



Roads and Maritime Services
Trip Generation Surveys
Medium Density Residential
Dwellings
Analysis Report

transportation planning, design and delivery

Roads and Maritime Services

Trip Generation Surveys, Medium Density Residential
Dwellings

Analysis Report

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1. Introduction

1.1 Background

Roads and Maritime Services (RMS) is seeking to obtain updated trip generation data for 'medium density residential' land uses. The RMS (formerly RTA) published Version 2.2 of *Guide to Traffic Generating Developments* (Guide) in October 2002. The current version provides guidance on a number of matters related to the traffic impacts of land use developments and is widely referred to in Australia. However, much of the data is based on surveys conducted in excess of 20 years ago and the trip generation rates are generally considered out of date since it is likely that travel patterns of various land use have changed over the years.

RMS proposes to progressively update the guide to provide data that represents modern conditions.

In January 2013, RMS commissioned GTA to evaluate trip generation rates for vehicles and persons arising out of medium density residential development based upon surveys at suitable sites.

As part of the study, consideration has been given to 'Accessibility Score' which is a measure of accessibility to public transport and proximity to commercial and retail business districts and its effect upon trip generation.

Finally, the trip generation rates obtained from the study have been compared to available trip generation rates from various national and international guidelines.

1.2 Medium Density Residential Development

The purpose of this study was to determine trip generation rates for medium density residential developments where the residents either own or commercially rent the dwelling.

Types of developments that could be classified as 'medium density residential' have been provided by RMS and include the following:

- town houses
- villas
- flats/ home units
- terrace or row houses
- cluster homes
- low-rise apartments (at least 2 but less than 20 units, with or without ground floor commercial use).

The classification excludes the following:

- Aged housing
- Disability housing
- Government owned housing
- Holiday or temporary rental accommodation.

For the purpose of this study, a range of 23 – 45 dwellings per hectare (gross) or 34 – 67 dwellings per hectare (net) was defined by RMS as being medium density residential development.

1.3 Study Approach

As part of the study to determine trip generation rates for medium density residential developments, the following approach was adopted:

- GTA prepared a list of potential survey locations for the study and submitted to RMS for their review. This included key site information, aerial images and “Accessibility Score”

The ‘Accessibility Score’ is a system developed by the RMS to attribute a site’s accessibility in relation to nearby public transport services and the proximity to nearby “centres”. The system considers the proximity of public transport services, up to 800m from the site and frequency of services. A hierarchy of transport types is considered, with greater weighting to rail services and lesser weighting to bus services. Nearby centres, within 800m of the site are classified as, Global/ Regional City, Major Centre and Smaller Centre, with scoring reflected the importance of each centre.

- A total of 20 potential sites were approved by RMS for the purpose of undertaking traffic surveys to determine the trip generation rates.
- Further site inspections were carried out by GTA and each site was inspected to determine the suitability of undertaking the surveys.
- Finally a total of 17 sites were selected for the study and a letter was delivered to each dwelling to inform the residents of the proposed survey.
- GTA commissioned traffic and pedestrian surveys at the selected 17 sites. This involved counting vehicles and pedestrian accessing the sites and undertaking a sample of pedestrian interview surveys.
- The survey data was then analysed to provide trip generation data for person and vehicles
- SCATS data provided by RMS, for signalised intersections in the vicinity of the 17 sites, were analysed to determine the local road network peak hour.
- A review of national and international trip generation rates was undertaken to compare the results from the study.
- The results of the study were to be presented in the form of a data report and an analysis report.

2. Survey Methodology

2.1 Medium Density Definition

Although the project brief provides some description of medium density residential land use, the actual site selection process identified a wide variance in regards to the actual definition. The study brief outlines net and gross area as the two accepted area measurements for a site.

GTA was referred to *Residential Density Guide for Landcom Project Teams* (May 2011) by planners working in the industry to help refine the definition. The guide provides the following definitions of net and gross residential density:

"Net residential density 'the built form': *The ratio of the number of dwellings to the area of land they occupy including internal public streets, plus half the width of adjoining access roads that provide vehicular access to dwellings".*

"Gross residential density 'the place': *The ratio of the number of dwellings to the area of land they occupy. The area includes internal public streets, all areas of local open space (including parks, sports fields, drainage reserves, landscape buffers, bushfire asset protection zones) local or neighbourhood shops, primary and secondary schools, local community services, local employment areas and half the width of adjoining arterial roads".*

The guidelines to residential density refer to *AMCORD Planning Practice Note 6* where the practice note definition of gross residential density is referred to as neighbourhood density.

For the purpose of this study, the definition of the "net residential density" was adopted for all site measurements. Further research into various state and national standard did not provide a definitive range for medium density residential.

As stated in the project brief, medium density refers to those residential sites which have between 23 and 45 dwellings per hectare (gross), or between 34 and 67 dwellings per hectare (net).

However Landcom "*Residential Density Guide for Landcom Project Teams*", May 2011 nominates the Growth Centres Commission definition for medium density residential of 20 – 40 dwellings per hectare net.

The NSW Department of Planning draft document "*Good Design for Medium Density Living*" March 2011 nominates medium density as being between 25 – 60 dwellings per hectare net.

For the purpose of this study, the site selection was broadly based on the NSW Department of Planning definition (25 – 60 dwellings per hectare net), but limiting the minimum to 30 dwellings as per advice from RMS. Consequently a range of 30 to 60 was selected for the purposes of this study.

2.2 Site Selection

2.2.1 Criteria

An extensive site selection criterion was set out by RMS to capture a large range of medium density residential developments. As a minimum, the following types of developments were to be surveyed.

- Individual multi-storey developments (at least 6)
- Larger area developments (at least 4)
- Precincts (at least 3).

The suggested site selection criteria further required the developments to have the following attributes:

- recently built
- with on-site parking provision
- having reasonable geographic spread
- owner-occupied or commercially tenanted
- a range of dwelling numbers
- a range of "Accessibility Scores"
- availability of relevant information
- having no other significant traffic generating developments within the sites.

To ensure the survey data could be used throughout NSW, a range of locations were included to identify any regional variance. The suggested locations included:

- Sydney
- Newcastle
- Wollongong
- Central Coast.

2.2.2 Site Selection Methodology

The selection of potential survey sites was initially undertaken by GTA from local knowledge supported by publicly available aerial images from Google Maps and SIX Maps.

The sites were then assessed based on number of dwelling and net area. Net area was initially assumed to be the site area plus half the adjacent road reserve.

Site visits were undertaken to confirm the number of dwellings and the number of site accesses. Further assessments were carried out using desktop reviews and a total of 17 sites were finally selected for the study.

Table 2.1 provides a summary of the selected sites for undertaking the traffic and pedestrian interview surveys to determine trip generation rates.

Table 2.1: Selected Survey Sites

Region	Site Address	No. of Dwellings	Net Area (Ha)	Net Density (Dwellings/ Ha)
Multi-storey Development				
Sydney	17 and 19 Blaxland Avenue, Newington	54	0.9667	55.9
	67-71 Helen Street, Lane Cove North	12	0.2335	51.4
	21 Parkes Street, Harris Park	10	0.1952	51.2
Newcastle	80 Mitchell Street, Merewether	12	0.2123	56.5
South Coast	60 Bourke Street, North Wollongong	18	0.4215	42.7
	9 Campbell Street, Wollongong	8	0.1650	48.5
Larger Area Developments				
Sydney	32-36 Belmore Street, North Parramatta	16	0.3077	52.0
	5-7 Park Road, Five Dock	11	0.2021	54.4
	135-141 Stafford Street, Penrith	30	0.8021	37.4
	98-102 Victoria Street, Werrington	24	0.4676	51.3
Newcastle	68 Fletcher Street, Adamstown	9	0.2460	36.6
Central Coast	33 Cutler Drive, Wyong	18	0.5162	34.9
	2-10 Ruby Street, Gorokan	26	0.7915	32.8
Precinct				
Sydney	60 Davies Road, Padstow	66	1.506	43.8
	Nordica Street, Ermington	82	2.109	38.9
Newcastle	233 Hannell Street, Maryville	77	1.429	53.9
South Coast	Gayantay Way, Woonona	116	3.257	35.6

2.2.3 Key Challenges

While it was relatively easy to locate suitable sites representing large area developments, it was comparatively difficult to locate suitable precincts and multi-storey developments for the purpose of undertaking the surveys.

During the process of site selection, it was established that higher density developments are focused around retail and public transport hubs while lower density developments are located towards outlying areas.

Multi-storey medium density residential developments were generally found to be older, with no more than two storeys and relatively large garden/ open areas surrounding the development. Modern multi-storey developments were typically found to be high density developments with basement car parking and minimal open space compared to older buildings where open space and adjacent parking reduces the overall density.

2.3 Survey

GTA Consultants commissioned traffic and pedestrian surveys at the 17 selected sites during the following periods:

- Thursday 21 March 2013 between 6am and 7pm

- Week commencing Wednesday 1 May 2013 between 6am and 7pm.

The survey data is provided in a separate data report and the analysis results are provided in Chapter 3 of this report. Table 2.2 provides a summary of surveys undertaken at the selected 17 sites.

Table 2.2: Summary of Surveys

Region	Site Address	1 day	7 day	Interview
Multi-storey Development				
Sydney	17 and 19 Blaxland Avenue, Newington	☒		☒
	67-71 Helen Street, Lane Cove North		☒	☒
	21 Parkes Street, Harris Park	☒		☒
Newcastle	80 Mitchell Street, Merewether	☒		☒
South Coast	60 Bourke Street, North Wollongong	☒		☒
	9 Campbell Street, Wollongong	☒		☒
Larger Area Developments				
Sydney	32-36 Belmore Street, North Parramatta	☒		☒
	5-7 Park Road, Five Dock	☒		☒
	135-141 Stafford Street, Penrith	☒		☒
	98-102 Victoria Street, Werrington	☒		☒
Newcastle	68 Fletcher Street, Adamstown	☒		☒
Central Coast	33 Cutler Drive, Wyong		☒	☒
	2-10 Ruby Street, Gorokan	☒		☒
Precinct				
Sydney	60 Davies Road, Padstow		☒	☒
	Nordica Street, Ermington	☒		☒
Newcastle	233 Hannell Street, Maryville	☒		☒
South Coast	Gayantay Way, Woonona	☒		☒

Three sites (one each of the multi-storey, larger area and precinct developments) were surveyed over a one week period to determine the daily variation and to confirm the suitability of selecting the chosen weekdays (Wednesday and Thursday) used for the surveys. The survey week was carefully selected so that it occurred within normal school term times and the one day survey excluded Mondays, Fridays, school holiday periods or days before or after a public holiday.

The following information was recorded by the traffic and pedestrian interview surveys on-site:

- Number of vehicles entering and leaving the site
- Vehicle occupancy
- Number of pedestrians/ cyclists entering and leaving the site
- Pedestrian trip destination and other travel mode including public transport
- Car ownership.

2.4 Local Road Network Peak Periods

In a separate exercise, SCATS data from signalised intersection in the vicinity of each of the sites was provided by the RMS to allow GTA to determine the local road network peak hour and compare with the peak hour at the surveyed sites. The network peak determined from the SCATS data is provided below in Table 2.3.

Table 2.3: Road Network Peak Hour and Site Vehicle Peaks for Surveyed Sites

Region	Survey Location	Site AM Peak	Network AM Peak	Site PM Peak	Network PM Peak
Multi-storey Development					
Sydney	17 and 19 Blaxland Avenue, Newington	7:15-8:15	8:00-9:00	16:15-17:15 16:30-17:30	17:00-18:00
	67-71 Helen Street, Lane Cove North	7:00-8:00	7:45-8:45	17:00-18:00	17:00-18:00
	21 Parkes Street, Harris Park	6:00-8:30	7:45-8:45	16:30-19:00	17:00-18:00
Newcastle	80 Mitchell Street, Merewether	8:00-9:00	8:00-9:00	17:45-18:45 18:00-19:00	16:45-17:45
South Coast	60 Bourke Street, North Wollongong	7:15-8:15	8:15-9:15	18:00-19:00	17:00-18:00
	9 Campbell Street, Wollongong	7:45-8:45 8:00-9:00	8:15-9:15	16:15-17:15	17:00-18:00
Larger Area Development					
Sydney	32-36 Belmore Street, North Parramatta	6:00-7:00 7:15-8:30	8:00-9:00	17:45-19:00	16:15-17:15
	5-7 Park Road, Five Dock	6:15-7:30	7:15-8:15	16:45-18:15	17:30-18:30
	135-141 Stafford Street, Penrith	6:45-8:15	8:00-9:00	16:15-17:45	16:30-17:30
	98-102 Victoria Street, Werrington	7:45-8:45	8:00-9:00	16:15-17:15	15:15-16:15
Newcastle	68 Fletcher Street, Adamstown	8:00-9:00	8:15-9:15	16:15-17:15	16:45-17:45
Central Coast	33 Cutler Drive, Wyong	8:00-9:00	7:45-8:45	17:15-18:15 17:45-18:45	14:45-15:45
	2-10 Ruby Street, Gorokan	8:00-9:00	8:30-9:30	17:45-19:00	16:00-17:00
Precinct					
Sydney	60 Davies Road, Padstow	7:45-8:45	6:45-7:45	16:00-17:00	15:45-16:45
	Nordica Street, Ermington	7:30-8:30	7:30-8:30	17:30-18:30	17:00-18:00
Newcastle	233 Hannell Street, Maryville	7:45-8:45	7:30-8:30	17:15-18:15	16:30-17:30
South Coast	Gayantay Way, Woonona	7:45-8:45	7:15-8:15	16:15-17:15	16:45-17:45

Note: SCATS data rounded to 15 minute intervals

A review of the local road network peak hours indicates the AM peak period generally occurs between 7am – 9am and the PM peak period generally occurs between 4pm and 6pm.

A site summary sheet is provided in Appendix A and contains key survey data and statistics from all surveyed sites.

3. Survey Analysis

3.1 Survey Data

The objective of the data collection was to determine person and vehicle trip generation rates for medium density residential and assess of transport mode split.

Person trips include all people travelling to and from the site, including all occupants of vehicles, pedestrians, cyclists and any others. Vehicle trips only included vehicles accessing and exiting the site.

The data collected from the surveys was assessed for the following time periods:

- Site AM peak period (6am to 9am) - Within the typical road network peak
- Site PM peak period (4pm to 7pm) - Within the typical road network peak
- Site peak hour within the survey period
- The total daily (6am to 7pm) generation of the sites.

All people movements to and from the sites were broken down into the following modes:

- Car (as driver)
- Car (as passenger)
- Pedestrian
- Cyclist.

Sample pedestrian interview surveys were undertaken to determine trip purpose and modal split including information on car ownership and public transport usage. Trip purpose was classified as follows:

- Shopping
- Work
- Leisure/ recreation
- To a car parked on street
- Education (including childcare centre)
- Access public transport (including trains, buses, school bus, ferries and taxis).

The interview survey was limited to pedestrians and excluded drivers who may have been using their car to access public transport for part of the trip.

3.2 Key Independent Variables for Trip Rate Calculation

The key independent variables selected to assess trip generation were:

- Number of Dwellings
- 'Accessibility Score'.

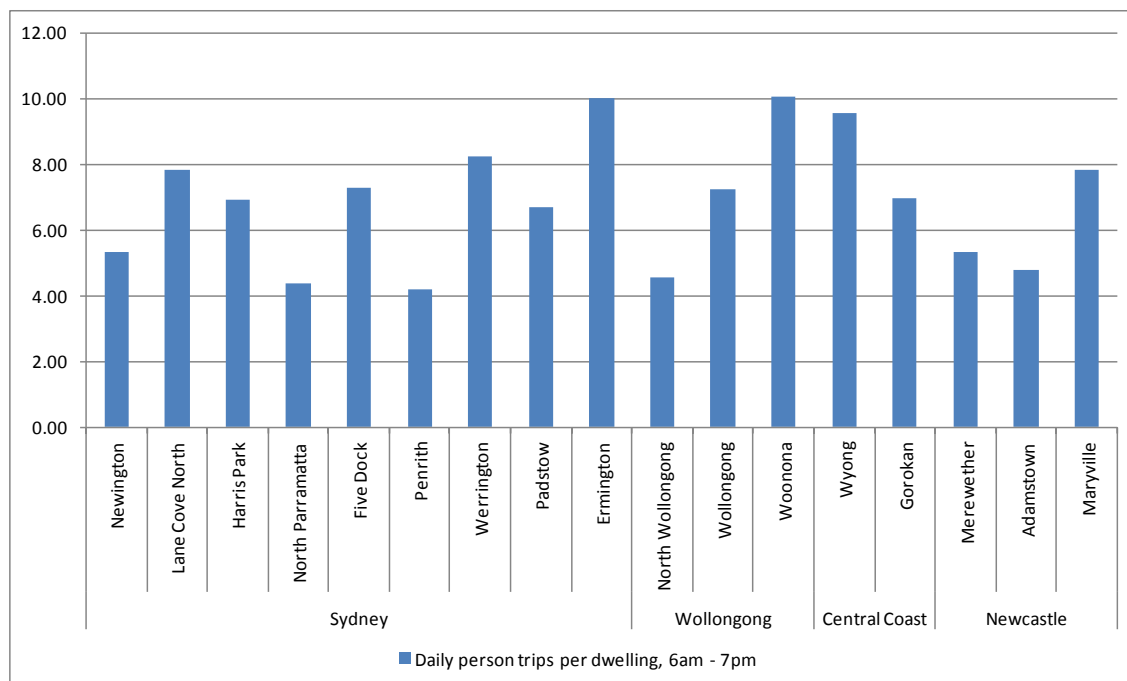
3.3 Trip Rates per Dwelling

From the surveyed data, person and vehicle trip generation rates were analysed for each of the site between 6am and 7pm (13 hours).

3.3.1 Person Trip Rates

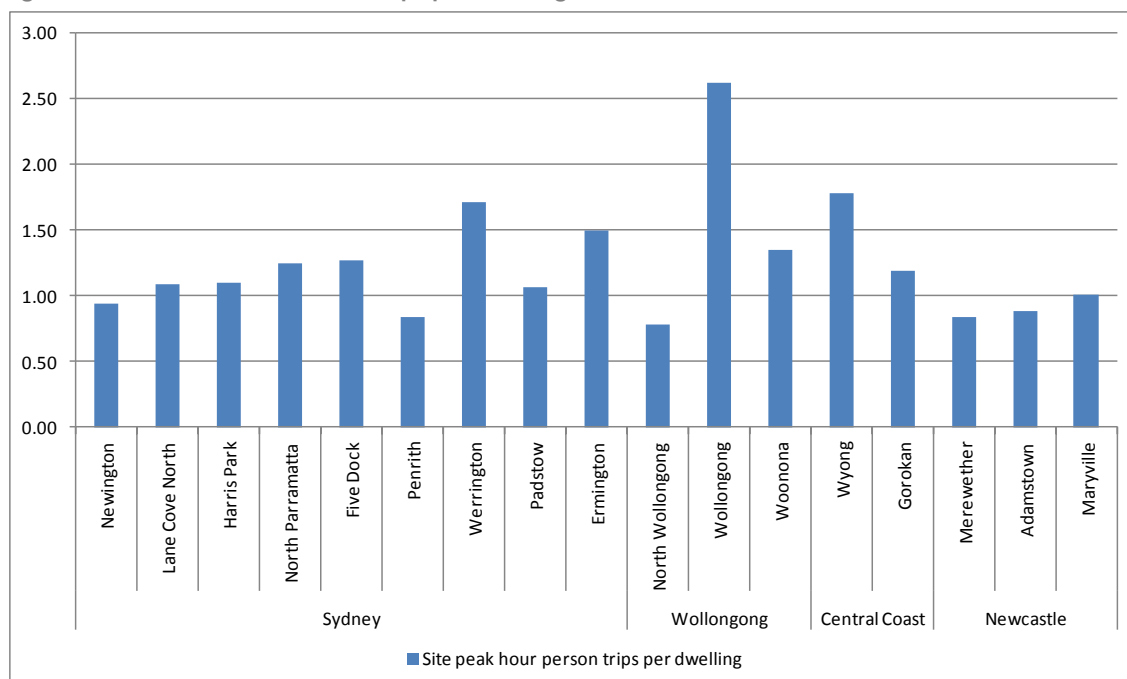
Figure 3.1 to Figure 3.4 illustrates the daily and overall site peak hour, AM peak and PM peak person trip rates for the 17 surveyed sites.

Figure 3.1: Daily Person Trips per Dwelling, 6am-7pm



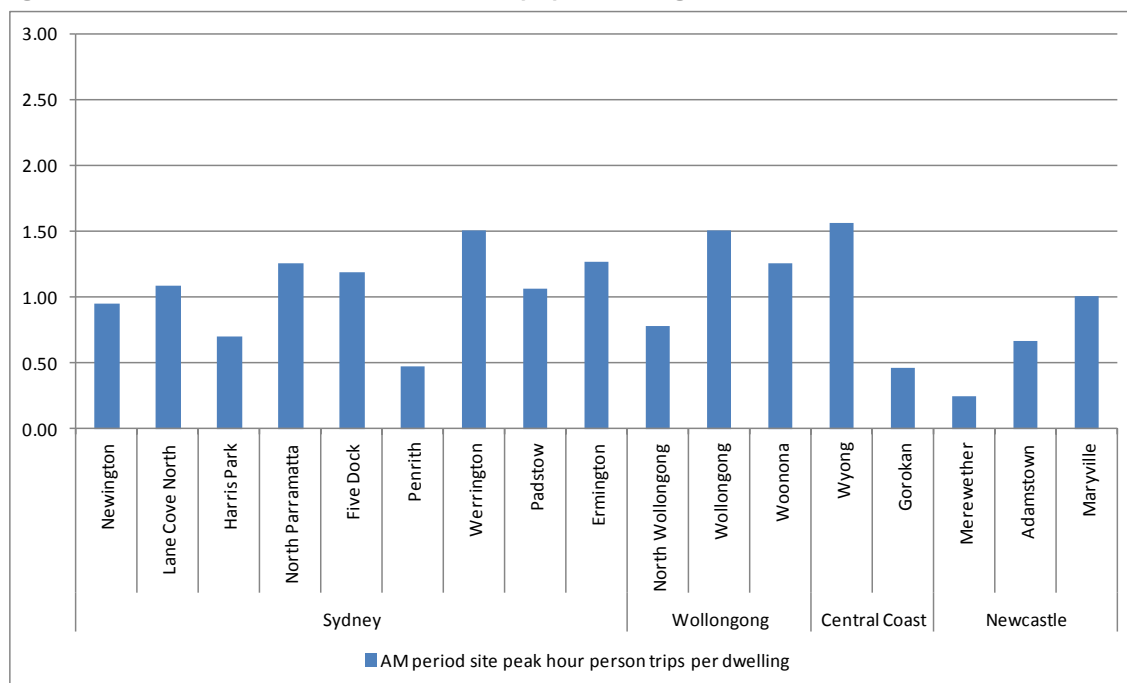
The sites in Ermington and Woonona recorded the highest trip rate while North Parramatta and Penrith recorded the lowest trip generation.

Figure 3.2: Site Peak Hour Person Trips per Dwelling



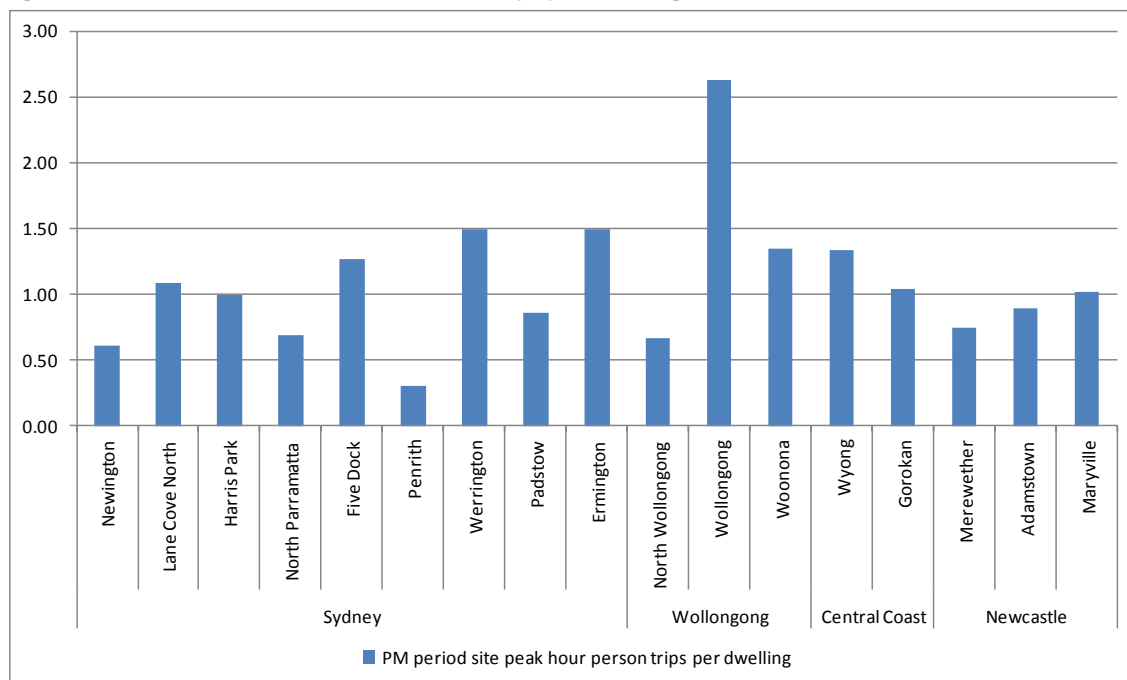
The site in Wollongong experienced the highest peak hour person trip rate per dwelling while sites in Penrith and North Wollongong had the lowest peak hour person trip generation.

Figure 3.3: AM Period Site Peak Hour Person Trips per Dwelling



The AM period site peak trip generation rate ranged from 0.25 to 1.56 person trips per dwelling.

Figure 3.4: PM Period Site Peak Hour Person Trips per Dwelling



The PM period site peak trip generation rate ranged from 0.30 to 2.63 person trips per dwelling.

3.3.2 Summary of Person Trip Rates

A summary of key results of vehicle trip rates aggregated for all surveyed sites is provided in Table 3.1 with results for each region (Sydney, Wollongong, Central Coast and Newcastle) provided in Table 3.2 to Table 3.5. Detailed results are provided in Appendix A.

Table 3.1: Person Trip Rate per dwelling Summary – All Sites

	Minimum	Maximum	Average
Daily trips (6am – 7pm)	4.20	10.03	6.89
Site Peak hour trips (6am – 7pm)	0.78	2.63	1.25
Site AM peak hour (6am -9am)	0.25	1.56	1.00
Site PM peak hour (4pm – 7pm)	0.30	2.63	1.09

Table 3.2: Person Trip Rate per dwelling Summary – Sydney (9 Sites)

	Minimum	Maximum	Average
Daily trips (6am – 7pm)	4.20	10.01	6.76
Site Peak hour trips (6am – 7pm)	0.83	1.71	1.19
Site AM peak hour (6am -9am)	0.47	1.50	1.05
Site PM peak hour (4pm – 7pm)	0.30	1.50	0.98

Table 3.3: Person Trip Rate per dwelling Summary – Wollongong (3 Sites)

	Minimum	Maximum	Average
Daily trips (6am – 7pm)	4.56	10.03	7.28
Site Peak hour trips (6am – 7pm)	0.78	2.63	1.58
Site AM peak hour (6am -9am)	0.78	1.50	1.18
Site PM peak hour (4pm – 7pm)	0.67	2.63	1.55

Table 3.4: Person Trip Rate per dwelling Summary – Central Coast (2 Sites)

	Minimum	Maximum	Average
Daily trips (6am – 7pm)	6.96	9.56	8.26
Site Peak hour trips (6am – 7pm)	1.19	1.78	1.49
Site AM peak hour (6am -9am)	0.46	1.56	1.01
Site PM peak hour (4pm – 7pm)	1.04	1.33	1.19

Table 3.5: Person Trip Rate per dwelling Summary – Newcastle (3 Sites)

	Minimum	Maximum	Average
Daily trips (6am – 7pm)	4.78	7.83	5.98
Site Peak hour trips (6am – 7pm)	0.83	1.01	0.91
Site AM peak hour (6am -9am)	0.25	1.00	0.64
Site PM peak hour (4pm – 7pm)	0.75	1.01	0.88

The analysis results for the person trip generation could be summarised as follows:

- For all the 17 sites surveyed, daily person trip rates ranged from a minimum of 4.20 to a maximum of 10.03 persons per dwelling with an average of 6.89 persons per dwelling.
- For nine sites surveyed in Sydney region, daily person trip rates ranged from a minimum of 4.20 to a maximum of 10.01 persons per dwelling with an average of 6.76. Maximum AM and PM peak hour rate for the sites was 1.5 persons per dwelling in each period.
- For three sites surveyed in Wollongong region, daily person trip rates ranged from a minimum of 4.56 to a maximum of 10.03 persons per dwelling with an average of 7.28.

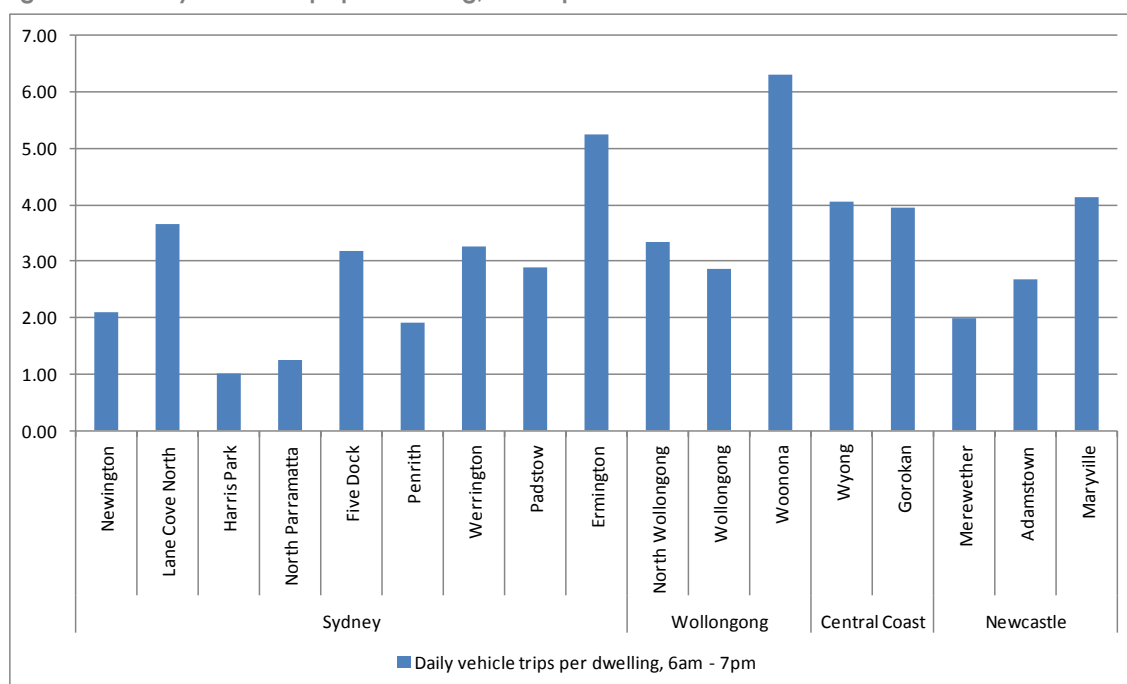
Maximum AM and PM peak hour rate for the sites was 1.5 and 2.63 persons per dwelling respectively.

- For two sites surveyed in Central Coast, daily person trip rates ranged from a minimum of 6.96 to a maximum of 9.56 persons per dwelling with an average of 8.26. Maximum AM and PM peak hour rate for the sites was 1.56 and 1.33 persons per dwelling respectively.
- For three sites surveyed in Newcastle, daily person trip rates ranged from a minimum of 4.78 and a maximum of 7.83 persons per dwelling with an average of 5.98. Maximum AM and PM peak hour rate for the sites was 1.00 and 1.01 persons per dwelling respectively.
- Peak person trip rates did not occur at consistent times between sites or within regions.
- Regional areas can represent both higher and lower trip generation rates than Sydney.

3.3.3 Summary of Vehicle Trip Rates

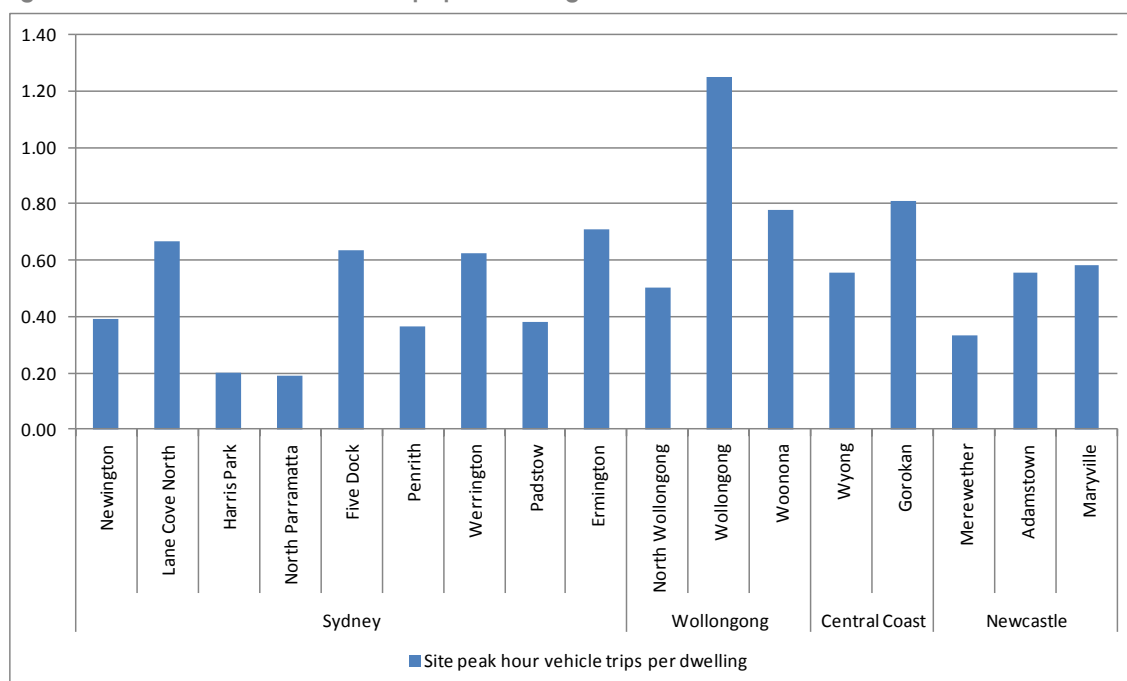
Figure 3.5 and Figure 3.6 illustrate the daily and overall peak hourly, AM peak and PM peak vehicle trip rates for the 17 surveyed sites.

Figure 3.5: Daily Vehicle Trips per Dwelling, 6am-7pm



The site with the lowest daily vehicle trip generation, Harris Park, also has the highest 'Accessibility Score'. Interestingly, the site in North Parramatta with the second lowest daily vehicle trip generation has a very low 'Accessibility Score'. The sites with the highest daily trip vehicle generation, Ermington and Woonona were relatively isolated and also scored low for accessibility.

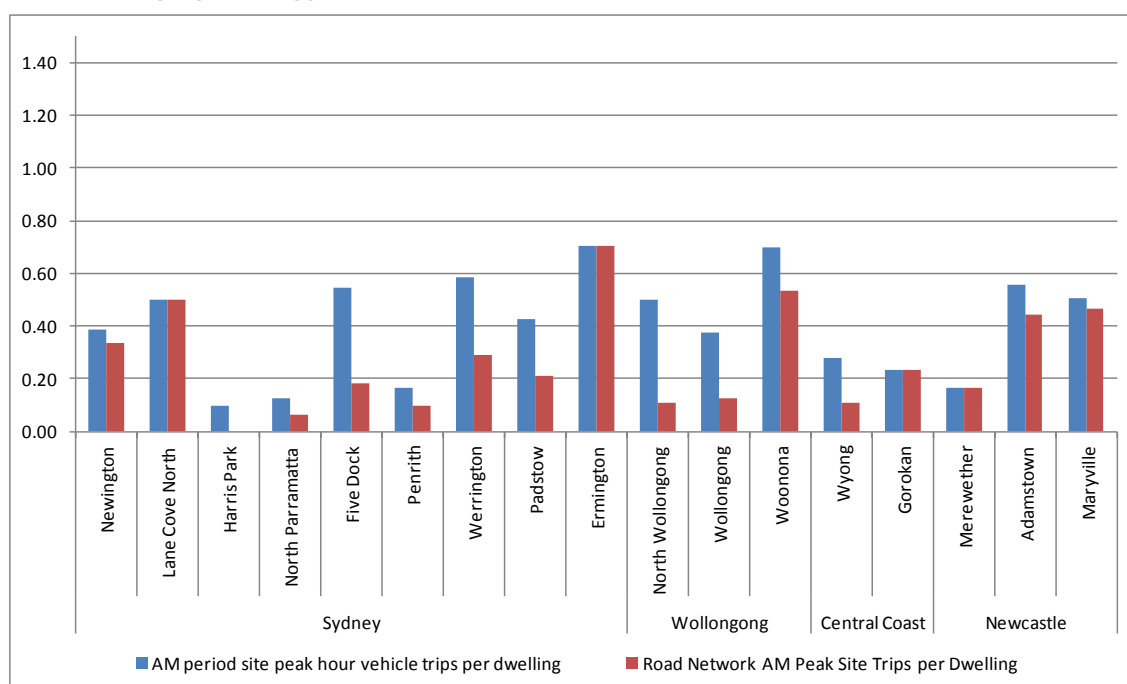
Figure 3.6: Site Peak Hour Vehicle Trips per Dwelling



The sites in Harris Park and North Parramatta sites generated low peak hour vehicle trips. The Wollongong site, which had higher person based peak trips also had the highest peak vehicle trip generation.

Figure 3.7 and Figure 3.8 compare the traffic generated during the site peak hours with the traffic generated during network peak hour.

Figure 3.7: AM Period Site Peak Hour Vehicle Trips per Dwelling and Site Generation during Road Network AM Peak

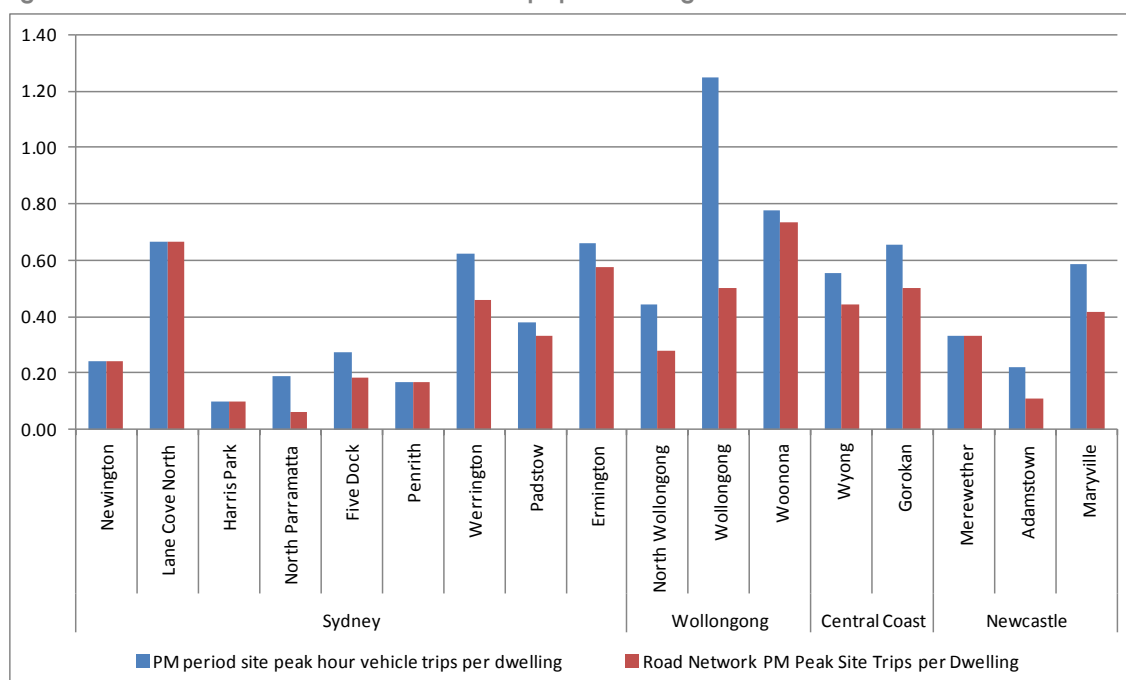


The AM period site peak trip generation rate ranged from 0.10 to 0.71 vehicle trips per dwelling.

During the AM period road network peak the sites generated between 0 to 0.71 vehicle trips per dwelling.

During the AM period road network peak the sites generated between 0 to 0.71 vehicle trips per dwelling. Lane Cove North, Ermington and Gorokan sites AM peak vehicle generation coincided with the local road network peak whereas the Harris Park site did not generate any traffic in the local road network AM peak.

Figure 3.8: PM Period Site Peak Hour Vehicle Trips per Dwelling



The PM period site peak trip generation rate ranged from 0.10 to 1.25 vehicle trips per dwelling.

During the AM and PM peak periods, sites in Harris Park and North Parramatta had consistently low trip generation rates. No pattern was established for sites located in Sydney or other regional areas. Sites located in the Wollongong region had the highest AM and PM period peak hour vehicle generation rates.

3.3.4 Summary of Vehicle Trip Rates

A summary of key results of vehicle trip rates aggregated for all surveyed sites is provided in Table 3.6 with results for each region (Sydney, Wollongong, Central Coast and New Castle) provided in Table 3.7 to Table 3.10.

. Detailed results are provided in Appendix A.

- The site peak hour trips (6am-7pm) recognises that the traffic generation peak of any site can be outside the traditional AM and PM peak periods. The tables show the range of values and the average value that is obtained across all sites, regardless of what hour it occurred.
- The site AM peak hour (6am-9am) is the maximum AM peak traffic generation occurring in the traditional AM peak period. The tables show the range of values and the average value that is obtained of these peaks across all sites, regardless of when it occurred in the AM peak period.

- The Road Network AM peak (6am – 9am) is the maximum AM peak traffic volume occurring on the adjacent principal roads closest to the sites in the traditional AM peak period. The tables show the range of values and the average value that is obtained of these peaks across all sites, regardless of when it occurred in the AM peak period.
- The site PM peak hour (4pm-7pm) is the maximum PM peak traffic generation occurring in the traditional PM peak period. The tables show the range of values and the average value that is obtained of these peaks across all sites, regardless of when it occurred in the PM peak period.
- The Road Network PM peak (4pm-7pm) is the maximum PM peak traffic volume occurring on the adjacent principal roads closest to the sites in the traditional PM peak period. The tables show the range of values and the average value that is obtained of these peaks across all sites, regardless of when it occurred in the PM peak period.

