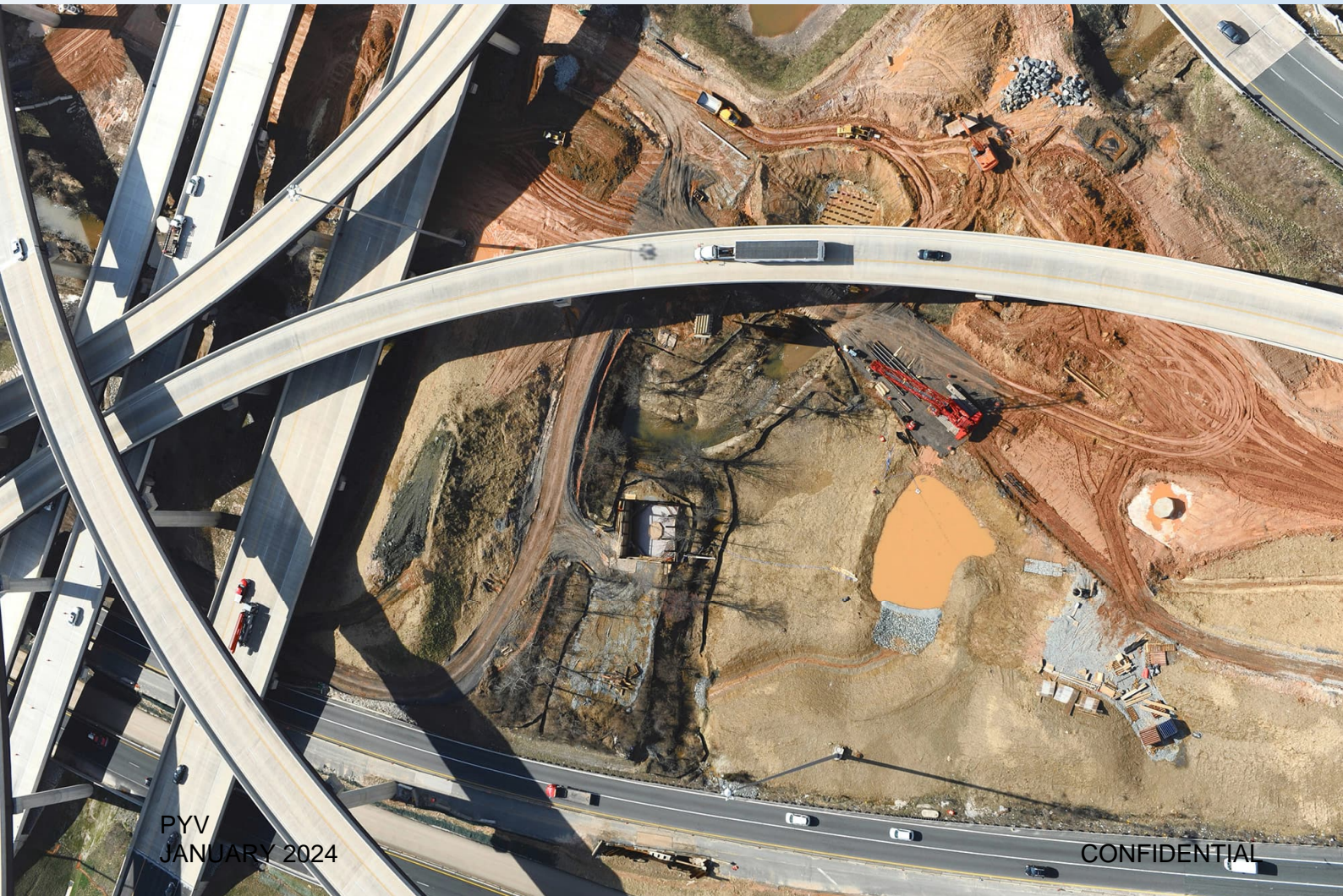




North Yorkshire County Council and Selby
District Council

SELBY DISTRICT TRAFFIC MODEL

2023 Present Year Validation





North Yorkshire County Council and Selby District
Council

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Council

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1 INTRODUCTION

1.1 BACKGROUND

- 1.1.1. WSP were commissioned by North Yorkshire County Council (NYCC) and SDC to develop the updated Selby District Strategic Transport Model (SDSTM) for a 2019 base year, providing a tool to test the upcoming Selby District Local Plan.
- 1.1.2. The SDSTM model includes a SATURN highway assignment model in addition to a variable demand model (VDM) developed in CUBE Voyager.
- 1.1.3. This report relates to a 2023 Present Year Validation (2023 PYV) which considers the update of the highway assignment model element of the SDSTM, which will then be used as starting point for the updated variable demand model.

1.2 MODEL PURPOSES

- 1.2.1. The SDTSTM provides a robust evidence base for a range of possible applications.
- 1.2.2. The SDSTM has been used since 2019 as a multi-purpose transport modelling tool for NYCC and SDC to test a range of potential transport schemes and policies. These include:
 - Highway scheme appraisal,
 - Inputs for transport business cases and funding applications,
 - Inputs for environmental appraisals,
 - Local plan assessments,
 - Development impact assessment; and
 - Local highway interventions.
- 1.2.3. The SDSTM has been developed to an extent that it is able to serve as a high-level strategic assessment tool for all such applications. However, no strategic model is capable of representing a whole district in fine detail, so the level of detail required for each application is reviewed prior to testing. It is commonly necessary to enhance a particular local area for a specific testing purpose.

1.3 PURPOSE OF THE PRESENT YEAR VALIDATION

- 1.3.1. TAG Unit M4 (Forecasting and Uncertainty, Nov 2023) recognises that the COVID-19 pandemic has led to marked changes in travel demand relative to pre-pandemic projected demand, even if there is uncertainty over the long-term impacts.
- 1.3.2. To account for COVID-19 related changes, trip matrices based before the beginning of the pandemic should ideally be rebased, or if this is not possible, an appropriate adjustment applied to model inputs or outputs in a proportionate way.
- 1.3.3. TAG provides the following options for possible approaches to adjust the base year
 - Method 1 - Create a forecast to the present day by applying adjustments to include a COVID-19 impact, based on observed data. This forecast can be used as a “new base year” as a substitute basis for scheme forecast.
 - Method 2- Apply adjustments to a forecast year model to produce a new scheme opening year forecast, or the first required forecast year, that include a COVID-19 impact to that point. This will be the new pivot off which further forecast years are based.

- Method 3 - Apply the adjustment globally to model results as a post-model adjustment.

1.3.4. It was agreed with SDC (NYC) to use a combination of method 1 and 2. The 2019 base year model was used to produce a 2023 forecast year which was compared against available traffic data from the councils traffic data site C2web and other publicly available traffic data sets and then a suitable factor applied.

1.3.5. The 2023 PYV exercise has updated the base year of the SDSTM from 2019 to 2023, with 2019 being the last year of “neutral” traffic conditions prior to the COVID-19 pandemic. The aim of the 2023 PYV is to derive forecasts for the SDSTM encompassing a post-COVID-19 pandemic base year of 2023.

1.4 UPDATED BASE YEAR MODEL SPECIFICATION

1.4.1. The SDSTM has a base year of 2023 based on an average Monday to Thursday for neutral months.

1.4.2. The assignment of the models following matrix estimation has been carried out using SATURN version 11.5.05H.

1.4.3. The following three time periods have been modelled:

- AM peak hour (0800-0900)
- Inter peak average hour (1000-1600)
- PM peak hour (1700-1800)

1.4.4. Justification for the time periods modelled is based on extensive county-wide coverage of ATC data.

1.5 PURPOSE OF THIS REPORT

1.5.1. This note is intended to outline the overall district wide validation performance of the 2023 base year assignment.

1.6 REPORT STRUCTURE

1.6.1. Section 2 provides detail of the 2023 traffic count and journey time data which has been compiled to inform the 2023 PYV.

1.6.2. Section 3 outlines the model network assumptions which have been compiled and applied as part of an update to ensure changes which occurred to the highway network between 2019 and 2023 have been captured and represented.

1.6.3. Section 4 sets out the trip matrix development undertaken to update the 2019 SDSTM matrices to a 2023 level of demand.

1.6.4. Section 5/6 sets out the validation performance for the model as a whole in 2023, as well as breaking down this performance by count data source.

2 VALIDATION DATA

2.1 TRAFFIC COUNT DATA

2.1.1. 2023 count data in the study area is limited, so updated 2023 counts have been analysed from existing count locations where possible. The traffic data sets which have been considered at a county-wide scale are the following:

- 2023 C2Web Traffic counts
 - C2 permanent count site dataset hosted by North Yorkshire County Council providing data for parts of the study area. The data obtained was tabulated by survey day with traffic volume reported in fifteen-minute intervals.
- 2022 DfT counts.
 - The DfT Count Database which is a collection of hourly traffic counts undertaken on behalf of the DfT for single days on an annual basis at various locations on the major (motorways and A roads) and minor road network which is also available online. As of creating the 2023 base year model, 2023 DfT counts were not available, but 2022 data was deemed a suitable substitute.

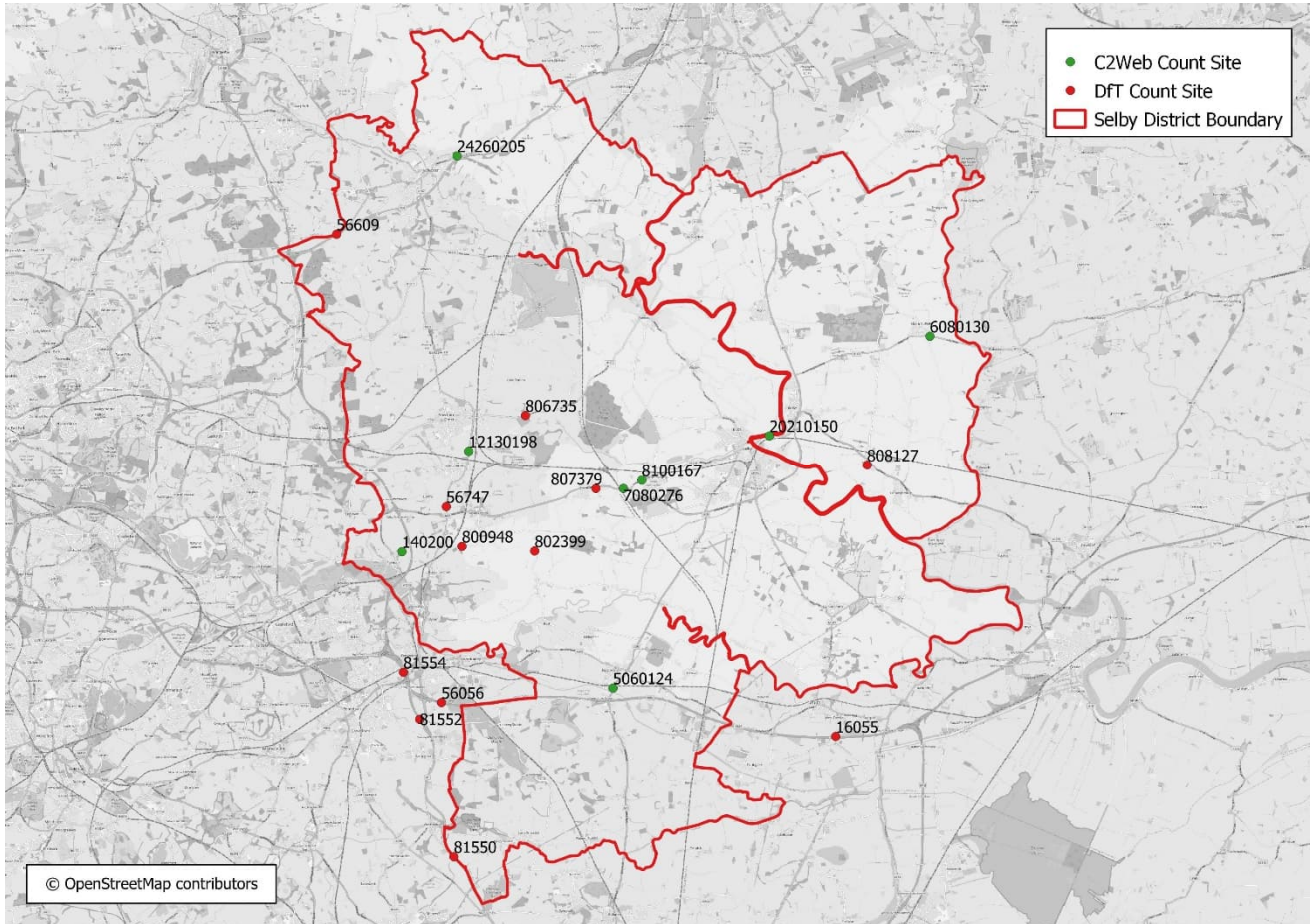
2.1.2. Table 2-1 shows the number of sites and link counts by source once counts with two directions of flow are considered.

Table 2-1 – Link counts by source

Source	No. sites	No. counts
C2Web	8	16
DfT	12	24
TOTAL	20	40

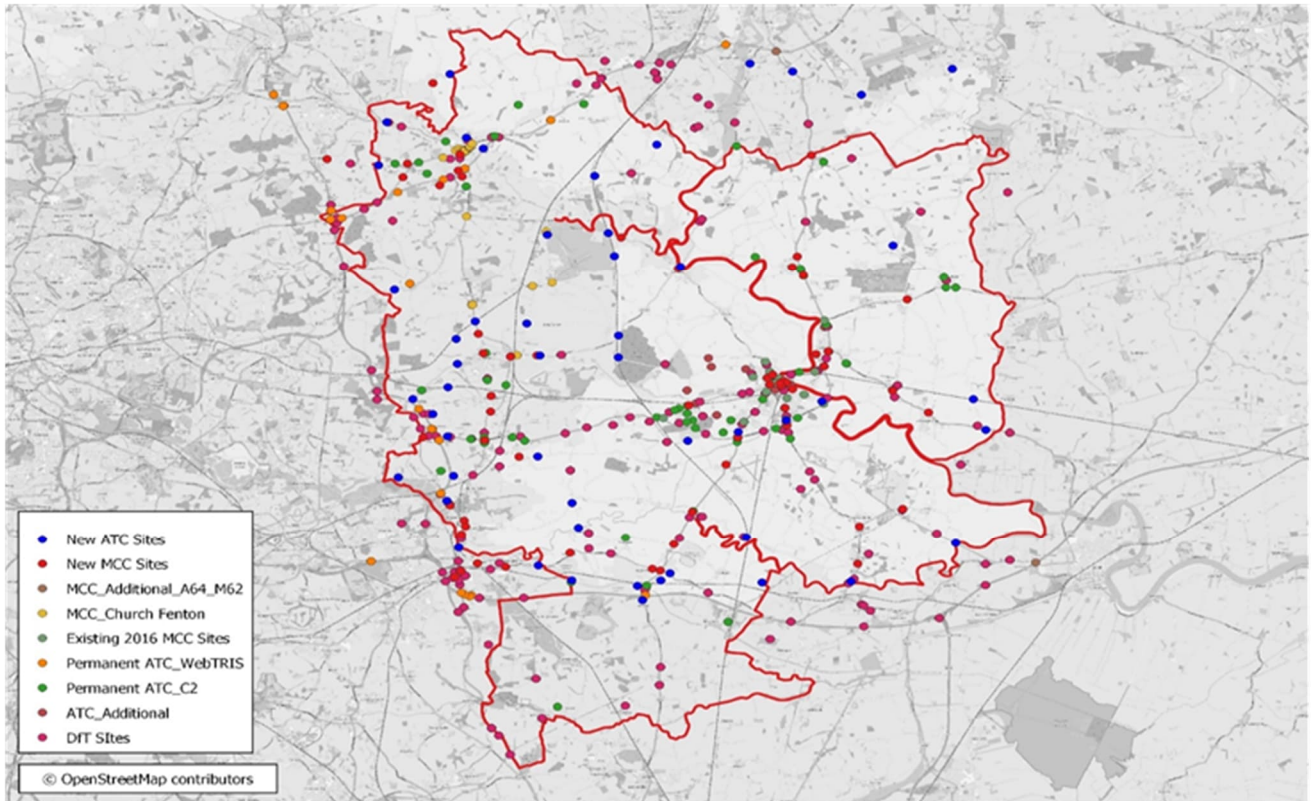
2.1.3. Coverage of the aforementioned traffic count datasets is provided in the figures below.

Figure 2-1 – 2022/23 C2Web and DfT Counts



2.1.4. Figure 2-2 shows the data coverage for the existing 2019 base year model that will be retained for the 2023 base year validation.

Figure 2-2 – Count site data coverage



2.2 2023 DATA FILTERING

2.2.1. The hourly flow data was then grouped into the following time periods:

- AM peak: 08:00 – 09:00.
- Inter-Peak period: 10:00 – 16:00; and
- PM period: 17:00 – 18:00.

2.2.2. Once the data was filtered and grouped, a double outlier exclusion process was performed to remove extreme traffic volumes that could have been recorded due to equipment malfunction or exceptional events.

