

Project: **Land at Harthill Road, Liverpool**

Title: **Highways Technical Note 1: Calculation of AADT Traffic Estimates**

Date: **December 2016**

1.0 INTRODUCTION

1.1 This Highways Technical Note has been prepared by Axis on behalf of Redrow Homes Ltd to present existing and future year estimated Annual Average Daily Traffic (AADT) traffic levels on immediate sections of Harthill Road, Liverpool. This exercise has been carried out in response to a request from Liverpool City Council (LCC) to understand changes in AADT levels on this route as consequence of the proposed residential development of land associated with Beechley House and Harthill Depot off Calderstones Park, Harthill Road, Liverpool. The current proposals (LCC Planning Ref: 16F/2049) envisage the development of up to 51 new residential dwellings (a mixture of large private houses, mews units and apartments). It is anticipated that this information will assist LCC officers in determining whether there is any potential for material traffic related air quality and other related traffic related effects associated with the proposed development.

1.2 The remainder of this report therefore sets out the following:

- The calculation methodology utilised to generate background AADT estimates for the study section of Harthill Road.
- The calculation methodology utilised to generate predicted development traffic AADT flows.
- A review of the anticipated 'net change' in daily traffic levels on Harthill Road as a consequence of the proposed re-development.

2.0 CALCULATION OF 'DO-NOTHING' BACKGROUND AADT ESTIMATES

2.1 The calculation of 'Do-Nothing' Background (i.e. continuation of existing uses of the proposed residential development parcels) AADT estimates for the study section of Harthill Road has been carried out based on:

- Observed peak hour traffic flow information collected in early 2016 in order to inform the Transport Statement (TS) prepared to support the planning application for the Harthill Road re-development scheme; and,
- Suitable survey hour to AADT conversion factors taken from DfT reference document 'Road Traffic Estimates in Great Britain 2015'.

2.2 Peak hour background traffic surveys for the study section of Harthill Road were undertaken on Tuesday 2 February 2016 by CTS Traffic Surveys Ltd using CCTV camera methodology. No extraordinary traffic conditions were recorded as taking place during the surveys, which were undertaken during school term time and included for the recording of critical school pick up / drop off periods. Full detail of these traffic surveys is set out in section 3.2 to the formal TS and Appendix TS3 to that document.

2.3 The TS surveys covered the time periods 07:30 – 09:30 and 14:30 – 18:00. For the purposes of calculation of AADT estimates, the residual half hour survey periods

were not utilised in this exercise and therefore a 2016 four hour combined (08:00-09:00 & 15:00-18:00) traffic flow value was derived from the survey data. These four hour combined observed turning flows are illustrated in **Figure HTN1** to this note.

2.4 In order to calculate a background 2016 AADT value, the observed four hour traffic volume was growthed via locally adjusted DfT all vehicle factors based on the hourly profile index information set out in DfT document 'Road Traffic Estimates in Great Britain 2015' (see **Appendix HTN1** to this report). This data sets out UK wide trends in traffic flow demand and the application of these factors to observed hourly traffic survey data, allows for the estimation of daily estimates of traffic flow.

2.5 In the case of Harthill Road, which is known to experience a pronounced short term 'peak' in local traffic demand during the AM peak period associated with the effects of the adjacent Calderstones School (see Figure TS6 to the formal TS report), it is prudent to adjust the AM peak related DfT index value and overall 24hr weekday index value in order to avoid under-estimating this AM peak effect and subsequent AADT values. This local adjustment has been carried out via a comparison of the observed relationship between the surveyed AM peak hour and afternoon hours as illustrated below, when compared to the relationship within the DfT weekday index and the pro-rata adjustment of the DfT AM peak hour value, viz:

Observed 2016 Traffic Count:

- AM peak hour 08:00-09:00: 405 vehicles
 - Afternoon period 15:00-18:00: 948 vehicles
- AM peak = 42.72% of afternoon flow

2015 DfT Factors (All vehicles):

- AM peak hour 08:00-09:00: 181 index value
 - Afternoon period 15:00-18:00: 576 index value
- AM peak = 31.36% of afternoon flow

Local Adjustment of Weekday DfT Values (All vehicles):

- Weekday AM peak index value uplift factor: $42.72 / 31.36 = \underline{1.36}$
- Locally adjusted weekday AM pk index value: $181 * 1.36 = \underline{246.17}$
- Locally adjusted DfT weekday index value: $2552 + (246-181) = \underline{2618}$

Conversion of New Average Weekday DfT Index Value to AADT Index Value (All vehicles)

- $2618 * 0.94 = \underline{2461}$ AADT index value

Calculation of Conversion Factor: Observed Four Hour Survey Period to AADT Index Value (All vehicles)

- $(576 + 246) / 2461 = 2.993$ conversion factor.

2.6 Application of this locally adjusted conversion factor (2.993) to the observed combined four hour 2016 traffic flow data, allows for the calculation of 2016 AADT background traffic estimates as set out in **Figure HTN2**.

2.7 Future Year Background 'Do Nothing' AADT estimates for the study section of Harthill Road have been calculated by the application of locally adjusted TEMPRO (v9) National Transport Model average day growth factor estimates for Liverpool Super Output Area 47 (see **Appendix HTN2**). These growth factors are as follows:

- 2016 – 2019: 1.0410
- 2016 – 2023: 1.0885

2.8 The resultant 2019 & 2023 'Do-Nothing' AADT background traffic estimates are illustrated in **Figure HTN3a** & **Figure HTN3b** respectively. Review of this information illustrates that two-way predicted AADT levels on the immediate sections of Harthill Road to the proposed residential development areas are as follows:

Location	2019	2023
North of Depot Access	2956	3091
South of Calderstones School Access	2882	3013
South of Beechley House Access	2882	3013

2.9 Maximum future year 'Do-Nothing' background traffic demand on Harthill Road is therefore predicted to occur on the section of route immediately to the north of the existing Depot Access Road and is of the order of just 3100 vehicles AADT (2023).

3.0 CALCULATION OF PROPOSED HARTHILL RESIDENTIAL DEVELOPMENT TRAFFIC AADT ESTIMATES

3.1 The calculation of development traffic estimates for the proposed Harthill Residential redevelopment land parcels has been carried out via reference to TRICS traffic estimates and the application of relevant DfT factors. TRICS has been utilised to calculate 12 hour weekday residential traffic demand estimates, with relevant DfT factors then applied to convert this 12hr estimate to an appropriate AADT value.

3.2 12hr weekday development traffic estimates have been derived from TRICS using the same sample of sites utilised to support the formal TS report. In line with the TS assessment approach, development estimates have been prepared for both 'average' and worst case '85th percentile' trip rate scenarios (see **Appendix HTN3**).

3.3 These 12 hour development traffic estimates have then been growthed to an AADT value via reference to the DfT 12 hour weekday to AADT factor (1.196) and assigned to the local highway network on the basis of recorded background traffic flow proportions. This is the same assignment methodology as adopted as part of the TS appraisal.

3.4 Development AADT estimates are set out in **Figure HTN4a** & **Figure HTN4b** for average and 85th percentile trip rate scenarios respectively. Review of this information illustrates that two-way predicted development related AADT levels on the immediate sections of Harthill Road are as follows:

Location	Average Trip Rate 'Development' Demand	85 th %tile Trip Rate 'Development' Demand
North of Depot Access	152	200
South of Calderstones School Access	146	193
South of Beechley House Access	147	191

3.5 Maximum proposed residential development traffic demand on Harthill Road is predicted to occur on the section of route immediately to the north of the existing Depot Access Road (85th percentile trip rates) and is of the order of 200 vehicle movements AADT.

4.0 CALCULATION OF 'DO-SOMETHING' BASELINE + RESIDENTIAL DEVELOPMENT AADT ESTIMATES

4.1 Calculation of 'Do-Something' Baseline + Development AADT estimates for the study section of Harthill Road has been carried out on the same basis as for the formal TS, i.e. via the summation of the predicted development traffic to 'baseline' network traffic estimates which include for the removal of those traffic movements associated with existing uses of the proposal site areas. 2016, 2019 & 2023 baseline network traffic estimates including for the removal of such existing traffic movements are included as **Figures HTN5(a-c)** to this note for reference.

4.2 'Do-Something' Baseline + Development (Average trip rates) AADT estimates for 2019 and 2023 future year scenarios are illustrated in **Figure HTN6a** and **Figure HTN6b**.

4.3 'Do-Something' Baseline + Development (85th percentile trip rates) AADT estimates for 2019 and 2023 future year scenarios are illustrated in **Figure HTN7a** and **Figure HTN7b**.

