Taylor Wimpey Strategic Land

Land at Light Hall, Solihull

Transport Report

March 2019

Ground Floor, Helmont House, Churchill Way, Cardiff CF10 2HE www.vectos.co.uk
Registered address: Vectos (South) Limited, Network Building, 97 Tottenham Court Road, London W1T 4TP. Company no. 7591661

Contents

Figures

Appendices

1 INTRODUCTION

1.1 Vectos is retained by Taylor Wimpey Strategic Land to provide traffic and transportation advice in relation to the proposed residential led, mixed use development at Land at Light Hall, Solihull.

1.2 The land is being promoted for residential development of approximately 1,200 dwellings (Site 12) for inclusion within the Solihull Local Plan which is currently at consultation. There is also potential to provide a primary school and a small retail/commercial unit.

1.3 In the context of contemporary transport policy, place making and mobility, this location is an excellent location for housing and a new community. The site forms a natural extension to Shirley and is already connected to a range of day-to-day amenities and public transport, and through the site's design it has the ability to enhance sustainability from the outset for new residents. As such, it should be supported for inclusion in the emerging Local Plan.

1.4 The remainder of the report is structured as follows:

- **Section 2** – Sustainability and Accessibility – This section revies the current accessibility of the site by all modes of travel, and the proximity to local services and facilites;
- **Section 3** – Proposed Development – This section details the development proposals and the access arrangement options to the site, including that for pedestrians and cyclists;
- **Section 4** – The Transport Vision – This section outlines the Transport Vision and the Mobility characteristics of the site;
- **Section 5** – Policy Review – This section provides a review of the emerging Local Plan and relevant national policy;
- **Section 6** – Trip Characteristics – This section sets out the expected trip characteristics by all modes of travel;
- **Section 7** – Highway Network Assessment – This section includes an assessment of the local junctions to the site in terms of capacity; and
- **Section 8** – Summary and Conclusion.

2 SUSTAINABILITY AND ACCESSIBILITY

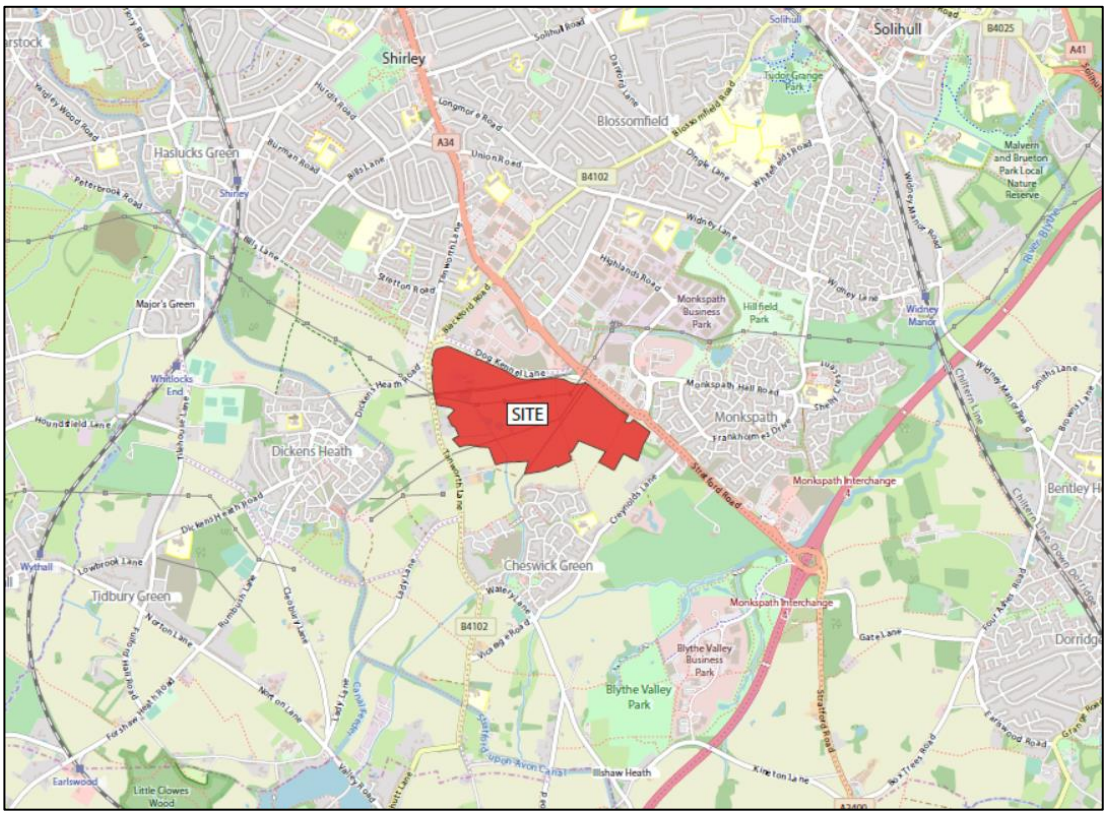
2.1 This section reviews the existing accessibility of the area surrounding the Site as a proxy for the potential accessibility of the Site itself.

Site Location

2.2 The site lies approximately 6km to the south west of Solihull and is approximately 5km to the south of the suburb of Shirley. The site is bound to the north by Dog Kennel Lane, to the east by the A34 Stratford Road and Creynolds Lane, to the south by residential dwellings and to the west by Tanworth Lane.

2.3 The location of the developable area is shown in **Figure 2.1.**

Figure 2.1 – Site Location



2.4 The Site comprises open farmland, which is well related to the existing urban edge and provides a sustainable urban extension location to meet the longer-term housing needs for Solihull.

2.5 The Site has been promoted via the Local Plan process as a sustainable urban extension location.

Accessibility by Non Car Modes

2.6 Development on Land at Light Hall would be designed to encourage trips to be made by sustainable modes, including active travel (walking and cycling), by car sharing and on public transport in an effort to maximise social inclusion and minimise the number of single occupancy private car trips. The location of the site is well suited to the promotion of sustainable travel.

Walking

2.7 The area is served by good quality pedestrian routes, through attractive and active environments. Existing pedestrian facilities in the vicinity of the site include formal footways, shared footway/cycleways and Public Rights of Way (PRoW).

2.8 In the vicinity of the site there is a footway on the northern edge of Dog Kennel Lane and on the northern edge of Creynolds Road. These lit footways are in good condition and of sufficient width to comfortably accommodate pedestrian movement. On some sections of Creynolds Road, the footway is segregated from the carriageway by a grassed verge.

Footway on Dog Kennel Lane

Footway on Creynolds

2.9 Dog Kennel Lane provides a link to Stratford Road to the east and the B4102 to the west. Creynolds Road provides a link to Cheswick Green Primary School.

Cheswick Green Primary School

2.10 There is a shared footway/cycleway on both sides of the A34 Stratford Road. There is a signalised pedestrian crossing at the junction with Creynolds Road. The A34 Stratford Road provides a pedestrian route to many local facilities including Tesco Extra, McDonald's restaurant, Notcutts Garden Centre, Beefeater restaurant, Harvester restaurant, The Plough public house, Sainsbury's and Solihull Retail Park.

Signalised Pedestrian Crossing on Stratford Road

Shared Footway/Cycleway on Stratford Road

2.11 There is a footway on the western edge of Tanworth Road. In some sections, the footway is segregated from the carriageway by a grass verge. Tanworth Road provides pedestrian

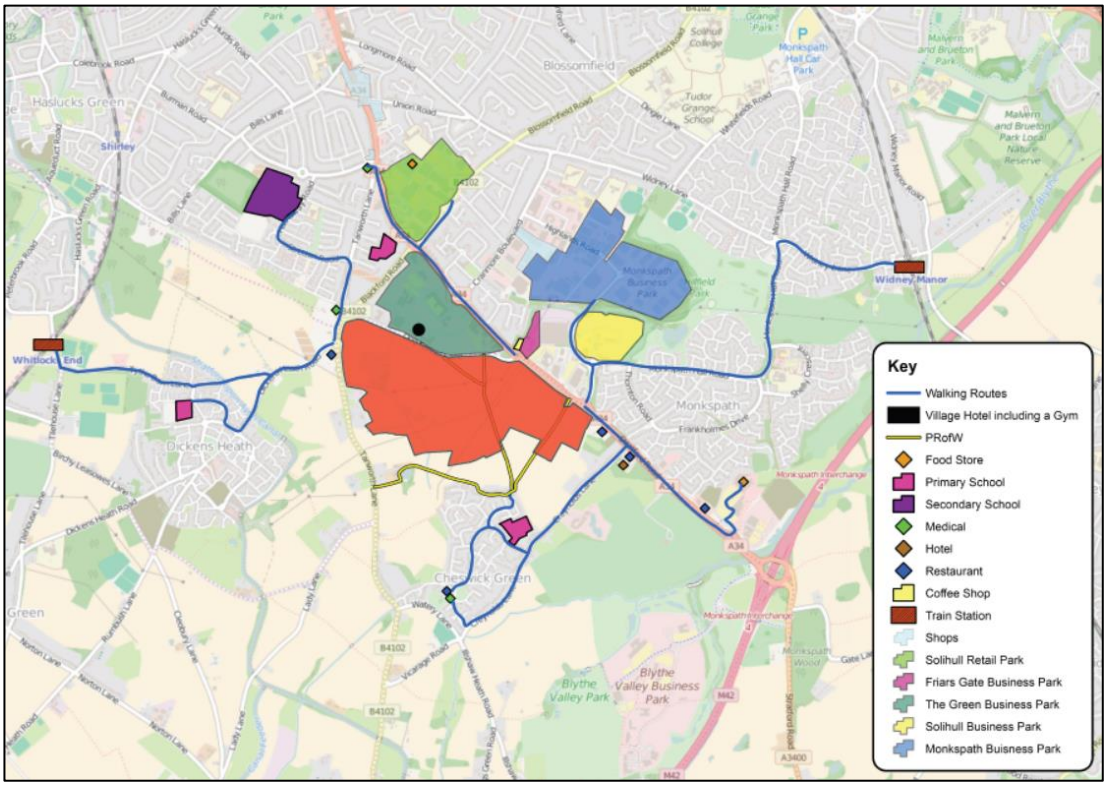
access into Shirley Heath to the north and Cheswick Green to the south as well as the Miller and Carter restaurant near the Dickens Heath / Tanworth Road junction.

Footway Provision on Tanworth Road

Dickens Heath / Tanworth Road Junction and Miller and Carter Access

2.12 **Figure 2.2** shows the walking routes to these facilities.

