

# TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL  
Category : A - HOUSES PRIVATELY OWNED  
MULTI-MODAL VEHICLES

## Selected regions and areas:

02	SOUTH EAST	
	EX ESSEX	1 days
03	SOUTH WEST	
	WL WILTSHIRE	1 days
05	EAST MIDLANDS	
	NT NOTTINGHAMSHIRE	1 days
06	WEST MIDLANDS	
	WM WEST MIDLANDS	1 days
	WO WORCESTERSHIRE	1 days
10	WALES	
	WR WREXHAM	1 days

## Main parameter selection:

Parameter: Number of households  
Range: 12 to 237 (units: )

Date Range: 01/01/00 to 13/05/08

## Selected survey days:

Monday	2 days
Tuesday	1 days
Wednesday	2 days
Thursday	1 days

## Selected survey types:

Manual count	6 days
Directional ATC Count	0 days

## Selected Locations:

Suburban Area (PPS6 Out of Centre)	1
Edge of Town	5

## Selected Location Sub Categories:

Residential Zone	4
No Sub Category	2

## Optional parameter selection:

### Use Class:

C3	6 days
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### Population within 1 mile:

5,001 to 10,000	1 days
10,001 to 15,000	1 days
15,001 to 20,000	3 days
25,001 to 50,000	1 days

Optional parameter selection (Cont.):

Population within 5 miles:

75,001 to 100,000	1 days
100,001 to 125,000	1 days
125,001 to 250,000	3 days
250,001 to 500,000	1 days

Car ownership within 5 miles:

0.6 to 1.0	4 days
1.1 to 1.5	2 days

Travel Plan:

No	6 days
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LIST OF SITES relevant to selection parameters

1	EX-03-A-01 MILTON ROAD CORRINGHAM STANFORD-LE-HOPE Total Number of households: 237 Survey date: TUESDAY 13/05/08	SEMI-DET., STANFORD-LE-HOPE	ESSEX	Survey Type: MANUAL
2	NT-03-A-03 B6018 SUTTON ROAD  KIRKBY-IN-ASHFIELD Total Number of households: 166 Survey date: WEDNESDAY 28/06/06	SEMI DETACHED, KIRKBY-IN-ASHFD	NOTTINGHAMSHIRE	Survey Type: MANUAL
3	WL-03-A-01 MAPLE DRIVE  WOOTTON BASSETT Total Number of households: 99 Survey date: MONDAY 02/10/06	SEMI D./TERRACED W. BASSETT	WILTSHIRE	Survey Type: MANUAL
4	WM-03-A-02 HEATH STREET  STOURBRIDGE Total Number of households: 12 Survey date: WEDNESDAY 26/04/06	DETACHED/SEMI D., STRBRIDGE	WEST MIDLANDS	Survey Type: MANUAL
5	WO-03-A-06 ST GODWALDS ROAD ASTON FIELDS BROMSGROVE Total Number of households: 232 Survey date: THURSDAY 30/06/05	DET./TERRACED, BROMSGROVE	WORCESTERSHIRE	Survey Type: MANUAL
6	WR-03-A-01 MOLD ROAD RHOSDDU WREXHAM Total Number of households: 82 Survey date: MONDAY 05/07/04	SEMI DETACHED, WREXHAM	WREXHAM	Survey Type: MANUAL

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

MULTI-MODAL VEHICLES

Calculation factor: 1 HHOLDS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. HHOLDS	Trip Rate	No. Days	Ave. HHOLDS	Trip Rate	No. Days	Ave. HHOLDS	Trip Rate
00:00 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	6	138	0.088	6	138	0.307	6	138	0.395
08:00 - 09:00	6	138	0.118	6	138	0.418	6	138	0.536
09:00 - 10:00	6	138	0.134	6	138	0.209	6	138	0.343
10:00 - 11:00	6	138	0.129	6	138	0.171	6	138	0.300
11:00 - 12:00	6	138	0.178	6	138	0.157	6	138	0.335
12:00 - 13:00	6	138	0.185	6	138	0.178	6	138	0.363
13:00 - 14:00	6	138	0.169	6	138	0.169	6	138	0.338
14:00 - 15:00	6	138	0.181	6	138	0.159	6	138	0.340
15:00 - 16:00	6	138	0.332	6	138	0.220	6	138	0.552
16:00 - 17:00	6	138	0.315	6	138	0.203	6	138	0.518
17:00 - 18:00	6	138	0.397	6	138	0.223	6	138	0.620
18:00 - 19:00	6	138	0.271	6	138	0.209	6	138	0.480
19:00 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			2.497			2.623			5.120

#### Parameter summary

Trip rate parameter range selected: 12 - 237 (units: )  
Survey date range: 01/01/00 - 13/05/08  
Number of weekdays (Monday-Friday): 6  
Number of Saturdays: 0  
Number of Sundays: 0  
Optional parameters used in selection: NO  
Surveys manually removed from selection: 43

# TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT

Category : B - BUSINESS PARK

## VEHICLES

### Selected regions and areas:

03	SOUTH WEST	
	WL WILTSHIRE	1 days
04	EAST ANGLIA	
	SF SUFFOLK	1 days
06	WEST MIDLANDS	
	SH SHROPSHIRE	1 days
	ST STAFFORDSHIRE	1 days
	WO WORCESTERSHIRE	1 days

