Tritax Symmetry (Hinckley) Limited

HINCKLEY NATIONAL RAIL FREIGHT INTERCHANGE

The Hinckley National Rail Freight Interchange Development Consent Order

Project reference TR050007

Environmental Statement
Volume 2: Appendices

Appendix 8.1: Transport Assessment (part 9 of 20) Furnessing Methodology

Document reference: 6.2.8.1

Revision: 07

September 2023

Planning Act 2008

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

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

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

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

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

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

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

http://www.hinckleynrfi.co.uk/

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

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

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1. INTRODUCTION

1.1 BWB Consulting has been commissioned as part a wider project scope by Tritax Symmetry Ltd to develop a series of highway models capable of assessing highway impacts from the proposed Hinckley National Rail Freight Interchange (HNRFI) development. The site will be developed to serve a maximum of 850,000sqm of B8 warehousing/distribution uses and a rail freight terminal.

1.2 A strategic model PRTM V1.0 was utilised initially to undertake modelling of future forecast scenarios. At the request of the HNRFI Transport Working Group (TWG) and specifically Leicestershire County Council, an updated version of the model has been used (PRTM V2.2) which includes for more detailed trip generation of committed schemes as well as committed infrastructure within the modelling extent.

1.3 This note has been produced to detail the furnessing methodology undertaken to derive future forecast traffic flow matrices for junctions assessed.

2. BACKGROUND

2.1 Hydrock previously produced a technical note (*07700-HYD-XX-XX-RP-TP-1021 Rev. P02) which* detailed three different methodologies of furnessing the PRTM data. A copy of the technical note is provided in **Appendix A**. A short summary of each option has been provided below.

Option 1: Use target entry and exit flows directly extracted from PRTM;

Option 2: Use linear interpolation to obtain 2018 PRTM base and use this in conjunction with future PRTM flows to derive growth factors. These growth rates are then applied to observed flows to derive future forecast flows and junctions; and

Option 3: Use linear interpolation to obtain 2018 PRTM base and calculate absolute differences in link flows between calculated 2018 PRTM and the respective future year PRTM flows. The absolute differences are then added to 2018 observed flows to derive future forecast link flows for each scenario. The base 2018 observed turning counts are then used to furness the future forecast matrices.

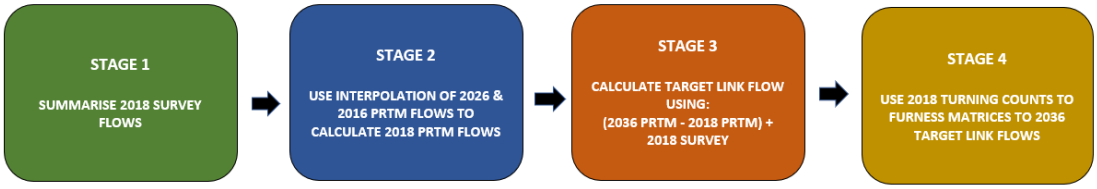
2.2 Following the submission of the options above by Hydrock, LCC considered Option 3 as the preferable option, and this was agreed in November 2019. A copy of the correspondence is provided in **Appendix B**.

2.3 BWB has also reviewed the methodologies and compared the multiplicative (Option 2) and additive (Option 3) approaches proposed in the options for furnessing. It was considered that the multiplicative approach could provide growth factors too great a variance which subsequently may provide unrealistic forecast traffic flows at junctions. Option 3 which is the Interpolation and Application of Absolute Growth is considered more appropriate, which will use PRTM flows to calculate absolute changes in flows and assume the reassignment of traffic forecast in PRTM is correct as opposed to the flows directly extracted from PRTM. Based on this, BWB considers Option 3 the preferable and acceptable furnessing methodology, and this has been utilised to furness traffic flow matrices.

3. DETAILED FURNESS METHODOLOGY

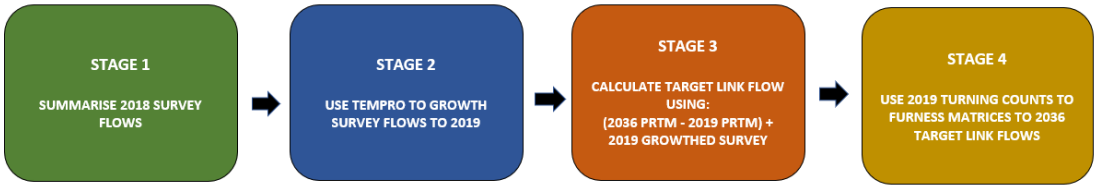
3.1 Option 3 of the furnessing methodologies had been utlised to furness the traffic flow matrices at the junctions of interest. A flow chart of the methodology is provided in Figure 1 below.

Figure 1: Option 3 Furnessing Methodology



3.2 However the PRTM 2.2 SATURN outputs provided a 2019 traffic flow scenario therefore, instead of interpolating between PRTM 2016 and 2026 to obtain a 2018 PRTM base flows, it is considered that Stage 2 to is altered to growth 2018 survey flows using TEMPro to 2019 to derive an equivalent base year as PRTM. This provides a more robust basis for the furnessing as no further assumptions have to be made to derive a base flow scenario from PRTM, i.e. linear growth between PRTM scenarios. A revised flow chart of the methodology is presented in Figure 2 below.

Figure 2: Revised Furnessing Methodology



3.3 The furnessing methodology has been undertaken for each scenario separately, this includes 'Without Development', 'Without Development with Infrastructure' and 'With development with Infrastructure' for the years 2026 and 2036 respectively.

3.4 The furnessing has been built using an MS Excel macro using VBA to ensure an extensive spreadsheet is not required to display every iteration of the furnessing. This also ensures that the methodology is consistent between all furnessed matrices. A summary of the process undertaken by the macros is provided below.

1. Column: adjustment: Calculate turning counts across column using survey data proportions in combination with the target link flow out of each arm
2. Sum Row: Calculate the sum of each arm row total
3. Row Adjustment: Calculate turning counts across rows using survey data proportions in combination with the target link flow into each arm
4. Sum Column: Calculate sum of each column
5. Round all values in matrix to the closest integer
6. Update sums for column and row total
7. Repeat the above 'x' number of iterations

3.5 The macro has been built to run the furnessing 20 times for each matrix, however it should be noted that every time the macro is executed, it runs an additional 20 times. The furnessing spreadsheet therefore has been run for at least 20 iterations. The furnessing methodology has been double constrained, i.e. both origin and destination and the traffic flow matrices are furnessed until link flows are within 2% of calculated link flows. This has been calculated by taking the absolute difference between the calculated target link flow and furnessed link flow. Should these be higher than 2%, the macro is executed until convergence is achieved.

3.6 Additional matrices are provided to calculate the absolute difference and percentage difference between the forecast and furnessed link flows for each scenario respectively. A review of these indicates that this is considered to be convergent with the accepted furnessing methodology.

3.7 Furnessing of traffic flow matrices based on the above methodology was initially undertaken using PRTM V1.0 data, HE and LCC reviewed the submitted information and broadly agreed with the calculation. However, HE has queried the negative growth applied at some junctions and queried whether negative growth should be excluded as part of furnessing.

3.8 PRTM model was utilised for the scheme to understand what the reassignment of traffic is due to the proposed scheme and infrastructure. PRTM reassigns vehicle routes based on delays and cost of journey therefore some movements may experience reduction in flows whilst some increase which is considered acceptable as the model was built to illustrate the changes and impact of flows on junctions.

3.9 Furthermore, PRTM V1.0 has been revised with more detailed trip generation of committed developments and also includes revised committed infrastructure improvements. Excluding negative growth would overestimate impacts at junctions therefore, it is considered that PRTM V2.2 should be acceptable to understand what the reassignment of traffic is within the modelling extent.

4. SITE ACCESS JUNCTIONS

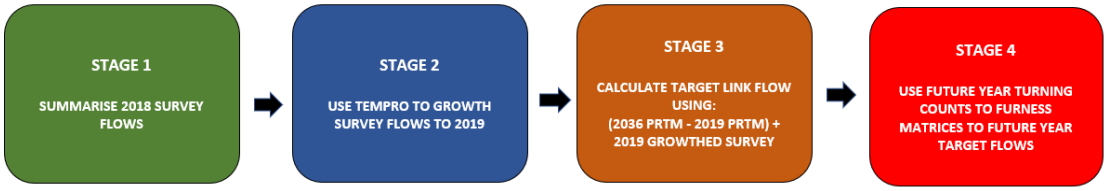
4.1 M69 Junction 2 provides access into the proposed site. Furthermore, as part of the access strategy, south facing on and off slip roads are proposed at M69 Junction 2.

4.2 The agreed furnessing methodology utilises the observed turning movements in combination with calculated forecast link flows to furness future year flow matrices. However, it is considered that this approach is not applicable to M69 Junction 2 as three additional arms are added to the junction and as these do not have any base flows, furnessing cannot be undertaken.

4.3 Furthermore, the proposed scheme will significantly alter the movement at the junction with rerouting of traffic through the junction, therefore it is proposed that a different approach for 'Stage 4' is taken only for the site access junctions. Instead of using observed turning count proportions to furness the matrices, we will use the PRTM turning counts for the respective future year scenarios as a prior matrix to furness the matrices. This methodology utilises observed counts to calculate a more realistic link flow target at the junction whilst accounting for the redistribution of traffic anticipated at M69 J2

with the inclusion of new arms to the junction. Similar approach would be taken for the secondary access. Please see revised methodology for site access junctions below.

Figure 3: Site Access Furnessing Methodology



4.4 A VISSIM model of M69 J2 was obtained from National Highways and recalibrated to provide a basis for future year assessment. The model utilises static routing assignment therefore the furnessed matrices will be directly input into the model to derive the future year scenarios.

4.5 Further to the above, junctions along the proposed spine road utilise a first principles method to derive forecast traffic flow matrices for junction capacity assessments. The spine road movements are extracted from PRTM for the respective scenarios and development traffic from minor arms will be calculated utilising agreed trip distribution.

5. SUMMARY

5.1 PRTM V1.0 has been revised to PRTM V2.2 to include for more detailed trip generation of committed schemes as well as include for committed schemes within the modelling extent.

5.2 As part of PRTM V1.0, it was agreed that Option 3 of the furnessing methodologies presented was the most preferable option. This utilises interpolation of PRTM flows to derive a common base year with observed data and calculate absolute differences in links flows between calculate PRTM base flows and subsequent future year scenarios to provide forecast link flows. Subsequently these are furnessed using turning count proportions from observed data to derive future year flow matrices.

5.3 The furnessing methodology is applied to all junctions with the exception of M69 Junction 2, the proposed second access on the B4668 Leicester Road. As there are additional arms to these junctions, it is considered more appropriate to use the respective PRTM future year turning proportions to furness the matrices. Furthermore, proposed junctions along the spine road will utilise a first principles method to calculate forecast traffic matrices.

APPENDIX A

TECHNICAL NOTE

Project name	Hinckley National Rail Freight Interchange		
Design note title	Furness Modelling Methodology		
Document reference	07770-HYD-XX-XX-RP-TP-1021		
Author	Vassil Pavlov		
Checker/Approver	Luke Hutcheson/Rory McHugh		
Revision	P01		
Date	9 August 2019	Approved	✓

1. INTRODUCTION

1.1 Preamble

1.1.1 This Technical Note [TN] has been prepared with the aim of summarising the application of the Furness method to observed traffic flows and setting out the chosen methodology, giving justification for its validity and suitability as well as the appropriateness of the adopted approach, particularly with regards to convergence and intended outcomes.

1.1.2 The exercise is undertaken as part of the wider transport modelling methodology for the Hinckley National Rail Freight Interchange [NRFI]. It forms the backbone of the more detailed junction capacity modelling, to be carried out in subsequent stages of the analysis.

1.2 Modelling Context

1.2.1 The method follows on from the outputs of the Pan Regional Transport Model [PRTM], with the modelling results presented in the AECOM report *" PRTM Hinckley NRFI Application: Forecast Modelling v1.0"* and the subsequent filtering process undertaken by Hydrock, presented in the technical note *"Strategic Traffic Modelling Results - An Interim Summary"*.

1.2.2 The use of the PRTM and the methodology for undertaking the strategic modelling has been agreed previously and is not discussed further here.

1.2.3 Various assessment scenarios have been/will be modelled using the PRTM, with the results being presented in various output files in the form of image plots, excel files and MapInfo formats for total vehicle flows and splits for light vehicles and HGVs.

1.2.4 The performed primary and secondary filtering process has significantly reduced the total number of nodes to 63, with a VoC in excess of 85% in any assessment scenario and a development impact of +/- 5% defined as critical thresholds. Further consultation with the relevant LHAs established an additional performance indicator of +30 vehicles impact. This was deemed appropriate to overcome spurious values of VoC resulting from modelling noise. The final number of junctions agreed for further analysis is still to be agreed, with local factors/judgement to be applied.

1.2.5 The Furness procedure outlined in this note facilitates the transition from strategic to local junction modelling in an attempt to derive a future year origin-destination (entry-exit) matrix for each junction

assessed. Moreover, the process is used to further gauge the change in traffic flows and inform the need for detailed capacity assessments.

2. PROPOSED METHODOLOGY

2.1 Purpose of Furness Procedure

2.1.1 The strategic modelling outputs are presented in the form of link flows. These form the target entry and exit trip ends for each junction in the future assessment years of 2026 and 2036 i.e. the total number of vehicles to and from each arm.

2.1.2 The link flows for the Base scenario in all assessment years are contained in **Appendix A**. The node references used to define the individual links can be located at:

[redacted]

2.1.3 In order to derive a future year matrix that respects the forecast trip ends, a method of bi-proportional adjustment, also known as the Furness method, is followed. The Furness method, typically having applications in strategic modelling as a trip distribution tool, achieves a doubly constrained solution through successive factoring of individual matrix entries, thus reconciling an observed base matrix with both sets of forecast trip ends.

2.1.4 The method relies on the assumption that the pattern of travel in the future year will remain substantially identical, with traffic increasing in line with individual entry/exit growth. Different sets of growth factors are, therefore, applied to each column and row entry until convergence is reached. The doubly constrained solution is achieved when the derived matrix is adjusted accordingly and respects the forecasted trip ends.

2.1.5 The incremental steps taken to perform the procedure are more thoroughly scrutinised in the following sections, where the New Road/Long Street/Broughton Road junction is used as an illustrative example.

2.1.6 The mathematical notation used throughout this report is explained in **Appendix B**.

2.2 Traffic Survey Data and Base Matrix

2.2.1 Manual Classified Turning Count surveys were commissioned in 2018/2019 for all junctions potentially requiring a more detailed review. The raw survey data for the example junction discussed here (New Road/Long Street/Broughton Road) is provided in **Appendix C** for reference.

2.2.2 To ensure consistency with the PRTM outputs, the data was processed to yield the turning movements at the junction for the modelled AM and PM peak hours of 08:00 - 09:00 and 17:00 - 18:00 respectively. The resulting 2018 Origin-Destination [O-D] Base Matrices (in veh/hr) as derived from the traffic surveys are illustrated in Table 2.1 and Table 2.2.

Table 2.1: 2018 Base Matrix AM (Veh/hr)

From\To	A	B	C	D	Total
A	0	62	79	209	**350**
B	33	0	12	242	**287**
C	41	4	1	75	**121**
D	155	337	118	0	**610**
Total	**229**	**403**	**210**	**526**	**1368**

Table 2.2: 2018 Base Matrix PM (Veh/hr)

From\To	A	B	C	D	Total
A	0	56	70	152	**278**
B	69	0	8	377	**454**
C	78	7	1	143	**229**
D	225	286	116	0	**627**
Total	**372**	**349**	**195**	**672**	**1588**

2.3 Forecast Trip Ends

2.3.1 As already mentioned, the purpose of the Furness method is to adjust the base matrix to match the forecast trip ends (i.e. row and column totals) for the future year scenarios. To achieve this, two variations of the method are proposed to be followed.