4.4 Review of this information illustrates that two-way predicted Baseline + Development AADT levels on the immediate sections of Harthill Road are as follows:

Baseline + Development Average Trip Rates

Location	2019	2023
North of Depot Access	3024	3155
South of Calderstones School Access	2976	3104
South of Beechley House Access	2974	3103

Baseline + Development 85th Percentile Trip Rates

Location	2019	2023
North of Depot Access	3072	3203
South of Calderstones School Access	3022	3150
South of Beechley House Access	3020	3148

4.5 Maximum future year 'Do-Something' Baseline + Residential Development traffic demand on the immediate study section of Harthill Road is therefore anticipated to be of the order of 3200 vehicles AADT (2023) – assuming for 'worst case' 85th percentile development traffic estimates.

5.0 PREDICTED CHANGES IN ESTIMATED AADT ‘DO-NOTHING’ V ‘DO-SOMETHING’ AND COMPARISON TO GUIDELINE THRESHOLDS

5.1 The anticipated ‘net change’ in traffic demand on immediate sections of Harthill Road to the proposed residential development can be calculated by the comparison of future year ‘Do Nothing’ and ‘Do-Something’ estimates. This exercise is set out in the table below for 2019 future year (Average & 85th percentile development trip rate estimates). 2019 represents the anticipated full opening year of the residential development scheme and therefore represents the date at which the maximum percentage increase in traffic demand (when compared to background traffic levels) could be expected to occur.

2019 ‘Do-Nothing’ v ‘Do-Something’

Location	Average Trip Rates			85 th Percentile Trip Rates		
	‘Do-Noth’	‘Do-Some’	Diff	‘Do-Noth’	‘Do-Some’	Diff
North of Depot Access	2956	3024	68 (2.3%)	2956	3072	116 (3.9%)
Sth of Calderstones School	2882	2976	94 (3.3%)	2882	3022	140 (4.9%)
Sth of Beechley House	2882	2974	92 (3.2%)	2882	3020	138 (4.9%)

5.2 Review of the above exercise demonstrates that the proposed residential development would only give rise to an increase in traffic over the Harthill Road corridor of less than 5% of ‘Do-Nothing’ Background AADT traffic levels - even including for ‘worst case’ 85th percentile development traffic estimates.

5.3 General guidance with respect to environmental impacts associated with additional development related traffic volumes is set out in Institution of Environmental Management & Assessment (IEMA) document “Guidance for the Environmental Assessment of Road Traffic”. The IEMA guidelines suggest the following general thresholds when considering the initial ‘screening’ of traffic related environmental impact and the identification of where more detailed analysis of specific environmental effects might be required:

- *Rule 1:* Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%).
- *Rule 2:* Include any other specifically sensitive areas where traffic flows have increased by 10% or more.

5.4 IEMA guidance notes that traffic forecasting is not an exact science and that it is generally accepted that accuracies greater than 10% are not achievable. Day to day variations in traffic flow on a route corridor are frequently at least some + or – 10% of data recorded on a single survey date. The IEMA guidelines therefore suggest that, at a basic level, projected changes in total traffic of less than 10% would create no discernible environmental impact.

5.5 IEMA guidance further notes that the most discernible environmental impacts of road traffic are considered to be noise & vibration, severance and pedestrian delay & intimidation. Other environmental impacts (e.g. pollution, ecology, etc.) are considered to be less sensitive to general traffic flow changes. IEMA guidelines recommend that as a starting point a 30% change in traffic would represent a reasonable threshold for the need to undertake a more detailed assessment of traffic related environmental conditions. Where there are major changes in the

composition of the traffic flow (such as significant increases in HGV traffic volumes), the IEMA guidance identifies that a lower percentage change threshold might be appropriate and that the assessor should use their professional judgement as to whether additional detailed assessment is required.

- 5.6 Based on the above guidelines, it is clear that the predicted changes in traffic on Harthill Road in the vicinity of the proposed residential development do not come close to thresholds at which a material change in traffic related environmental conditions could be expected. Indeed, as identified above, day to day changes in traffic demand on the study section of route, when compared with current practice, can be expected to be low. Furthermore, it is also worth noting that residential re-development of the Harthill Depot site is likely to give rise to a local reduction in HGV traffic as a consequence of the removal of existing regular recycling / green waste HGV trips to / from the depot site. The removal of such local HGV movements could be expected to give rise to some improvements in those traffic air quality elements associated with HGV operations and help off-set the small overall increases in traffic movements on the route.



FIGURES

Time Period: **Combined Period (08:00-09:00, 15:00-18:00)**
 Assessment Year: **2016**
 Scenario: **Background Traffic**

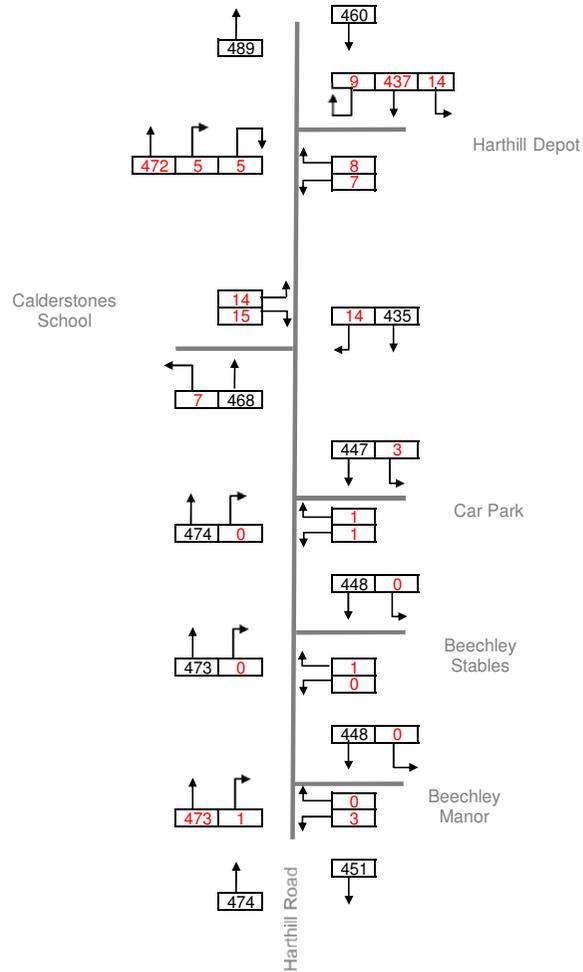


Figure HTN1

Observed Background Traffic: 2016 Combined Surevy Hours (08:00-09:00 & 15:00-18:00)

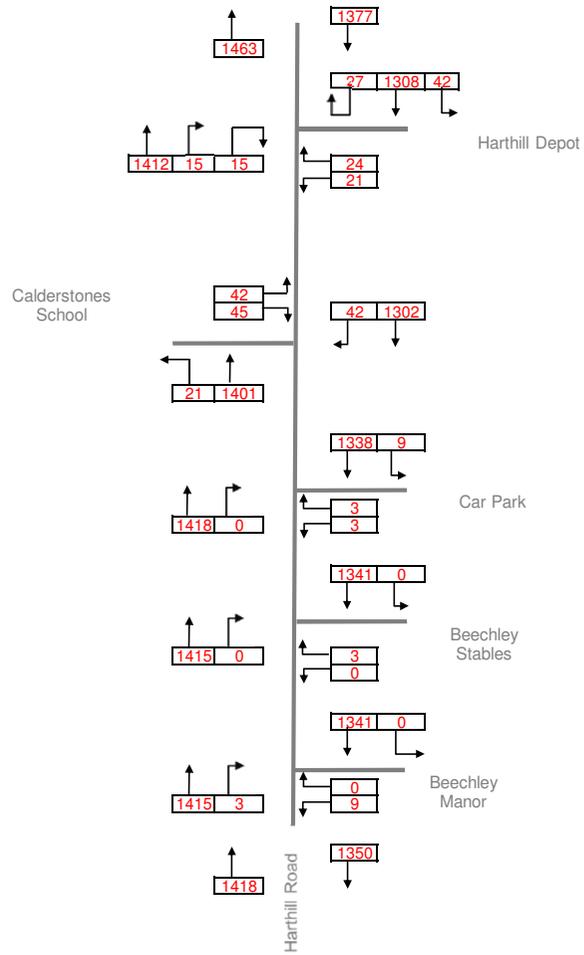
1768-01

Harthill Road, Liverpool

December 2016

axis Camellia House
 76 Water Lane,
 Wilmslow
 Cheshire, SK9 5BB

Time Period: **Estimated AADT**
 Assessment Year: **2016**
 Scenario: **Background Traffic**
 Combined Hour to AADT Factor: 2.9926