### Main parameter selection:

Parameter: Gross floor area  
 Range: 2120 to 78756 (units: sqm)

Date Range: 01/01/00 to 22/11/07

### Selected survey days:

Monday	1 days
Tuesday	2 days
Wednesday	1 days
Thursday	1 days

### Selected survey types:

Manual count	5 days
Directional ATC Count	0 days

### Selected Locations:

Edge of Town	5
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### Selected Location Sub Categories:

Industrial Zone	3
Commercial Zone	1
Residential Zone	1

### Optional parameter selection:

#### Use Class:

Not Known	2 days
B1	3 days

#### Population within 1 mile:

1,001 to 5,000	1 days
5,001 to 10,000	2 days
10,001 to 15,000	1 days
15,001 to 20,000	1 days

Optional parameter selection (Cont.):

Population within 5 miles:

50,001 to 75,000	2 days
75,001 to 100,000	2 days
100,001 to 125,000	1 days

Car ownership within 5 miles:

0.6 to 1.0	2 days
1.1 to 1.5	3 days

Travel Plan:

Not Known	1 days
No	4 days

LIST OF SITES relevant to selection parameters

1	SF-02-B-01 KEMPSON WAY	BUSINESS PK, BURY ST EDMUNDS	SUFFOLK
	BURY ST EDMUNDS		
	Total Gross floor area:	2480 sqm	
	Survey date: WEDNESDAY	10/05/06	Survey Type: MANUAL
2	SH-02-B-01 WELSHPOOL ROAD	BUSINESS PARK, SHREWSBURY	SHROPSHIRE
	SHREWSBURY		
	Total Gross floor area:	17197 sqm	
	Survey date: TUESDAY	14/06/05	Survey Type: MANUAL
3	ST-02-B-03 FRANK FOLEY WAY GREYFRIARS STAFFORD	BUSINESS PARK, STAFFORD	STAFFORDSHIRE
	Total Gross floor area:	4064 sqm	
	Survey date: THURSDAY	06/07/00	Survey Type: MANUAL
4	WL-02-B-01 HIGH STREET COPED HALL WOOTTON BASSETT	BUSINESS PK,WOOTTON BASSETT	WILTSHIRE
	Total Gross floor area:	2600 sqm	
	Survey date: MONDAY	02/10/06	Survey Type: MANUAL
5	WO-02-B-01 BURNT MEADOW ROAD MOORS MOAT NTH IND. EST REDDITCH	BUSINESS PARK, REDDITCH	WORCESTERSHIRE
	Total Gross floor area:	3525 sqm	
	Survey date: TUESDAY	02/05/06	Survey Type: MANUAL

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK  
 VEHICLES  
 Calculation factor: 100 sqm  
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30	0	0	0.000	0	0	0.000	0	0	0.000
00:30 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 01:30	0	0	0.000	0	0	0.000	0	0	0.000
01:30 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 02:30	0	0	0.000	0	0	0.000	0	0	0.000
02:30 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 03:30	0	0	0.000	0	0	0.000	0	0	0.000
03:30 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 04:30	0	0	0.000	0	0	0.000	0	0	0.000
04:30 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 05:30	0	0	0.000	0	0	0.000	0	0	0.000
05:30 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 06:30	0	0	0.000	0	0	0.000	0	0	0.000
06:30 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 07:30	5	5973	0.201	5	5973	0.080	5	5973	0.281
07:30 - 08:00	5	5973	0.368	5	5973	0.070	5	5973	0.438
08:00 - 08:30	5	5973	0.676	5	5973	0.244	5	5973	0.920
08:30 - 09:00	5	5973	1.209	5	5973	0.204	5	5973	1.413
09:00 - 09:30	5	5973	0.633	5	5973	0.184	5	5973	0.817
09:30 - 10:00	5	5973	0.352	5	5973	0.161	5	5973	0.513
10:00 - 10:30	5	5973	0.298	5	5973	0.214	5	5973	0.512
10:30 - 11:00	5	5973	0.208	5	5973	0.181	5	5973	0.389
11:00 - 11:30	5	5973	0.154	5	5973	0.228	5	5973	0.382
11:30 - 12:00	5	5973	0.151	5	5973	0.224	5	5973	0.375
12:00 - 12:30	5	5973	0.208	5	5973	0.412	5	5973	0.620
12:30 - 13:00	5	5973	0.204	5	5973	0.318	5	5973	0.522
13:00 - 13:30	5	5973	0.462	5	5973	0.405	5	5973	0.867
13:30 - 14:00	5	5973	0.432	5	5973	0.311	5	5973	0.743
14:00 - 14:30	5	5973	0.188	5	5973	0.137	5	5973	0.325
14:30 - 15:00	5	5973	0.238	5	5973	0.234	5	5973	0.472
15:00 - 15:30	5	5973	0.224	5	5973	0.338	5	5973	0.562
15:30 - 16:00	5	5973	0.241	5	5973	0.352	5	5973	0.593
16:00 - 16:30	5	5973	0.171	5	5973	0.372	5	5973	0.543
16:30 - 17:00	5	5973	0.164	5	5973	0.489	5	5973	0.653
17:00 - 17:30	5	5973	0.261	5	5973	0.911	5	5973	1.172
17:30 - 18:00	5	5973	0.151	5	5973	0.840	5	5973	0.991
18:00 - 18:30	5	5973	0.077	5	5973	0.315	5	5973	0.392
18:30 - 19:00	5	5973	0.023	5	5973	0.121	5	5973	0.144
19:00 - 19:30	0	0	0.000	0	0	0.000	0	0	0.000
19:30 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 20:30	0	0	0.000	0	0	0.000	0	0	0.000
20:30 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 21:30	0	0	0.000	0	0	0.000	0	0	0.000
21:30 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 22:30	0	0	0.000	0	0	0.000	0	0	0.000
22:30 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 23:30	0	0	0.000	0	0	0.000	0	0	0.000
23:30 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			7.294			7.345			14.639