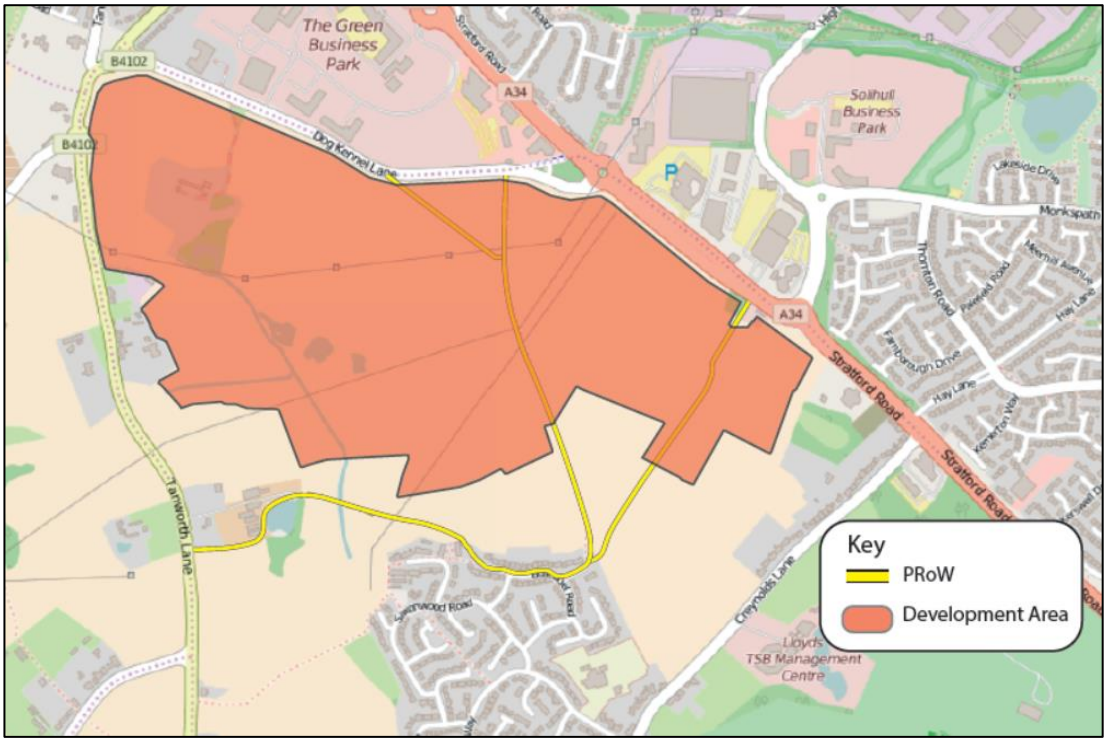
Figure 2.2 – Walking Routes to Local Facilities



2.13 There are a number of PRoWs located through the site and also in the vicinity of the site. The PRoWs through the site can be retained. The PRoWs provide links to the A34 Stratford Road, Dog Kennel Lane, Tanworth Lane and into Dickens Heath.

2.14 The location of the PRoWs are shown in **Figure 2.3.**

Figure 2.3 – Existing PRoWs in the Vicinity of the Site



2.15 The site is well located in terms of proximity and easy access by foot or bicycle to a number of local facilities.

2.16 The propensity for people to walk or cycle depends on individual preferences and circumstances. These circumstances might include, for instance, the purpose of the journey, the attractiveness and/or activity along the route, the weather, and the cost of alternatives.

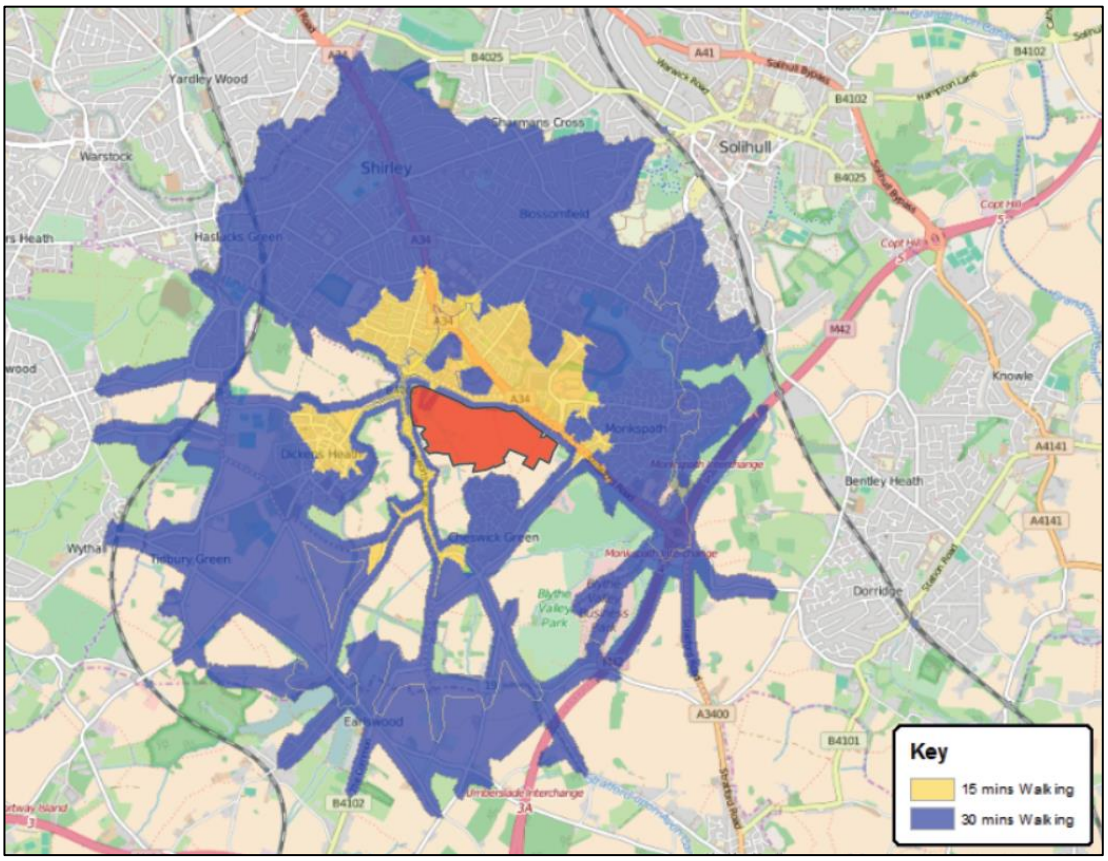
2.17 The thrust of land use and transport policy is to promote and encourage the choice of walking and cycling above all else where travel needs to occur. Therefore, it is reasonable to assume that walking is a viable and growing means of travel, and that new development, such as this one, should be designed to promote and encourage it.

2.18 In practice, the distance that any individual is likely to choose to walk depends on that individual and the circumstances, but it is fair to assume that over time, given current policies to encourage community, the propensity for individuals to walk, and to walk further, will increase.

2.19 **Figure 2.4** indicates the 15 and 30 minute walking isochrones from the proposed site accesses assuming a comfortable average walking speed of 5km/hr (3 mph). **Figure 2.4**

demonstrates that the local facilities on Stratford Road, in Cheswick Green and Cheswick Green primary school and Light Hall secondary school are all within a 30 minutes' walk of the site.

Figure 2.4 – 15 & 30 minute indicative walking isochrones



Cycling

2.20 There are excellent cycle facilities in the vicinity of the site. There is a shared footway/cycleway on both sides of the A34 Stratford Road. This shared facility provides a cycle link to Shirley Heath in the north and into Hockley Heath in the south. In addition, there is a signposted, on road cycle route on Hay Lane which provides a link to Widnes Manor Rail Station.

Tanworth Road

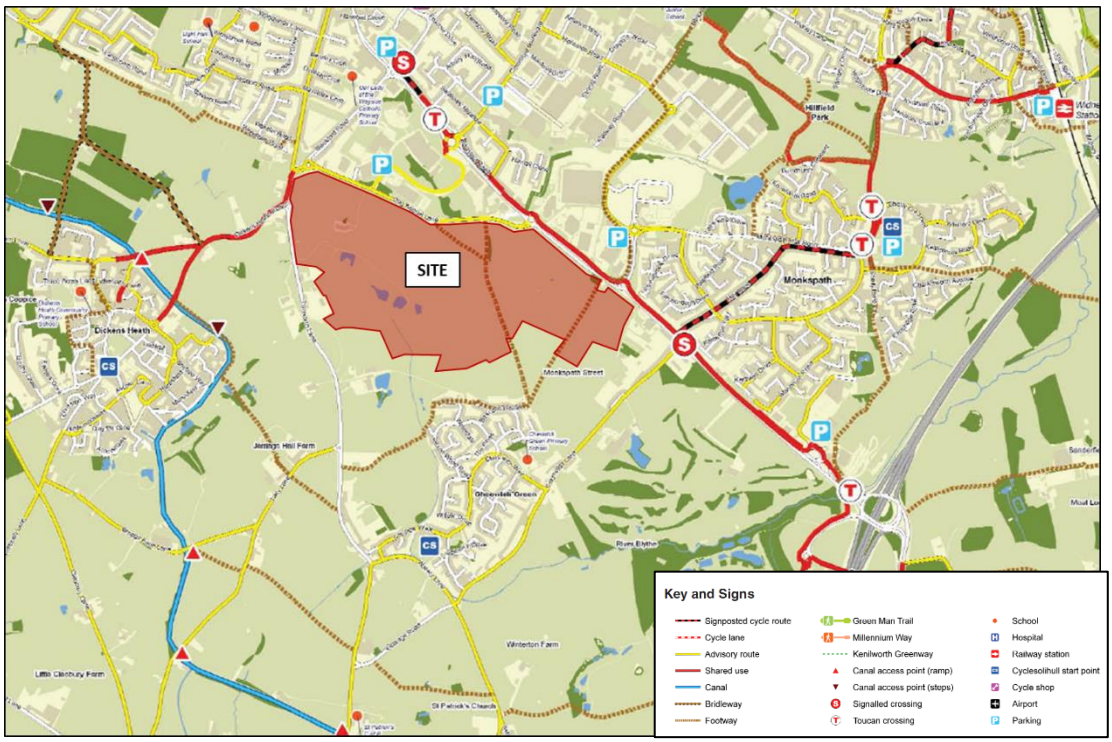
Stratford Road

Toucan Crossing on Stratford Road

2.21 In the vicinity of the site, both Dog Kennel Lane and Creynolds Road are categorised as 'Advisory cycle routes'.

2.22 The locations of the cycle routes in the vicinity of the site are shown in the Solihull Cycling & Walking Map, an extract of which is shown in **Figure 2.5.**