Table 3.6: Vehicle Trip Rate per dwelling Summary – All Sites

	Minimum	Maximum	Average
Daily trips (6am – 7pm)	1.00	6.29	3.17
Site Peak hour trips (within the period 6am – 7pm)	0.19	1.25	0.56
Site AM peak hour (within the period 6am – 9am)	0.10	0.71	0.40
Road network AM peak hour (within the period 6am – 9am)	0	0.71	0.27
Site PM peak hour (within the period 4pm – 7pm)	0.10	1.25	0.48
Road network PM peak hour (within the period 4pm – 7pm)	0.06	0.73	0.36

Table 3.7: Vehicle Trip Rate per dwelling Summary – Sydney (9 Sites)

	Minimum	Maximum	Average
Daily trips (6am – 7pm)	1.00	5.24	2.72
Site Peak hour trips (within the period 6am – 7pm)	0.19	0.71	0.46
Site AM peak hour (within the period 6am – 9am)	0.10	0.71	0.39
Road network AM peak hour (within the period 6am – 9am)	0	0.71	0.27
Site PM peak hour (within the period 4pm – 7pm)	0.10	0.67	0.37
Road network PM peak hour (within the period 4pm – 7pm)	0.06	0.67	0.31

Table 3.8: Vehicle Trip Rate Summary per dwelling – Wollongong (3 Sites)

	Minimum	Maximum	Average
Daily trips (6am – 7pm)	2.88	6.29	4.17
Site Peak hour trips (within the period 6am – 7pm)	0.50	1.25	0.84
Site AM peak hour (within the period 6am – 9am)	0.38	0.70	0.52
Road network AM peak hour (within the period 6am – 9am)	0.11	0.53	0.26
Site PM peak hour (within the period 4pm – 7pm)	0.44	1.25	0.82
Road network PM peak hour (within the period 4pm – 7pm)	0.28	0.73	0.50

Table 3.9: Vehicle Trip Rate Summary per dwelling - Central Coast (2 Sites)

	Minimum	Maximum	Average
Daily trips (6am – 7pm)	3.96	4.06	4.01
Site Peak hour trips (within the period 6am – 7pm)	0.56	0.81	0.68
Site AM peak hour (within the period 6am – 9am)	0.23	0.28	0.25
Road network AM peak hour (within the period 6am – 9am)	0.11	0.23	0.17
Site PM peak hour (within the period 4pm – 7pm)	0.56	0.65	0.60
Road network PM peak hour (within the period 4pm – 7pm)	0.44	0.50	0.47

Table 3.10: Vehicle Trip Rate Summary – Newcastle (3 Sites)

	Minimum	Maximum	Average
Daily trips (6am – 7pm)	2.00	4.14	2.94
Site Peak hour trips (within the period 6am – 7pm)	0.33	0.58	0.49
Site AM peak hour (within the period 6am – 9am)	0.17	0.56	0.41
Road network AM peak hour (within the period 6am – 9am)	0.17	0.47	0.36
Site PM peak hour (within the period 4pm – 7pm)	0.22	0.58	0.38
Road network PM peak hour (within the period 4pm – 7pm)	0.11	0.42	0.29

The analysis results for the vehicle trip generation could be summarised as follows:

- For all the 17 sites surveyed, daily vehicle trip rates ranged from a minimum of 1.00 to a maximum of 6.29 vehicles per dwelling with an average of 3.17 vehicles per dwelling.
- For nine sites surveyed in Sydney region, daily vehicle trip rates ranged from a minimum of 1.00 to a maximum of 5.24 vehicles per dwelling with an average of 2.72. Maximum AM and PM peak hour rate for the sites was 0.71 and 0.67 vehicles per dwelling respectively.
- For three sites surveyed in Wollongong region, daily vehicle trip rates ranged from a minimum of 2.88 to a maximum of 6.29 vehicles per dwelling with an average of 4.17. Maximum AM and PM peak hour rate for the sites was 0.70 and 1.25 vehicles per dwelling respectively.
- For two sites surveyed in Central Coast, daily vehicle trip rates ranged from a minimum of 3.96 to a maximum of 4.06 vehicles per dwelling with an average of 4.01. Maximum AM and PM peak hour rate for the sites was 0.28 and 0.65 vehicles per dwelling respectively.
- For three sites surveyed in Newcastle, daily vehicle trip rates ranged from a minimum of 2.00 to a maximum of 4.14 vehicles per dwelling with an average of 2.94. Maximum AM and PM peak hour rate for the sites was 0.56 and 0.58 vehicles per dwelling respectively.
- Peak trip rates did not occur at consistent times between sites or within regions.
- The Sydney sites have the lowest peak hour vehicle trip generation rate, yet have the second highest daily vehicle trip generation which could be as a result of peak spreading or lower commuter vehicle trips.
- A comparison of the vehicle trip generation between the regions doesn't highlight any significant variance in trip generation rates. It would require a larger sample size of regional sites to confirm any such variance.
- No trend could be established between sites in regional areas and Sydney.

3.4 Daily Variation

The three sites (Lane Cove North, Padstow and Wyong) have been surveyed for seven days to determine the daily variation in person and vehicle trip generation.

Daily person and vehicle trips for each of the sites surveyed for one week were compared to confirm the proposition that Tuesday to Thursday represent normal trip generation time periods. Weekday data is considered more important as it is generally accepted that road network experience highest peaks during the week. However, it is acknowledged that weekend road network peaks are increasing to levels seen on weekdays.

Figure 3.9: Daily Variation of Person and Vehicle Trips - Lane Cove North

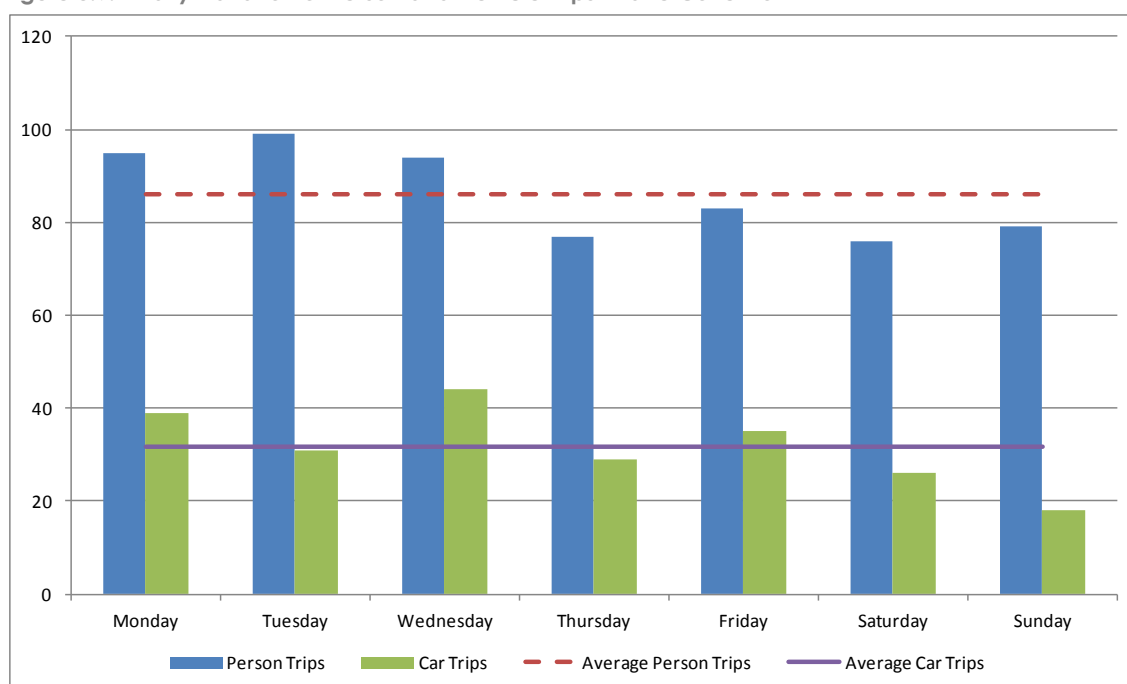


Figure 3.10: Daily Variation of Person and Vehicle Trips - Padstow

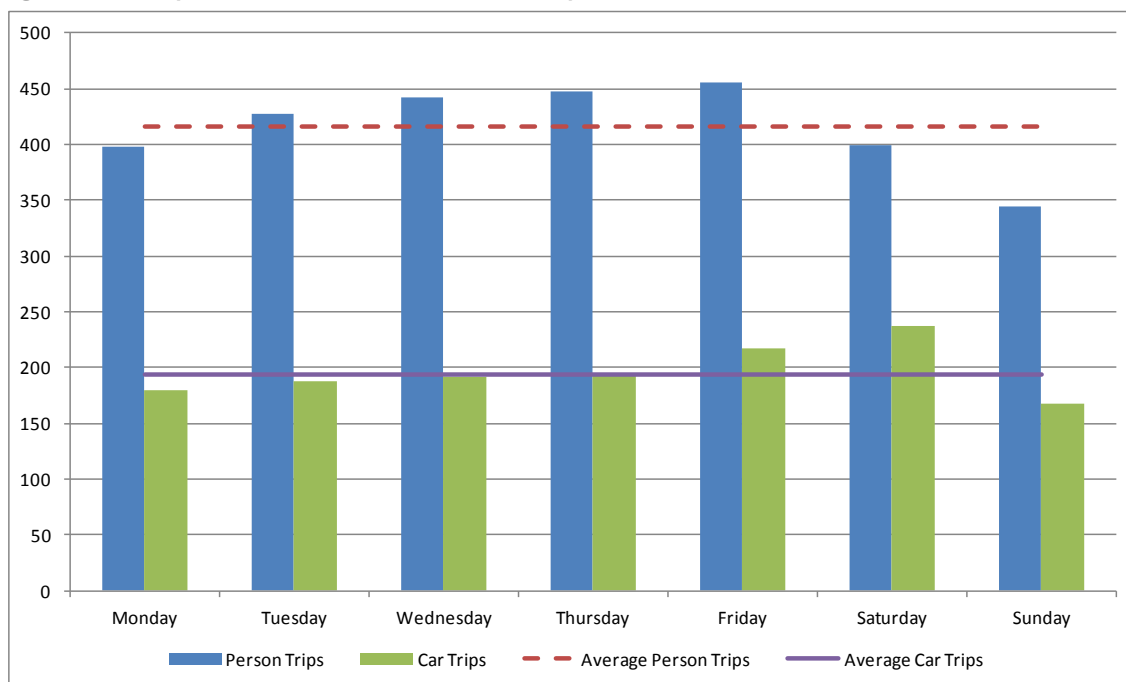


Figure 3.11: Daily Variation of Person and Vehicle Trips - Wyong

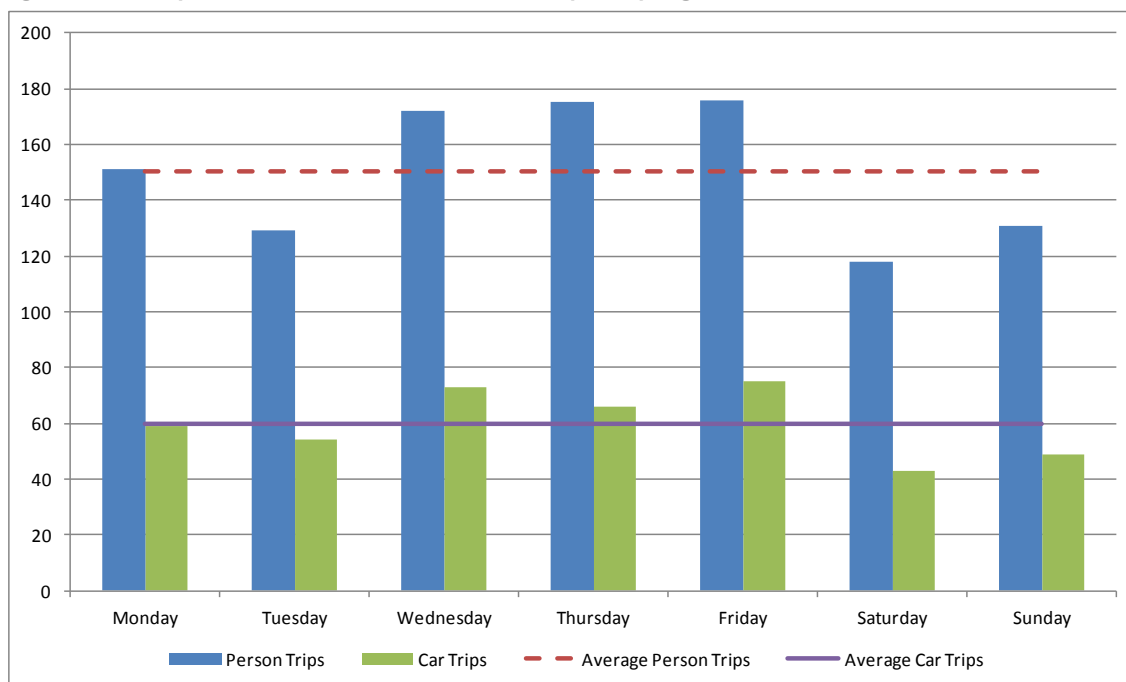


Figure 3.9 to Figure 3.11 confirm that Wednesdays and Thursdays generally experience higher than average traffic generation.

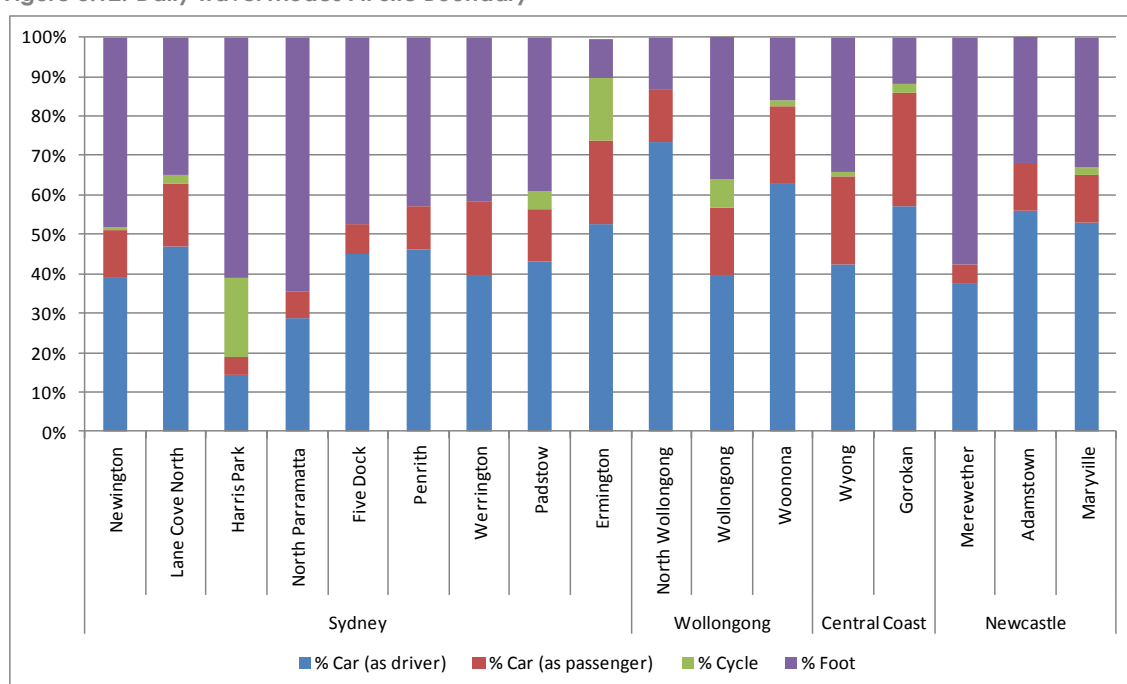
The only exception was Lane Cove where Tuesdays and Wednesdays generated higher than average traffic.

3.5 Transport Modes

3.5.1 Observed Mode Split

Analysis of the traffic surveys was undertaken to ascertain the mode of travel for people from the individual sites. As part of the analysis, people driving to access other public transport modes were counted as vehicle trips and pedestrians walking out of the site to access public transport were considered pedestrians. A small proportion of pedestrians were noted walking to access their cars which were parked on-street (i.e. outside the site). Preparation of trips from each site for each travel mode is presented in Figure 3.12.

Figure 3.12: Daily Travel Modes At Site Boundary



Survey results from site in North Wollongong recorded the maximum vehicle trips, while the sites in Harris Park and North Parramatta (both having high 'Accessibility Score') showed a higher proportion of pedestrians. The aggregated summary of travel modes from all the sites is provided in Table 3.11.

Table 3.11: Aggregated Summary of Travel Mode – All Sites

Trip Mode at Site Boundary	Proportion
All modes observed	
Car (as driver)	45%
Car (as passenger)	14%
Cyclist	4%
Foot	37%
Car vs. Non Car	
Car	59%
Non Car	41%

Table 3.11 shows that car is the dominate mode choice with close to 60% of trips by this mode from all the sites while total of 41% of trips are non-car based (pedestrians and cyclists).

3.5.2 Interview Trip Survey

Sample interview surveys were undertaken at each site to determine trip purpose and modal split and car ownership. The surveys recorded a sample of the total pedestrians leaving each site.

The interview survey provides information on pedestrian trips from the site including information on public transport usage.

A brief summary of the information gathered as part of the questionnaire survey is as follows.

Trip Purpose

- Shopping
- Work
- Leisure/ recreation
- To a car parked on street
- Education(including childcare centre)
- Access public transport (including trains, buses, school bus, ferries and taxis).

The number of respondents for each trip purpose at each of the surveyed site is provided in Table 3.12.

Table 3.12: Pedestrian Interview Survey Results - Trip Purpose

Site	Shops	Leisure/ Recreation	To car parked on-street	Education (inc day care)	To catch a train	To catch a bus (inc school bus)	Other public transport	Work	Total Survey Respondents
Newington	4 (13%)	5 (17%)	12 (40%)	1 (3%)	0	1 (3%)	1 (3%)	0	30
Lane Cove North	19 (18%)	26 (24%)	29 (27%)	8 (7%)	11 (10%)	15 (14%)	0	0	108
Harris Park	0	0	1 (14%)	0	5 (71%)	0	0	1 (14%)	7
North Parramatta	0	0	2 (40%)	0	0	2 (40%)	0	1 (20%)	5
Five Dock	1 (7%)	4 (27%)	6 (40%)	0	0	4 (27%)	0	0	15
Penrith	1 (33%)	0	0	0	2 (67%)	0	0	0	3
Werrington	8 (35%)	0	9 (39%)	3 (13%)	2 (9%)	0	0	0	23
Padstow	20 (8%)	85 (34%)	0	13 (5%)	113 (45%)	6 (2%)	0	15 (6%)	252
Ermington	0	1 (50%)	0	0	0	1 (50%)	0	0	2
North Wollongong	3 (50%)	0	1 (17%)	0	1 (17%)	0	0	1 (17%)	6
Wollongong	4 (36%)	3 (27%)	1 (9%)	2 (18%)	0	0	0	1 (9%)	11
Woonona	1 (2%)	24 (51%)	1 (2%)	5 (11%)	2 (4%)	9 (19%)	0	5 (11%)	47
Wyong	42 (55%)	4 (5%)	3 (4%)	23 (30%)	0	6 (8%)	0	0	77
Gorokan	0	2 (33%)	3 (50%)	0	0	1 (17%)	0	0	6
Merewether	2 (14%)	0	12 (86%)	0	0	0	0	0	14
Adamstown	0	0	1 (33%)	1 (33%)	0	0	1 (33%)	0	3
Maryville	5 (28%)	5 (28%)	6 (33%)	0	0	2 (11%)	0	0	18

Note: Percentages rounded to nearest integer

The total respondents at each site varied from two at Ermington, recorded on a single day survey, to 252 at Padstow where surveys were conducted over one week. A summary of public transport usage is provided in Table 3.13.

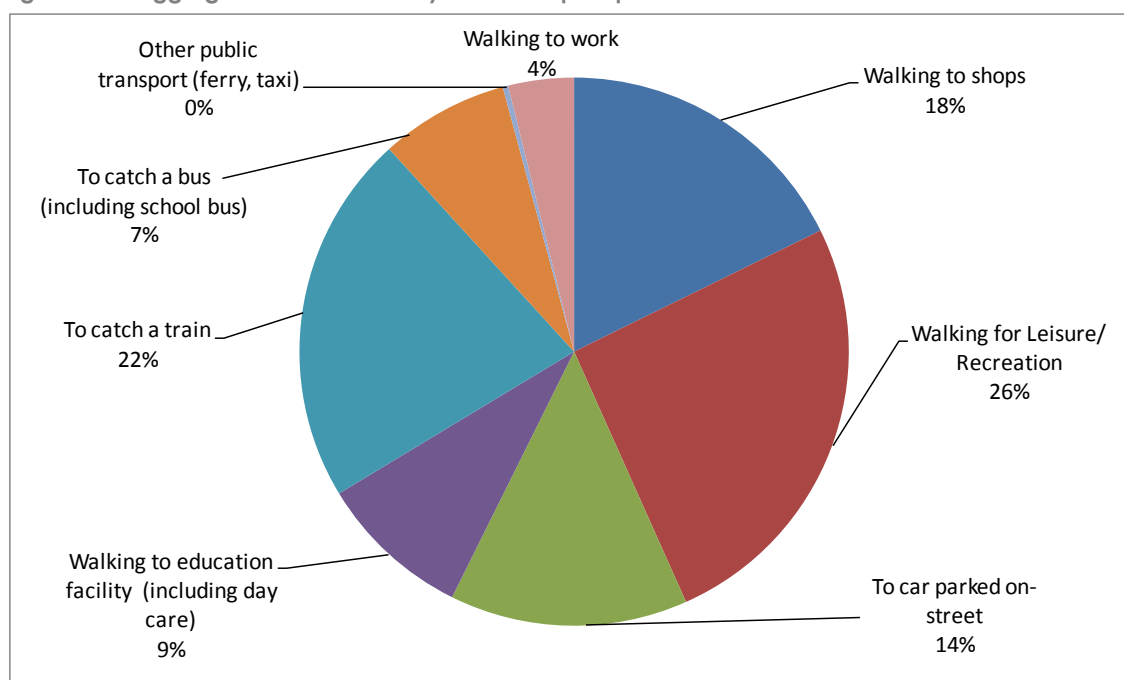
Table 3.13: Interview Survey, Public Transport Usage Responses

Site	Respondents (%) - All modes of public transport
Newington	2 (6%)
Lane Cove North	26 (24%)
Harris Park	5 (71%)
North Parramatta	2 (40%)
Five Dock	4 (27%)
Penrith	2 (67%)
Werrington	2 (9%)
Padstow	119 (47%)
Ermington	1 (50%)
North Wollongong	1 (17%)
Wollongong	0
Woonona	11 (23%)
Wyong	6 (8%)
Gorokan	1 (17%)
Merewether	0
Adamstown	1 (33%)
Maryville	2 (11%)

Note: Percentages rounded to nearest integer

The survey responses indicate that public transport usage is minimal at the regional sites in Wollongong and Merewether and could be around 71% (of pedestrians leaving the site) at sites in Sydney. An aggregate summary of trip purpose for all sites is provided in Figure 3.13.

Figure 3.13: Aggregate Interview Survey Results– Trip Purpose

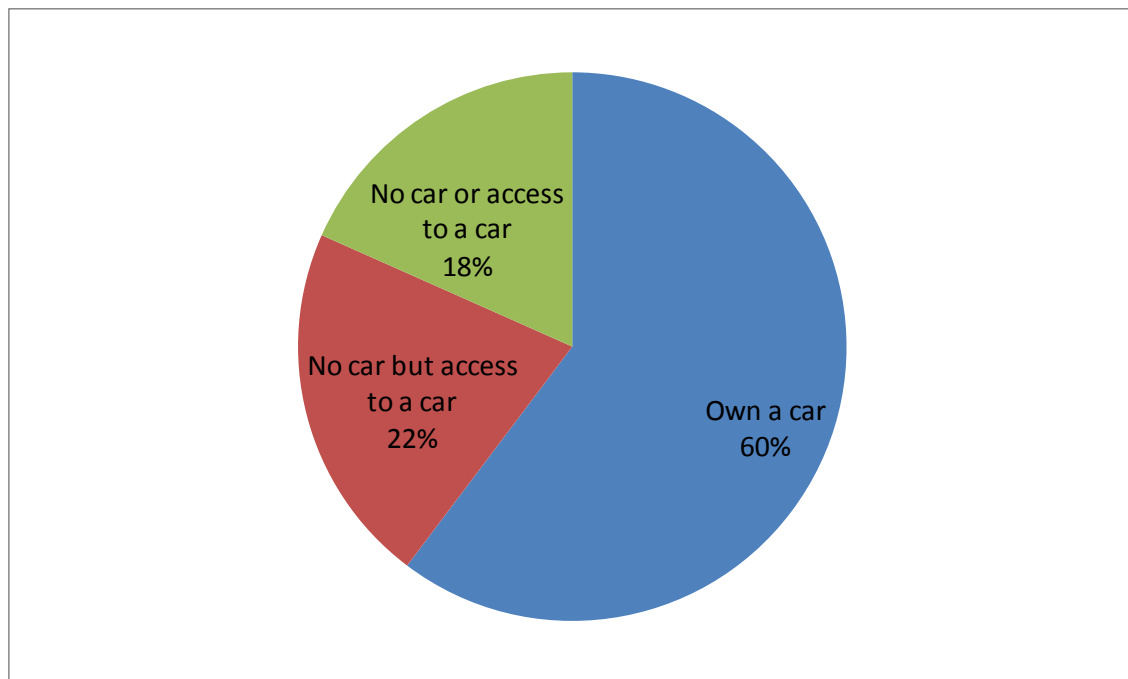


On an aggregate, the total public transport usage at all the sites was around 29%, which included 22% by train and 7% by bus.

Car ownership

An aggregated summary of car ownership at all the surveyed sites is provided in Figure 3.14 with results for individual sites provided in Appendix A.

Figure 3.14: Aggregate Interview Survey Results– Car Ownership



The car ownership results show 60% of respondents owned a car, 22% do not own a car but have access to one and only 18% do not have access to any car.

3.6 Trip Directional Split

The directional split for person and vehicle trips were analysed for the each sites in the AM and PM peak periods. Figure 3.15 and Figure 3.16 shows the directional split for all person trips for individual sites.

Figure 3.15: Person Trip Directional Split AM Period Site Peak

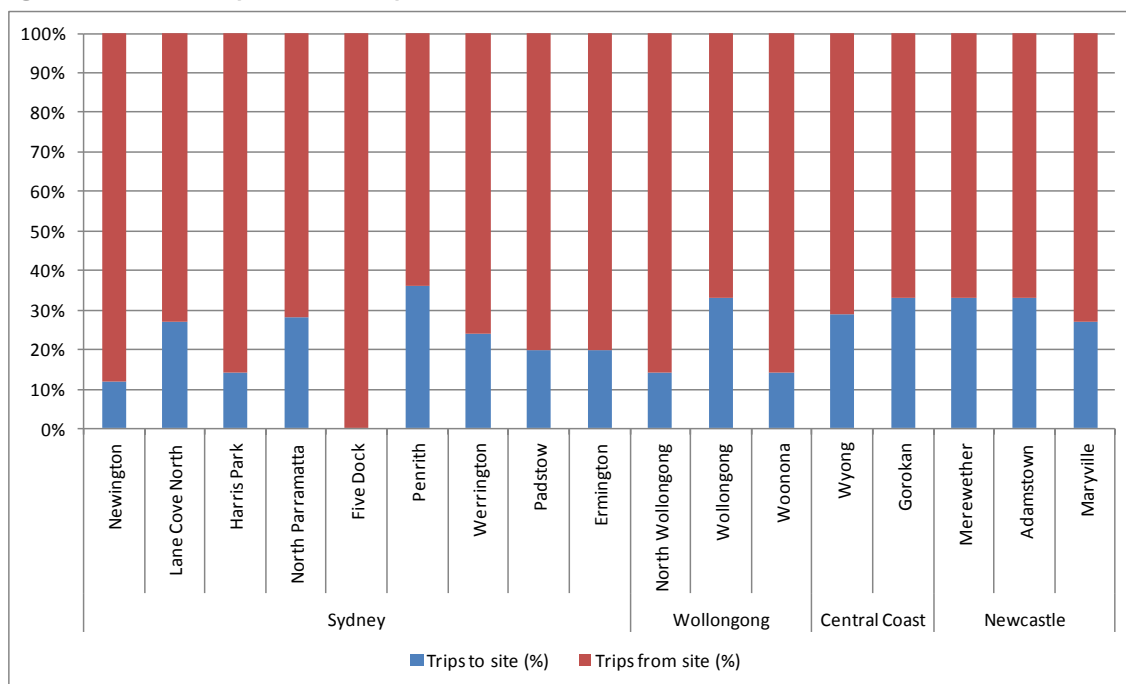


Figure 3.16: Person Trip Directional Split PM Period Peak

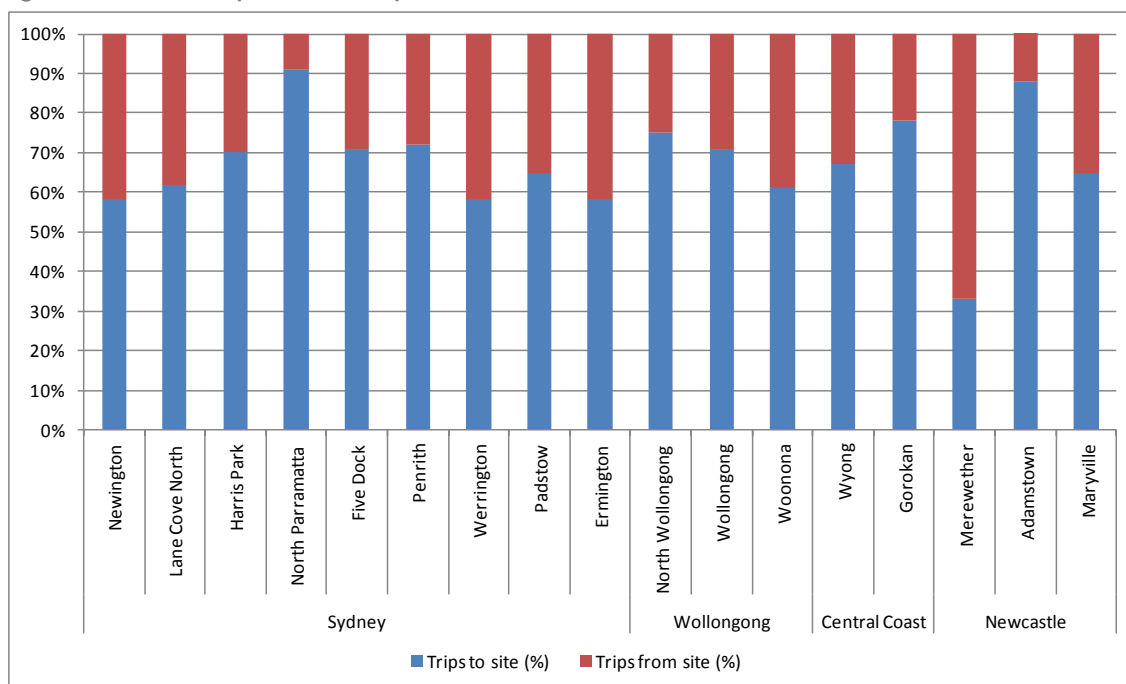


Figure 3.17 and Figure 3.18 shows the directional split for all vehicle trips for individual sites.

Figure 3.17: Vehicle Trip Directional Split AM Period Site Peak

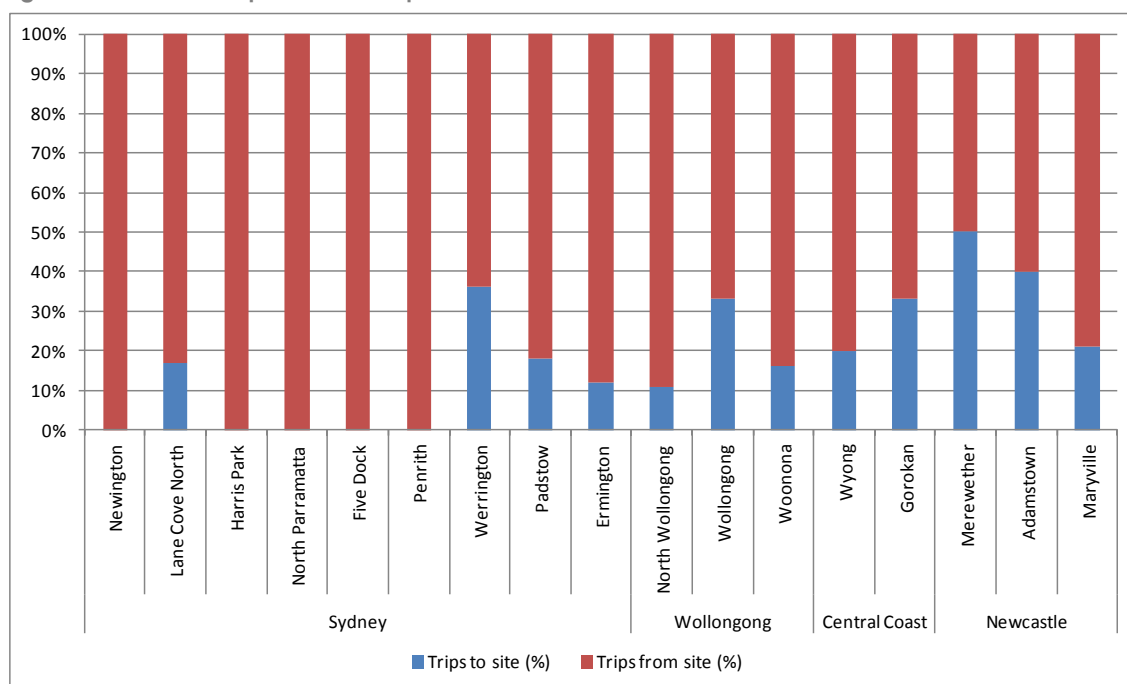
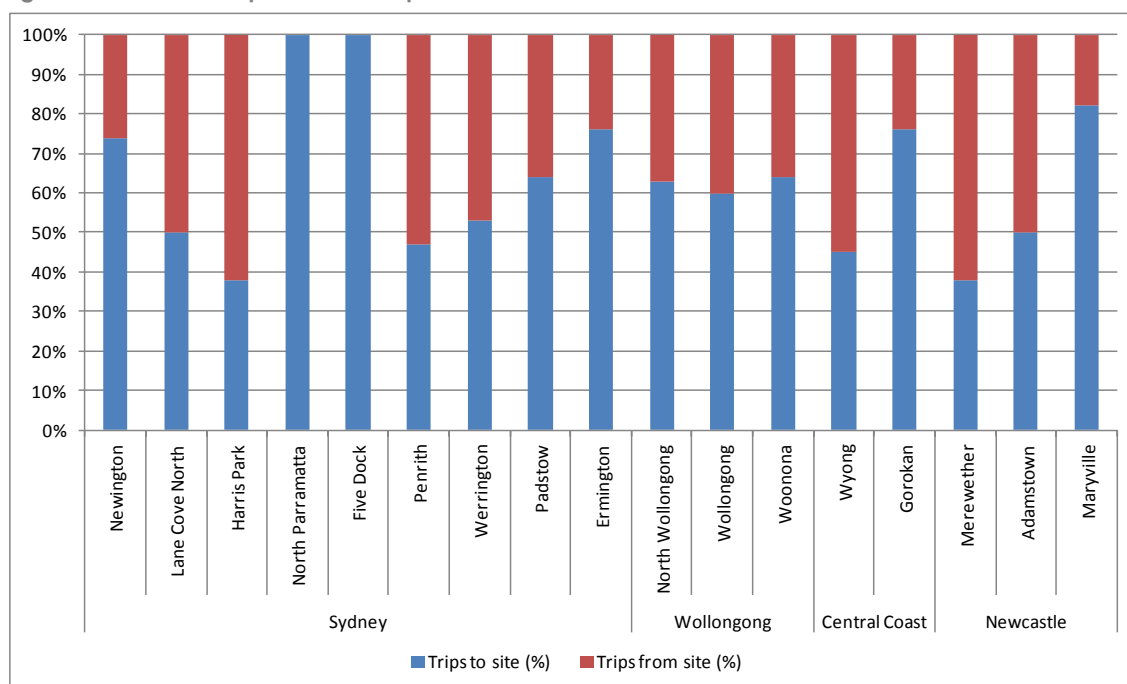


Figure 3.18: Vehicle Trip Directional Split PM Period Site Peak



The aggregate directional split for persons and vehicles for the surveyed sites in the AM and PM peak periods is summarised in Table 3.14 as follows.

Table 3.14: Aggregated Trip Directional Split

Trip Type	Peak Period	Direction	Average
Person	AM	To	23%
		From	77%
	PM	To	67%
		From	33%
Vehicle	AM	To	18%
		From	82%
	PM	To	64%
		From	37%

Table 3.14 shows that approximately 80% of trips in the AM leaves the site and in the PM peak, approximately 65% of the trips travel into the sites. This confirms the proposition that AM peak periods are more intense than PM peak periods where the peak traffic generally spreads over a longer period.

3.7 Vehicle Occupancy

Figure 3.19 compares the vehicle occupancy recorded at each of the 17 surveyed sites while Table 3.15 gives the daily average of each site.

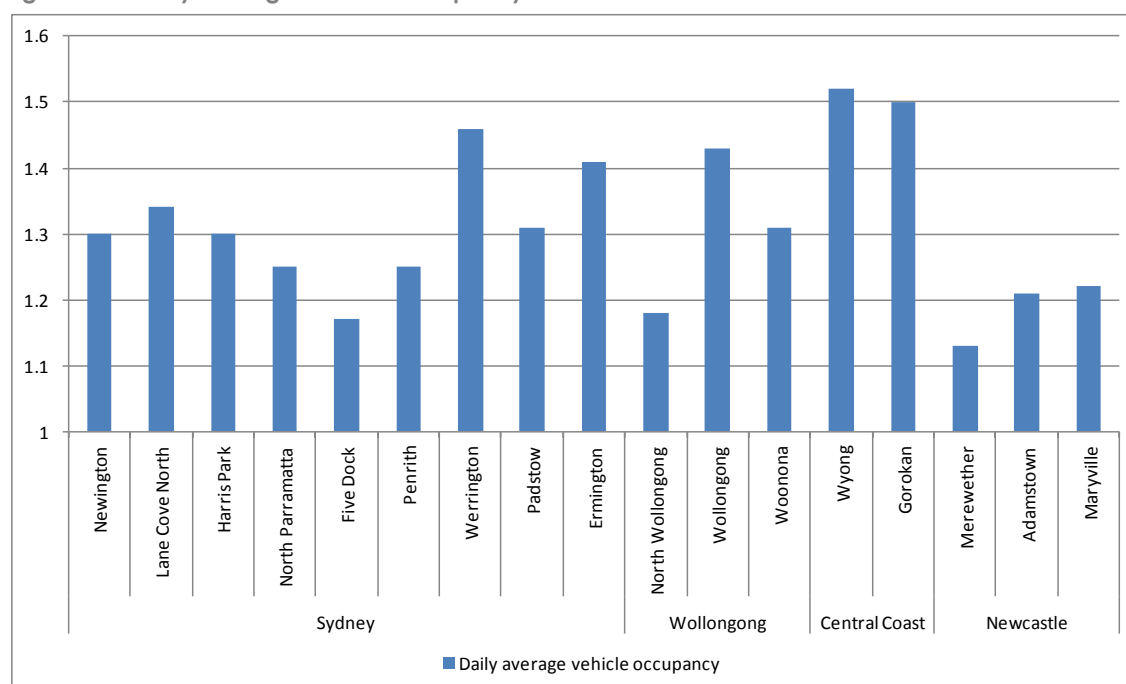
Figure 3.19: Daily Average Vehicle Occupancy


Table 3.15: Daily Average Vehicle Occupancy

Site	Daily Average Vehicle Occupancy
Newington	1.3
Lane Cove North	1.34
Harris Park	1.3
North Parramatta	1.25
Five Dock	1.17
Penrith	1.25
Werrington	1.46
Padstow	1.31
Ermington	1.41
North Wollongong	1.18
Wollongong	1.43
Woonona	1.31
Wyong	1.52
Gorokan	1.5
Merewether	1.13
Adamstown	1.21
Maryville	1.22

The maximum vehicle occupancy of 1.52 was observed at Wyong and the minimum occupancy of 1.13 was observed at Merewether.

The survey analysis showed that the Central Coast sites had the highest vehicle occupancy. However, only two sites were surveyed as part of this study and a larger sample size is required to confirm this overall trend.

3.8 Linear Regression Analysis

Linear regression analysis was carried out to determine the most consistent measure of trip generation and establish a relation between trip rates and any other identified factor. Any relationship established from this analysis could be then applied to assess the traffic generation for other proposed medium density residential developments.

The regression analysis was carried out using number of dwellings and “Accessibility Score” as the key independent variables and trip generation as the dependant variable.

The coefficient of determination (R^2) has been used to provide a measure of the usefulness of the regression equation. It measures the proportion of variation in Y (trip behaviour) that is explained by the independent variable X (such as number of occupied units) in the regression model. The values vary from 0 to 1 with higher value representing a higher degree of correlation. In this study, a correlation coefficient (R^2) above 0.8 is preferred in order to accept the results to the desired level of correlation. In other words, at least 80% of the variation in trip behaviour can be explained by the variability in the selected independent variable in the acceptable level.

3.8.1 Number of dwellings as the Independent Variable

Person Trips

Figure 3.20 to Figure 3.23 illustrates the regression analysis results for daily, overall site peak hour, site AM peak and site PM peak person trip rates.