Option 1 - Extraction of Target Trip Ends Directly from PRTM

2.3.2 The first method involves taking the forecast link flows directly from the PRTM and using those as the target entry and exit flows for each arm.

2.3.3 The advantage of this method is the ensured consistency with the wider assessment methodology and reduced number of assumptions applied to derive the target trip ends. Additionally, the flow assignment in this set of forecasts fully takes into account the available capacity within the network, thus ensuring that no unrealistic volumes are being assigned.

2.3.4 However, following detailed discussions with the AECOM modelling team, concerns were raised that such an approach could potentially place too much reliance on the forecast flows from the PRTM. Due to its strategic nature, only the base model of the PRTM is validated against observed data, albeit not calibrated/validated against individual turning movements.

Option 2 - Interpolation and Growth Factoring of Trip Ends

2.3.5 A second method giving more confidence in the growth predicted by the model is also considered. The approach involves using the 2016 and 2026 Base scenarios and interpolation to obtain the 2018 flow for each target entry and exit link flow. A linear interpolation formula is used to derive the 2018 values. The equations are shown below for both origins and destinations:

$$Q_{i_{2018}} = \frac{(2018 - 2016)\left(Q_{i_{2026}} - Q_{i_{2016}}\right)}{(2026 - 2016)} + Q_{i_{2016}}$$

$$Q_{j_{2018}} = \frac{(2018 - 2016)\left(Q_{j_{2026}} - Q_{j_{2016}}\right)}{(2026 - 2016)} + Q_{j_{2016}}$$

2.3.6 The forecast change in flows to 2036 has then been used to obtain appropriate growth factors that have in turn been used to multiply the observed (base 2018) trip ends. This generates target row and column totals which utilise both the base matrix and the growth predicted by the model and eliminates discrepancies between the two data sources.

2.3.7 However, a disadvantage of this method is the potential for artificially inflated flows which are not representative of the future conditions. As such, they would in some instances be reassigned by the

model due to an increased congestion factor. It is also worth noting that in the PRTM only a portion of the growth determines the forecast while the rest of it is the function of the future year forecast itself. Therefore, such an approach could lead to inaccurate results.

2.4 Trip End Balancing

2.4.1 The second method creates the need for trip end balancing due to the disproportionate increase/reduction for each set of targets. A common method of balancing trip ends is to balance destinations with respect to origins on the assumption that those are considered more reliable in terms of correctness. However, in order to recognise the validity of both sets of trip ends, the average of the two is taken and the rows and columns balanced to match the said average. The implementation of this step is mathematically formulated below:

$$T_{Av} = \frac{\sum_{ij}(X_i + Y_j)}{2}$$

$$O_i = X_i \frac{T_{Av}}{\sum_i X_i}$$

$$D_j = Y_j \frac{T_{Av}}{\sum_j Y_j}$$

2.5 Method Comparison

2.5.1 The two methods have been carried out as described. The following forecast trip ends are hence derived for both the AM and PM conditions. These are presented alongside the base matrix to aid reader comprehension of the methods. Table 2.3 through to Table 2.6 illustrate.

Table 2.3: Method 1 - Target Trip Ends from PRTM - AM (Veh/hr)

From\To	A	B	C	D	Total	Target
A	0	62	79	209	350	152
B	33	0	12	242	287	395
C	41	4	1	75	121	160
D	155	337	118	0	610	742
Total	229	403	210	526	1368	
Target	114	389	330	617		

Table 2.4: Method 1 - Target Trip Ends from PRTM - PM (Veh/hr)

From\To	A	B	C	D	Total	Target
A	0	56	70	152	278	238
B	69	0	8	377	454	372
C	78	7	1	143	229	447
D	225	286	116	0	627	685
Total	372	349	195	672	1588	
Target	571	281	159	732		

Table 2.5: Method 2 - Balanced Forecast Trip Ends - AM (Veh/hr)

From\To	A	B	C	D	Total	Target
A	0	62	79	209	350	538
B	33	0	12	242	287	261
C	41	4	1	75	121	111
D	155	337	118	0	610	634
Total	229	403	210	526	1368	
Target	223	450	321	548		1543

Table 2.6: Method 2 - Balanced Forecast Trip Ends - PM (Veh/hr)

From\To	A	B	C	D	Total	Target
A	0	56	70	152	278	268
B	69	0	8	377	454	560
C	78	7	1	143	229	243
D	225	286	116	0	627	679
Total	372	349	195	672	1588	
Target	515	340	190	706		1751

2.5.2 The two sets of forecasts are compared to establish if there are significant differences between them. If the difference is shown to be immaterial, the preference is to proceed using the calibrated and validated PRTM flows. This also ensures consistency with the wider scoping and filtering methodology undertaken to date.

2.5.3 If significant discrepancies are identified on one or more links, this will be evaluated to determine the most appropriate method to follow. If deemed necessary the interpolated and factored targets will be used to carry out the Furness procedure. Conversely, if there is sufficient evidence to suggest that the PRTM forecast yields a more realistic representation of the future year conditions, then the same method will be followed as before.

2.5.4 Table 2.7 and Table 2.8 illustrate the differences between the two alternatives.

Table 2.7: Forecast Difference AM

Arm	Row Totals			Column Totals		
	Method 1	Method 2	Difference	Method 1	Method 2	Difference
A	152	538	+386	114	223	+109
B	395	261	-134	389	450	+61
C	160	111	-49	330	321	-9
D	742	634	-108	617	548	-69

Table 2.8: Forecast Difference PM

Arm	Row Totals			Column Totals		
	Method 1	Method 2	Difference	Method 1	Method 2	Difference
A	238	268	+30	571	515	-56
B	372	560	+188	281	340	+59
C	447	243	-204	159	190	+31
D	685	679	-6	732	706	-26

2.5.5 From the tables it is evident that there are significant differences between the two sets of forecasts. For the purpose of this TN it is proposed that the flows taken directly from the PRTM forecast are used to perform the Furness procedure at the Road/Long Street/Broughton Road junction.

2.5.6 However, it is worth noting that this position is not final and Hydrock are currently in the process of performing further spot checks and sensitivity tests at four additional junctions in order to establish the validity of the PRTM base model when compared directly against the observed 2018/2019 base. The GEH Statistic has been used to gauge whether there is a statistically significant difference between the two and the output will be used to further inform a decision on the most appropriate set of forecast flows to be used in the Furness procedure.

2.6 Iterative Process

2.6.1 With the base matrix and balanced forecast trip ends now confirmed, the iterative process of bi-proportional adjustment can begin. The process is divided into iterations, with each consisting of factor derivation and the subsequent adjustment of the base matrix in the order to derive the individual entries in the future year O-D matrix, respecting both sets of target trip ends. Each iteration consists of five stages, described as followed:

1. Calculation of column factors
2. Adjustment of column entries by the calculated factors
3. Calculation of row factors
4. Adjustment of row entries by the calculated factors
5. Rounding of Matrix Entries

2.6.2 The column and row factors are calculated by dividing the target trip end by the sum of the individual entries in the column or row. This is illustrated below.

$$r_i = \frac{O_i}{\sum_j B_{ij}}$$

$$c_j = \frac{D_j}{\sum_i B_{ij}}$$

2.6.3 The derived factors are then applied in succession. The column factors are applied to the base matrix, while the row factors are then applied to the resulting, partially adjusted matrix. The two steps are summarised below:

$$R_{ij} = c_j B_{ij}$$

$$I_{ij} = r R_{ij}$$

2.6.4 At the end of the first iteration the resulting matrix is described as an intermediate matrix, according with the trip-ends used to obtain the second set of factors but not the first. At this stage a singly constrained solution is reached.

2.6.5 In order to reconcile the matrix with both sets of trip ends, the process is continued until both sets are matched and a doubly constrained solution is accomplished. This entails further iterations of the same nature. With each successive iteration the sum of the individual entries will get closer to their respective targets and will thus near convergence. This is reflected in the calculated factors which will approach 1.

2.7 Convergence Measure and Defined Criterion

2.7.1 At the end of each iteration, checks for convergence are performed to ensure row and column totals are within a permissible degree of unity with their target trip ends. For this exercise that threshold is set at 1%. The convergence criterion used is the Relative Absolute Difference [RAD], calculated as:

$$\left|\frac{\sum_i F_{kij} - D_j}{D_j}\right| \leq \varepsilon, \forall j$$

2.7.2 The RAD is calculated for all columns at the end of each iteration. No test for convergence is carried out for the row totals as this is the last parameter to be adjusted. Therefore, the sum of the individual matrix entries will equal the forecast target and the RAD will be 0.

2.7.3 The process is completed when the RAD for all columns is ≤ 1%. If the value of RAD is above the threshold on one or more columns the iterations continue until convergence is reached. The Furness method will almost always converge, often within a small number of iterations, provided that the trip ends are balanced.

2.7.4 The number of iterations has been set at 20, believing that to be sufficient for convergence to be achieved. The final adjusted matrices for the AM and PM peaks are shown in Table 2.9 and Table 2.10.

Table 2.9: Final 2036 Matrix AM (Veh/hr)

From\To	A	B	C	D	Total
A	0	15	30	107	**152**
B	11	0	17	367	**395**
C	17	4	2	137	**160**
D	87	372	283	0	**742**
Total	**115**	**391**	**332**	**611**	**1449**

Table 2.10: Final 2036 Matrix PM (Veh/hr)

From\To	A	B	C	D	Total
A	0	36	48	155	**239**
B	63	0	5	304	**372**
C	166	9	0	271	**446**
D	343	237	106	0	**686**
Total	**572**	**282**	**159**	**730**	**1744**

2.8 Application to HGV Flows

2.8.1 In order to use the output from the Furness method for detailed junction modelling purposes, the flows must be converted to PCUs. This can be achieved by estimating the future HGV flows, with the same procedure of bi-proportional adjustment followed. The base matrix along with the forecast row and column totals are shown in Table 2.11 and Table 2.12.

Table 2.11: 2018 Base Matrix and Forecast Trip Ends AM (HGVs)

From\To	A	B	C	D	Total	Target
A	0	3	0	2	5	1
B	1	0	0	17	18	11
C	2	0	0	5	7	8
D	0	18	1	0	19	19
Total	3	21	1	24	49	
Target	1	13	6	19		39

Table 2.12: 2018 Base Matrix and Forecast Trip Ends PM (HGVs)

From\To	A	B	C	D	Total	Target
A	0	1	1	2	4	1
B	1	0	0	18	19	8
C	1	0	0	3	4	8
D	3	9	2	0	14	10
Total	5	10	3	23	41	
Target	1	8	2	16		27

2.8.2 An issue that arises here is that for some junctions the HGV flows are very low, as a consequence of which the matrix entries for certain movements are displayed as 0. When there are too many zeros in the matrix the Furness method will fail to converge and may begin to diverge due to the continuous factoring of zeros.

2.8.3 At junctions where this is applicable, the problem has been overcome using a manual override. An IF statement has been inserted to detect where an imbalance exists in the final matrix in the range -1< >+1 and automatically reposition an HGV unit in the correct cell. Given the low numbers and the rounding performed at the end of each iteration, the RAD is displayed as 0 upon convergence.

2.8.4 The final adjusted HGV matrices are illustrated in Table 2.13 and Table 2.14.

Table 2.13: Final 2036 Matrix AM (HGVs/hr)

From\To	A	B	C	D	Total
A	0	0	0	1	1
B	0	0	0	11	11
C	1	0	0	7	8
D	0	13	6	0	19
Total	1	13	6	19	39

Table 2.14: Final 2036 Matrix PM (HGVs/hr)

From\To	A	B	C	D	Total
A	0	0	0	1	1
B	0	0	0	8	8
C	1	0	0	7	8
D	0	8	2	0	10
Total	1	8	2	16	26

3. CONCLUSION

3.1 Summary

3.1.1 The application of the Furness method has allowed for the number of trips to converge. While the second set of factoring effectively negates the convergence reached in the first, an intermediate solution is reached at the end of each cycle. The measure of convergence performed after each iteration is a check for this. The output from the exercise is the converged matrix which has been adjusted to respect the derived target trip ends. This has been obtained for both total vehicle traffic and HGVs at New Road/Long Street/Broughton Road.

3.2 General Remarks

3.2.1 The Furness method has been undertaken using two variations of the initial trip end derivation stage, namely (1) Direct extraction from PRTM and (2) Growth Interpolation. It should be appreciated that both identified methods have limitations and engineering judgement will be applied following conclusive results of the ongoing detailed review.

3.2.2 This methodology TN sets out the process of performing the Furness procedure, not the results. Following agreement to the process (which does not vary with year of assessment) the results will be provided for all of the relevant assessment years.

3.3 Next Steps

3.3.1 The next stage of the modelling process is to combine the total vehicle matrices with the HGV matrices for each junction in order to obtain the total flows in PCUs. An initial review will then be undertaken and engineering judgment applied to determine if detailed capacity modelling is justified. For all junctions where this is required, further assessments will be undertaken using the industry standard software packages Junctions 9 and LinSig 3. If capacity issues are experienced, mitigation designs will be prepared and agreed with the relevant LHAs.

