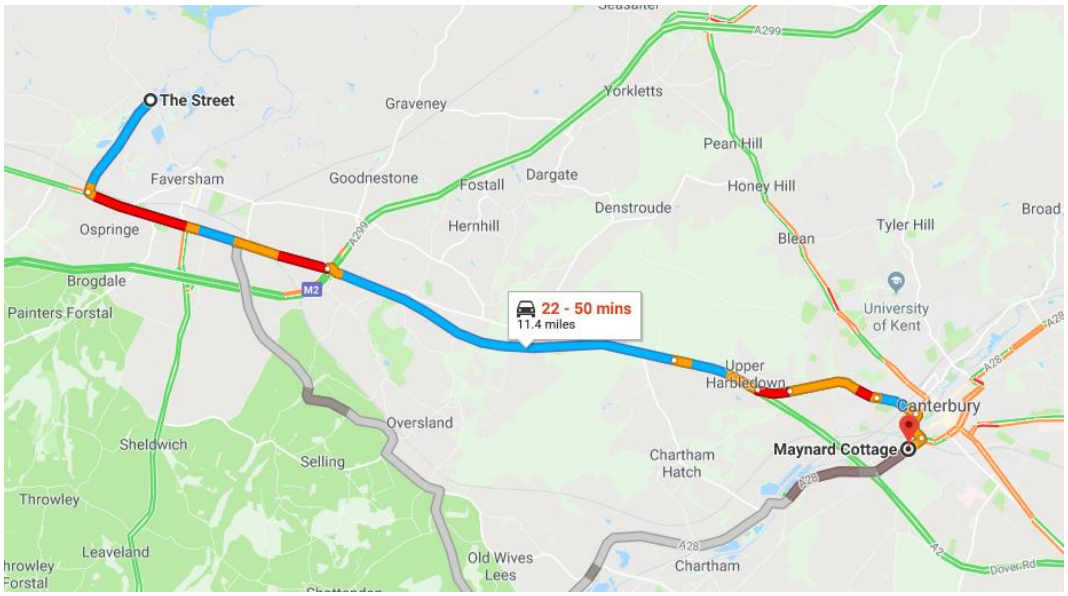
Route 14



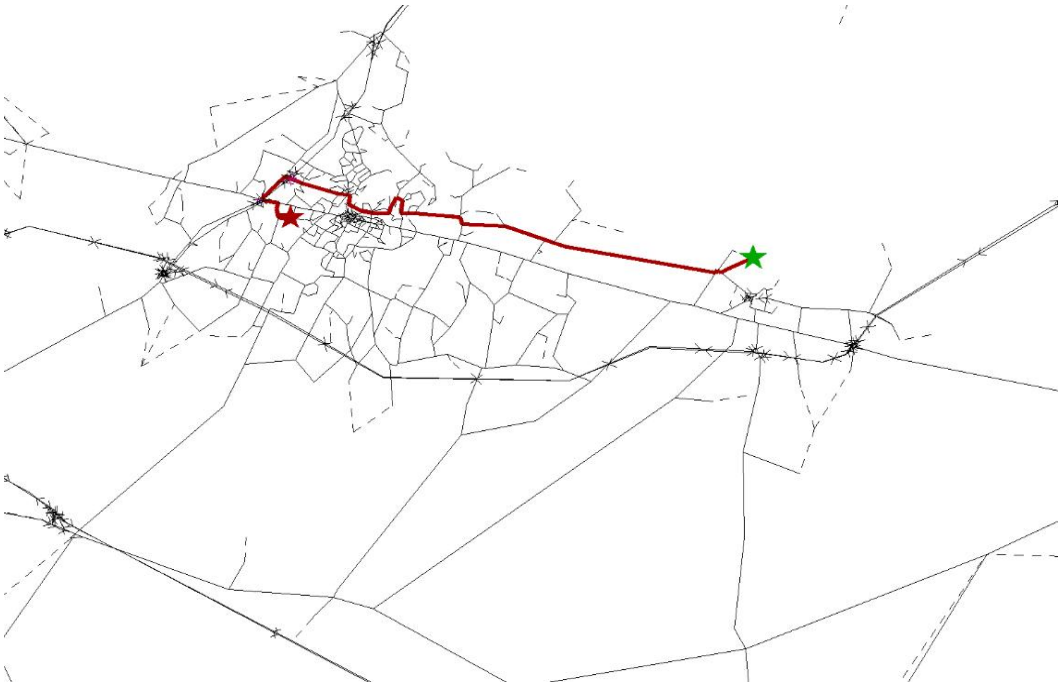

23 School Lane
Iwade
Elmley
National
Nature Reserve
Kemsley
Howt Green
Milton Creek
Country Park
Bobbing
Sittingbourne
Borden
Tunstall
Highsted
Rodmersham
Bapchild
Teynham
Lynsted
Kingsdown
3 Kingsdown Road
Dungate
Milstead
M2
A249
A2

Route 15



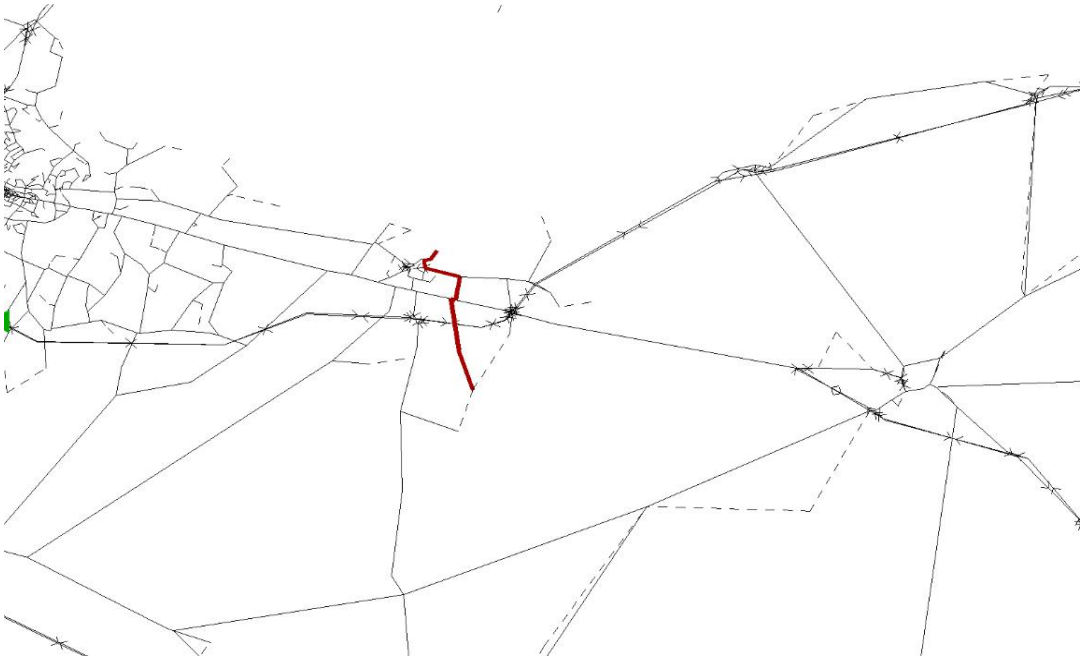

The Street
Graveney
Yorkletts
Pean Hill
Faversham
Goodnestone
Fostall
Dargate
Honey Hill
Denstroude
Broad
Ospringe
Hernhill
Tyler Hill
Blean
Brogdale
Painters Forstal
22 - 50 mins
11.4 miles
University of Kent
Upper Harbledown
Canterbury
Oversland
Sheldwich
Selling
Chartham Hatch
Maynard Cottage
Throwley
Leaveland
Old Wives Lees
Chartham
A299
M2
A28
Dover Rd