Figure 2.5 – Extract from Solihull Cycling & Walking Map

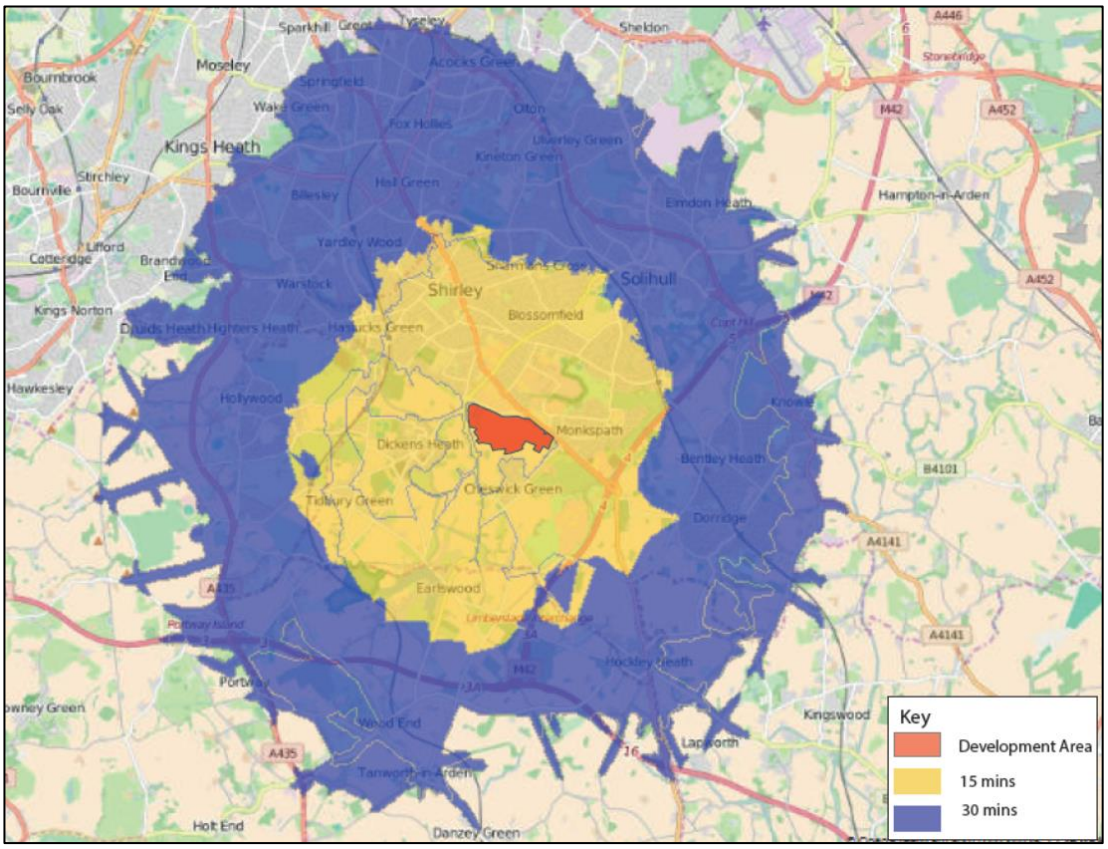


2.23 As demonstrated above, there are opportunities in the local area to enable future (and existing) residents to cycle to work, school, and also for shopping and leisure purposes.

2.24 Again, the distance people are prepared to cycle will be dependent on the individual, journey purpose, the attractiveness and/or activity along the route, the weather, and the cost of alternatives. **Figure 2.6** indicates the 15 and 30 minute cycling isochrones from the site access, assuming a comfortable average cycle speed of 15km/hr (9 mph). Sustrans[1] has suggested that up to 5 miles is an appropriate distance for cycle commuting. This equates to 33 minutes at this speed.

[1] http://www.sustrans.org.uk/sites/default/files/documents/sustrans_mhls_evidence_100511.pdf

Figure 2.6 – 15 & 30 minute indicative cycling isochrones



2.25 **Figure 2.6** demonstrates that the areas of Shirley, Cheswick Green, Dickens Heath, Monkspath and Widney Manor rail station are within a 15 minute cycle of the site and the areas of Solihull, Dorridge and Hockley Heath are within a 30 minute cycle ride of the site.

Local Facilities

2.26 The site is accessible and suitably well located to a number of key local facilities that can be accessed by non-car modes but particularly walking and cycling.

2.27 These facilities are shown in **Figure 2.2,** and the walking and cycling distances from the centre of the site are shown in **Table 2.1.** The distances set out in **Table 2.1** are from any of the four vehicular access points or PRoW dependent on the location of the facility.

Table 2.1 – Local Facilities

Local Facility	Distance (m)	Walking Time (mins) based on 5km/h	Cycling Time (mins) based on 15km/h
Costa Coffee	420	5	2
Friars Gate Business Park	420	5	2
Harvester Monkspath	920	11	4
Cheswick Green Primary School	1130	14	5
The Plough Beefeater	1140	14	5
Premier Inn Solihull South M42	1140	14	5
Miller and Carter	1160	14	5
Tanworth Lane Surgery (GP)	1435	17	6
The Saxon Public House	1480	18	6
Post Office	1520	18	6
Lifestyle Express	1520	18	6
Hair and Beauty Salon	1500	18	6
The Village Surgery (GP)	1550	19	6
Cheswick Green Village Hall	1600	19	6
McDonald's Stratford Road	1730	21	7
Boots	1770	21	7
Solihull Retail Park	1770	21	7
Sainsbury's	1820	22	7
Tesco Extra	2000	24	8
Dicken's Heath Community Primary School	2200	26	9
Shakespeare Dental Centre	2320	28	9
Light Hall School (Secondary)	2370	28	9
Widney Manor Rail Station	3500	42	14

2.28 **Table 2.1** demonstrates that the site is well connected and accessible by foot (under 30 minutes) or by bicycle (under 15 minutes) to a wide range of local amenities in Cheswick Green, Shirley Heath and Monkspath. Widney Manor rail station is also within cycling distance of the site. The site fully complies with local and national policy in this respect, offering real transport choice, improving health and well-being and being socially inclusive.

Bus

2.29 There are a number of bus stops located in the vicinity of the site. These are located on Stratford Road, Creynolds Road, Dickens Heath Road and Cheswick Way.

2.30 The bus stops on Stratford Road are located within laybys and are equipped with bus shelters, timetable information and seating. The bus stops on Cheswick Way are equipped with bus shelters, timetable information and seating.

2.31 The bus stops on Dickens Heath Road and Creynolds Road are equipped with timetable information and flagpoles.

Bus Stop on Stratford Road

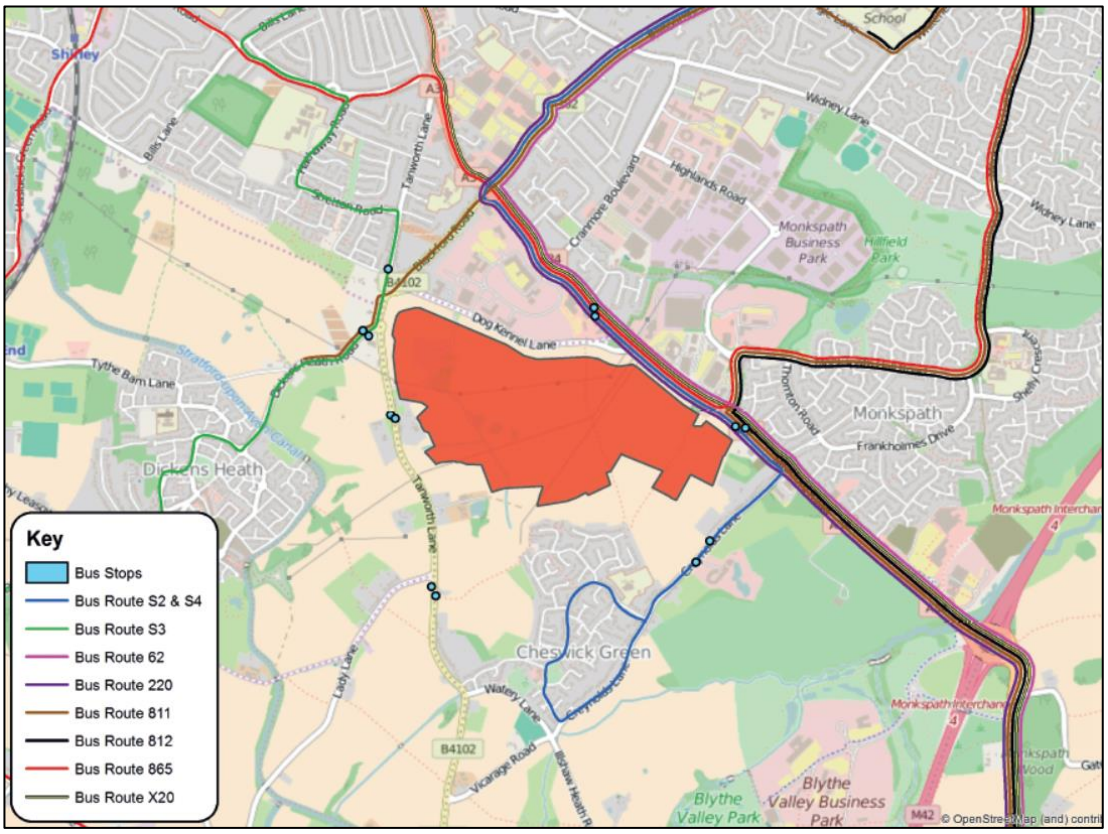
Bus Stop on Creynolds Lane

Bus Stop on Dickens Heath Road

Bus Stop on Cheswick Way

2.32 The location of the bus stops and bus routes are shown **Figure 2.7.**

Figure 2.7 – Bus Stops and Bus Route Plan



2.33 A summary of the bus services which operate from these bus stops is shown in **Table 2.2.**

Table 2.2 – Summary of Bus Services

Operator	Service	Route	First Bus	Last Bus	Daytime Frequency (mins)			Bus Stop Served
					Mon-Fri	Sat	Sun	
Stagecoach Warwickshire	62	Solihull – Leamington Spa	07:30	-	1 service a day (College Term Time Only)	-	-	Monkspath, opp The Plough
		Leamington Spa – Solihull	18:02	-	1 service a day (College Term Time Only)	-	-	Monkspath, adj The Plough
Johnson's Excelbus	220	Solihull Station – Stratford College	08:12	-	1 service a day (College Term Time Only)	-	-	Monkspath, opp The Plough
		Stratford College – Solihull Station	16:46	-	1 service a day (College Term Time Only)	-	-	Monkspath, adj The Plough
Grosvenor Coaches	811	Dickens Heath – Hockley Heath via Dingle la Schs	15:30	-	1 service a day	-	-	Monkspath, opp The Plough
		Dickens Heath – Dingle Lane Schools via Monkspath	-	-	12:05 (Mondays, Wednesdays and Fridays only)	-	-	Monkspath, adj The Plough
Grosvenor Coaches	812	Blossomfield Schools – Dickens Heath via Hockley Heath	15:27	-	1 service a day (school term time only)	-	-	Monkspath, opp The Plough
		Dickens Heath – Blossomfield Schools via Monkspath	07:55	-	1 service a day (school term time only)	-	-	Monkspath, adj The Plough
Johnson's Excelbus	X20	Birmingham – Stratford via Henley in Arden	07:41	20:09	60	60	90	Monkspath, opp The Plough

		Stratford – Birmingham via Henley in Arden	06:21	18:47	60	60	90	Monkspath, adj The Plough
Diamond Bus	S4	Dorridge – Cheswick Green via Solihull	07:04	18:44	30	30	-	Three May Poles, Dog Kennel Lane (opp)
Diamond Bus	S2	Cheswick Green – Dorridge via Solihull	07:19	18:00	30	30	-	Three May Poles, Dog Kennel Lane (adj)
Diamond Bus	S3	Wythall – Hockley Heath via Solihull	06:58	18:08	30	30	-	Three May Poles, opp Cheswick Green Inn
		Hockley Heath – Wythall via Solihull	07:24	18:59	30	30	-	Three May Poles, adj Cheswick Green Inn
Hollywood Travel	865	St. Peters/Our Lady of Wayside Schools – Bransons X	15:38	-	1 service a day (school service)	-	-	Three May Poles, Dog Kennel Lane (adj)
		Bransons X – Our Lady of Wayside/St. Peters Schools	08:25	-	1 service a day (school service)	-	-	Three May Poles, Dog Kennel Lane (on)

2.34 A total of 10 commercial services operate from the nearest bus stops on Dog Kennel Lane, Stratford Road and Dickens Heath Road with service S2/S4 providing a half hourly service between Cheswick Green, Solihull and Dorridge, service S3 providing a half hourly service between Wythall and Hockley Heath and Service X20 providing an hourly service between Stratford and Birmingham.