#### Parameter summary

Trip rate parameter range selected:	2120 - 78756 (units: sqm)
Survey date date range:	01/01/00 - 22/11/07
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Optional parameters used in selection:	NO
Surveys manually removed from selection:	14

# TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT  
Category : B - BUSINESS PARK  
MULTI-MODAL VEHICLES

## Selected regions and areas:

03	SOUTH WEST	
	WL WILTSHIRE	1 days
06	WEST MIDLANDS	
	SH SHROPSHIRE	1 days
	ST STAFFORDSHIRE	1 days
	WO WORCESTERSHIRE	1 days

## Main parameter selection:

Parameter: Gross floor area  
Range: 2600 to 17197 (units: sqm)

Date Range: 01/01/00 to 17/05/07

## Selected survey days:

Monday	1 days
Tuesday	2 days
Thursday	1 days

## Selected survey types:

Manual count	4 days
Directional ATC Count	0 days

## Selected Locations:

Edge of Town	4
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## Selected Location Sub Categories:

Industrial Zone	2
Commercial Zone	1
Residential Zone	1

## Optional parameter selection:

### Use Class:

Not Known	2 days
B1	2 days

### Population within 1 mile:

5,001 to 10,000	2 days
10,001 to 15,000	1 days
15,001 to 20,000	1 days

### Population within 5 miles:

50,001 to 75,000	1 days
75,001 to 100,000	2 days
100,001 to 125,000	1 days

### Car ownership within 5 miles:

0.6 to 1.0	1 days
1.1 to 1.5	3 days

Optional parameter selection (Cont.):

Travel Plan:

Not Known

1 days

No

3 days

LIST OF SITES relevant to selection parameters

1	SH-02-B-01 WELSHPOOL ROAD  SHREWSBURY Total Gross floor area: 17197 sqm Survey date: TUESDAY 14/06/05	BUSINESS PARK, SHREWSBURY  SHROPSHIRE
2	ST-02-B-03 FRANK FOLEY WAY GREYFRIARS STAFFORD Total Gross floor area: 4064 sqm Survey date: THURSDAY 06/07/00	BUSINESS PARK, STAFFORD  STAFFORDSHIRE
3	WL-02-B-01 HIGH STREET COPED HALL WOOTTON BASSETT Total Gross floor area: 2600 sqm Survey date: MONDAY 02/10/06	BUSINESS PK,WOOTTON BASSETT  WILTSHIRE
4	WO-02-B-01 BURNT MEADOW ROAD MOORS MOAT NTH IND. EST REDDITCH Total Gross floor area: 3525 sqm Survey date: TUESDAY 02/05/06	BUSINESS PARK, REDDITCH  WORCESTERSHIRE

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK

MULTI-MODAL VEHICLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30	0	0	0.000	0	0	0.000	0	0	0.000
00:30 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 01:30	0	0	0.000	0	0	0.000	0	0	0.000
01:30 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 02:30	0	0	0.000	0	0	0.000	0	0	0.000
02:30 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 03:30	0	0	0.000	0	0	0.000	0	0	0.000
03:30 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 04:30	0	0	0.000	0	0	0.000	0	0	0.000
04:30 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 05:30	0	0	0.000	0	0	0.000	0	0	0.000
05:30 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 06:30	0	0	0.000	0	0	0.000	0	0	0.000
06:30 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 07:30	4	6847	0.190	4	6847	0.080	4	6847	0.270
07:30 - 08:00	4	6847	0.358	4	6847	0.066	4	6847	0.424
08:00 - 08:30	4	6847	0.661	4	6847	0.259	4	6847	0.920
08:30 - 09:00	4	6847	1.194	4	6847	0.215	4	6847	1.409
09:00 - 09:30	4	6847	0.628	4	6847	0.186	4	6847	0.814
09:30 - 10:00	4	6847	0.354	4	6847	0.161	4	6847	0.515
10:00 - 10:30	4	6847	0.292	4	6847	0.204	4	6847	0.496
10:30 - 11:00	4	6847	0.212	4	6847	0.168	4	6847	0.380
11:00 - 11:30	4	6847	0.157	4	6847	0.237	4	6847	0.394
11:30 - 12:00	4	6847	0.139	4	6847	0.215	4	6847	0.354
12:00 - 12:30	4	6847	0.197	4	6847	0.409	4	6847	0.606
12:30 - 13:00	4	6847	0.208	4	6847	0.340	4	6847	0.548
13:00 - 13:30	4	6847	0.467	4	6847	0.402	4	6847	0.869
13:30 - 14:00	4	6847	0.416	4	6847	0.281	4	6847	0.697
14:00 - 14:30	4	6847	0.179	4	6847	0.124	4	6847	0.303
14:30 - 15:00	4	6847	0.237	4	6847	0.248	4	6847	0.485
15:00 - 15:30	4	6847	0.212	4	6847	0.340	4	6847	0.552
15:30 - 16:00	4	6847	0.223	4	6847	0.336	4	6847	0.559
16:00 - 16:30	4	6847	0.179	4	6847	0.336	4	6847	0.515
16:30 - 17:00	4	6847	0.164	4	6847	0.478	4	6847	0.642
17:00 - 17:30	4	6847	0.278	4	6847	0.931	4	6847	1.209
17:30 - 18:00	4	6847	0.157	4	6847	0.858	4	6847	1.015
18:00 - 18:30	4	6847	0.080	4	6847	0.303	4	6847	0.383
18:30 - 19:00	4	6847	0.026	4	6847	0.106	4	6847	0.132
19:00 - 19:30	0	0	0.000	0	0	0.000	0	0	0.000
19:30 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 20:30	0	0	0.000	0	0	0.000	0	0	0.000
20:30 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 21:30	0	0	0.000	0	0	0.000	0	0	0.000
21:30 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 22:30	0	0	0.000	0	0	0.000	0	0	0.000
22:30 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 23:30	0	0	0.000	0	0	0.000	0	0	0.000
23:30 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			7.208			7.283			14.491