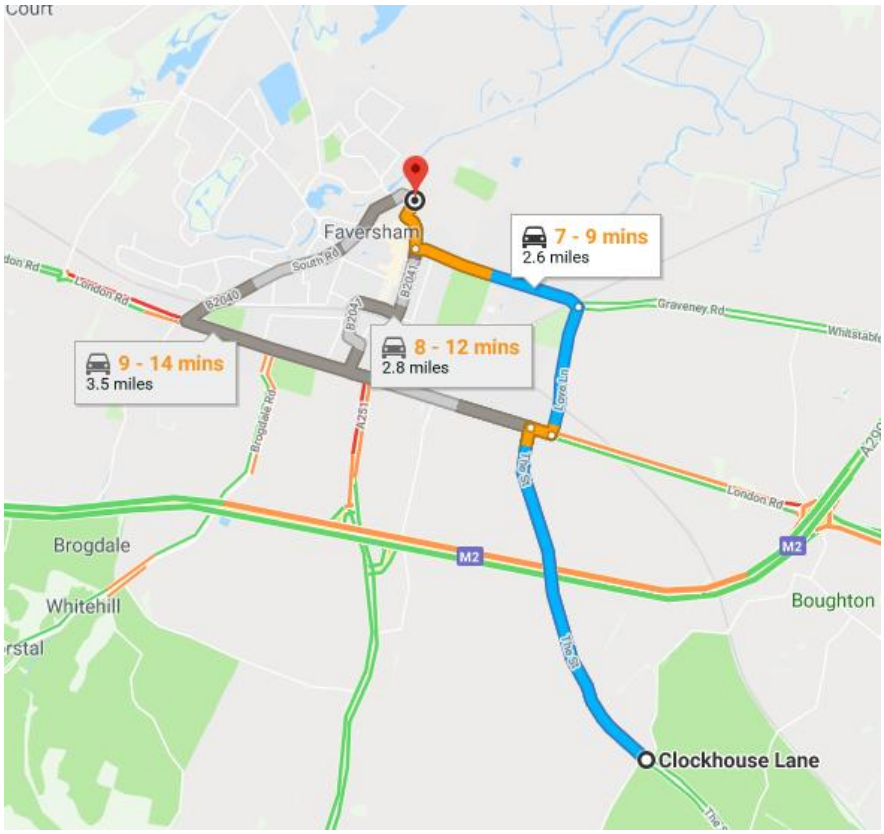
Route 16



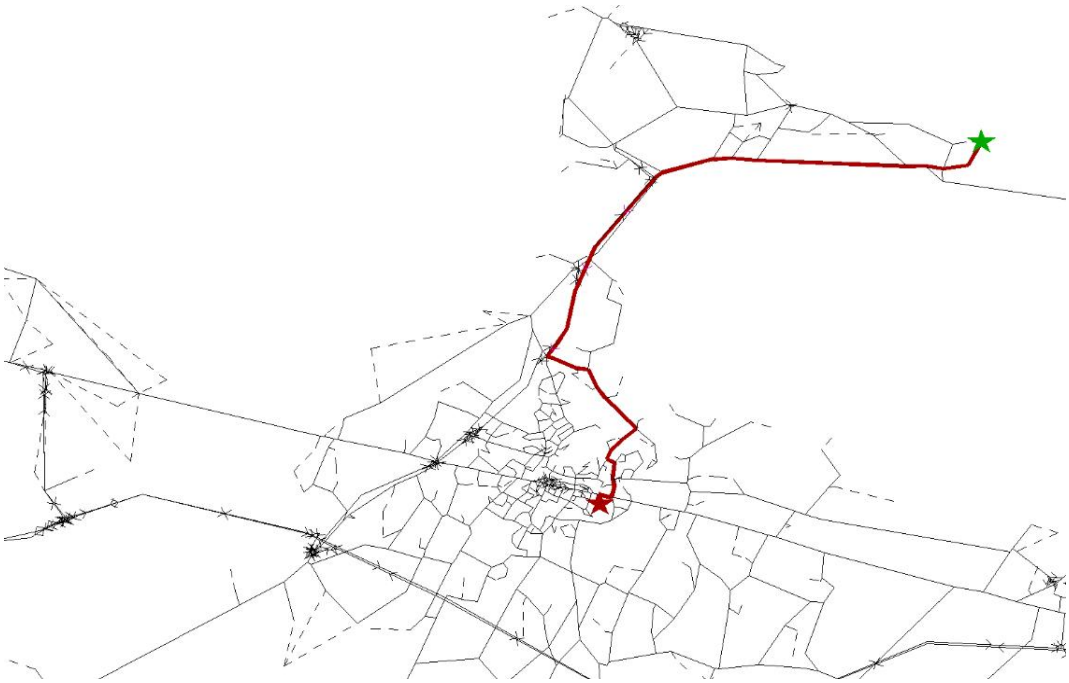

Kemsley
Howt Green
Newington
Bobbing
Harty
Conyer
Uplees
97 Brier Road
22 - 40 mins
9.1 miles
Sittingbourne
Tonge
Borden
Teynham
Luddenham Court
42 The Street
Oad Street
24 - 40 mins
10.0 miles
Rodmersham
Highsted
Lynsted
Lewson Street
Faversham
Ospringe
Kingsdown
Dungate
Brogdale
Bicknor
Milstead
24 - 40 mins
17.0 miles
Painters Forstal
M2

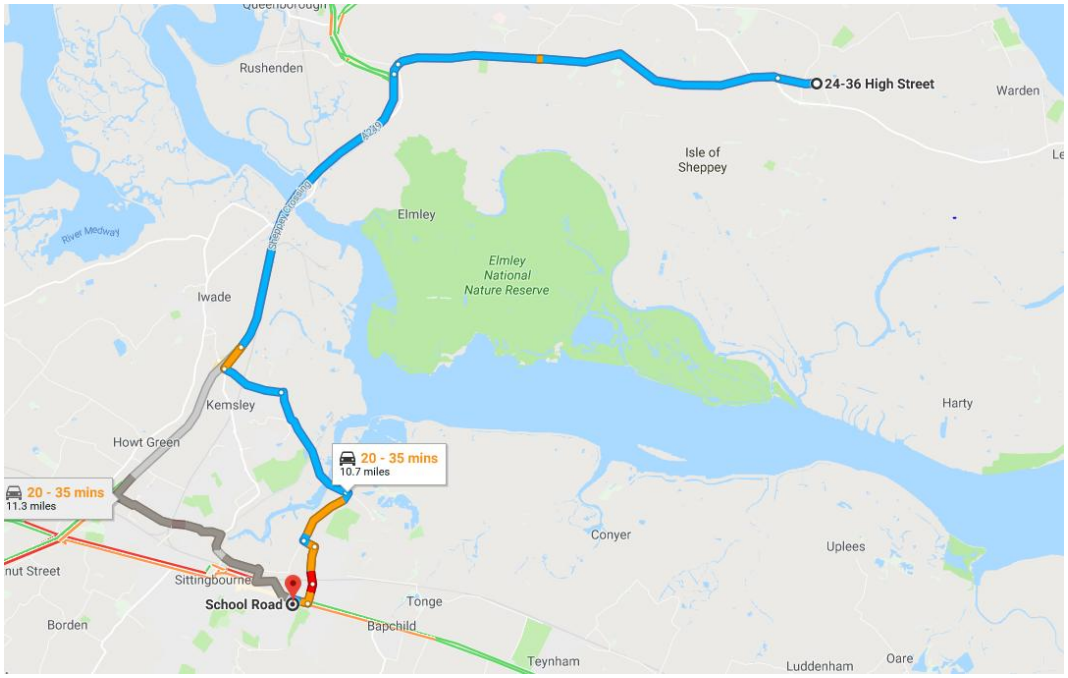
Route 17



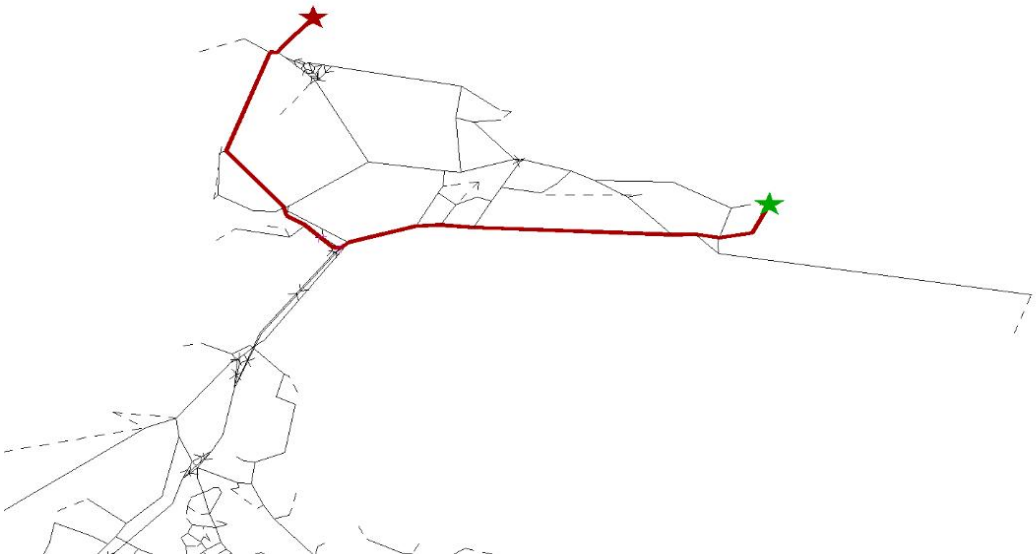

Faversham
7 - 9 mins
2.6 miles
8 - 12 mins
2.8 miles
9 - 14 mins
3.5 miles
London Rd
B2040
Graveney Rd
Brogdale Rd
A251
Lore Ln
M2
Brogdale
Whitehill
Boughton
Clockhouse Lane