Rail

2.35 Whitlock's End rail station is located approximately 2.7km from the site. There is an attractive walking and cycling route to the rail station from the site, via Dicken's Heath Road, Tythe Barn Lane and Tilehouse Lane. There is a shared footway/cycleway on Dicken's Heath Road and a continuous footway link on Tythe Barn Lane and Tilehouse Lane.

2.36 Widney Manor rail station is located approximately 4km from the site. There are a number of walking routes to the rail station from the site. The quickest route is via a footpath between the residential area of Monkspath and the industrial estate. An alternative route is via Hay Lane, Monkspath Road and Widney Lane where there are good quality footpaths or shared facilities, street lighting and good natural surveillance. The cycling route to the rail station is via the signposted cycle route on Hay Lane and the shared use cycle facility on Monkspath Hall Road and Widney Lane.

2.37 The walking and cycling routes between the site and both rail stations are shown in **Figure 2.2.**

2.38 Whitlock's End rail station is equipped 20 bicycle storage spaces with storage CCTV. There is also a car park (free for rail users) with 111 car parking spaces. Widney Manor rail station is equipped with 266 car parking spaces (free for rail users) and 28 sheltered cycle storage spaces. A summary of the rail services from Widney Manor Station is included at **Table 2.3.**

Table 2.3 – Summary of Rail Services from Whitlock's End and Widney Manor Rail Stations

Destination	First Train	Last Train	Daytime Frequency (mins)			Journey Time (mins)
			Mon-Fri	Sat	Sun	
Direct Services from Whitlock's End Rail Station						
Stourbridge Junction	06:28	21:57	20	20	60	49-52
Worcester Shrub Hill	10:19	13:19	60	-	-	80
Kidderminster	06:28	18:18	30	30	60	60
Stratford-upon-Avon	06:52	22:51	60	60	60	35
Direct Services from Widney Manor Rail Station						
Birmingham Moor Street (City Centre)	05:45	23:27	20	20	60	15
Solihull	05:45	23:27	20	20	60	3
Stourbridge Junction	06:58	22:38	20	20	60	50
Dorridge	06:14	23:51	20	20	60	5
Worcester Foregate Street	05:45	21:36	60	60	-	80
Kidderminster	05:45	22:38	30	30	-	55
Stratford-upon-Avon	06:14	18:20	60	60	-	25

Summary

2.39 The site provides ample opportunities for good connectivity with all of the mobility networks, including walking, cycling, public transport, and road, providing access by a choice of means of transport for day-to-day facilities and beyond.

2.40 Considering the above, the site is well placed in terms of existing, and certainly future residents. The site is well placed in terms of accessibility to pedestrian, cycle and public transport networks.

3 PROPOSED DEVELOPMENT

3.1 There are four key stages to creating a socially inclusive community, hereby encouraging community interaction (within and neighbouring the scheme), in such a way to encourage non-motorised travel modes, prioritising walking and cycling, followed by use of the bus.

3.2 **Design** is in terms of creating communities, where public interaction, outdoor and indoor, is the norm. Where friends and day-to-day activities are nearby and easy to get to, and where it is not an automatic reaction when leaving home to get into a car. The site is well placed to take advantage of the proximity of a range of day-to-day facilities.

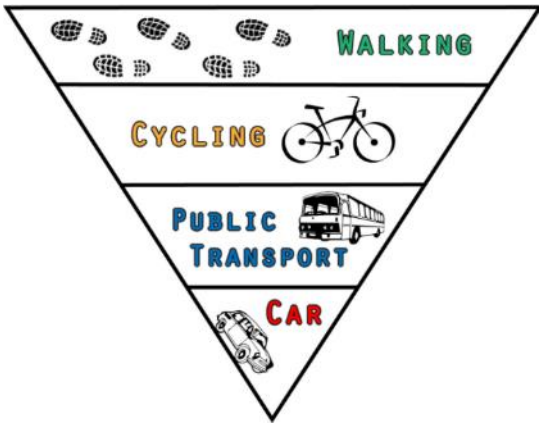
3.3 The site design is of a pedestrian scale. Walking, cycling, and using a bus, will be easy, and vehicle intimidation will be at a minimum.

3.4 **Choice** is in terms of providing the **infrastructure** and facilities to minimise reliance on any single option. This widens social inclusion, and for instance, makes contributing to commuter car congestion on average more of a choice and less of a necessity.

3.5 Through increased choices a change in behaviour can be affected. The proposals will introduce and maintain any sustainable transport options and seek to encourage a net travel behavioural change.

3.6 **Behaviour** is in terms of educating people in the options and consequences. It brings together awareness, health, environment, and personal convenience.

3.7 Finally, one of the 'by design' aims is to create an environment where fewer people automatically choose to use their cars when leaving their homes, therefore decreasing the impact on the road network. These proposals strive to not only influence the traffic impact of the proposed development, but also the surrounding communities.



3.8 **Network Management** is in terms of managing the road network in accord with the user hierarchy preferred by the Council. Car travel is the lowest capacity network in terms of space occupied per person. It also occupies the lowest priority in the user hierarchy. This means, for instance, prioritising the reliability and speed of bus and cycle movement over that of cars in the commuter peaks.

Masterplan

3.9 The masterplan for Land at Light Hall is designed in such a way that it complements the existing area. Integration with the existing communities in Shirley and Dickens Heath are paramount to the site's design, with permeability as the highest priority.

3.10 Manual for Streets (MfS) and Manual for Streets 2 (MfS2) are used as a framework for the design philosophy, encompassing a comprehensive movement strategy which will inform and shape the layout of the streets serving the development. In particular, the movement strategy will focus on the movement hierarchy within MfS2 with priority given to pedestrians, cyclists, and other non-motorised road users.

3.11 The illustrative masterplan is shown in **Figure 3.1** and a scale version is provided at **Appendix A.**

Figure 3.1 – Illustrative Masterplan

3.12 It is proposed that the internal spine road will be designed to be 6.3m wide to accommodate two-way bus movements, with 1.5m on-carriageway cycleways on both sides allowing for cyclist priority over side roads, and 2.0m footways either side. The spine road can be designed to have an active frontage, providing an attractive thorough-fare for cyclists, buses, and pedestrians, but will not allow movement of cars to dominate over movement of other modes.

3.13 Based on the illustrative masterplan at **Figure 3.1**, the site has capacity to provide up to 1,200 residential dwellings, a primary school and a small retail/commercial unit.

Access Strategy

3.14 Pedestrians and cyclists will have many opportunities to access the site. Each vehicular access will have a footway on both sides of the carriageway to tie in to the existing pedestrian provision where appropriate. Where possible, a cycleway will be provided at the site access junctions to connect to the existing network.

3.15 In addition, pedestrians will be able to access the site via the existing Public Rights of Way (PRoWs). It is proposed to improve and upgrade the PRoWs through the site.

3.16 The locations of the access junctions and PRoWs allow for convenient access to the existing pedestrian, cycle and public transport networks.

3.17 Within the site, a comprehensive network of footpaths and cycleways will be provided that will link the development to the surrounding existing network. It could also be possible to provide a public transport only access from A34 / Monkspath Hall Road Roundabout to deliver a public transport link through the site.

3.18 The site will be designed in such a way that it will not be the automatic reaction for many to reach for the car keys when leaving home. It will be to a pedestrian scale. Ie, pedestrians and cyclists feel involved and comfortable. We suggest that the entire site is subject to a 20 mph vehicle speed limit, and that road widths are minimised (ensuring that buses can pass on bus routes).

3.19 Pedestrian and cycle access to the site is provided in a number of locations along the site's northern, western and eastern edge, to suitably connect to the existing residential areas and local facilities in these locations.

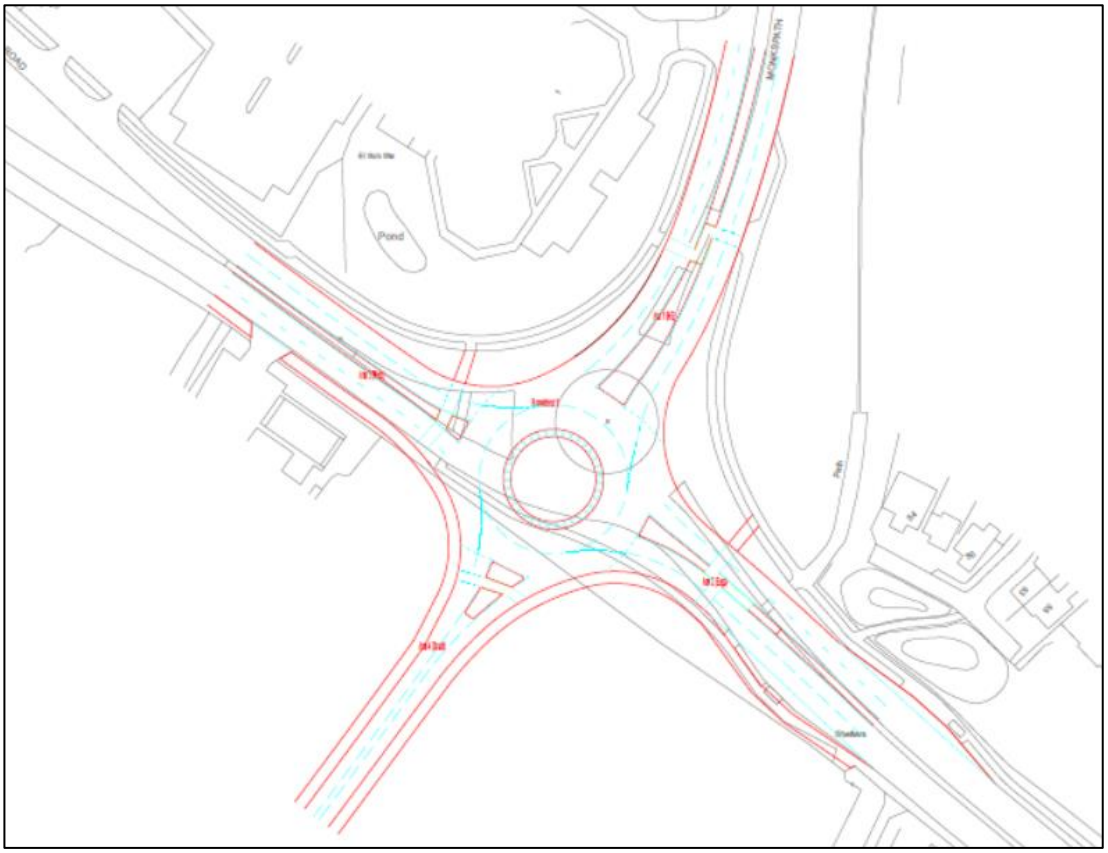
3.20 To the south of the site, there will be connections provided to the PRoWs to access the residential area of Cheswick Green.

3.21 The vehicle access strategy comprises providing 4 points of access to the existing highway network, with the A34 Stratford Road to the east, two site access junctions from Dog Kennel Lane to the north and Tanworth Lane to the west. Each access is designed within the adopted highway and site boundaries.