Parameter summary

Trip rate parameter range selected:	2600 - 17197 (units: sqm)
Survey date date range:	01/01/00 - 17/05/07
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Optional parameters used in selection:	NO
Surveys manually removed from selection:	8

# TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT  
 Category : B - BUSINESS PARK  
 MULTI-MODAL VEHICLES

## Selected regions and areas:

04	EAST ANGLIA	
	NF NORFOLK	1 days
05	EAST MIDLANDS	
	LN LINCOLNSHIRE	1 days
	NT NOTTINGHAMSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE	
	NO NORTH LINCOLNSHIRE	1 days

## Main parameter selection:

Parameter: Gross floor area  
 Range: 1574 to 7400 (units: sqm)

Date Range: 01/01/00 to 17/05/07

## Selected survey days:

Tuesday	1 days
Thursday	3 days

## Selected survey types:

Manual count	4 days
Directional ATC Count	0 days

## Selected Locations:

Suburban Area (PPS6 Out of Centre)	1
Edge of Town	3

## Selected Location Sub Categories:

Industrial Zone	1
Residential Zone	1
Retail Zone	1
No Sub Category	1

## Optional parameter selection:

### Use Class:

B1	4 days
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### Population within 1 mile:

10,001 to 15,000	1 days
15,001 to 20,000	2 days
25,001 to 50,000	1 days

### Population within 5 miles:

75,001 to 100,000	1 days
125,001 to 250,000	2 days
250,001 to 500,000	1 days

### Car ownership within 5 miles:

0.6 to 1.0	4 days
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Optional parameter selection (Cont.):

Travel Plan:

No

4 days



LIST OF SITES relevant to selection parameters

1	LN-02-B-01	BUSINESS PARK, LINCOLN	LINCOLNSHIRE
	BISHOPS ROAD		
	LINCOLN		
	Total Gross floor area:	4460 sqm	
	Survey date: TUESDAY	17/05/05	Survey Type: MANUAL
2	NF-02-B-02	BUSINESS PARK, NORWICH	NORFOLK
	WHITING ROAD		
	LONG JOHN'S HILL		
	NORWICH		
	Total Gross floor area:	7400 sqm	
	Survey date: THURSDAY	17/05/07	Survey Type: MANUAL
3	NO-02-B-02	BUSINESS PARK, SCUNTHORPE	NORTH LINCOLNSHIRE
	DONCASTER ROAD		
	SCUNTHORPE		
	Total Gross floor area:	1574 sqm	
	Survey date: THURSDAY	22/09/05	Survey Type: MANUAL
4	NT-02-B-01	BUSINESS PARK, NOTTINGHAM	NOTTINGHAMSHIRE
	PARK LANE		
	NOTTINGHAM		
	Total Gross floor area:	2321 sqm	
	Survey date: THURSDAY	17/05/07	Survey Type: MANUAL