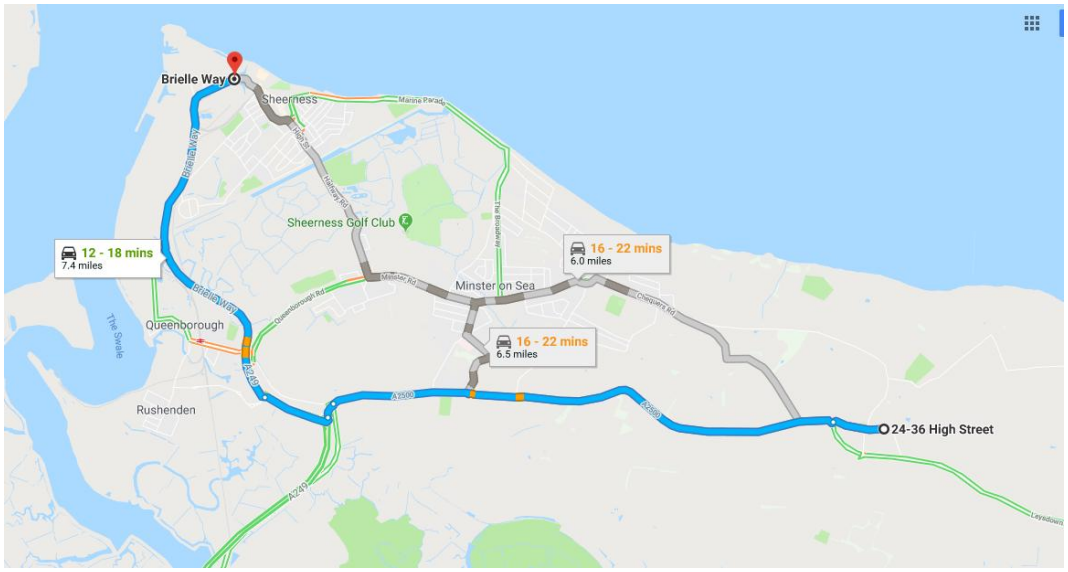
Route 18



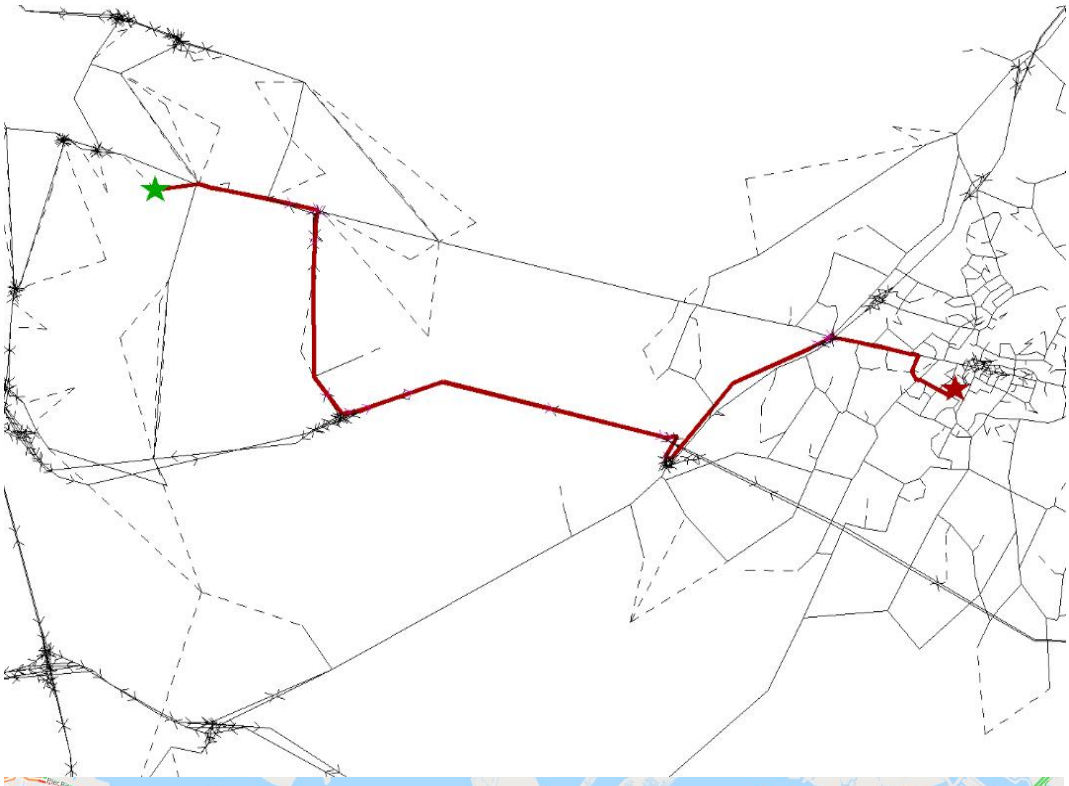

24-36 High Street
Rushenden
Warden
Isle of Sheppey
Elmley
Elmley National Nature Reserve
River Medway
Iwade
Kemsley
Howt Green
Harty
20 - 35 mins
10.7 miles
20 - 35 mins
11.3 miles
Conyer
Uplees
Sittingbourne
School Road
Tonge
Borden
Bapchild
Teynham
Luddenham
Oare

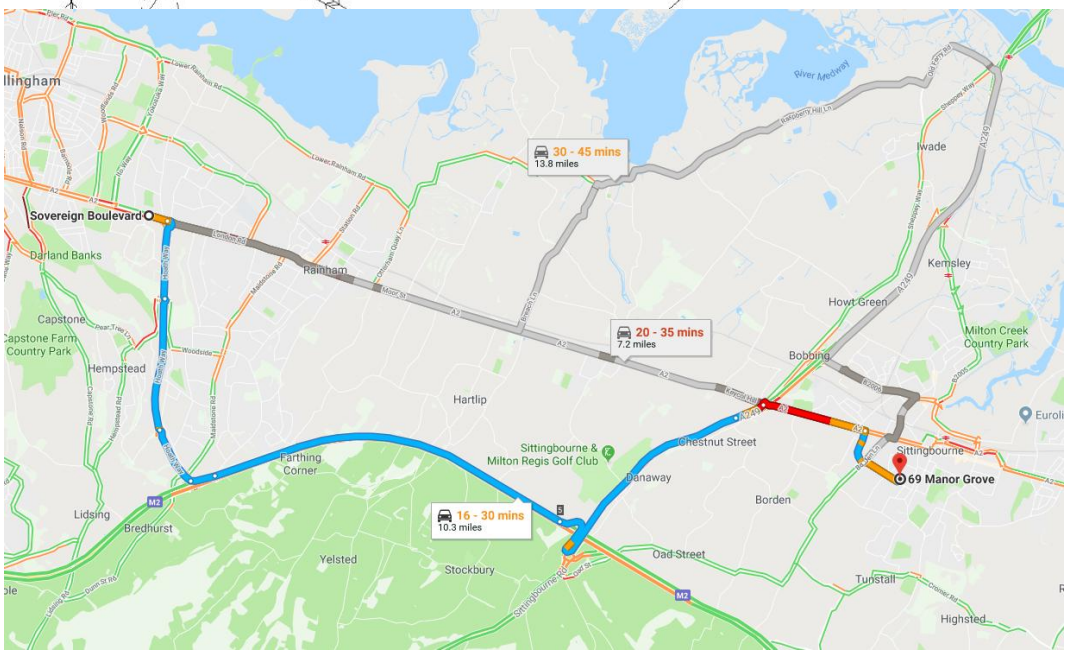
Route 19




Brielle Way
Sheerness
Sheerness Golf Club
12 - 18 mins
7.4 miles
16 - 22 mins
6.0 miles
Minster on Sea
16 - 22 mins
6.5 miles
Queenborough
Rushenden
24-36 High Street