2.2.3. Records with less than 3 fifteen-minute interval observations per hour were deemed not to have a large enough sample to provide a representative average value and were therefore excluded.

2.2.4. Once the data was filtered and cleaned, the counts were used to normalise the existing 2019 counts to 2023 values.

2.3 2023 DATA NORMALISATION

2.3.1. The 2022 DfT counts have been used to normalise the existing 2019 counts to 2023 values. DfT counts provide data split by vehicle class, so were deemed suitable to factor the existing 2019 count dataset.

2.3.2. As the latest year of DfT counts available at the time of writing is 2022 data, a check of the 2023 C2Web data was undertaken to check the suitability of the DfT counts. Table 2-2 shows the comparison between 2019 values for both 2022 DfT and 2023 C2Web for all vehicles per time period. It must be noted that C2Web counts are available on local minor roads, so they have been compared to DfT minor road counts.

Table 2-2 – Minor Roads 2019 vs DfT/C2Web all vehicle comparison

Source	AM Peak	Inter Peak	PM Peak
2023 C2Web	-2.5%	-0.5%	-7.0%
2022 DfT	-2.8%	0.3%	-6.4%

2.3.3. As can be seen from the table above, the change in traffic when compared to 2019 traffic values in very similar for both 2023 C2Web and 2022 DfT counts. As a result, 2022 DfT counts have been deemed acceptable for 2023 count normalisation.

2.3.4. The 2022 DfT count data was used to factor the 2019 counts to 2023 level by vehicle class and time period. Existing counts were split into minor and major roads and a different factor was applied based on road type. Here, major roads refer to the SRN (A1(M), M62 and A64). A full summary of the comparison between 2019 and 2022 is shown in Figure 2-3.

Figure 2-3 – DfT Count Comparison 2019 vs 2022

Adjusted Ref	All - Total			Car - Total			LGV - Total			HGV - Total		
	2019	2022	Diff	2019	2022	Diff	2019	2022	Diff	2019	2022	Diff
Minor Roads	2157	2085	-3.3%	1842	1729	-6.2%	270	288	6.9%	45	68	52.1%
Major Roads	91682	81905	-10.7%	61962	51281	-17.2%	14141	14984	6.0%	15578	15640	0.4%
Total	93839	83990	-10.5%	63804	53010	-16.9%	14411	15272	6.0%	15623	15708	0.5%
AM	2019	2022	Diff	2019	2022	Diff	2019	2022	Diff	2019	2022	Diff
Minor Roads	795	773	-2.8%	662	621	-6.2%	115	121	5.5%	18	31	68.7%
Major Roads	31248	27844	-10.9%	20109	15986	-20.5%	5330	5879	10.3%	5809	5979	2.9%
Total	32043	28617	-10.7%	20771	16607	-20.0%	5445	6000	10.2%	5827	6010	3.1%
Interpeak	2019	2022	Diff	2019	2022	Diff	2019	2022	Diff	2019	2022	Diff
Minor Roads	558	560	0.3%	450	433	-3.9%	90	101	12.3%	18	26	44.7%
Major Roads	25970	24836	-4.4%	15520	14180	-8.6%	4497	4702	4.6%	5953	5954	0.0%
Total	26528	25396	-4.3%	15970	14613	-8.5%	4587	4803	4.7%	5971	5980	0.1%
PM	2019	2022	Diff	2019	2022	Diff	2019	2022	Diff	2019	2022	Diff
Minor Roads	804	752	-6.4%	730	675	-7.6%	65	66	1.8%	8	11	31.6%
Major Roads	34464	29225	-15.2%	26333	21115	-19.8%	4315	4403	2.0%	3816	3707	-2.9%
Total	35267	29977	-15.0%	27063	21790	-19.5%	4380	4469	2.0%	3824	3718	-2.8%

2.3.5. Due to the low number of HGV flows available on minor roads, it was deemed more appropriate to use the total difference factors for all road types.

2.4 2023 JOURNEY TIME DATA

- 2.4.1. No changes were made to the existing 2019 journey time data as 2023 data was not available and generally a PYV does not require the update of journey time data.
- 2.4.2. Journey times from the 2019 data for a major route towards selby have been analysed against current conditions using historical Google Maps travel times. The A63 route west of selby was observed to have a travel time of roughly 10 minutes in both directions across all time periods. This was compared to a neutral march 2023 weekday in Google Maps and found that the journey times were still typically 10 mins. Therefore it has been deemed reasonable to use the existing 2019 journey time data.
- 2.4.3. The journey time validation statistics for the 2023 PYV are presented in Table 6-2 and show a strong level of validation, typically above 97%, even with outdated data.

3 NETWORK DEVELOPMENT

3.1 INTRODUCTION

3.1.1. In order to represent the 2023 model network, it was key to review the previous 2019 base year model network. There were no significant additional network schemes completed between 2019 and 2023, so the highway network has remained unchanged.

3.2 GENERALISED COST FORMULATIONS & PARAMETER VALUES

3.2.1. Generalised cost is defined in keeping with the guidance in section 2.8 of TAG Unit M3.1 (May 2020), and is as follows:

$$Generalised\ cost = Time + \left(\frac{Vehicle\ operating\ cost}{Value\ of\ time} \right) Distance$$

3.2.2. Value of time is calculated in pence per minute (PPM) and vehicle operating cost is calculated in pence per kilometre (PPK). The adopted parameters were calculated from the TAG data book version 1.17 (November 2021), to remain consistent with the 2019 base model. The value of time (PPM) for the HGVs was doubled from the value provided in the TAG data book. This is in line with TAG Unit A1.3 which advises for HGV that the driver’s time does not take account of the influence of owners on the routing of these vehicles.

3.2.3. The parameters adopted for a 2023 base year are shown in Table 3-1. For the HGV class, local ATC data was used to determine the split of vehicles which could be classified as OGV1 and OGV2 by peak hour. This split was used to calculate average generalised cost parameters for HGVs. Average simulation network speeds were also used to derive the generalised cost parameters.

Table 3-1 – 2023 Generalised Cost Parameters

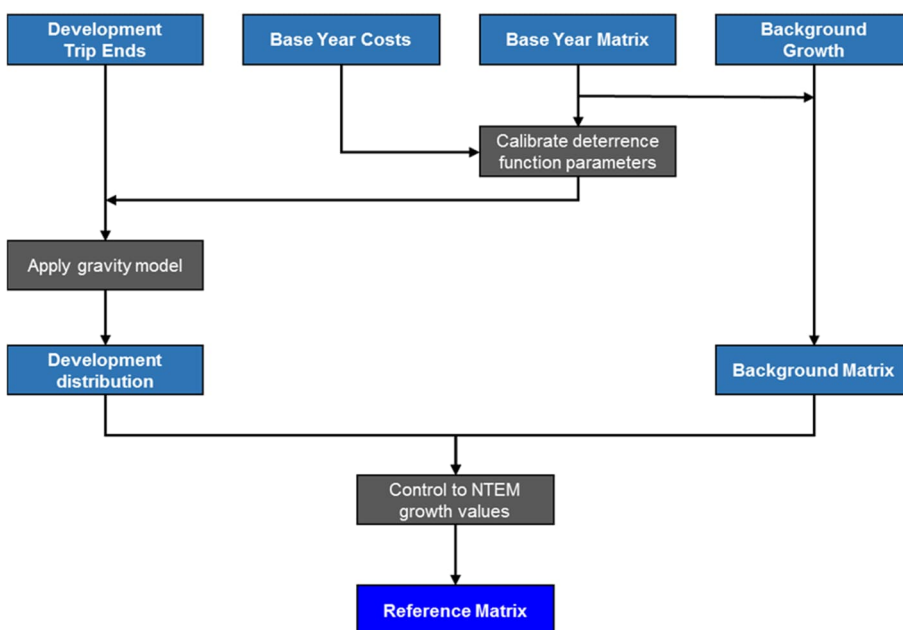
User Class	AM		IP		PM	
	PPM	PPK	PPM	PPK	PPM	PPK
UC1 – Car Employer’s Business	31.68	12.27	32.47	12.27	32.14	12.27
UC2 – Car Commuting	21.25	5.74	21.56	5.74	21.32	5.74
UC3 – Car Other	14.66	5.74	15.62	5.74	15.35	5.74
UC4 – LGV	22.96	13.28	22.96	13.28	22.96	13.28
UC5 – HGV Average	52.59	43.30	52.59	43.67	52.59	45.37

4 TRIP MATRIX DEVELOPMENT

4.1 INTRODUCTION

- 4.1.1. In order to update the 2019 base year matrix to a 2023 base year demand, information has been gathered from NYCC and SDC about the developments that have occurred between 2019 and 2023. WSP already had an outdated information as part of historic Local Plan modelling. However, updated information was obtained from the NYCC and SDC to confirm build out rate figures between 2019 and 2023.
- 4.1.2. The development trip ends were distributed using a Gravity model developed with the CUBE suite. The TAG compliant CUBE procedure attempts to reproduce the 'distribution of trips by distance' curve of the base year matrix, such that it yields what parameters would be needed to distribute the development trips as if they were in the base year matrix.
- 4.1.3. Given the level of calibration and validation the base year matrices have undergone, this provides a level of confidence in the distribution of development trips. CUBE optimises the gravity model parameters to minimise the overall differences between observed and modelled values, by time period. The gravity model then distributes development trips based on the cost of travel to other zones using the optimised parameters.
- 4.1.4. The CUBE process then balances background growth with the development trips, known as 'constraining'. It is a requirement in TAG Unit M4 Section 7.3 that there is a need to control overall growth to TEMPro. This has been done at Local Authority District (LAD) level. CUBE subtracts the developments trips from the background growth (NTEM) at the aggregated level (i.e. Local Authority District), and then furnishes the base year matrices using these 'adjusted' growth factors to generate matrices with adjusted trip ends. This means when adding development trips to the furnished background matrices (to create the final matrices), there is no double counting of trips and assumed growth.

Figure 4-1 – Reference Demand Methodology



4.1.5. Due to the Impact of COVID-19, traffic levels have yet to return to pre COVID levels. Therefore, the final 2023 matrices have been factored using available 2019 and 2022/23 counts highlighted in Section 2, that were located on the same model network links. This data was then used to derive reduction factors by vehicle type.

4.2 DEVELOPMENT COMPLETION INFORMATION

4.2.1. A log of all completed developments between the planning years 2019 and 2023 for the Selby district was created. The developments modelled were classified as residential developments only, as there was no employment sites completed between 2019 and 2023. For each site the following information was obtained:

- Site name and planning reference
- an accurate site location (coordinates)
- The number of dwellings

4.2.2. Residential sites were aggregated per model zone and zones with less than 30 aggregated two-way trips in both the AM and PM peaks were not modelled, after trip rates had been applied. Any sites that were deemed not substantial enough to include in the development matrices will be assumed to be included in the background growth matrix, as highlighted in Figure 4-1 – Reference Demand Methodology.

4.2.3. A full list of details for all completed developments is provided in Appendix A and summarised by model zone in Table 4-1 below.

Table 4-1 – Residential completions in completions log 2019 to 2023

Model Zone	Residential completions to be explicitly modelled (dwellings)
11	80
67	129
78	100
149	160
227	120
287	276
289	91
505	97
584	115
586	268
Total	1,436

4.3 TRIP RATES

4.3.1. For the explicitly modelled completed developments trip rates were derived using the TRICS 7.8.4 database and applied to the development quantum. TRICS provides a consistent system for derivation of trip generation in this type of analysis through providing access to a large database of inbound & outbound transport surveys covering a wide variety of development types. Trip rates were derived at a district level for AM Peak, Inter-Peak and PM Peak for housing developments by choosing areas of similar type to Selby and split by out of town and town centre.

4.3.2. The Trip rates have been agreed with NYCC and SDC.

The TRICS trip rates used to calculate the trip generation associated with each development are shown in Table 4-2.

Table 4-2 – All Vehicle Residential Trip Rates (trips per dwelling)

Local Authority Area	AM Peak		Inter Peak		PM Peak	
	Origin	Destination	Origin	Destination	Origin	Destination
Town Centre 0-400	0.285	0.146	0.139	0.120	0.180	0.224
Out of Town 0-400	0.349	0.135	0.156	0.158	0.156	0.323
Out of Town 400-800	0.416	0.167	0.149	0.154	0.173	0.357
Out of Town 800+	0.339	0.151	0.124	0.116	0.150	0.318

4.3.3. The resulting trip generation from all completed developments is shown in Table 4-3. It must be noted, that due to rounding, the total trip generation may not match the sum of the individual vehicle types.

Table 4-3 – Trip generation from completed developments (Vehicles)

	AM Peak		Inter Peak		PM Peak	
	Origin	Destination	Origin	Destination	Origin	Destination
Car	333	144	173	164	188	298
LGV	24	23	26	23	19	28
HGV	2	2	2	2	1	1
Total Trip Generation	359	169	202	189	208	327

4.4 USER CLASS PROPORTIONS

- 4.4.1. The trips generated by the explicitly modelled developments are not categorised by purpose and therefore need proportioning between the 3 car-specific user classes. The user class proportions have been based on a split acquired from the National Trip-End Model (NTEM) Version 8.1 using TEMPro software for each of the time periods respectively. A few select MSOAs in the study area which were most representative of residential areas were selected for this calculation. The proportions used are shown in Table 4-4. It must be noted, that due to rounding, the total proportions may not match the sum of the individual user class types.

Table 4-4 – Car User Type Proportions

	AM Peak		Inter Peak		PM Peak	
	Origin	Destination	Origin	Destination	Origin	Destination
UC1 – Car Business	6%	5%	5%	5%	5%	6%
UC2 – Car Commuting	40%	30%	9%	11%	25%	35%
UC3 – Car Other	54%	64%	85%	84%	70%	59%

4.5 BACKGROUND GROWTH

- 4.5.1. TAG M4 defines a background assumption to be “an assumed change between the base year and the forecast year that is assumed to happen independent of the scheme”.
- 4.5.2. Background demand changes occur due to various factors including demographic changes, GDP, and fuel prices.
- National Trip End Model**
- 4.5.3. In line with TAG guidance the impact of changes to demographic data are accounted for by applying data from the DfT’s National Trip End Model (NTEM) dataset.
- 4.5.4. Forecast trip ends were extracted from the NTEM version 8.1 to derive background car trip end growth factors for each demand segment. They consisted of origin and destination factors by mode (car driver, bus, rail), by time period (am peak, inter peak, pm peak) and by trip purpose (business, commuting, other).
- 4.5.5. The growth factors were applied at MSOA level, as the lowest spatial geography defined in NTEM, for zones within the FMA and aggregated to higher geographies corresponding to the zone definitions in the external areas.
- 4.5.6. A summary of the factors for Selby district overall are given in Table 4-5. These provide a high-level indication of the level of growth applied to the demand for Cars in the forecast matrix development.
- 4.5.7. It can be seen that Car driver trip growth is around 2-3% in all time periods in 2023. This is in contrast to the 9-20% (depending on time period) reduction that is shown for the DfT counts highlighted in Figure 2-3. As a result, an exercise was undertaken to scale the 2023 matrices to better reflect post Covid traffic. This process is further detailed in Section 4.7.

Table 4-5 – Summary of NTEM Growth Factors (2019-2023)

AM Peak		Inter Peak		PM Peak	
O	D	O	D	O	D
1.0273	1.0152	1.0239	1.0255	1.0200	1.0269

National Transport Model

4.5.8. Background LGV and HGV forecast growth was derived from the National Road Traffic Projections 2022 (NRTP) which are produced by the DfT from the National Transport Model (NTM).

The factors were applied at Government Region level. Table 4-6 summarises the values for Yorkshire and the Humber. A trend of increased growth for LGVs and HGVs is predicted.

Table 4-6 – Summary of NTM Growth Factors

Year	LGVs	HGVs
2023	1.0884	1.0192

4.6 DEVELOPMENT TRIP DISTRIBUTION

4.6.1. The location of each development was spatially allocated to the model zone structure and thus an existing zone number was assigned to each development. The base model included dummy zones in locations where developments were expected to be allocated.

4.6.2. The trip distribution applied to the development trips was undertaken using a gravity model approach. A tanner function or log normal curve was calibrated against the trip distance distributions from the calibrated base year models by mode, time period and trip purpose. The formulations are as follows, where c_{ij} is the cost of travel between zones i and j (in this case distance) and x_1, x_2 or μ, σ parameters to be calibrated.