Key
 10 Total Vehicles

Figure HTN2

Background Traffic: 2016 Estimated AADT

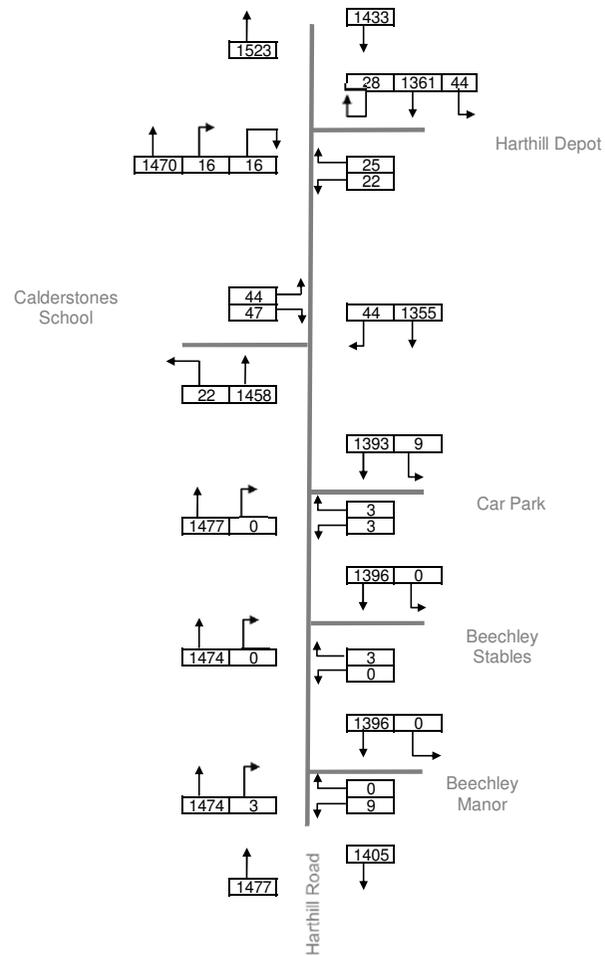
1768-01

Harthill Road, Liverpool

December 2016

axis Camellia House
 76 Water Lane,
 Wilmslow
 Cheshire, SK9 5BB

Time Period: **Estimated AADT**
 Assessment Year: **2019**
 Scenario: **Background Traffic**
 2016 - 2019 Growth Factor 1.0410



Key
 10 Total Vehicles

Figure HTN3a

'Do-Nothing' Traffic: 2019 Estimated AADT

1768-01

Harthill Road, Liverpool

December 2016

axis
 Camellia House
 76 Water Lane,
 Wilmslow
 Cheshire, SK9 5BB

Time Period: **Estimated AADT**
 Assessment Year: **2023**
 Scenario: **Background Traffic**
 2016 - 2023 Growth Factor 1.0885

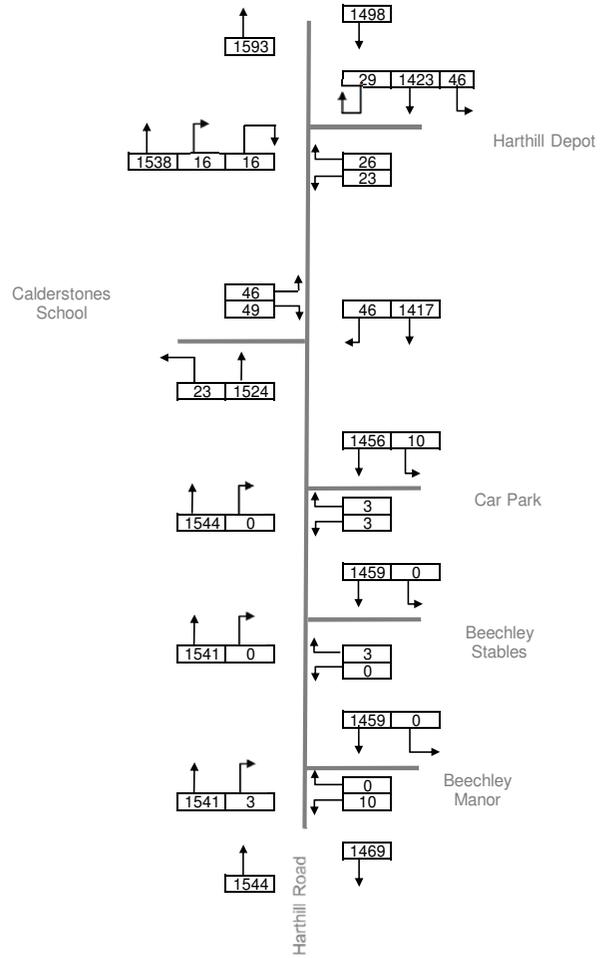


Figure HTN3b

'Do-Nothing' Traffic: 2023 Estimated AADT

1768-01

Harthill Road, Liverpool

December 2016

axis Camellia House
 76 Water Lane,
 Wilmslow
 Cheshire, SK9 5BB

Time Period: **Estimated AADT Assignment**
 Assessment Year:
 Scenario: **Development Traffic Assignment (Average Trip Rates)**

Development Demand (Average)

	IN	OUT	TOTAL
Depot & Park View	100	99	199

Beechley Manor & Stables	49	48	97
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To / from North 51.36%

To / from the South 48.64%

12 hour weekday to 24 hour AADT Factor 1.196

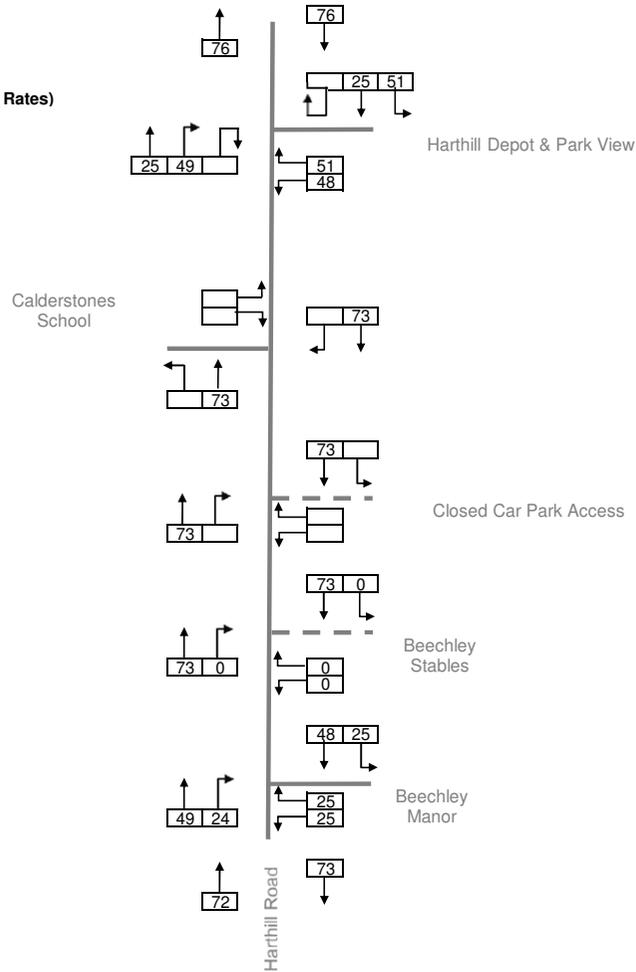


Figure HTN4a

Predicted Average Development Traffic: Estimate AADT Flows

1768-01

Harthill Road, Liverpool

December 2016

axis Camellia House
 76 Water Lane,
 Wilmslow
 Cheshire, SK9 5BB

Time Period: **Estimated AADT Assignment**
 Assessment Year:
 Scenario: **Development Traffic Assignment (85th Percentile Trip Rates)**

Development Demand (85th Percentile)