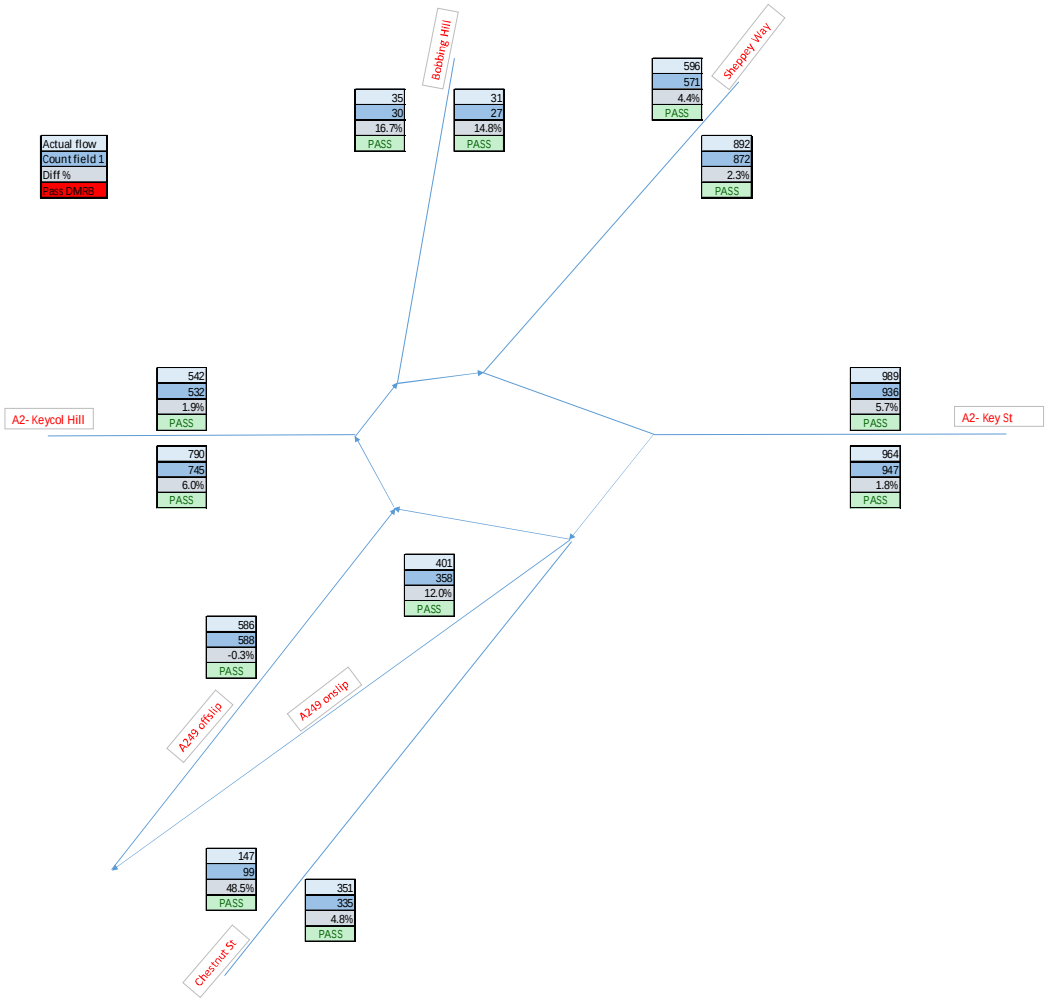
Route 20



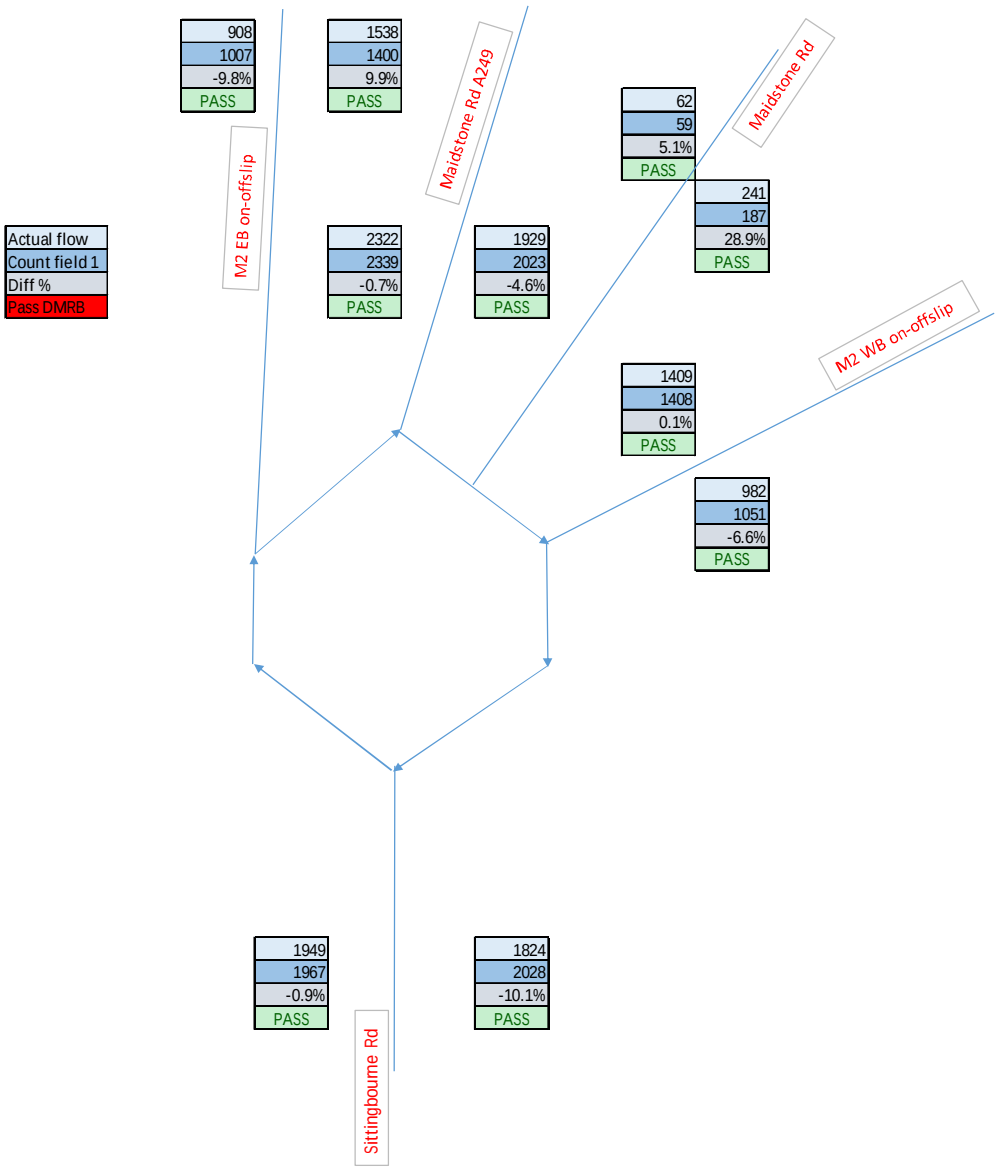

Sovereign Boulevard
Darland Banks
Capstone
Capstone Farm Country Park
Hempstead
Rainham
Hartlip
Farthing Corner
Lidsing
Bredhurst
Yelsted
Stockbury
Oad Street
Sittingbourne & Milton Regis Golf Club
Danaway
Chestnut Street
Borden
Sittingbourne
69 Manor Grove
Tunstall
Highsted
Howt Green
Bobbing
Iwade
Kemsley
Milton Creek Country Park
River Medway
30 - 45 mins
13.8 miles
20 - 35 mins
7.2 miles
16 - 30 mins
10.3 miles