- Tanner $f(c_{ij} : x_1, x_2) = c_{ij}^{x_1} \exp(c_{ij}^{x_2})$
- Log Normal $f(c_{ij} : \mu, \sigma) = \frac{1}{c_{ij}\sigma\sqrt{2\pi}} \exp\left(-\frac{(\ln(c_{ij}) - \mu)^2}{2\sigma^2}\right)$

4.6.3. The outturn parameters and R^2 statistics are presented in Table 4-7.

Table 4-7 – Gravity Model Calibration Summary

Mode	Time Period	User Class	Function	Parameters*		R^2
				p1	p2	
Highway	AM Peak	Car Business	LogNormal	1.44281	1.522354	0.99851
		Car Commute	LogNormal	1.268064	1.572055	0.99978

		Car Other	LogNormal	0.879092	1.059556	0.99955
		LGV	LogNormal	1.959463	0.924051	0.99977
		HGV	LogNormal	1.269195	1.292387	0.98965
	Inter Peak	Car Business	LogNormal	1.33907	1.20021	0.99729
		Car Commute	LogNormal	1.285268	1.318235	0.99976
		Car Other	LogNormal	1.008197	1.074398	0.99975
		LGV	LogNormal	1.877947	0.958531	0.99981
		HGV	LogNormal	1.327919	1.394782	0.99755
	PM Peak	Car Business	LogNormal	1.491585	1.451822	0.99877
		Car Commute	LogNormal	1.302016	1.587693	0.99971
		Car Other	LogNormal	1.109436	1.172982	0.99981
		LGV	LogNormal	1.994973	0.953442	0.99977
		HGV	LogNormal	1.176243	1.395188	0.98611

**If Tanner then $p1=x1$, $p2=x2$
If Log normal then $p1=\mu$, $p2=\sigma$

4.7 MATRIX REDUCTION

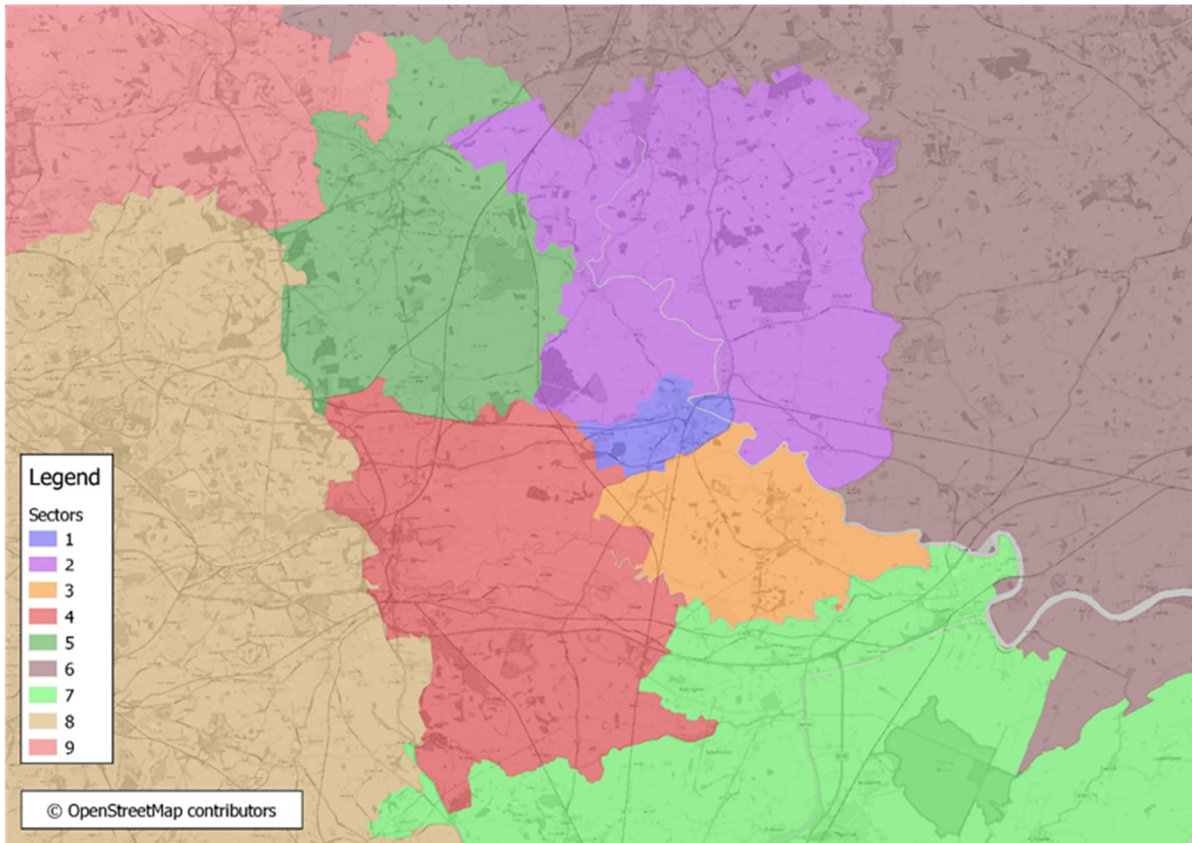
- 4.7.1. Due to Covid-19, it has been observed that traffic levels for car trips have been significantly reduced, so an exercise was undertaken to scale the 2023 matrices to better reflect post Covid traffic. As can be seen from Figure 2-3 and Table 4-6, the comparison between the counts and TEMPro show similar growth levels for LGVs and HGVs, so only the Car matrices have been reduced.
- 4.7.2. To reduce the Car matrices, factors were applied to major and minor road movements for each time period, based on the factors shown in Figure 2-3. To achieve this, a sectoring system was created, with certain sector to sector movements being given minor or major road reductions. External to External movements pass through Selby using the Strategic Road Network, so these movements were given a major road reduction factor. All other movements were given minor road reduction factors.
- 4.7.3. Based on the DfT car reduction factors presented in Figure 2-3 an initial set of reduction factors was proposed. These factors are summarised in Table 4-8 below by time period.

Table 4-8 – Initial Matrix Reduction Factors

Movement	AM Peak	Inter Peak	PM Peak
Internal Sectors	0.94	0.96	0.92
External to External Sectors	0.79	0.91	0.80

- 4.7.4. The sector system used is shown in Figure 4-2 below. Sectors 1-5 represent internal sectors, with 6-9 being external.

Figure 4-2 – Reduction Sectors



4.7.5. As TEMPro growth presented in Table 4-5 was originally applied to the 2023 matrices, a higher reduction factor was applied to compensate for this additional growth. It must be noted that this adjustment when compared to the initial reduction factors (Table 4-8) has only been applied to the external-external sectors for the AM and PM peak, as the impact on the Inter-Peak and internal sectors will be minimal. The final factors applied to the car matrices is summarised in Table 4-9 below by time period.

Table 4-9 – Final Matrix Reduction Factors

Movement	AM Peak	Inter Peak	PM Peak
Internal Sectors	0.94	0.96	0.92
External to External Sectors	0.75	0.91	0.75

4.7.6. These sector factors were then used to create a matrix that was multiplied with the car matrices using FORTRAN equations within SATURN. The resulting matrices were the final 2023 present year validation matrices.

4.8 2023 MATRIX TOTALS

4.8.1. The final 2023 matrix totals in each of the peak periods are shown in Table 4-10 to Table 4-12.

Table 4-10 – Matrix Totals AM Peak (PCUs)

User Class	Base Matrix (2019)	Total Trips 2023	Difference (2019-2023)	% Change
1	11,843	9,588	-2,254	-19%
2	52,728	42,835	-9,893	-19%
3	62,009	49,840	-12,169	-20%
4	19,351	21,133	1,782	9%
5	22,402	22,810	407	2%
Total	168,333	146,206	-22,127	-13%

Table 4-11 – Matrix Totals Inter-Peak (PCUs)

User Class	Base Matrix (2019)	Total Trips 2023	Difference (2019-2023)	% Change
1	7,816	7,426	-390	-5%
2	15,958	15,153	-805	-5%
3	68,075	64,526	-3,549	-5%
4	16,079	17,559	1,480	9%
5	21,124	21,517	393	2%
Total	129,053	126,181	-2,872	-2%

Table 4-12 – Matrix Totals PM Peak (PCUs)

User Class	Base Matrix (2019)	Total Trips 2023	Difference (2019-2023)	% Change
1	9,522	7,684	-1,838	-19%
2	52,884	42,939	-9,946	-19%
3	71,808	57,795	-14,014	-20%
4	15,127	16,513	1,386	9%
5	12,455	12,689	234	2%



Total	161,796	137,620	-24,177	-15%
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5 LINK FLOW CALIBRATION & VALIDATION

5.1 INTRODUCTION

- 5.1.1. This chapter reports the SDSTM 2023 present year model performance and validation summary with respect to three measures:
- Trip matrix calibration.
 - Link flow calibration and validation; and
 - Journey time validation.
- 5.1.2. The calibration and validation of the 2023 base year models utilised two sources of data:
- Traffic count data – grouped for.
 - Calibration of screenline and cordon totals.
 - Calibration and validation of link flow volumes.
 - Journey time data – for validation of the highway network.
- 5.1.3. The model results for link flows and journey times are reported globally based on the cordons/screenlines. Links flows have been split into calibration and validation. More details on these links/screenlines/cordons can be found in Appendix B - Selby District Traffic Model Local Validation Report (LMVR).
- 5.1.4. The reporting of calibration and validation results is based on TAG acceptability guidelines, and with additional ‘near’ criteria defined for each metric, which are detailed in their respective sections. This approach is consistent with reporting used on other large urban models to provide additional context than only pass/fail and could be considered a style red/amber/green system of validation.

5.2 TAG CRITERIA

- 5.2.1. The trip matrices have been calibrated against the criteria set out in Table 5-1, that is reproduced from TAG M3.1, and advises that modelled flow should be within 5% of the observed counts for “all or nearly all” cordons/screenlines.

Table 5-1 - Trip Matrix Verification Criteria

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

- 5.2.2. The measures used for link flow verification are:
- The absolute and percentage differences between modelled flows and counts; and
 - The GEH statistic which is a hybrid of the Chi-squared statistic to incorporate both relative and absolute errors. It is defined by

$$GEH = \sqrt{\frac{(M - C)^2}{(M + 2)/2}}$$

where M is the modelled flow and C is the observed flow.

- 5.2.3. Both measures are considered broadly consistent and meeting either is considered satisfactory by TAG M3.1.
- 5.2.4. The acceptability criteria are given in Table 5-2 reproduced from TAG M3.1.

Table 5-2 - Link Flow Verification Criteria

Criteria	Description	Acceptability Guideline
	Individual flows within 15% of counts for flows from 700 veh/hr to 2,700 veh/hr	> 85% of cases
2	GEH < 5 for individual flows	> 85% of cases

- 5.2.5. Journey time routes have been validated against the criteria set out in Table 5-3 that is reproduced from TAG M3.1.

Table 5-3 - Journey Time Routes Validation Criteria

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

5.3 TRIP MATRIX CALIBRATION

- 5.3.1. Trip matrix calibration for the calibrated models is reported for nine bi-directional calibration cordons/screenlines. The trip matrices have been calibrated against the TAG criteria set out in Table 5-1.
- 5.3.2. TAG also advises that cordons/screenlines should be “made up of 5 links or more”. For some cordons/screenlines, particularly within the rural areas, it was not possible to do this given the network configuration actually ‘on the ground’ and without extending them in a way that would compromise the purpose for which those cordons/screenlines had been defined.
- 5.3.3. There are also some cordons/screenlines with relatively low observed flow. On that basis, the cordon/screenline verification is reported based on differences between modelled and observed flows ‘within 5% or GEH < 4’. The latter condition is accounting for cordons/screenlines with lower cumulative flow and/or lower number of counts and has similarly been applied in other models for those reasons mentioned. A secondary, ‘near pass’, criteria has been defined as ‘within 7.5% or GEH <5’.

- 5.3.4. The results are presented in Table 5-4 and show, overall, a strong level of calibration for screenlines and cordons. In most cases, the screenlines and cordons the primary criteria based on TAG guidance ('Within 5% or GEH < 4') is above 85% for all screenlines and cordons. Where this is not the case, for the AM peak, the validation is above 85% when a more relaxed amber rating is used.
- 5.3.5. The breakdown by individual screenlines and cordons has been summarised in Table 5-5 to Table 5-7 for 'all vehicles', including the validation ratings. The ratings are using the two criteria described above and therefore, an absolute percentage difference exceeding 5% can have a green rating if the GEH is less than 4.
- 5.3.6. Additional reporting of the screenline and cordon calibration is provided in Appendix C including verification for cars separately.

Table 5-4 - Calibrated Trip Matrix Calibration

Measure	All Vehicles			Cars		
	AM Peak	Inter Peak	PM Peak	AM Peak	Inter Peak	PM Peak
Calibration Screenlines and Cordons (18)						
Within 5% or GEH < 4 ('Green' validation)	78%	100%	83%	83%	89%	89%
Within 7.5% or GEH < 5 ('Amber' validation)	100%	100%	89%	94%	100%	94%

Table 5-5 - Calibrated Trip Matrix Screenline and Cordons: AM Peak

All Vehicles	Direction	Obs.	Mod.	Diff.	%Diff.	GEH	Rating
Strategic Screenlines and Cordons Screenlines							
Outer Cordon	Inbound	10,701	10,306	-395	-4%	3.9	G
	Outbound	11,391	12,020	629	6%	5.8	A
Tadcaster Cordon	Inbound	5,523	5,512	-11	0%	0.1	G
	Outbound	5,420	5,553	133	2%	1.8	G
Eggborough Cordon	Inbound	2,071	2,034	-37	-2%	0.8	G
	Outbound	2,101	2,152	51	2%	1.1	G
Screenline North-South North	Northbound	6,880	6,730	-150	-2%	1.8	G
	Southbound	5,969	5,820	-148	-2%	1.9	G
Screenline North-South Central	Northbound	6,252	6,657	405	6%	5.0	A
	Southbound	4,914	5,080	166	3%	2.4	G

All Vehicles	Direction	Obs.	Mod.	Diff.	%Diff.	GEH	Rating
Screenline East-West Central	Eastbound	3,659	3,596	-63	-2%	1.0	G
	Westbound	3,618	3,899	282	8%	4.6	A
Selby Outer Cordon	Inbound	2,910	3,035	125	4%	2.3	G
	Outbound	2,648	2,749	101	4%	1.9	G
Selby North-South	Northbound	2,380	2,473	93	4%	1.9	G
	Southbound	1,907	1,976	70	4%	1.6	G
Selby East-West	Eastbound	871	1,012	140	16%	4.6	A
	Westbound	780	849	69	9%	2.4	G

Table 5-6 - Calibrated Trip Matrix Screenline and Cordons: Inter Peak

All Vehicles	Direction	Obs.	Mod.	Diff.	%Diff.	GEH	Rating
Strategic Screenlines and Cordons Screenlines							
Outer Cordon	Inbound	8,102	8,461	360	4%	4.0	G
	Outbound	8,205	8,583	378	5%	4.1	G
Tadcaster Cordon	Inbound	4,330	4,465	135	3%	2.0	G
	Outbound	4,325	4,461	136	3%	2.1	G
Eggborough Cordon	Inbound	1,485	1,472	-13	-1%	0.3	G
	Outbound	1,511	1,439	-72	-5%	1.9	G
Screenline North-South North	Northbound	5,116	5,247	131	3%	1.8	G
	Southbound	5,513	5,641	129	2%	1.7	G
Screenline North-South Central	Northbound	4,812	5,038	226	5%	3.2	G
	Southbound	5,078	5,291	213	4%	3.0	G
Screenline East-West Central	Eastbound	2,785	2,866	81	3%	1.5	G
	Westbound	2,853	2,952	99	3%	1.8	G
Selby Outer Cordon	Inbound	2,132	2,216	84	4%	1.8	G
	Outbound	2,146	2,244	98	5%	2.1	G
Selby North-South	Northbound	1,770	1,848	78	4%	1.8	G
	Southbound	1,832	1,882	50	3%	1.2	G

All Vehicles	Direction	Obs.	Mod.	Diff.	%Diff.	GEH	Rating
Selby East-West	Eastbound	626	673	47	8%	1.9	G
	Westbound	618	686	68	11%	2.7	G

Table 5-7 - Calibrated Trip Matrix Screenline and Cordons: PM Peak

All Vehicles	Direction	Obs.	Mod.	Diff.	%Diff.	GEH	Rating
Strategic Screenlines and Cordons Screenlines							
Outer Cordon	Inbound	12,507	13,059	551	4%	4.9	G
	Outbound	11,582	11,523	-59	-1%	0.5	G
Tadcaster Cordon	Inbound	5,611	5,874	263	5%	3.5	G
	Outbound	5,683	5,779	95	2%	1.3	G
Eggborough Cordon	Inbound	2,203	2,274	71	3%	1.5	G
	Outbound	2,188	2,271	83	4%	1.8	G
Screenline North-South North	Northbound	6,507	6,589	82	1%	1.0	G
	Southbound	7,025	7,087	61	1%	0.7	G
Screenline North-South Central	Northbound	5,794	6,084	290	5%	3.8	G
	Southbound	6,622	7,011	388	6%	4.7	A
Screenline East-West Central	Eastbound	3,894	4,326	432	11%	6.7	R
	Westbound	3,341	3,479	138	4%	2.4	G
Selby Outer Cordon	Inbound	3,224	3,397	173	5%	3.0	G
	Outbound	2,910	3,080	170	6%	3.1	G
Selby North-South	Northbound	2,343	2,435	93	4%	1.9	G
	Southbound	2,517	2,654	137	5%	2.7	G
Selby East-West	Eastbound	962	1,028	66	7%	2.1	G
	Westbound	864	1,023	159	18%	5.2	R

5.4 LINK FLOW CALIBRATION

5.4.1. The summary statistics for the link flow calibration in the calibrated models is reported in Table 5-8 for all counts across the study area. The TAG criteria shown in Table 5-2 is achieved for both 'all vehicles' and 'cars' in each time period. The results are also very similar for 'all vehicles' and 'cars'. More detailed reporting of the link flow calibration is provided in Appendix D.