	IN	OUT	TOTAL
Depot & Park View	125	137	262

Beechley Manor & Stables	60	67	127
--------------------------	----	----	-----

To / from North **51.36%**

To / from the South **48.64%**

12 hour weekday to 24 hour AADT Factor **1.196**

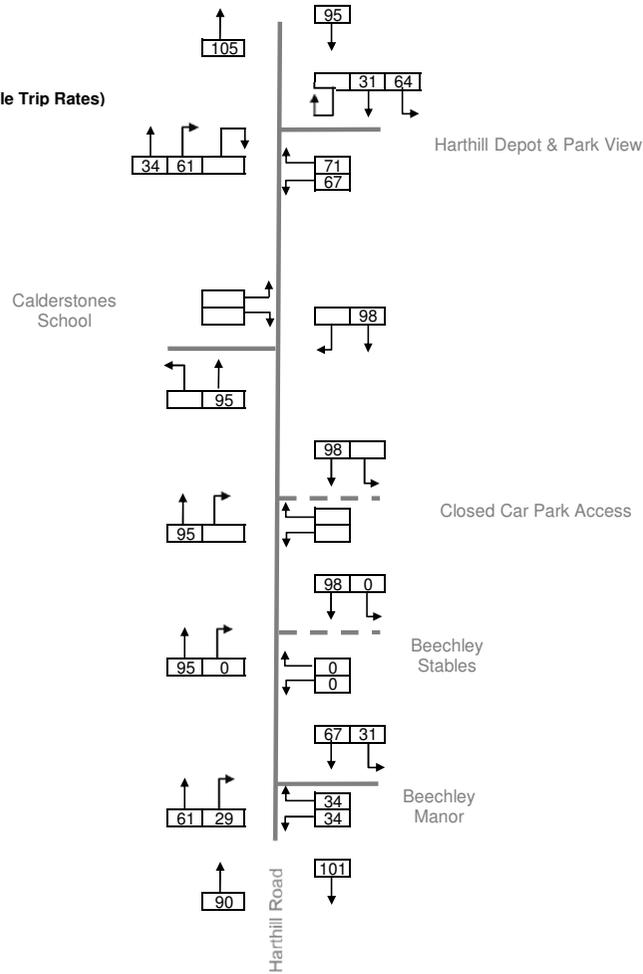


Figure HTN4b

Predicted 85th Percentile Development Traffic: Estimate AADT Flows

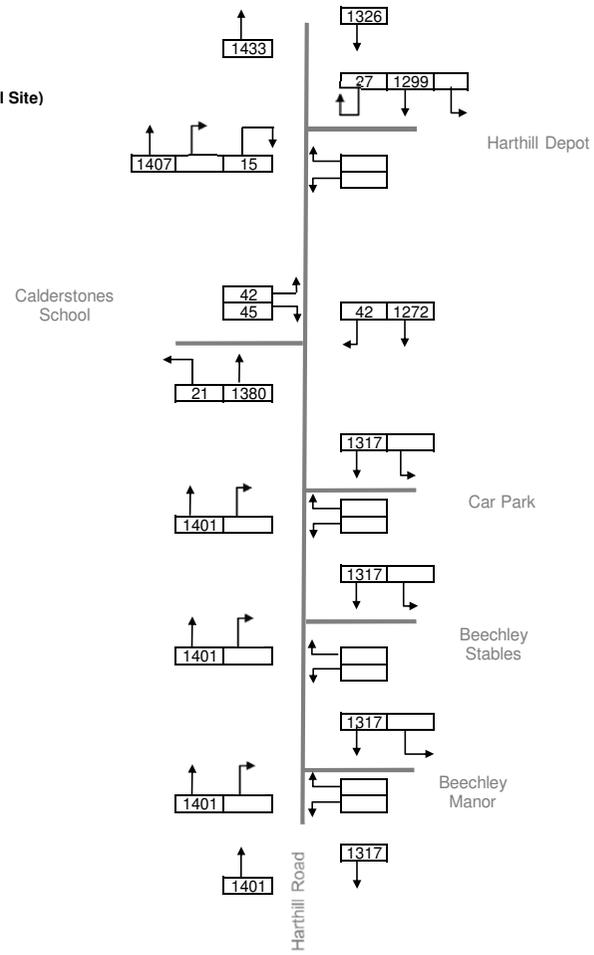
1768-01

Harthill Road, Liverpool

December 2016



Time Period: **Estimated AADT**
 Assessment Year: **2016**
 Scenario: **Baseline Traffic (No Development at Proposal Site)**
 Combined Hour to AADT Factor: 2.9926

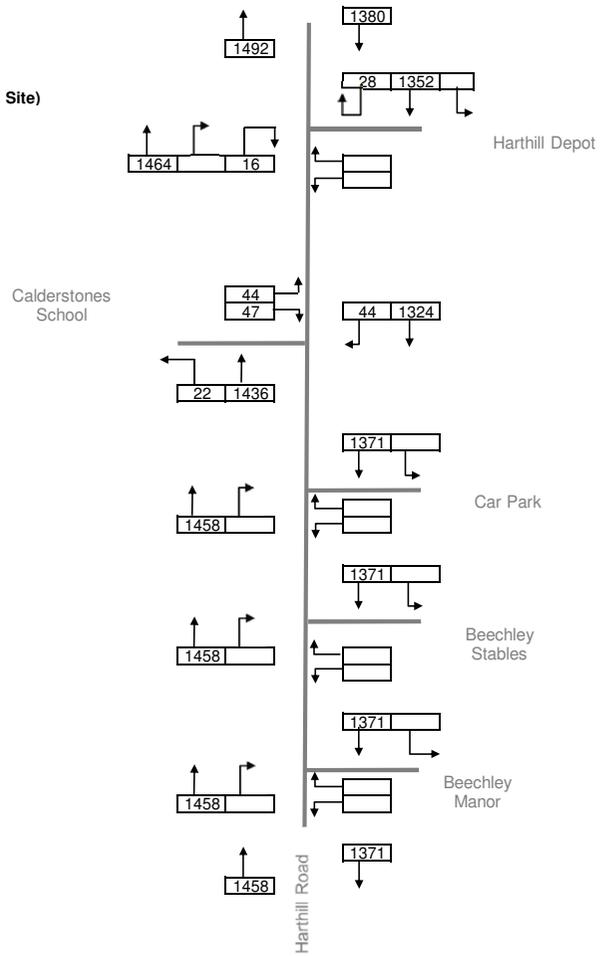


Key
 10 Total Vehicles

Figure HTN5a **Baseline Traffic: 2016 Estimated AADT**
 1768-01 Harthill Road, Liverpool December 2016

axis Camellia House
 76 Water Lane,
 Wilmslow
 Cheshire, SK9 5BB

Time Period: **Estimated AADT**
 Assessment Year: **2019**
 Scenario: **Baseline Traffic (No Development at Proposal Site)**
 2016 - 2019 Growth Factor 1.0410



Key
 10 Total Vehicles

Figure HTN5b

Baseline Traffic: 2019 Estimated AADT

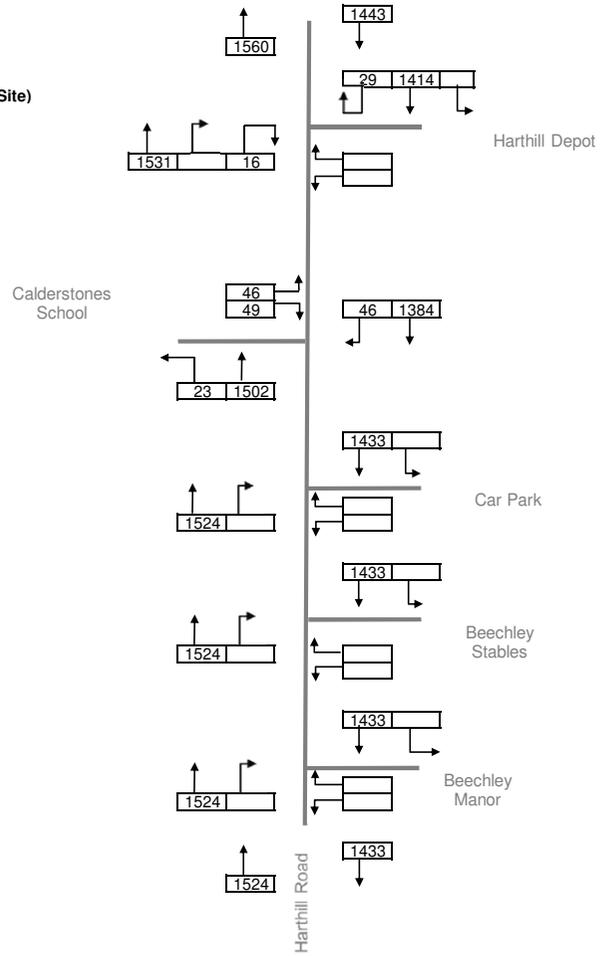
1768-01

Harthill Road, Liverpool

June 2016

axis Camellia House
 76 Water Lane,
 Wilmslow
 Cheshire, SK9 5BB

Time Period: **Estimated AADT**
 Assessment Year: **2023**
 Scenario: **Baseline Traffic (No Development at Proposal Site)**
 2016 - 2023 Growth Factor 1.0885



Key
 [10] Total Vehicles

Figure HTN5c

Baseline Traffic: 2023 Estimated AADT

1768-01

Harthill Road, Liverpool

December 2016

axis
 Camellia House
 76 Water Lane,
 Wilmslow
 Cheshire, SK9 5BB

Time Period: **Estimated AADT**
 Assessment Year: **2019**
 Scenario: **Base + Development Traffic (Average)**