14 Appendix E

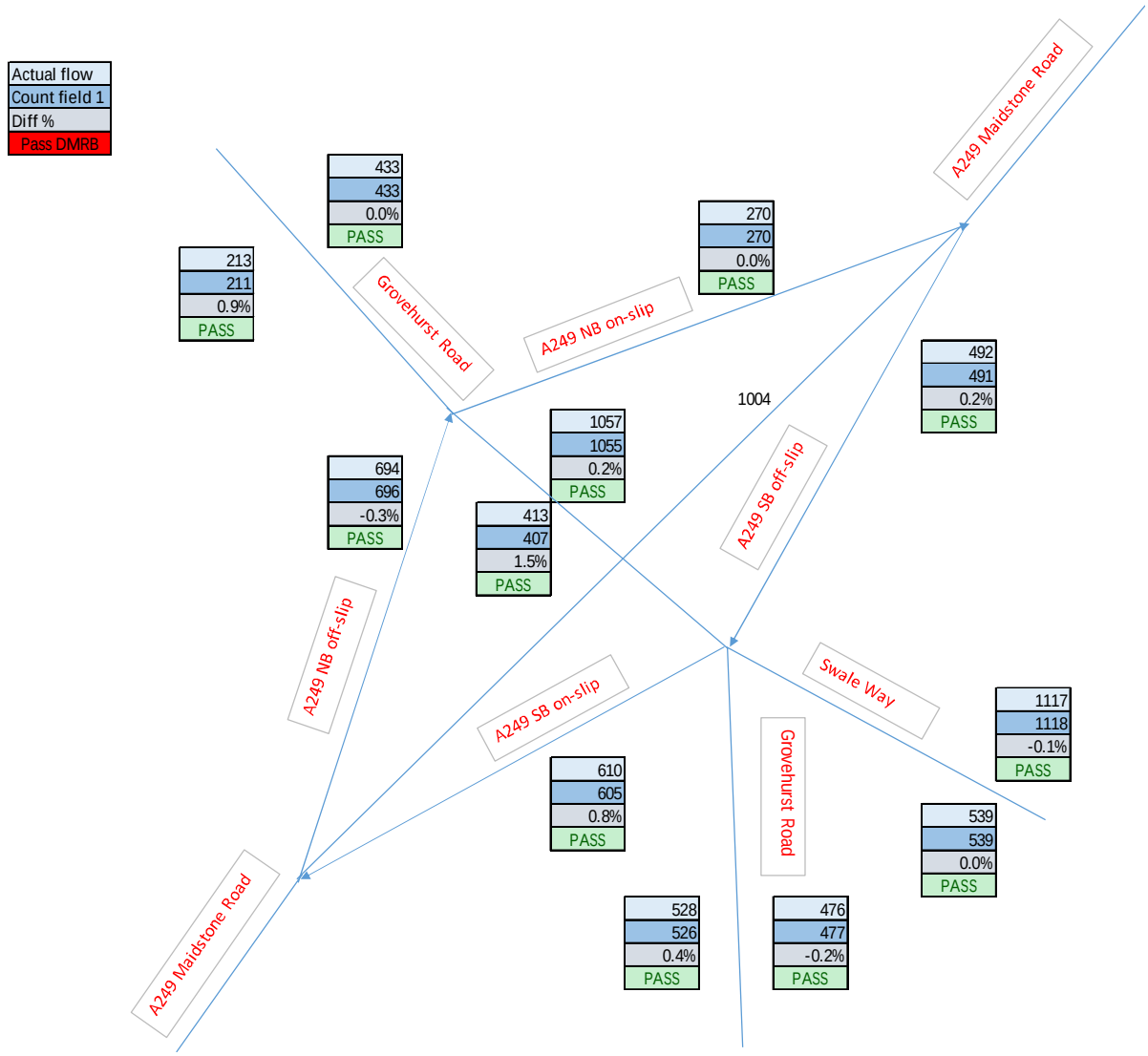
Link flows AM – A2/A249



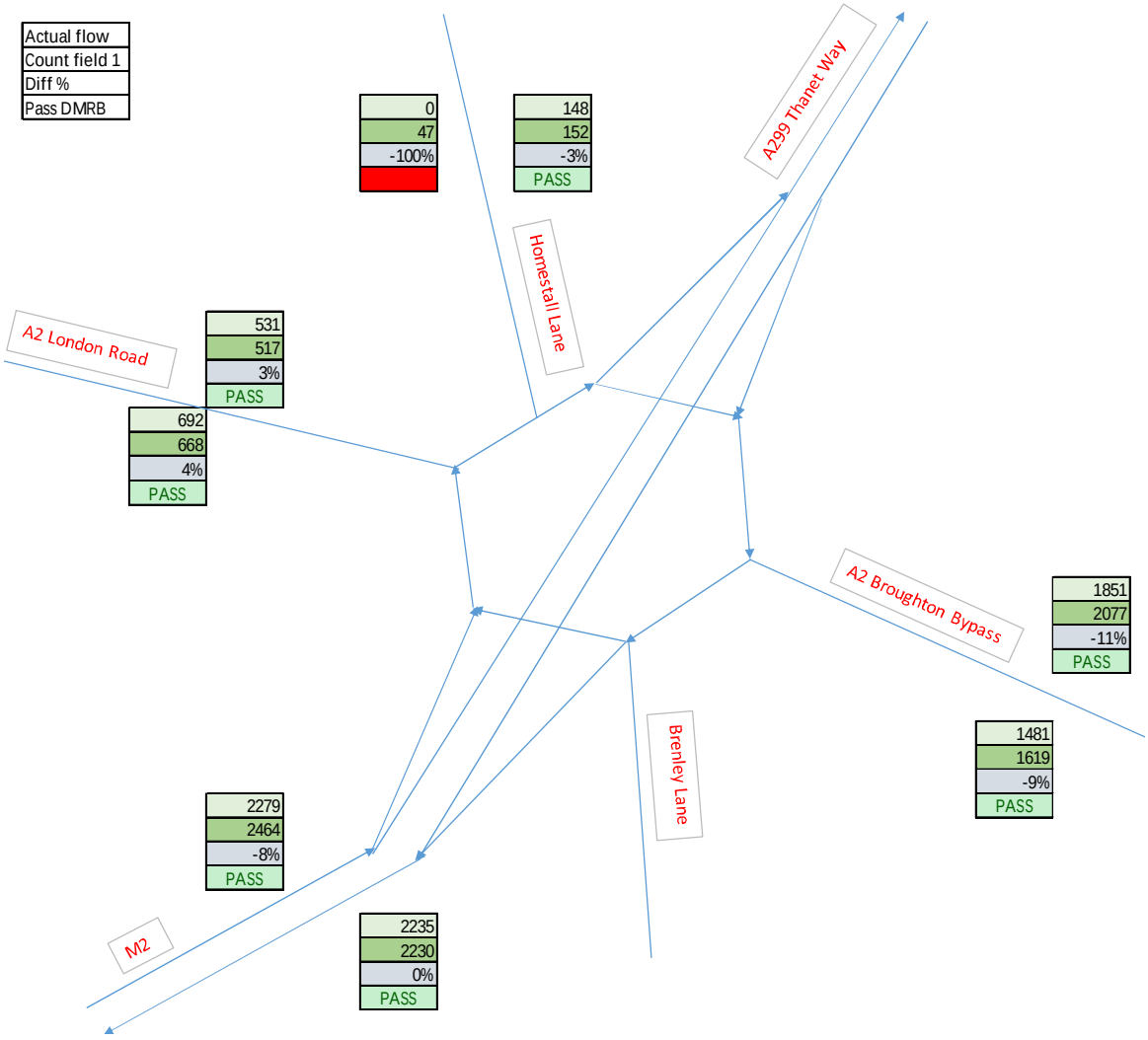
Link flows AM – M2/A249



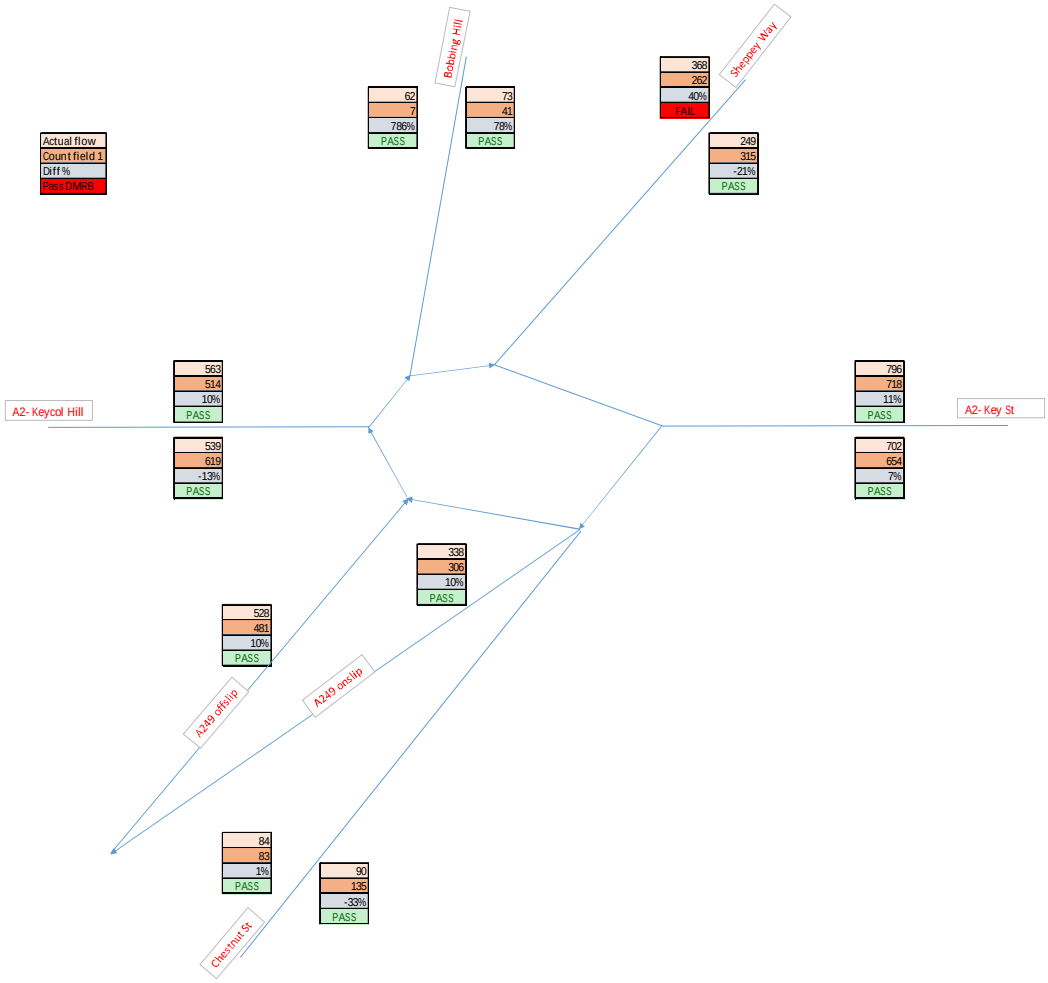
Link flows AM – Grovehurst Road/A249



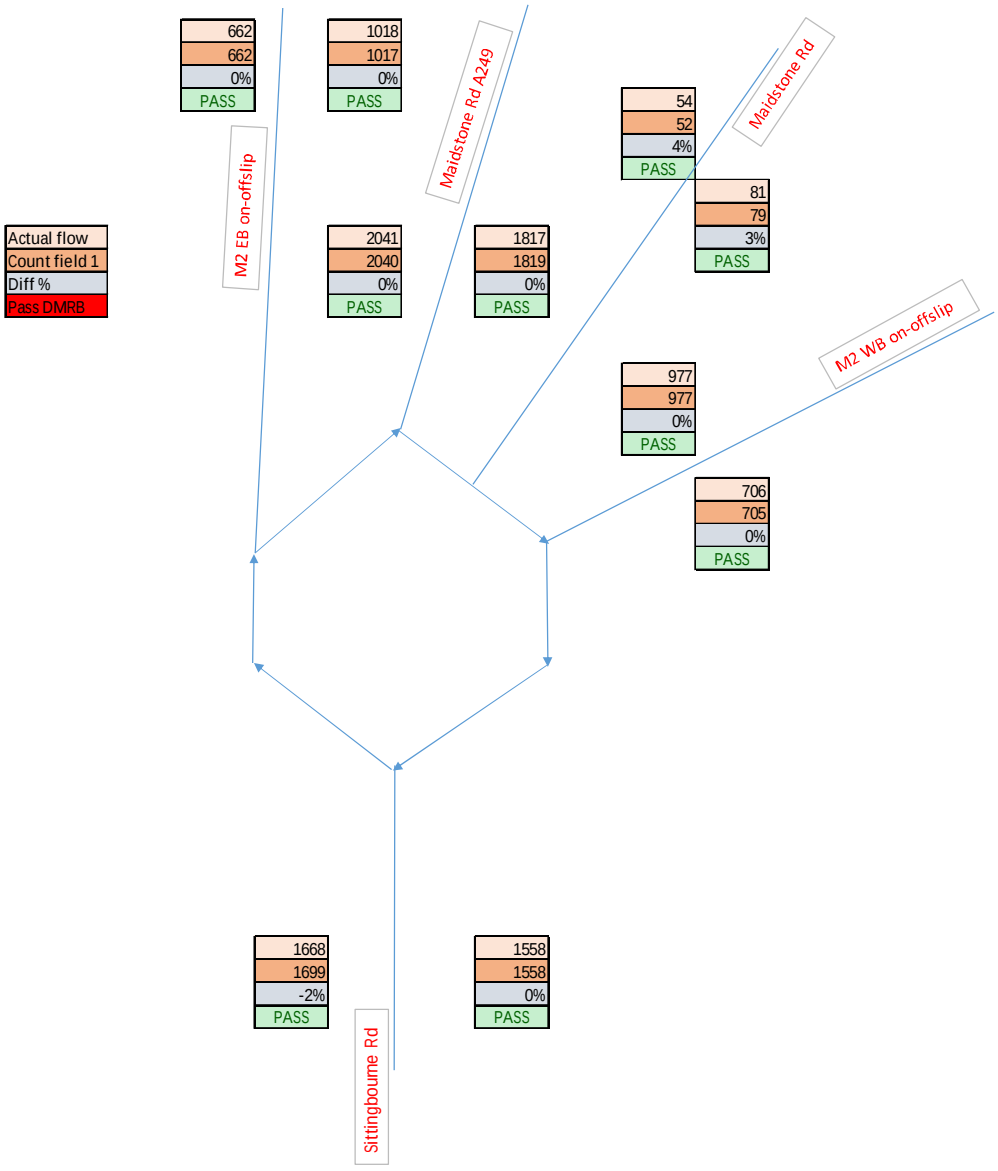
Link flows AM – M2 J7



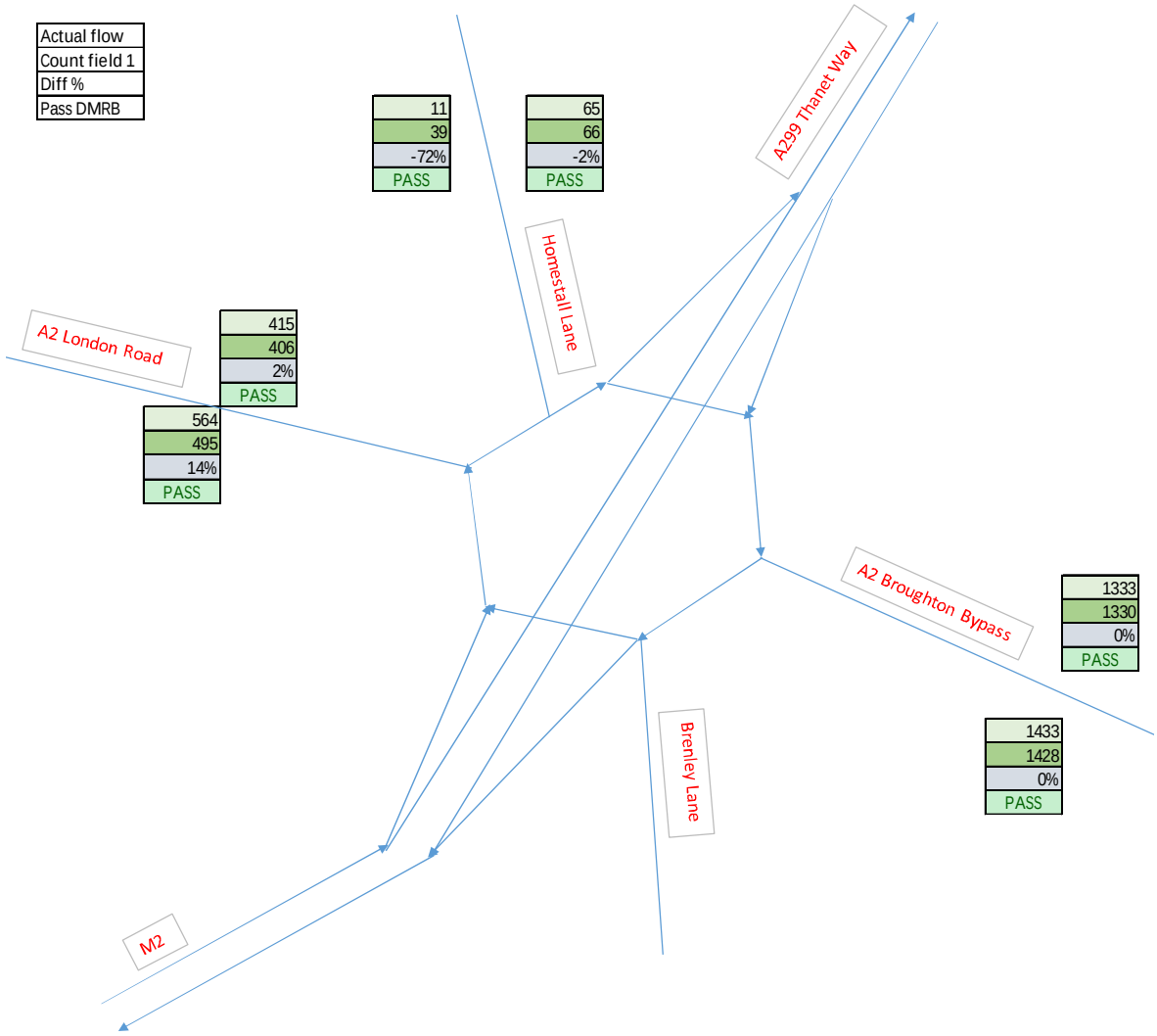
Link flows IP – A2/A249



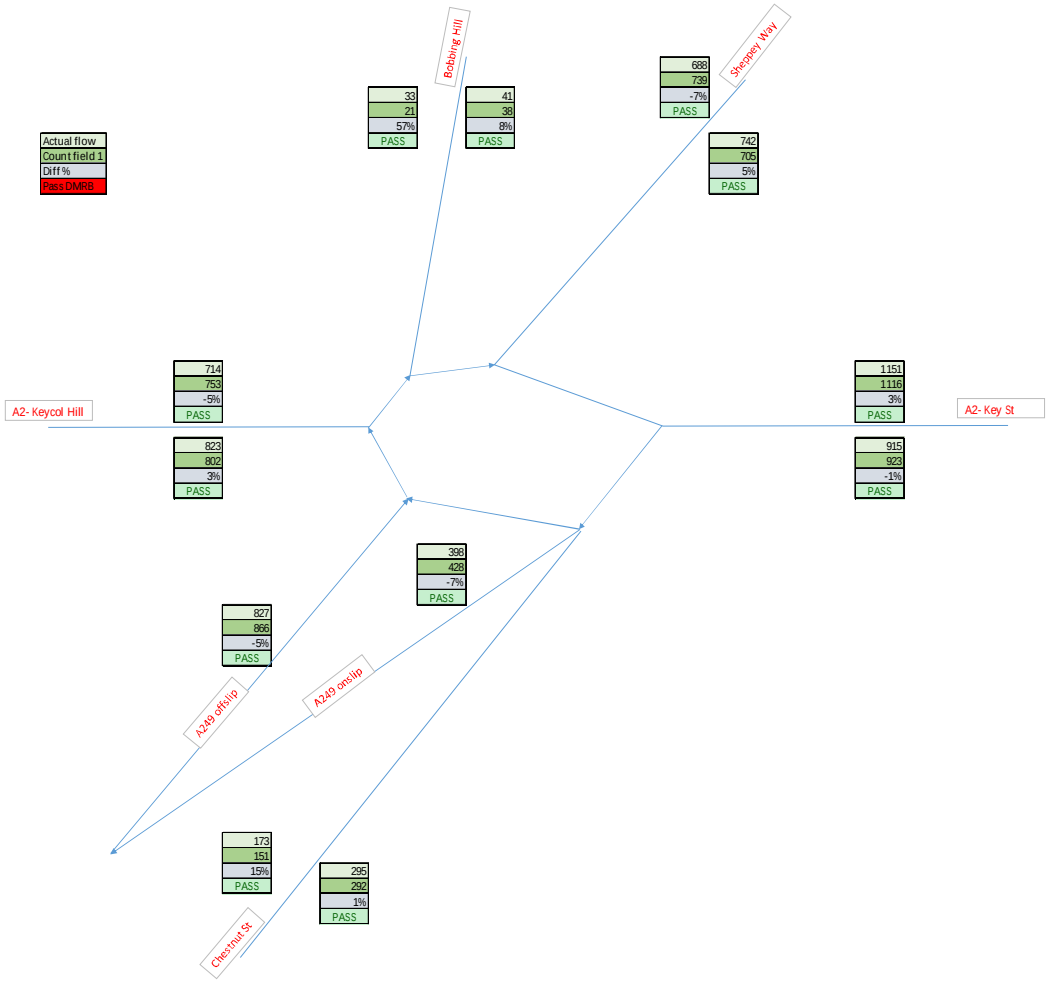
Link flows IP – M2/A249



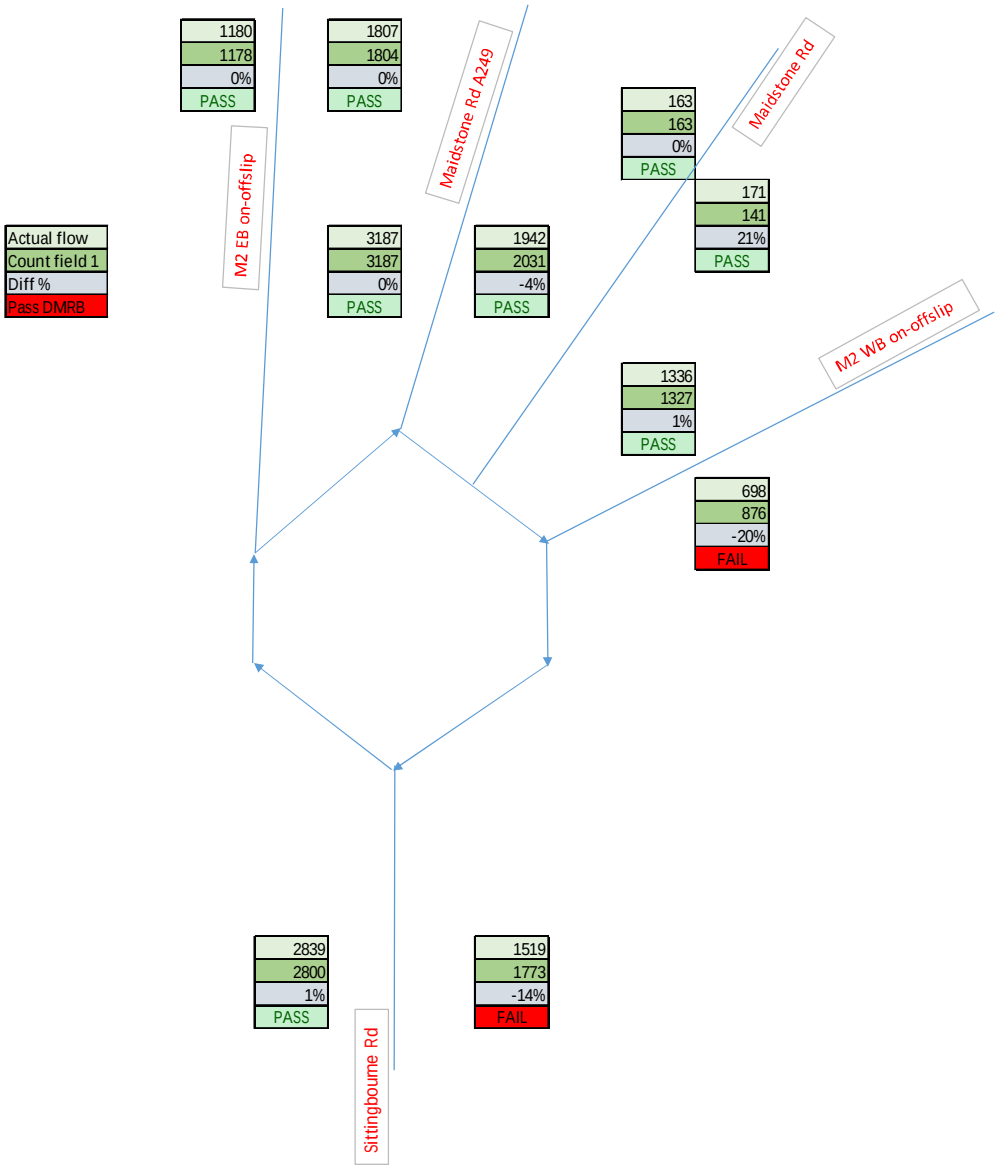
Link flows IP – M2 J7



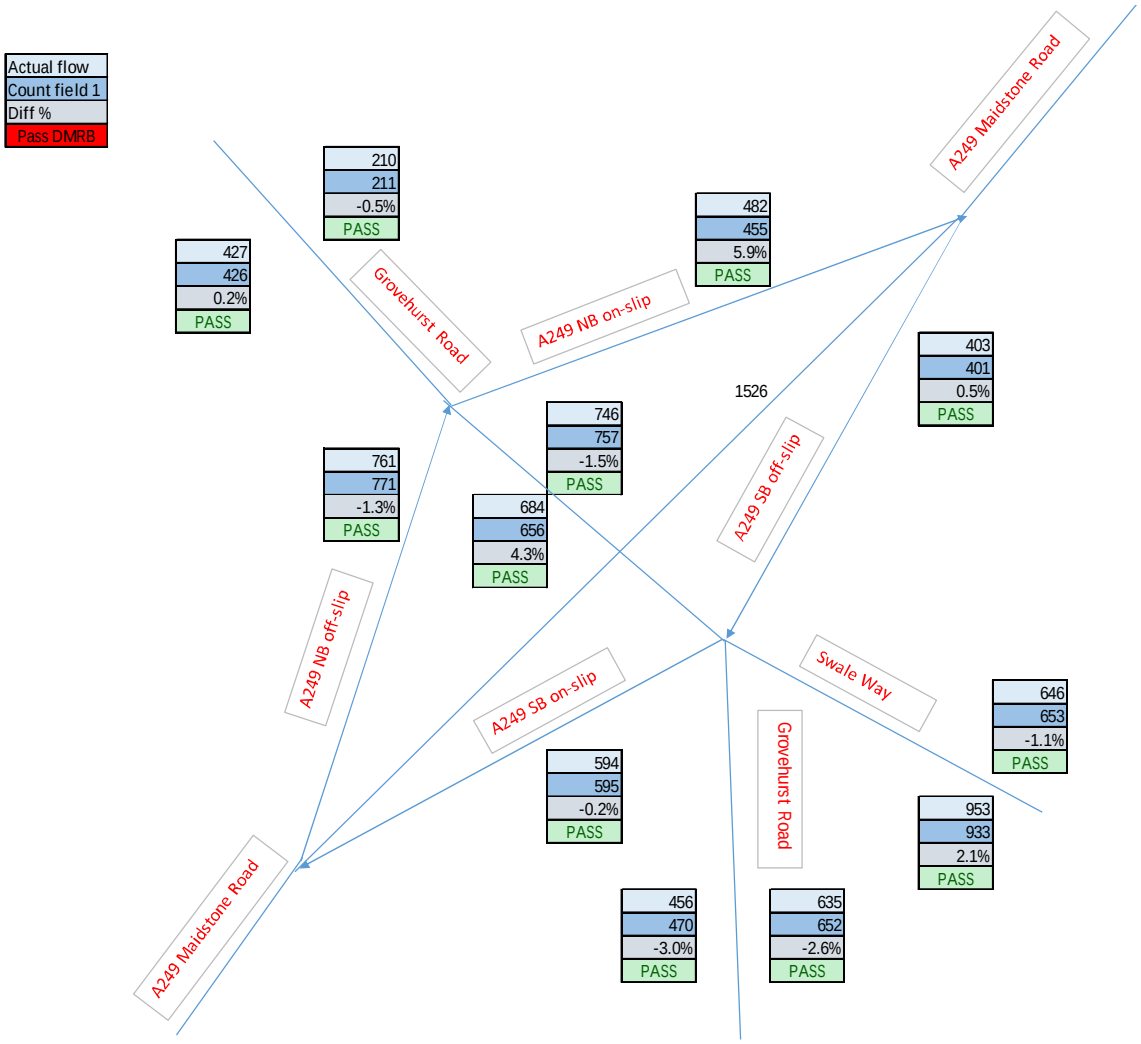
Link flows PM – A2/A249



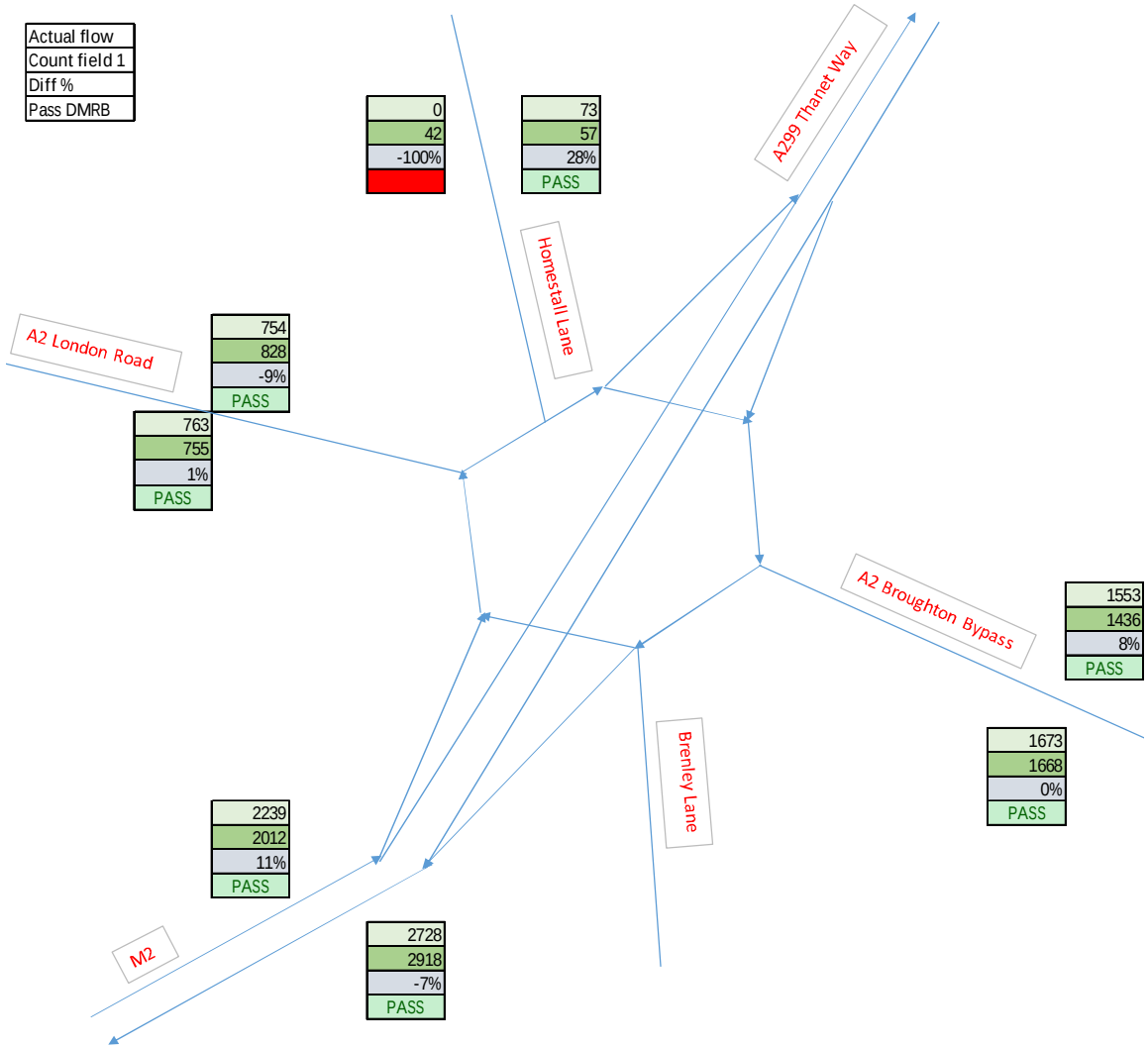
Link flows PM – M2/A249



Link flows PM – Grovehurst Road/A249



Link flows PM – M2 J7



15 Appendix F

Sector Changes – AM peak

	Sector	1	2	3	4	5	Total
Prior	1	-	2,913	1,049	375	445	**4,782**
	2	2,780	-	1,710	3,369	15,685	**23,544**
	3	741	2,125	-	2,331	3,856	**9,053**
	4	289	3,973	2,025	-	3,069	**9,355**
