

REPORT N° 002

CALDERDALE STRATEGIC MODEL UPDATE

LOCAL MODEL VALIDATION REPORT (LMVR)

CONFIDENTIAL

JUNE 2015

CALDERDALE STRATEGIC MODEL UPDATE

LOCAL MODEL VALIDATION REPORT

Calderdale Metropolitan Borough Council

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1 INTRODUCTION

1.1 BACKGROUND

- 1.1.1 WSP | Parsons Brinckerhoff has been commissioned by Calderdale Metropolitan Borough Council (CMBC) under the Metro Framework to update and extend the existing Calderdale Strategic Transport Model (CSTM) to represent the current 2014 travel patterns and highway network conditions, in order to enable assessment of proposed developments and infrastructure schemes, and more specifically test the implications of delivery of CMBC schemes identified as part of the West Yorkshire plus Transport Fund (WY+TF).
- 1.1.2 A SATURN strategic model of the Calderdale area covering Halifax town and the adjacent centres was developed by Mouchel in 2008 and further expanded in 2009. The CSTM represented travel patterns that occurred across the key road network within the Borough, during a typical 2009 weekday. The model was developed to assess development options associated with Calderdale's Local Development Framework (LDF) and also to enable testing of a series of highway improvements options.
- 1.1.3 The 2009 CSTM inherited model formed the basis of the update to 2014 travel patterns and highway network conditions taking account of all significant highway network changes and developments since the model's previous update.
- 1.1.4 The 2014 model has been developed in accordance with the Department for Transport (DfT) web based Transport Analysis Guidance (WebTAG) on <http://www.dft.gov.uk/webtag> along with the WebTAG 2 'Guidance for the Technical Project Manager.' These provide detailed guidance on the appraisal of transport projects and wider advice on scoping and carrying out transport studies. The guidance is a requirement for all projects/studies that require government approval.

1.2 REPORT PURPOSE AND STRUCTURE

- 1.2.1 This report is a Local Model Validation Report (LMVR) for the 2014 base year SATURN modelling. This report details the development, calibration and validation of the traffic model to 2014 observed traffic conditions.
- 1.2.2 The structure and content of this LMVR is based on guidance contained in WebTAG 'Guidance for the Technical Project Manager' Appendix D (January 2014).
- 1.2.3 The structure of this report is as follows:
- Section 2: Model Overview
 - Section 3: Survey Data Collection & Analysis
 - Section 4: Network Development
 - Section 5: Matrix Development
 - Section 6: Assignment Calibration & Validation
 - Section 7: Summary

2 MODEL OVERVIEW

2.1 INTRODUCTION

- 2.1.1 This section of the report details the specification of the CSTM. Detailed information regarding the construction of the network and matrices can be found in Section 4 and Section 5 of this report.

2.2 MODELLING SOFTWARE VERSION

- 2.2.1 SATURN (Simulation and Assignment of Traffic in Urban Road Networks) Version 11.3.07K was used for the updating of the CSTM. SATURN is a recognised industry-standard transport modelling tool providing:
- A modelling and assessment platform supported by CMBC, WYCA and the Highways Agency (HA);
 - WebTAG compliance in terms of structure and model 'convergence' and output statistics essential for scheme appraisal and the determination of robustness in decision-making and scheme design; and
 - A comprehensive and efficient data input and analysis capability

2.3 BASE YEAR

- 2.3.1 The updated base year of the CSTM is 2014. This is determined by the Road Side Interview traffic data commissioned for this study which was collected in June 2014 and supplemented by additional junction and link surveys from April and October 2014.

2.4 TIME PERIODS

- 2.4.1 The model was developed for the following time periods outlined below. The inter peak hour model is taken as an average hour between the inter peak period of 10:00 to 16:00.
- Average weekday AM Peak Hour: 08:00 - 09:00
 - Average weekday Inter Peak Hour: 10:00 - 16:00
 - Average weekday PM Peak Hour: 17:00 - 18:00

2.5 USER CLASSES

- 2.5.1 In the CSTM, as in most conventional highway assignment models, routing of trips between origin and destination zones is dictated by weightings applied to time and distance. The weightings are based on central government research into the values of time and the perceived costs of the travel of road users.
- 2.5.2 SATURN permits 'multiple user class' assignment in which vehicles and users (identified by vehicle type and journey purpose as below) may be assigned onto the highway network. In CSTM 2014 the assignment model comprises six user classes as follows:
- UC1: Cars on employers' business
 - UC2: Cars commuting
 - UC3: Cars 'other trips'

- UC4: Light Goods Vehicles (LGV)
- UC5: Heavy Goods Vehicles (OGV 1)
- UC6: Heavy Goods Vehicles (OGV 2)

2.5.3 Public Service Vehicles (PSVs) i.e. buses have not been included in the model as a distinct user class. Instead they have been represented on the network as fixed flows along a defined route with a peak hour frequency relevant to the respective peak hour modelled. Defining buses in this manner means their impact in terms of congestion and subsequently journey times around the model is captured and their routing realistic in terms of current bus provision when traffic surveys were undertaken.

2.6 GENERALISED COST PARAMETERS

2.6.1 Generalised costs were calculated using values of time, GDP growth rates, purpose splits, and vehicle operating costs recommended by the DfT for use in economic appraisals of transport projects in England, as presented in the WebTAG Databook (November 2014).

2.6.2 The values calculated for use in the base year models are shown in Table 2.1 and Table 2.2. Table 2.1 outlines the Pence per Minute (PPM) values by peak period and vehicle class, whilst Table 2.2 shows this in terms of Pence per Kilometre (PPK).

Table 2.1 - Generalised Cost Parameters, Pence per Minute (PPM)

PEAK	CAR EMPLOYERS BUSINESS	CAR COMMUTING	CAR OTHER	LGV	OGV 1	OGV 2
AM	54.55	13.52	17.25	24.19	24.87	24.87
IP	53.29	13.42	17.93	24.19	24.87	24.87
PM	52.44	13.23	18.45	24.19	24.87	24.87

Table 2.2 - Generalised Cost Parameters, Pence per Kilometre (PPK)

PEAK	CAR EMPLOYERS BUSINESS	CAR COMMUTING	CAR OTHER	LGV	OGV 1	OGV 2
AM	13.74	10.03	10.03	10.44	22.97	48.32
IP	13.74	10.03	10.03	10.44	22.97	48.32
PM	13.74	10.03	10.03	10.44	22.97	48.32

2.6.3 The assignment technique that has been used is Wardrop Equilibrium Assignment which is the default assignment procedure within SATURN. Wardrop's Principle of traffic equilibrium states that:

"Traffic arranges itself on congested networks such that the cost of travel on all routes used between each O-D pair is equal to the minimum cost of travel and all unused routes have equal or greater cost."

2.7 PASSENGER CAR UNITS

2.7.1 Standard factors to convert each vehicle type in to passenger car units (pcu) have been taken from TAG Unit M3.1 Highway Assignment Modelling Appendix D - Section D7 Conversion to Passenger Car Units (January 2014). These are:

→ Car:	1.0
→ Light Goods Vehicle:	1.0
→ HGV on Motorway and all-purpose dual carriageway:	2.5
→ HGV on other road types:	2.0

2.7.2 In an assignment model, it is not possible to allocate different PCU factors to a particular user class according to link type. Guidance is not given on this aspect in WebTAG, so a default pcu factor of 2.0 has been applied to all HGVs, since the majority of links within the model are not motorway or all-purpose dual carriageway.

2.8 TRANSPORT MODEL AREA

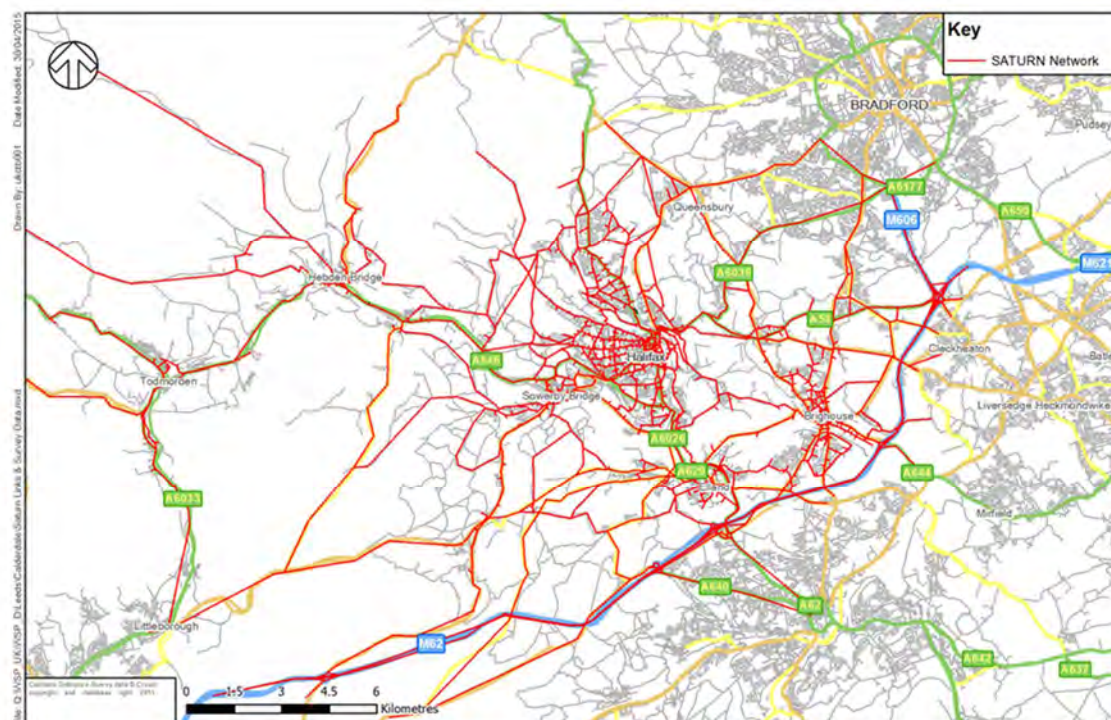
2.8.1 The CSTM contains a total of 2,297 nodes and 5,519 links. The model covers the Calderdale District representing all key highway links and junctions with appropriate minor road network detail in the key towns of the district.

2.8.2 The coverage of the model includes the M62 with the connections from Junction 22 and the A672, Junction 23 and the A640, Junction 24 and the A629, Junction 25 and the A644, and Junction 26 and the A58. All major routes through the district to the key towns are represented including the A646 to Hebden Bridge and Todmorden, A629 to Illingworth, A6036 to Shelf, A644 and A641 to Brighouse.

2.8.3 The model includes urbanised areas such as Halifax town centre, Elland and Brighouse, in considerable detail with the local roads included within the assignment as well as major strategic roads.

2.8.4 The transport model area and links included within the model are shown in Figure 2.1 below.

Figure 2.1 - Extent of Transport Model Area



2.9 ZONING SYSTEM

- 2.9.1 The zone system of the CSTM has been designed such that it is sufficiently detailed to credibly represent trip loading points from different land uses onto the transport network. In total there are 278 zones in the CSTM. Plans of the zone system are included in Appendix B.
- 2.9.2 Within Halifax, additional zones were created by splitting the original CSTM zones during the validation process in order to provide sufficient detail to accurately represent observed traffic conditions, as shown in figure B-1.
- 2.9.3 South of the M62, the zone loading was adjusted to create single zones loading onto each entry point into the network. This was essential, as each corridor as a traffic count, with many of them also hosting RSI sites, and the only way to validate these counts at this level of detail is to provide a separate zone. Further accuracy in this area can be obtained by extending the detailed simulation area into Kirklees, which is the aim of a future update to the model.
- 2.9.4 Further east along the M62 up to Junction 26, additional detail was added with seven zones introduced at specific loading points, rather than the single zone (33) used in the original model. The number of external zones at the eastern and western fringes of the model was substantially reduced as the original model had multiple zones loading onto the same point at edges of the network. The revised CSTM zone structure involves a single zone (813) loading onto the western end of the M62 and another zone (827) loading onto the eastern end of the M62 as shown in figure B-3.
- 2.9.5 Zone loading was amended in many instances within the main simulation network by ensuring zones loading onto a single 'spigot' access link representing an existing road, logical in relation to the area covered by the model zone. The original model was found to contain a number of zones loading across multiple spigots and across links. This arrangement did not allow for counts to be interpreted or matched in a logical way, and also caused major problems with model convergence.

3 SURVEY DATA AND COLLECTION & ANALYSIS

3.1 INTRODUCTION

3.1.1 To produce a robust and 'fit for purpose' model, a suitable data collection exercise was undertaken by SkyHigh-CountOnUs in June 2014, under the instruction of CMBC, including Road Side Interviews (RSIs), supplemented by additional junction and link data collected in April and October 2014 as part of parallel studies on the A629 corridor.

3.1.2 This section provides a summary of the survey data obtained and how it was processed in order for it to be used to create the base year SATURN model. The following data was collected for model development, or was already available via existing sources:

- 19 Road Side Interviews (RSIs)
- 10 ATC sites collected by SkyHigh-CountOnUs;
- 7 Automatic Traffic Counts (ATC) sites collected by NDC;
- 10 Permanent ATC Sites from <http://www.c2traffic.co.uk>;
- 133 Automatic Traffic Counts (ATC) sites from <http://www.c2traffic.co.uk>;
- 9 Highways Agency TRADS Count Sites
- 16 Manual Classified Counts (MCC) sites collected by NDC in April;
- 14 Manual Classified Counts (MCC) sites collected by NDC in October; and
- 1 ANPR site collected by SkyHigh-CountOnUs.

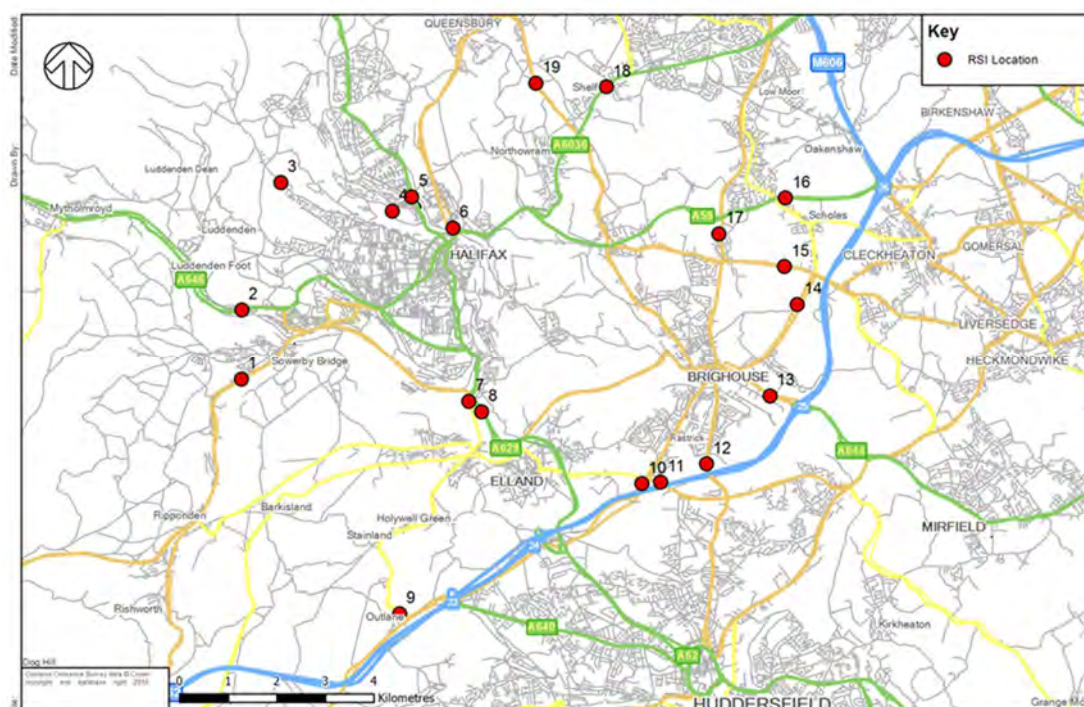
3.2 ROADSIDE INTERVIEW DATA

3.2.1 Table 3.1 details the location of the 19 RSIs.

Table 3.1 - RSI Locations

SITE ID	DESCRIPTION	DATE	INTERVIEW DIRECTION
1	A58 Rochdale Road	17/06/2014	Eastbound
2	A646 Burnley road	10/06/2014	Eastbound
3	Moor End Road	10/06/2014	North-Westbound
4	Shroggs Road	10/06/2014	Southbound
5	Ovenden Road	18/06/2014	Southbound
6	Haley Hill	18/06/2014	South-Eastbound
7	Stainland Road	18/06/2014	Northbound
8	A629 Elland Wood Bottom	11/06/2014	Southbound
9	New Road	11/06/2014	Southbound
10	New Hey Road	24/06/2014	North-Eastbound
11	Clough Lane	24/06/2014	Eastbound
12	A641 Huddersfield Road	17/06/2014	Southbound
13	A644 Wakefield Road	17/06/2014	Eastbound
14	Walton Lane	17/06/2014	Northbound
15	Birkby Lane	19/06/2014	Eastbound
16	A58 Whitehall Road	19/06/2014	Eastbound
17	Bradford Road	12/06/2014	Northbound
18	Wade House Road	12/06/2014	North-Eastbound
19	A644 Brighouse & Denholme Gate Road	12/06/2014	Southbound

Figure 3.1 - RSI Locations



3.2.2 Information on the following was obtained for each respondent:

- Vehicle type
- Number of occupants
- Origin postcode for trip
- Reason for being at origin
- Destination postcode for trip
- Reason for going to destination

3.2.3 RSIs were conducted between 07:00 and 19:00 on the respective survey date. Associated MCCs were also carried out over the same time period, on the same day as the relevant RSI in both directions, in order to gain a full understanding of the make-up and volume of traffic at each location.

3.2.4 Existing ATC information available from CMBC via <http://www.c2traffic.co.uk>, for temporary and permanent sites at comparable locations, was used to expand the MCC counts at the RSI sites in order to provide a more robust long-term average traffic count unaffected by disruptions associated with the RSIs themselves. Where no ATCs were available, the MCC associated with the RSI was used to expand the data.

3.2.5

Table 3.2 shows the number of logical face-to-face interviews in the interview direction and the proportion of the total traffic these represent. Logic checks were carried out, with data excluded if any key field related to the RSI record was incomplete. Appendix C contains origin and destination postcode plots for each RSI site. In certain instances, there are records which appear to be the wrong side of the RSI based on whether they are an origin or destination and the interview direction. Examination of these individual records does not show these interviews to be illogical definitively - they could be part of a linked trip or a logical journey for the specific respondent involved. It was decided to not exclude such records to ensure the data used was not biased by presumptions of travel patterns through the RSI sites.

Table 3.2 - RSI Interviews & Sample Size

SITE ID	DESCRIPTION	INTERVIEW DIRECTION	LOGICAL JOURNEYS	INCOMPLETE / ILLOGICAL JOURNEYS	MCC INTERVIEW DIRECTION	LOGICAL SAMPLE RATE	MCC NON-INTERVIEW DIRECTION
1	A58 Rochdale Road between Lower Brockwell Lane & Mill House Lane	EB	694	29	3996	17%	4426
2	A646 Burnley Road near Warley Wood Avenue	EB	1029	89	7378	14%	6868
3	Moor End Road travelling east before Heath Hill Road	NWB	751	192	1644	46%	1712
4	Shroggs Road in the bus stop opposite Hebble Lane	SB	691	122	3315	21%	3885
5	Ovenden Road opposite Ovenden Way	SB	792	99	8877	9%	10580
6	Haley Hill toward A58 gyratory	SEB	1006	250	6552	15%	3762
7	Stainland Road towards Calder & Hebble Junction	NB	872	94	7955	11%	6815
8	A629 Elland Wood Bottom in Bus stop towards M62	SB	1143	109	14606	8%	12761
9	New Road north of Forest Hill Road	SB	521	96	1285	41%	1334
10	New Hey Road south of Dewsbury Road/Clough Lane Crossroads	NEB	597	168	4502	13%	4799
11	Clough Lane in the lay-by outside the Roundhill Inn	EB	819	166	7276	11%	7160
12	A641 Huddersfield Road towards Huddersfield on grassed central reserve	SB	915	130	7957	11%	7557
13	A644 Wakefield Road towards M62 on grassed central reserve	EB	896	113	6902	13%	5456
14	Walton Lane north of Highmoor Lane	NB	1270	195	3530	36%	3217

SITE ID	DESCRIPTION	INTERVIEW DIRECTION	LOGICAL JOURNEYS	INCOMPLETE / ILLOGICAL JOURNEYS	MCC INTERVIEW DIRECTION	LOGICAL SAMPLE RATE	MCC NON-INTERVIEW DIRECTION
15	Birkby Lane towards Walton Lane	EB	825	103	2905	28%	3081
16	A58 Whitehall Road east of Westfield Lane	EB	771	158	7993	10%	7833
17	Bradford Road south of Mayfield Grove	NB	817	95	5666	14%	5835
18	Wade House Road south of Brow Lane	NEB	765	83	7439	10%	7659
19	A644 Brighouse & Denholme Gate Road between Shaw Lane and Bowl Shaw Lane	SB	1009	113	4335	23%	4881

3.2.6 Typical sample rates for RSIs generally line in the range of 10-20%. The samples achieved here are mostly within that range, with some sites being considerably better.

3.3 ATC DATA

3.3.1 Temporary ATCs were laid down for the purposes of this study to supplement existing ATC information available from CMBC via <http://www.c2traffic.co.uk>, for permanent and temporary sites. The existing data available from the above website, supplemented by project specific data collected, provides sufficient coverage to robustly develop the base model.

3.3.2 Table 3.3 below lists the Temporary ATCs commissioned for this study and parallel CMBC studies:

Table 3.3 - Project Specific Temporary ATC Sites

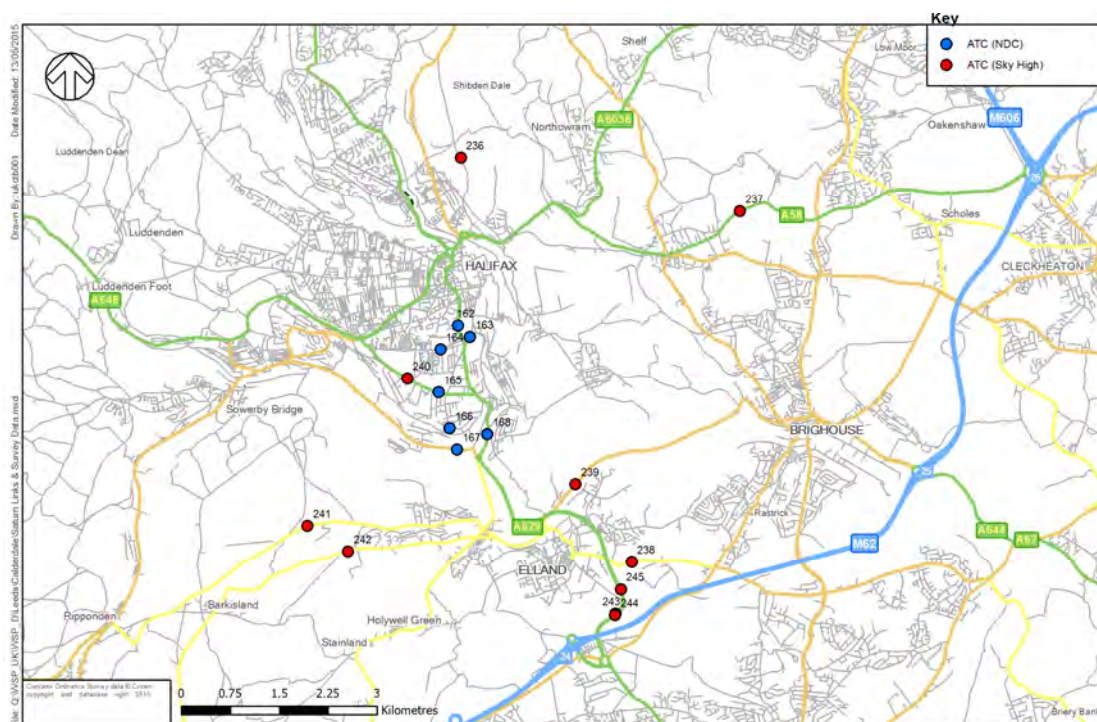
REF	SITE ID	DESCRIPTION	DIRECTION	CLASSIFICATION	DATE RANGE
162	3864 – 1/ Halifax	A629 Skircoat Road between Caygill Terrace and Heath Road	Northbound	Classified	02/04/2014 - 16/04/2014
162	3864 – 1/ Halifax	A629 Skircoat Road between Caygill Terrace and Heath Road	Southbound	Classified	02/04/2014 - 16/04/2014
163	3864 - 2/ Halifax	Huddersfield Road. Between Shaw Hill and Simmonds Lane	Southbound	Classified	02/04/2014 - 16/04/2014
163	3864 - 2/ Halifax	Huddersfield Road. Between Shaw Hill and Simmonds Lane	Northbound	Classified	02/04/2014 - 16/04/2014
164	3864 - 3/ Halifax	Freeschool Lane. Between Heath Street and Heath Villas	Westbound	Classified	02/04/2014 - 16/04/2014
164	3864 – 3/ Halifax	Freeschool Lane. Between Heath Street and Heath Villas	Eastbound	Classified	02/04/2014 - 16/04/2014
165	3864 - 4/ Halifax	A646 Skircoat Moor Road. Between Lea Avenue and Rawson Avenue	Westbound	Classified	02/04/2014 - 16/04/2014

REF	SITE ID	DESCRIPTION	DIRECTION	CLASSIFICATION	DATE RANGE
	Halifax				
165	3864 – 4/ Halifax	A646 Skircoat Moor Road. Between Lea Avenue and Rawson Avenue	Eastbound	Classified	02/04/2014 - 16/04/2014
166	3864 - 5/ Halifax	Skircoat Green Road. Between Copley Lane and Skircoat Green	Southbound	Classified	02/04/2014 - 16/04/2014
166	3864 – 5/ Halifax	Skircoat Green Road. Between Copley Lane and Skircoat Green	Northbound	Classified	02/04/2014 - 16/04/2014
167	3864 – 6/ Halifax	A6026 Wakefield Road. Between Copley Lane and Cow Lane	Westbound	Classified	02/04/2014 - 16/04/2014
167	3864 – 6/ Halifax	A6026 Wakefield Road. Between Copley Lane and Cow Lane	Eastbound	Classified	02/04/2014 - 16/04/2014
168	3864 – 7/ Halifax	A629 Huddersfield Road. Between Exley Bank and A6026 Wakefield Road	Southbound	Classified	03/04/2014 - 16/04/2014
168	3864 – 7/ Halifax	A629 Huddersfield Road. Between Exley Bank and A6026 Wakefield Road	Northbound	Classified	03/04/2014 - 16/04/2014
236	9298 – 1	Bradford Old Road - South of Ploughcroft Lane	Northbound	Classified	Jun-14
236	9298 – 1	Bradford Old Road - South of Ploughcroft Lane	Southbound	Classified	Jun-14
237	9298 – 2	A58 Whitehall Road - Between Syke Lane and Rooks Lane	Westbound	Classified	Jun-14
237	9298 – 2	A58 Whitehall Road - Between Syke Lane and Rooks Lane	Eastbound	Classified	Jun-14
238	9298 - 3	B6114 Dewsbury Road, East of Whitwell Green Lane	Westbound	Classified	Jun-14
238	9298 - 3	B6114 Dewsbury Road, East of Whitwell Green Lane	Eastbound	Classified	Jun-14
239	9298 - 4	A6025 Park Road North of Park Wood Crematorium	Northbound	Classified	Jun-14
239	9298 - 4	A6025 Park Road North of Park Wood Crematorium	Southbound	Classified	Jun-14
240	9298 - 5	A646 Skircoat Moor Road East of Rocks Road	Westbound	Classified	Jun-14

REF	SITE ID	DESCRIPTION	DIRECTION	CLASSIFICATION	DATE RANGE
240	9298 - 5	A646 Skircoat Moor Road East of Rocks Road	Eastbound	Classified	Jun-14
241	9298 - 6	Greetland Road – East of Norland Road	Westbound	Classified	Jun-14
241	9298 - 6	Greetland Road – East of Norland Road	Eastbound	Classified	Jun-14
242	9298 - 7	B6113 Saddleworth Road - East of Syke House Road	Westbound	Classified	Jun-14
242	9298 - 7	B6113 Saddleworth Road - East of Syke House Road	Eastbound	Classified	Jun-14
243	9298 – 8NB	A629 Huddersfield Road North of M62	Northbound	Classified	Jun-14
244	9298 – 9SB	Huddersfield Road Slip onto A629	Southbound	Classified	Jun-14
245	9298 – 10	Calderdale Way (at bus stop area)	Southbound	Classified	Jun-14

3.3.3 Figure 3.2 shows the location of the project specific ATC sites.

Figure 3.2 - Project Specific Temporary ATC Sites



3.3.4 The classified surveys are based on vehicle type and axle length outlined in Table 3.4. The vehicle types were then re-classified into Car, LGV, OGV1 and OGV2 in order to build matrices for the CSTM.

Table 3.4 - Vehicle Classification

VEHICLE TYPE	CLASS		DATE COLLECTED	CSTM CLASSIFICATION
Very short Bicycle or Motorcycle	MC	1	d(1)<1.7 and axles=2	Not used
Short Sedan, Wagon, 4WD, Utility, Light Van	SV	2	d(1)>1.7m d(1)<=3.2m. and axles=2	Car
Short-Towing Trailer, Caravan, Boat, etc.	SVT	3	Groups=3, d(1)>2.1m d(1)<=3.2m. d(2)>=2.1m and axles=3, 4, 5	Car
Two Axle Truck or Bus	TB2	4	d(1)>3.2m and axles=2	LGV
Three Axle Truck or Bus	TB3	5	Axles=3 and groups=2	LGV
Four Axle Truck	T4	6	d(1)>3.2m. axles=3 and groups=3	LGV
Three Axle Articulated Three axle articulated vehicle or rigid vehicle and trailer	ART3	7	d(1)>3.2m. axles=3 and groups=3	OGV1
Four Axle Articulated Four axle articulated vehicle or rigid vehicle and trailer	ART4	8	d(2)<2.1m or d(1)<2.1m or d(1)>3.2m axles=4 and groups>2	OGV2
Five Axle Articulated Five axle articulated vehicle or rigid vehicle and trailer	ART5	9	d(2)<2.1m or d(1)<2.1m or d(1)>3.2m axles=5 and groups>2	OGV2
Six Axle Articulated Six axle articulated vehicle or rigid vehicle and trailer	ART6	10	Axles=6 and groups>2 or axles>6 and groups=3	OGV2
B-Double or Heavy truck and trailer	BD	11	groups=4 & axles>6	OGV2
Double or triple road train or Heavy truck and two (or more) trailers	DRT	12	groups>=5 & axles>6	OGV2

3.3.5

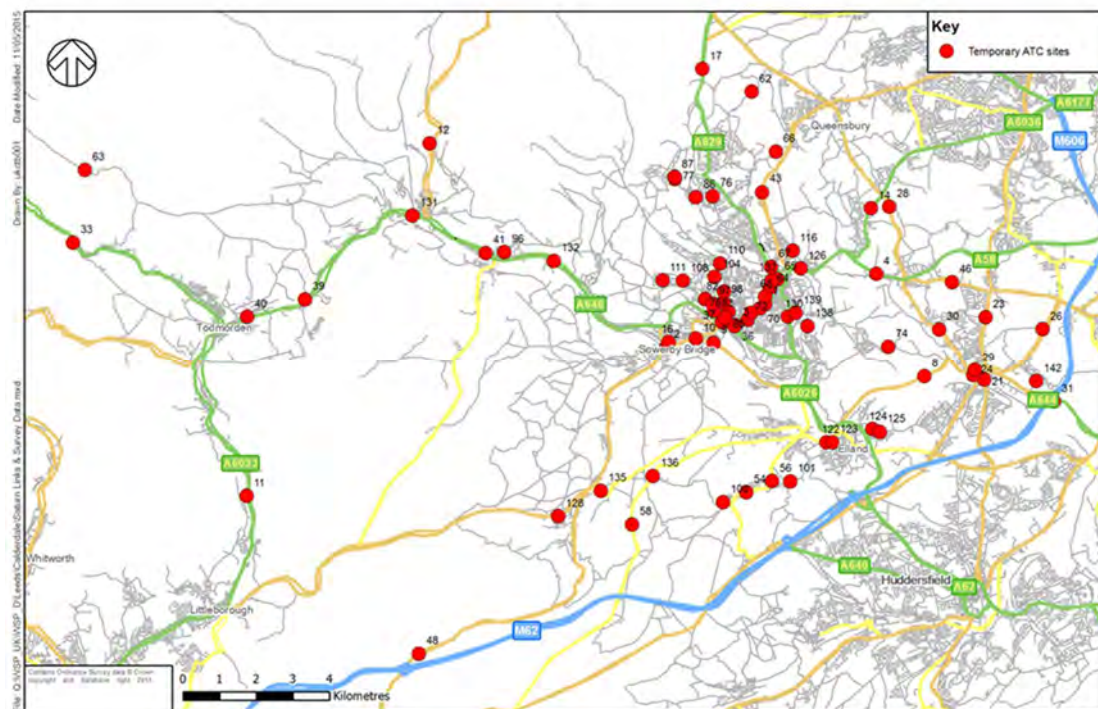
Table 3.5 below lists the Permanent ATCs situated in Calderdale, around Halifax:

Table 3.5 - Permanent ATC Sites

REF	SITE ID	DESCRIPTION - PERMANENT	DIRECTION	CLASSIFICATION	DATE RANGE
126	000000130207	A58 New Bank - Halifax	Eastbound	Volumetric	01-06-2014 to 30-06-2014
126	000000130207	A58 New Bank - Halifax	Westbound	Volumetric	01-06-2014 to 30-06-2014
127	000000130421	A58 Kings Cross Road, Halifax	Eastbound	Volumetric	01-06-2014 to 30-06-2014
127	000000130421	A58 Kings Cross Road, Halifax	Westbound	Volumetric	01-06-2014 to 30-06-2014
129	000000130205	A629 north of Halifax town centre	Northbound	Volumetric	01-06-2014 to 30-06-2014
129	000000130205	A629 north of Halifax town	Southbound		01-06-2014 to 30-

		centre		Volumetric	06-2014
130	000000130403	A629 Skircoat Road, Halifax	Northbound	Volumetric	01-06-2014 to 30-06-2014
130	000000130403	A629 Skircoat Road, Halifax	Southbound	Volumetric	01-06-2014 to 30-06-2014
133	000000130206	A647 Hagley Hill, Halifax	Northbound	Volumetric	01-06-2014 to 30-06-2014
133	000000130206	A647 Hagley Hill, Halifax	Southbound	Volumetric	01-06-2014 to 30-06-2014
137	000000130203	Pellon Lane, Halifax	Eastbound	Volumetric	01-06-2014 to 30-06-2014
137	000000130203	Pellon Lane, Halifax	Westbound	Volumetric	01-06-2014 to 30-06-2014
138	000000130401	Siddal New Rd, Halifax	Northbound	Volumetric	01-06-2014 to 30-06-2014
138	000000130401	Siddal New Rd, Halifax	Southbound	Volumetric	01-06-2014 to 30-06-2014
139	000000130402	Shay Syke, Halifax	Northbound	Volumetric	01-06-2014 to 30-06-2014
139	000000130402	Shay Syke, Halifax	Southbound	Volumetric	01-06-2014 to 30-06-2014
140	000000130427	Southowram Bank Top	Northbound	Volumetric	01-06-2014 to 30-06-2014
140	000000130427	Southowram Bank Top	Southbound	Volumetric	01-06-2014 to 30-06-2014
141	000000140103	Shibden Hall Road - Halifax	Eastbound	Volumetric	01-06-2014 to 30-06-2014
141	000000140103	Shibden Hall Road - Halifax	Westbound	Volumetric	01-06-2014 to 30-06-2014

Figure 3.4 - Temporary CMBC ATC sites



3.3.10

The volumetric counts were split into Car, LGV, OGV1 and OGV2 based on the proportions of these vehicle types in the 19 MCC RSI counts. The proportions by peak hour are shown in Table 3.6 with the inter peak hour representing an average hour between 10:00 and 16:00. Overall model calibration and validation is controlled to total vehicles, so although the vehicle split is useful to determine the assignment, it is not critical to overall performance.

Table 3.6 - Permanent ATC Vehicle Splits

CLASS	AM PEAK (08:00-09:00)	INTER PEAK (10:00-16:00)	PM PEAK (17:00-18:00)
Car	87.47%	82.59%	91.01%
LGV	10.70%	14.56%	8.28%
OGV1	1.23%	1.91%	0.48%
OGV2	0.60%	0.93%	0.23%

Table 3.7 - HGV Vehicle Splits

CLASS	OGV 1	OGV 2
HGV	67.23%	32.77%

3.4 TRADS DATA

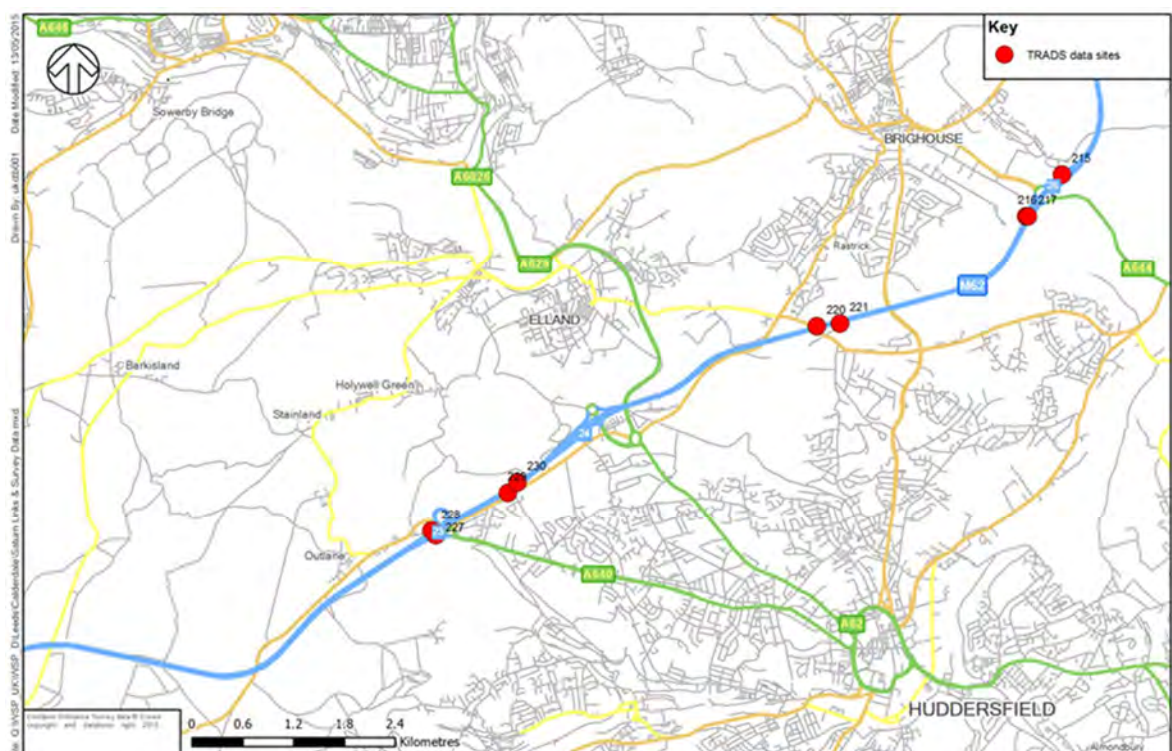
3.4.1 TRADS counts were downloaded from the HATRIS website (<https://www.hatris.co.uk>) for various locations along the M62 between Junction 23 and Junction 26, included within the SATURN simulation network. Junction 22 has not been included, as it lies at the edge of the modelled area, so there is insufficient detail in the model to calibrate flows at this junction.

3.4.2 Table 3.8 below lists the sites and provides descriptions. All of the data is averaged from relevant non-school holiday months in 2014. Figure 3.5 shows the location of TRADS sites

Table 3.8 - Selected TRADS Sites

REF	SITE ID	DESCRIPTION	DIRECTION	CLASSIFICATION	DATE
215	12/30034813	Slip onto M62 at J25	Eastbound	Volumetric/Tabular	June 2014
216	12/30034831	M62 at J25	Eastbound	Volumetric/Tabular	June 2014
217	12/30028975	M62 Westbound within J25	Westbound	Volumetric/Tabular	July 2014
220	12/30029016	M62 Eastbound between J24 and J25	Eastbound	Volumetric/Tabular	June 2014
221	12/30029015	M62 Westbound between J25 and J24	Westbound	Volumetric/Tabular	June 2014
227	12/30029050	Slip onto M62 at J23	Westbound	Volumetric/Tabular	June 2014
228	12/30029052	Slip off M62 at J23	Eastbound	Volumetric/Tabular	June 2014
229	12/30029035	M62 Westbound between J24 and J23	Westbound	Volumetric/Tabular	June 2014
230	12/30029034	M62 Eastbound between J23 and J24	Eastbound	Volumetric/Tabular	June 2014

Figure 3.5 - TRADS sites



3.5 MCC DATA

3.5.1 Data collection commissioned as part of a parallel CMBC project included 16 turning count surveys at junctions in the south Halifax area, focused around the A629 corridor. Data was collected on Tuesday 8 April 2014. Table 3.9 below lists the sites and provides descriptions.

3.5.2 The MCC data in table 3.9 was not used for turning count validation. Link flows were derived from the MCC arm totals and used during model validation.

Table 3.9 - MCC Sites

REF	SITE ID	DESCRIPTION	DATE
169	3864 / 1 Halifax	A629 Skircoat Road/Heath Road	08-04-2014
170	3864 / 2 Halifax	A629 Skircoat Road/Free School Lane	08-04-2014
171	3864 / 3 Halifax	A629 Skircoat Road /Huddersfield Road	08-04-2014
172	3864 / 4 Halifax	A629 Huddersfield Road/Skircoat Green Road	08-04-2014
173	3864 / 5 Halifax	A629 Huddersfield Road/Coronation Road/Stafford Avenue	08-04-2014
174	3864 / 6 Halifax	A629 Huddersfield Road/Stafford Road	08-04-2014
175	3864 / 7 Halifax	A629 Huddersfield Road/A646 Dry Clough Lane	08-04-2014
176	3864 / 8 Halifax	A629 Huddersfield Road/Dudwell Lane	08-04-2014
177	3864 / 9 Halifax	A646 Dry Clough Lane/Calderdale Royal Hospital Access	08-04-2014
178	3864 / 10 Halifax	A646 Dry Clough Lane/Skircoat Green Road	08-04-2014
179	3864 / 11 Halifax	Skircoat Green Road/Stafford Road	08-04-2014
180	3864 / 12 Halifax	Skircoat Green Road/Manor Heath Road/Stafford Avenue	08-04-2014
181	3864 / 13 Halifax	Skircoat Green Road/Heath Road	08-04-2014
182	3864 / 14 Halifax	Heath Road/Free School Lane	08-04-2014
183	3864 / 15 Halifax	Godfrey Road Hospital Access (East)	08-04-2014
184	3864 / 16 Halifax	Godfrey Road Hospital Access (West)	08-04-2014
300	4398 / 1 Elland	Hammerstones Rd / Victoria Rd / Blackley Rd / Hammerstone Leach Lane	16-10-2014
301	4398 / 2 Elland	B6112 Stainland Rd / B6114 Saddleworth Rd	16-10-2014
302	4398 / 3 Elland	B6112 Stainland Rd / B6113 Rochdale Rd	16-10-2014

REF	SITE ID	DESCRIPTION	DATE
303	4398 / 4 Elland	B6113 Rochdale Rd / B6114 Saddleworth Rd	16-10-2014
304	4398 / 5 Elland	Jepson Lane / Victoria Rd	16-10-2014
305	4398 / 6 Elland	Victoria Rd / Southgate	16-10-2014
306	4398 / 7 Elland	Southgate/B6114 Elland Riores Link/Huddersfield Rd/Catherine Street	16-10-2014
307	4398 / 8 Elland	B6114 Elland Riores Link / B6114 Dewsbury Rd	16-10-2014
308	4398 / 9 Elland	B6114 Elland Riores Link / Huddersfield Rd/Elland Riores Link	16-10-2014
309	4398 / 10 Elland	B6114 Huddersfield Rd / B6114 Saddleworth Rd	16-10-2014
310	4398 / 11 Elland	A6025 Halifax Rd / A6025 Park Rd	16-10-2014
311	4398 / 12 Elland	A6025 Park Rd / Exley Lane	16-10-2014
312	4398 / 13 Elland	A629 Huddersfield Rd / Jubilee Rd	16-10-2014
313	4398 / 14 Elland	A629 Huddersfield Rd /A6026 Wakefield Rd / B6112 Stainland Rd/A629 Elland Wood Bottom	16-10-2014

Figure 3.6 - MCC and ANPR surveys

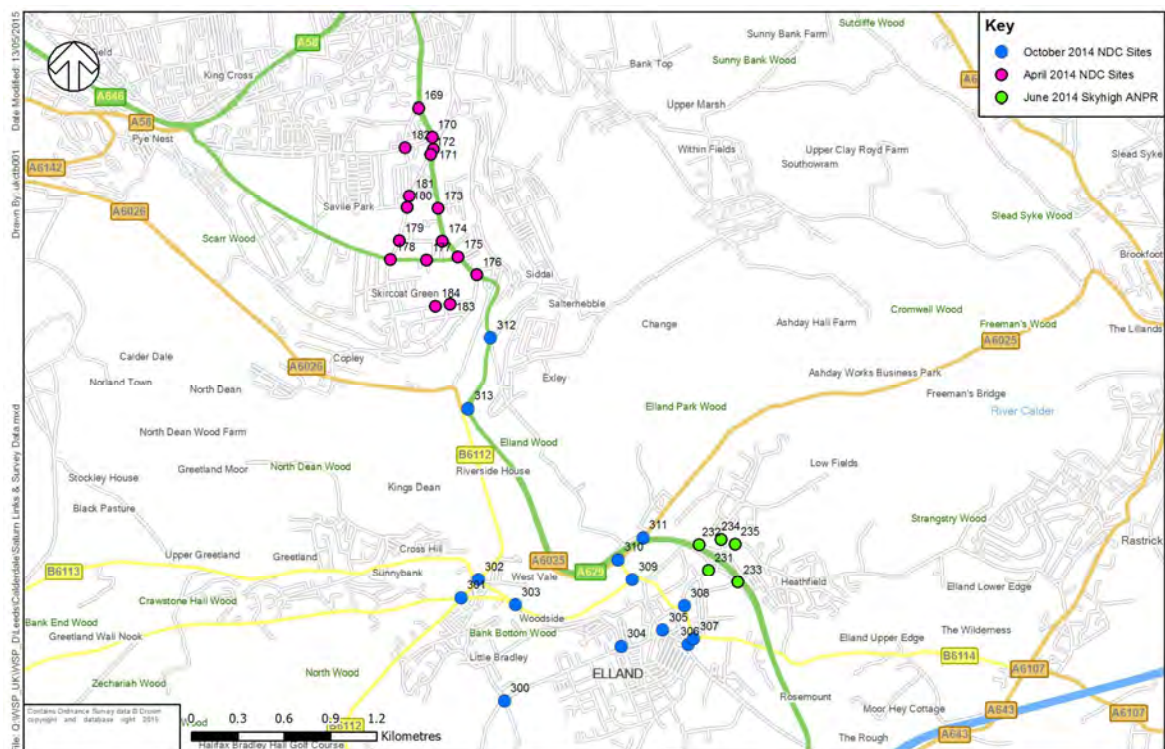


Figure 3.7 - MCC surveys south of Halifax



3.6 ANPR DATA

- 3.6.1 SkyHigh-CountOnUs were commissioned to collect ANPR data for the Elland Riores Link dumbbell roundabout under the A629 near Lowfields Business Park. The data was collected on Thursday 12 June 2014 between 07:00 – 19:00. This is shown above in figure 3.6

3.7 SCREENLINES

- 3.7.1 Screenlines were defined across the CSTM detailed in figure 3.8 and Table 3.10

Figure 3.8 - Screenline Locations

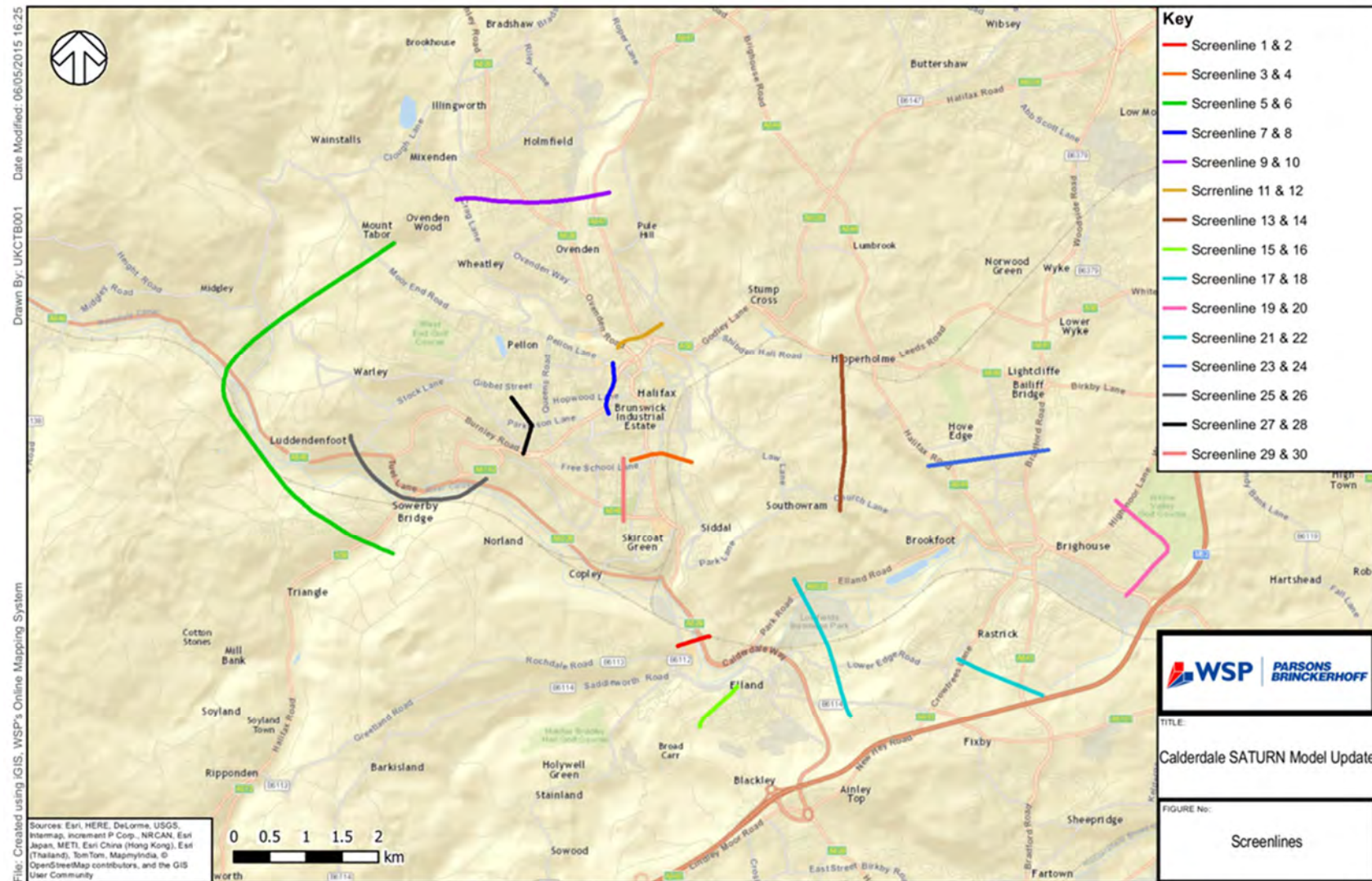


Table 3.10 - Screenline description

SCREENLINE ID	DIRECTION	DESCRIPTION OF ROADS INTERSECTED
1	Northbound	A629 & Stainland road
2	Southbound	A629 & Stainland Road
3	Northbound	Heath Road, A629, Huddersfield Road & Shaw Lane
4	Southbound	Heath Road, A629, Huddersfield Road & Shaw Lane
5	Eastbound	Moor End road, Luddenden Lane, A646 & A58
6	Westbound	Moor End road, Luddenden Lane, A646 & A58
7	Eastbound	Pellon Lane, Gibbet Street, Hopwood Lane & A646 Burdock Way
8	Westbound	Pellon Lane, Gibbet Street, Hopwood Lane & A646 Burdock Way
9	Northbound	Crag Lane, Keighley Road, Shay Lane & Queensbury Road
10	Southbound	Crag Lane, Keighley Road, Shay Lane & Queensbury Road
11	Northbound	Ovenden Road, Dean Clough & Haley Hill
12	Southbound	Ovenden Road, Dean Clough & Haley Hill
13	Eastbound	A58 Halifax Road & Church Lane
14	Westbound	A58 Halifax Road & Church Lane
15	Northbound	Victoria Road & Jepson Lane
16	Southbound	Victoria Road & Jepson Lane
17	Eastbound	A6025 Elland Road & B6114 Dewsbury Road
18	Westbound	A6025 Elland road & B6114 Dewsbury Road
19	Eastbound	A643 Highmoor Lane & A644 Wakefield Road
20	Westbound	A643 Highmoor Lane & A644 Wakefield Road
21	Northbound	A643 Crowtrees Lane & A641 Huddersfield Road
22	Southbound	A643 Crowtrees Lane & A641 Huddersfield Road
23	Northbound	A644 Halifax Road, Laverock Lane & A641 Bradford Road
24	Southbound	A644 Halifax Road, Laverock Lane & A641 Bradford Road
25	Eastbound	A646 Burnley Road, A58 Rochdale Road & A6026 Wakefield Road
26	Westbound	A646 Burnley Road, A58 Rochdale Road & A6026 Wakefield Road
27	Eastbound	Aachen Way, Parkinson Lane & Hopwood Lane
28	Westbound	Aachen Way, Parkinson Lane & Hopwood Lane
29	Eastbound	Free School Lane & Skircoat Moor Road
30	Westbound	Free School Lane & Skircoat Moor Road

3.8 JOURNEY TIME DATA

3.8.1 Journey time data was obtained from TrafficMaster data. TrafficMaster is an online tool which calculates average journey time based on real-life traffic delays and movements. The journey time route observations were taken for June 2014 and were provided for 38 routes. These routes provided sufficient coverage of the network with the focus being around Halifax town centre. The journey time data was provided for average node to node journey times for all peak periods.

3.8.2 These routes are shown in figure 3.9 and described in table 3.11 covering major strategic movements and key route paths in the modelled area.

Table 3.11 - Journey time route description

ROUTE ID	DESCRIPTION	DIRECTION	DISTANCE (KM)
1	A629 Calderdale Way - M62 J24 to Calder & Hebble junction	Northbound	5.09
1	A629 Calderdale Way - Calder & Hebble junction to M62	Southbound	4.92
2	A629 Skircoat Road/Huddersfield Road - Calder & Hebble junction to A58 Roundabout	Northbound	3.49
2	A629 Skircoat Road/Huddersfield Road - A58 Roundabout to Calder & Hebble junction	Southbound	3.58
3	A58 Burdock Way/A646 Burnley Road - Luddenden Lane to A58 Roundabout	Eastbound	4.50
3	A58 Burdock Way/A646 Burnley Road - A58 Roundabout to Luddenden Lane	Westbound	4.53
4	A629 Ovenden Road - A58 Roundabout to Illingworth	Northbound	5.0
4	A629 Ovenden Road - Illingworth to A58 Roundabout	Southbound	5.0
5	Ford Hill/Queensbury Road – Claremount Road to A644 Cross Roads	Northbound	1.90
5	Ford Hill/Queensbury Road – A644 Cross Roads to Claremount Road	Southbound	1.91
6	Boothtown Road/Haley Hill/Charlestown Road/Shaw Hill/Freeschool Lane – Claremount Road to Freeschool Lane junction with A646 Skircoat Moor Road	Northbound	5.13
6	Freeschool Lane/Shaw Hill/Charlestown Road/Haley Hill/Boothtown Road – Freeschool Lane junction with A646 Skircoat Moor Road to Claremount Road	Southbound	5.22
7	A58 – A58/Burdock Way Roundabout to A58/A644 Cross Roads	Eastbound	3.93
7	A58 – A58/A644 Cross Roads to A58/Burdock Way Roundabout	Westbound	3.76
8	A641/A644 – A641 Huddersfield Road under M62 Bridge to A644/Upper Green Lane junction	Northbound	4.36
8	A644/A641 – A644/Upper Green Lane junction to A641 Huddersfield Road under M62 Bridge	Southbound	4.27
9	Southgate Roundabout/B6114/A6107 - Southgate/Huddersfield Road Roundabout to A6107/A644 Roundabout	Eastbound	2.20
9	A6107/B6114/Southgate Roundabout – A6107/A644 Roundabout to Southgate/Huddersfield Road Roundabout	Westbound	2.19
10	B6113/B6114 – Rochdale Road/Turbury Lane junction to Southgate Roundabout	Eastbound	3.96
10	B6114/B6113 – Southgate roundabout to Rochdale Road/Turbury Lane junction	Westbound	3.90

ROUTE ID	DESCRIPTION	DIRECTION	DISTANCE (KM)
11	Lindley Road/Hammerstones Road/Green Lane/B6112 – M62 Junction 24 Roundabout to Calder & Hebble junction	Northbound	4.50
11	B6112/Green Lane/Hammerstones Road/Lindley Road – Calder & Hebble junction to M62 junction 24 Roundabout	Southbound	4.42
12	A6026/A58/A6139 – Calder & Hebble junction to A646/A6139 junction	Northbound	4.65
12	A6139/A58/A6026 – A646/A6139 junction to Calder & Hebble junction	Southbound	4.71
13	Brookfoot Lane/Pinnar Lane/Beacon Hill Road/Godley Branch Road – A6025/Brookfoot Lane junction to A58/Godley Branch Road junction	Northbound	5.47
13	Godley Branch Road/Beacon Hill Road/Pinnar Lane/Brookfoot Lane – A58/Godley Branch Road junction to A6025/Brookfoot Lane junction	Southbound	5.44
14	A644/A6025 - M62 junction 25 to A6025/Brookfoot Lane junction	Northbound	3.17
14	A6025/A644 – A6025/Brookfoot Lane junction to M62 Junction 25	Southbound	3.21
15	A646/Queens Road – A646/A629 junction to Queens Road/Pellon Lane junction	Northbound	3.82
15	Queens Road/A646 – Queens Road/Pellon Lane junction	Southbound	3.77
16	A6025/A644/A641 – A6025/Brookfoot Lane junction to A649/A641 junction	Northbound	3.45
16	A641/A644/A6025 – A649/A641 junction to A6025/Brookfoot Lane junction	Southbound	3.52
17	A6025 – A6025/Exley Lane junction to A6025/Brookfoot Lane junction	Northbound	3.56
17	A6025 – A6025/Brookfoot Lane junction to A6025/Exley Lane junction	Southbound	3.36
18	M62 junction 23 to M62 junction 25	Eastbound	8.40
18	M62 junction 25 to M62 junction 23	Westbound	8.40
19	M62 junction 25 to M62 junction 26	Eastbound	5.27
19	M62 junction 26 to M62 junction 25	Westbound	5.27

4 NETWORK DEVELOPMENT

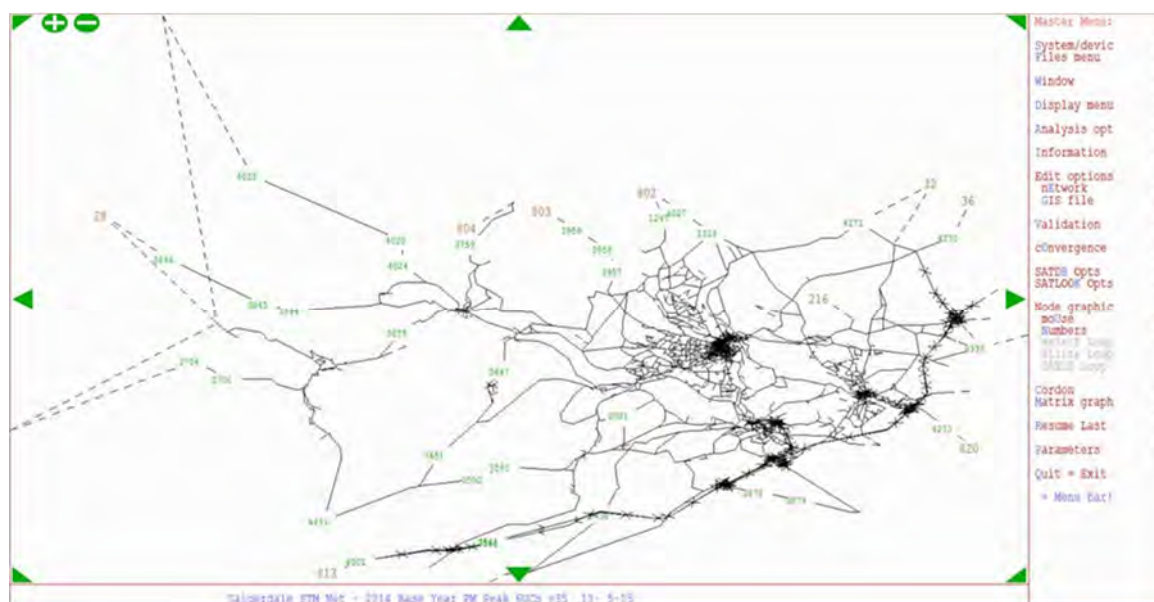
4.1 INTRODUCTION

4.1.1 The network covers all key highway links and junctions extending through the Calderdale district. All key network improvements were done in the simulation network, however a buffer network was provided around the edge of Calderdale that connects to external district locations.

4.2 NETWORK BUILDING

4.2.1 The inherited model and details of the previous update can be found in the previous consultants LMVR written by Mouchel in 2010. The model predominantly covers the Calderdale Metropolitan Borough area, with a small amount of the network extending into neighbouring districts/boroughs the extent of the model is shown in Figure 4.1 below.

Figure 4.1 - Extent of CSTM 2014 Modelled Area



4.2.2 The network has been updated in SATURN with ArcGIS, site visits and aerial photography used for assistance. Checks based on internal GIS systems and GIS itself have been carried out for the following:

- Link Length
- Speed/flow relationship
- Link Type and Saturation flows
- Link Capacity
- One/Two way operation
- Number of effective lanes*
- Length and position of effective flares**
- Any observed turn delays/penalties

- Location of public transport routes
- Access points
- Junction changes and type

*Number of effective lanes is the amount of lanes that have an effect on traffic flow

**Effective flares are the amount of flares that have an effect on traffic flow at a junction.

5 MATRIX DEVELOPMENT

5.1 MATRIX BUILDING INTRODUCTION

- 5.1.1 This section outlines the methodology used to build the AM peak, inter peak and PM peak matrices.
- 5.1.2 The following user classes and pcu factors were used during the matrix construction process:
- UC1: Car: Employer's Business – 1.0
 - UC2: Car: Commuting – 1.0
 - UC3: Car: Other – 1.0
 - UC4: LGV – 1.0
 - UC5: OGV1 – 2.0
 - UC6: OGV2 – 2.0

5.2 RSI MATRIX

- 5.2.1 RSI data includes information on:
- The time at which the vehicle passed through the RSI site
 - Vehicle type
 - Vehicle occupancy
 - Purpose of a journey
 - Origin and destination address of a trip
- 5.2.2 The RSI data obtained was the primary source of data used to build the demand matrices and capture trips local to the study area. For each site and interview direction, vehicles surveyed were split into four vehicle types detailed below. Motorcycles were not included as they were not a designated user class within the model and do not generally contribute to congestion:
- Car / Taxi
 - LGV
 - OGV1
 - OGV2
- 5.2.3 The RSI origin-destination data was cleaned and assigned to their appropriate zone. The interview records have been divided by time period, purpose and vehicle type.

- 5.2.4** For the non-interview direction in the AM peak period (07:00-10:00), the car, taxi and LGV RSI records in the PM peak (16:00-19:00) were selected. This makes the assumption that the PM peak (16:00-19:00) interview direction records made the other leg of their journey between the respective origin and destination zones in the non-interview direction in the AM peak (07:00-10:00) and therefore the data was transposed. The transposed records were then scaled to match the non-interview AM peak count controlled by journey purpose and vehicle type. The equivalent process was applied in the PM peak (16:00-19:00), using transposed AM peak movements and scaled accordingly. In the interpeak (10:00-16:00), the transpose of the interpeak interview movements was used.
- 5.2.5** Trips within each peak period are generally considered to remain representative of trip behaviour within that period. For example, trips in the AM peak period (07:00-10:00) are mostly commuting trips, and the origin-destination patterns across the whole period are reflected in the patterns of the peak hour itself (08:00-09:00). To increase the sample rate car and LGV user interview data for 3 hours (07:00-10:00; 16:00-19:00) for the AM peak and PM period and 6 hours (10:00-16:00) for the inter peak was taken into account and factored to the count of the peak of one hour period being modelled. This makes best use of the RSI data and reduces the reliance on the existing matrix. Trips are not mixed between time periods for the Car and LGV user classes.
- 5.2.6** Because the number of observations was small, OGV1 and OGV2 trips were not split into peak periods, instead the entire RSI survey period (07:00-19:00) for these user classes were included in the respective peak matrix which was being built irrespective of the time the interview was recorded for this journey. This was done to limit the number of instances where no heavy vehicles were present in the creation of expansion factors.
- 5.2.7** Hourly expansion factors were then derived in order to expand the RSI matrix from representing a sample of the traffic to the total traffic flow. This was done by dividing the ATC volume by the total number of interviews for the relevant vehicle type. These expansion factors were then used against each individual RSI record to create a matrix which matched the ATC totals.

Table 5.1 - RSI expansion factors by interview direction and vehicle type

RSI SITE	PEAK PERIOD	INTERVIEW DIRECTION				NON-INTERVIEW DIRECTION			
		CAR	LGV	OGV1	OGV2	CAR	LGV	OGV1	OGV2
RSI 1	AM peak	2.31	3.00	0.30	6.00	1.89	4.00	0.35	3.00
	Inter peak	0.77	1.39	0.40	7.17	0.87	1.46	0.42	6.17
	PM peak	1.77	1.77	0.25	1.00	3.19	4.27	0.05	3.00
RSI 2	AM peak	2.42	2.31	4.67	2.00	1.62	3.96	7.67	6.00
	Inter peak	1.08	1.31	6.50	5.17	1.04	1.20	5.50	4.83
	PM peak	2.24	2.56	1.33	2.00	2.64	1.91	0.67	2.00
RSI 3	AM peak	0.79	0.75	0.11	0.00	1.01	1.01	0.63	2.52
	Inter peak	0.40	0.48	0.41	0.59	0.38	0.49	0.20	0.58
	PM peak	0.95	0.73	0.12	0.47	0.81	0.44	0.11	0.43
RSI 4	AM peak	2.03	2.80	0.33	0.00	1.22	6.20	0.33	0.00
	Inter peak	0.76	0.93	0.44	-	0.89	1.11	0.37	-
	PM peak	1.39	2.20	0.00	0.00	2.65	3.60	0.00	0.00
RSI 5	AM peak	4.16	5.00	1.54	-	2.90	10.70	2.15	-
	Inter peak	1.45	2.01	1.68	-	1.82	2.49	1.76	-
	PM peak	3.66	4.80	0.46	-	5.84	5.56	0.62	-
RSI 6	AM peak	2.84	3.39	-	-	0.82	2.38	-	-
	Inter peak	0.90	1.19	-	-	0.55	0.85	-	-
	PM peak	2.30	4.23	-	0.00	1.60	1.65	-	0.00
RSI 7	AM peak	3.48	3.60	1.08	9.00	2.36	7.20	1.33	9.00
	Inter peak	1.23	1.78	0.93	7.50	1.26	1.70	1.10	7.67
	PM peak	3.54	6.90	0.25	2.00	3.10	2.55	0.08	1.00
RSI 8	AM peak	4.44	7.97	5.22	-	3.46	8.49	5.37	-
	Inter peak	1.97	2.59	7.04	-	1.84	2.55	5.84	-

RSI SITE	PEAK PERIOD	INTERVIEW DIRECTION				NON-INTERVIEW DIRECTION			
		CAR	LGV	OGV1	OGV2	CAR	LGV	OGV1	OGV2
RSI 9	PM peak	4.73	8.38	1.50	-	3.46	6.43	2.26	-
	AM peak	0.79	0.59	0.00	0.00	0.69	0.91	0.00	0.00
	Inter peak	0.41	0.72	0.56	0.00	0.45	0.65	0.61	0.00
	PM peak	0.88	0.86	0.00	0.00	1.30	0.88	0.00	0.00
RSI 10	AM peak	2.72	4.78	0.50	0.43	3.17	3.80	0.43	0.43
	Inter peak	1.14	1.81	0.44	0.36	1.26	1.92	0.45	0.05
	PM peak	3.50	4.00	0.21	0.00	3.24	6.11	0.07	0.00
RSI 11	AM peak	4.17	2.82	5.00	-	3.32	2.79	9.00	-
	Inter peak	1.14	1.36	6.83	-	1.20	1.52	7.00	-
	PM peak	4.04	2.95	2.00	-	4.08	2.96	1.00	0.00
RSI 12	AM peak	3.78	2.70	0.79	-	4.09	5.21	0.86	-
	Inter peak	1.07	1.30	0.93	-	1.05	1.37	0.69	-
	PM peak	4.35	4.86	0.14	-	3.98	1.70	0.21	-
RSI 13	AM peak	2.53	3.37	1.71	1.31	1.55	3.48	0.96	0.69
	Inter peak	1.13	1.55	1.17	1.34	1.00	1.24	0.85	0.90
	PM peak	2.75	3.39	0.38	0.46	1.98	1.17	0.25	0.42
RSI 14	AM peak	1.03	0.84	0.33	1.00	0.89	2.29	0.39	1.00
	Inter peak	0.33	0.41	0.22	1.33	0.34	0.41	0.23	1.00
	PM peak	1.76	3.76	0.17	1.00	1.46	0.98	0.11	0.00
RSI 15	AM peak	1.61	2.87	2.67	1.00	1.35	2.94	0.33	0.00
	Inter peak	0.41	0.48	1.39	0.33	0.39	0.61	1.06	0.33
	PM peak	1.64	1.94	1.00	0.00	2.57	3.93	0.33	0.00
RSI 16	AM peak	3.59	3.85	1.50	-	2.90	5.37	1.43	-
	Inter peak	1.43	2.13	1.57	-	1.35	2.17	1.36	-
	PM peak	3.63	3.37	0.71	-	4.03	3.85	0.86	-
RSI 17	AM peak	3.22	4.06	1.14	6.53	2.57	6.33	0.96	2.23
	Inter peak	1.15	1.32	0.85	4.57	1.12	1.44	0.81	4.50
	PM peak	3.00	5.59	0.37	0.52	3.22	3.17	0.37	1.03
RSI 18	AM peak	4.25	3.75	5.94	14.68	3.28	8.84	7.86	8.84
	Inter peak	1.48	3.14	6.17	8.17	1.51	2.80	7.73	12.37
	PM peak	4.02	5.16	2.24	6.73	4.52	3.40	3.02	3.40
RSI 19	AM peak	1.90	2.73	6.25	-	1.57	3.28	11.32	-
	Inter peak	0.78	0.94	9.14	-	0.80	0.99	9.09	-
	PM peak	2.27	1.99	5.98	-	2.68	3.26	4.07	-

5.2.8

Matrix totals for each RSI site matched to their respective ATC direction are provided in Table 5.2.

Table 5.2 - Individual RSI matrix totals (vehicles)

RSI SITE	PEAK PERIOD	INTERVIEW DIRECTION					NON-INTERVIEW DIRECTION				
		CAR	LGV	OGV1	OGV2	TOTAL	CAR	LGV	OGV1	OGV2	TOTAL
RSI 1	AM peak	385	33	6	6	430	301	52	7	3	363
	Inter peak	223	42	8	7	280	253	44	8	6	311
	PM peak	281	23	5	1	310	529	47	1	3	580
RSI 2	AM peak	650	81	14	2	747	369	107	23	6	505
	Inter peak	428	85	20	5	538	410	78	17	5	510
	PM peak	512	69	4	2	587	709	67	2	2	780
RSI 3	AM peak	114	22	1	0	137	202	18	5	5	230
	Inter peak	119	21	3	1	144	115	21	2	1	139
	PM peak	190	13	1	1	205	118	13	1	1	132
RSI 4	AM peak	415	28	3	0	446	185	31	3	0	219
	Inter peak	212	25	4	0	241	248	30	3	0	282
	PM peak	212	11	0	0	223	541	36	0	0	577
RSI 5	AM peak	761	90	20	0	871	517	107	28	0	652

RSI SITE	PEAK PERIOD	INTERVIEW DIRECTION					NON-INTERVIEW DIRECTION				
		CAR	LGV	OGV1	OGV2	TOTAL	CAR	LGV	OGV1	OGV2	TOTAL
	Inter peak	496	90	22	0	609	623	112	23	0	758
	PM peak	652	48	6	0	706	1057	100	8	0	1165
	AM peak	709	78	0	0	787	187	31	0	0	218
RSI 6	Inter peak	392	56	0	0	447	238	40	0	0	278
	PM peak	541	55	0	0	596	401	38	0	0	439
	AM peak	805	72	13	9	899	486	72	16	9	583
RSI 7	Inter peak	419	66	11	8	503	428	63	13	8	512
	PM peak	730	69	3	2	804	708	51	1	1	761
	AM peak	1265	127	31	0	1423	963	110	32	0	1105
RSI 8	Inter peak	922	176	42	0	1140	862	174	35	0	1071
	PM peak	1316	109	9	0	1434	893	103	14	0	1099
	AM peak	119	12	0	0	131	97	10	0	0	107
RSI 9	Inter peak	72	14	1	0	87	78	12	1	0	92
	PM peak	123	9	0	0	133	194	18	0	0	212
	AM peak	504	43	7	3	557	386	38	6	3	433
RSI 10	Inter peak	257	34	6	3	300	284	37	6	0	327
	PM peak	431	40	3	0	474	599	55	1	0	655
	AM peak	796	79	5	0	880	684	53	9	0	746
RSI 11	Inter peak	382	49	7	0	438	402	55	7	0	464
	PM peak	832	56	2	0	890	776	83	1	0	860
	AM peak	755	89	11	0	855	794	73	12	0	879
RSI 12	Inter peak	434	65	13	0	512	423	69	10	0	502
	PM peak	844	68	2	0	914	796	56	3	0	855
	AM peak	405	138	41	34	618	379	80	23	18	500
RSI 13	Inter peak	350	101	28	35	513	309	80	21	23	433
	PM peak	670	78	9	12	769	315	48	6	11	380
	AM peak	279	37	6	1	323	278	39	7	1	325
RSI 14	Inter peak	177	28	4	1	210	183	27	4	1	215
	PM peak	548	64	3	1	616	397	43	2	0	442
	AM peak	285	43	8	1	337	281	50	1	0	332
RSI 15	Inter peak	141	27	4	0	172	135	34	3	0	172
	PM peak	345	33	3	0	381	455	59	1	0	515
	AM peak	721	100	21	0	842	473	102	20	0	595
RSI 16	Inter peak	425	96	22	0	543	401	98	19	0	517
	PM peak	592	64	10	0	666	811	100	12	0	923
	AM peak	672	61	16	13	762	478	76	13	4	572
RSI 17	Inter peak	375	61	12	9	457	364	66	11	9	450
	PM peak	558	67	5	1	631	674	48	5	2	729
	AM peak	834	71	18	15	937	544	88	24	9	665
RSI 18	Inter peak	478	91	19	8	596	487	81	23	12	603
	PM peak	671	52	7	7	736	886	65	9	3	963
	AM peak	426	68	13	0	507	390	88	23	0	501
RSI 19	Inter peak	317	68	18	0	403	323	71	18	0	412
	PM peak	565	54	12	0	631	604	81	8	0	693

- 5.2.9 Some expansion factors are less than 1. This occurs primarily in the interpeak, where trips across the whole 6 hour interpeak period are factored to match the count for the single average interpeak hour. Small expansion factors in the AM and PM peaks occur as a result of factoring 3 hour peak period observations to a single peak hour count taken as an average from multiple ATC observations. This average may well be lower than the MCC undertaken on the particular survey day.
- 5.2.10 Each individual directional RSI matrix was assigned in isolation to the modelled network in order to check the routing, and origin-destination patterns appeared logical. These checks also assisted in refining the coding of the SATURN network.
- 5.2.11 The RSI matrices were combined and the multiple observations of a trip at more than one RSI site were removed by applying the double counting technique at matrix level. All the trips from Zone A to B at different sites were summed up and then divided by the number of sites they appear in.
- 5.2.12 The final RSI matrix totals (in pcu) for each peak are shown in Table 5.3.

Table 5.3 - RSI matrix totals (pcu)

USER CLASS ID	USER CLASS DEFINITION	AM PEAK (08:00-09:00)	Ave INTER PEAK (10:00-16:00)	PM PEAK (17:00-18:00)
UC1	Car Employers Business	1,559	1,783	1,078
UC2	Car Commuting	8,738	2,110	6,999
UC3	Car Other	3,481	5,753	8,524
UC4	LGV	2,099	1,950	1,750
UC5	OGV1	801	765	261
UC6	OGV2	255	255	92
Total		16,933	12,616	18,704

5.3 INFILL MATRIX

- 5.3.1 To account for car trips that are otherwise unobserved by any of the surveys, the post matrix-estimation matrices assigned in the original CSTM were used to represent the best estimate of unknown movements. This is particularly important for car-based trips, where a large number of trips will occur over short distances on local roads, so would not be captured by the RSI surveys. Other vehicle types will be more strategic in nature, so should be captured by the RSI.

5.4 PRIOR MATRIX

- 5.4.1 The final AM peak, PM peak and interpeak infill matrices were assigned to the corresponding SATURN networks. The trips that passed through the 19 RSI sites were identified by means of select link analysis and then replaced with the observed RSI Matrices for each time period thus producing the Prior Matrices.

5.5 ASSIGNED MATRIX

- 5.5.1 The final assigned trip matrix was calibrated by undertaking select link analysis at calibration sites and applying scaling factors to adjust the flows, before reinserting the adjusted matrix into the full trip matrix. This provides a targeted adjustment of the matrix that does not distort the observed origin-destination patterns by introducing an excessive volume of short trips - a typical concern when matrix estimation is used, and the reason for the strict controls on its effect set out in WebTAG. Matrix estimation was considered as a final stage of refining the matrix, but this proved unnecessary.
- 5.5.2 Matrix totals for each stage are shown in Table 5.4.

Table 5.4 - Matrix totals (pcus)

MATRIX	AM	IP	PM
RSI	16,933	12,616	18,704
Infill	57,889	52,302	60,505
Prior	53,640	48,619	57,125
Assigned	56,377	51,094	57,843

5.5.3

In creating the matrices, the best use has been made of the available data. Information from the latest 2014 RSI surveys accounts for approximately 30% of trips. The remainder of trips unobserved by the RSIs has been taken from the existing model matrices, as they are the next best source of information for these trips.

6

CALIBRATION AND VALIDATION RESULT

6.1 INTRODUCTION

- 6.1.1 The process of model calibration is designed to ensure that the parameters that control the model's calculation of route choices and the resulting delays lead to accurate replication of traffic patterns in the network. The calibration of a model crucially relies on traffic entering the detailed model area at the correct points and on the correct routes.
- 6.1.2 Validation of the assignment model requires that the modelled transport flows replicate independent data not used at other stages in the construction of the models.
- 6.1.3 A number of calibration and validation checks were carried out including:
- Model convergence
 - Routing Validation
 - Link flow calibration and validation
 - Screenline calibration
 - Journey time validation

6.2 MODEL CONVERGENCE

- 6.2.1 Model assignment of trips to the highway network was undertaken using a standard approach based on a 'Wardrop User Equilibrium', which seeks to minimise travel costs for all vehicles in the network. The Wardrop User Equilibrium is based on the following proposition:
- 6.2.2 "Traffic arranges itself on congested networks such that the cost of travel on all routes used between each origin-destination pair is equal to the minimum cost of travel and unused routes have equal or greater costs."
- 6.2.3 The Wardrop User Equilibrium as implemented in SATURN is based on the 'Frank-Wolfe Algorithm', which employs an iterative process. This process is based on successive 'All or Nothing' iterations, which are combined to minimise an 'Objective Function'. The travel costs are recalculated after each iteration and compared to the previous iteration. The process is terminated once successive iteration costs have not changed significantly. This process enables multi-routeing between any origin-destination pair.
- 6.2.4 An element of calibrating the model is ensuring that a satisfactory convergence is achieved. Model convergence is needed to ensure traffic flows remain stable between successive iterations of the model.
- 6.2.5 In accordance with criteria set out in WebTAG Unit M3.1 (January 2014), the parameters %Flow, %GAP and Delta (δ) have been monitored to determine the level of convergence. %Flow measures the proportion of links in the network with flows changing by less than 1% from the previous iteration. δ is the difference between costs on chosen routes and costs on minimum cost paths. %GAP is a generalisation of the δ function to include the interaction effects within the simulation.
- 6.2.6 The convergence criteria used to assess when a model is considered to have converged is shown in Table 6.1.

Table 6.1 - Convergence criteria

MEASURE OF CONVERGENCE	ACCEPTABLE VALUE
'Delta' and %GAP	Less than 0.1% or at least stable with convergence fully documented and all other criteria met
Percentage of links with flow change < 1%	Four consecutive iterations greater than 98%
Percentage of links with cost change < 1%	Four consecutive iterations greater than 98%
Percentage change in total user costs	Four consecutive iterations less than 0.1%

6.2.7

WebTAG M3.1 suggests that delta (δ) and %GAP values of less than 0.1% is the most fundamental indicator of model convergence and should be achieved as a minimum. Tables 6.2, 6.3 and 6.4 indicate a satisfactory convergence has been achieved in all peaks periods regarding these parameters. %Flow has also meets the required standard of four successive iterations greater than 98% with a percentage change of less than 1%. Therefore the base year model for all peak time periods meet the required convergence standards.

Table 6.2 - AM peak convergence results

ITERATION	DELTA (Δ)	%FLOW	%GAP
87	0.0041	98.8	0.011
88	0.0054	98.4	0.004
89	0.0031	99.8	0.012
90	0.003	98.7	0.011
91	0.0029	98.6	0.011
92	0.0027	98.7	0.011

Table 6.3 - Inter peak convergence results

ITERATION	DELTA (Δ)	%FLOW	%GAP
13	0.0031	98.1	0.0037
14	0.0016	98.4	0.0039
15	0.0016	98.5	0.0033
16	0.0018	99.5	0.0023
17	0.001	99.1	0.002
18	0.0008	99.7	0.0015

Table 6.4 - PM peak convergence results

ITERATION	DELTA (Δ)	%FLOW	%GAP
35	0.0106	98.4	0.025
36	0.0102	98.4	0.031
37	0.01	99.5	0.021
38	0.0089	98.8	0.021
39	0.009	99.6	0.021
40	0.0095	98.9	0.025

6.3 ROUTEING VALIDATION

- 6.3.1 The calibration of a model crucially relies on traffic entering the detailed modelling area at the correct points and on the correct routes. The TREE function in the SATURN programme P1X plots all the routes used within the network for trips between two zones. By using the TREE function for many zone pairs throughout the study area, routes used by traffic were examined to ensure they are reasonable and resemble probable routes used by vehicles in the base traffic situation.
- 6.3.2 Plotted trees display the percentage of traffic using each different route, thus highlighting the most common path taken. To check that the assigned routes in the model were feasible, 'trees' were generated for representative origin-destination pairs. The trees can be seen in Appendix E. These figures used examples of disparate origin-destination pairs and show logical routeing occurs within the model with traffic assigning to major routes appropriately.

6.4 LINK FLOW CALIBRATION AND VALIDATION

- 6.4.1 The assignment of the matrix to the network should reproduce the overall level and general distribution of observed traffic, which is assessed by comparing assignment results with selected observed link flows within the study area. The assessment is conducted in accordance with guidance provided in WebTAG.
- 6.4.2 A modified Chi² statistic known as the GEH (Geoffrey Edward Havers) statistic was used to determine the best fit. The statistic uses the formula shown below to calculate a value for the difference between observed (O) and modelled (M) flows:

$$GEH = \sqrt{\frac{(O - M)^2}{0.5(O + M)}}$$

- 6.4.3 The calibration was undertaken for a comprehensive set of traffic count sites for each time period. The calibration counts have been further compared as a whole and as a series of screenlines to further assess current traffic movements. WebTAG recommends counts from ATCs be used in preference to counts from MCCs. Where duplicate counts occur, we have taken the ATC count in preference to the MCC, as a more reliable observation. Arm totals from MCCs have been used to further inform calibration and validation where no other data is available.
- 6.4.4 The criteria used to assess the acceptable performance of a traffic model are defined in WebTAG and are shown in Table 6.5.
- 6.4.5 The GEH statistic takes account of the fact that when traffic flows are low the percentage difference between observed and modelled flows may be high but the significance of this difference is small. A GEH value greater than 10 indicates that closer attention is required as the match between observed and modelled flows is poor, while a GEH of less than 5 indicates a very good fit.
- 6.4.6 It is an important measure of model performance that the model reproduces the observed volumes of traffic. The WebTAG criteria for comparing the performance of the model traffic counts are reproduced in Table 6.5. Modelled flows are expected to be within a certain tolerance of the observed values and this goodness of fit is measured using the GEH statistic. Both the flow comparison and GEH criteria are assessed in this report.

Table 6.5 - Assignment acceptability guidelines

CRITERIA AND MEASURE: ASSIGNED MODEL HOURLY FLOWS COMPARED WITH OBSERVED FLOWS		ACCEPTABILITY GUIDELINE
Flow criteria		
Observed flow < 700 vph	Modelled flow within ± 100 vph	> 85 % of links
Observed flow 700 - 2,700 vph	Modelled flow within $\pm 15\%$	> 85 % of links
Observed flow > 2,700 vph	Modelled flow within ± 400 vph	> 85 % of links
Total screenline flows (normally >5 links) to be within $\pm 5\%$		All (or nearly all) screenlines
GEH criteria		
GEH Statistic for individual links < 5		> 85 % of links
GEH Statistic for screenline totals		All (or nearly all) screenlines

6.4.7 Appendix F details modelled flow compared to the observed flow for each individual count used during the calibration and validation process. Counts were excluded if they overlapped with or if the data conflicted with adjacent counts. Counts were also excluded if they were located at a minor junction / link not included in the model simulation network.

6.4.8 The summary of the link flow calibration and validation results for the final trip matrix in the AM Peak is shown in Table 6.6 and a summary of the distribution of GEH values is provided in Table 6.7.

Table 6.6 - AM peak calibration and validation results

CRITERIA AND MEASURE		ACCEPTABILITY GUIDELINE	CALIBRATION			VALIDATION		
Flow criteria			Total	Model	%	Total	Model	%
Observed	Modelled	Requirement						
< 700 vph	± 100 vph	> 85 % of links	181	155	86%	56	44	79%
700 - 2,700 vph	$\pm 15\%$	> 85 % of links	40	34	85%	16	14	88%
> 2,700 vph	± 400 vph	> 85 % of links	6	6	100%	0	0	0%
GEH criteria								
GEH Statistic for individual links < 5		> 85 % of links	227	194	85%	72	53	74%
GEH Statistic for screenline totals < 4		All (or nearly all) screenlines	27	30	90%			

6.4.9 The AM peak, 27 out of 30 (90%) screenlines have achieved a GEH under 4 and 194 calibration counts (85%) out of 227 counts achieve a GEH under 5. Of the calibration counts with a flow less than 700vph, 155 counts (86%) out of 181 counts meet the criteria. For counts with a flow between 700vph and 2,700vph, 34 counts (85%) out of 40 counts meet the criteria. For calibration counts with a flow over 2,700vph, all counts (100%) meet the required standard.