Figure 3.20: Linear Regression -Daily Person Trips

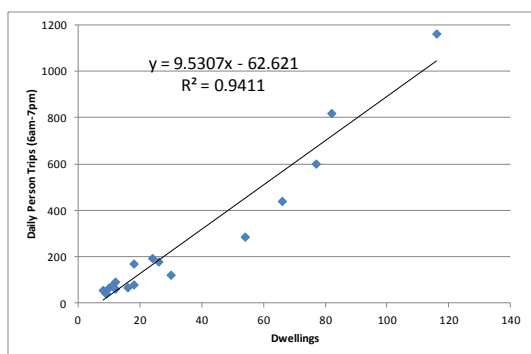


Figure 3.21: Linear Regression -Site Peak Hour Person Trips

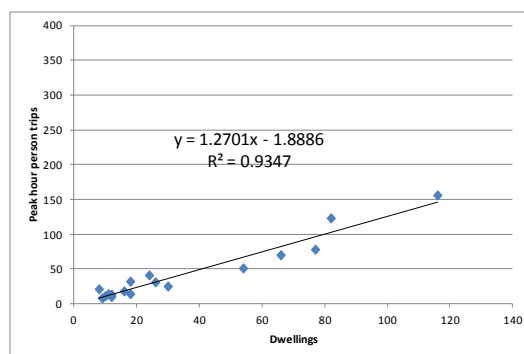


Figure 3.22: Linear Regression -AM Period Site Peak Person Trips

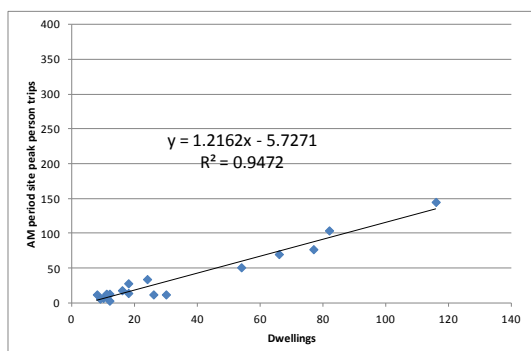
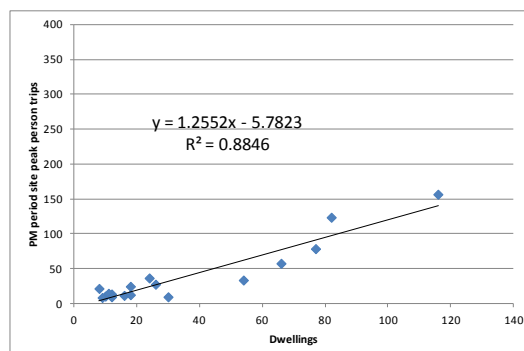


Figure 3.23: Linear Regression -PM Period Site Peak Person Trips



The analysis shows there is a strong correlation between the number of dwellings and person trip generation, with a minimum R^2 of 0.89 indicating 89% certainty of a relationship.

Vehicle Trips

Figure 3.24 to Figure 3.27 illustrates the regression analysis results for daily and overall site peak hour, site AM peak and site PM peak vehicle trip rates.

Figure 3.24: Linear Regression -Daily Vehicle Trips

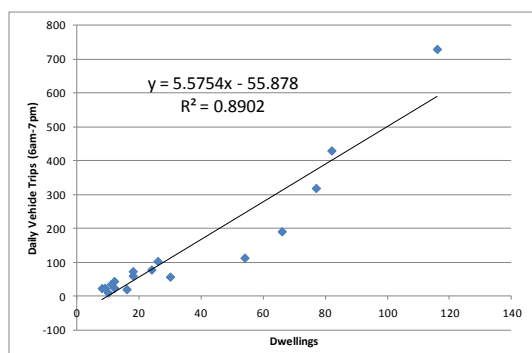


Figure 3.25: Linear Regression -Site Peak Hour Vehicle Trips

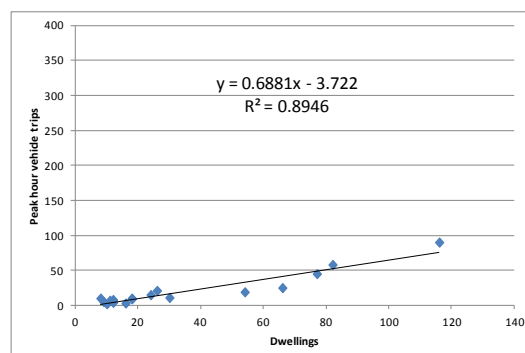


Figure 3.26: Linear Regression -AM Period Site Peak Vehicle Trips

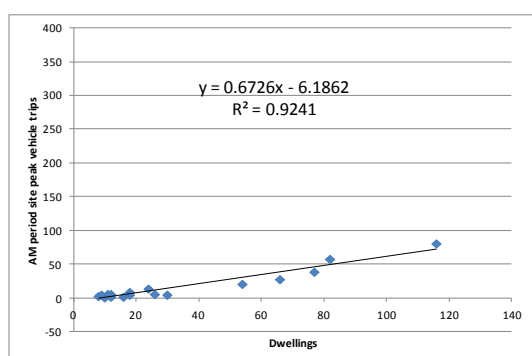
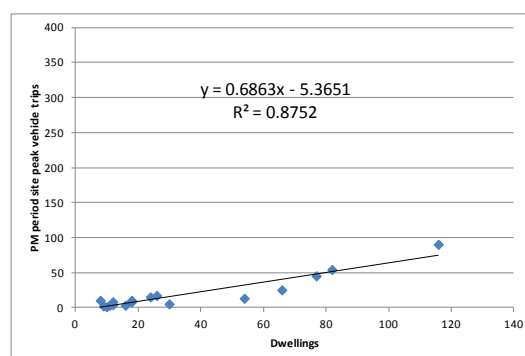


Figure 3.27: PM Period Site Peak Vehicle Trips



The survey results indicate a strong relationship between number of dwellings and vehicle trips generated with an R^2 of 0.87 or higher noted for all analysis.

3.8.2 'Accessibility Score' as the Independent Variable

Regression analysis was undertaken to assess 'Accessibility Score' against person trips and vehicle trips to determine the relationship of trip rates with accessibility.

Person Trips

Figure 3.28 to Figure 3.31 illustrates the regression analysis results for daily, overall site peak hour, site AM peak and site PM peak person trip rates with 'Accessibility Score' as the independent variable.

Figure 3.28: Linear Regression -Daily Person Trip Rate

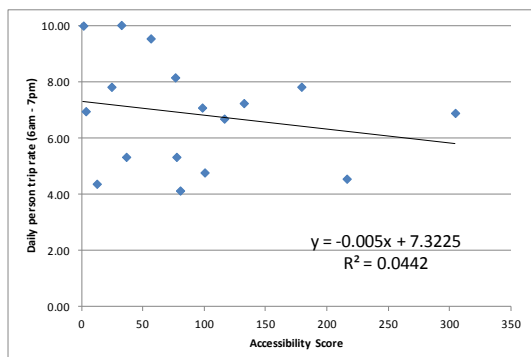


Figure 3.29: Linear Regression -Site Peak Hour Person Trip Rate

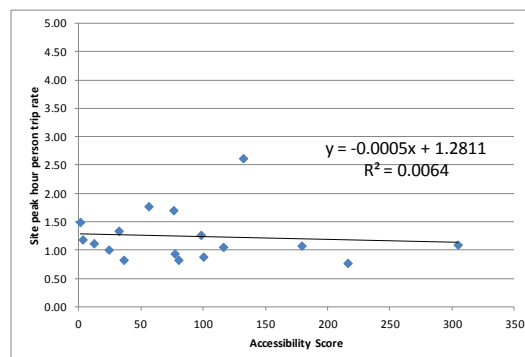


Figure 3.30: Linear Regression -AM Period Site Peak Person Trip Rate

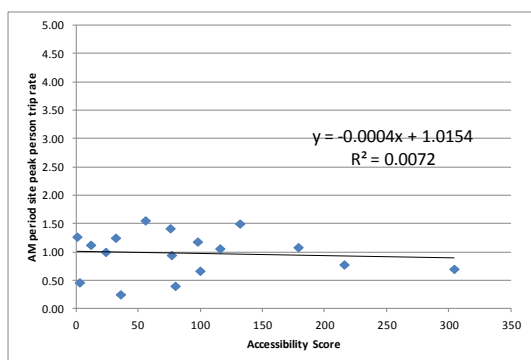


Figure 3.31: Linear Regression -PM Period Site Peak Person Trip Rate

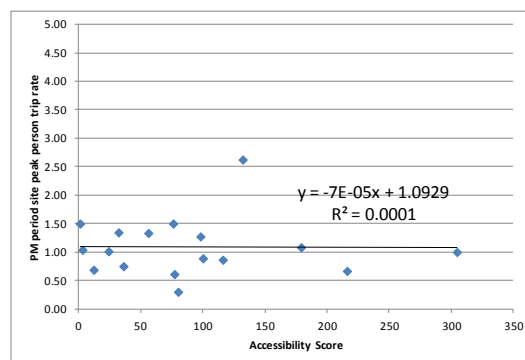


Figure 3.32: Linear Regression -Percentage of Non Car Trips

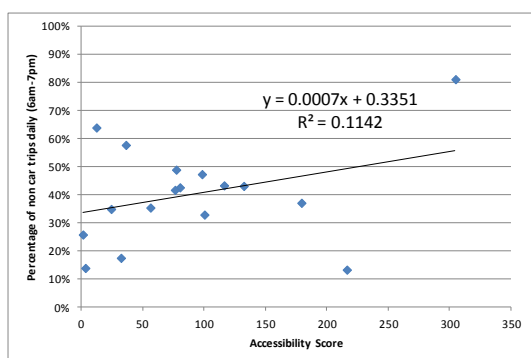


Figure 3.28 to Figure 3.31 showed that 'Accessibility Score' does not have a significant bearing on person trips. However Figure 3.32 indicates an increase in non car trips with an increase in accessibility.

Vehicle Trips

Figure 3.33 to Figure 3.37 illustrates the regression analysis results for daily, overall site peak hour, site AM peak and site PM peak vehicle trip rates with 'Accessibility Score' as the independent variable.

Figure 3.33: Daily Vehicle Trip Rate

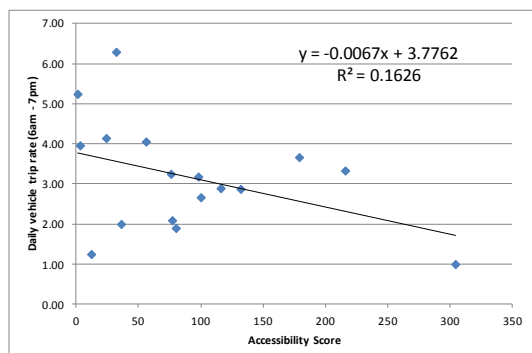


Figure 3.34: Peak Hour Vehicle Trip Rate

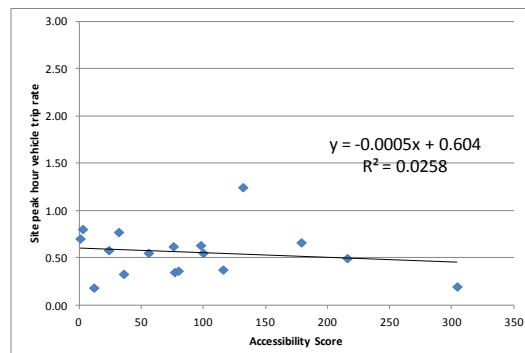


Figure 3.35: AM Period Peak Vehicle Trip Rate

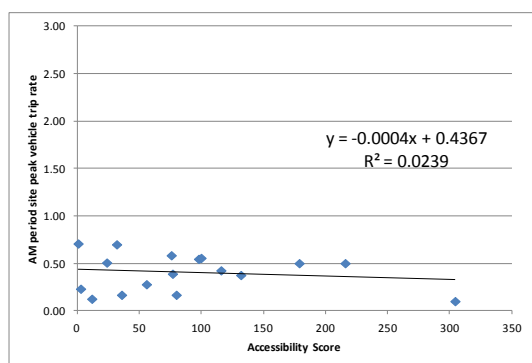


Figure 3.36: PM Period Peak Vehicle Trip Rate

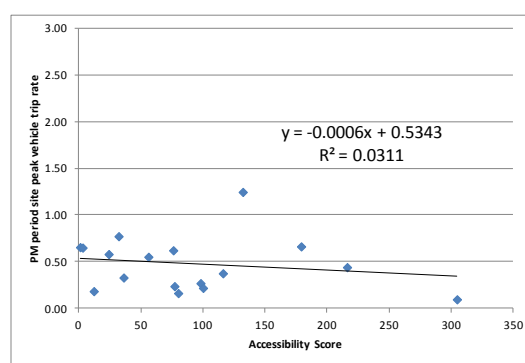
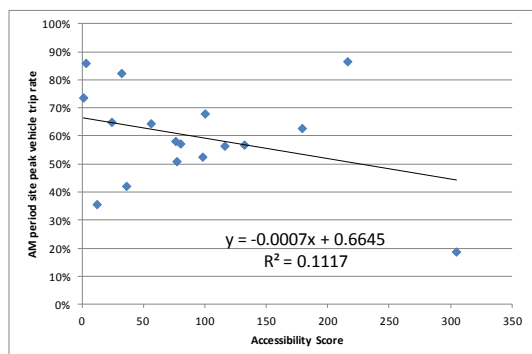


Figure 3.37: Percentage of People Access Site by Car



The general trend shows a reduction in vehicle trips as accessibility increases. However, given the low R^2 values obtained, no strong relationship between the 'Accessibility Score' of a site and the vehicle trip generation could be established.

3.8.3 Linear Regression Conclusion

It was observed that there are identifiable relationships between dwelling numbers and trip generation, both vehicle and person despite the differences in location and 'Accessibility Scores'. The analysis could not establish a strong relationship between "Accessibility Score" and trip generation.

4. Review of Trip Generation Rates

A number of traffic generation databases, both Australian and overseas, have been examined to see if they are comparable to the results for the trip generation rates for medium density residential that have been established from this study. The following sections provide an overview of the various Australian and overseas guidance documents on trip generation rates.

4.1 Australian Guidelines

4.1.1 National Documents

"The Guide to Traffic Management Part 12 – Traffic Impact of Developments" published by Austroads provides guidance on the design, development and management of a variety of land use developments. Under 'Commentary 7 Trip Generation Data' the guide specifies that *'The NSW guide is currently the most comprehensive Australian reference on the subject. However, it is noted that the base data included in that publication were collected many years ago and need to be updated with more recent data'*.

The guide however mentions that the most reliable source of trip generation data is the survey data from actual developments (only possible where an existing development is being changed or enlarged) or from a similar site preferably in close proximity. Modifications may be made to the collected data to allow for differences in attributes between the surveyed and proposed developments, such as size, location, and minor differences in the mix of uses (e.g. business types).

4.1.2 TDB AUSTRALIAN Database

From 2009, the New Zealand Trips and Parking Database Bureau which is now known as the Trips Database Bureau (TDB) has been supplemented with a database of Australian trip and parking surveys. This database has therefore been partially sourced from survey data provided by RMS (formerly RTA) for surveys undertaken for RMS over a range of development uses since 2009. The TDB Trips and Parking Database is now being used by a number of Australian practitioners.

4.1.3 State Documents

Most Australian states produce a document which provides guidance to traffic / transport impact assessments and reference to sources of traffic generation data. The documents, and other anecdotal information, are discussed below in Table 4.1 for each of the states.

Table 4.1: Recommended Sources of Trip Generation Information for various Australian States

NSW	The RMS "Guide To Traffic Generating Developments (2002)" is generally used. The latest version of the document was published in 2002 but much of its data is around 20 years old. A number of consultancies use their own data collection efforts to argue variations to the RMS Guide (both up and down) but invariably use the RMS guide as the starting point.
Victoria	The RMS Guide to Traffic Generating Developments is used extensively and some documents refer to a Victorian document "Guidelines for Transport Impact Assessment Reports for major land use and development proposals (2006)" often referred to as "The Transport Impact Assessment Report (TIAR) Guidelines". To a lesser extent, the Institute of Transportation Engineers (ITE) Trip Generation, 8th Edition publication is still used. Again, consultancies tend to use their own data collection efforts to assemble traffic generation figures. VISTA (Victorian Integrated Survey of Travel and Activity) provides data across all dwelling types for each Victorian municipality without any split of dwelling types.
Queensland	The "Guidelines for Assessment of Road Impacts for Developments (2006)" produced by Queensland Transport refers to data sources from RMS "Guide To Traffic Generating Developments (2002)", ITE Trip Generation, Main Roads and Local Governments' Databases and Traffic transport consultants' and various surveyors' databases. Appendix 3A of the "Roads Planning and Design Manual 2005" by the Department of Main Roads provides trip rates for selected land uses including medium density residential. Most Council Planning Guidelines refer to the RMS Guide "Guide To Traffic Generating Developments (2002)" for further reference.
South Australia	The library at the Department for Transport, Energy and Infrastructure (South Australia) has confirmed that they have the RMS's version of "Guide To Traffic Generating Developments" although they were also able to provide a copy of the "Land use traffic generation guidelines (1987)" which was produced by the Director-General of Transport South Australia. Anecdotal evidence suggests that traffic assessments generally refer to the RMS's "Guide To Traffic Generating Developments (2002)" whilst historically emphasis was placed on the South Australian "Land Use Traffic Generation Guidelines".
Western Australia	Transport Assessment Guidelines for Developments was issued in 2006 for trial and evaluation. The document is divided into 5 volumes with the final volume giving more detailed considerations. The document was endorsed by the Western Australia Planning Commission Transport Committee as a "working" document for voluntary trial and evaluation. Transport officers within the Department for Planning and Infrastructure are using the guidelines to assist them in assessing the transport implications of land use development proposals and officers within local government are being encouraged to do the same. Anecdotal evidence suggests that the South Australia Land Use Traffic Generation Guidelines (1987), the RMS's "Guide To Traffic Generating Developments (2002)" and the ITE Trip Generation Handbook (USA) are all used for various planning purposes
Australian Capital Territory	Residential trip generation rates are outlined with the ACTPLA Residential Subdivision Development Code. GTA Consultants undertook a study in 2011 to find traffic Generation Rates for small lots under 360sq.m. The results from the study was adopted by the ACT government and are likely to be included the next revision of the territory plan.
Northern Territory	Unknown
Tasmania	Tasmania generally uses the RMS guidelines when assessing traffic generating developments. This only varies when contemporary and relevant traffic count data that supports using other figures is available.

Each of the key Australian documents is described below.

New South Wales

The RMS's "Guide to Traffic Generating Developments (2002)" includes both traffic generation and parking impact information for a wide range of land uses. However, the datasets used for the RMS trip generation are considered to be old and the guide needs to be updated. The document is currently widely used in NSW although its validity is sometimes called into question, particularly at Land and Environment Court cases, when developers often submit their own traffic count data.

The RMS guide provides trip generation rates for medium density residential land use:

Residential type	Description	Trip Generation Rate
Medium density residential flat building	building containing at least 2 but less than 20 dwellings (includes villas, town houses, flats, semi-detached houses, terrace or row houses and other medium density developments and excluding aged or disabled persons' housing)	Smaller units and flats (up to two bedrooms): Daily vehicle trips = 4-5 per dwelling Weekday peak hour vehicle trips = 0.4-0.5 per dwelling. Larger units and town houses (>3 bedrooms): Daily vehicle trips = 5.0-6.5 per dwelling Weekday peak hour vehicle trips = 0.5-0.65 per dwelling.

Over the past few years a number of surveys have been undertaken to update trip generation and parking information provided in the RMS guide.

Queensland

The Guidelines for Assessment of Road Impacts for Developments states at Section 4.3 that *"traffic generation can be forecast using trip generation rates established for particular land uses. These are available from a number of sources including Main Roads and local government. The use of locally derived trip generation rates is preferred to that applicable elsewhere"*. This is then discussed in more detail at Appendix E of the guidelines which lists a number of sources:

- "Guide To Traffic Generating Developments (2002)" prepared by the Roads and Traffic Authority of NSW (may need to be modified for particular uses to suit the local situation)
- Trip Generation by the Institute of Transportation Engineers (ITE) (United States data-may need to be modified to suit Australian conditions)
- Main Roads' and local governments' data bases
- Traffic/transport consultants' and surveyor's databases.

It also confirms that the level of detail in these sources varies from 'raw data to rates only with some containing parking demand etc'. It also notes that the most reliable source is from an actual development or a similar one in a similar location, preferably in close proximity to the subject site.

Appendix E mentions that *"For medium to high density dwelling, the smaller units are more likely to have a lower vehicle generation rate, and vice versa for larger units and town houses (three or more bedrooms)"*.

Table 4.2: Traffic Generation Rates for Residential Dwellings, Appendix 3A of the 'Roads Planning and Design Manual 2005'

Description	Peak Rate/Unit	Daily Rate	Unit	Source*
Medium Density		4-6.5	Dwelling	RMS
	N/A	5.9	Dwelling	Qld Streets
	N/A	6	Dwelling	QT

RMS – Roads and Maritime Services, NSW

QT – Queensland Transport

Qld Streets – Institutions of Engineers Australia publication on standards and guidelines for streets

Victoria

The Guidelines for Preparation of Transport Impact Assessment Report (which is part of the VicRoads Toolkit for managing access to Arterial Roads and Freeways) discusses the provision of traffic generation information but gives no indication as to where such trip generation information might be obtained.

VISTA (Victorian Integrated Survey of Travel and Activity) – contains information from surveys conducted across Greater Melbourne, Geelong and some selected regional centres. The current VISTA survey started in July 2012 and will end in July 2016. Data is collected across the year, to allow average daily travel behaviour to be described. Randomly selected households are asked to complete the VISTA travel diary for a single specified day.

Western Australia

The Western Australia document, which is issued for trial and evaluation, comprises a number of volumes giving guidance on transport assessments for developments. Volume 5 however contains some very old data suggesting that *“person-trip generation rates for residential land uses may be derived from household travel surveys such as the 1986 Perth Travel Surveys, the more recent TravelSmart surveys in particular suburbs and the current Perth and regions travel survey (PARTS). However, such person-trip generation data is often unavailable, particularly for other than residential land uses. In these cases it is usually sufficient to use vehicle-trip generation rates with adjustments as appropriate to reflect anticipated higher or lower non-car mode share for the particular development.*

The person and/or vehicle trip generation of a development can be estimated by:

- *surveying a comparable development in a similar location*
- *using existing traffic data for a comparable development(s)*
- *using typical rates for similar developments”.*

With regard to trip generation, Volume 2 states that *“vehicle trip generation rates are to be based on surveys of comparable land uses or extracted from recognised land use traffic generation databases such as:*

- i *Land Use Traffic Generation Guidelines, March 1987 - Director General of Transport, South Australia*
- ii *Guide to Traffic Generating Developments Version 2.2, October 2002 – Roads and Traffic Authority, New South Wales*
- iii *Trip Generation 7th edition, 2003 - Institute of Transportation Engineers, Washington, USA.”*

Typical (average) trip rates extracted from these sources as provided in Volume 2 of Transport Assessment Guidelines for Developments are shown in Table 4.3 below for a general residential land use types.

It does not specify a specific ‘medium density’ residential use.

Table 4.3: Typical Land Use Vehicle Trip Rates, Volume 2 of Transport Assessment Guidelines for Developments, Western Australia

Land use	Unit	AM peak hour trip rate		PM peak hour trip rate	
		In	Out	In	Out
Residential	Dwellings	0.2	0.6	0.5	0.3

South Australia

The 1987 Land Use traffic Generation Guidelines of South Australia states that the ‘trip rates’ used in the document are appropriate for the 1980’s and *“care should be taken in applying them after 1980”*. It does however contain simplistic trip generation rates for a large number of land uses.

Table 4.4: Trip Generation for Residential Land Uses, Land Use traffic Generation Guidelines, SA

A. Detached Dwellings	
Daily Vehicle Trips	8 to 11 trips per dwelling
A.M. Peak Hour Vehicle Trips	7.5% of Daily Vehicle Trips (assume ¼ enter, ¼ exit).
P.M. Peak Hour Vehicle Trips	7.5% of Daily Vehicle Trips (assume ¼ enter, ¼ exit).
Typical daily traffic generation rates of various types of detached dwellings are as follows:	
Dwellings in inner suburban areas	8 trip per dwelling
Dwellings in established areas where there is a mixture of families and couples	8 trips per dwelling
Dwellings occupied by families with children	10 trips per dwelling
Dwellings in affluent areas	11 trips per dwelling
B. Unit Developments (also applied to flats, home units, townhouses and apartments)	
Daily Vehicle Trips	3 to 7 trips per unit
A.M. Peak Hour Vehicle Trips	7.5% of Daily Vehicle Trips (assume 1/4 enter, 3/4 exit).
P.M. Peak Hour Vehicle Trips	10% of Daily Vehicle Trips (assume 2/3 enter, 1/3 exit).
A daily trip rate of 6 trips per unit would be common, however, variations occur as follows:	
Units occupied mainly by families	7 trips per unit
Units occupied mainly by retired persons	3 trips per unit
Units occupied mainly by single persons or couples	4- 6 trips per unit. (With the lower rate applying when car ownership is low.)
Vehicle Trips	1.5 to 3 trips per unit.

Again however, no specific reference to medium density residential use is made.

4.1.4 Summary

- Throughout Australia, the RMS guide seems to be the main source of traffic generation data.
- The ITE's 'Trip Generation' guide is used but in a limited way.
- TRICS appear to be used academically but not in detailed consideration of development impacts.
- The TDB Australian Database is beginning to gain prominence in traffic generation assessments.
- There are concerns about the RMS data in so far as the age of the data and the relevance of the time of year at which the data surveys were undertaken.
- Many practitioners use the RMS guide as a starting point but then do their own surveys to establish traffic generation characteristics at similar sites / land uses.
- The RMS guide does not consider multi-modal travel and covers land uses in which developments can have significantly different characteristics.
- The current RMS Trip Rates for medium residential flat building were based on surveys conducted in areas where new residential subdivisions were being built and public transport accessibility in such areas is often limited.
- Traffic generation rates for medium density residential (unlike high density residential) in the existing RMS Guide are aggregated for inner metropolitan areas where public transport is more accessible and metropolitan sub-regional centres where car ownership could be higher. In contrast, TRICS database provides rates for residential units based on their proximity to urban centres and public transport accessibility.

In summary, although other documents are used, and many companies seem to undertake their own surveys to establish the traffic generating capabilities of a particular site, the RMS guide seems to be the first point of reference.

4.2 International Guidelines

4.2.1 New Zealand

The former New Zealand Trips and Parking Database Bureau is now known as the Trips Database Bureau (TDB). The TDB database was first published in 2001 as Trips and Parking Related to Land Use. Volume 2: Trip and Parking Surveys Database (Douglass & McKenzie 2001b). This original report has been superseded by regular releases and upgrades of the database. The TDB database used for this report (Version November 2011–October 2012) contains approximately 712 sites. The database is supplied to members as a Microsoft Excel spreadsheet on CD which is updated annually. The database is sorted according to nine Land Use Groups in alphabetical order:

- i assembly
- ii commercial
- iii education
- iv industry
- v medical
- vi recreation
- vii residential
- viii retail
- ix rural.

Each land use group has between 5 and 13 primary activity subgroups which are recognisable town planning, employment and visitor attracting activities. The database also categorises the with respect to the relative position of the site to the city centre, suburbs, outer edge of a city or in the rural area, proximity to urban, rural roads, frontage road hierarchy and daily traffic volume and public transport accessibility. However, the TDB surveys include car based trips only and multimodal or heavy vehicle trips are not reported.

The Bureau continues to collect surveys of trip rates, parking demand and travel information relative to different land uses from across the country. In addition to developing the trips and parking database, the Bureau also undertakes government sponsored transportation research on travel profiles, trip generation and transportation assessment guidelines. Members of the Bureau include New Zealand organisations including Transit NZ, consultants and councils and recently some Australian councils and consultants (including GTA).

4.2.2 United States

The Institution of Transportation Engineers (ITE) most recent (9th) edition was published in 2012 “Trip Generation” manual consists of a three-volume report (formally known as the Trip Generation Handbook, 2nd Edition) and contains updated land use descriptions, trip generation rates, equations, and data plots. Data is included from more than 5,500 sites with a total of 172 land uses. All data presented in the ITE database represent vehicle trip generation rather than person trip generation.

The USA document is produced in book format only which means it is not possible to select the most appropriate site data and it encourages the use of average values.

In 2010, ITE released the Parking Generation Manual (4rd Edition) (ITE 2010) with 106 land uses represented and it includes parking demand data by hour of day.

4.2.3 United Kingdom

TRICS

TRICS is the UK national standard trip generation database and is used as an integral and essential part of the Transport Assessment process. The system is marketed and managed by JMP Consultants Limited on behalf of the TRICS® Consortium of 6 County Councils: Surrey, Kent, East Sussex, West Sussex, Hampshire and Dorset. JMP regularly ask for input from consultants and local authorities with regard to the additional land uses that require additional information. It contains transport generation data for a wide variety of development types, across all regions of the UK and Ireland. The current annual data collection programme consists of 170 multi-modal surveys across all regions, plus another 100 traffic surveys. The database in which 5,600 days of survey data are held uses a flexible system of filtering, to allow users to interrogate trip rates for sites (including a very specialised range of land use categories) which meet their own compatibility criteria. Also, individual trip rates for a given time period of a site's local environment and surroundings, information on the site's structure and operations, and uninterrupted hourly arrival and departure transport data, for a number of surveys can be calculated and ranked, displaying the worst and best case scenarios.

TRICS® can also analyse individual or selected sets of survey counts to produce trip rate information. Users can fine-tune whole land use categories (superstores, offices, schools, residential developments, a total of 109 separate categories), so that a final selected data set is shortlisted, based on a wide range of compatibility requirements.

Once a trip rate calculation has been produced, the information can be output and used as part of a Transport Assessment. Also, individual trip rates for a given time period for a number of surveys can be calculated and ranked, displaying worse and best case scenarios.

TRICS Database is accessible online and the current version of TRICS is 2013(a) v6.11.2 released in April 2013. TRICS system updates are released every three months, with every second update containing new system enhancements (with data only updates in between). Current version of TRICS is undergoing a restructuring and is scheduled for release by the end of 2013 (TRICS® 7).

Nevertheless, with the wide range of data, it is often the case that developers and development control officers fail to agree on the most relevant site data which in turn often leads to disagreements and this often forms the basis of planning appeals (which are the UK equivalent of Land & Environment Courts).

TRAVL

TRAVL (Trip Rate Assessment Valid for London) is a multi-modal trip generation database designed specifically for use in London. It is used by planners working on projects across Greater London to estimate the effect of proposed changes in land use on transport patterns and, in particular, on the amount of road traffic in an area. The TRAVL database contains surveys of over four hundred sites across the capital. There are several types of surveys provided for each site which cover all aspects of traffic and people movement at the specific sites.

4.2.4 Summary

It is clear that the TRAVL database is primarily used in city centre London which has heavily constrained traffic movements and very high levels of public transport accessibility. Consequently, it is not considered that it is a useful database in the context of this study. Elsewhere in the UK, TRICS is the accepted database for nearly all councils and traffic consultancies.

4.3 Interrogation of International Databases

The following databases that have been examined as part of this study:

- i RMS's "Guide to Traffic Generating Developments (2002)"
- ii New Zealand Trips Database Bureau (NZTDB)
- iii United States Institute of Transportation Engineers (ITE)
- iv Trip Rate Information Computer Systems (TRICS) UK.

4.3.1 RMS "Guide to Traffic Generating Developments (2002)"

The RMS guide provides trip generation rates for medium density residential land use:

Table 4.5: Residential Trip Generation Rates, RMS Guide to Traffic Generating Developments 2002

Residential type	Description	Trip Generation Rate
Medium density residential flat building	Building containing at least 2 but less than 20 dwellings (includes villas, town houses, flats, semi-detached houses, terrace or row houses and other medium density developments and excluding aged or disabled persons' housing)	Smaller units and flats (up to two bedrooms): Daily vehicle trips = 4-5 per dwelling Weekday peak hour vehicle trips = 0.4-0.5 per dwelling. Larger units and town houses (>3 bedrooms): Daily vehicle trips = 5.0-6.5 per dwelling Weekday peak hour vehicle trips = 0.5-0.65 per dwelling.

Over the past few years a number of surveys have been undertaken to update trip generation and parking information provided in the RMS guide.

4.3.2 Trips Database Bureau (TDB) - New Zealand

The TDB database does not specifically define medium density residential developments. However, selection of appropriate sites could be made from the database for a number of identified criteria. Residential land use includes a total of 126 residential surveys consisting a range of land use activities (e.g. dwellings, homes, hotels, motels, backpacker hostels) out of which a total of 37 residential dwellings sites were selected.

The average daily trip generation was 9.38 per residential unit with trip rates between 0.66- 1.17 in the AM peak and 0.80-1.39 in the PM peak.

A summary of the sites selected along with individual trip generation have been provided in Appendix B.

4.3.3 US Institute of Transportation Engineers (ITE)

The Institute of Transportation Engineers (ITE) Trip Generation Manual (8th Edition 2008) splits residential land use into a wide range of discrete land uses (200-299 inclusive). However for the purpose

of comparison in the context of this study, the following land uses were selected as being the most appropriate:

- i Low-Rise Apartment (Code – 221)
- ii Mid-Rise Apartment (Code – 223)
- iii Low-Rise Residential Condominium/Townhouse (Code – 231).

The information contained in this document has been analysed and summarised in Table 4.6 and Table 4.7.

Note that the US uses imperial measuring units and so 1,000 square feet = 92.9030 square metre. The person trip generation have been based on a small sample size and therefore the rates must be used with caution.

Table 4.6: Vehicle Trip Generation (per Occupied Dwelling Unit), ITE Trip Generation Manual (8th Edition 2008)

Residential Type	AM Peak Hour		PM Peak Hour		Saturday	
	Average	Range	Average	Range	Average	Range
Low-Rise Apartment (Code – 221)	0.51	0.25-0.98	0.62	0.38-1.23	7.16	4.41-9.20
Mid-Rise Apartment (Code – 223)	0.35	0.19-0.47	0.44	0.19-0.60	-	-
Low-Rise Residential Condominium/Townhouse (Code – 231)	0.54	0.34-0.82	0.52	0.37-0.79	-	-

Table 4.7: Weekday Person Trip Generation (per Occupied Dwelling Unit), ITE Trip Generation Manual (8th Edition 2008)

Residential Type	AM Peak Hour		PM Peak Hour	
	Average	Range	Average	Range
Low-Rise Apartment (Code – 221)	0.28	0.19-0.52	0.33	0.22-0.65
Mid-Rise Apartment (Code – 223)	0.22	0.22-0.22	0.20	0.18-0.26

4.3.4 Trip Rate Information Computer Systems (TRICS), UK

TRICS database was interrogated for a range of residential land uses. TRICS split residential development into a number of categories which includes:

- i *o3/A - Houses Privately Owned*- Housing developments where at least 75%¹ of units are privately owned.
- ii *o3/B - Houses for Rent*- Housing developments where at least 75%¹ of units are non-privately owned².
- iii *o3/C - Flats Privately Owned*- Housing developments where at least 75%³ of households are privately owned.
- iv *o3/D - Flats for Rent*- Housing developments where at least 75% of households are non-privately owned.
- v *o3/K - Mixed Private Housing*- Housing developments where at least 75%⁴ of units are privately owned.

¹ Of the total number of units, 75% must also be houses (sum of "non-split" terraced, detached, semi-detached, bungalows, etc), with no more than 25% of the total units being flats.

² "Non-privately owned" may be council rented or housing association rented/part-owned.

³ Of the total number of units, 75% must also be flats (sum of flats in blocks and "split" houses), with no more than 25% of the total units being "non-split" houses.

- vi o3/L - *Mixed Non-Private Housing*- Housing developments where at least 75% of units are non-privately owned.
- vii o3/M - *Mixed Private/Non-Private Housing*- Housing developments where less than 75% of units are privately owned, and less than 75% of units are non-privately owned.

The sites under each residential classification were then individually selected to ensure that the density met the criteria for medium density residential.

Finally Table 4.8 shows the regions selected for trip generation analysis and excluded the following:

- i Greater London
- ii Greater Dublin
- iii Ulster (Republic of Ireland)
- iv Ulster (Northern Ireland).

Table 4.8: Region Selection, TRICS Database

SELECT REGIONS	
Select	Planning Region
☐	GREATER LONDON
☒	SOUTH EAST
☒	SOUTH WEST
☒	EAST ANGLIA
☒	EAST MIDLANDS
☒	WEST MIDLANDS
☒	YORKSHIRE & NORTH LINCOLNSHIRE
☒	NORTH WEST
☒	NORTH
☒	WALES
☒	SCOTLAND
☒	CONNAUGHT
☒	MUNSTER
☒	LEINSTER
☐	GREATER DUBLIN
☐	ULSTER (REPUBLIC OF IRELAND)
☐	ULSTER (NORTHERN IRELAND)

The following "Main Locations" for the site were included in the criteria:

- i Town Centre
- ii Edge of Town Centre
- iii Neighbourhood Centre (Local Centre)
- iv Suburban Area (Out of Centre)
- v Edge of Town
- vi Standing (Out of Town).

The following "Sub Locations" were included in the criteria:

⁴ Of the total number of units, less than 75% must be houses (sum of "non-split" terraced, detached, semi-detached, bungalows, etc), and less than 75% must be flats (sum of flats in blocks and "split" houses).

- i Commercial Zone
- ii Industrial Zone
- iii Sub-Location: Development Zone
- iv Residential Zone
- v Retail Zone
- vi Built-Up Zone
- vii Out of Town
- viii High Street.

Any site located under "village" sub location was not included in the trip generation calculation.

A summary of weekday and weekend Trip Generation Rates from the TRICS database is provided in Table 4.9 and Table 4.10 with detailed description of the sites selected in Appendix C.

Table 4.9: Weekday Vehicle Trip Generation (per Dwelling Unit), TRICS version 2013(a) v6.11.2

Land Use	Peak	Arrivals	Departures	Total Trip Rates
Residential-A - Houses Privately Owned	AM	0.13	0.39	0.52
	PM	0.37	0.21	0.58
	Daily	2.42	2.55	4.97
Residential-B - Houses For Rent	AM	0.13	0.24	0.37
	PM	0.29	0.18	0.48
	Daily	2.07	2.09	4.15
Residential-C - Flats Privately Owned	AM	0.04	0.29	0.33
	PM	0.23	0.14	0.37
	Daily	1.03	1.17	2.20
Residential-D - Flats For Rent	AM	0.07	0.10	0.17
	PM	0.12	0.11	0.22
	Daily	0.91	0.98	1.89
Residential-K - Mixed Private Housing	AM	0.10	0.41	0.51
	PM	0.31	0.18	0.49
	Daily	2.51	2.48	4.99
Residential-L - Mixed Non-Private Housing	AM	0.07	0.24	0.31
	PM	0.28	0.16	0.44
	Daily	1.98	1.89	3.86
Residential-M - Mixed Private-Non-Private Housing	AM	0.13	0.31	0.44
	PM	0.32	0.18	0.50
	Daily	2.17	2.22	4.39

Table 4.10: Weekend Vehicle Trip Generation (per Dwelling Unit), TRICS version 2013(a) v6.11.2

Land Use	Peak	Arrivals	Departures	Total Trip Rates
Residential-A - Houses Privately Owned	Mid Day	0.19	0.28	0.47
	Daily	1.94	1.96	3.90
Residential-C - Flats Privately Owned	Mid Day	0.14	0.16	0.30
	Daily	1.47	1.43	2.90

The TRICS database is sourced from both multimodal and vehicles surveys and Table 4.11 provide person trip rates for each residential classification.

Table 4.11: Weekday Daily Person Trip Generation (per Dwelling Unit), TRICS version 2013(a) v6.11.2

Land Use	Arrivals	Departures	Total Trip Rates
Residential-A - Houses Privately Owned	4.08	4.40	8.48
Residential-B - Houses For Rent	3.52	3.70	7.22
Residential-C - Flats Privately Owned	3.14	3.54	6.68
Residential-D - Flats For Rent	4.34	4.29	8.62
Residential-K - Mixed Private Housing	3.27	3.50	6.78
Residential-L - Mixed Non-Private Housing	4.60	4.65	9.56
Residential-M - Mixed Private-Non-Private Housing	3.87	3.97	7.85

4.4 Comparison of Trip Generation rates

Table 4.12 provides a summary of the person trip generation rates.

Table 4.12: Summary Trip Generation Comparison, Person Trips per Dwelling

Source	Weekday Daily
Trip Rate Information Computer Systems (TRICS) UK	6.68-9.56
STUDY RESULTS	4.13 – 10.03

The RMS “Guide to Traffic Generating Developments (2002)” does not provide any information on person trip rates.

Comparison of the study results was only possible between trip rates from TRICS UK data base that contains multi modal surveys. The results show that the person trip rates are comparable.

Table 4.13 provides a summary of the vehicle trip generation rates from the various sources that has been reviewed in the above sections along with the generation rates derived from the analysis of this study for medium density residential.

Table 4.13: Summary Trip Generation Comparison, Vehicle Trips per Dwelling

Source	Weekday			Saturday	
	AM Peak	PM Peak	Daily	Peak	Daily
RMS Guide to Traffic Generating Developments (2002)	0.4-0.65		4.0-6.5	-	-
New Zealand Trips Database Bureau (NZTDB)	0.66-1.17	0.80-1.39	5.60-11.77	-	-
ITE 'Trip Generation', US	0.35-0.54	0.44-0.62	-	-	4.41-9.20
Trip Rate Information Computer Systems (TRICS) UK	0.17-0.52	0.22-0.58	1.89-4.97	0.30-0.47	2.90-3.90
STUDY RESULTS	0.40 (0.10-0.71)	0.48 (0.10-1.25)	3.17 (1-6.29)		

Comparison of the study results for vehicle trips shows that the AM and PM peak hour traffic trip rates are within the range suggested in the RMS (2002), ITE and TRICS database.

While the RMS “Guide to Traffic Generating Developments (2002)” provides daily trip rates for medium density residential flats, it does not provide separate trip rates for weekend peak hours.

The NZTDB provides a range of weekday vehicle trip rates for AM and PM peaks and daily trip rates for residential developments but does not provide any weekend trip rates.

The ITE "Trip Generation" guide provides vehicle trip generation rates for weekday AM and PM peak and weekend daily trip rates. However, the closest comparison to medium density residential trip rates within the ITE guide were low/mid rise apartments and townhouses with where average number of dwellings appeared comparatively higher.

The TRICS UK rates provide trip rates for weekday AM and PM and weekend. The trip rates were selected based on proximity to town centres, density of development and hence provide a less wide range. The weekday daily trip rates for medium density residential are comparatively lower than the RMS rates. This could be as a result of the planning policy in the UK which promotes non car based trips above all others resulting in trip generation rates which are much less and public transport/cycle use/pedestrian numbers are higher compared to other countries considered.

In making comparisons, there is also clearly a concern that these foreign databases use different land use classes to those being used in Australia and this can make direct comparisons between the databases difficult.

5. Summary

The purpose of this study was to determine trip generation rates for medium density residential developments and inform RMS for the purpose of updating the existing trip rate provisions within the *RMS Guide to Traffic Generating Developments*.

Site selection criteria for medium density residential selection was broadly based on the NSW Department of Planning definition (25 – 60 dwellings per hectare net), but limiting the minimum to 30 dwellings following advice from RMS. Consequently a range of 30 – 60 was selected.

A total of 17 sites that were identified by GTA, broadly met the selection criteria laid out by RMS and were approved for the purpose of undertaking surveys.

Surveys were undertaken within Sydney and key New South Wales regional centres including Wollongong, the Central Coast and Newcastle. The surveyed sites included dwelling types such as villas, townhouses, flats and low rise apartments that were located within larger area developments, multi-storey developments and precincts with varying public transport accessibility ('Accessibility Score').