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK

MULTI-MODAL VEHICLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30	0	0	0.000	0	0	0.000	0	0	0.000
00:30 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 01:30	0	0	0.000	0	0	0.000	0	0	0.000
01:30 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 02:30	0	0	0.000	0	0	0.000	0	0	0.000
02:30 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 03:30	0	0	0.000	0	0	0.000	0	0	0.000
03:30 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 04:30	0	0	0.000	0	0	0.000	0	0	0.000
04:30 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 05:30	0	0	0.000	0	0	0.000	0	0	0.000
05:30 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 06:30	0	0	0.000	0	0	0.000	0	0	0.000
06:30 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 07:30	4	3939	0.114	4	3939	0.063	4	3939	0.177
07:30 - 08:00	4	3939	0.432	4	3939	0.083	4	3939	0.515
08:00 - 08:30	4	3939	0.831	4	3939	0.152	4	3939	0.983
08:30 - 09:00	4	3939	1.212	4	3939	0.222	4	3939	1.434
09:00 - 09:30	4	3939	0.933	4	3939	0.248	4	3939	1.181
09:30 - 10:00	4	3939	0.374	4	3939	0.241	4	3939	0.615
10:00 - 10:30	4	3939	0.298	4	3939	0.324	4	3939	0.622
10:30 - 11:00	4	3939	0.171	4	3939	0.241	4	3939	0.412
11:00 - 11:30	4	3939	0.267	4	3939	0.317	4	3939	0.584
11:30 - 12:00	4	3939	0.273	4	3939	0.324	4	3939	0.597
12:00 - 12:30	4	3939	0.279	4	3939	0.609	4	3939	0.888
12:30 - 13:00	4	3939	0.374	4	3939	0.425	4	3939	0.799
13:00 - 13:30	4	3939	0.457	4	3939	0.470	4	3939	0.927
13:30 - 14:00	4	3939	0.552	4	3939	0.305	4	3939	0.857
14:00 - 14:30	4	3939	0.317	4	3939	0.317	4	3939	0.634
14:30 - 15:00	4	3939	0.305	4	3939	0.349	4	3939	0.654
15:00 - 15:30	4	3939	0.222	4	3939	0.343	4	3939	0.565
15:30 - 16:00	4	3939	0.254	4	3939	0.305	4	3939	0.559
16:00 - 16:30	4	3939	0.248	4	3939	0.470	4	3939	0.718
16:30 - 17:00	4	3939	0.171	4	3939	0.533	4	3939	0.704
17:00 - 17:30	4	3939	0.152	4	3939	0.736	4	3939	0.888
17:30 - 18:00	4	3939	0.102	4	3939	0.851	4	3939	0.953
18:00 - 18:30	4	3939	0.083	4	3939	0.349	4	3939	0.432
18:30 - 19:00	4	3939	0.044	4	3939	0.159	4	3939	0.203
19:00 - 19:30	0	0	0.000	0	0	0.000	0	0	0.000
19:30 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 20:30	0	0	0.000	0	0	0.000	0	0	0.000
20:30 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 21:30	0	0	0.000	0	0	0.000	0	0	0.000
21:30 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 22:30	0	0	0.000	0	0	0.000	0	0	0.000
22:30 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 23:30	0	0	0.000	0	0	0.000	0	0	0.000
23:30 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			8.465			8.436			16.901

#### Parameter summary

Trip rate parameter range selected:	1574 - 7400 (units: sqm)
Survey date date range:	01/01/00 - 17/05/07
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Optional parameters used in selection:	NO
Surveys manually removed from selection:	8

# TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL  
Category : A - HOUSES PRIVATELY OWNED  
MULTI-MODAL VEHICLES

## Selected regions and areas:

03	SOUTH WEST	
	CW CORNWALL	1 days
	WL WILTSHIRE	1 days
05	EAST MIDLANDS	
	DS DERBYSHIRE	1 days
06	WEST MIDLANDS	
	WM WEST MIDLANDS	1 days
08	NORTH WEST	
	GM GREATER MANCHESTER	1 days
	MS MERSEYSIDE	1 days
09	NORTH	
	TV TEES VALLEY	1 days

## Main parameter selection:

Parameter: Number of households  
Range: 13 to 372 (units: )

Date Range: 01/01/00 to 11/05/08

## Selected survey days:

Monday	1 days
Thursday	4 days
Friday	2 days

## Selected survey types:

Manual count	7 days
Directional ATC Count	0 days

## Selected Locations:

Suburban Area (PPS6 Out of Centre)	3
Edge of Town	2
Neighbourhood Centre (PPS6 Local Centre)	2

## Selected Location Sub Categories:

Residential Zone	6
No Sub Category	1

## Optional parameter selection:

### Use Class:

C3	7 days
----	--------

### Population within 1 mile:

5,001 to 10,000	1 days
10,001 to 15,000	2 days
15,001 to 20,000	1 days
20,001 to 25,000	2 days
25,001 to 50,000	1 days

Optional parameter selection (Cont.):

Population within 5 miles:

25,001 to 50,000	1 days
75,001 to 100,000	1 days
100,001 to 125,000	1 days
125,001 to 250,000	1 days
250,001 to 500,000	2 days
500,001 or More	1 days

Car ownership within 5 miles:

0.5 or Less	1 days
0.6 to 1.0	3 days
1.1 to 1.5	3 days

Travel Plan:

Not Known	1 days
No	6 days

LIST OF SITES relevant to selection parameters

1	CW-03-A-01	TERRACED, PENZANCE	CORNWALL
	ALVERTON ROAD		
	PENZANCE		
	Total Number of households:	13	
	Survey date: THURSDAY	30/06/05	Survey Type: MANUAL
2	DS-03-A-01	SEMI D./TERRACED, DRONFIELD	DERBYSHIRE
	THE AVENUE		
	HOLMESDALE		
	DRONFIELD		
	Total Number of households:	20	
	Survey date: THURSDAY	22/06/06	Survey Type: MANUAL
3	GM-03-A-08	SEMI DETACHED, STOCKPORT	GREATER MANCHESTER
	ELM TREE ROAD		
	LOWER BREDBURY		
	STOCKPORT		
	Total Number of households:	247	
	Survey date: FRIDAY	12/10/01	Survey Type: MANUAL
4	MS-03-A-01	TERRACED, RUNCORN	MERSEYSIDE
	PALACE FIELDS AVENUE		
	RUNCORN		
	Total Number of households:	372	
	Survey date: THURSDAY	06/10/05	Survey Type: MANUAL
5	TV-03-A-01	MIXED HOUSES/FLATS, HARTLEPL	TEES VALLEY
	POWLETT ROAD		
	HARTLEPOOL		
	Total Number of households:	225	
	Survey date: THURSDAY	14/04/05	Survey Type: MANUAL
6	WL-03-A-01	SEMI D./TERRACED W. BASSETT	WILTSHIRE
	MAPLE DRIVE		
	WOOTTON BASSETT		
	Total Number of households:	99	
	Survey date: MONDAY	02/10/06	Survey Type: MANUAL
7	WM-03-A-01	TERRACED, COVENTRY	WEST MIDLANDS
	FOLESHILL ROAD		
	FOLESHILL		
	COVENTRY		
	Total Number of households:	79	
	Survey date: FRIDAY	03/02/06	Survey Type: MANUAL