6.4.10 For validation counts with a flow less than 700vph, 44 counts (79%) out of 56 counts meet the criteria which is slightly lower than the 85% threshold. For counts with a flow between 700vph and 2,700vph, 14 counts (88%) out of 16 counts meet the criteria. No counts have a flow greater than 2,700vph in the AM peak.

- 6.4.11 Table 6.7 shows that when calibration and validation links are combined, 83% achieve a GEH under 5 narrowly missing the 85% threshold. However 88% achieve a GEH under six and 97% of these links achieving a GEH under 10. This indicates the model is a good representation of observed counts and therefore existing traffic conditions.

Table 6.7 - AM peak GEH summary

GEH RANGE	CALIBRATION	VALIDATION	COMBINED
GEH < 2	43%	42%	43%
GEH < 4	74%	67%	72%
GEH < 6	89%	83%	88%
GEH < 8	96%	90%	95%
GEH < 10	98%	94%	97%
GEH < 5	85%	74%	83%

- 6.4.12 The summary of the link flow calibration and validation results in the inter peak is shown in Table 6.8 and a summary of the GEH values for calibration and validation links are provided in Table 6.9.

Table 6.8 - Inter peak calibration and validation results

CRITERIA AND MEASURE		ACCEPTABILITY GUIDELINE	CALIBRATION			VALIDATION		
Flow criteria			Total	Model	%	Total	Model	%
Observed	Modelled	Requirement						
< 700 vph	±100 vph	> 85 % of links	201	177	88%	60	51	85%
700 - 2,700 vph	±15%	> 85 % of links	20	19	95%	12	10	82%
> 2,700 vph	±400 vph	> 85 % of links	6	6	100%	0	0	0%
GEH criteria								
GEH Statistic for individual links < 5		> 85 % of links	227	193	85%	72	54	75%
GEH Statistic for screenline totals < 4		All (or nearly all) screenlines	27	30	90%			

- 6.4.13 The calibration results for the inter peak period meet the criteria in terms of GEH and flow. Of the 227 counts analysed, 193 (85%) counts have a GEH value under 5. 177 counts (88%) out of 201 counts have a flow of less than 700vph which meet the criteria. 19 counts (95%) out of 20 which have a flow of between 700vph and 2,700vph meet the criteria. For counts with a flow of over 2,700vph there are 6 counts (100%) out of 6 counts that meet the criteria. 27 (90%) of the 30 screenlines achieve an overall GEH below 4.
- 6.4.14 For the validation counts, 51 out of 60 counts (85%) with a flow below 700vph are within the flow difference guidelines. For the counts with flows of between 700vph and 2,700vph, 10 of the 12 counts (82%) meet the required flow criteria. No counts have a flow greater than 2,700vph in the inter peak.
- 6.4.15 Table 6.9 shows that when calibration and validation counts are combined, 83% of counts achieve a GEH under five. However, 86% of counts achieve a GEH under six, and 97% of achieve a GEH under 10.

Table 6.9 - Inter peak GEH summary

GEH RANGE	CALIBRATION	VALIDATION	COMBINED
GEH < 2	39%	38%	39%
GEH < 4	77%	68%	75%
GEH < 6	88%	81%	86%
GEH < 8	93%	88%	92%
GEH < 10	96%	97%	97%
GEH < 5	85%	76%	83%

6.4.16 The summary of the link flow calibration and validation results in the PM peak is shown in Table 6.10 and a summary of the GEH values for calibration and validation links is provided in Table 6.11.

6.4.17 In the PM peak, 194 counts (85%) out of 227 counts achieve a GEH under 5. Of the counts with a flow less than 700vph, 151 counts (88%) out of 171 counts meet the required flow criteria. For counts with a flow between 700vph and 2,700vph, 39 counts (78%) out of 50 counts meet the requirements. For the counts with flows over 2,700vph, four of the six counts (75%) meet the criteria.

6.4.18 For validation counts with a flow less than 700vph, 43 counts (78%) out of 55 counts meet the criteria which are lower than the 85% threshold. For counts with a flow between 700vph and 2,700vph, 12 counts (71%) out of 17 counts meet the required flow criteria.

Table 6.10 - PM peak calibration and validation results

CRITERIA AND MEASURE			ACCEPTABILITY GUIDELINE			CALIBRATION			VALIDATION		
Flow criteria						Total	Model	%	Total	Model	%
Observed	Modelled	Requirement									
< 700 vph	±100 vph	> 85 % of links				171	151	88%	55	43	78%
700 - 2,700 vph	±15%	> 85 % of links				50	39	78%	17	12	71%
> 2,700 vph	±400 vph	> 85 % of links				6	4	67%	0	0	0%
GEH criteria											
GEH Statistic for individual links < 5			> 85 % of links			227	194	85%	72	52	72%
GEH Statistic for screenline totals < 4			All (or nearly all) screenlines			26	30	87%			

6.4.19 Table 6.11 shows that when calibration and validation links are combined, 82% achieve a GEH under five. However 87% of all counts achieve a GEH under eight indicating some of these counts are only marginally outside the required level and 95% of these links achieve a GEH under 10.

Table 6.11 - PM peak GEH summary

GEH RANGE	CALIBRATION	VALIDATION	COMBINED
GEH < 2	43%	31%	40%
GEH < 4	78%	61%	74%
GEH < 6	87%	72%	83%
GEH < 8	91%	75%	87%
GEH < 10	96%	92%	95%
GEH < 5	85%	72%	82%

6.4.20 The performance at validation counts is generally lower than that for calibration counts. This is because, by definition, counts at calibration sites have been specifically targeted with matrix and network adjustments to ensure that they correspond to observed flows. Validation counts are an independent check on model performance that have not been specifically targeted. It is therefore to be expected that more calibration sites will pass the criteria than validation sites.

6.5 SCREENLINE VALIDATION

6.5.1 Tables 6.12 to 6.14 provide a comparison of model flows compared to observed flows across the 30 screenlines. These summary Tables show that in all peaks the majority of screenlines in the model achieve acceptable results in terms of the overall GEH being below four and passes in terms of WebTAG. This shows across the model the major strategic movements of traffic have been accurately captured and are reflected in the final matrix.

6.5.2 Appendix F outlines the performance of each count included within each respective screenline.

6.5.3 WebTAG Unit M3.1 Table 1 stipulates that modelled flow on screenlines should be within 5% of the observed flow. The screenlines were initially prepared according to WebTAG guidance for potential use in matrix estimation, which recommend a small number of counts. The count coverage is generally such that it is not possible to create larger screenlines that are meaningful. Given the relatively low observed flows across many of the CSTM screenlines the current WebTAG success criteria would be hard to achieve in practice. Therefore screenline validation was reverted to previous WebTAG guidance which requires screenlines to achieve a GEH below four which if achieved is still deemed to be a good match between the observed and modelled flow.

6.5.4 Table 6.12 demonstrates that 27 (90%) of the 30 screenlines achieve a GEH below four. This demonstrates in the AM peak the model is replicating the strategic movements of traffic well.

6.5.5 The three screenlines which produce a GEH over four include:

- Halifax South Central southbound (screenline 4)
- Elland West eastbound (screenline 15)
- Halifax South East northbound (screenline 27)

Table 6.12 - Highway model screenline validation results – AM peak

SCREENLINE		AM PEAK			
ID	Name	Observed	Modelled	GEH	% Diff
1	Halifax South NB	2031	1869	3.676	-8%
2	Halifax South SB	2027	2000	0.613	-1%
3	Halifax South Central NB	2002	2109	2.360	5%
4	Halifax South Central SB	1336	1593	6.712	19%
5	Halifax West EB	1249	1262	0.374	1%
6	Halifax West WB	1101	1123	0.648	2%
7	Halifax West Central EB	1898	1825	1.686	-4%
8	Halifax West Central WB	1824	1848	0.561	1%
9	Halifax North SB	735	656	3.014	-11%
10	Halifax North NB	398	386	0.622	-3%
11	Halifax North Central SB	2221	2249	0.589	1%
12	Halifax North Central NB	1408	1356	1.405	-4%
13	Halifax East WB	959	1073	3.589	12%
14	Halifax East EB	838	743	3.388	-11%
15	Elland West EB	916	664	8.964	-28%
16	Elland West WB	671	607	2.540	-10%
17	Elland East WB	1270	1237	0.926	-3%
18	Elland East EB	1332	1400	1.836	5%
19	Brighouse South NB	1253	1252	0.022	0%
20	Brighouse South SB	1200	1306	2.995	9%
21	Brighouse East WB	1025	973	1.643	-5%
22	Brighouse East EB	1069	1066	0.104	0%
23	Brighouse North SB	1138	1172	1.006	3%
24	Brighouse North NB	1131	1120	0.314	-1%
25	Sowerby Bridge NB	1900	1758	3.316	-7%
26	Sowerby Bridge SB	1772	1715	1.372	-3%
27	Halifax South East NB	1210	994	6.523	-18%
28	Halifax South East SB	711	674	1.395	-5%
29	Saville Park EB	995	1108	3.497	11%
30	Saville Park WB	592	606	0.573	2%

6.5.6 Table 6.13 outlines 27 (90%) of the 30 screenlines achieve a GEH under four in the inter peak. This demonstrates the model accurately reflects the balance of strategic traffic movements in the inter peak.

6.5.7 The three screenlines in the inter peak which show a GEH over four include:

- Halifax South East northbound (screenline 27)
- Halifax South East southbound (screenline 28)
- Saville Park westbound (screenline 30)

Table 6.13 - Highway model screenline validation results – Inter peak

SCREENLINE		AM PEAK			
ID	Name	Observed	Modelled	GEH	% Diff
1	Halifax South NB	1597	1531	1.673	-4%
2	Halifax South SB	1671	1571	2.478	-6%
3	Halifax South Central NB	1367	1490	3.253	9%
4	Halifax South Central SB	1328	1417	2.378	7%
5	Halifax West EB	964	988	0.760	2%
6	Halifax West WB	996	941	1.769	-6%
7	Halifax West Central EB	1834	1802	0.747	-2%
8	Halifax West Central WB	1834	1859	0.569	1%
9	Halifax North SB	422	357	3.286	-15%
10	Halifax North NB	396	367	1.473	-7%
11	Halifax North Central SB	1404	1367	1.015	-3%
12	Halifax North Central NB	1492	1451	1.064	-3%
13	Halifax East WB	753	727	0.978	-4%
14	Halifax East EB	793	784	0.334	-1%
15	Elland West EB	484	410	3.508	-15%
16	Elland West WB	430	399	1.494	-7%
17	Elland East WB	815	885	2.377	9%
18	Elland East EB	825	810	0.548	-2%
19	Brighouse South NB	726	733	0.281	1%
20	Brighouse South SB	751	711	1.476	-5%
21	Brighouse East WB	699	762	2.349	9%
22	Brighouse East EB	811	851	1.391	5%
23	Brighouse North SB	970	974	0.126	0%
24	Brighouse North NB	955	945	0.327	-1%
25	Sowerby Bridge NB	1536	1458	2.013	-5%
26	Sowerby Bridge SB	1546	1482	1.643	-4%
27	Halifax South East NB	733	542	7.542	-26%
28	Halifax South East SB	721	575	5.733	-20%
29	Saville Park EB	701	722	0.774	3%
30	Saville Park WB	606	719	4.380	19%

6.5.8 Table 6.14 shows 26 (87%) of the 30 screenlines achieve a GEH under 4 in the PM peak. This demonstrates the PM peak model replicates strategic traffic movements along key corridors to a satisfactory level of accuracy.

6.5.9 The four screenlines which show a GEH over four include:

- Halifax North northbound (screenline 10)
- Halifax East eastbound (screenline 14)
- Halifax South East northbound (screenline 27)
- Saville Park eastbound (screenline 29)

Table 6.14 - Highway model screenline validation results – PM peak

SCREENLINE		AM PEAK			
ID	Name	Observed	Modelled	GEH	% Diff
1	Halifax South NB	1918	1892	0.609	-1%
2	Halifax South SB	2221	2121	2.148	-5%
3	Halifax South Central NB	1578	1700	3.033	8%
4	Halifax South Central SB	1912	1962	1.135	3%
5	Halifax West EB	1083	1065	0.555	-2%
6	Halifax West WB	1512	1400	2.949	-7%
7	Halifax West Central EB	1923	1931	0.189	0%
8	Halifax West Central WB	2156	2221	1.403	3%
9	Halifax North SB	558	485	3.232	-13%
10	Halifax North NB	730	581	5.835	-20%
11	Halifax North Central SB	1760	1798	0.913	2%
12	Halifax North Central NB	2371	2456	1.734	4%
13	Halifax East WB	1067	1138	2.148	7%
14	Halifax East EB	958	1099	4.384	15%
15	Elland West EB	581	571	0.427	-2%
16	Elland West WB	930	975	1.472	5%
17	Elland East WB	1242	1219	0.659	-2%
18	Elland East EB	1499	1374	3.299	-8%
19	Brighouse South NB	1158	1220	1.790	5%
20	Brighouse South SB	1192	1198	0.185	1%
21	Brighouse East WB	808	793	0.537	-2%
22	Brighouse East EB	1440	1518	2.021	5%
23	Brighouse North SB	1311	1362	1.402	4%
24	Brighouse North NB	1233	1149	2.438	-7%
25	Sowerby Bridge NB	1760	1611	3.645	-9%
26	Sowerby Bridge SB	2070	2005	1.434	-3%
27	Halifax South East NB	756	647	4.095	-14%
28	Halifax South East SB	1091	1005	2.634	-8%
29	Saville Park EB	799	1006	6.909	26%
30	Saville Park WB	827	863	1.238	4%

6.5.10

The screenlines which do not meet the criteria are generally caused by a single count within the screenline having a high GEH - other counts within the screenline generally perform well. It is not often possible to achieve a match on 100% of the counts used, and the screenlines adopted indicate areas where groups of counts are robust, and where they are less robust. This does not indicate poor performance of the model, but indicates areas where caution should be used if any specific scheme were to be tested in the vicinity of these counts.

6.6 JOURNEY TIME VALIDATION

6.6.1 To assist the validation of the highway models journey time data was collected for 38 routes. The observed journey times have been compared against the modelled journey times, graphs comparing the modelled journey time to the observed journey times are included in Appendix G. WebTAG Unit M3.1 paragraph 3.2.10 requires that total modelled journey time should be within 15% (or 1 minute, whichever is greater) of the observed average journey time.

6.6.2 Table 6.15 shows that 31 (82%) of the 38 journey time routes are within 15% of the observed journey time in the AM peak. However, it should be noted the following key route is marginally within the required WebTAG criteria:

A629 NORTHBOUND (ROUTE 1):

6.6.3 The model represents this route 15% quicker compared to the observed data. The section of the A629 northbound between the A629 / Elland Riorges junction northbound on-slip and A629 / A6025 Halifax Road northbound on-slip leads to the journey time route falling outside of WebTAG guidance, with the model 39% quicker at the end of this section compared to the observed data. The issue highlights a limitation of SATURN in dealing with the delay caused by traffic funnelling from a dual carriageway into a single carriageway and it's interaction with queuing from the roundabout upstream. This configuration occurs immediately north of the A629 / A6025 Halifax Road northbound on-slip and south of the Calder Hebble junction and is known locally to generate considerable delays particularly in the AM peak. SATURN does not offer an adequate tool to emulate this delay where funnelling occurs. In the absence of this it is deemed the journey time along route 1 northbound is being replicated as closely as possible.

6.6.4 Detailed modelling work will be carried out in this area using Paramics which will be used to develop and test a preferred scheme at the Calder Hebble junction. As a micro-simulation tool, Paramics will be able to more accurately emulate the delay and driver behaviour at this location. The combination of the strategic SATURN model and micro-simulation Paramics model will be able to provide sufficient confidence in the potential impacts of a preferred scheme at the Calder Hebble junction.

6.6.5 There is one other notable discrepancy in the AM peak:

HALIFAX / SOUTHOWRAM / BRIGHOUSE NORTHBOUND (ROUTE 14)

6.6.6 The cause of the discrepancy on this route is a mismatch between the observed and modelled times at the A644 Wakefield Road / A642 Clifton Road signalised junction. We have checked the signal timings at this junction and ensured they are coded correctly. The resultant modelled journey times are considered realistic, given the signal timings and traffic flows. Additional surveys of turning flows and delays/queue lengths at this junction would therefore be required to better understand this junction in order to verify the calibration.

6.6.7 Two journey time routes are only marginally outside of WebTAG criteria:

A629 SOUTHBOUND (ROUTE 1):

6.6.8 This journey time on this route northbound is 18% slower in the model compared to the observed data for this route. The journey time along this route is replicated well until the final section between the A629 northern approach to the Ainley Top roundabout and the southbound exit from this junction, the delay from this junction leads to the journey time route falling marginally outside the WebTAG requirements.

A6107 / B6114 / ROCHDALE ROAD EASTBOUND (ROUTE 10):

- 6.6.9 This journey time on this route northbound is 20% quicker in the model compared to the observed data for this route. Along the majority of this route the journey time route is accurately replicated by the model, the section of the B6114 Saddleworth Road between Elland Bridge and B6112 Stainland Road does not incur the same level of delay in the model as that shown in the observed data. This leads to the journey falling outside of the WebTAG criteria.
- 6.6.10 Taking into consideration the above two routes and relaxing the requirements of the model to match journey time routes to within 20% means 33 (87%) of the 38 routes in the model replicate the observed data well. This is deemed a sufficient indication that the model is representing travel times and delay in the AM peak to a satisfactory degree.
- 6.6.11 The upper and lower confidence interval and the observed mean for each journey time route were calculated from the supplied TrafficMaster data. These values take into account the variability of the repeated observations along the same route. In the AM peak, route 10 – A6107/B6114/Rochdale Road eastbound shows the modelled journey time falls within the upper and lower confidence limits of the mean.

Table 6.15 - AM peak hour journey time route comparison

NAME	LOWER CONFIDENCE LIMITS (s)	OBSERVED (s)	UPPER CONFIDENCE LIMITS (s)	MODELLED (s)	DIFFERENCE (s)	%	PASS?
Route 1NB - A629	630.18	718.2	806.22	612	106	15%	Yes
Route 1SB - A629	314.44	339.39	364.3	400	-61	-18%	No
Route 2NB - A629	456.12	528.78	601.47	563	-34	-6%	Yes
Route 2SB - A629	467.45	583.66	699.91	551	32	6%	Yes
Route 3WB - A646/A58	427.27	500.88	574.48	444	57	11%	Yes
Route 3EB - A646/A58	420.01	495.79	571.67	501	-6	-1%	Yes
Route 4NB - A629 Ovenden Road	410.97	481.13	551.15	468	13	3%	Yes
Route 4SB - A629 Ovenden Road	473.88	561.09	648.32	498	63	11%	Yes
Route 5NB - Queensbury Road	122.89	130.55	138.20	152	-22	-17%	Yes
Route 5SB - Queensbury Road	119.11	123.83	128.52	148	-24	-19%	Yes
Route 6NB - Queensbury Road/Free School Lane	544.95	695.92	846.84	676	20	3%	Yes
Route 6SB - Queensbury Road/Free School Lane	594.93	783.67	972.45	684	99	13%	Yes
Route 7WB - A58	392.71	439.58	486.38	383	56	13%	Yes
Route 7EB - A58	465.79	532.78	599.76	366	167	31%	No
Route 8NB - A644/A641	446.51	511.07	575.59	534	-23	-4%	Yes
Route 8SB - A644/A641	628.06	767.42	906.9	735	33	4%	Yes
Route 9WB - A6107/B6114/Rochdale Road	159.44	170.76	182.11	200	-15	-8%	Yes
Route 9EB - A6107/B6114/Rochdale Road	179.30	252.32	325.37	238	14	6%	Yes
Route 10WB - A6107/B6114/Rochdale Road	247.77	379.73	511.66	429	-49	-13%	Yes
Route 10EB - A6107/B6114/Rochdale Road	427.05	581.62	736.25	466	116	20%	No
Route 11NB - A629/Stainland Road/Blackley Road	538.59	663.68	788.75	621	43	6%	Yes
Route 11SB - A629/Stainland Road/Blackley Road	339.99	391.31	442.67	508	-117	-30%	No
Route 12NB - A629/Stainland Road/Blackley Road	421.02	479.33	537.49	483	-3	-1%	Yes
Route 12SB - A629/Stainland	434.71	513.36	592.03	703	-190	-37%	No

NAME	LOWER CONFIDENCE LIMITS (s)	OBSERVED (s)	UPPER CONFIDENCE LIMITS (s)	MODELLED (s)	DIFFERENCE (s)	%	PASS?
Road/Blackley Road							
Route 13NB - Halifax/Southowram/Brighouse A644 towards Halifax	515.21	601.96	688.71	588	14	2%	Yes
Route 13SB - Halifax/Southowram/Brighouse A644 towards motorway	408.86	462.98	517.05	465	-2	0%	Yes
Route 14NB - Halifax/Southowram/Brighouse A644 towards motorway	322.31	389.8	457.34	584	-194	-50%	No
Route 14SB - Halifax/Southowram/Brighouse A644 towards motorway	317.28	349.61	381.87	382	-32	-9%	Yes
Route 15NB - Queens Road/Dryclough Lane	379.72	534.86	689.99	581	-46	-9%	Yes
Route 15SB - Queens Road/Dryclough Lane	358.31	541.01	723.73	556	-15	-3%	Yes
Route 16NB - A641/A6025	312.36	367.87	423.44	386	-18	-5%	Yes
Route 16SB - A641/A6025	332.93	422.74	478.78	447	-24	-6%	Yes
Route 17NB - A641/A6025	227.25	239.25	251.22	250	-11	-4%	Yes
Route 17SB - A641/A6025	228.29	251.44	274.59	236	16	6%	Yes
Route 18WB - M62	314.11	334.01	353.91	333	2	0%	Yes
Route 18EB - M62	300.13	319.4	338.66	336	-16	-5%	Yes
Route 19WB - M62	199.1	200.84	202.54	140	61	30%	No
Route 19EB - M62	268.13	281.24	294.37	235	46	16%	Yes

6.6.12 Table 6.16 shows that 33 (87%) of the 38 journey times are within the WebTAG requirement of the model being within 15% of the observed travel time in the inter peak. Relaxing this requirement to 20% as has been done in the AM peak shows two further routes; Route 11 - A629/Stainland Road/Blackley Road northbound (16% quicker) and Route 15 - Queens Road/Freeschool Lane northbound fall within these margins. It is therefore considered the model provides a satisfactory reflection of travel times and delay in the inter peak period.

6.6.13 Taking into account the upper and lower confidence interval for the observed mean for each journey time route, route 11 – A629/Stainland Road/Blackley Road northbound shows the modelled journey time falls within the upper and lower confidence limits of the mean.

Table 6.16 - Inter peak hour journey time route comparison

NAME	LOWER CONFIDENCE LIMITS (s)	OBSERVED (s)	UPPER CONFIDENCE LIMITS (s)	MODELLED (s)	DIFFERENCE (s)	%	PASS?
Route 1NB - A629	364.93	379.72	394.55	394	-15	-4%	Yes
Route 1SB - A629	289.31	296.25	303.21	375	-78	-26%	No
Route 2NB - A629	467.50	492.92	518.27	523	-30	-6%	Yes
Route 2SB - A629	471.91	512.65	553.36	490	23	5%	Yes
Route 3WB - A646/A58	441.48	477.87	514.35	413	65	14%	Yes
Route 3EB - A646/A58	428.65	458.18	487.66	445	14	3%	Yes
Route 4NB - A629 Ovenden Road	439.95	467.01	494.00	482	-15	-3%	Yes
Route 4SB - A629 Ovenden Road	468.44	500.56	532.78	466	34	7%	Yes
Route 5NB - Queensbury Road	123.12	127.53	131.95	150	-22	-18%	Yes
Route 5SB - Queensbury Road	124.14	129.48	134.82	135	-5	-4%	Yes
Route 6NB - Queensbury Road/Free School Lane	588.28	695.15	801.99	670	25	4%	Yes
Route 6SB - Queensbury Road/Free School Lane	646.75	769.83	892.86	657	113	15%	Yes
Route 7WB - A58	336.82	356.1	375.39	339	17	5%	Yes
Route 7EB - A58	350.42	367.99	385.56	369	-1	0%	Yes
Route 8NB - A644/A641	420.96	446.79	472.68	480	-33	-7%	Yes
Route 8SB - A644/A641	404.63	439.65	474.59	505	-65	-15%	Yes
Route 9WB - A6107/B6114/Rochdale Road	156.49	163.97	171.43	160	18	10%	Yes
Route 9EB - A6107/B6114/Rochdale Road	164.85	176.73	188.64	168	9	5%	Yes
Route 10WB - A6107/B6114/Rochdale Road	312.81	352.12	391.48	359	-7	-2%	Yes
Route 10EB - A6107/B6114/Rochdale Road	381.0	423.61	466.05	331	93	22%	No
Route 11NB - A629/Stainland Road/Blackley Road	399.36	522.32	645.28	439	84	16%	No
Route 11SB - A629/Stainland Road/Blackley Road	444.83	497.2	549.5	440	57	11%	Yes
Route 12NB - A629/Stainland Road/Blackley Road	461.80	495.19	528.65	548	-52	-11%	Yes
Route 12SB - A629/Stainland Road/Blackley Road	483.25	520.93	558.52	526	-5	-1%	Yes
Route 13NB - Halifax/Southowram/Brighouse A644 towards Halifax	460.38	519.79	579.21	494	26	5%	Yes
Route 13SB - Halifax/Southowram/Brighouse A644 towards motorway	425.74	497.65	569.65	458	40	8%	Yes
Route 14NB - Halifax/Southowram/Brighouse A644 towards motorway	273.86	292.08	310.24	340	-48	-17%	Yes
Route 14SB - Halifax/Southowram/Brighouse A644 towards motorway	292.78	317.12	341.4	373	-56	-18%	Yes
Route 15NB - Queens Road/Dryclough Lane	641.88	735.15	828.36	594	141	19%	No
Route 15SB - Queens Road/Dryclough Lane	509.72	571.24	632.76	557	14	3%	Yes
Route 16NB - A641/A6025	331.83	365.13	398.42	364	1	0%	Yes

NAME	LOWER CONFIDENCE LIMITS (s)	OBSERVED (s)	UPPER CONFIDENCE LIMITS (s)	MODELLED (s)	DIFFERENCE (s)	%	PASS?
Route 16SB - A641/A6025	317.45	339.57	361.70	357	-17	-5%	Yes
Route 17NB - A641/A6025	245.32	258.59	271.87	227	32	12%	Yes
Route 17SB - A641/A6025	232.30	241.87	251.45	232	10	4%	Yes
Route 18WB - M62	319.46	323.81	328.19	345	-21	-7%	Yes
Route 18EB - M62	272.70	273.84	274.96	340	-66	-24%	No
Route 19WB - M62	202.71	203.32	203.95	161	42	21%	Yes
Route 19EB - M62	194.49	195.46	196.40	221	-25	-13%	Yes

6.6.14 Table 6.17 demonstrates that 31 (82%) of the 38 journey time routes are within the WebTAG requirement for the modelled journey time to be within 15% of observed journey time. However Route 16A northbound encompassing the A641 and A6025 is 15.1% quicker in the model compared to the observed data, one second outside the lower limit for it to meet the WebTAG criteria, therefore it should be considered well replicated within the model.

6.6.15 Three other routes are only marginally outside the 15% requirement, these include:

QUEENSBURY ROAD / FREE SCHOOL LANE SOUTHBOUND (ROUTE 6)

6.6.16 This route is marginally outside the WebTAG criteria, the section between Southowram Bank/Bank Bottom junction and Free School Lane/Saville Park is simulated quicker than the observed data and leads to the overall route being 16% quicker compared to the observed data.

A629 SOUTHBOUND (ROUTE 1)

6.6.17 This route is modelled within 15% of the observed data for most of the route until the A629 northern approach to the Ainley Top roundabout through to the A629 Halifax Road southbound. The lower level of delay incurred in the model traversing the Ainley Top roundabout leads to the overall journey time route becoming marginally slower (19%) than the observed journey time.

A629 SOUTHBOUND (ROUTE 2)

6.6.18 This route is modelled within 15% of the observed journey data for this route. From the A629 Salterhebble Hill / A646 Dryclough Lane junction to the A629 Huddersfield Road / A6026 the model travel time is faster than the observed journey time route. This leads to the final cumulative journey time total being 19% lower in the model compared to the observed data.

6.6.19 Relaxing the criteria for the journey times in the model to be within 20% of the observed data means 35 (92%) of the 38 journey time routes are well represented in the model. Therefore it is considered that in the PM peak, the model provides a sufficient reflection of the travel time across key strategic routes within the study area.

6.6.20 Taking into account the upper and lower confidence interval for the observed mean for each journey time route, shows the modelled journey time falls within the upper and lower confidence limits of the mean for the following routes:

- Route 2 A629 southbound
- Route 6 Queensbury Road/Free School Lane southbound
- Route 15 Queens Road/Dryclough Lane southbound

Table 6.17 - PM peak hour journey time route comparison

NAME PM	LOWER CONFIDENCE LIMITS (s)	OBSERVED (s)	UPPER CONFIDENCE LIMITS (s)	MODELLED (s)	DIFFERENCE (s)	%	PASS?
Route 1NB - A629	553.40	641.56	729.75	623	18	3%	Yes
Route 1SB - A629	389.27	460.61	531.95	371	89	19%	No
Route 2NB - A629	476.78	569.34	661.91	593	-24	-4%	Yes
Route 2SB - A629	606.32	803.83	1001.38	651	153	19%	No
Route 3WB - A646/A58	355.33	544.53	733.57	505	40	7%	Yes
Route 3EB - A646/A58	379.23	467.11	555.03	512	-45	-10%	Yes
Route 4NB - A629 Ovenden Road	436.88	507.70	578.43	550	-42	-8%	Yes
Route 4SB - A629 Ovenden Road	436.78	496.73	556.69	471	25	5%	Yes
Route 5NB - Queensbury Road	117.45	128.25	139.06	168	-40	-31%	Yes
Route 5SB - Queensbury Road	108.64	119.99	131.36	141	-21	-17%	Yes
Route 6NB - Queensbury Road/Free School Lane	593.08	825.43	1057.73	825	0	0%	Yes
Route 6SB - Queensbury Road/Free School Lane	596.25	864.46	1132.04	724	141	16%	No
Route 7WB - A58	389.73	452.2	514.67	432	20	4%	Yes
Route 7EB - A58	485.05	603.59	722.06	575	29	5%	Yes
Route 8NB - A644/A641	453.22	568.52	683.82	514	55	10%	Yes
Route 8SB - A644/A641	542.26	645.43	748.53	606	40	6%	Yes
Route 9WB - A6107/B6114/Rochdale Road	152.46	162.35	172.27	219	-39	-22%	Yes
Route 9EB - A6107/B6114/Rochdale Road	185.22	231.49	277.76	270	-38	-17%	Yes
Route 10WB - A6107/B6114/Rochdale Road	337.86	441.27	544.65	488	-47	-11%	Yes
Route 10EB - A6107/B6114/Rochdale Road	345.05	451.09	557.14	456	-5	-1%	Yes
Route 11NB - A629/Stainland Road/Blackley Road	428.41	569.87	711.23	620	-50	-9%	Yes
Route 11SB - A629/Stainland Road/Blackley Road	438.04	539.62	641.12	594	-55	-10%	Yes
Route 12NB - A629/Stainland Road/Blackley Road	510.15	619.48	728.77	688	-68	-11%	Yes
Route 12SB - A629/Stainland Road/Blackley Road	461.11	567.48	673.85	581	-14	-2%	Yes
Route 13NB - Halifax/Southowram/Brighouse A644 towards Halifax	440.37	526.54	612.74	513	14	3%	Yes
Route 13SB - Halifax/Southowram/Brighouse A644 towards motorway	438.54	490.52	542.52	502	-11	-2%	Yes
Route 14NB - Halifax/Southowram/Brighouse A644 towards motorway	587.26	756.26	925.26	517	239	32%	No
Route 14SB - Halifax/Southowram/Brighouse A644 towards motorway	392.73	469.97	547.19	427	43	9%	Yes
Route 15NB - Queens Road/Dryclough Lane	520.89	705.3	889.69	621	84	12%	Yes
Route 15SB - Queens Road/Dryclough Lane	503.28	754.49	1004.87	556	198	26%	No
Route 16NB - A641/A6025	437.79	512.74	587.69	393	120	23%	No
Route 16SB - A641/A6025	349.95	414.18	478.61	408	6	2%	Yes
Route 17NB - A641/A6025	231.66	259.45	287.22	232	28	11%	Yes

NAME PM	LOWER CONFIDENCE LIMITS (s)	OBSERVED (s)	UPPER CONFIDENCE LIMITS (s)	MODELLED (s)	DIFFERENCE (s)	%	PASS?
Route 17SB - A641/A6025	203.78	219.42	235.07	248	-28	-13%	Yes
Route 18WB - M62	360.84	378.94	397.03	353	25	7%	Yes
Route 18EB - M62	261.00	271.57	282.14	321	-49	-18%	Yes
Route 19WB - M62	241.39	250.08	258.79	166	84	34%	No
Route 19EB - M62	190.08	225.08	260.08	225	0	0%	Yes

6.7 CALIBRATION AND VALIDATION CONCLUSIONS

6.7.1 The model calibration process was undertaken successfully and shows the model provides a satisfactory representation of the existing traffic situation within the study area across all three peaks.

6.7.2 The link flow calibration and validation results for all time periods are at a sufficient standard to provide confidence the model is replicating existing traffic conditions. In all peaks, at least 194 of the 227 calibration counts (85%) have a GEH value under five. In all peaks at least 26 out of 30 (87%) screenlines meet the required criteria in terms of GEH. Journey time routes are also validated to an acceptable level in all peaks when consideration is taken of how certain routes have performed which marginally fall outside the requirement of the model being within 15% of the observed journey time. Validation across screenlines and journey times provides further confirmation that the base year model reasonably represents observed traffic conditions in Calderdale.

6.7.3 Figure 6.1, figure 6.2 and figure 6.3 graphically present the performance of the model against the thresholds of the key acceptability criteria, these figures clearly show the model performs to an acceptable level and robustly represents the local traffic conditions.

Figure 6.1 - AM peak summary

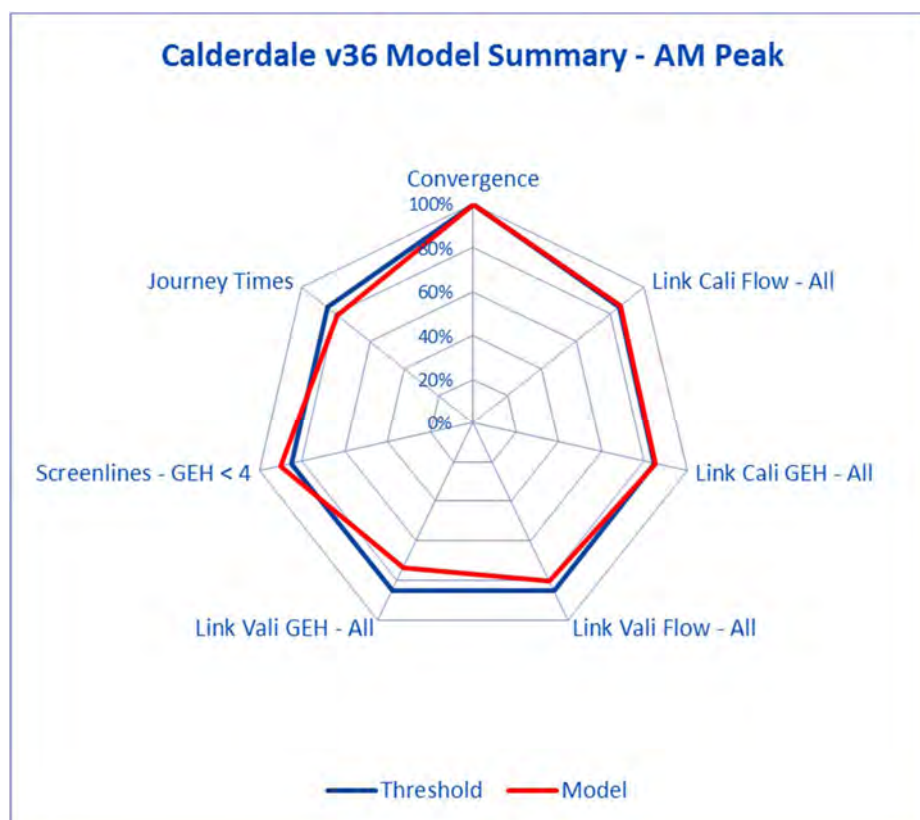


Figure 6.2 - Inter peak summary

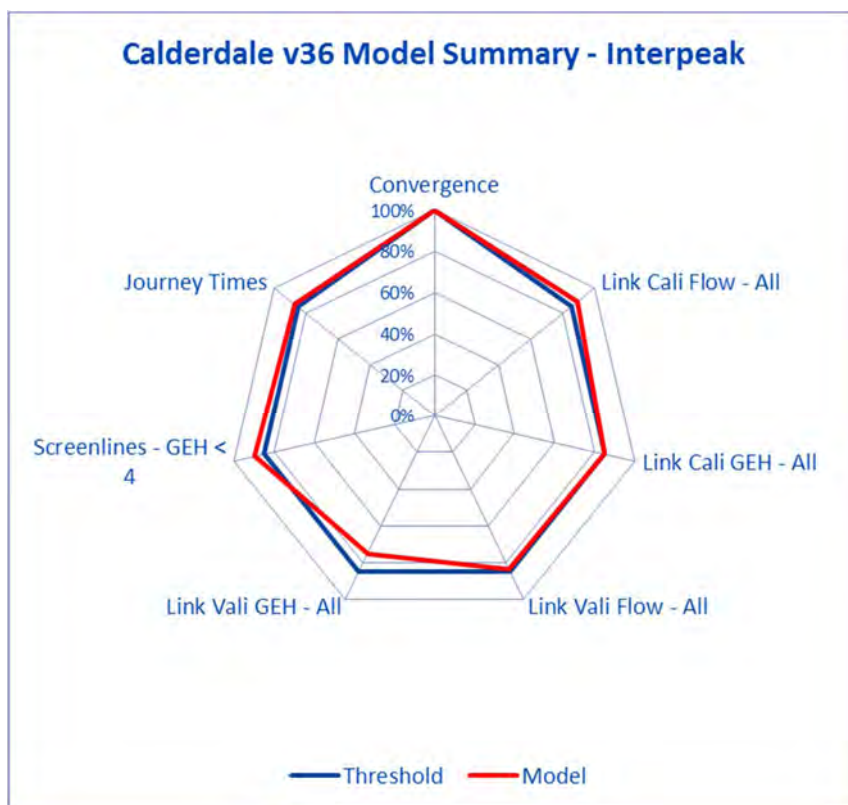
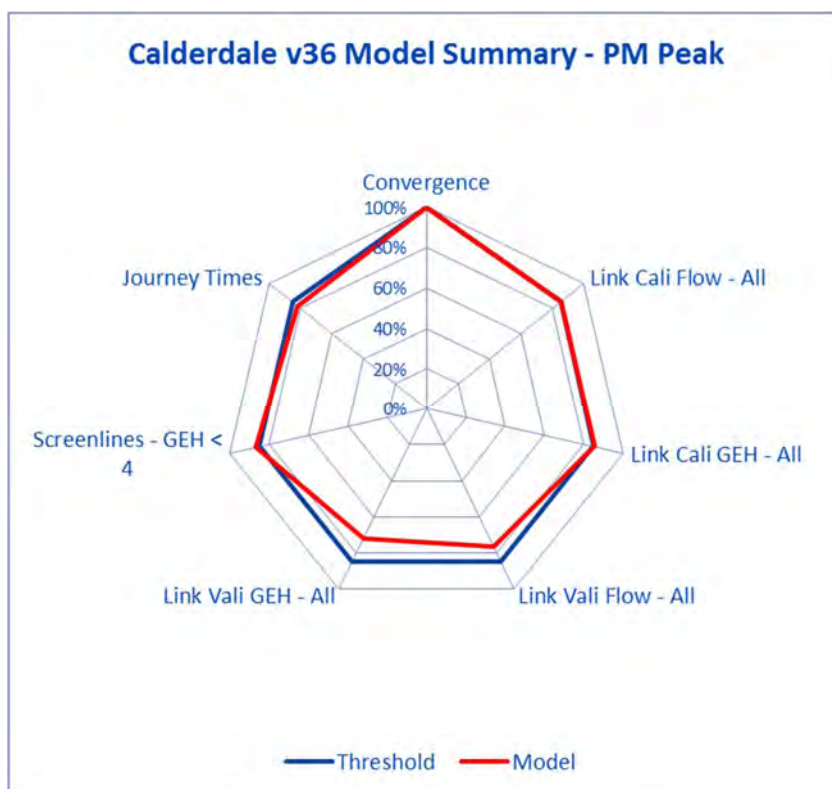


Figure 6.3 - PM peak summary



7

CONCLUSION

- 7.1.1 WSP | Parsons Brinckerhoff has been commissioned by Calderdale Metropolitan Borough Council (CMBC) under the Metro Framework to update and extend the existing Calderdale Strategic Transport Model (CSTM) to represent the current 2014 travel patterns and highway network conditions for the AM peak, inter peak and PM peak time periods. This Local Model Validation Report (LMVR) has outlined the modelling process used to produce a fully validated 2014 base year highway transport model.
- 7.1.2 The model development has involved a comprehensive and extensive data collection exercise, including manual and automatic traffic counts, road side interview surveys and journey time surveys. To ensure compliance with modelling guidance the models have been developed in accordance with the Department for Transport (DfT) Web based Transport Analysis Guidance (WebTAG) on <http://www.dft.gov.uk/webtag/>. This provides detailed guidance on appraisal of transport projects and wider advice on scoping and carrying out transport studies.
- 7.1.3 The highway model calibration process was undertaken successfully and has produced a reasonable standard and quality of results for all time periods.
- 7.1.4 The technical information presented in this report demonstrates that the CSTM is adequate representation of base year traffic condition for each time period. It can be concluded that overall the CSTM is considered to be a robust tool and is suitable to be used for traffic forecasting, development and scheme appraisal, and hence is considered to be fit for purpose.

Appendix A

MODEL FILES

Model file names and network paths

AM Peak

SATURN model DAT file:	\\ser02lds1uk\projects\70006056 - Calderdale Strategic Transport\D Design and Analysis\Transportation\SATURN\Base Year 2014\v36\AM\N14AM_CBASE_v36a.dat
------------------------	---

Matrix UFM:	\\ser02lds1uk\projects\70006056 - Calderdale Strategic Transport\D Design and Analysis\Transportation\SATURN\Base Year 2014\v36\AM\Prior_uc6_AM_RevZoneSys_v36a.UFM
-------------	---

Latest Update:	07/05/2015 11:31
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Interpeak

SATURN model DAT file:	\\ser02lds1uk\projects\70006056 - Calderdale Strategic Transport\D Design and Analysis\Transportation\SATURN\Base Year 2014\v36\IP\N14IP_CBASE_v36.dat
------------------------	--

Matrix UFM:	\\ser02lds1uk\projects\70006056 - Calderdale Strategic Transport\D Design and Analysis\Transportation\SATURN\Base Year 2014\v36\AM\Prior_uc6_IP_RevZoneSys_v36.UFM
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Latest Update:	06/05/2015 12:13
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PM Peak

SATURN model DAT file:	\\ser02lds1uk\projects\70006056 - Calderdale Strategic Transport\D Design and Analysis\Transportation\SATURN\Base Year 2014\v36\PM\N14PM_CBASE_v36.dat
------------------------	--

Matrix UFM:	\\ser02lds1uk\projects\70006056 - Calderdale Strategic Transport\D Design and Analysis\Transportation\SATURN\Base Year 2014\v36\PM\Prior_uc6_PM_RevZoneSys_v36.UFM
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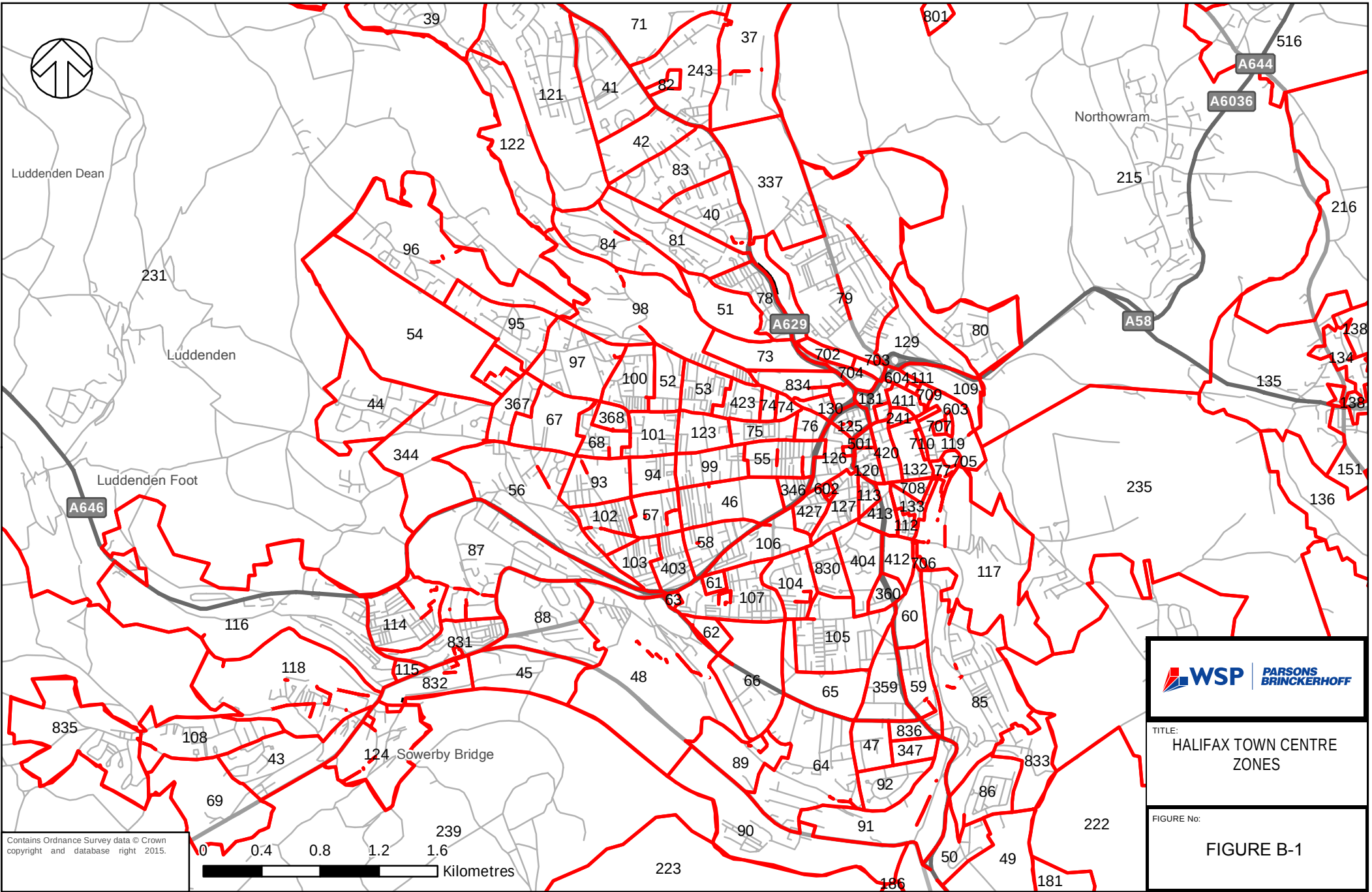
Latest Update:	06/05/2015 10:18
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Appendix B

MODEL ZONE PLANS

APPENDIX B-1

HALIFAX TOWN CENTRE ZONE STRUCTURE



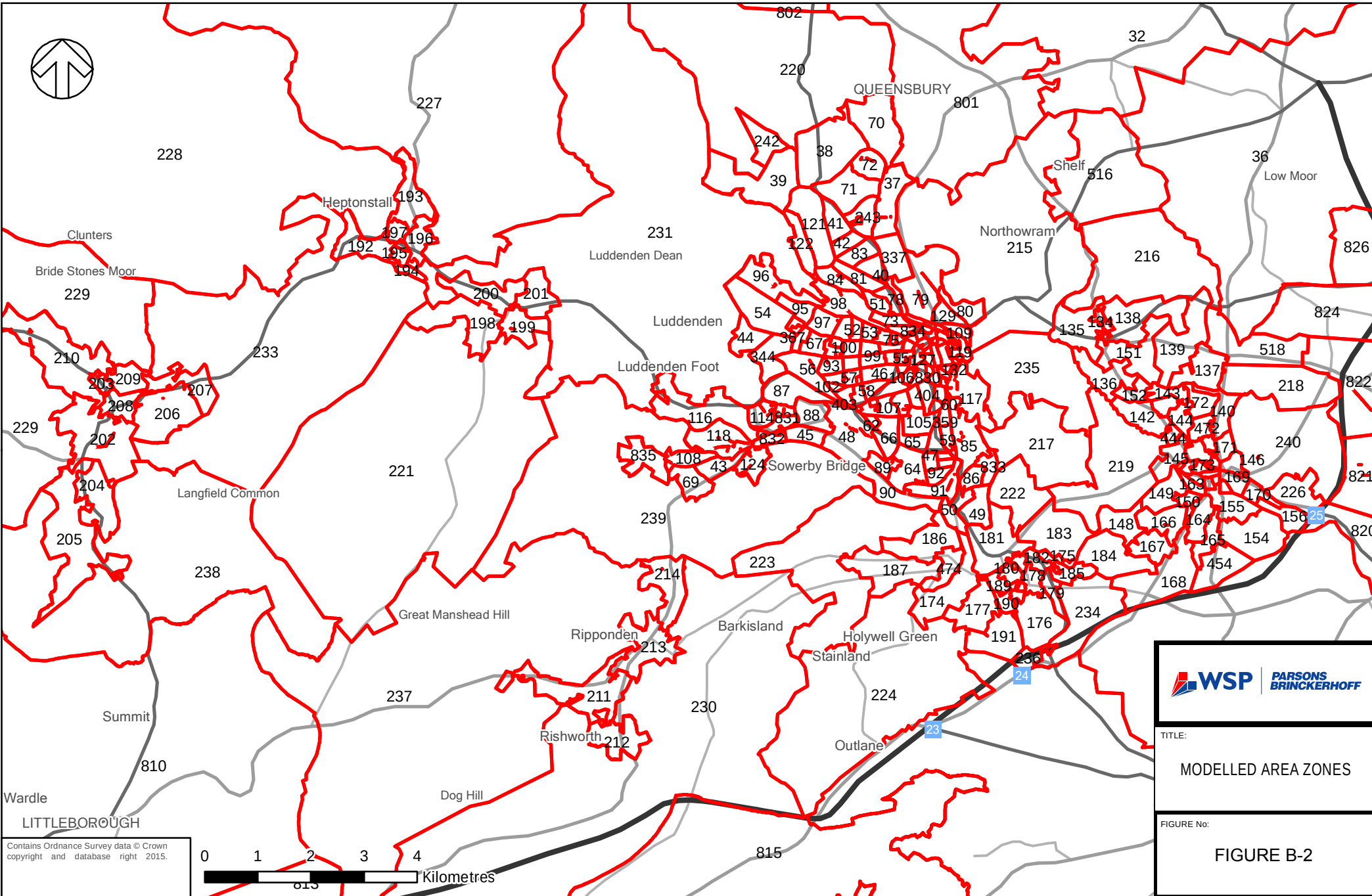
APPENDIX B-2

MODEL STUDY AREA ZONE STRUCTURE

Date Modified:

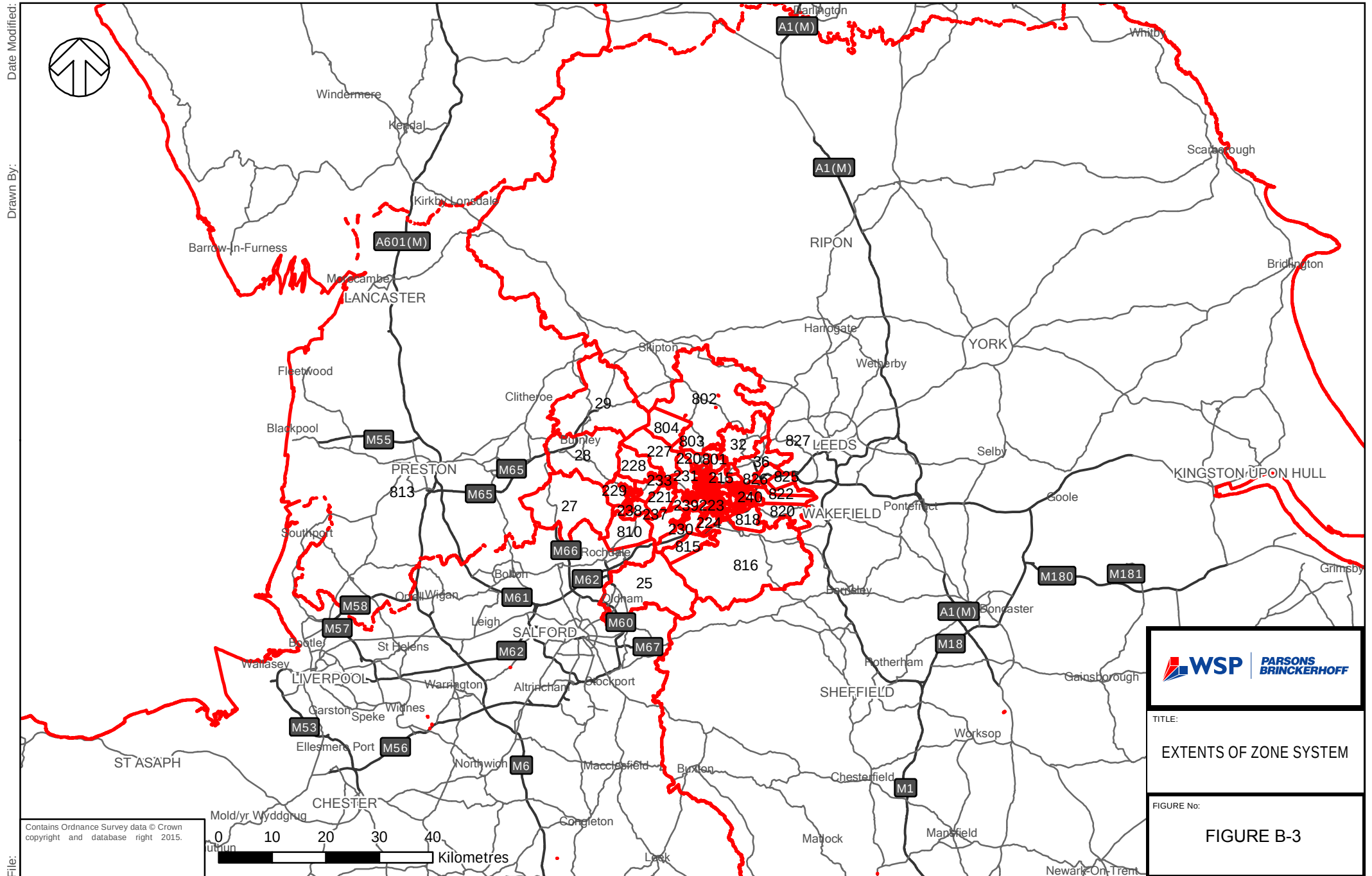
Drawn By:

File:



APPENDIX B-3

OUTER ZONE STRUCTURE



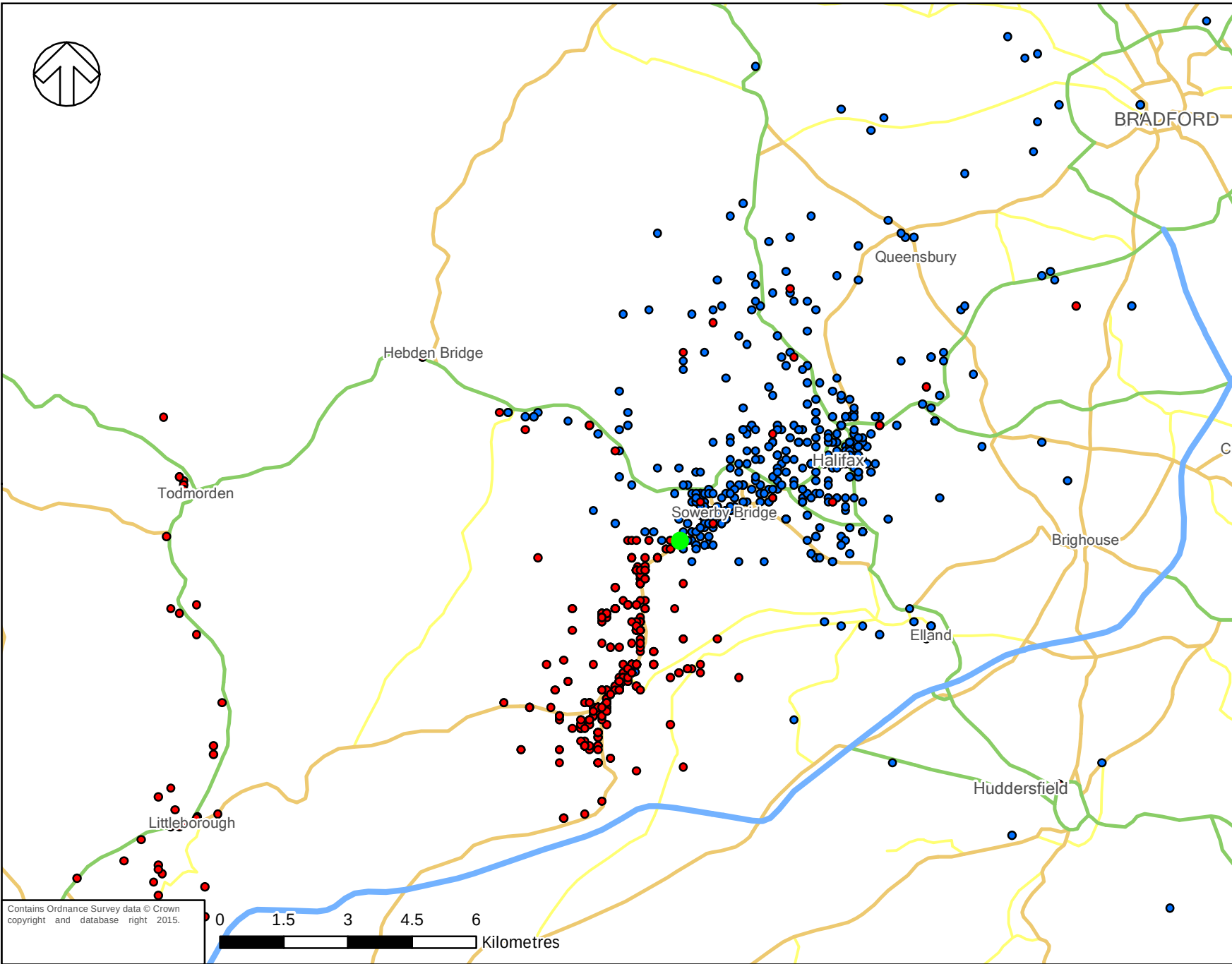
Appendix C

RSI ORIGIN - DESTINATION PLOTS

Date Modified:

Drawn By:

File:



Key

- Origin Postcode
- Desitnation Postcode
- Site Location

Direction of Survey:
Eastbound

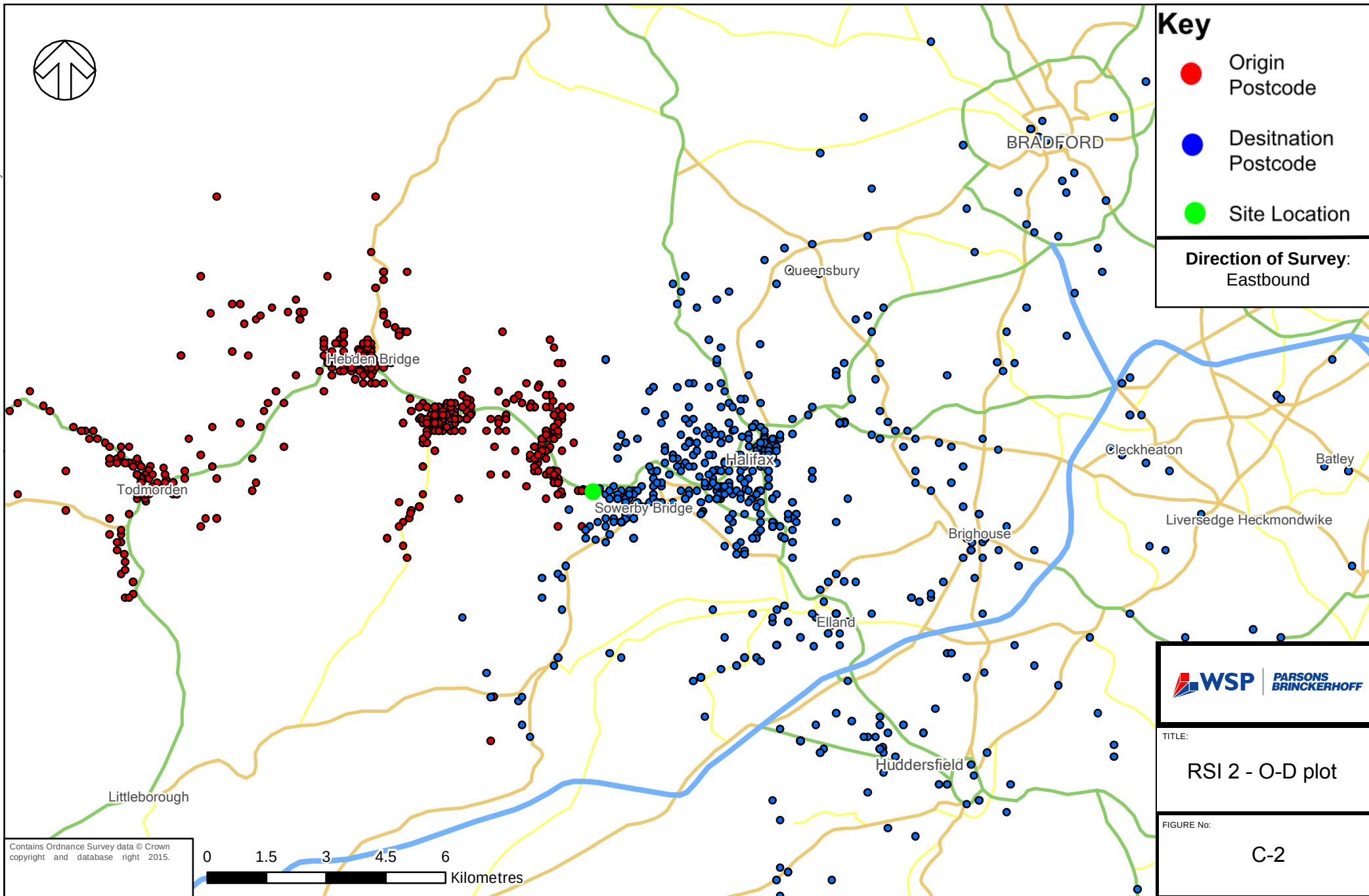


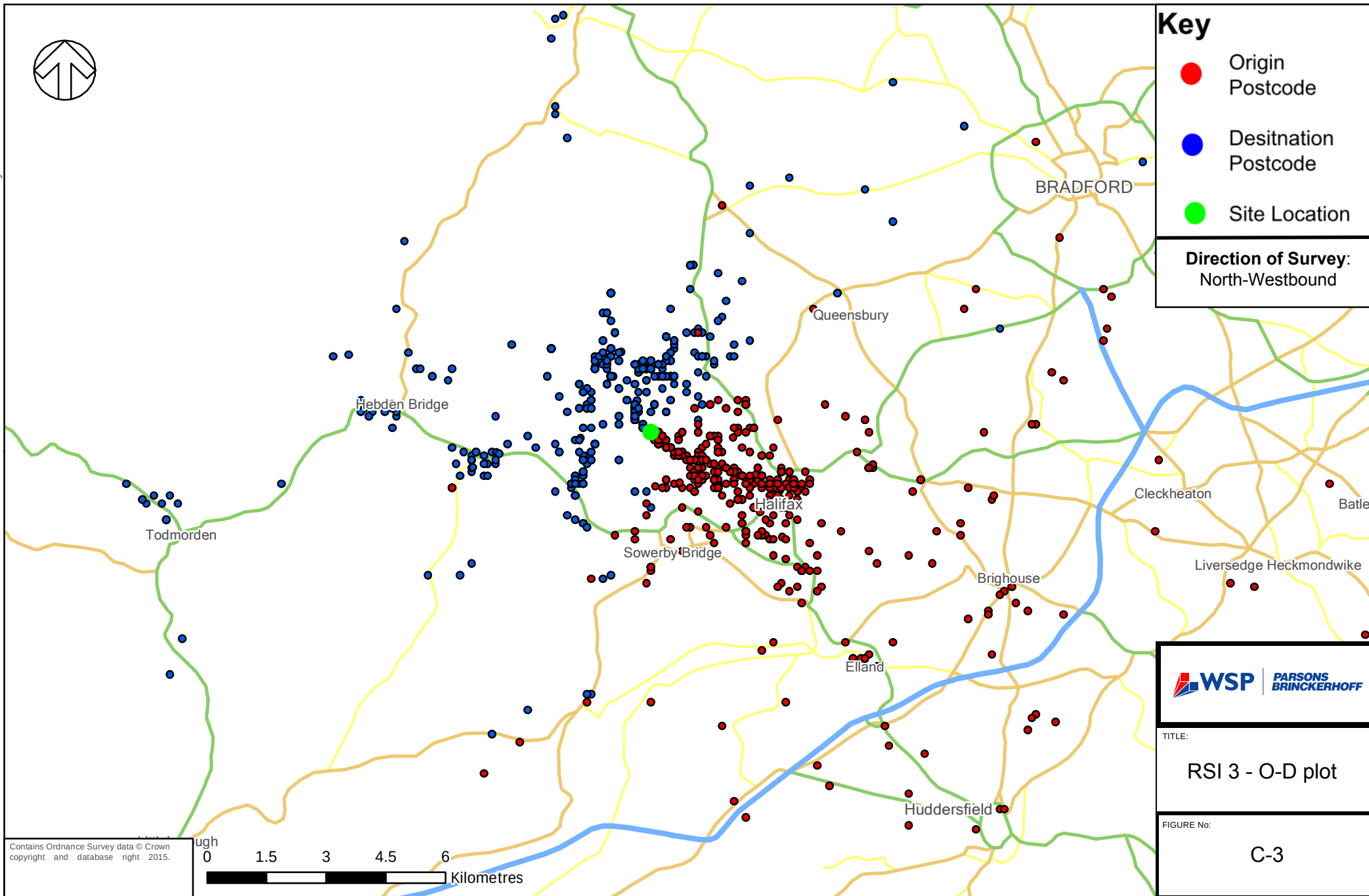
TITLE:

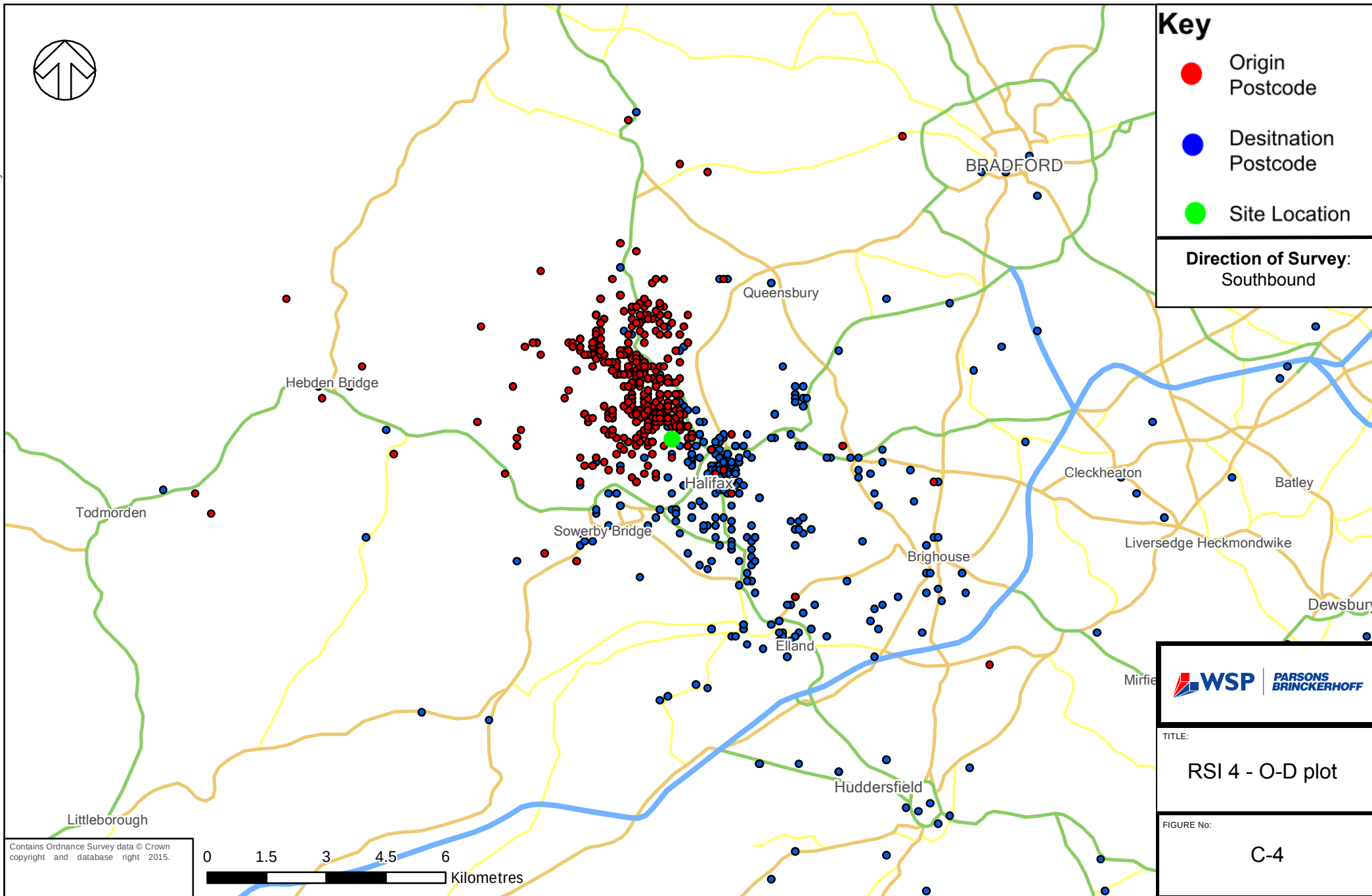
RSI 1 - O-D plot

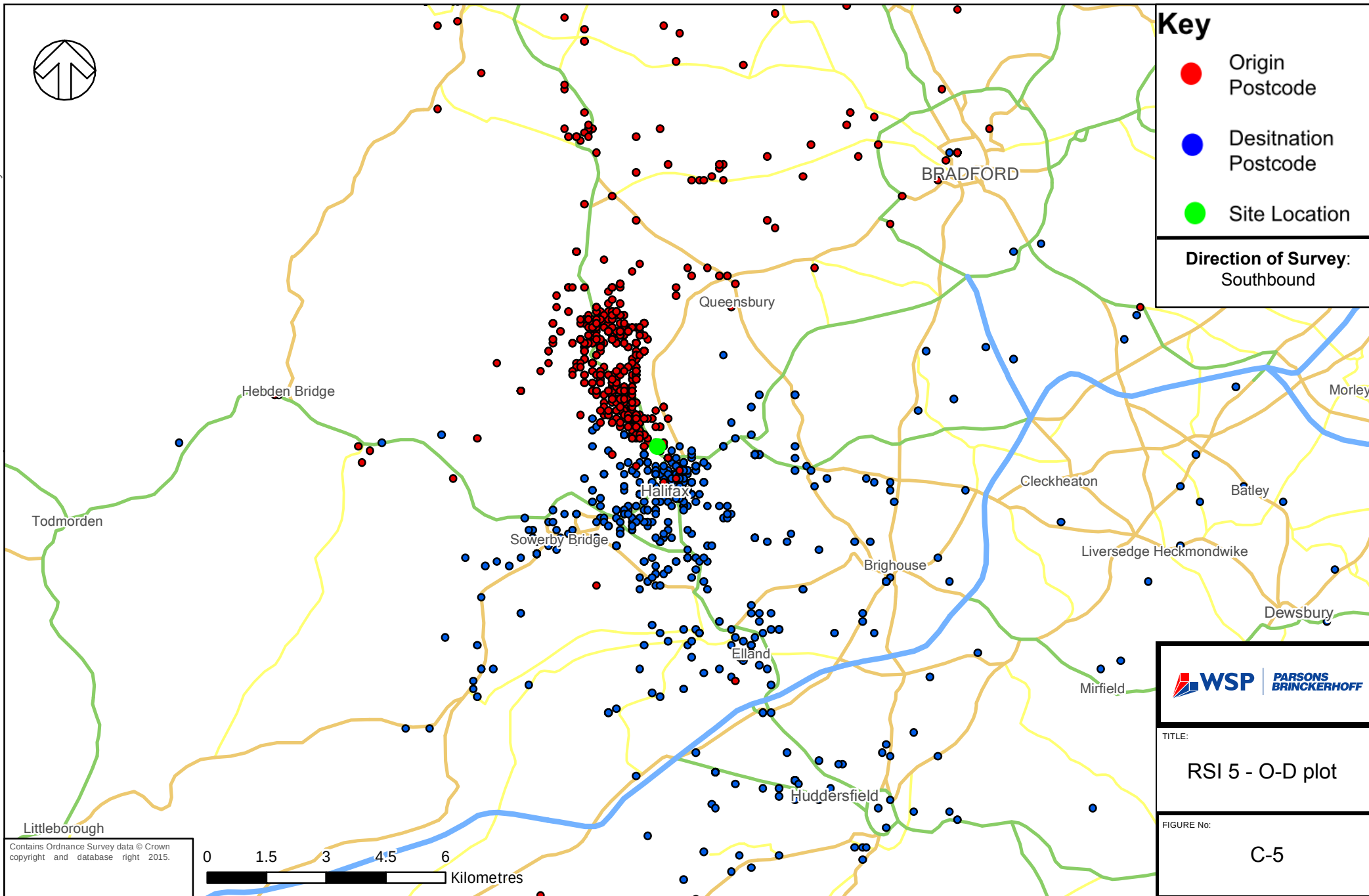
FIGURE No:

C-1







**Key**

- Origin Postcode
- Destination Postcode
- Site Location

Direction of Survey:
Southbound



TITLE:

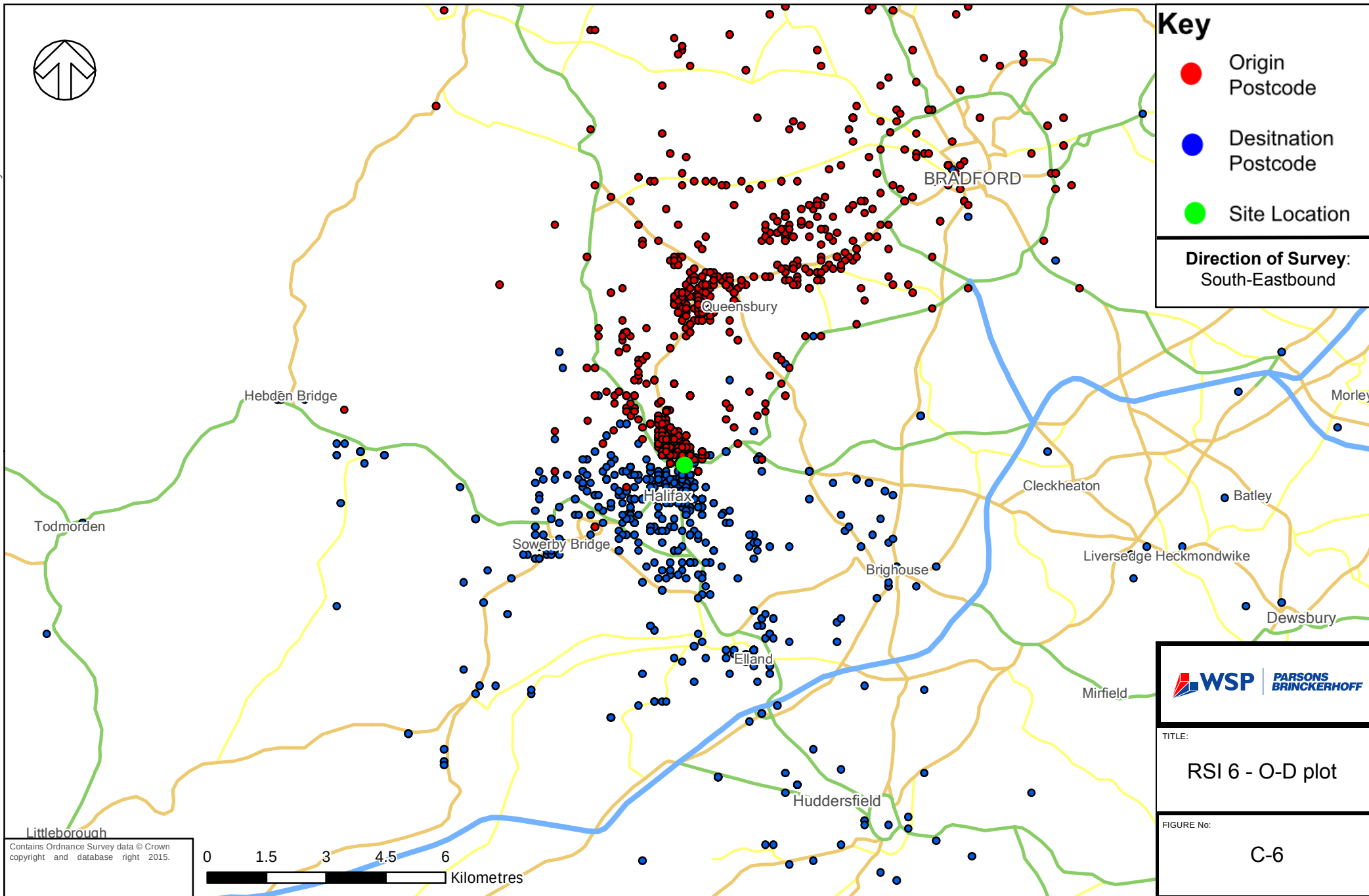
RSI 5 - O-D plot

FIGURE No:

C-5

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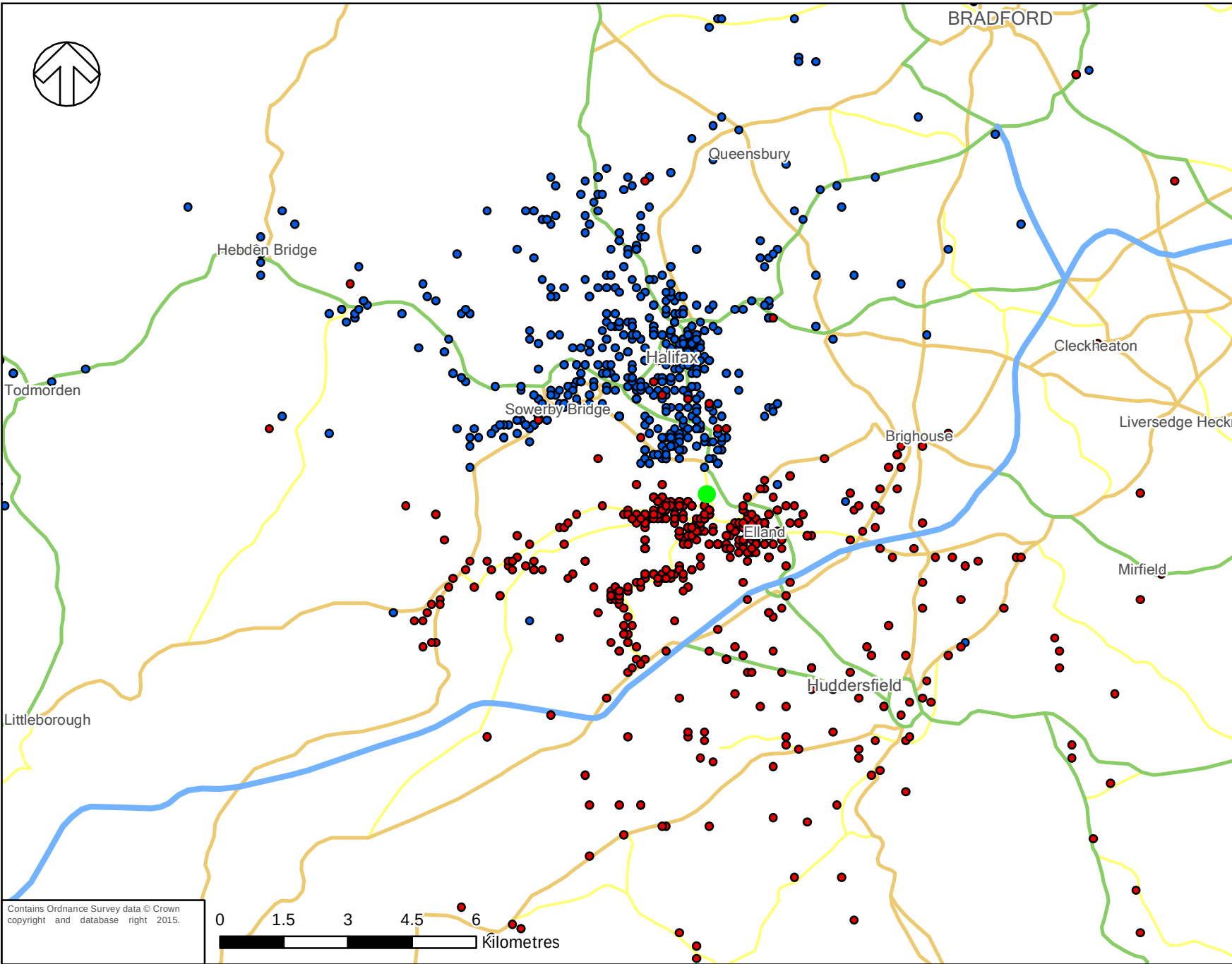
0 1.5 3 4.5 6
Kilometres



Date Modified:

Drawn By:

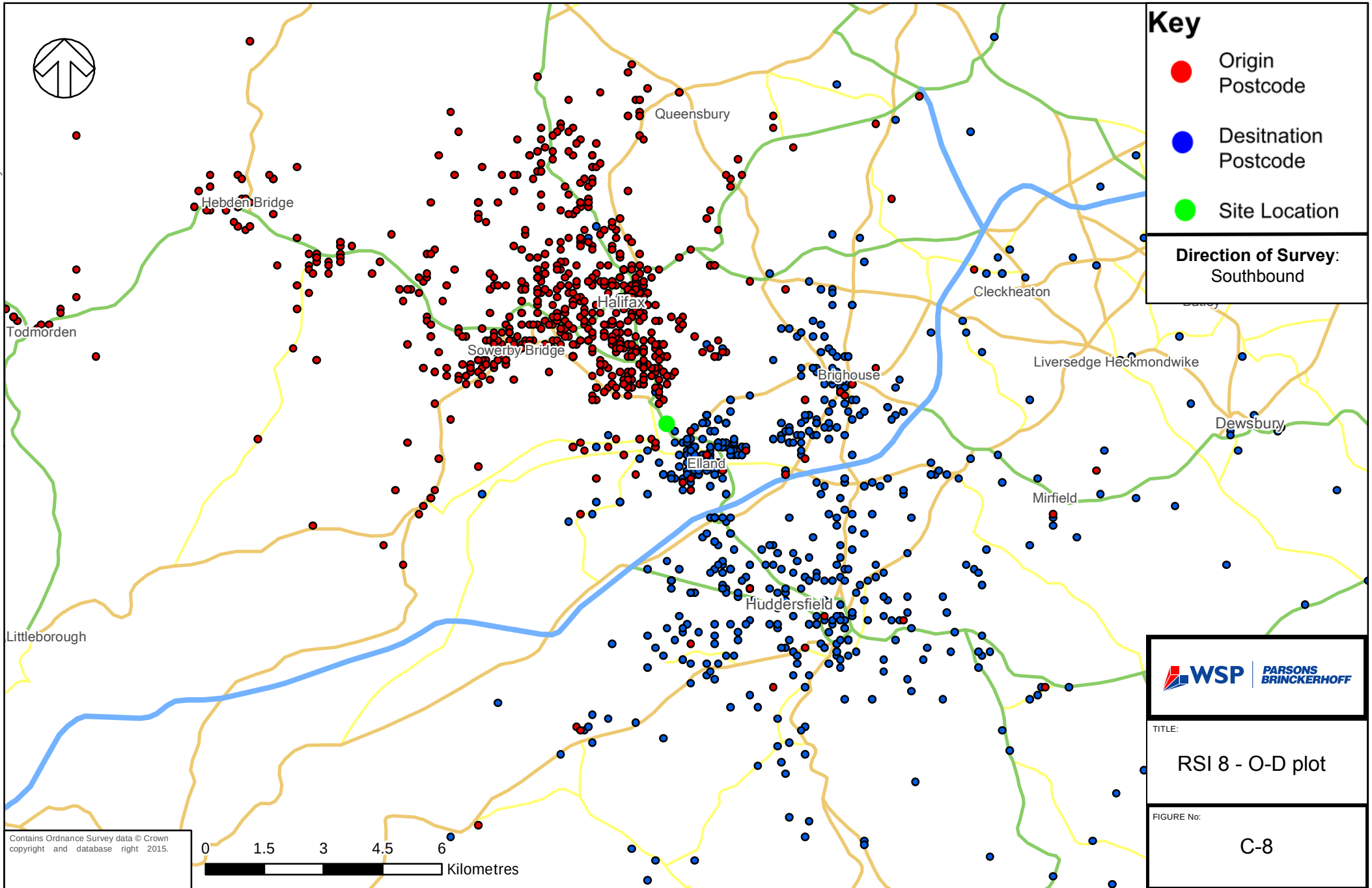
File:



Key	
	Origin Postcode
	Desitnation Postcode
	Site Location
Direction of Survey: Northbound	
 	