Table 5-8 - Link Flow Calibration: All Counts

Measure (572 counts)	All Vehicles			Cars		
	AM Peak	Inter Peak	PM Peak	AM Peak	Inter Peak	PM Peak
Pass Criteria 1	99%	99%	98%	98%	97%	98%
Pass Criteria 2	94%	97%	94%	95%	96%	94%
Pass TAG	99%	99%	98%	98%	93%	98%

5.4.2. The GEH statistic for the modelled link flows versus the observed link flows for all vehicles across the three time periods is shown in Figure 5-1 to Figure 5-3.

Figure 5-1 – GEH Statistic of Modelled Flow vs Observed Count by Direction - AM Peak

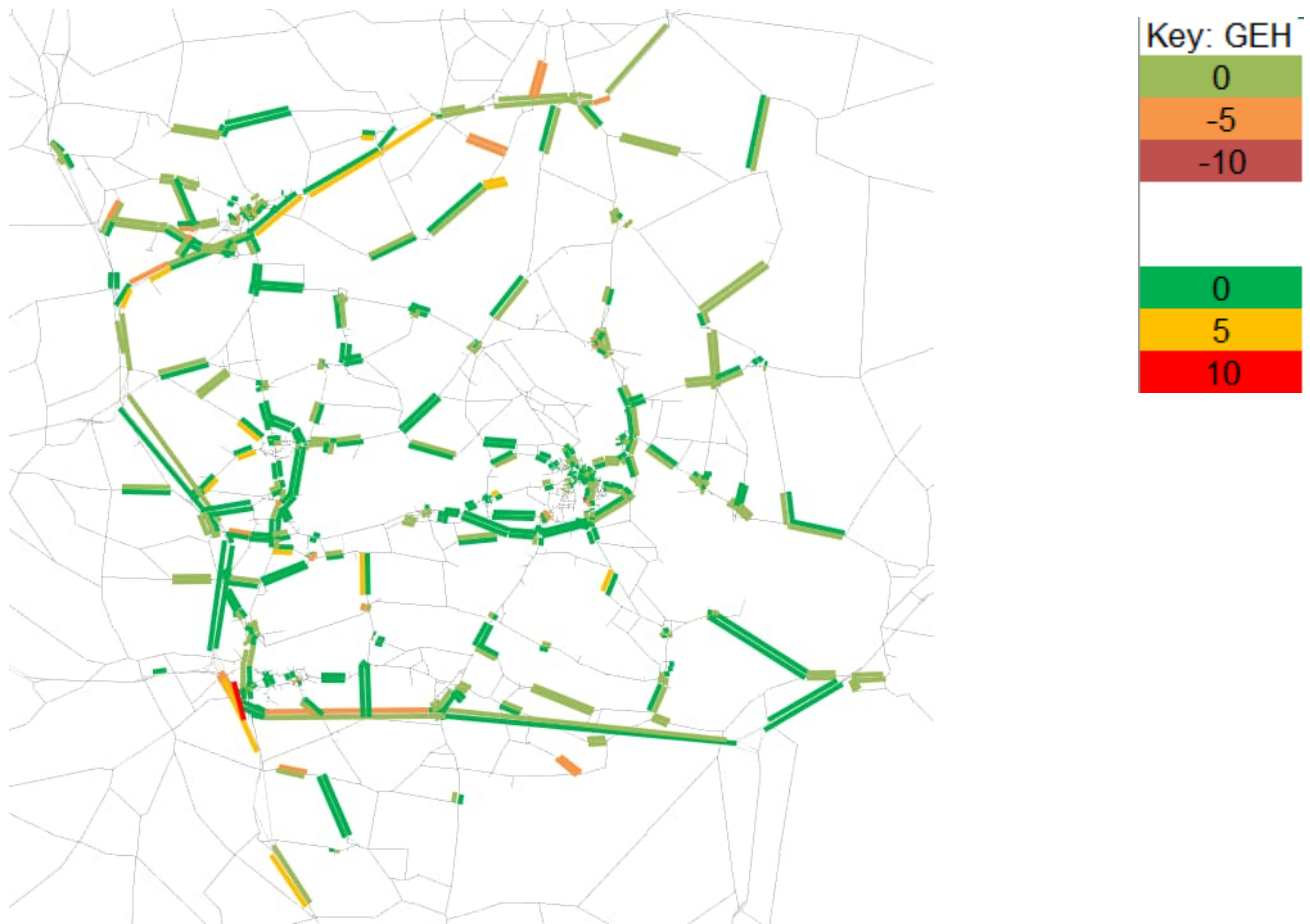


Figure 5-2 - GEH Statistic of Modelled Flow vs Observed Count by Direction - Inter Peak

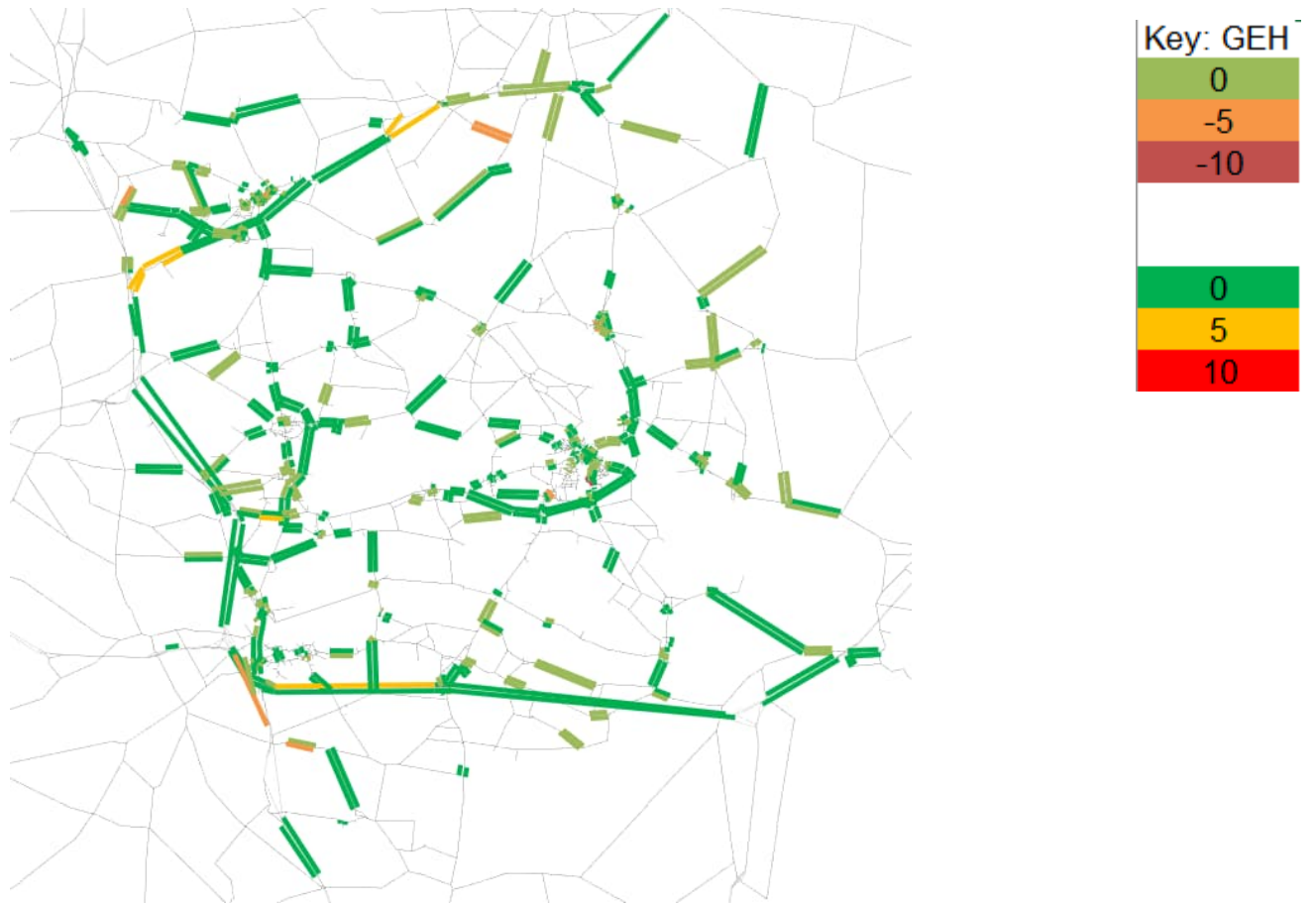


Figure 5-3 - GEH Statistic of Modelled Flow vs Observed Count by Direction - PM Peak



5.5 LINK FLOW VALIDATION

- 5.5.1. Trip matrix validation for the calibrated models is reported for four bi-directional validation cordons/screenlines. The trip matrices have been calibrated against the TAG criteria set out in Table 5-1.
- 5.5.2. There are some cordons/screenlines with relatively low observed flow. On that basis, the cordon/screenline verification is reported based on differences between modelled and observed flows 'within 5% or GEH < 4'. The latter condition is accounting for cordons/screenlines with lower cumulative flow and/or lower number of counts and has similarly been applied in other models for those reasons mentioned. A secondary, 'near pass', criteria has been defined as 'within 7.5% or GEH <5'.
- 5.5.3. The results are presented in Table 5-9 and show, overall, a strong level of validation for screenlines and cordons. In most cases, the screenlines and cordons primary criteria based on TAG guidance ('Within 5% or GEH < 4') is above 85% for all screenlines and cordons. In cases where this is not the case, particularly for the AM Peak, the validation is at 75%, which for a present year validation, is deemed to be acceptable.
- 5.5.4.
- 5.5.5. Table 5-10 to Table 5-12 shows the breakdown for 'all vehicles' by individual screenlines and cordons, including the validation ratings. The ratings are using the two criteria described above and therefore, an absolute percentage difference exceeding 5% can have a green rating if the GEH is less than 4.
- 5.5.6. Additional reporting of the screenline and cordon validation is provided in Appendix C including verification for cars separately.

Table 5-9 - Trip Matrix Validation

Measure	All Vehicles			Cars		
	AM Peak	Inter Peak	PM Peak	AM Peak	Inter Peak	PM Peak
Calibration Screenlines and Cordons (8)						
Within 5% or GEH < 4 ('Green' validation)	75%	100%	88%	75%	75%	88%
Within 7.5% or GEH < 5 ('Amber' validation)	75%	100%	88%	88%	75%	88%

Table 5-10 - Calibrated Trip Matrix Screenline and Cordon Validation: AM Peak

All Vehicles	Direction	Obs.	Mod.	Diff.	%Diff.	GEH	Rating
Strategic Screenlines and Cordons Screenlines							
Sherburn Cordon	Inbound	1,880	2,122	242	13%	5.4	R
	Outbound	1,804	2,065	261	14%	5.9	R
Screenline North-South	Northbound	1,298	1,300	2	0%	0.0	G
	Southbound	1,080	1,139	59	5%	1.8	G
Screenline East-West	Eastbound	861	898	37	4%	1.2	G
	Westbound	1,317	1,267	-51	-4%	1.4	G
Selby Town Centre Cordon	Inbound	2,969	2,930	-39	-1%	0.7	G
	Outbound	2,234	2,354	120	5%	2.5	G

Table 5-11 - Calibrated Trip Matrix Screenline and Cordon Validation: Inter Peak

All Vehicles	Direction	Obs.	Mod.	Diff.	%Diff.	GEH	Rating
Strategic Screenlines and Cordons Screenlines							
Sherburn Cordon	Inbound	1,242	1,381	139	11%	3.8	G
	Outbound	1,290	1,434	144	11%	3.9	G
Screenline North-South	Northbound	926	856	-70	-8%	2.4	G
	Southbound	932	942	10	1%	0.3	G
Screenline East-West	Eastbound	740	783	43	6%	1.6	G
	Westbound	746	725	-22	-3%	0.8	G
Selby Town Centre Cordon	Inbound	2,473	2,446	-27	-1%	0.5	G
	Outbound	2,478	2,525	47	2%	0.9	G

Table 5-12 - Calibrated Trip Matrix Screenline and Cordon Validation: PM Peak

All Vehicles	Direction	Obs.	Mod.	Diff.	%Diff.	GEH	Rating
Strategic Screenlines and Cordons Screenlines							
Sherburn Cordon	Inbound	1,977	2,326	349	18%	7.5	R

All Vehicles	Direction	Obs.	Mod.	Diff.	%Diff.	GEH	Rating
	Outbound	2,087	2,163	76	4%	1.6	G
Screenline North-South	Northbound	1,370	1,435	65	5%	1.7	G
	Southbound	1,321	1,360	38	3%	1.0	G
Screenline East-West	Eastbound	1,260	1,319	59	5%	1.6	G
	Westbound	973	950	-23	-2%	0.7	G
Selby Town Centre Cordon	Inbound	2,747	2,738	-9	0%	0.2	G
	Outbound	3,076	3,242	167	5%	3.0	G

5.5.7. The summary statistics for the link flow validation in the calibrated models is reported in Table 5-13 for all counts across the study area. The TAG criteria shown in Table 5-2 is achieved for both 'all vehicles' and 'cars' in each time period. The results are also very similar for 'all vehicles' and 'cars'.

5.5.8. More detailed reporting of the link flow validation is provided in Appendix D.

Table 5-13 - Link Flow Validation: All Counts

Measure (216 counts)	All Vehicles			Cars		
	AM Peak	Inter Peak	PM Peak	AM Peak	Inter Peak	PM Peak
Pass Criteria 1	95%	97%	93%	97%	99%	95%
Pass Criteria 2	90%	95%	91%	90%	96%	91%
Pass TAG	95%	97%	94%	98%	99%	96%

6 JOURNEY TIME VALIDATION

- 6.1.1. Table 6-1 outlines the journey time validation criteria taken from TAG which is used to consider whether modelled journey times sufficiently match observed journey times.

Table 6-1 – Journey time validation criteria

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

- 6.1.2. Table 6-2 demonstrates the journey time validation performance which has been achieved across each of the modelled time periods. TAG thresholds have been achieved in each instance, with 97% and 99% achieved in both the AM and PM. 99% of routes match in the Interpeak, demonstrating the model is also accurate in representing more free flow conditions. The journey time validation performance is considered to demonstrate the SDSTM shows a high standard of fit between modelled and observed flows at a strategic scale.

Table 6-2 – SDTSM Journey Time Performance

Performance Measure (70 routes)	AM Peak	Inter Peak	PM Peak
Routes within 15% or 1 min of Observed Times ('Green' validation)	97%	99%	99%
Within 20% - Near Pass ('Yellow' validation)	100%	100%	100%

7 SUMMARY

- 7.1.1. This report sets out a 2023 Present Year Validation (2023 PYV) exercise which has updated the base year of the SDSTM from 2019 to 2023, with 2019 being the last year of “neutral” traffic conditions prior to the COVID-19 pandemic. The aim of the 2023 PYV is to extend the life of the current highway assignment model so it can be argued to be a suitable basis from which to derive forecasts in the short term.
- 7.1.2. The methodology for the PYV exercise has been adopted from TAG Unit M4.
- 7.1.3. The following three time periods have been retained and modelled as part of the 2023 PYV:
- AM peak hour (0800-0900)
 - Inter peak average hour (1000-1600)
 - PM peak hour (1700-1800)
- 7.1.4. A limited number of 2023 observed data has been compiled to inform the validation exercise. Link count data has been drawn together from DfT and C2Web data covering the Strategic Road Network and local roads. 2019 journey time data has been retained.
- 7.1.5. Due to the original build of the SDSTM being 2019, an exercise has been undertaken to compile completed highway infrastructure schemes which have come forward between 2019 and 2023. There has been no update to the highway network as part of the 2023 PYV.
- 7.1.6. The SDSTM demand matrix has been updated from a 2019 to 2023 situation utilising a combination of development completion information compiled for Selby District, as well as NTEM Version 8.1 and 2022 National Road Traffic Projections. The development trips have been distributed in CUBE software using a gravity model to match trip distribution of the base year matrix. The resulting matrix was then factored to reflect post covid-19 conditions, informed by analysis of local 2022 DfT counts.
- 7.1.7. The validation performance of the 2023 base year models has been presented at a district-wide level, achieving TAG criteria in terms of GEH and flow. Significant strengths of the validation performance are the level of fit between modelled and observed flows on the count links and the journey time validation. The level of validation on screenlines and cordons is weaker in comparison to link flows and journey times, but the results are still acceptable for a PYV.
- 7.1.8. This 2023 PYV forms a basis for which forecasting models, and the local modelled responses in the forecast models can be created and assessed in order to inform local studies which may be brought forward by Selby District Council or other stakeholders.