Appendix A ‘Base’ and ‘Base + New Slip Roads’ Link Flows

V1.4

Link_ID	A_Node	B_Node	WDWS_2026_AM_Lights	WDWS_2026_AM_HGVs	WDWS_2026_AM_Total	WDWS_2026_PM_Lights	WDWS_2026_PM_HGVs	WDWS_2026_PM_Total	WDWS_2036_AM_Lights	WDWS_2036_AM_HGVs	WDWS_2036_AM_Total	WDWS_2036_PM_Lights	WDWS_2036_PM_HGVs	WDWS_2036_PM_Total	WoDWoS_2026_AM_Lights	WoDWoS_2026_AM_HGVs	WoDWoS_2026_AM_Total	WoDWoS_2026_PM_Lights	WoDWoS_2026_PM_HGVs	WoDWoS_2026_PM_Total	WoDWoS_2036_AM_Lights	WoDWoS_2036_AM_HGVs	WoDWoS_2036_AM_Total	WoDWoS_2036_PM_Lights	WoDWoS_2036_PM_HGVs	WoDWoS_2036_PM_Total	WoDWoS_2016_AM_Lights	WoDWoS_2016_AM_HGVs	WoDWoS_2016_AM_Total	WoDWoS_2016_PM_Lights	WoDWoS_2016_PM_HGVs	WoDWoS_2016_PM_Total
30215-30081	30215	30081	633.3140444	15.80797778	649.1220222	882.6840766	5.932961715	888.6170383	653.788487	16.39075652	670.1924435	870.8209806	5.689509702	876.5104903	708.9069346	18.09151258	726.9984674	646.7943554	9.507822313	656.3021777	722.993065	18.76346748	741.7563325	675.0563124	10.2418438	685.2981562	650.8207288	12.82462562	663.6453644	610.1603715	6.014814257	616.1751857
39998-30081	39998	30081	263.1388633	0.915568327	264.0544317	333.1659423	0.922028847	334.0879712	284.5987678	0.90561612	285.5043839	340.3647466	0.912626696	341.2773733	125.4288432	0.910578393	126.3394216	257.2775668	0.916216624	258.1937834	151.1487308	0.900634604	152.0493654	237.2454523	0.912273826	238.1577262	84.61605605	0.986971973	85.60302803	239.0742782	0.992860908	240.0671391
73343-30081	73343	30081	378.5209446	9.829527677	388.3504723	225.4071203	7.421439835	232.8285602	375.9911967	9.679401672	385.6705983	291.270918	7.209541023	298.480459	385.7250807	10.61745965	396.3425404	303.9087791	8.470610462	312.3793895	384.4105586	10.98972072	395.4002793	363.8957406	7.937129723	371.8328703	407.4710712	8.994664393	416.4655356	284.4795964	9.135201817	293.6147982
73344-30081	73344	30081	125.8548192	7.132590384	132.9874096	384.0759949	7.06200254	391.1379975	126.5685585	6.680720774	133.2492792	374.0445	7.06775	381.11225	151.1733832	7.963308383	159.1366916	454.9436034	8.008198317	462.9518017	152.5918689	7.599065555	160.1909344	438.9378387	7.796080642	446.7339194	160.5575113	6.346244366	166.9037556	397.4189487	6.415525655	403.8344743

V1.4

Link_ID	A_Node	B_Node	WDWS_2026_AM_Lights	WDWS_2026_AM_HGVs	WDWS_2026_AM_Total	WDWS_2026_PM_Lights	WDWS_2026_PM_HGVs	WDWS_2026_PM_Total	WDWS_2036_AM_Lights	WDWS_2036_AM_HGVS	WDWS_2036_AM_Total	WDWS_2036_PM_Lights	WDWS_2036_PM_HGVs	WDWS_2036_PM_Total	WoDWoS_2026_AM_Lights	WoDWoS_2026_AM_HGVs	WoDWoS_2026_AM_Total	WoDWoS_2026_PM_Lights	WoDWoS_2026_PM_HGVs	WoDWoS_2026_PM_Total	WoDWoS_2036_AM_Lights	WoDWoS_2036_AM_HGVs	WoDWoS_2036_AM_Total	WoDWoS_2036_PM_Lights	WoDWoS_2036_PM_HGVs	WoDWoS_2036_PM_Total	WoDWoS_2016_AM_Lights	WoDWoS_2016_AM_HGVs	WoDWoS_2016_AM_Total	WoDWoS_2016_PM_Lights	WoDWoS_2016_PM_HGVs	WoDWoS_2016_PM_Total
30081-30215	30081	30215	690.4015388	16.97340562	707.3769944	649.613166	14.91341702	664.526583	692.5949518	16.42752409	709.0224759	669.2320092	14.70399539	683.9360046	581.4496177	18.55519113	600.0048089	701.2095736	16.84521319	718.0547868	598.59231	18.57384502	617.1661555	715.4238567	16.10807166	731.5319283	618.215959	15.58402051	633.7959795	686.9295748	15.93521258	702.8647874
30081-39998	30081	39998	158.116859	0.93157052	159.0484295	847.6544547	0.907772664	848.5622273	169.5360371	0.916981468	170.4530185	916.3634871	0.888256463	917.2517435	117.7762111	0.926894468	118.7031055	509.1454909	0.902254539	510.0477455	112.8161232	0.911938424	113.7280616	569.742721	0.888639482	570.6313605	123.6215615	1.004219256	124.6257807	393.5059415	0.987029232	394.4929708
30081-73343	30081	73343	327.780808	11.14459598	338.925404	197.5604264	3.739786776	201.3002132	323.7303838	11.60480808	335.3351919	156.4513071	3.53434647	159.9856535	388.7840351	12.26298245	401.0470176	291.9147231	6.797638457	298.7123615	376.0014077	12.88929613	388.8907039	273.3768854	7.51155729	280.8884427	352.6418708	8.394064622	361.0359354	285.9959204	4.802039812	290.7979602
30081-73344	30081	73344	224.5425702	4.648714884	229.1912851	130.5320153	1.763992339	132.3160077	255.0486294	4.70068531	259.7493147	133.4589975	1.745501249	135.2044988	283.2526187	5.848690632	289.1013094	160.6975452	2.341227405	163.0387726	323.751178	5.904411019	329.6555389	156.5490462	2.380476909	158.9295231	208.6687829	4.150608563	212.8193914	164.768832	0.810584016	165.579416

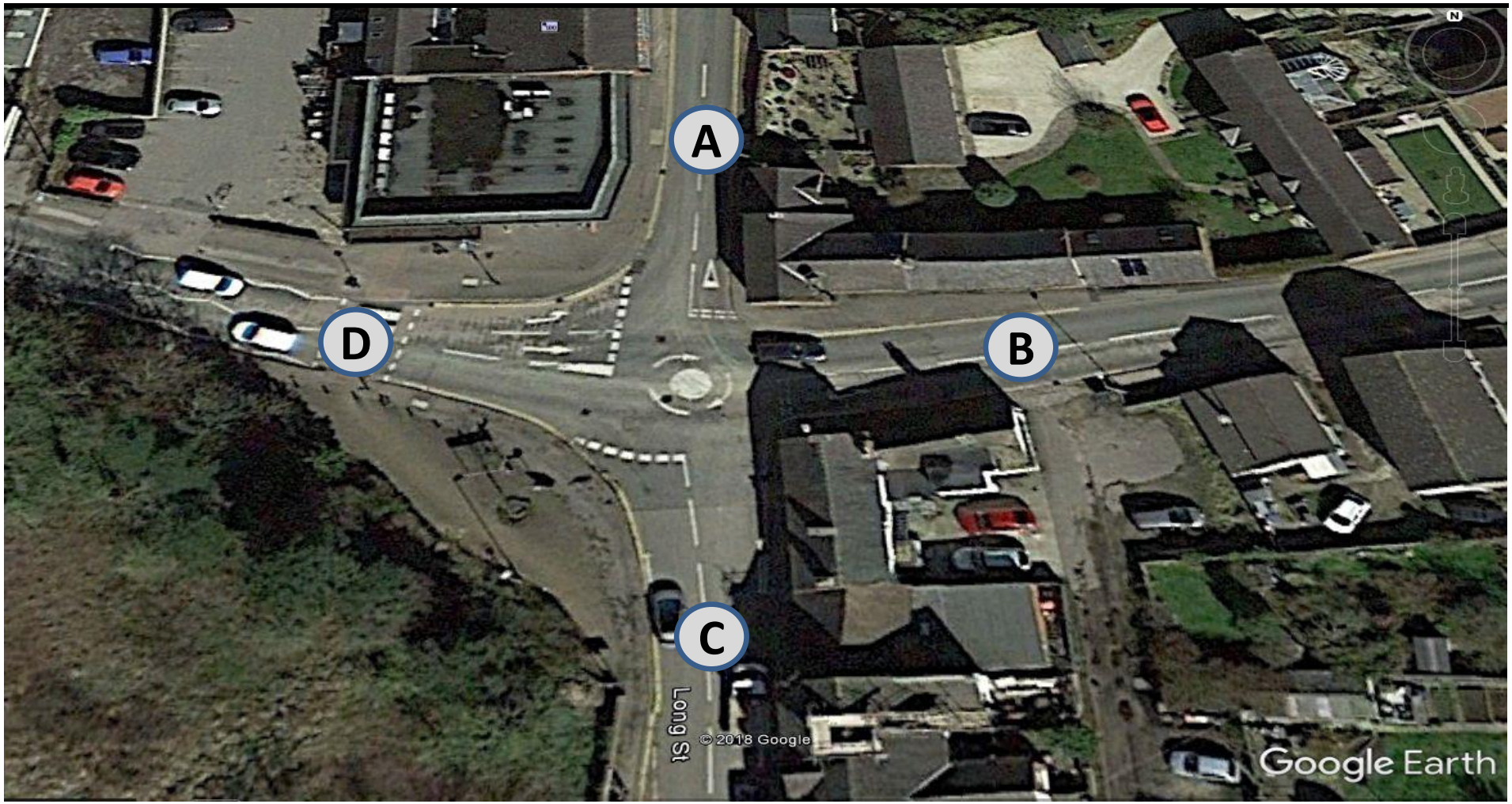
Appendix B Mathematical Notation

i	*Origin i*
j	*Destination j*
Q_{iyear}	*Flow from Arm i in particular modelled year*
Q_{jyear}	*Flow to Arm j in particular modelled year*
X_i	*Forecast Row Total for Arm i before balancing*
Y_j	*Forecast Column Total for Arm j before balancing*
T_{Av}	*Average Target Trip End Total*
O_i	*Forecast Row Total for Arm i after balancing*
D_j	*Forecast Column Total for Arm j after balancing*
r_i	*Row Factor*
c_j	*Column Factor*
B_{ij}	*Entry in Base Matrix*
R_{ij}	*Entry in Resultant Matrix (after column factoring)*
I_{ij}	*Entry in Intermediate Matrix (end of iteration)*
F_{kij}	*Entry in Forecast Matrix for iteration k (when I_{ij} is converged)*
ε	*Convergence threshold*
$\forall_j$	*For All Destinations*

Appendix C New Road/Long Street/Broughton Road Junction Raw Survey Data

Client:	Hydrock
Project Number:	TSP13881
Project Name:	07700 Hinckley NRFI
Survey Type:	Manual Classified Turning Count
Survey Date:	26 Jun 2018, Tuesday
Survey Time:	07:00 - 19:00
Weather:	Dry
Comments:	

Project Number: TSP13881
Project Name: 07700 Hinckley NRFI
Survey Type: Manual Classified Turning Count
Site No: 18
Location: New Road / Long Street / Broughton Road



Project Number: TSP13881
Project Name: 07700 Hinckley NRFI
Survey Type: Manual Classified Turning Count
Site No: 18
Location: New Road / Long Street / Broughton Road
Date: 26 June 2018, Tuesday

traffic survey partners

	1	1	1.5	2.3	2	2	0.4	0.2												
Time	A - A										A - B									
	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)
07:00									0	0	13	2		2					17	19.6
07:15									0	0	8	1	1						10	10.5
07:30									0	0	11	3							14	14
07:45									0	0	13	3							16	16
H/Total	0	0	0	0	0	0	0	0	0	0	45	9	1	2	0	0	0	0	57	60.1
08:00									0	0	14								14	14
08:15									0	0	20	2							22	22
08:30									0	0	10	1	1	1					13	14.8
08:45									0	0	10	2	1						13	13.5
H/Total	0	0	0	0	0	0	0	0	0	0	54	5	2	1	0	0	0	0	62	64.3
09:00									0	0	8	6							14	14
09:15	1								1	1	13								13	13
09:30									0	0	5		1						6	6.5
09:45									0	0	2	1		1		1		5	10	8.3
H/Total	1	0	0	0	0	0	0	0	1	1	28	7	1	1	0	1	0	5	43	41.8
10:00									0	0	6								6	6
10:15									0	0	5	1							6	6
10:30	1								1	1	6	3		1					10	11.3
10:45									0	0	8	1					1		10	9.4
H/Total	1	0	0	0	0	0	0	0	1	1	25	5	0	1	0	0	1	0	32	32.7
11:00									0	0	8	2							10	10
11:15									0	0	6	2							8	8
11:30									0	0	11								11	11
11:45									0	0	7	3	2	1					13	15.3
H/Total	0	0	0	0	0	0	0	0	0	0	32	7	2	1	0	0	0	0	42	44.3
12:00									0	0	12	1	1						14	14.5
12:15									0	0	7	1							8	8
12:30									0	0	10	3		1					14	15.3
12:45									0	0	15	2							17	17
H/Total	0	0	0	0	0	0	0	0	0	0	44	7	1	1	0	0	0	0	53	54.8
13:00									0	0	7	7	1						15	15.5
13:15									0	0	10	1	1						12	12.5
13:30									0	0	9	3		1					13	14.3
13:45									0	0	5	1		1					7	8.3
H/Total	0	0	0	0	0	0	0	0	0	0	31	12	2	2	0	0	0	0	47	50.6
14:00									0	0	11		1						12	12.5
14:15									0	0	5	3							8	8
14:30									0	0	9	2	1						12	12.5
14:45									0	0	7	1					1		9	8.4
H/Total	0	0	0	0	0	0	0	0	0	0	32	6	2	0	0	0	1	0	41	41.4
15:00									0	0	5	1							6	6
15:15									0	0	8		2						10	11
15:30									0	0	9		1						10	10.5
15:45									0	0	8	1	1	1		1			12	14.8
H/Total	0	0	0	0	0	0	0	0	0	0	30	2	4	1	0	1	0	0	38	42.3
16:00									0	0	5	1		1					7	8.3
16:15									0	0	3								3	3
16:30									0	0	9	1						1	11	10.2
16:45									0	0	9								9	9
H/Total	0	0	0	0	0	0	0	0	0	0	26	2	0	1	0	0	0	1	30	30.5
17:00									0	0	13								13	13
17:15									0	0	8	1							9	9
17:30									0	0	12	3						1	16	15.2
17:45									0	0	17		1						18	18.5
H/Total	0	0	0	0	0	0	0	0	0	0	50	4	1	0	0	0	0	1	56	55.7
18:00									0	0	14	2		1				1	18	18.5
18:15									0	0	9	1	1						11	11.5
18:30									0	0	14	2							16	16
18:45									0	0	8								8	8
H/Total	0	0	0	0	0	0	0	0	0	0	45	5	1	1	0	0	0	1	53	54
Total	2	0	0	0	0	0	0	0	2	2	442	71	17	12	0	2	2	8	554	572.5