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

MULTI-MODAL VEHICLES

Calculation factor: 1 HHOLDS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. HHOLDS	Trip Rate	No. Days	Ave. HHOLDS	Trip Rate	No. Days	Ave. HHOLDS	Trip Rate
00:00 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	7	151	0.061	7	151	0.254	7	151	0.315
08:00 - 09:00	7	151	0.115	7	151	0.348	7	151	0.463
09:00 - 10:00	7	151	0.152	7	151	0.175	7	151	0.327
10:00 - 11:00	7	151	0.140	7	151	0.179	7	151	0.319
11:00 - 12:00	7	151	0.152	7	151	0.165	7	151	0.317
12:00 - 13:00	7	151	0.165	7	151	0.159	7	151	0.324
13:00 - 14:00	7	151	0.173	7	151	0.171	7	151	0.344
14:00 - 15:00	7	151	0.174	7	151	0.200	7	151	0.374
15:00 - 16:00	7	151	0.247	7	151	0.198	7	151	0.445
16:00 - 17:00	7	151	0.286	7	151	0.183	7	151	0.469
17:00 - 18:00	7	151	0.369	7	151	0.207	7	151	0.576
18:00 - 19:00	7	151	0.306	7	151	0.242	7	151	0.548
19:00 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			2.340			2.481			4.821

#### Parameter summary

Trip rate parameter range selected: 13 - 372 (units: )  
Survey date range: 01/01/00 - 11/05/08  
Number of weekdays (Monday-Friday): 7  
Number of Saturdays: 0  
Number of Sundays: 0  
Optional parameters used in selection: NO  
Surveys manually removed from selection: 22

## APPENDIX 4 – Trip Generation, Assignment and Background growth

The following appendix sets out the approach taken to trip generation and distribution assumptions used to inform estimates of the potential traffic impact of the development scenarios. Detail on background growth assumptions is also provided.

### 1 Development Density

Gross site areas were obtained using GIS for all known sites within the study area and a standard development density applied. For housing this was taken from the Leicestershire, Leicester and Rutland Structure Plan 1996 to 2016 Housing Policy 5 (p89) which in turn is based on PPS 3 and is set out in Table 1.

**Table 1: Housing Densities**

Area	Density
Within and adjoining the centre of Leicester and Loughborough	A minimum of 50 dwellings per hectare
Within other main town centres, local centres and other locations well served by public transport and accessible to services and facilities	A minimum of 40 dwellings per hectare
Other Locations	A minimum of 30 dwellings per hectare

For the purposes of the study only the two lower housing densities are applicable as the study area does not include sites within or adjoining the centre of Leicester.

For employment sites, guide densities were developed based on estimates of likely build-out rates. Two basic types of employment were considered – General industrial and Office. Trip rates associated with warehousing activity were not explicitly assessed as such land usage typically generates lower levels of trips than either office or general industrial uses. It is considered that the approach adopted avoids potential underestimation of trip levels and is therefore robust.

Table 2 details the employment densities used. Both employment and housing density assumptions were discussed and agreed with the study steering group, which included all three relevant highway authorities (Leicestershire County Council, Leicester City Council and the Highways Agency). These density levels are slightly lower than those used in the PACEC report for general industrial land uses, which appear to apply plot ratios of between 42% and 50%. The PACEC report does not calculate land areas for office use and therefore there is no comparator. There is no conflict between the two studies as the PACEC report does not recommend any employment provision in Harborough District and recommends only office allocations in Oadby and Wigston District.



**Table 2: Employment Densities**

Land Use	Conversion Factor to Gross Internal Floor Area
B1 / B2 General Industrial (various)	35%
B1 (office)	35% build out density; 2.5 floors per office building

For large sites which were likely to come forward for mixed use development in Harborough District the split of land use set out in Table 3 was used. Of these land uses only trip generation from the residential and employment uses were taken forward.

**Table 3 - Assumed Mixed Use Land Splits, HDC**

Land Use	Split
Housing	60%
Employment	30%
Retail	10%

In Oadby and Wigston a different set of densities for mixed use development was applied to reflect to the generally smaller sites and more central urban locations, as set out in Table 4.