TITLE: RSI 7 - O-D plot	
FIGURE No: C-7	

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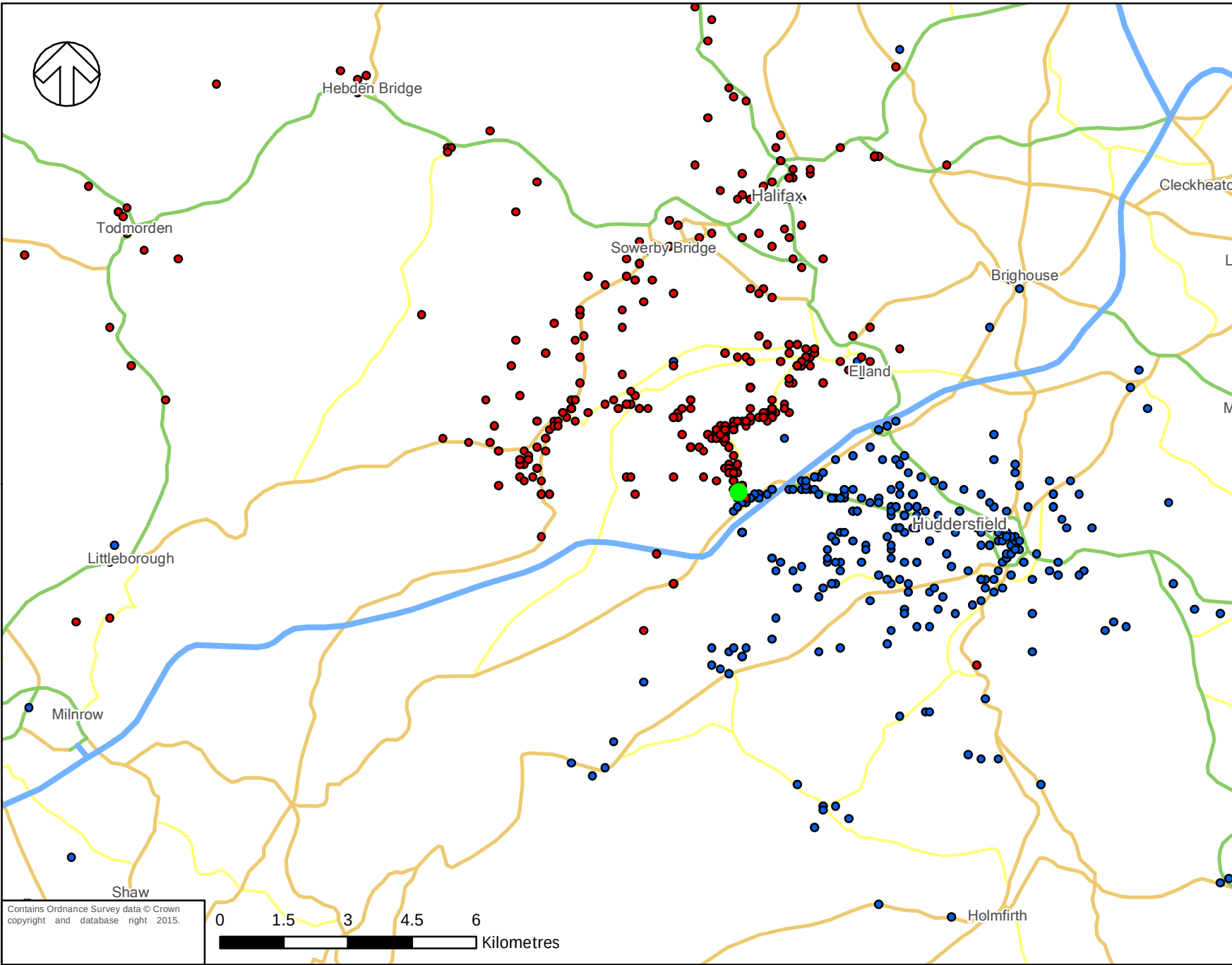




Date Modified:

Drawn By:

File:



Key

- Origin Postcode
- Destination Postcode
- Site Location

Direction of Survey:
Southbound



TITLE:

RSI 9 - O-D plot

FIGURE No:

C-9

Date Modified:

Drawn By:

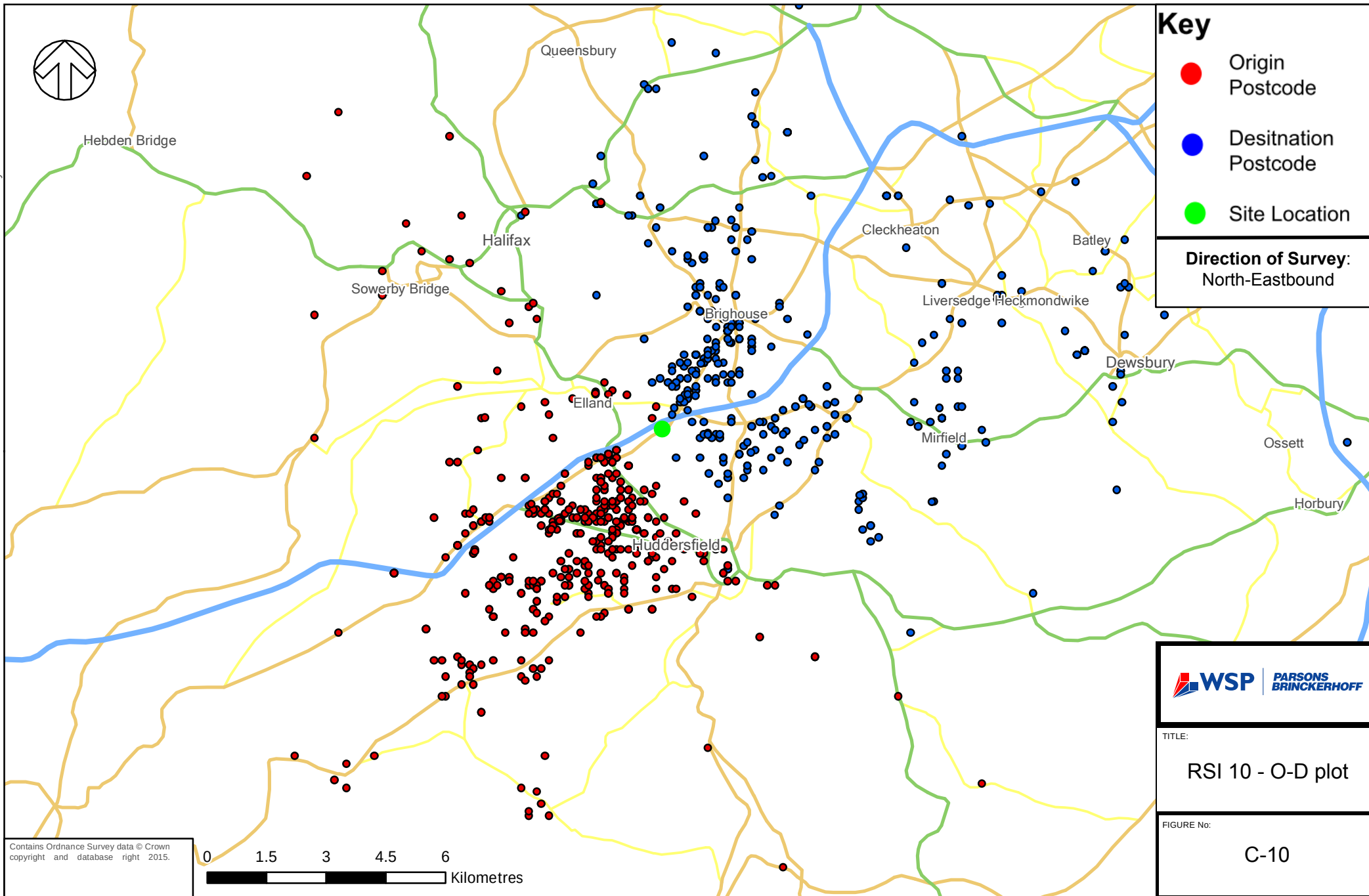
File:



Key

- Origin Postcode
- Destination Postcode
- Site Location

Direction of Survey:
North-Eastbound



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0 1.5 3 4.5 6
Kilometres



TITLE:

RSI 10 - O-D plot

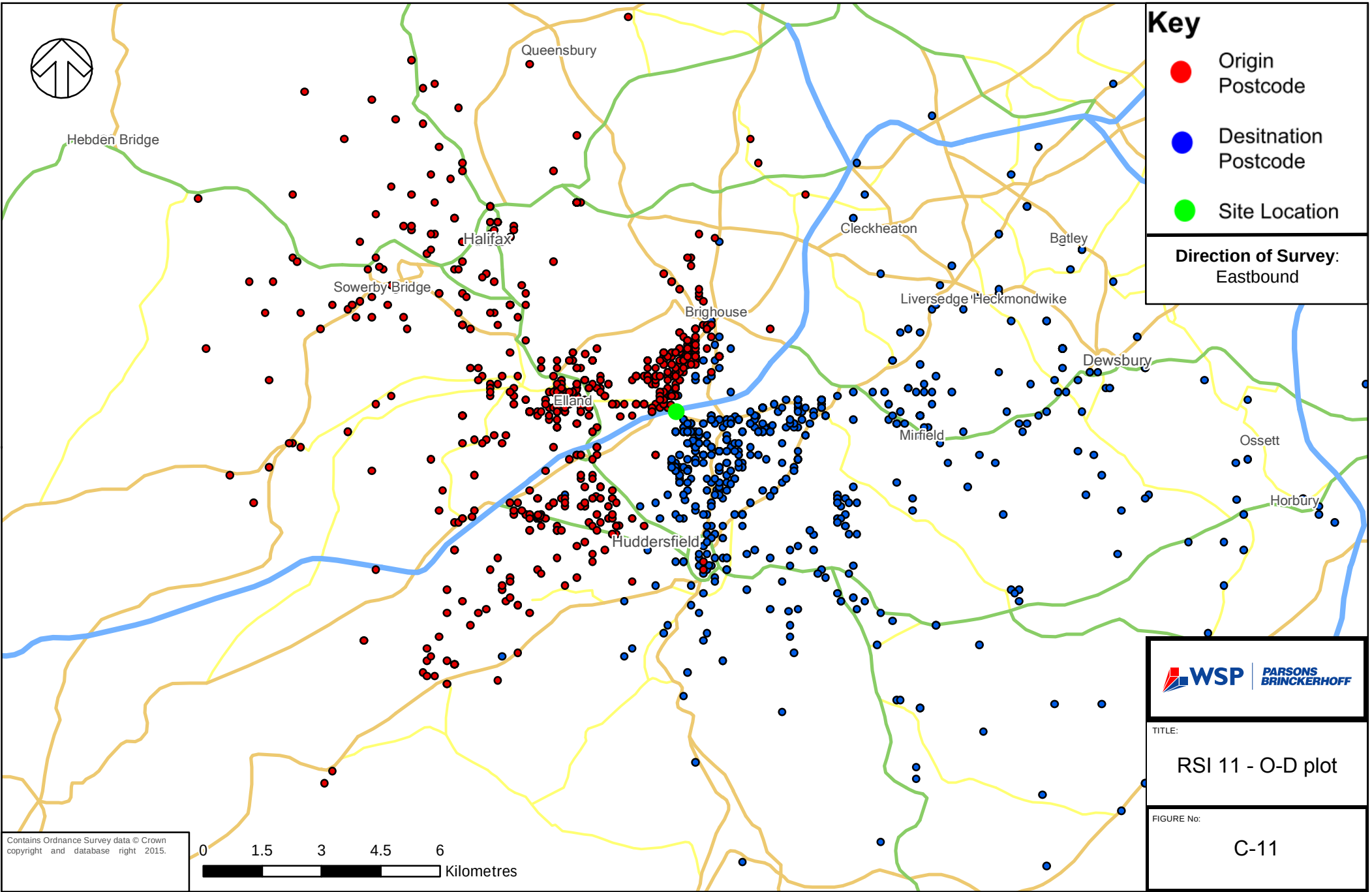
FIGURE No:

C-10

Date Modified:

Drawn By:

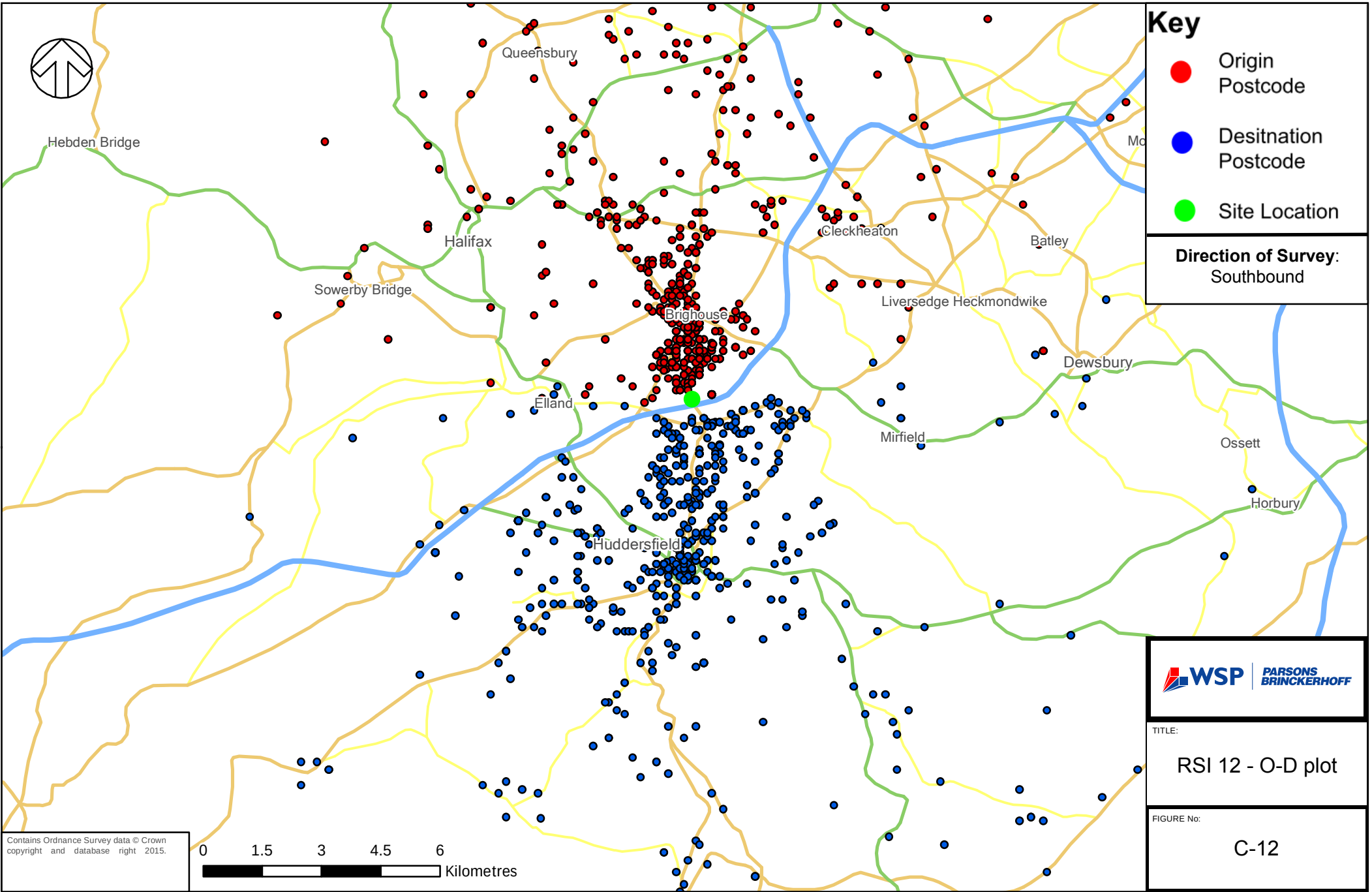
File:



Date Modified:

Drawn By:

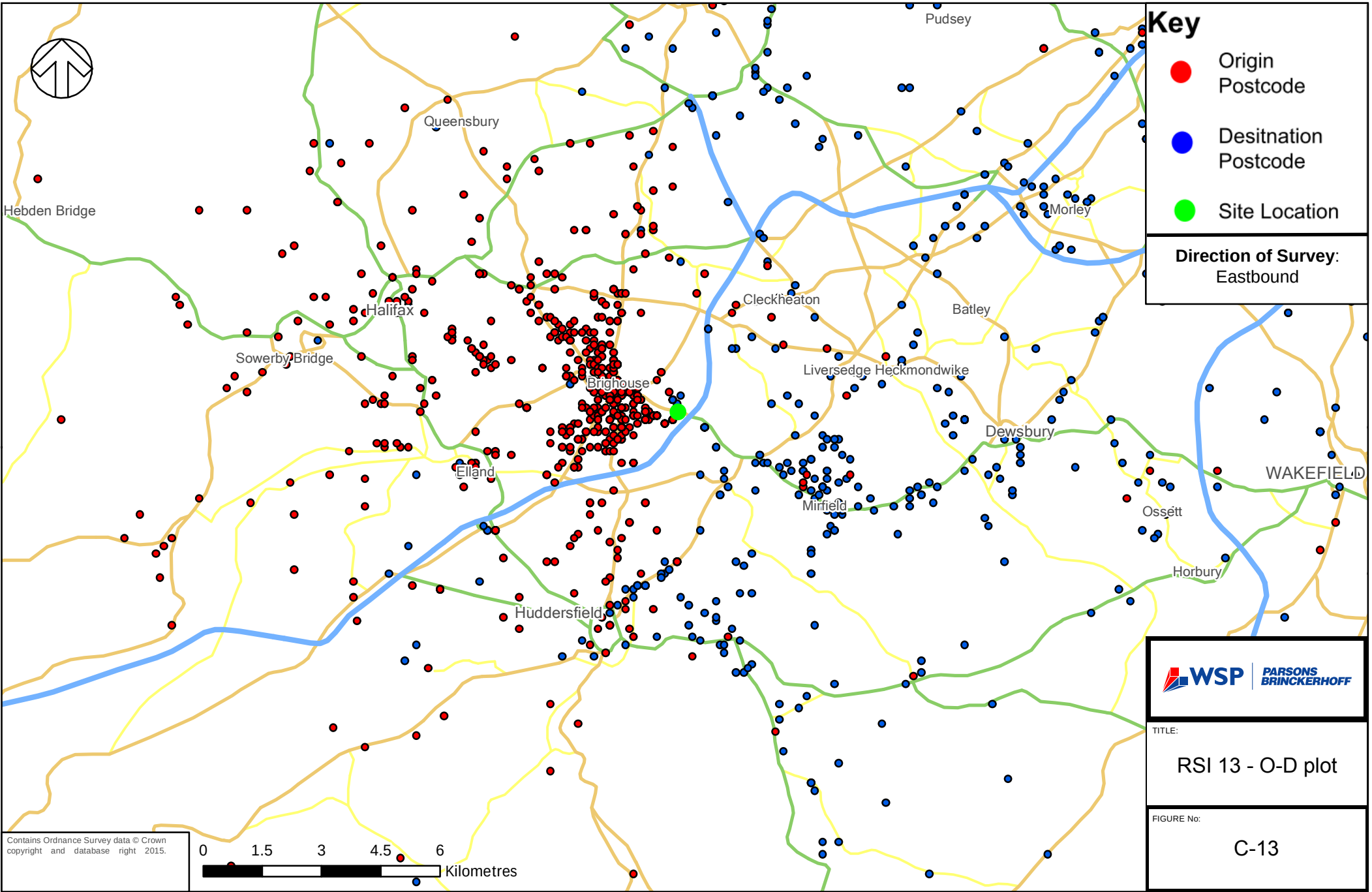
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Date Modified:

Drawn By:

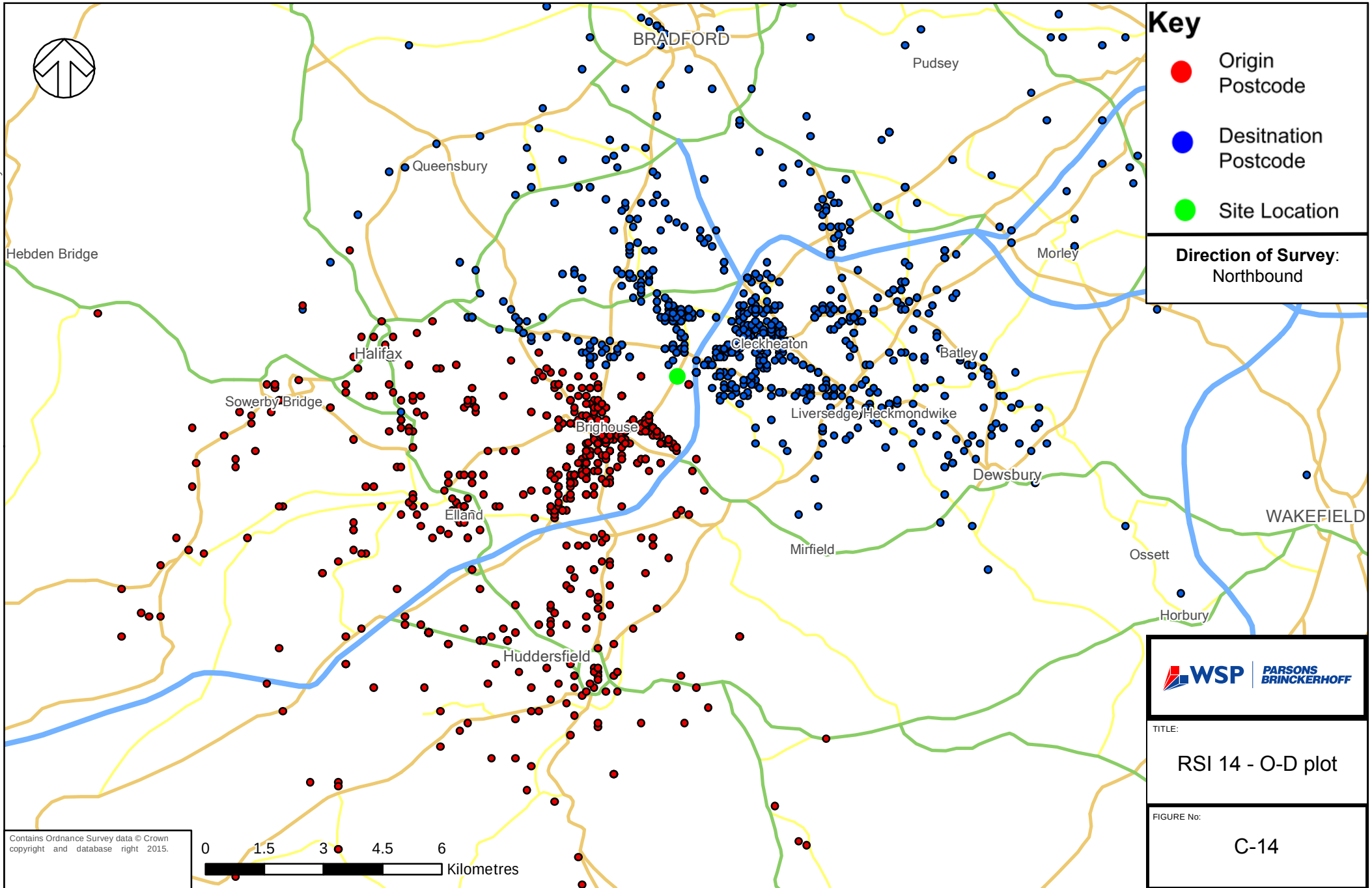
File:



Date Modified:

Drawn By:

File:



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TITLE:

RSI 14 - O-D plot

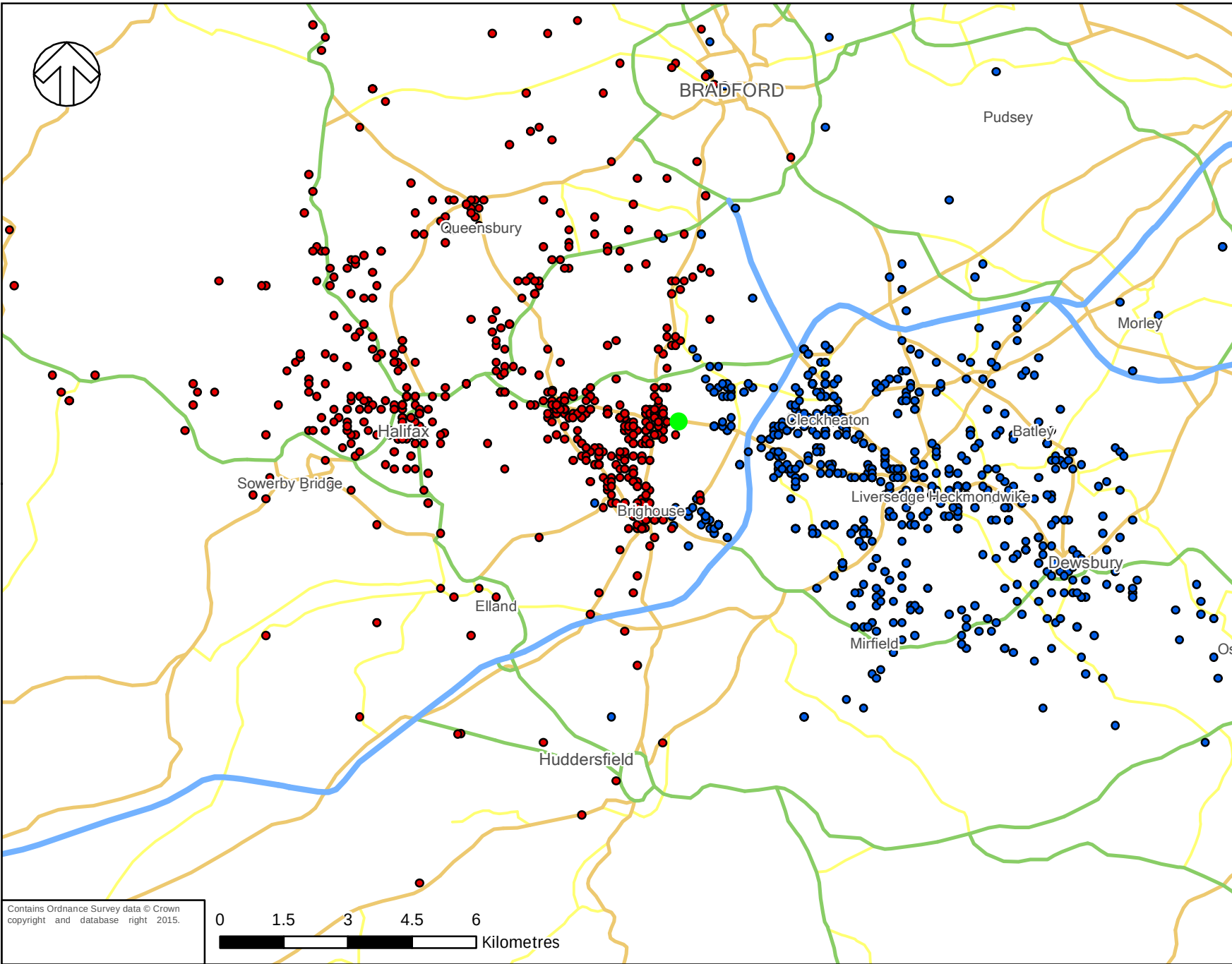
FIGURE No:

C-14

Date Modified:

Drawn By:

File:



Key

- Origin Postcode
- Destination Postcode
- Site Location

Direction of Survey:
Eastbound



TITLE:

RSI 15 - O-D plot

FIGURE No:

C-15

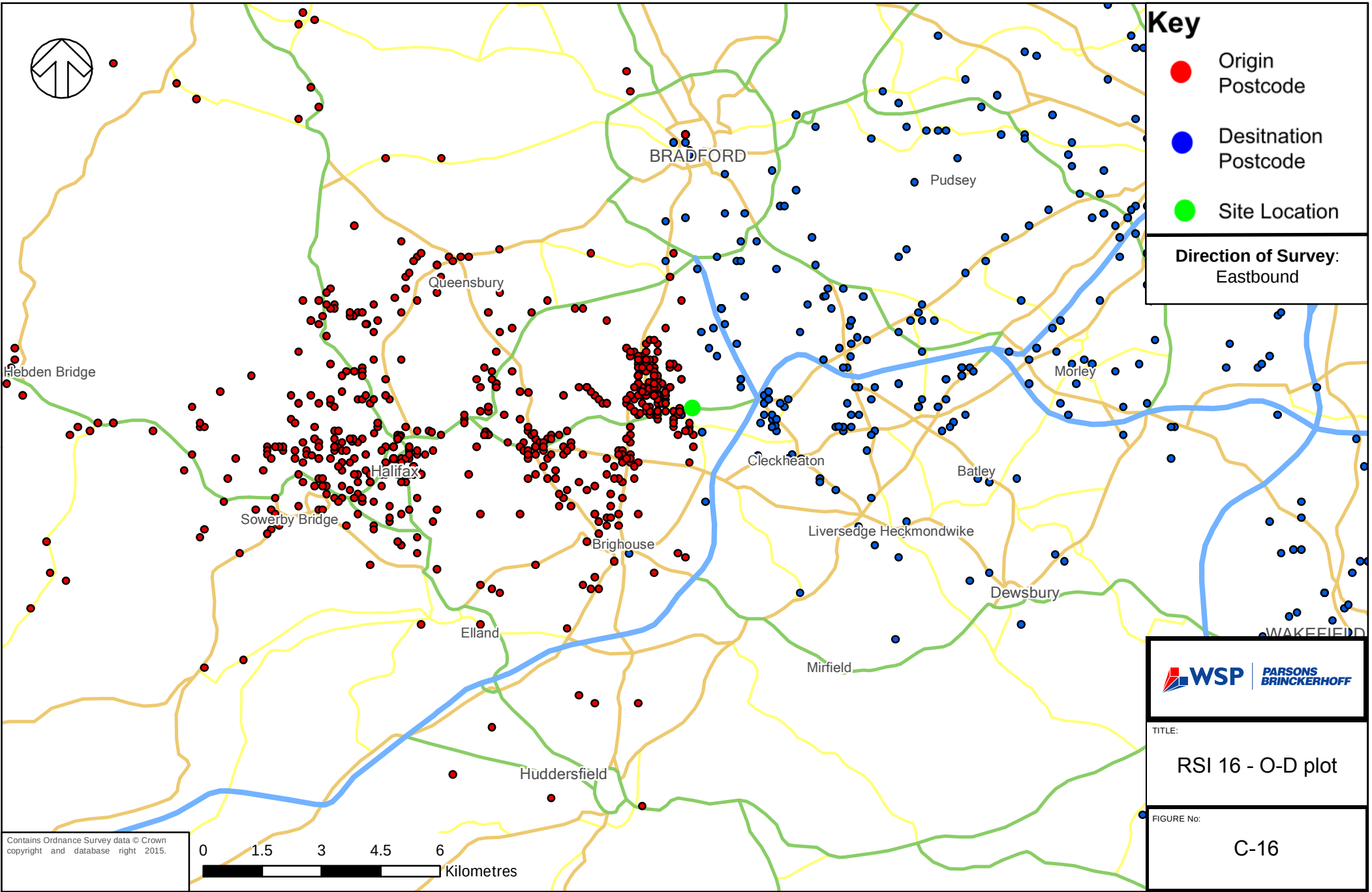
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0 1.5 3 4.5 6
Kilometres

Date Modified:

Drawn By:

File:



Key

- Origin Postcode
- Destination Postcode
- Site Location

Direction of Survey:
Eastbound



TITLE:

RSI 16 - O-D plot

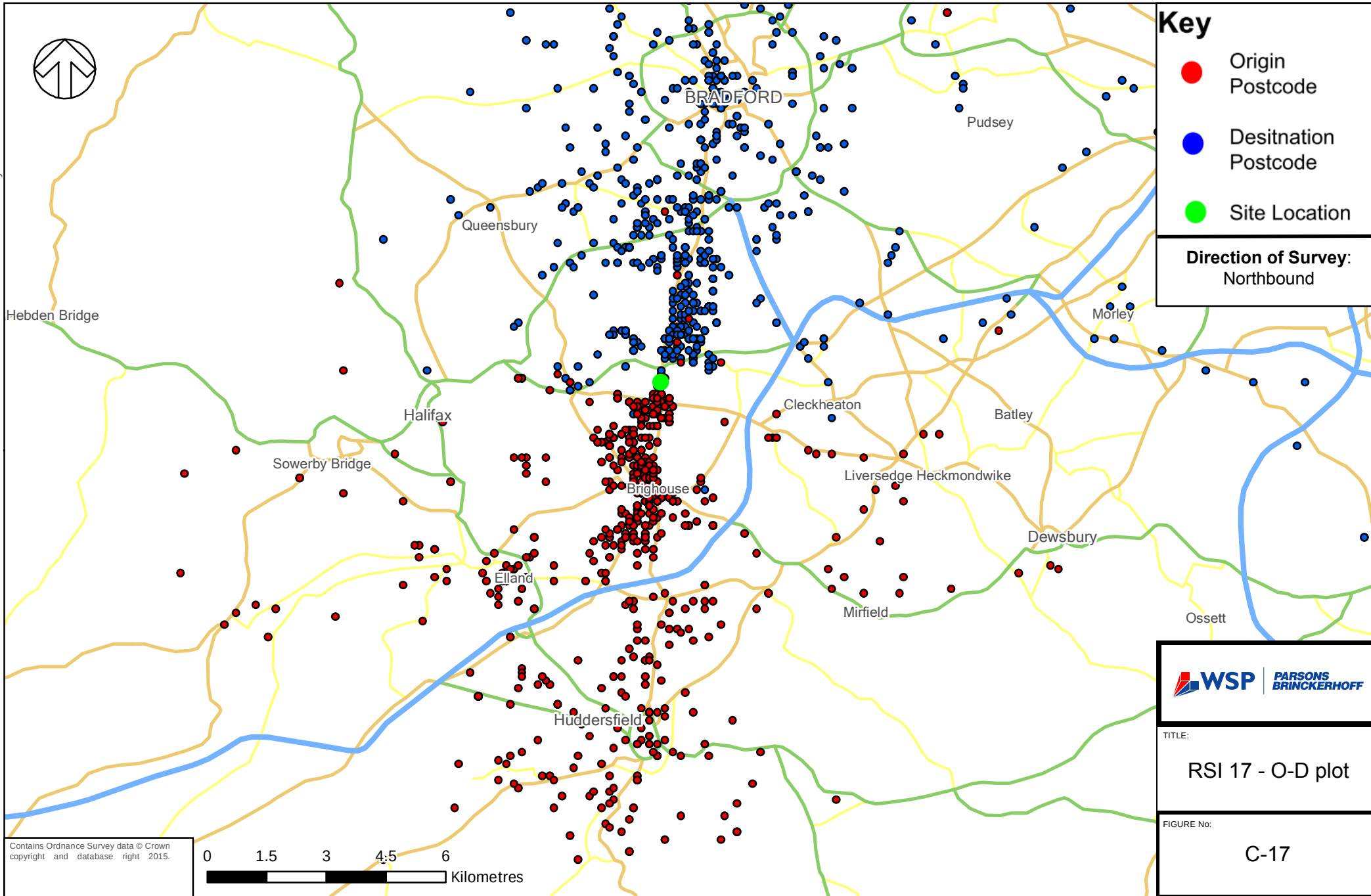
FIGURE No:

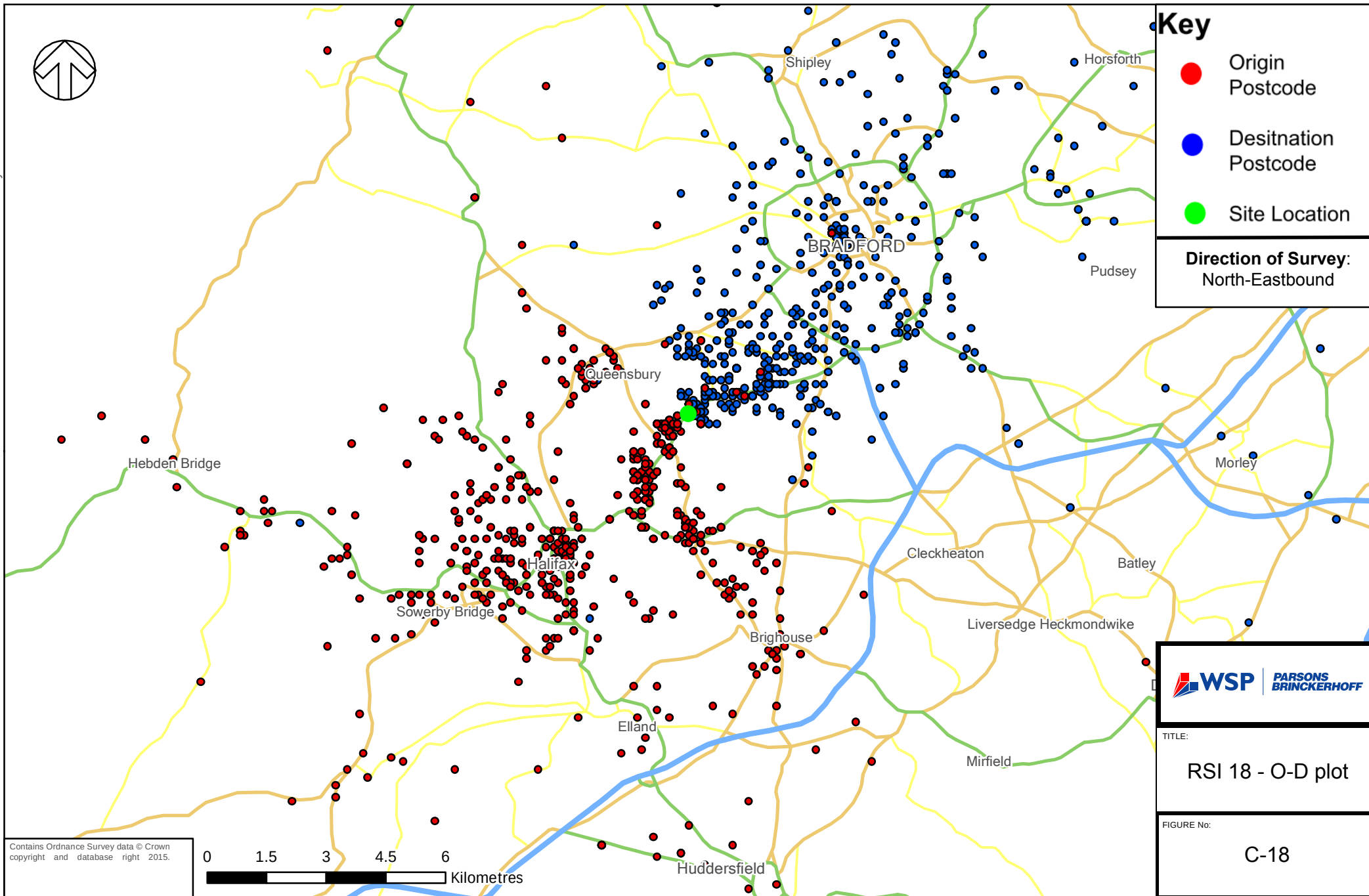
C-16

Date Modified:

Drawn By:

File:



**Key**

- Origin Postcode
- Destination Postcode
- Site Location

Direction of Survey:
North-Eastbound



TITLE:

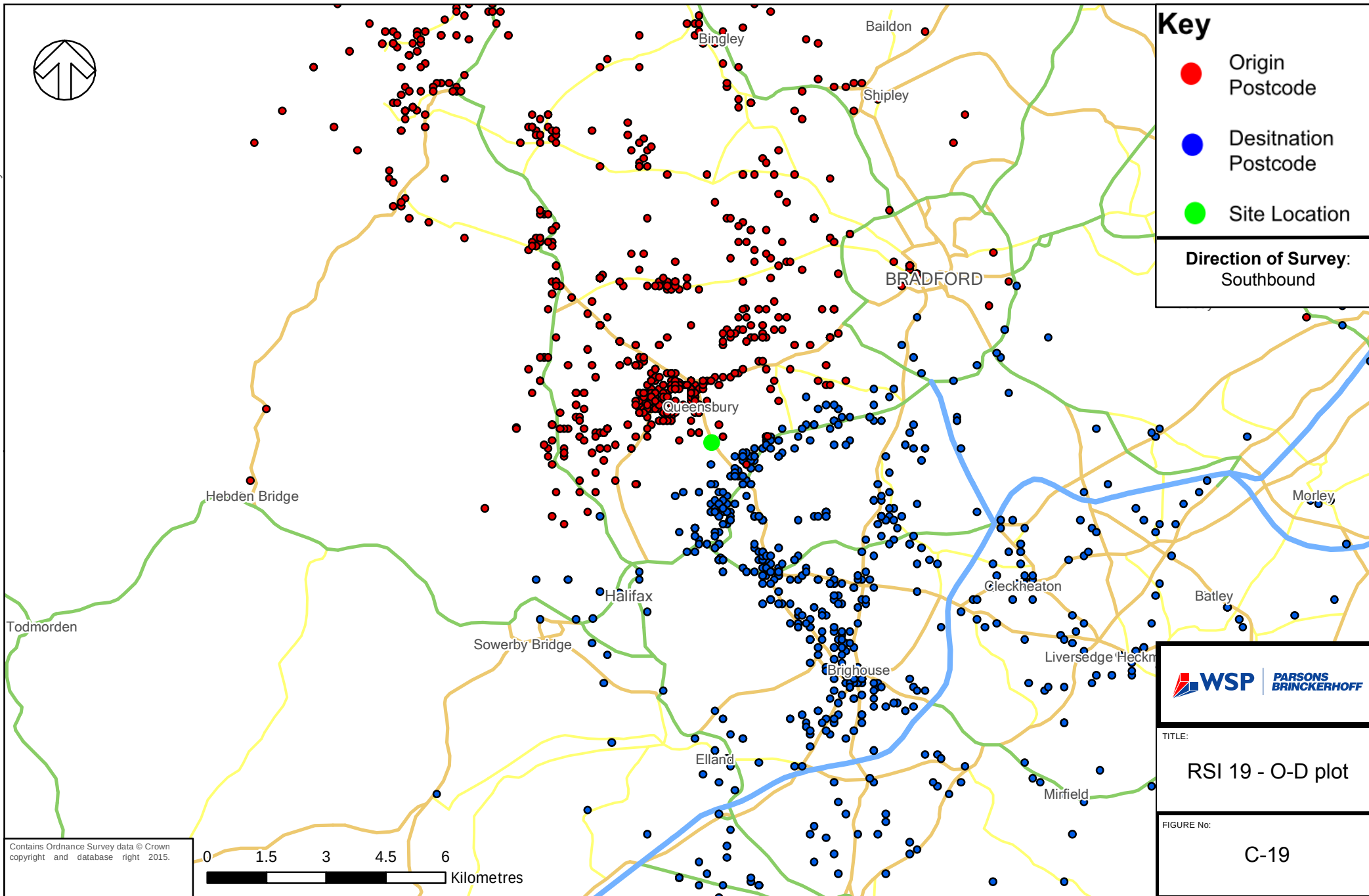
RSI 18 - O-D plot

FIGURE No:

C-18

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0 1.5 3 4.5 6
Kilometres



TITLE:

RSI 19 - O-D plot

FIGURE No:

C-19

Appendix D

CMBC TEMPORARY ATC SITES

Table D.1 - CMBC Temporary ATC Sites

REF	SITE ID	DESCRIPTION	DIRECTION	CLASSIFICATION	DATE RANGE
1	000000130404	A58 Kings Cross Road, Halifax	Northbound	Volumetric	12-6-2013 to 20-6-2013
1	000000130404	A58 Kings Cross Road, Halifax	Southbound	Volumetric	12-6-2013 to 20-6-2013
2	000000130407	A58 Calder Bridge, Sowerby Bridge	Northbound	Volumetric	20-6-2013 to 01-7-2013
2	000000130407	A58 Calder Bridge, Sowerby Bridge	Southbound	Volumetric	20-6-2013 to 01-7-2013
3	000000130411	A58 Rochdale Road, Halifax	Westbound	Volumetric	20-6-2013 to 01-7-2013
3	000000130411	A58 Rochdale Road, Halifax	Eastbound	Volumetric	20-6-2013 to 01-7-2013
4	000000140113	A58 West of Hipperholme	Westbound	Volumetric	10-7-2013 to 26-7-2013
4	000000140113	A58 West of Hipperholme	Eastbound	Volumetric	10-7-2013 to 26-7-2013
8	000000140321	A6025 Park Road, East of Elland	Westbound	Volumetric	05-7-2013 to 15-7-2013
8	000000140321	A6025 Park Road, East of Elland	Eastbound	Volumetric	05-7-2013 to 15-7-2013
9	000000130458	A6026 Wakefield Road	Eastbound	Volumetric	19-6-2013 to 01-7-2015
9	000000130458	A6026 Wakefield Road	Westbound	Volumetric	19-6-2013 to 01-7-2015
10	000000130408	A6026 Wakefield Road, east of Sowerby Bridge	Westbound	Volumetric	20-6-2013 to 01-7-2013
10	000000130408	A6026 Wakefield Road, east of Sowerby Bridge	Eastbound	Volumetric	20-6-2013 to 01-7-2013
11	000000120402	A6033 South of Todmorden	Northbound	Volumetric	22-7-2013 to 30-7-2013
11	000000120402	A6033 South of Todmorden	Southbound	Volumetric	22-7-2013 to 30-7-2013
12	000022013046	A6033 Keighley Road Pecket Well	Northbound	Volumetric	07-2-2013 to 18-2-2013
12	000022013046	A6033 Keighley Road Pecket Well	Southbound	Volumetric	07-2-2013 to 18-2-2013
14	000000140112	A6036 North of Northowram	Northbound	Volumetric	07-2-2013 to 18-2-2013
14	000000140112	A6036 North of Northowram	Southbound	Volumetric	07-2-2013 to 18-2-2013

REF	SITE ID	DESCRIPTION	DIRECTION	CLASSIFICATION	DATE RANGE
16	000000130459	A6139 Tuel Lane	Northbound	Volumetric	20-6-2013 to 01-7-2013
16	000000130459	A6139 Tuel Lane	Southbound	Volumetric	20-6-2013 to 01-7-2013
17	000000070401	A629 Halifax Causeway Foot	Northbound	Volumetric	11-4-2013 to 22-4-2013
17	000000070401	A629 Halifax Causeway Foot	Southbound	Volumetric	11-4-2013 to 22-4-2013
21	000000140318	A641, Huddersfield Rd, Brighouse	Northbound	Volumetric	08-7-2013 to 16-7-2013
21	000000140318	A641, Huddersfield Rd, Brighouse	Southbound	Volumetric	08-7-2013 to 16-7-2013
23	000000140327	A641 North of Brighouse	Northbound	Volumetric	05-7-2013 to 23-7-2013
23	000000140327	A641 North of Brighouse	Southbound	Volumetric	05-7-2013 to 23-7-2013
24	000000140313	A643 North of Anchor Bridge	Northbound	Volumetric	08-7-2013 to 16-7-2013
24	000000140313	A643 North of Anchor Bridge	Southbound	Volumetric	08-7-2013 to 16-7-2013
26	000000140415	A643 Cleckheaton Road, NE of Brighouse	Northbound	Volumetric	05-7-2013 to 15-7-2013
26	000000140415	A643 Cleckheaton Road, NE of Brighouse	Southbound	Volumetric	05-7-2013 to 15-7-2013
28	000000140107	A644 North of Hipperholme	Northbound	Volumetric	10-7-2013 to 18-7-2013
28	000000140107	A644 North of Hipperholme	Southbound	Volumetric	10-7-2013 to 18-7-2013
29	000000140314	A644 Commercial St Bypass, Brighouse	Eastbound	Volumetric	02-7-2014 to 11-7-2014
29	000000140314	A644 Commercial St Bypass, Brighouse	Westbound	Volumetric	02-7-2014 to 11-7-2014
30	000000140326	A644 North of Brighouse	Northbound	Volumetric	05-7-2013 to 15-7-2013
30	000000140326	A644 North of Brighouse	Southbound	Volumetric	05-7-2013 to 15-7-2013
31	000000140402	A644 Wakefield Road West of Mirfield	Eastbound	Volumetric	17-7-2013 to 30-7-2013
31	000000140402	A644 Wakefield Road West of Mirfield	Westbound	Volumetric	17-7-2013 to 30-7-2013

REF	SITE ID	DESCRIPTION	DIRECTION	CLASSIFICATION	DATE RANGE
33	000000120101	A646 West of Todmorden	Northbound	Volumetric	06-8-2013 to 15-8-2013
33	000000120101	A644 West of Todmorden	Southbound	Volumetric	06-8-2013 to 15-8-2013
36	000000130409	Skircoat Moor Road	Northbound	Volumetric	12-6-2013 to 20-6-2013
36	000000130409	Skircoat Moor Road	Southbound	Volumetric	12-6-2013 to 20-6-2013
37	000000130410	A646 Burnley Road, Halifax	Eastbound	Volumetric	12-6-2013 to 20-6-2013
37	000000130410	A646 Burnley Road, Halifax	Westbound	Volumetric	12-6-2013 to 20-6-2013
39	000022013051	A646 Halifax Road	Eastbound	Volumetric	01-2-2013 to 07-2-2013
39	000022013051	A646 Halifax Road	Westbound	Volumetric	01-2-2013 to 07-2-2013
40	000022013052	A646 Halifax Road	Eastbound	Volumetric	01-2-2013 to 07-2-2013
40	000022013052	A646 Halifax Road	Westbound	Volumetric	01-2-2013 to 07-2-2013
41	000022013463	A646 Burnley Road	Eastbound	Volumetric	13-11-2013 to 22-11-2013
41	000022013463	A646 Burnley Road	Westbound	Volumetric	13-11-2013 to 22-11-2013
43	000000130209	A647 Halifax Road (south west of Queensbury)	Northbound	Volumetric	27-6-2013 to 05-7-2013
43	000000130209	A647 Halifax Road (south west of Queensbury)	Southbound	Volumetric	27-6-2013 to 05-7-2013
46	000000140108	A649 Lightcliffe	Eastbound	Volumetric	15-7-2013 to 23-7-2013
46	000000140108	A649 Lightcliffe	Westbound	Volumetric	15-7-2013 to 23-7-2013
48	000000180201	A672 SW of Ripponden	Eastbound	Volumetric	26-7-2013 to 05-8-2013
48	000000180201	A672 SW of Ripponden	Westbound	Volumetric	26-7-2013 to 05-8-2013
54	000022013472	B6112 Stainland Road	Eastbound	Volumetric	05-11-2013 to 13-11-2013

REF	SITE ID	DESCRIPTION	DIRECTION	CLASSIFICATION	DATE RANGE
54	000022013472	B6112 Stainland Road	Westbound	Volumetric	05-11-2013 to 13-11-2013
56	000022013470	B6112 Stainland Road Stainland (col no 123)	Northbound	Volumetric	05-11-2013 to 13-11-2013
56	000022013470	B6112 Stainland Road Stainland (col no 123)	Southbound	Volumetric	05-11-2013 to 13-11-2013
58	000000190211	B6114 Ringstone Edge Moor	Northbound	Volumetric	29-7-2013 to 06-8-2013
58	000000190211	B6114 Ringstone Edge Moor	Southbound	Volumetric	29-7-2013 to 06-8-2013
62	000000070402	Bradshaw Lane	Northbound	Volumetric	12-3-2013 to 21-3-2013
62	000000070402	Bradshaw Lane	Southbound	Volumetric	12-3-2013 to 21-3-2013
63	000000120103	Long Causeway	Eastbound	Volumetric	22-7-2013 to 30-7-2013
63	000000120103	Long Causeway	Westbound	Volumetric	22-7-2013 to 30-7-2013
64	000000130202	Gibbet Street, Halifax	Eastbound	Volumetric	02-6-2014 to 17-6-2014
64	000000130202	Gibbet Street, Halifax	Westbound	Volumetric	02-6-2014 to 17-6-2014
65	000000130204	Slip onto Burdock Way	Northbound	Volumetric	03-6-2013 to 12-6-2013
66	000000130208	Windy Bank Lane	Eastbound	Volumetric	05-7-2013 to 15-7-2013
66	000000130208	Windy Bank Lane	Westbound	Volumetric	05-7-2013 to 15-7-2013
67	000000130231	Lee Bridge, Halifax	Eastbound	Volumetric	17-6-2014 to 25-6-2014
67	000000130231	Lee Bridge, Halifax	Westbound	Volumetric	17-6-2014 to 25-6-2014
68	000000130412	Hopwood Lane, Halifax	Eastbound	Volumetric	02-6-2014 to 25-6-2014
68	000000130412	Hopwood Lane, Halifax	Westbound	Volumetric	02-6-2014 to 25-6-2014
70	000000130423	Swires Road	Eastbound	Volumetric	03-6-2013 to 12-6-2013

REF	SITE ID	DESCRIPTION	DIRECTION	CLASSIFICATION	DATE RANGE
70	000000130423	Swires Road	Westbound	Volumetric	03-6-2013 to 12-6-2013
72	000000130460	Haugh Shaw Road	Eastbound	Volumetric	02-6-2014 to 17-6-2014
72	000000130460	Haugh Shaw Road	Westbound	Volumetric	02-6-2014 to 17-6-2014
74	000000140320	Church Lane, Southowram	Northbound	Volumetric	05-7-2013 to 15-7-2013
74	000000140320	Church Lane, Southowram	Southbound	Volumetric	05-7-2013 to 15-7-2013
76	000000130101	B6138 Cragg Vale, South of Mytholmroyd	Northbound	Volumetric	06-8-2014 to 15-8-2014
76	000000130101	B6138 Cragg Vale, South of Mytholmroyd	Southbound	Volumetric	06-8-2014 to 15-8-2014
77	000022014270	Mixenden Road Mixenden	Northbound	Volumetric	20-5-2014 to 23-5-2014
77	000022014270	Mixenden Road Mixenden	Southbound	Volumetric	20-5-2014 to 23-5-2014
78	000000130422	Parkinson Lane, Halifax	Eastbound	Volumetric	02-6-2014 to 17-6-2014
78	000000130422	Parkinson Lane, Halifax	Westbound	Volumetric	02-6-2014 to 17-6-2014
80	000022013128	Stanley Road	Northbound	Volumetric	17-4-2013 to 25-4-2013
80	000022013128	Stanley Road	Southbound	Volumetric	17-4-2013 to 25-4-2013
82	000022014402	B6113 Rochdale Road	Eastbound	Volumetric	06-8-2014 to 14-8-2014
82	000022014402	B6113 Rochdale Road	Westbound	Volumetric	06-8-2014 to 14-8-2014
83	000000130405	Elland Bypass, South of Halifax	Northbound	Volumetric	20-6-2013 to 05-7-2013
83	000000130405	Elland Bypass, South of Halifax	Southbound	Volumetric	20-6-2013 to 05-7-2013
86	000022014269	Crag Lane Mixenden	Northbound	Volumetric	12-5-2014 to 20-5-2014
86	000022014269	Crag Lane Mixenden	Southbound	Volumetric	12-5-2014 to 20-5-2014
87	000022014405	A641 Bradford Road	Northbound	Volumetric	02-9-2014 to 10-9-2014

REF	SITE ID	DESCRIPTION	DIRECTION	CLASSIFICATION	DATE RANGE
87	000022014405	A641 Bradfrod Road	Southbound	Volumetric	02-9-2014 to 10-9-2014
96	000022013465	Midgley Road	Northbound	Volumetric	04-11-2013 to 13-11-2013
96	000022013465	Midgley Road	Southbound	Volumetric	04-11-2013 to 13-11-2013
97	000022013466	Hopwood Lane Halifax (w of Mile Cross Terrace)	Eastbound	Volumetric	04-11-2013 to 13-11-2013
98	000022013467	Hopwood Lane Halifax (w of Westholme road)	Eastbound	Volumetric	04-11-2013 to 13-11-2013
98	000022013467	Hopwood Lane Halifax (w of Westholme road)	Westbound	Volumetric	04-11-2013 to 13-11-2013
100	000022013469	High Street Stainland	Eastbound	Volumetric	04-11-2013 to 13-11-2013
100	000022013469	High Street Stainland	Westbound	Volumetric	04-11-2013 to 13-11-2013
101	000022013475	Broad Carr Lane Holywell Green	Eastbound	Volumetric	05-11-2013 to 13-11-2013
101	000022013475	Broad Carr Lane Holywell Green	Westbound	Volumetric	05-11-2013 to 13-11-2013
104	000022013478	Albert Road	Eastbound	Volumetric	25-11-2013 to 03-12-2013
104	000022013478	Albert Road	Westbound	Volumetric	25-11-2013 to 03-12-2013
107	000022013481	Gibbet Street	Eastbound	Volumetric	25-11-2013 to 03-12-2013
107	000022013481	Gibbet Street	Westbound	Volumetric	25-11-2013 to 03-12-2013
108	000022013482	Highroad Well Lane	Eastbound	Volumetric	25-11-2013 to 03-12-2013
108	000022013482	Highroad Well Lane	Westbound		

REF	SITE ID	DESCRIPTION	DIRECTION	CLASSIFICATION	DATE RANGE
				Volumetric	25-11-2013 to 03-12-2013
110	000022013484	Pellon New Road Pellon	Eastbound	Volumetric	28-11-2013 to 06-12-2013
110	000022013484	Pellon New Road Pellon	Westbound	Volumetric	28-11-2013 to 06-12-2013
111	000022013485	Roils Head Road	Eastbound	Volumetric	25-11-2013 to 03-12-2013
111	000022013485	Roils Head Road	Westbound	Volumetric	25-11-2013 to 03-12-2013
116	000022013490	Claremount Road Boothtown (o/s 174)	Northbound	Volumetric	07-11-2013 to 15-11-2013
116	000022013490	Claremount Road Boothtown (o/s 174)	Southbound	Volumetric	07-11-2013 to 15-11-2013
122	000022013493	Hullenedge Road	Eastbound	Volumetric	25-11-2013 to 03-12-2013
122	000022013493	Hullenedge Road	Westbound	Volumetric	25-11-2013 to 03-12-2013
123	000022013497	Jepson Lane Elland	Northbound	Volumetric	13-11-2013 to 22-11-2013
123	000022013497	Jepson Lane Elland	Southbound	Volumetric	13-11-2013 to 22-11-2013
124	000022013498	Elland Lane	Eastbound	Volumetric	14-11-2013 to 22-11-2013
124	000022013498	Elland Lane	Westbound	Volumetric	14-11-2013 to 22-11-2013
125	000022013499	Lower Edge Road Elland	Eastbound	Volumetric	14-11-2013 to 22-11-2013
125	000022013499	Lower Edge Road Elland	Westbound	Volumetric	14-11-2013 to 22-11-2013
126	000000130207	A58 New Bank	Eastbound	Volumetric	01-6-2014 to 30-6-2014

REF	SITE ID	DESCRIPTION	DIRECTION	CLASSIFICATION	DATE RANGE
126	000000130207	A58 New Bank	Westbound	Volumetric	01-6-2014 to 30-6-2014
127	000000130421	A58 Kings Cross Road	Eastbound	Volumetric	01-6-2014 to 30-6-2014
127	000000130421	A58 Kings Cross Road	Westbound	Volumetric	01-6-2014 to 30-6-2014
128	000022014025	A58 Rochdale Road	Eastbound	Volumetric	08-01-2014 to 16-01-2014
128	000022014025	A58 Rochdale Road	Westbound	Volumetric	08-01-2014 to 16-01-2014
130	000000130403	A629 Skircoat Road	Northbound	Volumetric	01-6-2014 to 30-6-2014
130	000000130403	A629 Skircoat Road	Southbound	Volumetric	01-6-2014 to 30-6-2014
131	000022014026	A646 Market Street	Eastbound	Volumetric	08-01-2014 to 16-01-2014
131	000022014026	A646 Market Street	Westbound	Volumetric	08-01-2014 to 16-01-2014
132	000022014167	A646 Burnley Road Luddendenfoot	Eastbound	Volumetric	01-3-2014 to 10-3-2014
132	000022014167	A646 Burnley Road Luddendenfoot	Westbound	Volumetric	01-3-2014 to 10-3-2014
135	000022014023	B6113 Elland Road	Northbound	Volumetric	08-01-2014 to 16-01-2014
135	000022014023	B6113 Elland Road	Southbound	Volumetric	08-01-2014 to 16-01-2014
136	000022014024	B6114 Saddleworth Road	Northbound	Volumetric	08-01-2014 to 16-01-2014
136	000022014024	B6114 Saddleworth Road	Southbound	Volumetric	08-01-2014 to 16-01-2014
137	000000130203	Pellon Lane	Eastbound	Volumetric	01-6-2014 to 30-6-2014
137	000000130203	Pellon Lane	Westbound	Volumetric	01-6-2014 to 30-6-2014
138	000000130401	Siddal New Road	Northbound	Volumetric	01-6-2014 to 30-6-2014
138	000000130401	Siddal New Road	Southbound	Volumetric	01-6-2014 to 30-6-2014

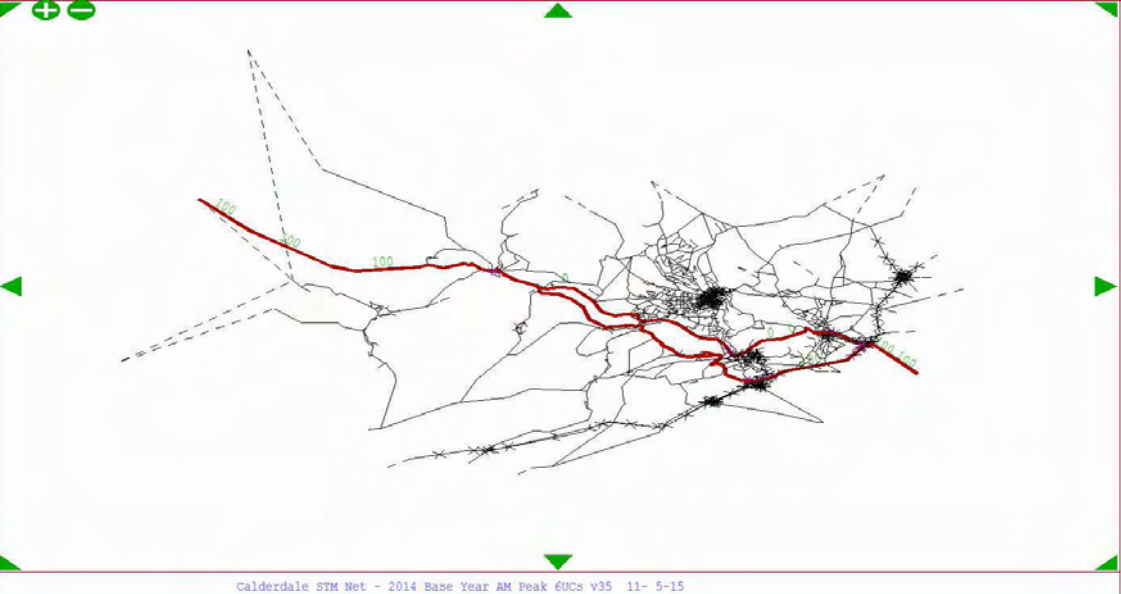
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139	000000130402	Shay Syke	Northbound	Volumetric	01-6-2014 to 30-6-2014
139	000000130402	Shay Syke	Southbound	Volumetric	01-6-2014 to 30-6-2014
142	000022014165	Coal Pit Lane Clifton	Eastbound	Volumetric	28-2-2014 to 10-3-2014
142	000022014165	Coal Pit Lane Clifton	Westbound	Volumetric	28-2-2014 to 10-3-2014
144	000022014399	A58 Whitehall Road	Eastbound	Volumetric	14-8-2014 to 22-8-2014
144	000022014399	A58 Whitehall Road	Westbound	Volumetric	14-8-2014 to 22-8-2014