Project Number: TSP13881
Project Name: 07700 Hinckley NRFI
Survey Type: Manual Classified Turning Count
Site No: 18
Location: New Road / Long Street / Broughton Road
Date: 26 June 2018, Tuesday

traffic survey partners

Time	A - C										A - D									
	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)
07:00	13	5							18	18	18	6	1			2			27	29.5
07:15	13		1						14	14.5	32	3	3	2					40	44.1
07:30	24	2				1			27	28	30	6	1						37	37.5
07:45	27	7			1			1	36	36.2	44	6	1	1		1			53	55.8
H/Total	77	14	1	0	1	1	0	1	95	96.7	124	21	6	3	0	3	0	0	157	166.9
08:00	17	1							18	18	42	7				1			50	51
08:15	16	4				1			21	22	51	5							56	56
08:30	22	4							26	26	61	3	2						66	67
08:45	12	2							14	14	32	3				2			37	39
H/Total	67	11	0	0	0	1	0	0	79	80	186	18	2	0	0	3	0	0	209	213
09:00	14	4							18	18	40	3	1						44	44.5
09:15	11	3	1						15	15.5	23	6	1						30	30.5
09:30	6	2							8	8	24	3							27	27
09:45	6	1	1						8	8.5	18	3		2					23	25.6
H/Total	37	10	2	0	0	0	0	0	49	50	105	15	2	2	0	0	0	0	124	127.6
10:00	3	2		1					6	7.3	15	2	1						18	18.5
10:15	6	2						1	9	8.2	28	1		1					30	31.3
10:30	4	3							7	7	36		1						37	37.5
10:45	7	1						1	9	8.2	14	1	1						16	16.5
H/Total	20	8	0	1	0	0	0	2	31	30.7	93	4	3	1	0	0	0	0	101	103.8
11:00	11								11	11	18	5		1					24	25.3
11:15	6	1							7	7	20	4	1	1					26	27.8
11:30	7	1			1				9	10	19	2		1				2	24	23.7
11:45	7	2	1						10	10.5	15	3	1	1					20	21.8
H/Total	31	4	1	0	1	0	0	0	37	38.5	72	14	2	4	0	0	0	2	94	98.6
12:00	7		1						8	8.5	13	5		1				1	20	20.5
12:15	7	1					1		9	8.4	18	3	1	1		1			24	26.8
12:30	18	2							20	20	19	4	1						24	24.5
12:45	29	5						1	35	34.2	26	5							31	31
H/Total	61	8	1	0	0	0	1	1	72	71.1	76	17	2	2	0	1	0	1	99	102.8
13:00	9	2							11	11	12	3						1	16	15.2
13:15	7						1		8	7.4	21								21	21
13:30	13	2					2		17	15.8	16	3							19	19
13:45	4	1							5	5	18	2		1					21	22.3
H/Total	33	5	0	0	0	0	3	0	41	39.2	67	8	0	1	0	0	0	1	77	77.5
14:00	8	2							10	10	17	5	1	1					24	25.8
14:15	10	2			1				13	14	12	1		1					14	15.3
14:30	10	1	1					1	13	12.7	33	3				1			37	38
14:45	11	2							13	13	40	5	1			1			47	48.5
H/Total	39	7	1	0	1	0	0	1	49	49.7	102	14	2	2	0	2	0	0	122	127.6
15:00	12								12	12	29	5							34	34
15:15	8	3							11	11	19	7	1					1	28	27.7
15:30	5	1							6	6	30	3							33	33
15:45	9				1				10	11	16	5	3			1			25	27.5
H/Total	34	4	0	0	1	0	0	0	39	40	94	20	4	0	0	1	0	1	120	122.2
16:00	12	2							14	14	42	9	1		1		2		55	55.3
16:15	7	2				1			10	11	22	6		1				1	30	30.5
16:30	14	2					2	1	19	17	31	4		1				1	37	37.5
16:45	14	1						1	16	15.2	28	2						2	32	30.4
H/Total	47	7	0	0	0	1	2	2	59	57.2	123	21	1	2	1	0	2	4	154	153.7
17:00	11	3						1	15	14.2	41	6					1		48	47.4
17:15	15	1			1			1	18	18.2	28	6	1			1		2	38	37.9
17:30	18	4						3	25	22.6	30	1				1	1	3	36	34
17:45	11		1						12	12.5	28		1					1	30	29.7
H/Total	55	8	1	0	1	0	0	5	70	67.5	127	13	2	0	0	2	2	6	152	149
18:00	19	1							20	20	42								42	42
18:15	11								11	11	21	3							24	24
18:30	9	3	1						13	13.5	31	1							32	32
18:45	7							1	8	7.2	26	2					1	1	30	28.6
H/Total	46	4	1	0	0	0	0	1	52	51.7	120	6	0	0	0	0	1	1	128	126.6
Total	547	90	8	1	5	3	6	13	673	672.3	1289	171	26	17	1	12	5	16	1537	1569.3

Project Number: TSP13881
Project Name: 07700 Hinckley NRFI
Survey Type: Manual Classified Turning Count
Site No: 18
Location: New Road / Long Street / Broughton Road
Date: 26 June 2018, Tuesday

Time	B - A										B - B									
	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)
07:00	3							1	4	3.2									0	0
07:15	6	2							8	8									0	0
07:30	5	1							6	6									0	0
07:45	6	1							7	7									0	0
H/Total	20	4	0	0	0	0	0	1	25	24.2	0	0	0	0	0	0	0	0	0	0
08:00	9	1							10	10									0	0
08:15	6	2	1						9	9.5									0	0
08:30	7								7	7									0	0
08:45	7								7	7									0	0
H/Total	29	3	1	0	0	0	0	0	33	33.5	0	0	0	0	0	0	0	0	0	0
09:00	4	2	3	1					10	12.8									0	0
09:15	9	2		1					12	13.3									0	0
09:30	4	5		1					10	11.3									0	0
09:45	11	2		1					14	15.3									0	0
H/Total	28	11	3	4	0	0	0	0	46	52.7	0	0	0	0	0	0	0	0	0	0
10:00	4	2		3					9	12.9									0	0
10:15	6	3					1		10	9.4									0	0
10:30	6								6	6									0	0
10:45	4	3							7	7									0	0
H/Total	20	8	0	3	0	0	1	0	32	35.3	0	0	0	0	0	0	0	0	0	0
11:00	8	1	2						11	12									0	0
11:15	7	4							11	11									0	0
11:30	6								6	6									0	0
11:45	10	3	2						15	16									0	0
H/Total	31	8	4	0	0	0	0	0	43	45	0	0	0	0	0	0	0	0	0	0
12:00	9	4					1		14	13.4									0	0
12:15	6	2							8	8									0	0
12:30	9	2	1	1					13	14.8									0	0
12:45	12	1	1			1			15	16.5									0	0
H/Total	36	9	2	1	0	1	1	0	50	52.7	0	0	0	0	0	0	0	0	0	0
13:00	8	2							10	10	1								1	1
13:15	7	5	1						13	13.5									0	0
13:30	10	1	1						12	12.5									0	0
13:45	9		1						10	10.5									0	0
H/Total	34	8	3	0	0	0	0	0	45	46.5	1	0	0	0	0	0	0	0	1	1
14:00	7	3	3	2					15	19.1									0	0
14:15	10	2	2					1	15	15.2									0	0
14:30	10	2				1			13	14									0	0
14:45	5	1					1		7	6.4									0	0
H/Total	32	8	5	2	0	1	1	1	50	54.7	0	0	0	0	0	0	0	0	0	0
15:00	12	1	2						15	16									0	0
15:15	9	1							10	10									0	0
15:30	21	2	2						25	26									0	0
15:45	7	1							8	8									0	0
H/Total	49	5	4	0	0	0	0	0	58	60	0	0	0	0	0	0	0	0	0	0
16:00	14	1	1						16	16.5									0	0
16:15	8	4							12	12									0	0
16:30	14	4							18	18									0	0
16:45	9	2							11	11									0	0
H/Total	45	11	1	0	0	0	0	0	57	57.5	0	0	0	0	0	0	0	0	0	0
17:00	17	1							18	18									0	0
17:15	7	2				1	1	1	12	11.6									0	0
17:30	19		1						20	20.5									0	0
17:45	18	1							19	19									0	0
H/Total	61	4	1	0	0	1	1	1	69	69.1	0	0	0	0	0	0	0	0	0	0
18:00	20	3							23	23									0	0
18:15	12	1							13	13									0	0
18:30	15	1							16	16									0	0
18:45	14	1							15	15									0	0
H/Total	61	6	0	0	0	0	0	0	67	67	0	0	0	0	0	0	0	0	0	0
Total	446	85	24	10	0	3	4	3	575	598.2	1	0	0	0	0	0	0	0	1	1

Project Number: TSP13881
Project Name: 07700 Hinckley NRFI
Survey Type: Manual Classified Turning Count
Site No: 18
Location: New Road / Long Street / Broughton Road
Date: 26 June 2018, Tuesday

traffic survey partners

Time	B - C										B - D									
	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)
07:00	1								1	1	36	10		1	1	3		1	52	56.5
07:15	2								2	2	55	8		1	1		2		67	68.1
07:30	1								1	1	65	14	3						82	83.5
07:45									0	0	59	12	2			1			74	76
H/Total	4	0	0	0	0	0	0	0	4	4	215	44	5	2	2	4	2	1	275	284.1
08:00	3	1							4	4	55	9	2		1		1		68	69.4
08:15	2	1							3	3	51	12	1	2					66	69.1
08:30	4								4	4	43	9	5	1					58	61.8
08:45		1							1	1	40	4	2	4					50	56.2
H/Total	9	3	0	0	0	0	0	0	12	12	189	34	10	7	1	0	1	0	242	256.5
09:00	4	1							5	5	33	10	3						46	47.5
09:15				1					1	2.3	26	7	5	1				1	40	43
09:30	3	1		1					5	6.3	24	4	3	2					33	37.1
09:45	5								5	5	32	7	2	1					42	44.3
H/Total	12	2	0	2	0	0	0	0	16	18.6	115	28	13	4	0	0	0	1	161	171.9
10:00	5	1	1						7	7.5	27	8	2	1		1			39	42.3
10:15	2	1		1					4	5.3	35	8	2	3		1			49	54.9
10:30	1								1	1	29	12		1			1		43	43.7
10:45		1							1	1	27	5		3			1		36	39.3
H/Total	8	3	1	1	0	0	0	0	13	14.8	118	33	4	8	0	2	2	0	167	180.2
11:00	5								5	5	28	6	2			1			37	39
11:15	1								1	1	25	4	2	2		1	2		36	39.4
11:30	3	1							4	4	37	5	3	1			1		47	49.2
11:45	3	1							4	4	30	5	2	1			1		39	40.7
H/Total	12	2	0	0	0	0	0	0	14	14	120	20	9	4	0	2	4	0	159	168.3
12:00	4								4	4	35	12	2						49	50
12:15									0	0	33	3	3	4					43	49.7
12:30	1	1							2	2	36	3	5			1			45	48.5
12:45	2								2	2	29	2	3	3					37	42.4
H/Total	7	1	0	0	0	0	0	0	8	8	133	20	13	7	0	1	0	0	174	190.6
13:00	5	1							6	6	37	7	3						47	48.5
13:15	3	1							4	4	38	10	2	3			2		55	58.7
13:30	4	1							5	5	34	6	3	2			1		46	49.5
13:45	3							1	4	3.2	31	8	2	2					43	46.6
H/Total	15	3	0	0	0	0	0	1	19	18.2	140	31	10	7	0	0	3	0	191	203.3
14:00	1	1							2	2	28	6	5	2					41	46.1
14:15	5		1						6	6.5	30	7	5	1		1	2		46	49.6
14:30		1							1	1	54	7	4	2	1	1			69	75.6
14:45	6								6	6	46	10	1	1			2		60	60.6
H/Total	12	2	1	0	0	0	0	0	15	15.5	158	30	15	6	1	2	4	0	216	231.9
15:00	1								1	1	46	10	3	2			1		62	65.5
15:15	1	1							2	2	33	9	1			1	1		45	45.9
15:30	2								2	2	51	10	3	1	3				68	73.8
15:45	2								2	2	50	12	1	1					64	65.8
H/Total	6	1	0	0	0	0	0	0	7	7	180	41	8	4	3	1	2	0	239	251
16:00									0	0	68	17	2	4		1	1		93	99.6
16:15	1								1	1	53	9	5		1				68	71.5
16:30	2	1							3	3	82	15	6			2	3		108	111.2
16:45	2								2	2	73	16	2	1		1	1	1	95	96.9
H/Total	5	1	0	0	0	0	0	0	6	6	276	57	15	5	1	4	5	1	364	379.2
17:00	2								2	2	67	8	1	2	1		1	1	81	83.7
17:15	3								3	3	76	11	6				2	1	96	97
17:30	1	1							2	2	80	10	2	3		1	1		97	102.3
17:45	1								1	1	92	5	4				2		103	103.8
H/Total	7	1	0	0	0	0	0	0	8	8	315	34	13	5	1	1	6	2	377	386.8
18:00	1								1	1	78	16	3	1			2	1	101	101.8
18:15	4								4	4	69	6	1			1	1	1	79	79.1
18:30	3	2							5	5	56	6					1		63	62.4
18:45	11	1							12	12	50	6	1	1					58	59.8
H/Total	19	3	0	0	0	0	0	0	22	22	253	34	5	2	0	1	4	2	301	303.1
Total	116	22	2	3	0	0	0	1	144	148.1	2212	406	120	61	9	18	33	7	2866	3006.9

Project Number: TSP13881
Project Name: 07700 Hinckley NRFI
Survey Type: Manual Classified Turning Count
Site No: 18
Location: New Road / Long Street / Broughton Road
Date: 26 June 2018, Tuesday

traffic survey partners

Time	C - A										C - B									
	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)
07:00	1				1				2	3									0	0
07:15	4	2						1	7	6.2									0	0
07:30	10	2							12	12	1								1	1
07:45	6	2			1			1	10	10.2	2								2	2
H/Total	21	6	0	0	2	0	0	2	31	31.4	3	0	0	0	0	0	0	0	3	3
08:00	9	2							11	11		1							1	1
08:15	10	4							14	14									0	0
08:30	5								5	5									0	0
08:45	8	1	2						11	12	2	1							3	3
H/Total	32	7	2	0	0	0	0	0	41	42	2	2	0	0	0	0	0	0	4	4
09:00	7	1	1						9	9.5									0	0
09:15	6	1							7	7	1								1	1
09:30	6	1							7	7									0	0
09:45	9	2			1			1	13	13.2									0	0
H/Total	28	5	1	0	1	0	0	1	36	36.7	1	0	0	0	0	0	0	0	1	1
10:00	2								2	2	1								1	1
10:15	4	1							5	5									0	0
10:30	2								2	2		2							2	2
10:45	5		1						6	6.5		1		1					2	3.3
H/Total	13	1	1	0	0	0	0	0	15	15.5	1	3	0	1	0	0	0	0	5	6.3
11:00	5	2							7	7			2						2	3
11:15	4	1	1						6	6.5	1								1	1
11:30	9	2							11	11									0	0
11:45	4	3							7	7	1	2							3	3
H/Total	22	8	1	0	0	0	0	0	31	31.5	2	2	2	0	0	0	0	0	6	7
12:00	10	1						1	12	11.2	2								2	2
12:15	2								2	2	2								2	2
12:30	4				1			1	6	6.2	1								1	1
12:45	8								8	8	1								1	1
H/Total	24	1	0	0	1	0	0	2	28	27.4	6	0	0	0	0	0	0	0	6	6
13:00	7	2							9	9	1								1	1
13:15	5	1							6	6	4	1							5	5
13:30	3	1							4	4	2								2	2
13:45	6	2							8	8	2								2	2
H/Total	21	6	0	0	0	0	0	0	27	27	9	1	0	0	0	0	0	0	10	10
14:00	7	1						1	9	8.2	6								6	6
14:15	7						1		8	7.4	2								2	2
14:30	5	2							7	7	3								3	3
14:45	4	2	1						7	7.5	1	1							2	2
H/Total	23	5	1	0	0	0	1	1	31	30.1	12	1	0	0	0	0	0	0	13	13
15:00	5	1	2						8	9	2								2	2
15:15	14	2							16	16	1	1							2	2
15:30	20	1	1		1				23	24.5	1								1	1
15:45	5	2							7	7	3								3	3
H/Total	44	6	3	0	1	0	0	0	54	56.5	7	1	0	0	0	0	0	0	8	8
16:00	10	1							11	11									0	0
16:15	11	1					1		13	12.4									0	0
16:30	6	2	1						9	9.5	1								1	1
16:45	18	4							22	22		1							1	1
H/Total	45	8	1	0	0	0	1	0	55	54.9	1	1	0	0	0	0	0	0	2	2
17:00	13	1	1						15	15.5									0	0
17:15	14	4							18	18		1							1	1
17:30	20	2							22	22	3								3	3
17:45	20	3							23	23	3								3	3
H/Total	67	10	1	0	0	0	0	0	78	78.5	6	1	0	0	0	0	0	0	7	7
18:00	16	1							17	17	1								1	1
18:15	12	1						2	15	13.4	4								4	4
18:30	5								5	5	1								1	1
18:45	10	1							11	11									0	0
H/Total	43	3	0	0	0	0	0	2	48	46.4	6	0	0	0	0	0	0	0	6	6
Total	383	66	11	0	5	0	2	8	475	477.9	56	12	2	1	0	0	0	0	71	73.3