2016 - 2019 Growth Factor 1.0410

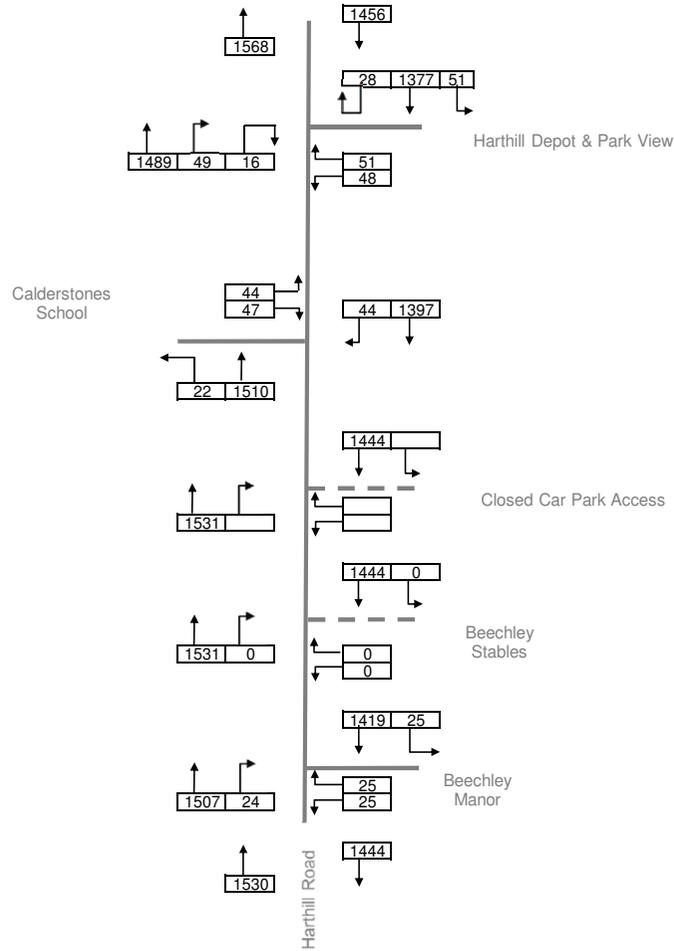
Development Demand (Average)

	IN	OUT	TOTAL
Depot & Park View	100	99	199

Beechley Manor & Stables	49	48	97
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To / from North **51.36%**

To / from the South **48.64%**



Key
 10 Total Vehicles

Figure HTN6a

'Do-Something' Base + Development Traffic (Average): 2019 Estimated AADT

1768-01

Harthill Road, Liverpool

December 2016

axis Camellia House
 76 Water Lane,
 Wilmslow
 Cheshire, SK9 5BB

Time Period: **Estimated AADT**
 Assessment Year: **2023**
 Scenario: **Base + Development Traffic (Average)**

2016 - 2023 Growth Factor 1.0885

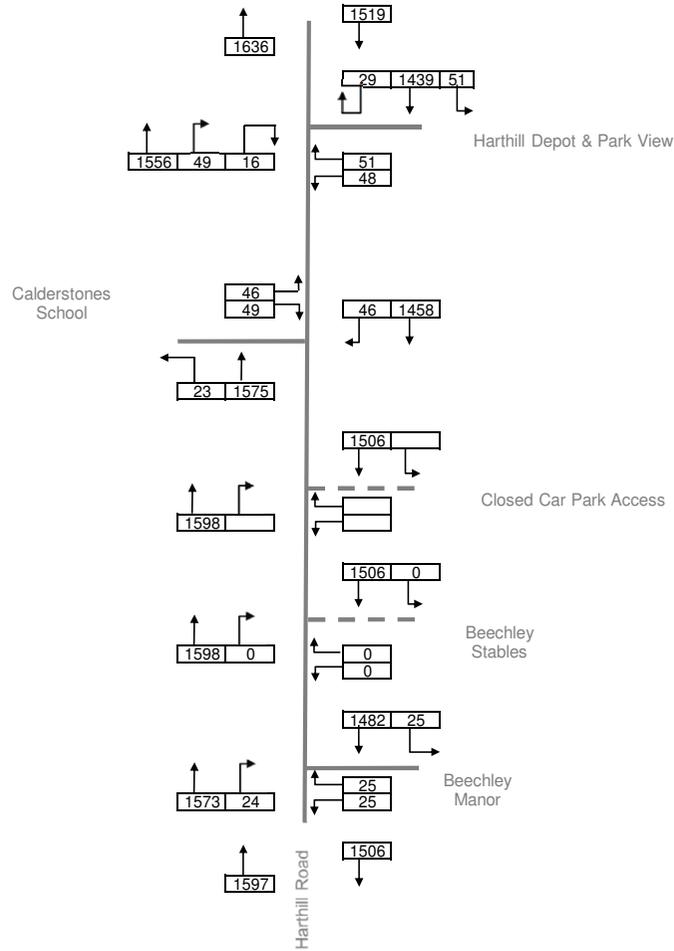
Development Demand (Average)

	IN	OUT	TOTAL
Depot & Park View	100	99	199

Beechley Manor & Stables	49	48	97
--------------------------	----	----	----

To / from North **51.36%**

To / from the South **48.64%**



Key
 10 Total Vehicles

Figure HTN6b

'Do-Something' Base + Development Traffic (Average): 2023 Estimated AADT

1768-01

Harthill Road, Liverpool

December 2016

axis Camellia House
 76 Water Lane,
 Wilmslow
 Cheshire, SK9 5BB

Time Period: **Estimated AADT**
 Assessment Year: **2019**
 Scenario: **Base + Development Traffic (85th Percentile)**

2016 - 2019 Growth Factor 1.0410

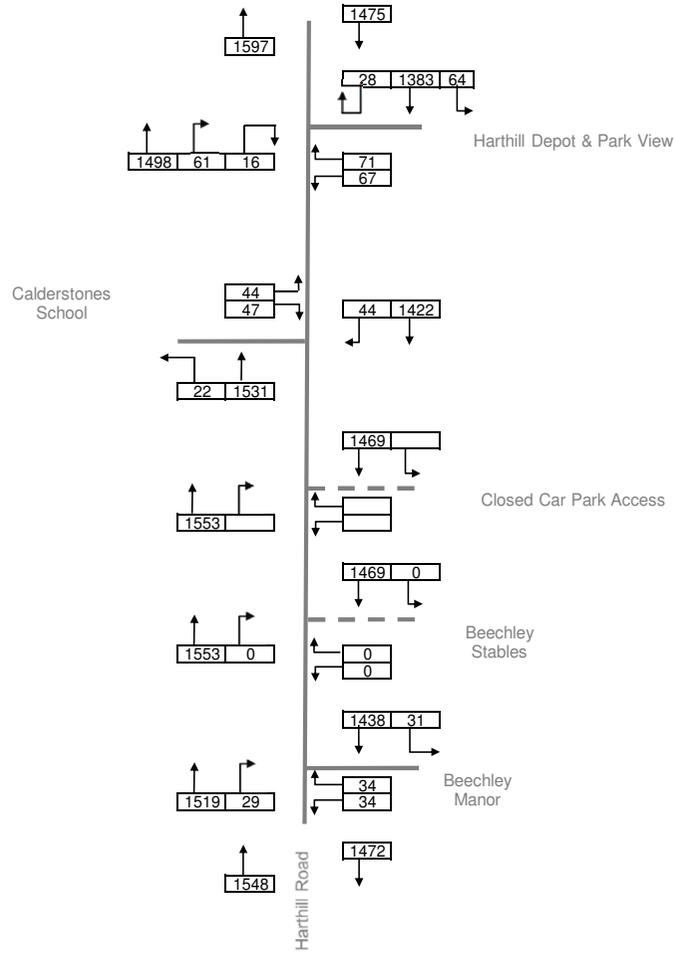
Development Demand (85th Percentile)

	IN	OUT	TOTAL
Depot & Park View	125	137	262

Beechley Manor & Stables	60	67	127
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To / from North **51.36%**

To / from the South **48.64%**



Key
 10 Total Vehicles

Figure HTN7a

'Do-Something' Base + Development Traffic (85th %'tile): 2019 Estimated AADT

1768-01

Harthill Road, Liverpool

December 2016

axis Camellia House
 76 Water Lane,
 Wilmslow
 Cheshire, SK9 5BB

Time Period: **Estimated AADT**
 Assessment Year: **2023**
 Scenario: **Base + Development Traffic (85th Percentile)**