Appendix E

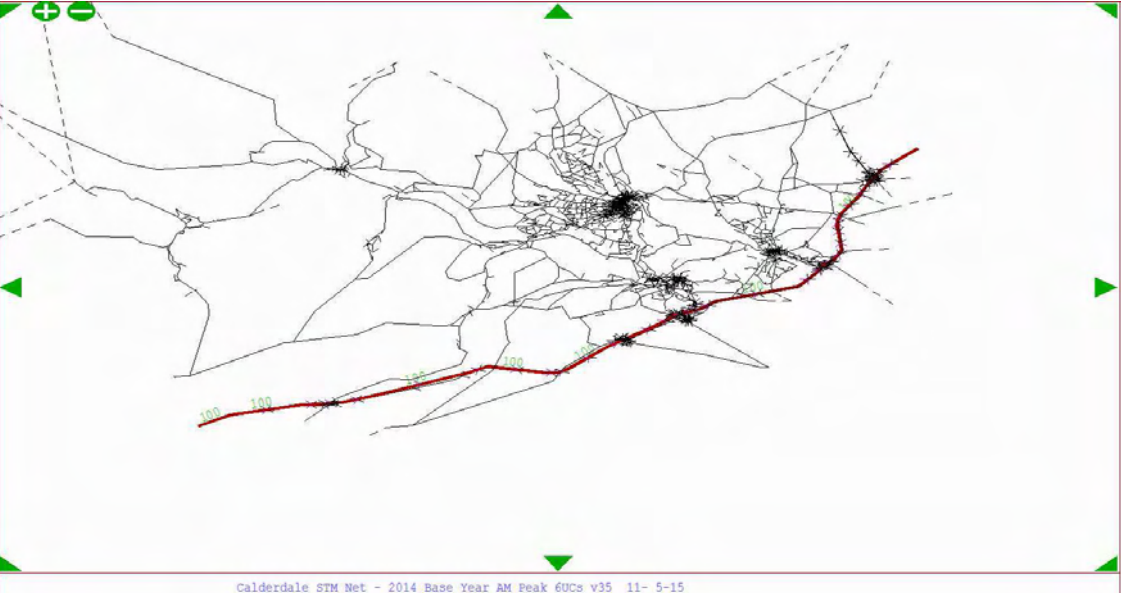
ROUTING VALIDATION - ORIGIN DESTINATION TREES

Project Name: OD Tree Plots - AM Peak

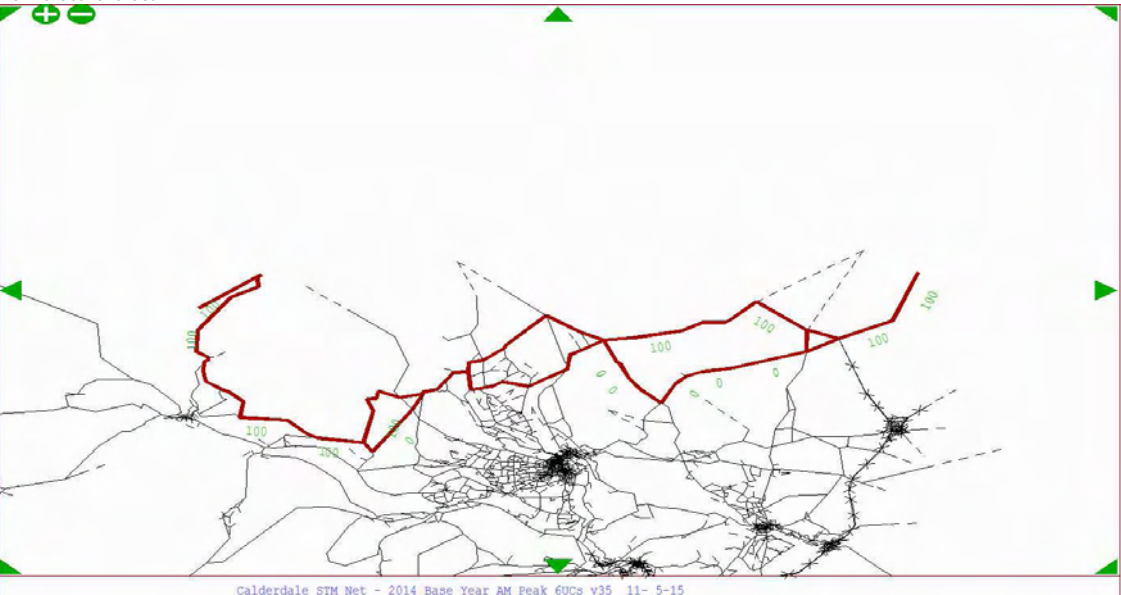
From Zone 28 To Zone 820



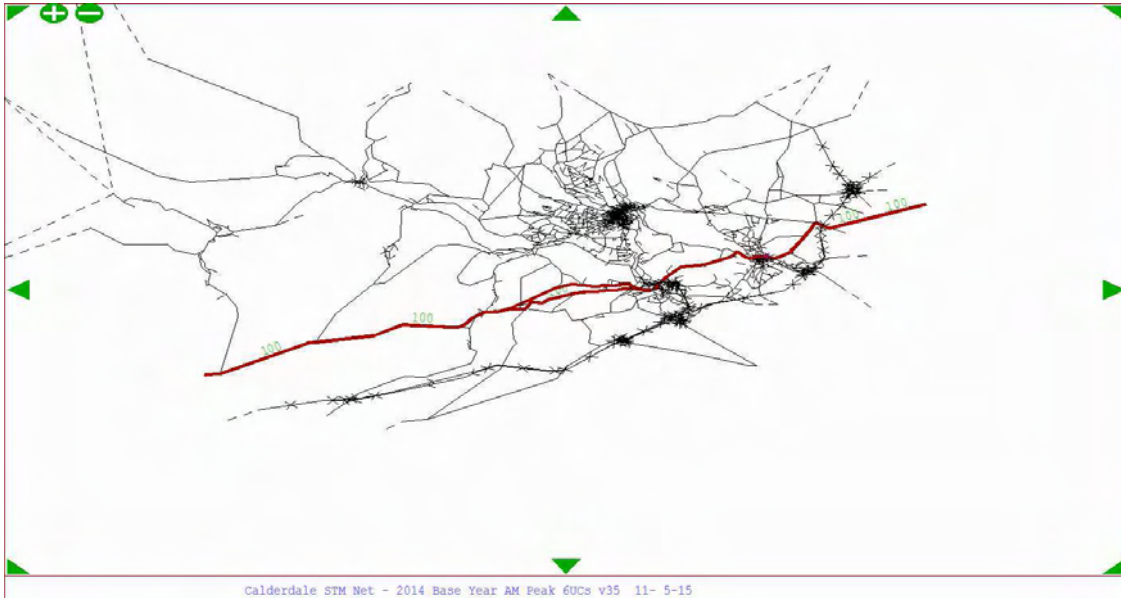
From Zone 813 To Zone 827



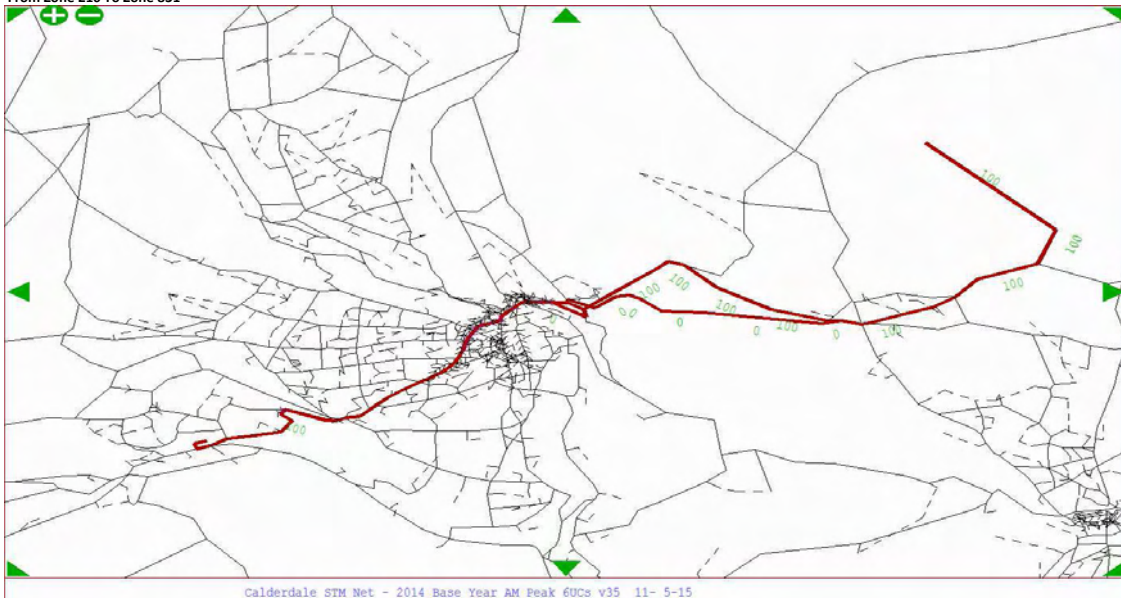
From Zone 36 To Zone 804



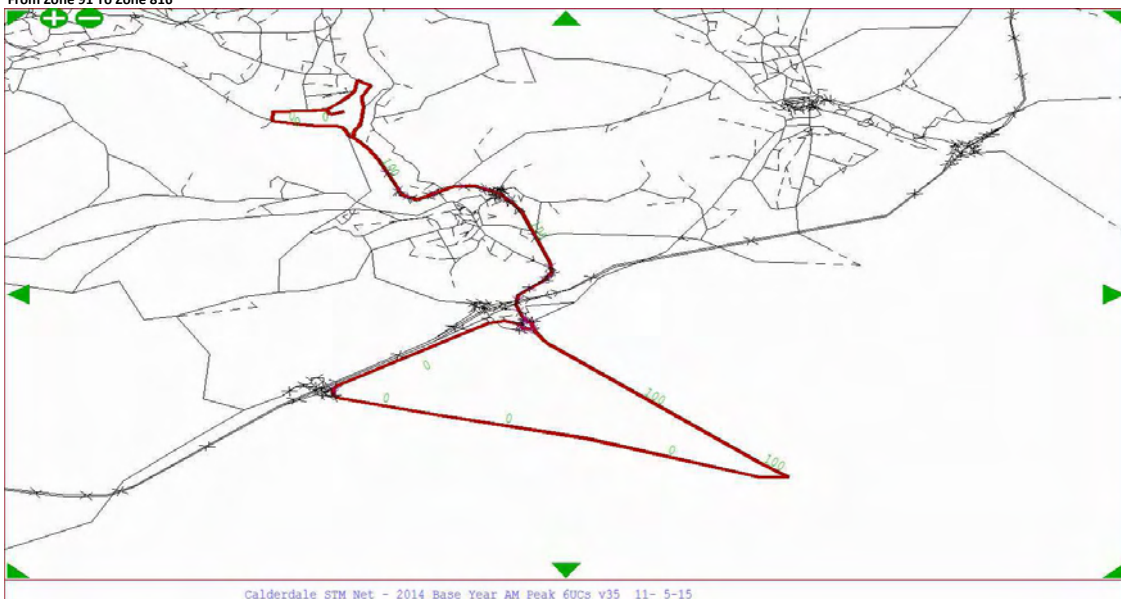
From Zone 810 To Zone 823



From Zone 216 To Zone 831

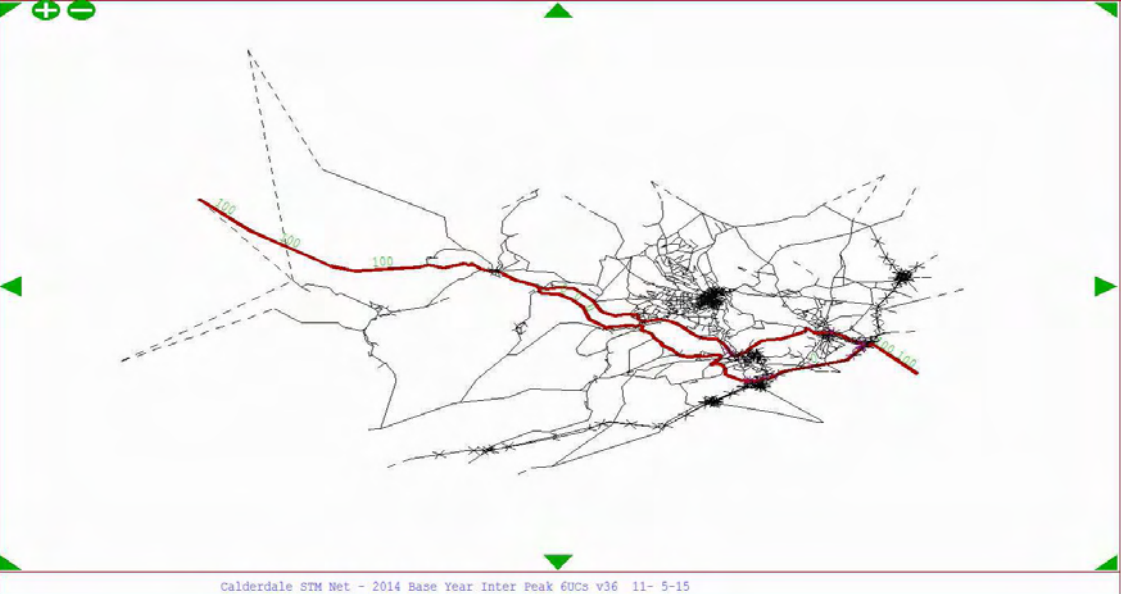


From Zone 91 To Zone 816

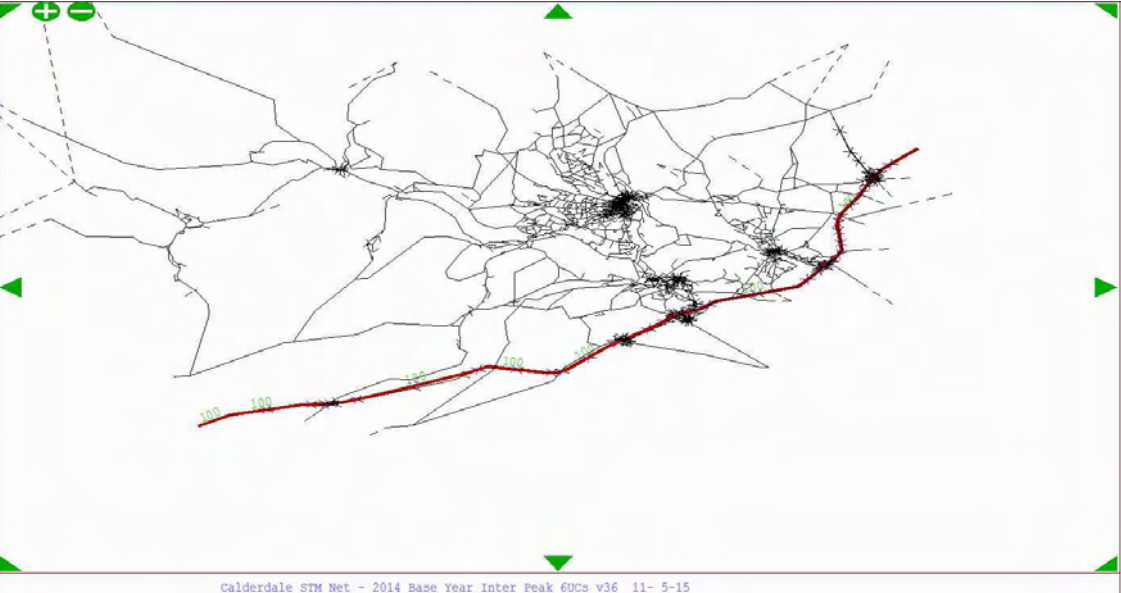


Project Name: OD Tree Plots - Interpeak

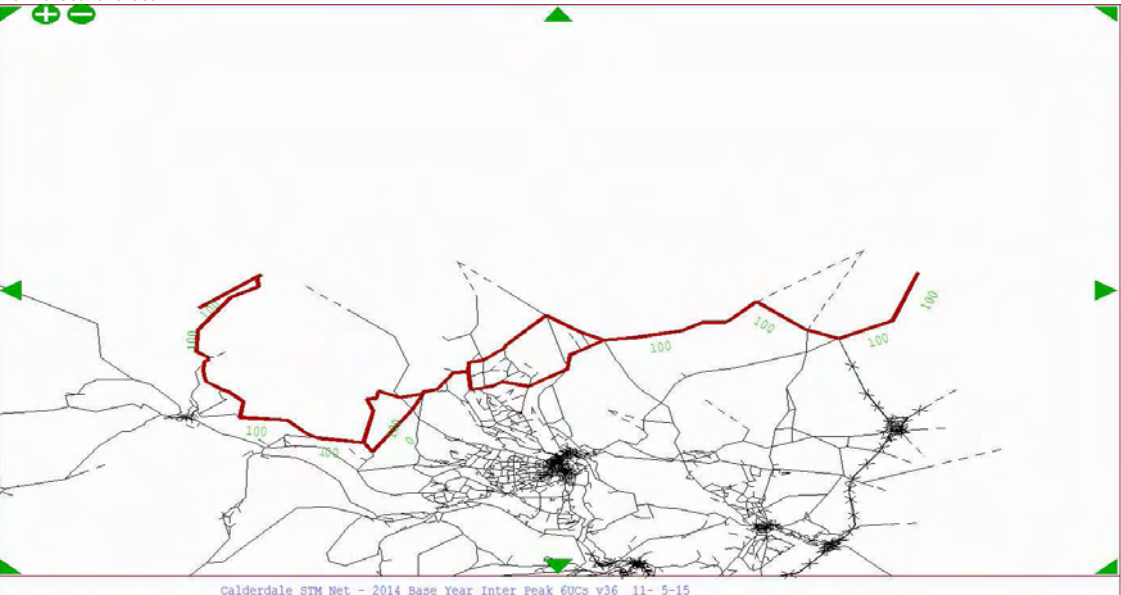
From Zone 28 To Zone 820



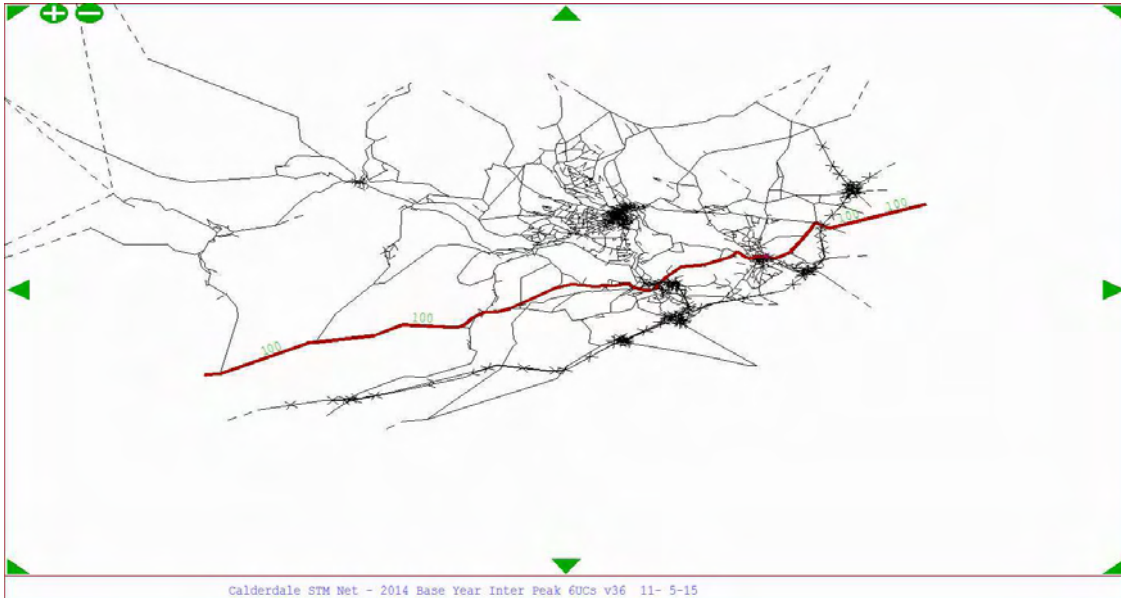
From Zone 813 To Zone 827



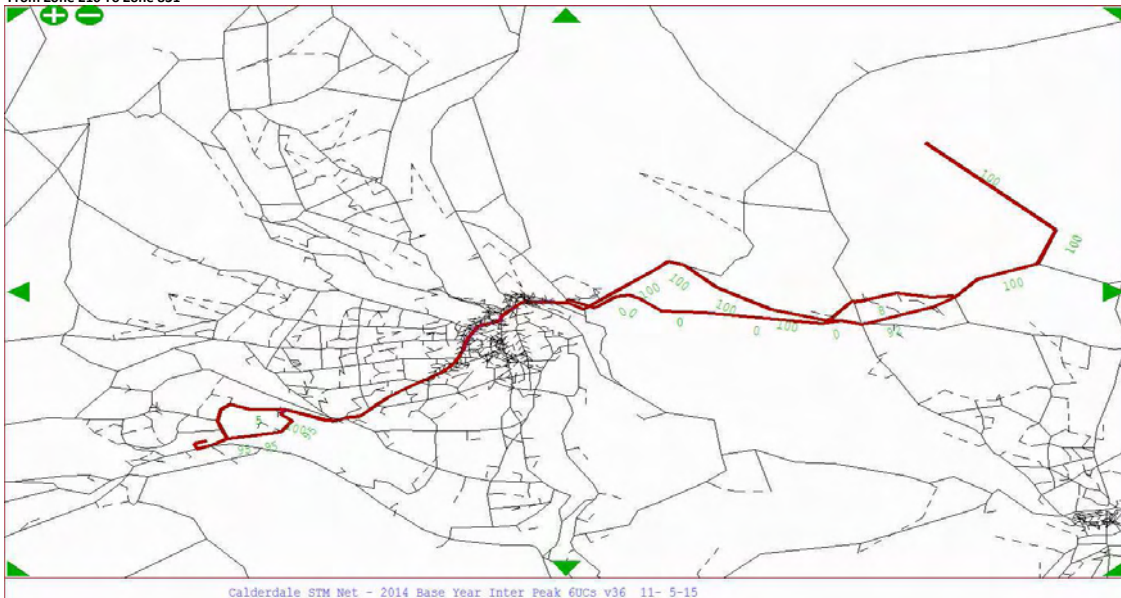
From Zone 36 To Zone 804



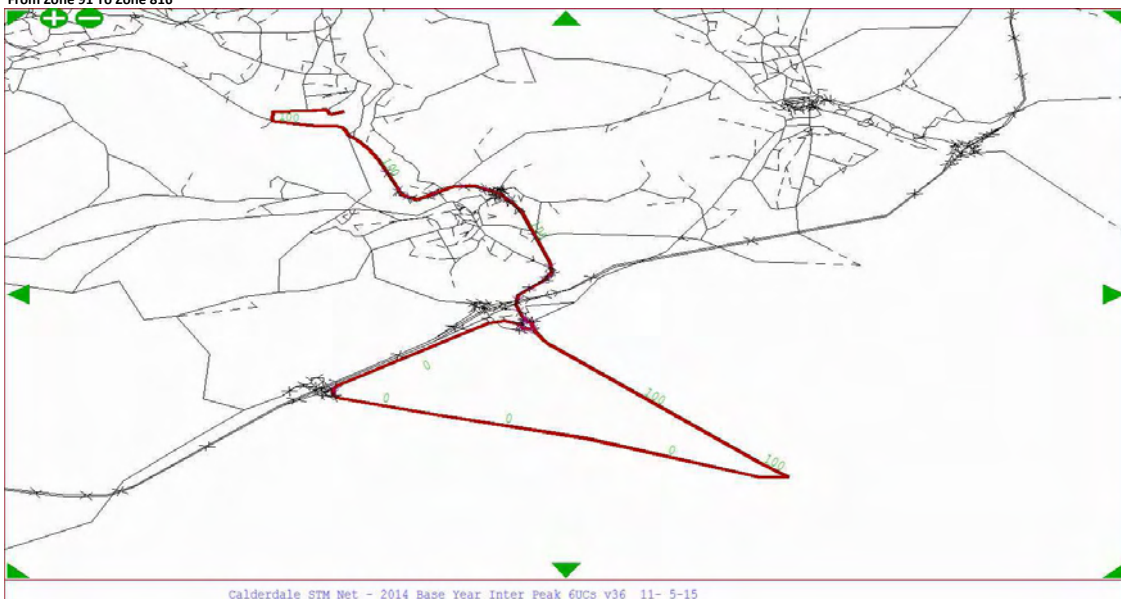
From Zone 810 To Zone 823



From Zone 216 To Zone 831

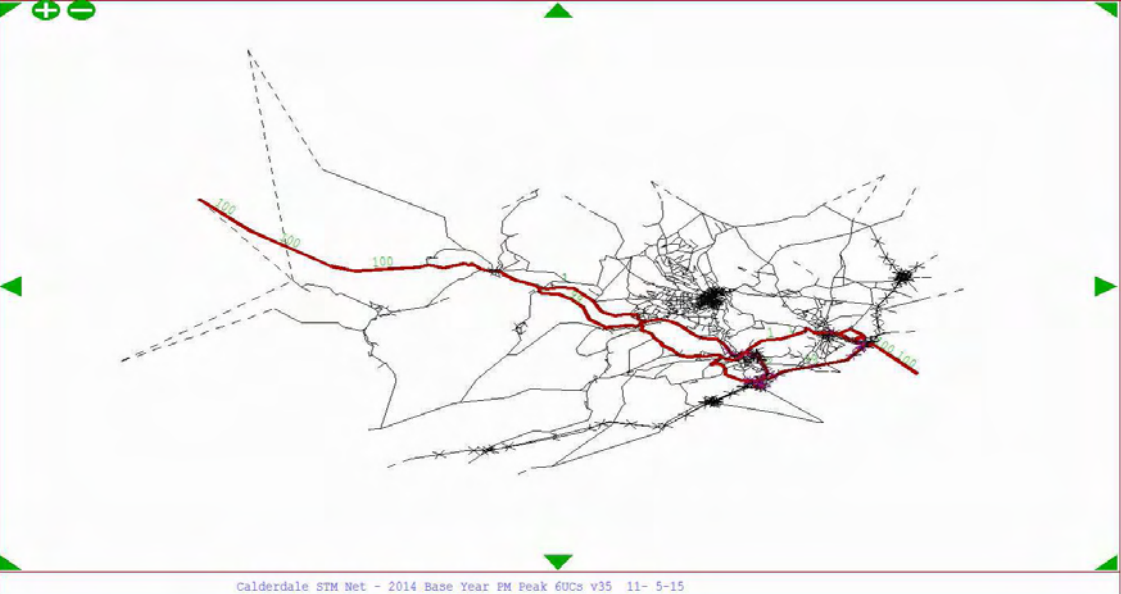


From Zone 91 To Zone 816

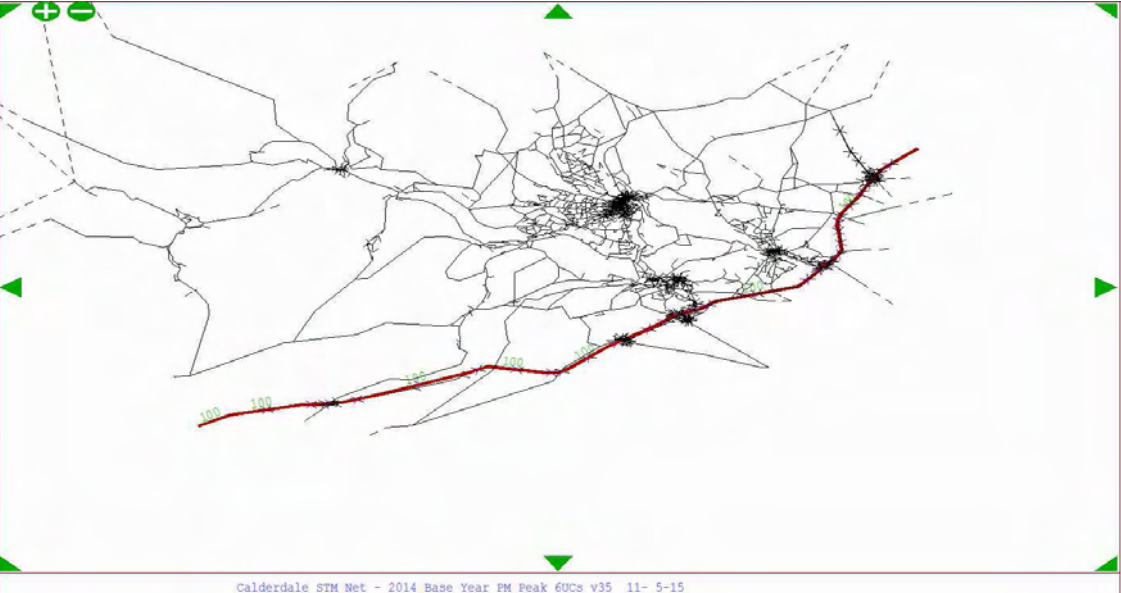


Project Name: OD Tree Plots - PM Peak

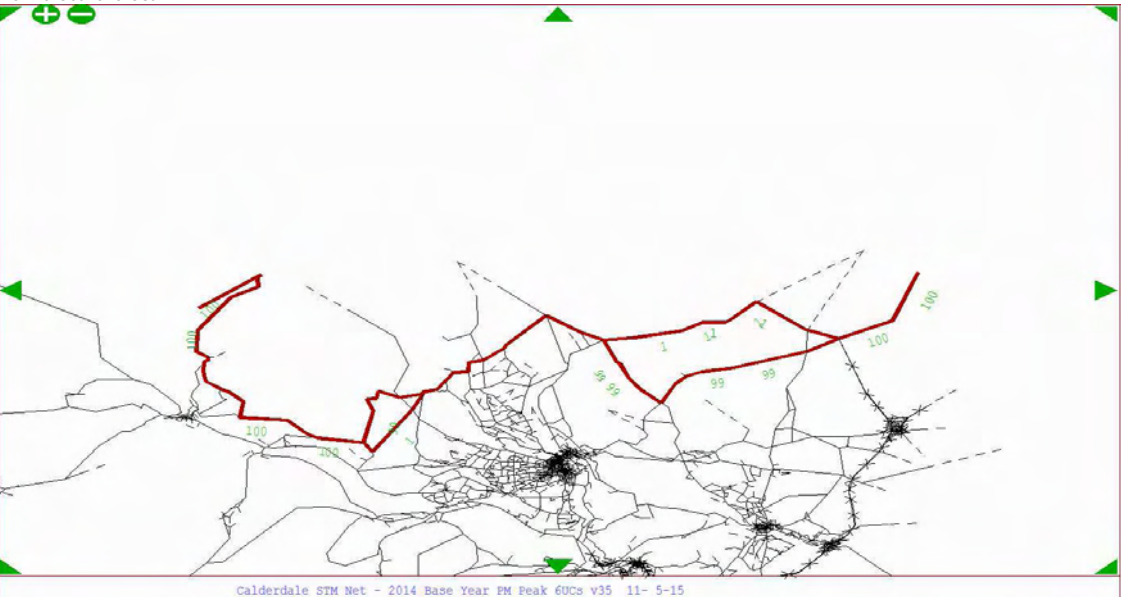
From Zone 28 To Zone 820



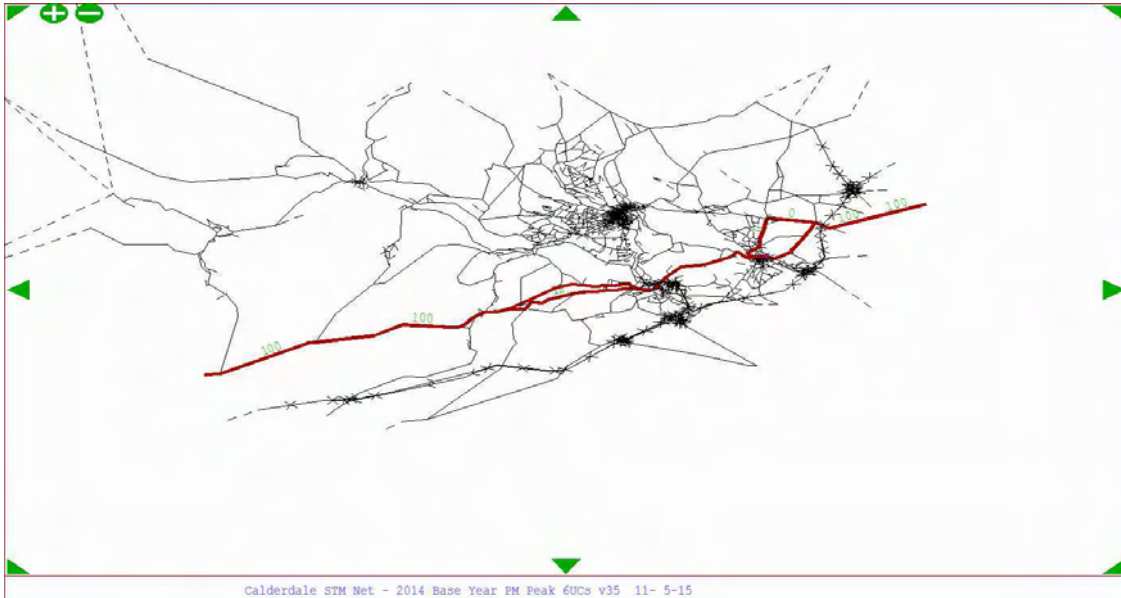
From Zone 813 To Zone 827



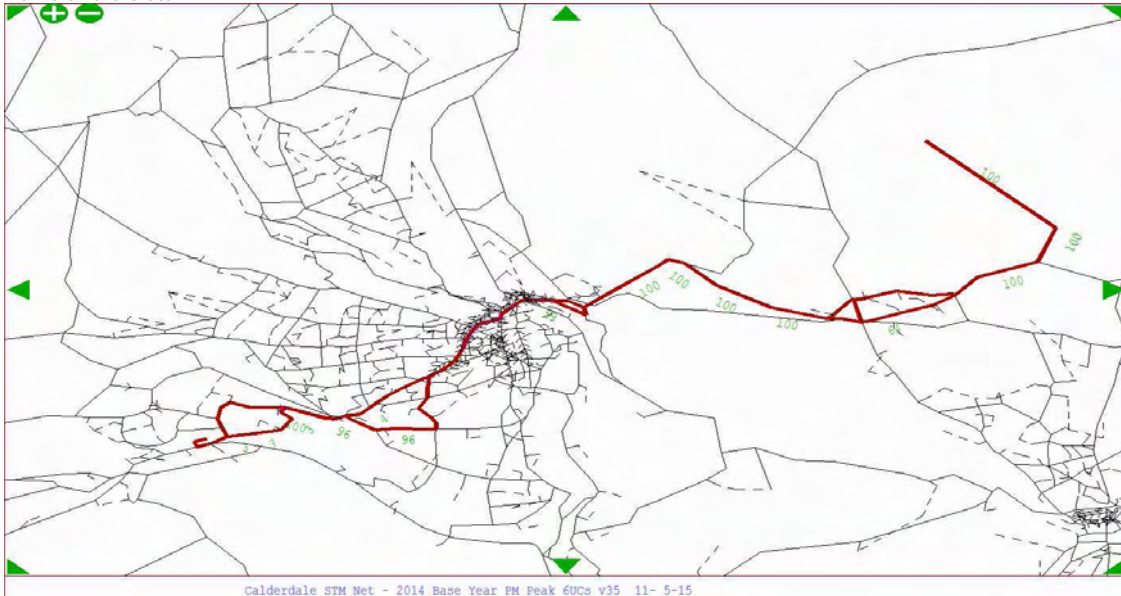
From Zone 36 To Zone 804



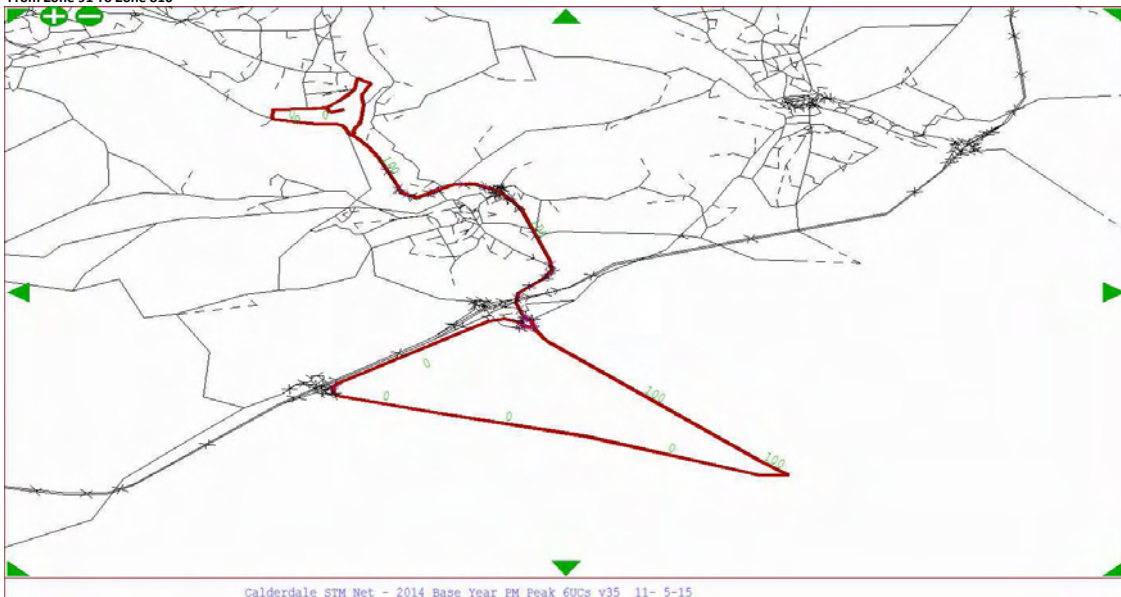
From Zone 810 To Zone 823



From Zone 216 To Zone 831



From Zone 91 To Zone 816



Appendix F

CALIBRATION / VALIDATION RESULTS

Calderdale v36 Link Flows

AM

ID	Calibration / Validation	Area	ID	Site Location	Dir	Date	Data Type	Duplicate?	Ref	A-Node	B-Node	AM Peak	Interpe ak	Type	AM Peak				
															ALL VEHICLES				
															Observed	Modelled	GEH	GEH Pass?	Flow Pass?
3	Calibration		157	Crowtress Lane	NB	12/07/2013	MCC	No	3176-3175	3176	3175	Yes	Yes	1-way	365	401	1.818	Yes	Yes
4	Calibration		157	Crowtrees Lane	SB	12/07/2013	MCC	No	3175-3176	3175	3176	Yes	Yes	1-way	338	349	0.608	Yes	Yes
29	Calibration		163	Huddersfield Road	NB	02/04/2014 - 16/04/2014	ATC	No	1485-2380	1485	2380	Yes	Yes	1-way	674	740	2.466	Yes	Yes
30	Calibration		163	Huddersfield Road	SB	02/04/2014 - 16/04/2014	ATC	No	2380-1485	2380	1485	Yes	Yes	1-way	477	657	7.559	No	No
31	Calibration		164	Freeschool Lane	EB	02/04/2014 - 16/04/2014	ATC	No	2631-1012	2631	1012	Yes	Yes	1-way	379	424	2.264	Yes	Yes
32	Calibration		164	Freeschool Lane	WB	02/04/2014 - 16/04/2014	ATC	No	1012-2631	1012	2631	Yes	Yes	1-way	243	283	2.457	Yes	Yes
33	Calibration		165	Skircoat Moor Road	EB	02/04/2014 - 16/04/2014	ATC	No	1390-1009	1390	1009	Yes	Yes	1-way	616	684	2.669	Yes	Yes
34	Calibration		165	Skircoat Moor Road	WB	02/04/2014 - 16/04/2014	ATC	No	1009-1390	1009	1390	Yes	Yes	1-way	349	323	1.408	Yes	Yes
35	Calibration		166	Skircoat Green Road	NB	02/04/2014 - 16/04/2014	ATC	No	1481-1398	1481	1398	Yes	Yes	1-way	269	286	0.997	Yes	Yes
36	Calibration		166	Skircoat Green Road	SB	02/04/2014 - 16/04/2014	ATC	No	1398-1481	1398	1481	Yes	Yes	1-way	209	238	1.920	Yes	Yes
37	Calibration		167	A6026 Wakefield Road	EB	02/04/2014 - 16/04/2014	ATC	No	2266-1002	2266	1002	Yes	Yes	1-way	527	586	2.494	Yes	Yes
38	Calibration		167	A6026 Wakefield Road	WB	02/04/2014 - 16/04/2014	ATC	No	1002-2266	1002	2266	Yes	Yes	1-way	537	405	6.090	No	No
39	Validation		168	A629 Huddersfield Road	NB	03/04/2014 - 16/04/2014	ATC	No	1462-1467	1462	1467	Yes	Yes	1-way	1584	1384	5.200	No	Yes
40	Validation		168	A629 Huddersfield Road	SB	03/04/2014 - 16/04/2014	ATC	No	1467-1462	1467	1462	Yes	Yes	1-way	1385	1490	2.780	Yes	Yes
43	Validation		169	A629 Skircoat road/Heath Road Junction	NB	08/04/2014	MCC	No	2772-1013	2772	1013	Yes	Yes	1-way	637	776	5.240	No	No
44	Validation		169	A629 Skircoat Road/Heath Road Junction	SB	08/04/2014	MCC	No	1013-2772	1013	2772	Yes	Yes	1-way	489	587	4.237	Yes	Yes
45	Validation		169	A629 Skircoat Road/Heath Road Junction	NEB	08/04/2014	MCC	No	1407-1013	1407	1013	Yes	Yes	1-way	266	226	2.572	Yes	Yes
46	Validation		169	A629 Skircoat Road/Heath Road Junction	SWB	08/04/2014	MCC	No	1013-1407	1013	1407	Yes	Yes	1-way	153	234	5.841	No	Yes
47	Calibration		170	A629 Skircoat Road/Free School Lane Junction	SB	08/04/2014	MCC	No	2381-1014	2381	1014	Yes	Yes	1-way	500	504	0.179	Yes	Yes
48	Calibration		170	A629 Skircoat Road/Free School Lane Junction	NB	08/04/2014	MCC	No	1014-2381	1014	2381	Yes	Yes	1-way	641	750	4.130	Yes	No
49	Calibration		170	A629 Skircoat Road/Free School Lane Junction	WB	08/04/2014	MCC	No	1485-1014	1485	1014	Yes	Yes	1-way	206	161	3.324	Yes	Yes
50	Calibration		170	A629 Skircoat Road/Free School Lane Junction	EB	08/04/2014	MCC	No	1014-1485	1014	1485	Yes	Yes	1-way	228	199	1.997	Yes	Yes
53	Calibration		170	A629 Skircoat Road/Free School Lane Junction	EB	08/04/2014	MCC	No	1616-1014	1616	1014	Yes	Yes	1-way	325	192	8.250	No	No
54	Calibration		170	A629 Skircoat Road/Free School Lane Junction	WB	08/04/2014	MCC	No	1014-1616	1014	1616	Yes	Yes	1-way	237	157	5.724	No	Yes
55	Calibration		171	A629 Skircoat Road/Huddersfield Road Junction	SB	08/04/2014	MCC	No	1014-1484	1014	1484	Yes	Yes	1-way	588	498	3.884	Yes	Yes
56	Calibration		171	A629 Skircoat Road/Huddersfield Road Junction	NB	08/04/2014	MCC	No	1484-1014	1484	1014	Yes	Yes	1-way	663	746	3.113	Yes	Yes
57	Calibration		171	A629 Skircoat Road/Huddersfield Road Junction	SWB	08/04/2014	MCC	No	1485-1484	1485	1484	Yes	Yes	1-way	314	496	9.045	No	No
58	Calibration		171	A629 Skircoat Road/Huddersfield Road Junction	NEB	08/04/2014	MCC	No	1484-1485	1484	1485	Yes	Yes	1-way	475	541	2.916	Yes	Yes
67	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	SB	08/04/2014	MCC	No	1400-2388	1400	2388	Yes	Yes	1-way	893	916	0.767	Yes	Yes
68	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	NB	08/04/2014	MCC	No	2388-1400	2388	1400	Yes	Yes	1-way	1057	1087	0.911	Yes	Yes
69	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	WB	08/04/2014	MCC	No	2608-2388	2608	2388	Yes	Yes	1-way	71	102	3.321	Yes	Yes
70	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	EB	08/04/2014	MCC	No	2388-2608	2388	2608	Yes	Yes	1-way	41	19	3.921	Yes	Yes
71	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	NB	08/04/2014	MCC	No	1199-2388	1199	2388	Yes	Yes	1-way	1031	1062	0.963	Yes	Yes
72	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	SB	08/04/2014	MCC	No	2388-1199	2388	1199	Yes	Yes	1-way	897	974	2.504	Yes	Yes
79	Calibration		175	A629 Huddersfield Road/A646 Dry Clough Lane	NB	08/04/2014	MCC	No	2389-1008	2389	1008	Yes	Yes	1-way	1310	1330	0.552	Yes	Yes
80	Calibration		175	A629 Huddersfield Road/A646 Dry Clough Lane	SB	08/04/2014	MCC	No	1008-2389	1008	2389	Yes	Yes	1-way	1189	1224	1.021	Yes	Yes
81	Calibration		175	A629 Huddersfield Road/A646 Dry Clough Lane	EB	08/04/2014	MCC	No	2387-1008	2387	1008	Yes	Yes	1-way	454	448	0.283	Yes	Yes
82	Calibration		175	A629 Huddersfield Road/A646 Dry Clough Lane	WB	08/04/2014	MCC	No	1008-2387	1008	2387	Yes	Yes	1-way	364	465	4.941	Yes	No
83	Validation		176	A629 Huddersfield Road/Dudwell Lane	SB	08/04/2014	MCC	No	2390-1483	2390	1483	Yes	Yes	1-way	1225	1224	0.015	Yes	Yes
84	Validation		176	A629 Huddersfield Road/Dudwell Lane	NB	08/04/2014	MCC	No	1483-2390	1483	2390	Yes	Yes	1-way	1342	1330	0.327	Yes	Yes
85	Validation		176	A629 Huddersfield Road/Dudwell Lane	SB	08/04/2014	MCC	No	2391-1483	2391	1483	Yes	Yes	1-way	1502	1409	2.432	Yes	Yes
86	Validation		176	A629 Huddersfield Road/Dudwell Lane	NB	08/04/2014	MCC	No	1483-2391	1483	2391	Yes	Yes	1-way	1301	1244	1.611	Yes	Yes
87	Calibration		176	A629 Huddersfield Road/Dudwell Lane	EB	08/04/2014	MCC	No	1477-1483	1477	1483	Yes	Yes	1-way	195	184	0.805	Yes	Yes
88	Calibration		176	A629 Huddersfield Road/Dudwell Lane	WB	08/04/2014	MCC	No	1483-1477	1483	1477	Yes	Yes	1-way	279	243	2.200	Yes	Yes
95	Validation		178	A646 Dry Clough Lane/Skircoat Green Road	SB	08/04/2014	MCC	No	1391-1009	1391	1009	Yes	Yes	1-way	253	397	7.979	No	No
96	Validation		178	A646 Dry Clough Lane/Skircoat Green Road	NB	08/04/2014	MCC	No	1009-1391	1009	1391	Yes	Yes	1-way	283	424	7.514	No	No
97	Validation		178	A646 Dry Clough Lane/Skircoat Green Road	WB	08/04/2014	MCC	No	2385-1009	2385	1009	Yes	Yes	1-way	285	238	2.916	Yes	Yes
98	Validation		178	A646 Dry Clough Lane/Skircoat Green Road	EB	08/04/2014	MCC	No	1009-2385	1009	2385	Yes	Yes	1-way	494	419	3.514	Yes	Yes
99	Calibration		178	A646 Dry Clough Lane/Skircoat Green Road	NB	08/04/2014	MCC	No	1396-1009	1396	1009	Yes	Yes	1-way	391	371	1.039	Yes	Yes
100	Calibration		178	A646 Dry Clough Lane/Skircoat Green Road	SB	08/04/2014	MCC	No	1009-1396	1009	1396	Yes	Yes	1-way	421	523	4.697	Yes	No
115	Calibration		182	Heath Road/Free School Lane	SB	08/04/2014	MCC	No	2382-1012	2382	1012	Yes	Yes	1-way	175	234	4.144	Yes	Yes
116	Calibration		182	Heath Road/Free School Lane	NB	08/04/2014	MCC	No	1012-2382	1012	2382	Yes	Yes	1-way	271	226	2.876	Yes	Yes
117	Calibration		182	Heath Road/Free School Lane	WB	08/04/2014	MCC	No	1616-1012	1616	1012	Yes	Yes	1-way	242	157	6.042	No	Yes
118	Calibration		182	Heath Road/Free School Lane	EB	08/04/2014	MCC	No	1012-1616	1012	1616	Yes	Yes	1-way	320	192	7.978	No	No
119	Calibration		182	Heath Road/Free School Lane	NB	08/04/2014	MCC	No	1401-1012	1401	1012	Yes	Yes	1-way	274	219	3.471	Yes	Yes
120	Calibration		182	Heath Road/Free School Lane	SB	08/04/2014	MCC	No	1012-1401	1012	1401	Yes	Yes	1-way	267	334	3.855	Yes	Yes
134	Validation		215	Slip onto M62	NB	Jun-14	TRADS	No	3427-3423	3427	3423	Yes	Yes	1-way	1088	1096	0.243	Yes	Yes
135	Calibration	M62	216	M62 at Junction 25	NB	Jun-14	TRADS	No	3413-3421	3413	3421	Yes	Yes	1-way	3705	3830	2.041	Yes	Yes
136	Calibration	M62	217	M62 at Junction 25	SB	Jun-14	TRADS	No	3422-3414	3422	3414	Yes	Yes	1-way	3168	3093	1.345	Yes	Yes
137	Calibration	M62	220	M62 approaching Clough Lane	NB	Jun-14	TRADS	No	3406-3408	3406	3408	Yes	Yes	1-way	3902	4189	4.512	Yes	Yes
138	Calibration	M62	221	M62 after Clough Lane	SB	Jun-14	TRADS	No	3409-3407	3409	3407	Yes	Yes	1-way	3431	3356	1.293	Yes	Yes
143	Validation		227	Slip onto M62 at J23	SB	Jun-14	TRADS	No	3877-3537	3877	3537	Yes	Yes	1-way	307	268	2.301	Yes	Yes
144	Validation		228	Slip off M62 at J23	NB	Jun-14	TRADS	No	3536-3858	3536	3858	Yes	Yes	1-way	310	249	3.628	Yes	Yes
145	Calibration	M62	229	M62 Next to Laund Road	SB	Jun-14	TRADS	No	3398-3412	3398	3412	Yes	Yes	1-way	2820	2754	1.258	Yes	Yes

Calderdale v36 Link Flows

AM

ID	Calibration / Validation	Area	ID	Site Location	Dir	Date	Data Type	Duplicate?	Ref	A-Node	B-Node	AM Peak	Interpeak	Type	AM Peak ALL VEHICLES				
															Observed	Modelled	GEH	GEH Pass?	Flow Pass?
146	Calibration	M62	230	M62 Next to Laund Road	NB	Jun-14	TRADES	No	3411-3397	3411	3397	Yes	Yes	1-way	3215	3169	0.820	Yes	Yes
149	Calibration		235	Elland Riorges Link	WB	12/06/2014	ANPR	No	3333-3332	3333	3332	Yes	Yes	1-way	400	431	1.508	Yes	Yes
150	Calibration		235	Elland Riorges Link	EB	12/06/2014	ANPR	No	3332-3333	3332	3333	Yes	Yes	1-way	335	395	3.124	Yes	Yes
151	Calibration		233	A629 Calderdale Way	NB	12/06/2014	ANPR	No	3343-3344	3343	3344	Yes	Yes	1-way	546	607	2.559	Yes	Yes
152	Calibration		233	A629 Calderdale Way	SB	12/06/2014	ANPR	No	3260-3286	3260	3286	Yes	Yes	1-way	86	73	1.490	Yes	Yes
153	Calibration		231	Elland Riorges Link	EB	12/06/2014	ANPR	No	3254-3255	3254	3255	Yes	Yes	1-way	478	385	4.499	Yes	Yes
154	Calibration		231	Elland Riorges Link	WB	12/06/2014	ANPR	No	3256-3254	3256	3254	Yes	Yes	1-way	914	817	3.290	Yes	Yes
155	Calibration		232	A629 Calderdale Way	SB	12/06/2014	ANPR	No	3265-3266	3265	3266	Yes	Yes	1-way	464	453	0.525	Yes	Yes
156	Calibration		232	A629 Calderdale Way	NB	12/06/2014	ANPR	No	3257-3264	3257	3264	Yes	Yes	1-way	122	208	6.708	No	Yes
157	Calibration		234	Lowfields Way	SWB	12/06/2014	ANPR	No	3923-3331	3923	3331	Yes	Yes	1-way	109	112	0.312	Yes	Yes
158	Calibration		234	Lowfields Way	NEB	12/06/2014	ANPR	No	3331-3923	3331	3923	Yes	Yes	1-way	540	494	2.025	Yes	Yes
159	Validation		236	Bradford Old Road	NB	Jun-14	ATC	No	1443-1442	1443	1442	Yes	Yes	1-way	37	49	1.898	Yes	Yes
160	Validation		236	Bradford Old Road	SB	Jun-14	ATC	No	1442-1443	1442	1443	Yes	Yes	1-way	76	75	0.171	Yes	Yes
163	Calibration		238	B6114 Dewsbury Road	EB	Jun-14	ATC	No	3187-4104	3187	4104	Yes	Yes	1-way	411	426	0.733	Yes	Yes
164	Calibration		238	B6114 Dewsbury Road	WB	Jun-14	ATC	No	4104-3187	4104	3187	Yes	Yes	1-way	459	532	3.290	Yes	Yes
165	Calibration		239	A6025 Park Road	NB	Jun-14	ATC	No	3358-3245	3358	3245	Yes	Yes	1-way	578	658	3.200	Yes	Yes
166	Calibration		239	A6025 Park Road	SB	Jun-14	ATC	No	3245-3358	3245	3358	Yes	Yes	1-way	503	433	3.219	Yes	Yes
167	Validation		240	A646 Skircoat Moor Road	EB	Jun-14	ATC	No	1389-1062	1389	1062	Yes	Yes	1-way	522	470	2.316	Yes	Yes
168	Validation		240	A646 Skircoat Moor Road	WB	Jun-14	ATC	No	1062-1389	1062	1389	Yes	Yes	1-way	317	196	7.543	No	No
169	Calibration		242	B6113 Saddleworth Road	EB	Jun-14	ATC	No	3517-3527	3517	3527	Yes	Yes	1-way	284	210	4.704	Yes	Yes
170	Calibration		242	B6113 Saddleworth Road	WB	Jun-14	ATC	No	3527-3517	3527	3517	Yes	Yes	1-way	183	179	0.307	Yes	Yes
171	Calibration		243	A629 Huddersfield Road	NB	Jun-14	ATC	No	3300-3296	3300	3296	Yes	Yes	1-way	1174	1286	3.204	Yes	Yes
173	Validation		245	Calderdale Way at bus stop	SB	Jun-14	ATC	No	3286-3292	3286	3292	Yes	Yes	1-way	749	792	1.546	Yes	Yes
174	Calibration	RSI Out	246	Site 16 - Whitehall Road	EB	11/06/2014	MCC/RSI	No	3473-3482	3473	3482	Yes	Yes	1-way	860	722	4.889	Yes	No
175	Calibration	RSI Out	247	Site 17 - Bradford Road	NB	11/06/2014	ATC/RSI	No	3944-3195	3944	3195	Yes	Yes	1-way	762	731	1.150	Yes	Yes
176	Calibration	RSI Out	248	Site 15 - Birkby Lane	EB	18/06/2014	MCC/RSI	No	3082-3073	3082	3073	Yes	Yes	1-way	337	346	0.503	Yes	Yes
177	Calibration	RSI Out	249	Site 14 - Walton Lane	NB	18/06/2014	MCC/RSI	No	3071-3072	3071	3072	Yes	Yes	1-way	323	415	4.811	Yes	Yes
178	Calibration	RSI Out	250	Site 12 - A641 Huddersfield Road	SB	10/06/2014	MCC/RSI	No	3125-3132	3125	3132	Yes	Yes	1-way	862	957	3.142	Yes	Yes
179	Calibration	RSI Out	251	Site 13 - A644 Wakefield Road	EB	18/06/2014	MCC/RSI	No	3095-3097	3095	3097	Yes	Yes	1-way	618	516	4.267	Yes	No
180	Calibration	RSI Out	252	Site 11 - Clough Lane (A6107)	EB	10/06/2014	MCC/RSI	No	3137-3135	3137	3135	Yes	Yes	1-way	883	848	1.178	Yes	Yes
181	Calibration	RSI In	253	Site 10 - New Hey Road	NEB	10/06/2014	MCC/RSI	No	3173-4291	3173	4291	Yes	Yes	1-way	557	579	0.919	Yes	Yes
182	Calibration	RSI In	254	Site 9 - New Road	SB	12/06/2014	ATC/RSI	No	3888-3886	3888	3886	Yes	Yes	1-way	131	99	2.959	Yes	Yes
183	Calibration	RSI In	255	Site 7 - Stainland Road	NB	12/06/2014	MCC/RSI	No	3495-1667	3495	1667	Yes	Yes	1-way	899	885	0.474	Yes	Yes
185	Calibration	RSI In	257	Site 1 - A58 Rochdale Road	EB	17/06/2014	MCC/RSI	No	4312-3985	4312	3985	Yes	Yes	1-way	430	412	0.871	Yes	Yes
186	Calibration	RSI In	258	Site 6 - Haley Hill	SEB	19/06/2014	MCC/RSI	No	1523-1522	1523	1522	Yes	Yes	1-way	796	785	0.401	Yes	Yes
187	Calibration	RSI In	259	Site 4 - Shropps Road	SB	17/06/2014	MCC/RSI	No	1127-1126	1127	1126	Yes	Yes	1-way	446	392	2.640	Yes	Yes
188	Calibration	RSI In	260	Site 5 - Ovenden Road	SB	19/06/2014	MCC/RSI	No	1039-2400	1039	2400	Yes	Yes	1-way	893	907	0.471	Yes	Yes
189	Calibration	RSI Out	261	Site 3 - Moor End Road	NWB	17/06/2014	ATC/RSI	No	2317-1251	2317	1251	Yes	Yes	1-way	137	139	0.181	Yes	Yes
190	Calibration	RSI In	262	Site 18 - Wade House Road	NEB	24/06/2014	ATC/RSI	No	3235-4404	3235	4404	Yes	Yes	1-way	938	755	6.295	No	No
191	Calibration	RSI In	263	Site 19 - A644 Brighouse & Denholme Gate Road	SB	24/06/2014	ATC/RSI	No	1238-1452	1238	1452	Yes	Yes	1-way	521	500	0.946	Yes	Yes
192	Calibration	RSI In	264	Site 2 - A646 Burnley Road	EB	17/06/2014	MCC/RSI	No	1094-1095	1094	1095	Yes	Yes	1-way	747	768	0.763	Yes	Yes
193	Calibration		1	A58 Kings Cross Road	NB	12-06-2013 to 20-06-2013	ATC	No	1584-1594	1584	1594	Yes	Yes	1-way	1014	966	1.518	Yes	Yes
194	Calibration		1	A58 Kings Cross Road	SB	12-06-2013 to 20-06-2013	ATC	No	1594-1584	1594	1584	Yes	Yes	1-way	1015	1013	0.062	Yes	Yes
195	Calibration		2	A58 Calder Bridge	NEB	20-06-2013 to 01-07-2013	ATC	No	1113-2275	1113	2275	Yes	Yes	1-way	825	753	2.570	Yes	Yes
196	Calibration		2	A58 Calder Bridge	SWB	20-06-2013 to 01-07-2013	ATC	No	2275-1113	2275	1113	Yes	Yes	1-way	758	750	0.292	Yes	Yes
197	Calibration		3	A58 Rochdale Road	EB	20-06-2013 to 01-07-2013	ATC	No	8099-1065	8099	1065	Yes	Yes	1-way	799	999	6.656	No	No
198	Calibration		3	A58 Rochdale Road	WB	20-06-2013 to 01-07-2013	ATC	No	1065-8099	1065	8099	Yes	Yes	1-way	445	604	6.942	No	No
199	Calibration		4	A58 West of Hipperholme	EB	10-07-2013 to 26-07-2013	ATC	No	1168-4238	1168	4238	Yes	Yes	1-way	619	493	5.331	No	No
200	Calibration		4	A58 West of Hipperholme	WB	10-07-2013 to 26-07-2013	ATC	No	4238-1168	4238	1168	Yes	Yes	1-way	562	554	0.354	Yes	Yes
206	Validation		8	A6025 Park Road	EB	05-07-2013 to 15-07-2013	ATC	No	3244-3243	3244	3243	Yes	Yes	1-way	599	645	1.863	Yes	Yes
207	Validation		8	A6025 Park Road	WB	05-07-2013 to 15-07-2013	ATC	No	3243-3244	3243	3244	Yes	Yes	1-way	500	414	4.015	Yes	Yes
208	Validation		9	A6026 Wakefield Road	EB	19-06-2013 to 01-07-2013	ATC	No	2272-1092	2272	1092	Yes	Yes	1-way	752	703	1.803	Yes	Yes
209	Validation		9	A6026 Wakefield Road	WB	19-06-2013 to 01-07-2013	ATC	No	1092-2272	1092	2272	Yes	Yes	1-way	418	344	3.797	Yes	Yes
210	Calibration		10	A6026 Wakefield Road	EB	20-06-2013 to 01-07-2013	ATC	No	1355-1354	1355	1354	Yes	Yes	1-way	508	444	2.923	Yes	Yes
211	Calibration		10	A6026 Wakefield Road	WB	20-06-2013 to 01-07-2013	ATC	No	1354-1355	1354	1355	Yes	Yes	1-way	328	237	5.391	No	Yes
212	Calibration		11	A6033 South of Todmorden	NB	22-07-2013 to 30-07-2013	ATC	No	4251-4927	4251	4927	Yes	Yes	1-way	225	209	1.085	Yes	Yes
213	Calibration		11	A6033 South of Todmorden	SB	22-07-2013 to 30-07-2013	ATC	No	4927-4251	4927	4251	Yes	Yes	1-way	310	243	4.050	Yes	Yes
214	Validation		12	A6033 Keighley Road Peckett Well	NB	07-02-2013 to 18-02-2013	ATC	No	3753-3754	3753	3754	Yes	Yes	1-way	115	115	0.005	Yes	Yes
215	Validation		12	A6033 Keighley Road Peckett Well	SB	07-02-2013 to 18-02-2013	ATC	No	3754-3753	3754	3753	Yes	Yes	1-way	141	120	1.836	Yes	Yes
218	Calibration		14	A6036 North of Northowram	NB	10-07-2013 to 18-07-2013	ATC	No	1167-1234	1167	1234	Yes	Yes	1-way	590	664	2.943	Yes	Yes
219	Calibration		14	A6036 North of Northowram	SB	10-07-2013 to 18-07-2013	ATC	No	1234-1167	1234	1167	Yes	Yes	1-way	446	536	4.065	Yes	Yes
222	Calibration		16	A6139 Tuel Lane	NB	20-06-2013 to 01-07-2013	ATC	No	1356-1112	1356	1112	Yes	Yes	1-way	353	445	4.618	Yes	Yes
223	Calibration		16	A6139 Tuel Lane	SB	20-06-2013 to 01-07-2013	ATC	No	1112-1356	1112	1356	Yes	Yes	1-way	388	394	0.326	Yes	Yes
224	Calibration		17	A629 Halifax Causeway Foot	NB	11-04-2013 to 22-04-2013	ATC	No	4016-1247	4016	1247	Yes	Yes	1-way	363	251	6.406	No	No

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AM

ID	Calibration / Validation	Area	ID	Site Location	Dir	Date	Data Type	Duplicate?	Ref	A-Node	B-Node	AM Peak	Interpeak	Type	AM Peak ALL VEHICLES				
															Observed	Modelled	GEH	GEH Pass?	Flow Pass?
225	Calibration		17	A629 Halifax Causeway Foot	SB	11-04-2013 to 22-04-2013	ATC	No	1247-4016	1247	4016	Yes	Yes	1-way	512	548	1.583	Yes	Yes
230	Calibration		21	A641 Huddersfield Road	NB	08-07-2013 to 16-07-2013	ATC	No	3930-3946	3930	3946	Yes	Yes	1-way	820	712	3.913	Yes	Yes
231	Calibration		21	A641 Huddersfield Road	SB	08-07-2013 to 16-07-2013	ATC	No	3946-3930	3946	3930	Yes	Yes	1-way	712	802	3.259	Yes	Yes
234	Calibration		23	A641 North of Birghouse	NB	05-07-2013 to 23-07-2013	ATC	No	3086-3085	3086	3085	Yes	Yes	1-way	735	650	3.249	Yes	Yes
235	Calibration		23	A641 North of Brighouse	SB	05-07-2013 to 23-07-2013	ATC	No	3085-3086	3085	3086	Yes	Yes	1-way	685	712	1.016	Yes	Yes
236	Validation		24	A643 North of Anchor Bridge	NB	08-07-2013 to 16-07-2013	ATC	No	3039-3921	3039	3921	Yes	Yes	1-way	838	1006	5.545	No	No
237	Validation		24	A643 North of Anchor Bridge	SB	08-07-2013 to 16-07-2013	ATC	No	3921-3039	3921	3039	Yes	Yes	1-way	585	792	7.882	No	No
240	Calibration		26	A643 Cleckheaton Road	NB	05-07-2013 to 15-07-2013	ATC	No	3068-3070	3068	3070	Yes	Yes	1-way	375	432	2.828	Yes	Yes
241	Calibration		26	A643 Cleckheaton Road	SB	05-07-2013 to 15-07-2013	ATC	No	3070-3068	3070	3068	Yes	Yes	1-way	332	344	0.649	Yes	Yes
244	Validation		28	A644 North of Hipperholme	NB	10-07-2013 to 18-07-2013	ATC	No	3229-3225	3229	3225	Yes	Yes	1-way	494	416	3.643	Yes	Yes
245	Validation		28	A644 North of Hipperholme	SB	10-07-2013 to 18-07-2013	ATC	No	3225-3229	3225	3229	Yes	Yes	1-way	576	467	4.759	Yes	No
246	Calibration		29	A644 Commercial Street	EB	02-07-2014 to 11-07-2014	ATC	No	3042-3942	3042	3942	Yes	Yes	1-way	1019	916	3.313	Yes	Yes
247	Calibration		29	A644 Commercial Street	WB	02-07-2014 to 11-07-2014	ATC	No	3942-3042	3942	3042	Yes	Yes	1-way	787	672	4.261	Yes	Yes
248	Calibration		30	A644 North of Brighouse	NB	05-07-2013 to 15-07-2013	ATC	No	3169-3205	3169	3205	Yes	Yes	1-way	396	471	3.600	Yes	Yes
249	Calibration		30	A644 North of Brighouse	SB	05-07-2013 to 15-07-2013	ATC	No	3205-3169	3205	3169	Yes	Yes	1-way	453	460	0.344	Yes	Yes
250	Calibration		31	A644 Wakefield Road	EB	17-07-2013 to 30-07-2013	ATC	No	4092-4093	4092	4093	Yes	Yes	1-way	784	802	0.627	Yes	Yes
251	Calibration		31	A644 Wakefield Road	WB	17-07-2013 to 30-07-2013	ATC	No	4093-4092	4093	4092	Yes	Yes	1-way	967	1022	1.760	Yes	Yes
254	Validation		33	A646 West of Todmorden	NB	06-08-2014 to 15-08-2014	ATC	No	3684-3687	3684	3687	Yes	Yes	1-way	237	211	1.750	Yes	Yes
255	Validation		33	A644 West of Todmorden	SB	06-08-2014 to 15-08-2014	ATC	No	3687-3684	3687	3684	Yes	Yes	1-way	144	159	1.240	Yes	Yes
259	Validation		36	Skircoat Moor Road	NB	12-06-2013 to 20-06-2013	ATC	No	2294-1064	2294	1064	Yes	Yes	1-way	457	289	8.696	No	No
260	Validation		36	Skircoat Moor Road	SB	12-06-2013 to 20-06-2013	ATC	No	1064-2294	1064	2294	Yes	Yes	1-way	743	597	5.650	No	No
261	Calibration		37	A646 Burnley Road	EB	12-06-2013 to 20-06-2013	ATC	No	1428-1080	1428	1080	Yes	Yes	1-way	804	629	6.557	No	No
262	Calibration		37	A646 Burnley Road	WB	12-06-2013 to 20-06-2013	ATC	No	1080-1428	1080	1428	Yes	Yes	1-way	414	371	2.151	Yes	Yes
265	Calibration		39	A646 Halifax Road	EB	01-02-2013 to 07-02-2013	ATC	No	3662-3659	3662	3659	Yes	Yes	1-way	427	603	7.738	No	No
266	Calibration		39	A646 Halifax Road	WB	01-02-2013 to 07-02-2013	ATC	No	3659-3662	3659	3662	Yes	Yes	1-way	362	406	2.236	Yes	Yes
267	Calibration		40	A646 Halifax Road	EB	01-02-2013 to 07-02-2013	ATC	No	3667-3666	3667	3666	Yes	Yes	1-way	504	541	1.613	Yes	Yes
268	Calibration		40	A646 Halifax Road	WB	01-02-2013 to 07-02-2013	ATC	No	3666-3667	3666	3667	Yes	Yes	1-way	455	413	2.032	Yes	Yes
269	Calibration		41	A646 Burnley Road	EB	13-11-2013 to 22-11-2013	ATC	No	3618-3617	3618	3617	Yes	Yes	1-way	666	744	2.947	Yes	Yes
270	Calibration		41	A646 Burnley Road	WB	13-11-2013 to 22-11-2013	ATC	No	3617-3618	3617	3618	Yes	Yes	1-way	531	700	6.818	No	No
273	Calibration		43	A647 Halifax Road	NB	27-06-2013 to 05-07-2013	ATC	No	1036-1243	1036	1243	Yes	Yes	1-way	221	228	0.452	Yes	Yes
274	Calibration		43	A647 Halifax Road	SB	27-06-2013 to 05-07-2013	ATC	No	1243-1036	1243	1036	Yes	Yes	1-way	506	422	3.890	Yes	Yes
279	Validation		46	A649 Lightcliffe	EB	15-07-2013 to 23-07-2013	ATC	No	3218-3221	3218	3221	Yes	Yes	1-way	425	498	3.401	Yes	Yes
280	Validation		46	A649 Lightcliffe	WB	15-07-2013 to 23-07-2013	ATC	No	3221-3218	3221	3218	Yes	Yes	1-way	387	333	2.822	Yes	Yes
283	Calibration		48	A672 SW of Ripponden	EB	26-07-2013 to 05-08-2013	ATC	No	3573-3574	3573	3574	Yes	Yes	1-way	169	240	4.934	Yes	Yes
284	Calibration		48	A672 SW of Ripponden	WB	26-07-2013 to 05-08-2013	ATC	No	3574-3573	3574	3573	Yes	Yes	1-way	236	243	0.462	Yes	Yes
295	Calibration		54	B6112 Stainland Road	EB	05-11-2013 to 13-11-2013	ATC	No	3502-4373	3502	4373	Yes	Yes	1-way	326	542	10.369	No	No
296	Calibration		54	B6112 Stainland Road	WB	05-11-2013 to 13-11-2013	ATC	No	4373-3502	4373	3502	Yes	Yes	1-way	313	401	4.654	Yes	Yes
299	Calibration		56	B6112 Stainland Road	NB	05-11-2013 to 13-11-2013	ATC	No	3501-3500	3501	3500	Yes	Yes	1-way	332	244	5.189	No	Yes
300	Calibration		56	B6112 Stainland Road	SB	05-11-2013 to 13-11-2013	ATC	No	3500-3501	3500	3501	Yes	Yes	1-way	217	241	1.556	Yes	Yes
303	Validation		58	B6114 Ringstone Edge Moor	NB	29-07-2013 to 06-08-2013	ATC	No	3732-3731	3732	3731	Yes	Yes	1-way	50	38	1.845	Yes	Yes
304	Validation		58	B6114 Ringstone Edge Moor	SB	29-07-2013 to 06-08-2013	ATC	No	3731-3732	3731	3732	Yes	Yes	1-way	31	120	10.209	No	Yes
309	Calibration		62	Bradshaw Lane	NB	12-03-2013 to 21-03-2013	ATC	No	7104-1318	7104	1318	Yes	Yes	1-way	148	152	0.351	Yes	Yes
310	Calibration		62	Bradshaw Lane	SB	12-03-2013 to 21-03-2013	ATC	No	1318-7104	1318	7104	Yes	Yes	1-way	160	130	2.515	Yes	Yes
311	Validation		63	Long Causeway	EB	22-07-2013 to 30-07-2013	ATC	No	3846-3845	3846	3845	Yes	Yes	1-way	28	28	0.000	Yes	Yes
312	Validation		63	Long Causeway	WB	22-07-2013 to 30-07-2013	ATC	No	3845-3846	3845	3846	Yes	Yes	1-way	44	88	5.410	No	Yes
313	Calibration		64	Gibbet Street	EB	02-06-2014 to 17-06-2014	ATC	No	1567-1565	1567	1565	Yes	Yes	1-way	282	258	1.456	Yes	Yes
314	Calibration		64	Gibbet Street	WB	02-06-2014 to 17-06-2014	ATC	No	1565-1567	1565	1567	Yes	Yes	1-way	55	54	0.163	Yes	Yes
315	Calibration		65	Slip onto Burdock Way	NB	03-06-2013 to 12-06-2013	ATC	No	4422-1556	4422	1556	Yes	Yes	1-way	430	532	4.634	Yes	No
316	Validation		66	Windy Bank Lane	EB	05-07-2013 to 15-07-2013	ATC	No	4008-1241	4008	1241	Yes	Yes	1-way	111	233	9.299	No	No
317	Validation		66	Windy Bank Lane	WB	05-07-2013 to 15-07-2013	ATC	No	1241-4008	1241	4008	Yes	Yes	1-way	150	170	1.570	Yes	Yes
318	Calibration		67	Lee Bridge	EB	17-06-2014 to 25-06-2014	ATC	No	1632-1631	1632	1631	Yes	Yes	1-way	377	404	1.376	Yes	Yes
319	Calibration		67	Lee Bridge	WB	17-06-2014 to 25-06-2014	ATC	No	1631-1632	1631	1632	Yes	Yes	1-way	282	239	2.643	Yes	Yes
320	Calibration		68	Hopwood Lane	EB	02-06-2014 to 25-06-2014	ATC	No	1582-2723	1582	2723	Yes	Yes	1-way	153	196	3.242	Yes	Yes
321	Calibration		68	Hopwood Lane	WB	02-06-2014 to 25-06-2014	ATC	No	2723-1582	2723	1582	Yes	Yes	1-way	117	156	3.370	Yes	Yes
324	Validation		70	Swires Road	EB	03-06-2013 to 12-06-2013	ATC	No	1058-1408	1058	1408	Yes	Yes	1-way	244	181	4.300	Yes	Yes
325	Validation		70	Swires Road	WB	03-06-2013 to 12-06-2013	ATC	No	1408-1058	1408	1058	Yes	Yes	1-way	300	507	10.305	No	No
328	Validation		72	Haugh Shaw Road	EB	02-06-2014 to 17-06-2014	ATC	No	1409-2366	1409	2366	Yes	Yes	1-way	173	344	10.636	No	No
329	Validation		72	Haugh Shaw Road	WB	02-06-2014 to 17-06-2014	ATC	No	2366-1409	2366	1409	Yes	Yes	1-way	202	164	2.789	Yes	Yes
332	Calibration		74	Church Lane	NB	05-07-2013 to 15-07-2013	ATC	No	3362-1007	3362	1007	Yes	Yes	1-way	397	520	5.734	No	No
333	Calibration		74	Church Lane	SB	05-07-2013 to 15-07-2013	ATC	No	1007-3362	1007	3362	Yes	Yes	1-way	219	249	1.991	Yes	Yes
334	Calibration		76	B6138 Cragg Vale	NB	06-08-2014 to 15-08-2014	ATC	No	3647-3612	3647	3612	Yes	Yes	1-way	112	106	0.581	Yes	Yes
335	Calibration		76	B6138 Cragg Vale	SB	06-08-2014 to 15-08-2014	ATC	No	3612-3647	3612	3647	Yes	Yes	1-way	105	93	1.161	Yes	Yes
336	Calibration		77	Mixenden Road	NB	20-05-2014 to 23-05-2014	ATC	No	4423-3969	4423	3969	Yes	Yes	1-way	101	148	4.244	Yes	Yes
337	Calibration		77	Mixenden Road	SB	20-05-2014 to 23-05-2014	ATC	No	3969-4423	3969	4423	Yes	Yes	1-way	89	100	1.180	Yes	Yes

Calderdale v36 Link Flows

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ID	Calibration / Validation	Area	ID	Site Location	Dir	Date	Data Type	Duplicate?	Ref	A-Node	B-Node	AM Peak	Interpeak	Type	AM Peak				
															ALL VEHICLES				
															Observed	Modelled	GEH	GEH Pass?	Flow Pass?
338	Calibration		78	Parkinson Lane	EB	02-06-2014 to 17-06-2014	ATC	No	1110-2340	1110	2340	Yes	Yes	1-way	226	149	5.602	No	Yes
339	Calibration		78	Parkinson Lane	WB	02-06-2014 to 17-06-2014	ATC	No	2340-1110	2340	1110	Yes	Yes	1-way	161	156	0.366	Yes	Yes
340	Validation		80	Stanley Road	NB	17-04-2013 to 25-04-2013	ATC	No	2709-4319	2709	4319	Yes	Yes	1-way	78	18	8.698	No	Yes
341	Validation		80	Stanley Road	SB	17-04-2013 to 25-04-2013	ATC	No	4319-2709	4319	2709	Yes	Yes	1-way	85	83	0.209	Yes	Yes
342	Calibration		82	B6113 Rochdale Road	EB	06-08-2014 to 14-08-2014	ATC	No	3524-3523	3524	3523	Yes	Yes	1-way	199	156	3.218	Yes	Yes
343	Calibration		82	B6113 Rochdale Road	WB	06-08-2014 to 14-08-2014	ATC	No	3523-3524	3523	3524	Yes	Yes	1-way	68	102	3.655	Yes	Yes
344	Calibration		83	Elland Bypass	NB	20-06-2013 to 05-07-2013	ATC	No	3277-1200	3277	1200	Yes	Yes	1-way	1132	984	4.555	Yes	Yes
345	Calibration		83	Elland Bypass	SB	20-06-2013 to 05-07-2013	ATC	No	1200-3278	1200	3278	Yes	Yes	1-way	1444	1538	2.425	Yes	Yes
348	Calibration		86	Crag Lane	NB	12-05-2014 to 20-05-2014	ATC	No	1043-3966	1043	3966	Yes	Yes	1-way	177	158	1.476	Yes	Yes
349	Calibration		86	Crag Lane	SB	12-05-2014 to 20-05-2014	ATC	No	3966-1043	3966	1043	Yes	Yes	1-way	229	233	0.283	Yes	Yes
350	Calibration		87	A641 Bradford Road	NB	02-09-2014 to 10-09-2014	ATC	No	3158-3156	3158	3156	Yes	Yes	1-way	582	621	1.596	Yes	Yes
351	Calibration		87	A641 Bradford Road	SB	02-09-2014 to 10-09-2014	ATC	No	3156-3158	3156	3158	Yes	Yes	1-way	686	662	0.908	Yes	Yes
360	Validation		96	Midgley Road	NB	04-11-2013 to 13-11-2013	ATC	No	4388-4392	4388	4392	Yes	Yes	1-way	110	90	2.043	Yes	Yes
361	Validation		96	Midgley Road	SB	04-11-2013 to 13-11-2013	ATC	No	4392-4388	4392	4388	Yes	Yes	1-way	130	205	5.761	No	Yes
362	Calibration		97	Hopwood Lane	EB	04-11-2013 to 13-11-2013	ATC	No	1124-2336	1124	2336	Yes	Yes	1-way	140	187	3.708	Yes	Yes
363	Calibration		97	Hopwood Lane	WB	04-11-2013 to 13-11-2013	ATC	No	2336-1124	2336	1124	Yes	Yes	1-way	88	75	1.495	Yes	Yes
364	Calibration		98	Hopwood Lane	EB	04-11-2013 to 13-11-2013	ATC	No	2332-2341	2332	2341	Yes	Yes	1-way	180	216	2.539	Yes	Yes
365	Calibration		98	Hopwood Lane	WB	04-11-2013 to 13-11-2013	ATC	No	2341-2332	2341	2332	Yes	Yes	1-way	136	147	0.886	Yes	Yes
366	Calibration		100	High Street	EB	04-11-2013 to 13-11-2013	ATC	No	3891-3535	3891	3535	Yes	Yes	1-way	144	158	1.102	Yes	Yes
367	Calibration		100	High Street	WB	04-11-2013 to 13-11-2013	ATC	No	3535-3891	3535	3891	Yes	Yes	1-way	183	212	2.035	Yes	Yes
368	Validation		101	Broad Carr Lane	EB	05-11-2013 to 13-11-2013	ATC	No	3504-3503	3504	3503	Yes	Yes	1-way	303	298	0.286	Yes	Yes
369	Validation		101	Broad Carr Lane	WB	05-11-2013 to 13-11-2013	ATC	No	3503-3504	3503	3504	Yes	Yes	1-way	156	160	0.352	Yes	Yes
372	Calibration		104	Albert Road	EB	25-11-2013 to 03-12-2013	ATC	No	2303-1071	2303	1071	Yes	Yes	1-way	137	184	3.736	Yes	Yes
373	Calibration		104	Albert Road	WB	25-11-2013 to 03-12-2013	ATC	No	1071-2303	1071	2303	Yes	Yes	1-way	130	145	1.240	Yes	Yes
378	Validation		107	Gibbet Street	EB	25-11-2013 to 03-12-2013	ATC	No	2306-2307	2306	2307	Yes	Yes	1-way	340	329	0.589	Yes	Yes
379	Validation		107	Gibbet Street	WB	25-11-2013 to 03-12-2013	ATC	No	2307-2306	2307	2306	Yes	Yes	1-way	262	242	1.240	Yes	Yes
380	Calibration		108	Highroad Well Lane	EB	25-11-2013 to 03-12-2013	ATC	No	1375-2316	1375	2316	Yes	Yes	1-way	93	63	3.371	Yes	Yes
381	Calibration		108	Highroad Well Lane	WB	25-11-2013 to 03-12-2013	ATC	No	2316-1375	2316	1375	Yes	Yes	1-way	55	51	0.610	Yes	Yes
384	Validation		110	Pellon New Road	EB	28-11-2013 to 06-12-2013	ATC	No	1121-2402	1121	2402	Yes	Yes	1-way	379	374	0.253	Yes	Yes
385	Validation		110	Pellon New Road	WB	28-11-2013 to 06-12-2013	ATC	No	2402-1121	2402	1121	Yes	Yes	1-way	173	192	1.377	Yes	Yes
386	Calibration		111	Roils Head Road	EB	25-11-2013 to 03-12-2013	ATC	No	1133-2295	1133	2295	Yes	Yes	1-way	111	68	4.497	Yes	Yes
387	Calibration		111	Roils Head Road	WB	25-11-2013 to 03-12-2013	ATC	No	2295-1133	2295	1133	Yes	Yes	1-way	58	35	3.332	Yes	Yes
392	Calibration		116	Claremount Road	NB	07-11-2013 to 15-11-2013	ATC	No	2399-1203	2399	1203	Yes	Yes	1-way	230	176	3.777	Yes	Yes
393	Calibration		116	Claremount Road	SB	07-11-2013 to 15-11-2013	ATC	No	1203-2399	1203	2399	Yes	Yes	1-way	155	153	0.176	Yes	Yes
402	Validation		122	Hullenedge Road	EB	25-11-2013 to 03-12-2013	ATC	No	3486-3372	3486	3372	Yes	Yes	1-way	93	80	1.353	Yes	Yes
403	Validation		122	Hullenedge Road	WB	25-11-2013 to 03-12-2013	ATC	No	3372-3486	3372	3486	Yes	Yes	1-way	110	69	4.277	Yes	Yes
404	Calibration		123	Jepson Lane	NB	13-11-2013 to 22-11-2013	ATC	No	3371-4408	3371	4408	Yes	Yes	1-way	380	370	0.518	Yes	Yes
405	Calibration		123	Jepson Lane	SB	13-11-2013 to 22-11-2013	ATC	No	4408-3371	4408	3371	Yes	Yes	1-way	421	387	1.678	Yes	Yes
406	Validation		124	Elland Lane	EB	14-11-2013 to 22-11-2013	ATC	No	3334-3335	3334	3335	Yes	Yes	1-way	388	364	1.236	Yes	Yes
407	Validation		124	Elland Lane	WB	14-11-2013 to 22-11-2013	ATC	No	3335-3334	3335	3334	Yes	Yes	1-way	409	411	0.105	Yes	Yes
408	Calibration		125	Lower Edge Road	EB	14-11-2013 to 22-11-2013	ATC	No	3367-3366	3367	3366	Yes	Yes	1-way	343	316	1.469	Yes	Yes
409	Calibration		125	Lower Edge Road	WB	14-11-2013 to 22-11-2013	ATC	No	3366-3367	3366	3367	Yes	Yes	1-way	308	272	2.137	Yes	Yes
410	Calibration		126	A58 New Bank	WB	01-06-2014 to 30-06-2014	ATC	No	1033-1515	1033	1515	Yes	Yes	1-way	975	1395	12.198	No	No
411	Calibration		126	A58 New Bank	EB	01-06-2014 to 30-06-2014	ATC	No	1514-1033	1514	1033	Yes	Yes	1-way	1256	1350	2.603	Yes	Yes
412	Calibration		127	A58 Kings Cross Road	EB	01-06-2014 to 30-06-2014	ATC	No	1431-2365	1431	2365	Yes	Yes	1-way	919	842	2.585	Yes	Yes
413	Calibration		127	A58 Kings Cross Road	WB	01-06-2014 to 30-06-2014	ATC	No	2365-1431	2365	1431	Yes	Yes	1-way	498	589	3.897	Yes	Yes
414	Calibration		128	A58 Rochdale Road	EB	08-01-2014 to 16-01-2014	ATC	No	3588-3587	3588	3587	Yes	Yes	1-way	237	224	0.874	Yes	Yes
415	Calibration		128	A58 Rochdale Road	WB	08-01-2014 to 16-01-2014	ATC	No	3587-3588	3587	3588	Yes	Yes	1-way	154	219	4.739	Yes	Yes
418	Validation		130	A629 Skircoat Road	NB	01-06-2014 to 30-06-2014	ATC	No	2369-1013	2369	1013	Yes	Yes	1-way	795	813	0.628	Yes	Yes
419	Validation		130	A629 Skircoat Road	SB	01-06-2014 to 30-06-2014	ATC	No	1013-2369	1013	2369	Yes	Yes	1-way	669	993	11.251	No	No
420	Calibration		131	A646 Market Street	EB	08-01-2014 to 16-01-2014	ATC	No	3635-3633	3635	3633	Yes	Yes	1-way	717	734	0.647	Yes	Yes
422	Calibration		131	A646 Market Street	WB	08-01-2014 to 16-01-2014	ATC	No	3633-3635	3633	3635	Yes	Yes	1-way	457	513	2.541	Yes	Yes
423	Calibration		132	A646 Burnley Road	EB	01-03-2014 to 10-03-2014	ATC	No	3614-3606	3614	3606	Yes	Yes	1-way	589	630	1.645	Yes	Yes
424	Calibration		132	A646 Burnley Road	WB	01-03-2014 to 10-03-2014	ATC	No	3606-3614	3606	3614	Yes	Yes	1-way	601	608	0.299	Yes	Yes
429	Calibration		135	B6113 Elland Road	NB	08-01-2014 to 16-01-2014	ATC	No	3729-3584	3729	3584	Yes	Yes	1-way	446	262	9.763	No	No
430	Calibration		135	B6113 Elland Road	SB	08-01-2014 to 16-01-2014	ATC	No	3584-3729	3584	3729	Yes	Yes	1-way	312	353	2.262	Yes	Yes
431	Calibration		136	B6114 Saddleworth Road	NB	08-01-2014 to 16-01-2014	ATC	No	3530-3533	3530	3533	Yes	Yes	1-way	158	207	3.638	Yes	Yes
432	Calibration		136	B6114 Saddleworth Road	SB	08-01-2014 to 16-01-2014	ATC	No	3533-3530	3533	3530	Yes	Yes	1-way	104	156	4.562	Yes	Yes
433	Calibration		137	Pellon Lane	EB	01-06-2014 to 30-06-2014	ATC	No	1575-1576	1575	1576	Yes	Yes	1-way	449	405	2.122	Yes	Yes
434	Calibration		137	Pellon Lane	WB	01-06-2014 to 30-06-2014	ATC	No	1576-1575	1576	1575	Yes	Yes	1-way	637	625	0.485	Yes	Yes
435	Calibration		138	Siddal New Road	NB	01-06-2014 to 30-06-2014	ATC	No	1189-1190	1189	1190	Yes	Yes	1-way	416	394	1.102	Yes	Yes
436	Calibration		138	Siddal New Road	SB	01-06-2014 to 30-06-2014	ATC	No	1190-1189	1190	1189	Yes	Yes	1-way	184	198	0.983	Yes	Yes
437	Validation		139	Shay Syke	NB	01-06-2014 to 30-06-2014	ATC	No	2379-1016	2379	1016	Yes	Yes	1-way	669	735	2.508	Yes	Yes
438	Validation		139	Shay Syke	SB	01-06-2014 to 30-06-2014	ATC	No	1016-2379	1016	2379	Yes	Yes	1-way	454	599	6.321	No	No

Calderdale v36 Link Flows

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															AM Peak				
															ALL VEHICLES				
ID	Calibration / Validation	Area	ID	Site Location	Dir	Date	Data Type	Duplicate?	Ref	A-Node	B-Node	AM Peak	Interpeak	Type	Observed	Modelled	GEH	GEH Pass?	Flow Pass?
441	Calibration		142	Coal Pit Lane	EB	28-02-2014 to 10-03-2014	ATC	No	4096-4095	4096	4095	Yes	Yes	1-way	76	117	4.211	Yes	Yes
442	Calibration		142	Coal Pit Lane	WB	28-02-2014 to 10-03-2014	ATC	No	4095-4096	4095	4096	Yes	Yes	1-way	193	201	0.576	Yes	Yes
445	Calibration		144	A58 Whitehall Road	EB	14-08-2014 to 22-08-2014	ATC	No	3197-3209	3197	3209	Yes	Yes	1-way	661	665	0.140	Yes	Yes
446	Calibration		144	A58 Whitehall Road	WB	14-08-2014 to 22-08-2014	ATC	No	3209-3197	3209	3197	Yes	Yes	1-way	589	555	1.439	Yes	Yes
457	Calibration	RSI In	246	Site 16 - Whitehall Road	WB	11/06/2014	MCC/RSI	No	3482-3473	3482	3473	Yes	Yes	1-way	614	568	1.877	Yes	Yes
458	Calibration	RSI In	247	Site 17 - Bradford Road	SB	11/06/2014	ATC/RSI	No	3195-3944	3195	3944	Yes	Yes	1-way	571	647	3.083	Yes	Yes
459	Calibration	RSI In	248	Site 15 - Birkby Lane	WB	18/06/2014	MCC/RSI	No	3073-3082	3073	3082	Yes	Yes	1-way	335	356	1.132	Yes	Yes
460	Calibration	RSI In	249	Site 14 - Walton Lane	SB	18/06/2014	MCC/RSI	No	3072-3071	3072	3071	Yes	Yes	1-way	325	382	3.025	Yes	Yes
461	Calibration	RSI In	250	Site 12 - A641 Huddersfield Road	NB	10/06/2014	MCC/RSI	No	3132-3125	3132	3125	Yes	Yes	1-way	888	852	1.233	Yes	Yes
462	Calibration	RSI In	251	Site 13 - A644 Wakefield Road	WB	18/06/2014	MCC/RSI	No	3097-3095	3097	3095	Yes	Yes	1-way	500	428	3.340	Yes	Yes
463	Calibration	RSI In	252	Site 11 - Clough Lane	WB	10/06/2014	MCC/RSI	No	3135-3137	3135	3137	Yes	Yes	1-way	750	718	1.187	Yes	Yes
464	Calibration	RSI Out	253	Site 10 - New Hey Road	SWB	10/06/2014	MCC/RSI	No	4291-3173	4291	3173	Yes	Yes	1-way	437	405	1.560	Yes	Yes
465	Calibration	RSI Out	254	Site 9 - New Road	NB	12/06/2014	ATC/RSI	No	3886-3888	3886	3888	Yes	Yes	1-way	107	187	6.630	No	Yes
466	Calibration	RSI Out	255	Site 7 - Stainland Road	SB	12/06/2014	MCC/RSI	No	1667-3495	1667	3495	Yes	Yes	1-way	583	462	5.298	No	No
468	Calibration	RSI Out	257	Site 1 - A58 Rochdale Road	WB	17/06/2014	MCC/RSI	No	3985-4312	3985	4312	Yes	Yes	1-way	363	375	0.630	Yes	Yes
469	Calibration	RSI Out	258	Site 6 - Haley Hill	NWB	19/06/2014	MCC/RSI	No	1522-1523	1522	1523	Yes	Yes	1-way	232	257	1.603	Yes	Yes
470	Calibration	RSI Out	259	Site 4 - Shroggs Road	NB	17/06/2014	MCC/RSI	No	1126-1127	1126	1127	Yes	Yes	1-way	220	255	2.293	Yes	Yes
471	Calibration	RSI Out	260	Site 5 - Ovenden Road	NB	19/06/2014	MCC/RSI	No	2400-1039	2400	1039	Yes	Yes	1-way	664	683	0.739	Yes	Yes
472	Calibration	RSI In	261	Site 3 - Moor End Road	SEB	17/06/2014	ATC/RSI	No	1251-2317	1251	2317	Yes	Yes	1-way	230	221	0.632	Yes	Yes
473	Calibration	RSI Out	262	Site 18 - Wade House Road	SWB	24/06/2014	ATC/RSI	No	4404-3235	4404	3235	Yes	Yes	1-way	668	580	3.534	Yes	Yes
474	Calibration	RSI Out	263	Site 19 - A644 Brighouse & Denholme Gate Road	NB	24/06/2014	ATC/RSI	No	1452-1238	1452	1238	Yes	Yes	1-way	511	401	5.147	No	No
475	Calibration	RSI Out	264	Site 2 - A646 Burnley Road	WB	17/06/2014	MCC/RSI	No	1095-1094	1095	1094	Yes	Yes	1-way	506	520	0.639	Yes	Yes
476	Calibration		14	A6026	NB	16/10/2014	MCC	No	1663-1662	1663	1662	Yes	Yes	2-way	583	405	8.016	No	No
477	Calibration		14	A6026	SB	16/10/2014	MCC	No	1662-1663	1662	1663	Yes	Yes	2-way	569	586	0.701	Yes	Yes
478	Calibration		14	Stainland Road	NB	16/10/2014	MCC	No	1667-1663	1667	1663	Yes	Yes	2-way	891	885	0.206	Yes	Yes
479	Calibration		14	Stainland Road	SB	16/10/2014	MCC	No	1663-1667	1663	1667	Yes	Yes	2-way	506	462	2.005	Yes	Yes
480	Calibration		14	A629 Elland Wood Bottom	NB	16/10/2014	MCC	No	1670-1664	1670	1664	Yes	Yes	2-way	1174	984	5.789	No	No
481	Calibration		14	A629 Elland Wood Bottom	SB	16/10/2014	MCC	No	1664-1670	1664	1670	Yes	Yes	2-way	1535	1538	0.067	Yes	Yes
482	Calibration		14	A629 Huddersfield Road	NB	16/10/2014	MCC	No	1665-1666	1665	1666	Yes	Yes	2-way	1570	1384	4.848	Yes	Yes
483	Calibration		14	A629 Huddersfield Road	SB	16/10/2014	MCC	No	1666-1665	1666	1665	Yes	Yes	2-way	1560	1490	1.782	Yes	Yes
484	Calibration		1	Hammerstone Road	NB	16/10/2014	MCC	No	3477-3489	3477	3489	Yes	Yes	2-way	229	168	4.309	Yes	Yes
485	Calibration		1	Hammerstone Road	SB	16/10/2014	MCC	No	3489-3477	3489	3477	Yes	Yes	2-way	230	231	0.070	Yes	Yes
486	Calibration		1	Hammerstone Leach Lane	EB	16/10/2014	MCC	No	3503-3477	3503	3477	Yes	Yes	2-way	323	298	1.416	Yes	Yes
487	Calibration		1	Hammerstone Leach Lane	WB	16/10/2014	MCC	No	3477-3503	3477	3503	Yes	Yes	2-way	147	160	1.083	Yes	Yes
488	Calibration		1	Blackley Road	NB	16/10/2014	MCC	No	3476-3477	3476	3477	Yes	Yes	2-way	326	223	6.230	No	No
489	Calibration		1	Blackley Road	SB	16/10/2014	MCC	No	3477-3476	3477	3476	Yes	Yes	2-way	299	383	4.557	Yes	Yes
490	Calibration		1	Victoria Road	EB	16/10/2014	MCC	No	3477-4036	3477	4036	Yes	Yes	2-way	495	277	11.109	No	No
491	Calibration		1	Victoria Road	WB	16/10/2014	MCC	No	4036-3477	4036	3477	Yes	Yes	2-way	291	237	3.335	Yes	Yes
557	Calibration		11	Halifax Road	WB	16/10/2014	MCC	No	3248-3281	3248	3281	Yes	Yes	2-way	268	97	12.659	No	No
558	Calibration		11	Elland Bridge	NB	16/10/2014	MCC	No	3249-3248	3249	3248	Yes	Yes	2-way	740	665	2.832	Yes	Yes
559	Calibration		11	Elland Bridge	SB	16/10/2014	MCC	No	3248-3249	3248	3249	Yes	Yes	2-way	488	704	8.858	No	No
560	Calibration		11	Park Road	EB	16/10/2014	MCC	No	3248-3247	3248	3247	Yes	Yes	2-way	585	662	3.066	Yes	Yes
561	Calibration		11	Park Road	WB	16/10/2014	MCC	No	3247-3248	3247	3248	Yes	Yes	2-way	596	798	7.647	No	No

Calderdale v36 Screenlines

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ID	Name	Link ID	Status	Site Location	Direction	A-Node	B-Node
1	Halifax South NB	183	Calibration	Site 7 - Stainland Road	NB	3495	1667
		344	Calibration	Elland Bypass	NB	3277	1200
		TOTAL					
2	Halifax South SB	466	Calibration	Site 7 - Stainland Road	SB	1667	3495
		345	Calibration	Elland Bypass	SB	1200	3278
		TOTAL					
3	Halifax South Central NB	116	Calibration	Heath Road/Free	NB	1012	2382
		48	Calibration	A629 Skircoat	NB	1014	2381
		29	Calibration	Huddersfield Road	NB	1485	2380
		435	Calibration	Siddal New Road	NB	1189	1190
4	Halifax South Central SB	115	Calibration	Heath Road/Free	SB	2382	1012
		47	Calibration	A629 Skircoat	SB	2381	1014
		30	Calibration	Huddersfield Road	SB	2380	1485
		436	Calibration	Siddal New Road	SB	1190	1189
5	Halifax West EB	472	Calibration	Site 3 - Moor End	SB	1251	2317
		423	Calibration	A646 Burnley Road	EB	3614	3606
		185	Calibration	Site 1 - A58 Rochdale Road	NB	4312	3985
		TOTAL					
6	Halifax West WB	189	Calibration	Site 3 - Moor End	NB	2317	1251
		424	Calibration	A646 Burnley Road	WB	3606	3614
		468	Calibration	Site 1 - A58 Rochdale Road	SB	3985	4312
		TOTAL					

All			
Observed	Modelled	Difference	GEH
899	885	-2%	0.474
1132	984	-13%	4.555
2031	1869	-8%	3.676
583	462	-21%	5.298
1444	1538	6%	2.425
2027	2000	-1%	0.613
271	226	-17%	2.876
641	750	17%	4.130
674	740	10%	2.466
416	394	-5%	1.102
2002	2109	5%	2.360
175	234	34%	4.144
500	504	1%	0.179
477	657	38%	7.559
184	198	7%	0.983
1336	1593	19%	6.712
230	221	-4%	0.632
589	630	7%	1.645
430	412	-4%	0.871
1249	1262	1%	0.374
137	139	2%	0.181
601	608	1%	0.299
363	375	3%	0.630
1101	1123	2%	0.648

Calderdale v36 Screenlines

AM

ID	Name	Link ID	Status	Site Location	Direction	A-Node	B-Node
7	Halifax West Central EB	433	Calibration	Pellon Lane	EB	1575	1576
		313	Calibration	Gibbet Street	EB	1567	1565
		320	Calibration	Hopwood Lane	EB	1582	2723
		193	Calibration	A58 Kings Cross Road	NB	1584	1594
		TOTAL					
8	Halifax West Central WB	434	Calibration	Pellon Lane	WB	1576	1575
		314	Calibration	Gibbet Street	WB	1565	1567
		321	Calibration	Hopwood Lane	WB	2723	1582
		194	Calibration	A58 Kings Cross Road	SB	1594	1584
		TOTAL					
9	Halifax North SB	349	Calibration	Crag Lane	SB	3966	1043
		274	Calibration	A647 Halifax Road	SB	1243	1036
		TOTAL					
10	Halifax North NB	348	Calibration	Crag Lane	NB	1043	3966
		273	Calibration	A647 Halifax Road	NB	1036	1243
		TOTAL					
11	Halifax North Central SB	188	Calibration	Site 5 - Ovenden Road	EB	1039	2400
		318	Calibration	Lee Bridge	EB	1632	1631
		186	Calibration	Site 6 - Haley Hill	SB	1523	1522
		393	Calibration	Claremount Road	SB	1203	2399
		TOTAL					
12	Halifax North Central NB	471	Calibration	Site 5 - Ovenden Road	WB	2400	1039
		319	Calibration	Lee Bridge	WB	1631	1632
		469	Calibration	Site 6 - Haley Hill	NB	1522	1523

All			
Observed	Modelled	Difference	GEH
449	405	-10%	2.122
282	258	-8%	1.456
153	196	28%	3.242
1014	966	-5%	1.518
1898	1825	-4%	1.686
637	625	-2%	0.485
55	54	-2%	0.163
117	156	34%	3.370
1015	1013	0%	0.062
1824	1848	1%	0.561
229	233	2%	0.283
506	422	-17%	3.890
735	656	-11%	3.014
177	158	-11%	1.476
221	228	3%	0.452
398	386	-3%	0.622
893	907	2%	0.471
377	404	7%	1.376
796	785	-1%	0.401
155	153	-1%	0.176
2221	2249	1%	0.589
664	683	3%	0.739
282	239	-15%	2.643
232	257	11%	1.603

Calderdale v36 Screenlines

AM

ID	Name	Link ID	Status	Site Location	Direction	A-Node	B-Node
	Central NB	392	Calibration	Claremount Road	NB	2399	1203
		TOTAL					
13	Halifax East WB	200	Calibration	A58 West of	WB	4238	1168
		332	Calibration	Church Lane	NB	3362	1007
		TOTAL					
14	Halifax East EB	199	Calibration	A58 West of	EB	1168	4238
		333	Calibration	Church Lane	SB	1007	3362
		TOTAL					
15	Elland West EB	490	Calibration	Victoria Road	EB	3477	4036
		405	Calibration	Jepson Lane	SB	4408	3371
		TOTAL					
16	Elland West WB	491	Calibration	Victoria Road	WB	4036	3477
		404	Calibration	Jepson Lane	NB	3371	4408
		TOTAL					
17	Elland East WB	166	Calibration	A6025 Park Road	SB	3245	3358
		409	Calibration	Lower Edge Road	WB	3366	3367
		164	Calibration	B6114 Dewsbury Road	WB	4104	3187
		TOTAL					
18	Elland East EB	165	Calibration	A6025 Park Road	NB	3358	3245
		408	Calibration	Lower Edge Road	EB	3367	3366
		163	Calibration	B6114 Dewsbury Road	EB	3187	4104
		TOTAL					
	Brighouse	3	Calibration	Crowtress Lane	NB	3176	3175

All			
Observed	Modelled	Difference	GEH
230	176	-23%	3.777
1408	1356	-4%	1.405
562	554	-1%	0.354
397	520	31%	5.734
959	1073	12%	3.589
619	493	-20%	5.331
219	249	14%	1.991
838	743	-11%	3.388
495	277	-44%	11.109
421	387	-8%	1.678
916	664	-28%	8.964
291	237	-19%	3.335
380	370	-3%	0.518
671	607	-10%	2.540
503	433	-14%	3.219
308	272	-12%	2.137
459	532	16%	3.290
1270	1237	-3%	0.926
578	658	14%	3.200
343	316	-8%	1.469
411	426	4%	0.733
1332	1400	5%	1.836
365	401	10%	1.818

Calderdale v36 Screenlines

AM

ID	Name	Link ID	Status	Site Location	Direction	A-Node	B-Node
19	Brighouse South NB	461	Calibration	Site 12 - A641 Huddersfield Road	NB	3132	3125
		TOTAL					
20	Brighouse South SB	4	Calibration	Crowtrees Lane	SB	3175	3176
		178	Calibration	Site 12 - A641 Huddersfield Road	SB	3125	3132
		TOTAL					
21	Brighouse East WB	462	Calibration	Site 13 - A644	WB	3097	3095
		442	Calibration	Coal Pit Lane	WB	4095	4096
		241	Calibration	A643 Cleckheaton Road	SB	3070	3068
		TOTAL					
22	Brighouse East EB	179	Calibration	Site 13 - A644	EB	3095	3097
		441	Calibration	Coal Pit Lane	EB	4096	4095
		240	Calibration	A643 Cleckheaton Road	NB	3068	3070
		TOTAL					
23	Brighouse North SB	249	Calibration	A644 North of	SB	3205	3169
		235	Calibration	A641 North of Brighouse	SB	3085	3086
		TOTAL					
24	Brighouse North NB	248	Calibration	A644 North of	NB	3169	3205
		234	Calibration	A641 North of Brighouse	NB	3086	3085
		TOTAL					
		192	Calibration	Site 2 - A646 Burnley	EB	1094	1095

All			
Observed	Modelled	Difference	GEH
888	852	-4%	1.233
1253	1252	0%	0.022
338	349	3%	0.608
862	957	11%	3.142
1200	1306	9%	2.995
500	428	-14%	3.340
193	201	4%	0.576
332	344	4%	0.649
1025	973	-5%	1.643
618	516	-16%	4.267
76	117	54%	4.211
375	432	15%	2.828
1069	1066	0%	0.104
453	460	2%	0.344
685	712	4%	1.016
1138	1172	3%	1.006
396	471	19%	3.600
735	650	-12%	3.249
1131	1120	-1%	0.314
747	768	3%	0.763

Calderdale v36 Screenlines

AM

ID	Name	Link ID	Status	Site Location	Direction	A-Node	B-Node
25	Sowerby Bridge NB	195	Calibration	A58 Calder Bridge	NEB	1113	2275
		211	Calibration	A6026 Wakefield Road	WB	1354	1355
		TOTAL					
26	Sowerby Bridge SB	475	Calibration	Site 2 - A646 Burnley	WB	1095	1094
		196	Calibration	A58 Calder Bridge	SWB	2275	1113
		210	Calibration	A6026 Wakefield Road	EB	1355	1354
		TOTAL					
27	Halifax South East NB	364	Calibration	Hopwood Lane	EB	2332	2341
		338	Calibration	Parkinson Lane	EB	1110	2340
		261	Calibration	A646 Burnley Road	EB	1428	1080
		TOTAL					
28	Halifax South East SB	365	Calibration	Hopwood Lane	WB	2341	2332
		339	Calibration	Parkinson Lane	WB	2340	1110
		262	Calibration	A646 Burnley Road	WB	1080	1428
		TOTAL					
29	Saville Park EB	31	Calibration	Freeschool Lane	EB	2631	1012
		33	Calibration	Skircoat Moor Road	EB	1390	1009
		TOTAL					
30	Saville Park WB	32	Calibration	Freeschool Lane	WB	1012	2631
		34	Calibration	Skircoat Moor Road	WB	1009	1390
		TOTAL					

All			
Observed	Modelled	Difference	GEH
825	753	-9%	2.570
328	237	-28%	5.391
1900	1758	-7%	3.316
506	520	3%	0.639
758	750	-1%	0.292
508	444	-13%	2.923
1772	1715	-3%	1.372
180	216	20%	2.539
226	149	-34%	5.602
804	629	-22%	6.557
1210	994	-18%	6.523
136	147	8%	0.886
161	156	-3%	0.366
414	371	-10%	2.151
711	674	-5%	1.395
379	424	12%	2.264
616	684	11%	2.669
995	1108	11%	3.497
243	283	16%	2.457
349	323	-7%	1.408
592	606	2%	0.573