GTA Consultants commissioned traffic and pedestrian surveys at the 17 selected sites during the following periods:

- Thursday 21 March 2013 between 6am and 7pm
- Week commencing Wednesday 1 May 2013 between 6am and 7pm.

These surveys included 14 sites where surveys were undertaken between 6am and 7pm on a single weekday and three sites where surveys were undertaken for 7 days between 6am and 7pm.

The three sites which were surveyed over a period of one week were used to determine the daily variation to confirm the suitability of the weekday selected for the surveys.

The data collected from each site were analysed to determine person and vehicle trip rates, trip purpose and modal split including information on car ownership and public transport usage.

The overall analysis provided the following key data:

- Average daily person trip rate was 6.89 with a range of 4.20 – 10.03 per dwelling
- Average peak hour person trip rate was 1.25 person movements, with a range of 0.78 – 2.63 per dwelling
- Average daily vehicle trip rate was 3.17 movements with a range of 1.00 to 6.29 per dwelling
- Average AM period site peak vehicle trip rate was 0.40 with a range of 0.10 to 0.71 per dwelling
- Average PM period site peak vehicle trip rate was 0.48 with a range of 0.10 to 1.25
- Average site peak hour vehicle trip rate was 0.56 movements with a range of 0.19 to 1.25.

Linear regression analysis established strong relationships between dwelling numbers and trip generation, with confidence above 87% for the time periods assessed. The surveys however, did not establish any linear relation between 'Accessibility Score' of various sites surveyed and the resulting trip generation.

An aggregated analysis of travel modes to and from all surveyed sites showed that approximately 60% of trips were by car while pedestrians and cyclists accounted for 37% and 4% respectively. Out of the 37% of pedestrians leaving the sites, it was established that an average of 27% accessed public transport for the remaining trip with a maximum of 71% recorded at a site (Harris Park) in Sydney.

An analysis was undertaken to determine the directional split of traffic indicated that approximately 80% of trips in the AM were leaving the site while approximately 60% of the trips are travelling into the site in the PM peak. This suggests that AM peak periods are more intense than PM peak periods where the peak traffic generally spreads over a longer period.

A review of existing nationally and internationally available guidance on traffic generation rates suggests that the RMS (formerly RTA) "Guide to Traffic Generating Developments (2002)" is the most commonly referred guidance in Australia.

Table 5.1 and Table 5.2 provides a comparison of the available person and vehicle trip generation rates in the various documents and compares them to the result from this study.

Table 5.1: Summary Trip Generation Comparison, Person Trips per Dwelling

Source	Weekday Daily
Trip Rate Information Computer Systems (TRICS) UK	6.68-9.56
STUDY RESULTS	4.20 – 10.03

Table 5.2: Summary Trip Generation Comparison, Vehicle Trips per Dwelling

Source	Weekday			Weekend (i.e. Saturday)	
	AM Peak	PM Peak	Daily	Peak	Daily
RMS Guide to Traffic Generating Developments (2002)	0.4-0.65		4.0-6.5	-	-
New Zealand Trips Database Bureau (NZTDB)	0.66-1.17	0.80-1.39	5.60-11.77	-	-
ITE 'Trip Generation', US	0.35-0.54	0.44-0.62	-	-	4.41-9.20
Trip Rate Information Computer Systems (TRICS) UK	0.17-0.52	0.22-0.58	1.89-4.97	0.30-0.47	2.90-3.90
STUDY RESULTS	0.40 (0.10-0.71)	0.48 (0.10-1.25)	3.17 (1-6.29)	-	-

Comparison of the study results for person trip rates was only possible between TRICS UK data base that contains multi modal surveys. The results show that the person trip rates from the two sources are comparable.

Comparison of the study results for vehicle trips shows that the AM and PM peak hour traffic trip rates are within the range suggested in the RMS (2002), ITE and TRICS database.

Overseas database including ITE, TRICS and TDB use different land use classes to those being used in Australia and can make direct comparisons between the databases difficult.

Appendix A

Site Data Summary

Region	Sydney									Wollongong			Central Coast		Newcastle			
Suburb	Newington	Lane Cove North	Harris Park	North Parramatta	Five Dock	Penrith	Werrington	Padstow	Ersmington	North Wollongong	Wollongong	Woonona	Wyong	Gorokan	Merewether	Adamstown	Maryville	
Number(s)	17, 19	67 - 71	21	16	5 - 7	135 - 141	98 - 102	60	Precinct	60	9		33	2 - 10	80	68	233	
Street	Blaxland Avenue	Helen Street	Parkes Street	Belmore Street	Park Road	Stafford Street	Victoria Street	Davies Road	Nordica Street	Bourke	Campbell Street	Gayantay Way	Cutler Drive	Ruby Street	Mitchell Street	Flectcher Street	Hannell Street	
Street Type																		
Survey days	1	7	1	1	1	1	1	7	1	1	1	1	7	1	1	1	1	
Start day of week	Wednesday	Wednesday	Wednesday	Thursday	Thursday	Thursday	Thursday	Wednesday	Thursday	Wednesday	Wednesday	Wednesday	Wednesday	Wednesday	Wednesday	Wednesday	Wednesday	
Start date of survey	1/05/2013	1/05/2013	1/05/2013	21/03/2013	21/03/2013	21/03/2013	21/03/2013	1/05/2013	21/03/2013	1/05/2013	1/05/2013	1/05/2013	1/05/2013	1/05/2013	1/05/2013	1/05/2013	1/05/2013	
Finish date of survey	1/05/2013	7/05/2013	1/05/2013	21/03/2013	21/03/2013	21/03/2013	21/03/2013	7/05/2013	21/03/2013	1/05/2013	1/05/2013	1/05/2013	7/05/2013	1/05/2013	1/05/2013	1/05/2013	1/05/2013	
Start time of survey each day	6am	6am	6am	6am	6am	6am	6am	6am	6am	6am	6am	6am	6am	6am	6am	6am	6am	
Finish time of survey each day	7pm	7pm	7pm	7pm	7pm	7pm	7pm	7pm	7pm	7pm	7pm	7pm	7pm	7pm	7pm	7pm	7pm	
Area Characteristics																		
Surrounding landuse	Residential	Residential	Residential	Residential	Residential/ Education	Residential	Residential/ Retail	Residential, Recreation	Residential, Recreation	Residential/ Bulky Retail	Residential	Residential, Office	Residential	Residential	Residential	Residential, Bulky Retail, Factories	Residential, Recreation	
Accessibility Discount factor	0.2	0.4	0.9	0	0.3	0.3	0.2	0.3	0	0.6	0.3	0.2	0.2	0	0.2	0.3	0.2	
Accessibility Score	77	179	304.5	12	98	80	76	116	1	216	132	32	56	3	36	100	24	
Nearby on-street parking regime	Unrestricted	Unrestricted	Restricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	
Site Characteristics																		
Type of Development	Multi-storey	Multi-storey	Multi-storey	Larger Area	Larger Area	Larger Area	Larger Area	Precinct	Precinct	Multi-storey	Multi-storey	Precinct	Larger Area	Larger Area	Multi-storey	Larger Area	Precinct	
Total number of dwellings	54	12	10	16	11	30	24	66	82	18	8	116	18	26	12	9	77	
Net Area Ha (including half of accessible adjacent road reserve(s))	0.9667	0.2335	0.1952	0.3077	0.2021	0.8021	0.4676	1.506	2.109	0.4215	0.165	3.257	0.5162	0.7915	0.2123	0.246	1.429	
Net Density	55.9	51.4	51.2	52.0	54.4	37.4	51.3	43.8	38.9	42.7	48.5	35.6	34.9	32.8	56.5	36.6	53.9	
Person Trips (All modes)																		
Start time of peak	7:15	7:00, 7:45, 16:45	14:45	7:45-8:45	17:00-17:15	9:45	15:45	7:45	17:30	7:15	16:15	16:15	14:45	15:15	13:45	15:45, 16:15	17:15	
Peak 1-hour person trips	51	13	11	20	14	25	41	70	123	14	21	156	32	31	10	8	78	
Site peak hour person trips per dwelling	0.94	1.08	1.10	1.25	1.27	0.83	1.71	1.06	1.50	0.78	2.63	1.34	1.78	1.19	0.83	0.89	1.01	
Total survey period person trips	288	94	69	70	80	126	198	442	821	82	58	1164	172	181	64	43	603	
Daily person trips per dwelling, 6am - 7pm	5.33	7.83	6.90	4.38	7.27	4.20	8.25	6.70	10.01	4.56	7.25	10.03	9.56	6.96	5.33	4.78	7.83	
(Person) Site AM Peak hour (6am-9am)																		
Hour Starting	7:15	7:00, 7:45	7:15, 8:00	7:45-8:45	6:15	8:00	7:45	7:45	7:30	7:15	7:45-8:00	7:45	8:00	8:00	7:00, 7:30-8:00	8:00	7:45-8:00	
Peak trips	51	13	7	20	13	14	36	70	104	14	12	145	28	12	3	6	77	
AM period site peak hour person trips per dwelling	0.94	1.08	0.70	1.25	1.18	0.47	1.50	1.06	1.27	0.78	1.50	1.25	1.56	0.46	0.25	0.67	1.00	
Trips to site (%)	12%	27%	14%	28%	0%	36%	24%	20%	20%	14%	33%	14%	29%	33%	33%	33%	27%	
Trips from site (%)	88%	73%	86%	72%	100%	64%	76%	80%	80%	86%	67%	86%	71%	67%	67%	67%	73%	
(Person) Site PM Peak hour (4pm-7pm)																		
Hour Starting	16:15, 16:30	16:45	18:00	17:45	17:00-17:15	16:00-16:15	16:00	16:00	17:30	18:00	16:15	16:15	16:00	17:45		16:15	17:15	
Peak trips	33	13	10	11	14	9	36	57	123	12	21	156	24	27	9	8	78	
PM period site peak hour person trips per dwelling	0.61	1.08	1.00	0.69	1.27	0.30	1.50	0.86	1.50	0.67	2.63	1.34	1.33	1.04	0.75	0.89	1.01	
Trips to site (%)	58%	62%	70%	91%	71%	72%	58%	65%	58%	75%	71%	61%	67%	78%	33%	88%	65%	
Trips from site (%)	42%	38%	30%	9%	29%	28%	42%	35%	42%	25%	29%	39%	33%	22%	67%	13%	35%	
Pedestrian																		
Pedestrian peak hour	15:00	6:45, 7:00, 7:15, 10:45, 11:00, 11:15, 11:30	18:00	7:45-8:00	17:00-17:15	9:45	10:30	7:15	17:30	7:00-7:00, 8:00-8:45, 10:00, 10:45, 14:45	15:30	7:45-8:00	7:45	14:15, 14:45	9:30	13:30-13:45	16:00-16:30	7:30
Pedestrian peak trips	22	5	8	17	9	14	19	29	18	2	7	35	17	6	6	6	27	
Pedestrian peak trips/ dwelling	0.41	0.42	0.80	1.06	0.82	0.47	0.79	0.44	0.22	0.11	0.88	0.30	0.94	0.23	0.50	0.67	0.35	
Pedestrian 13 hour trips	138	33	42	45	37	53	82	173	81	11	21	187	59	22	37	14	201	
Pedestrian 13 hour trips/dwelling	2.56	2.75	4.20	2.81	3.36	1.77	3.42	2.62	0.99	0.61	2.63	1.61	3.28	0.85	3.08	1.56	2.61	
Vehicle Trips																		
Start time of peak 1 hour vehicle trips	7:15	17:00	15:15	8:30-9:30, 14:30-14:45, 12:30, 17:45-18:00	14:00	9:00	16:15	16:00	7:30	7:15	16:15	16:15	17:45	14:15, 17:15, 17:45	15:30	14:00-14:30, 15:15-15:30, 16:45-17:00	17:15	
Peak 1-hour vehicle trips	21	8	2	3	7	11	15	25	58	9	10	90	10	21	4	5	45	
Site peak hour vehicle trips per dwelling	0.39	0.67	0.20	0.19	0.64	0.37	0.63	0.38	0.71	0.50	1.25	0.78	0.56	0.81	0.33	0.56	0.58	
Total survey vehicle trips	113	44	10	20	35	57	78	191	430	60	23	730	73	103	24	24	319	
Daily vehicle trips per dwelling, 6am - 7pm	2.09	3.67	1.00	1.25	3.18	1.90	3.25	2.89	5.24	3.33	2.88	6.29	4.06	3.96	2.00	2.67	4.14	
Daily average vehicle occupancy	1.3	1.34	1.3	1.25	1.17	1.25	1.46	1.31	1.41	1.18	1.43	1.31	1.52	1.5	1.13	1.21	1.22	
(Vehicle) Site AM Peak hour (6am-9am)																		
Start time of site AM peak hour	7:15	7:00	6:00-7:30	6:00, 7:15-7:30	6:00-6:15	6:45-7:15	7:45	7:45	7:30	7:15	7:45-8:00	7:45	8:00	8:00	8:00	8:00	7:45	
Peak vehicle trips	21	6	1	2	6	5	14	28	58	9	3	81	5	6	2	5	39	
AM period site peak hour vehicle trips per dwelling	0.39	0.50	0.10	0.13	0.55	0.17	0.58	0.42	0.71	0.50	0.38	0.70	0.28	0.23	0.17	0.56	0.51	
Trips to site (%)	0%	17%	0%	0%	0%	0%	36%	18%	12%	11%	33%	16%	20%	33%	50%	40%	21%	
Trips from site (%)	100%	83%	100%	100%	100%	100%	64%	82%	88%	89%	67%	84%	80%	67%	50%	60%	79%	
Road Network AM Peak hour (SCATS review)																		
Start time of site AM peak hour	8:00	7:45	7:45	8:00am	7:15	8:00	8:00	6:45	7:30	8:15	8:15	7:15	7:45	8:30	8:00	8:15	7:30	
Road Network AM Peak Site Vehicle Trips	18	6	0	1	2	3	7	14	58	2	1	62	2	6	2	4	36	
Road Network AM Peak Site Trips per Dwelling	0.33	0.50	0.00	0.06	0.18	0.10	0.29	0.21	0.71	0.11	0.13	0.53	0.11	0.23	0.17	0.44	0.47	
(Vehicle) Site PM Peak hour (4pm-7pm)																		
Start time of site PM peak hour	17:00, 17:15, 17:30	17:00	16:00, 16:30-18:00	17:45-18:00	16:45-17:15	16:15-16:45	16:15	16:00	17:30	18:00	16:15	16:15	17:15, 17:45	17:45-18:00	16:45-17:00	16:15	17:15	
Peak vehicle trips	13	8	1	3	3	5	15	25	54	8	10	90	10	17	4	2	45	
PM period site peak hour vehicle trips per dwelling	0.24	0.67	0.10	0.19	0.27	0.17	0.63	0.38	0.66	0.44	1.25	0.78	0.56	0.65	0.33	0.22	0.58	
Trips to site (%)	74%	50%	38%	100%	100%	47%	53%	64%	76%	63%	60%	64%	45%	76%	38%	50%	82%	
Trips from site (%)	26%	50%	67%	0%	0%	53%	47%	36%	24%	38%	40%	36%	55%	24%	63%	50%	18%	
Road Network PM Peak hour (SCATS)																		
Start time of site PM peak hour	17:00	17:00	17:00	16:15	17:30	16:30	15:15	15:45	17:00	17:00	17:00	16:45	14:45	16:00	16:45	16:45	4:30pm	
Road Network PM Peak Site Vehicle Trips	13	8	1	1	2	5	11	22	47	5	4	85	8	13	4	1	32	
Road Network PM Peak Site Trips per Dwelling	0.24	0.67	0.10	0.06	0.18	0.17	0.46	0.33	0.57	0.28	0.50	0.73	0.44	0.50	0.33	0.11	0.42	
% of total trips leaving site																		
% Car (as driver)	39%	47%	15%	29%	45%	46%	40%	43%	52%	73%	40%	63%	42%	57%	38%	56%	53%	
% Car (as passenger)	12%	16%	4%	7%	8%	11%	18%	13%	21%	13%	17%	20%	22%	29%	5%	12%	12%	
% Cycle	1%	2%	20%	0%	0%	0%	0%	4%	16%	0%	7%	2%	1%	2%	0%	0%	2%	
% Foot	48%	35%	61%	64%	47%	43%	42%	39%	10%	13%	36%	16%	34%	12%	58%	33%	33%	
% In Car																		
% In Car	51%	63%	19%	36%	53%	57%	58%	57%	74%	87%	57%	82%	65%	86%	42%	68%	65%	
% Non Car	49%	37%	81%	64%	47%	43%	42%	43%	26%	13%	43%	18%	36%	14%	58%	33%	35%	
Pedestrian Interview Survey																		
Walking next destination																		
To shops	4	19	0	0	1	1	8	20	0	3	4	1	42	0	2	0	5	
Leisure/ Recreation	5	26	0	0	4	0	0	85	1	0	3	24	4	2	0	0	5	
To car parked on-street	12	29	1	2	6	0	9	0	0	1	1	1	3	3	12	1	6	
To education inc day care	1	8	0	0	0	0	3	13	0	0	2	5	23					

Appendix B

TDB Database

Site No.	Source of Data	Territorial Local Authority	Suburb or Locality	Activity Name	Land Use Group	Land Use Activity (Primary)	Land Use Activity (Description)	Date of Survey	Other Unit (please specify unit eg: seats, rooms, beds, bays)	TRIP GENERATION RATES			
										OTHER UNIT (IN+OUT)			
										AM	PM	DAILY	OTHER UNIT
124	TDG	Christchurch	Yaldhurst	Kintyre Drive Subdivision	Residential	Dwelling		17/08/1999	residential units	0.00	0.00	8.13	residential unit
143	TDG	Queenstown Lakes	Dalefield	Mountain View Road subdivision	Residential	Dwelling	Outer	1/08/1994	residential units	0.00	0.00	5.55	residential unit
144	TDC via TDG	Tauranga	Gate Pa	Gate Pa residential subdivision	Residential	Dwelling	Intermediate	16/06/1995	residential units	0.00	0.00	9.52	residential unit
145	TDC via TDG	Tauranga	Matua Peninsula	Otumoetai Road - Matua Peninsula	Residential	Dwelling	Intermediate	16/06/1995	residential units	0.00	0.00	5.94	residential unit
254	CCC	Christchurch	Riccarton	Four Brockworth Place Flats	Residential	Dwelling	Inner	13/05/1999	residential units	0.00	0.00	0.00	
301	CCC	Christchurch	Sumner	Clifton Terrace	Residential	Dwelling	Outer	1/07/1992	residential units	0.00	0.00	5.12	residential unit
302	CCC	Christchurch	Bishopdale	Trafford Street	Residential	Dwelling	Intermediate	1/07/1992	residential units	0.00	0.00	11.55	residential unit
303	CCC	Christchurch	Burwood	Kingsford St + Queensbury St	Residential	Dwelling	Intermediate	1/10/1992	residential units	0.00	0.00	8.97	residential unit
304	CCC	Christchurch	Hillmorton	Warren Cres (both ends)	Residential	Dwelling	Intermediate	1/05/1998	residential units	0.00	0.00	10.74	residential unit
305	CCC	Christchurch	South Brighton	Rockinghorse Rd	Residential	Dwelling	Outer	1/09/1993	residential units	0.00	0.00	6.82	residential unit
306	CCC	Christchurch	Cashmere	Parklands St/Ramahana Rd	Residential	Dwelling	Intermediate	1/05/1998	residential units	0.00	0.00	7.49	residential unit
336	MD	Porirua	Plimmerton	Steyne Ave	Residential	Dwelling	Intermediate	23/04/1999	residential units	0.00	0.00	9.92	residential unit
337	MD	Porirua	Titahi Bay	Pikarere St	Residential	Dwelling	Intermediate	18/06/1998	residential units	0.00	0.00	10.16	residential unit
338	MD	Porirua	Porirua East	Gear Terrace	Residential	Dwelling	Intermediate	24/03/1999	residential units	0.00	0.00	10.72	residential unit
360	NPDC	New Plymouth	New Plymouth	Bromley Place	Residential	Dwelling	Intermediate	August 1999	residential units	0.00	0.00	7.73	residential unit
361	NPDC	New Plymouth	New Plymouth	Karamea Street	Residential	Dwelling	Intermediate	August 1999	residential units	0.00	0.00	5.60	residential unit
362	NPDC	New Plymouth	New Plymouth	Karina Road	Residential	Dwelling	Intermediate	August 1999	residential units	0.00	0.00	9.57	residential unit
363	MDC	Marlborough	Blenheim	Fyfe St	Residential	Dwelling	Intermediate	Week starting 6/08/1999	residential units	0.70	1.12	10.51	residential unit
364	MDC	Marlborough	Blenheim	Elisha Drive	Residential	Dwelling	Intermediate	Week starting 6/08/1999	residential units	1.38	1.19	14.19	residential unit
365	MDC	Marlborough	Blenheim	Ashford Grove	Residential	Dwelling	Rural	Week starting 15/08/1999	residential units	0.73	1.09	8.55	residential unit
366	MDC	Marlborough	Blenheim	Morven Lane	Residential	Dwelling	Rural	Week starting 16/09/1999	residential units	1.00	0.83	6.25	residential unit
367	MDC	Marlborough	Blenheim	Fareham Lane	Residential	Dwelling	Rural	Week starting 2/09/1999	residential units	2.13	1.63	17.13	residential unit
368	MDC	Marlborough	Blenheim	Fareham Lane	Residential	Dwelling	Rural	Week starting 30/08/1999	residential units	1.63	1.50	10.75	residential unit
369	MDC	Marlborough	Blenheim	Dillon St	Residential	Dwelling	Intermediate	Week starting 2/09/1999	residential units	0.66	1.39	11.03	residential unit
370	TDC	Tauranga	Tauranga	Carlton St	Residential	Dwelling	Intermediate	Week starting 1/02/1999	residential units	0.00	0.00	11.40	residential unit
371	TDC	Tauranga	Tauranga	Townhead Cres	Residential	Dwelling	Intermediate	Week starting 1/02/1999	residential units	0.00	0.00	9.66	residential unit
372	TDC	Tauranga	Tauranga	Kingswood Road	Residential	Dwelling	Intermediate	Week starting 1/02/1999	residential units	0.00	0.00	9.79	residential unit
373	TDC	Tauranga	Tauranga	Faulkner St	Residential	Dwelling	Intermediate	Week starting 1/02/1999	residential units	0.00	0.00	10.34	residential unit

374	TDC	Tauranga	Tauranga	Cheyne Rd	Residential	Dwelling	Intermediate	Week starting 1/02/1999	residential units	0.00	0.00	11.77	residential unit
375	TDC	Tauranga	Omanu	Matapahi Rd	Residential	Dwelling	Intermediate	Week starting 1/03/1999	residential units	0.00	0.00	9.91	residential unit
376	TDC	Tauranga		Levers Rd	Residential	Dwelling	Intermediate	Week starting 1/03/1999	residential units	0.00	0.00	6.95	residential unit
377	TDC	Tauranga		Taipari St	Residential	Dwelling	Intermediate	Week starting 1/03/1999	residential units	0.00	0.00	8.94	residential unit
378	TDC	Tauranga		Tuthill St	Residential	Dwelling	Intermediate	Week starting 1/03/1999	residential units	0.00	0.00	10.40	residential unit
379	PNCC	Palmerston North		Heatly Ave	Residential	Dwelling	Intermediate	Week starting 24/08/1995	residential units	0.92	1.10	9.32	residential unit
380	PNCC	Palmerston North		Kentucky Way	Residential	Dwelling	Intermediate	Week starting 11/07/1995	residential units	0.77	0.92	9.21	residential unit
381	PNCC	Palmerston North		Kentucky Way	Residential	Dwelling	Intermediate	Week 5-11 July-95	residential units	0.00	0.00	8.95	residential unit
382	PNCC	Palmerston North		Marriner St	Residential	Dwelling	Intermediate	Week starting 14/07/1995	residential units	0.70	1.29	11.20	residential unit
383	PNCC	Palmerston North		Marriner St	Residential	Dwelling	Intermediate	Week starting 14/07/1995	residential units	0.00	0.00	9.56	residential unit
384	PNCC	Palmerston North		Peters Ave	Residential	Dwelling	Intermediate	9-15 June 95	residential units	0.67	1.16	9.29	residential unit
385	PNCC	Palmerston North		Clifton Tce	Residential	Dwelling	Intermediate	Week starting 4/09/1996	residential units	1.17	1.15	9.06	residential unit
386	PNCC	Palmerston North		Ruamahanga Cres	Residential	Dwelling	Intermediate	Week starting 30/08/1996	residential units	1.02	1.08	9.69	residential unit
387	NSCC	North Shore	Burkdale	Hadfield Street	Residential	Dwelling	Intermediate	Week Starting 1/9/99	residential units	0.68	0.80	7.50	residential unit
388	NSCC	North Shore	Burkdale	Taurus Crescent	Residential	Dwelling	Intermediate	Week Staring 1/9/99	residential units	0.82	1.06	9.70	residential unit
389	NSCC	North Shore	Torbay	Waiau Street	Residential	Dwelling	Intermediate	Week Staring 1/9/99	residential units	0.77	0.93	7.88	residential unit
390	NSCC	North Shore	Browns Bay	Penguin Drive	Residential	Dwelling	Intermediate	Week Staring 1/9/99	residential units	1.09	0.99	9.52	residential unit
445	RDC	Rotorua	Ngongotaha	Hood St	Residential	Dwelling	Intermediate	1/04/1999	residential units	0.00	0.00	9.67	residential unit
446	RDC	Rotorua	Tihi-o-Tonga	Mokoia Drive	Residential	Dwelling	Intermediate	1/06/2000	residential units	0.00	0.00	7.79	residential unit
465	TDG	Auckland	Parnell	Claybrook Rd Student Flats	Residential	Dwelling	High Density	6/08/2003	residential units	0.22	0.33	0.00	residential unit
673	Abley Transportation Engineers	Christchurch	Heathcote	Avoca Valley	Residential	Dwelling		21/08/2008	residential units				
691	ViaStrada	Palmerston North	Palmerston North	Pacific Drive	Residential	Dwelling		8 Oct07-18 Oct 07	residential units	0.91	0.86	7.44	residential unit
692	ViaStrada	Dunedin	Abbotsford	Grandvista Estate	Residential	Dwelling		Feb 07	residential units			8.31	residential unit
711	Abley Transportation	Christchurch	Governor's Bay	Lachie Griffen Rise	Residential	Dwelling		9/04/2011	residential units	0.00	0.58	0.00	residential unit
712	Abley Transportation	Christchurch	Governor's Bay	Bay Heights	Residential	Dwelling		9/04/2011	residential units	0.77	0.00	0.00	residential unit

Appendix C

TRICS Database

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

02	SOUTH EAST	
	ES EAST SUSSEX	1 days
	EX ESSEX	1 days
03	SOUTH WEST	
	WL WILTSHIRE	1 days
04	EAST ANGLIA	
	NF NORFOLK	1 days
	SF SUFFOLK	2 days
05	EAST MIDLANDS	
	DS DERBYSHIRE	1 days
	LN LINCOLNSHIRE	1 days
	NR NORTHAMPTONSHIRE	1 days
06	WEST MIDLANDS	
	ST STAFFORDSHIRE	1 days
	WM WEST MIDLANDS	2 days
	WO WORCESTERSHIRE	2 days
07	YORKSHIRE & NORTH LINCOLNSHIRE	
	NY NORTH YORKSHIRE	2 days
08	NORTH WEST	
	CH CHESHIRE	1 days
	MS MERSEYSIDE	1 days
09	NORTH	
	CB CUMBRIA	1 days
	TV TEES VALLEY	1 days
10	WALES	
	CF CARDIFF	1 days
	CP CAERPHILLY	1 days
11	SCOTLAND	
	EA EAST AYRSHIRE	1 days
	HI HIGHLAND	1 days
	SR STIRLING	1 days
12	CONNAUGHT	
	CS SLIGO	1 days
	GA GALWAY	3 days
	MA MAYO	1 days
	RO ROSCOMMON	1 days
13	MUNSTER	
	WA WATERFORD	2 days
14	LEINSTER	
	KD KILDARE	1 days
	KK KILKENNY	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of dwellings
 Actual Range: 11 to 372 (units:)
 Range Selected by User: 7 to 491 (units:)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/05 to 23/10/12

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	7 days
Tuesday	6 days
Wednesday	5 days
Thursday	8 days
Friday	7 days
Saturday	2 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	35 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

Edge of Town Centre	3
Suburban Area (PPS6 Out of Centre)	18
Edge of Town	12
Neighbourhood Centre (PPS6 Local Centre)	2

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	27
Built-Up Zone	1
No Sub Category	7

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

C3	35 days
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This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Filtering Stage 3 selection (Cont.):

Population within 1 mile:

1,001 to 5,000	4 days
5,001 to 10,000	5 days
10,001 to 15,000	8 days
15,001 to 20,000	9 days
20,001 to 25,000	5 days
25,001 to 50,000	4 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,000 or Less	1 days
5,001 to 25,000	6 days
25,001 to 50,000	2 days
50,001 to 75,000	7 days
75,001 to 100,000	5 days
100,001 to 125,000	3 days
125,001 to 250,000	7 days
250,001 to 500,000	4 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.5 or Less	1 days
0.6 to 1.0	7 days
1.1 to 1.5	26 days
1.6 to 2.0	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	1 days
No	34 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1	CB-03-A-04	SEMI DETACHED			CUMBRIA
	MOORCLOSE ROAD				
	SALTERBACK				
	WORKINGTON				
	Edge of Town				
	No Sub Category				
	Total Number of dwellings:		82		
	Survey date: FRIDAY		24/04/09		Survey Type: MANUAL
2	CF-03-A-02	MIXED HOUSES			CARDIFF
	DROPE ROAD				
	CARDIFF				
	Edge of Town				
	Residential Zone				
	Total Number of dwellings:		196		
	Survey date: FRIDAY		05/10/07		Survey Type: MANUAL
3	CH-03-A-08	DETACHED			CHESHIRE
	WHITCHURCH ROAD				
	BOUGHTON HEATH				
	CHESTER				
	Suburban Area (PPS6 Out of Centre)				
	Residential Zone				
	Total Number of dwellings:		11		
	Survey date: TUESDAY		22/05/12		Survey Type: MANUAL
4	CP-03-A-02	SEMI DETACHED			CAERPHILLY
	THE RISE				
	PENGAM				
	Suburban Area (PPS6 Out of Centre)				
	No Sub Category				
	Total Number of dwellings:		41		
	Survey date: MONDAY		05/09/05		Survey Type: MANUAL
5	CS-03-A-01	TERRACED			SLIGO
	CIRCULAR ROAD				
	SLIGO				
	Edge of Town Centre				
	No Sub Category				
	Total Number of dwellings:		46		
	Survey date: THURSDAY		14/06/07		Survey Type: MANUAL
6	DS-03-A-01	SEMI D./TERRACED			DERBYSHIRE
	THE AVENUE				
	HOLMESDALE				
	DRONFIELD				
	Neighbourhood Centre (PPS6 Local Centre)				
	Residential Zone				
	Total Number of dwellings:		20		
	Survey date: THURSDAY		22/06/06		Survey Type: MANUAL
7	EA-03-A-01	DETACHED			EAST AYRSHIRE
	TALISKER AVENUE				
	KILMARNOCK				
	Edge of Town				
	Residential Zone				
	Total Number of dwellings:		39		
	Survey date: THURSDAY		05/06/08		Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

8	ES-03-A-02 SOUTH COAST ROAD PEACEHAVEN Edge of Town Residential Zone Total Number of dwellings: 37 Survey date: FRIDAY 18/11/11	PRIVATE HOUSING EAST SUSSEX
9	EX-03-A-01 MILTON ROAD CORRINGHAM STANFORD-LE-HOPE Edge of Town Residential Zone Total Number of dwellings: 237 Survey date: TUESDAY 13/05/08	SEMI-DET. ESSEX
10	GA-03-A-01 HEADFORD ROAD KNOCKAYARRAGH GALWAY Edge of Town No Sub Category Total Number of dwellings: 123 Survey date: WEDNESDAY 20/09/06	SEMI DETACHED GALWAY
11	GA-03-A-02 BOHERMORE TOWNPARKS GALWAY Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 185 Survey date: TUESDAY 19/09/06	TERRACED GALWAY
12	GA-03-A-03 MONEENEGEISHA ROAD WELLPARK GALWAY Suburban Area (PPS6 Out of Centre) Built-Up Zone Total Number of dwellings: 24 Survey date: WEDNESDAY 20/09/06	SEMI DET./TERRACED GALWAY
13	HI-03-A-14 CALEDONIAN ROAD DALNEIGH INVERNESS Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 73 Survey date: FRIDAY 13/05/11	SEMI-DETACHED HIGHLAND
14	KD-03-A-02 CEDARWOOD PARK MORRISTOWN ROAD NEWBRIDGE Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 71 Survey date: TUESDAY 12/05/09	TERRACED/SEMI-D. KILDARE

LIST OF SITES relevant to selection parameters (Cont.)

15	KK-03-A-02	SEMI-DETACHED		KILKENNY
	UPPER PATRICK STREET			
	KILKENNY			
	Edge of Town Centre			
	Residential Zone			
	Total Number of dwellings:	68		
	Survey date: SATURDAY	29/11/08		Survey Type: MANUAL
16	LN-03-A-01	MIXED HOUSES		LINCOLNSHIRE
	BRANT ROAD			
	BRACEBRIDGE			
	LINCOLN			
	Edge of Town			
	Residential Zone			
	Total Number of dwellings:	150		
	Survey date: TUESDAY	15/05/07		Survey Type: MANUAL
17	MA-03-A-01	SEMI-DET. & TERRACED		MAYO
	N26 STATION ROAD			
	BALLINA			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:	74		
	Survey date: FRIDAY	15/07/11		Survey Type: MANUAL
18	MS-03-A-01	TERRACED		MERSEYSIDE
	PALACE FIELDS AVENUE			
	RUNCORN			
	Neighbourhood Centre (PPS6 Local Centre)			
	Residential Zone			
	Total Number of dwellings:	372		
	Survey date: THURSDAY	06/10/05		Survey Type: MANUAL
19	NF-03-A-02	HOUSES & FLATS		NORFOLK
	DEREHAM ROAD			
	NORWICH			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:	98		
	Survey date: MONDAY	22/10/12		Survey Type: MANUAL
20	NR-03-A-01	HOUSES		NORTHAMPTONSHIRE
	BOUGHTON GREEN ROAD			
	KINGSTHORPE			
	NORTHAMPTON			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:	102		
	Survey date: SATURDAY	22/09/12		Survey Type: MANUAL
21	NY-03-A-03	PRIVATE HOUSING		NORTH YORKSHIRE
	NEW ROW			
	BOROUGHBRIDGE			
	Edge of Town Centre			
	Residential Zone			
	Total Number of dwellings:	14		
	Survey date: MONDAY	15/09/08		Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

22	NY-03-A-05	HOUSES AND FLATS	NORTH YORKSHIRE
	BOROUGHBRIDGE ROAD		
	RIPON		
	Edge of Town		
	No Sub Category		
	Total Number of dwellings:	71	
	Survey date: MONDAY	22/09/08	Survey Type: MANUAL
23	RO-03-A-02	SEMI DET. & BUNGALOWS	ROSCOMMON
	SLIGO ROAD		
	BALLAGHADERREEN		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	31	
	Survey date: THURSDAY	14/07/11	Survey Type: MANUAL
24	SF-03-A-01	SEMI DETACHED	SUFFOLK
	A1156 FELIXSTOWE ROAD		
	RACECOURSE		
	IPSWICH		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	77	
	Survey date: WEDNESDAY	23/05/07	Survey Type: MANUAL
25	SF-03-A-02	SEMI DET./TERRACED	SUFFOLK
	STOKE PARK DRIVE		
	MAIDENHALL		
	IPSWICH		
	Edge of Town		
	Residential Zone		
	Total Number of dwellings:	230	
	Survey date: THURSDAY	24/05/07	Survey Type: MANUAL
26	SR-03-A-01	DETACHED	STIRLING
	BENVUE		
	STIRLING		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	115	
	Survey date: MONDAY	23/04/07	Survey Type: MANUAL
27	ST-03-A-05	TERRACED & DETACHED	STAFFORDSHIRE
	WATERMEET GROVE		
	ETRURIA		
	STOKE-ON-TRENT		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	14	
	Survey date: WEDNESDAY	26/11/08	Survey Type: MANUAL
28	TV-03-A-01	HOUSES & FLATS	TEES VALLEY
	POWLETT ROAD		
	HARTLEPOOL		
	Suburban Area (PPS6 Out of Centre)		
	No Sub Category		
	Total Number of dwellings:	225	
	Survey date: THURSDAY	14/04/05	Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

29	WA-03-A-01 DUNMORE ROAD	DET. / SEMI-DET.		WATERFORD
	WATERFORD Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 70 Survey date: TUESDAY 18/11/08			Survey Type: MANUAL
30	WA-03-A-02 MAYPARK LANE	DETACHED		WATERFORD
	WATERFORD Edge of Town Residential Zone Total Number of dwellings: 290 Survey date: MONDAY 17/11/08			Survey Type: MANUAL
31	WL-03-A-01 MAPLE DRIVE	SEMI D. / TERRACED W.	BASSETT	WILTSHIRE
	WOOTTON BASSETT Edge of Town Residential Zone Total Number of dwellings: 99 Survey date: MONDAY 02/10/06			Survey Type: MANUAL
32	WM-03-A-01 FOLESHILL ROAD FOLESHILL COVENTRY	TERRACED		WEST MIDLANDS
	Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 79 Survey date: FRIDAY 03/02/06			Survey Type: MANUAL
33	WM-03-A-02 HEATH STREET	DETACHED & SEMI DET.		WEST MIDLANDS
	STOURBRIDGE Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 12 Survey date: WEDNESDAY 26/04/06			Survey Type: MANUAL
34	WO-03-A-03 BLAKEBROOK BLAKEBROOK KIDDERMINSTER	DETACHED		WORCESTERSHIRE
	Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 138 Survey date: FRIDAY 05/05/06			Survey Type: MANUAL
35	WO-03-A-06 ST GODWALDS ROAD ASTON FIELDS BROMSGROVE	DET. / TERRACED		WORCESTERSHIRE
	Edge of Town No Sub Category Total Number of dwellings: 232 Survey date: THURSDAY 30/06/05			Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
AD-03-A-01	under
AG-03-A-01	under
CA-03-A-04	under
CB-03-A-03	under
CF-03-A-03	under
CH-03-A-05	under
CH-03-A-06	under
CM-03-A-01	under
CR-03-A-01	under
CS-03-A-02	under
CW-03-A-01	over
CW-03-A-02	under
FI-03-A-02	under
FI-03-A-03	under
GA-03-A-04	under
GM-03-A-10	under
HI-03-A-11	under
HI-03-A-13	under
KK-03-A-01	under
KK-03-A-03	under
LC-03-A-22	under
LE-03-A-01	under
LN-03-A-02	under
LN-03-A-03	under
NF-03-A-01	under
NT-03-A-03	under
NY-03-A-01	under
NY-03-A-06	under
PK-03-A-01	under
RO-03-A-01	under
SF-03-A-04	under
SH-03-A-03	under
SH-03-A-04	under
WM-03-A-03	under
WO-03-A-01	under
WO-03-A-02	under

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL VEHICLES
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	35	107	0.069	35	107	0.265	35	107	0.334
08:00 - 09:00	35	107	0.133	35	107	0.390	35	107	0.523
09:00 - 10:00	35	107	0.158	35	107	0.202	35	107	0.360
10:00 - 11:00	35	107	0.136	35	107	0.160	35	107	0.296
11:00 - 12:00	35	107	0.165	35	107	0.172	35	107	0.337
12:00 - 13:00	35	107	0.170	35	107	0.171	35	107	0.341
13:00 - 14:00	35	107	0.186	35	107	0.184	35	107	0.370
14:00 - 15:00	35	107	0.192	35	107	0.183	35	107	0.375
15:00 - 16:00	35	107	0.266	35	107	0.199	35	107	0.465
16:00 - 17:00	35	107	0.296	35	107	0.204	35	107	0.500
17:00 - 18:00	35	107	0.369	35	107	0.212	35	107	0.581
18:00 - 19:00	35	107	0.283	35	107	0.203	35	107	0.486
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:		2.423			2.545			4.968	

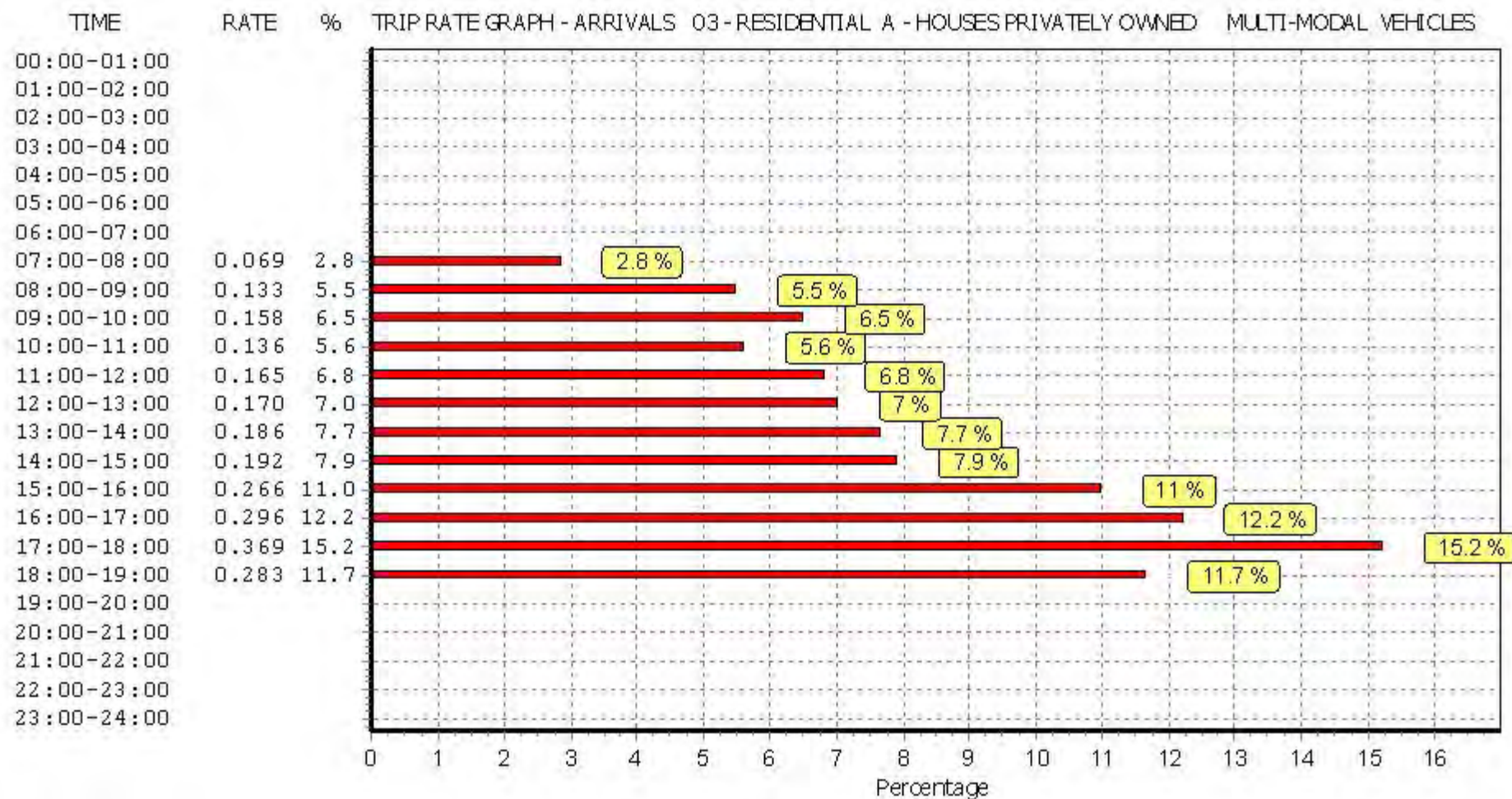
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