	5	282	12,379	2,929	2,613	-	**18,203**
Total		**4,093**	**21,390**	**7,713**	**8,688**	**23,055**	**64,938**
Post	1	-	2,384	617	360	356	**3,717**
	2	3,185	-	1,866	3,338	15,725	**24,115**
	3	749	1,780	-	2,497	3,479	**8,504**
	4	338	4,342	2,189	-	3,083	**9,952**
	5	307	12,477	3,054	2,591	-	**18,429**
Total		**4,579**	**20,983**	**7,726**	**8,786**	**22,643**	**64,716**
Difference	1	-	-529	-432	-15	-89	**-1,065**
	2	405	-	156	-31	40	**571**
	3	7	-345	-	165	-378	**-550**
	4	49	369	164	-	14	**597**
	5	26	98	125	-22	-	**226**
Total		**487**	**-407**	**13**	**98**	**-412**	**-222**
% Difference	1	-	-18%	-41%	-4%	-20%	**-22%**
	2	15%	-	9%	-1%	0%	**2%**
	3	1%	-16%	-	7%	-10%	**-6%**
	4	17%	9%	8%	-	0%	**6%**
	5	9%	1%	4%	-1%	-	**1%**
Total		**12%**	**-2%**	**0%**	**1%**	**-2%**	**0%**

Sector Changes – IP peak

	Sector	1	2	3	4	5	Total
Prior	1	-	2,065	765	234	281	**3,346**
	2	2,211	-	1,169	2,551	10,790	**16,721**