Calderdale v36 Link Flows

IP

ID	Calibration / Validation	Area	ID	Site Location	Dir	Date	Data Type	Duplicate?	Ref	A-Node	B-Node	AM Peak	Interpeak	Type	Interpeak				
															ALL VEHICLES				
															Observed	Modelled	GEH	GEH Pass?	Flow Pass?
3	Calibration		157	Crowtress Lane	NB	12/07/2013	MCC	No	3176-3175	3176	3175	Yes	Yes	1-way	219	291	4.541	Yes	Yes
4	Calibration		157	Crowtrees Lane	SB	12/07/2013	MCC	No	3175-3176	3175	3176	Yes	Yes	1-way	233	269	2.318	Yes	Yes
29	Calibration		163	Huddersfield Road	NB	02/04/2014 - 16/04/2014	ATC	No	1485-2380	1485	2380	Yes	Yes	1-way	476	559	3.644	Yes	Yes
30	Calibration		163	Huddersfield Road	SB	02/04/2014 - 16/04/2014	ATC	No	2380-1485	2380	1485	Yes	Yes	1-way	518	531	0.574	Yes	Yes
31	Calibration		164	Freeschool Lane	EB	02/04/2014 - 16/04/2014	ATC	No	2631-1012	2631	1012	Yes	Yes	1-way	235	248	0.832	Yes	Yes
32	Calibration		164	Freeschool Lane	WB	02/04/2014 - 16/04/2014	ATC	No	1012-2631	1012	2631	Yes	Yes	1-way	256	319	3.692	Yes	Yes
33	Calibration		165	Skircoat Moor Road	EB	02/04/2014 - 16/04/2014	ATC	No	1390-1009	1390	1009	Yes	Yes	1-way	466	474	0.355	Yes	Yes
34	Calibration		165	Skircoat Moor Road	WB	02/04/2014 - 16/04/2014	ATC	No	1009-1390	1009	1390	Yes	Yes	1-way	349	400	2.589	Yes	Yes
35	Calibration		166	Skircoat Green Road	NB	02/04/2014 - 16/04/2014	ATC	No	1481-1398	1481	1398	Yes	Yes	1-way	171	115	4.615	Yes	Yes
36	Calibration		166	Skircoat Green Road	SB	02/04/2014 - 16/04/2014	ATC	No	1398-1481	1398	1481	Yes	Yes	1-way	162	175	1.016	Yes	Yes
37	Calibration		167	A6026 Wakefield Road	EB	02/04/2014 - 16/04/2014	ATC	No	2266-1002	2266	1002	Yes	Yes	1-way	417	421	0.167	Yes	Yes
38	Calibration		167	A6026 Wakefield Road	WB	02/04/2014 - 16/04/2014	ATC	No	1002-2266	1002	2266	Yes	Yes	1-way	423	344	4.042	Yes	Yes
39	Validation		168	A629 Huddersfield Road	NB	03/04/2014 - 16/04/2014	ATC	No	1462-1467	1462	1467	Yes	Yes	1-way	1231	1199	0.918	Yes	Yes
40	Validation		168	A629 Huddersfield Road	SB	03/04/2014 - 16/04/2014	ATC	No	1467-1462	1467	1462	Yes	Yes	1-way	1256	1183	2.102	Yes	Yes
43	Validation		169	A629 Skircoat road/Heath Road Junction	NB	08/04/2014	MCC	No	2772-1013	2772	1013	Yes	Yes	1-way	511	618	4.483	Yes	No
44	Validation		169	A629 Skircoat Road/Heath Road Junction	SB	08/04/2014	MCC	No	1013-2772	1013	2772	Yes	Yes	1-way	463	507	2.015	Yes	Yes
45	Validation		169	A629 Skircoat Road/Heath Road Junction	NEB	08/04/2014	MCC	No	1407-1013	1407	1013	Yes	Yes	1-way	175	91	7.261	No	Yes
46	Validation		169	A629 Skircoat Road/Heath Road Junction	SWB	08/04/2014	MCC	No	1013-1407	1013	1407	Yes	Yes	1-way	159	173	1.129	Yes	Yes
47	Calibration		170	A629 Skircoat Road/Free School Lane Junction	SB	08/04/2014	MCC	No	2381-1014	2381	1014	Yes	Yes	1-way	470	481	0.499	Yes	Yes
48	Calibration		170	A629 Skircoat Road/Free School Lane Junction	NB	08/04/2014	MCC	No	1014-2381	1014	2381	Yes	Yes	1-way	513	593	3.384	Yes	Yes
49	Calibration		170	A629 Skircoat Road/Free School Lane Junction	WB	08/04/2014	MCC	No	1485-1014	1485	1014	Yes	Yes	1-way	186	157	2.269	Yes	Yes
50	Calibration		170	A629 Skircoat Road/Free School Lane Junction	EB	08/04/2014	MCC	No	1014-1485	1014	1485	Yes	Yes	1-way	139	89	4.701	Yes	Yes
53	Calibration		170	A629 Skircoat Road/Free School Lane Junction	EB	08/04/2014	MCC	No	1616-1014	1616	1014	Yes	Yes	1-way	168	65	9.494	No	No
54	Calibration		170	A629 Skircoat Road/Free School Lane Junction	WB	08/04/2014	MCC	No	1014-1616	1014	1616	Yes	Yes	1-way	209	150	4.352	Yes	Yes
55	Calibration		171	A629 Skircoat Road/Huddersfield Road Junction	SB	08/04/2014	MCC	No	1014-1484	1014	1484	Yes	Yes	1-way	490	457	1.517	Yes	Yes
56	Calibration		171	A629 Skircoat Road/Huddersfield Road Junction	NB	08/04/2014	MCC	No	1484-1014	1484	1014	Yes	Yes	1-way	528	587	2.513	Yes	Yes
57	Calibration		171	A629 Skircoat Road/Huddersfield Road Junction	SWB	08/04/2014	MCC	No	1485-1484	1485	1484	Yes	Yes	1-way	315	374	3.179	Yes	Yes
58	Calibration		171	A629 Skircoat Road/Huddersfield Road Junction	NEB	08/04/2014	MCC	No	1484-1485	1484	1485	Yes	Yes	1-way	319	470	7.624	No	No
67	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	SB	08/04/2014	MCC	No	1400-2388	1400	2388	Yes	Yes	1-way	802	841	1.384	Yes	Yes
68	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	NB	08/04/2014	MCC	No	2388-1400	2388	1400	Yes	Yes	1-way	796	904	3.690	Yes	Yes
69	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	WB	08/04/2014	MCC	No	2608-2388	2608	2388	Yes	Yes	1-way	37	79	5.547	No	Yes
70	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	EB	08/04/2014	MCC	No	2388-2608	2388	2608	Yes	Yes	1-way	40	70	4.141	Yes	Yes
71	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	NB	08/04/2014	MCC	No	1199-2388	1199	2388	Yes	Yes	1-way	793	866	2.541	Yes	Yes
72	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	SB	08/04/2014	MCC	No	2388-1199	2388	1199	Yes	Yes	1-way	796	812	0.587	Yes	Yes
79	Calibration		175	A629 Huddersfield Road/A646 Dry Clough Lane	NB	08/04/2014	MCC	No	2389-1008	2389	1008	Yes	Yes	1-way	1018	1076	1.785	Yes	Yes
80	Calibration		175	A629 Huddersfield Road/A646 Dry Clough Lane	SB	08/04/2014	MCC	No	1008-2389	1008	2389	Yes	Yes	1-way	1056	971	2.647	Yes	Yes
81	Calibration		175	A629 Huddersfield Road/A646 Dry Clough Lane	EB	08/04/2014	MCC	No	2387-1008	2387	1008	Yes	Yes	1-way	397	411	0.703	Yes	Yes
82	Calibration		175	A629 Huddersfield Road/A646 Dry Clough Lane	WB	08/04/2014	MCC	No	1008-2387	1008	2387	Yes	Yes	1-way	335	462	6.375	No	No
83	Validation		176	A629 Huddersfield Road/Dudwell Lane	SB	08/04/2014	MCC	No	2390-1483	2390	1483	Yes	Yes	1-way	1062	971	2.832	Yes	Yes
84	Validation		176	A629 Huddersfield Road/Dudwell Lane	NB	08/04/2014	MCC	No	1483-2390	1483	2390	Yes	Yes	1-way	1020	1076	1.717	Yes	Yes
85	Validation		176	A629 Huddersfield Road/Dudwell Lane	SB	08/04/2014	MCC	No	2391-1483	2391	1483	Yes	Yes	1-way	1073	1067	0.168	Yes	Yes
86	Validation		176	A629 Huddersfield Road/Dudwell Lane	NB	08/04/2014	MCC	No	1483-2391	1483	2391	Yes	Yes	1-way	1129	948	5.613	No	No
87	Calibration		176	A629 Huddersfield Road/Dudwell Lane	EB	08/04/2014	MCC	No	1477-1483	1477	1483	Yes	Yes	1-way	192	76	10.041	No	No
88	Calibration		176	A629 Huddersfield Road/Dudwell Lane	WB	08/04/2014	MCC	No	1483-1477	1483	1477	Yes	Yes	1-way	177	90	7.524	No	Yes
95	Validation		178	A646 Dry Clough Lane/Skircoat Green Road	SB	08/04/2014	MCC	No	1391-1009	1391	1009	Yes	Yes	1-way	202	254	3.482	Yes	Yes
96	Validation		178	A646 Dry Clough Lane/Skircoat Green Road	NB	08/04/2014	MCC	No	1009-1391	1009	1391	Yes	Yes	1-way	196	297	6.394	No	No
97	Validation		178	A646 Dry Clough Lane/Skircoat Green Road	WB	08/04/2014	MCC	No	2385-1009	2385	1009	Yes	Yes	1-way	317	296	1.210	Yes	Yes
98	Validation		178	A646 Dry Clough Lane/Skircoat Green Road	EB	08/04/2014	MCC	No	1009-2385	1009	2385	Yes	Yes	1-way	378	259	6.654	No	No
99	Calibration		178	A646 Dry Clough Lane/Skircoat Green Road	NB	08/04/2014	MCC	No	1396-1009	1396	1009	Yes	Yes	1-way	299	246	3.200	Yes	Yes
100	Calibration		178	A646 Dry Clough Lane/Skircoat Green Road	SB	08/04/2014	MCC	No	1009-1396	1009	1396	Yes	Yes	1-way	329	314	0.791	Yes	Yes
115	Calibration		182	Heath Road/Free School Lane	SB	08/04/2014	MCC	No	2382-1012	2382	1012	Yes	Yes	1-way	161	173	0.984	Yes	Yes
116	Calibration		182	Heath Road/Free School Lane	NB	08/04/2014	MCC	No	1012-2382	1012	2382	Yes	Yes	1-way	181	91	7.659	No	Yes
117	Calibration		182	Heath Road/Free School Lane	WB	08/04/2014	MCC	No	1616-1012	1616	1012	Yes	Yes	1-way	210	150	4.432	Yes	Yes
118	Calibration		182	Heath Road/Free School Lane	EB	08/04/2014	MCC	No	1012-1616	1012	1616	Yes	Yes	1-way	169	65	9.554	No	No
119	Calibration		182	Heath Road/Free School Lane	NB	08/04/2014	MCC	No	1401-1012	1401	1012	Yes	Yes	1-way	189	145	3.409	Yes	Yes
120	Calibration		182	Heath Road/Free School Lane	SB	08/04/2014	MCC	No	1012-1401	1012	1401	Yes	Yes	1-way	201	241	2.750	Yes	Yes
134	Validation		215	Slip onto M62	NB	Jun-14	TRADS	No	3427-3423	3427	3423	Yes	Yes	1-way	720	931	7.346	No	No
135	Calibration	M62	216	M62 at Junction 25	NB	Jun-14	TRADS	No	3413-3421	3413	3421	Yes	Yes	1-way	3255	3474	3.764	Yes	Yes
136	Calibration	M62	217	M62 at Junction 25	SB	Jun-14	TRADS	No	3422-3414	3422	3414	Yes	Yes	1-way	3418	3504	1.469	Yes	Yes
137	Calibration	M62	220	M62 approaching Clough Lane	NB	Jun-14	TRADS	No	3406-3408	3406	3408	Yes	Yes	1-way	3520	3888	6.039	No	Yes
138	Calibration	M62	221	M62 after Clough Lane	SB	Jun-14	TRADS	No	3409-3407	3409	3407	Yes	Yes	1-way	3616	3623	0.114	Yes	Yes
143	Validation		227	Slip onto M62 at J23	SB	Jun-14	TRADS	No	3877-3537	3877	3537	Yes	Yes	1-way	210	195	1.053	Yes	Yes
144	Validation		228	Slip off M62 at J23	NB	Jun-14	TRADS	No	3536-3858	3536	3858	Yes	Yes	1-way	219	281	3.965	Yes	Yes
145	Calibration	M62	229	M62 Next to Laund Road	SB	Jun-14	TRADS	No	3398-3412	3398	3412	Yes	Yes	1-way	3225	3062	2.890	Yes	Yes

Calderdale v36 Link Flows

IP

ID	Calibration / Validation	Area	ID	Site Location	Dir	Date	Data Type	Duplicate?	Ref	A-Node	B-Node	AM Peak	Interpeak	Type	Interpeak				
															ALL VEHICLES				
															Observed	Modelled	GEH	GEH Pass?	Flow Pass?
146	Calibration	M62	230	M62 Next to Laund Road	NB	Jun-14	TRADES	No	3411-3397	3411	3397	Yes	Yes	1-way	3134	3111	0.407	Yes	Yes
149	Calibration		235	Elland Riorges Link	WB	12/06/2014	ANPR	No	3333-3332	3333	3332	Yes	Yes	1-way	235	240	0.331	Yes	Yes
150	Calibration		235	Elland Riorges Link	EB	12/06/2014	ANPR	No	3332-3333	3332	3333	Yes	Yes	1-way	242	249	0.487	Yes	Yes
151	Calibration		233	A629 Calderdale Way	NB	12/06/2014	ANPR	No	3343-3344	3343	3344	Yes	Yes	1-way	329	388	3.143	Yes	Yes
152	Calibration		233	A629 Calderdale Way	SB	12/06/2014	ANPR	No	3260-3286	3260	3286	Yes	Yes	1-way	159	118	3.436	Yes	Yes
153	Calibration		231	Elland Riorges Link	EB	12/06/2014	ANPR	No	3254-3255	3254	3255	Yes	Yes	1-way	368	234	7.724	No	No
154	Calibration		231	Elland Riorges Link	WB	12/06/2014	ANPR	No	3256-3254	3256	3254	Yes	Yes	1-way	625	571	2.230	Yes	Yes
155	Calibration		232	A629 Calderdale Way	SB	12/06/2014	ANPR	No	3265-3266	3265	3266	Yes	Yes	1-way	281	241	2.483	Yes	Yes
156	Calibration		232	A629 Calderdale Way	NB	12/06/2014	ANPR	No	3257-3264	3257	3264	Yes	Yes	1-way	180	228	3.403	Yes	Yes
157	Calibration		234	Lowfields Way	SWB	12/06/2014	ANPR	No	3923-3331	3923	3331	Yes	Yes	1-way	188	306	7.547	No	No
158	Calibration		234	Lowfields Way	NEB	12/06/2014	ANPR	No	3331-3923	3331	3923	Yes	Yes	1-way	194	240	3.170	Yes	Yes
159	Validation		236	Bradford Old Road	NB	Jun-14	ATC	No	1443-1442	1443	1442	Yes	Yes	1-way	24	13	2.587	Yes	Yes
160	Validation		236	Bradford Old Road	SB	Jun-14	ATC	No	1442-1443	1442	1443	Yes	Yes	1-way	29	21	1.685	Yes	Yes
163	Calibration		238	B6114 Dewsbury Road	EB	Jun-14	ATC	No	3187-4104	3187	4104	Yes	Yes	1-way	229	239	0.639	Yes	Yes
164	Calibration		238	B6114 Dewsbury Road	WB	Jun-14	ATC	No	4104-3187	4104	3187	Yes	Yes	1-way	241	320	4.697	Yes	Yes
165	Calibration		239	A6025 Park Road	NB	Jun-14	ATC	No	3358-3245	3358	3245	Yes	Yes	1-way	408	431	1.097	Yes	Yes
166	Calibration		239	A6025 Park Road	SB	Jun-14	ATC	No	3245-3358	3245	3358	Yes	Yes	1-way	403	411	0.393	Yes	Yes
167	Validation		240	A646 Skircoat Moor Road	EB	Jun-14	ATC	No	1389-1062	1389	1062	Yes	Yes	1-way	380	313	3.601	Yes	Yes
168	Validation		240	A646 Skircoat Moor Road	WB	Jun-14	ATC	No	1062-1389	1062	1389	Yes	Yes	1-way	311	233	4.768	Yes	Yes
169	Calibration		242	B6113 Saddleworth Road	EB	Jun-14	ATC	No	3517-3527	3517	3527	Yes	Yes	1-way	154	48	10.508	No	No
170	Calibration		242	B6113 Saddleworth Road	WB	Jun-14	ATC	No	3527-3517	3527	3517	Yes	Yes	1-way	162	19	15.045	No	No
171	Calibration		243	A629 Huddersfield Road	NB	Jun-14	ATC	No	3300-3296	3300	3296	Yes	Yes	1-way	883	942	1.945	Yes	Yes
173	Validation		245	Calderdale Way at bus stop	SB	Jun-14	ATC	No	3286-3292	3286	3292	Yes	Yes	1-way	753	660	3.514	Yes	Yes
174	Calibration	RSI Out	246	Site 16 - Whitehall Road	EB	11/06/2014	MCC/RSI	No	3473-3482	3473	3482	Yes	Yes	1-way	566	575	0.384	Yes	Yes
175	Calibration	RSI Out	247	Site 17 - Bradford Road	NB	11/06/2014	ATC/RSI	No	3944-3195	3944	3195	Yes	Yes	1-way	457	505	2.209	Yes	Yes
176	Calibration	RSI Out	248	Site 15 - Birkby Lane	EB	18/06/2014	MCC/RSI	No	3082-3073	3082	3073	Yes	Yes	1-way	172	211	2.887	Yes	Yes
177	Calibration	RSI Out	249	Site 14 - Walton Lane	NB	18/06/2014	MCC/RSI	No	3071-3072	3071	3072	Yes	Yes	1-way	210	224	0.931	Yes	Yes
178	Calibration	RSI Out	250	Site 12 - A641 Huddersfield Road	SB	10/06/2014	MCC/RSI	No	3125-3132	3125	3132	Yes	Yes	1-way	519	442	3.496	Yes	Yes
179	Calibration	RSI Out	251	Site 13 - A644 Wakefield Road	EB	18/06/2014	MCC/RSI	No	3095-3097	3095	3097	Yes	Yes	1-way	513	577	2.741	Yes	Yes
180	Calibration	RSI Out	252	Site 11 - Clough Lane (A6107)	EB	10/06/2014	MCC/RSI	No	3137-3135	3137	3135	Yes	Yes	1-way	444	346	4.943	Yes	Yes
181	Calibration	RSI In	253	Site 10 - New Hey Road	NEB	10/06/2014	MCC/RSI	No	3173-4291	3173	4291	Yes	Yes	1-way	566	576	0.440	Yes	Yes
182	Calibration	RSI In	254	Site 9 - New Road	SB	12/06/2014	ATC/RSI	No	3888-3886	3888	3886	Yes	Yes	1-way	87	107	2.053	Yes	Yes
183	Calibration	RSI In	255	Site 7 - Stainland Road	NB	12/06/2014	MCC/RSI	No	3495-1667	3495	1667	Yes	Yes	1-way	503	515	0.528	Yes	Yes
185	Calibration	RSI In	257	Site 1 - A58 Rochdale Road	EB	17/06/2014	MCC/RSI	No	4312-3985	4312	3985	Yes	Yes	1-way	280	325	2.616	Yes	Yes
186	Calibration	RSI In	258	Site 6 - Haley Hill	SEB	19/06/2014	MCC/RSI	No	1523-1522	1523	1522	Yes	Yes	1-way	461	415	2.194	Yes	Yes
187	Calibration	RSI In	259	Site 4 - Shropps Road	SB	17/06/2014	MCC/RSI	No	1127-1126	1127	1126	Yes	Yes	1-way	242	178	4.372	Yes	Yes
188	Calibration	RSI In	260	Site 5 - Ovenden Road	SB	19/06/2014	MCC/RSI	No	1039-2400	1039	2400	Yes	Yes	1-way	623	614	0.360	Yes	Yes
189	Calibration	RSI Out	261	Site 3 - Moor End Road	NWB	17/06/2014	ATC/RSI	No	2317-1251	2317	1251	Yes	Yes	1-way	144	113	2.703	Yes	Yes
190	Calibration	RSI In	262	Site 18 - Wade House Road	NEB	24/06/2014	ATC/RSI	No	3235-4404	3235	4404	Yes	Yes	1-way	596	545	2.138	Yes	Yes
191	Calibration	RSI In	263	Site 19 - A644 Brighouse & Denholme Gate Road	SB	24/06/2014	ATC/RSI	No	1238-1452	1238	1452	Yes	Yes	1-way	421	356	3.281	Yes	Yes
192	Calibration	RSI In	264	Site 2 - A646 Burnley Road	EB	17/06/2014	MCC/RSI	No	1094-1095	1094	1095	Yes	Yes	1-way	538	478	2.698	Yes	Yes
193	Calibration		1	A58 Kings Cross Road	NB	12-06-2013 to 20-06-2013	ATC	No	1584-1594	1584	1594	Yes	Yes	1-way	823	787	1.284	Yes	Yes
194	Calibration		1	A58 Kings Cross Road	SB	12-06-2013 to 20-06-2013	ATC	No	1594-1584	1594	1584	Yes	Yes	1-way	832	859	0.927	Yes	Yes
195	Calibration		2	A58 Calder Bridge	NEB	20-06-2013 to 01-07-2013	ATC	No	1113-2275	1113	2275	Yes	Yes	1-way	680	701	0.799	Yes	Yes
196	Calibration		2	A58 Calder Bridge	SWB	20-06-2013 to 01-07-2013	ATC	No	2275-1113	2275	1113	Yes	Yes	1-way	708	682	0.960	Yes	Yes
197	Calibration		3	A58 Rochdale Road	EB	20-06-2013 to 01-07-2013	ATC	No	8099-1065	8099	1065	Yes	Yes	1-way	544	638	3.863	Yes	Yes
198	Calibration		3	A58 Rochdale Road	WB	20-06-2013 to 01-07-2013	ATC	No	1065-8099	1065	8099	Yes	Yes	1-way	499	574	3.266	Yes	Yes
199	Calibration		4	A58 West of Hipperholme	EB	10-07-2013 to 26-07-2013	ATC	No	1168-4238	1168	4238	Yes	Yes	1-way	648	609	1.560	Yes	Yes
200	Calibration		4	A58 West of Hipperholme	WB	10-07-2013 to 26-07-2013	ATC	No	4238-1168	4238	1168	Yes	Yes	1-way	594	521	3.110	Yes	Yes
206	Validation		8	A6025 Park Road	EB	05-07-2013 to 15-07-2013	ATC	No	3244-3243	3244	3243	Yes	Yes	1-way	427	413	0.720	Yes	Yes
207	Validation		8	A6025 Park Road	WB	05-07-2013 to 15-07-2013	ATC	No	3243-3244	3243	3244	Yes	Yes	1-way	423	392	1.529	Yes	Yes
208	Validation		9	A6026 Wakefield Road	EB	19-06-2013 to 01-07-2013	ATC	No	2272-1092	2272	1092	Yes	Yes	1-way	408	362	2.349	Yes	Yes
209	Validation		9	A6026 Wakefield Road	WB	19-06-2013 to 01-07-2013	ATC	No	1092-2272	1092	2272	Yes	Yes	1-way	427	424	0.177	Yes	Yes
210	Calibration		10	A6026 Wakefield Road	EB	20-06-2013 to 01-07-2013	ATC	No	1355-1354	1355	1354	Yes	Yes	1-way	329	300	1.621	Yes	Yes
211	Calibration		10	A6026 Wakefield Road	NB	20-06-2013 to 01-07-2013	ATC	No	1354-1355	1354	1355	Yes	Yes	1-way	318	280	2.203	Yes	Yes
212	Calibration		11	A6033 South of Todmorden	WB	22-07-2013 to 30-07-2013	ATC	No	4251-4927	4251	4927	Yes	Yes	1-way	272	205	4.326	Yes	Yes
213	Calibration		11	A6033 South of Todmorden	SB	22-07-2013 to 30-07-2013	ATC	No	4927-4251	4927	4251	Yes	Yes	1-way	270	135	9.492	No	No
214	Validation		12	A6033 Keighley Road Peckett Well	NB	07-02-2013 to 18-02-2013	ATC	No	3753-3754	3753	3754	Yes	Yes	1-way	105	75	3.191	Yes	Yes
215	Validation		12	A6033 Keighley Road Peckett Well	SB	07-02-2013 to 18-02-2013	ATC	No	3754-3753	3754	3753	Yes	Yes	1-way	99	89	0.949	Yes	Yes
218	Calibration		14	A6036 North of Northowram	NB	10-07-2013 to 18-07-2013	ATC	No	1167-1234	1167	1234	Yes	Yes	1-way	427	507	3.708	Yes	Yes
219	Calibration		14	A6036 North of Northowram	SB	10-07-2013 to 18-07-2013	ATC	No	1234-1167	1234	1167	Yes	Yes	1-way	396	431	1.749	Yes	Yes
222	Calibration		16	A6139 Tuel Lane	NB	20-06-2013 to 01-07-2013	ATC	No	1356-1112	1356	1112	Yes	Yes	1-way	345	463	5.884	No	No
223	Calibration		16	A6139 Tuel Lane	SB	20-06-2013 to 01-07-2013	ATC	No	1112-1356	1112	1356	Yes	Yes	1-way	380	328	2.763	Yes	Yes
224	Calibration		17	A629 Halifax Causeway Foot	NB	11-04-2013 to 22-04-2013	ATC	No	4016-1247	4016	1247	Yes	Yes	1-way	281	289	0.432	Yes	Yes

Calderdale v36 Link Flows

IP

ID	Calibration / Validation	Area	ID	Site Location	Dir	Date	Data Type	Duplicate?	Ref	A-Node	B-Node	AM Peak	Interpeak	Type	Interpeak				
															ALL VEHICLES				
															Observed	Modelled	GEH	GEH Pass?	Flow Pass?
225	Calibration		17	A629 Halifax Causeway Foot	SB	11-04-2013 to 22-04-2013	ATC	No	1247-4016	1247	4016	Yes	Yes	1-way	289	259	1.796	Yes	Yes
230	Calibration		21	A641 Huddersfield Road	NB	08-07-2013 to 16-07-2013	ATC	No	3930-3946	3930	3946	Yes	Yes	1-way	609	500	4.633	Yes	No
231	Calibration		21	A641 Huddersfield Road	SB	08-07-2013 to 16-07-2013	ATC	No	3946-3930	3946	3930	Yes	Yes	1-way	650	510	5.780	No	No
234	Calibration		23	A641 North of Birghouse	NB	05-07-2013 to 23-07-2013	ATC	No	3086-3085	3086	3085	Yes	Yes	1-way	560	550	0.413	Yes	Yes
235	Calibration		23	A641 North of Brighouse	SB	05-07-2013 to 23-07-2013	ATC	No	3085-3086	3085	3086	Yes	Yes	1-way	561	574	0.552	Yes	Yes
236	Validation		24	A643 North of Anchor Bridge	NB	08-07-2013 to 16-07-2013	ATC	No	3039-3921	3039	3921	Yes	Yes	1-way	560	862	11.311	No	No
237	Validation		24	A643 North of Anchor Bridge	SB	08-07-2013 to 16-07-2013	ATC	No	3921-3039	3921	3039	Yes	Yes	1-way	534	641	4.412	Yes	No
240	Calibration		26	A643 Cleckheaton Road	NB	05-07-2013 to 15-07-2013	ATC	No	3068-3070	3068	3070	Yes	Yes	1-way	240	223	1.106	Yes	Yes
241	Calibration		26	A643 Cleckheaton Road	SB	05-07-2013 to 15-07-2013	ATC	No	3070-3068	3070	3068	Yes	Yes	1-way	221	218	0.240	Yes	Yes
244	Validation		28	A644 North of Hipperholme	NB	10-07-2013 to 18-07-2013	ATC	No	3229-3225	3229	3225	Yes	Yes	1-way	402	333	3.597	Yes	Yes
245	Validation		28	A644 North of Hipperholme	SB	10-07-2013 to 18-07-2013	ATC	No	3225-3229	3225	3229	Yes	Yes	1-way	422	419	0.118	Yes	Yes
246	Calibration		29	A644 Commercial Street	EB	02-07-2014 to 11-07-2014	ATC	No	3042-3942	3042	3942	Yes	Yes	1-way	802	814	0.433	Yes	Yes
247	Calibration		29	A644 Commercial Street	WB	02-07-2014 to 11-07-2014	ATC	No	3942-3042	3942	3042	Yes	Yes	1-way	714	591	4.826	Yes	No
248	Calibration		30	A644 North of Brighouse	NB	05-07-2013 to 15-07-2013	ATC	No	3169-3205	3169	3205	Yes	Yes	1-way	396	395	0.018	Yes	Yes
249	Calibration		30	A644 North of Brighouse	SB	05-07-2013 to 15-07-2013	ATC	No	3205-3169	3205	3169	Yes	Yes	1-way	409	399	0.459	Yes	Yes
250	Calibration		31	A644 Wakefield Road	EB	17-07-2013 to 30-07-2013	ATC	No	4092-4093	4092	4093	Yes	Yes	1-way	827	850	0.811	Yes	Yes
251	Calibration		31	A644 Wakefield Road	WB	17-07-2013 to 30-07-2013	ATC	No	4093-4092	4093	4092	Yes	Yes	1-way	881	792	3.062	Yes	Yes
254	Validation		33	A646 West of Todmorden	NB	06-08-2014 to 15-08-2014	ATC	No	3684-3687	3684	3687	Yes	Yes	1-way	195	151	3.291	Yes	Yes
255	Validation		33	A644 West of Todmorden	SB	06-08-2014 to 15-08-2014	ATC	No	3687-3684	3687	3684	Yes	Yes	1-way	179	154	1.917	Yes	Yes
259	Validation		36	Skircoat Moor Road	NB	12-06-2013 to 20-06-2013	ATC	No	2294-1064	2294	1064	Yes	Yes	1-way	448	540	4.151	Yes	Yes
260	Validation		36	Skircoat Moor Road	SB	12-06-2013 to 20-06-2013	ATC	No	1064-2294	1064	2294	Yes	Yes	1-way	530	353	8.442	No	No
261	Calibration		37	A646 Burnley Road	EB	12-06-2013 to 20-06-2013	ATC	No	1428-1080	1428	1080	Yes	Yes	1-way	473	333	6.968	No	No
262	Calibration		37	A646 Burnley Road	WB	12-06-2013 to 20-06-2013	ATC	No	1080-1428	1080	1428	Yes	Yes	1-way	436	316	6.201	No	No
265	Calibration		39	A646 Halifax Road	EB	01-02-2013 to 07-02-2013	ATC	No	3662-3659	3662	3659	Yes	Yes	1-way	360	425	3.251	Yes	Yes
266	Calibration		39	A646 Halifax Road	WB	01-02-2013 to 07-02-2013	ATC	No	3659-3662	3659	3662	Yes	Yes	1-way	353	361	0.390	Yes	Yes
267	Calibration		40	A646 Halifax Road	EB	01-02-2013 to 07-02-2013	ATC	No	3667-3666	3667	3666	Yes	Yes	1-way	426	391	1.710	Yes	Yes
268	Calibration		40	A646 Halifax Road	WB	01-02-2013 to 07-02-2013	ATC	No	3666-3667	3666	3667	Yes	Yes	1-way	426	345	4.130	Yes	Yes
269	Calibration		41	A646 Burnley Road	EB	13-11-2013 to 22-11-2013	ATC	No	3618-3617	3618	3617	Yes	Yes	1-way	544	611	2.789	Yes	Yes
270	Calibration		41	A646 Burnley Road	WB	13-11-2013 to 22-11-2013	ATC	No	3617-3618	3617	3618	Yes	Yes	1-way	539	527	0.517	Yes	Yes
273	Calibration		43	A647 Halifax Road	NB	27-06-2013 to 05-07-2013	ATC	No	1036-1243	1036	1243	Yes	Yes	1-way	252	200	3.460	Yes	Yes
274	Calibration		43	A647 Halifax Road	SB	27-06-2013 to 05-07-2013	ATC	No	1243-1036	1243	1036	Yes	Yes	1-way	268	198	4.605	Yes	Yes
279	Validation		46	A649 Lightcliffe	EB	15-07-2013 to 23-07-2013	ATC	No	3218-3221	3218	3221	Yes	Yes	1-way	257	326	4.087	Yes	Yes
280	Validation		46	A649 Lightcliffe	WB	15-07-2013 to 23-07-2013	ATC	No	3221-3218	3221	3218	Yes	Yes	1-way	250	218	2.076	Yes	Yes
283	Calibration		48	A672 SW of Ripponden	EB	26-07-2013 to 05-08-2013	ATC	No	3573-3574	3573	3574	Yes	Yes	1-way	148	206	4.354	Yes	Yes
284	Calibration		48	A672 SW of Ripponden	WB	26-07-2013 to 05-08-2013	ATC	No	3574-3573	3574	3573	Yes	Yes	1-way	143	154	0.933	Yes	Yes
295	Calibration		54	B6112 Stainland Road	EB	05-11-2013 to 13-11-2013	ATC	No	3502-4373	3502	4373	Yes	Yes	1-way	135	249	8.235	No	No
296	Calibration		54	B6112 Stainland Road	WB	05-11-2013 to 13-11-2013	ATC	No	4373-3502	4373	3502	Yes	Yes	1-way	186	359	10.476	No	No
299	Calibration		56	B6112 Stainland Road	NB	05-11-2013 to 13-11-2013	ATC	No	3501-3500	3501	3500	Yes	Yes	1-way	135	168	2.679	Yes	Yes
300	Calibration		56	B6112 Stainland Road	SB	05-11-2013 to 13-11-2013	ATC	No	3500-3501	3500	3501	Yes	Yes	1-way	145	262	8.203	No	No
303	Validation		58	B6114 Ringstone Edge Moor	NB	29-07-2013 to 06-08-2013	ATC	No	3732-3731	3732	3731	Yes	Yes	1-way	39	52	1.874	Yes	Yes
304	Validation		58	B6114 Ringstone Edge Moor	SB	29-07-2013 to 06-08-2013	ATC	No	3731-3732	3731	3732	Yes	Yes	1-way	36	34	0.337	Yes	Yes
309	Calibration		62	Bradshaw Lane	NB	12-03-2013 to 21-03-2013	ATC	No	7104-1318	7104	1318	Yes	Yes	1-way	92	134	3.937	Yes	Yes
310	Calibration		62	Bradshaw Lane	SB	12-03-2013 to 21-03-2013	ATC	No	1318-7104	1318	7104	Yes	Yes	1-way	100	148	4.300	Yes	Yes
311	Validation		63	Long Causeway	EB	22-07-2013 to 30-07-2013	ATC	No	3846-3845	3846	3845	Yes	Yes	1-way	31	52	3.340	Yes	Yes
312	Validation		63	Long Causeway	WB	22-07-2013 to 30-07-2013	ATC	No	3845-3846	3845	3846	Yes	Yes	1-way	29	36	1.367	Yes	Yes
313	Calibration		64	Gibbet Street	EB	02-06-2014 to 17-06-2014	ATC	No	1567-1565	1567	1565	Yes	Yes	1-way	281	303	1.332	Yes	Yes
314	Calibration		64	Gibbet Street	WB	02-06-2014 to 17-06-2014	ATC	No	1565-1567	1565	1567	Yes	Yes	1-way	63	98	3.917	Yes	Yes
315	Calibration		65	Slip onto Burdock Way	NB	03-06-2013 to 12-06-2013	ATC	No	4422-1556	4422	1556	Yes	Yes	1-way	493	615	5.200	No	No
316	Validation		66	Windy Bank Lane	EB	05-07-2013 to 15-07-2013	ATC	No	4008-1241	4008	1241	Yes	Yes	1-way	85	180	8.173	No	Yes
317	Validation		66	Windy Bank Lane	WB	05-07-2013 to 15-07-2013	ATC	No	1241-4008	1241	4008	Yes	Yes	1-way	82	181	8.645	No	Yes
318	Calibration		67	Lee Bridge	EB	17-06-2014 to 25-06-2014	ATC	No	1632-1631	1632	1631	Yes	Yes	1-way	237	247	0.670	Yes	Yes
319	Calibration		67	Lee Bridge	WB	17-06-2014 to 25-06-2014	ATC	No	1631-1632	1631	1632	Yes	Yes	1-way	334	317	0.979	Yes	Yes
320	Calibration		68	Hopwood Lane	EB	02-06-2014 to 25-06-2014	ATC	No	1582-2723	1582	2723	Yes	Yes	1-way	143	152	0.739	Yes	Yes
321	Calibration		68	Hopwood Lane	WB	02-06-2014 to 25-06-2014	ATC	No	2723-1582	2723	1582	Yes	Yes	1-way	134	167	2.668	Yes	Yes
324	Validation		70	Swires Road	EB	03-06-2013 to 12-06-2013	ATC	No	1058-1408	1058	1408	Yes	Yes	1-way	166	175	0.624	Yes	Yes
325	Validation		70	Swires Road	WB	03-06-2013 to 12-06-2013	ATC	No	1408-1058	1408	1058	Yes	Yes	1-way	225	371	8.437	No	No
328	Validation		72	Haugh Shaw Road	EB	02-06-2014 to 17-06-2014	ATC	No	1409-2366	1409	2366	Yes	Yes	1-way	133	368	14.891	No	No
329	Validation		72	Haugh Shaw Road	WB	02-06-2014 to 17-06-2014	ATC	No	2366-1409	2366	1409	Yes	Yes	1-way	237	291	3.289	Yes	Yes
332	Calibration		74	Church Lane	NB	05-07-2013 to 15-07-2013	ATC	No	3362-1007	3362	1007	Yes	Yes	1-way	159	206	3.467	Yes	Yes
333	Calibration		74	Church Lane	SB	05-07-2013 to 15-07-2013	ATC	No	1007-3362	1007	3362	Yes	Yes	1-way	145	175	2.351	Yes	Yes
334	Calibration		76	B6138 Cragg Vale	NB	06-08-2014 to 15-08-2014	ATC	No	3647-3612	3647	3612	Yes	Yes	1-way	101	90	1.102	Yes	Yes
335	Calibration		76	B6138 Cragg Vale	SB	06-08-2014 to 15-08-2014	ATC	No	3612-3647	3612	3647	Yes	Yes	1-way	107	86	2.175	Yes	Yes
336	Calibration		77	Mixenden Road	NB	20-05-2014 to 23-05-2014	ATC	No	4423-3969	4423	3969	Yes	Yes	1-way	85	154	6.347	No	Yes
337	Calibration		77	Mixenden Road	SB	20-05-2014 to 23-05-2014	ATC	No	3969-4423	3969	4423	Yes	Yes	1-way	71	144	7.058	No	Yes

Calderdale v36 Link Flows

IP

ID	Calibration / Validation	Area	ID	Site Location	Dir	Date	Data Type	Duplicate?	Ref	A-Node	B-Node	AM Peak	Interpeak	Type	Interpeak				
															ALL VEHICLES				
															Observed	Modelled	GEH	GEH Pass?	Flow Pass?
338	Calibration		78	Parkinson Lane	EB	02-06-2014 to 17-06-2014	ATC	No	1110-2340	1110	2340	Yes	Yes	1-way	147	127	1.704	Yes	Yes
339	Calibration		78	Parkinson Lane	WB	02-06-2014 to 17-06-2014	ATC	No	2340-1110	2340	1110	Yes	Yes	1-way	153	168	1.175	Yes	Yes
340	Validation		80	Stanley Road	NB	17-04-2013 to 25-04-2013	ATC	No	2709-4319	2709	4319	Yes	Yes	1-way	69	24	6.478	No	Yes
341	Validation		80	Stanley Road	SB	17-04-2013 to 25-04-2013	ATC	No	4319-2709	4319	2709	Yes	Yes	1-way	63	56	0.835	Yes	Yes
342	Calibration		82	B6113 Rochdale Road	EB	06-08-2014 to 14-08-2014	ATC	No	3524-3523	3524	3523	Yes	Yes	1-way	127	109	1.659	Yes	Yes
343	Calibration		82	B6113 Rochdale Road	WB	06-08-2014 to 14-08-2014	ATC	No	3523-3524	3523	3524	Yes	Yes	1-way	79	98	2.054	Yes	Yes
344	Calibration		83	Elland Bypass	NB	20-06-2013 to 05-07-2013	ATC	No	3277-1200	3277	1200	Yes	Yes	1-way	1094	1016	2.404	Yes	Yes
345	Calibration		83	Elland Bypass	SB	20-06-2013 to 05-07-2013	ATC	No	1200-3278	1200	3278	Yes	Yes	1-way	1158	1082	2.262	Yes	Yes
348	Calibration		86	Crag Lane	NB	12-05-2014 to 20-05-2014	ATC	No	1043-3966	1043	3966	Yes	Yes	1-way	143	167	1.868	Yes	Yes
349	Calibration		86	Crag Lane	SB	12-05-2014 to 20-05-2014	ATC	No	3966-1043	3966	1043	Yes	Yes	1-way	154	159	0.435	Yes	Yes
350	Calibration		87	A641 Bradford Road	NB	02-09-2014 to 10-09-2014	ATC	No	3158-3156	3158	3156	Yes	Yes	1-way	554	512	1.825	Yes	Yes
351	Calibration		87	A641 Bradford Road	SB	02-09-2014 to 10-09-2014	ATC	No	3156-3158	3156	3158	Yes	Yes	1-way	546	519	1.159	Yes	Yes
360	Validation		96	Midgley Road	NB	04-11-2013 to 13-11-2013	ATC	No	4388-4392	4388	4392	Yes	Yes	1-way	63	83	2.374	Yes	Yes
361	Validation		96	Midgley Road	SB	04-11-2013 to 13-11-2013	ATC	No	4392-4388	4392	4388	Yes	Yes	1-way	54	135	8.337	No	Yes
362	Calibration		97	Hopwood Lane	EB	04-11-2013 to 13-11-2013	ATC	No	1124-2336	1124	2336	Yes	Yes	1-way	64	29	5.212	No	Yes
363	Calibration		97	Hopwood Lane	WB	04-11-2013 to 13-11-2013	ATC	No	2336-1124	2336	1124	Yes	Yes	1-way	80	39	5.352	No	Yes
364	Calibration		98	Hopwood Lane	EB	04-11-2013 to 13-11-2013	ATC	No	2332-2341	2332	2341	Yes	Yes	1-way	113	82	3.103	Yes	Yes
365	Calibration		98	Hopwood Lane	WB	04-11-2013 to 13-11-2013	ATC	No	2341-2332	2341	2332	Yes	Yes	1-way	131	91	3.849	Yes	Yes
366	Calibration		100	High Street	EB	04-11-2013 to 13-11-2013	ATC	No	3891-3535	3891	3535	Yes	Yes	1-way	51	193	12.818	No	No
367	Calibration		100	High Street	WB	04-11-2013 to 13-11-2013	ATC	No	3535-3891	3535	3891	Yes	Yes	1-way	50	171	11.467	No	No
368	Validation		101	Broad Carr Lane	EB	05-11-2013 to 13-11-2013	ATC	No	3504-3503	3504	3503	Yes	Yes	1-way	106	81	2.521	Yes	Yes
369	Validation		101	Broad Carr Lane	WB	05-11-2013 to 13-11-2013	ATC	No	3503-3504	3503	3504	Yes	Yes	1-way	106	98	0.864	Yes	Yes
372	Calibration		104	Albert Road	EB	25-11-2013 to 03-12-2013	ATC	No	2303-1071	2303	1071	Yes	Yes	1-way	126	104	2.100	Yes	Yes
373	Calibration		104	Albert Road	WB	25-11-2013 to 03-12-2013	ATC	No	1071-2303	1071	2303	Yes	Yes	1-way	144	126	1.530	Yes	Yes
378	Validation		107	Gibbet Street	EB	25-11-2013 to 03-12-2013	ATC	No	2306-2307	2306	2307	Yes	Yes	1-way	205	230	1.705	Yes	Yes
379	Validation		107	Gibbet Street	WB	25-11-2013 to 03-12-2013	ATC	No	2307-2306	2307	2306	Yes	Yes	1-way	210	89	9.925	No	No
380	Calibration		108	Highroad Well Lane	EB	25-11-2013 to 03-12-2013	ATC	No	1375-2316	1375	2316	Yes	Yes	1-way	55	39	2.380	Yes	Yes
381	Calibration		108	Highroad Well Lane	WB	25-11-2013 to 03-12-2013	ATC	No	2316-1375	2316	1375	Yes	Yes	1-way	61	6	9.550	No	Yes
384	Validation		110	Pellon New Road	EB	28-11-2013 to 06-12-2013	ATC	No	1121-2402	1121	2402	Yes	Yes	1-way	262	235	1.722	Yes	Yes
385	Validation		110	Pellon New Road	WB	28-11-2013 to 06-12-2013	ATC	No	2402-1121	2402	1121	Yes	Yes	1-way	241	272	1.910	Yes	Yes
386	Calibration		111	Roils Head Road	EB	25-11-2013 to 03-12-2013	ATC	No	1133-2295	1133	2295	Yes	Yes	1-way	70	44	3.464	Yes	Yes
387	Calibration		111	Roils Head Road	WB	25-11-2013 to 03-12-2013	ATC	No	2295-1133	2295	1133	Yes	Yes	1-way	73	23	7.168	No	Yes
392	Calibration		116	Claremount Road	NB	07-11-2013 to 15-11-2013	ATC	No	2399-1203	2399	1203	Yes	Yes	1-way	100	90	1.031	Yes	Yes
393	Calibration		116	Claremount Road	SB	07-11-2013 to 15-11-2013	ATC	No	1203-2399	1203	2399	Yes	Yes	1-way	85	91	0.708	Yes	Yes
402	Validation		122	Hullenedge Road	EB	25-11-2013 to 03-12-2013	ATC	No	3486-3372	3486	3372	Yes	Yes	1-way	26	92	8.572	No	Yes
403	Validation		122	Hullenedge Road	WB	25-11-2013 to 03-12-2013	ATC	No	3372-3486	3372	3486	Yes	Yes	1-way	64	115	5.466	No	Yes
404	Calibration		123	Jepson Lane	NB	13-11-2013 to 22-11-2013	ATC	No	3371-4408	3371	4408	Yes	Yes	1-way	265	260	0.320	Yes	Yes
405	Calibration		123	Jepson Lane	SB	13-11-2013 to 22-11-2013	ATC	No	4408-3371	4408	3371	Yes	Yes	1-way	300	260	2.395	Yes	Yes
406	Validation		124	Elland Lane	EB	14-11-2013 to 22-11-2013	ATC	No	3334-3335	3334	3335	Yes	Yes	1-way	240	224	1.071	Yes	Yes
407	Validation		124	Elland Lane	WB	14-11-2013 to 22-11-2013	ATC	No	3335-3334	3335	3334	Yes	Yes	1-way	220	179	2.879	Yes	Yes
408	Calibration		125	Lower Edge Road	EB	14-11-2013 to 22-11-2013	ATC	No	3367-3366	3367	3366	Yes	Yes	1-way	188	140	3.745	Yes	Yes
409	Calibration		125	Lower Edge Road	WB	14-11-2013 to 22-11-2013	ATC	No	3366-3367	3366	3367	Yes	Yes	1-way	171	153	1.361	Yes	Yes
410	Calibration		126	A58 New Bank	WB	01-06-2014 to 30-06-2014	ATC	No	1033-1515	1033	1515	Yes	Yes	1-way	693	1093	13.367	No	No
411	Calibration		126	A58 New Bank	EB	01-06-2014 to 30-06-2014	ATC	No	1514-1033	1514	1033	Yes	Yes	1-way	1243	1337	2.602	Yes	Yes
412	Calibration		127	A58 Kings Cross Road	EB	01-06-2014 to 30-06-2014	ATC	No	1431-2365	1431	2365	Yes	Yes	1-way	708	692	0.617	Yes	Yes
413	Calibration		127	A58 Kings Cross Road	WB	01-06-2014 to 30-06-2014	ATC	No	2365-1431	2365	1431	Yes	Yes	1-way	554	673	4.801	Yes	No
414	Calibration		128	A58 Rochdale Road	EB	08-01-2014 to 16-01-2014	ATC	No	3588-3587	3588	3587	Yes	Yes	1-way	106	108	0.225	Yes	Yes
415	Calibration		128	A58 Rochdale Road	WB	08-01-2014 to 16-01-2014	ATC	No	3587-3588	3587	3588	Yes	Yes	1-way	108	173	5.434	No	Yes
418	Validation		130	A629 Skircoat Road	NB	01-06-2014 to 30-06-2014	ATC	No	2369-1013	2369	1013	Yes	Yes	1-way	598	660	2.451	Yes	Yes
419	Validation		130	A629 Skircoat Road	SB	01-06-2014 to 30-06-2014	ATC	No	1013-2369	1013	2369	Yes	Yes	1-way	642	689	1.799	Yes	Yes
420	Calibration		131	A646 Market Street	EB	08-01-2014 to 16-01-2014	ATC	No	3635-3633	3635	3633	Yes	Yes	1-way	523	519	0.159	Yes	Yes
422	Calibration		131	A646 Market Street	WB	08-01-2014 to 16-01-2014	ATC	No	3633-3635	3633	3635	Yes	Yes	1-way	493	409	3.958	Yes	Yes
423	Calibration		132	A646 Burnley Road	EB	01-03-2014 to 10-03-2014	ATC	No	3614-3606	3614	3606	Yes	Yes	1-way	546	561	0.669	Yes	Yes
424	Calibration		132	A646 Burnley Road	WB	01-03-2014 to 10-03-2014	ATC	No	3606-3614	3606	3614	Yes	Yes	1-way	542	479	2.783	Yes	Yes
429	Calibration		135	B6113 Elland Road	NB	08-01-2014 to 16-01-2014	ATC	No	3729-3584	3729	3584	Yes	Yes	1-way	190	110	6.539	No	Yes
430	Calibration		135	B6113 Elland Road	SB	08-01-2014 to 16-01-2014	ATC	No	3584-3729	3584	3729	Yes	Yes	1-way	180	165	1.135	Yes	Yes
431	Calibration		136	B6114 Saddleworth Road	NB	08-01-2014 to 16-01-2014	ATC	No	3530-3533	3530	3533	Yes	Yes	1-way	84	47	4.486	Yes	Yes
432	Calibration		136	B6114 Saddleworth Road	SB	08-01-2014 to 16-01-2014	ATC	No	3533-3530	3533	3530	Yes	Yes	1-way	101	16	11.063	No	Yes
433	Calibration		137	Pellon Lane	EB	01-06-2014 to 30-06-2014	ATC	No	1575-1576	1575	1576	Yes	Yes	1-way	587	560	1.135	Yes	Yes
434	Calibration		137	Pellon Lane	WB	01-06-2014 to 30-06-2014	ATC	No	1576-1575	1576	1575	Yes	Yes	1-way	805	735	2.536	Yes	Yes
435	Calibration		138	Siddal New Road	NB	01-06-2014 to 30-06-2014	ATC	No	1189-1190	1189	1190	Yes	Yes	1-way	196	246	3.345	Yes	Yes
436	Calibration		138	Siddal New Road	SB	01-06-2014 to 30-06-2014	ATC	No	1190-1189	1190	1189	Yes	Yes	1-way	180	232	3.579	Yes	Yes
437	Validation		139	Shay Syke	NB	01-06-2014 to 30-06-2014	ATC	No	2379-1016	2379	1016	Yes	Yes	1-way	480	571	3.973	Yes	Yes
438	Validation		139	Shay Syke	SB	01-06-2014 to 30-06-2014	ATC	No	1016-2379	1016	2379	Yes	Yes	1-way	528	530	0.091	Yes	Yes

Calderdale v36 Link Flows

IP

															Interpeak				
															ALL VEHICLES				
ID	Calibration / Validation	Area	ID	Site Location	Dir	Date	Data Type	Duplicate?	Ref	A-Node	B-Node	AM Peak	Interpeak	Type	Observed	Modelled	GEH	GEH Pass?	Flow Pass?
441	Calibration		142	Coal Pit Lane	EB	28-02-2014 to 10-03-2014	ATC	No	4096-4095	4096	4095	Yes	Yes	1-way	58	51	0.962	Yes	Yes
442	Calibration		142	Coal Pit Lane	WB	28-02-2014 to 10-03-2014	ATC	No	4095-4096	4095	4096	Yes	Yes	1-way	45	45	0.072	Yes	Yes
445	Calibration		144	A58 Whitehall Road	EB	14-08-2014 to 22-08-2014	ATC	No	3197-3209	3197	3209	Yes	Yes	1-way	530	536	0.257	Yes	Yes
446	Calibration		144	A58 Whitehall Road	WB	14-08-2014 to 22-08-2014	ATC	No	3209-3197	3209	3197	Yes	Yes	1-way	492	571	3.451	Yes	Yes
457	Calibration	RSI In	246	Site 16 - Whitehall Road	WB	11/06/2014	MCC/RSI	No	3482-3473	3482	3473	Yes	Yes	1-way	539	542	0.127	Yes	Yes
458	Calibration	RSI In	247	Site 17 - Bradford Road	SB	11/06/2014	ATC/RSI	No	3195-3944	3195	3944	Yes	Yes	1-way	450	509	2.675	Yes	Yes
459	Calibration	RSI In	248	Site 15 - Birkby Lane	WB	18/06/2014	MCC/RSI	No	3073-3082	3073	3082	Yes	Yes	1-way	173	176	0.205	Yes	Yes
460	Calibration	RSI In	249	Site 14 - Walton Lane	SB	18/06/2014	MCC/RSI	No	3072-3071	3072	3071	Yes	Yes	1-way	215	219	0.276	Yes	Yes
461	Calibration	RSI In	250	Site 12 - A641 Huddersfield Road	NB	10/06/2014	MCC/RSI	No	3132-3125	3132	3125	Yes	Yes	1-way	507	442	2.978	Yes	Yes
462	Calibration	RSI In	251	Site 13 - A644 Wakefield Road	WB	18/06/2014	MCC/RSI	No	3097-3095	3097	3095	Yes	Yes	1-way	433	500	3.083	Yes	Yes
463	Calibration	RSI In	252	Site 11 - Clough Lane	WB	10/06/2014	MCC/RSI	No	3135-3137	3135	3137	Yes	Yes	1-way	468	438	1.400	Yes	Yes
464	Calibration	RSI Out	253	Site 10 - New Hey Road	SWB	10/06/2014	MCC/RSI	No	4291-3173	4291	3173	Yes	Yes	1-way	327	365	2.045	Yes	Yes
465	Calibration	RSI Out	254	Site 9 - New Road	NB	12/06/2014	ATC/RSI	No	3886-3888	3886	3888	Yes	Yes	1-way	91	117	2.521	Yes	Yes
466	Calibration	RSI Out	255	Site 7 - Stainland Road	SB	12/06/2014	MCC/RSI	No	1667-3495	1667	3495	Yes	Yes	1-way	513	489	1.074	Yes	Yes
468	Calibration	RSI Out	257	Site 1 - A58 Rochdale Road	WB	17/06/2014	MCC/RSI	No	3985-4312	3985	4312	Yes	Yes	1-way	311	349	2.115	Yes	Yes
469	Calibration	RSI Out	258	Site 6 - Haley Hill	NWB	19/06/2014	MCC/RSI	No	1522-1523	1522	1523	Yes	Yes	1-way	285	274	0.677	Yes	Yes
470	Calibration	RSI Out	259	Site 4 - Shroggs Road	NB	17/06/2014	MCC/RSI	No	1126-1127	1126	1127	Yes	Yes	1-way	282	289	0.400	Yes	Yes
471	Calibration	RSI Out	260	Site 5 - Ovenden Road	NB	19/06/2014	MCC/RSI	No	2400-1039	2400	1039	Yes	Yes	1-way	773	771	0.065	Yes	Yes
472	Calibration	RSI In	261	Site 3 - Moor End Road	SEB	17/06/2014	ATC/RSI	No	1251-2317	1251	2317	Yes	Yes	1-way	139	101	3.422	Yes	Yes
473	Calibration	RSI Out	262	Site 18 - Wade House Road	SWB	24/06/2014	ATC/RSI	No	4404-3235	4404	3235	Yes	Yes	1-way	603	579	1.002	Yes	Yes
474	Calibration	RSI Out	263	Site 19 - A644 Brighouse & Denholme Gate Road	NB	24/06/2014	ATC/RSI	No	1452-1238	1452	1238	Yes	Yes	1-way	430	380	2.509	Yes	Yes
475	Calibration	RSI Out	264	Site 2 - A646 Burnley Road	WB	17/06/2014	MCC/RSI	No	1095-1094	1095	1094	Yes	Yes	1-way	510	500	0.439	Yes	Yes
476	Calibration		14	A6026	NB	16/10/2014	MCC	No	1663-1662	1663	1662	Yes	Yes	2-way	402	344	3.014	Yes	Yes
477	Calibration		14	A6026	SB	16/10/2014	MCC	No	1662-1663	1662	1663	Yes	Yes	2-way	411	421	0.474	Yes	Yes
478	Calibration		14	Stainland Road	NB	16/10/2014	MCC	No	1667-1663	1667	1663	Yes	Yes	2-way	471	515	2.000	Yes	Yes
479	Calibration		14	Stainland Road	SB	16/10/2014	MCC	No	1663-1667	1663	1667	Yes	Yes	2-way	444	489	2.090	Yes	Yes
480	Calibration		14	A629 Elland Wood Bottom	NB	16/10/2014	MCC	No	1670-1664	1670	1664	Yes	Yes	2-way	1093	1016	2.370	Yes	Yes
481	Calibration		14	A629 Elland Wood Bottom	SB	16/10/2014	MCC	No	1664-1670	1664	1670	Yes	Yes	2-way	1187	1082	3.093	Yes	Yes
482	Calibration		14	A629 Huddersfield Road	NB	16/10/2014	MCC	No	1665-1666	1665	1666	Yes	Yes	2-way	1196	1199	0.080	Yes	Yes
483	Calibration		14	A629 Huddersfield Road	SB	16/10/2014	MCC	No	1666-1665	1666	1665	Yes	Yes	2-way	1254	1183	2.026	Yes	Yes
484	Calibration		1	Hammerstone Road	NB	16/10/2014	MCC	No	3477-3489	3477	3489	Yes	Yes	2-way	92	91	0.113	Yes	Yes
485	Calibration		1	Hammerstone Road	SB	16/10/2014	MCC	No	3489-3477	3489	3477	Yes	Yes	2-way	113	111	0.234	Yes	Yes
486	Calibration		1	Hammerstone Leach Lane	EB	16/10/2014	MCC	No	3503-3477	3503	3477	Yes	Yes	2-way	115	81	3.397	Yes	Yes
487	Calibration		1	Hammerstone Leach Lane	WB	16/10/2014	MCC	No	3477-3503	3477	3503	Yes	Yes	2-way	120	98	2.125	Yes	Yes
488	Calibration		1	Blackley Road	NB	16/10/2014	MCC	No	3476-3477	3476	3477	Yes	Yes	2-way	139	152	1.068	Yes	Yes
489	Calibration		1	Blackley Road	SB	16/10/2014	MCC	No	3477-3476	3477	3476	Yes	Yes	2-way	136	144	0.697	Yes	Yes
490	Calibration		1	Victoria Road	EB	16/10/2014	MCC	No	3477-4036	3477	4036	Yes	Yes	2-way	184	150	2.638	Yes	Yes
491	Calibration		1	Victoria Road	WB	16/10/2014	MCC	No	4036-3477	4036	3477	Yes	Yes	2-way	165	139	2.046	Yes	Yes
557	Calibration		11	Halifax Road	WB	16/10/2014	MCC	No	3248-3281	3248	3281	Yes	Yes	2-way	289	234	3.403	Yes	Yes
558	Calibration		11	Elland Bridge	NB	16/10/2014	MCC	No	3249-3248	3249	3248	Yes	Yes	2-way	411	494	3.924	Yes	Yes
559	Calibration		11	Elland Bridge	SB	16/10/2014	MCC	No	3248-3249	3248	3249	Yes	Yes	2-way	358	534	8.297	No	No
560	Calibration		11	Park Road	EB	16/10/2014	MCC	No	3248-3247	3248	3247	Yes	Yes	2-way	297	311	0.844	Yes	Yes
561	Calibration		11	Park Road	WB	16/10/2014	MCC	No	3247-3248	3247	3248	Yes	Yes	2-way	526	585	2.521	Yes	Yes

Calderdale v36 Screenlines

IP

ID	Name	Link ID	Status	Site Location	Direction	A-Node	B-Node
7	Halifax West Central EB	433	Calibration	Pellon Lane	EB	1575	1576
		313	Calibration	Gibbet Street	EB	1567	1565
		320	Calibration	Hopwood Lane	EB	1582	2723
		193	Calibration	A58 Kings Cross Road	NB	1584	1594
TOTAL							
8	Halifax West Central WB	434	Calibration	Pellon Lane	WB	1576	1575
		314	Calibration	Gibbet Street	WB	1565	1567
		321	Calibration	Hopwood Lane	WB	2723	1582
		194	Calibration	A58 Kings Cross Road	SB	1594	1584
TOTAL							
9	Halifax North SB	349	Calibration	Crag Lane	SB	3966	1043
		274	Calibration	A647 Halifax Road	SB	1243	1036
TOTAL							
10	Halifax North NB	348	Calibration	Crag Lane	NB	1043	3966
		273	Calibration	A647 Halifax Road	NB	1036	1243
TOTAL							
11	Halifax North Central SB	188	Calibration	Site 5 - Ovenden Road	EB	1039	2400
		318	Calibration	Lee Bridge	EB	1632	1631
		186	Calibration	Site 6 - Haley Hill	SB	1523	1522
		393	Calibration	Claremount Road	SB	1203	2399
TOTAL							
12	Halifax North Central NB	471	Calibration	Site 5 - Ovenden Road	WB	2400	1039
		319	Calibration	Lee Bridge	WB	1631	1632
		469	Calibration	Site 6 - Haley Hill	NB	1522	1523

All			
Observed	Modelled	Difference	GEH
587	560	-5%	1.135
281	303	8%	1.332
143	152	6%	0.739
823	787	-4%	1.284
1834	1802	-2%	0.747
805	735	-9%	2.536
63	98	56%	3.917
134	167	24%	2.668
832	859	3%	0.927
1834	1859	1%	0.569
154	159	4%	0.435
268	198	-26%	4.605
422	357	-15%	3.286
143	167	16%	1.868
252	200	-21%	3.460
396	367	-7%	1.473
623	614	-1%	0.360
237	247	4%	0.670
461	415	-10%	2.194
85	91	8%	0.708
1404	1367	-3%	1.015
773	771	0%	0.065
334	317	-5%	0.979
285	274	-4%	0.677

Calderdale v36 Screenlines

IP

ID	Name	Link ID	Status	Site Location	Direction	A-Node	B-Node
13	Central NB	392	Calibration	Claremount Road	NB	2399	1203
		TOTAL					
		200	Calibration	A58 West of	WB	4238	1168
14	Halifax East WB	332	Calibration	Church Lane	NB	3362	1007
		TOTAL					
		199	Calibration	A58 West of	EB	1168	4238
15	Halifax East EB	333	Calibration	Church Lane	SB	1007	3362
		TOTAL					
		490	Calibration	Victoria Road	EB	3477	4036
16	Elland West EB	405	Calibration	Jepson Lane	SB	4408	3371
		TOTAL					
		491	Calibration	Victoria Road	WB	4036	3477
17	Elland West WB	404	Calibration	Jepson Lane	NB	3371	4408
		TOTAL					
		166	Calibration	A6025 Park Road	SB	3245	3358
18	Elland East WB	409	Calibration	Lower Edge Road	WB	3366	3367
		164	Calibration	B6114 Dewsbury Road	WB	4104	3187
		TOTAL					
19	Elland East EB	165	Calibration	A6025 Park Road	NB	3358	3245
		408	Calibration	Lower Edge Road	EB	3367	3366
		163	Calibration	B6114 Dewsbury Road	EB	3187	4104
20	Brighouse	TOTAL					
		3	Calibration	Crowtress Lane	NB	3176	3175

All			
Observed	Modelled	Difference	GEH
100	90	-10%	1.031
1492	1451	-3%	1.064
594	521	-12%	3.110
159	206	29%	3.467
753	727	-4%	0.978
648	609	-6%	1.560
145	175	20%	2.351
793	784	-1%	0.334
184	150	-19%	2.638
300	260	-13%	2.395
484	410	-15%	3.508
165	139	-15%	2.046
265	260	-2%	0.320
430	399	-7%	1.494
403	411	2%	0.393
171	153	-10%	1.361
241	320	33%	4.697
815	885	9%	2.377
408	431	6%	1.097
188	140	-26%	3.745
229	239	4%	0.639
825	810	-2%	0.548
219	291	33%	4.541

Calderdale v36 Screenlines

IP

ID	Name	Link ID	Status	Site Location	Direction	A-Node	B-Node
19	Brighouse South NB	461	Calibration	Site 12 - A641 Huddersfield Road	NB	3132	3125
		TOTAL					
20	Brighouse South SB	4	Calibration	Crowtrees Lane	SB	3175	3176
		178	Calibration	Site 12 - A641 Huddersfield Road	SB	3125	3132
		TOTAL					
21	Brighouse East WB	462	Calibration	Site 13 - A644	WB	3097	3095
		442	Calibration	Coal Pit Lane	WB	4095	4096
		241	Calibration	A643 Cleckheaton Road	SB	3070	3068
		TOTAL					
22	Brighouse East EB	179	Calibration	Site 13 - A644	EB	3095	3097
		441	Calibration	Coal Pit Lane	EB	4096	4095
		240	Calibration	A643 Cleckheaton Road	NB	3068	3070
		TOTAL					
23	Brighouse North SB	249	Calibration	A644 North of	SB	3205	3169
		235	Calibration	A641 North of Brighouse	SB	3085	3086
		TOTAL					
24	Brighouse North NB	248	Calibration	A644 North of	NB	3169	3205
		234	Calibration	A641 North of Brighouse	NB	3086	3085
		TOTAL					
		192	Calibration	Site 2 - A646 Burnley	EB	1094	1095

All			
Observed	Modelled	Difference	GEH
507	442	-13%	2.978
726	733	1%	0.281
233	269	16%	2.318
519	442	-15%	3.496
751	711	-5%	1.476
433	500	15%	3.083
45	45	1%	0.072
221	218	-2%	0.240
699	762	9%	2.349
513	577	12%	2.741
58	51	-12%	0.962
240	223	-7%	1.106
811	851	5%	1.391
409	399	-2%	0.459
561	574	2%	0.552
970	974	0%	0.126
396	395	0%	0.018
560	550	-2%	0.413
955	945	-1%	0.327
538	478	-11%	2.698

Calderdale v36 Screenlines

IP

ID	Name	Link ID	Status	Site Location	Direction	A-Node	B-Node
25	Sowerby Bridge NB	195	Calibration	A58 Calder Bridge	NEB	1113	2275
		211	Calibration	A6026 Wakefield Road	WB	1354	1355
		TOTAL					
26	Sowerby Bridge SB	475	Calibration	Site 2 - A646 Burnley	WB	1095	1094
		196	Calibration	A58 Calder Bridge	SWB	2275	1113
		210	Calibration	A6026 Wakefield Road	EB	1355	1354
		TOTAL					
27	Halifax South East NB	364	Calibration	Hopwood Lane	EB	2332	2341
		338	Calibration	Parkinson Lane	EB	1110	2340
		261	Calibration	A646 Burnley Road	EB	1428	1080
		TOTAL					
28	Halifax South East SB	365	Calibration	Hopwood Lane	WB	2341	2332
		339	Calibration	Parkinson Lane	WB	2340	1110
		262	Calibration	A646 Burnley Road	WB	1080	1428
		TOTAL					
29	Saville Park EB	31	Calibration	Freeschool Lane	EB	2631	1012
		33	Calibration	Skircoat Moor Road	EB	1390	1009
		TOTAL					
30	Saville Park WB	32	Calibration	Freeschool Lane	WB	1012	2631
		34	Calibration	Skircoat Moor Road	WB	1009	1390
		TOTAL					

All			
Observed	Modelled	Difference	GEH
680	701	3%	0.799
318	280	-12%	2.203
1536	1458	-5%	2.013
510	500	-2%	0.439
708	682	-4%	0.960
329	300	-9%	1.621
1546	1482	-4%	1.643
113	82	-27%	3.103
147	127	-14%	1.704
473	333	-30%	6.968
733	542	-26%	7.542
131	91	-31%	3.849
153	168	10%	1.175
436	316	-28%	6.201
721	575	-20%	5.733
235	248	5%	0.832
466	474	2%	0.355
701	722	3%	0.774
256	319	24%	3.692
349	400	14%	2.589
606	719	19%	4.380

Calderdale v36 Link Flows

PM

ID	Calibration / Validation	Area	ID	Site Location	Dir	Date	Data Type	Duplicate?	Ref	A-Node	B-Node	AM Peak	Interpeak	Type	PM Peak				
															ALL VEHICLES				
															Observed	Modelled	GEH	GEH Pass?	Flow Pass?
3	Calibration		157	Crowtrees Lane	NB	12/07/2013	MCC	No	3176-3175	3176	3175	Yes	Yes	1-way	302	385	4.475	Yes	Yes
4	Calibration		157	Crowtrees Lane	SB	12/07/2013	MCC	No	3175-3176	3175	3176	Yes	Yes	1-way	276	308	1.850	Yes	Yes
29	Calibration		163	Huddersfield Road	NB	02/04/2014 - 16/04/2014	ATC	No	1485-2380	1485	2380	Yes	Yes	1-way	520	598	3.329	Yes	Yes
30	Calibration		163	Huddersfield Road	SB	02/04/2014 - 16/04/2014	ATC	No	2380-1485	2380	1485	Yes	Yes	1-way	660	706	1.784	Yes	Yes
31	Calibration		164	Freeschool Lane	EB	02/04/2014 - 16/04/2014	ATC	No	2631-1012	2631	1012	Yes	Yes	1-way	273	388	6.318	No	No
32	Calibration		164	Freeschool Lane	WB	02/04/2014 - 16/04/2014	ATC	No	1012-2631	1012	2631	Yes	Yes	1-way	410	353	2.872	Yes	Yes
33	Calibration		165	Skircoat Moor Road	EB	02/04/2014 - 16/04/2014	ATC	No	1390-1009	1390	1009	Yes	Yes	1-way	526	618	3.876	Yes	Yes
34	Calibration		165	Skircoat Moor Road	WB	02/04/2014 - 16/04/2014	ATC	No	1009-1390	1009	1390	Yes	Yes	1-way	417	509	4.278	Yes	Yes
35	Calibration		166	Skircoat Green Road	NB	02/04/2014 - 16/04/2014	ATC	No	1481-1398	1481	1398	Yes	Yes	1-way	207	196	0.769	Yes	Yes
36	Calibration		166	Skircoat Green Road	SB	02/04/2014 - 16/04/2014	ATC	No	1398-1481	1398	1481	Yes	Yes	1-way	332	284	2.767	Yes	Yes
37	Calibration		167	A6026 Wakefield Road	EB	02/04/2014 - 16/04/2014	ATC	No	2266-1002	2266	1002	Yes	Yes	1-way	651	576	3.054	Yes	Yes
38	Calibration		167	A6026 Wakefield Road	WB	02/04/2014 - 16/04/2014	ATC	No	1002-2266	1002	2266	Yes	Yes	1-way	612	569	1.804	Yes	Yes
39	Validation		168	A629 Huddersfield Road	NB	03/04/2014 - 16/04/2014	ATC	No	1462-1467	1462	1467	Yes	Yes	1-way	1398	1339	1.593	Yes	Yes
40	Validation		168	A629 Huddersfield Road	SB	03/04/2014 - 16/04/2014	ATC	No	1467-1462	1467	1462	Yes	Yes	1-way	1609	1660	1.248	Yes	Yes
43	Validation		169	A629 Skircoat road/Heath Road Junction	NB	08/04/2014	MCC	No	2772-1013	2772	1013	Yes	Yes	1-way	578	627	2.005	Yes	Yes
44	Validation		169	A629 Skircoat Road/Heath Road Junction	SB	08/04/2014	MCC	No	1013-2772	1013	2772	Yes	Yes	1-way	528	757	9.022	No	No
45	Validation		169	A629 Skircoat Road/Heath Road Junction	NEB	08/04/2014	MCC	No	1407-1013	1407	1013	Yes	Yes	1-way	202	243	2.777	Yes	Yes
46	Validation		169	A629 Skircoat Road/Heath Road Junction	SWB	08/04/2014	MCC	No	1013-1407	1013	1407	Yes	Yes	1-way	340	302	2.098	Yes	Yes
47	Calibration		170	A629 Skircoat Road/Free School Lane Junction	SB	08/04/2014	MCC	No	2381-1014	2381	1014	Yes	Yes	1-way	524	584	2.538	Yes	Yes
48	Calibration		170	A629 Skircoat Road/Free School Lane Junction	NB	08/04/2014	MCC	No	1014-2381	1014	2381	Yes	Yes	1-way	576	519	2.428	Yes	Yes
49	Calibration		170	A629 Skircoat Road/Free School Lane Junction	WB	08/04/2014	MCC	No	1485-1014	1485	1014	Yes	Yes	1-way	275	133	9.934	No	No
50	Calibration		170	A629 Skircoat Road/Free School Lane Junction	EB	08/04/2014	MCC	No	1014-1485	1014	1485	Yes	Yes	1-way	213	194	1.365	Yes	Yes
53	Calibration		170	A629 Skircoat Road/Free School Lane Junction	EB	08/04/2014	MCC	No	1616-1014	1616	1014	Yes	Yes	1-way	226	162	4.571	Yes	Yes
54	Calibration		170	A629 Skircoat Road/Free School Lane Junction	WB	08/04/2014	MCC	No	1014-1616	1014	1616	Yes	Yes	1-way	314	127	12.621	No	No
55	Calibration		171	A629 Skircoat Road/Huddersfield Road Junction	SB	08/04/2014	MCC	No	1014-1484	1014	1484	Yes	Yes	1-way	518	552	1.491	Yes	Yes
56	Calibration		171	A629 Skircoat Road/Huddersfield Road Junction	NB	08/04/2014	MCC	No	1484-1014	1484	1014	Yes	Yes	1-way	596	513	3.537	Yes	Yes
57	Calibration		171	A629 Skircoat Road/Huddersfield Road Junction	SWB	08/04/2014	MCC	No	1485-1484	1485	1484	Yes	Yes	1-way	340	573	10.908	No	No
58	Calibration		171	A629 Skircoat Road/Huddersfield Road Junction	NEB	08/04/2014	MCC	No	1484-1485	1484	1485	Yes	Yes	1-way	377	405	1.405	Yes	Yes
67	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	SB	08/04/2014	MCC	No	1400-2388	1400	2388	Yes	Yes	1-way	856	1128	8.634	No	No
68	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	NB	08/04/2014	MCC	No	2388-1400	2388	1400	Yes	Yes	1-way	891	889	0.068	Yes	Yes
69	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	WB	08/04/2014	MCC	No	2608-2388	2608	2388	Yes	Yes	1-way	50	69	2.475	Yes	Yes
70	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	EB	08/04/2014	MCC	No	2388-2608	2388	2608	Yes	Yes	1-way	59	79	2.373	Yes	Yes
71	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	NB	08/04/2014	MCC	No	1199-2388	1199	2388	Yes	Yes	1-way	881	923	1.396	Yes	Yes
72	Validation		173	629 Huddersfield Road/Coronation Road/Stafford Avenue	SB	08/04/2014	MCC	No	2388-1199	2388	1199	Yes	Yes	1-way	837	1152	9.996	No	No
79	Calibration		175	A629 Huddersfield Road/A646 Dry Clough Lane	NB	08/04/2014	MCC	No	2389-1008	2389	1008	Yes	Yes	1-way	1218	1188	0.876	Yes	Yes
80	Calibration		175	A629 Huddersfield Road/A646 Dry Clough Lane	SB	08/04/2014	MCC	No	1008-2389	1008	2389	Yes	Yes	1-way	1036	1426	11.108	No	No
81	Calibration		175	A629 Huddersfield Road/A646 Dry Clough Lane	EB	08/04/2014	MCC	No	2387-1008	2387	1008	Yes	Yes	1-way	315	449	6.842	No	No
82	Calibration		175	A629 Huddersfield Road/A646 Dry Clough Lane	WB	08/04/2014	MCC	No	1008-2387	1008	2387	Yes	Yes	1-way	367	440	3.628	Yes	Yes
83	Validation		176	A629 Huddersfield Road/Dudwell Lane	SB	08/04/2014	MCC	No	2390-1483	2390	1483	Yes	Yes	1-way	1099	1426	9.196	No	No
84	Validation		176	A629 Huddersfield Road/Dudwell Lane	NB	08/04/2014	MCC	No	1483-2390	1483	2390	Yes	Yes	1-way	1223	1188	1.020	Yes	Yes
85	Validation		176	A629 Huddersfield Road/Dudwell Lane	SB	08/04/2014	MCC	No	2391-1483	2391	1483	Yes	Yes	1-way	1297	1149	4.228	Yes	Yes
86	Validation		176	A629 Huddersfield Road/Dudwell Lane	NB	08/04/2014	MCC	No	1483-2391	1483	2391	Yes	Yes	1-way	1305	1453	3.978	Yes	Yes
87	Calibration		176	A629 Huddersfield Road/Dudwell Lane	EB	08/04/2014	MCC	No	1477-1483	1477	1483	Yes	Yes	1-way	285	272	0.760	Yes	Yes
88	Calibration		176	A629 Huddersfield Road/Dudwell Lane	WB	08/04/2014	MCC	No	1483-1477	1483	1477	Yes	Yes	1-way	153	207	3.992	Yes	Yes
95	Validation		178	A646 Dry Clough Lane/Skircoat Green Road	SB	08/04/2014	MCC	No	1391-1009	1391	1009	Yes	Yes	1-way	358	383	1.281	Yes	Yes
96	Validation		178	A646 Dry Clough Lane/Skircoat Green Road	NB	08/04/2014	MCC	No	1009-1391	1009	1391	Yes	Yes	1-way	263	331	3.965	Yes	Yes
97	Validation		178	A646 Dry Clough Lane/Skircoat Green Road	WB	08/04/2014	MCC	No	2385-1009	2385	1009	Yes	Yes	1-way	396	387	0.434	Yes	Yes
98	Validation		178	A646 Dry Clough Lane/Skircoat Green Road	EB	08/04/2014	MCC	No	1009-2385	1009	2385	Yes	Yes	1-way	287	318	1.788	Yes	Yes
99	Calibration		178	A646 Dry Clough Lane/Skircoat Green Road	NB	08/04/2014	MCC	No	1396-1009	1396	1009	Yes	Yes	1-way	340	280	3.385	Yes	Yes
100	Calibration		178	A646 Dry Clough Lane/Skircoat Green Road	SB	08/04/2014	MCC	No	1009-1396	1009	1396	Yes	Yes	1-way	564	510	2.331	Yes	Yes
115	Calibration		182	Heath Road/Free School Lane	SB	08/04/2014	MCC	No	2382-1012	2382	1012	Yes	Yes	1-way	336	302	1.880	Yes	Yes
116	Calibration		182	Heath Road/Free School Lane	NB	08/04/2014	MCC	No	1012-2382	1012	2382	Yes	Yes	1-way	211	243	2.153	Yes	Yes
117	Calibration		182	Heath Road/Free School Lane	WB	08/04/2014	MCC	No	1616-1012	1616	1012	Yes	Yes	1-way	312	127	12.515	No	No
118	Calibration		182	Heath Road/Free School Lane	EB	08/04/2014	MCC	No	1012-1616	1012	1616	Yes	Yes	1-way	216	162	3.904	Yes	Yes
119	Calibration		182	Heath Road/Free School Lane	NB	08/04/2014	MCC	No	1401-1012	1401	1012	Yes	Yes	1-way	275	304	1.681	Yes	Yes
120	Calibration		182	Heath Road/Free School Lane	SB	08/04/2014	MCC	No	1012-1401	1012	1401	Yes	Yes	1-way	369	361	0.398	Yes	Yes
134	Validation		215	Slip onto M62	NB	Jun-14	TRADS	No	3427-3423	3427	3423	Yes	Yes	1-way	874	1028	4.995	Yes	No
135	Calibration	M62	216	M62 at Junction 25	NB	Jun-14	TRADS	No	3413-3421	3413	3421	Yes	Yes	1-way	3253	3860	10.181	No	No
136	Calibration	M62	217	M62 at Junction 25	SB	Jun-14	TRADS	No	3422-3414	3422	3414	Yes	Yes	1-way	4206	4209	0.052	Yes	Yes
137	Calibration	M62	220	M62 approaching Clough Lane	NB	Jun-14	TRADS	No	3406-3408	3406	3408	Yes	Yes	1-way	3582	4152	9.161	No	No
138	Calibration	M62	221	M62 after Clough Lane	SB	Jun-14	TRADS	No	3409-3407	3409	3407	Yes	Yes	1-way	4477	4391	1.290	Yes	Yes
143	Validation		227	Slip onto M62 at J23	SB	Jun-14	TRADS	No	3877-3537	3877	3537	Yes	Yes	1-way	289	260	1.757	Yes	Yes
144	Validation		228	Slip off M62 at J23	NB	Jun-14	TRADS	No	3536-3858	3536	3858	Yes	Yes	1-way	513	456	2.573	Yes	Yes
145	Calibration	M62	229	M62 Next to Laund Road	SB	Jun-14	TRADS	No	3398-3412	3398	3412	Yes	Yes	1-way	3622	3411	3.551	Yes	Yes

Calderdale v36 Link Flows

PM

ID	Calibration / Validation	Area	ID	Site Location	Dir	Date	Data Type	Duplicate?	Ref	A-Node	B-Node	AM Peak	Interpeak	Type	PM Peak				
															ALL VEHICLES				
															Observed	Modelled	GEH	GEH Pass?	Flow Pass?
146	Calibration	M62	230	M62 Next to Laund Road	NB	Jun-14	TRADES	No	3411-3397	3411	3397	Yes	Yes	1-way	3060	2992	1.244	Yes	Yes
149	Calibration		235	Elland Riorges Link	WB	12/06/2014	ANPR	No	3333-3332	3333	3332	Yes	Yes	1-way	253	199	3.564	Yes	Yes
150	Calibration		235	Elland Riorges Link	EB	12/06/2014	ANPR	No	3332-3333	3332	3333	Yes	Yes	1-way	550	580	1.258	Yes	Yes
151	Calibration		233	A629 Calderdale Way	NB	12/06/2014	ANPR	No	3343-3344	3343	3344	Yes	Yes	1-way	392	480	4.209	Yes	Yes
152	Calibration		233	A629 Calderdale Way	SB	12/06/2014	ANPR	No	3260-3286	3260	3286	Yes	Yes	1-way	164	158	0.460	Yes	Yes
153	Calibration		231	Elland Riorges Link	EB	12/06/2014	ANPR	No	3254-3255	3254	3255	Yes	Yes	1-way	420	165	14.921	No	No
154	Calibration		231	Elland Riorges Link	WB	12/06/2014	ANPR	No	3256-3254	3256	3254	Yes	Yes	1-way	999	827	5.692	No	No
155	Calibration		232	A629 Calderdale Way	SB	12/06/2014	ANPR	No	3265-3266	3265	3266	Yes	Yes	1-way	500	424	3.557	Yes	Yes
156	Calibration		232	A629 Calderdale Way	NB	12/06/2014	ANPR	No	3257-3264	3257	3264	Yes	Yes	1-way	245	277	1.988	Yes	Yes
157	Calibration		234	Lowfields Way	SWB	12/06/2014	ANPR	No	3923-3331	3923	3331	Yes	Yes	1-way	521	732	8.423	No	No
158	Calibration		234	Lowfields Way	NEB	12/06/2014	ANPR	No	3331-3923	3331	3923	Yes	Yes	1-way	128	157	2.446	Yes	Yes
159	Validation		236	Bradford Old Road	NB	Jun-14	ATC	No	1443-1442	1443	1442	Yes	Yes	1-way	67	74	0.894	Yes	Yes
160	Validation		236	Bradford Old Road	SB	Jun-14	ATC	No	1442-1443	1442	1443	Yes	Yes	1-way	60	146	8.444	No	Yes
163	Calibration		238	B6114 Dewsbury Road	EB	Jun-14	ATC	No	3187-4104	3187	4104	Yes	Yes	1-way	535	437	4.474	Yes	Yes
164	Calibration		238	B6114 Dewsbury Road	WB	Jun-14	ATC	No	4104-3187	4104	3187	Yes	Yes	1-way	427	499	3.353	Yes	Yes
165	Calibration		239	A6025 Park Road	NB	Jun-14	ATC	No	3358-3245	3358	3245	Yes	Yes	1-way	549	492	2.486	Yes	Yes
166	Calibration		239	A6025 Park Road	SB	Jun-14	ATC	No	3245-3358	3245	3358	Yes	Yes	1-way	595	545	2.126	Yes	Yes
167	Validation		240	A646 Skircoat Moor Road	EB	Jun-14	ATC	No	1389-1062	1389	1062	Yes	Yes	1-way	393	483	4.308	Yes	Yes
168	Validation		240	A646 Skircoat Moor Road	WB	Jun-14	ATC	No	1062-1389	1062	1389	Yes	Yes	1-way	380	300	0.013	Yes	Yes
169	Calibration		242	B6113 Saddleworth Road	EB	Jun-14	ATC	No	3517-3527	3517	3527	Yes	Yes	1-way	159	100	5.169	No	Yes
170	Calibration		242	B6113 Saddleworth Road	WB	Jun-14	ATC	No	3527-3517	3527	3517	Yes	Yes	1-way	282	263	1.163	Yes	Yes
171	Calibration		243	A629 Huddersfield Road	NB	Jun-14	ATC	No	3300-3296	3300	3296	Yes	Yes	1-way	921	1015	3.012	Yes	Yes
173	Validation		245	Calderdale Way at bus stop	SB	Jun-14	ATC	No	3286-3292	3286	3292	Yes	Yes	1-way	928	817	3.760	Yes	Yes
174	Calibration	RSI Out	246	Site 16 - Whitehall Road	EB	11/06/2014	MCC/RSI	No	3473-3482	3473	3482	Yes	Yes	1-way	675	734	2.237	Yes	Yes
175	Calibration	RSI Out	247	Site 17 - Bradford Road	NB	11/06/2014	ATC/RSI	No	3944-3195	3944	3195	Yes	Yes	1-way	631	632	0.036	Yes	Yes
176	Calibration	RSI Out	248	Site 15 - Birkby Lane	EB	18/06/2014	MCC/RSI	No	3082-3073	3082	3073	Yes	Yes	1-way	381	342	2.078	Yes	Yes
177	Calibration	RSI Out	249	Site 14 - Walton Lane	NB	18/06/2014	MCC/RSI	No	3071-3072	3071	3072	Yes	Yes	1-way	616	441	7.597	No	No
178	Calibration	RSI Out	250	Site 12 - A641 Huddersfield Road	SB	10/06/2014	MCC/RSI	No	3125-3132	3125	3132	Yes	Yes	1-way	916	891	0.838	Yes	Yes
179	Calibration	RSI Out	251	Site 13 - A644 Wakefield Road	EB	18/06/2014	MCC/RSI	No	3095-3097	3095	3097	Yes	Yes	1-way	769	852	2.931	Yes	Yes
180	Calibration	RSI Out	252	Site 11 - Clough Lane (A6107)	EB	10/06/2014	MCC/RSI	No	3137-3135	3137	3135	Yes	Yes	1-way	891	795	3.321	Yes	Yes
181	Calibration	RSI In	253	Site 10 - New Hey Road	NEB	10/06/2014	MCC/RSI	No	3173-4291	3173	4291	Yes	Yes	1-way	474	623	6.373	No	No
182	Calibration	RSI In	254	Site 9 - New Road	SB	12/06/2014	ATC/RSI	No	3888-3886	3888	3886	Yes	Yes	1-way	132	89	4.130	Yes	Yes
183	Calibration	RSI In	255	Site 7 - Stainland Road	NB	12/06/2014	MCC/RSI	No	3495-1667	3495	1667	Yes	Yes	1-way	804	821	0.584	Yes	Yes
185	Calibration	RSI In	257	Site 1 - A58 Rochdale Road	EB	17/06/2014	MCC/RSI	No	4312-3985	4312	3985	Yes	Yes	1-way	310	328	1.019	Yes	Yes
186	Calibration	RSI In	258	Site 6 - Haley Hill	SEB	19/06/2014	MCC/RSI	No	1523-1522	1523	1522	Yes	Yes	1-way	597	606	0.347	Yes	Yes
187	Calibration	RSI In	259	Site 4 - Shropps Road	SB	17/06/2014	MCC/RSI	No	1127-1126	1127	1126	Yes	Yes	1-way	223	174	3.479	Yes	Yes
188	Calibration	RSI In	260	Site 5 - Ovenden Road	SB	19/06/2014	MCC/RSI	No	1039-2400	1039	2400	Yes	Yes	1-way	713	790	2.804	Yes	Yes
189	Calibration	RSI Out	261	Site 3 - Moor End Road	NWB	17/06/2014	ATC/RSI	No	2317-1251	2317	1251	Yes	Yes	1-way	205	204	0.052	Yes	Yes
190	Calibration	RSI In	262	Site 18 - Wade House Road	NEB	24/06/2014	ATC/RSI	No	3235-4404	3235	4404	Yes	Yes	1-way	737	652	3.209	Yes	Yes
191	Calibration	RSI In	263	Site 19 - A644 Brighouse & Denholme Gate Road	SB	24/06/2014	ATC/RSI	No	1238-1452	1238	1452	Yes	Yes	1-way	641	554	3.576	Yes	Yes
192	Calibration	RSI In	264	Site 2 - A646 Burnley Road	EB	17/06/2014	MCC/RSI	No	1094-1095	1094	1095	Yes	Yes	1-way	587	549	1.589	Yes	Yes
193	Calibration		1	A58 Kings Cross Road	NB	12-06-2013 to 20-06-2013	ATC	No	1584-1594	1584	1594	Yes	Yes	1-way	922	990	2.192	Yes	Yes
194	Calibration		1	A58 Kings Cross Road	SB	12-06-2013 to 20-06-2013	ATC	No	1594-1584	1594	1584	Yes	Yes	1-way	1186	1262	2.174	Yes	Yes
195	Calibration		2	A58 Calder Bridge	NEB	20-06-2013 to 01-07-2013	ATC	No	1113-2275	1113	2275	Yes	Yes	1-way	692	676	0.620	Yes	Yes
196	Calibration		2	A58 Calder Bridge	SWB	20-06-2013 to 01-07-2013	ATC	No	2275-1113	2275	1113	Yes	Yes	1-way	926	984	1.896	Yes	Yes
197	Calibration		3	A58 Rochdale Road	EB	20-06-2013 to 01-07-2013	ATC	No	8099-1065	8099	1065	Yes	Yes	1-way	546	642	3.937	Yes	Yes
198	Calibration		3	A58 Rochdale Road	WB	20-06-2013 to 01-07-2013	ATC	No	1065-8099	1065	8099	Yes	Yes	1-way	687	1089	13.487	No	No
199	Calibration		4	A58 West of Hipperholme	EB	10-07-2013 to 26-07-2013	ATC	No	1168-4238	1168	4238	Yes	Yes	1-way	677	625	2.025	Yes	Yes
200	Calibration		4	A58 West of Hipperholme	WB	10-07-2013 to 26-07-2013	ATC	No	4238-1168	4238	1168	Yes	Yes	1-way	719	733	0.528	Yes	Yes
206	Validation		8	A6025 Park Road	EB	05-07-2013 to 15-07-2013	ATC	No	3244-3243	3244	3243	Yes	Yes	1-way	555	479	3.320	Yes	Yes
207	Validation		8	A6025 Park Road	WB	05-07-2013 to 15-07-2013	ATC	No	3243-3244	3243	3244	Yes	Yes	1-way	597	520	3.259	Yes	Yes
208	Validation		9	A6026 Wakefield Road	EB	19-06-2013 to 01-07-2013	ATC	No	2272-1092	2272	1092	Yes	Yes	1-way	478	425	2.479	Yes	Yes
209	Validation		9	A6026 Wakefield Road	WB	19-06-2013 to 01-07-2013	ATC	No	1092-2272	1092	2272	Yes	Yes	1-way	760	726	1.250	Yes	Yes
210	Calibration		10	A6026 Wakefield Road	EB	20-06-2013 to 01-07-2013	ATC	No	1355-1354	1355	1354	Yes	Yes	1-way	364	314	2.725	Yes	Yes
211	Calibration		10	A6026 Wakefield Road	WB	20-06-2013 to 01-07-2013	ATC	No	1354-1355	1354	1355	Yes	Yes	1-way	481	386	4.591	Yes	Yes
212	Calibration		11	A6033 South of Todmorden	NB	22-07-2013 to 30-07-2013	ATC	No	4251-4927	4251	4927	Yes	Yes	1-way	403	208	11.173	No	No
213	Calibration		11	A6033 South of Todmorden	SB	22-07-2013 to 30-07-2013	ATC	No	4927-4251	4927	4251	Yes	Yes	1-way	295	159	9.026	No	No
214	Validation		12	A6033 Keighley Road Peckett Well	NB	07-02-2013 to 18-02-2013	ATC	No	3753-3754	3753	3754	Yes	Yes	1-way	154	163	0.716	Yes	Yes
215	Validation		12	A6033 Keighley Road Peckett Well	SB	07-02-2013 to 18-02-2013	ATC	No	3754-3753	3754	3753	Yes	Yes	1-way	145	106	3.489	Yes	Yes
218	Calibration		14	A6036 North of Northowram	NB	10-07-2013 to 18-07-2013	ATC	No	1167-1234	1167	1234	Yes	Yes	1-way	548	629	3.356	Yes	Yes
219	Calibration		14	A6036 North of Northowram	SB	10-07-2013 to 18-07-2013	ATC	No	1234-1167	1234	1167	Yes	Yes	1-way	584	607	0.953	Yes	Yes
222	Calibration		16	A6139 Tuel Lane	NB	20-06-2013 to 01-07-2013	ATC	No	1356-1112	1356	1112	Yes	Yes	1-way	407	467	2.863	Yes	Yes
223	Calibration		16	A6139 Tuel Lane	SB	20-06-2013 to 01-07-2013	ATC	No	1112-1356	1112	1356	Yes	Yes	1-way	458	402	2.722	Yes	Yes
224	Calibration		17	A629 Halifax Causeway Foot	NB	11-04-2013 to 22-04-2013	ATC	No	4016-1247	4016	1247	Yes	Yes	1-way	526	498	1.210	Yes	Yes