**Table 4 - Assumed Mixed Use Land Splits, OWB**

Land Use	Split
Housing	60%
Employment	10%
Retail	30%

When considering any of the larger urban periphery green field sites within Oadby and Wigston Borough which may be required to meet the full RSS8 allocation levels, a site by site consideration of appropriate densities was undertaken, applying densities similar to those used in Harborough District. As potential total land supply in Oadby and Wigston significantly exceeds that required by RSS8 and the number of sites identified as suitable for treatment as mixed use site are relatively limited this case by case approach was considered appropriate.

These development density assumptions were applied to the known potential development site schedule. The employment needs reports provided to the study were also used to produce estimates of the potentially developable land within each area of search. Further detail on this process is provided in Section 5.

## 2 Trip Rates

Car driver trip rates for the AM peak (8-9) for housing, general industrial use and office uses were identified using the national TRICS database. These were determined for the 3 basic location groups used for the strategic assessment and are set out in Table 5.

**Table 5: Trip Rates by Land Use**

Land Use Type	Location					
	Within or adjacent to the Leicester Principal Urban Area		Within or adjacent to Sub-Regional Centres (ie Market Harborough)		Within rural areas (ie elsewhere within the District)	
	IN	OUT	IN	OUT	IN	OUT
Housing (per household)	0.115	0.348	0.118	0.418	0.118	0.418
B1 / B2 General Industrial (various) (per 100 sq. m)	2.043	0.374	1.855	0.474	1.885	0.448
B1 (office) (per 100 sq. m)	2.043	0.374	1.855	0.474	1.885	0.448

The TRICS data used is provided in Appendix 4. Census Travel to Work data for the relevant Super Output Areas was also reviewed to provide estimates of trip movements for non-car movements. The multi-modal trip generation capability from TRICS was not used as, within the context of identifying different trip levels for large urban area, sub-regional centre and rural areas for each of the different uses, there is insufficient data available to provide a statistically sound and comparable basis for deriving trip rates. Therefore Census data was used in order to reflect local travel patterns, enabling consideration of potential capacity issues for infrastructure supporting sustainable travel modes. Data for mode share is set out in Table 6.

**Table 6 - Mode share by area based on 2001 Census data**

Location	Percentage split by mode									
	Home	Train	Bus	Taxi	Driver	Pass.	MC	Bike	Foot	Other
PUA	9.10	4.24	6.80	0.10	61.50	6.30	0.50	1.90	11.90	0.10
Market Harborough	9.5	1.33	1.1	0.4	61.3	5.0	0.6	5.3	15.0	0.4
Lutterworth	6.6	0.15	1.3	0.2	75.7	6.9	0.8	2.3	5.9	0.2
Broughton Astley	18.6	0.77	0.0	0.0	72.0	3.2	1.2	0.0	2.8	0.0

Morning peak hour only trip generation was considered as the purpose of the assessment was to inform the peak period highway model used for testing of traffic impact and for consideration of public transport impact. The peak hour use is the predominant factor in the capacity of existing infrastructure.

## 3 Trip Distribution & Assignment

### 3.1 Within the Leicester PUA

The study area is partly covered by an existing Central Leicestershire Traffic Model (CLTM). A 2016 future year base model was provided to the study by Leicestershire County Council for assessment of development within the Leicester Principal Urban Area. This is the most up to date traffic model available and was considered to provide the most appropriate baseline point for assessment. The 2016 scenario was developed by Leicestershire and Leicester highway authorities to inform their area wide evidence for Regional Spatial Strategy and is understood to include all known committed development up to 2016. The model is understood to be calibrated and validated to appropriate DMRB<sup>1</sup> standards. We have not undertaken separate evaluation of the model and have taken it to provide a sound and robust assessment tool for the purposes of this strategic study.

A discussion of assessment of future years up to 2026 using this model is provided in Section 6.

Traffic generation from proposed development which falls within the network coverage of this model was distributed according to the existing distribution of the relevant model zones. A copy of the network diagram for the CLTM is provided in Appendix 5.

For development outside the scope of the CLTM, 2001 Census data was analysed to provide a distribution based on the CLTM zone structure (which extends well beyond the network coverage). Census data is 'de-personalised' so that individual trip movements cannot be identified. This process over represents single trip movements by converting them to a minimum value of three. To avoid any significant skewing of data a factor of 2/3's was applied to all movements of just 3 trips.

The census data analysis enabled the proportion of movements from areas outside the CLTM coverage to within (or those likely to pass through it) it to be identified. From this an appropriate proportion of total trip generation from an area outside the model coverage could be added to the appropriate external zone of the CLTM and distributed according to the existing model distribution. This enabled the accumulative traffic effect of development both within the CLTM and outside it to be assessed.

### 3.2 Outside the Leicester PUA

For trip movements not entering the CLTM area (for example trips from Market Harborough to Corby) the Census data was used to help determine a broad directional distribution from the area of development.

Traffic within the key urban areas was then assigned to the highway network manually using MS Excel and based on a network of key routes, available traffic count data, shortest route and local knowledge of the highway conditions. This process necessitated a broad zoning of trips within the urban area with the application of different distributions for each zone at key junctions. The zoning used broadly accords with the Areas of Search identified for each area. Based on this the increase in traffic for each link could then be calculated in order to assess impact.