	3	440	1,089	-	1,332	2,896	**5,757**
	4	193	2,359	1,335	-	2,252	**6,139**
	5	335	11,591	2,970	2,351	-	**17,248**
Total		**3,179**	**17,105**	**6,239**	**6,469**	**16,219**	**49,211**
Post	1	-	1,968	435	235	327	**2,964**
	2	2,083	-	1,098	2,492	10,718	**16,392**
	3	570	986	-	1,491	2,799	**5,846**
	4	212	2,315	1,389	-	2,255	**6,170**
	5	322	11,528	3,001	2,364	-	**17,215**
Total		**3,187**	**16,796**	**5,922**	**6,582**	**16,099**	**48,587**
Difference	1	-	-98	-330		46	**-381**
	2	-128	-	-70	-59	-72	**-329**
	3	130	-103	-	159	-96	**89**
	4	19	-44	54	-	3	**32**
	5	-13	-63	30	13	-	**-34**
Total		**8**	**-308**	**-316**	**113**	**-120**	**-624**
% Difference	1	-	-5%	-43%	0%	16%	**-11%**
	2	-6%	-	-6%	-2%	-1%	**-2%**
	3	30%	-9%	-	12%	-3%	**2%**
	4	10%	-2%	4%	-	0%	**1%**
	5	-4%	-1%	1%	1%	-	**0%**
Total		**0%**	**-2%**	**-5%**	**2%**	**-1%**	**-1%**

Sector Changes – PM peak

	Sector	1	2	3	4	5	Total