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															ALL VEHICLES				
															Observed	Modelled	GEH	GEH Pass?	Flow Pass?
225	Calibration		17	A629 Halifax Causeway Foot	SB	11-04-2013 to 22-04-2013	ATC	No	1247-4016	1247	4016	Yes	Yes	1-way	473	396	3.722	Yes	Yes
230	Calibration		21	A641 Huddersfield Road	NB	08-07-2013 to 16-07-2013	ATC	No	3930-3946	3930	3946	Yes	Yes	1-way	765	665	3.731	Yes	Yes
231	Calibration		21	A641 Huddersfield Road	SB	08-07-2013 to 16-07-2013	ATC	No	3946-3930	3946	3930	Yes	Yes	1-way	933	955	0.702	Yes	Yes
234	Calibration		23	A641 North of Birghouse	NB	05-07-2013 to 23-07-2013	ATC	No	3086-3085	3086	3085	Yes	Yes	1-way	769	642	4.783	Yes	No
235	Calibration		23	A641 North of Brighouse	SB	05-07-2013 to 23-07-2013	ATC	No	3085-3086	3085	3086	Yes	Yes	1-way	868	924	1.860	Yes	Yes
236	Validation		24	A643 North of Anchor Bridge	NB	08-07-2013 to 16-07-2013	ATC	No	3039-3921	3039	3921	Yes	Yes	1-way	638	927	10.316	No	No
237	Validation		24	A643 North of Anchor Bridge	SB	08-07-2013 to 16-07-2013	ATC	No	3921-3039	3921	3039	Yes	Yes	1-way	821	787	1.194	Yes	Yes
240	Calibration		26	A643 Cleckheaton Road	NB	05-07-2013 to 15-07-2013	ATC	No	3068-3070	3068	3070	Yes	Yes	1-way	409	427	0.902	Yes	Yes
241	Calibration		26	A643 Cleckheaton Road	SB	05-07-2013 to 15-07-2013	ATC	No	3070-3068	3070	3068	Yes	Yes	1-way	367	317	2.693	Yes	Yes
244	Validation		28	A644 North of Hipperholme	NB	10-07-2013 to 18-07-2013	ATC	No	3229-3225	3229	3225	Yes	Yes	1-way	602	500	4.323	Yes	No
245	Validation		28	A644 North of Hipperholme	SB	10-07-2013 to 18-07-2013	ATC	No	3225-3229	3225	3229	Yes	Yes	1-way	618	539	3.261	Yes	Yes
246	Calibration		29	A644 Commercial Street	EB	02-07-2014 to 11-07-2014	ATC	No	3042-3942	3042	3942	Yes	Yes	1-way	856	889	1.120	Yes	Yes
247	Calibration		29	A644 Commercial Street	WB	02-07-2014 to 11-07-2014	ATC	No	3942-3042	3942	3042	Yes	Yes	1-way	927	639	10.292	No	No
248	Calibration		30	A644 North of Brighouse	NB	05-07-2013 to 15-07-2013	ATC	No	3169-3205	3169	3205	Yes	Yes	1-way	464	507	1.949	Yes	Yes
249	Calibration		30	A644 North of Brighouse	SB	05-07-2013 to 15-07-2013	ATC	No	3205-3169	3205	3169	Yes	Yes	1-way	443	438	0.211	Yes	Yes
250	Calibration		31	A644 Wakefield Road	EB	17-07-2013 to 30-07-2013	ATC	No	4092-4093	4092	4093	Yes	Yes	1-way	985	759	7.657	No	No
251	Calibration		31	A644 Wakefield Road	WB	17-07-2013 to 30-07-2013	ATC	No	4093-4092	4093	4092	Yes	Yes	1-way	843	727	4.135	Yes	Yes
254	Validation		33	A646 West of Todmorden	NB	06-08-2014 to 15-08-2014	ATC	No	3684-3687	3684	3687	Yes	Yes	1-way	225	195	2.099	Yes	Yes
255	Validation		33	A644 West of Todmorden	SB	06-08-2014 to 15-08-2014	ATC	No	3687-3684	3687	3684	Yes	Yes	1-way	272	145	8.791	No	No
259	Validation		36	Skircoat Moor Road	NB	12-06-2013 to 20-06-2013	ATC	No	2294-1064	2294	1064	Yes	Yes	1-way	568	829	9.871	No	No
260	Validation		36	Skircoat Moor Road	SB	12-06-2013 to 20-06-2013	ATC	No	1064-2294	1064	2294	Yes	Yes	1-way	555	498	2.483	Yes	Yes
261	Calibration		37	A646 Burnley Road	EB	12-06-2013 to 20-06-2013	ATC	No	1428-1080	1428	1080	Yes	Yes	1-way	431	348	4.204	Yes	Yes
262	Calibration		37	A646 Burnley Road	WB	12-06-2013 to 20-06-2013	ATC	No	1080-1428	1080	1428	Yes	Yes	1-way	651	646	0.211	Yes	Yes
265	Calibration		39	A646 Halifax Road	EB	01-02-2013 to 07-02-2013	ATC	No	3662-3659	3662	3659	Yes	Yes	1-way	373	397	1.224	Yes	Yes
266	Calibration		39	A646 Halifax Road	WB	01-02-2013 to 07-02-2013	ATC	No	3659-3662	3659	3662	Yes	Yes	1-way	471	471	0.032	Yes	Yes
267	Calibration		40	A646 Halifax Road	EB	01-02-2013 to 07-02-2013	ATC	No	3667-3666	3667	3666	Yes	Yes	1-way	464	389	3.615	Yes	Yes
268	Calibration		40	A646 Halifax Road	WB	01-02-2013 to 07-02-2013	ATC	No	3666-3667	3666	3667	Yes	Yes	1-way	547	453	4.178	Yes	Yes
269	Calibration		41	A646 Burnley Road	EB	13-11-2013 to 22-11-2013	ATC	No	3618-3617	3618	3617	Yes	Yes	1-way	577	655	3.110	Yes	Yes
270	Calibration		41	A646 Burnley Road	WB	13-11-2013 to 22-11-2013	ATC	No	3617-3618	3617	3618	Yes	Yes	1-way	671	719	1.829	Yes	Yes
273	Calibration		43	A647 Halifax Road	NB	27-06-2013 to 05-07-2013	ATC	No	1036-1243	1036	1243	Yes	Yes	1-way	499	370	6.191	No	No
274	Calibration		43	A647 Halifax Road	SB	27-06-2013 to 05-07-2013	ATC	No	1243-1036	1243	1036	Yes	Yes	1-way	347	316	1.704	Yes	Yes
279	Validation		46	A649 Lightcliffe	EB	15-07-2013 to 23-07-2013	ATC	No	3218-3221	3218	3221	Yes	Yes	1-way	437	412	1.225	Yes	Yes
280	Validation		46	A649 Lightcliffe	WB	15-07-2013 to 23-07-2013	ATC	No	3221-3218	3221	3218	Yes	Yes	1-way	395	409	0.692	Yes	Yes
283	Calibration		48	A672 SW of Ripponden	EB	26-07-2013 to 05-08-2013	ATC	No	3573-3574	3573	3574	Yes	Yes	1-way	301	315	0.843	Yes	Yes
284	Calibration		48	A672 SW of Ripponden	WB	26-07-2013 to 05-08-2013	ATC	No	3574-3573	3574	3573	Yes	Yes	1-way	211	178	2.367	Yes	Yes
295	Calibration		54	B6112 Stainland Road	EB	05-11-2013 to 13-11-2013	ATC	No	3502-4373	3502	4373	Yes	Yes	1-way	198	337	8.536	No	No
296	Calibration		54	B6112 Stainland Road	WB	05-11-2013 to 13-11-2013	ATC	No	4373-3502	4373	3502	Yes	Yes	1-way	421	647	9.788	No	No
299	Calibration		56	B6112 Stainland Road	NB	05-11-2013 to 13-11-2013	ATC	No	3501-3500	3501	3500	Yes	Yes	1-way	208	196	0.914	Yes	Yes
300	Calibration		56	B6112 Stainland Road	SB	05-11-2013 to 13-11-2013	ATC	No	3500-3501	3500	3501	Yes	Yes	1-way	352	399	2.421	Yes	Yes
303	Validation		58	B6114 Ringstone Edge Moor	NB	29-07-2013 to 06-08-2013	ATC	No	3732-3731	3732	3731	Yes	Yes	1-way	39	70	4.114	Yes	Yes
304	Validation		58	B6114 Ringstone Edge Moor	SB	29-07-2013 to 06-08-2013	ATC	No	3731-3732	3731	3732	Yes	Yes	1-way	53	139	8.761	No	Yes
309	Calibration		62	Bradshaw Lane	NB	12-03-2013 to 21-03-2013	ATC	No	7104-1318	7104	1318	Yes	Yes	1-way	149	171	1.781	Yes	Yes
310	Calibration		62	Bradshaw Lane	SB	12-03-2013 to 21-03-2013	ATC	No	1318-7104	1318	7104	Yes	Yes	1-way	166	308	9.218	No	No
311	Validation		63	Long Causeway	EB	22-07-2013 to 30-07-2013	ATC	No	3846-3845	3846	3845	Yes	Yes	1-way	61	44	2.315	Yes	Yes
312	Validation		63	Long Causeway	WB	22-07-2013 to 30-07-2013	ATC	No	3845-3846	3845	3846	Yes	Yes	1-way	39	63	3.311	Yes	Yes
313	Calibration		64	Gibbet Street	EB	02-06-2014 to 17-06-2014	ATC	No	1567-1565	1567	1565	Yes	Yes	1-way	283	250	1.993	Yes	Yes
314	Calibration		64	Gibbet Street	WB	02-06-2014 to 17-06-2014	ATC	No	1565-1567	1565	1567	Yes	Yes	1-way	74	87	1.493	Yes	Yes
315	Calibration		65	Slip onto Burdock Way	NB	03-06-2013 to 12-06-2013	ATC	No	4422-1556	4422	1556	Yes	Yes	1-way	565	612	1.945	Yes	Yes
316	Validation		66	Windy Bank Lane	EB	05-07-2013 to 15-07-2013	ATC	No	4008-1241	4008	1241	Yes	Yes	1-way	150	344	12.334	No	No
317	Validation		66	Windy Bank Lane	WB	05-07-2013 to 15-07-2013	ATC	No	1241-4008	1241	4008	Yes	Yes	1-way	142	313	11.369	No	No
318	Calibration		67	Lee Bridge	EB	17-06-2014 to 25-06-2014	ATC	No	1632-1631	1632	1631	Yes	Yes	1-way	270	219	3.294	Yes	Yes
319	Calibration		67	Lee Bridge	WB	17-06-2014 to 25-06-2014	ATC	No	1631-1632	1631	1632	Yes	Yes	1-way	517	453	2.920	Yes	Yes
320	Calibration		68	Hopwood Lane	EB	02-06-2014 to 25-06-2014	ATC	No	1582-2723	1582	2723	Yes	Yes	1-way	170	173	0.267	Yes	Yes
321	Calibration		68	Hopwood Lane	WB	02-06-2014 to 25-06-2014	ATC	No	2723-1582	2723	1582	Yes	Yes	1-way	170	197	1.949	Yes	Yes
324	Validation		70	Swires Road	EB	03-06-2013 to 12-06-2013	ATC	No	1058-1408	1058	1408	Yes	Yes	1-way	218	111	8.393	No	No
325	Validation		70	Swires Road	WB	03-06-2013 to 12-06-2013	ATC	No	1408-1058	1408	1058	Yes	Yes	1-way	332	285	2.683	Yes	Yes
328	Validation		72	Haugh Shaw Road	EB	02-06-2014 to 17-06-2014	ATC	No	1409-2366	1409	2366	Yes	Yes	1-way	173	311	8.887	No	No
329	Validation		72	Haugh Shaw Road	WB	02-06-2014 to 17-06-2014	ATC	No	2366-1409	2366	1409	Yes	Yes	1-way	387	368	0.942	Yes	Yes
332	Calibration		74	Church Lane	NB	05-07-2013 to 15-07-2013	ATC	No	3362-1007	3362	1007	Yes	Yes	1-way	347	405	2.943	Yes	Yes
333	Calibration		74	Church Lane	SB	05-07-2013 to 15-07-2013	ATC	No	1007-3362	1007	3362	Yes	Yes	1-way	281	474	9.895	No	No
334	Calibration		76	B6138 Cragg Vale	NB	06-08-2014 to 15-08-2014	ATC	No	3647-3612	3647	3612	Yes	Yes	1-way	151	148	0.309	Yes	Yes
335	Calibration		76	B6138 Cragg Vale	SB	06-08-2014 to 15-08-2014	ATC	No	3612-3647	3612	3647	Yes	Yes	1-way	170	131	3.187	Yes	Yes
336	Calibration		77	Mixenden Road	NB	20-05-2014 to 23-05-2014	ATC	No	4423-3969	4423	3969	Yes	Yes	1-way	123	131	0.698	Yes	Yes
337	Calibration		77	Mixenden Road	SB	20-05-2014 to 23-05-2014	ATC	No	3969-4423	3969	4423	Yes	Yes	1-way	73	77	0.465	Yes	Yes

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															ALL VEHICLES				
															Observed	Modelled	GEH	GEH Pass?	Flow Pass?
338	Calibration		78	Parkinson Lane	EB	02-06-2014 to 17-06-2014	ATC	No	1110-2340	1110	2340	Yes	Yes	1-way	174	184	0.765	Yes	Yes
339	Calibration		78	Parkinson Lane	WB	02-06-2014 to 17-06-2014	ATC	No	2340-1110	2340	1110	Yes	Yes	1-way	240	205	2.335	Yes	Yes
340	Validation		80	Stanley Road	NB	17-04-2013 to 25-04-2013	ATC	No	2709-4319	2709	4319	Yes	Yes	1-way	87	14	10.196	No	Yes
341	Validation		80	Stanley Road	SB	17-04-2013 to 25-04-2013	ATC	No	4319-2709	4319	2709	Yes	Yes	1-way	77	89	1.383	Yes	Yes
342	Calibration		82	B6113 Rochdale Road	EB	06-08-2014 to 14-08-2014	ATC	No	3524-3523	3524	3523	Yes	Yes	1-way	192	165	2.020	Yes	Yes
343	Calibration		82	B6113 Rochdale Road	WB	06-08-2014 to 14-08-2014	ATC	No	3523-3524	3523	3524	Yes	Yes	1-way	145	233	6.359	No	Yes
344	Calibration		83	Elland Bypass	NB	20-06-2013 to 05-07-2013	ATC	No	3277-1200	3277	1200	Yes	Yes	1-way	1114	1071	1.308	Yes	Yes
345	Calibration		83	Elland Bypass	SB	20-06-2013 to 05-07-2013	ATC	No	1200-3278	1200	3278	Yes	Yes	1-way	1453	1388	1.736	Yes	Yes
348	Calibration		86	Crag Lane	NB	12-05-2014 to 20-05-2014	ATC	No	1043-3966	1043	3966	Yes	Yes	1-way	231	210	1.367	Yes	Yes
349	Calibration		86	Crag Lane	SB	12-05-2014 to 20-05-2014	ATC	No	3966-1043	3966	1043	Yes	Yes	1-way	211	169	3.102	Yes	Yes
350	Calibration		87	A641 Bradford Road	NB	02-09-2014 to 10-09-2014	ATC	No	3158-3156	3158	3156	Yes	Yes	1-way	775	654	4.496	Yes	No
351	Calibration		87	A641 Bradford Road	SB	02-09-2014 to 10-09-2014	ATC	No	3156-3158	3156	3158	Yes	Yes	1-way	767	939	5.899	No	No
360	Validation		96	Midgley Road	NB	04-11-2013 to 13-11-2013	ATC	No	4388-4392	4388	4392	Yes	Yes	1-way	88	161	6.569	No	Yes
361	Validation		96	Midgley Road	SB	04-11-2013 to 13-11-2013	ATC	No	4392-4388	4392	4388	Yes	Yes	1-way	57	195	12.238	No	No
362	Calibration		97	Hopwood Lane	EB	04-11-2013 to 13-11-2013	ATC	No	1124-2336	1124	2336	Yes	Yes	1-way	85	92	0.770	Yes	Yes
363	Calibration		97	Hopwood Lane	WB	04-11-2013 to 13-11-2013	ATC	No	2336-1124	2336	1124	Yes	Yes	1-way	121	85	3.606	Yes	Yes
364	Calibration		98	Hopwood Lane	EB	04-11-2013 to 13-11-2013	ATC	No	2332-2341	2332	2341	Yes	Yes	1-way	151	115	3.093	Yes	Yes
365	Calibration		98	Hopwood Lane	WB	04-11-2013 to 13-11-2013	ATC	No	2341-2332	2341	2332	Yes	Yes	1-way	200	155	3.384	Yes	Yes
366	Calibration		100	High Street	EB	04-11-2013 to 13-11-2013	ATC	No	3891-3535	3891	3535	Yes	Yes	1-way	103	97	0.654	Yes	Yes
367	Calibration		100	High Street	WB	04-11-2013 to 13-11-2013	ATC	No	3535-3891	3535	3891	Yes	Yes	1-way	116	131	1.399	Yes	Yes
368	Validation		101	Broad Carr Lane	EB	05-11-2013 to 13-11-2013	ATC	No	3504-3503	3504	3503	Yes	Yes	1-way	110	142	2.804	Yes	Yes
369	Validation		101	Broad Carr Lane	WB	05-11-2013 to 13-11-2013	ATC	No	3503-3504	3503	3504	Yes	Yes	1-way	249	249	0.015	Yes	Yes
372	Calibration		104	Albert Road	EB	25-11-2013 to 03-12-2013	ATC	No	2303-1071	2303	1071	Yes	Yes	1-way	111	102	0.897	Yes	Yes
373	Calibration		104	Albert Road	WB	25-11-2013 to 03-12-2013	ATC	No	1071-2303	1071	2303	Yes	Yes	1-way	174	211	2.644	Yes	Yes
378	Validation		107	Gibbet Street	EB	25-11-2013 to 03-12-2013	ATC	No	2306-2307	2306	2307	Yes	Yes	1-way	227	138	6.585	No	Yes
379	Validation		107	Gibbet Street	WB	25-11-2013 to 03-12-2013	ATC	No	2307-2306	2307	2306	Yes	Yes	1-way	277	126	10.580	No	No
380	Calibration		108	Highroad Well Lane	EB	25-11-2013 to 03-12-2013	ATC	No	1375-2316	1375	2316	Yes	Yes	1-way	54	30	3.606	Yes	Yes
381	Calibration		108	Highroad Well Lane	WB	25-11-2013 to 03-12-2013	ATC	No	2316-1375	2316	1375	Yes	Yes	1-way	115	76	4.015	Yes	Yes
384	Validation		110	Pellon New Road	EB	28-11-2013 to 06-12-2013	ATC	No	1121-2402	1121	2402	Yes	Yes	1-way	246	179	4.593	Yes	Yes
385	Validation		110	Pellon New Road	WB	28-11-2013 to 06-12-2013	ATC	No	2402-1121	2402	1121	Yes	Yes	1-way	346	301	2.521	Yes	Yes
386	Calibration		111	Roils Head Road	EB	25-11-2013 to 03-12-2013	ATC	No	1133-2295	1133	2295	Yes	Yes	1-way	73	18	8.221	No	Yes
387	Calibration		111	Roils Head Road	WB	25-11-2013 to 03-12-2013	ATC	No	2295-1133	2295	1133	Yes	Yes	1-way	120	61	6.216	No	Yes
392	Calibration		116	Claremount Road	NB	07-11-2013 to 15-11-2013	ATC	No	2399-1203	2399	1203	Yes	Yes	1-way	230	202	1.900	Yes	Yes
393	Calibration		116	Claremount Road	SB	07-11-2013 to 15-11-2013	ATC	No	1203-2399	1203	2399	Yes	Yes	1-way	180	184	0.341	Yes	Yes
402	Validation		122	Hullenedge Road	EB	25-11-2013 to 03-12-2013	ATC	No	3486-3372	3486	3372	Yes	Yes	1-way	27	104	9.522	No	Yes
403	Validation		122	Hullenedge Road	WB	25-11-2013 to 03-12-2013	ATC	No	3372-3486	3372	3486	Yes	Yes	1-way	138	153	1.240	Yes	Yes
404	Calibration		123	Jepson Lane	NB	13-11-2013 to 22-11-2013	ATC	No	3371-4408	3371	4408	Yes	Yes	1-way	400	423	1.134	Yes	Yes
405	Calibration		123	Jepson Lane	SB	13-11-2013 to 22-11-2013	ATC	No	4408-3371	4408	3371	Yes	Yes	1-way	351	330	1.118	Yes	Yes
406	Validation		124	Elland Lane	EB	14-11-2013 to 22-11-2013	ATC	No	3334-3335	3334	3335	Yes	Yes	1-way	522	554	1.410	Yes	Yes
407	Validation		124	Elland Lane	WB	14-11-2013 to 22-11-2013	ATC	No	3335-3334	3335	3334	Yes	Yes	1-way	252	191	4.116	Yes	Yes
408	Calibration		125	Lower Edge Road	EB	14-11-2013 to 22-11-2013	ATC	No	3367-3366	3367	3366	Yes	Yes	1-way	414	445	1.463	Yes	Yes
409	Calibration		125	Lower Edge Road	WB	14-11-2013 to 22-11-2013	ATC	No	3366-3367	3366	3367	Yes	Yes	1-way	220	175	3.168	Yes	Yes
410	Calibration		126	A58 New Bank	WB	01-06-2014 to 30-06-2014	ATC	No	1033-1515	1033	1515	Yes	Yes	1-way	993	1500	14.360	No	No
411	Calibration		126	A58 New Bank	EB	01-06-2014 to 30-06-2014	ATC	No	1514-1033	1514	1033	Yes	Yes	1-way	1662	1737	1.820	Yes	Yes
412	Calibration		127	A58 Kings Cross Road	EB	01-06-2014 to 30-06-2014	ATC	No	1431-2365	1431	2365	Yes	Yes	1-way	727	787	2.201	Yes	Yes
413	Calibration		127	A58 Kings Cross Road	WB	01-06-2014 to 30-06-2014	ATC	No	2365-1431	2365	1431	Yes	Yes	1-way	755	683	2.678	Yes	Yes
414	Calibration		128	A58 Rochdale Road	EB	08-01-2014 to 16-01-2014	ATC	No	3588-3587	3588	3587	Yes	Yes	1-way	120	117	0.271	Yes	Yes
415	Calibration		128	A58 Rochdale Road	WB	08-01-2014 to 16-01-2014	ATC	No	3587-3588	3587	3588	Yes	Yes	1-way	156	153	0.260	Yes	Yes
418	Validation		130	A629 Skircoat Road	NB	01-06-2014 to 30-06-2014	ATC	No	2369-1013	2369	1013	Yes	Yes	1-way	714	978	9.071	No	No
419	Validation		130	A629 Skircoat Road	SB	01-06-2014 to 30-06-2014	ATC	No	1013-2369	1013	2369	Yes	Yes	1-way	885	790	3.300	Yes	Yes
420	Calibration		131	A646 Market Street	EB	08-01-2014 to 16-01-2014	ATC	No	3635-3633	3635	3633	Yes	Yes	1-way	521	576	2.345	Yes	Yes
422	Calibration		131	A646 Market Street	WB	08-01-2014 to 16-01-2014	ATC	No	3633-3635	3633	3635	Yes	Yes	1-way	759	741	0.640	Yes	Yes
423	Calibration		132	A646 Burnley Road	EB	01-03-2014 to 10-03-2014	ATC	No	3614-3606	3614	3606	Yes	Yes	1-way	640	602	1.564	Yes	Yes
424	Calibration		132	A646 Burnley Road	WB	01-03-2014 to 10-03-2014	ATC	No	3606-3614	3606	3614	Yes	Yes	1-way	724	623	3.913	Yes	Yes
429	Calibration		135	B6113 Elland Road	NB	08-01-2014 to 16-01-2014	ATC	No	3729-3584	3729	3584	Yes	Yes	1-way	337	373	1.909	Yes	Yes
430	Calibration		135	B6113 Elland Road	SB	08-01-2014 to 16-01-2014	ATC	No	3584-3729	3584	3729	Yes	Yes	1-way	346	263	4.763	Yes	Yes
431	Calibration		136	B6114 Saddleworth Road	NB	08-01-2014 to 16-01-2014	ATC	No	3530-3533	3530	3533	Yes	Yes	1-way	91	100	0.964	Yes	Yes
432	Calibration		136	B6114 Saddleworth Road	SB	08-01-2014 to 16-01-2014	ATC	No	3533-3530	3533	3530	Yes	Yes	1-way	206	263	3.713	Yes	Yes
433	Calibration		137	Pellon Lane	EB	01-06-2014 to 30-06-2014	ATC	No	1575-1576	1575	1576	Yes	Yes	1-way	548	517	1.319	Yes	Yes
434	Calibration		137	Pellon Lane	WB	01-06-2014 to 30-06-2014	ATC	No	1576-1575	1576	1575	Yes	Yes	1-way	726	676	1.896	Yes	Yes
435	Calibration		138	Siddal New Road	NB	01-06-2014 to 30-06-2014	ATC	No	1189-1190	1189	1190	Yes	Yes	1-way	271	339	3.917	Yes	Yes
436	Calibration		138	Siddal New Road	SB	01-06-2014 to 30-06-2014	ATC	No	1190-1189	1190	1189	Yes	Yes	1-way	393	370	1.167	Yes	Yes
437	Validation		139	Shay Syke	NB	01-06-2014 to 30-06-2014	ATC	No	2379-1016	2379	1016	Yes	Yes	1-way	502	619	4.918	Yes	No
438	Validation		139	Shay Syke	SB	01-06-2014 to 30-06-2014	ATC	No	1016-2379	1016	2379	Yes	Yes	1-way	763	710	1.965	Yes	Yes

Calderdale v36 Link Flows

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															PM Peak ALL VEHICLES				
ID	Calibration / Validation	Area	ID	Site Location	Dir	Date	Data Type	Duplicate?	Ref	A-Node	B-Node	AM Peak	Interpeak	Type	Observed	Modelled	GEH	GEH Pass?	Flow Pass?
441	Calibration		142	Coal Pit Lane	EB	28-02-2014 to 10-03-2014	ATC	No	4096-4095	4096	4095	Yes	Yes	1-way	262	238	1.528	Yes	Yes
442	Calibration		142	Coal Pit Lane	WB	28-02-2014 to 10-03-2014	ATC	No	4095-4096	4095	4096	Yes	Yes	1-way	60	60	0.020	Yes	Yes
445	Calibration		144	A58 Whitehall Road	EB	14-08-2014 to 22-08-2014	ATC	No	3197-3209	3197	3209	Yes	Yes	1-way	611	691	3.164	Yes	Yes
446	Calibration		144	A58 Whitehall Road	WB	14-08-2014 to 22-08-2014	ATC	No	3209-3197	3209	3197	Yes	Yes	1-way	809	827	0.650	Yes	Yes
457	Calibration	RSI In	246	Site 16 - Whitehall Road	WB	11/06/2014	MCC/RSI	No	3482-3473	3482	3473	Yes	Yes	1-way	932	735	6.834	No	No
458	Calibration	RSI In	247	Site 17 - Bradford Road	SB	11/06/2014	ATC/RSI	No	3195-3944	3195	3944	Yes	Yes	1-way	729	777	1.765	Yes	Yes
459	Calibration	RSI In	248	Site 15 - Birkby Lane	WB	18/06/2014	MCC/RSI	No	3073-3082	3073	3082	Yes	Yes	1-way	515	469	2.062	Yes	Yes
460	Calibration	RSI In	249	Site 14 - Walton Lane	SB	18/06/2014	MCC/RSI	No	3072-3071	3072	3071	Yes	Yes	1-way	442	382	2.955	Yes	Yes
461	Calibration	RSI In	250	Site 12 - A641 Huddersfield Road	NB	10/06/2014	MCC/RSI	No	3132-3125	3132	3125	Yes	Yes	1-way	856	835	0.729	Yes	Yes
462	Calibration	RSI In	251	Site 13 - A644 Wakefield Road	WB	18/06/2014	MCC/RSI	No	3097-3095	3097	3095	Yes	Yes	1-way	381	416	1.743	Yes	Yes
463	Calibration	RSI In	252	Site 11 - Clough Lane	WB	10/06/2014	MCC/RSI	No	3135-3137	3135	3137	Yes	Yes	1-way	864	827	1.281	Yes	Yes
464	Calibration	RSI Out	253	Site 10 - New Hey Road	SWB	10/06/2014	MCC/RSI	No	4291-3173	4291	3173	Yes	Yes	1-way	655	595	2.393	Yes	Yes
465	Calibration	RSI Out	254	Site 9 - New Road	NB	12/06/2014	ATC/RSI	No	3886-3888	3886	3888	Yes	Yes	1-way	213	210	0.212	Yes	Yes
466	Calibration	RSI Out	255	Site 7 - Stainland Road	SB	12/06/2014	MCC/RSI	No	1667-3495	1667	3495	Yes	Yes	1-way	768	733	1.266	Yes	Yes
468	Calibration	RSI Out	257	Site 1 - A58 Rochdale Road	WB	17/06/2014	MCC/RSI	No	3985-4312	3985	4312	Yes	Yes	1-way	583	573	0.427	Yes	Yes
469	Calibration	RSI Out	258	Site 6 - Haley Hill	NWB	19/06/2014	MCC/RSI	No	1522-1523	1522	1523	Yes	Yes	1-way	441	522	3.708	Yes	Yes
470	Calibration	RSI Out	259	Site 4 - Shroggs Road	NB	17/06/2014	MCC/RSI	No	1126-1127	1126	1127	Yes	Yes	1-way	577	596	0.775	Yes	Yes
471	Calibration	RSI Out	260	Site 5 - Ovenden Road	NB	19/06/2014	MCC/RSI	No	2400-1039	2400	1039	Yes	Yes	1-way	1182	1278	2.739	Yes	Yes
472	Calibration	RSI In	261	Site 3 - Moor End Road	SEB	17/06/2014	ATC/RSI	No	1251-2317	1251	2317	Yes	Yes	1-way	133	136	0.222	Yes	Yes
473	Calibration	RSI Out	262	Site 18 - Wade House Road	SWB	24/06/2014	ATC/RSI	No	4404-3235	4404	3235	Yes	Yes	1-way	963	827	4.561	Yes	Yes
474	Calibration	RSI Out	263	Site 19 - A644 Brighouse & Denholme Gate Road	NB	24/06/2014	ATC/RSI	No	1452-1238	1452	1238	Yes	Yes	1-way	696	711	0.564	Yes	Yes
475	Calibration	RSI Out	264	Site 2 - A646 Burnley Road	WB	17/06/2014	MCC/RSI	No	1095-1094	1095	1094	Yes	Yes	1-way	780	707	2.682	Yes	Yes
476	Calibration		14	A6026	NB	16/10/2014	MCC	No	1663-1662	1663	1662	Yes	Yes	2-way	632	569	2.586	Yes	Yes
477	Calibration		14	A6026	SB	16/10/2014	MCC	No	1662-1663	1662	1663	Yes	Yes	2-way	658	576	3.313	Yes	Yes
478	Calibration		14	Stainland Road	NB	16/10/2014	MCC	No	1667-1663	1667	1663	Yes	Yes	2-way	793	821	0.974	Yes	Yes
479	Calibration		14	Stainland Road	SB	16/10/2014	MCC	No	1663-1667	1663	1667	Yes	Yes	2-way	732	733	0.049	Yes	Yes
480	Calibration		14	A629 Elland Wood Bottom	NB	16/10/2014	MCC	No	1670-1664	1670	1664	Yes	Yes	2-way	1201	1071	3.853	Yes	Yes
481	Calibration		14	A629 Elland Wood Bottom	SB	16/10/2014	MCC	No	1664-1670	1664	1670	Yes	Yes	2-way	1509	1388	3.187	Yes	Yes
482	Calibration		14	A629 Huddersfield Road	NB	16/10/2014	MCC	No	1665-1666	1665	1666	Yes	Yes	2-way	1448	1339	2.926	Yes	Yes
483	Calibration		14	A629 Huddersfield Road	SB	16/10/2014	MCC	No	1666-1665	1666	1665	Yes	Yes	2-way	1669	1660	0.229	Yes	Yes
484	Calibration		1	Hammerstone Road	NB	16/10/2014	MCC	No	3477-3489	3477	3489	Yes	Yes	2-way	265	240	1.553	Yes	Yes
485	Calibration		1	Hammerstone Road	SB	16/10/2014	MCC	No	3489-3477	3489	3477	Yes	Yes	2-way	154	190	2.711	Yes	Yes
486	Calibration		1	Hammerstone Leach Lane	EB	16/10/2014	MCC	No	3503-3477	3503	3477	Yes	Yes	2-way	136	142	0.496	Yes	Yes
487	Calibration		1	Hammerstone Leach Lane	WB	16/10/2014	MCC	No	3477-3503	3477	3503	Yes	Yes	2-way	298	249	2.994	Yes	Yes
488	Calibration		1	Blackley Road	NB	16/10/2014	MCC	No	3476-3477	3476	3477	Yes	Yes	2-way	326	408	4.282	Yes	Yes
489	Calibration		1	Blackley Road	SB	16/10/2014	MCC	No	3477-3476	3477	3476	Yes	Yes	2-way	353	555	9.472	No	No
490	Calibration		1	Victoria Road	EB	16/10/2014	MCC	No	3477-4036	3477	4036	Yes	Yes	2-way	230	240	0.677	Yes	Yes
491	Calibration		1	Victoria Road	WB	16/10/2014	MCC	No	4036-3477	4036	3477	Yes	Yes	2-way	530	552	0.965	Yes	Yes
557	Calibration		11	Halifax Road	WB	16/10/2014	MCC	No	3248-3281	3248	3281	Yes	Yes	2-way	292	259	2.004	Yes	Yes
558	Calibration		11	Elland Bridge	NB	16/10/2014	MCC	No	3249-3248	3249	3248	Yes	Yes	2-way	718	853	4.801	Yes	No
559	Calibration		11	Elland Bridge	SB	16/10/2014	MCC	No	3248-3249	3248	3249	Yes	Yes	2-way	593	861	9.929	No	No
560	Calibration		11	Park Road	EB	16/10/2014	MCC	No	3248-3247	3248	3247	Yes	Yes	2-way	585	615	1.238	Yes	Yes
561	Calibration		11	Park Road	WB	16/10/2014	MCC	No	3247-3248	3247	3248	Yes	Yes	2-way	742	882	4.919	Yes	No

Calderdale v36 Screenlines

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ID	Name	Link ID	Status	Site Location	Direction	A-Node	B-Node
1	Halifax South NB	183	Calibration	Site 7 - Stainland Road	NB	3495	1667
		344	Calibration	Elland Bypass	NB	3277	1200
		TOTAL					
2	Halifax South SB	466	Calibration	Site 7 - Stainland Road	SB	1667	3495
		345	Calibration	Elland Bypass	SB	1200	3278
		TOTAL					
3	Halifax South Central NB	116	Calibration	Heath Road/Free	NB	1012	2382
		48	Calibration	A629 Skircoat	NB	1014	2381
		29	Calibration	Huddersfield Road	NB	1485	2380
		435	Calibration	Siddal New Road	NB	1189	1190
		TOTAL					
4	Halifax South Central SB	115	Calibration	Heath Road/Free	SB	2382	1012
		47	Calibration	A629 Skircoat	SB	2381	1014
		30	Calibration	Huddersfield Road	SB	2380	1485
		436	Calibration	Siddal New Road	SB	1190	1189
		TOTAL					
5	Halifax West EB	472	Calibration	Site 3 - Moor End	SB	1251	2317
		423	Calibration	A646 Burnley Road	EB	3614	3606
		185	Calibration	Site 1 - A58 Rochdale Road	NB	4312	3985
		TOTAL					
6	Halifax West WB	189	Calibration	Site 3 - Moor End	NB	2317	1251
		424	Calibration	A646 Burnley Road	WB	3606	3614
		468	Calibration	Site 1 - A58 Rochdale Road	SB	3985	4312
		TOTAL					

All			
Observed	Modelled	Difference	GEH
804	821	2%	0.584
1114	1071	-4%	1.308
1918	1892	-1%	0.609
768	733	-5%	1.266
1453	1388	-5%	1.736
2221	2121	-5%	2.148
211	243	15%	2.153
576	519	-10%	2.428
520	598	15%	3.329
271	339	25%	3.917
1578	1700	8%	3.033
336	302	-10%	1.880
524	584	11%	2.538
660	706	7%	1.784
393	370	-6%	1.167
1912	1962	3%	1.135
133	136	2%	0.222
640	602	-6%	1.564
310	328	6%	1.019
1083	1065	-2%	0.555
205	204	0%	0.052
724	623	-14%	3.913
583	573	-2%	0.427
1512	1400	-7%	2.949

Calderdale v36 Screenlines

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ID	Name	Link ID	Status	Site Location	Direction	A-Node	B-Node
7	Halifax West Central EB	433	Calibration	Pellon Lane	EB	1575	1576
		313	Calibration	Gibbet Street	EB	1567	1565
		320	Calibration	Hopwood Lane	EB	1582	2723
		193	Calibration	A58 Kings Cross Road	NB	1584	1594
TOTAL							
8	Halifax West Central WB	434	Calibration	Pellon Lane	WB	1576	1575
		314	Calibration	Gibbet Street	WB	1565	1567
		321	Calibration	Hopwood Lane	WB	2723	1582
		194	Calibration	A58 Kings Cross Road	SB	1594	1584
TOTAL							
9	Halifax North SB	349	Calibration	Crag Lane	SB	3966	1043
		274	Calibration	A647 Halifax Road	SB	1243	1036
TOTAL							
10	Halifax North NB	348	Calibration	Crag Lane	NB	1043	3966
		273	Calibration	A647 Halifax Road	NB	1036	1243
TOTAL							
11	Halifax North Central SB	188	Calibration	Site 5 - Ovenden Road	EB	1039	2400
		318	Calibration	Lee Bridge	EB	1632	1631
		186	Calibration	Site 6 - Haley Hill	SB	1523	1522
		393	Calibration	Claremount Road	SB	1203	2399
TOTAL							
12	Halifax North Central NB	471	Calibration	Site 5 - Ovenden Road	WB	2400	1039
		319	Calibration	Lee Bridge	WB	1631	1632
		469	Calibration	Site 6 - Haley Hill	NB	1522	1523

All			
Observed	Modelled	Difference	GEH
548	517	-6%	1.319
283	250	-12%	1.993
170	173	2%	0.267
922	990	7%	2.192
1923	1931	0%	0.189
726	676	-7%	1.896
74	87	18%	1.493
170	197	15%	1.949
1186	1262	6%	2.174
2156	2221	3%	1.403
211	169	-20%	3.102
347	316	-9%	1.704
558	485	-13%	3.232
231	210	-9%	1.367
499	370	-26%	6.191
730	581	-20%	5.835
713	790	11%	2.804
270	219	-19%	3.294
597	606	1%	0.347
180	184	3%	0.341
1760	1798	2%	0.913
1182	1278	8%	2.739
517	453	-12%	2.920
441	522	18%	3.708

Calderdale v36 Screenlines

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ID	Name	Link ID	Status	Site Location	Direction	A-Node	B-Node
13	Central NB	392	Calibration	Claremount Road	NB	2399	1203
		TOTAL					
		200	Calibration	A58 West of Church Lane	WB	4238	1168
14	Halifax East WB	332	Calibration	Church Lane	NB	3362	1007
		TOTAL					
		199	Calibration	A58 West of Church Lane	EB	1168	4238
15	Halifax East EB	333	Calibration	Church Lane	SB	1007	3362
		TOTAL					
		490	Calibration	Victoria Road	EB	3477	4036
16	Elland West EB	405	Calibration	Jepson Lane	SB	4408	3371
		TOTAL					
		491	Calibration	Victoria Road	WB	4036	3477
17	Elland West WB	404	Calibration	Jepson Lane	NB	3371	4408
		TOTAL					
		166	Calibration	A6025 Park Road	SB	3245	3358
18	Elland East WB	409	Calibration	Lower Edge Road	WB	3366	3367
		164	Calibration	B6114 Dewsbury Road	WB	4104	3187
		TOTAL					
19	Elland East EB	165	Calibration	A6025 Park Road	NB	3358	3245
		408	Calibration	Lower Edge Road	EB	3367	3366
		163	Calibration	B6114 Dewsbury Road	EB	3187	4104
20	Brighouse	TOTAL					
		3	Calibration	Crowtress Lane	NB	3176	3175

All			
Observed	Modelled	Difference	GEH
230	202	-12%	1.900
2371	2456	4%	1.734
719	733	2%	0.528
347	405	16%	2.943
1067	1138	7%	2.148
677	625	-8%	2.025
281	474	68%	9.895
958	1099	15%	4.384
230	240	5%	0.677
351	330	-6%	1.118
581	571	-2%	0.427
530	552	4%	0.965
400	423	6%	1.134
930	975	5%	1.472
595	545	-9%	2.126
220	175	-20%	3.168
427	499	17%	3.353
1242	1219	-2%	0.659
549	492	-10%	2.486
414	445	7%	1.463
535	437	-18%	4.474
1499	1374	-8%	3.299
302	385	27%	4.475

Calderdale v36 Screenlines

PM

ID	Name	Link ID	Status	Site Location	Direction	A-Node	B-Node
19	Brighouse South NB	461	Calibration	Site 12 - A641 Huddersfield Road	NB	3132	3125
		TOTAL					
20	Brighouse South SB	4	Calibration	Crowtrees Lane	SB	3175	3176
		178	Calibration	Site 12 - A641 Huddersfield Road	SB	3125	3132
		TOTAL					
		462	Calibration	Site 13 - A644	WB	3097	3095
21	Brighouse East WB	442	Calibration	Coal Pit Lane	WB	4095	4096
		241	Calibration	A643 Cleckheaton Road	SB	3070	3068
		TOTAL					
		179	Calibration	Site 13 - A644	EB	3095	3097
22	Brighouse East EB	441	Calibration	Coal Pit Lane	EB	4096	4095
		240	Calibration	A643 Cleckheaton Road	NB	3068	3070
		TOTAL					
		249	Calibration	A644 North of	SB	3205	3169
23	Brighouse North SB	235	Calibration	A641 North of Brighouse	SB	3085	3086
		TOTAL					
24	Brighouse North NB	248	Calibration	A644 North of	NB	3169	3205
		234	Calibration	A641 North of Brighouse	NB	3086	3085
		TOTAL					
		192	Calibration	Site 2 - A646 Burnley	EB	1094	1095

All			
Observed	Modelled	Difference	GEH
856	835	-2%	0.729
1158	1220	5%	1.790
276	308	11%	1.850
916	891	-3%	0.838
1192	1198	1%	0.185
381	416	9%	1.743
60	60	0%	0.020
367	317	-14%	2.693
808	793	-2%	0.537
769	852	11%	2.931
262	238	-9%	1.528
409	427	5%	0.902
1440	1518	5%	2.021
443	438	-1%	0.211
868	924	6%	1.860
1311	1362	4%	1.402
464	507	9%	1.949
769	642	-17%	4.783
1233	1149	-7%	2.438
587	549	-6%	1.589

Calderdale v36 Screenlines

PM

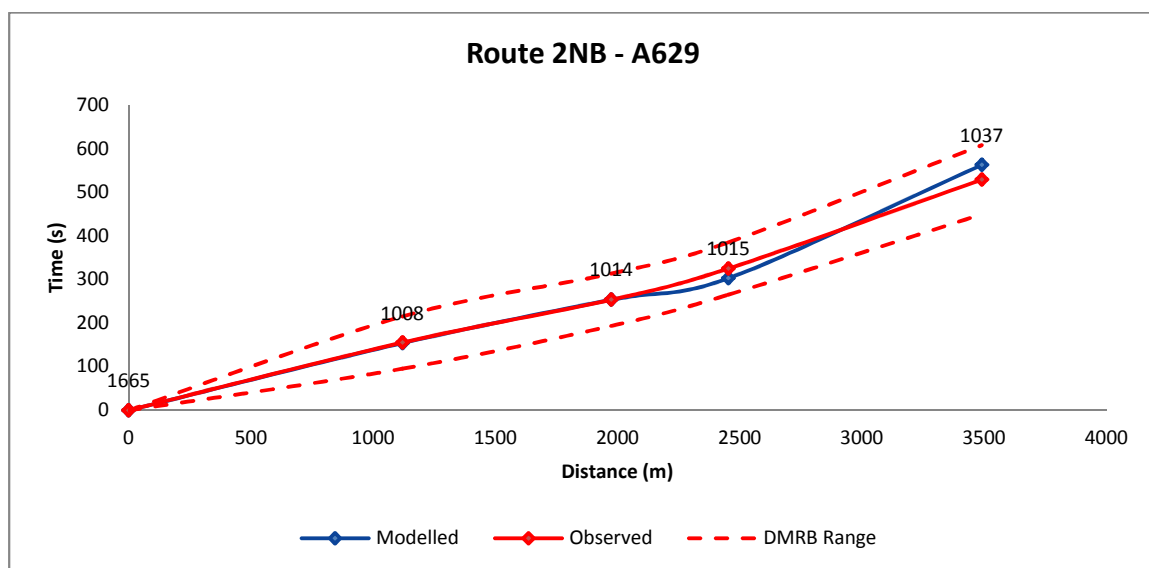
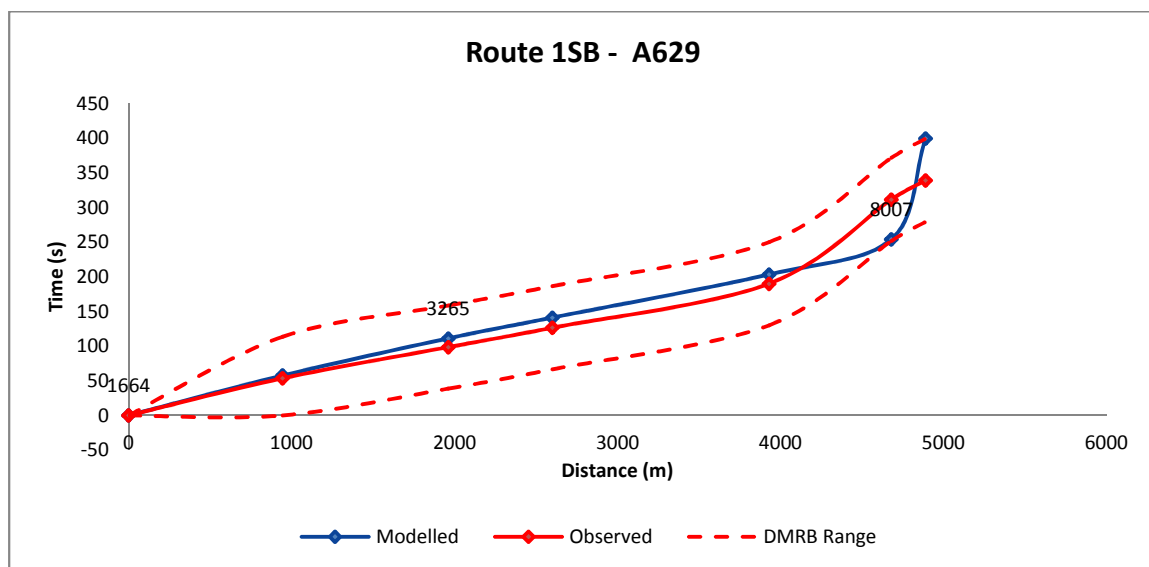
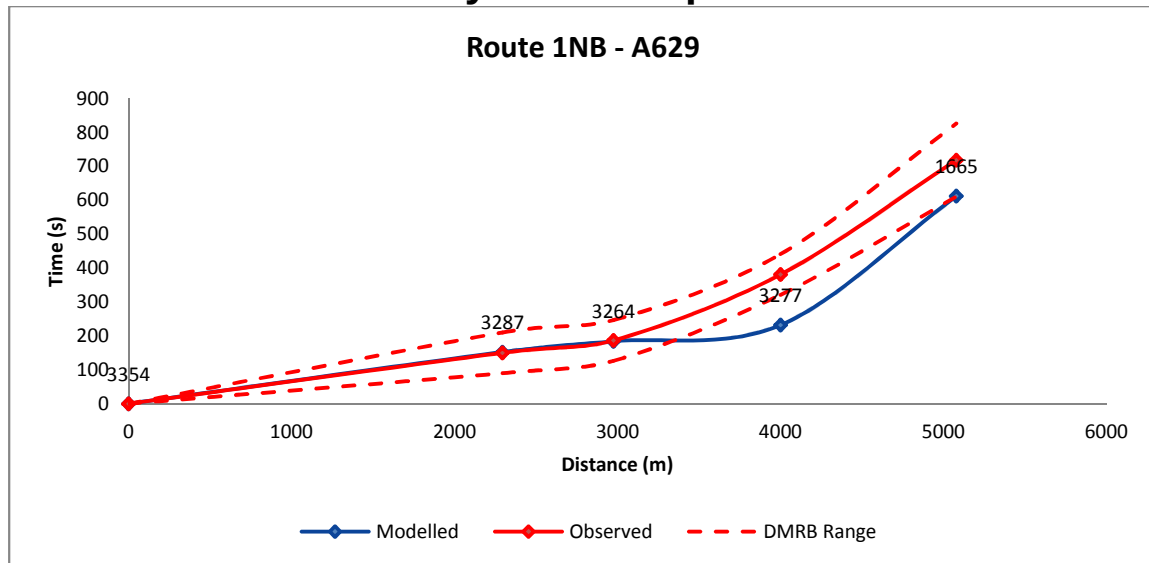
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25	Sowerby Bridge NB	195	Calibration	A58 Calder Bridge	NEB	1113	2275
		211	Calibration	A6026 Wakefield Road	WB	1354	1355
		TOTAL					
26	Sowerby Bridge SB	475	Calibration	Site 2 - A646 Burnley	WB	1095	1094
		196	Calibration	A58 Calder Bridge	SWB	2275	1113
		210	Calibration	A6026 Wakefield Road	EB	1355	1354
		TOTAL					
27	Halifax South East NB	364	Calibration	Hopwood Lane	EB	2332	2341
		338	Calibration	Parkinson Lane	EB	1110	2340
		261	Calibration	A646 Burnley Road	EB	1428	1080
		TOTAL					
28	Halifax South East SB	365	Calibration	Hopwood Lane	WB	2341	2332
		339	Calibration	Parkinson Lane	WB	2340	1110
		262	Calibration	A646 Burnley Road	WB	1080	1428
		TOTAL					
29	Saville Park EB	31	Calibration	Freeschool Lane	EB	2631	1012
		33	Calibration	Skircoat Moor Road	EB	1390	1009
		TOTAL					
30	Saville Park WB	32	Calibration	Freeschool Lane	WB	1012	2631
		34	Calibration	Skircoat Moor Road	WB	1009	1390
		TOTAL					

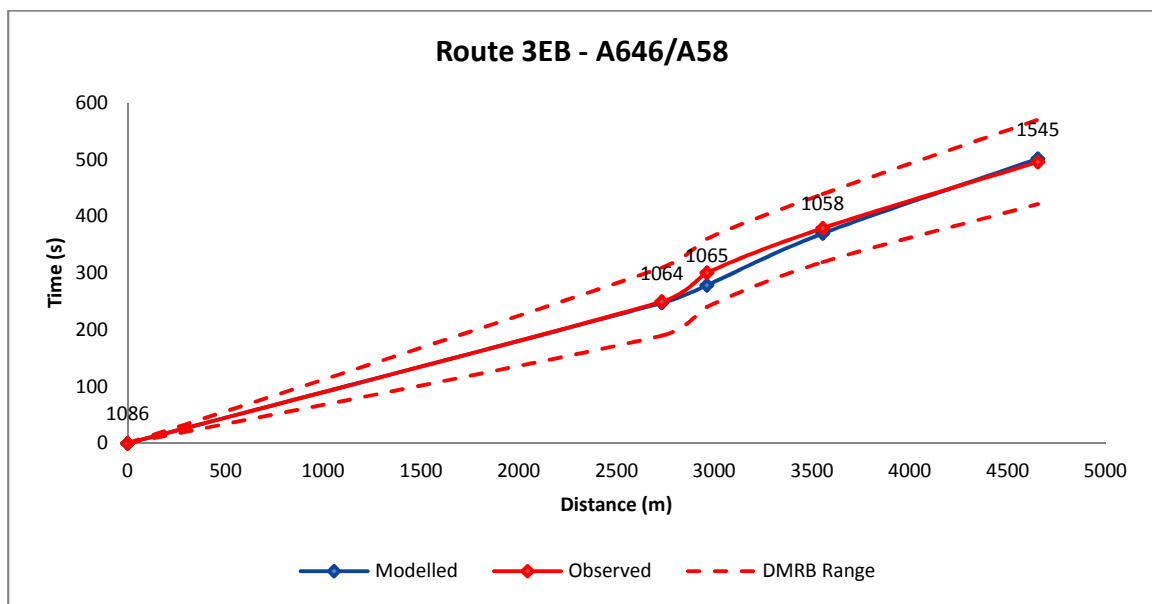
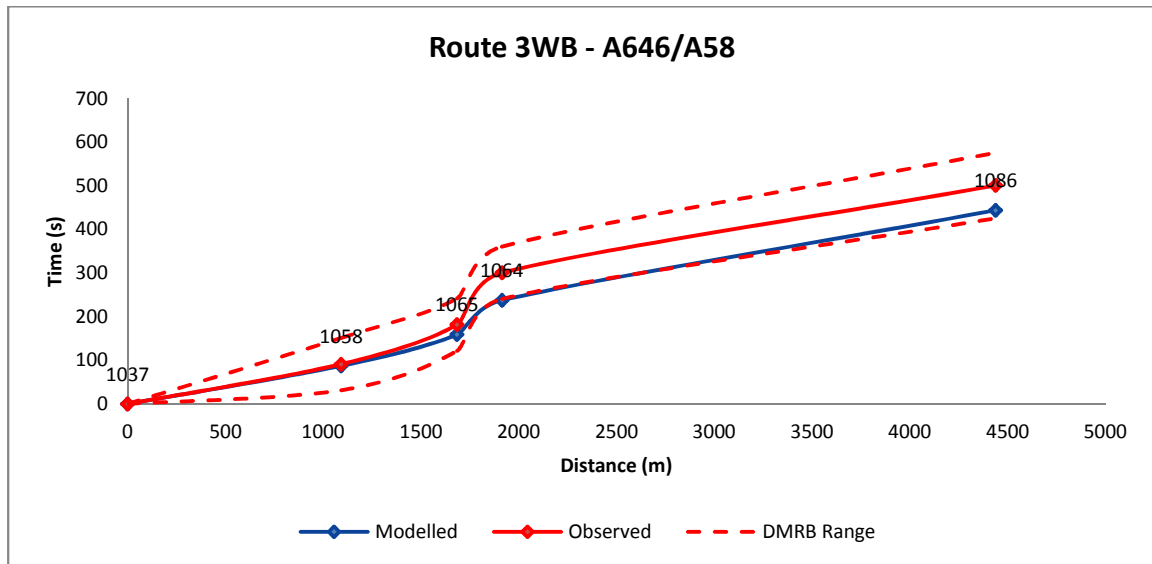
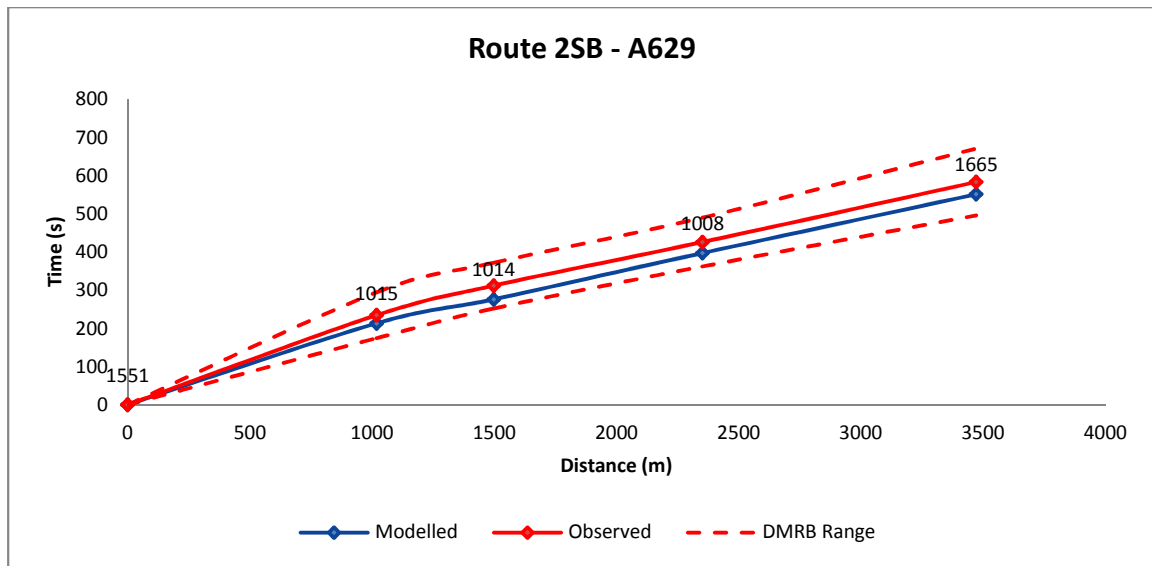
All			
Observed	Modelled	Difference	GEH
692	676	-2%	0.620
481	386	-20%	4.591
1760	1611	-9%	3.645
780	707	-9%	2.682
926	984	6%	1.896
364	314	-14%	2.725
2070	2005	-3%	1.434
151	115	-24%	3.093
174	184	6%	0.765
431	348	-19%	4.204
756	647	-14%	4.095
200	155	-23%	3.384
240	205	-15%	2.335
651	646	-1%	0.211
1091	1005	-8%	2.634
273	388	42%	6.318
526	618	18%	3.876
799	1006	26%	6.909
410	353	-14%	2.872
417	509	22%	4.278
827	863	4%	1.238

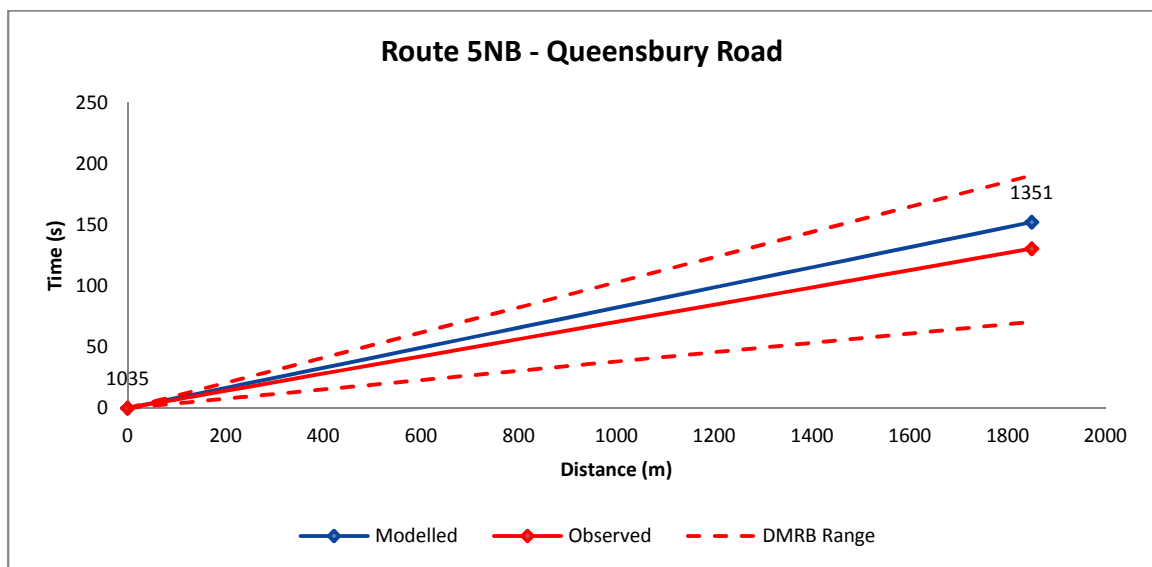
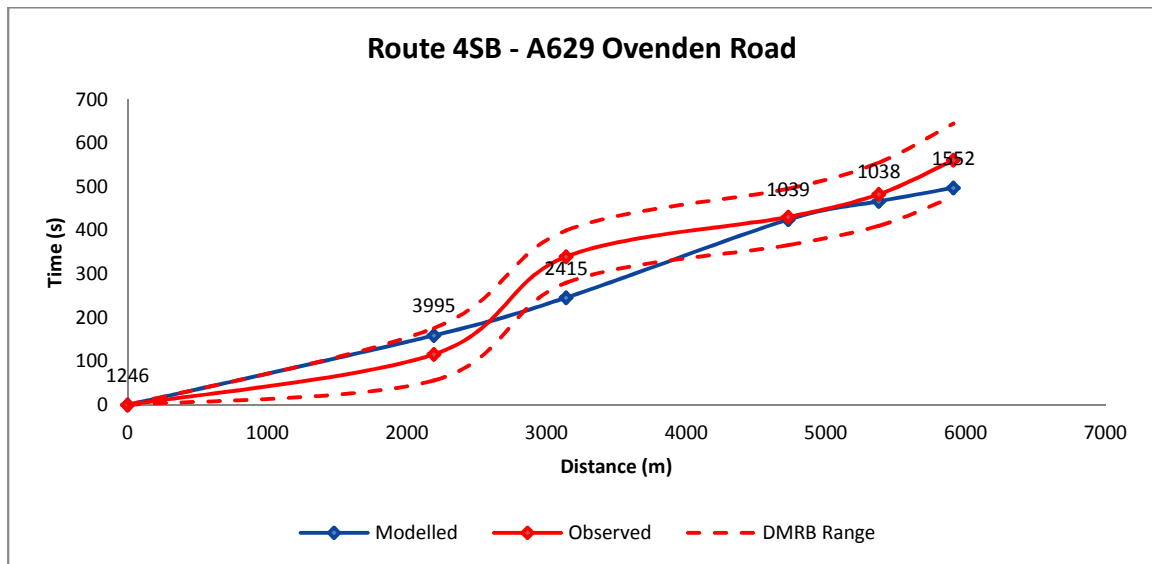
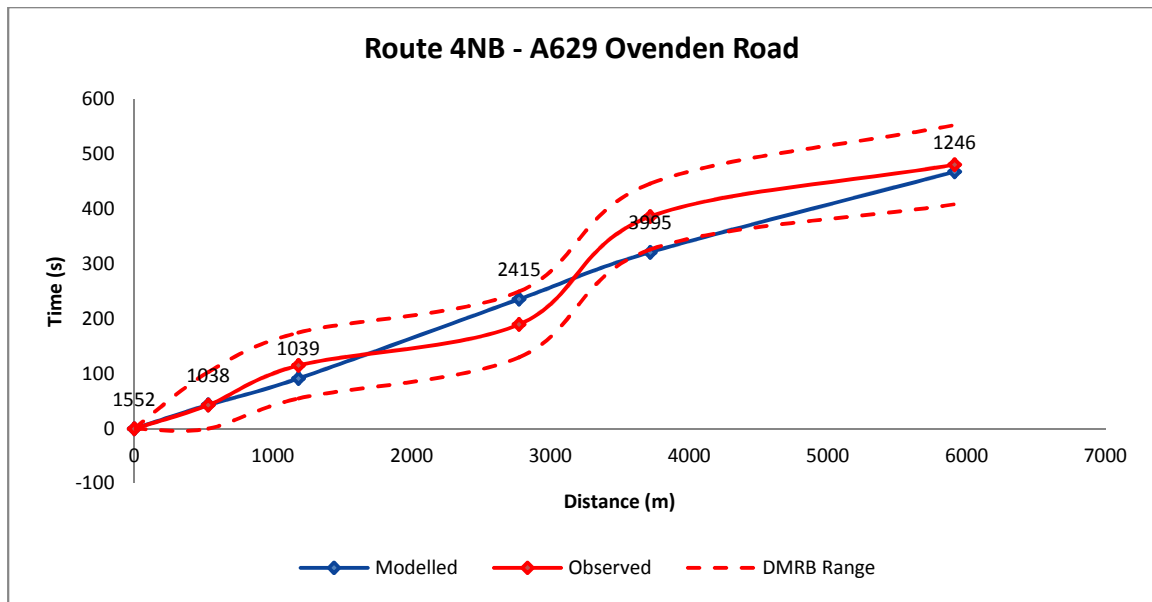
Appendix G

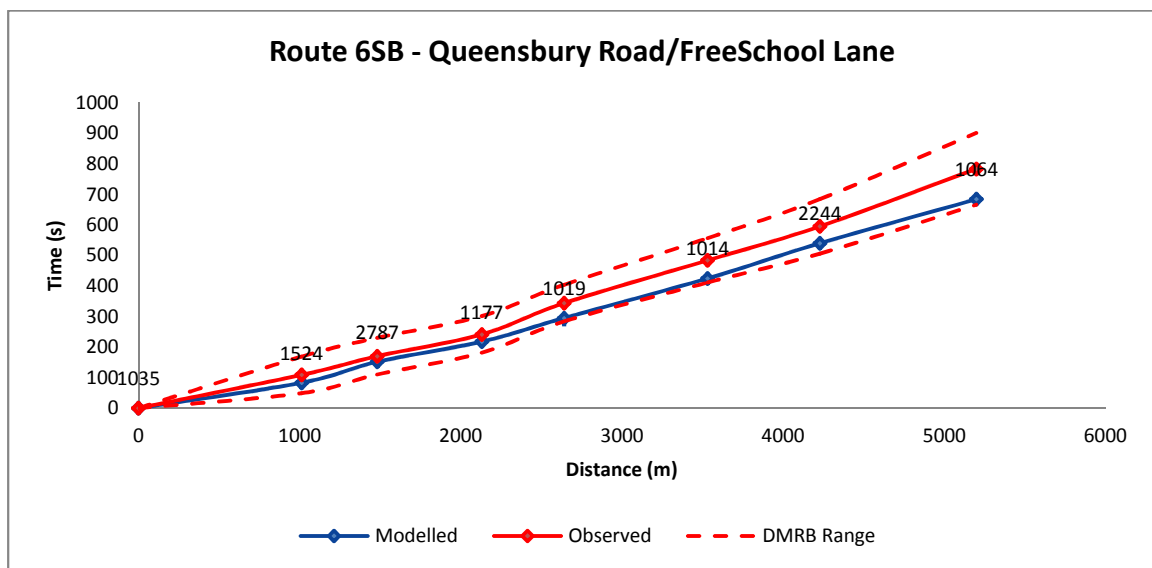
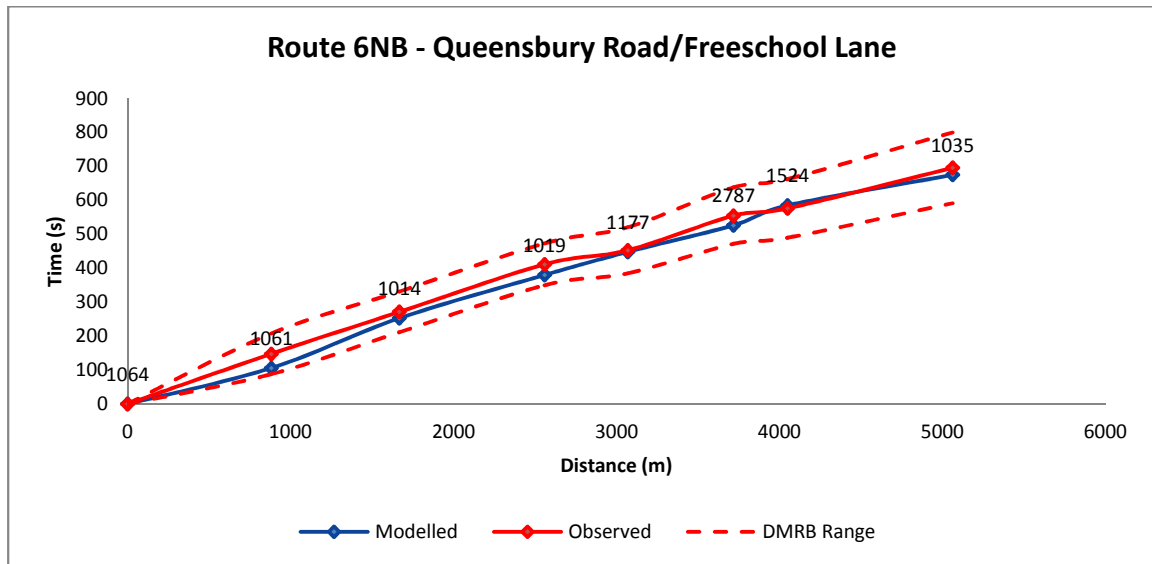
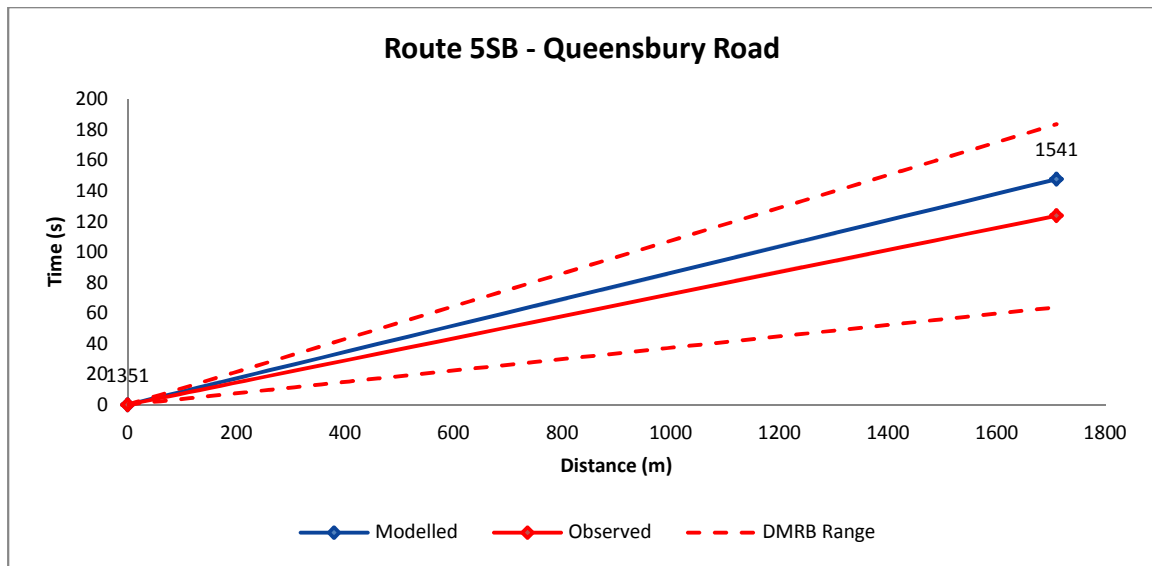
JOURNEY TIME ROUTE RESULTS

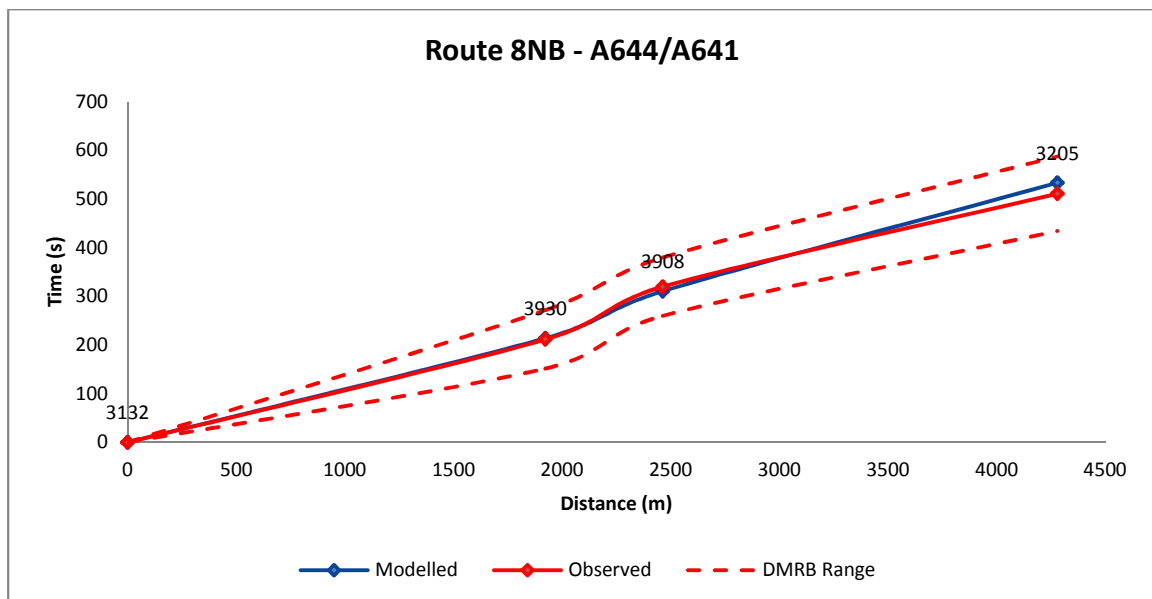
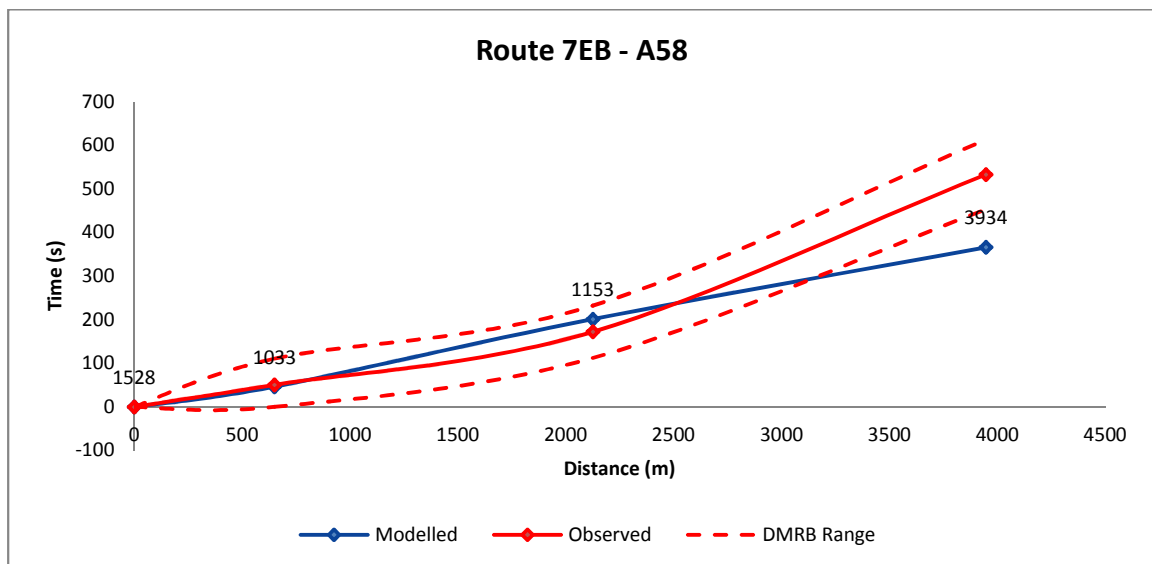
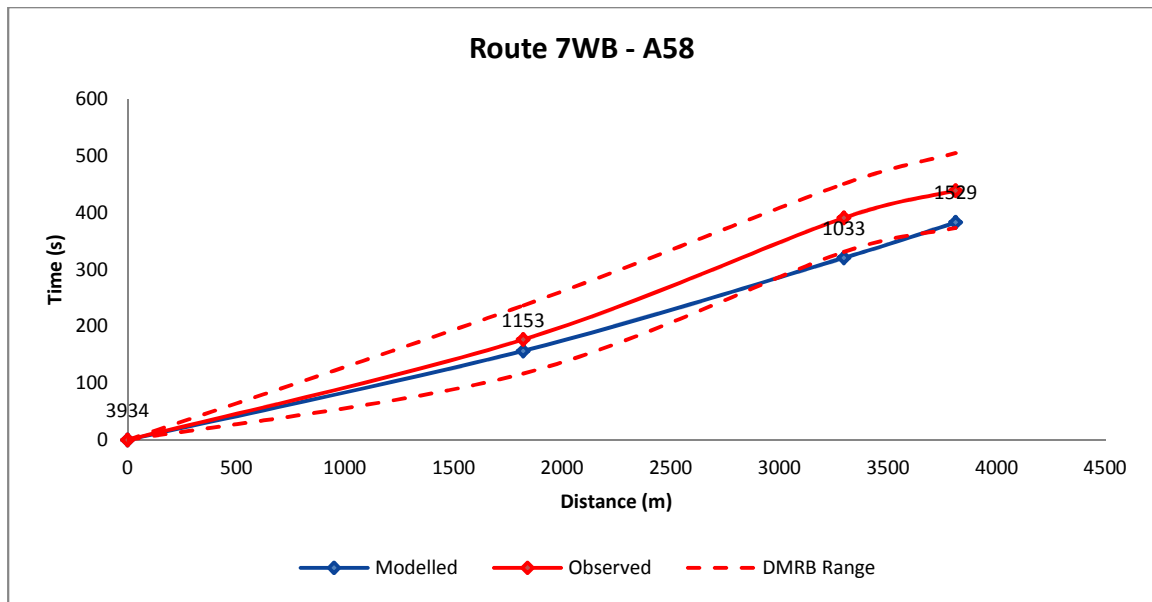
Calderdale v36 Journey Time Graphs - AM Peak

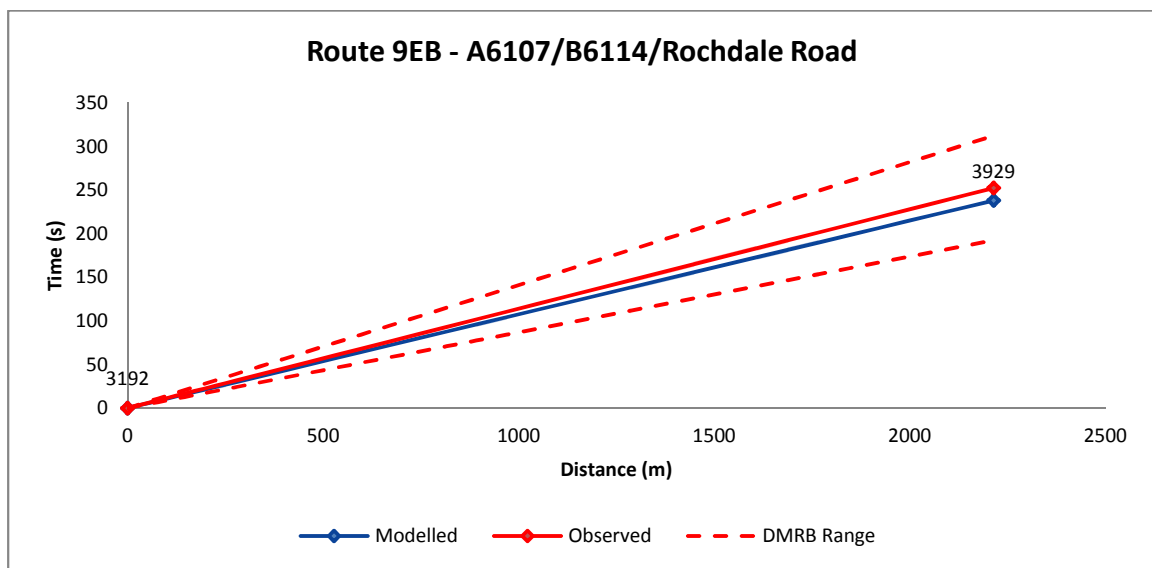
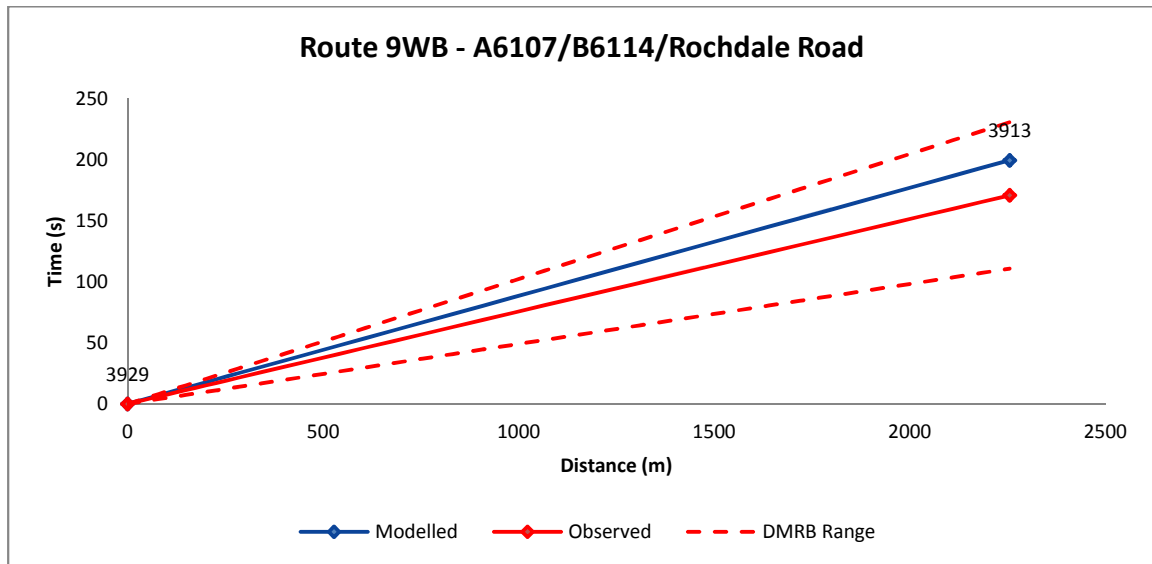
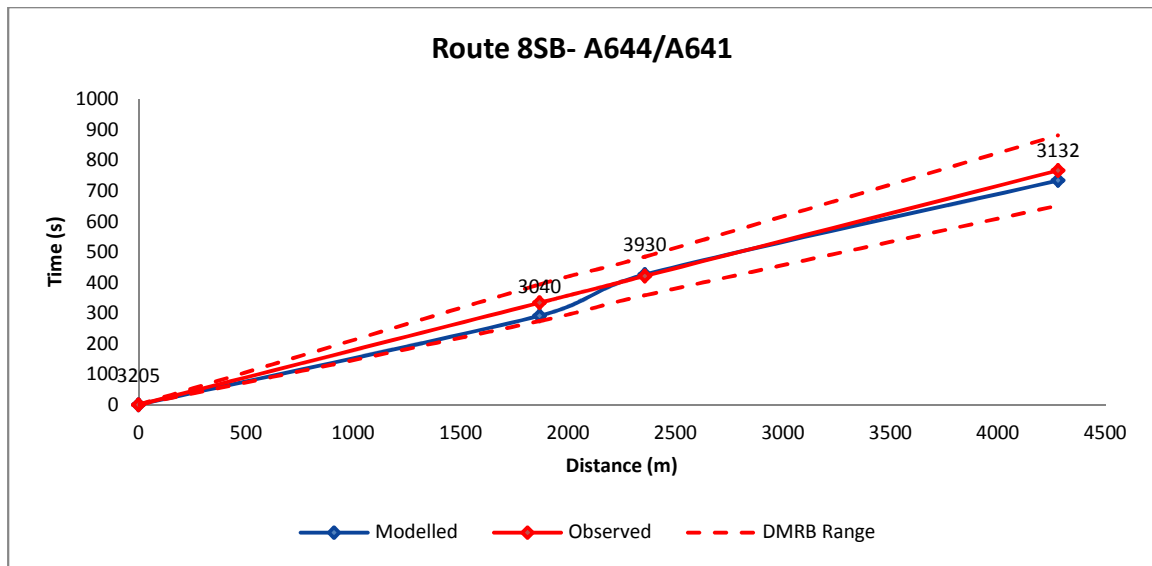