Appendix A

DEVELOPMENT COMPLETIONS

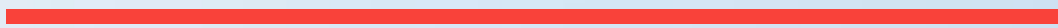


Completed Developments in Selby 2019 to 2023

Location	Planselby ref for GIS shapefile	Parish	Planning reference	Dwellings 2019-2023	SDTSM Zone
Turnhead Farm, York Road, Barlby	2017/1295/FULM	Barlby & Osgodby	2017/1295/FULM	100	78
Land North of cemetery, Station Road	Carlton-1	Carlton	2018/0870/REMM	67	227
Land North of cemetery, Station Road	Carlton-9	Carlton	2018/0871/REMM	46	227
Vine Farm, Low Street,Carlton, Goole, East Yorkshire, DN14 9PN	2019/0169/FUL	Carlton	2019/0169/FUL	7	227
RAF Church Fenton, Busk Lane, Church Fenton, Tadcaster, Leeds, North Yorkshire, LS24 9SE	2015/0318/FUL	Church Fenton	2015/0318/FUL	10	505
RAF Church Fenton, Busk Lane	Ulleskelf-6	Church Fenton	2019/0325/FULM	87	505
Main Road, Hambleton	2017/0117/REMM	Hambleton	2017/0117/REMM	115	584
Land East of Flaxley Road	Selby-21	Selby	2017/0775/REMM	129	67
Phases 4A,4B,4C,4D,4E, Staynor Hall Development, Bawtry Road	Selby-33	Selby	2015/0452/EIA	25	289
Phase 3E, 3F, 3G, 3K Staynor Hall, Abbots Road	Selby-58	Selby	2015/0580/EIA	66	289
Portholme Road	Selby-84	Selby	2020/0776/FULM	80	11
Low Street - Persimmon	2014/0321/REM	Sherburn in Elmet	2014/0321/REM	8	149
Low Street - Persimmon	2017/0234/REMM	Sherburn In Elmet	2017/0234/REMM	50	149
Land South of Saxton Way	Sherburn-54	Sherburn in Elmet	2017/0147/REMM , 2014/0261/REM,	102	149
Land off Hodgsons Lane	Sherburn-6	Sherburn in Elmet	2018/0045/REMM	268	586
Leeds Road (East), Thorpe Willoughby, Selby, North Yorkshire	2016/0197/REM	Thore Willoughby	2016/0197/REM	276	287

Appendix B

SELBY LMVR



Appendix C

SCREENLINE & CORDON SUMMARY



SDSTM Screenline and Cordon Calibration

ID	Screenline Name	Type	AM Peak												Interpeak												PM Peak																							
			All				Car				LGV				HGV				All				Car				LGV				HGV				All				Car				LGV				HGV			
			Observed	Modelled	Difference	GEH	Observed	Modelled	Difference	GEH	Observed	Modelled	Difference	GEH	Observed	Modelled	Difference	GEH	Observed	Modelled	Difference	GEH	Observed	Modelled	Difference	GEH	Observed	Modelled	Difference	GEH	Observed	Modelled	Difference	GEH	Observed	Modelled	Difference	GEH	Observed	Modelled	Difference	GEH	Observed	Modelled	Difference	GEH	Observed	Modelled	Difference	GEH
1	Outer Cordon Inbound	Calibration	10701	10306	-4%	3.853	7980	7705	-3%	3.099	1872	1828	-2%	1.036	849	773	-9%	2.866	8102	8461	4%	3.953	5963	6242	5%	3.563	1386	1487	7%	2.660	752	733	-3%	0.712	12507	13059	4%	4.877	10783	11066	3%	2.703	1334	1579	18%	6.406	390	414	6%	1.214
2	Outer Cordon Outbound	Calibration	11391	12020	6%	5.818	8825	9331	6%	5.306	1711	1889	10%	4.197	855	800	-6%	1.882	8205	8583	5%	4.128	5952	6331	6%	4.840	1483	1494	1%	0.272	770	759	-2%	0.418	11582	11523	-1%	0.547	9851	9660	-2%	1.928	1345	1441	7%	2.588	386	421	9%	1.747
3	Tadcaster Cordon Inbound	Calibration	5523	5512	0%	0.146	3952	4141	5%	2.974	1111	985	-11%	3.912	460	387	-16%	3.564	4330	4465	3%	2.041	3210	3313	3%	1.800	730	787	8%	2.055	390	365	-6%	1.252	5611	5874	5%	3.468	4855	4916	1%	0.874	578	761	32%	7.054	179	198	11%	1.401
4	Tadcaster Cordon Outbound	Calibration	5420	5553	2%	1.791	4179	4176	0%	0.046	862	994	15%	4.315	379	383	1%	0.211	4325	4461	3%	2.053	3103	3316	7%	3.769	806	777	-4%	1.036	416	368	-12%	2.442	5683	5779	2%	1.260	4702	4822	3%	1.739	735	751	2%	0.612	246	205	-17%	2.749
5	Sherburn Cordon Inbound	Validation	1880	2122	13%	5.414	1492	1683	13%	4.810	240	300	25%	3.679	148	138	-7%	0.832	1242	1381	11%	3.849	880	1039	18%	5.131	208	211	2%	0.233	154	131	-15%	1.917	1977	2326	18%	7.529	1712	2042	19%	7.619	187	217	16%	2.079	77	67	-14%	1.234
6	Sherburn Cordon Outbound	Validation	1804	2065	14%	5.924	1403	1680	20%	7.072	254	248	-2%	0.347	148	136	-8%	0.971	1290	1434	11%	3.911	918	1086	18%	5.306	219	223	2%	0.276	153	125	-18%	2.352	2087	2163	4%	1.644	1841	1924	4%	1.506	178	180	1%	0.122	67	59	-13%	1.077
7	Eggborough Cordon Inbound	Calibration	2071	2034	-2%	0.828	1597	1576	-1%	0.532	306	310	1%	0.231	168	148	-12%	1.619	1485	1472	-1%	0.328	1066	1071	0%	0.148	273	262	-4%	0.666	145	139	-5%	0.551	2203	2274	3%	1.497	1891	1941	3%	1.140	249	262	5%	0.800	63	71	13%	0.995
8	Eggborough Cordon Outbound	Calibration	2101	2152	2%	1.113	1609	1656	3%	1.158	321	334	4%	0.708	170	162	-5%	0.644	1511	1439	-5%	1.865	1105	1051	-5%	1.641	261	250	-4%	0.688	145	138	-5%	0.566	2188	2271	4%	1.767	1880	1942	3%	1.417	241	254	5%	0.840	67	76	12%	0.982
9	Screenline North-South West NB	Validation	1298	1300	0%	0.050	1019	1005	-1%	0.435	217	229	6%	0.830	63	66	5%	0.402	926	856	-8%	2.351	685	639	-7%	1.805	169	156	-8%	1.000	72	61	-15%	1.347	1370	1435	5%	1.738	1185	1229	4%	1.278	157	174	11%	1.311	28	32	14%	0.692
10	Screenline North-South West SB	Validation	1080	1139	5%	1.766	849	900	6%	1.706	162	174	8%	0.941	69	65	-6%	0.464	932	942	1%	0.341	676	693	3%	0.666	188	171	-9%	1.266	68	78	15%	1.174	1321	1360	3%	1.048	1117	1135	2%	0.544	177	184	4%	0.559	28	40	46%	2.165
11	Screenline North-South North NB	Calibration	6880	6730	-2%	1.820	4452	4532	2%	1.198	1339	1321	-1%	0.512	1089	877	-19%	6.753	5116	5247	3%	1.825	3226	3425	6%	3.455	965	999	4%	1.083	925	823	-11%	3.444	6507	6589	1%	1.008	4912	5089	4%	2.504	924	1005	9%	2.611	671	495	-26%	7.313
12	Screenline North-South North SB	Calibration	5969	5820	-2%	1.934	3697	3709	0%	0.203	1234	1237	0%	0.083	1038	875	-16%	5.294	5513	5641	2%	1.721	3475	3648	5%	2.906	1044	1076	3%	0.997	994	917	-8%	2.502	7025	7087	1%	0.728	5368	5383	0%	0.206	1010	1062	5%	1.616	647	641	-1%	0.235
13	Screenline North-South Central NB	Calibration	6252	6657	6%	5.038	4508	4820	7%	4.574	1054	1133	7%	2.378	691	704	2%	0.522	4812	5038	5%	3.223	3341	3575	7%	3.970	825	825	0%	0.002	645	638	-1%	0.288	5794	6084	5%	3.769	4768	4982	4%	3.064	673	726	8%	2.024	353	376	7%	1.208
14	Screenline North-South Central SB	Calibration	4914	5080	3%	2.353	3518	3704	5%	3.100	826	834	1%	0.273	570	542	-5%	1.180	5078	5291	4%	2.953	3506	3755	7%	4.130	889	882	-1%	0.252	683	654	-4%	1.113	6622	7011	6%	4.701	5468	5765	5%	3.972	769	833	8%	2.259	386	413	7%	1.331
15	Screenline East-West East EB	Validation	861	898	4%	1.244	644	650	1%	0.242	142	175	23%	2.629	75	73	-3%	0.272	740	783	6%	1.553	545	582	7%	1.541	128	132	3%	0.346	66	69	4%	0.285	1260	1319	5%	1.633	1094	1128	3%	1.035	144	153	6%	0.753	22	37	67%	2.742
16	Screenline East-West East WB	Validation	1317	1267	-4%	1.417	1061	1015	-4%	1.429	170	188	11%	1.339	86	63	-27%	2.645	746	725	-3%	0.799	547	518	-5%	1.248	134	136	1%	0.137	65	70	9%	0.675	973	950	-2%	0.728	844	800	-5%	1.522	114	120	4%	0.469	15	31	110%	3.365
17	Screenline East-West Central EB	Calibration	3659	3596	-2%	1.046	2225	2316	4%	1.908	807	893	14%	4.163	627	587	-6%	1.620	2785	2866	3%	1.525	1635	1737	6%	2.500	516	510	-1%	0.278	634	619	-2%	0.612	3894	4326	11%	6.734	2914	3375	16%	8.223	559	575	3%	0.654	421	376	-11%	2.253
18	Screenline East-West Central WB	Calibration	3618	3899	8%	4.595	2324	2640	14%	6.346	681	613	-10%	2.693	612	646	6%	1.356	2853	2952	3%	1.837	1683	1803	7%	2.866	578	563	-3%	0.606	592	586	-1%	0.256	3341	3479	4%	2.359	2519	2661	6%	2.788	487	489	1%	0.118	335	329	-2%	0.369
19	Cordon R1 Inbound	Calibration	2910	3035	4%	2.285	2374	2493	5%	2.407	432	454	5%	1.036	104	88	-15%	1.633	2132	2216	4%	1.801	1686	1787	6%	2.441	343	346	1%	0.175	104	83	-20%	2.169	3224	3397	5%	3.000	2860	2999	5%	2.572	320	350	10%	1.687	45	48	6%	0.376
20	Cordon R1 Outbound	Calibration	2648	2749	4%	1.938	2110	2229	6%	2.539	427	425	0%	0.081	111	95	-14%	1.568	2146	2244	5%	2.091	1692	1820	8%	3.059	353	344	-2%	0.471	101	80	-21%	2.249	2910	3080	6%	3.112	2587	2728	5%	2.746	283	304	7%	1.239	39	47	19%	1.146
21	Cordon R2 Northbound	Calibration	2380	2473	4%	1.882	1936	2049	6%	2.524	336	329	-2%	0.388	108	95	-12%	1.276	1770	1848	4%	1.843	1396	1503	8%	2.821	268	254	-5%	0.838	106	91	-15%	1.562	2343	2435	4%	1.894	2076	2160	4%	1.842	225	229	2%	0.241	42	46	10%	0.626
22	Cordon R2 Southbound	Calibration	1907	1976	4%	1.578	1551	1634	5%	2.078	284	259	-2%	0.327	92	84	-9%	0.867	1832	1882	3%	1.170	1430	1524	7%	2.457	287	284	-8%	1.382	115	94	-18%	2.058	2517	2654	5%	2.702	2246	2371	6%	2.596	229	232	1%	0.198	42	51	23%	1.413
23	Cordon R3 Eastbound	Calibration	871	1012	16%	4.573	740	847	14%	3.774	101	120	19%	1.782	30	45	51%	2.501	626	673	8%	1.851	492	534	8%	1.846	99	104	6%	0.559	35	34	-1%	0.050	962	1028	7%	2.108	867	897	3%	1.014	82	111	35%	2.907	12	20	63%	1.942
24	Cordon R3 Westbound	Calibration	780	849	9%	2.419	634	682	8%	1.866	107	124	16%	1.586	38	43	11%	0.645	618	686	11%	2.662	492	547	11%	2.393	95	102	7%	0.688	31	37	22%	1.135	864	1023	18%	5.169	784	914	17%	4.458	68	90	34%	2.565	12	18	49%	1.549
25	Cordon R5 Inbound	Validation	2969	2930	-1%	0.722	2610	2524	-3%	1.691	321	340	6%	1.028	38	66	73%	3.845	2473	2446	-1%	0.539	2129	2075	-3%	1.179	319	311	-2%	0.434	25	60	140%	5.376	2747	2738	0%	0.173	2497	2456	-2%	0.824	243	245	1%	0.177	7	37	393%	6.216
26	Cordon R5 Outbound	Validation	2234	2354	5%	2.505	1878	1972	5%	2.145	312	322	3%	0.567	44	60	36%	2.181	2478	2525	2%	0.933	2139	2143	0%	0.079	314	324	3%	0.536	25	58	134%	5.180	3076	3242	5%	2.964	2821	2948	5%	2.382	247	259	5%	0.749	8	35	316%	5.726

Appendix D

LINK FLOW VERIFICATION



Table with columns for Calibration/Validation, Ref, Dir, A-Node, B-Node, ALL VEHICLES (Observed, Modeled, GEH, GEH Pass?, Flow Pass?), CAR (Observed, Modeled, GEH, GEH Pass?, Flow Pass?), LGV (Observed, Modeled, GEH, GEH Pass?, Flow Pass?), HOV (Observed, Modeled, GEH, GEH Pass?, Flow Pass?), ALL VEHICLES (Observed, Modeled, GEH, GEH Pass?, Flow Pass?), CAR (Observed, Modeled, GEH, GEH Pass?, Flow Pass?), LGV (Observed, Modeled, GEH, GEH Pass?, Flow Pass?), HOV (Observed, Modeled, GEH, GEH Pass?, Flow Pass?), ALL VEHICLES (Observed, Modeled, GEH, GEH Pass?, Flow Pass?), CAR (Observed, Modeled, GEH, GEH Pass?, Flow Pass?), LGV (Observed, Modeled, GEH, GEH Pass?, Flow Pass?), HOV (Observed, Modeled, GEH, GEH Pass?, Flow Pass?).