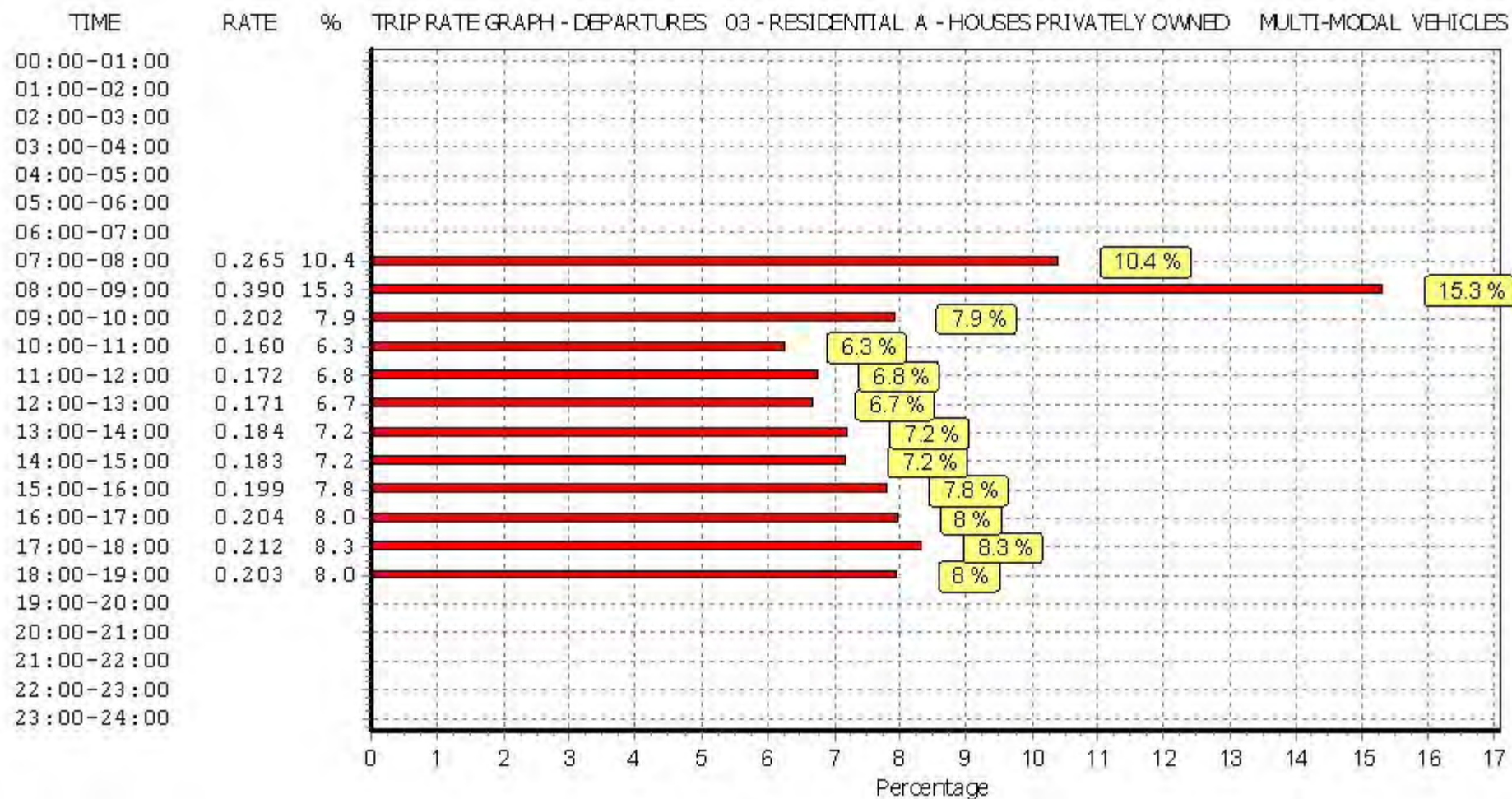
Parameter summary

Trip rate parameter range selected:	11 - 372 (units:)
Survey date range:	01/01/05 - 23/10/12
Number of weekdays (Monday-Friday):	33
Number of Saturdays:	2
Number of Sundays:	0
Surveys manually removed from selection:	37

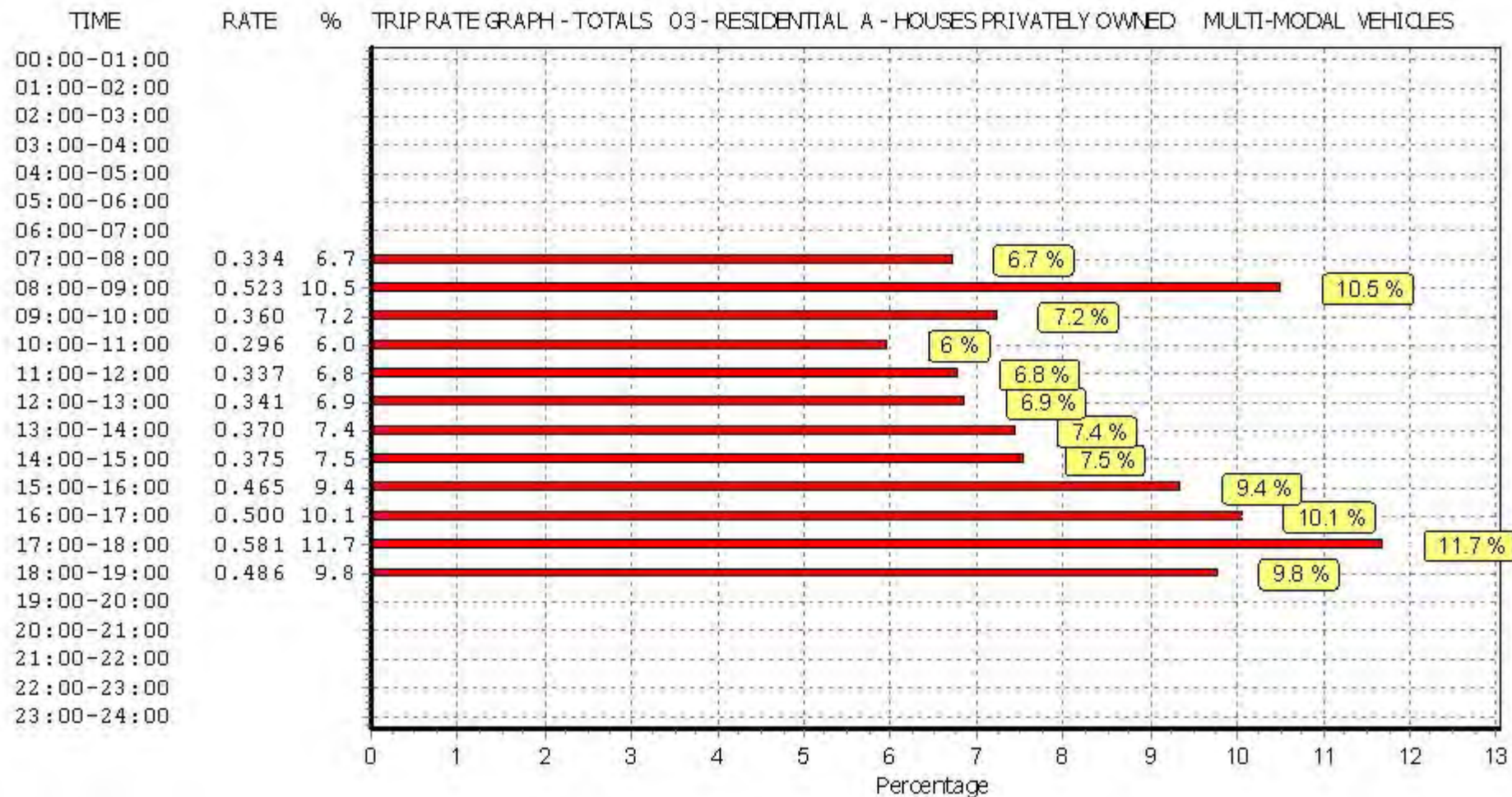
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



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TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	35	107	0.101	35	107	0.383	35	107	0.484
08:00 - 09:00	35	107	0.215	35	107	0.783	35	107	0.998
09:00 - 10:00	35	107	0.238	35	107	0.336	35	107	0.574
10:00 - 11:00	35	107	0.210	35	107	0.263	35	107	0.473
11:00 - 12:00	35	107	0.257	35	107	0.274	35	107	0.531
12:00 - 13:00	35	107	0.273	35	107	0.282	35	107	0.555
13:00 - 14:00	35	107	0.298	35	107	0.303	35	107	0.601
14:00 - 15:00	35	107	0.310	35	107	0.294	35	107	0.604
15:00 - 16:00	35	107	0.584	35	107	0.359	35	107	0.943
16:00 - 17:00	35	107	0.518	35	107	0.389	35	107	0.907
17:00 - 18:00	35	107	0.595	35	107	0.365	35	107	0.960
18:00 - 19:00	35	107	0.479	35	107	0.367	35	107	0.846
19:00 - 20:00	1	73	0.000	1	73	0.000	1	73	0.000
20:00 - 21:00	1	73	0.000	1	73	0.000	1	73	0.000
21:00 - 22:00	1	73	0.000	1	73	0.000	1	73	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:		4.078			4.398			8.476	

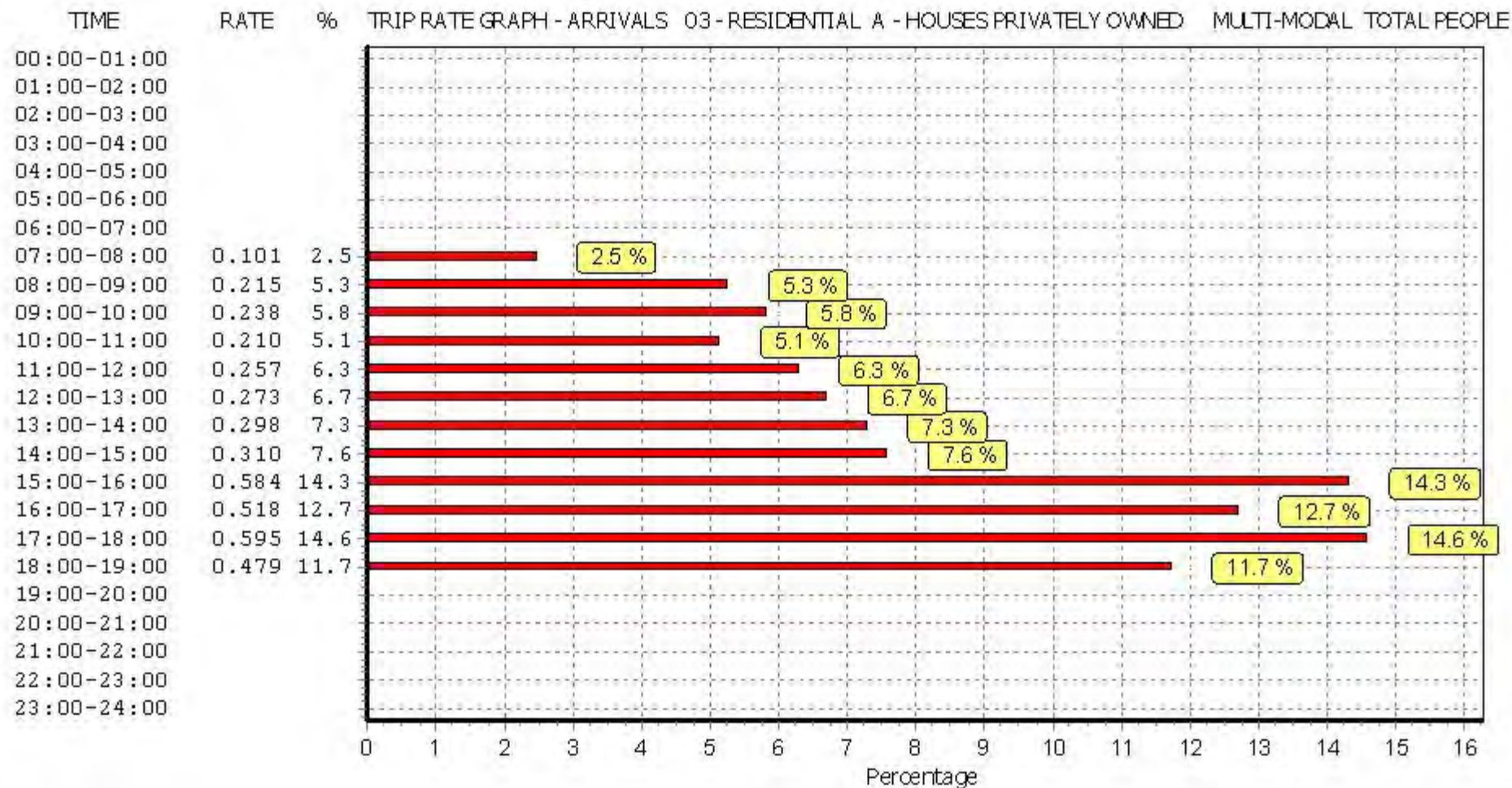
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

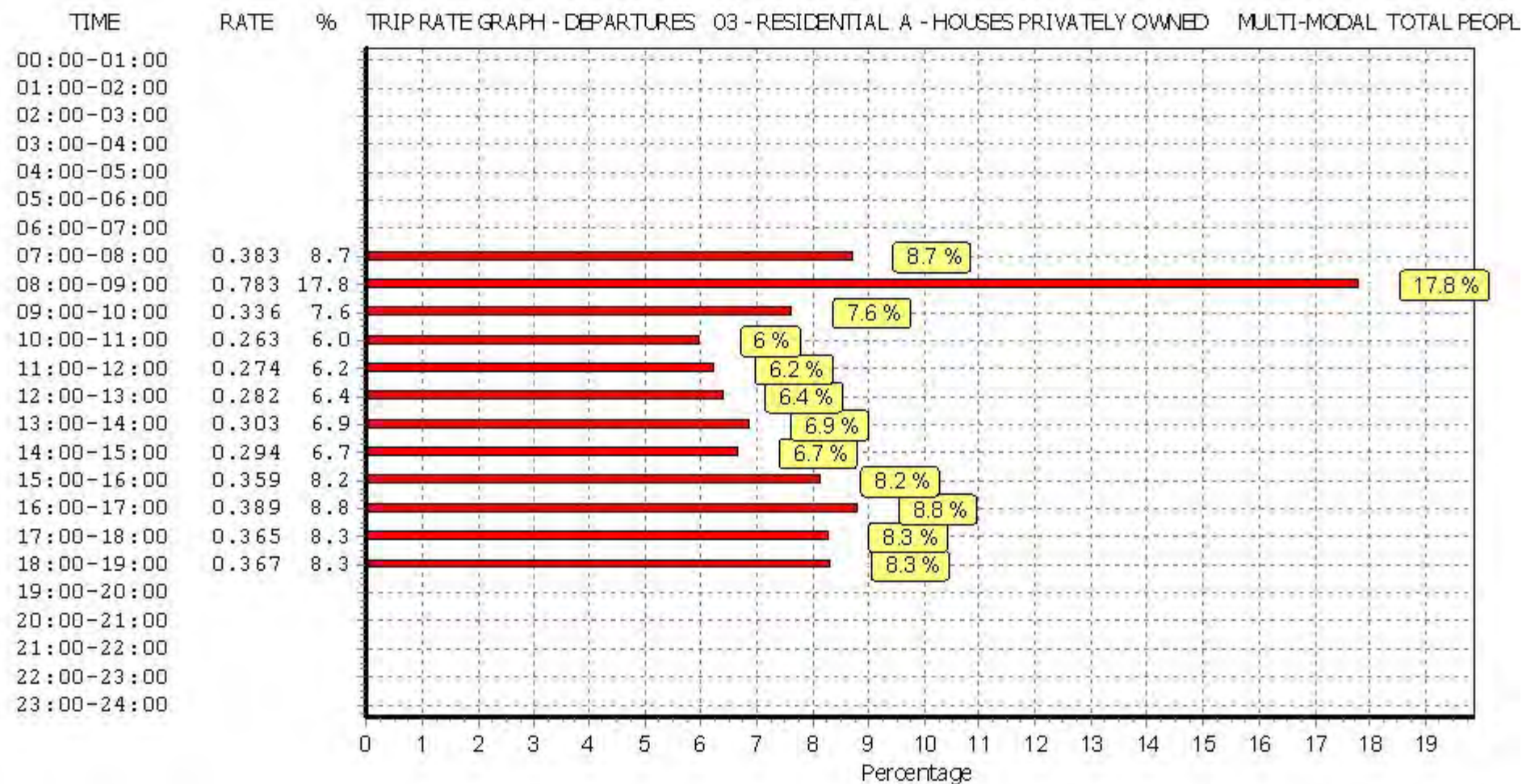
Parameter summary

Trip rate parameter range selected:	11 - 372 (units:)
Survey date range:	01/01/05 - 23/10/12
Number of weekdays (Monday-Friday):	33
Number of Saturdays:	2
Number of Sundays:	0
Surveys manually removed from selection:	37

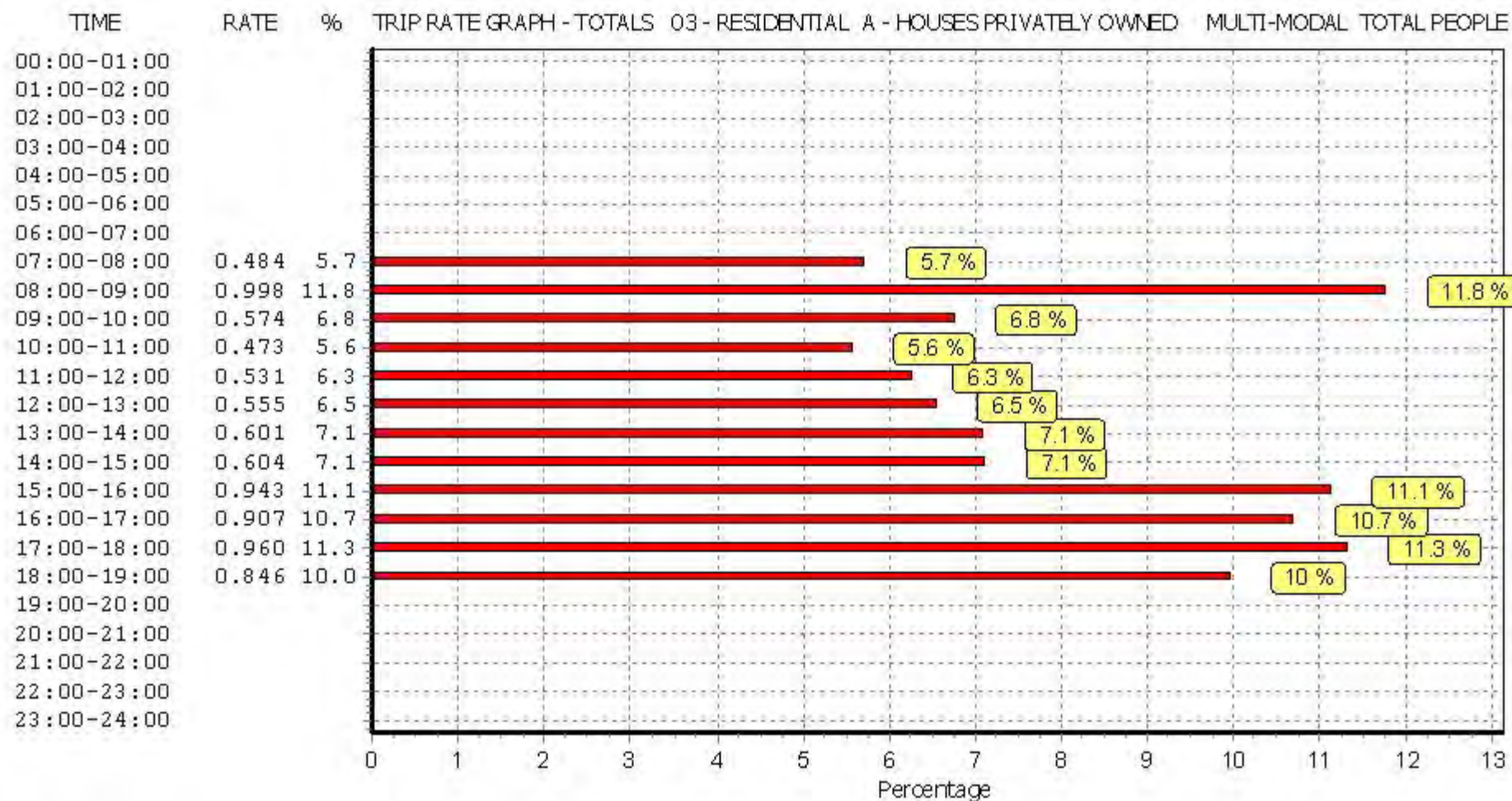
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



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This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

02	SOUTH EAST	
	HF HERTFORDSHIRE	1 days
04	EAST ANGLIA	
	CA CAMBRIDGESHIRE	1 days
05	EAST MIDLANDS	
	NR NORTHAMPTONSHIRE	1 days
06	WEST MIDLANDS	
	SH SHROPSHIRE	1 days
08	NORTH WEST	
	CH CHESHIRE	2 days
	MS MERSEYSIDE	1 days
13	MUNSTER	
	WA WATERFORD	1 days
14	LEINSTER	
	KK KILKENNY	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of dwellings
Actual Range: 25 to 195 (units:)
Range Selected by User: 5 to 4334 (units:)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/05 to 23/10/12

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Saturday	2 days
Sunday	7 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	9 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

Edge of Town Centre	1
Suburban Area (PPS6 Out of Centre)	6
Edge of Town	2

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	9
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This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

C3	9 days
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This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

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

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

50,001 to 75,000	1 days
75,001 to 100,000	1 days
100,001 to 125,000	3 days
125,001 to 250,000	3 days
500,001 or More	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	2 days
1.1 to 1.5	6 days
1.6 to 2.0	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	9 days
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This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1	CA-03-A-03	SEMI-DET.		CAMBRIDGESHIRE
	SUGAR WAY			
	WOODSTON			
	PETERBOROUGH			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:	28		
	Survey date: SUNDAY	11/05/08		Survey Type: MANUAL
2	CH-03-A-03	SEMI-DETACHED		CESHIRE
	SPRING GARDENS			
	CREWE			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:	80		
	Survey date: SUNDAY	19/10/08		Survey Type: MANUAL
3	CH-03-A-04	DETACHED/SEMI-DET.		CESHIRE
	LIME TREE AVENUE			
	CREWE			
	Edge of Town			
	Residential Zone			
	Total Number of dwellings:	25		
	Survey date: SUNDAY	19/10/08		Survey Type: MANUAL
4	HF-03-A-02	HOUSES		HERTFORDSHIRE
	BLACK FAN ROAD			
	PANSHANGER			
	WELWYN GARDEN CITY			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:	195		
	Survey date: SUNDAY	20/07/08		Survey Type: MANUAL
5	KK-03-A-02	SEMI-DETACHED		KILKENNY
	UPPER PATRICK STREET			
	KILKENNY			
	Edge of Town Centre			
	Residential Zone			
	Total Number of dwellings:	68		
	Survey date: SATURDAY	29/11/08		Survey Type: MANUAL
6	MS-03-A-02	DETACHED		MERSEYSIDE
	RIVERSIDE DRIVE			
	AIGBURTH			
	LIVERPOOL			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:	31		
	Survey date: SUNDAY	05/09/10		Survey Type: MANUAL
7	NR-03-A-01	HOUSES		NORTHAMPTONSHIRE
	BOUGHTON GREEN ROAD			
	KINGSTHORPE			
	NORTHAMPTON			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:	102		
	Survey date: SATURDAY	22/09/12		Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

8	SH-03-A-02	DETACHED	SHROPSHIRE
	GATCOMBE WAY		
	PRIORSLEE		
	TELFORD		
	Edge of Town		
	Residential Zone		
	Total Number of dwellings:	57	
	Survey date: SUNDAY	21/06/09	Survey Type: MANUAL
9	WA-03-A-03	TERR./SEMI-DET.	WATERFORD
	OLD TRAMORE ROAD		
	WATERFORD		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	70	
	Survey date: SUNDAY	16/11/08	Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
CM-03-A-01	under
EA-03-A-02	under
NY-03-A-02	under
NY-03-A-04	under

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
VEHICLES
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	9	73	0.024	9	73	0.040	9	73	0.064
08:00 - 09:00	9	73	0.046	9	73	0.069	9	73	0.115
09:00 - 10:00	9	73	0.069	9	73	0.163	9	73	0.232
10:00 - 11:00	9	73	0.143	9	73	0.192	9	73	0.335
11:00 - 12:00	9	73	0.189	9	73	0.282	9	73	0.471
12:00 - 13:00	9	73	0.223	9	73	0.221	9	73	0.444
13:00 - 14:00	9	73	0.213	9	73	0.163	9	73	0.376
14:00 - 15:00	9	73	0.236	9	73	0.210	9	73	0.446
15:00 - 16:00	9	73	0.216	9	73	0.181	9	73	0.397
16:00 - 17:00	9	73	0.198	9	73	0.143	9	73	0.341
17:00 - 18:00	9	73	0.216	9	73	0.169	9	73	0.385
18:00 - 19:00	9	73	0.168	9	73	0.123	9	73	0.291
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:		1.941			1.956			3.897	

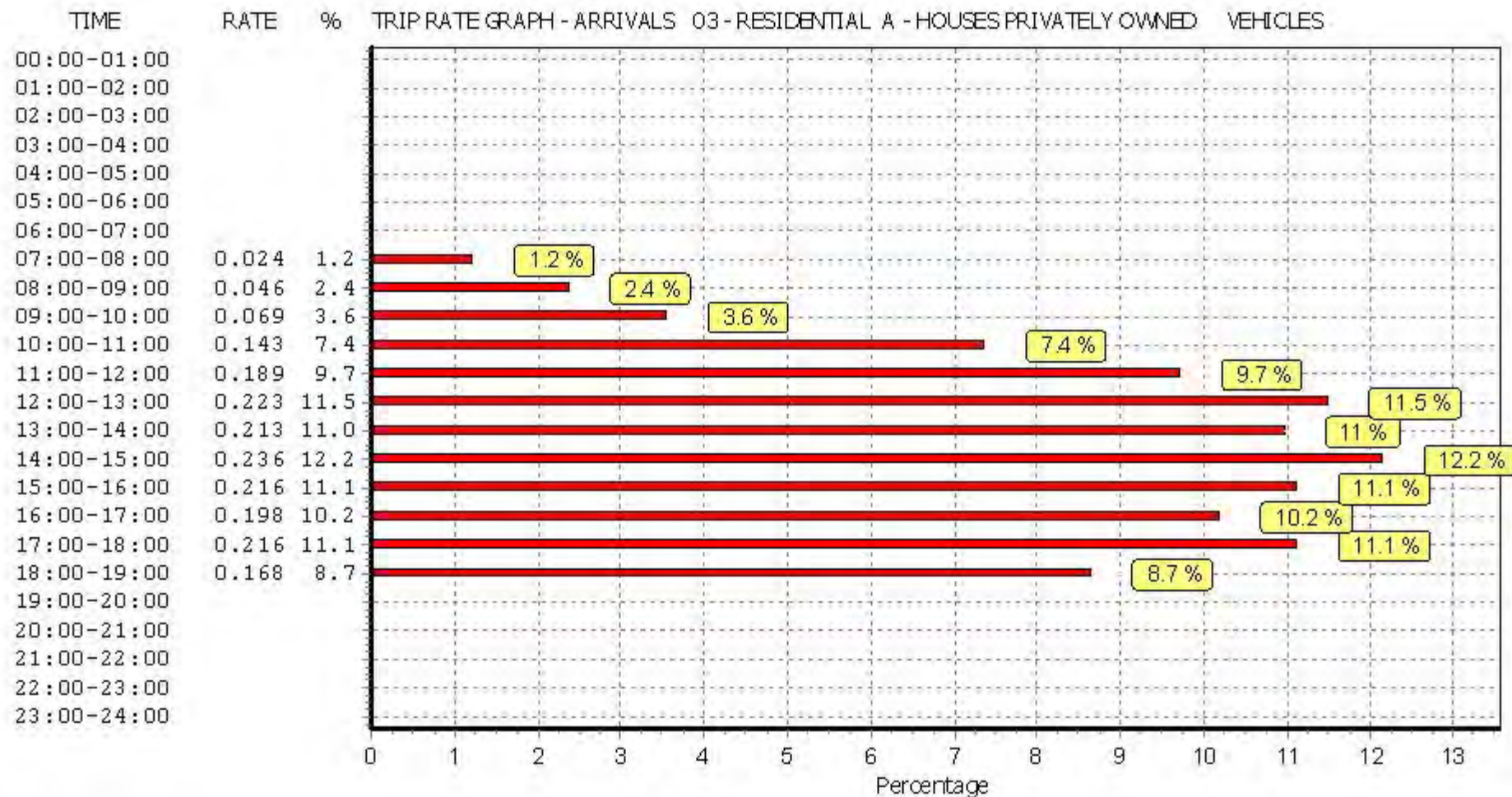
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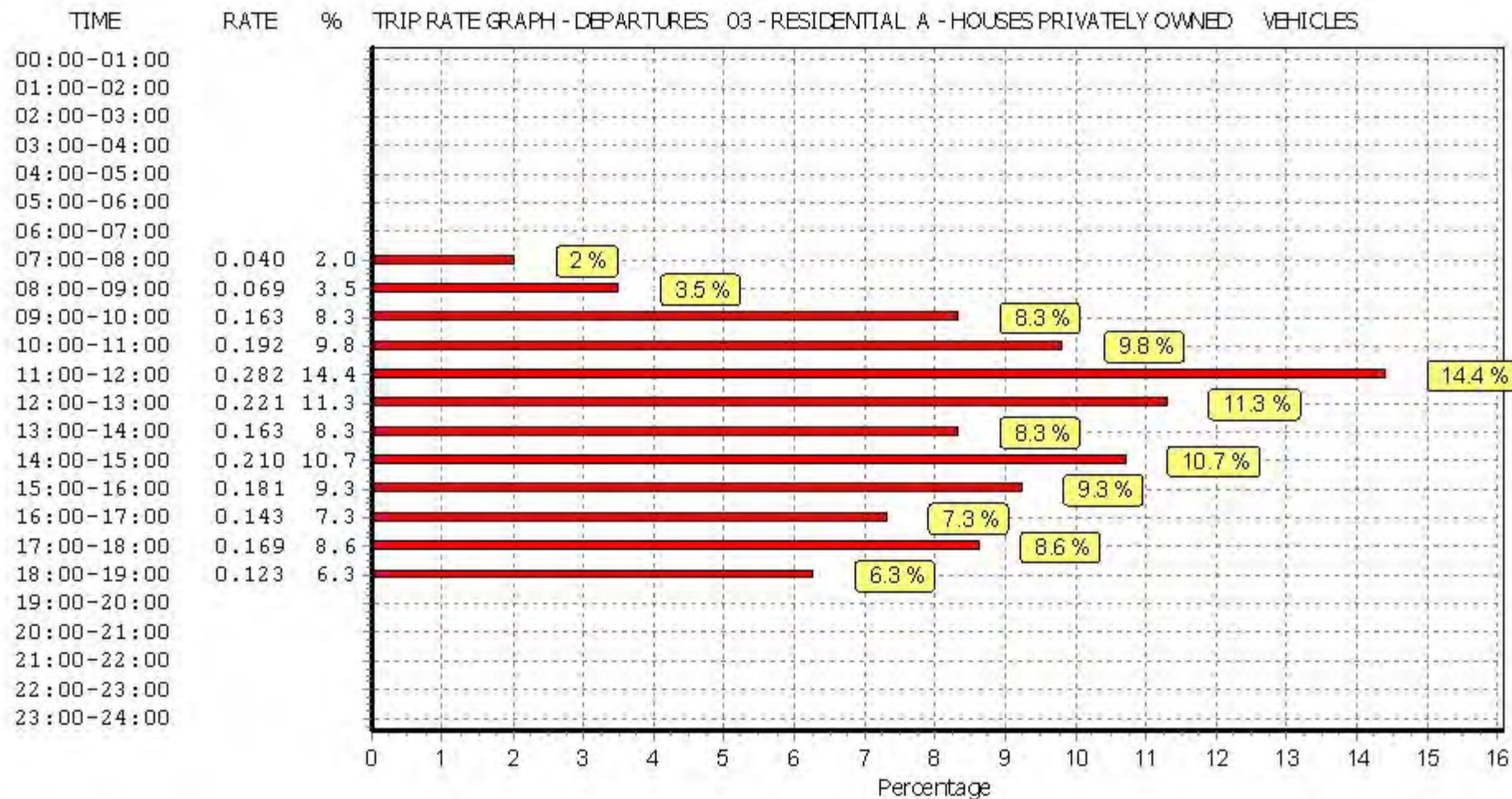
Parameter summary

Trip rate parameter range selected:	25 - 195 (units:)
Survey date range:	01/01/05 - 23/10/12
Number of weekdays (Monday-Friday):	0
Number of Saturdays:	2
Number of Sundays:	7
Surveys manually removed from selection:	4

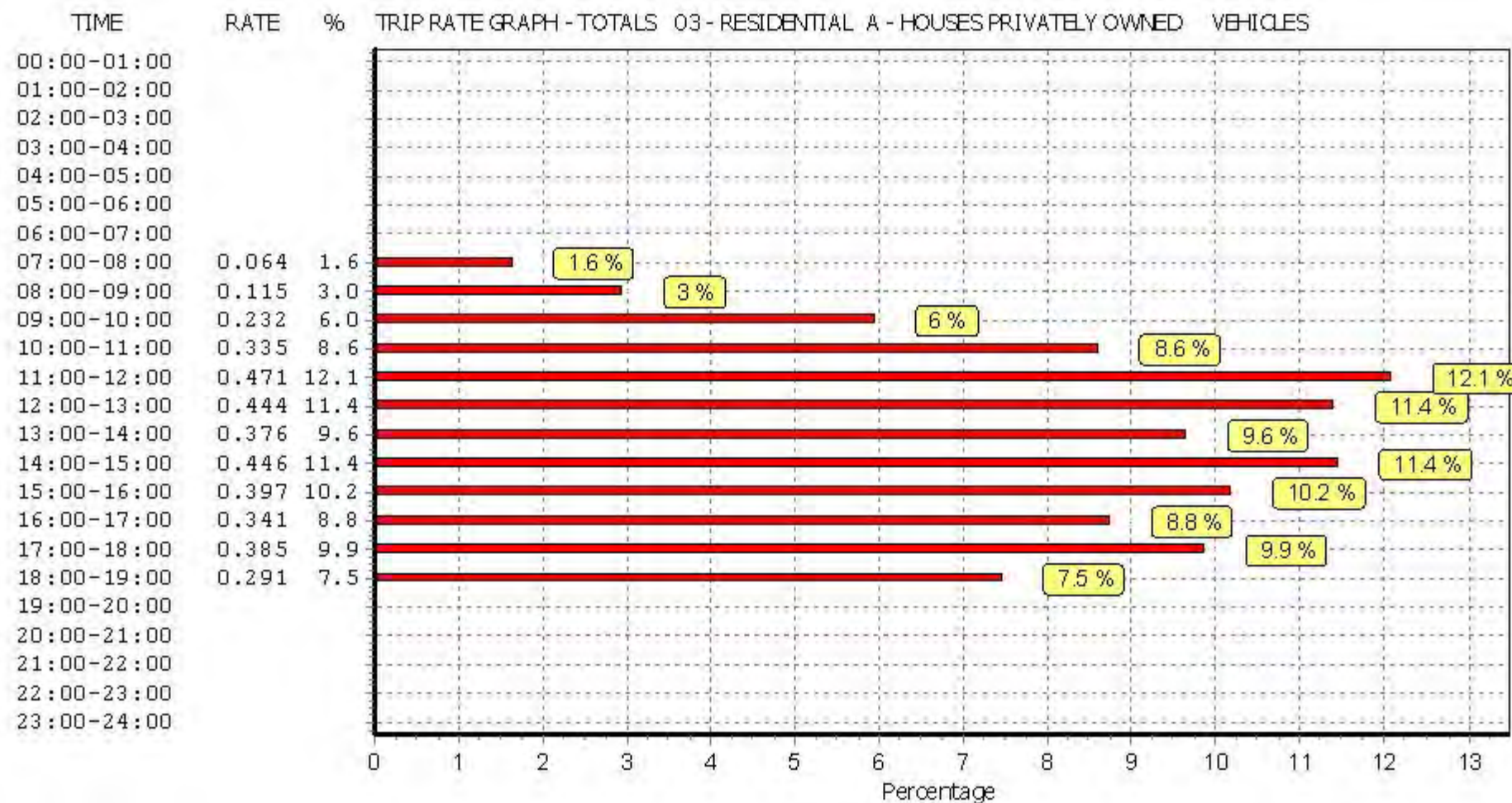
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TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
 Category : B - HOUSES FOR RENT
 VEHICLES

Selected regions and areas:

03	SOUTH WEST	
	DV DEVON	1 days
04	EAST ANGLIA	
	SF SUFFOLK	1 days
05	EAST MIDLANDS	
	DS DERBYSHIRE	1 days
06	WEST MIDLANDS	
	WM WEST MIDLANDS	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE	
	NY NORTH YORKSHIRE	1 days
09	NORTH	
	NB NORTHUMBERLAND	1 days
11	SCOTLAND	
	HI HIGHLAND	2 days
	MO MORAY	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of dwellings
 Actual Range: 29 to 280 (units:)
 Range Selected by User: 11 to 516 (units:)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/05 to 19/11/12

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	3 days
Tuesday	2 days
Wednesday	2 days
Thursday	2 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	9 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

Edge of Town Centre	1
Suburban Area (PPS6 Out of Centre)	4
Edge of Town	2
Neighbourhood Centre (PPS6 Local Centre)	2

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	6
No Sub Category	3

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

C3

8 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

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

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	2 days
25,001 to 50,000	1 days
75,001 to 100,000	2 days
125,001 to 250,000	1 days
250,001 to 500,000	3 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	5 days
1.1 to 1.5	4 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No

9 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1	DS-03-B-01	TERRACED / SEMI / BUNG.	DERBYSHIRE
	COCKAYNE STREET		
	BOULTON		
	DERBY		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	29	
	Survey date: MONDAY	04/07/11	Survey Type: MANUAL
2	DV-03-B-01	TERRACED	DEVON
	HAM DRIVE		
	PLYMOUTH		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	35	
	Survey date: WEDNESDAY	06/07/05	Survey Type: MANUAL
3	HI-03-B-05	TERRACED	HIGHLAND
	PLANTATION ESTATE		
	KENNEDY ROAD		
	FORT WILLIAM		
	Neighbourhood Centre (PPS6 Local Centre)		
	Residential Zone		
	Total Number of dwellings:	126	
	Survey date: TUESDAY	19/05/09	Survey Type: MANUAL
4	HI-03-B-06	TERRACED	HIGHLAND
	CARNARC CRESCENT		
	INVERNESS		
	Neighbourhood Centre (PPS6 Local Centre)		
	Residential Zone		
	Total Number of dwellings:	108	
	Survey date: THURSDAY	21/05/09	Survey Type: MANUAL
5	MO-03-B-02	BUNGALOWS	MORAY
	PLUSCARDEN ROAD		
	ELGIN		
	Edge of Town Centre		
	No Sub Category		
	Total Number of dwellings:	40	
	Survey date: WEDNESDAY	10/05/06	Survey Type: MANUAL
6	NB-03-B-01	SEMI DET. & TERRACED	NORTHUMBERLAND
	WESTLEA		
	BEDLINGTON		
	Edge of Town		
	Residential Zone		
	Total Number of dwellings:	97	
	Survey date: MONDAY	19/11/12	Survey Type: MANUAL
7	NY-03-B-01	TERRACED HOUSING	NORTH YORKSHIRE
	NORTHALLERTON ROAD		
	NORBY		
	THIRSK		
	Suburban Area (PPS6 Out of Centre)		
	No Sub Category		
	Total Number of dwellings:	280	
	Survey date: THURSDAY	20/09/07	Survey Type: MANUAL
8	SF-03-B-01	SEMI D. / TERRACED	SUFFOLK
	A1144 ST PETERS STREET		
	LOWESTOFT		
	Suburban Area (PPS6 Out of Centre)		
	No Sub Category		
	Total Number of dwellings:	46	
	Survey date: TUESDAY	20/09/05	Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

9	WM-03-B-01	SEMI DET./TERRACED	WEST MIDLANDS
	YORKMINSTER DRIVE		
	CHELMSLEY WOOD		
	BIRMINGHAM		
	Edge of Town		
	Residential Zone		
	Total Number of dwellings:	97	
	Survey date: MONDAY	17/10/11	Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
MO-03-B-01	over
WY-03-B-01	over

TRIP RATE for Land Use 03 - RESIDENTIAL/B - HOUSES FOR RENT
VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	9	95	0.062	9	95	0.168	9	95	0.230
08:00 - 09:00	9	95	0.133	9	95	0.240	9	95	0.373
09:00 - 10:00	9	95	0.154	9	95	0.142	9	95	0.296
10:00 - 11:00	9	95	0.131	9	95	0.148	9	95	0.279
11:00 - 12:00	9	95	0.149	9	95	0.171	9	95	0.320
12:00 - 13:00	9	95	0.160	9	95	0.181	9	95	0.341
13:00 - 14:00	9	95	0.155	9	95	0.126	9	95	0.281
14:00 - 15:00	9	95	0.174	9	95	0.206	9	95	0.380
15:00 - 16:00	9	95	0.227	9	95	0.178	9	95	0.405
16:00 - 17:00	9	95	0.249	9	95	0.183	9	95	0.432
17:00 - 18:00	9	95	0.291	9	95	0.184	9	95	0.475
18:00 - 19:00	9	95	0.181	9	95	0.159	9	95	0.340
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.066			2.086			4.152