3.22 The preliminary access design for access from A34 Stratford Road comprises providing an additional arm to the existing A34 Stratford Road/Monkspath Hall Road 3 arm roundabout junction. It should be noted that pedestrian facilities are not proposed at the proposed site access due to the fact that there are no existing pedestrian facilities on Tanworth Lane to connect into and no pedestrian desire lines in this location. As shown on the illustrative masterplan, it is proposed to provide pedestrian connections to Tanworth Lane at other locations along the site boundary which are more appropriate for pedestrian connectivity.

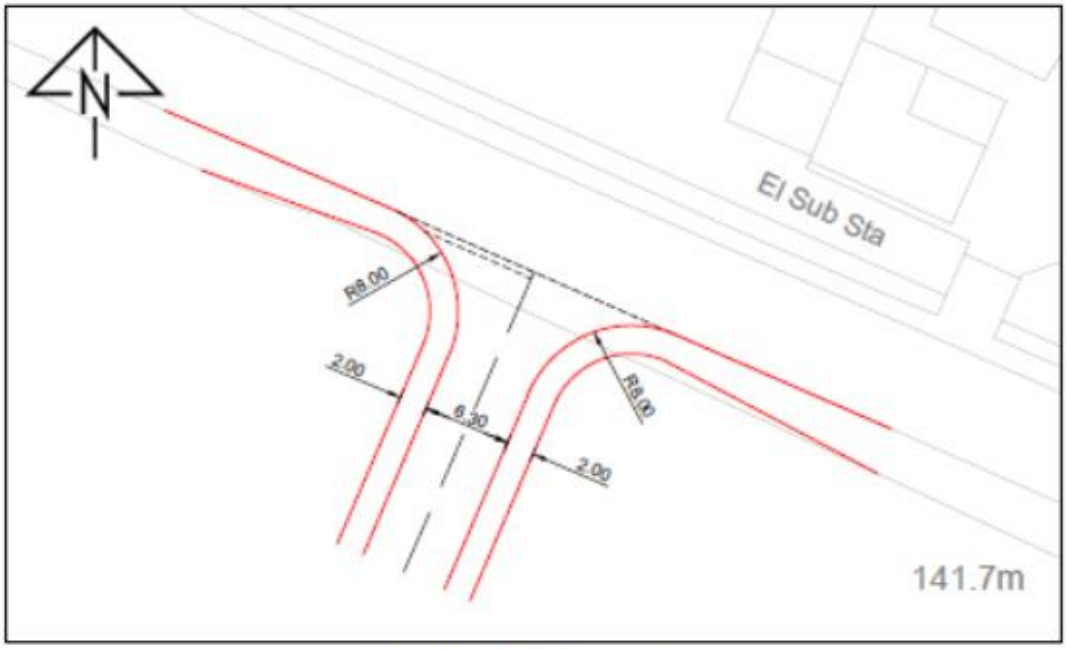
3.23 The preliminary junction arrangement is demonstrated in **Figure 3.2** and presented in full in **Appendix B.**

Figure 3.2 – Stratford Road Site Access Junction Arrangement

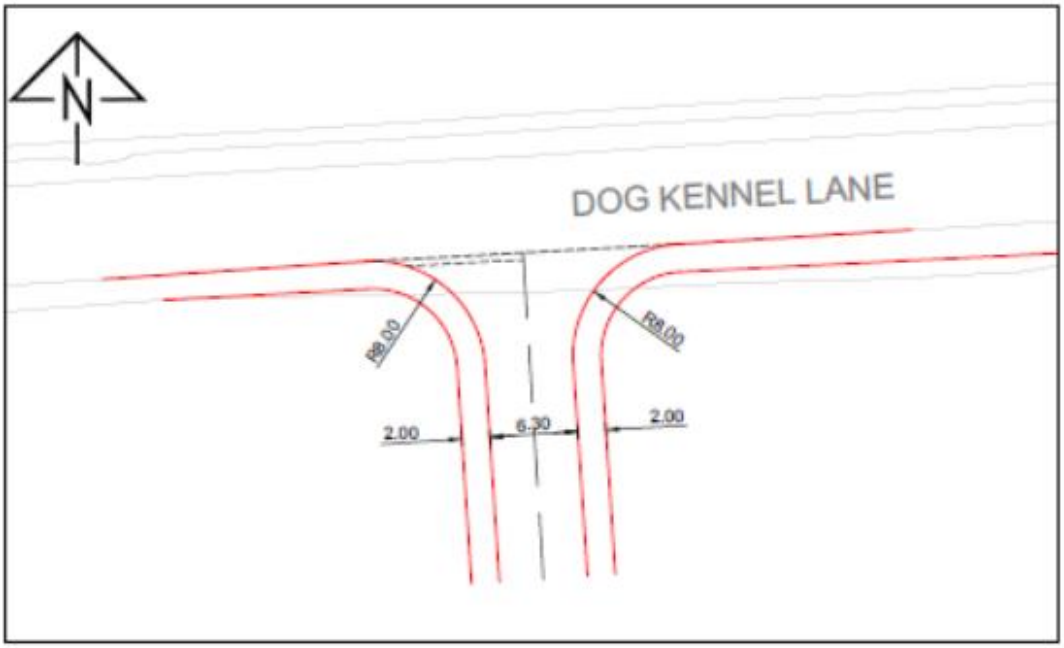


3.24 The preliminary access design for access from Dog Kennel Lane comprises providing two priority junctions into the site. The preliminary junction arrangement is demonstrated in **Figure 3.3** and presented in full in **Appendix B.**

Figure 3.3 – Dog Kennel Lane Site Access Junction Arrangements



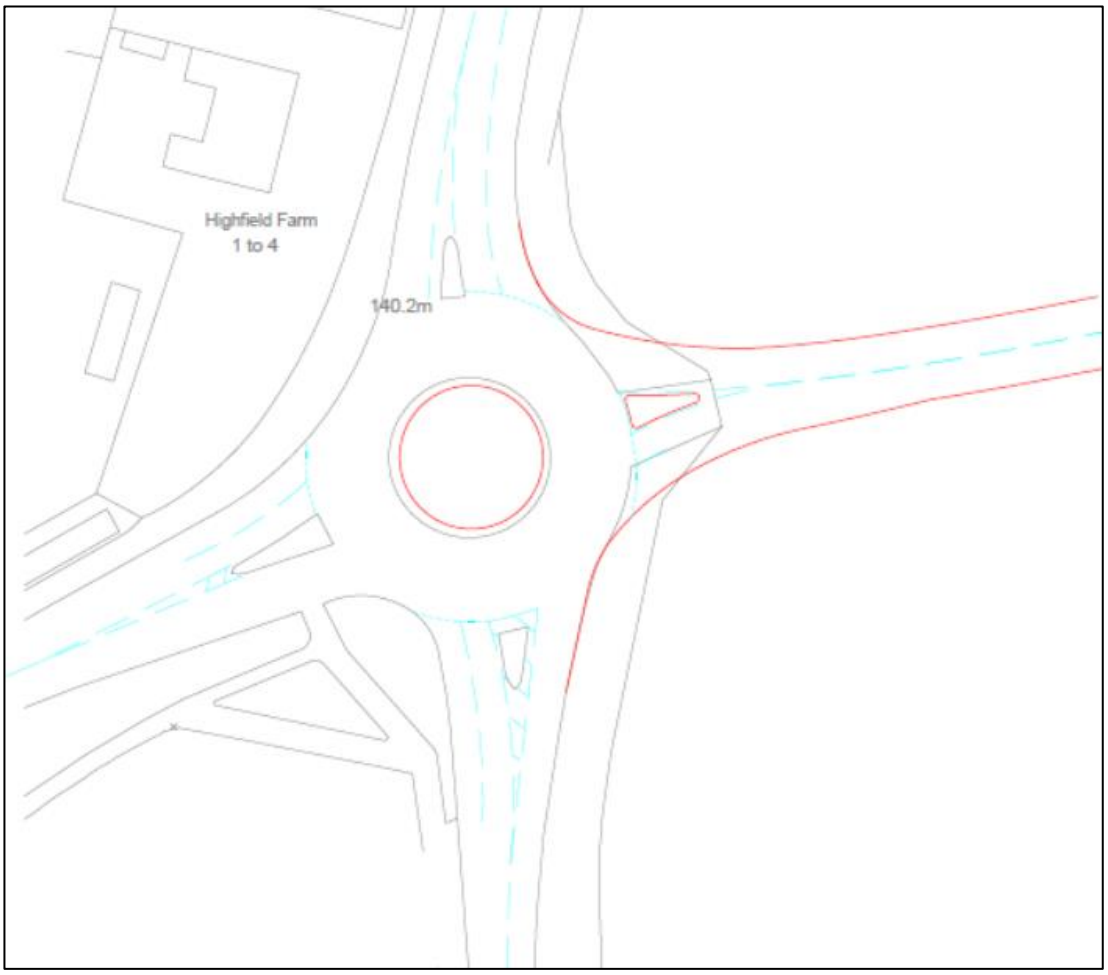
Priority Junction A
Scale 1:500



Priority Junction B
Scale 1:500

3.25 The preliminary access design for access from Tanworth Lane comprises providing an additional arm from the Tanworth Lane/Dickens Heath Road 3 arm junction. The preliminary junction arrangement is demonstrated in **Figure 3.4** and presented in full in **Appendix B.**

Figure 3.4 – Tanworth Lane Site Access Junction Arrangement



3.26 All access junction arrangements will accommodate the needs of all users, providing attractive pedestrian and cyclist links to their respective existing transport networks. Section 2 demonstrates that the site is well located on the edge of an excellent existing pedestrian network, which takes the form of a typical urban residential area.

4 THE TRANSPORT VISION

4.1 This development has the opportunity to provide a step-change in the attitude towards large scale residential development in terms of sustainability, accessibility, and Mobility as a Service. The Transport Vision seeks to do this in a number of ways.

Mobility

4.2 Current transport trends, as reported by the Independent Transport Commission (ITC)[2] are consistent with a movement strategy that relies upon the promotion of sustainable transport, in accord with paragraph 29 onwards of the Framework.

4.3 Those trends include[3]:

- Per capita travel in terms of distance has been decreasing significantly over the past decade and is now 10% lower than in the mid-2000s;
- Individual car driving mileage per adult has declined significantly over the period 1995-2014;
- The historic correlation between incomes/costs and travel are weakening;
- We are witnessing an inter-generational divide in travel behaviour trends … younger people (especially men under 35) are the group where car use per adult is falling fastest, but this group has also seen one of the fastest rises in public transport use; and,
- Attitudinal factors are becoming increasingly significant as drivers of travel. The ITC's 2015 attitudinal research indicated that cars are increasingly viewed as 'appliances not aspirations', especially by young people.

4.4 The ITC's December 2016 report on travel trends is consistent with the Department for Transport's (DfT) November 2017 report 'Commuting trends in England 1988 – 2015'.

4.5 The DfT advises in this report[4] that:

[2] Independent Transport Commission: Recent trends in road and rail travel: What do they tell us? Overview and policy analysis December 2016

[3] ITC December 2016 p1 and p2

[4] DfT Executive Summary

- There has been a decline in commuting trips per person which has not been outweighed by the growth in population. Commuting is in decline despite population and employment growth[5];
- Commuting behaviour is undergoing a period of change;
- Several reasons contribute to this decrease in commuting journeys;
- The emergence of various forms of flexible working;
- Workers are commuting fewer days per week;
- Working from home is growing, both on an occasional basis and on a usual basis;
- There has been an increase in the number of people who report that they are employed but do not work at home and are not observed to travel to work during the surveyed diary week; and
- Part time employment and self-employment have expanded, with both being associated with reduced numbers of commuting journeys.