159	Calibration	2E-07	1: East Bound	1134	1136	309	334	1.374	Yes	Yes	231.5158	236	0.279	Yes	Yes	49.6244	67	2.233	27.9078	31	0.613	288	317	1.617	Yes	Yes	203.3329	227	1.595	Yes	Yes	52.9185	58	0.699	32.21604	32	0.082	509	554	1.918	Yes	Yes	433.4805	466	1.522	Yes	Yes	57.39229	69	1.417	18.4469	19	0.158
160	Calibration	2E-07	2: West Bound	1135	1134	472	465	0.801	Yes	Yes	353.3851	351	0.111	Yes	Yes	75.78933	76	0.005	42.59824	27	2.568	276	303	1.598	Yes	Yes	194.2579	216	1.504	Yes	Yes	50.56677	59	1.110	30.77819	28	0.472	358	404	2.376	Yes	Yes	304.6442	348	2.405	Yes	Yes	40.3803	43	0.054	12.96423	13	0.005
161	Calibration	2E-07	1: South Bound	1136	1134	517	494	0.443	Yes	Yes	497.8884	202	0.301	Yes	Yes	21.8675	22	0.001	2.4668	23	0.263	312	333	2.021	Yes	Yes	159.9595	256	2.286	Yes	Yes	51.3986	52	0.341	34.3868	24	0.046	541.878	603	1.477	Yes	Yes	21.372	23	0.021	3.27193	3	0.285					
162	Calibration	2E-07	2: North Bound	1137	1134	706	647	2.289	Yes	Yes	528.5877	545	0.700	Yes	Yes	113.3675	76	0.006	6.71792	26	5.814	281	322	3.398	Yes	Yes	198.4096	243	2.999	Yes	Yes	61.9377	51	1.041	31.45596	28	0.669	376	345	1.648	Yes	Yes	139.9679	294	1.459	Yes	Yes	42.36705	43	0.054	13.61633	8	1.827
163	Calibration	2E-07	1: South Bound	1038	1037	781	740	0.756	Yes	Yes	570.0315	549	0.874	Yes	Yes	122.2528	122	0.037	68.71331	69	0.044	605	631	1.073	Yes	Yes	426.4469	456	1.394	Yes	Yes	110.9317	107	0.334	67.03449	68	0.110	992	992	0.008	Yes	Yes	844.0007	836	0.277	Yes	Yes	111.7544	116	0.440	35.91671	40	0.599
164	Calibration	2E-07	2: North Bound	1037	1038	881	931	1.654	Yes	Yes	659.8871	170	1.901	Yes	Yes	141.5238	146	0.358	79.54523	76	0.446	606	607	1.679	Yes	Yes	422.9222	447	1.153	Yes	Yes	110.0678	107	0.285	67.00773	63	0.474	818	836	0.644	Yes	Yes	696.9485	704	0.321	Yes	Yes	92.15075	101	0.866	29.6163	31	0.280
165	Calibration	2E-07	1: West Bound	72754	5093	246	268	1.316	Yes	Yes	198.5086	225	2.436	Yes	Yes	36.19276	36	0.050	20.7831	7	3.655	181	186	0.389	Yes	Yes	311.5674	142	0.853	Yes	Yes	29.31933	37	1.395	20.09759	7	3.455	271	284	0.772	Yes	Yes	235.8153	254	1.261	Yes	Yes	28.11832	29	0.248	9.45898	1	3.516
166	Calibration	2E-07	2: East Bound	5103	5093	271	277	0.265	Yes	Yes	508.816	275	0.265	Yes	Yes	41.6519	41	0.002	1.454	22	0.043	503	503	0.000	Yes	Yes	12.2542	12	0.000	Yes	Yes	58.0299	58	0.000	0.000	0	0.000	208	208	0.000	Yes	Yes	44.000	44	0.000	0.000	0	0.000					
169	Calibration	2E-07	1: Northeast	1095	1157	985	492	1.047	Yes	Yes	371.1381	366	0.244	Yes	Yes	79.50697	82	0.215	44.73848	44	0.077	317	322	0.310	Yes	Yes	223.7498	230	0.462	Yes	Yes	58.1541	56	0.251	35.9477	36	0.708	536	556	0.822	Yes	Yes	456.574	472	0.716	Yes	Yes	60.4651	64	0.046	9.49265	20	0.164
170	Calibration	2E-07	2: Southwest	1157	1095	432	460	1.341	Yes	Yes	323.4977	350	1.470	Yes	Yes	69.39474	71	0.244	38.95661	38	0.116	337	350	0.684	Yes	Yes	237.5798	253	0.982	Yes	Yes	61.8144	60	0.298	37.64211	38	0.033	485	503	0.837	Yes	Yes	412.6425	428	0.577	Yes	Yes	54.63812	57	0.296	17.56013	18	0.203
171	Calibration	J1-A-Entry	0	1325	1064	85	119	3.367	Yes	Yes	65.26879	97	3.513	Yes	Yes	12.42359	15	0.600	7.01901	7	0.044	95	114	1.818	Yes	Yes	72.27431	91	1.887	Yes	Yes	18.08383	19	0.317	4.661103	5	0.089	217	240	1.528	Yes	Yes	188.3829	210	1.488	Yes	Yes	25.39739	27	0.373	2.104732	2	0.100
172	Calibration	J1-B-Entry	0	1219	1064	245	269	1.500	Yes	Yes	207.8932	235	1.845	Yes	Yes	26.09929	29	0.603	10.67381	4	2.434	161	181	1.520	Yes	Yes	128.9573	151	1.783	Yes	Yes	26.97959	26	0.280	4.014817	4	0.084	242	268	1.620	Yes	Yes	213.2046	242	1.880	Yes	Yes	27.76919	24	0.477	1.92603	3	2.005
173	Calibration	J1-C-Entry	0	1083	1064	408	418	0.923	Yes	Yes	105.4081	105	0.923	Yes	Yes	14.742	14	0.000	0.000	0	0.000	312	312	0.000	Yes	Yes	11.242	11	0.000	Yes	Yes	6.0298	6	0.000	0.000	0	0.000	50	54	0.442	Yes	Yes	60.524	60	0.000	0.000	0	0.000					
174	Calibration	J5-D-Entry	0	4057	1077	195	132	4.928	Yes	Yes	105.1563	85	2.043	Yes	Yes	69.57209	41	3.879	20.28663	6	3.935	200	150	1.710	Yes	Yes	126.8178	129	0.174	Yes	Yes	58.44081	16	8.875	14.41417	5	2.906	278	268	0.558	Yes	Yes	222.7333	226	0.157	Yes	Yes	48.73768	43	0.832	6.53797	1	3.149
179	Calibration	J1-A-Entry	0	1583	1136	113	129	0.374	Yes	Yes	113.616	114	0.024	Yes	Yes	16.15066	12	1.222	3.50805	3	0.005	79	79	0.067	Yes	Yes	60.62821	61	0.056	Yes	Yes	14.93712	14	0.289	3.034289	3	0.039	119	120	0.070	Yes	Yes	107.1979	108	0.036	Yes	Yes	12.094	12	0.002	0	0	0.884
180	Calibration	J1-B-Entry	0	10480	1136	478	434	2.025	Yes	Yes	387.4391	333	1.821	Yes	Yes	85.72726	76	1.078	24.40654	25	0.107	294	296	0.103	Yes	Yes	211.0815	214	0.202	Yes	Yes	57.74199	54	0.435	2.508446	26	0.106	412	411	0.068	Yes	Yes	358.5173	354	0.215	Yes	Yes	41.1958	43	0.320	12.28047	13	0.167
181	Calibration	J4-C-Entry	0	1153	1136	59	49	1.369	Yes	Yes	10.74681	40	1.541	Yes	Yes	7.454153	4	0.006	1.067381	4	2.434	161	181	1.520	Yes	Yes	128.9573	151	1.783	Yes	Yes	26.97959	26	0.280	4.014817	4	0.084	242	268	1.620	Yes	Yes	213.2046	242	1.880	Yes	Yes	27.76919	24	0.477	1.92603	3	2.005
182	Calibration	J1-A-Entry	0	1145	1136	331	334	0.143	Yes	Yes	32.271	334	0.236	Yes	Yes	41.6519	41	0.002	1.454	22	0.043	503	503	0.000	Yes	Yes	12.2542	12	0.000	Yes	Yes	58.0299	58	0.000	0.000	0	0.000	208	208	0.000	Yes	Yes	44.000	44	0.000	0.000	0	0.000					
183	Calibration	J1-A-Entry	0	1582	1141	16	23	1.489	Yes	Yes	10.87841	17	1.659	Yes	Yes	3.727076	4	0.207	1.373302	1	0.182	19	23	0.829	Yes	Yes	12.49003	17	1.154	Yes	Yes	4.904275	4	0.311	1.912490	2	0.145	21	23	0.288	Yes	Yes	20.24848	21	0.067	Yes	Yes	1.2094	2	0.568	0	0	0.884
184	Calibration	J1-B-Entry	0	1142	1141	338	309	1.608	Yes	Yes	235.6928	213	1.495	Yes	Yes	77.02824	69	0.980	25.16794	27	0.359	345	245	2.085	Yes	Yes	161.604	153	0.687	Yes	Yes	52.16844	49	0.440	30.85334	26	0.866	368	333	1.860	Yes	Yes	314.447	276	2.244	Yes	Yes	38.70079	43	0.738	14.38521	13	0.262
185	Calibration	J1-C-Entry	0	3314	1141	70	68	3.324	Yes	Yes	60.43406	65	0.598	Yes	Yes	9.93887	0	0	0.000	0	0.631	26	31	0.882	Yes	Yes	27.6939	29	0.230	Yes	Yes	8.025913	2	2.773	0.501363	0	0.273	31	38	1.232	Yes	Yes	30.96287	37	1.092	Yes	Yes	0	1	1.288	0	0	0.263
186	Calibration	J1-D-Entry	0	1140	1141	314	257	3.378	Yes	Yes	211.5192	174	2.670	Yes	Yes	64.68379	54	0.177	47.76288	29	3.088	263	228	2.264	Yes	Yes	175.451	150	1.998	Yes	Yes	51.27667	50	0.229	36.09638	28	1.472	472	389	3.974	Yes	Yes	376.7588	316	3.354	Yes	Yes	74.98277	56	2.324	17.79191	17	0.260
187	Calibration	J1-E-Entry	0	8054	9163	49	69	1.922	Yes	Yes	49.55529	49	1.108	Yes	Yes	7.32191	1	0.350	0.000	0	0.000	79	72	0.795	Yes	Yes	65.4098	10	0.279	Yes	Yes	12.360	10	0.239	5.021495	5	0.359	116	164	1.090	Yes	Yes	38.89024	67	1.104	Yes	Yes	55.72219	15	0.334	1.05266	10	0.162
188	Calibration	J1-F-Entry	0	3164	3163	296	277	1.126	Yes	Yes	228.4408	213	1.016	Yes	Yes	50.36781	49	0.255	17.08458	15	0.550	179	178	0.080	Yes	Yes	121.583	122	0.001	Yes	Yes	10.78544	35	0.239	21.06655	21	0.081	260	259	0.091	Yes	Yes	214.3957	211	0.206	Yes	Yes	36.28199	37	0.171	9.519368	10	0.162
189	Calibration	J1-G-Entry	0	3162	3163	113	92	1.213	Yes	Yes	88.81637	73	1.383	Yes	Yes	18.97774	18	0.375	7.627912	0	3.749	68	50	0.266	Yes	Yes	45.59361	40	0.808	Yes	Yes	13.37652	8	1.481	9.010162	1	3.554	74	45	3.743	Yes	Yes	63.12763	36	3.778	Yes	Yes	9.675196	8	0.393	1.271968	0	1.227
190	Calibration	J1-H-Entry	0	3166	3163	303	274	1.701	Yes	Yes	195.8064	179	1.264	Yes	Yes	69.57209	65	0.559	37.37121	30	1.210	130	192	0.900	Yes	Yes	130.7017	131	0.028	Yes	Yes	39.90682	38	0.238	22.54433	23	0.070	275	265	0.600	Yes	Yes	217.989	209	0.584	Yes	Yes	42.32898	44	0.314	13.48521	11	0.949
191	Calibration	J1-I-Entry	0	1044	1043	557	527	1.285	Yes	Yes	400.7375	373	1.395	Yes	Yes	91.94045	91	0.076	64.87525	63	0.221	533	532	0.053	Yes	Yes	385.9138	388	0.137	Yes	Yes	95.41919	91	0.409	52.05288	52																	

353	Calibration	J26-D-Ext	0	5059	80060	86	89	0.361	Yes	Yes	74.93824	74	0.059	Yes	Yes	8.89512	9	0.011	2.40654	6	1.844	57	54	0.329	Yes	Yes	47.78886	41	0.960	Yes	Yes	8.24855	8	0.260	0.883913	6	2.608	78	79	0.144	Yes	Yes	69.03006	70	0.096	Yes	Yes	8.465797	9	0.029	0	0	0.884
354	Calibration	J27-A-Ext	0	1499	5115	737	764	0.934	Yes	Yes	468.9883	565	4.226	Yes	Yes	118.0241	10	2.779	149.8186	109	3.597	411	397	0.739	Yes	Yes	206.1156	236	1.904	Yes	Yes	76.915	56	2.623	128.4506	105	2.241	488	454	1.569	Yes	Yes	378.7658	371	0.414	Yes	Yes	45.96718	31	2.342	63.7267	52	1.505
355	Calibration	J27-B-Ext	0	1499	5115	737	764	0.934	Yes	Yes	117.4221	134	1.456	Yes	Yes	26.0793	9	1.180	2.56916	20	0.624	249	249	0.329	Yes	Yes	130.3601	130	1.044	Yes	Yes	20.0726	3	0.361	2.98989	2	0.930	17	17	0.339	Yes	Yes	10.851	10	0.339	Yes	Yes	1.02638	1	0.127	0	0	0.510
356	Validation	J27-C-Ext	0	5062	5067	503	515	0.528	Yes	Yes	332.3872	34	0.926	Yes	Yes	60.87568	63	2.429	109.6308	103	0.694	459	488	0.346	Yes	Yes	249.5005	213	3.741	Yes	Yes	91.4062	75	1.818	117.8326	101	1.613	608.5943	414	4.226	Yes	Yes	67.07677	47	4.937	65.65748	49	2.233					
357	Validation	J27-D-Ext	0	1500	80075	310	223	0.332	No	Yes	245.3623	184	4.197	Yes	Yes	63.4243	39	2.057	11.59937	0	4.815	258	213	0.952	Yes	Yes	204.158	188	1.136	Yes	Yes	42.80487	25	3.077	11.52089	0	4.800	499	492	0.286	Yes	Yes	428.714	448	0.939	Yes	Yes	67.27638	44	3.170	2.24334	0	2.156
358	Calibration	J28-B-Ext	0	5006	80074	403	395	0.336	Yes	Yes	250.197	251	0.065	Yes	Yes	96.30099	97	0.007	55.68654	47	1.239	347	330	0.928	Yes	Yes	221.72	220	0.536	Yes	Yes	69.55791	61	1.009	56.16167	39	2.459	408	738	1.131	Yes	Yes	626.2934	630	0.971	Yes	Yes	76.19217	80	4.622	25.61331	28	0.420
359	Validation	J29-A-Ext	0	5011	80078	68	58	1.270	Yes	Yes	53.19198	51	0.245	Yes	Yes	11.6695	6	2.955	1.067351	1	0.251	42	47	0.787	Yes	Yes	32.4222	43	1.648	Yes	Yes	8.24855	5	1.471	1.38676	0	1.217	62	68	0.739	Yes	Yes	58.3628	59	0.021	Yes	Yes	5.829199	6	2.21	0	0	0.510
360	Validation	J29-B-Ext	0	7913	5379	331	315	0.232	Yes	Yes	93.8364	34	0.624	Yes	Yes	11.8224	2	1.024	3.28454	1	0.284	28	24	0.329	Yes	Yes	42.7222	43	1.648	Yes	Yes	8.24855	5	1.471	1.38676	0	1.217	108	53	0.232	Yes	Yes	58.3628	59	0.021	Yes	Yes	5.829199	6	2.21	0	0	0.510
361	Validation	J29-C-Ext	0	80283	5007	98	92	0.650	Yes	Yes	87.02505	82	0.568	Yes	Yes	11.86123	6	2.955	1.067351	1	0.251	42	47	0.787	Yes	Yes	32.4222	43	1.648	Yes	Yes	8.24855	5	1.471	1.38676	0	1.217	62	68	0.739	Yes	Yes	58.3628	59	0.021	Yes	Yes	5.829199	6	2.21	0	0	0.510
362	Validation	J30-B-Ext	0	80324	42030	162	172	0.790	Yes	Yes	123.6549	136	0.267	Yes	Yes	26.06953	23	0.703	2.746605	13	3.734	158	150	0.675	Yes	Yes	116.745	88	1.946	Yes	Yes	32.77248	23	1.834	6.982511	29	5.116	289	228	3.790	Yes	Yes	240.5966	179	4.221	Yes	Yes	39.01919	36	5.986	8.884173	13	1.191
363	Validation	J30-C-Ext	0	80322	80323	23	31	1.466	Yes	Yes	16.92154	24	1.486	Yes	Yes	61.11794	6	0.007	0	0	1.304	20	33	2.549	Yes	Yes	16.2106	26	2.088	Yes	Yes	3.790515	6	0.902	0	2	1.762	39	86	5.843	No	Yes	33.50044	89	5.034	No	Yes	64.08998	15	2.755	0	1	1.531
364	Validation	J31-A-Ext	0	80321	80319	380	375	0.251	Yes	Yes	311.4422	305	0.342	Yes	Yes	64.53268	66	0.220	37.37003	3	0.462	241	254	0.845	Yes	Yes	183.1738	202	1.359	Yes	Yes	44.50626	45	0.135	12.65805	6	2.092	712	449	1.786	Yes	Yes	363.9488	396	1.667	Yes	Yes	43.11327	51	1.158	4.743799	1	1.947
365	Validation	J31-B-Ext	0	80321	80319	380	375	0.251	Yes	Yes	311.4422	305	0.342	Yes	Yes	64.53268	66	0.220	37.37003	3	0.462	241	254	0.845	Yes	Yes	183.1738	202	1.359	Yes	Yes	44.50626	45	0.135	12.65805	6	2.092	712	449	1.786	Yes	Yes	363.9488	396	1.667	Yes	Yes	43.11327	51	1.158	4.743799	1	1.947
366	Validation	J31-C-Ext	0	80321	80319	81	87	0.648	Yes	Yes	75.06664	81	0.616	Yes	Yes	64.53268	66	0.220	37.37003	3	0.462	241	254	0.845	Yes	Yes	183.1738	202	1.359	Yes	Yes	44.50626	45	0.135	12.65805	6	2.092	712	449	1.786	Yes	Yes	363.9488	396	1.667	Yes	Yes	43.11327	51	1.158	4.743799	1	1.947
367	Calibration	J32-A-Ext	0	5076	80330	393	399	0.278	Yes	Yes	321.3109	324	0.139	Yes	Yes	67.06501	70	0.413	4.66013	5	0.012	274	280	0.329	Yes	Yes	209.4887	218	0.582	Yes	Yes	53.89917	51	0.406	11.08008	11	0.060	457	474	0.804	Yes	Yes	402.7678	418	0.743	Yes	Yes	51.73592	54	0.288	2.143729	2	0.129
368	Calibration	J32-B-Ext	0	5076	80332	119	101	1.679	Yes	Yes	91.09963	74	1.865	Yes	Yes	25.30755	25	1.016	2.174225	2	0.108	104	100	0.428	Yes	Yes	82.7391	79	0.371	Yes	Yes	19.9824	19	0.190	1.702176	2	0.115	190	185	0.366	Yes	Yes	158.9235	154	0.382	Yes	Yes	29.65338	29	0.506	1.071864	1	0.063
369	Calibration	J32-C-Ext	0	5076	8114	409	425	0.772	Yes	Yes	398.5499	356	0.937	Yes	Yes	55.67961	58	0.288	14.7559	11	1.080	359	376	0.855	Yes	Yes	272.7925	293	1.173	Yes	Yes	75.9443	72	0.400	10.71305	11	0.057	517	546	1.237	Yes	Yes	429.4573	452	1.089	Yes	Yes	78.8969	84	0.568	8.979638	0	0.175
370	Calibration	J33-B-Ext	0	1508	6210	158	141	0.648	Yes	Yes	100.6548	148	0.489	Yes	Yes	11.8224	2	1.024	3.28454	1	0.284	28	24	0.329	Yes	Yes	42.7222	43	1.648	Yes	Yes	8.24855	5	1.471	1.38676	0	1.217	108	53	0.232	Yes	Yes	58.3628	59	0.021	Yes	Yes	5.829199	6	2.21	0	0	0.510
371	Calibration	J33-C-Ext	0	1505	1426	107	87	2.000	Yes	Yes	100.3005	80	2.138	Yes	Yes	61.21794	6	0.068	4	0	0.888	44	43	0.202	Yes	Yes	35.96029	35	0.092	Yes	Yes	17.14445	6	0.278	0.835605	0	0.064	61	68	0.859	Yes	Yes	54.79002	61	0.811	Yes	Yes	6.04896	6	0.130	0	0	0.884
372	Validation	J34-A-Ext	0	1593	5113	235	184	0.320	Yes	Yes	197.015	158	2.888	Yes	Yes	33.54469	21	2.393	4.881307	5	0.059	178	145	0.623	Yes	Yes	137.6251	120	1.516	Yes	Yes	33.2188	18	0.973	7.049106	6	0.400	233	158	5.298	No	Yes	215.5688	145	5.249	No	Yes	15.72219	11	1.421	1.271968	3	0.082
373	Validation	J34-B-Ext	0	1514	80639	775	766	0.326	Yes	Yes	548.7413	548	0.047	Yes	Yes	139.1442	139	0.016	86.95999	79	0.851	335	658	1.212	Yes	Yes	457.2827	476	0.871	Yes	Yes	108.7957	105	3.444	189.17618	77	0.927	838	973	1.159	Yes	Yes	801.6017	831	1.022	Yes	Yes	94.33317	100	5.078	41.6184	43	0.143
374	Calibration	J35-A-Ext	0	1532	80641	638	676	1.558	Yes	Yes	409.7246	529	1.688	Yes	Yes	90.69219	93	0.241	55.07464	5	0.069	62	54	0.794	Yes	Yes	392.6116	414	1.005	Yes	Yes	78.47559	76	0.247	96.25437	55	0.110	74	867	2.912	Yes	Yes	682.493	755	2.690	Yes	Yes	72.93997	81	1.017	28.56981	31	0.482
375	Validation	J35-B-Ext	0	5017	70396	42	41	0.155	Yes	Yes	21.29044	29	0.362	Yes	Yes	15.92666	2	0.738	1.9376	2	0.069	60	44	1.394	Yes	Yes	47.78886	41	0.960	Yes	Yes	8.24855	8	0.260	0.883913	6	2.608	78	79	0.144	Yes	Yes	69.03006	70	0.096	Yes	Yes	8.465797	9	0.029	0	0	0.884
376	Validation	J35-D-Ext	0	1567	1505	449	468	0.922	Yes	Yes	299.753	323	1.335	Yes	Yes	80.75332	85	0.433	68.01676	60	0.965	341	360	1.040	Yes	Yes	198.8968	218	1.482	Yes	Yes	55.77335	73	0.332	68.31447	70	0.151	427	495	1.308	Yes	Yes	341.8421	414	3.719	Yes	Yes	52.00418	47	0.650	33.83688	34	0.022
377	Calibration	J36-A-Ext	0	5087	70278	429	443	0.680	Yes	Yes	734.6912	387	0.611	Yes	Yes	47.20967	49	0.290	7.01601	7	0.100	347	353	0.281	Yes	Yes	296.3885	302	0.350	Yes	Yes	43.25075	42	0.148	1.766372	8	0.060	481	501	0.959	Yes	Yes	426.4002	451	1.172	Yes	Yes	50.70478	46	0.722	3.376699	4	0.317
378	Calibration	J36-B-Ext	0	5087	80576	621	642	0.843	Yes	Yes	502.8111	522	0.858	Yes	Yes	78.2699	80	0.218	40.11781	40	0.030	583	594	0.450	Yes	Yes	479.9107	492	0.583	Yes	Yes	70.44968	68	0.280	33.89352	34	0.071	823	877	1.873	Yes	Yes	758.7228	807	1.719	Yes	Yes	52.00418	58	0.810	12.06097	13	0.142
379	Calibration	J36-C-Ext	0	5087	8081	621	642	0.843	Yes	Yes	502.8111	522	0.858	Yes	Yes	78.2699	80	0.218	40.11781	40	0.030	583	594	0.450	Yes	Yes	479.9107	492	0.583	Yes	Yes	7																					