Project Number: TSP13881
Project Name: 07700 Hinckley NRFI
Survey Type: Manual Classified Turning Count
Site No: 18
Location: New Road / Long Street / Broughton Road
Date: 26 June 2018, Tuesday

traffic survey partners

Time	C - C										C - D									
	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)
07:00									0	0	8	1							9	9
07:15				1					1	2.3	7	3				1			11	12
07:30									0	0	22	2						1	25	24.2
07:45									0	0	18	3		1		2			24	27.3
H/Total	0	0	0	1	0	0	0	0	1	2.3	55	9	0	1	0	3	0	1	69	72.5
08:00	1								1	1	16	1	1			1			19	20.5
08:15									0	0	26	2	2						30	31
08:30									0	0	11								11	11
08:45									0	0	12	1	2						15	16
H/Total	1	0	0	0	0	0	0	0	1	1	65	4	5	0	0	1	0	0	75	78.5
09:00									0	0	18	1							19	19
09:15									0	0	12	2					1		15	14.4
09:30									0	0	8	2	2			1			13	15
09:45									0	0	16	1						1	18	17.2
H/Total	0	0	0	0	0	0	0	0	0	0	54	6	2	0	0	1	1	1	65	65.6
10:00									0	0	21								21	21
10:15									0	0	8	2		2					12	14.6
10:30									0	0	8		1						9	9.5
10:45									0	0	9	3	1						13	13.5
H/Total	0	0	0	0	0	0	0	0	0	0	46	5	2	2	0	0	0	0	55	58.6
11:00									0	0	14	1	1						16	16.5
11:15									0	0	5	1							6	6
11:30									0	0	9	5							14	14
11:45									0	0	11	1							12	12
H/Total	0	0	0	0	0	0	0	0	0	0	39	8	1	0	0	0	0	0	48	48.5
12:00									0	0	10								10	10
12:15									0	0	14	1		1					16	17.3
12:30									0	0	10	1							11	11
12:45									0	0	8	2				1			11	12
H/Total	0	0	0	0	0	0	0	0	0	0	42	4	0	1	0	1	0	0	48	50.3
13:00									0	0	9	2	1						12	12.5
13:15									0	0	8	1							9	9
13:30									0	0	10	3							13	13
13:45									0	0	12					1			13	14
H/Total	0	0	0	0	0	0	0	0	0	0	39	6	1	0	0	1	0	0	47	48.5
14:00									0	0	11	2							13	13
14:15									0	0	17	2							19	19
14:30									0	0	23	2							25	25
14:45									0	0	15	3	2						20	21
H/Total	0	0	0	0	0	0	0	0	0	0	66	9	2	0	0	0	0	0	77	78
15:00									0	0	12	1						1	14	13.2
15:15									0	0	11	4							15	15
15:30									0	0	15	3	1						19	19.5
15:45									0	0	17	1	1	1					20	21.8
H/Total	0	0	0	0	0	0	0	0	0	0	55	9	2	1	0	0	0	1	68	69.5
16:00									0	0	15	5	1					1	22	21.7
16:15									0	0	18	3							21	21
16:30									0	0	35	4							39	39
16:45									0	0	26	3							29	29
H/Total	0	0	0	0	0	0	0	0	0	0	94	15	1	0	0	0	0	1	111	110.7
17:00	1								1	1	37	7					1		45	44.4
17:15									0	0	25	3	1						29	29.5
17:30									0	0	30	3							33	33
17:45									0	0	32	2		2					36	38.6
H/Total	1	0	0	0	0	0	0	0	1	1	124	15	1	2	0	0	1	0	143	145.5
18:00									0	0	33	1							34	34
18:15									0	0	24	1			1	1		2	29	29.4
18:30	1								1	1	14	1							15	15
18:45									0	0	15	1						2	18	16.4
H/Total	1	0	0	0	0	0	0	0	1	1	86	4	0	0	1	1	0	4	96	94.8
Total	3	0	0	1	0	0	0	0	4	5.3	765	94	17	7	1	8	2	8	902	921

Project Number: TSP13881
Project Name: 07700 Hinckley NRFI
Survey Type: Manual Classified Turning Count
Site No: 18
Location: New Road / Long Street / Broughton Road
Date: 26 June 2018, Tuesday

traffic survey partners

Time	D - A										D - B									
	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)
07:00	9	3	1					1	14	13.7	48	6	4	2	1	2	1		64	71
07:15	16	4	1	1					22	23.8	65	17	5	1	1	1	1		91	96.2
07:30	22	4			1	1	1	3	32	31	76	11	4				1	1	93	93.6
07:45	25	5							30	30	75	19	4	3				1	102	107.1
H/Total	72	16	2	1	1	1	1	4	98	98.5	264	53	17	6	2	3	3	2	350	367.9
08:00	27	5					1		33	32.4	90	13		1			1	1	106	105.9
08:15	33	2						1	36	35.2	59	9	6				2	1	77	78
08:30	31	3							34	34	53	8	4	1					66	69.3
08:45	44	6				1	1		52	52.4	69	12	4	2		1			88	93.6
H/Total	135	16	0	0	0	1	2	1	155	154	271	42	14	4	0	1	3	2	337	346.8
09:00	23	3	1				1		28	27.9	52	9	4	2	3	1	2		73	80.4
09:15	16	7		1					24	25.3	38	6	2	2			1	2	51	52.4
09:30	22	3	1	1					27	28.8	34	5	6	6					51	61.8
09:45	16	1		3					20	23.9	31	12	2	3		1		1	50	55.1
H/Total	77	14	2	5	0	0	1	0	99	105.9	155	32	14	13	3	2	3	3	225	249.7
10:00	21	3		2					26	28.6	28	9	3	1		1	1		43	46.2
10:15	18	3	2						23	24	32	4	2	1			1		40	41.7
10:30	18	5							23	23	26	8	4	1					39	42.3
10:45	20	4	1					3	28	26.1	36	9	1	2	1				49	53.1
H/Total	77	15	3	2	0	0	0	3	100	101.7	122	30	10	5	1	1	2	0	171	183.3
11:00	23	2		1					26	27.3	32	9	1	1		1	1	1	46	47.4
11:15	18	4		2					24	26.6	36	3	7						46	49.5
11:30	21	7	1					1	30	29.7	32	10	2						44	45
11:45	27	3	2	1					33	35.3	33	3				1			37	38
H/Total	89	16	3	4	0	0	0	1	113	118.9	133	25	10	1	0	2	1	1	173	179.9
12:00	26	5	1				1		33	32.9	42	4		1		1	2	1	51	51.3
12:15	18	6	1	1					26	27.8	29	1	1	2			2		35	36.9
12:30	18	4	1	1					24	25.8	23	2	3	2					30	34.1
12:45	21	6		1					28	29.3	27	2	6						35	38
H/Total	83	21	3	3	0	0	1	0	111	115.8	121	9	10	5	0	1	4	1	151	160.3
13:00	23	1		1					25	26.3	34	5							39	39
13:15	18	5							23	23	35	6	1	3					45	49.4
13:30	24	7							31	31	31	12	1						44	44.5
13:45	21	3	2						26	27	20	4	2			2			28	31
H/Total	86	16	2	1	0	0	0	0	105	107.3	120	27	4	3	0	2	0	0	156	163.9
14:00	15	3	2			1			21	23	33	4	1	1		1	1		41	43.2
14:15	18	3	2						23	24	35	4	1	2					42	45.1
14:30	19	2							21	21	32	14	2	2					50	53.6
14:45	21	3	2					1	27	27.2	42	4	2	2					50	53.6
H/Total	73	11	6	0	0	1	0	1	92	95.2	142	26	6	7	0	1	1	0	183	195.5
15:00	43	4	2						49	50	47	11	1	1					60	61.8
15:15	30	4	1			2	1		38	39.9	42	12	2						56	57
15:30	36	3	2	1					42	44.3	47	7	2	1	2	1	1		61	65.7
15:45	38	7	1			2			48	50.5	38	15	1	1		1			56	58.8
H/Total	147	18	6	1	0	4	1	0	177	184.7	174	45	6	3	2	2	1	0	233	243.3
16:00	35	3		1					39	40.3	50	13	2	1		1			67	70.3
16:15	38	6	2						46	47	46	9	1	2	1		1		60	63.5
16:30	32	2							34	34	62	10	1			1			74	75.5
16:45	43	5	1						49	49.5	80	10	1	2		2	1	1	97	100.7
H/Total	148	16	3	1	0	0	0	0	168	170.8	238	42	5	5	1	4	2	1	298	310
17:00	46	5	1			1			53	54.5	67	17	3	3					90	95.4
17:15	57	5				1			63	64	62	5	1	1			3	1	73	72.2
17:30	62	4	1	1		1		1	70	72	49	4		1				2	56	55.7
17:45	33	3					1	2	39	36.8	58	8					1		67	66.4
H/Total	198	17	2	1	0	3	1	3	225	227.3	236	34	4	5	0	0	4	3	286	289.7
18:00	42	10				1			53	54	41	4		2		1		2	50	52
18:15	44	3						1	48	47.2	52	2		1			1	2	58	57.1
18:30	35	3	1	1					40	41.8	42	5	1	1		1		1	51	53
18:45	28							1	29	28.2	38	3		1					42	43.3
H/Total	149	16	1	1	0	1	0	2	170	171.2	173	14	1	5	0	2	1	5	201	205.4
Total	1334	192	33	20	1	11	7	15	1613	1651.3	2149	379	101	62	9	21	25	18	2764	2895.7

Project Number: TSP13881
Project Name: 07700 Hinckley NRFI
Survey Type: Manual Classified Turning Count
Site No: 18
Location: New Road / Long Street / Broughton Road
Date: 26 June 2018, Tuesday

traffic survey partners

Time	D - C										D - D									
	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)
07:00	16	1							17	17									0	0
07:15	23	7	1						31	31.5									0	0
07:30	16	5		2					23	25.6									0	0
07:45	20	4				1			25	26									0	0
H/Total	75	17	1	2	0	1	0	0	96	100.1	0	0	0	0	0	0	0	0	0	0
08:00	32	1							33	33									0	0
08:15	18	2							20	20									0	0
08:30	29	1							30	30									0	0
08:45	30	3		1	1				35	37.3									0	0
H/Total	109	7	0	1	1	0	0	0	118	120.3	0	0	0	0	0	0	0	0	0	0
09:00	20	2	1	1					24	25.8									0	0
09:15	14	3				1	1		19	19.4									0	0
09:30	11	4	1						16	16.5									0	0
09:45	16	1	1			1			19	20.5	1								1	1
H/Total	61	10	3	1	0	2	1	0	78	82.2	1	0	0	0	0	0	0	0	1	1
10:00	10	3				1	1		15	15.4									0	0
10:15	10	2		1				1	14	14.5									0	0
10:30	12		2	1					15	17.3									0	0
10:45	10	4							14	14									0	0
H/Total	42	9	2	2	0	1	1	1	58	61.2	0	0	0	0	0	0	0	0	0	0
11:00	11	1							12	12									0	0
11:15	17	2							19	19									0	0
11:30	15								15	15									0	0
11:45	12							1	13	12.2									0	0
H/Total	55	3	0	0	0	0	0	1	59	58.2	0	0	0	0	0	0	0	0	0	0
12:00	15								15	15									0	0
12:15	8	1						1	10	9.2									0	0
12:30	14	3						1	18	17.2									0	0
12:45	11	2							13	13									0	0
H/Total	48	6	0	0	0	0	0	2	56	54.4	0	0	0	0	0	0	0	0	0	0
13:00	11								11	11									0	0
13:15	12	2	1	1					16	17.8									0	0
13:30	9	2	2						13	14									0	0
13:45	14	1	1						16	16.5									0	0
H/Total	46	5	4	1	0	0	0	0	56	59.3	0	0	0	0	0	0	0	0	0	0
14:00	7	2		1					10	11.3									0	0
14:15	10	3							13	13									0	0
14:30	22	4	1						27	27.5									0	0
14:45	17	1							18	18	1								1	1
H/Total	56	10	1	1	0	0	0	0	68	69.8	1	0	0	0	0	0	0	0	1	1
15:00	17	4							21	21									0	0
15:15	20	7				1			28	29									0	0
15:30	16	4							20	20	1								1	1
15:45	18	4				1			23	24									0	0
H/Total	71	19	0	0	0	2	0	0	92	94	1	0	0	0	0	0	0	0	1	1
16:00	14	2							16	16									0	0
16:15	19					1			20	21									0	0
16:30	18	1			1		1		21	21.4									0	0
16:45	14	4				1			19	20									0	0
H/Total	65	7	0	0	1	2	1	0	76	78.4	0	0	0	0	0	0	0	0	0	0
17:00	35	3		1		1			40	42.3									0	0
17:15	23	3				1			27	28									0	0
17:30	19	3							22	22									0	0
17:45	23	3	1						27	27.5									0	0
H/Total	100	12	1	1	0	2	0	0	116	119.8	0	0	0	0	0	0	0	0	0	0
18:00	19	2					2		23	21.8									0	0
18:15	16	3							19	19									0	0
18:30	22	1						6	29	24.2									0	0
18:45	14								14	14									0	0
H/Total	71	6	0	0	0	0	2	6	85	79	0	0	0	0	0	0	0	0	0	0
Total	799	111	12	9	2	10	5	10	958	976.7	3	0	0	0	0	0	0	0	3	3

Project Number: TSP13881
Project Name: 07700 Hinckley NRFI
Survey Type: Manual Classified Turning Count
Site No: 18
Location: New Road / Long Street / Broughton Road
Date: 26 June 2018, Tuesday