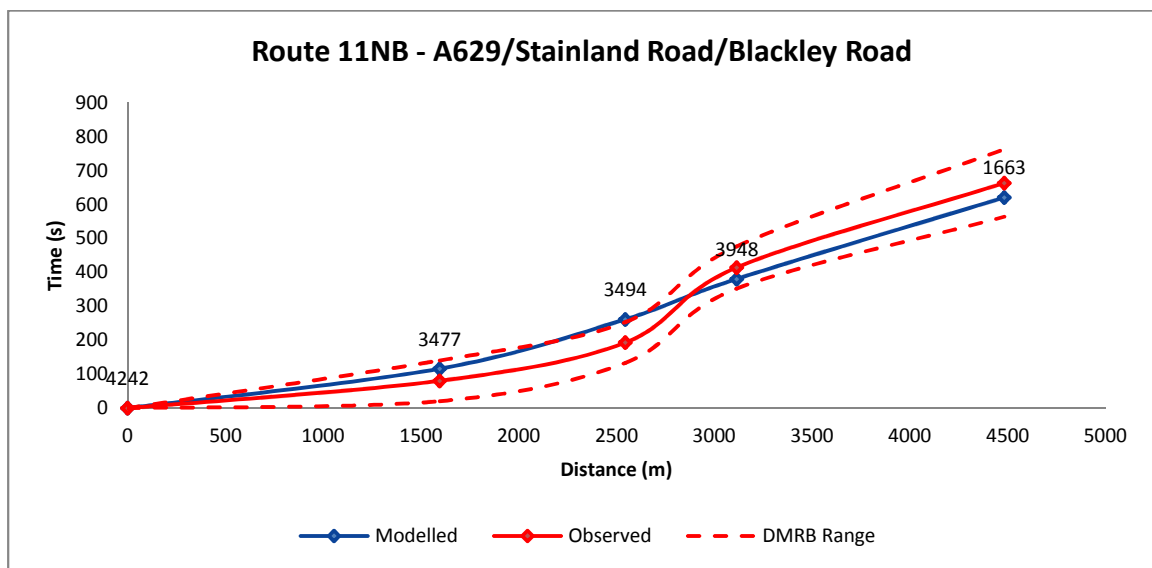
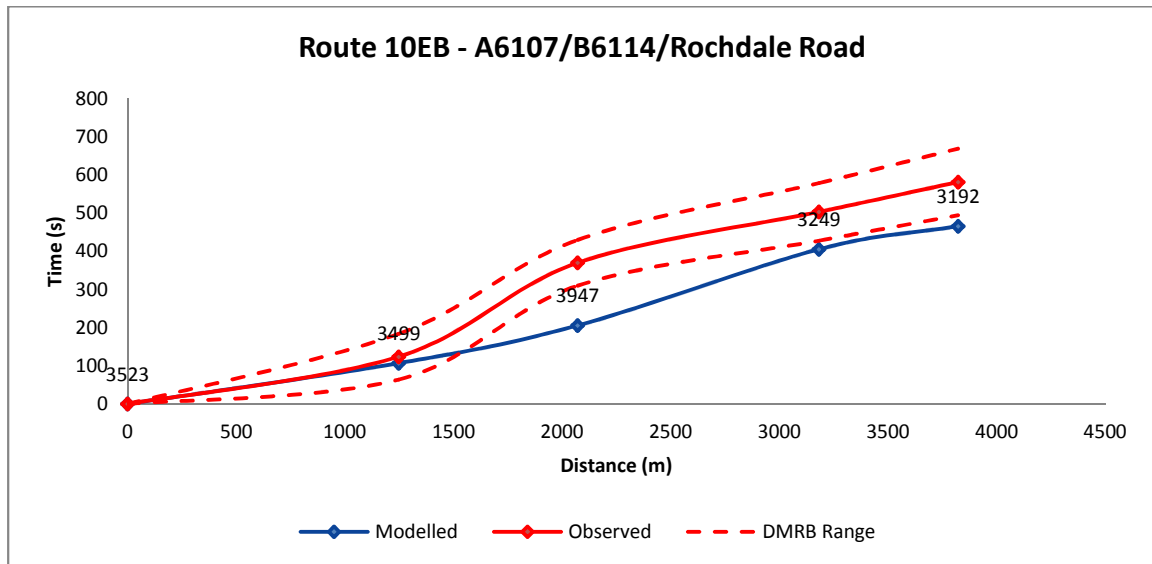
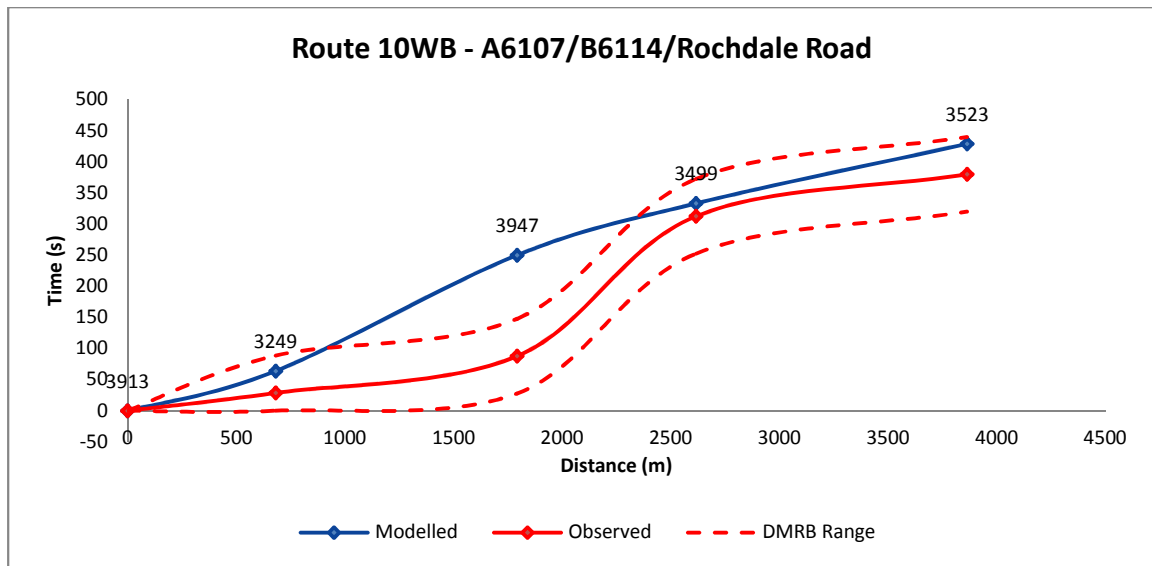




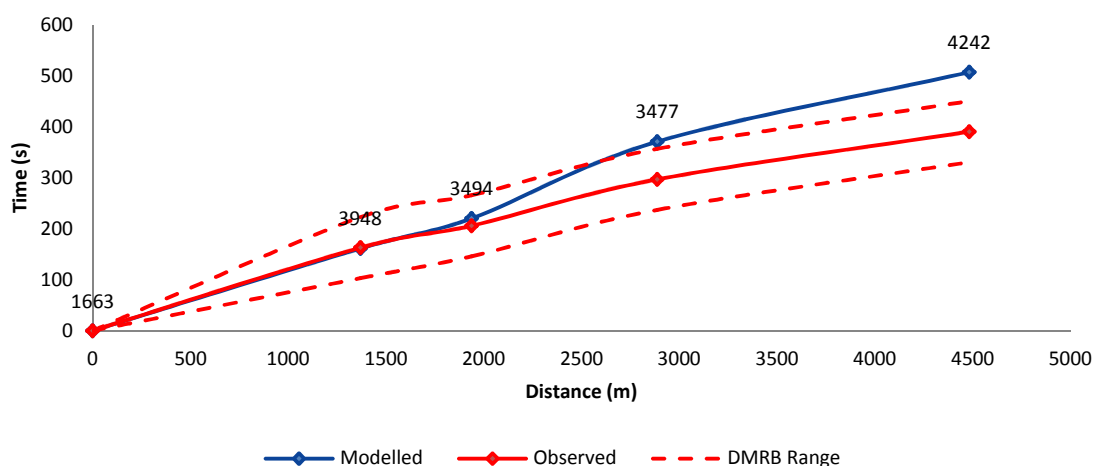




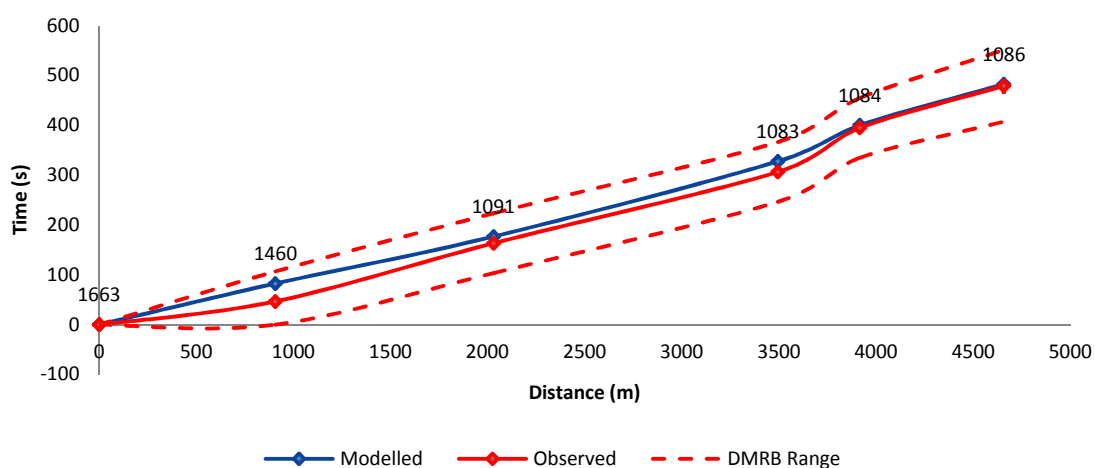




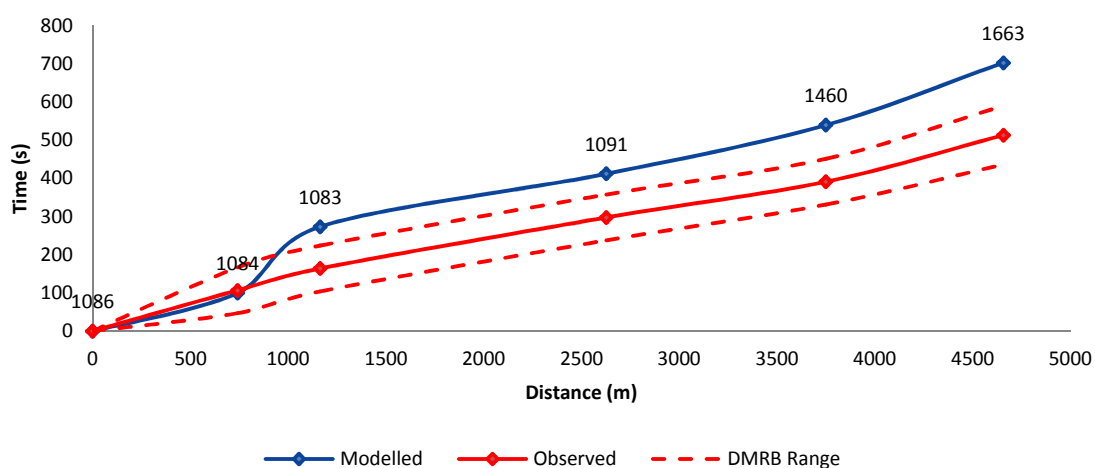
Route 11SB - A629/Stainland Road/Blackley Road Southbound

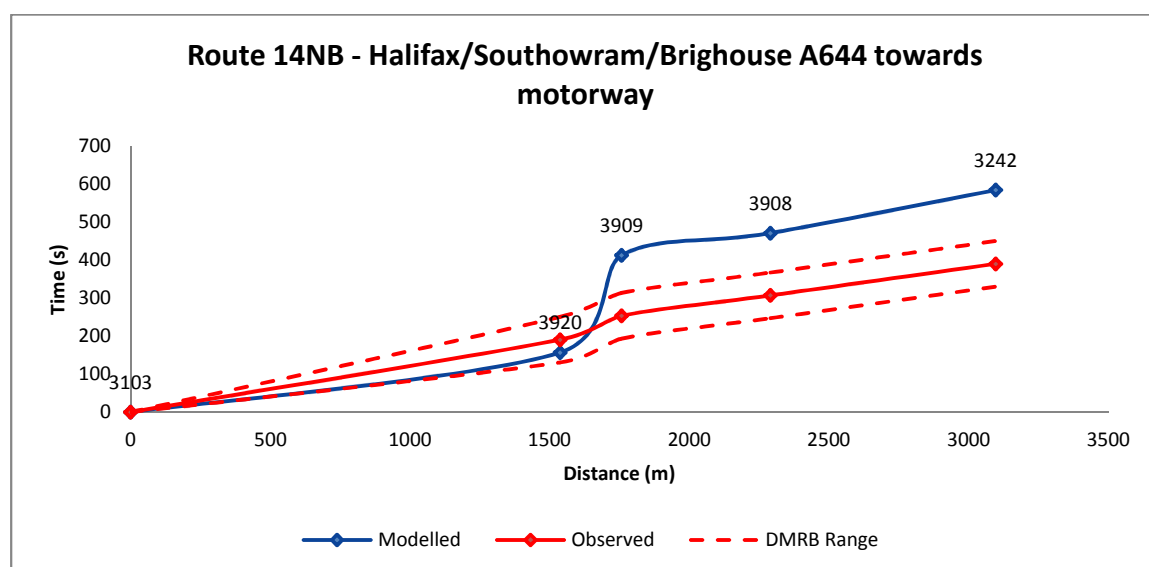
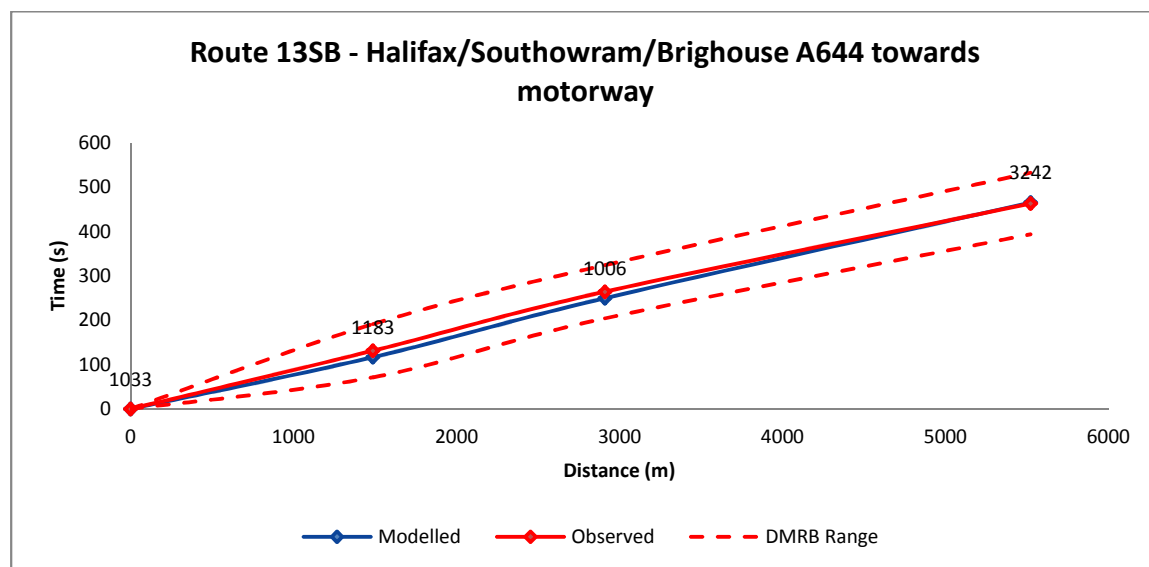
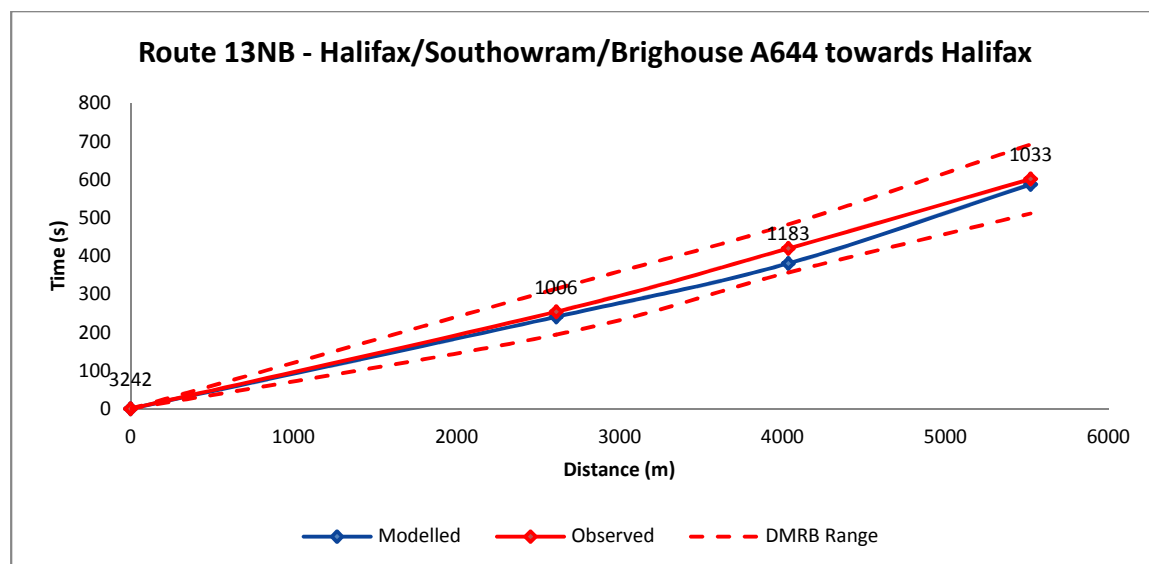


Route 12NB - A629/Stainland Road/Blackley Road

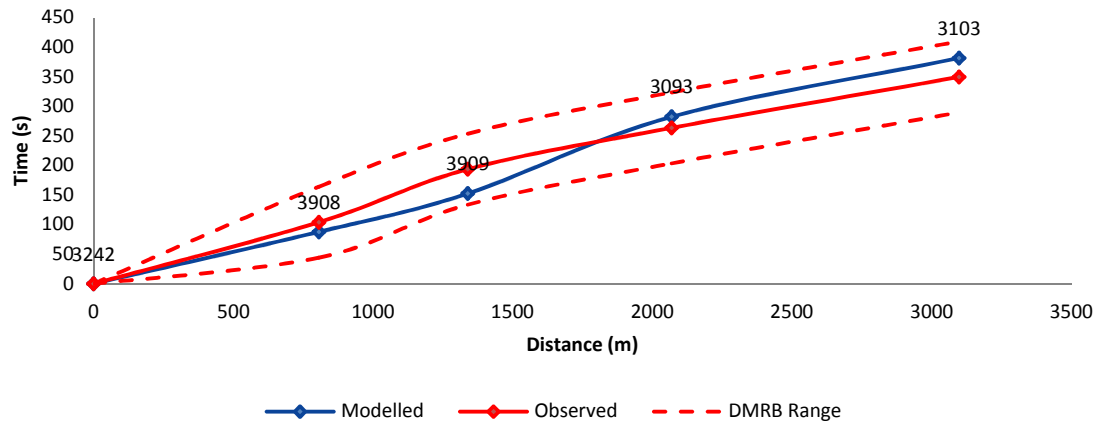


Route 12SB - A629/Stainland Road/Blackley Road

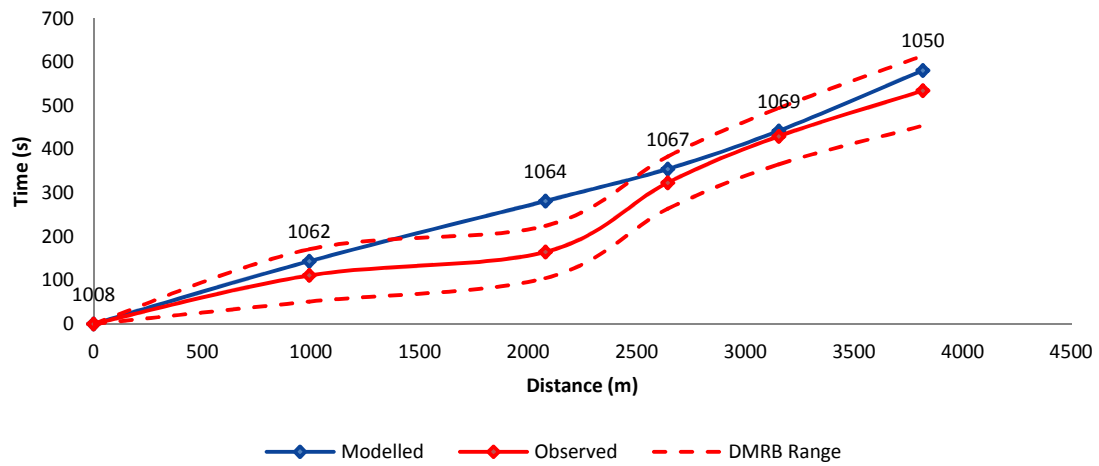




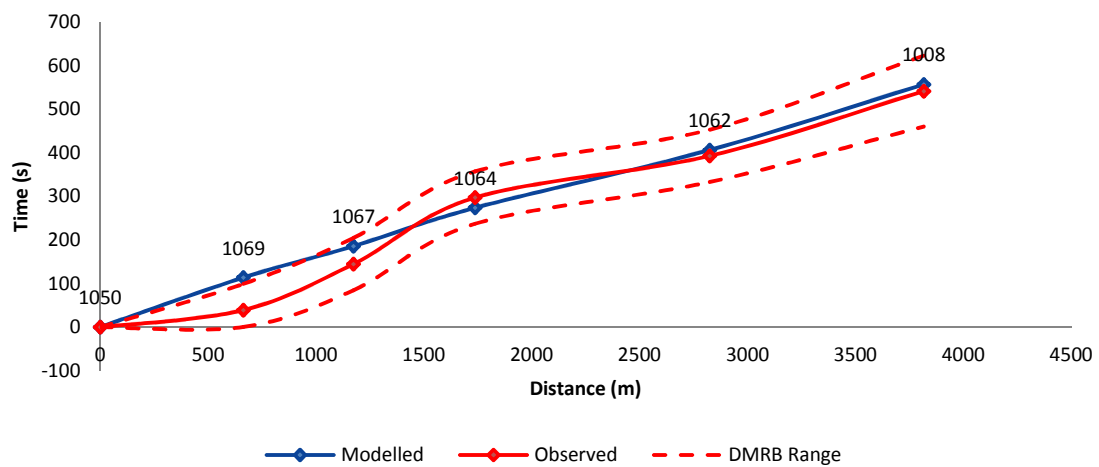
Route 14SB - Halifax/Southowram/Brighouse A644 towards motorway

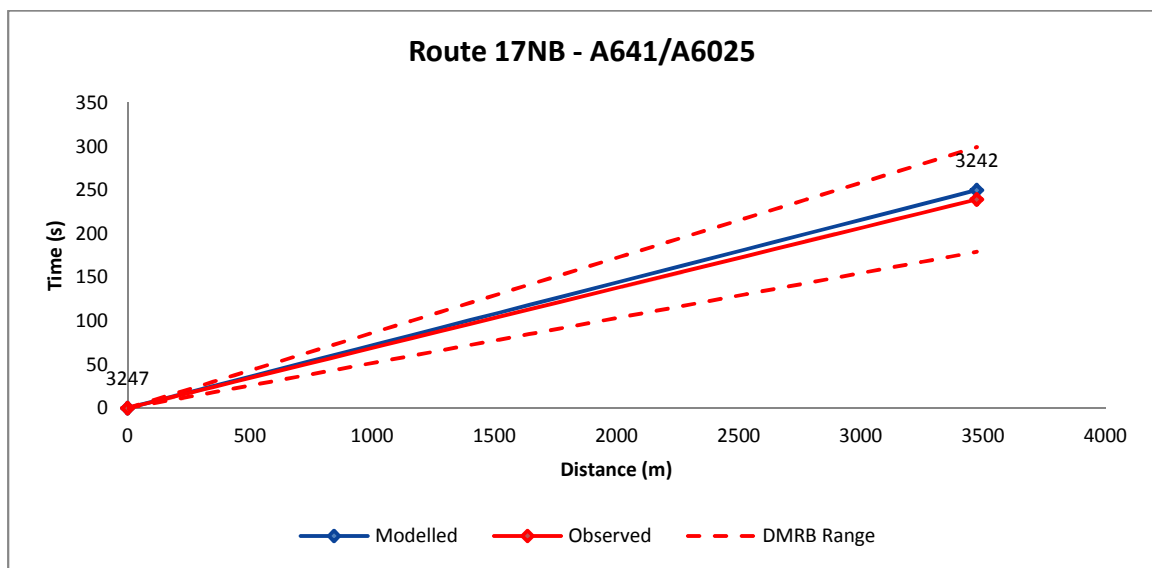
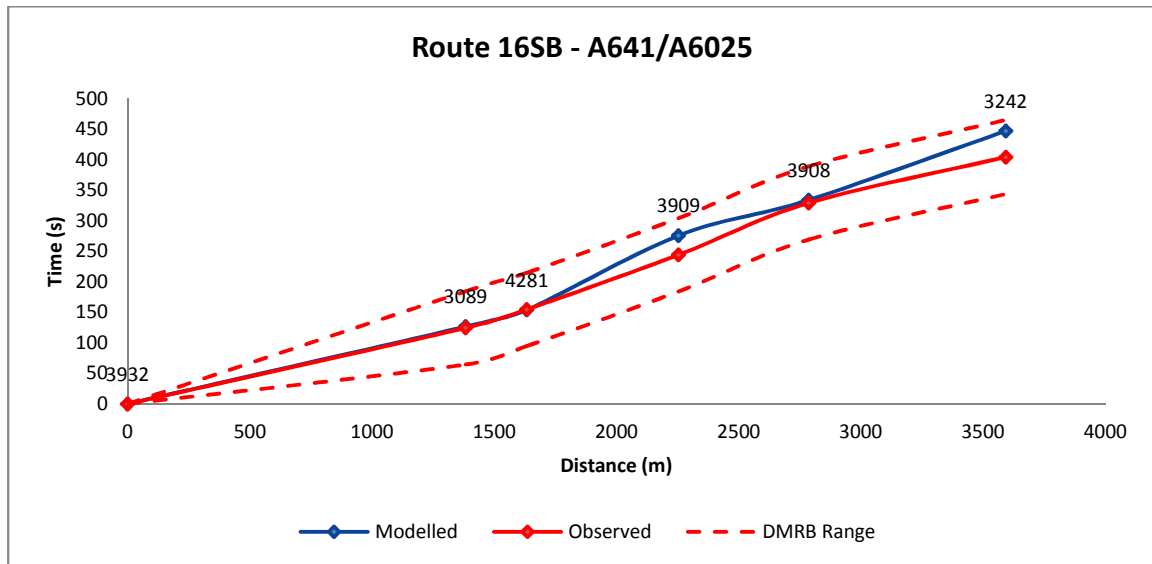
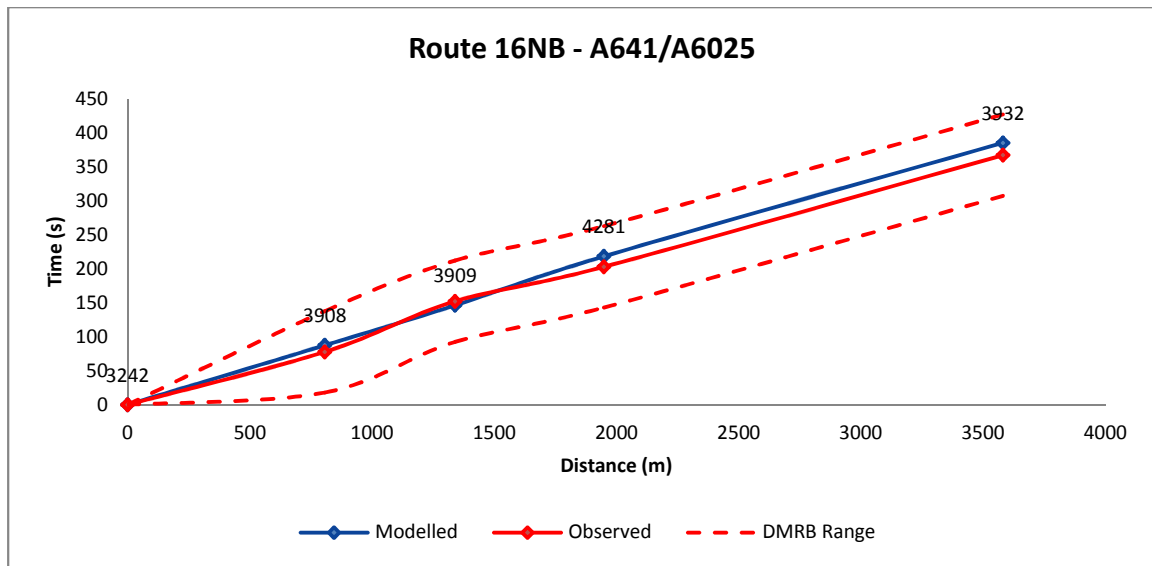


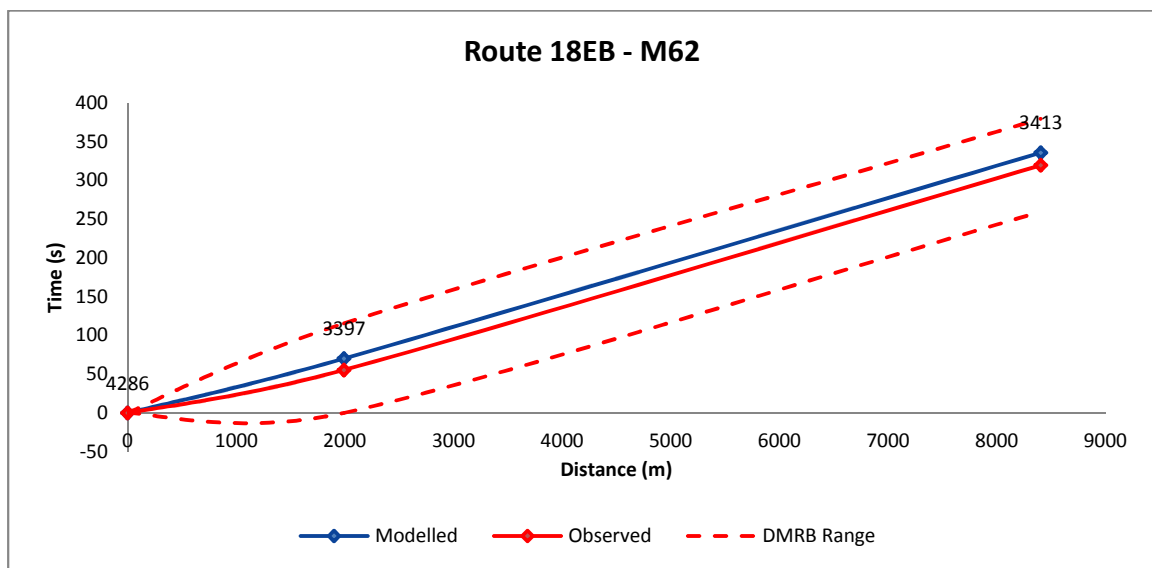
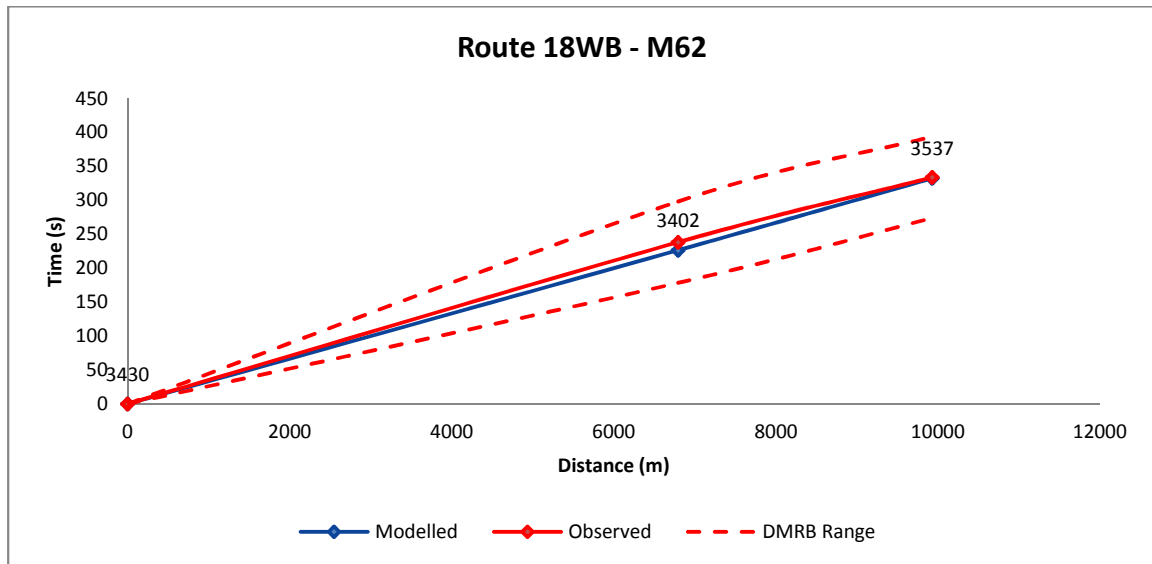
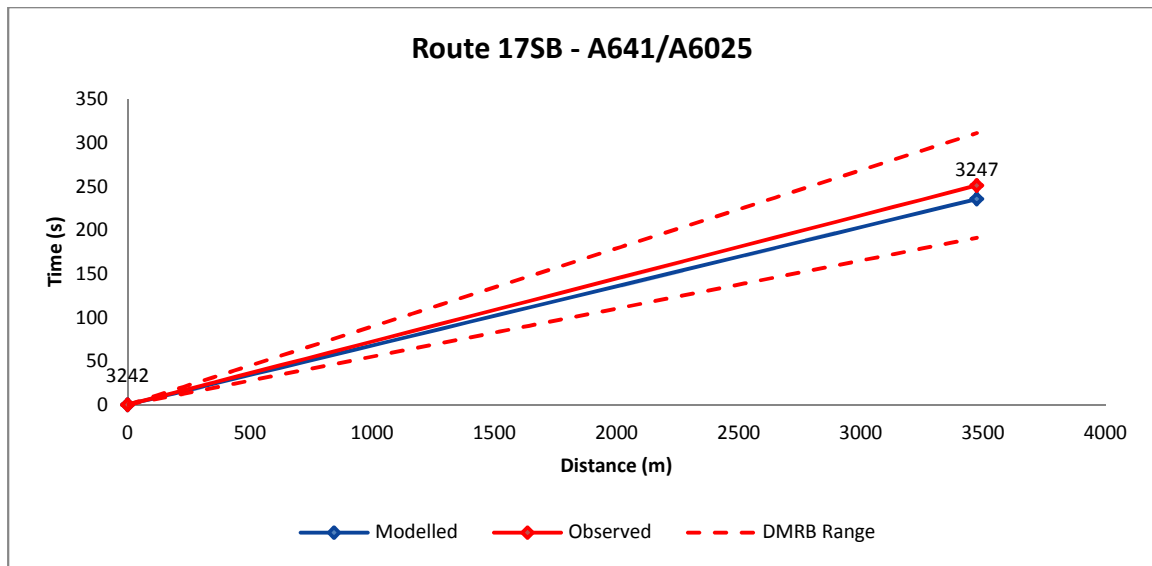
Route 15NB - Quenens Road/Dryclough Lane

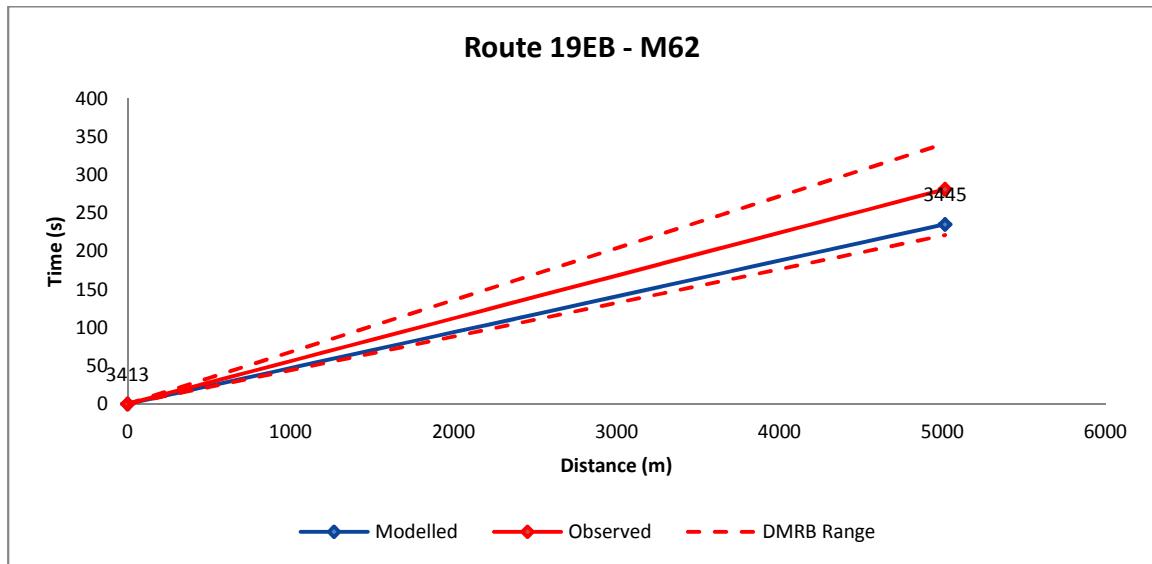
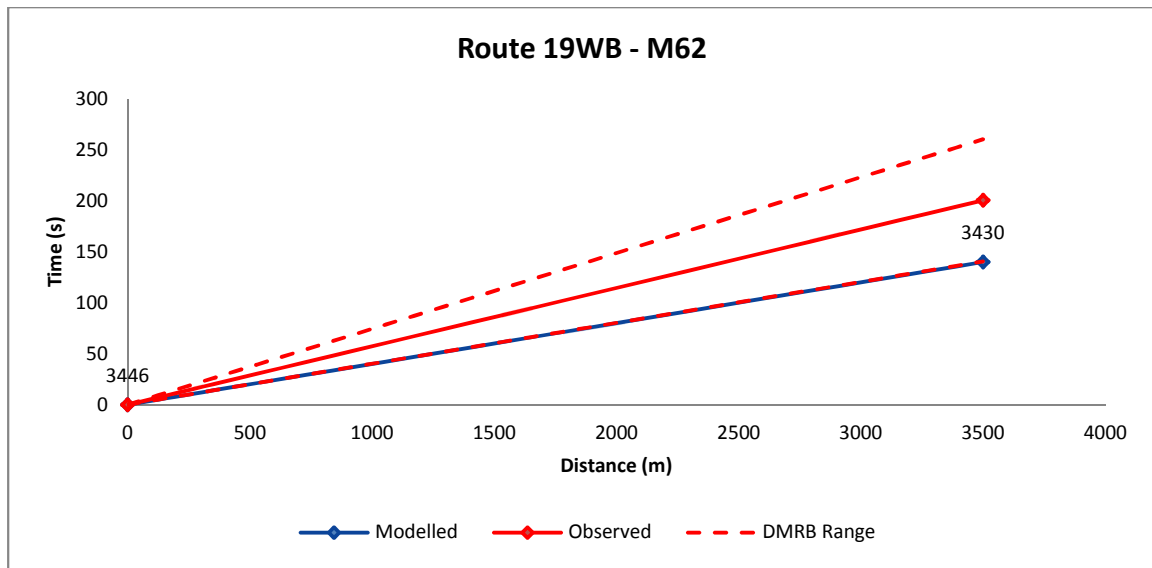


Route 15SB - Queens Road/Dryclough Lane

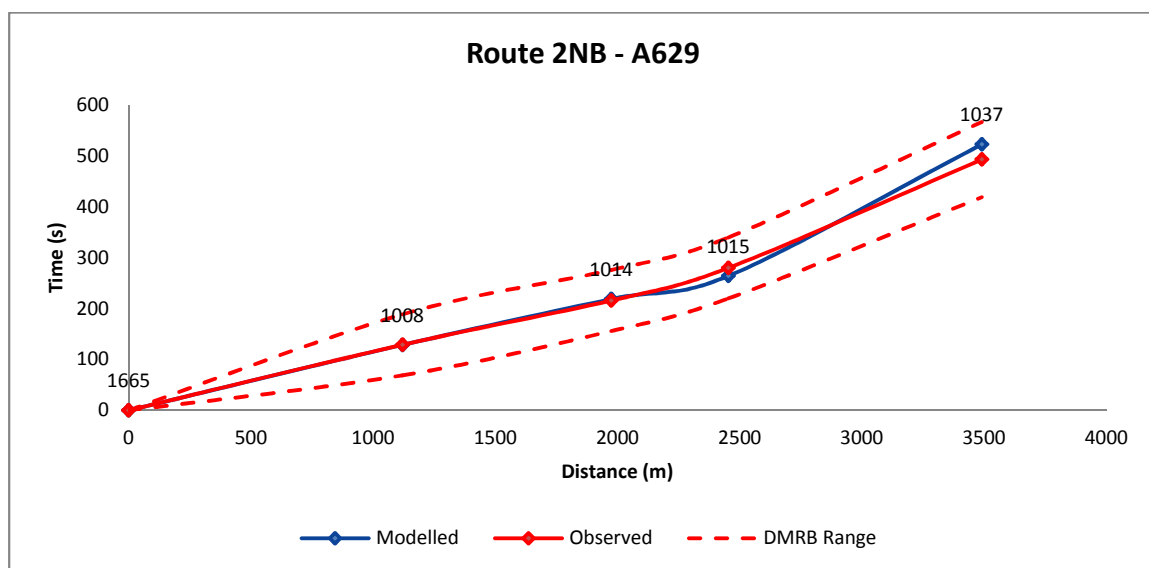
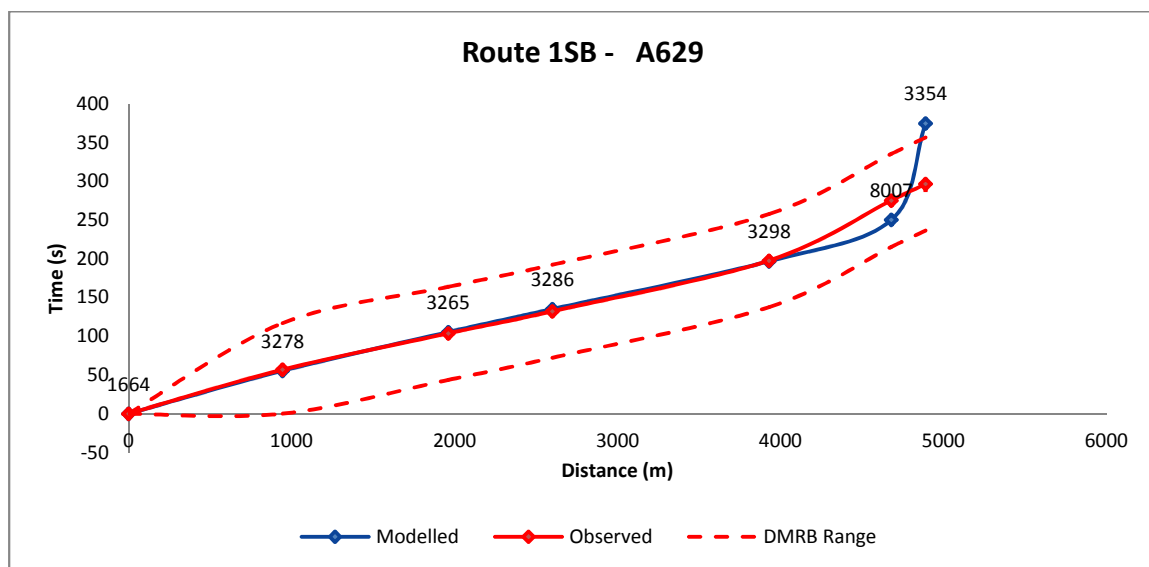
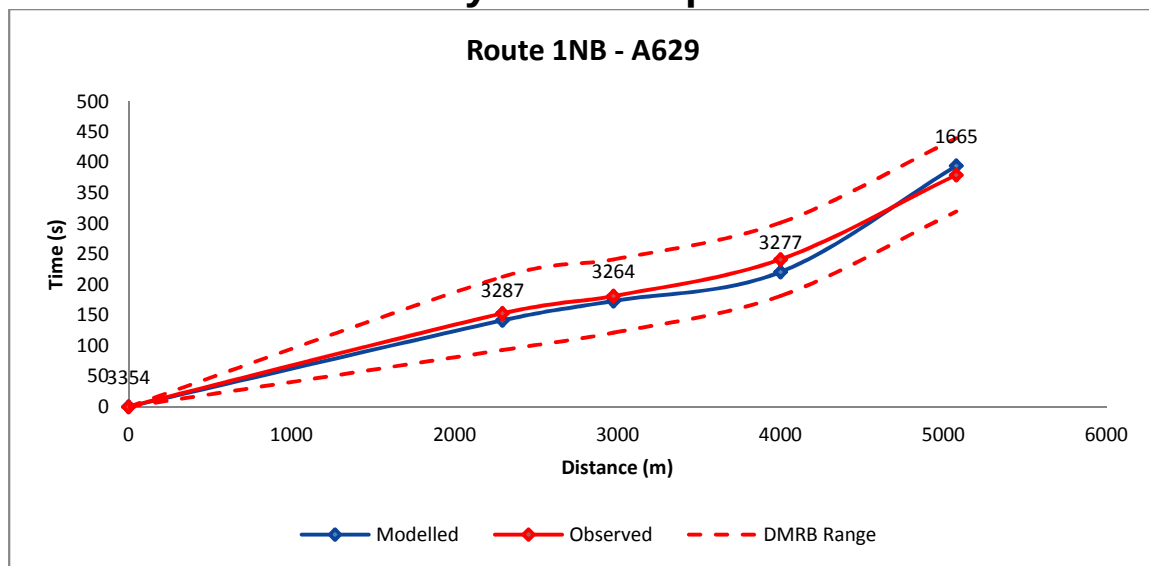


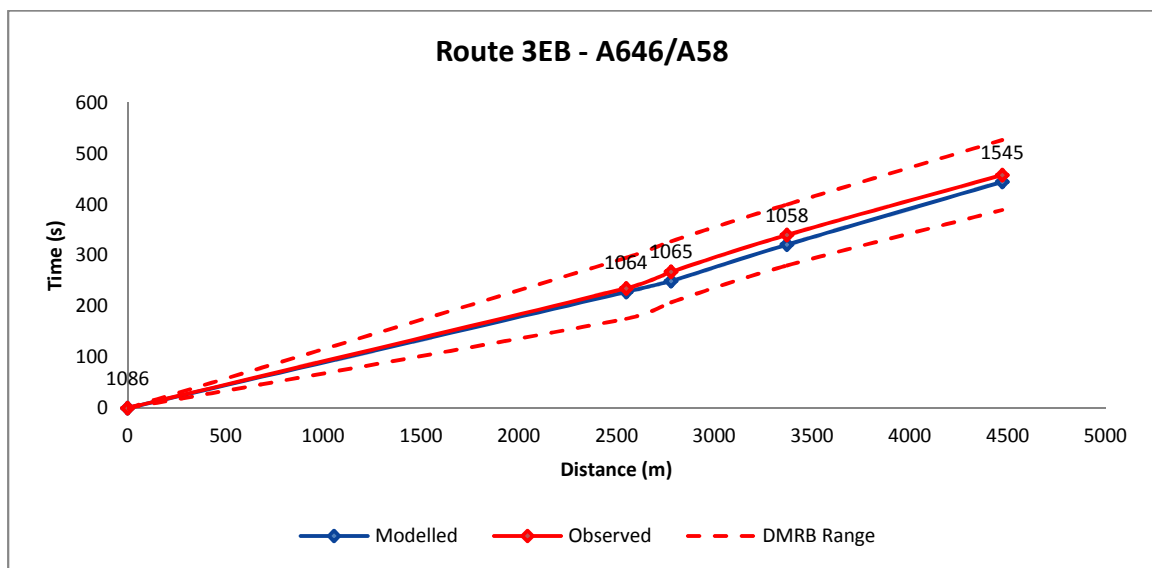
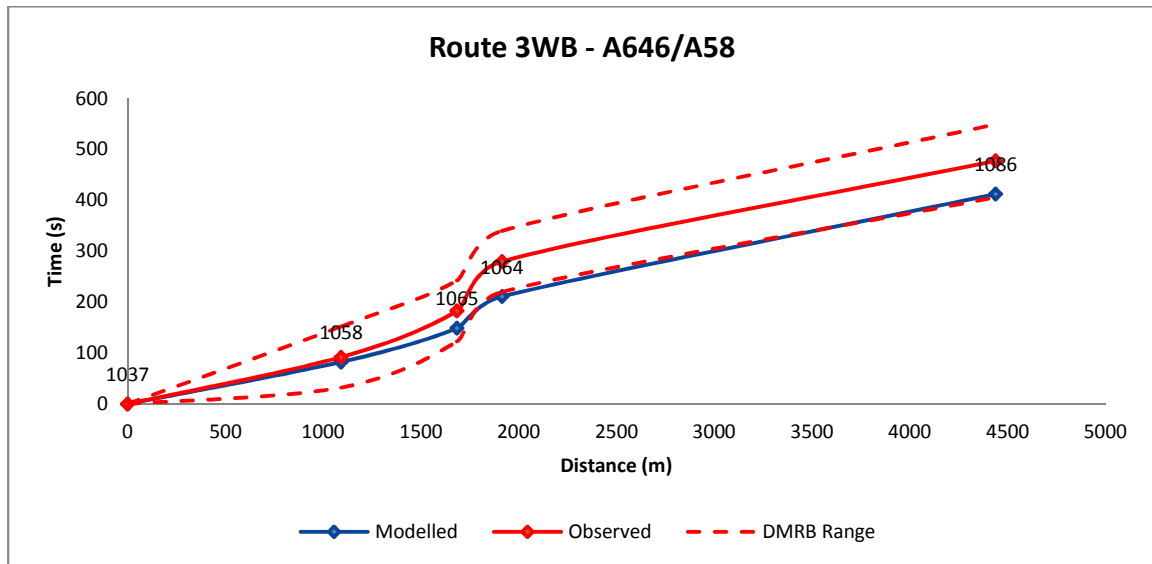
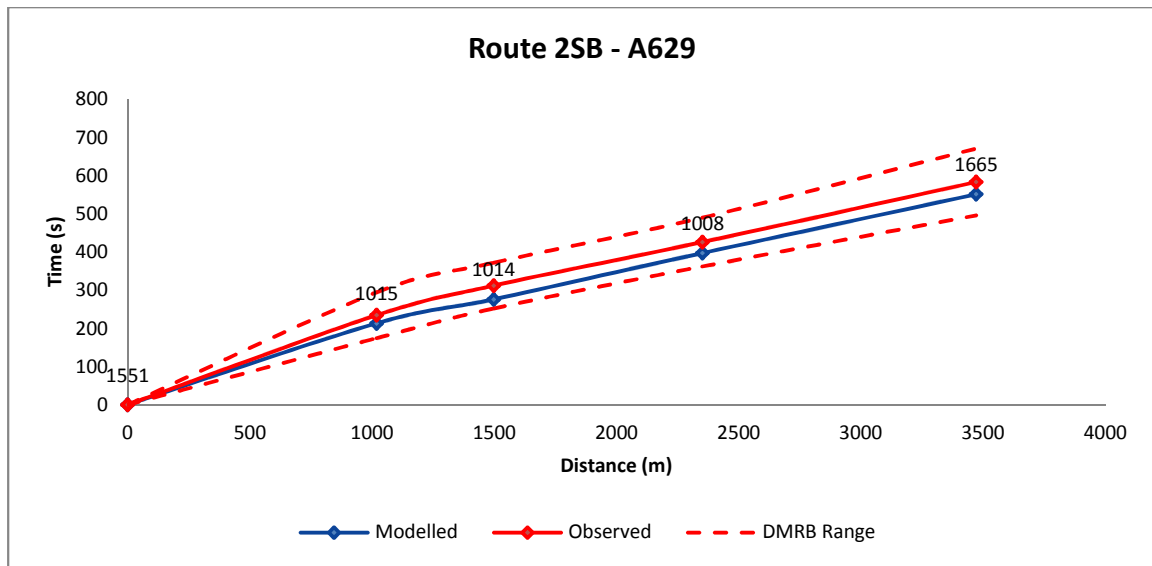


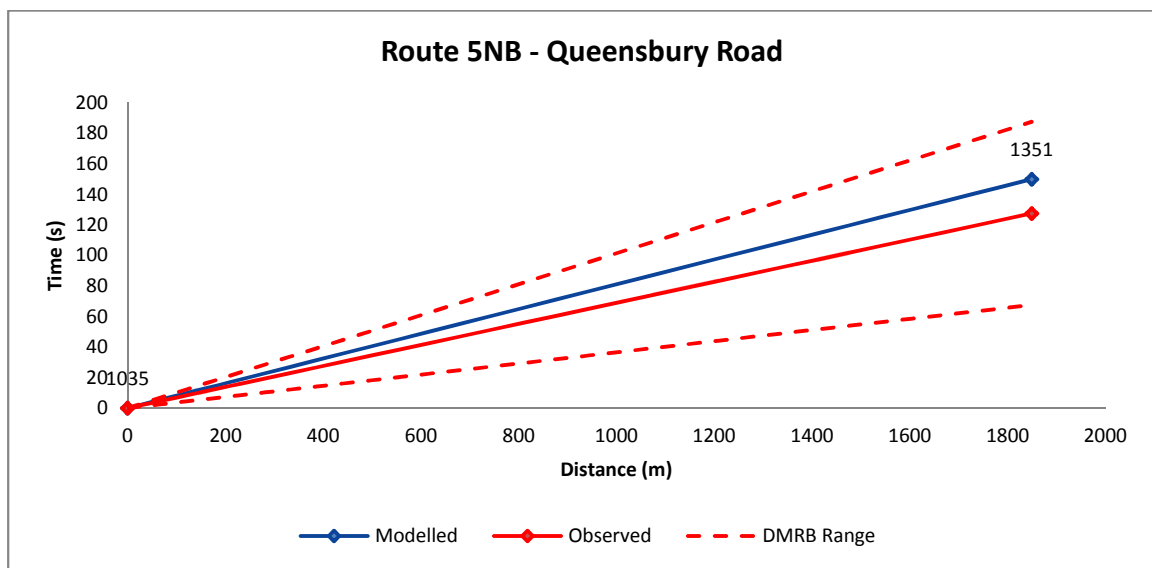
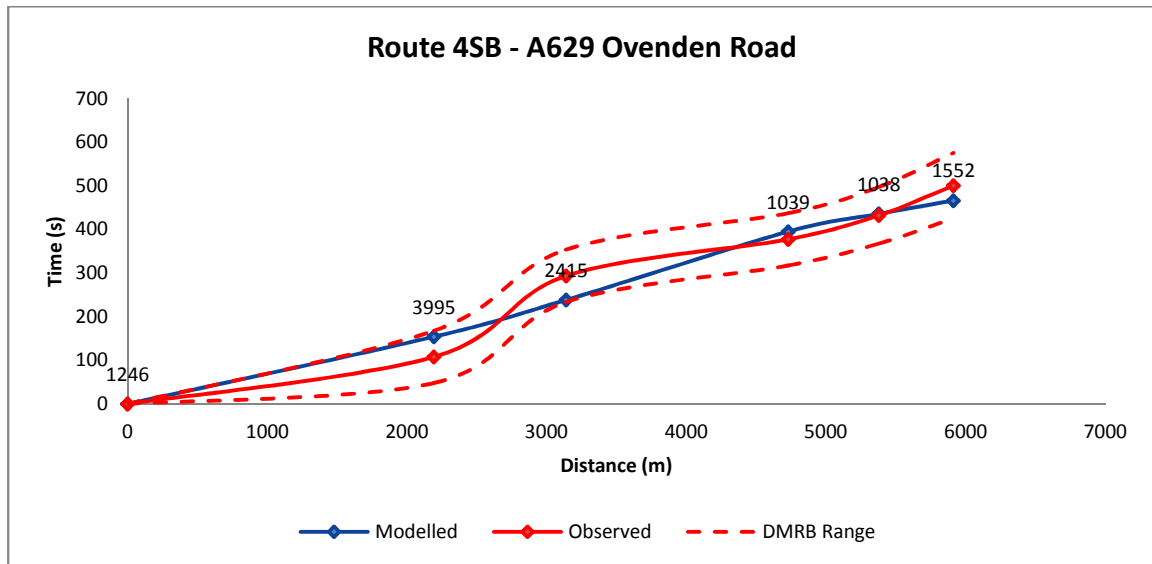
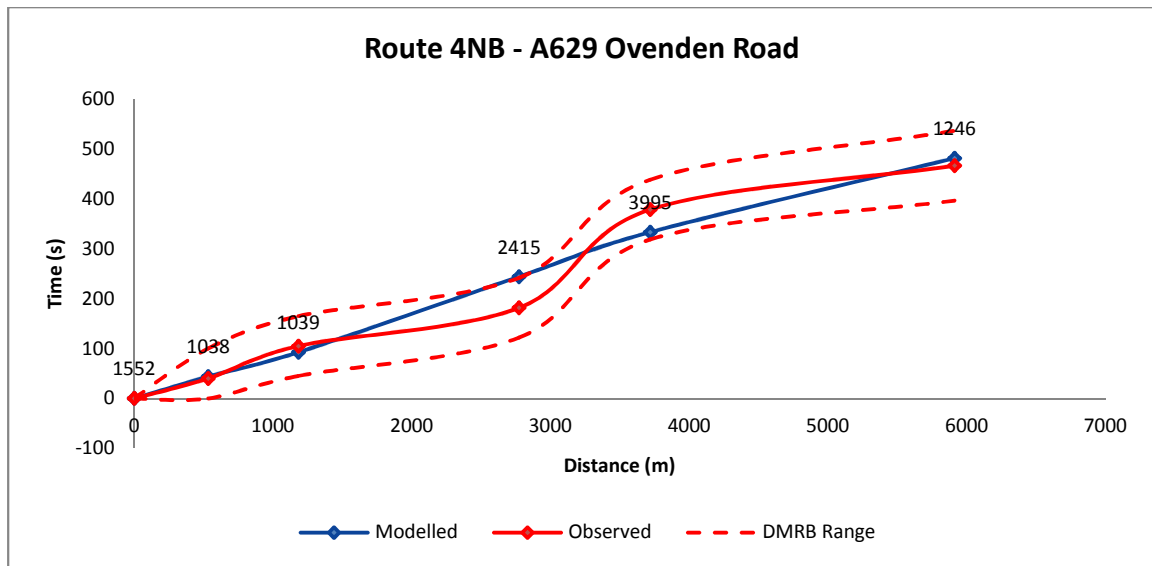


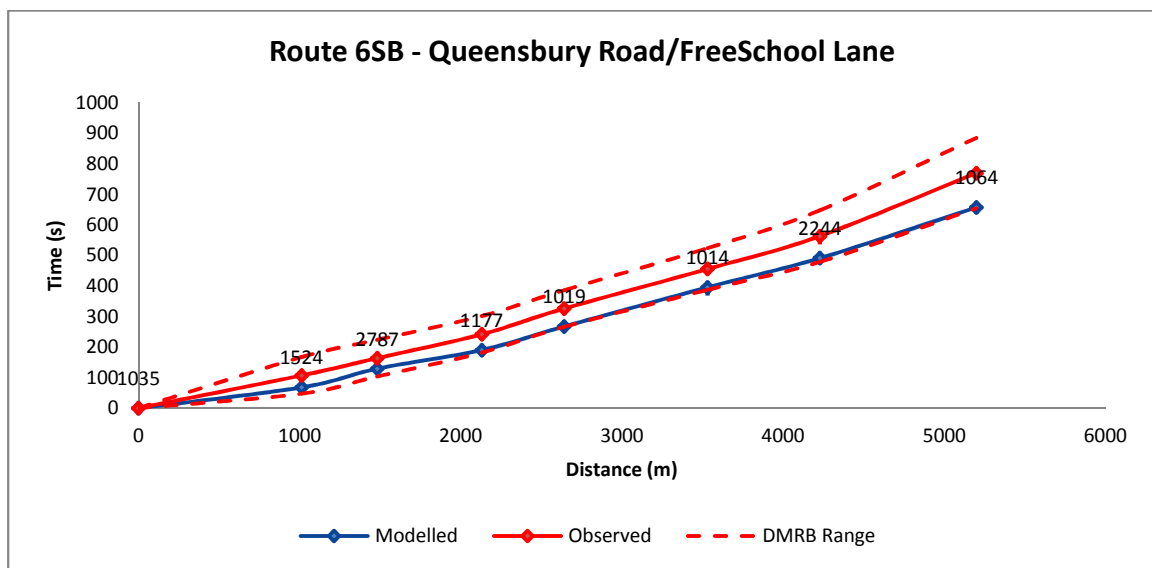
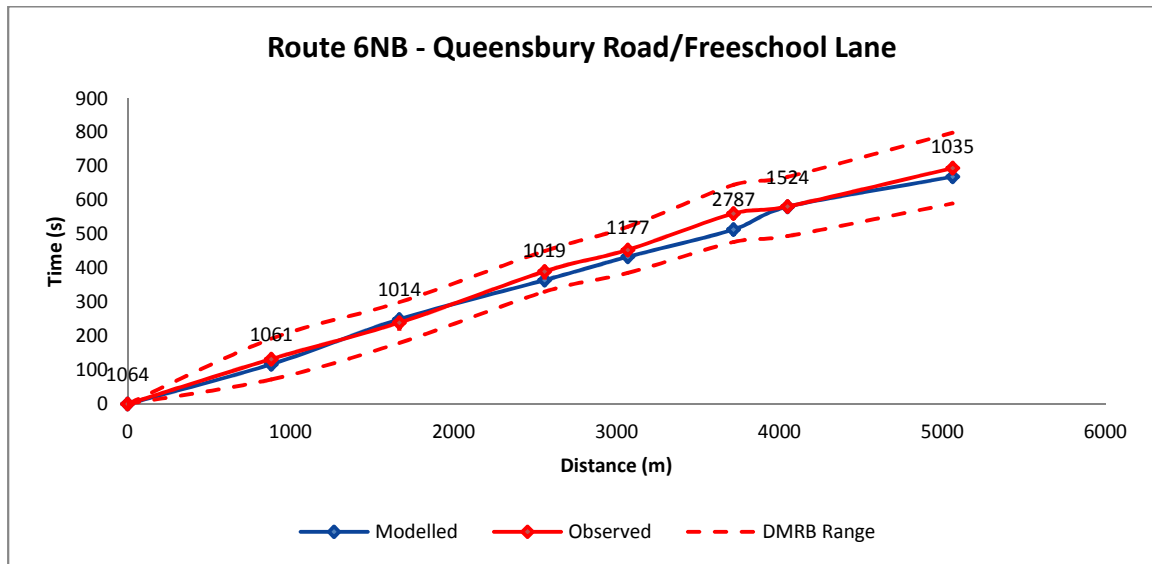
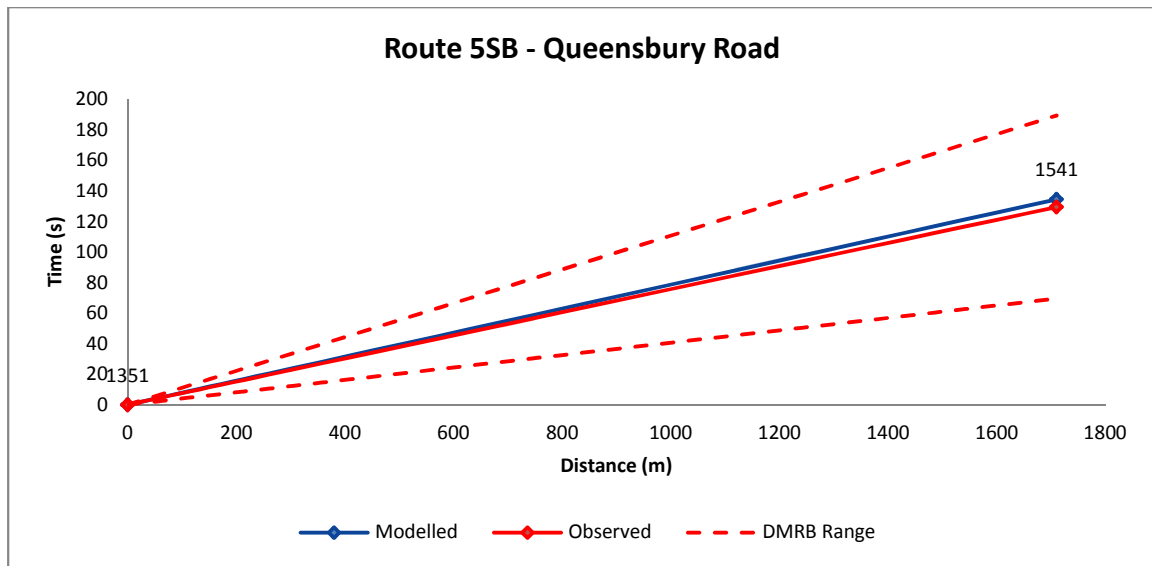


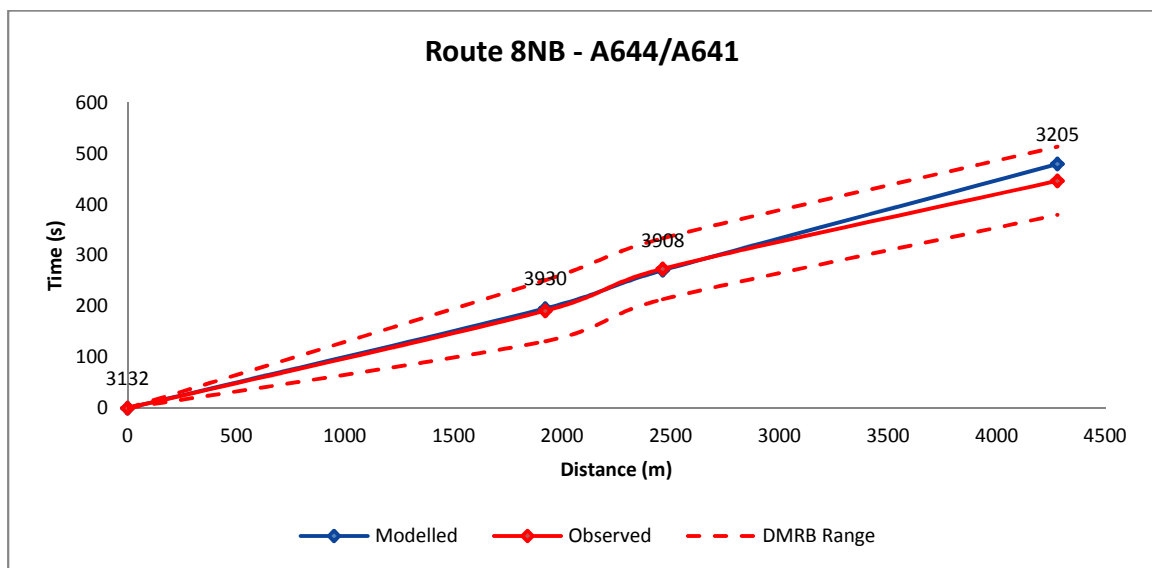
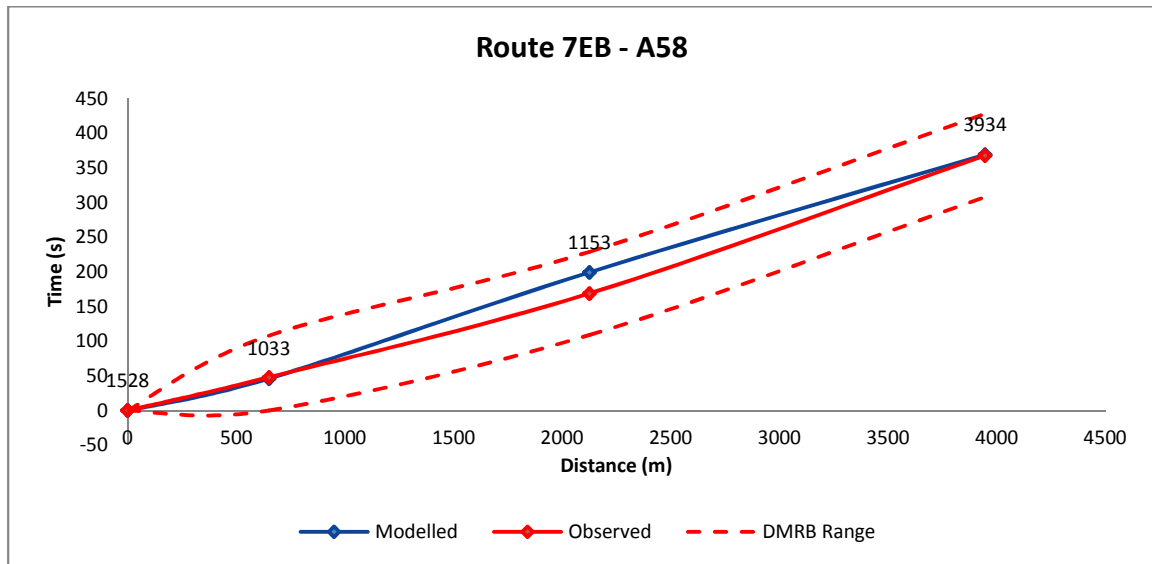
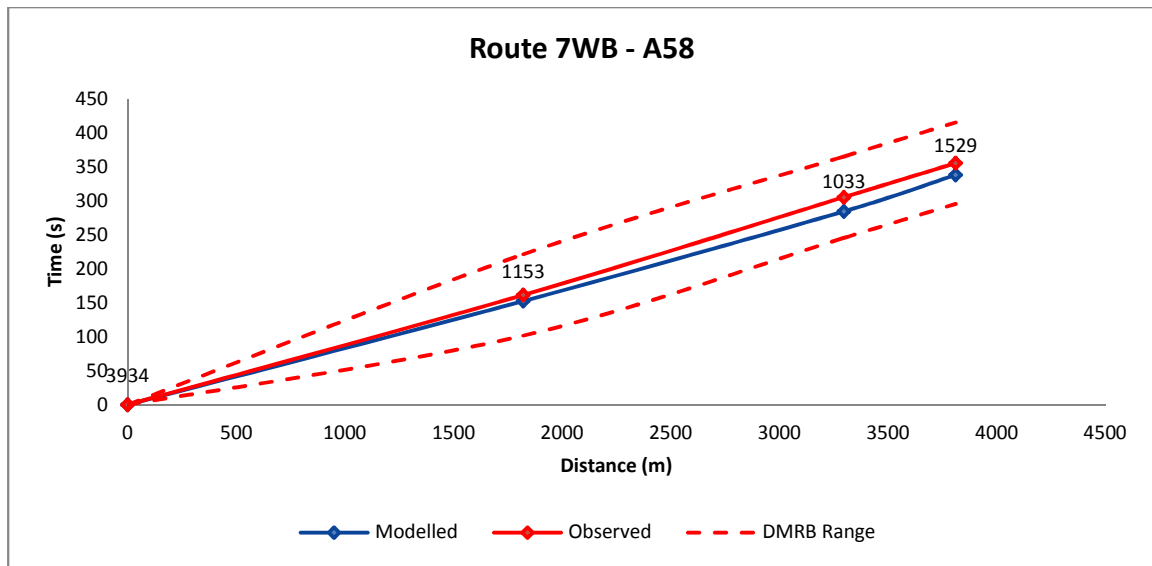
Calderdale v36 Journey Time Graphs - Inter Peak

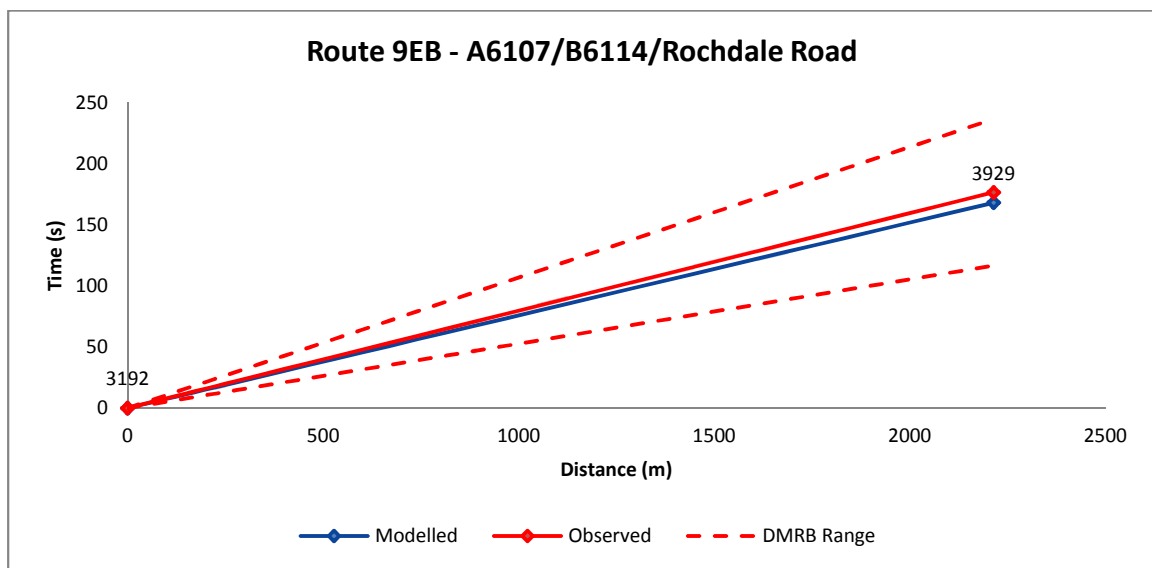
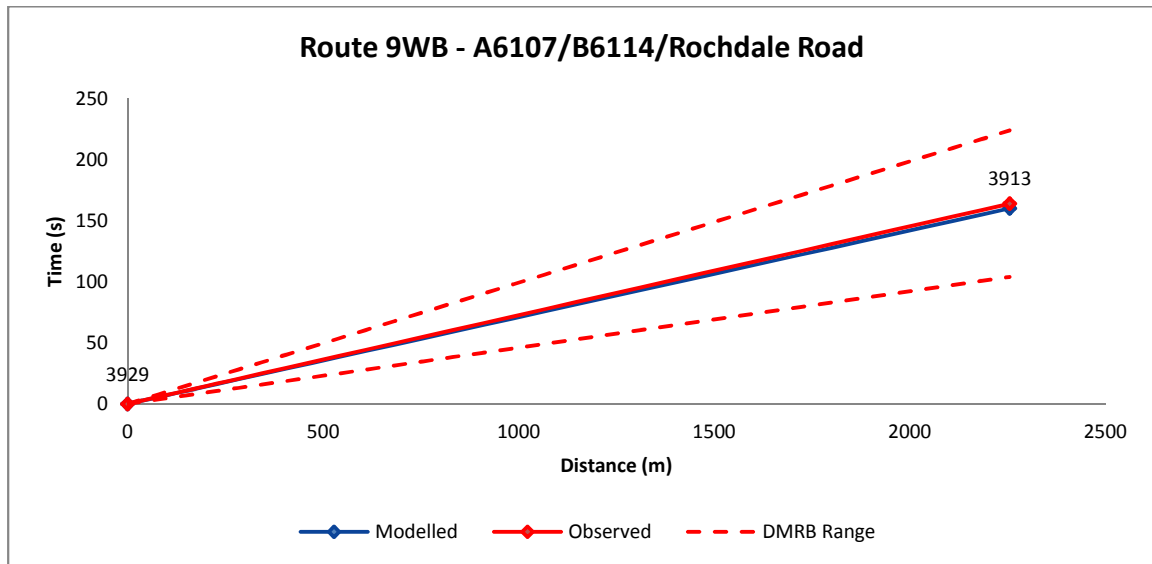
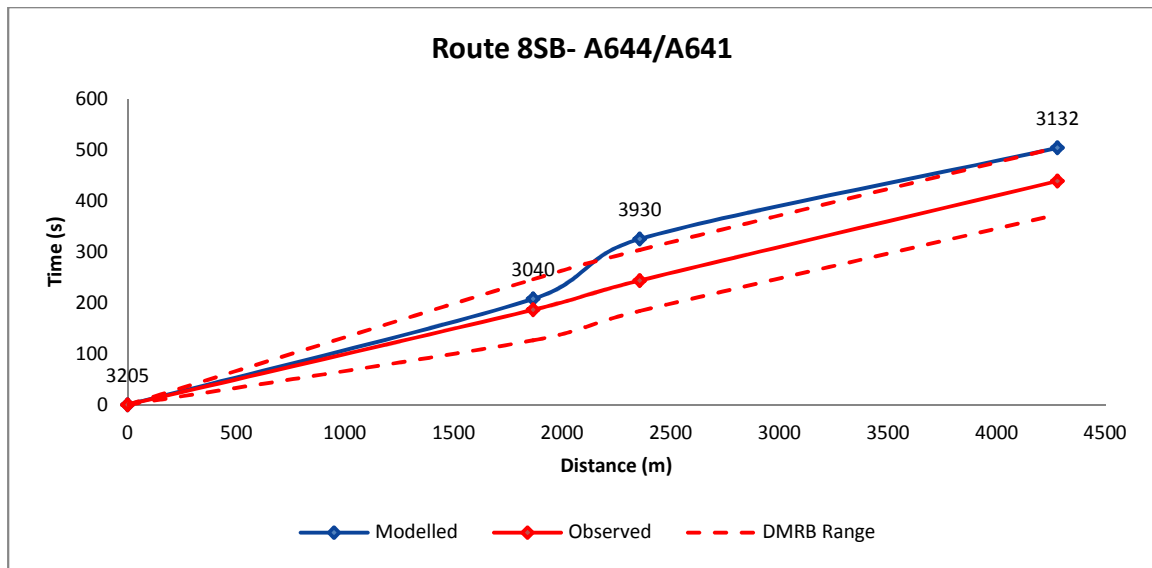


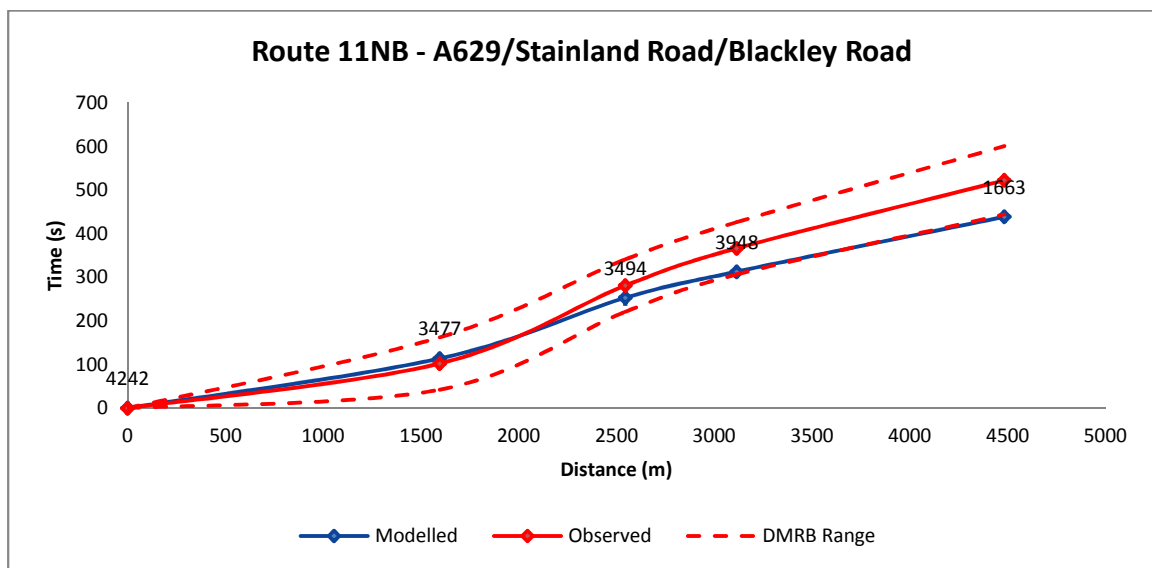
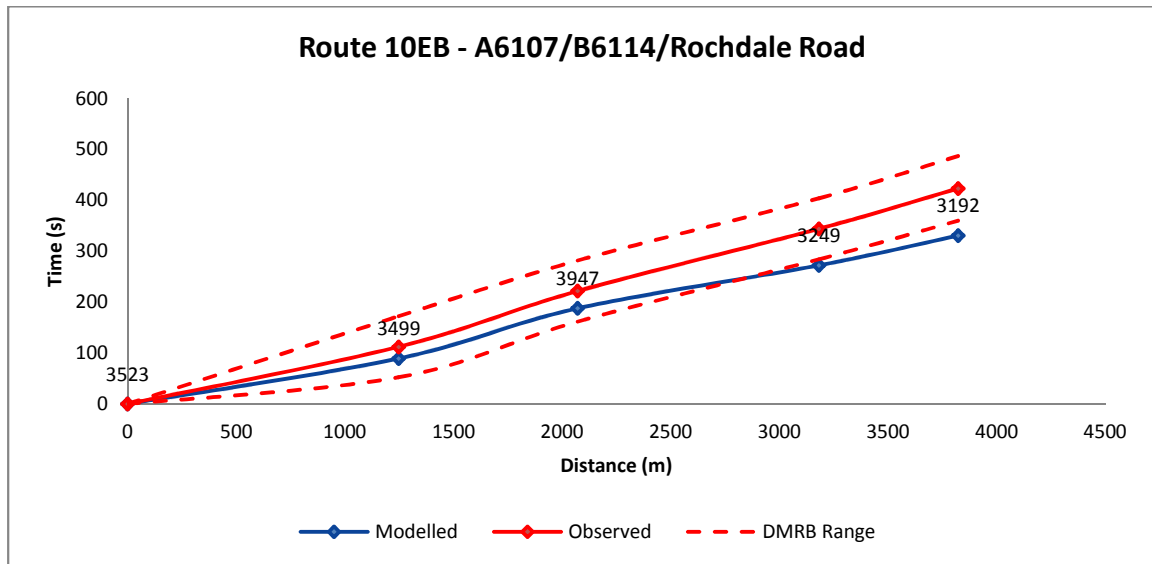
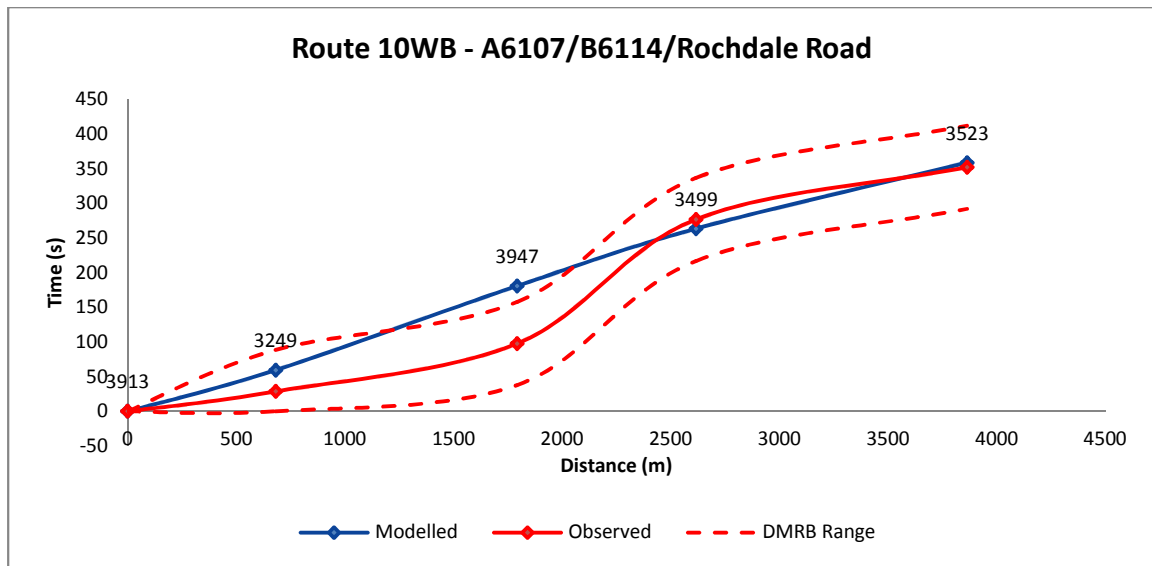




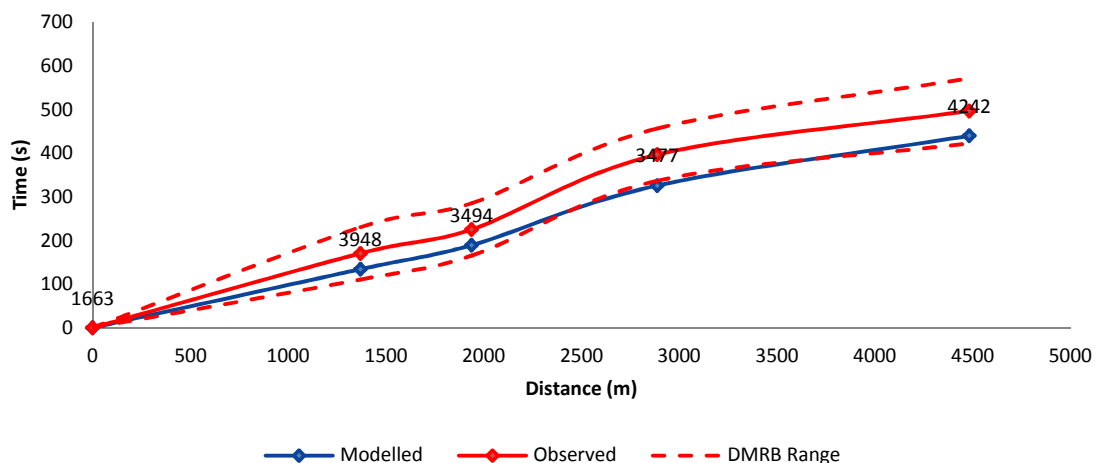




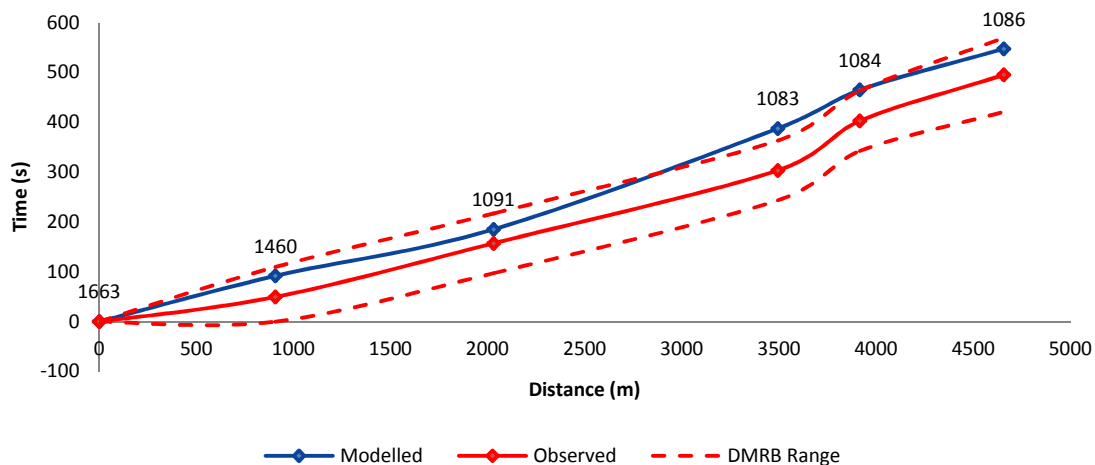




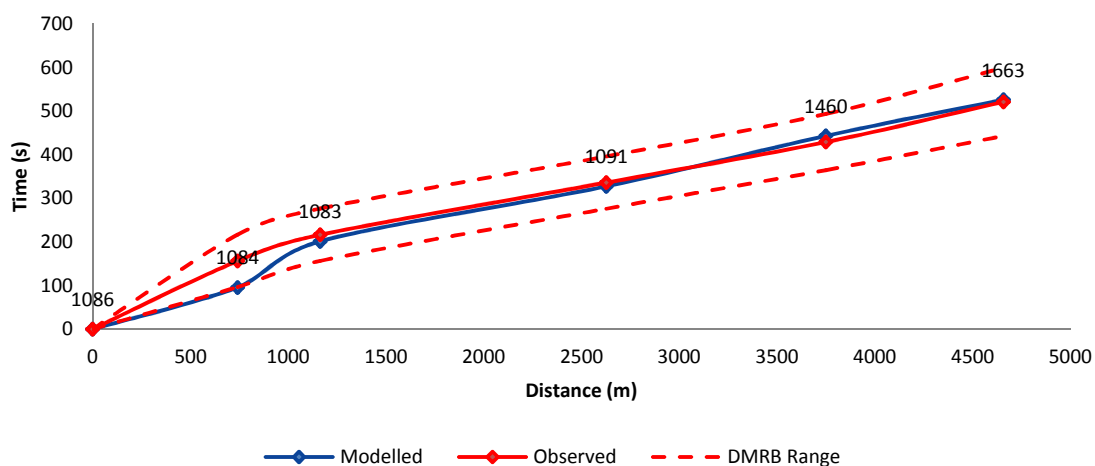
Route 11SB - A629/Stainland Road/Blackley Road Southbound