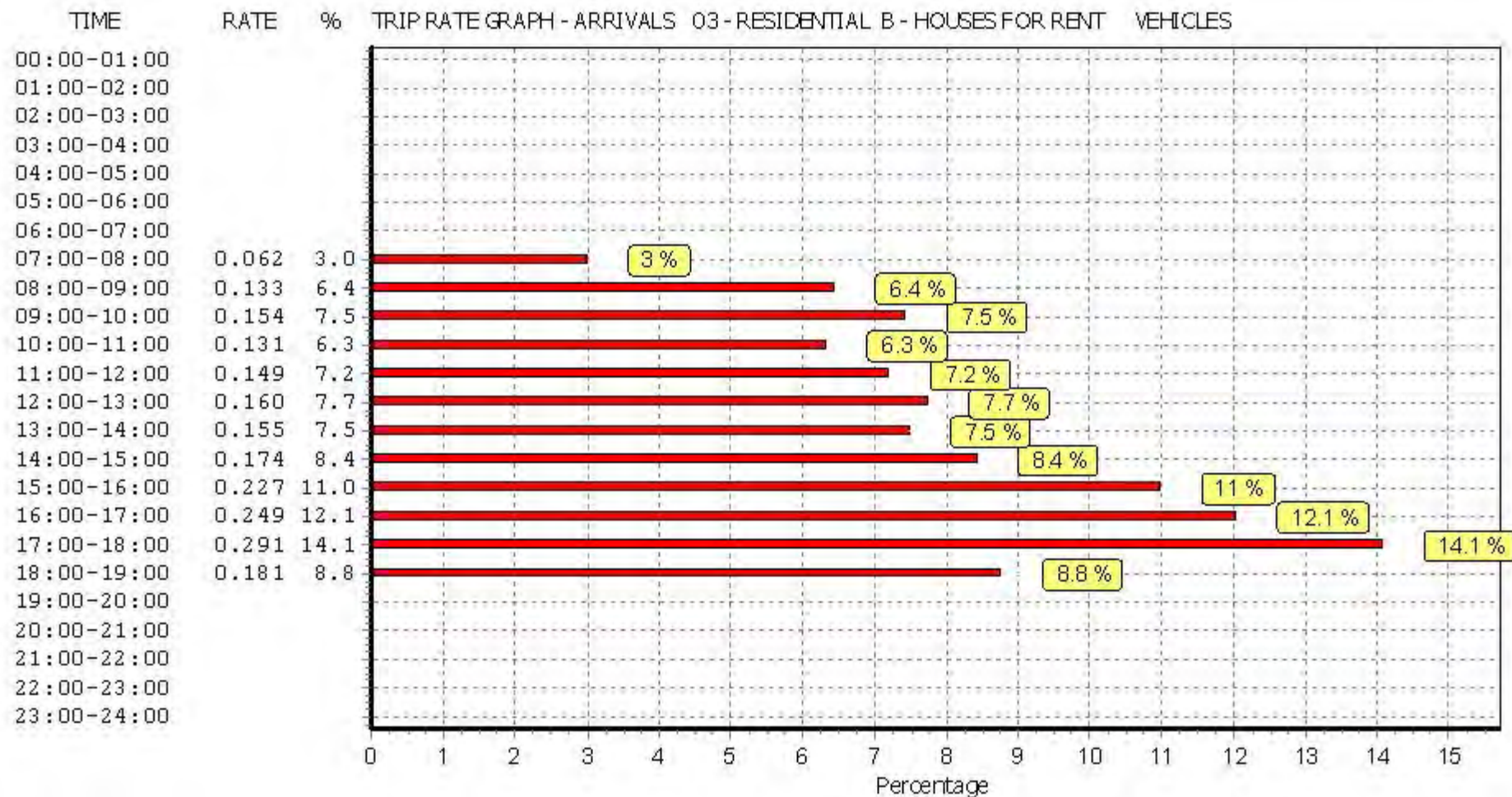
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

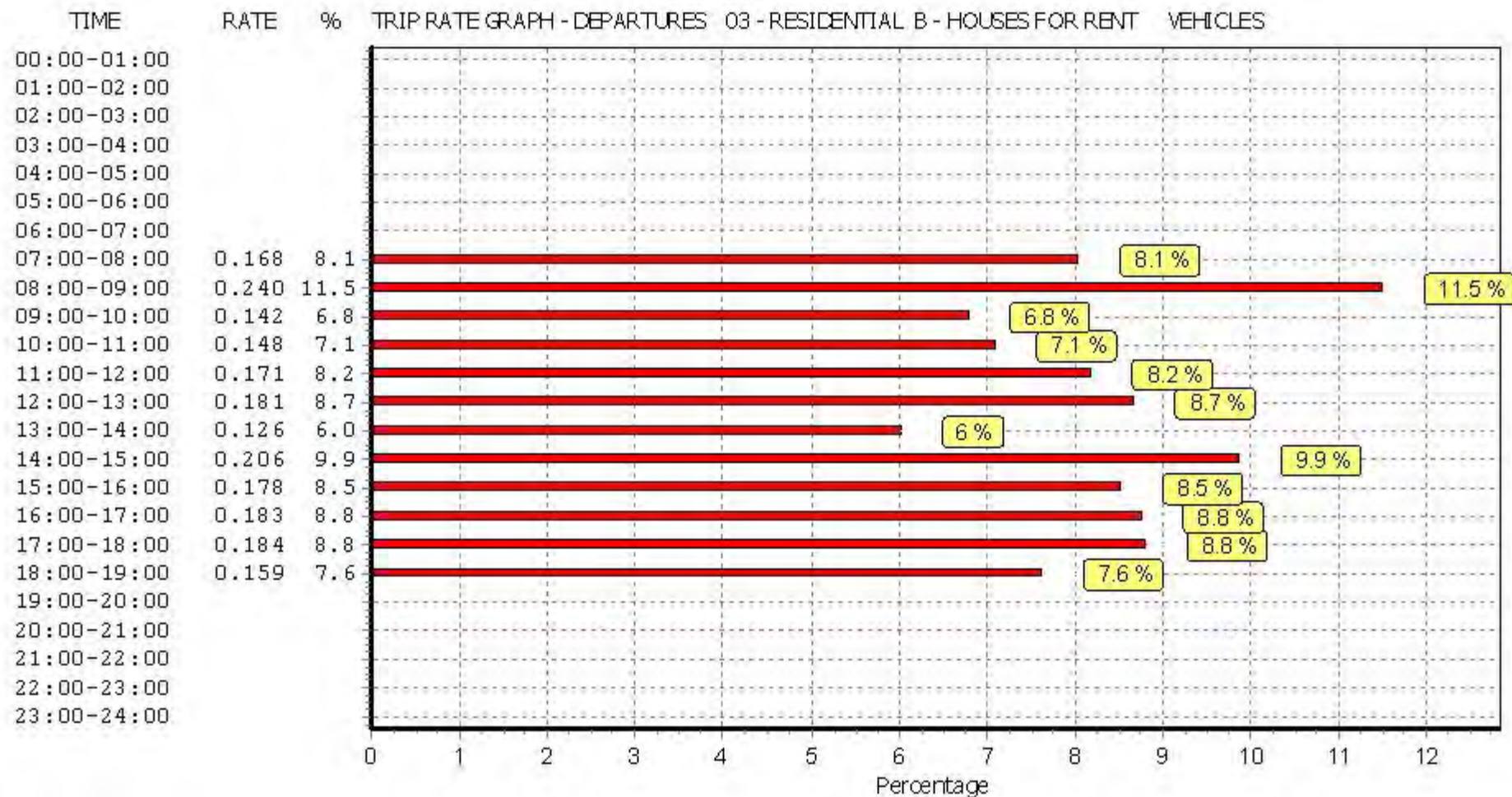
Parameter summary

Trip rate parameter range selected: 29 - 280 (units:)
Survey date range: 01/01/05 - 19/11/12
Number of weekdays (Monday-Friday): 9
Number of Saturdays: 0
Number of Sundays: 0
Surveys manually removed from selection: 2

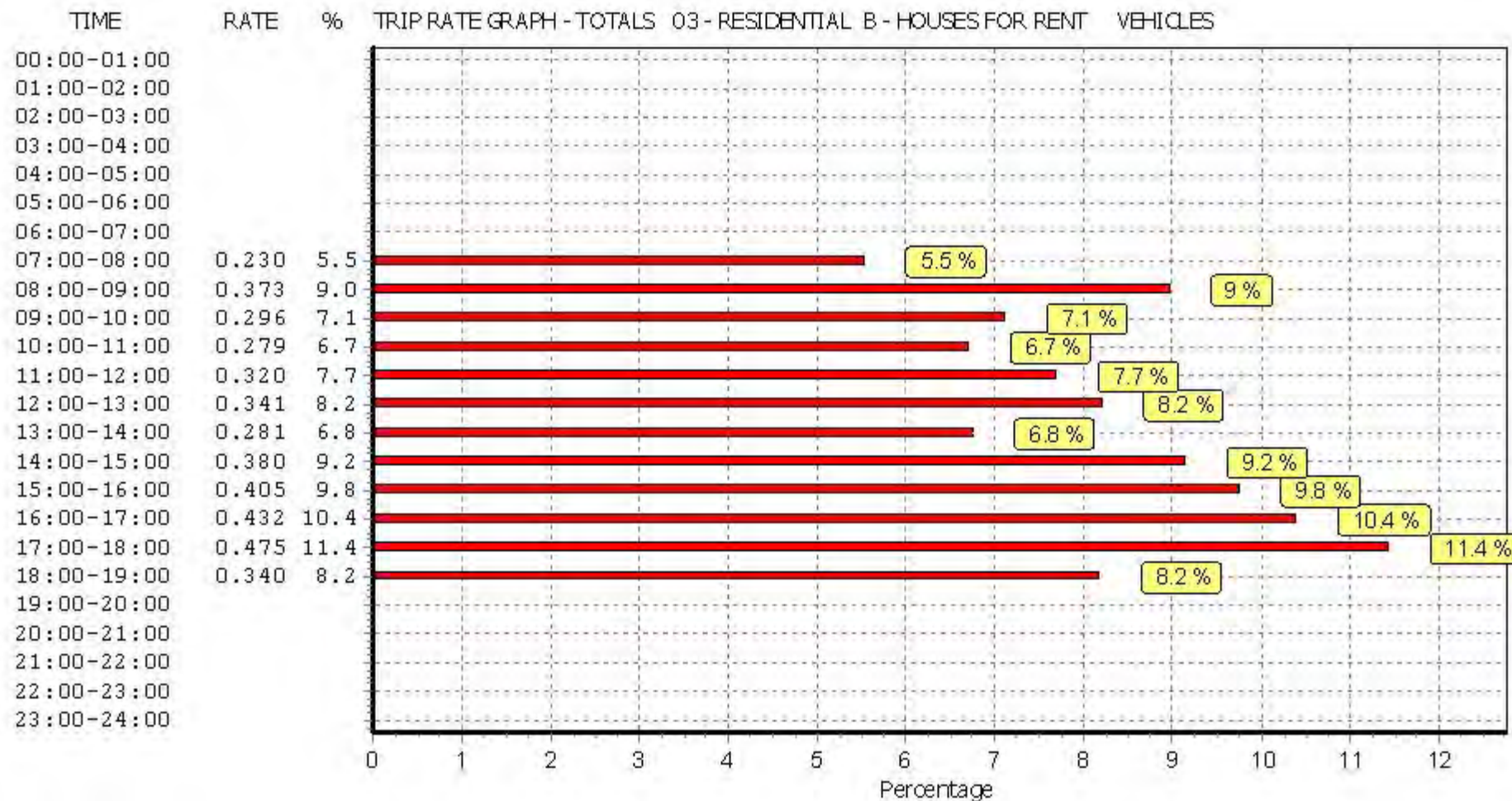
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



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TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : C - FLATS PRIVATELY OWNED
VEHICLES

Selected regions and areas:

06	WEST MIDLANDS	
	WM WEST MIDLANDS	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE	
	WY WEST YORKSHIRE	1 days
11	SCOTLAND	
	HI HIGHLAND	1 days
14	LEINSTER	
	KD KILDARE	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter:	Number of dwellings
Actual Range:	12 to 60 (units:)
Range Selected by User:	6 to 215 (units:)

Public Transport Provision:

Selection by:	Include all surveys
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Date Range:	01/01/05 to 21/10/11
-------------	----------------------

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Wednesday	2 days
Friday	2 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	4 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

Town Centre	1
Edge of Town Centre	3

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	2
Built-Up Zone	1
No Sub Category	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

C3	4 days
----	--------

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

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

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	1 days
75,001 to 100,000	1 days
125,001 to 250,000	1 days
250,001 to 500,000	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

1.1 to 1.5	4 days
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This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	4 days
----	--------

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1	HI-03-C-01 SHORE STREET	FLATS	HIGHLAND
	INVERNESS Town Centre Residential Zone		
	Total Number of dwellings:	38	
	Survey date: WEDNESDAY	20/05/09	Survey Type: MANUAL
2	KD-03-C-01 STATION ROAD	BLOCK OF FLATS	KILDARE
	KILDARE Edge of Town Centre Residential Zone		
	Total Number of dwellings:	32	
	Survey date: FRIDAY	22/05/09	Survey Type: MANUAL
3	WM-03-C-03 LODE LANE	FLATS	WEST MIDLANDS
	SOLIHULL Edge of Town Centre No Sub Category		
	Total Number of dwellings:	60	
	Survey date: FRIDAY	21/09/07	Survey Type: MANUAL
4	WY-03-C-02 KINGS MILL LANE ASPLEY HUDDERSFIELD	BLOCK OF FLATS	WEST YORKSHIRE
	Edge of Town Centre Built-Up Zone		
	Total Number of dwellings:	12	
	Survey date: WEDNESDAY	13/09/06	Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
BR-03-C-01	Over Density
CA-03-C-01	Over Density
CA-03-C-02	Over Density
CH-03-C-01	Over Density
CS-03-C-01	Over Density
DB-03-C-01	Over Density
DC-03-C-01	Over Density
DS-03-C-01	Over Density
FS-03-C-01	Over Density
GM-03-C-02	Over Density
GM-03-C-03	Over Density
HC-03-C-02	Over Density
HF-03-C-02	Over Density
NR-03-C-01	Over Density
OX-03-C-01	Over Density
SC-03-C-01	Over Density
SC-03-C-02	Over Density
ST-03-C-01	Over Density
TV-03-C-01	Over Density
TV-03-C-02	Over Density
WK-03-C-01	Over Density
WT-03-C-01	Over Density
WT-03-C-02	Over Density

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	36	0.028	4	36	0.070	4	36	0.098
08:00 - 09:00	4	36	0.042	4	36	0.289	4	36	0.331
09:00 - 10:00	4	36	0.063	4	36	0.049	4	36	0.112
10:00 - 11:00	4	36	0.070	4	36	0.056	4	36	0.126
11:00 - 12:00	4	36	0.042	4	36	0.042	4	36	0.084
12:00 - 13:00	4	36	0.042	4	36	0.056	4	36	0.098
13:00 - 14:00	4	36	0.049	4	36	0.099	4	36	0.148
14:00 - 15:00	4	36	0.077	4	36	0.077	4	36	0.154
15:00 - 16:00	4	36	0.120	4	36	0.099	4	36	0.219
16:00 - 17:00	4	36	0.120	4	36	0.127	4	36	0.247
17:00 - 18:00	4	36	0.225	4	36	0.141	4	36	0.366
18:00 - 19:00	4	36	0.155	4	36	0.063	4	36	0.218
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.033			1.168			2.201

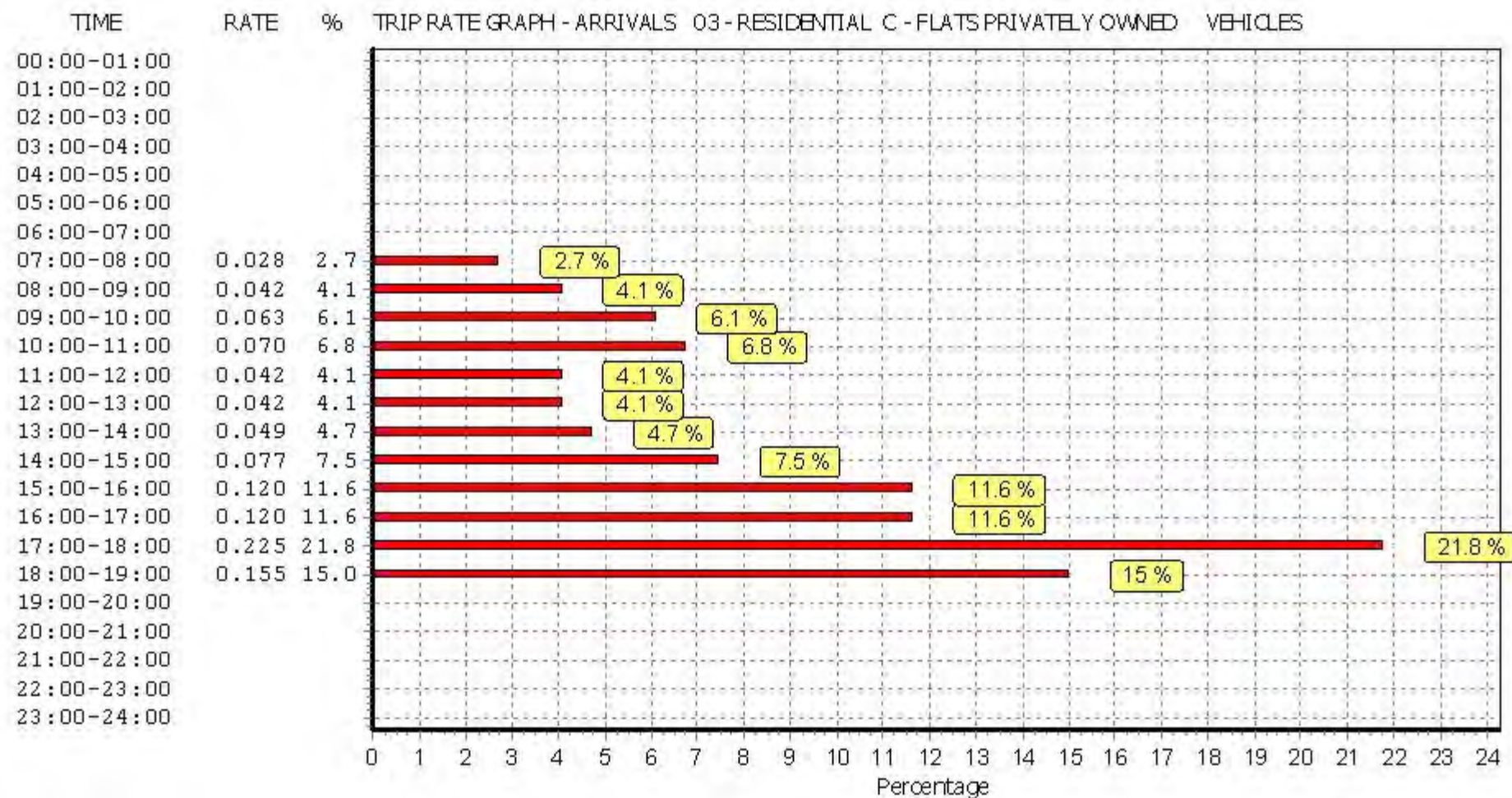
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

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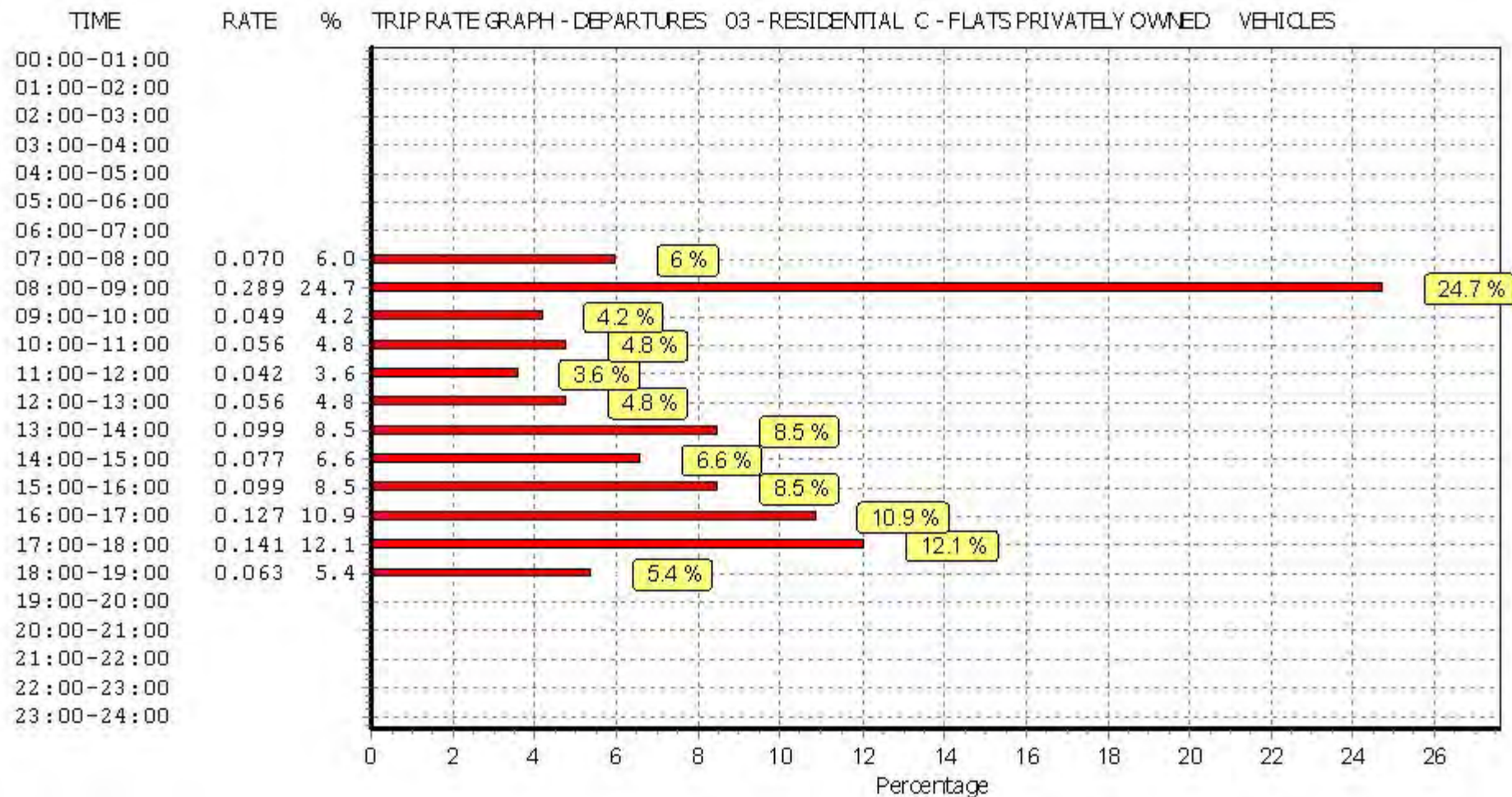
Parameter summary

Trip rate parameter range selected:	12 - 60 (units:)
Survey date range:	01/01/05 - 21/10/11
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	23

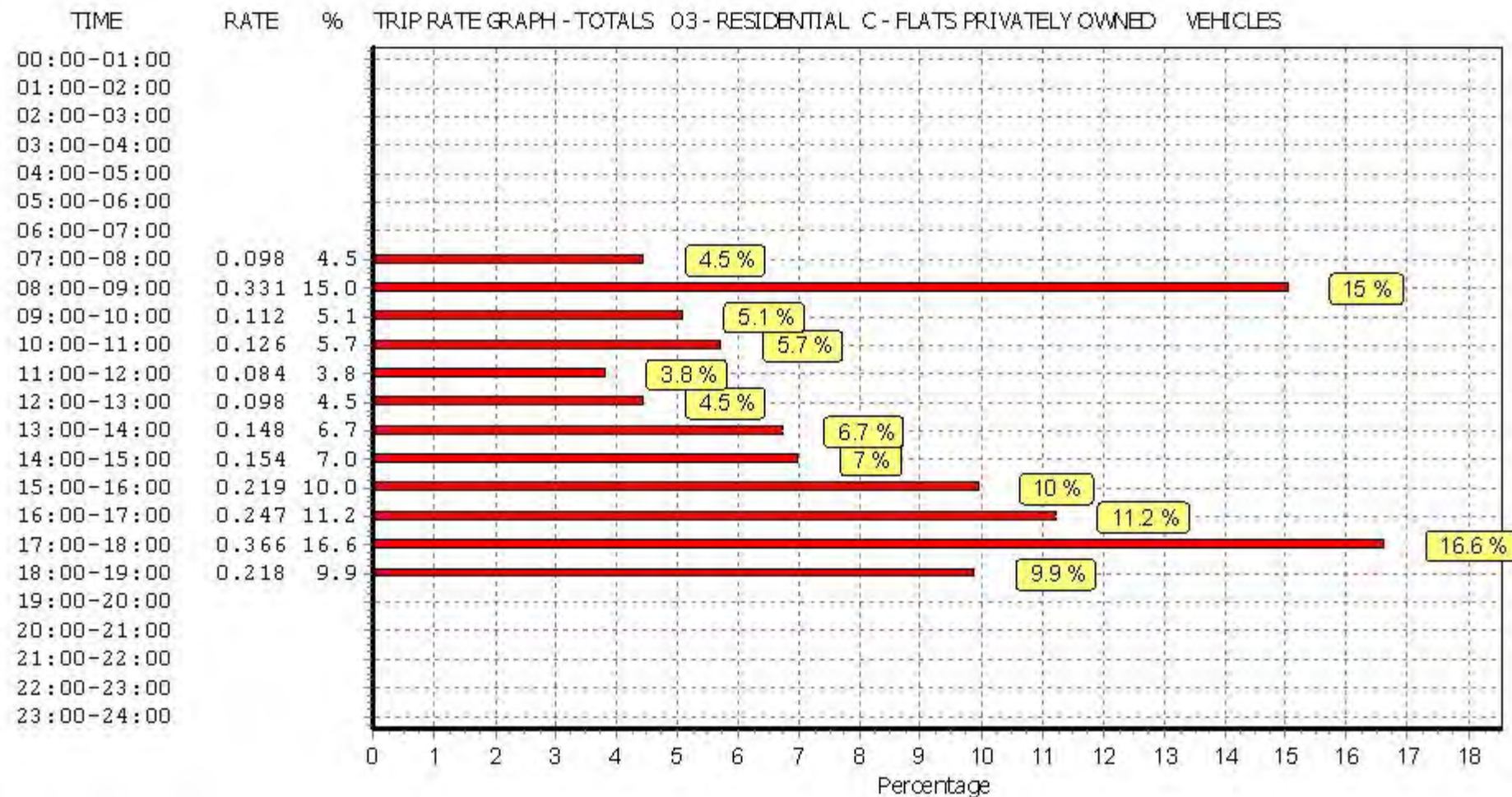
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



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This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : C - FLATS PRIVATELY OWNED
VEHICLES

Selected regions and areas:

02	SOUTH EAST	
	SC SURREY	2 days
05	EAST MIDLANDS	
	DS DERBYSHIRE	1 days
11	SCOTLAND	
	GC GLASGOW CITY	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter:	Number of dwellings
Actual Range:	28 to 72 (units:)
Range Selected by User:	6 to 215 (units:)

Public Transport Provision:

Selection by:	Include all surveys
---------------	---------------------

Date Range: 01/01/05 to 21/10/11

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Saturday	3 days
Sunday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	4 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

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

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	3
Built-Up Zone	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

C3	3 days
----	--------

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

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

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

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

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.5 or Less	1 days
1.1 to 1.5	3 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	4 days
----	--------

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1	DS-03-C-02	FLATS		DERBYSHIRE
	BURTON ROAD			
	NEW NORMANTON			
	DERBY			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:	28		
	Survey date: SATURDAY	09/07/11		Survey Type: MANUAL
2	GC-03-C-01	BLOCK OF FLATS		GLASGOW CITY
	FERSIT STREET			
	MANESWOOD			
	GLASGOW			
	Suburban Area (PPS6 Out of Centre)			
	Built-Up Zone			
	Total Number of dwellings:	36		
	Survey date: SUNDAY	29/06/08		Survey Type: MANUAL
3	SC-03-C-03	FLATS		SURREY
	KINGS ROAD			
	WOKING			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:	52		
	Survey date: SATURDAY	19/07/08		Survey Type: MANUAL
4	SC-03-C-04	BLOCK OF FLATS		SURREY
	LONDON ROAD			
	BURPHAM			
	GUILDFORD			
	Edge of Town			
	Residential Zone			
	Total Number of dwellings:	72		
	Survey date: SATURDAY	23/10/10		Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
VEHICLES
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	47	0.011	4	47	0.069	4	47	0.080
08:00 - 09:00	4	47	0.069	4	47	0.122	4	47	0.191
09:00 - 10:00	4	47	0.069	4	47	0.133	4	47	0.202
10:00 - 11:00	4	47	0.101	4	47	0.101	4	47	0.202
11:00 - 12:00	4	47	0.085	4	47	0.096	4	47	0.181
12:00 - 13:00	4	47	0.090	4	47	0.133	4	47	0.223
13:00 - 14:00	4	47	0.144	4	47	0.160	4	47	0.304
14:00 - 15:00	4	47	0.117	4	47	0.106	4	47	0.223
15:00 - 16:00	4	47	0.122	4	47	0.069	4	47	0.191
16:00 - 17:00	4	47	0.160	4	47	0.101	4	47	0.261
17:00 - 18:00	4	47	0.106	4	47	0.064	4	47	0.170
18:00 - 19:00	4	47	0.122	4	47	0.064	4	47	0.186
19:00 - 20:00	1	72	0.111	1	72	0.097	1	72	0.208
20:00 - 21:00	1	72	0.083	1	72	0.069	1	72	0.152
21:00 - 22:00	1	72	0.083	1	72	0.042	1	72	0.125
22:00 - 23:00									
23:00 - 24:00									
Total Rates:		1.473			1.426			2.899	

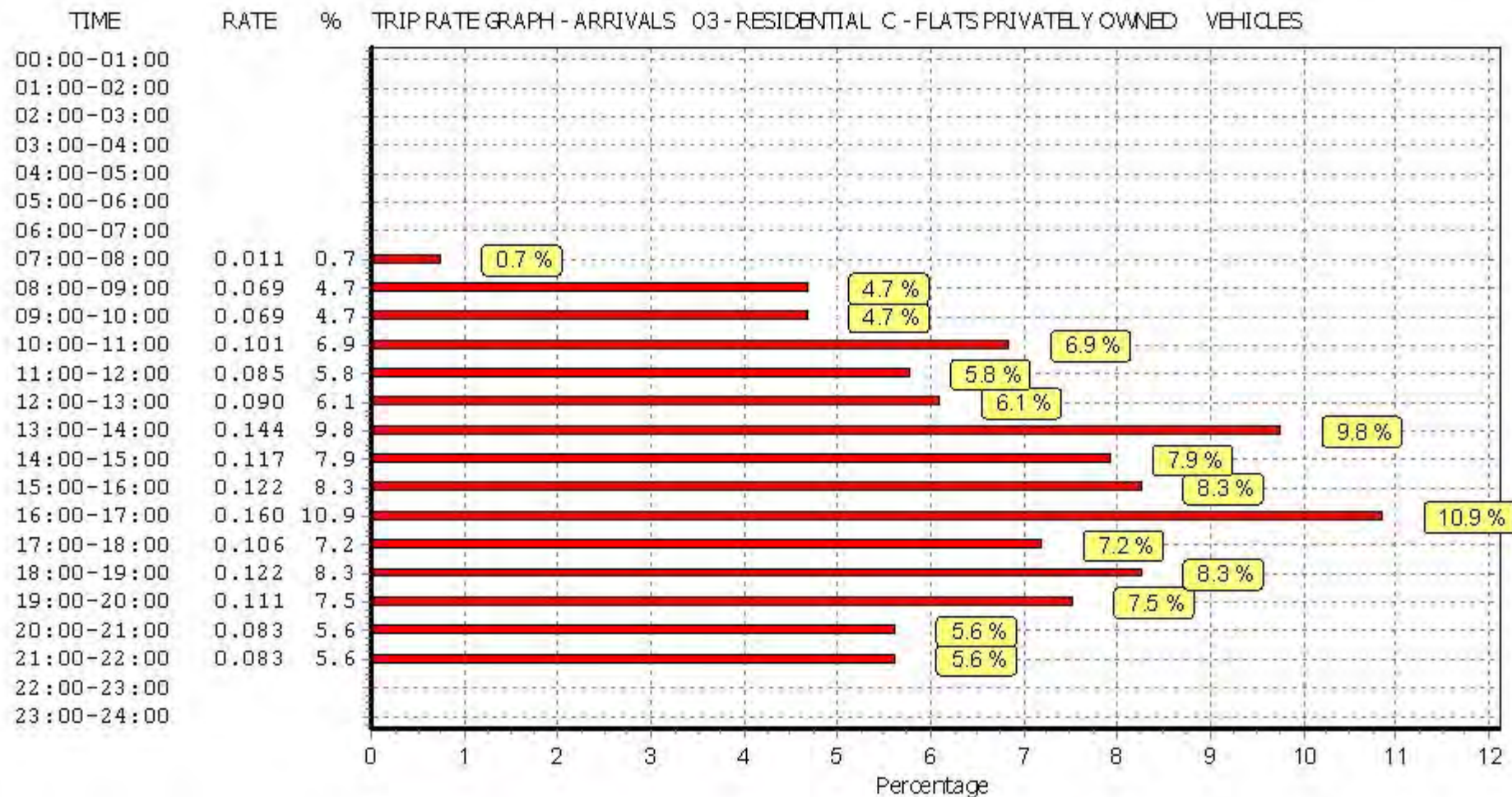
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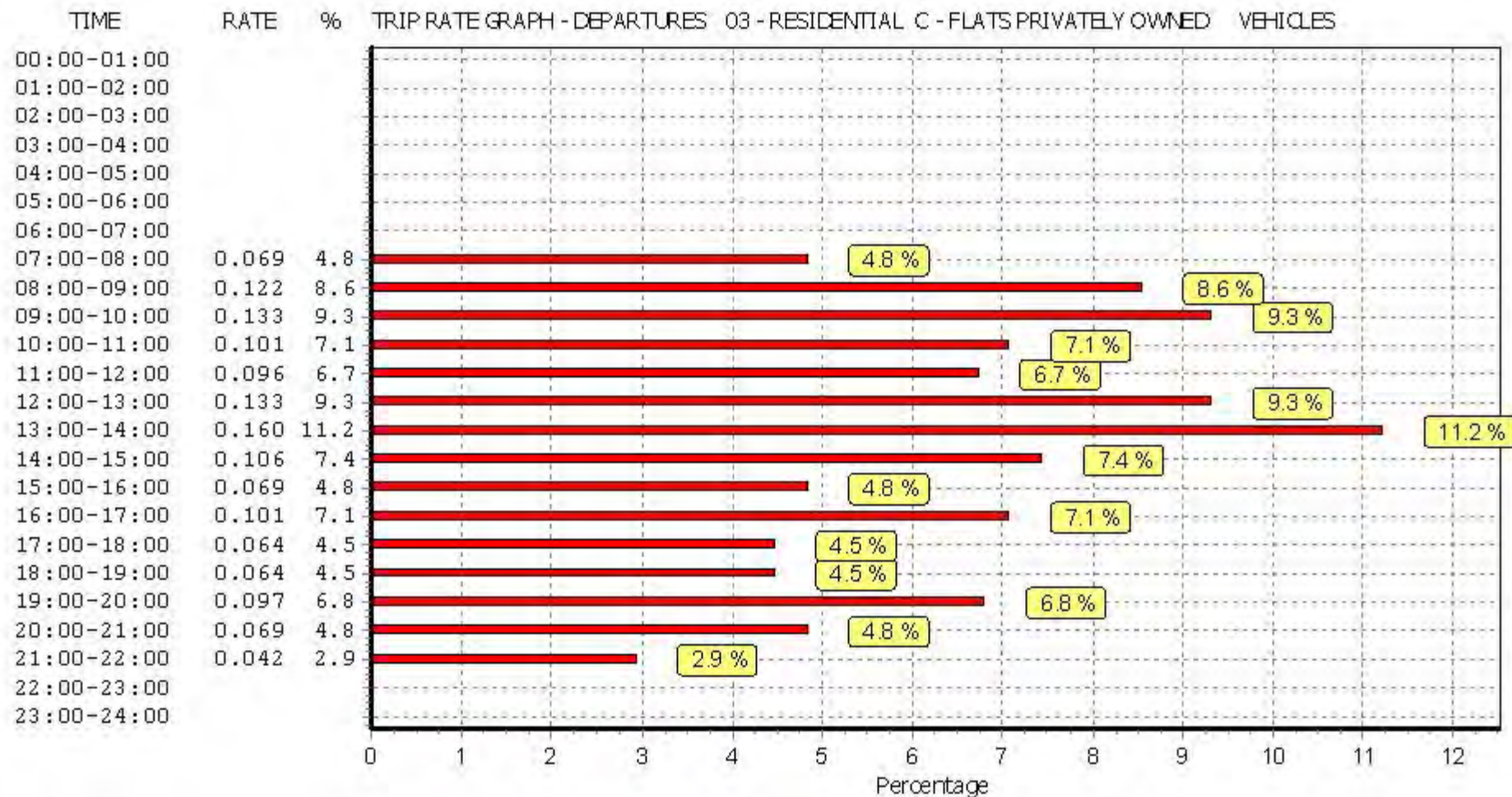
Parameter summary

Trip rate parameter range selected:	28 - 72 (units:)
Survey date range:	01/01/05 - 21/10/11
Number of weekdays (Monday-Friday):	0
Number of Saturdays:	3
Number of Sundays:	1
Surveys manually removed from selection:	0

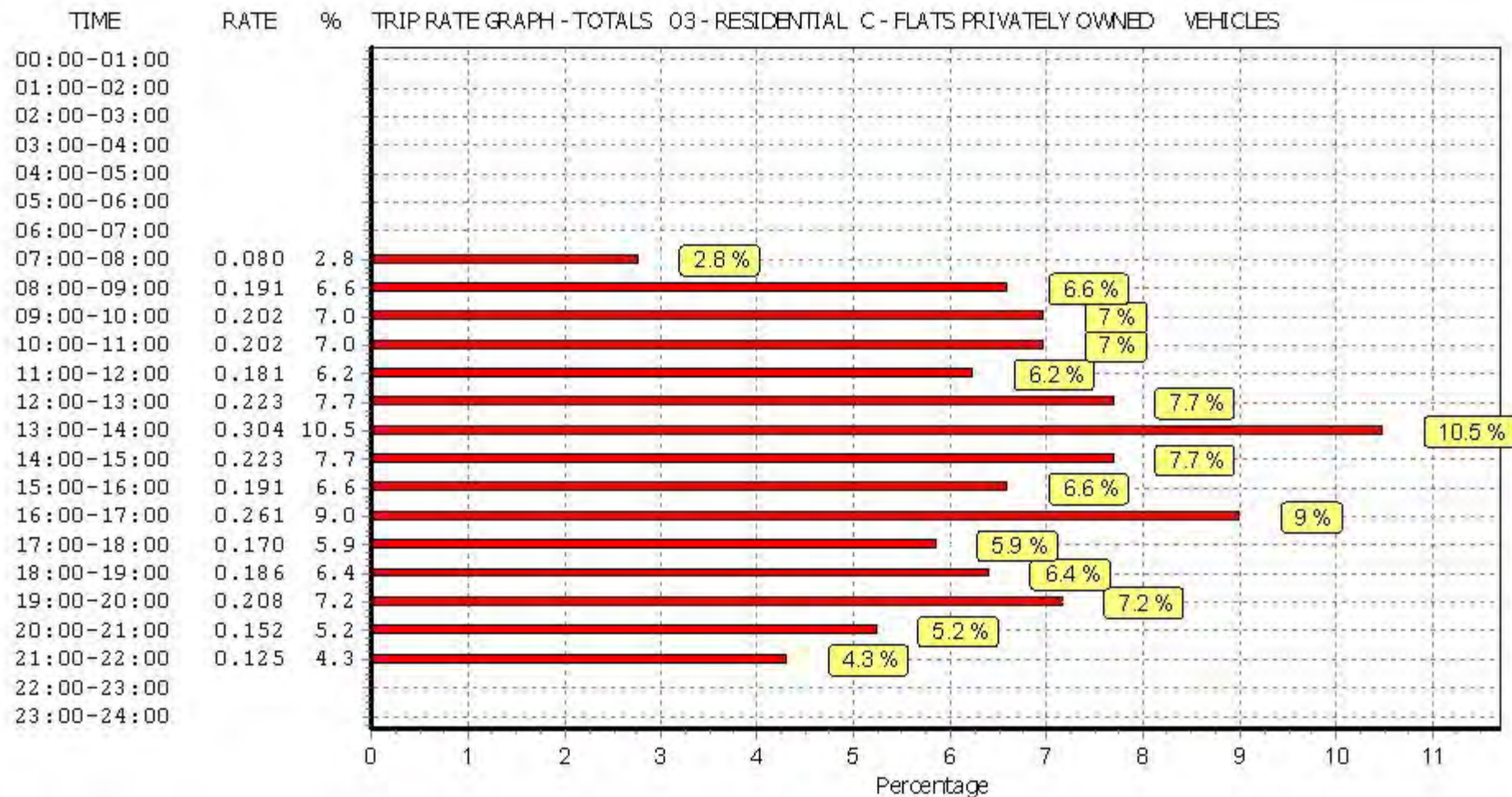
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This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
 Category : D - FLATS FOR RENT
 VEHICLES

Selected regions and areas:

03	SOUTH WEST	
	BR BRISTOL CITY	1 days
05	EAST MIDLANDS	
	NT NOTTINGHAMSHIRE	1 days
06	WEST MIDLANDS	
	WM WEST MIDLANDS	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE	
	WY WEST YORKSHIRE	1 days
08	NORTH WEST	
	CH CHESHIRE	1 days
	LC LANCASHIRE	2 days
	MS MERSEYSIDE	1 days
09	NORTH	
	TW TYNE & WEAR	1 days
10	WALES	
	DB DENBIGHSHIRE	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of dwellings
 Actual Range: 28 to 63 (units:)
 Range Selected by User: 12 to 132 (units:)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/05 to 24/05/12

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	4 days
Tuesday	4 days
Wednesday	1 days
Thursday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	10 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

Town Centre	1
Edge of Town Centre	2
Suburban Area (PPS6 Out of Centre)	6
Edge of Town	1