Prior	1	-	2,654	999	287	313	**4,254**
	2	2,831	-	1,917	3,630	14,458	**22,835**
	3	577	1,428	-	1,731	2,974	**6,709**
	4	266	3,070	2,107	-	2,815	**8,258**
	5	403	15,472	3,339	2,840	-	**22,054**
Total		**4,076**	**22,624**	**8,362**	**8,488**	**20,559**	**64,110**
Post	1	-	3,255	773	277	378	**4,682**
	2	2,961	-	1,668	3,869	14,638	**23,137**
	3	675	1,720	-	1,812	3,154	**7,361**
	4	264	3,229	2,191	-	2,812	**8,496**
	5	383	15,707	3,242	2,813	-	**22,145**
Total		**4,283**	**23,910**	**7,874**	**8,772**	**20,983**	**65,822**
Difference	1	-	600	-227	-9	64	**429**
	2	131	-	-248	239	181	**302**
	3	98	292	-	81	181	**652**
	4	-2	159	84	-	-2	**238**
	5	-20	235	-97	-27	-	**91**
Total		**207**	**1,286**	**-488**	**284**	**423**	**1,712**
% Difference	1	-	23%	-23%	-3%	21%	**10%**
	2	5%	-	-13%	7%	1%	**1%**
	3	17%	20%	-	5%	6%	**10%**
	4	-1%	5%	4%	-	0%	**3%**
	5	-5%	2%	-3%	-1%	-	**0%**
Total		**5%**	**6%**	**-6%**	**3%**	**2%**	**3%**