4.6 There have been changes in the time of day of commuting, with work-bound journeys shifting on average several minutes earlier in the morning.

4.7 Car commuters experience the most variable commute times, though road traffic reliability has improved.

4.8 Transport policy, which promotes active travel and places single occupancy car use at the bottom of the movement hierarchy, is intrinsically linked to health policy. Rising obesity is caused by sedentary lifestyles, and there is now a crossover between transport and health in prioritising investment in, and use of, active (walking and cycling) travel corridors to deliver transport objectives and health objectives.

4.9 The common threads through local and national policy are:

- Mobility, access to day to day and other facilities, is fundamental to 'liveability'
- Mobility must be provided through a plethora of realistic choices
- The highest priority travel choices are those which are most space efficient, most energy efficient, are likely to result in good community integration, and those which combat a sedentary lifestyle.

[5] DfT p5 and p15

4.10 Large strategic sites allow planned coordinated development and provide effective mobility infrastructure. They are best placed to achieve all of these aims. They are substantially more effective than the alternative of smaller ad-hoc and unplanned schemes.

4.11 The way that people understand mobility has changed, is changing, and will continue to change in the future. Mobility is about accessing day-to-day facilities, such as schools, shops, friends, healthcare, and the workplace.

4.12 Mobility is a function of placemaking, an increasing awareness of the need for healthy living, internet technology, providing Mobility as a Service (MaaS), electric vehicle technology, and general cultural preferences.

4.13 Per capita travel in terms of distance has decreased significantly over the past decade, and is now 10% lower than in the mid-2000s. Each person makes significantly fewer trips now than they used to, and the car driving mileage per adult has dropped significantly. The historic correlation between income, costs and travel are weakening, with car driving per adult declining despite motoring costs remaining stagnant. The link between economic growth and travel has weakened[6].

4.14 In terms of attitudes[7]:

- Cars are increasingly viewed as 'appliances not aspirations';
- There is a growing body of understanding of travel options;
- Use of technology for communication and work whilst travelling is easier and safer by non-car modes;
- For business travel there is some travel substitution by home working and video conferencing; and
- There is a growing disconnection between car ownership and car use leading to a wider use of alternatives including vehicle and journey sharing.

4.15 These changes in attitude are set to accelerate, with the catalysts of the Central Government initiatives to promote healthier living, and the recently announced ban on all new diesel and petrol cars and vans by 2040.

[6] Independent Transport Commission (ITC); Overview and Policy Analysis December 2016

[7] ITC December 2016, Section 7; Possible Causes of Changes in Travel Patterns

4.16 There is an expectation borne out of emerging evidence that travel habits will continue to evolve so that a greater proportion of people will be travelling less, and using more socially inclusive mobility methods, such as walking, cycling, car sharing, and public transport.

Mobility as a Service

4.17 Mobility-as-a-Service (MaaS) is at the forefront of change, and is a concept of combining services from public and private transport providers in one place which allows users to create and manage trips, which they can then pay for from a single account, typically a single app.

4.18 MaaS can be delivered by a range of innovative new mobility services, complimenting more established transport modes, and can include:

- Demand Responsive Transport
- Active Travel Corridors – links to amenities, employment and Kidderminster Railway Station
- Cycle super routes
- Bike sharing/electric bike schemes
- Technology (Virtual Mobility)
- Car clubs/carpooling
- Safe Routes to School/School Travel Planning

- Community Hub/concierge

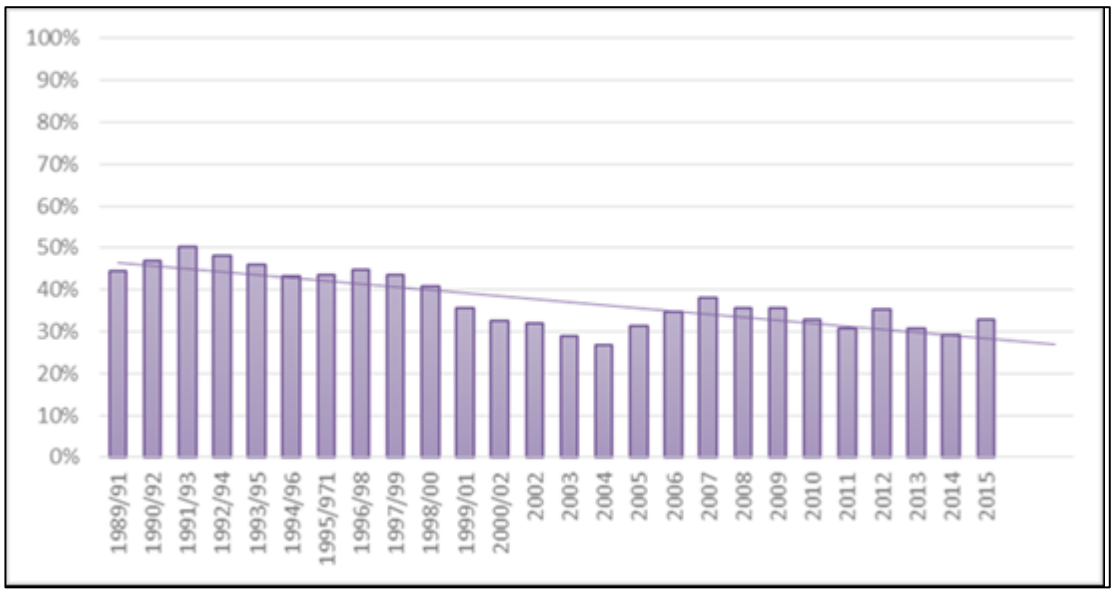
4.19 One single initiative will not deliver Mobility, but the combination of these services and the collection of access to each service in a single location (or app) will provide people with the Mobility and choice they desire.

Millennials

4.20 *"The millennials don't value cars and car ownership, they value technology — they care about what kinds of devices you own."* - Mimi Sheller, a sociology professor at Drexel University and Director of the Center for Mobilities Research and Policy[8].

4.21 In 1993 50% of people aged 17-20 possessed a car licence. In 2014 the proportion had reduced to 30%, reflecting the changing priorities of young people. The change in car licence possession is summarised in **Graph 4.1**.

Graph 4.1 – Full Car Driving Licence Holders Aged 17-20 Years



4.22 The travel patterns and behaviour of young people is critical given the timescales for the proposed development, and the need to address and accommodate the needs of the people who will be living at the proposed development in the future rather than design and forecast based on historic travel patterns and behaviour.

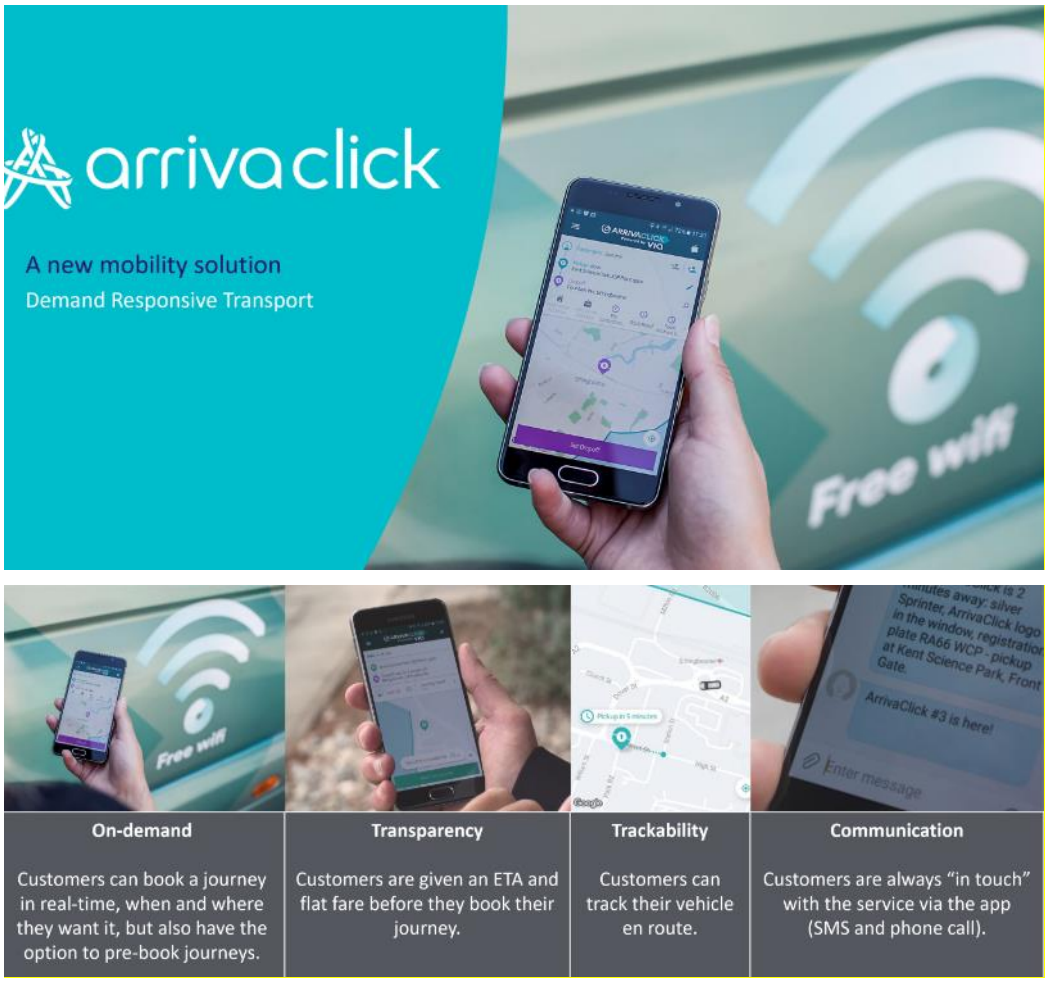
[8] http://drexel.edu/coas/faculty-research/faculty-directory/sheller-mimi/

Demand Responsive Transport

4.23 Demand-responsive transport (DRT) is a modern, user-orientated form of public transport, with flexible routing, pick-up and drop-off locations, and timetabling matched to passenger needs. DRT is app based, convenient, flexible, and modern.

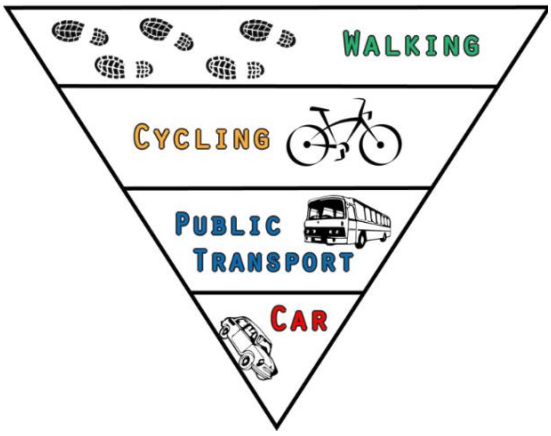
4.24 ArrivaClick is a Demand Responsive bus service which could provide a new service for the site and surrounding area with no fixed route of timetable, providing ultimate flexibility via app-based technology allowing passengers to be picked up when and where they want.