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	4
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This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

C3	10 days
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This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

5,001 to 10,000	1 days
20,001 to 25,000	2 days
25,001 to 50,000	6 days
50,001 to 100,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

50,001 to 75,000	1 days
100,001 to 125,000	1 days
125,001 to 250,000	2 days
250,001 to 500,000	4 days
500,001 or More	2 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.5 or Less	1 days
0.6 to 1.0	5 days
1.1 to 1.5	4 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	10 days
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This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1	BR-03-D-03 BRISTOL ROAD	BLOCKS OF FLATS	BRISTOL CITY
	BRISTOL Edge of Town No Sub Category		
	Total Number of dwellings:	28	
	Survey date: TUESDAY	13/10/09	Survey Type: MANUAL
2	CH-03-D-01 HEATH LANE	BLOCK OF FLATS	CHESHIRE
	BOUGHTON HEATH CHESTER		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	30	
	Survey date: THURSDAY	24/05/12	Survey Type: MANUAL
3	DB-03-D-01 HIGHFIELD PARK	FLATS IN HOUSES	DENBIGHSHIRE
	RHYL		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	59	
	Survey date: TUESDAY	11/10/11	Survey Type: MANUAL
4	LC-03-D-01 MANCHESTER ROAD	BLOCK OF FLATS	LANCASHIRE
	PRESTON		
	Edge of Town Centre		
	No Sub Category		
	Total Number of dwellings:	63	
	Survey date: MONDAY	18/06/07	Survey Type: MANUAL
5	LC-03-D-02 GRAHAM STREET	FLATS/TERRACED HOUSING	LANCASHIRE
	PRESTON		
	Suburban Area (PPS6 Out of Centre)		
	No Sub Category		
	Total Number of dwellings:	30	
	Survey date: MONDAY	18/06/07	Survey Type: MANUAL
6	MS-03-D-01 UPPER PARLIAMENT ST	BLOCK OF FLATS	MERSEYSIDE
	TOXTETH LIVERPOOL		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	38	
	Survey date: TUESDAY	07/09/10	Survey Type: MANUAL
7	NT-03-D-01 CANAL STREET	BLOCK OF FLATS	NOTTINGHAMSHIRE
	NOTTINGHAM		
	Town Centre		
	Built-Up Zone		
	Total Number of dwellings:	46	
	Survey date: MONDAY	22/11/10	Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

8	TW-03-D-01	BLOCKS OF FLATS	TYNE & WEAR
	CRAWHALL ROAD		
	NEWCASTLE		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	45	
	Survey date: TUESDAY	26/04/05	Survey Type: MANUAL
9	WM-03-D-01	BLOCK OF FLATS	WEST MIDLANDS
	TERRACE ROAD		
	HANDSWORTH		
	BIRMINGHAM		
	Suburban Area (PPS6 Out of Centre)		
	No Sub Category		
	Total Number of dwellings:	42	
	Survey date: WEDNESDAY	12/09/07	Survey Type: MANUAL
10	WY-03-D-02	BLOCKS OF FLATS	WEST YORKSHIRE
	REYHILL GROVE		
	BRADFORD		
	Edge of Town Centre		
	Built-Up Zone		
	Total Number of dwellings:	44	
	Survey date: MONDAY	09/05/05	Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
DU-03-D-01	Under
EB-03-D-01	Over
HE-03-D-01	Over
NF-03-D-01	Under
RO-03-D-01	Under

TRIP RATE for Land Use 03 - RESIDENTIAL/D - FLATS FOR RENT
 VEHICLES
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	10	43	0.045	10	43	0.075	10	43	0.120
08:00 - 09:00	10	43	0.066	10	43	0.087	10	43	0.153
09:00 - 10:00	10	43	0.066	10	43	0.099	10	43	0.165
10:00 - 11:00	10	43	0.064	10	43	0.082	10	43	0.146
11:00 - 12:00	10	43	0.064	10	43	0.066	10	43	0.130
12:00 - 13:00	10	43	0.075	10	43	0.085	10	43	0.160
13:00 - 14:00	10	43	0.094	10	43	0.089	10	43	0.183
14:00 - 15:00	10	43	0.096	10	43	0.096	10	43	0.192
15:00 - 16:00	10	43	0.068	10	43	0.075	10	43	0.143
16:00 - 17:00	10	43	0.115	10	43	0.108	10	43	0.223
17:00 - 18:00	10	43	0.085	10	43	0.071	10	43	0.156
18:00 - 19:00	10	43	0.073	10	43	0.042	10	43	0.115
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.911			0.975			1.886

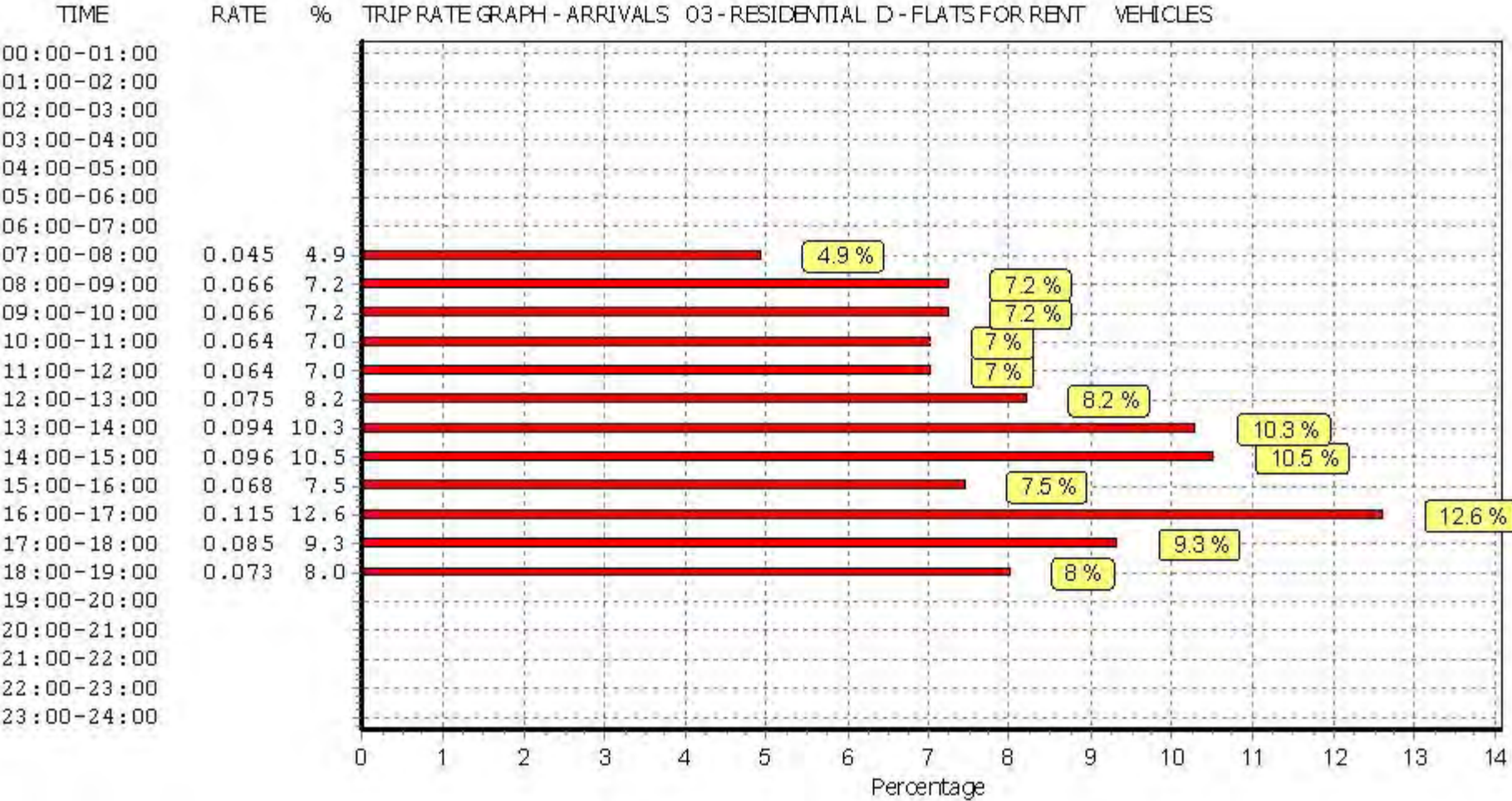
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: $COUNT/TRP*FACT$. Trip rates are then rounded to 3 decimal places.

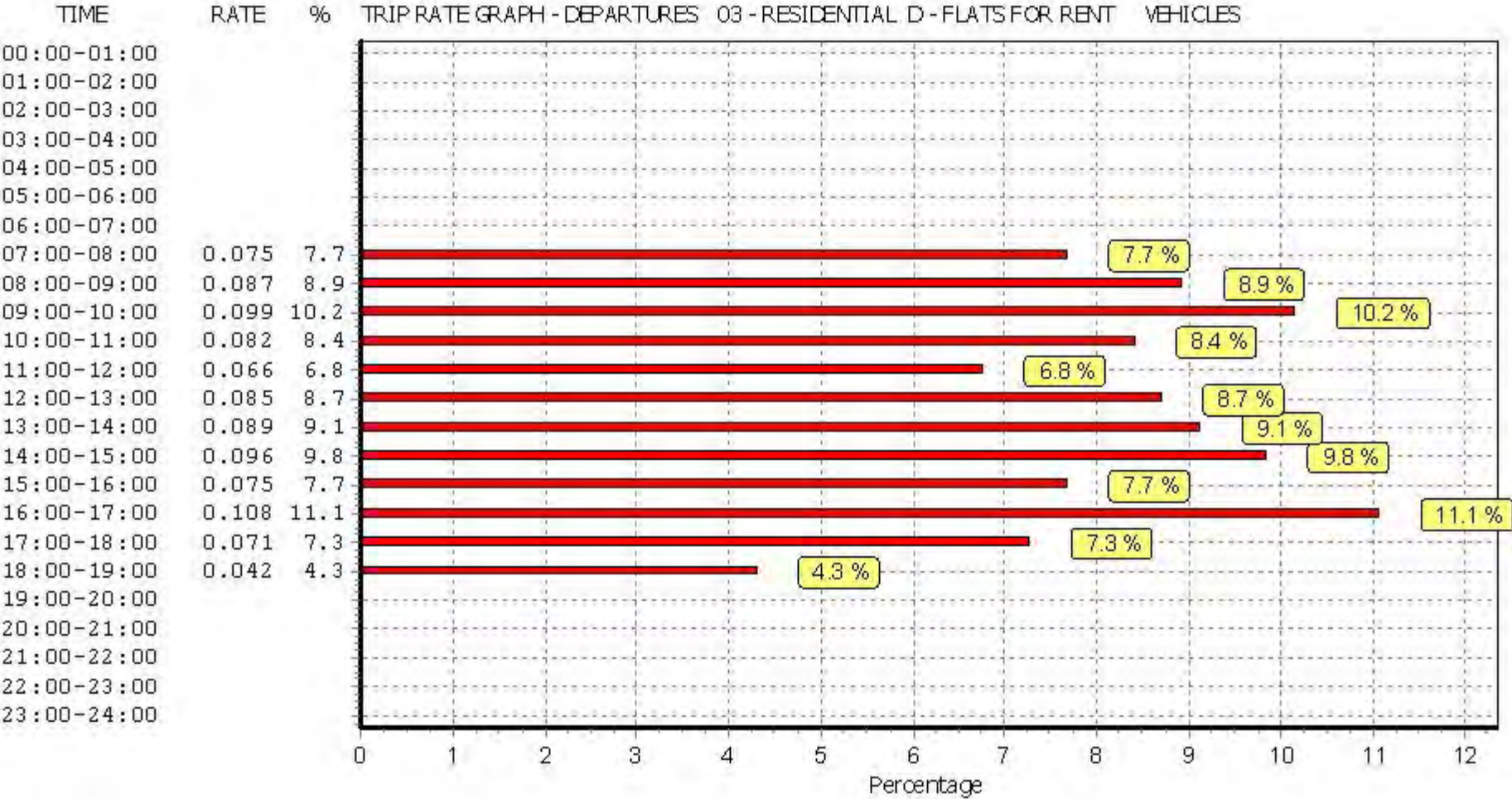
Parameter summary

Trip rate parameter range selected: 28 - 63 (units:)
 Survey date range: 01/01/05 - 24/05/12
 Number of weekdays (Monday-Friday): 10
 Number of Saturdays: 0
 Number of Sundays: 0
 Surveys manually removed from selection: 6

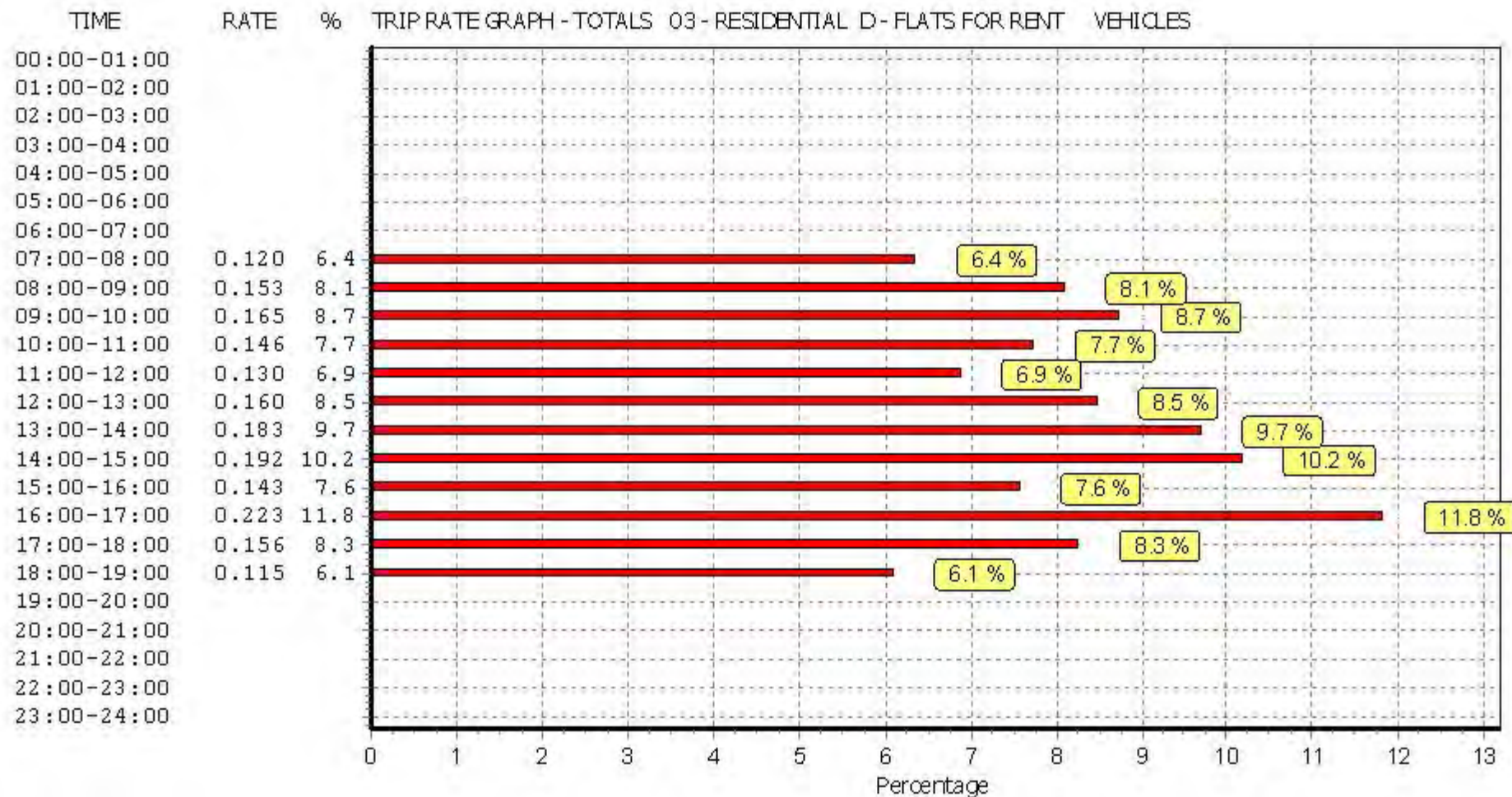
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : K - MIXED PRIVATE HOUSING
VEHICLES

Selected regions and areas:

02	SOUTH EAST	
	HF HERTFORDSHIRE	1 days
03	SOUTH WEST	
	DC DORSET	1 days
04	EAST ANGLIA	
	CA CAMBRIDGESHIRE	1 days
05	EAST MIDLANDS	
	LN LINCOLNSHIRE	1 days
06	WEST MIDLANDS	
	ST STAFFORDSHIRE	2 days
07	YORKSHIRE & NORTH LINCOLNSHIRE	
	NY NORTH YORKSHIRE	2 days
08	NORTH WEST	
	CH CHESHIRE	1 days
	GM GREATER MANCHESTER	1 days
10	WALES	
	CF CARDIFF	1 days
	CP CAERPHILLY	1 days
11	SCOTLAND	
	AD ABERDEEN CITY	1 days
	FA FALKIRK	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of dwellings
Actual Range: 19 to 224 (units:)
Range Selected by User: 19 to 788 (units:)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/05 to 18/10/11

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	2 days
Tuesday	4 days
Wednesday	3 days
Thursday	2 days
Friday	3 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	14 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

Edge of Town Centre	4
Suburban Area (PPS6 Out of Centre)	7
Edge of Town	3

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	11
No Sub Category	3

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

C3	13 days
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This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5,000	2 days
5,001 to 10,000	1 days
10,001 to 15,000	3 days
15,001 to 20,000	3 days
20,001 to 25,000	3 days
25,001 to 50,000	2 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	2 days
25,001 to 50,000	1 days
50,001 to 75,000	1 days
100,001 to 125,000	1 days
125,001 to 250,000	4 days
250,001 to 500,000	4 days
500,001 or More	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	7 days
1.1 to 1.5	6 days
1.6 to 2.0	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	14 days
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This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

1	AD-03-K-01	SEMI DET./FLATS		ABERDEEN CITY
	ASHGROVE ROAD			
	ABERDEEN			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:		24	
	Survey date: WEDNESDAY		11/05/05	Survey Type: MANUAL
2	CA-03-K-01	TERRACED & FLATS		CAMBRIDGESHIRE
	SOVEREIGN HOUSE			
	ALDERMANS DRIVE			
	PETERBOROUGH			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:		40	
	Survey date: TUESDAY		18/10/11	Survey Type: MANUAL
3	CF-03-K-01	TERRACED/FLATS		CARDIFF
	BISHOPS ROAD			
	LLANDAFF NORTH			
	CARDIFF			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:		84	
	Survey date: MONDAY		08/10/07	Survey Type: MANUAL
4	CH-03-K-03	MIXED HOUSING		CHESHIRE
	PRIORY LANE			
	BROKEN CROSS			
	MACCLESFIELD			
	Edge of Town			
	Residential Zone			
	Total Number of dwellings:		211	
	Survey date: FRIDAY		29/06/07	Survey Type: MANUAL
5	CP-03-K-01	HOUSES/FLATS		CAERPHILLY
	TRECENYDD			
	CAERPHILLY			
	Edge of Town			
	Residential Zone			
	Total Number of dwellings:		61	
	Survey date: FRIDAY		19/09/08	Survey Type: MANUAL
6	DC-03-K-03	MIXED HOUSING		DORSET
	MAUMBURY MEWS			
	DORCHESTER			
	Edge of Town Centre			
	No Sub Category			
	Total Number of dwellings:		24	
	Survey date: FRIDAY		04/07/08	Survey Type: MANUAL
7	FA-03-K-01	MIXED HOUSING		FALKIRK
	ETNA ROAD			
	BAINSFORD			
	FALKIRK			
	Suburban Area (PPS6 Out of Centre)			
	No Sub Category			
	Total Number of dwellings:		224	
	Survey date: THURSDAY		26/04/07	Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

8	GM-03-K-02	SEMI DET. & FLATS		GREATER MANCHESTER
	ABRAM CLOSE			
	FALLOWFIELD			
	MANCHESTER			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:	33		
	Survey date: TUESDAY	11/10/11		Survey Type: MANUAL
9	HF-03-K-01	PRIVATE HOUSING		HERTFORDSHIRE
	MURIEL AVENUE			
	WATFORD			
	Edge of Town Centre			
	No Sub Category			
	Total Number of dwellings:	31		
	Survey date: TUESDAY	22/07/08		Survey Type: MANUAL
10	LN-03-K-01	TERRACED/FLATS		LINCOLNSHIRE
	DE WINT AVENUE			
	LINCOLN			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:	56		
	Survey date: WEDNESDAY	18/05/05		Survey Type: MANUAL
11	NY-03-K-01	MIXED HOUSING		NORTH YORKSHIRE
	HORSEFAIR			
	BOROUGHBRIDGE			
	Edge of Town Centre			
	Residential Zone			
	Total Number of dwellings:	19		
	Survey date: TUESDAY	16/09/08		Survey Type: MANUAL
12	NY-03-K-02	MIXED HOUSING		NORTH YORKSHIRE
	HORSEFAIR			
	BOROUGHBRIDGE			
	Edge of Town Centre			
	Residential Zone			
	Total Number of dwellings:	19		
	Survey date: MONDAY	10/10/11		Survey Type: MANUAL
13	ST-03-K-01	MIXED HOUSING		STAFFORDSHIRE
	ROYAL WAY			
	STOKE-ON-TRENT			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:	162		
	Survey date: THURSDAY	27/11/08		Survey Type: MANUAL
14	ST-03-K-02	TERRACED & FLATS		STAFFORDSHIRE
	CHASEWATER DRIVE			
	FORD GREEN			
	STOKE-ON-TRENT			
	Edge of Town			
	Residential Zone			
	Total Number of dwellings:	73		
	Survey date: WEDNESDAY	26/11/08		Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
CR-03-K-01	under
FI-03-K-01	under
GS-03-K-01	over
HI-03-K-02	under
RE-03-K-01	over
WS-03-K-02	over
WT-03-K-01	under

TRIP RATE for Land Use 03 - RESIDENTIAL/K - MIXED PRIVATE HOUSING
VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	14	76	0.055	14	76	0.284	14	76	0.339
08:00 - 09:00	14	76	0.102	14	76	0.412	14	76	0.514
09:00 - 10:00	14	76	0.134	14	76	0.175	14	76	0.309
10:00 - 11:00	14	76	0.122	14	76	0.164	14	76	0.286
11:00 - 12:00	14	76	0.122	14	76	0.123	14	76	0.245
12:00 - 13:00	14	76	0.135	14	76	0.128	14	76	0.263
13:00 - 14:00	14	76	0.133	14	76	0.154	14	76	0.287
14:00 - 15:00	14	76	0.156	14	76	0.154	14	76	0.310
15:00 - 16:00	14	76	0.241	14	76	0.153	14	76	0.394
16:00 - 17:00	14	76	0.283	14	76	0.133	14	76	0.416
17:00 - 18:00	14	76	0.311	14	76	0.182	14	76	0.493
18:00 - 19:00	14	76	0.267	14	76	0.156	14	76	0.423
19:00 - 20:00	1	31	0.129	1	31	0.129	1	31	0.258
20:00 - 21:00	1	31	0.161	1	31	0.065	1	31	0.226
21:00 - 22:00	1	31	0.161	1	31	0.065	1	31	0.226
22:00 - 23:00									
23:00 - 24:00									
Total Rates:		2.512			2.477			4.989	

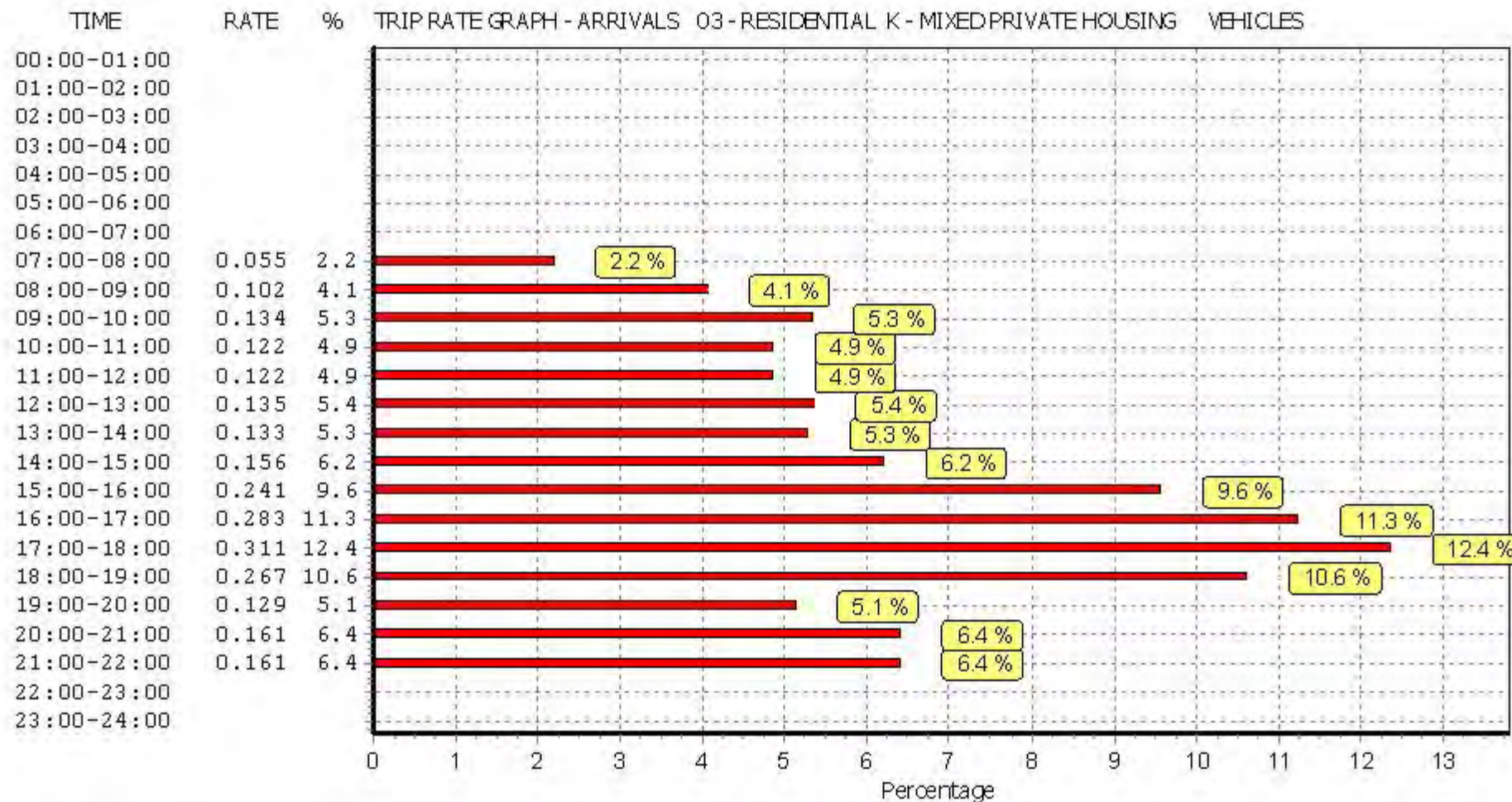
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

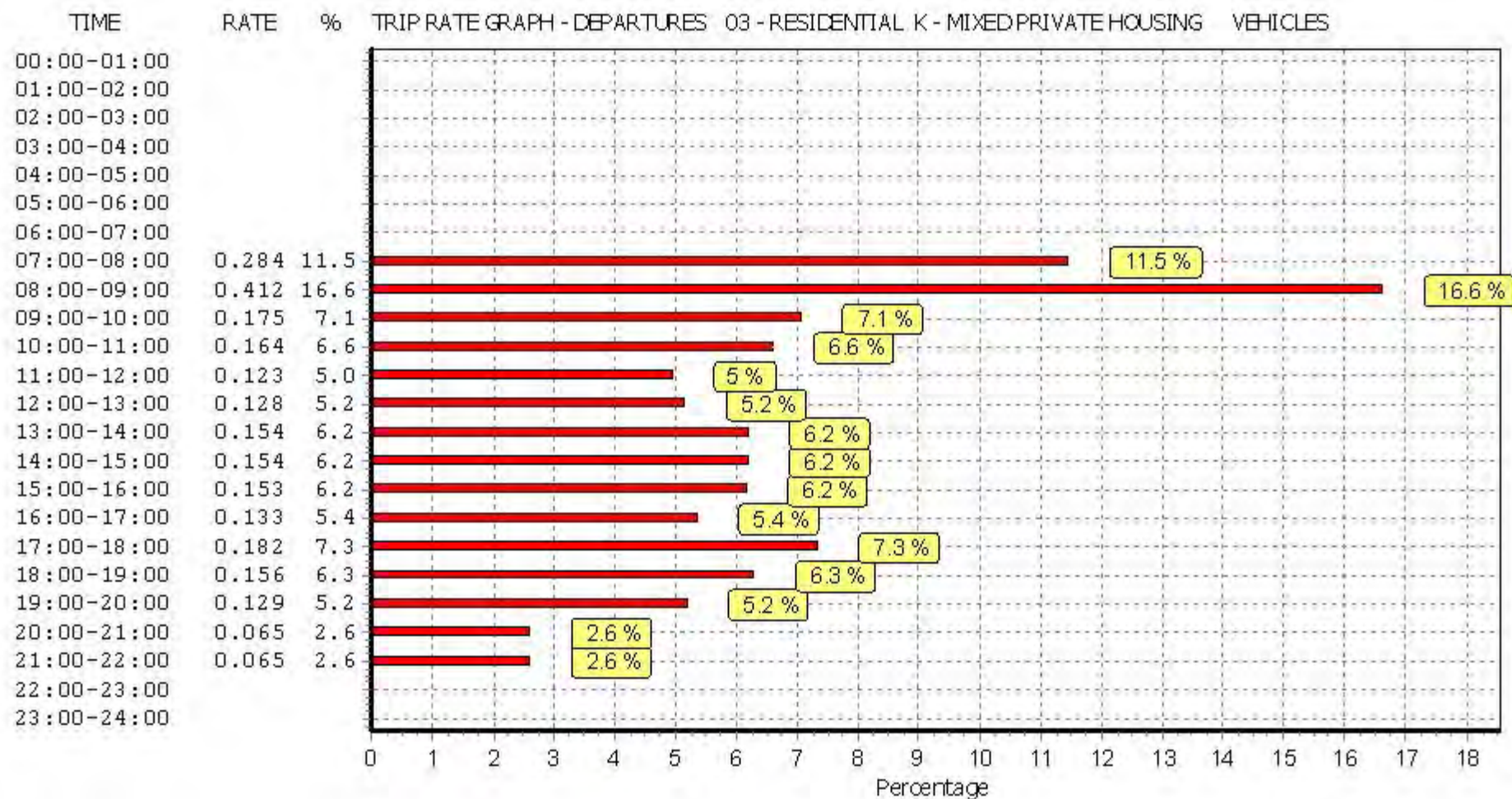
Parameter summary

Trip rate parameter range selected: 19 - 224 (units:)
Survey date range: 01/01/05 - 18/10/11
Number of weekdays (Monday-Friday): 14
Number of Saturdays: 0
Number of Sundays: 0
Surveys manually removed from selection: 8

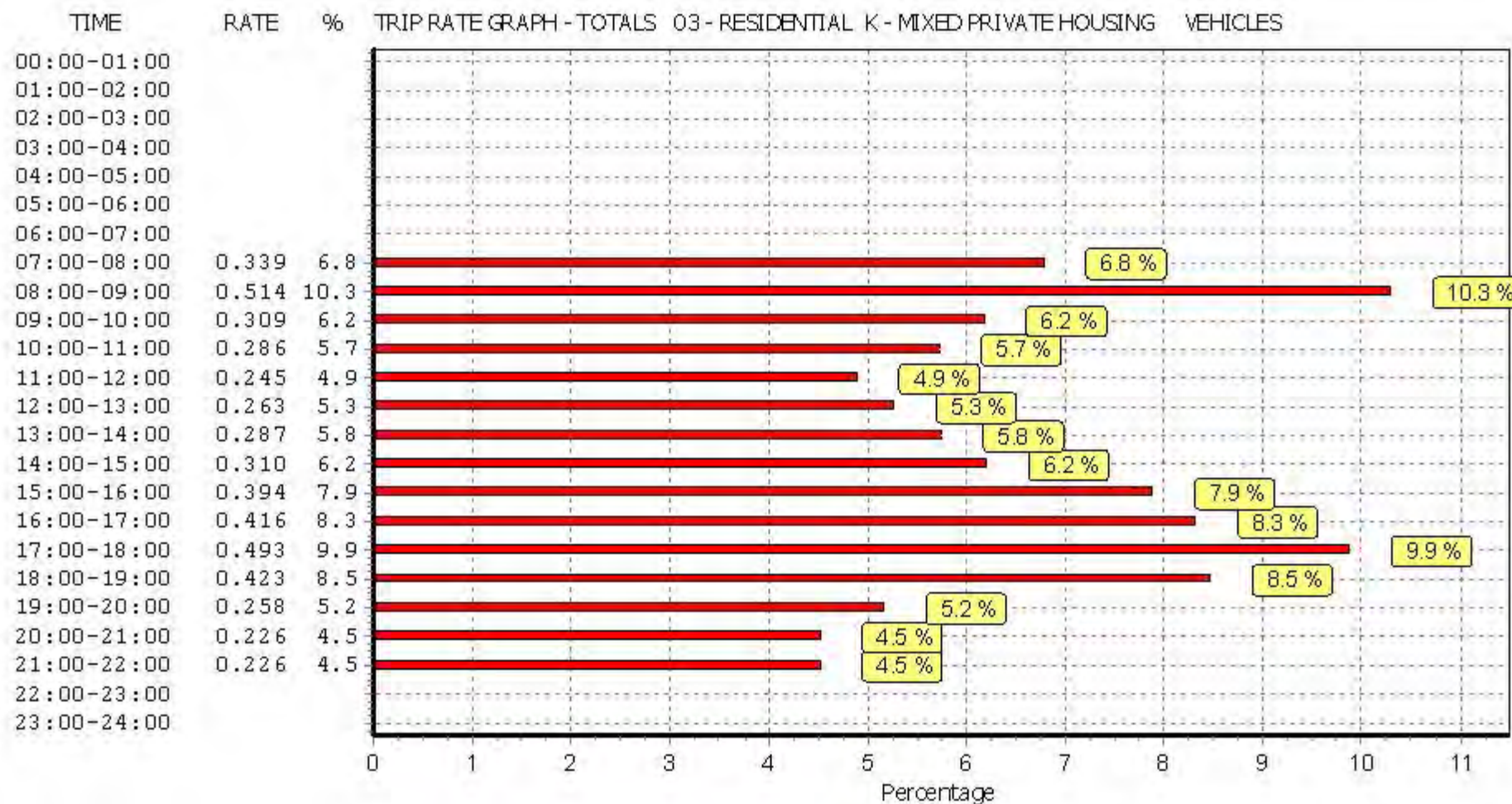
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
 Category : L - MIXED NON-PRIVATE HOUSING
 VEHICLES

Selected regions and areas:

02	SOUTH EAST	
	EX ESSEX	1 days
	HC HAMPSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE	
	SY SOUTH YORKSHIRE	1 days
08	NORTH WEST	
	CH CHESHIRE	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter:	Number of dwellings
Actual Range:	21 to 312 (units:)
Range Selected by User:	18 to 920 (units:)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/05 to 18/12/12

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Tuesday	4 days
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This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	4 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

Edge of Town Centre	1
Edge of Town	3

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Development Zone	1
Residential Zone	2
No Sub Category	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

C3	4 days
----	--------

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

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

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

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

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	1 days
1.1 to 1.5	3 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	1 days
No	3 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1	CH-03-L-01	MIXED HOUSING	CHESHIRE
	PERCYVALE STREET		
	HURDSFIELD		
	MACCLESFIELD		
	Edge of Town Centre		
	No Sub Category		
	Total Number of dwellings:	40	
	Survey date: TUESDAY	26/06/07	Survey Type: MANUAL
2	EX-03-L-01	HOUSES & FLATS	ESSEX
	GREENWICH WAY		
	WALTHAM ABBEY		
	Edge of Town		
	Development Zone		
	Total Number of dwellings:	312	
	Survey date: TUESDAY	15/07/08	Survey Type: MANUAL
3	HC-03-L-02	HOUSES/FLATS	HAMPSHIRE
	HUNTS POND ROAD		
	TITCHFIELD		
	NEAR FAREHAM		
	Edge of Town		
	Residential Zone		
	Total Number of dwellings:	59	
	Survey date: TUESDAY	09/11/10	Survey Type: MANUAL
4	SY-03-L-01	HOUSES & FLATS	SOUTH YORKSHIRE
	DELVES CLOSE		
	SHEFFIELD		
	Edge of Town		
	Residential Zone		
	Total Number of dwellings:	21	
	Survey date: TUESDAY	18/12/12	Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
WM-03-L-01	over
WM-03-L-02	over

TRIP RATE for Land Use 03 - RESIDENTIAL/L - MIXED NON-PRIVATE HOUSING
 VEHICLES
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	108	0.060	4	108	0.215	4	108	0.275
08:00 - 09:00	4	108	0.069	4	108	0.241	4	108	0.310
09:00 - 10:00	4	108	0.109	4	108	0.160	4	108	0.269
10:00 - 11:00	4	108	0.088	4	108	0.113	4	108	0.201
11:00 - 12:00	4	108	0.132	4	108	0.118	4	108	0.250
12:00 - 13:00	4	108	0.162	4	108	0.116	4	108	0.278
13:00 - 14:00	4	108	0.113	4	108	0.109	4	108	0.222
14:00 - 15:00	4	108	0.134	4	108	0.183	4	108	0.317
15:00 - 16:00	4	108	0.220	4	108	0.176	4	108	0.396
16:00 - 17:00	4	108	0.245	4	108	0.169	4	108	0.414
17:00 - 18:00	4	108	0.280	4	108	0.160	4	108	0.440
18:00 - 19:00	4	108	0.315	4	108	0.127	4	108	0.442
19:00 - 20:00	1	40	0.050	1	40	0.000	1	40	0.050
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.977			1.887			3.864

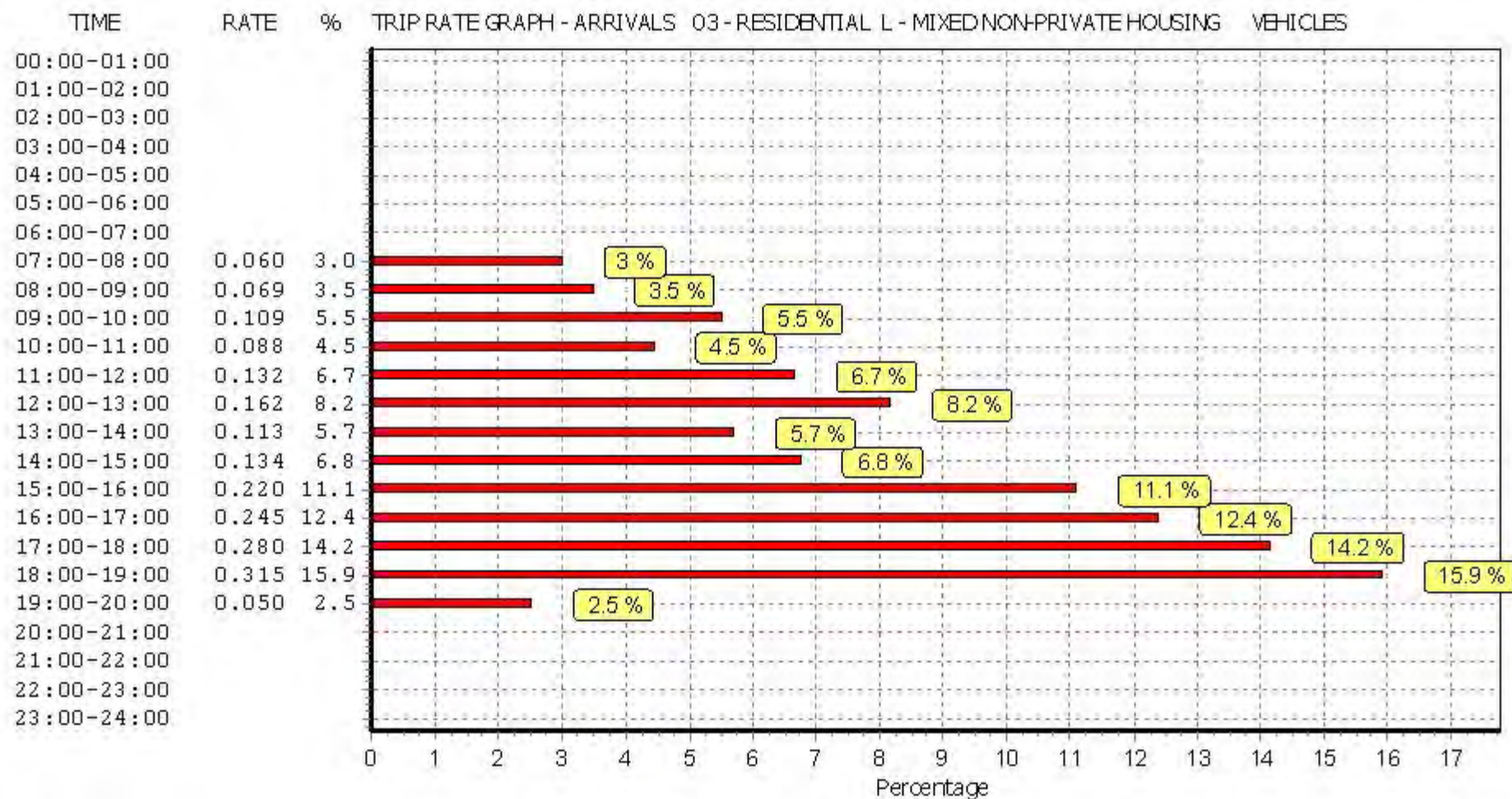
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