traffic survey partners

Time	From A										To A									
	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)
07:00	44	13	1	2	0	2	0	0	62	67.1	13	3	1	0	1	0	0	2	20	19.9
07:15	53	4	5	2	0	0	0	0	64	69.1	26	8	1	1	0	0	0	1	37	38
07:30	65	11	1	0	0	1	0	0	78	79.5	37	7	0	0	1	1	1	3	50	49
07:45	84	16	1	1	1	1	0	1	105	108	37	8	0	0	1	0	0	1	47	47.2
H/Total	246	44	8	5	1	4	0	1	309	323.7	113	26	2	1	3	1	1	7	154	154.1
08:00	73	8	0	0	0	1	0	0	82	83	45	8	0	0	0	0	1	0	54	53.4
08:15	87	11	0	0	0	1	0	0	99	100	49	8	1	0	0	0	0	1	59	58.7
08:30	93	8	3	1	0	0	0	0	105	107.8	43	3	0	0	0	0	0	0	46	46
08:45	54	7	1	0	0	2	0	0	64	66.5	59	7	2	0	0	1	1	0	70	71.4
H/Total	307	34	4	1	0	4	0	0	350	357.3	196	26	3	0	0	1	2	1	229	229.5
09:00	62	13	1	0	0	0	0	0	76	76.5	34	6	5	1	0	0	1	0	47	50.2
09:15	48	9	2	0	0	0	0	0	59	60	32	10	0	2	0	0	0	0	44	46.6
09:30	35	5	1	0	0	0	0	0	41	41.5	32	9	1	2	0	0	0	0	44	47.1
09:45	26	5	1	3	0	1	0	5	41	42.4	36	5	0	4	1	0	0	1	47	52.4
H/Total	171	32	5	3	0	1	0	5	217	220.4	134	30	6	9	1	0	1	1	182	196.3
10:00	24	4	1	1	0	0	0	0	30	31.8	27	5	0	5	0	0	0	0	37	43.5
10:15	39	4	0	1	0	0	0	1	45	45.5	28	7	2	0	0	0	1	0	38	38.4
10:30	47	6	1	1	0	0	0	0	55	56.8	27	5	0	0	0	0	0	0	32	32
10:45	29	3	1	0	0	0	1	1	35	34.1	29	7	2	0	0	0	0	3	41	39.6
H/Total	139	17	3	3	0	0	1	2	165	168.2	111	24	4	5	0	0	1	3	148	153.5
11:00	37	7	0	1	0	0	0	0	45	46.3	36	5	2	1	0	0	0	0	44	46.3
11:15	32	7	1	1	0	0	0	0	41	42.8	29	9	1	2	0	0	0	0	41	44.1
11:30	37	3	0	1	1	0	0	2	44	44.7	36	9	1	0	0	0	0	1	47	46.7
11:45	29	8	4	2	0	0	0	0	43	47.6	41	9	4	1	0	0	0	0	55	58.3
H/Total	135	25	5	5	1	0	0	2	173	181.4	142	32	8	4	0	0	0	1	187	195.4
12:00	32	6	2	1	0	0	0	1	42	43.5	45	10	1	0	0	0	2	1	59	57.5
12:15	32	5	1	1	0	1	1	0	41	43.2	26	8	1	1	0	0	0	0	36	37.8
12:30	47	9	1	1	0	0	0	0	58	59.8	31	6	2	2	1	0	0	1	43	46.8
12:45	70	12	0	0	0	0	0	1	83	82.2	41	7	1	1	0	1	0	0	51	53.8
H/Total	181	32	4	3	0	1	1	2	224	228.7	143	31	5	4	1	1	2	2	189	195.9
13:00	28	12	1	0	0	0	0	1	42	41.7	38	5	0	1	0	0	0	0	44	45.3
13:15	38	1	1	0	0	0	1	0	41	40.9	30	11	1	0	0	0	0	0	42	42.5
13:30	38	8	0	1	0	0	2	0	49	49.1	37	9	1	0	0	0	0	0	47	47.5
13:45	27	4	0	2	0	0	0	0	33	35.6	36	5	3	0	0	0	0	0	44	45.5
H/Total	131	25	2	3	0	0	3	1	165	167.3	141	30	5	1	0	0	0	0	177	180.8
14:00	36	7	2	1	0	0	0	0	46	48.3	29	7	5	2	0	1	0	1	45	50.3
14:15	27	6	0	1	1	0	0	0	35	37.3	35	5	4	0	0	0	1	1	46	46.6
14:30	52	6	2	0	0	1	0	1	62	63.2	34	6	0	0	0	1	0	0	41	42
14:45	58	8	1	0	0	1	1	0	69	69.9	30	6	3	0	0	0	1	1	41	41.1
H/Total	173	27	5	2	1	2	1	1	212	218.7	128	24	12	2	0	2	2	3	173	180
15:00	46	6	0	0	0	0	0	0	52	52	60	6	6	0	0	0	0	0	72	75
15:15	35	10	3	0	0	0	0	1	49	49.7	53	7	1	0	0	2	1	0	64	65.9
15:30	44	4	1	0	0	0	0	0	49	49.5	77	6	5	1	1	0	0	0	90	94.8
15:45	33	6	4	1	1	2	0	0	47	53.3	50	10	1	0	0	2	0	0	63	65.5
H/Total	158	26	8	1	1	2	0	1	197	204.5	240	29	13	1	1	4	1	0	289	301.2
16:00	59	12	1	1	1	0	2	0	76	77.6	59	5	1	1	0	0	0	0	66	67.8
16:15	32	8	0	1	0	1	0	1	43	44.5	57	11	2	0	0	0	1	0	71	71.4
16:30	54	7	0	1	0	0	2	3	67	64.7	52	8	1	0	0	0	0	0	61	61.5
16:45	51	3	0	0	0	0	0	3	57	54.6	70	11	1	0	0	0	0	0	82	82.5
H/Total	196	30	1	3	1	1	4	7	243	241.4	238	35	5	1	0	0	1	0	280	283.2
17:00	65	9	0	0	0	0	1	1	76	74.6	76	7	2	0	0	1	0	0	86	88
17:15	51	8	1	0	1	1	0	3	65	65.1	78	11	0	0	0	2	1	1	93	93.6
17:30	60	8	0	0	0	1	1	7	77	71.8	101	6	2	1	0	1	0	1	112	114.5
17:45	56	0	3	0	0	0	0	1	60	60.7	71	7	0	0	0	0	1	2	81	78.8
H/Total	232	25	4	0	1	2	2	12	278	272.2	326	31	4	1	0	4	2	4	372	374.9
18:00	75	3	0	1	0	0	0	1	80	80.5	78	14	0	0	0	1	0	0	93	94
18:15	41	4	1	0	0	0	0	0	46	46.5	68	5	0	0	0	0	0	3	76	73.6
18:30	54	6	1	0	0	0	0	0	61	61.5	55	4	1	1	0	0	0	0	61	62.8
18:45	41	2	0	0	0	0	1	2	46	43.8	52	2	0	0	0	0	0	1	55	54.2
H/Total	211	15	2	1	0	0	1	3	233	232.3	253	25	1	1	0	1	0	4	285	284.6
Total	2280	332	51	30	6	17	13	37	2766	2816.1	2165	343	68	30	6	14	13	26	2665	2729.4

Project Number: TSP13881
Project Name: 07700 Hinckley NRFI
Survey Type: Manual Classified Turning Count
Site No: 18
Location: New Road / Long Street / Broughton Road
Date: 26 June 2018, Tuesday

Time	From B										To B									
	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)
07:00	40	10	0	1	1	3	0	2	57	60.7	61	8	4	4	1	2	1	0	81	90.6
07:15	63	10	0	1	1	0	2	0	77	78.1	73	18	6	1	1	1	1	0	101	106.7
07:30	71	15	3	0	0	0	0	0	89	90.5	88	14	4	0	0	0	1	1	108	108.6
07:45	65	13	2	0	0	1	0	0	81	83	90	22	4	3	0	0	0	1	120	125.1
H/Total	239	48	5	2	2	4	2	2	304	312.3	312	62	18	8	2	3	3	2	410	431
08:00	67	11	2	0	1	0	1	0	82	83.4	104	14	0	1	0	0	1	1	121	120.9
08:15	59	15	2	2	0	0	0	0	78	81.6	79	11	6	0	0	0	2	1	99	100
08:30	54	9	5	1	0	0	0	0	69	72.8	63	9	5	2	0	0	0	0	79	84.1
08:45	47	5	2	4	0	0	0	0	58	64.2	81	15	5	2	0	1	0	0	104	110.1
H/Total	227	40	11	7	1	0	1	0	287	302	327	49	16	5	0	1	3	2	403	415.1
09:00	41	13	6	1	0	0	0	0	61	65.3	60	15	4	2	3	1	2	0	87	94.4
09:15	35	9	5	3	0	0	0	1	53	58.6	52	6	2	2	0	0	1	2	65	66.4
09:30	31	10	3	4	0	0	0	0	48	54.7	39	5	7	6	0	0	0	0	57	68.3
09:45	48	9	2	2	0	0	0	0	61	64.6	33	13	2	4	0	2	0	6	60	63.4
H/Total	155	41	16	10	0	0	0	1	223	243.2	184	39	15	14	3	3	3	8	269	292.5
10:00	36	11	3	4	0	1	0	0	55	62.7	35	9	3	1	0	1	1	0	50	53.2
10:15	43	12	2	4	0	1	1	0	63	69.6	37	5	2	1	0	0	1	0	46	47.7
10:30	36	12	0	1	0	0	1	0	50	50.7	32	13	4	2	0	0	0	0	51	55.6
10:45	31	9	0	3	0	0	1	0	44	47.3	44	11	1	3	1	0	1	0	61	65.8
H/Total	146	44	5	12	0	2	3	0	212	230.3	148	38	10	7	1	1	3	0	208	222.3
11:00	41	7	4	0	0	1	0	0	53	56	40	11	3	1	0	1	1	1	58	60.4
11:15	33	8	2	2	0	1	2	0	48	51.4	43	5	7	0	0	0	0	0	55	58.5
11:30	46	6	3	1	0	0	1	0	57	59.2	43	10	2	0	0	0	0	0	55	56
11:45	43	9	4	1	0	0	1	0	58	60.7	41	8	2	1	0	1	0	0	53	56.3
H/Total	163	30	13	4	0	2	4	0	216	227.3	167	34	14	2	0	2	1	1	221	231.2
12:00	48	16	2	0	0	0	1	0	67	67.4	56	5	1	1	0	1	2	1	67	67.8
12:15	39	5	3	4	0	0	0	0	51	57.7	38	2	1	2	0	0	2	0	45	46.9
12:30	46	6	6	1	0	1	0	0	60	65.3	34	5	3	3	0	0	0	0	45	50.4
12:45	43	3	4	3	0	1	0	0	54	60.9	43	4	6	0	0	0	0	0	53	56
H/Total	176	30	15	8	0	2	1	0	232	251.3	171	16	11	6	0	1	4	1	210	221.1
13:00	51	10	3	0	0	0	0	0	64	65.5	43	12	1	0	0	0	0	0	56	56.5
13:15	48	16	3	3	0	0	2	0	72	76.2	49	8	2	3	0	0	0	0	62	66.9
13:30	48	8	4	2	0	0	1	0	63	67	42	15	1	1	0	0	0	0	59	60.8
13:45	43	8	3	2	0	0	0	1	57	60.3	27	5	2	1	0	2	0	0	37	41.3
H/Total	190	42	13	7	0	0	3	1	256	269	161	40	6	5	0	2	0	0	214	225.5
14:00	36	10	8	4	0	0	0	0	58	67.2	50	4	2	1	0	1	1	0	59	61.7
14:15	45	9	8	1	0	1	2	1	67	71.3	42	7	1	2	0	0	0	0	52	55.1
14:30	64	10	4	2	1	2	0	0	83	90.6	44	16	3	2	0	0	0	0	65	69.1
14:45	57	11	1	1	0	0	3	0	73	73	50	6	2	2	0	0	1	0	61	64
H/Total	202	40	21	8	1	3	5	1	281	302.1	186	33	8	7	0	1	2	0	237	249.9
15:00	59	11	5	2	0	0	1	0	78	82.5	54	12	1	1	0	0	0	0	68	69.8
15:15	43	11	1	0	0	1	1	0	57	57.9	51	13	4	0	0	0	0	0	68	70
15:30	74	12	5	1	3	0	0	0	95	101.8	57	7	3	1	2	1	1	0	72	77.2
15:45	59	13	1	1	0	0	0	0	74	75.8	49	16	2	2	0	2	0	0	71	76.6
H/Total	235	47	12	4	3	1	2	0	304	318	211	48	10	4	2	3	1	0	279	293.6
16:00	82	18	3	4	0	1	1	0	109	116.1	55	14	2	2	0	1	0	0	74	78.6
16:15	62	13	5	0	1	0	0	0	81	84.5	49	9	1	2	1	0	1	0	63	66.5
16:30	98	20	6	0	0	2	3	0	129	132.2	72	11	1	0	0	1	0	1	86	86.7
16:45	84	18	2	1	0	1	1	1	108	109.9	89	11	1	2	0	2	1	1	107	110.7
H/Total	326	69	16	5	1	4	5	1	427	442.7	265	45	5	6	1	4	2	2	330	342.5
17:00	86	9	1	2	1	0	1	1	101	103.7	80	17	3	3	0	0	0	0	103	108.4
17:15	86	13	6	0	0	1	3	2	111	111.6	70	7	1	1	0	0	3	1	83	82.2
17:30	100	11	3	3	0	1	1	0	119	124.8	64	7	0	1	0	0	0	3	75	73.9
17:45	111	6	4	0	0	0	2	0	123	123.8	78	8	1	0	0	0	1	0	88	87.9
H/Total	383	39	14	5	1	2	7	3	454	463.9	292	39	5	5	0	0	4	4	349	352.4
18:00	99	19	3	1	0	0	2	1	125	125.8	56	6	0	3	0	1	0	3	69	71.5
18:15	85	7	1	0	0	1	1	1	96	96.1	65	3	1	1	0	0	1	2	73	72.6
18:30	74	9	0	0	0	0	1	0	84	83.4	57	7	1	1	0	1	0	1	68	70
18:45	75	8	1	1	0	0	0	0	85	86.8	46	3	0	1	0	0	0	0	50	51.3
H/Total	333	43	5	2	0	1	4	2	390	392.1	224	19	2	6	0	2	1	6	260	265.4
Total	2775	513	146	74	9	21	37	11	3586	3754.2	2648	462	120	75	9	23	27	26	3390	3542.5

Project Number: TSP13881
Project Name: 07700 Hinckley NRFI
Survey Type: Manual Classified Turning Count
Site No: 18
Location: New Road / Long Street / Broughton Road
Date: 26 June 2018, Tuesday