532	Calibration	J9-D-Exit	0	1062	4207	199	205	0.445	Yes	Yes	170.0181	177	0.496	Yes	Yes	26.48239	26	0.071	2.251516	2	0.104	159	160	0.051	Yes	Yes	135.5281	137	0.147	Yes	Yes	21.86674	21	0.231	1.639789	2	0.006	200	215	1.015	Yes	Yes	182.569	195	0.923	Yes	Yes	16.66141	18	0.357	1.0612	2	0.399
533	Calibration	J9-A-Exit	0	3288	3292	249	237	0.780	Yes	Yes	212.0081	203	0.658	Yes	Yes	28.78251	26	0.444	8.90306	8	0.125	265	265	0.056	Yes	Yes	21.1947	236	0.296	Yes	Yes	31.86164	28	0.718	1.196385	2	0.190	277	301	1.426	Yes	Yes	249.1411	271	1.326	Yes	Yes	27.78002	30	0.474	0	1	1.184
534	Calibration	J9-B-Exit	0	3288	3292	249	237	0.780	Yes	Yes	212.0081	203	0.658	Yes	Yes	28.78251	26	0.444	8.90306	8	0.125	265	265	0.056	Yes	Yes	21.1947	236	0.296	Yes	Yes	31.86164	28	0.718	1.196385	2	0.190	277	301	1.426	Yes	Yes	249.1411	271	1.326	Yes	Yes	27.78002	30	0.474	0	1	1.184
535	Validation	J9-C-Exit	0	3288	3292	221	262	0.651	Yes	Yes	185.379	227	2.881	Yes	Yes	31.08002	34	0.449	7.800306	2	1.414	242	291	2.956	Yes	Yes	212.648	238	2.956	Yes	Yes	28.19800	20	0.811	2.019094	2	1.170	344	444	0.506	No	No	313.6968	416	5.333	No	No	28.97790	20	0.748	0	0	2.748
536	Calibration	J10-B-Exit	0	1065	1154	321	354	1.792	Yes	Yes	262.1935	297	2.060	Yes	Yes	55.26756	55	0.334	3.377274	4	0.480	325	361	1.906	Yes	Yes	279.7999	312	1.893	Yes	Yes	42.68214	45	0.363	2.95118	3	0.186	382	428	2.296	Yes	Yes	354.0426	394	2.083	Yes	Yes	24.43674	28	0.747	4.1836	5	1.011
537	Calibration	J10-C-Exit	0	1065	1064	452	453	0.000	Yes	Yes	371.7822	373	0.050	Yes	Yes	66.78168	68	0.116	13.5091	13	0.227	377	376	0.103	Yes	Yes	322.6443	324	0.080	Yes	Yes	50.68921	49	0.268	3.279577	3	0.104	396	417	1.060	Yes	Yes	356.0599	373	0.895	Yes	Yes	35.54354	39	0.648	4.2448	5	0.270
538	Calibration	J11-B-Exit	0	1066	1067	394	390	0.208	Yes	Yes	349.25	343	0.334	Yes	Yes	42.60211	45	0.268	2.251516	2	0.128	387	381	0.317	Yes	Yes	331.2132	328	0.196	Yes	Yes	51.47569	50	0.169	4.37277	3	0.759	427	438	0.531	Yes	Yes	303.2998	306	0.295	Yes	Yes	33.29998	26	0.626	3.1836	5	0.976
539	Calibration	J11-A-Exit	0	1066	1067	394	390	0.208	Yes	Yes	349.25	343	0.334	Yes	Yes	42.60211	45	0.268	2.251516	2	0.128	387	381	0.317	Yes	Yes	331.2132	328	0.196	Yes	Yes	51.47569	50	0.169	4.37277	3	0.759	427	438	0.531	Yes	Yes	303.2998	306	0.295	Yes	Yes	33.29998	26	0.626	3.1836	5	0.976
540	Calibration	J11-B-Exit	0	1068	1067	394	390	0.208	Yes	Yes	376.9302	380	0.143	Yes	Yes	67.90309	70	0.301	8.006064	9	0.018	444	451	0.317	Yes	Yes	385.949	394	0.401	Yes	Yes	55.15233	53	0.247	3.093719	4	0.288	544	564	0.850	Yes	Yes	604.3342	601	0.715	Yes	Yes	34.53559	37	0.526	5.306	6	3.328
541	Calibration	J12-B-Exit	0	1068	1435	82	64	2.107	Yes	Yes	79.8871	62	2.175	Yes	Yes	2.320817	2	0.082	0	0	0.888	39	40	0.114	Yes	Yes	35.32474	36	0.185	Yes	Yes	34.27566	3	0.127	0.465966	0	0.222	69	58	1.333	Yes	Yes	68.58945	57	1.529	Yes	Yes	0	1	1.483	0	0	0.880
542	Calibration	J12-D-Exit	0	1068	1435	302	310	0.462	Yes	Yes	286.774	293	0.348	Yes	Yes	13.8169	16	0.538	1.125758	1	0.075	273	280	0.438	Yes	Yes	250.7707	256	0.327	Yes	Yes	22.06101	22	0.043	0.364397	3	1.860	251	259	0.522	Yes	Yes	234.0111	241	0.457	Yes	Yes	16.66141	18	0.215	0	0	0.897
543	Calibration	J13-A-Exit	0	1127	1128	427	403	1.189	Yes	Yes	348.2226	325	1.261	Yes	Yes	64.47887	59	0.717	14.63495	19	1.102	441	435	0.276	Yes	Yes	377.9948	343	1.836	Yes	Yes	58.21655	57	1.706	4.559498	20	1.385	627	584	1.762	Yes	Yes	574.9499	509	2.822	Yes	Yes	44.20077	62	1.354	0	12	4.919
544	Calibration	J13-B-Exit	0	1127	1128	427	403	1.189	Yes	Yes	348.2226	325	1.261	Yes	Yes	64.47887	59	0.717	14.63495	19	1.102	441	435	0.276	Yes	Yes	377.9948	343	1.836	Yes	Yes	58.21655	57	1.706	4.559498	20	1.385	627	584	1.762	Yes	Yes	574.9499	509	2.822	Yes	Yes	44.20077	62	1.354	0	12	4.919
545	Validation	J13-C-Exit	0	1127	1128	427	403	1.189	Yes	Yes	406.6404	396	0.545	Yes	Yes	50.61902	59	1.120	4.503032	4	0.492	388	366	1.133	Yes	Yes	339.8142	301	1.601	Yes	Yes	53.99991	61	0.992	4.37277	3	0.561	390	388	0.140	Yes	Yes	74.97309	341	0.290	Yes	Yes	44.50074	45	0.100	0	0	3.257
546	Validation	J13-D-Exit	0	1127	1128	359	409	2.554	Yes	Yes	294.677	327	1.831	Yes	Yes	58.72162	68	1.112	5.62879	15	2.810	329	401	3.728	Yes	Yes	275.5232	326	3.047	Yes	Yes	50.04581	64	0.581	4.190571	18	4.208	388	428	2.296	Yes	Yes	354.0426	394	2.083	Yes	Yes	37.76567	42	0.743	0	8	3.939
547	Calibration	J14-B-Exit	0	3008	2047	321	396	3.941	Yes	Yes	274.4839	333	3.379	Yes	Yes	34.54225	44	1.556	12.38334	18	1.523	322	390	3.938	Yes	Yes	275.4281	317	2.422	Yes	Yes	52.29277	55	0.425	3.826173	18	4.220	368	435	3.319	Yes	Yes	322.7739	379	3.025	Yes	Yes	44.43044	45	0.105	1.0612	10	3.849
548	Calibration	J14-C-Exit	0	3008	3097	53	69	2.049	Yes	Yes	46.09462	60	2.107	Yes	Yes	9.94984	8	0.235	1.125758	1	0.082	81	82	0.143	Yes	Yes	71.69973	73	0.138	Yes	Yes	8.579282	9	0.004	0.728795	1	0.129	85	93	0.146	Yes	Yes	86.74548	88	0.108	Yes	Yes	44.40044	4	0.040	0	0	0.783
549	Calibration	J14-D-Exit	0	3008	3097	53	69	2.049	Yes	Yes	46.09462	60	2.107	Yes	Yes	9.94984	8	0.235	1.125758	1	0.082	81	82	0.143	Yes	Yes	71.69973	73	0.138	Yes	Yes	8.579282	9	0.004	0.728795	1	0.129	85	93	0.146	Yes	Yes	86.74548	88	0.108	Yes	Yes	44.40044	4	0.040	0	0	0.783
550	Calibration	J15-A-Exit	0	2006	2005	338	352	0.914	Yes	Yes	283.7106	299	0.906	Yes	Yes	39.14988	41	0.285	12.38334	12	0.088	283	298	0.943	Yes	Yes	236.7007	249	0.762	Yes	Yes	43.90456	43	0.083	0.558779	7	1.905	348	368	1.061	Yes	Yes	305.6205	319	0.736	Yes	Yes	42.20852	45	0.488	0	0	2.768
551	Calibration	J15-B-Exit	0	2006	3293	349	356	0.370	Yes	Yes	311.3548	315	0.226	Yes	Yes	36.84507	39	0.281	1.125758	2	0.930	315	321	0.409	Yes	Yes	273.1547	279	0.340	Yes	Yes	38.81104	38	0.082	3.279577	4	0.206	399	419	0.950	Yes	Yes	366.1466	382	0.817	Yes	Yes	33.32263	35	0.256	0	2	1.963
552	Validation	J16-A-Exit	0	2007	2008	172	165	0.556	Yes	Yes	133.1452	125	0.721	Yes	Yes	36.84507	36	0.067	2.251516	4	0.830	202	196	0.412	Yes	Yes	169.1041	164	0.388	Yes	Yes	29.82222	28	0.396	2.732981	4	0.639	292	244	0.559	Yes	Yes	2.72999	220	0.538	Yes	Yes	24.43674	22	0.455	0	1	1.702
553	Validation	J16-B-Exit	0	2007	2006	335	309	1.464	Yes	Yes	297.0161	272	1.497	Yes	Yes	32.23943	31	0.138	5.66879	5	0.080	235	235	0.010	Yes	Yes	196.0348	197	0.101	Yes	Yes	35.95128	32	0.636	3.093719	5	1.047	268	272	0.268	Yes	Yes	242.0804	243	0.062	Yes	Yes	25.5475	25	0.021	0	4	2.779
554	Calibration	J17-A-Exit	0	2010	2011	159	151	0.668	Yes	Yes	128.0242	120	0.680	Yes	Yes	28.78251	27	0.246	2.251516	3	0.355	153	148	0.405	Yes	Yes	131.6808	126	0.488	Yes	Yes	19.96998	20	0.115	2.732981	3	0.034	213	204	0.674	Yes	Yes	196.6903	185	0.843	Yes	Yes	16.66141	18	0.258	0	1	1.304
555	Calibration	J17-B-Exit	0	2010	3297	15	16	1.009	Yes	Yes	7.169355	8	0.372	Yes	Yes	8.058858	7	0.382	0	0	0.947	25	27	0.471	Yes	Yes	19.76807	21	0.224	Yes	Yes	3.881104	5	0.615	1.093192	1	0.078	25															