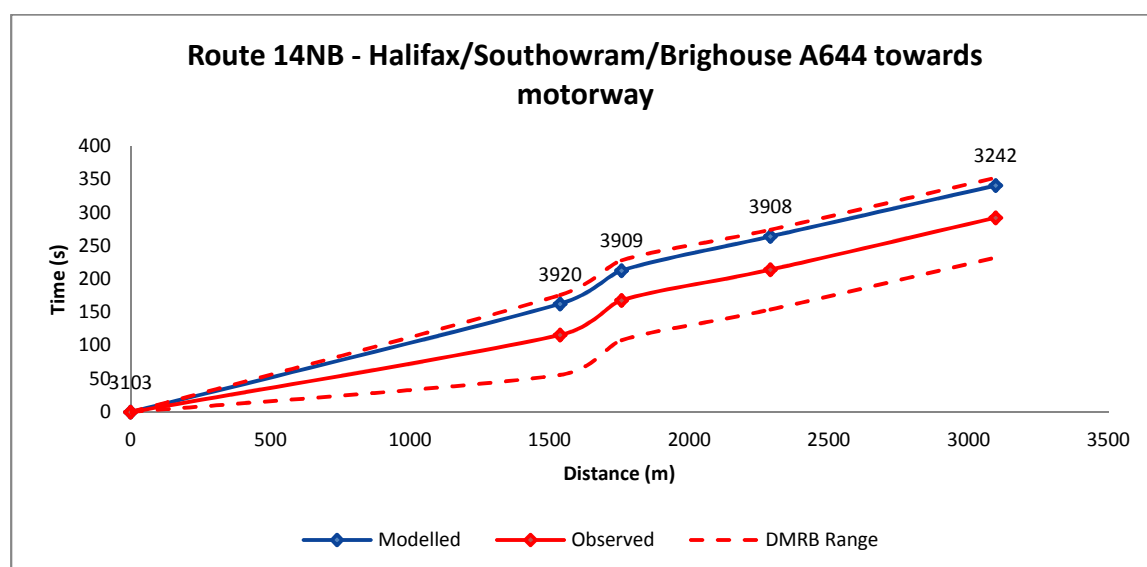
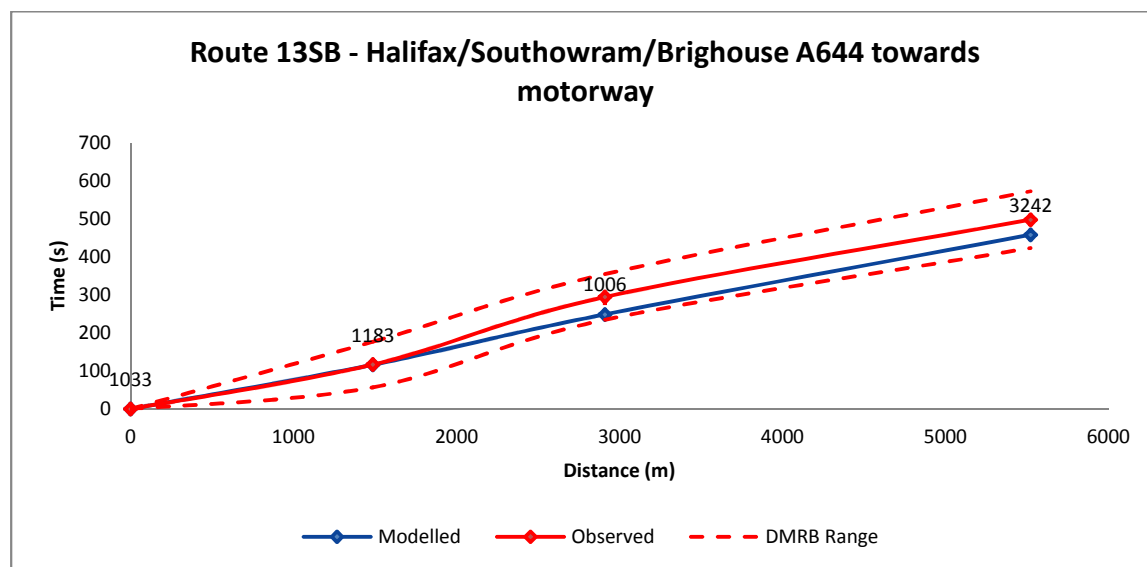
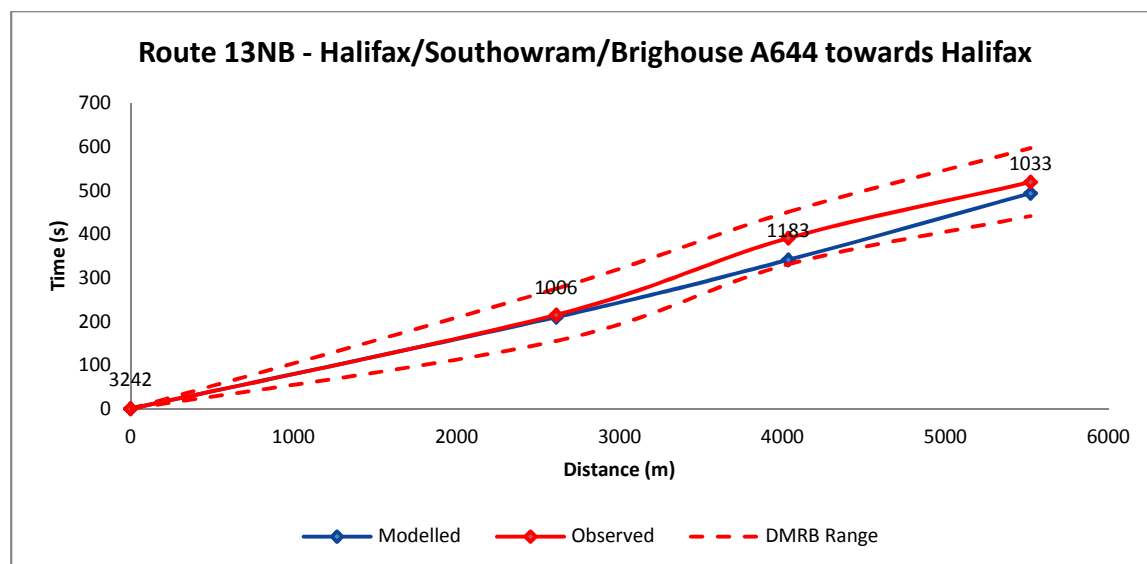


Route 12NB - A629/Stainland Road/Blackley Road

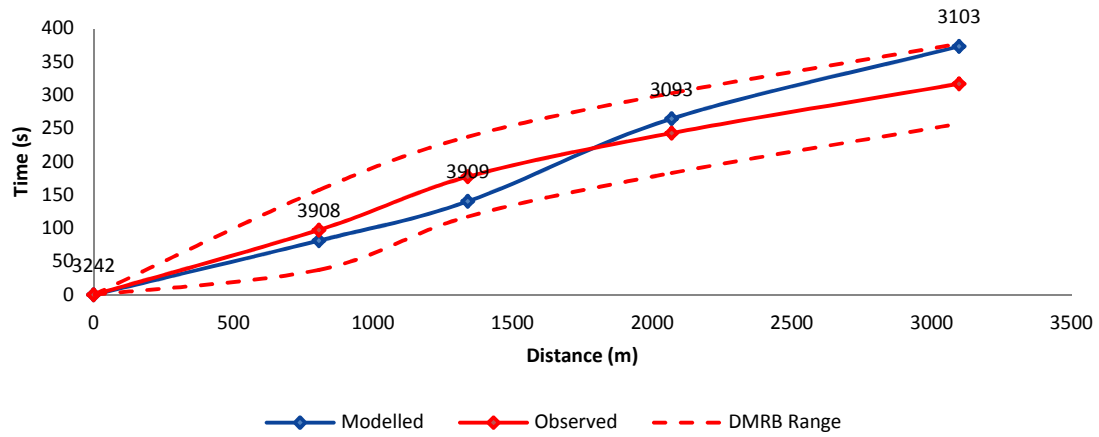


Route 12SB - A629/Stainland Road/Blackley Road

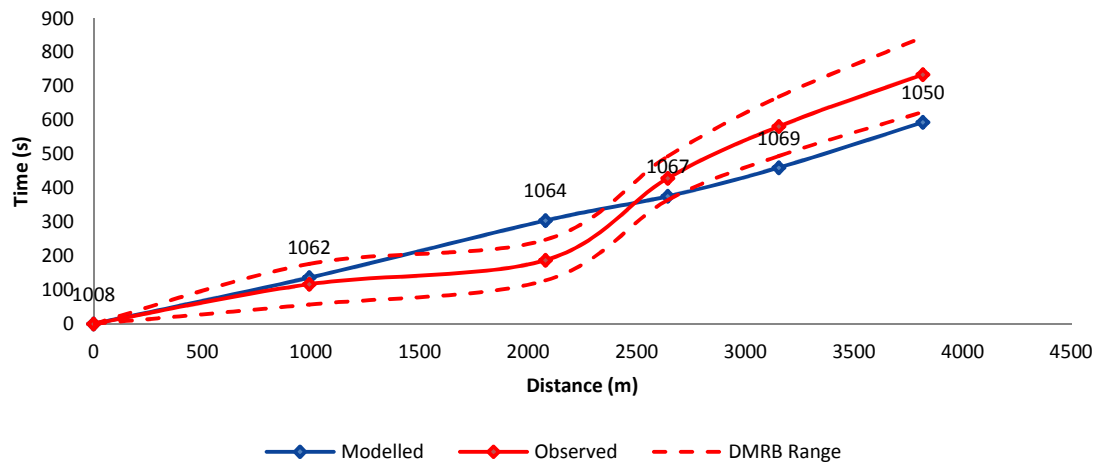




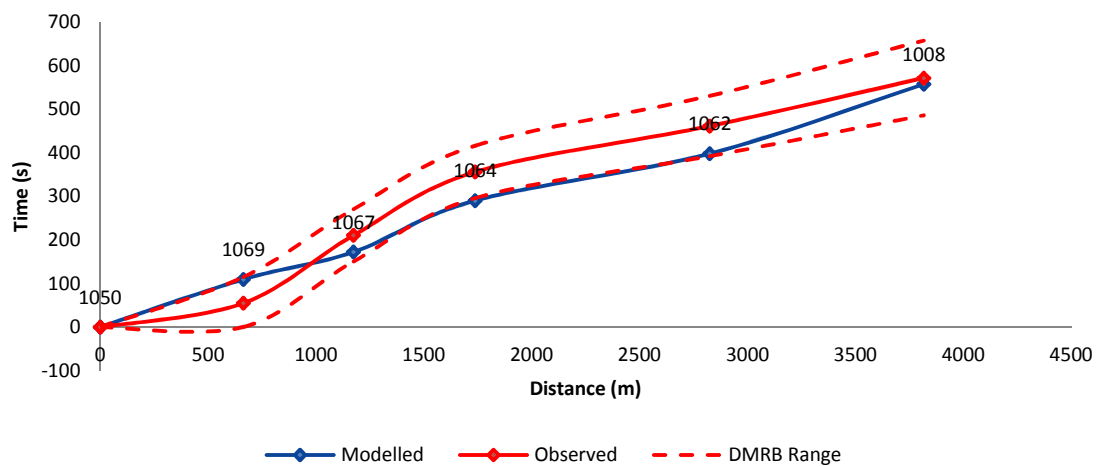
Route 14SB - Halifax/Southowram/Brighthouse A644 towards motorway

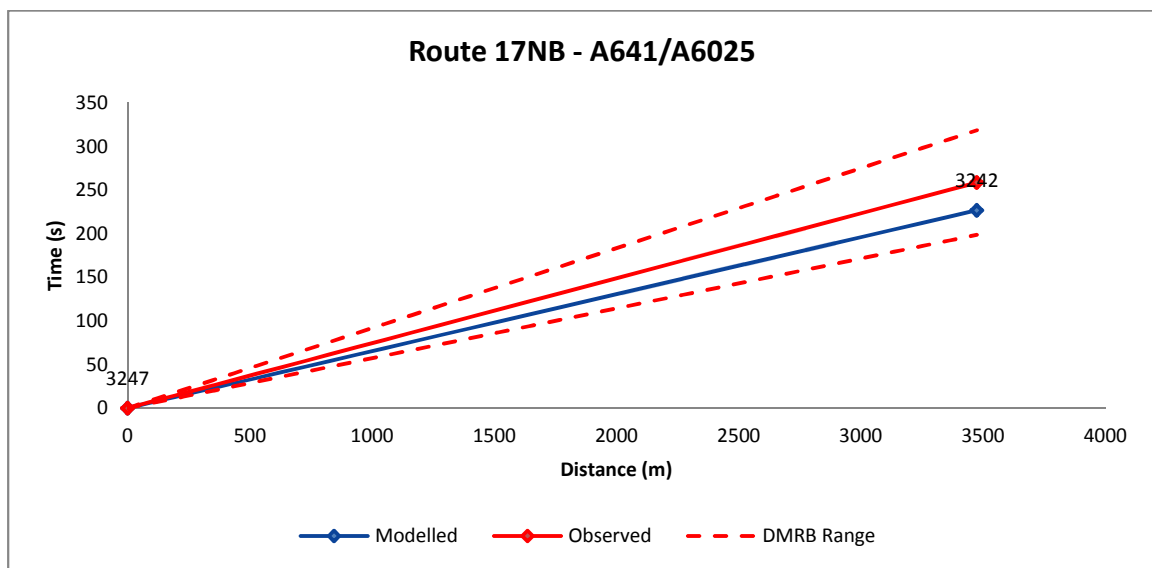
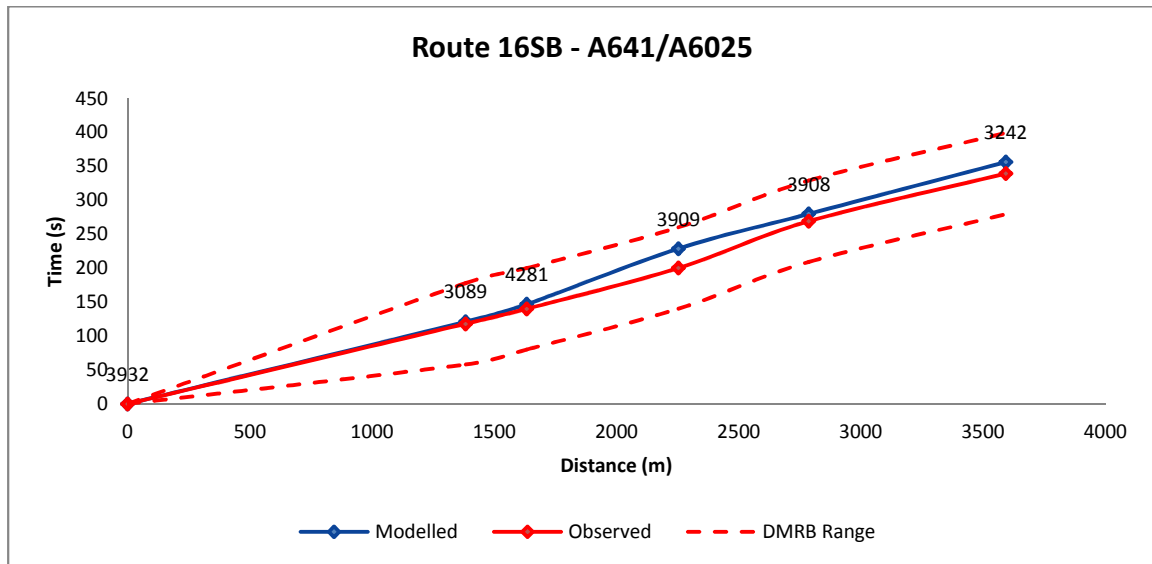
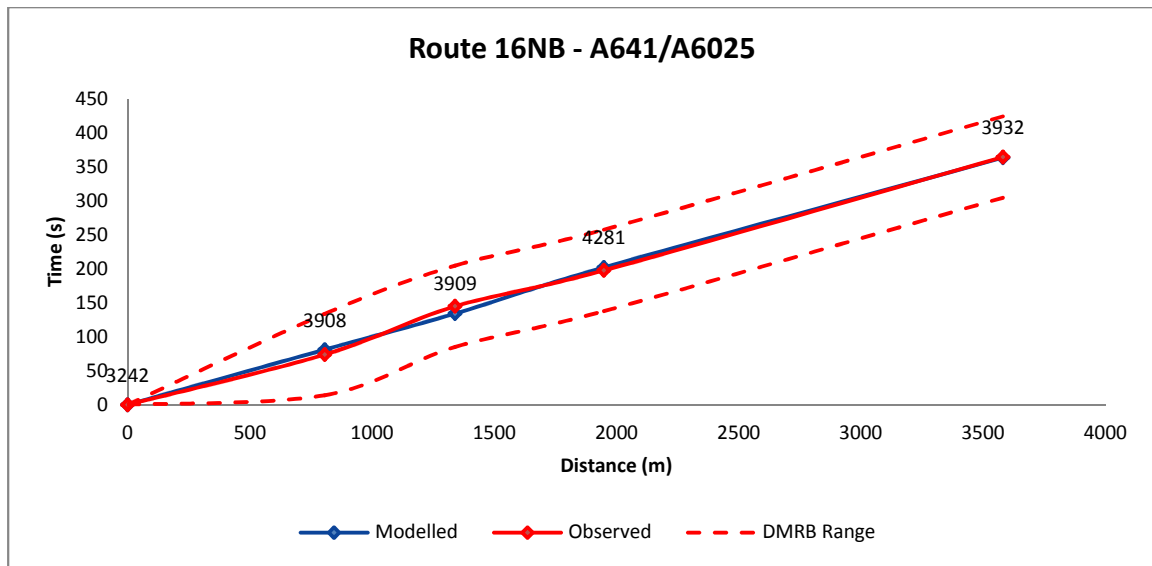


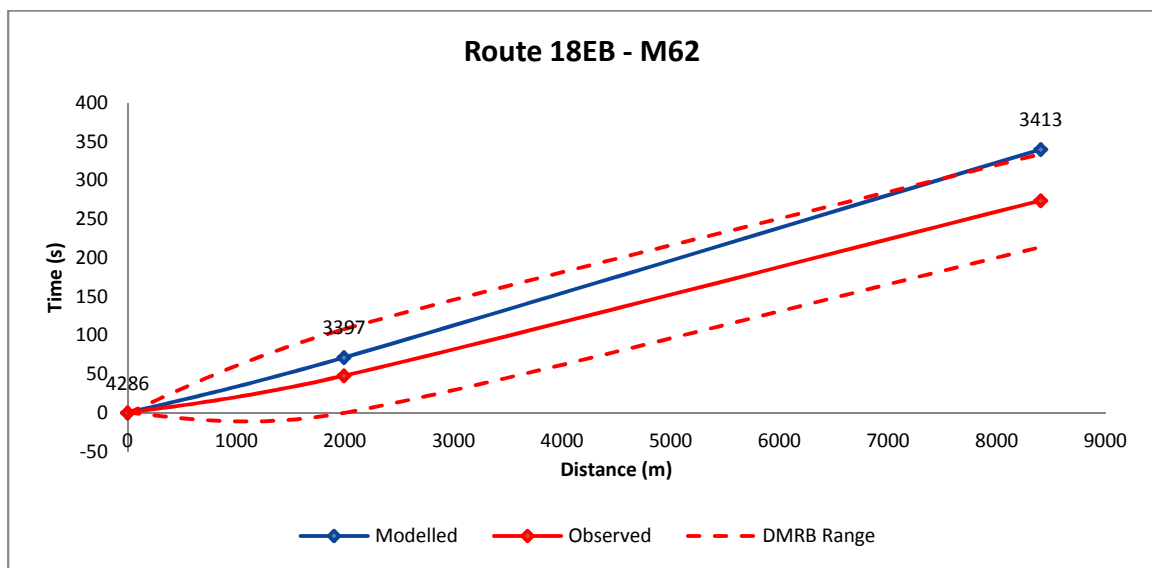
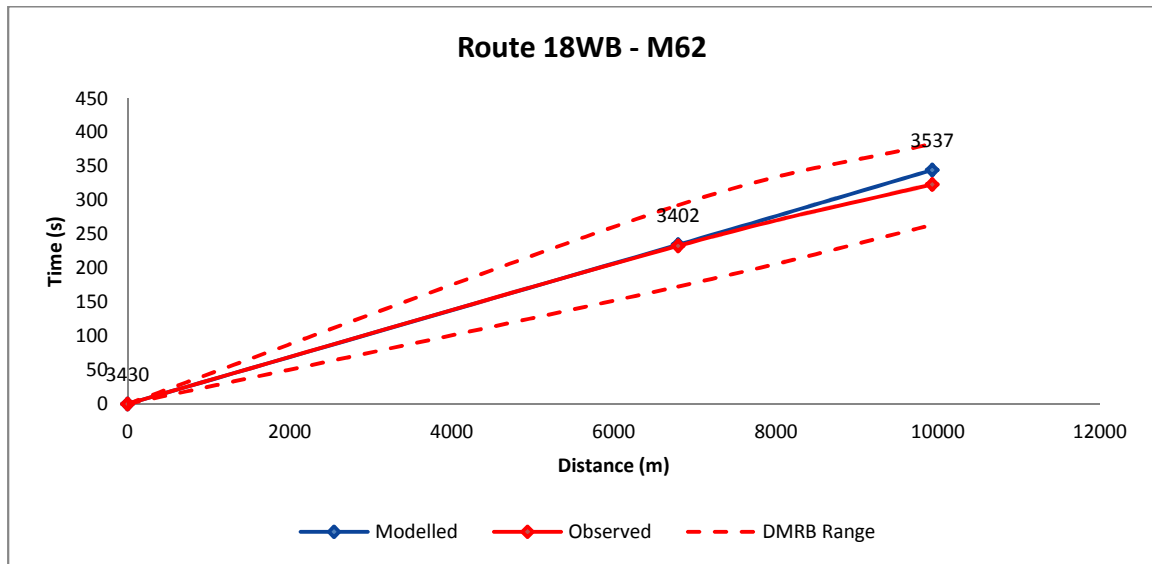
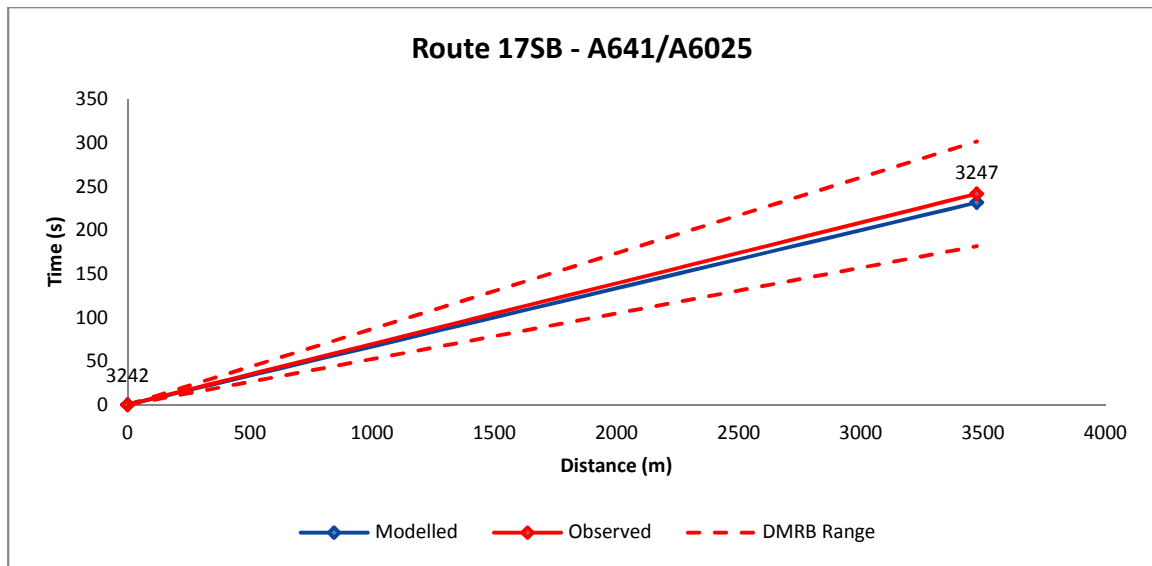
Route 15NB - Quenens Road/Dryclough Lane

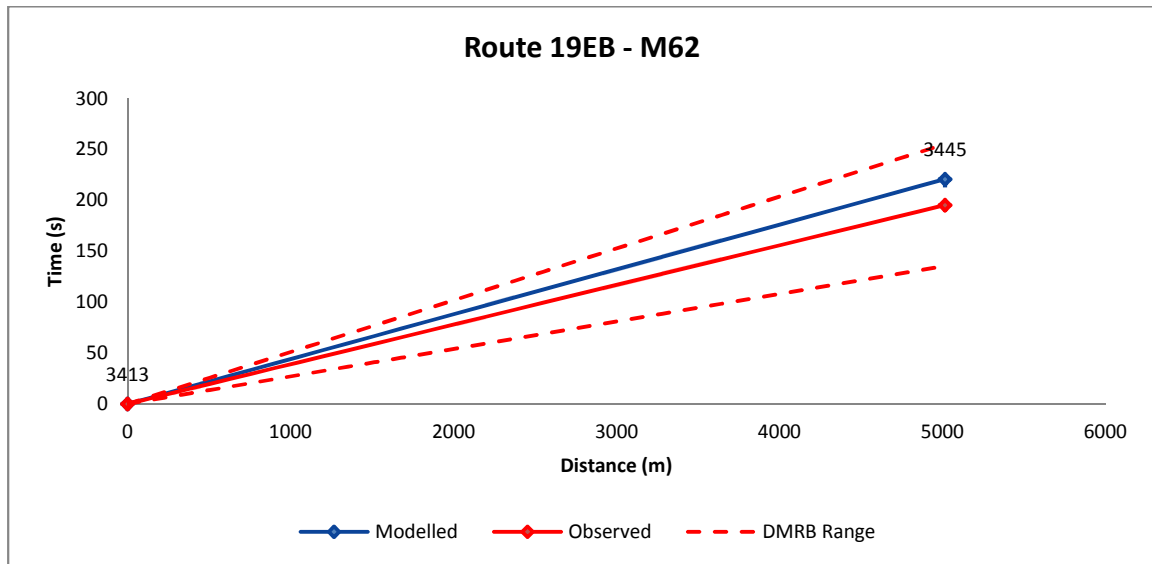
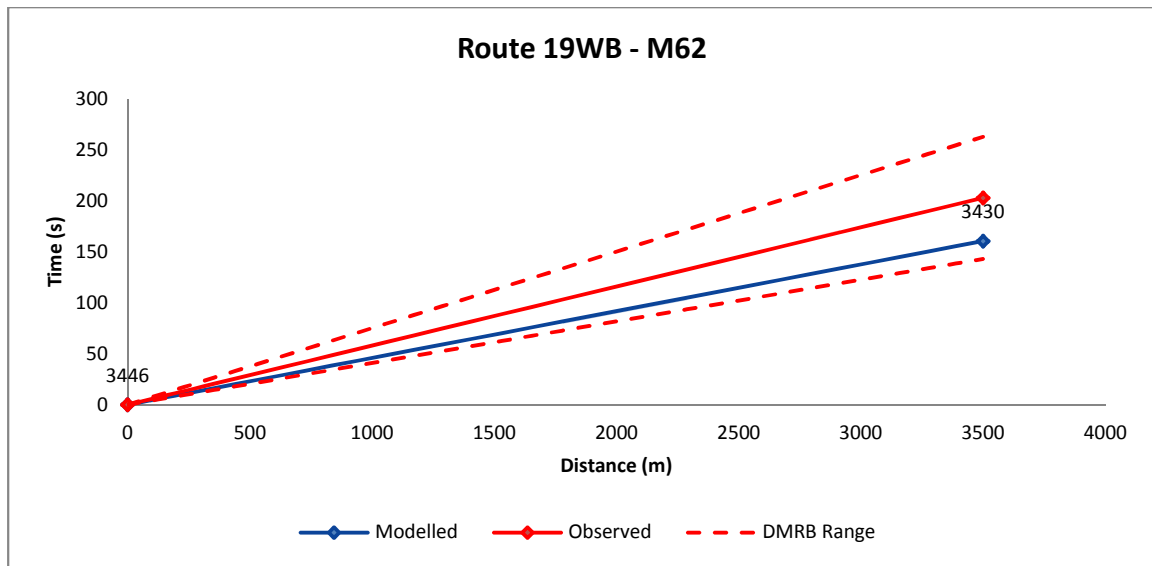


Route 15SB - Queens Road/Dryclough Lane

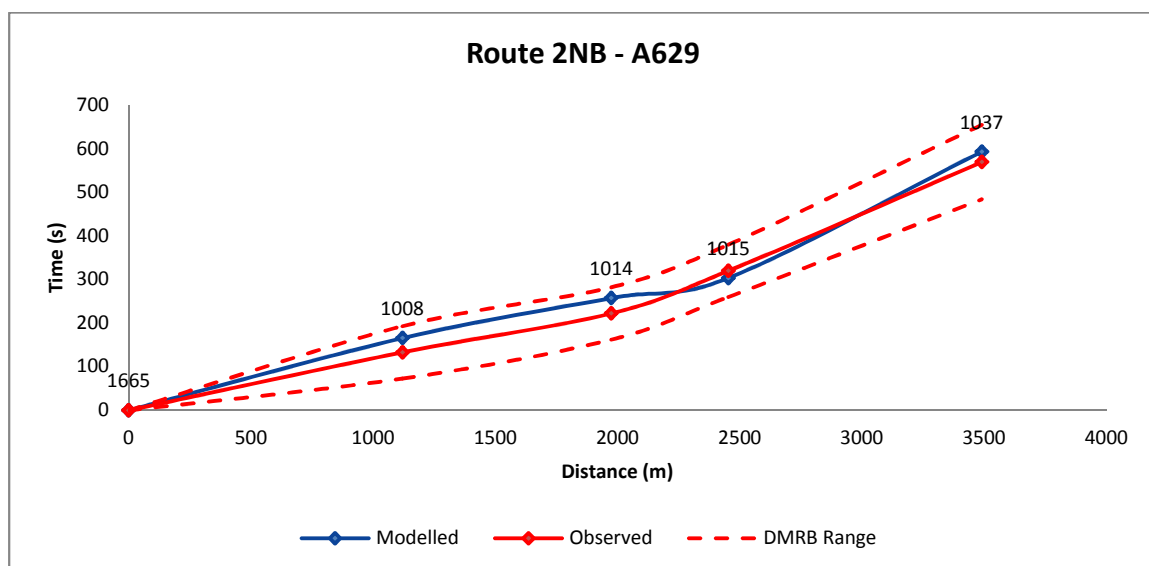
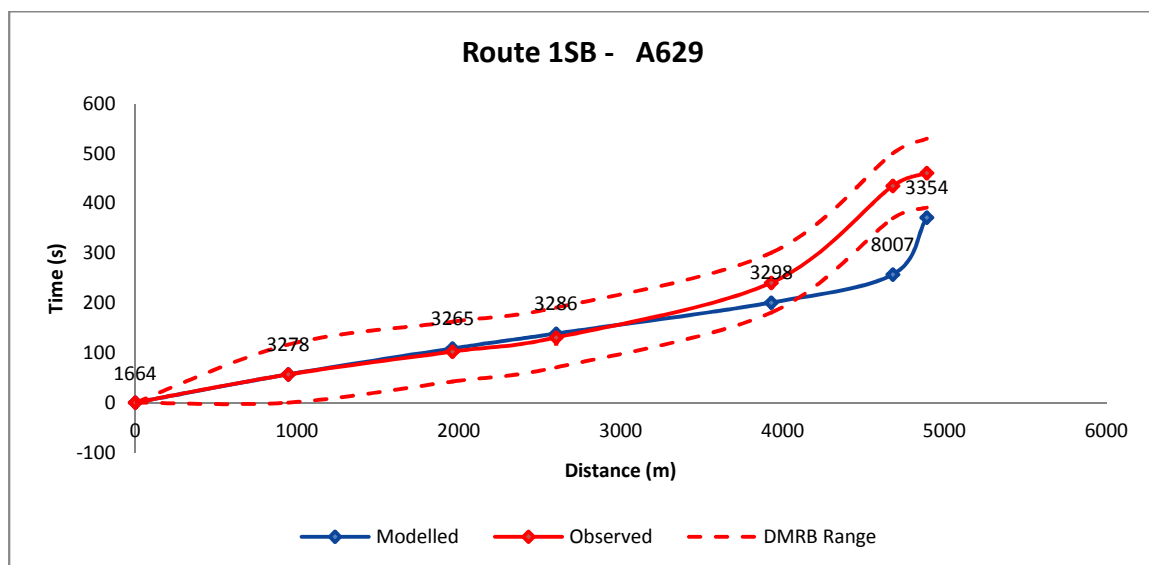
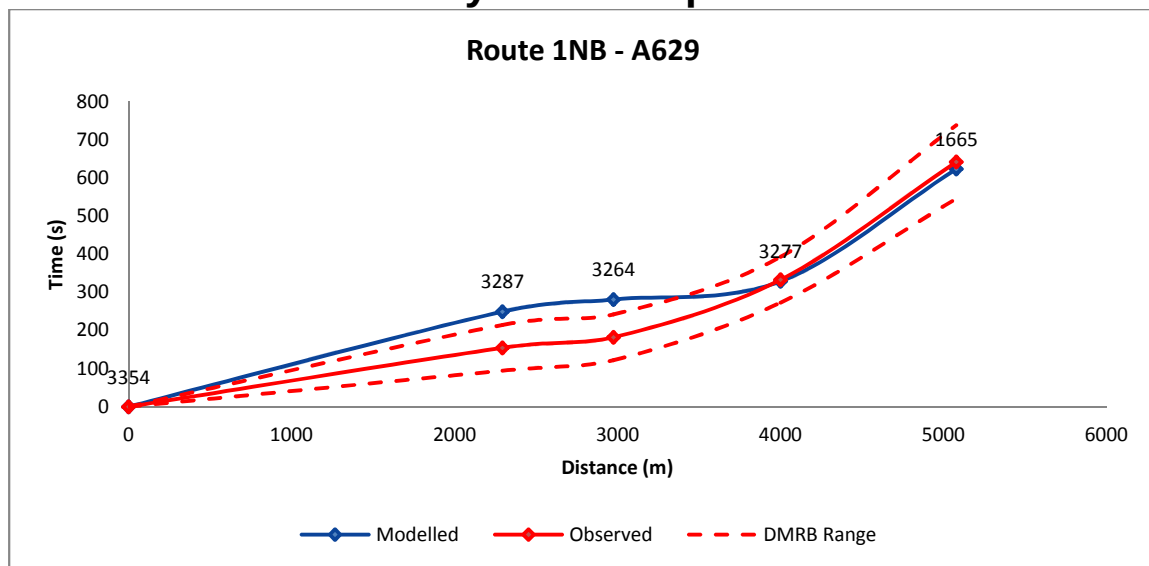


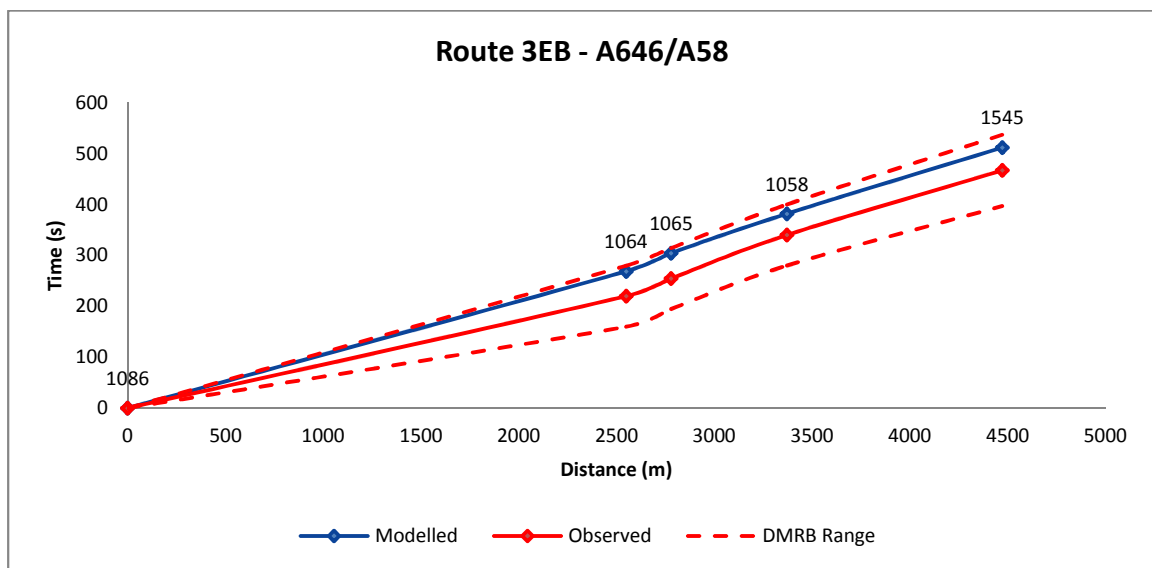
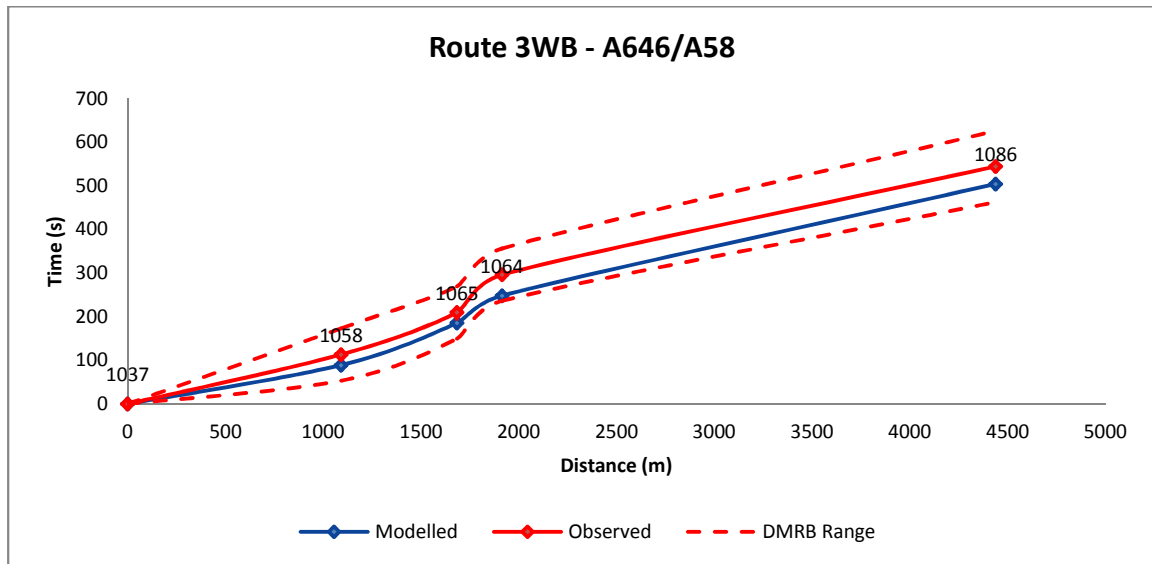
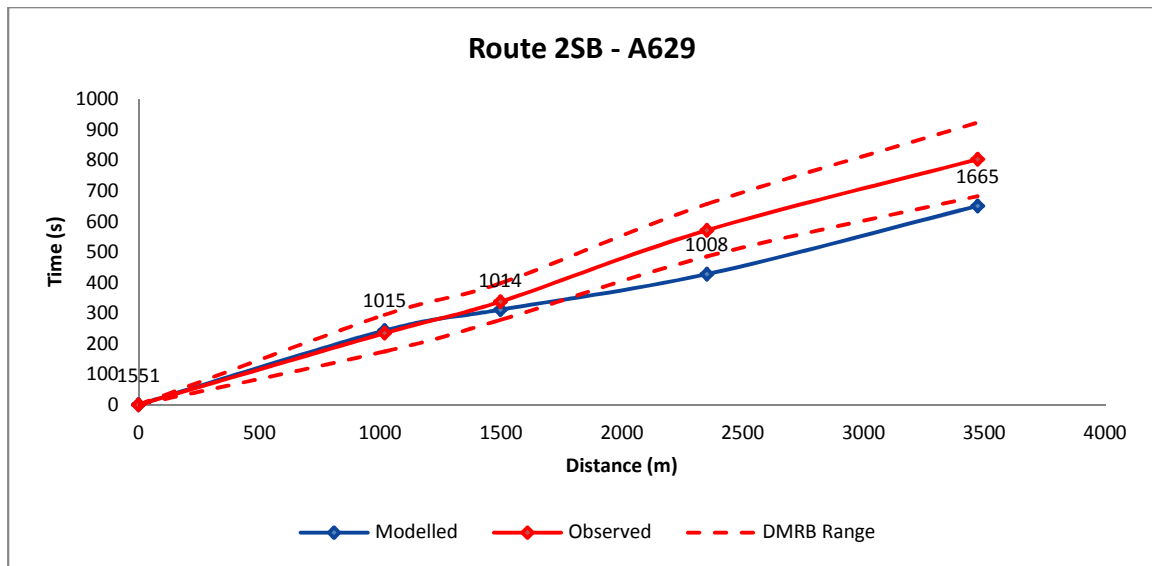




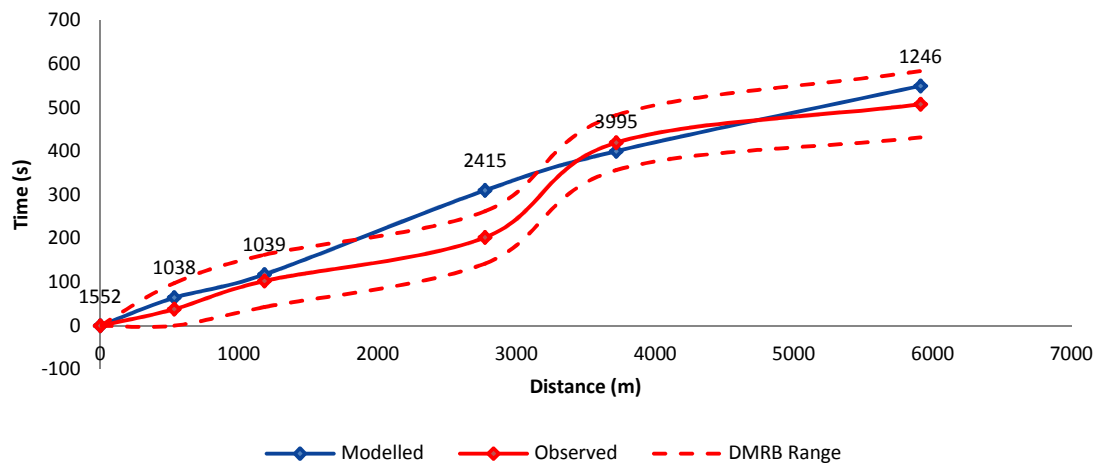


Calderdale v36 Journey Time Graphs - PM Peak

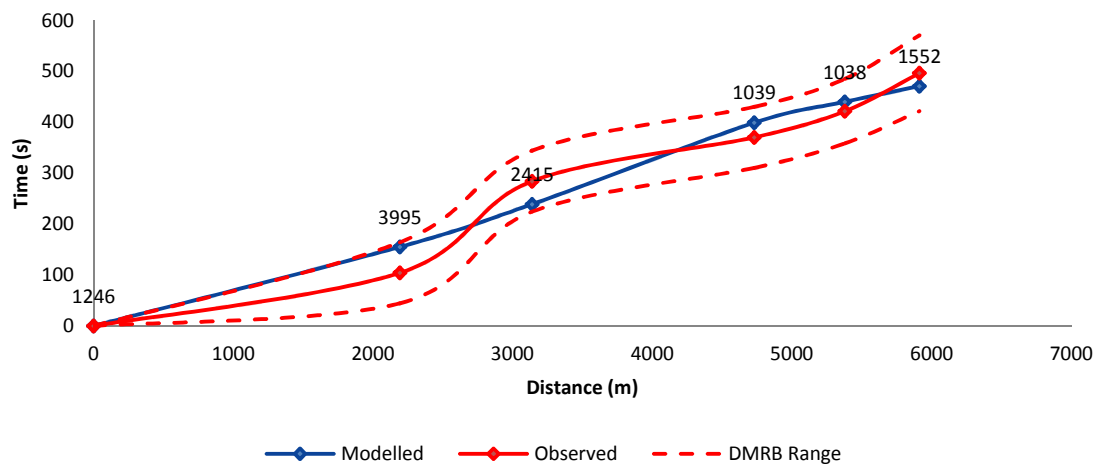




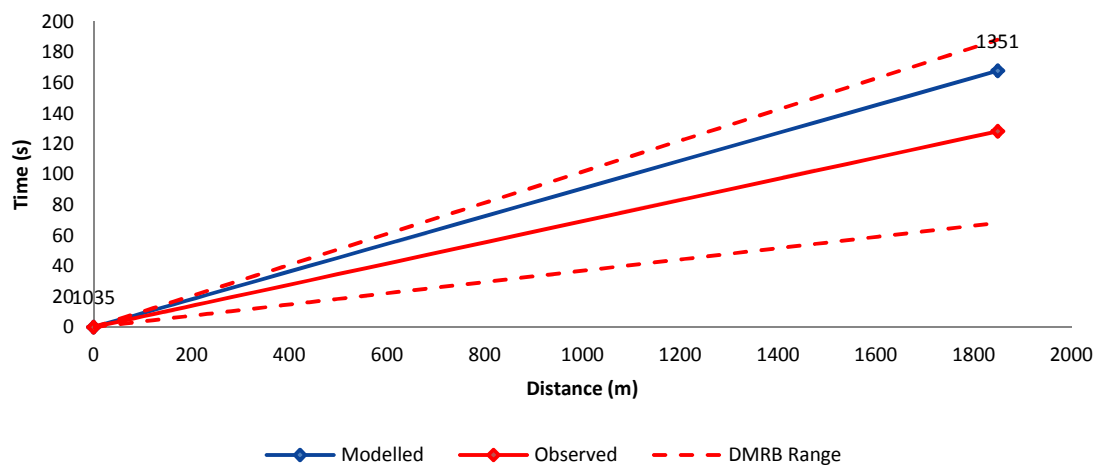
Route 4NB - A629 Ovenden Road

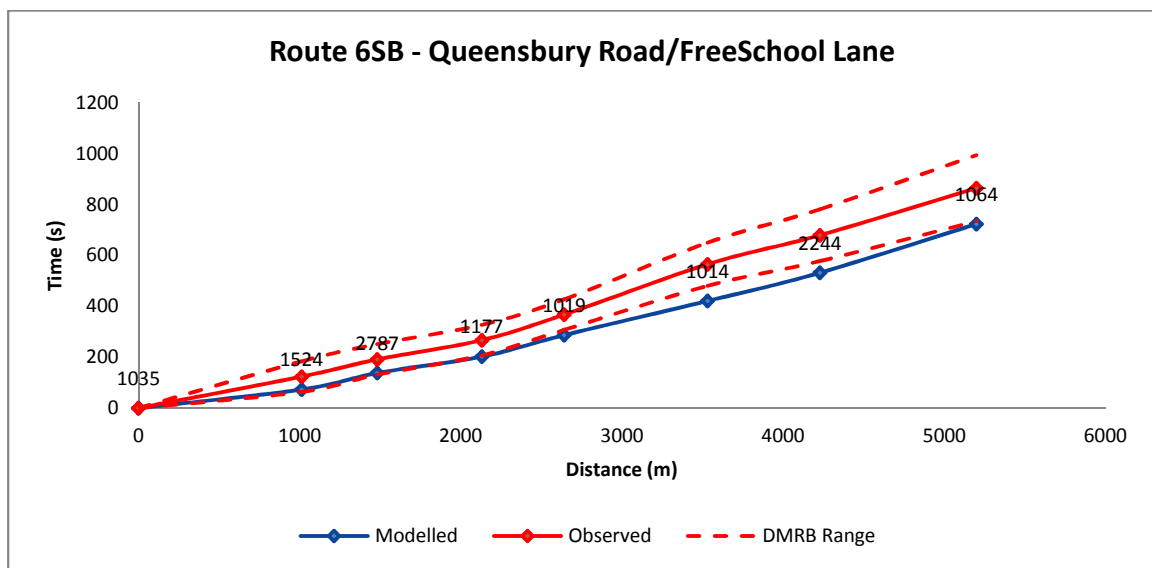
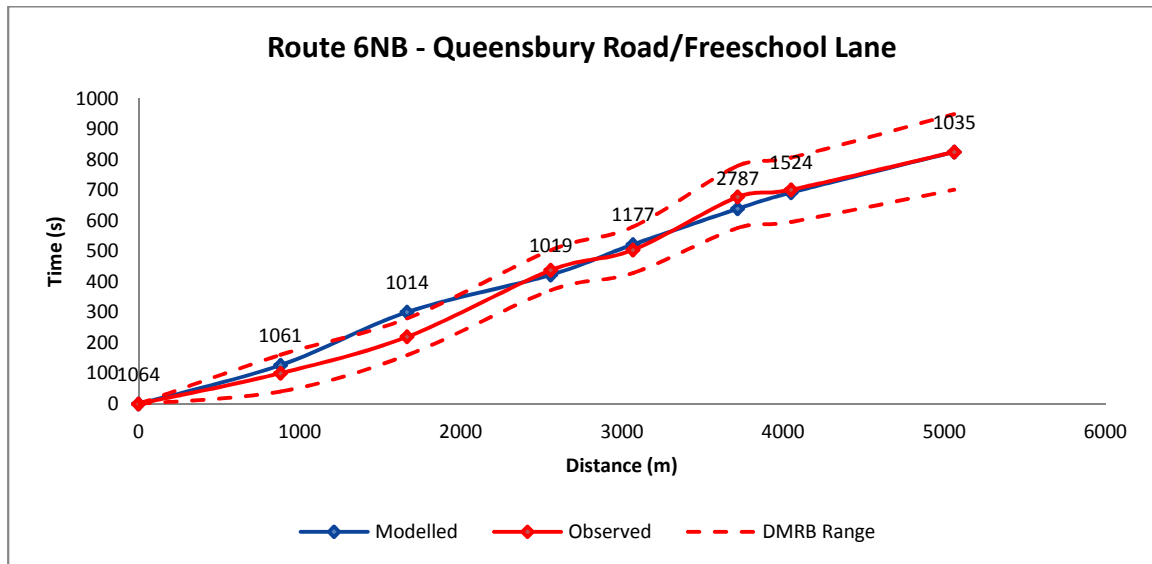
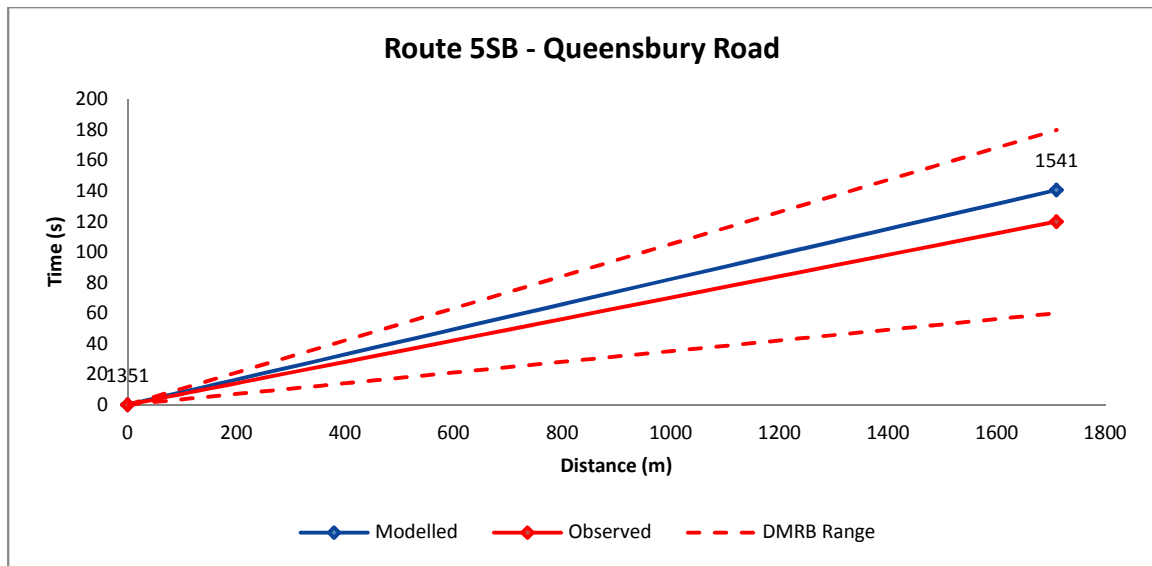


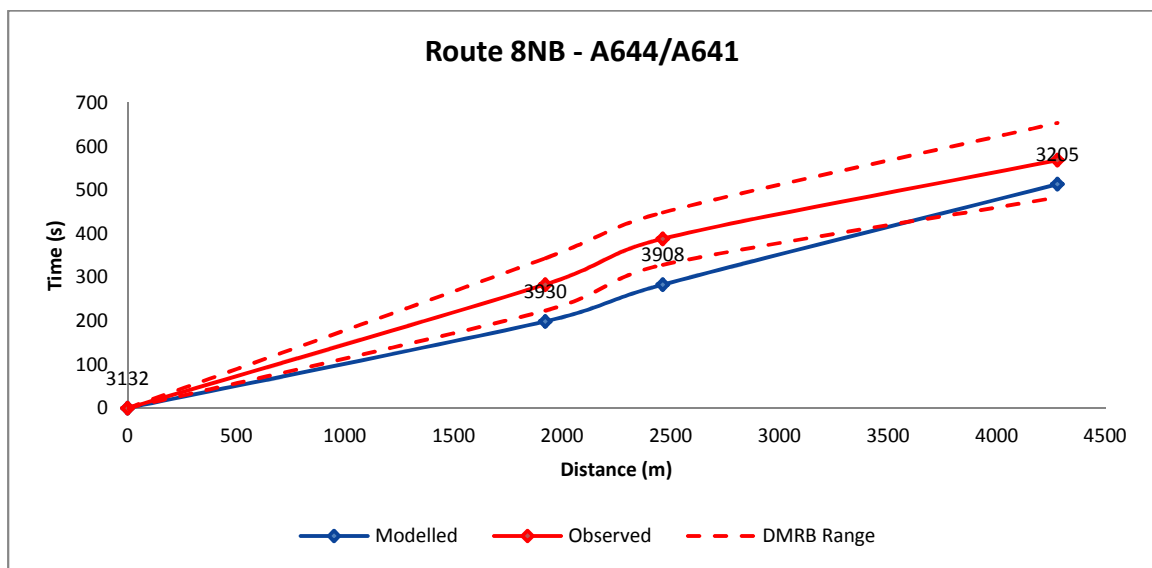
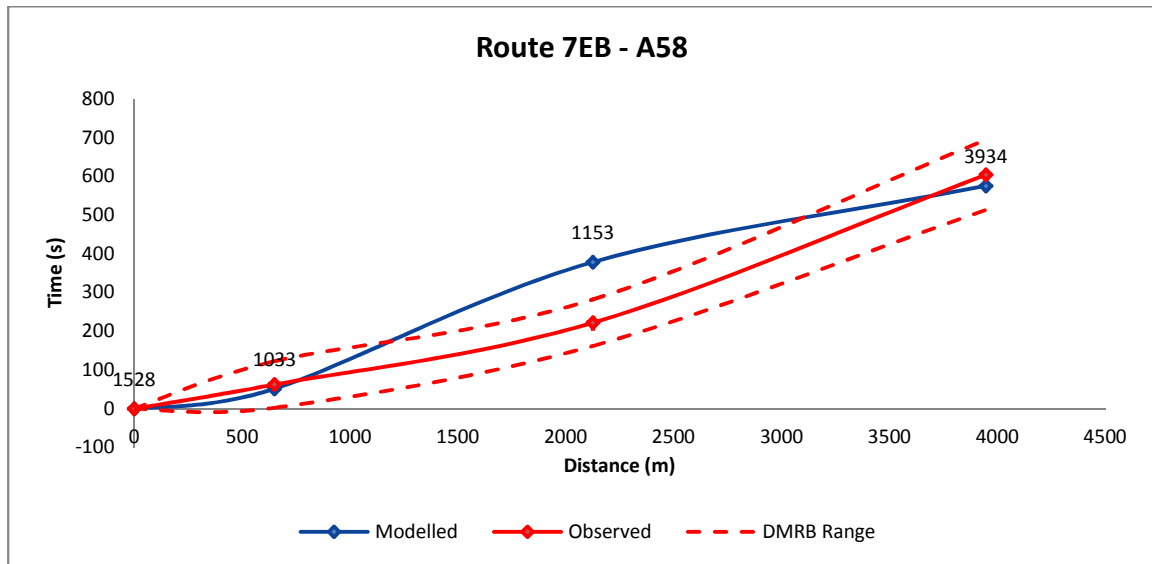
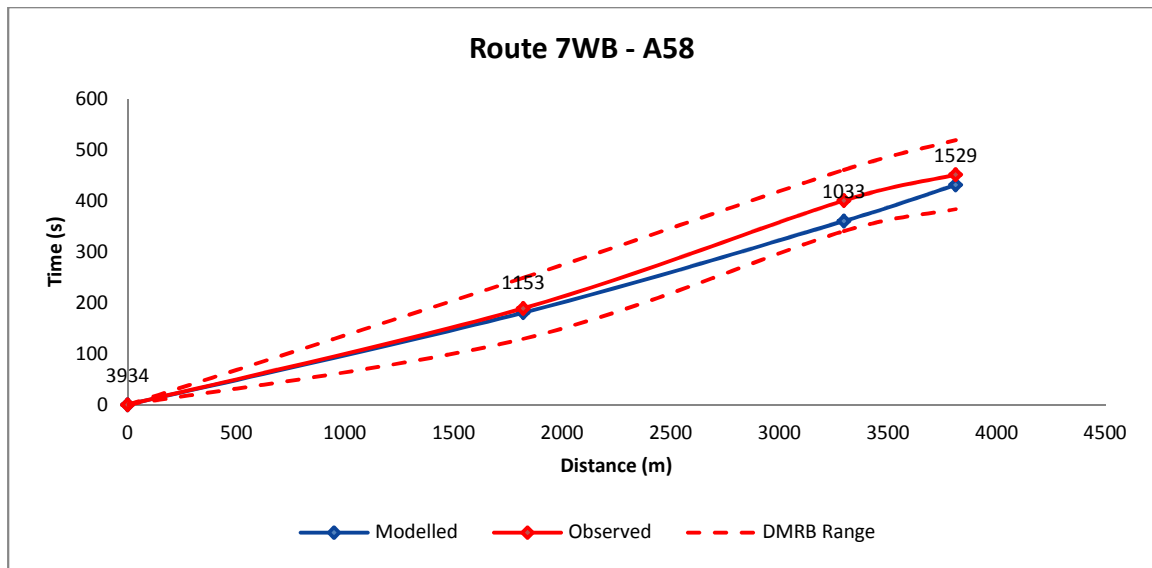
Route 4SB - A629 Ovenden Road

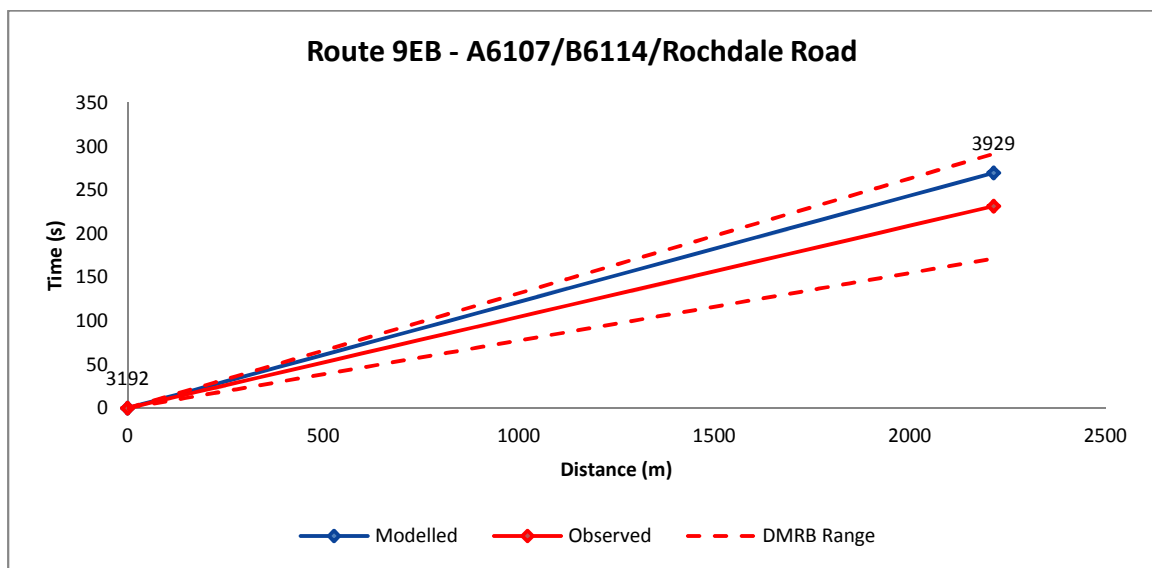
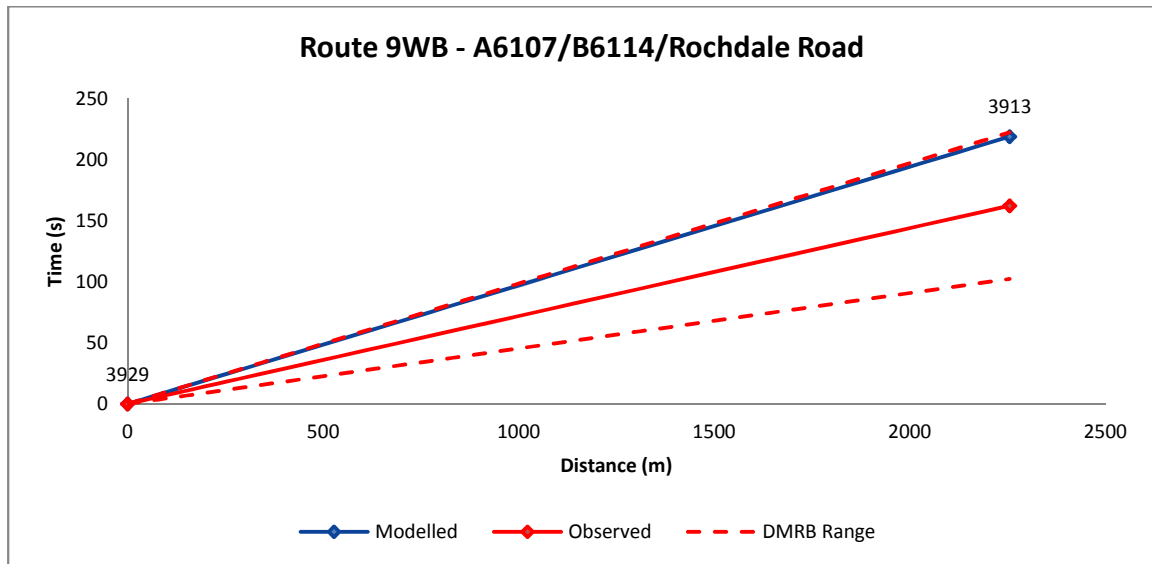
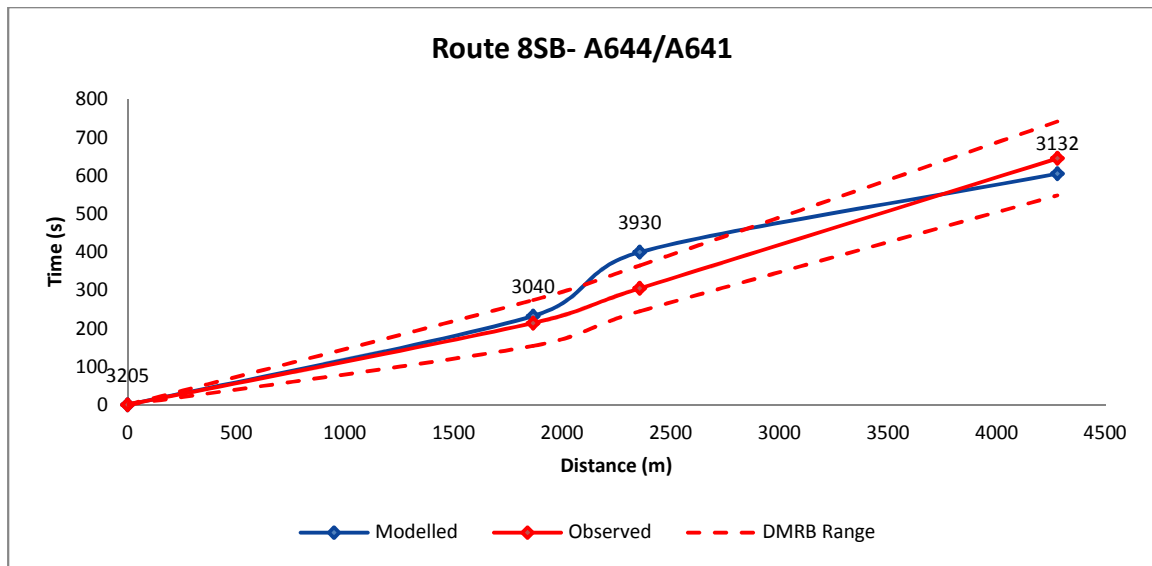


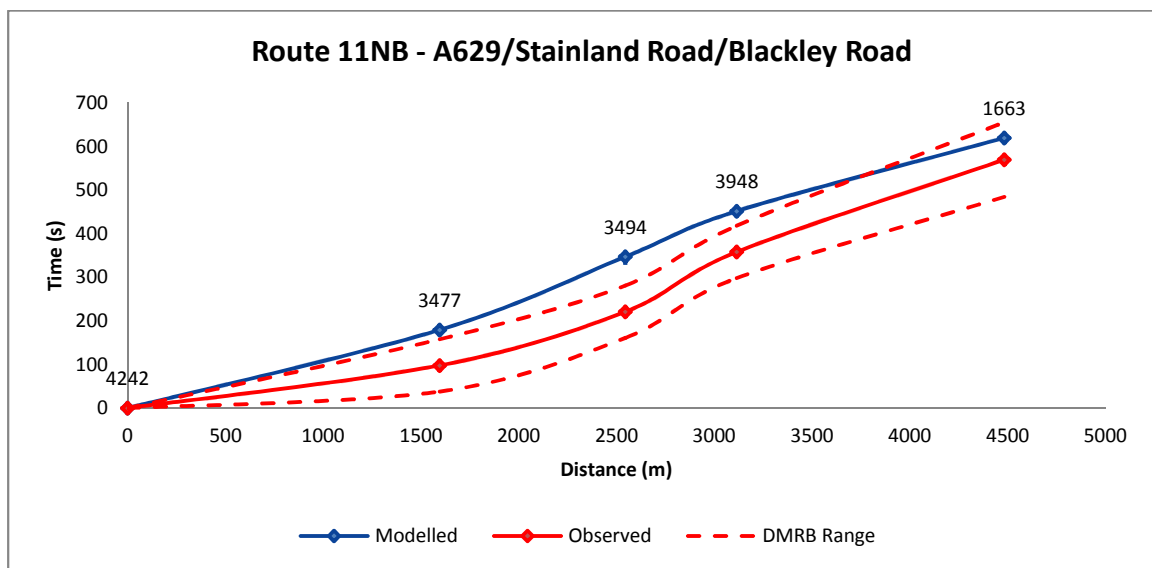
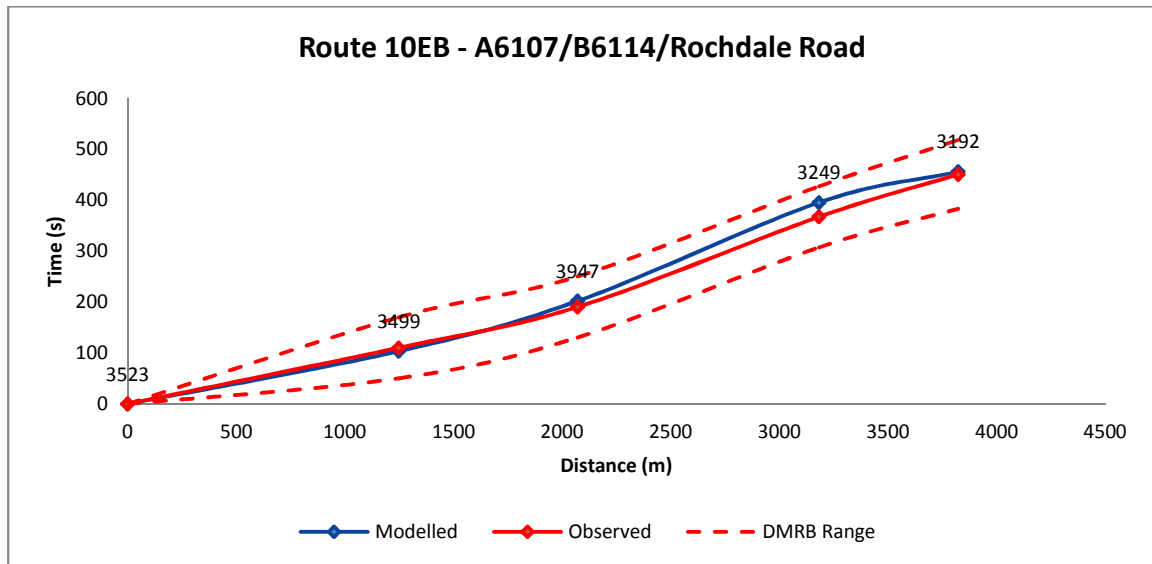
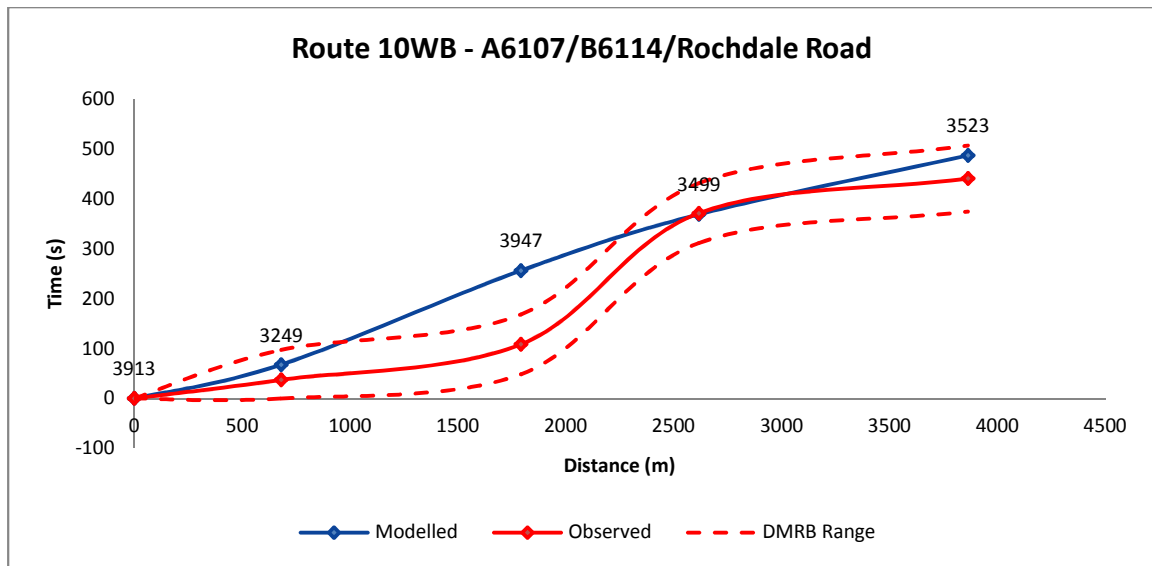
Route 5NB - Queensbury Road



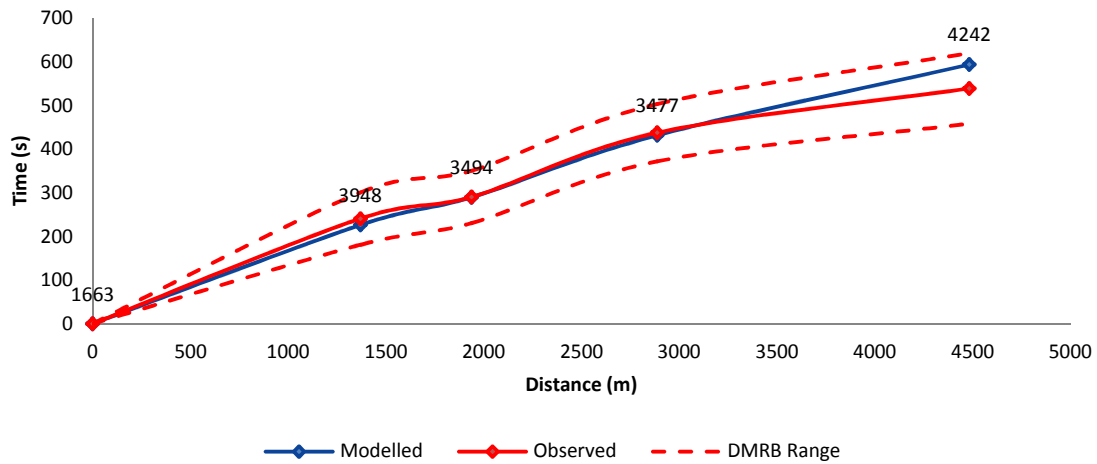




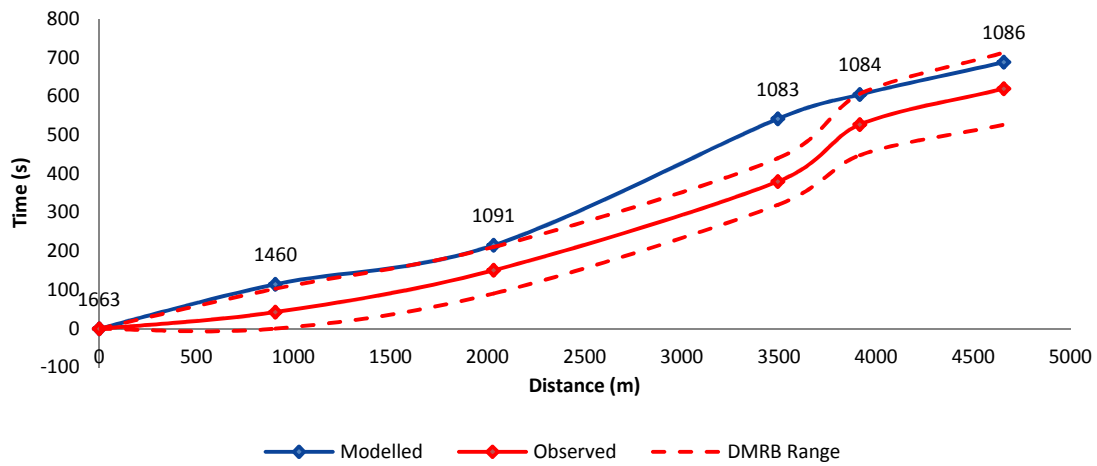




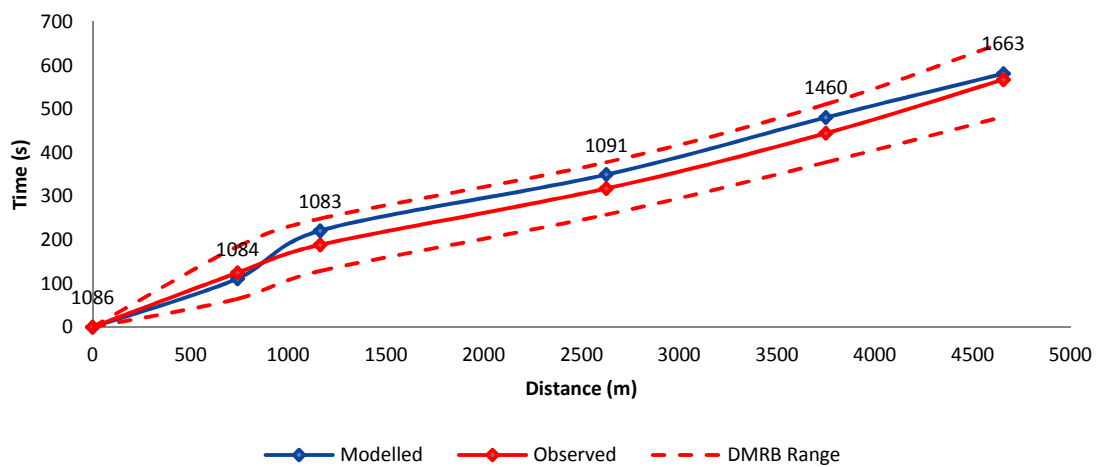
Route 11SB - A629/Stainland Road/Blackley Road Southbound



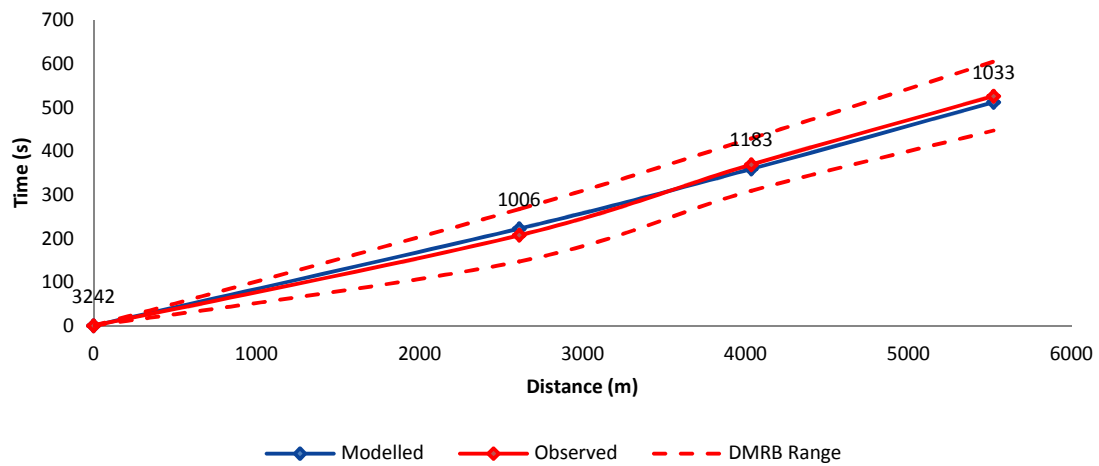
Route 12NB - A629/Stainland Road/Blackley Road



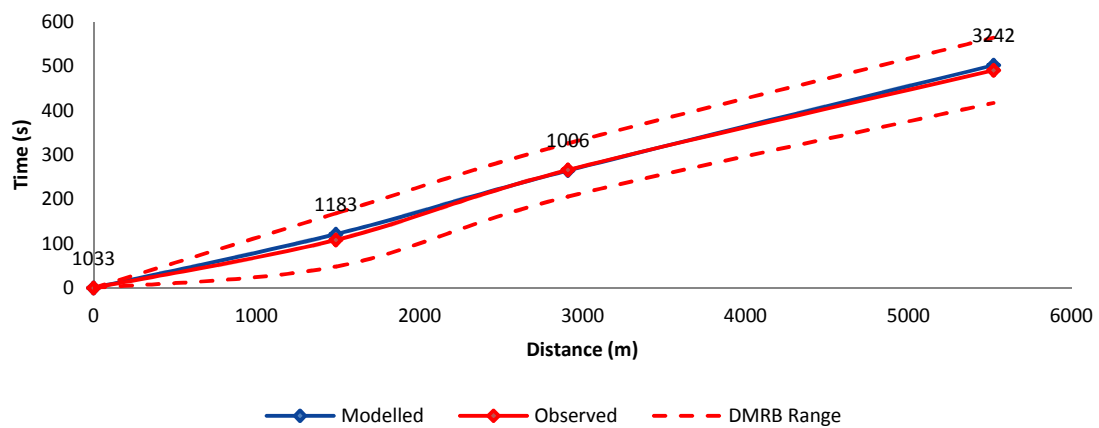
Route 12SB - A629/Stainland Road/Blackley Road



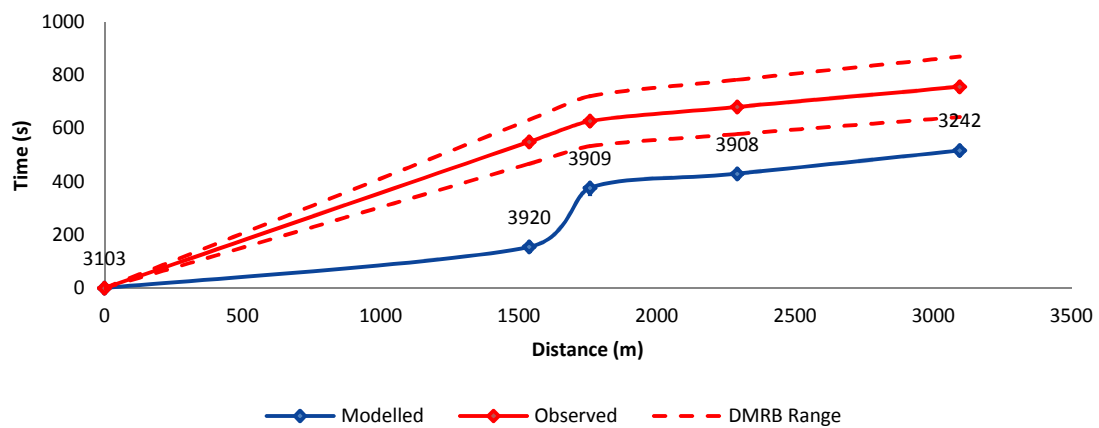
Route 13NB - Halifax/Southowram/Brighouse A644 towards Halifax



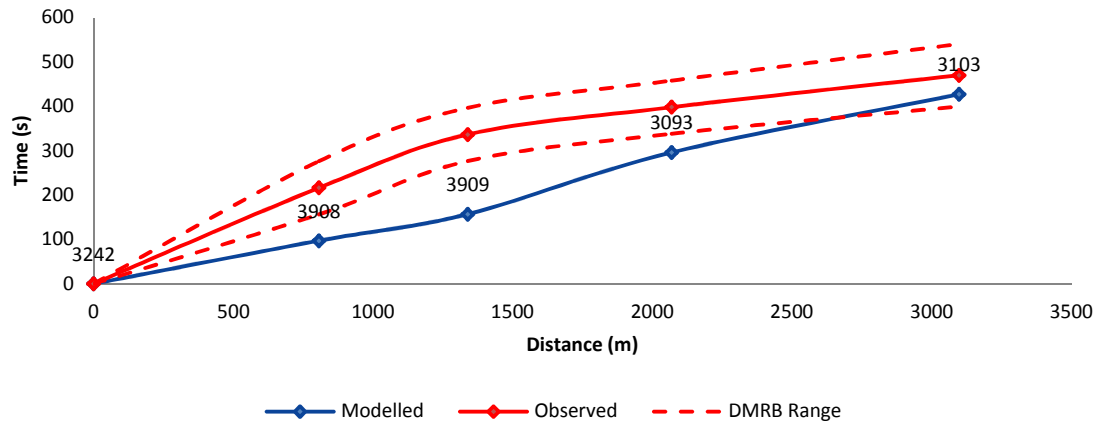
Route 13SB - Halifax/Southowram/Brighouse A644 towards motorway



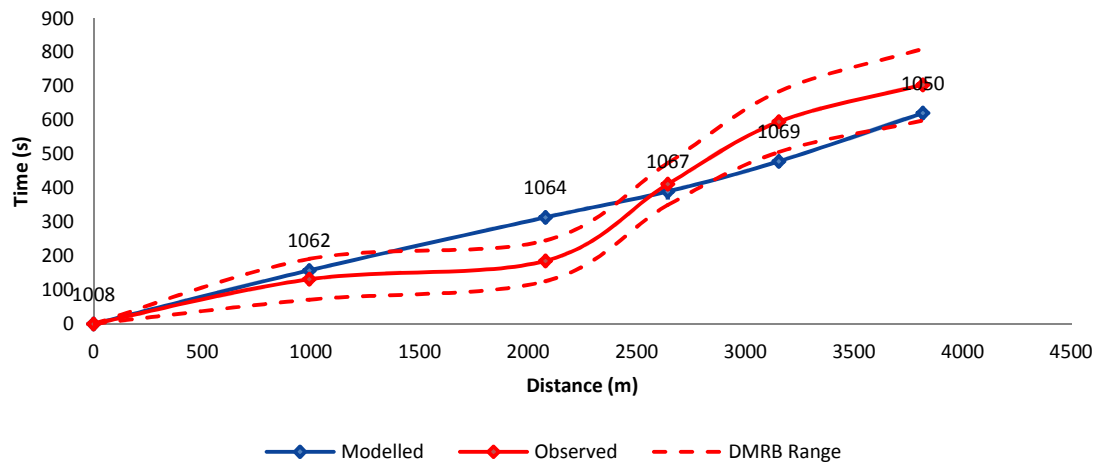
Route 14NB - Halifax/Southowram/Brighouse A644 towards motorway



Route 14SB - Halifax/Southowram/Brighouse A644 towards motorway



Route 15NB - Quenens Road/Dryclough Lane



Route 15SB - Queens Road/Dryclough Lane