2016 - 2023 Growth Factor 1.0885

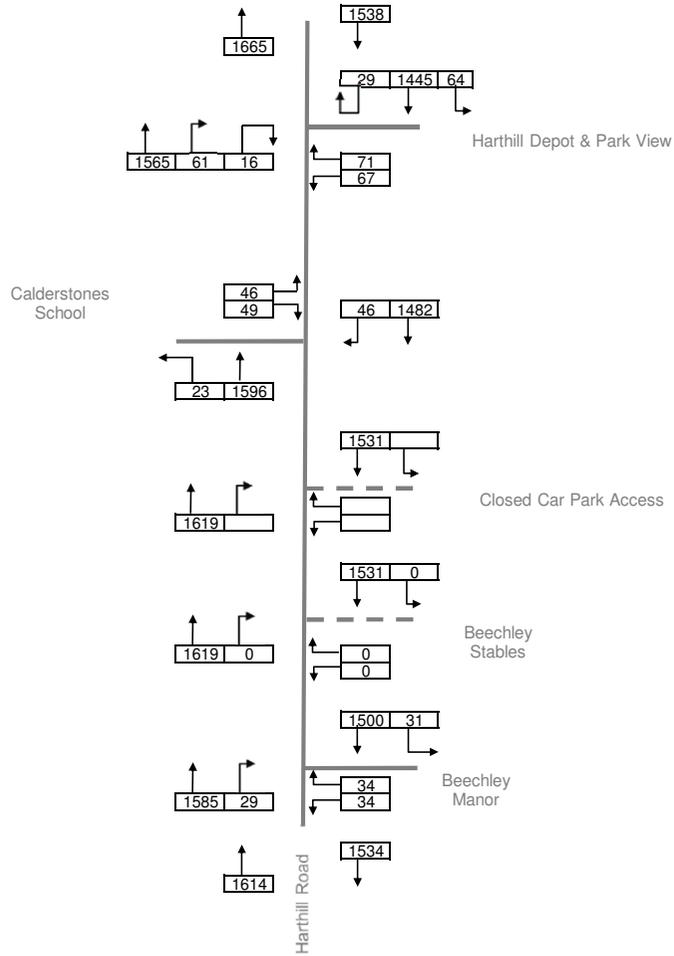
Development Demand (85th Percentile)

	IN	OUT	TOTAL
Depot & Park View	125	137	262

Beechley Manor & Stables	60	67	127
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To / from North **51.36%**

To / from the South **48.64%**



Key
 10 Total Vehicles

Figure HTN7b

'Do-Something' Base + Development Traffic (85th %'tile): 2023 Estimated AADT

1768-01

Harthill Road, Liverpool

December 2016

axis Camellia House
 76 Water Lane,
 Wilmslow
 Cheshire, SK9 5BB



APPENDICES



APPENDIX HTN1

24 hour traffic flow profile

Source: Road Traffic Estimates in Great Britain 2015

Index: Average hour in week = 100

Time of Day	Cars			All Vehicles		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
0-1	13	22	26	16	23	25
1-2	7	13	16	12	16	16
2-3	6	9	10	10	12	11
3-4	6	8	8	12	12	9
4-5	12	10	9	20	15	10
5-6	36	21	14	48	25	15
6-7	99	38	24	113	43	25
7-8	174	64	38	180	67	38
8-9	178	102	59	181	98	56
9-10	140	141	101	150	130	92
10-11	134	176	148	144	158	130
11-12	139	193	177	148	172	154
12-13	142	191	184	151	170	160
13-14	145	181	177	155	161	155
14-15	154	168	174	163	150	152
15-16	173	162	176	178	144	154
16-17	204	161	181	199	142	158
17-18	214	158	169	199	138	148
18-19	170	134	147	158	118	129
19-20	115	102	123	109	90	109
20-21	80	74	96	77	66	86
21-22	58	56	69	57	50	62
22-23	43	48	45	43	43	41
23-24	26	38	27	28	35	26

Weekday
12hr 2006
18hr 2433
24hr 2552
 AADT
12hr 1887
18hr 2288
24hr 2400

12hr wday --> 24hr AADT 1.196
24hr wday --> 24hr AADT 0.94

8-9 + 17-18 weekday 380

24hr AADT 2400

8-9&17-18 weekday --> AADT 6.32

&17-18 weekday --> 18hrAADT 6.02

7-9+15-19 1095

7-9+15-19 --> 18hr AAWT 2.22

7-9+15-19 --> 24hr AAWT 2.33

8-10+15-19 1065

8-10+15-19 --> 18hr AAWT 2.28

8-10+15-19 --> 24hr AAWT 2.4

Totals	Cars			All Vehicles		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
8 hour	205	158	133	260	181	136
16 hour	2262	2108	2064	2292	1894	1825
18 hour	2387	2184	2114	2433	1972	1876
24 hour	2467	2265	2197	2552	2075	1961
12hour (7-7)	1966	1829	1731	2006	1646	1528

Factors	Cars			All Vehicles		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
8 hour	0.08	0.07	0.06	0.10	0.09	0.07
16 hour	0.92	0.93	0.94	0.90	0.91	0.93
18 hour	0.97	0.96	0.96	0.95	0.95	0.96
24 hour	1.00	1.00	1.00	1.00	1.00	1.00
12hour (7-7)	0.80	0.81	0.79	0.79	0.79	0.78



APPENDIX HTN2

Appendix HTN2: TEMPRO (v9) Locally Adjusted NTM Growth Rates

2016-2019 Average Day – Liverpool 047

Results

*Italicised results indicate that there is a lower level of confidence in data presented at the zonal level than when aggregated to higher geographical levels

Area Description	Name	Origin	Destination
Level			
<i>E02001393</i>	<i>Liverpool 047</i>	<i>1.0169</i>	<i>1.0176</i>

NTM Traffic Growth Calculations

1: Select NTM Dataset:

NTM Dataset Description	From	To
NTM AF15 Dataset	2010	2040
NTM AF09 Dataset	2003	2035
NTM AF08 Dataset	2003	2025

2: Select Areas to make up the geographic region:
 Liverpool 047 (E02001393)

3. Select area type:
 Urban
 Rural
 All

4. Select road type:
 Motorway
 Trunk
 Principal
 Minor
 All

5. Select which area it serves:
 Region
 England

Calculate the adjusted local growth figure

Results

Level	Area	Local Growth Figure
E02001393	Liverpool 047	1.0410

2016-2023 Average Day – Liverpool 047

Results

*Italicised results indicate that there is a lower level of confidence in data presented at the zonal level than when aggregated to higher geographical levels

Area Description	Name	Origin	Destination
Level			
<i>E02001393</i>	<i>Liverpool 047</i>	<i>1.0417</i>	<i>1.043</i>

NTM Traffic Growth Calculations

1: Select NTM Dataset:

NTM Dataset Description	From	To
NTM AF15 Dataset	2010	2040
NTM AF09 Dataset	2003	2035
NTM AF08 Dataset	2003	2025

2: Select Areas to make up the geographic region:
 Liverpool 047 (E02001393)

3. Select area type:
 Urban
 Rural
 All

4. Select road type:
 Motorway
 Trunk
 Principal
 Minor
 All

5. Select which area it serves:
 Region
 England

Calculate the adjusted local growth figure

Results

Level	Area	Local Growth Figure
E02001393	Liverpool 047	1.0885



APPENDIX HTN3

PREDICTED RESIDENTIAL DEVELOPMENT TRAFFIC DEMAND - DEPOT SITE

Prop Re-devel Site 20 dwellings

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

Calculation Factor: 1 DWELLS

Count Type: **VEHICLES**

Time Range	Survey Days	Rates per dwelling			Trip Demand - Average Trip Rates			
		Ave. Dwellings	Arrivals Trip Rate	Departures Trip Rate	Total Trip Rate	Arrivals Trip Rate	Departures Trip Rate	Total Trip Rate
00:00-01:00	0	0	0	0	0	0	0	
01:00-02:00	0	0	0	0	0	0	0	
02:00-03:00	0	0	0	0	0	0	0	
03:00-04:00	0	0	0	0	0	0	0	
04:00-05:00	0	0	0	0	0	0	0	
05:00-06:00	0	0	0	0	0	0	0	
06:00-07:00	0	0	0	0	0	0	0	
07:00-08:00	11	27	0.081	0.336	0.417	2	7	8
08:00-09:00	11	27	0.156	0.495	0.651	3	10	13
09:00-10:00	11	27	0.139	0.163	0.302	3	3	6
10:00-11:00	11	27	0.125	0.108	0.233	3	2	5
11:00-12:00	11	27	0.122	0.18	0.302	2	4	6
12:00-13:00	11	27	0.173	0.119	0.292	3	2	6
13:00-14:00	11	27	0.142	0.125	0.267	3	3	5
14:00-15:00	11	27	0.139	0.19	0.329	3	4	7
15:00-16:00	11	27	0.278	0.2	0.478	6	4	10
16:00-17:00	11	27	0.356	0.146	0.502	7	3	10
17:00-18:00	11	27	0.414	0.149	0.563	8	3	11
18:00-19:00	11	27	0.264	0.159	0.423	5	3	8
19:00-20:00	0	0	0	0	0	0	0	0
20:00-21:00	0	0	0	0	0	0	0	0
21:00-22:00	0	0	0	0	0	0	0	0
22:00-23:00	0	0	0	0	0	0	0	0
23:00-24:00	0	0	0	0	0	0	0	0
12hr (07:00-19:00)			2.389	2.37	4.759	48	47	95