traffic survey partners

Time	From C										To C									
	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)
07:00	9	1	0	0	1	0	0	0	11	12	30	6	0	0	0	0	0	0	36	36
07:15	11	5	0	1	0	1	0	1	19	20.5	38	7	2	1	0	0	0	0	48	50.3
07:30	33	4	0	0	0	0	0	1	38	37.2	41	7	0	2	0	1	0	0	51	54.6
07:45	26	5	0	1	1	2	0	1	36	39.5	47	11	0	0	1	1	0	1	61	62.2
H/Total	79	15	0	2	2	3	0	3	104	109.2	156	31	2	3	1	2	0	1	196	203.1
08:00	26	4	1	0	0	1	0	0	32	33.5	53	3	0	0	0	0	0	0	56	56
08:15	36	6	2	0	0	0	0	0	44	45	36	7	0	0	0	1	0	0	44	45
08:30	16	0	0	0	0	0	0	0	16	16	55	5	0	0	0	0	0	0	60	60
08:45	22	3	4	0	0	0	0	0	29	31	42	6	0	1	1	0	0	0	50	52.3
H/Total	100	13	7	0	0	1	0	0	121	125.5	186	21	0	1	1	1	0	0	210	213.3
09:00	25	2	1	0	0	0	0	0	28	28.5	38	7	1	1	0	0	0	0	47	48.8
09:15	19	3	0	0	0	0	1	0	23	22.4	25	6	1	1	0	1	1	0	35	37.2
09:30	14	3	2	0	0	1	0	0	20	22	20	7	1	1	0	0	0	0	29	30.8
09:45	25	3	0	0	1	0	0	2	31	30.4	27	2	2	0	0	1	0	0	32	34
H/Total	83	11	3	0	1	1	1	2	102	103.3	110	22	5	3	0	2	1	0	143	150.8
10:00	24	0	0	0	0	0	0	0	24	24	18	6	1	1	0	1	1	0	28	30.2
10:15	12	3	0	2	0	0	0	0	17	19.6	18	5	0	2	0	0	0	2	27	28
10:30	10	2	1	0	0	0	0	0	13	13.5	17	3	2	1	0	0	0	0	23	25.3
10:45	14	4	2	1	0	0	0	0	21	23.3	17	6	0	0	0	0	0	1	24	23.2
H/Total	60	9	3	3	0	0	0	0	75	80.4	70	20	3	4	0	1	1	3	102	106.7
11:00	19	3	3	0	0	0	0	0	25	26.5	27	1	0	0	0	0	0	0	28	28
11:15	10	2	1	0	0	0	0	0	13	13.5	24	3	0	0	0	0	0	0	27	27
11:30	18	7	0	0	0	0	0	0	25	25	25	2	0	0	1	0	0	0	28	29
11:45	16	6	0	0	0	0	0	0	22	22	22	3	1	0	0	0	0	1	27	26.7
H/Total	63	18	4	0	0	0	0	0	85	87	98	9	1	0	1	0	0	1	110	110.7
12:00	22	1	0	0	0	0	0	1	24	23.2	26	0	1	0	0	0	0	0	27	27.5
12:15	18	1	0	1	0	0	0	0	20	21.3	15	2	0	0	0	0	1	1	19	17.6
12:30	15	1	0	0	1	0	0	1	18	18.2	33	6	0	0	0	0	0	1	40	39.2
12:45	17	2	0	0	0	1	0	0	20	21	42	7	0	0	0	0	0	1	50	49.2
H/Total	72	5	0	1	1	1	0	2	82	83.7	116	15	1	0	0	0	1	3	136	133.5
13:00	17	4	1	0	0	0	0	0	22	22.5	25	3	0	0	0	0	0	0	28	28
13:15	17	3	0	0	0	0	0	0	20	20	22	3	1	1	0	0	1	0	28	29.2
13:30	15	4	0	0	0	0	0	0	19	19	26	5	2	0	0	0	2	0	35	34.8
13:45	20	2	0	0	0	1	0	0	23	24	21	2	1	0	0	0	0	1	25	24.7
H/Total	69	13	1	0	0	1	0	0	84	85.5	94	13	4	1	0	0	3	1	116	116.7
14:00	24	3	0	0	0	0	0	1	28	27.2	16	5	0	1	0	0	0	0	22	23.3
14:15	26	2	0	0	0	0	1	0	29	28.4	25	5	1	0	1	0	0	0	32	33.5
14:30	31	4	0	0	0	0	0	0	35	35	32	6	2	0	0	0	0	1	41	41.2
14:45	20	6	3	0	0	0	0	0	29	30.5	34	3	0	0	0	0	0	0	37	37
H/Total	101	15	3	0	0	0	1	1	121	121.1	107	19	3	1	1	0	0	1	132	135
15:00	19	2	2	0	0	0	0	1	24	24.2	30	4	0	0	0	0	0	0	34	34
15:15	26	7	0	0	0	0	0	0	33	33	29	11	0	0	0	1	0	0	41	42
15:30	36	4	2	0	1	0	0	0	43	45	23	5	0	0	0	0	0	0	28	28
15:45	25	3	1	1	0	0	0	0	30	31.8	29	4	0	0	1	1	0	0	35	37
H/Total	106	16	5	1	1	0	0	1	130	134	111	24	0	0	1	2	0	0	138	141
16:00	25	6	1	0	0	0	0	1	33	32.7	26	4	0	0	0	0	0	0	30	30
16:15	29	4	0	0	0	0	1	0	34	33.4	27	2	0	0	0	2	0	0	31	33
16:30	42	6	1	0	0	0	0	0	49	49.5	34	4	0	0	1	0	3	1	43	41.4
16:45	44	8	0	0	0	0	0	0	52	52	30	5	0	0	0	1	0	1	37	37.2
H/Total	140	24	2	0	0	0	1	1	168	167.6	117	15	0	0	1	3	3	2	141	141.6
17:00	51	8	1	0	0	0	1	0	61	60.9	49	6	0	1	0	1	0	1	58	59.5
17:15	39	8	1	0	0	0	0	0	48	48.5	41	4	0	0	1	1	0	1	48	49.2
17:30	53	5	0	0	0	0	0	0	58	58	38	8	0	0	0	0	0	3	49	46.6
17:45	55	5	0	2	0	0	0	0	62	64.6	35	3	2	0	0	0	0	0	40	41
H/Total	198	26	2	2	0	0	1	0	229	232	163	21	2	1	1	2	0	5	195	196.3
18:00	50	2	0	0	0	0	0	0	52	52	39	3	0	0	0	0	2	0	44	42.8
18:15	40	2	0	0	1	1	0	4	48	46.8	31	3	0	0	0	0	0	0	34	34
18:30	21	1	0	0	0	0	0	0	22	22	35	6	1	0	0	0	0	6	48	43.7
18:45	25	2	0	0	0	0	0	2	29	27.4	32	1	0	0	0	0	0	1	34	33.2
H/Total	136	7	0	0	1	1	0	6	151	148.2	137	13	1	0	0	0	2	7	160	153.7
Total	1207	172	30	9	6	8	4	16	1452	1477.5	1465	223	22	14	7	13	11	24	1779	1802.4

Project Number: TSP13881
Project Name: 07700 Hinckley NRFI
Survey Type: Manual Classified Turning Count
Site No: 18
Location: New Road / Long Street / Broughton Road
Date: 26 June 2018, Tuesday

Time	From D										To D									
	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)
07:00	73	10	5	2	1	2	1	1	95	101.7	62	17	1	1	1	5	0	1	88	95
07:15	104	28	7	2	1	1	1	0	144	151.5	94	14	3	3	1	1	2	0	118	124.2
07:30	114	20	4	2	1	1	2	4	148	150.2	117	22	4	0	0	0	0	1	144	145.2
07:45	120	28	4	3	0	1	0	1	157	163.1	121	21	3	2	0	4	0	0	151	159.1
H/Total	411	86	20	9	3	5	4	6	544	566.5	394	74	11	6	2	10	2	2	501	523.5
08:00	149	19	0	1	0	0	2	1	172	171.3	113	17	3	0	1	2	1	0	137	140.9
08:15	110	13	6	0	0	0	2	2	133	133.2	128	19	3	2	0	0	0	0	152	156.1
08:30	113	12	4	1	0	0	0	0	130	133.3	115	12	7	1	0	0	0	0	135	139.8
08:45	143	21	4	3	1	2	1	0	175	183.3	84	8	4	4	0	2	0	0	102	111.2
H/Total	515	65	14	5	1	2	5	3	610	621.1	440	56	17	7	1	4	1	0	526	548
09:00	95	14	6	3	3	1	3	0	125	134.1	91	14	4	0	0	0	0	0	109	111
09:15	68	16	2	3	0	1	2	2	94	97.1	61	15	6	1	0	0	1	1	85	87.9
09:30	67	12	8	7	0	0	0	0	94	107.1	56	9	5	2	0	1	0	0	73	79.1
09:45	64	14	3	6	0	2	0	1	90	100.5	67	11	2	3	0	0	0	1	84	88.1
H/Total	294	56	19	19	3	4	5	3	403	438.8	275	49	17	6	0	1	1	2	351	366.1
10:00	59	15	3	3	0	2	2	0	84	90.2	63	10	3	1	0	1	0	0	78	81.8
10:15	60	9	4	2	0	0	1	1	77	80.2	71	11	2	6	0	1	0	0	91	100.8
10:30	56	13	6	2	0	0	0	0	77	82.6	73	12	2	1	0	0	1	0	89	90.7
10:45	66	17	2	2	1	0	0	3	91	93.2	50	9	2	3	0	0	1	0	65	69.3
H/Total	241	54	15	9	1	2	3	4	329	346.2	257	42	9	11	0	2	2	0	323	342.6
11:00	66	12	1	2	0	1	1	1	84	86.7	60	12	3	1	0	1	0	0	77	80.8
11:15	71	9	7	2	0	0	0	0	89	95.1	50	9	3	3	0	1	2	0	68	73.2
11:30	68	17	3	0	0	0	0	1	89	89.7	65	12	3	2	0	0	1	2	85	86.9
11:45	72	6	2	1	0	1	0	1	83	85.5	56	9	3	2	0	0	1	0	71	74.5
H/Total	277	44	13	5	0	2	1	3	345	357	231	42	12	8	0	2	4	2	301	315.4
12:00	83	9	1	1	0	1	3	1	99	99.2	58	17	2	1	0	0	0	1	79	80.5
12:15	55	8	2	3	0	0	2	1	71	73.9	65	7	4	6	0	1	0	0	83	93.8
12:30	55	9	4	3	0	0	0	1	72	77.1	65	8	6	0	0	1	0	0	80	84
12:45	59	10	6	1	0	0	0	0	76	80.3	63	9	3	3	0	1	0	0	79	85.4
H/Total	252	36	13	8	0	1	5	3	318	330.5	251	41	15	10	0	3	0	1	321	343.7
13:00	68	6	0	1	0	0	0	0	75	76.3	58	12	4	0	0	0	0	1	75	76.2
13:15	65	13	2	4	0	0	0	0	84	90.2	67	11	2	3	0	0	2	0	85	88.7
13:30	64	21	3	0	0	0	0	0	88	89.5	60	12	3	2	0	0	1	0	78	81.5
13:45	55	8	5	0	0	2	0	0	70	74.5	61	10	2	3	0	1	0	0	77	82.9
H/Total	252	48	10	5	0	2	0	0	317	330.5	246	45	11	8	0	1	3	1	315	329.3
14:00	55	9	3	2	0	2	1	0	72	77.5	56	13	6	3	0	0	0	0	78	84.9
14:15	63	10	3	2	0	0	0	0	78	82.1	59	10	5	2	0	1	2	0	79	83.9
14:30	73	20	3	2	0	0	0	0	98	102.1	110	12	4	2	1	2	0	0	131	138.6
14:45	81	8	4	2	0	0	0	1	96	99.8	102	18	4	1	0	1	2	0	128	131.1
H/Total	272	47	13	8	0	2	1	1	344	361.5	327	53	19	8	1	4	4	0	416	438.5
15:00	107	19	3	1	0	0	0	0	130	132.8	87	16	3	2	0	0	1	1	110	112.7
15:15	92	23	3	0	0	3	1	0	122	125.9	63	20	2	0	0	1	1	1	88	88.6
15:30	100	14	4	2	2	1	1	0	124	131	97	16	4	1	3	0	0	0	121	127.3
15:45	94	26	2	1	0	4	0	0	127	133.3	83	18	5	2	0	1	0	0	109	115.1
H/Total	393	82	12	4	2	8	2	0	503	523	330	70	14	5	3	2	2	2	428	443.7
16:00	99	18	2	2	0	1	0	0	122	126.6	125	31	4	4	1	1	3	1	170	176.6
16:15	103	15	3	2	1	1	1	0	126	131.5	93	18	5	1	1	0	0	1	119	123
16:30	112	13	1	0	1	1	1	0	129	130.9	148	23	6	1	0	2	3	1	184	187.7
16:45	137	19	2	2	0	3	1	1	165	170.2	127	21	2	1	0	1	1	3	156	156.3
H/Total	451	65	8	6	2	6	3	1	542	559.2	493	93	17	7	2	4	7	6	629	643.6
17:00	148	25	4	4	0	2	0	0	183	192.2	145	21	1	2	1	0	3	1	174	175.5
17:15	142	13	1	1	0	2	3	1	163	164.2	129	20	8	0	0	1	2	3	163	164.4
17:30	130	11	1	2	0	1	0	3	148	149.7	140	14	2	3	0	2	2	3	166	169.3
17:45	114	14	1	0	0	0	2	2	133	130.7	152	7	5	2	0	0	2	1	169	172.1
H/Total	534	63	7	7	0	5	5	6	627	636.8	566	62	16	7	1	3	9	8	672	681.3
18:00	102	16	0	2	0	2	2	2	126	127.8	153	17	3	1	0	0	2	1	177	177.8
18:15	112	8	0	1	0	0	1	3	125	123.3	114	10	1	0	1	2	1	3	132	132.5
18:30	99	9	2	2	0	1	0	7	120	119	101	8	0	0	0	0	1	0	110	109.4
18:45	80	3	0	1	0	0	0	1	85	85.5	91	9	1	1	0	0	1	3	106	104.8
H/Total	393	36	2	6	0	3	3	13	456	455.6	459	44	5	2	1	2	5	7	525	524.5
Total	4285	682	146	91	12	42	37	43	5338	5526.7	4269	671	163	85	11	38	40	31	5308	5500.2

Project Number: TSP13881
Project Name: 07700 Hinckley NRFI
Survey Type: Manual Classified Turning Count
Site No: 18
Location: New Road / Long Street / Broughton Road
Date: 26 June 2018, Tuesday

Time	Whole Junction									
	CAR	LGV	OGV 1	OGV 2	BUS	COACH	MCY	PCY	TOTAL	TOTAL (PCU)
07:00	166	34	6	5	3	7	1	3	225	241.5
07:15	231	47	12	6	2	2	3	1	304	319.2
07:30	283	50	8	2	1	2	2	5	353	357.4
07:45	295	62	7	5	2	5	0	3	379	393.6
H/Total	975	193	33	18	8	16	6	12	1261	1311.7
08:00	315	42	3	1	1	2	3	1	368	371.2
08:15	292	45	10	2	0	1	2	2	354	359.8
08:30	276	29	12	3	0	0	0	0	320	329.9
08:45	266	36	11	7	1	4	1	0	326	345
H/Total	1149	152	36	13	2	7	6	3	1368	1405.9
09:00	223	42	14	4	3	1	3	0	290	304.4
09:15	170	37	9	6	0	1	3	3	229	238.1
09:30	147	30	14	11	0	1	0	0	203	225.3
09:45	163	31	6	11	1	3	0	8	223	237.9
H/Total	703	140	43	32	4	6	6	11	945	1005.7
10:00	143	30	7	8	0	3	2	0	193	208.7
10:15	154	28	6	9	0	1	2	2	202	214.9
10:30	149	33	8	4	0	0	1	0	195	203.6
10:45	140	33	5	6	1	0	2	4	191	197.9
H/Total	586	124	26	27	1	4	7	6	781	825.1
11:00	163	29	8	3	0	2	1	1	207	215.5
11:15	146	26	11	5	0	1	2	0	191	202.8
11:30	169	33	6	2	1	0	1	3	215	218.6
11:45	160	29	10	4	0	1	1	1	206	215.8
H/Total	638	117	35	14	1	4	5	5	819	852.7
12:00	185	32	5	2	0	1	4	3	232	233.3
12:15	144	19	6	9	0	1	3	1	183	196.1
12:30	163	25	11	5	1	1	0	2	208	220.4
12:45	189	27	10	4	0	2	0	1	233	244.4
H/Total	681	103	32	20	1	5	7	7	856	894.2
13:00	164	32	5	1	0	0	0	1	203	206
13:15	168	33	6	7	0	0	3	0	217	227.3
13:30	165	41	7	3	0	0	3	0	219	224.6
13:45	145	22	8	4	0	3	0	1	183	194.4
H/Total	642	128	26	15	0	3	6	2	822	852.3
14:00	151	29	13	7	0	2	1	1	204	220.2
14:15	161	27	11	4	1	1	3	1	209	219.1
14:30	220	40	9	4	1	3	0	1	278	290.9
14:45	216	33	9	3	0	1	4	1	267	273.2
H/Total	748	129	42	18	2	7	8	4	958	1003.4
15:00	231	38	10	3	0	0	1	1	284	291.5
15:15	196	51	7	0	0	4	2	1	261	266.5
15:30	254	34	12	3	6	1	1	0	311	327.3
15:45	211	48	8	4	1	6	0	0	278	294.2
H/Total	892	171	37	10	7	11	4	2	1134	1179.5
16:00	265	54	7	7	1	2	3	1	340	353
16:15	226	40	8	3	2	2	2	1	284	293.9
16:30	306	46	8	1	1	3	6	3	374	377.3
16:45	316	48	4	3	0	4	2	5	382	386.7
H/Total	1113	188	27	14	4	11	13	10	1380	1410.9
17:00	350	51	6	6	1	2	3	2	421	431.4
17:15	318	42	9	1	1	4	6	6	387	389.4
17:30	343	35	4	5	0	3	2	10	402	404.3
17:45	336	25	8	2	0	0	4	3	378	379.8
H/Total	1347	153	27	14	2	9	15	21	1588	1604.9
18:00	326	40	3	4	0	2	4	4	383	386.1
18:15	278	21	2	1	1	2	2	8	315	312.7
18:30	248	25	3	2	0	1	1	7	287	285.9
18:45	221	15	1	2	0	0	1	5	245	243.5
H/Total	1073	101	9	9	1	5	8	24	1230	1228.2
Total	10547	1699	373	204	33	88	91	107	13142	13575

Peak Hours		Totals
07:00	08:00	1261
07:15	08:15	1404
07:30	08:30	1454
07:45	08:45	1421
08:00	09:00	1368
08:15	09:15	1290
08:30	09:30	1165
08:45	09:45	1048
09:00	10:00	945
09:15	10:15	848
09:30	10:30	821
09:45	10:45	813
10:00	11:00	781
10:15	11:15	795
10:30	11:30	784
10:45	11:45	804
11:00	12:00	819
11:15	12:15	844
11:30	12:30	836
11:45	12:45	829
12:00	13:00	856
12:15	13:15	827
12:30	13:30	861
12:45	13:45	872
13:00	14:00	822
13:15	14:15	823
13:30	14:30	815
13:45	14:45	874
14:00	15:00	958
14:15	15:15	1038
14:30	15:30	1090
14:45	15:45	1123
15:00	16:00	1134
15:15	16:15	1190
15:30	16:30	1213
15:45	16:45	1276
16:00	17:00	1380
16:15	17:15	1461
16:30	17:30	1564
16:45	17:45	1592
17:00	18:00	1588
17:15	18:15	1550
17:30	18:30	1478
17:45	18:45	1363
18:00	19:00	1230

APPENDIX B

Malcolm Ash

From: Rebecca Henson [redacted]
Sent: 11 November 2019 15:21
To: Luke Hutcheson
Cc: Jonathan Dawes; Harry Sadleir; Anthea Anderson; Alex J Gray; Harry Horsley; Patrick Brooks; Sonny Tolofari; Gogna, Sunil; Lepidi, Sara; [redacted]; Rory McHugh; Vassil Pavlov
Subject: RE: C-07700 Hinckley NRFI Furness Modelling Methodology
Attachments: 07700-HYD-XX-XX-RP-TP-1021-P02 Furness Methodology.pdf

Luke

Thank you for the attached revised Furness Methodology Technical Note. Apologies for the delay in response. Following review, I can confirm that Option 3 in the attached (Hydrock's preferred approach) is acceptable to Leicestershire County Council.