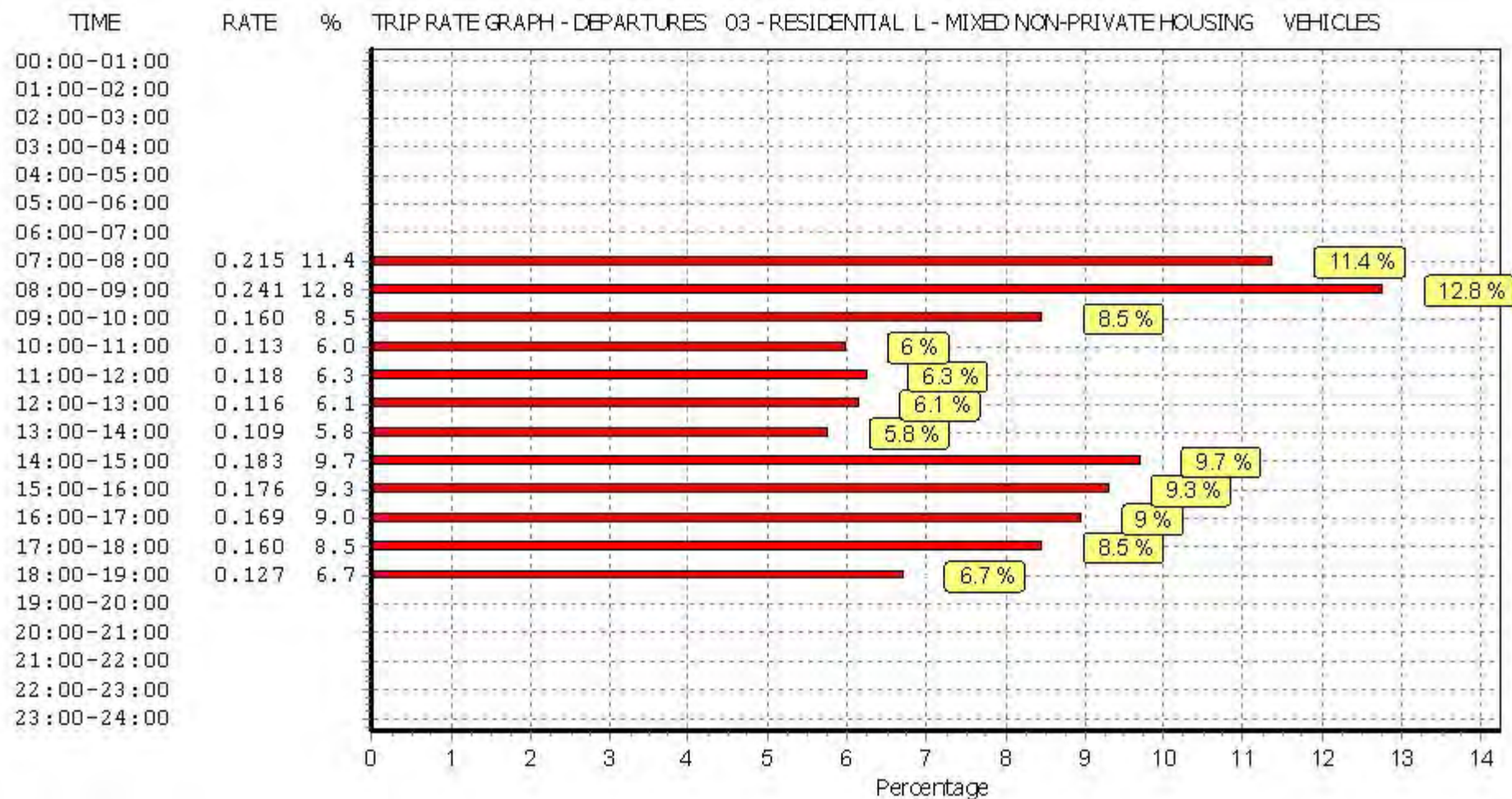
Parameter summary

Trip rate parameter range selected: 21 - 312 (units:)
 Survey date range: 01/01/05 - 18/12/12
 Number of weekdays (Monday-Friday): 4
 Number of Saturdays: 0
 Number of Sundays: 0
 Surveys manually removed from selection: 2

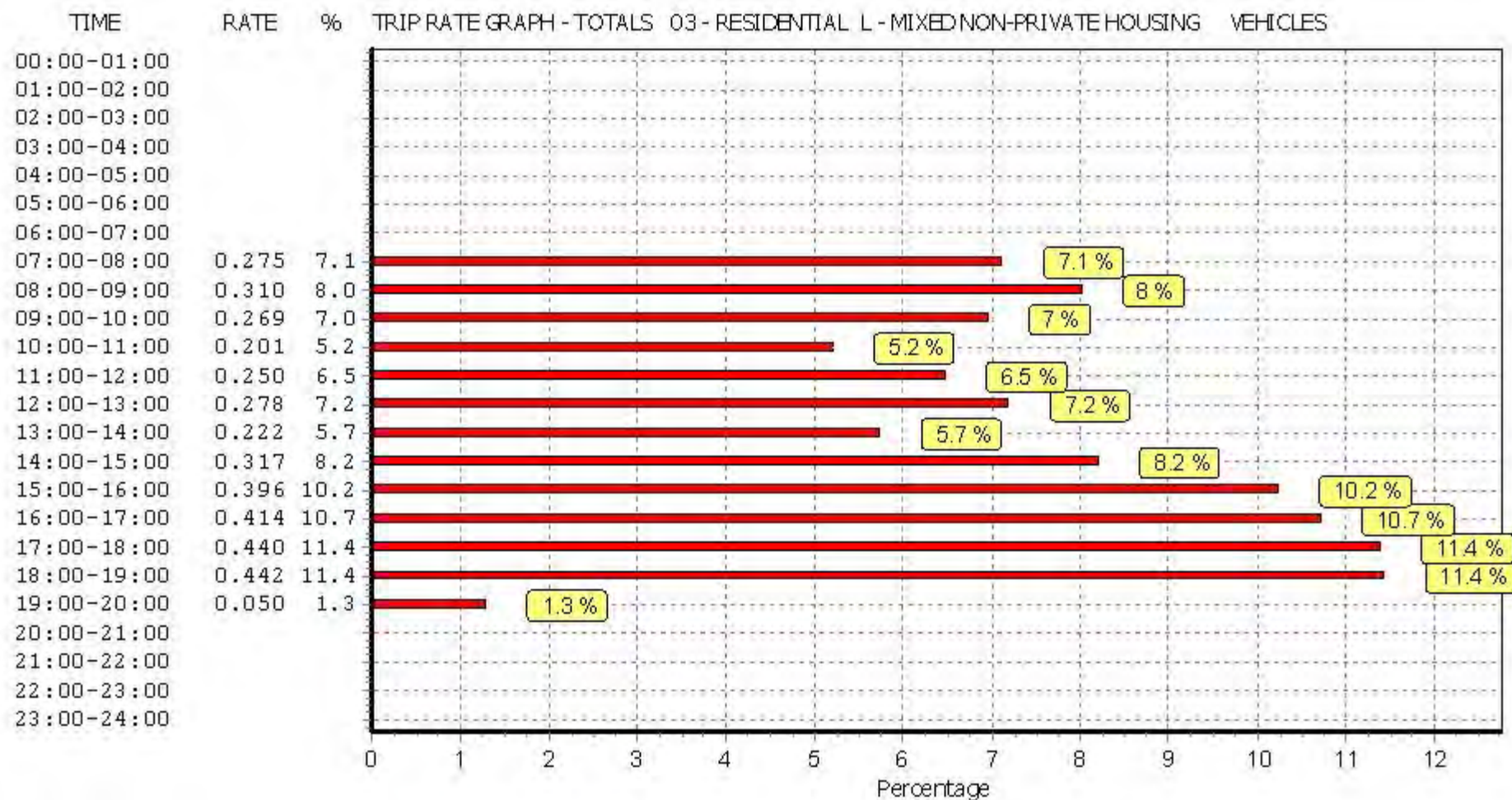
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



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TRIP RATE for Land Use 03 - RESIDENTIAL/L - MIXED NON-PRIVATE HOUSING
 CYCLISTS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	108	0.002	4	108	0.002	4	108	0.004
08:00 - 09:00	4	108	0.000	4	108	0.000	4	108	0.000
09:00 - 10:00	4	108	0.000	4	108	0.007	4	108	0.007
10:00 - 11:00	4	108	0.000	4	108	0.005	4	108	0.005
11:00 - 12:00	4	108	0.000	4	108	0.000	4	108	0.000
12:00 - 13:00	4	108	0.000	4	108	0.000	4	108	0.000
13:00 - 14:00	4	108	0.000	4	108	0.000	4	108	0.000
14:00 - 15:00	4	108	0.005	4	108	0.000	4	108	0.005
15:00 - 16:00	4	108	0.002	4	108	0.005	4	108	0.007
16:00 - 17:00	4	108	0.000	4	108	0.000	4	108	0.000
17:00 - 18:00	4	108	0.005	4	108	0.000	4	108	0.005
18:00 - 19:00	4	108	0.007	4	108	0.000	4	108	0.007
19:00 - 20:00	1	40	0.000	1	40	0.025	1	40	0.025
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.021			0.044			0.065

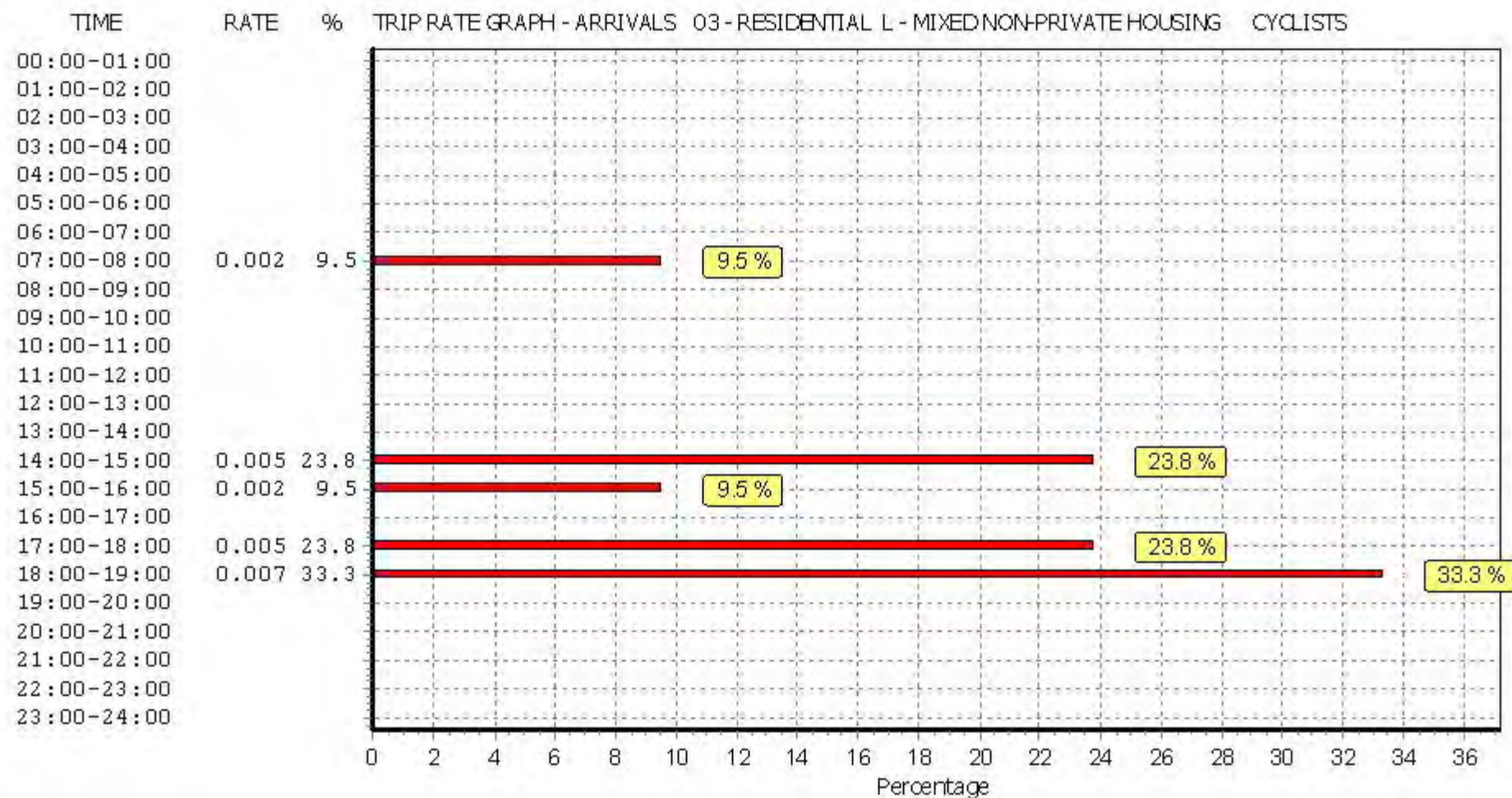
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

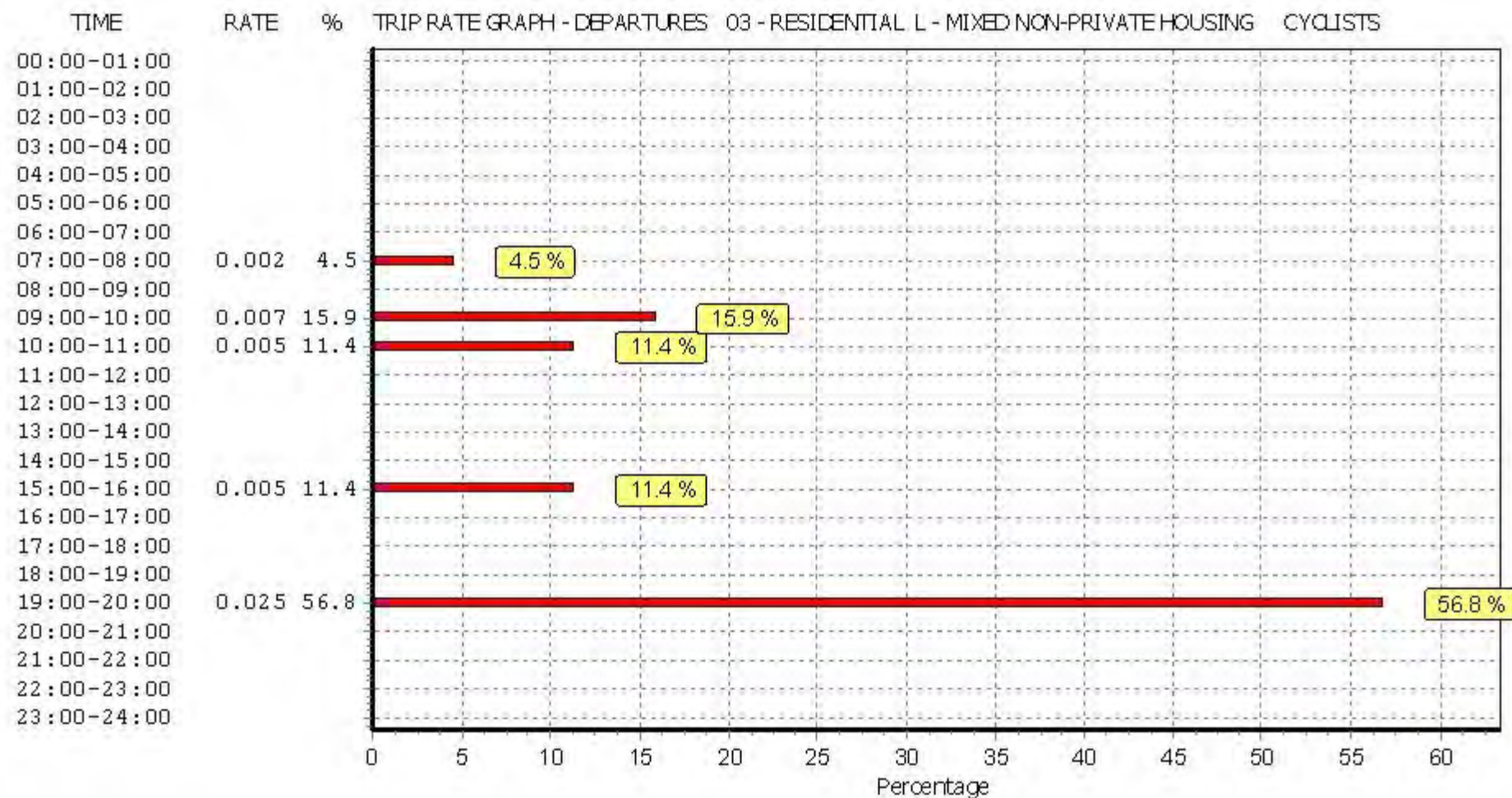
Parameter summary

Trip rate parameter range selected: 21 - 312 (units:)
 Survey date range: 01/01/05 - 18/12/12
 Number of weekdays (Monday-Friday): 4
 Number of Saturdays: 0
 Number of Sundays: 0
 Surveys manually removed from selection: 2

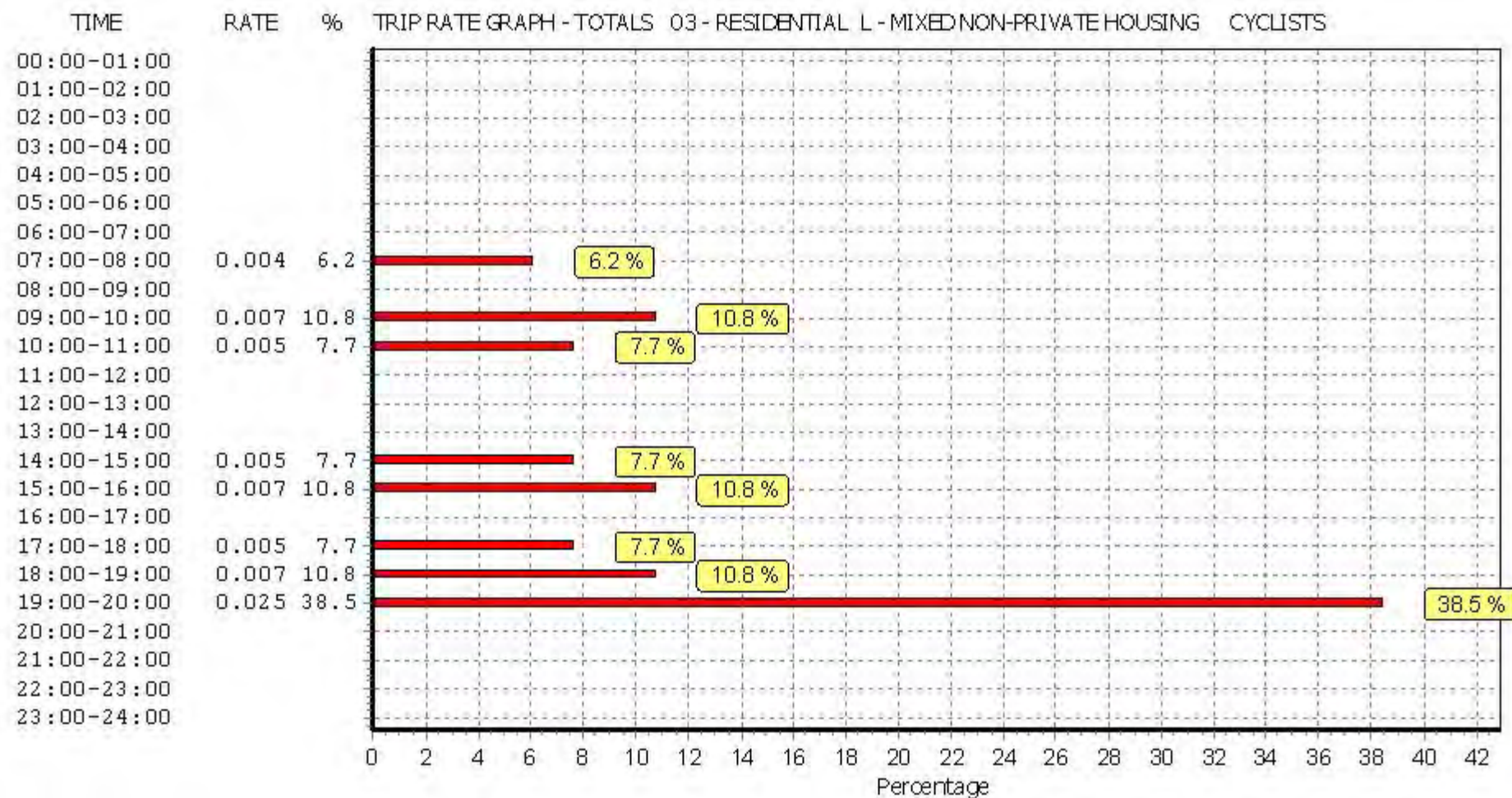
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



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This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : M - MIXED PRIVATE/NON-PRIVATE HOUSING
VEHICLES

Selected regions and areas:

02	SOUTH EAST	
	HC HAMPSHIRE	1 days
	SC SURREY	3 days
	WS WEST SUSSEX	1 days
03	SOUTH WEST	
	DV DEVON	1 days
05	EAST MIDLANDS	
	LE LEICESTERSHIRE	1 days
06	WEST MIDLANDS	
	HE HEREFORDSHIRE	1 days
08	NORTH WEST	
	MS MERSEYSIDE	1 days
09	NORTH	
	CB CUMBRIA	1 days
10	WALES	
	CM CARMARTHENSHIRE	1 days
	VG VALE OF GLAMORGAN	1 days
11	SCOTLAND	
	EB CITY OF EDINBURGH	1 days
	FA FALKIRK	1 days
14	LEINSTER	
	KK KILKENNY	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of dwellings
Actual Range: 16 to 500 (units:)
Range Selected by User: 14 to 1874 (units:)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/05 to 11/12/12

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	4 days
Tuesday	2 days
Wednesday	3 days
Thursday	5 days
Friday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	15 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	8
Edge of Town	7

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone	1
Development Zone	1
Residential Zone	12
No Sub Category	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

C3	15 days
----	---------

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5,000	1 days
5,001 to 10,000	3 days
10,001 to 15,000	1 days
15,001 to 20,000	3 days
20,001 to 25,000	5 days
25,001 to 50,000	1 days
50,001 to 100,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	1 days
25,001 to 50,000	2 days
50,001 to 75,000	1 days
75,001 to 100,000	1 days
100,001 to 125,000	1 days
125,001 to 250,000	6 days
250,001 to 500,000	3 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.5 or Less	1 days
0.6 to 1.0	5 days
1.1 to 1.5	9 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	5 days
No	10 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1	CB-03-M-03 SEMI-DETACHED MOORCLOSE ROAD SALTERBECK WORKINGTON Edge of Town No Sub Category Total Number of dwellings: 82 Survey date: MONDAY 20/06/05	CUMBRIA	Survey Type: MANUAL
2	CM-03-M-01 HOUSES & FLATS COLLEGE ROAD CARMARTHEN Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 48 Survey date: THURSDAY 18/09/08	CARMARTHENSHIRE	Survey Type: MANUAL
3	DV-03-M-01 HOUSES & FLATS TOPSHAM ROAD EXETER Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of dwellings: 61 Survey date: THURSDAY 06/10/11	DEVON	Survey Type: MANUAL
4	EB-03-M-01 BLOCKS OF FLATS WESTERN HARBOUR PLACE LEITH DOCKS EDINBURGH Edge of Town Development Zone Total Number of dwellings: 106 Survey date: FRIDAY 29/10/10	CITY OF EDINBURGH	Survey Type: MANUAL
5	FA-03-M-01 SEMI D./TERRACED FAIRLIE STREET FALKIRK Edge of Town Residential Zone Total Number of dwellings: 138 Survey date: WEDNESDAY 29/06/05	FALKIRK	Survey Type: MANUAL
6	HC-03-M-04 HOUSES & FLATS HUNTS POND ROAD TITCHFIELD NEAR FAREHAM Edge of Town Residential Zone Total Number of dwellings: 282 Survey date: TUESDAY 11/12/12	HAMPSHIRE	Survey Type: MANUAL
7	HE-03-M-01 SEMI D./TERRACED WHITECROSS ROAD WIDEMARSH HEREFORD Suburban Area (PPS6 Out of Centre) Industrial Zone Total Number of dwellings: 57 Survey date: WEDNESDAY 01/03/06	HEREFORDSHIRE	Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

8	KK-03-M-01 NEBRON PARK GARRINCREEN KILKENNY Edge of Town Residential Zone	MIXED HOUSING		KILKENNY
	Total Number of dwellings:	43		
	Survey date: TUESDAY	25/11/08		Survey Type: MANUAL
9	LE-03-M-01 RYDER ROAD BRAUNSTONE FRITH LEICESTER Edge of Town Residential Zone	SEMI DETACHED		LEICESTERSHIRE
	Total Number of dwellings:	16		
	Survey date: THURSDAY	27/09/12		Survey Type: MANUAL
10	MS-03-M-01 OFF KINGSWAY PRECOT LIVERPOOL Suburban Area (PPS6 Out of Centre) Residential Zone	HOUSING		MERSEYSIDE
	Total Number of dwellings:	40		
	Survey date: MONDAY	25/06/07		Survey Type: MANUAL
11	SC-03-M-03 ST ANNE'S DRIVE REDHILL Edge of Town Residential Zone	HOUSES & FLATS		SURREY
	Total Number of dwellings:	500		
	Survey date: THURSDAY	08/09/11		Survey Type: MANUAL
12	SC-03-M-04 EPSOM ROAD GUILDFORD Suburban Area (PPS6 Out of Centre) Residential Zone	HOUSES/FLATS		SURREY
	Total Number of dwellings:	130		
	Survey date: THURSDAY	13/10/11		Survey Type: MANUAL
13	SC-03-M-05 HOLYWELL WAY STANWELL STAINES Suburban Area (PPS6 Out of Centre) Residential Zone	HOUSES & FLATS		SURREY
	Total Number of dwellings:	52		
	Survey date: MONDAY	19/11/12		Survey Type: MANUAL
14	VG-03-M-01 SKOMER ROAD BARRY Suburban Area (PPS6 Out of Centre) Residential Zone	SEMI-DET./TERRACED		VALE OF GLAMORGAN
	Total Number of dwellings:	40		
	Survey date: MONDAY	18/10/10		Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

15 WS-03-M-03 TERRACED & FLATS WEST SUSSEX
UPPER SHOREHAM ROAD

SHOREHAM BY SEA
Suburban Area (PPS6 Out of Centre)
Residential Zone

Total Number of dwellings: 48
Survey date: WEDNESDAY 18/04/12 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
BR-03-M-02	Over
DH-03-M-02	Over
HC-03-M-02	Over
KC-03-M-01	Over
KD-03-M-01	Under
NT-03-M-01	Over
NY-03-M-03	Under
RE-03-M-01	Over
RO-03-M-01	Under

TRIP RATE for Land Use 03 - RESIDENTIAL/M - MIXED PRIVATE/NON-PRIVATE HOUSING
VEHICLES
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	15	110	0.085	15	110	0.243	15	110	0.328
08:00 - 09:00	15	110	0.128	15	110	0.313	15	110	0.441
09:00 - 10:00	15	110	0.144	15	110	0.167	15	110	0.311
10:00 - 11:00	15	110	0.140	15	110	0.143	15	110	0.283
11:00 - 12:00	15	110	0.155	15	110	0.145	15	110	0.300
12:00 - 13:00	15	110	0.145	15	110	0.152	15	110	0.297
13:00 - 14:00	15	110	0.162	15	110	0.166	15	110	0.328
14:00 - 15:00	15	110	0.165	15	110	0.166	15	110	0.331
15:00 - 16:00	15	110	0.204	15	110	0.164	15	110	0.368
16:00 - 17:00	15	110	0.267	15	110	0.194	15	110	0.461
17:00 - 18:00	15	110	0.323	15	110	0.179	15	110	0.502
18:00 - 19:00	15	110	0.256	15	110	0.184	15	110	0.440
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.174			2.216			4.390

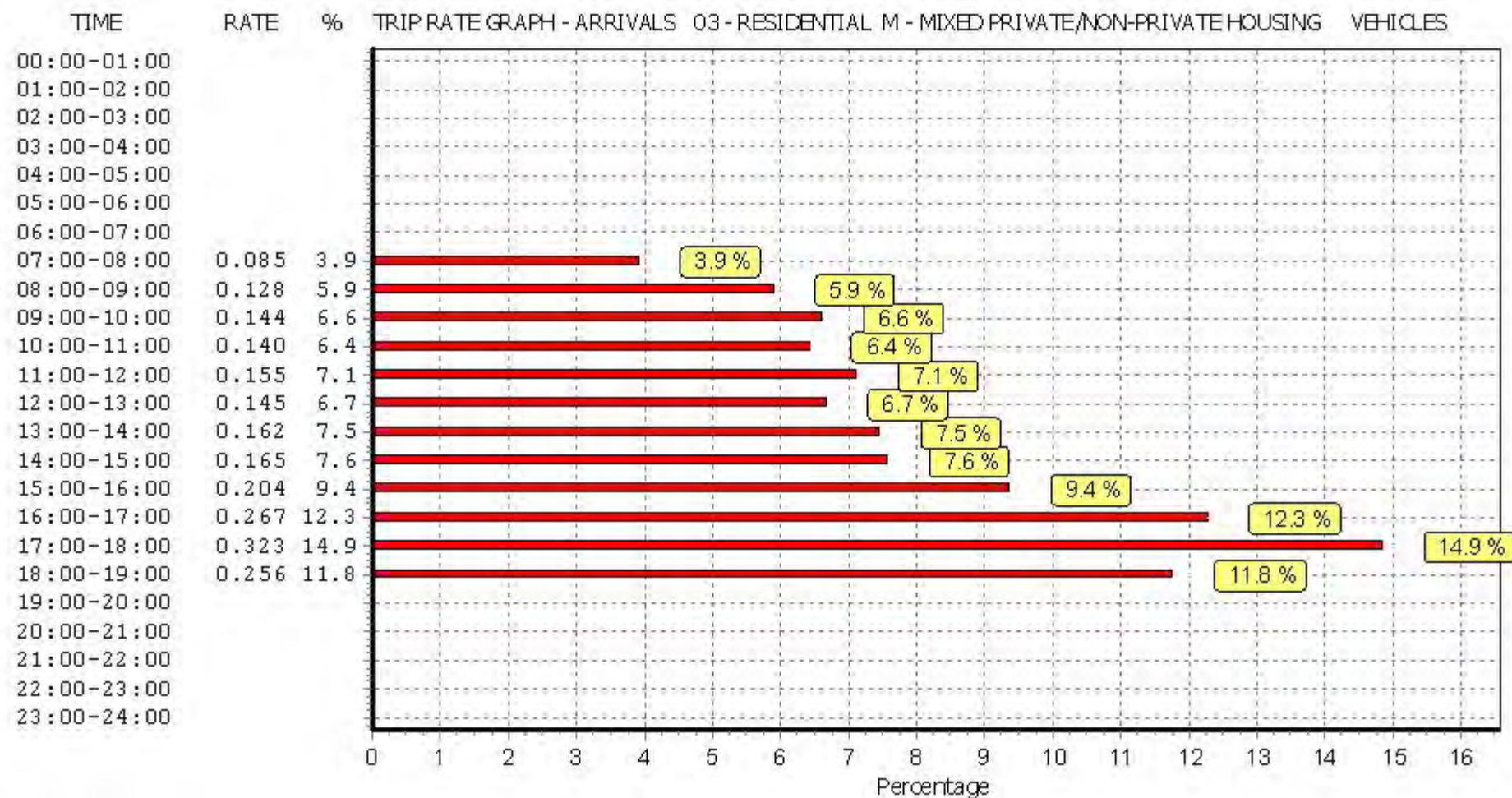
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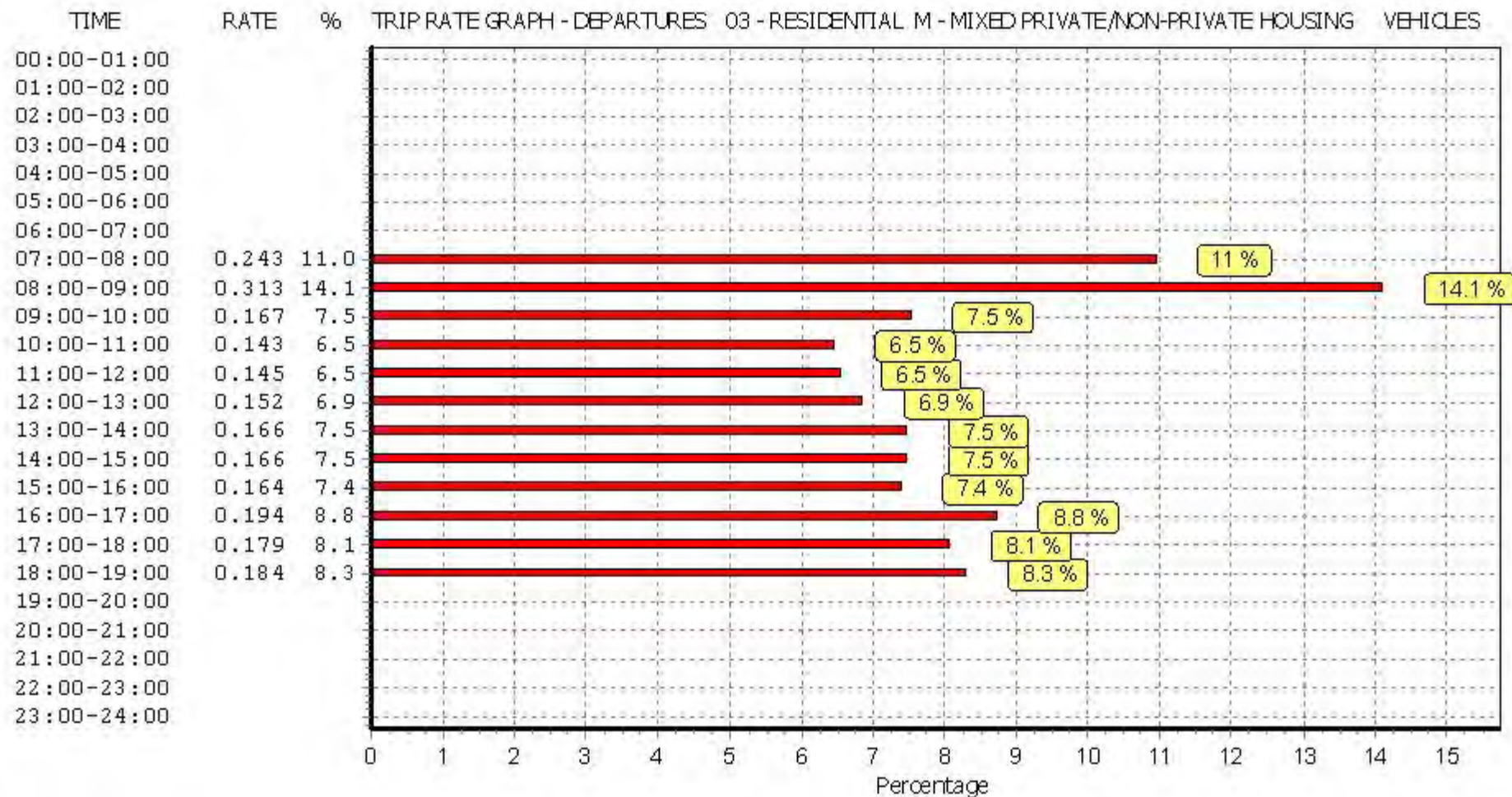
Parameter summary

Trip rate parameter range selected:	16 - 500 (units:)
Survey date range:	01/01/05 - 11/12/12
Number of weekdays (Monday-Friday):	15
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	12

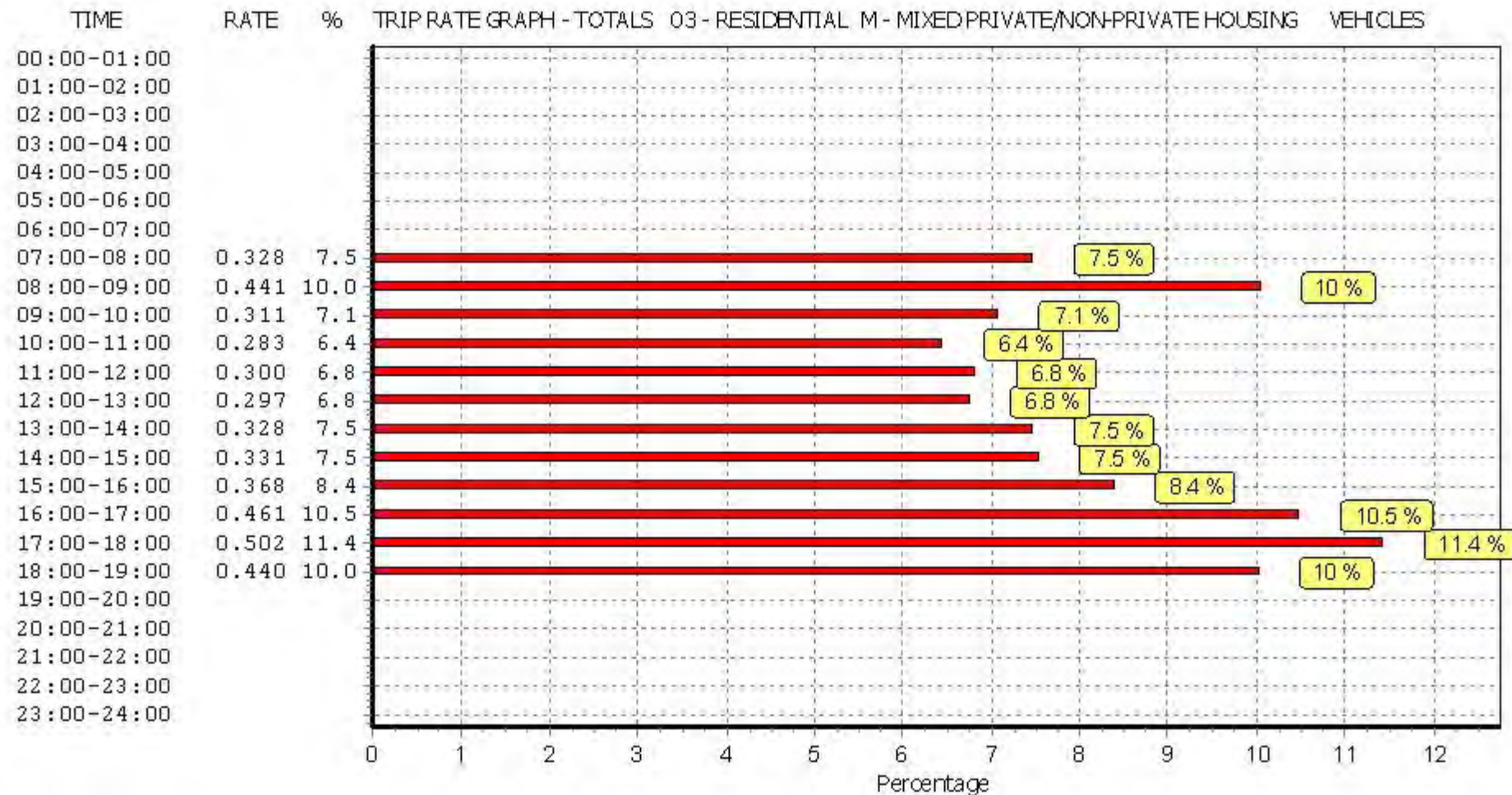
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



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Residential land use sub-category definitions

All land use sub-categories within the Residential main category are defined as follows, in numeric order.

For definitions of trip rate parameters please see the appropriate definitions section of this guide.

For GDO use class definitions, please see the Library module of the system.

03/A - Houses Privately Owned (GDO use class C3)

Housing developments where at least 75% of units are privately owned. Of the total number of units, 75% must also be houses (sum of "non-split" terraced, detached, semi-detached, bungalows, etc), with no more than 25% of the total units being flats. Includes properties that are privately owned and then privately rented. Trip rates are calculated by Site Area, Dwellings, Housing Density, or Total Bedrooms.

03/B - Houses for Rent (GDO use class C3)

Housing developments where at least 75% of units are non-privately owned. Of the total number of units, 75% must also be houses (sum of "non-split" terraced, detached, semi-detached, bungalows, etc), with no more than 25% of the total units being flats. "Non-privately owned" may be council rented or housing association rented/part-owned. Trip rates are calculated by Site Area, Dwellings, Housing Density, or Total Bedrooms.

03/C - Flats Privately Owned (GDO use class C3)

Housing developments where at least 75% of households are privately owned. Of the total number of units, 75% must also be flats (sum of flats in blocks and "split" houses), with no more than 25% of the total units being "non-split" houses. Includes properties that are privately owned and then privately rented. Trip rates are calculated by Site Area, Dwellings, Housing Density, or Total Bedrooms.

03/D - Flats for Rent (GDO use class C3)

Housing developments where at least 75% of households are non-privately owned. Of the total number of units, 75% must also be flats (sum of flats in blocks and "split" houses), with no more than 25% of the total units being "non-split" houses. "Non-privately owned" may be council rented or housing association rented/part-owned. Trip rates are calculated by Site Area, Dwellings, Housing Density, or Total Bedrooms.

03/E - Institutional Hostels (GDO use class C1)

An institutional hostel comprising one or more buildings. Trip rates are calculated by Site Area, Residents, or Parking Spaces.

03/F - Sheltered Accommodation (GDO use class C3)

Sheltered accommodation for elderly people, not to be confused with nursing homes. Trip rates are calculated by Site Area, Dwellings, or Housing Density.

03/G - Student Accommodation (GDO use class C3)

Includes halls of residence, student flats, etc. If sharing a site with an educational land use, only the accommodation element should be included in the site and survey details. Trip rates are calculated by Site Area or Residents.

03/H - Nurses Homes (GDO use class C3)

Building or collection of buildings housing nurses. If sharing a site with a health land use, only the accommodation element should be included in the site and survey details. Trip rates are calculated by Site Area, Residents, or Parking Spaces.

03/J - Holiday Accommodation

Includes caravan/camping parks, holiday villages, holiday camps. All types of unit (caravans/chalets/pitches, etc.) are included in the total for the site. Trip rates are calculated by Site Area, Units, or Parking Spaces.

03/K - Mixed Private Housing (GDO use class C3)

Housing developments where at least 75% of units are privately owned. Of the total number of units, less than 75% must be houses (sum of "non-split" terraced, detached, semi-detached, bungalows, etc), and less than 75%

must be flats (sum of flats in blocks and "split" houses). Trip rates are calculated by Site Area, Dwellings, Housing Density, or Total Bedrooms.

03/L - Mixed Non-Private Housing (GDO use class C3)

Housing developments where at least 75% of units are non-privately owned. Of the total number of units, less than 75% must be houses (sum of "non-split" terraced, detached, semi-detached, bungalows, etc), and less than 75% must be flats (sum of flats in blocks and "split" houses). "Non-privately owned" may be council rented or housing association rented/part-owned. Trip rates are calculated by Site Area, Dwellings, Housing Density, or Total Bedrooms.

03/M - Mixed Private/Non-Private Housing (GDO use class C3)

Housing developments where less than 75% of units are privately owned, and less than 75% of units are non-privately owned. "Non-privately owned" may be council rented or housing association rented/part-owned. Trip rates are calculated by Site Area, Dwellings, Housing Density, or Total Bedrooms.

03/N - Retirement Flats (GDO use class C3)

Housing developments built specifically for the retired, where at least 75% of units are privately owned. Of the total number of units, 75% must also be flats (sum of flats in blocks and "split" houses), with no more than 25% of the total units being "non-split" houses. Trip rates are calculated by Site Area, Dwellings, Housing Density, or Total Bedrooms.

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