Sites: Not including Eire or Gt London
 15 - 50 dwellings
 Suburban or Edge of Town Locations
 No Bungalow or Terraced Sites

Average Trip Rates

	In	Out	Total
AM Peak	0.156	0.495	0.651
PM Peak	0.414	0.149	0.563
12hr (7-7)	2.389	2.370	4.759
School Pk	0.278	0.200	0.478
	In	Out	Total
AM Peak	3	10	13
PM Peak	8	3	11
12hr (7-7)	48	47	95
School Pk	6	4	10

85th Percentile Trip Rates

	In	Out	Total
AM Peak	0.233	0.674	0.907
PM Peak	0.542	0.246	0.788
School Pk	0.400	0.348	0.748
12hr	2.975	3.281	6.256
	In	Out	Total
AM Peak	5	13	18
PM Peak	11	5	16
School Pk	8	7	15
12 hr	60	66	125

	AM In	AM Out	PM In	PM Out	Sch Pk In	Sch Pk Out	12hr In	12hr Out
0.400	0.933	0.667	0.179	0.500	0.321	3.063	3.313	
0.138	0.759	0.353	0.412	0.353	0.412	3	3.267	
0.235	0.588	0.609	0.130	0.313	0.375	2.706	3.294	
0.225	0.450	0.475	0.250	0.400	0.250	2.95	2.6	
0.188	0.438	0.414	0.241	0.400	0.133	2.759	2.69	
0.069	0.552	0.448	0.103	0.261	0.261	2.846	2.462	
0.231	0.359	0.438	0.063	0.241	0.207	2.435	2.348	
0.000	0.565	0.200	0.200	0.179	0.128	2.069	2.241	
0.179	0.321	0.351	0.000	0.136	0.136	2.107	2.071	
0.081	0.405	0.273	0.045	0.243	0.027	1.318	1.591	
0.045	0.364	0.107	0.071	0.103	0.138	1.405	1.378	
85th Percentile Value	0.233	0.674	0.542	0.246	0.400	0.348	2.975	3.281

PREDICTED RESIDENTIAL DEVELOPMENT TRAFFIC DEMAND - PARK VIEW SITE

Prop Re-devel Site 15 dwellings

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

Calculation Factor: 1 DWELLS

Count Type: VEHICLES

Time Range	Survey Days	Rates per dwelling			Trip Demand - Average Trip Rates			
		Ave. Dwellings	Arrivals Trip Rate	Departures Trip Rate	Total Trip Rate	Arrivals Trip Rate	Departures Trip Rate	Total Trip Rate
00:00-01:00	0	0	0	0	0	0	0	
01:00-02:00	0	0	0	0	0	0	0	
02:00-03:00	0	0	0	0	0	0	0	
03:00-04:00	0	0	0	0	0	0	0	
04:00-05:00	0	0	0	0	0	0	0	
05:00-06:00	0	0	0	0	0	0	0	
06:00-07:00	0	0	0	0	0	0	0	
07:00-08:00	11	27	0.081	0.336	0.417	1	5	6
08:00-09:00	11	27	0.156	0.495	0.651	2	7	10
09:00-10:00	11	27	0.139	0.163	0.302	2	2	5
10:00-11:00	11	27	0.125	0.108	0.233	2	2	3
11:00-12:00	11	27	0.122	0.18	0.302	2	3	5
12:00-13:00	11	27	0.173	0.119	0.292	3	2	4
13:00-14:00	11	27	0.142	0.125	0.267	2	2	4
14:00-15:00	11	27	0.139	0.19	0.329	2	3	5
15:00-16:00	11	27	0.278	0.2	0.478	4	3	7
16:00-17:00	11	27	0.356	0.146	0.502	5	2	8
17:00-18:00	11	27	0.414	0.149	0.563	6	2	8
18:00-19:00	11	27	0.264	0.159	0.423	4	2	6
19:00-20:00	0	0	0	0	0	0	0	
20:00-21:00	0	0	0	0	0	0	0	
21:00-22:00	0	0	0	0	0	0	0	
22:00-23:00	0	0	0	0	0	0	0	
23:00-24:00	0	0	0	0	0	0	0	
12hr (07:00-19:00)			2.389	2.37	4.759	36	36	71

Sites: Not including Eire or Gt London
 15 - 50 dwellings
 Suburban or Edge of Town Locations
 No Bungalow or Terraced Sites

Average Trip Rates

	In	Out	Total
AM Peak	0.156	0.495	0.651
PM Peak	0.414	0.149	0.563
12hr (7-7)	2.389	2.370	4.759
School Pk	0.278	0.200	0.478
	In	Out	Total
AM Peak	2	7	10
PM Peak	6	2	8
12hr (7-7)	36	36	71
School Pk	4	3	7

85th Percentile Trip Rates

	In	Out	Total
AM Peak	0.233	0.674	0.907
PM Peak	0.542	0.246	0.788
School Pk	0.400	0.348	0.748
12hr	2.975	3.281	6.256
	In	Out	Total
AM Peak	3	10	14
PM Peak	8	4	12
School Pk	6	5	11
12hr	45	49	94

	AM In	AM Out	PM In	PM Out	Sch Pk In	Sch Pk Out	12hr In	12hr Out
0.400	0.933	0.667	0.179	0.500	0.321	3.063	3.313	
0.138	0.759	0.353	0.412	0.353	0.412	3	3.267	
0.235	0.588	0.609	0.130	0.313	0.375	2.706	3.294	
0.225	0.450	0.475	0.250	0.400	0.250	2.95	2.6	
0.188	0.438	0.414	0.241	0.400	0.133	2.759	2.69	
0.069	0.552	0.448	0.103	0.261	0.261	2.846	2.462	
0.231	0.359	0.438	0.063	0.241	0.207	2.435	2.348	
0.000	0.565	0.200	0.200	0.179	0.128	2.069	2.241	
0.179	0.321	0.351	0.000	0.136	0.136	2.107	2.071	
0.081	0.405	0.273	0.045	0.243	0.027	1.318	1.591	
0.045	0.364	0.107	0.071	0.103	0.138	1.405	1.378	
85th Percentile Value	0.233	0.674	0.542	0.246	0.400	0.348	2.975	3.281

PREDICTED RESIDENTIAL DEVELOPMENT TRAFFIC DEMAND - BEECHLEY MANOR

Prop Re-devel Site 13 dwellings

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

Calculation Factor: 1 DWELLS

Count Type: **VEHICLES**

Time Range	Survey Days	Rates per dwelling			Trip Demand - Average Trip Rates			
		Ave. Dwellings	Arrivals Trip Rate	Departures Trip Rate	Total Trip Rate	Arrivals Trip Rate	Departures Trip Rate	Total Trip Rate
00:00-01:00	0	0	0	0	0	0	0	
01:00-02:00	0	0	0	0	0	0	0	
02:00-03:00	0	0	0	0	0	0	0	
03:00-04:00	0	0	0	0	0	0	0	
04:00-05:00	0	0	0	0	0	0	0	
05:00-06:00	0	0	0	0	0	0	0	
06:00-07:00	0	0	0	0	0	0	0	
07:00-08:00	11	27	0.081	0.336	0.417	1	4	5
08:00-09:00	11	27	0.156	0.495	0.651	2	6	8
09:00-10:00	11	27	0.139	0.163	0.302	2	2	4
10:00-11:00	11	27	0.125	0.108	0.233	2	1	3
11:00-12:00	11	27	0.122	0.18	0.302	2	2	4
12:00-13:00	11	27	0.173	0.119	0.292	2	2	4
13:00-14:00	11	27	0.142	0.125	0.267	2	2	3
14:00-15:00	11	27	0.139	0.19	0.329	2	2	4
15:00-16:00	11	27	0.278	0.2	0.478	4	3	6
16:00-17:00	11	27	0.356	0.146	0.502	5	2	7
17:00-18:00	11	27	0.414	0.149	0.563	5	2	7
18:00-19:00	11	27	0.264	0.159	0.423	3	2	5
19:00-20:00	0	0	0	0	0	0	0	
20:00-21:00	0	0	0	0	0	0	0	
21:00-22:00	0	0	0	0	0	0	0	
22:00-23:00	0	0	0	0	0	0	0	
23:00-24:00	0	0	0	0	0	0	0	
12hr (07:00-19:00)			2.389	2.37	4.759	31	31	62