725	Calibration	26091	S	80063	80294	337	330	0.349	Yes	Yes	213.472	211	0.162	Yes	Yes	73.75766	72	0.187	49.51141	47	0.348	303	309	0.339	Yes	Yes	197.9619	206	0.582	Yes	Yes	58.78554	56	0.392	46.51335	47	0.092	867	698	6.041	No	No	778.2592	615	6.167	No	No	64.78177	69	0.457	24.35067	14	2.268	
728	Calibration	36034	W	1508	80284	847	850	0.125	Yes	Yes	685.4005	701	0.599	Yes	Yes	80.27042	93	0.316	17.0381	56	1.903	360	369	0.205	Yes	Yes	246.1148	261	0.820	Yes	Yes	89.69788	67	0.359	43.72416	42	0.313	419	526	1.201	Yes	Yes	417.579	435	0.860	Yes	Yes	64.78177	70	0.694	16.23778	20	0.875	
730	Calibration	52056	E	8024	1508	845	845	0.22	Yes	Yes	369.2294	298	0.172	Yes	Yes	144.12973	186	0.19	0.014	126	0.087	394	354	0.261	Yes	Yes	227.755	246	0.938	Yes	Yes	71.09048	68	0.433	40.41436	41	0.060	735	761	0.668	Yes	Yes	64.78177	80	0.392	10.14611	11	2.588						
732	Calibration	56006	E	72566	72676	2409	2151	3.395	No	No	1262	1197	0.405	Yes	Yes	586	498	3.771	541	456	3.851	1788	2030	5.204	No	Yes	842.8333	1106	8.321	No	No	369.5	379	0.471	586	545	1.711	2220	2679	9.283	No	No	11565	1969	9.392	No	No	353	411	2.958	302	3.09	4.422	
733	Calibration	56006	W	72575	72676	2726	2477	4.887	Yes	Yes	1548	1459	2.302	Yes	Yes	545	474	3.140	633	544	3.675	1905	2045	4.358	Yes	Yes	910.3333	1133	6.660	No	No	421.1667	410	0.553	564	502	2.674	2270	2095	3.747	Yes	Yes	1458	1495	0.959	Yes	Yes	454	338	5.836	358	262	5.437	
734	Calibration	56009	E	72217	72219	2365	2082	5.999	No	Yes	1579	1573	5.036	No	No	555	505	2.155	231	214	1.149	1902	1759	3.368	No	No	1112.167	1317	5.881	No	No	225.8333	288	3.882	163.8333	154	0.801	2270	2095	3.747	Yes	Yes	1989	2008	1.746	Yes	Yes	189	281	5.996	88	84	0.481	
735	Calibration	56009	W	72218	70354	1698	2014	3.646	No	No	1368	1569	5.505	No	No	193	297	6.672	147	149	0.134	1608	1816	5.032	Yes	Yes	1106.15	1279	4.894	Yes	No	316	355	2.123	185	162	0.234	2254	2118	2.914	Yes	Yes	1947	1657	4.543	Yes	Yes	304	347	2.381	103	114	1.055	
736	Calibration	56009	W	72219	70354	1698	2014	3.646	No	No	1368	1569	5.505	No	No	193	297	6.672	147	149	0.134	1608	1816	5.032	Yes	Yes	1106.15	1279	4.894	Yes	No	316	355	2.123	185	162	0.234	2254	2118	2.914	Yes	Yes	1947	1657	4.543	Yes	Yes	304	347	2.381	103	114	1.055	
737	Validation	56031	W	1059	1058	1059	1059	1.169	Yes	Yes	126.3413	151	2.216	Yes	Yes	29.7232	14	0.909	157	142	0.11	1508	1540	1.334	Yes	Yes	134.7615	148	1.159	Yes	No	2058658	38	2.229	2.967	14	0.600	141	149	0.137	Yes	Yes	118.9331	123	0.944	231	0.633	2	0.389					
744	Calibration	81550	N	80833	80862	2428	2724	2.825	No	Yes	1300	1479	4.800	Yes	Yes	527	604	3.232	601	641	1.599	2290	2496	4.231	Yes	Yes	1243.833	1459	5.857	No	No	410	439	1.419	636.6667	598	1.514	2817	2693	0.369	Yes	Yes	1869	1840	1.138	Yes	Yes	373	428	2.764	412	425	0.632	
745	Calibration	81550	S	72502	80832	2227	2223	2.886	Yes	Yes	1408	1234	0.935	Yes	Yes	441	459	0.870	548	530	0.777	2254	2670	4.266	Yes	Yes	1301	1571	7.125	No	No	473	439	1.020	680.1667	604	3.021	2817	2757	1.128	Yes	Yes	1863	1860	0.066	Yes	Yes	477	453	1.111	477	444	1.525	
746	Calibration	81550	N	73131	73157	2288	2573	0.195	No	Yes	1248	1464	5.072	No	No	407	487	0.004	533	622	3.689	2574	2258	4.432	No	Yes	1766.333	1239	11.202	No	No	401	348	4.729	460.3333	583	7.952	2644	2302	6.886	Yes	Yes	2195	1538	13.278	No	No	305	342	2.037	234	422	10.365	
751	Calibration	81552	S	73134	73157	2288	2573	0.195	No	Yes	1248	1464	5.072	No	No	407	487	0.004	533	622	3.689	2574	2258	4.432	No	Yes	1766.333	1239	11.202	No	No	401	348	4.729	460.3333	583	7.952	2644	2302	6.886	Yes	Yes	2195	1538	13.278	No	No	305	342	2.037	234	422	10.365	
748	Calibration	81554	S	73133	72568	2534	2244	5.942	No	Yes	1393	1277	3.177	Yes	Yes	596	475	5.217	545	491	2.355	2032	2253	2.573	Yes	Yes	1005.333	1259	7.541	No	No	405.6667	365	5.452	389.2333	665	7.347	2644	2302	6.886	Yes	Yes	2195	1538	13.278	No	No	305	342	2.037	234	422	10.365	
749	Calibration	81554	N	72567	73137	2280	2490	3.998	No	Yes	1642	1507	4.409	Yes	Yes	538	642	5.179	640	559	3.300	2110	2127	0.384	Yes	Yes	1075.333	1160	2.524	Yes	Yes	444	440	0.130	591.1667	527	2.705	2372	2090	5.971	No	Yes	1535	1502	0.839	Yes	Yes	452	329	6.225	385	259	7.035	
750	Validation	89150	N	5018	5113	888	990	2.999	Yes	Yes	569.9114	663	3.754	Yes	Yes	181.6471	193	0.814	146.3815	134	1.036	667	716	3.524	Yes	Yes	409.4669	478	3.258	Yes	Yes	128.8985	440	1.491	188.6875	158.6995	134	0.491	1083	1297	6.202	No	No	886.2704	1042	5.005	No	No	131.8875	192	4.274	64.93511	63	0.193
751	Validation	89150	S	42098	42098	772	857	2.997	Yes	Yes	544.4415	604	2.479	Yes	Yes	113.3885	149	0.193	114.9945	104	0.929	667	675	0.313	Yes	Yes	409.4669	478	3.258	Yes	Yes	133.9783	141	0.562	123.8661	112	0.653	997	1058	1.918	Yes	Yes	795.9182	830	1.213	Yes	Yes	927.1296	107	0.012	179.1987	58	2.816	
752	Validation	89150	E	8094	8094	18	20	0.15	Yes	Yes	12.9018	11.9	0.105	Yes	Yes	0.5781	719	0.197	0.235	0.212	0.17	425	423	0.02	Yes	Yes	425.2663	548	0.747	Yes	Yes	472.368	6	0.440	1.68797	0	1.316	48	483	0.324	Yes	Yes	672.281	614	0.122	Yes	Yes	21	21	0.001	4	1.679		
753	Calibration	89156	S	72776	80954	771	895	3.557	Yes	Yes	619.7546	611	0.017	Yes	Yes	124.6541	204	0.221	46.87244	45	0.287	611	611	0.005	Yes	Yes	438.1768	443	0.197	Yes	Yes	124.3622	119	0.454	47.70869	49	0.130	869	958	2.930	Yes	Yes	754.084	833	2.784	Yes	Yes	97.83471	107	0.024	179.1987	18	0.168	
757	Calibration	806735	W	4050	4056	251	268	1.086	Yes	Yes	199	224	1.695	Yes	Yes	34	32	1.219	10	10	0.096	183	159	1.791	Yes	Yes	133.5	124	0.817	Yes	Yes	38.16667	27	1.945	10.83333	8	0.994	187	184	0.205	Yes	Yes	173	169	0.331	Yes	Yes	13	13	0.032	1	2	0.855	
758	Calibration	806735	E	5056	4056	215	183	2.256	Yes	Yes	164	131	2.885	Yes	Yes	42	32	0.628	15	19	1.074	192	158	1.789	Yes	Yes	149.3333	132	1.424	Yes	Yes	34	28	1.113	8.833333	8	0.316	288	294	0.352	Yes	Yes	262	264	0.117	Yes	Yes	23	24	0.286	3	6	1.303	
759	Calibration	806887	W	1377	80443	65	19	0.709	Yes	Yes	47.53277	18	5.149	No	Yes	13.09956	6	0.426	4.26501	0	2.823	66	21	0.276	Yes	Yes	52.95051	19	5.523	No	Yes	12.18877	2	3.985	17.25681	0	1.377	132	36	10.415	No	Yes	113.8689	34	0.251	Yes	Yes	16.83277	2	4.875	1.005107	0	1.218	
760	Calibration	806887	E	1377	80443	65	19	0.709	Yes	Yes	47.53277	18	5.149	No	Yes	13.09956	6	0.426	4.26501	0	2.823	66	21	0.276	Yes	Yes	52.95051	19	5.523	No	Yes	12.18877	2	3.985	17.25681	0	1.377	132	36	10.415	No	Yes	113.8689	34	0.251	Yes	Yes	16.83277	2	4.875	1.005107	0	1.218	
763	Calibration	807101	N	80447	80446	39	40	1.016	Yes	Yes	29.36846	30	0.187	Yes	Yes	9.528381	8	0.442	0	2	1.783	18	19	0.278	Yes	Yes	14.07093	15	0.233	Yes	Yes	3.023446	3	0.072	0.101193	1	0.179	12	23	0.317	Yes	Yes	20.5669	21	0.082	Yes	Yes	1.027444	1	0.051	0	1	1.465	
764	Calibration	807101	S	80446	80447	21	21	0.032	Yes	Yes	17.05266	17	0.010	Yes	Yes	2.130085	2	0.020	0.208232	2	0.096	14	16	0.350	Yes	Yes	10.99963	12	0.266	Yes	Yes	2.078413	2	0.169	1.348257	2	0.172	14	22	2.825	Yes	Yes	13.06213	20	1.604	Yes	Yes	1.027444	2	0.714	0	0	0.884	
765	Calibration	807379	N	3008	3006	59	29	4.521	Yes	Yes	52	25	4.395	Yes	Yes	7	4	1.357	0	0	0.897	20	19	0.126	Yes	Yes	17.66667	17	0.114	Yes	Yes	1.833333	2	0.012	0.5	0	0.145	44	29	1.659	Yes	Yes	39	26	2.232	Yes	Yes	5	2	1.501	0	0	0.587	
766	Calibration	807379	S	3006	3008	55	55	1.281	Yes	Yes	58	52	0.765	Yes	Yes	6	3	1.658	0	0	0.714	21	16	1.104	Yes	Yes	17.66667	13	0.842	Yes	Yes	2.833333	2	0.488	0.669697	0	0.358	42	34	1.291	Yes	Yes	38	32	0.946	Yes	Yes	4	1	1.705	0	0	0.905	
770	Calibration	808127	W	3154	3152	30	16	9.284	Yes	Yes	25																																											

1199	Calibration	J3-A-Exit	Northbound	1491	1231	299	355	3.097	Yes	Yes	262.4469	305	2.513	Yes	Yes	17.84548	30	2.428	18.61113	20	0.417
1200	Calibration	J3-B-Exit	Eastbound	1490	1482	899	917	0.581	Yes	Yes	673.0492	688	0.574	Yes	Yes	118.9699	123	0.365	107.014	106	0.146
1201	Calibration	J3-C-Exit	Southbound	1489	80092	405	440	1.665	Yes	Yes	259.2721	291	1.540	Yes	Yes	65.43344	67	0.241	80.26049	81	0.053
1202	Calibration	J3-D-Exit	Westbound	1488	80094	297	268	1.746	Yes	Yes	231.7575	217	0.961	Yes	Yes	54.72615	50	0.616	10.46676	0	4.576
1203	Calibration	9256/1	EB	72779	72813	2269	2095	3.732	Yes	Yes	1620.634	1480	3.576	Yes	Yes	460.0734	434	1.244	188.7319	182	0.531
1204	Calibration	9256/1	WB	72811	72781	1952	1897	1.254	Yes	Yes	1394.015	1416	0.583	Yes	Yes	395.7398	325	3.706	162.3409	156	0.516
1205	Calibration	9257/1	EB	1235	72861	2136	1924	4.713	Yes	Yes	1525.613	1352	4.572	Yes	Yes	433.0983	399	1.669	177.6662	173	0.369
1206	Calibration	9258/1	WB	1236	72857	1551	1392	6.197	No	Yes	1136.021	1001	4.119	Yes	Yes	322.499	259	3.743	132.236	132	0.059
1207	Calibration	9568A	NB	72220	72213	4790	4617	2.520	Yes	Yes	2764.276	2804	0.756	Yes	Yes	1044.28	1031	0.419	981.6803	782	6.707
1208	Calibration	9568B	SB	72215	1182	4582	4525	0.846	Yes	Yes	2643.92	2751	2.056	Yes	Yes	998.8118	996	0.101	938.9381	778	5.482
1209	Calibration	York15	NB	80562	80563	461	309	7.753	No	No	417.891	276	7.633	No	No	30.59144	27	0.654	12.81855	6	2.102
1210	Calibration	York15	SB	80563	80562	271	165	7.211	No	No	294.2133	140	6.883	No	Yes	32.77654	23	1.773	4.272949	1	1.741

2000	1777	5.118	No	Yes	1524.686	1328	5.206	No	Yes	312.9761	294	1.096	161.8851	155	0.531						
1954	1656	7.012	No	No	1489.677	1192	8.142	No	No	305.7897	306	0.011	158.168	158	0.004						
1612	1616	0.104	Yes	Yes	1228.929	1229	0.015	Yes	Yes	262.2653	256	0.219	130.4628	131	0.015						
1690	1616	1.838	Yes	Yes	1288.934	1214	2.119	Yes	Yes	264.5827	265	0.026	136.8339	137	0.008						
4441	4329	1.694	Yes	Yes	2817.762	2818	0.010	Yes	Yes	765.009	765	0.001	657.8378	745	3.979						
111	111	0.023	Yes	Yes	91.1471	91	0.018	Yes	Yes	15.53844	16	0.117	4.14305	4	0.275						
198	197	0.048	Yes	Yes	168.8293	168	0.058	Yes	Yes	21.92364	22	0.016	6.905083	7	0.002						

148	208	4.485	Yes	Yes	133.4031	189	4.370	Yes	Yes	10.3293	14	1.100	4.385962	5	0.240
558	589	1.303	Yes	Yes	467.9532	489	0.974	Yes	Yes	33.28329	41	1.193	57.01751	60	0.346
655	667	1.254	Yes	Yes	576.3432	603	1.081	Yes	Yes	35.57869	39	0.023	42.76318	45	0.322
582	595	0.500	Yes	Yes	827.3693	538	0.455	Yes	Yes	53.94169	57	0.368	1.066491	0	1.481
2233	2178	1.167	Yes	Yes	1893.068	1859	0.790	Yes	Yes	262.406	248	0.872	77.75474	71	0.767
2326	2114	4.493	Yes	Yes	1971.294	1758	4.938	Yes	Yes	273.2493	274	0.054	80.96776	82	0.076
1840	1854	4.443	Yes	Yes	1559.745	1382	4.647	Yes	Yes	216.2027	207	0.595	64.06402	65	0.150
2089	1895	4.347	Yes	Yes	1770.27	1554	5.006	No	Yes	245.4479	260	0.940	72.7296	71	0.248
5101	5176	1.043	Yes	Yes	3681.06	3863	2.968	Yes	Yes	787.3896	854	2.311	632.3134	459	7.438
4893	4998	1.499	Yes	Yes	3530.801	3593	1.035	Yes	Yes	755.2487	810	1.964	606.5027	595	0.461
243	156	6.168	No	Yes	217.2635	153	4.684	Yes	Yes	23.1876	2	5.820	3.020863	0	1.997
374	259	6.447	No	No	345.516	236	6.401	No	No	21.07964	22	0.141	7.04868	1	3.071

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