4.25 ArrivaClick would operate an executive minibus service with air con, Wi-Fi, and table seats within a wide area, providing timely and convenient services connecting the site to local employment areas and public transport hubs.



Active Travel Corridors

4.26 Walkable and cycle-able neighbourhoods; Active Travel Corridors for walking, cycling, or electric vehicles providing connections to key amenities, including Widney Manor rail station, Solihull town centre, Monkspath Business Park and Solihull Retail Park.



Bike Sharing and Electric Bike Schemes

4.27 Bike sharing schemes can make cycling as a travel mode more accessible and salient.

4.28 Bike sharing schemes can be defined as 'short-term urban bicycle rental schemes that enable bicycles to be picked up at and returned to any self-service bicycle station, which makes bicycle-sharing ideal for point-to-point trips'.[9]

4.29 There are different types of schemes in place. There are schemes with or without fixed docking points, schemes with free access to members, or schemes which charge monthly or annually, pay-per-use schemes, and schemes which target a specific area and others which are city wide.

4.30 There is currently no scheme in place in Solihull, yet providing this type of bike sharing scheme in tandem with the provision of new active travel corridors within the development will greatly enhance the promotion of cycling. Either as the main mode of transport for travelling to and from work or as part of a multi-modal journey, this has the potential to be a major mode of short distance travel.

[9] 1 Definition of a bike-sharing scheme by the ECF – European Cyclists' Federation, accessed January 21, 2016 http://www.ecf.com/advocary/mobility/bike-sharing-scheme/).

4.31 Technology is also bringing significant change to the cycle industry, and e-bikes are now the biggest single market sector in the cycling industry[10]. In a recent trial in Randers, Denmark, 91% of participants approved of e-bikes after they had used them. Of those who used the pedal-assisted bikes, 75% were women, and 70% were aged 35-54.

4.32 This demonstrates the potential of cycling to accommodate a proportion of trips to and from the proposed Land at Light Hall site.

Community Hub

4.33 To supplement MaaS, the development could include a Community Hub within the Local Centre, occupied by a Community Concierge Team. The Community Hub could provide a range of facilities, including a coffee shop, community centre and retail facilities.

4.34 The Community Hub would effectively act as a Mobility Station – a hub where all modes of transport are available which will simplify planning and choosing how to travel.

[10] The Bike Shed, Cardiff

Source: https://www.qixxit.com/blog/die-mobilitaesstation-mobilitaet-vor-ort/

4.35 A Transport Information Centre (TIC) could also be located at the Community Hub. The TIC would provide information in relation to bike sharing, car clubs, carpooling, demand-responsive transport, and electric vehicle charging points. Walking, cycling (active travel) and public transport maps, and public transport timetable information, will also be available.

Personalised Travel Planning/Area-wide Travel Planning

4.36 Personalised Travel Planning (PTP) can have a significant impact on travel behaviour and travel patterns, helping to achieve more sustainable travel practices and healthier lifestyles, which in turn contribute to a more socially inclusive community and help protect the environment. PTP can be effective both amongst existing residents and communities and in new developments.

4.37 PTP provides tailored information directly to the individual on sustainable mobility options through a one-to-one discussion with a PTP Adviser. The personal approach and specifically tailored information leads to a greater propensity for behavioural change than a one-size-fits-all approach.

4.38 In tandem with a well-designed Travel Plan and appropriate and attractive sustainable travel infrastructure, PTP can result in a step-change in travel behaviour which will benefit every member of the community.

4.39 Safe routes to school will be established as part of the development design and ethos of the site from the outset, and school travel planning will be provided and offered to schools where appropriate. The intention therefore is to design school specific travel planning in cohesion with the wider community to benefit all school users.

4.40 Travel planning will be provided also for the wider area to maximise on the transport opportunities this site can bring to the local and wider areas.

PTP – Cardiff Case Study

4.41 The project in Cardiff the project – funded by Welsh Government, and supported by Local Authorities – targeted 63,000 households in Cardiff and Penarth in a 15-month period. Stage 1 commenced in north Cardiff in September 2011. Stage 2 was undertaken in Spring 2012 and covered the western and southern parts of the city, as well as Penarth, whilst the final stage, Stage 3, covered the east of the city, during Autumn 2012.

4.42 After control group effects had been considered, the after survey showed a 12% relative reduction in car-as-driver trips across the PTP target population, with a reduction from 45% of trips being car-as-driver trips observed before PTP, to 40% thereafter.

4.43 Use of sustainable transport modes increased significantly, with a 21% increase in walking journeys (from 24% of all journeys before PTP, to 29% afterwards); a 13% rise in public transport journeys (from 8% of journeys to 9%); and, a 30% rise in cycling (from 2% of journeys to 3%). The modal shifts observed resulted in a 26% rise in the amount of time spent doing active travel per day (including as a linking mode in a car or public transport trip). The decrease in car-use also corresponds to a 10% reduction in distances travelled by car for everyday trips – equivalent to 31 million km per year – which generates an estimated annual reduction of 6,300 tonnes of CO_2 emissions.

4.44 The complete Sustrans Report to Welsh Government, titled 'Personalised Travel Planning in Cardiff - Final Evaluation of Intervention' is available on request.

Sustrans PTP Results

4.45 Sustrans has also undertaken PTP in the locations summarised in **Table 6.4**:

Table 6.4 – Sustrans PTP Results

Location (date)	Households	Car-Driver Mode Shift
Gloucester (2005)	4,000	-13%
Worcester (2005 – 07)	23,500	-10%
Peterborough (2005 – 07)	30,000	-11%
Preston & South Ribble (2007)	25,000	-10%
Lancaster & Morecambe (2007)	25,000	-14%
Watford (2009)	25,000	-13%
Exeter (2009)	25,000	-12%
Lowestoft (2009)	25,000	-13%
Broxbourne (2010)	8,000	-10%
Ipswich (2010)	17,000	-11%

4.46 The results demonstrate that the PTP can achieve a mode shift away from car driver of 10% or more. Introducing PTP from the outset at the proposed development would help enhance the number of trips undertaken in a sustainable manner by new residents and could also result in a change in travel behaviour amongst existing residents.

PTP-Cycle

4.47 PTP-Cycle is a project using PTP methods to promote a shift from private motor vehicle use towards cycling, walking and public transport.

London Borough of Haringey

4.48 In the London Borough of Haringey, a team of seven travel advisors visited over 14,000 homes between May-September 2015. These seven travel advisors surveyed residents in the Haringey and St Ann's wards, delivering 4,229 personal travel plans, with a further 306 personal travel plans delivered at events across the borough.

4.49 A follow-up survey in October 2015 revealed a 24.1% increase in the number of residents cycling across the project area, and amongst residents who cycle the average number of cycle journeys per week increased from 6.6 to 8.2. Overall the follow-up survey revealed that 23% of Harringay participants and 13% of St Ann's participants provided with travel advice had changed one or more of their regular journeys to a sustainable mode of travel in the past two months.

4.50 Full details of the PTP-Cycle Newsletter 05 (December 2015), which reports the results of PTP-Cycle in the London Borough of Haringey, is available on request.

London Borough of Greenwich

4.51 In the London Borough of Greenwich 3,500 residents in the Abbey Wood area were contacted about PTP. Of these residents, 2,175 (62%) were interested in receiving travel advice, and information packs were delivered to these residents. In addition, 274 people were given travel advice at local events.

4.52 A follow-up survey was undertaken in December 2014. The results demonstrated:

- 33% of respondents decreased their number of car (alone) trips;
- 6% of respondents increased their number of cycling trips;
- 42% of respondents increased their number of walking trips;
- 22% of respondents increased their number of bus trips; and
- 7% of respondents increased their number of train trips.

4.53 The results demonstrate the important role education and knowledge can play in determining travel choices, and simply making people aware of their options and alternatives can deliver significant benefits.

Technology (Virtual Mobility)

4.54 The sustainability of the site will also be complemented by the provision of high-speed broadband which will provide excellent virtual mobility, enabling a number of activities that would have required physical travel to be replaced by on-line services, including working, shopping, and socialising.

4.55 Virtual mobility may remove the need to travel at all, and can include for instance, social media, video conferencing, home shopping, internet-based research and working from home.

Car Clubs and Carpooling

4.56 A car club is where several people access and drive the same vehicle. For example, several people in the same community would drive the car on different days of the week.

4.57 This means that drivers have access to cars without the need to own them. Access without ownership is becoming more common in modern-day living.

4.58 Studies have demonstrated that each shared car replaces between eight and eleven private cars. Car clubs are becoming more prominent in towns and cities across the UK, and car club spaces can be located strategically at key destinations, major employment sites, transport hubs, and town and city centres. The membership of car clubs is increasing, reflecting people's changing attitudes towards Mobility.

4.59 There is potential to deliver a car club within the site at Land at Light Hall.

4.60 Carpooling is where a car driver will use their own personal vehicle to give lifts to other passengers, usually whose origins and destinations are similar to their own.

4.61 App-based carpooling is now taking off, and lifts can be booked on demand, reflecting modern lifestyles, removing the requirement to plan journeys well in advance to participate in an effective carpooling system. Vectos plays a leading role in the SocialCar project, an EU funded research and innovation project, which is aiming to establish carpooling as a more accessible transport mode. The project is developing and demonstrating a new mobile phone application, in ten European cities, which allows users to find carpooling options in real-time and to connect with public transport services. We expect to be able to feedback results in due course.

4.62 It is anticipated that many residents of the proposed site will work in Shirley, Solihull and and wider Birmingham. Therefore, encouraging carpooling from the outset will be a key component to the Mobility Strategy at this site.

Safe Routes to School / School Travel Planning

4.63 The proximity of the schools (primary and secondary) within the development site and within the local area have the ability to contain significant proportion of trips (up to 50%) in the morning peak hour.

4.64 Safe routes to school will be established as part of the development design and ethos of the site from the outset. Connecting pedestrians and cyclists safely to the existing residential areas of Shirley are of a high priority of the site's design, and suitable crossing locations will be ensured to ensure the A34 Stratford Road is not a barrier to movement in particular for school children.

4.65 To instigate excellent travel habits in students and parents from the outset within the site, options such as 'Living Streets' will be investigated.

5 POLICY REVIEW

National Policy

National Planning Policy Framework (NPPF, July 2018)

5.1 The National Planning Policy Framework was updated in July 2018 and sets out the Government's planning policies for England and how these should be applied.

5.2 In terms of transport related policies, it places the sustainability of development at the heart of the decision-making process (Sec 9). It is stated that '*transport issues should be considered from the earliest stages of plan-making and development proposals*.'

5.3 The NPPF states that sustainable travel is about '*offering a genuine choice of transport modes'*, with recognition given to the different travel needs of those who live in urban or rural areas. It advises that the safety and security of accesses to the site are achieved for all users and that '*Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe'*. The bar to what is therefore unacceptable in transport impact terms is set very high.

5.4 In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

- *'appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
- *safe and suitable access to the site can be achieved for all users; and*
- *any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.'*

5.5 The NPPF states that if setting local parking standards for residential and non-residential development, policies should take into account:

- the accessibility of the development;
- the type, mix and use of development;
- the availability of and opportunities for public transport;

- local car ownership levels; the need to ensure an adequate provision of spaces for charging plug-in and other ultra-low emission vehicles.