Sites: Not including Eire or Gt London
 15 - 50 dwellings
 Suburban or Edge of Town Locations
 No Bungalow or Terraced Sites

Average Trip Rates

	In	Out	Total
AM Peak	0.156	0.495	0.651
PM Peak	0.414	0.149	0.563
12hr (7-7)	2.389	2.370	4.759
School Pk	0.278	0.200	0.478
	In	Out	Total
AM Peak	2	6	8
PM Peak	5	2	7
12hr (7-7)	31	31	62
School Pk	4	3	6

85th Percentile Trip Rates

	In	Out	Total
AM Peak	0.233	0.674	0.907
PM Peak	0.542	0.246	0.788
School Pk	0.400	0.348	0.748
12hr	2.975	3.281	6.256
	In	Out	Total
AM Peak	3	9	12
PM Peak	7	3	10
School Pk	5	5	10
12hr	39	43	81

	AM In	AM Out	PM In	PM Out	Sch Pk In	Sch Pk Out	12hr In	12hr Out
0.400	0.933	0.667	0.179	0.500	0.321	3.063	3.313	
0.138	0.759	0.353	0.412	0.353	0.412	3	3.267	
0.235	0.588	0.609	0.130	0.313	0.375	2.706	3.294	
0.225	0.450	0.475	0.250	0.400	0.250	2.95	2.6	
0.188	0.438	0.414	0.241	0.400	0.133	2.759	2.69	
0.069	0.552	0.448	0.103	0.261	0.261	2.846	2.462	
0.231	0.359	0.438	0.063	0.241	0.207	2.435	2.348	
0.000	0.565	0.200	0.200	0.179	0.128	2.069	2.241	
0.179	0.321	0.351	0.000	0.136	0.136	2.107	2.071	
0.081	0.405	0.273	0.045	0.243	0.027	1.318	1.591	
0.045	0.364	0.107	0.071	0.103	0.138	1.405	1.378	
85th Percentile Value	0.233	0.674	0.542	0.246	0.400	0.348	2.975	3.281

PREDICTED RESIDENTIAL DEVELOPMENT TRAFFIC DEMAND - BEECHLEY MANOR

Prop Re-devel Site 4 dwellings

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

Calculation Factor: 1 DWELLS

Count Type: **VEHICLES**

Time Range	Survey Days	Rates per dwelling			Trip Demand - Average Trip Rates			
		Ave. Dwellings	Arrivals Trip Rate	Departures Trip Rate	Total Trip Rate	Arrivals Trip Rate	Departures Trip Rate	Total Trip Rate
00:00-01:00	0	0	0	0	0	0	0	
01:00-02:00	0	0	0	0	0	0	0	
02:00-03:00	0	0	0	0	0	0	0	
03:00-04:00	0	0	0	0	0	0	0	
04:00-05:00	0	0	0	0	0	0	0	
05:00-06:00	0	0	0	0	0	0	0	
06:00-07:00	0	0	0	0	0	0	0	
07:00-08:00	11	27	0.081	0.336	0.417	0	1	2
08:00-09:00	11	27	0.156	0.495	0.651	1	2	3
09:00-10:00	11	27	0.139	0.163	0.302	1	1	1
10:00-11:00	11	27	0.125	0.108	0.233	1	0	1
11:00-12:00	11	27	0.122	0.18	0.302	0	1	1
12:00-13:00	11	27	0.173	0.119	0.292	1	0	1
13:00-14:00	11	27	0.142	0.125	0.267	1	1	1
14:00-15:00	11	27	0.139	0.19	0.329	1	1	1
15:00-16:00	11	27	0.278	0.2	0.478	1	1	2
16:00-17:00	11	27	0.356	0.146	0.502	1	1	2
17:00-18:00	11	27	0.414	0.149	0.563	2	1	2
18:00-19:00	11	27	0.264	0.159	0.423	1	1	2
19:00-20:00	0	0	0	0	0	0	0	0
20:00-21:00	0	0	0	0	0	0	0	0
21:00-22:00	0	0	0	0	0	0	0	0
22:00-23:00	0	0	0	0	0	0	0	0
23:00-24:00	0	0	0	0	0	0	0	0
12hr (07:00-19:00)			2.389	2.37	4.759	10	9	19

Sites: Not including Eire or Gt London
 15 - 50 dwellings
 Suburban or Edge of Town Locations
 No Bungalow or Terraced Sites

Average Trip Rates

	In	Out	Total
AM Peak	0.156	0.495	0.651
PM Peak	0.414	0.149	0.563
12hr (7-7)	2.389	2.370	4.759
School Pk	0.278	0.200	0.478
	In	Out	Total
AM Peak	1	2	3
PM Peak	2	1	2
12hr (7-7)	10	9	19
School Pk	1	1	2

85th Percentile Trip Rates

	In	Out	Total
AM Peak	0.233	0.674	0.907
PM Peak	0.542	0.246	0.788
School Pk	0.400	0.348	0.748
12hr	2.975	3.281	6.256
	In	Out	Total
AM Peak	1	3	4
PM Peak	2	1	3
School Pk	2	1	3
12hr	12	13	25

	AM In	AM Out	PM In	PM Out	Sch Pk In	Sch Pk Out	12hr In	12hr Out
0.400	0.933	0.667	0.179	0.500	0.321	3.063	3.313	
0.138	0.759	0.353	0.412	0.353	0.412	3	3.267	
0.235	0.588	0.609	0.130	0.313	0.375	2.706	3.294	
0.225	0.450	0.475	0.250	0.400	0.250	2.95	2.6	
0.188	0.438	0.414	0.241	0.400	0.133	2.759	2.69	
0.069	0.552	0.448	0.103	0.261	0.261	2.846	2.462	
0.231	0.359	0.438	0.063	0.241	0.207	2.435	2.348	
0.000	0.565	0.200	0.200	0.179	0.128	2.069	2.241	
0.179	0.321	0.351	0.000	0.136	0.136	2.107	2.071	
0.081	0.405	0.273	0.045	0.243	0.027	1.318	1.591	
0.045	0.364	0.107	0.071	0.103	0.138	1.405	1.378	
85th Percentile Value	0.233	0.674	0.542	0.246	0.400	0.348	2.975	3.281

TRICS 7.2.4

Trip Rate Parameter: Number of dwellings

RANK ORDER for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

Ranking Type: TOTALS Time Range: 07:00-19:00

85th/15th Percentile Survey Not Highlighted

Rank	Site Ref	Description	Town/City	DWELLS	Day	Date	Arrivals	Departures	Totals	Parking Spaces Per Dwelling
1	TW-03-A-02	SEMI-DETACHED	GATESHEAD	16	Monday	07/10/2013	3.063	3.313	6.374	2.38
2	MS-03-A-03	DETACHED	LIVERPOOL	15	Friday	21/06/2013	3	3.267	6.267	3
3	CH-03-A-05	DETACHED	CREWE	17	Tuesday	14/10/2008	2.706	3.294	6	3.71
4	CB-03-A-03	SEMI DETACHED	WORKINGTON	40	Thursday	20/11/2008	2.95	2.6	5.55	3.1
5	CF-03-A-03	DETACHED	CARDIFF	29	Monday	08/10/2007	2.759	2.69	5.449	3.21
6	EA-03-A-01	DETACHED	KILMARNOCK	39	Thursday	05/06/2008	2.846	2.462	5.308	3.03
7	NY-03-A-11	PRIVATE HOUSING	BOROUGHBRIDGE	23	Wednesday	18/09/2013	2.435	2.348	4.783	6.26
8	GM-03-A-10	DETACHED/SEMI	MANCHESTER	29	Wednesday	12/10/2011	2.069	2.241	4.31	2.79
9	PS-03-A-02	DETACHED/SEMI-DETACHED	WELSHPOOL	28	Monday	11/05/2015	2.107	2.071	4.178	2.32
10	LN-03-A-03	SEMI DETACHED	LINCOLN	22	Tuesday	18/09/2012	1.318	1.591	2.909	1.09
11	ES-03-A-02	PRIVATE HOUSING	PEACEHAVEN	37	Friday	18/11/2011	1.405	1.378	2.783	1.59