Kind regards
Rebecca

Rebecca Henson
Team Manager
Highway Development Management
Environment and Transport
Leicestershire County Council
Tel: [redacted]
Mob: [redacted]
Email: [redacted]

From: Luke Hutcheson [redacted]
Sent: 29 October 2019 18:45
To: [redacted]; Lepidi, Sara [redacted]; Gogna, Sunil [redacted] Rebecca Henson [redacted]; Harry Horsley [redacted]; Alex J Gray [redacted]; Anthea Anderson [redacted]
Cc: Jonathan Dawes [redacted]; Harry Sadleir [redacted]; Rory McHugh [redacted]; Vassil Pavlov [redacted]
Subject: RE: C-07700 Hinckley NRFI Furness Modelling Methodology

Dear all

Please find attached an updated Furness Methodology Technical Note, updated to offer a third option, and also our recommendations.

As before, this is also saved in the dataroom.

I would be grateful for any comments by the end of the week so that we can close out this item.

Kind regards

Luke

Luke Hutcheson BSc (Hons) MSc MCIHT
Senior Consultant | Transportation

Hydrock
Merchants' House North, Wapping Road, Bristol BS1 4RW
Tel: [redacted] | Internal Ext: [redacted] | Mob: [redacted]

From: Luke Hutcheson
Sent: 09 August 2019 18:10
To: Lepidi, Sara [redacted]; Sonny Tolofari [redacted]; [redacted] Rebecca Henson [redacted]; Harry Horsley [redacted]
Cc: Jonathan Dawes [redacted]; Harry Sadleir [redacted] Gogna, Sunil [redacted]; [redacted] Laura P Shepherd [redacted]; Rory McHugh [redacted] Mark Pearce [redacted] HE instructions [redacted]; Vassil Pavlov [redacted]
Subject: RE: C-07700 Hinckley NRFI Furness Modelling Methodology

Hi all

Please find attached the Furness Methodology Note, also saved into the Dataroom.

The note remains in draft, awaiting the resolution of the discussion below, as the conclusions drawn from this discussion will provide confirmation of the methodology and approach.

The note should therefore aid the discussion of below, and should not detract from the importance of discussing and resolving the discrepancies.

Monday 12th will be three weeks since the discrepancies from the spot checks were presented, and so I hope this can be treated with some urgency.

Many thanks

Luke

Luke Hutcheson BSc (Hons) MSc MCIHT
Senior Consultant | Transportation

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From: Lepidi, Sara [redacted]
Sent: 08 August 2019 11:47
To: Vassil Pavlov [redacted]; Sonny Tolofari [redacted] Rebecca Henson [redacted]; Harry Horsley [redacted]
Cc: Jonathan Dawes [redacted]; Harry Sadleir [redacted] Gogna, Sunil [redacted]; [redacted]; Laura P Shepherd [redacted]; Rory McHugh [redacted] Luke Hutcheson [redacted]; Mark Pearce [redacted]; HE instructions [redacted]
Subject: RE: C-07700 Hinckley NRFI Furness Modelling Methodology

Hi Vassil,

Thank you for providing the information regarding the comparison exercise that you have undertaken between PRTM and traffic survey flows and regarding the Furness methodology to match the two datasets.

Having reviewed your email below and the attached spreadsheet titled "07700-HYD-XX-XX-CA-TP-0022-P01.04 Furness Analysis", we consider some of the discrepancies between the 2036 WoDWoS PRTM flows and the interpolated and factored 2018 base flows to be significant. We recommend this is further investigated to exclude the possibility of this being related to PRTM validation issues in the study area.

Notwithstanding the above, based on our previous experience with similar techniques, we would consider the first methodology presented (derive target trip ends directly from the PRTM without interpolation) to be a more suitable approach as this would reduce the amount of assumptions applied to derive the target flows. Also, the flow assignment in these forecasts would fully take into account the available capacity within the network, ensuring that no unrealistic volume are being assigned.

However, as it is our understanding that a Furness Methodology Technical Note (TN) is currently being prepared and will be shortly issued for review, we will only be in a position to confirm our preferred approach following the review of this document. In order to help us to take an inform decision, please ensure that the forthcoming TN clearly sets out the two different methodologies and pros / cons for each of them.

Please also note that for Highways England the 2036 scenario is for information only. Therefore, we would request the TN to also consider opening year (2026) flow forecasts.

We look forward receiving the additional information and the meantime we hope you find this advice useful.

Kind regards,
Sara

Sara Lepidi
Senior Consultant, Transportation & Traffic
[redacted]

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[redacted]

From: Vassil Pavlov [redacted]
Sent: 29 July 2019 11:52
To: Sonny Tolofari [redacted] Rebecca Henson [redacted]; Harry Horsley
Cc: Jonathan Dawes [redacted]; Harry Sadleir [redacted] Gogna, Sunil [redacted]; Lepidi, Sara [redacted]; [redacted]; Laura P Shepherd [redacted]; Rory McHugh [redacted]; Luke Hutcheson [redacted]; Mark Pearce [redacted]
Subject: FW: C-07700 Hinckley NRFI Furness Modelling Methodology

Good morning all,

Further to my last email, I was wondering if you have had a chance to review the attached and offer your views. As discussed before, we are keen to agree on a final methodology as soon as possible in order to proceed with the subsequent stages of the wider modelling exercise.

We would therefore appreciate any comments/input you are able to provide.

I look forward to hearing from you.

Many thanks

Kind regards

Vassil Pavlov BEng (Hons) GradCIHT MTPS
Graduate Consultant | Transportation

Hydrock
Northern Assurance Buildings, 9-21 Princess St, Albert Square, Manchester M2 4DN

Tel: [redacted]
Email: [redacted]

From: Vassil Pavlov [redacted]
Sent: 22 July 2019 17:19
To: Sonny Tolofari [redacted]; [redacted]; Rebecca Henson [redacted]; Harry Horsley [redacted]
Cc: Jonathan Dawes [redacted]; Harry Sadleir [redacted]; Gogna, Sunil [redacted]; Lepidi, Sara [redacted]; [redacted]; Laura P Shepherd [redacted]; Rory McHugh [redacted]; Luke Hutcheson [redacted]
Subject: C-07700 Hinckley NRFI Furness Modelling Methodology

Dear all

As discussed at the latest highways workshop, please see below and attached our comparison of the PRTM/traffic survey flows, with Furness applied. This technique has been discussed/agreed with the modelling team and is consistent with the advice given to date.

As you may recall, we discovered potential discrepancies between the 2036 WoDWoS PRTM flows and the interpolated and factored 2018 base flows during the Furness procedure at Site 18 - New Rd / Long St / Broughton Road roundabout junction, the survey for which was undertaken on 26/06/2018.

To ascertain the extent of these discrepancies across the rest of the network, we have undertaken spot checks at further four junctions, namely:

- Site 21 - Coventry Road / B581 Broughton Road (Survey undertaken on 26/06/2018)
- Site 22 - M69 J1 / A5 (Survey undertaken on 10/04/2019)
- Site 28 - B4669 Leicester Road Sapcote / B4114 Coventry Road (Survey undertaken on 26/06/2018)
- Site 29 - The Common Barwell / A47 / B4668 Leicester Road (Survey undertaken on 26/06/2018)

This provides a mixture of junction types and locations. The location of all five junctions is illustrated below.

The spot checks involved comparing the observed base flows with those predicted by the model for the same year (derived through linear interpolation). The GEH statistic was then calculated to provide an indication of the statistical significance of the differences. The results of this is summarised in the table below, with the full calculations attached. Negative flows mean that the observed (surveyed) flows are lower than the PRTM forecast.

Arm	Site 18 - New Rd / Long St / Broughton Road		Site 21 - Coventry Road / B581 Broughton		Site 22 - M69 J1 / A5		Site 28 - B4669 Leicester Road Sapcote / B4114 Coventry Road		Site 29 - The Common Barwell / A47 / B4668 Leicester Road	
AM	Difference	GEH Statistic	Difference	GEH Statistic	Difference	GEH Statistic	Difference	GEH Statistic	Difference	GEH Statistic
From A	+256	17	-349	13	+70	2	-49	2	-72	4
From B	-125	7	+380	16	+90	4	-135	7	-166	4
From C	-44	4	-93	4	+33	1	+19	1	+46	2
From D	-66	3	-4	0	-285	13			0	0
From E					-96	4				
From F					+40	1				
PM										
From A	+34	2	+192	7	-114	5	+5	0	-95	6
From B	+157	8	+116	5	-6	0	+313	16	+134	4
From C	-187	10	+421	18	+80	3	+132	9	-18	1
From D	+3	0	+110	7	-237	11			-97	3
From E					-222	6				
From F					+251	8				
AM										
From A	+106	8	+15	1	-134	6	-137	6	-20	1
From B	+34	2	+58	2	-271	10	-100	5	-31	1
From C	-18	1	+31	1	+69	3	+73	6	-117	4
From D	-101	4	-170	9	+161	7			-25	1
From E					-232	7				
From F					+261	8				
PM										
From A	-46	2	+271	11	+64	2	+395	17	+64	3
From B	+57	3	+189	7	-142	6	+19	1	-229	6
From C	+30	2	+76	4	+273	9	+36	3	-64	3
From D	-34	1	+269	14	-113	5			+154	6

From E					-124	5				
From F					-205	6				

The difference was also gauged for forecast trip ends for 2036 for the two variations of the Furness procedure. This is contained within the comparison tab of the attached spreadsheet for each junction.

Taking the above into consideration, we have the following questions.

- Do you consider the methodology shown to be acceptable/ in accordance with the advice you have given us to date?
- Do you consider the differences in flows to be significant/acceptable?
- Can the dates of the surveys be reviewed by LCC to check against road space bookings/diversions at that time, that might be skewing the results?

We welcome any further thoughts/opinions.

Many thanks

Kind regards

Vassil Pavlov BEng (Hons) GradCIHT MTPS
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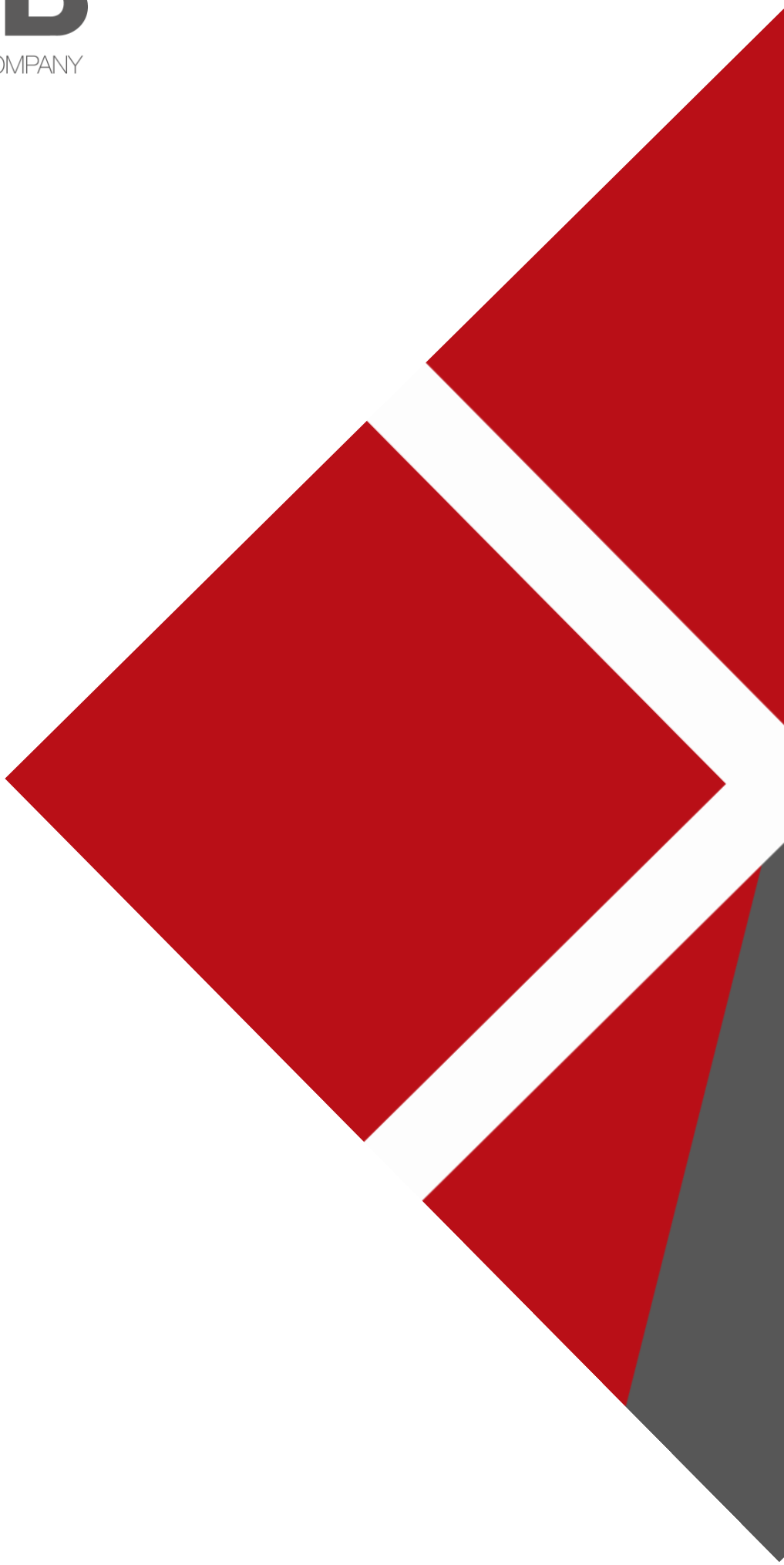

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