The networks and distribution used for areas outside the coverage of the CLTM are provided in Appendix 6. GIS based information detailing the assignment of trips to/from Market Harborough, Lutterworth and Broughton Astley based on the zoning system from the CLTM (the coverage of which is based on Super Output Areas and covers the UK) is provided in Appendix 7. This allocates the routes by which these 'external' trips would be likely to enter or leave the

<sup>1</sup> Design Manual for Roads and Bridges

urban networks, and when combined with an analysis of Census Travel to Work data, provides the inbound and outbound trip proportions represented in Appendix 6.

Distribution of trips within the networks from the areas of search previously identified was undertaken on the basis of available traffic count data, shortest routes and local knowledge. All relevant traffic count data for the three urban areas was requested from LCC. The available current data was unfortunately relatively limited and it was necessary to undertake a number of limited peak hour traffic counts at the following locations in Market Harborough:

- Abbey Street / High Street
- Coventry Road / High Street
- Northampton Road / St Mary's Road
- Springfield Street / Northampton Road
- Northampton Road / Welland Park Road

Distribution of traffic within the Broughton Astley network was similarly assessed.

### **3.3 M1 Junction 20**

This junction lies on the A4304 immediately adjacent to Lutterworth and also provides a direct link to the M1 from Market Harborough. It is a key strategic link for routes from both development areas, particularly as existing severe congestion problems at the M1 junction 19 (A14) limit the scope for Market Harborough traffic to use this as a link to the south. The Highways Agency provided a recent count for the junction and the MS Excel spreadsheet models for Lutterworth and Market Harborough were linked to provide an estimate of potential traffic impact at this junction. Through movements on the M1 itself were excluded and consideration restricted to the grade separated roundabout only.

## 4 Background growth

Background growth is the occurrence of increased traffic levels as a result of changing travel habits, socio-demographics and general development in the area outside of the study area. The trend for increased car ownership, affluence, travel distance etc tends to result in a small level of growth in traffic through a specific area, even if there is no additional development which produces or attracts traffic directly to that area. The issue of background growth has been treated slightly differently in the study dependant on the area being assessed.

### 4.1 Central Leicestershire area

Growth up to 2016 is represented in the 2016 CLTM model which the study has been supplied with.

No further background growth beyond the 2016 test year of the CLTM has been applied because:

- The study is assessing the strategic impact of planned development at levels set by RSS8. To apply background growth as well as well would introduce a significant degree of double counting.
- The purpose of the study has been to identify the impact of the proposed development on the network. The potential amount of traffic generated into/from the PUA is small in proportion to the potential amount of background growth across the whole of the PUA area. If the growth was applied it would be very difficult to effectively isolate impact of the RSS8 development.
- The masking effect described above would be exacerbated because the CLTM area of network coverage is subject to significant existing congestion. Applying a further 10 years of growth globally without mitigation measures and network changes would have a significant adverse impact on the performance of the network, would be likely to lock the network and would significantly and unrealistically skew the results. At the time of the study Leicester and Leicestershire highway authorities were unable to advise what mitigation measures might be appropriate taking into account development and growth issues across the urban area.

TEMPRO (the national database for localised traffic growth trends based on planning data) was examined to in order to consider what development levels were predicted compared to the levels of development being considered in this study. The relevant TEMPRO outputs are provided in Table 7.

This highlighted a possible anomaly within the TEMPRO database, which appears to suggest a very large amount of development in the eastern area of the PUA. This contradicts the RSS8 level of development which sets out that the Thurnby / Scraftoft area should only be subject development of 820 houses (based on RSS8, Three Cities Sub-Regional Strategy Policy 3 (Housing Provision))

On this basis it was not considered appropriate to apply TEMPRO and to instead retain a base assessment year of 2016 for the PUA area, to which predicted development levels up to 2026 would be added.

### 4.2 Market Harborough, Lutterworth and Broughton Astley areas

Assessment of traffic and traffic growth in these areas, although not as detailed as in the CLTM area, is not as constrained because network and junction capacity is not explicitly modelled. Therefore some of the practical restrictions on applying background growth as outlined in the

section above dealing with the CLTM area do not apply. Also the predicted TEMPRO growth levels appear to be more in line with the development levels set out in RSS8.

Furthermore the relative impact of background growth from areas outside the study area on the highway within the study area is likely to be higher than within the Leicester PUA. This is premised on the assumption that a higher proportion of traffic on the network outside the PUA area will be through traffic compared to the predominantly origin/destination related traffic accessing the PUA.

Therefore, in order to retain parity of assessment available count data has been growthed using the National Traffic Model and TEMPRO factor to obtain a 2016 base year scenario for networks outside the CLTM. As an additional sensitivity test a 2026 year has also been developed, although this is not considered to represent a completely realistic scenario due to the same issues of double counting set described in relation to the Leicester PUA. The 2026 scenario must therefore be considered to provide only a very worst case sensitivity test.

**Table 7 - TEMPRO output for study area (Car Driver trip growth, TEMPRO 5.1, Car driver weekday Am peak period (07:00-09:59))**

Area	Years					
	08-16		16-21		21-26	
	Production	Attraction	Production	Attraction	Production	Attraction
Oadby	192	283	83	139	107	140
Wigston	238	458	112	221	162	221
Market Harborough	285	365	161	166	166	169
Thurnby (Leicester City)	7,305	3,463	3,123	1,635	3,011	1,862
Scraptoft (Leicester City)	7,305	3,463	3,123	1,635	3,011	1,862
Lutterworth	135	376	76	172	74	169
Broughton Astley	135	84	75	39	70	39