5.6 The '*Promoting Sustainable Transport*' section concludes by stating that all applications for development should:

- give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;
- address the needs of people with disabilities and reduced mobility in relation to all modes of transport;
- create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;
- allow for the efficient delivery of goods, and access by service and emergency vehicles; and;
- be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.

Manual for Streets

5.7 The Department for Transport's 'Manual for Streets' replaced their general road and street design guidance manual Design Bulletin 32 and 'Places Streets and Movement' in 2007, with specific focus on lightly trafficked residential streets and highways.

5.8 'A key consideration for achieving sustainable development is how the design can influence how people choose to travel. Designers and engineers need to respond to a wide range of policies aimed at making car use a matter of choice rather than habit or dependence. Local transport plans and movement strategies can directly inform the design process as part of the policy implementation process.'

5.9 'By creating linkages between new housing and local facilities and community infrastructure, the public transport network and established walking and cycling routes are fundamental to achieving more sustainable patterns of movement and to reducing people's reliance on the car.'

Local Policy

Solihull Local Plan 2011 – 2028

5.10 The Solihull Local Plan was adopted in 2013, and replaces policies from the previous development plan, the Solihull Unitary Development Plan 2006. This Local Plan was prepared in accordance with national policies, such as the NPPF and other local policies such as the West Midlands Regional Spatial Strategy. The plan recognises several challenges that need to be addressed and sets out objectives that need to be achieved in order to combat and overcome such challenges.

5.11 Challenge H relates to transport and states transport issues which need to be addressed, these include: congestion at peak times*, 'poor pedestrian and cycle connectivity between communities, retail, and employment centres'*, '*poor north-south sustainable transport links'*, and '*the physical, behavioural and perceptual barriers'* that prevent people from utilising more sustainable forms of transport such as walking, cycling and public transport.

5.12 The plan presents a number of objectives to achieve in order to combat the aforementioned challenges, such as: managing '*transport demand and reducing car reliance'*, '*enable and increase the modal share of all forms of sustainable transport*', as well as improving '*accessibility and ease of movement for all users of services, facilities, jobs and green infrastructure'*.

5.13 More long term and major transport initiatives are planned for the future, and the Council wishes to influence overall travel behaviour to aid in the management and reduction of congestion and greenhouse gas emissions. This is intended to be done through the Smarter Choices Programme, which is concerned with how research into behavioural change and marketing techniques can be used in order to encourage a greater shift to sustainable modes of travel.

5.14 It is also planned that the Council will work alongside transport providers and businesses in order to '*increase the proportion of employees and visitors accessing key destinations by public transport, walking, and cycling.*'

5.15 Such objectives are further discussed in the plan through the medium of Policies, which address the current issues the Council is facing in the transport sector and set out in greater

detail the plans of the council to promote and increase use of sustainable travel modes. Policies P7 and P8 are the ones concerned with the transport section of the Plan.

5.16 Policy P7 in particular, makes provisions for new developments, and states that it should be '*focused in the most accessible locations and seek to enhance existing accessibility levels and promote ease of access.*' Additionally, the Plan states that there is an expectation that '*improvements to local public transport provision, cycling and or/walking measures will be sought in association with development proposals which do not meet the accessibility criteria set out by this policy*.'

5.17 It is clear therefore that the Council is dedicated to the promotion and improvement of usage of sustainable modes of travel, as is evidenced by the provisions made in the Local Plan, with regards to the transportation sector.

Solihull Local Plan Review

5.18 Since the adoption of the Solihill Local Plan a successful legal challenge has resulted in the overall housing requirement being deleted and remitted back to the Council for reconsideration. As a result, the Council is undertaking a Local Plan Review.

High Speed Rail 2 (HS2)

5.19 Government plans for Phase One of HS2 have been granted, and this section of the route is expected to open by 2026. The first station outside of London to be built is in Solihull on land adjacent to the M42 and opposite the NEC, with the Interchange station constructed on land currently in the green belt.

North Solihull Strategic Framework 2005

5.20 The North Solihull Strategic Framework was adopted in February 2005 and is Supplementary Planning Guidance accompanying the Solihull Local Plan. One of the Strategic Framework's primary objectives is delivering long term and sustainable travel options, with a focus on the *'improvements to and ease of transfer between different modes of travel'*.

5.21 A way in which the Strategic Framework can achieve such aims is through '*locating and concentrating complementary land uses in accessible locations to encourage linked trips and sustain a viable level of usage to support public transport routes.*' Additionally, there are

plans for a new long-distance footpath and cycleway to be integrated along the eastern boundary of North Solihull.

West Midlands Local Transport Plan 2011 – 2026

5.22 The West Midlands Local Transport Plan is a statutory document, setting out the transport strategy and policies for the West Midlands Metropolitan Area. According to this LTP, '*transport is about providing good connectivity through efficient networks that support the everyday needs of people, businesses and organisations*.'

5.23 The Local Transport Plan understands the difficulties that come with attempting to combat congestion and car reliance. It states that the only ways in which this issue can be tackled is through a multi-pronged approach to change travel behaviour and offer up viable alternatives to use of the private car.

5.24 In order to combat transport issues, the LTP sets out several objectives and policies, as well as a programme of transport interventions which will work towards achieving those objectives. Such objectives, the LTP states, '*are closely aligned with national transport goals*.'

5.25 Some of the objectives set out by the LTP include the implementation of the Rapid Transit Network, supporting the runway extension of Birmingham Airport, as well as supporting a strategic Park & Ride provisions at appropriate locations for the relief of congestion in the Metropolitan Area impacting on the strategic highway network and the environment.

5.26 The LTP also aims to provide upgrades for the rail and stations alongside the proposed Metro extensions in Birmingham and Wolverhampton city centres. Another way in which the LTP aims to promote the use of sustainable modes of travel is through the pursuance of a parking management and pricing approach, which would serve to '*deter long stay off-street public parking in areas with high public transport accessibility.*'

5.27 The LTP makes obvious its involvement in and dedication to providing choices of travel that are more sustainable and accessible, which is clearly in line with national policy, as well as other local policy documents.

6 TRIP CHARACTERISTICS

6.1 A high-level assessment has been undertaken to assess the effect of up to 1,200 residential dwellings, primary school and ancillary retail/community facilities on the local highway network.

6.2 The mode split for movement will fluctuate by time of day and day of week. It will be influenced by the measures proposed as part of the proposals, the general approach to transport and parking by Solihull Metropolitan Borough Council in the town centre and other locations, the changes in mind-set that the Council expect to occur over time, and the degrees of congestion and delay on the car driver network.

6.3 However, for the purposes of assessment, and to inform the evidence, this Transport Report provides a forecast of the likely trip generation, taking into account trips by journey purpose (education, employment, leisure), the potential for internalisation, taking into the account the proposed employment floor space, the local centre and the school, and the likely levels of inbound and outbound commuting from the proposals. The potential effect of Personalised Travel Planning in influencing the travel choice and mode split for both existing residents and future residents is also considered.

Existing Traffic Data

6.4 To establish an approximation of existing traffic levels baseline traffic data for the local area has been extracted from Transport Assessment for the TRW planning application to the north of Dog Kennel Lane (application ref: PL/2018/02731/MAJFOT).

6.5 The 2018 baseline data has been obtained from surveys undertaken on Wednesday 16th March 2016 and growthed using TEMPro.

6.6 Traffic Growth forecasts within the UK are based on the DfT's National Trip End Model (NTEM) the current version being NTEM 7.2 and presented within the Trip End Model Presentation Program (TEMPro) the current version being TEMPro 7.2. The forecasts include projections on:

- Population;
- Employment;
- Households by car ownership;

- Trip ends; and
- Simple traffic growth factors.

6.7 The TEMPro Growth assumptions data is generated by the DfT making use of a standard set of planning assumptions. These include growth forecasts for the number of Households (HH) and Jobs for each of the geographical units in the data.

6.8 The TEMPro factors used are shown below in **Table 6.1**.

Table 6.1 – TEMPro Factors

Year	AM Peak	PM Peak
2016-2018	1.0242	1.0235

6.9 The factors in **Table 6.1** have then been applied to all vehicular movements on the network to get achieve a baseline year of 2018.

Residential Development

6.10 The starting point for understanding the potential demand from the proposed residential development is to derive a total people trip rate. The trip rates for the proposed development have been derived from the TRICS database. TRICS is an industry-wide recognised database containing trip rate information, and interrogating the TRICS database to calculate trip rates by land use, represents an established and accepted methodology. It is widely used as part of the planning process by both developer consultants and local authorities.

6.11 TRICS contains over 6,300 transport surveys at a wide range of development sites across all regions of the UK and Ireland. A filtering system allows sites to be selected, which fit within required parameters and can therefore be considered representative of a development site.

6.12 To calculate residential trip rates for the site the following parameters have been set:

- Residential trip rates – Houses Privately Owned;
- Location – UK (excluding London and Ireland);
- Weekday surveys;
- Number of dwellings – 100 plus; and
- Location type – Edge of Town / Suburban.

6.13 In total, 38 sites fell within these parameters, and produced an average total people trip rate as summarised in **Table 6.2**. Full TRICS data is contained at **Appendix C.**

Table 6.2 – Residential Total People Trip Rate for Houses Privately Owned (per dwelling)

	Arrivals	Departures	Total
AM (08:00-09:00)	0.189	0.784	0.973
PM (17:00-18:00)	0.592	0.287	0.879

6.14 The resulting total people trip generation for 1,200 residential dwellings is shown in **Table 6.3.**

Table 6.3 – Residential Total People Trip Generation for Houses Privately Owned (1,200 dwellings)

	Arrivals	Departures	Total
AM (08:00-09:00)	227	941	1168
PM (17:00-18:00)	710	344	1055

6.15 To understand the mode split of these trips, we first need to understand the journey purpose.

Journey Purpose

6.16 The National Travel Survey, which consists of a face-to-face interview and a seven day self-completed written travel diary, allows us to understand trips by journey purpose, and the mode split of trips for each purpose.

6.17 A summary of trips by journey purpose in the AM and PM peak periods is provided in **Table 6.4**.

Table 6.4 – National Travel Survey – Trips by Journey Purpose

Start Time	Commuting	Business	Education	Escort education	Shopping	Other personal business and escort	Visiting friends/ entertainment/ sport	Holiday/ Day trip/ Other
AM (08:00-08:59)	22%	3%	29%	21%	4%	14%	3%	3%
PM (17:00-17:59)	34%	4%	3%	2%	12%	20%	20%	6%

6.18 **Table 6.4** demonstrates that trips can be classified into three general journey purposes, commuting, education, leisure / recreation, with the proportion of trips for each purpose as summarised in **Table 6.5**.

Table 6.5 – Trips by Journey Purpose – Commuting, Education, Leisure / Recreation

Start Time	Commuting	Education	Leisure / Recreation
AM (08:00-08:59)	26%	50%	24%
PM (17:00-17:59)	38%	4%	58%

6.19 Distributing the total number of trips summarised in **Table 6.3** by the journey purpose summarised in **Table 6.5**, results in a breakdown of trips by journey purpose as summarised in **Table 6.6.**

Table 6.6 – Total Trips by Journey Purpose

Time Period	Commuting		Education		Leisure / Recreation	
	Arrivals	Departure	Arrivals	Departure	Arrivals	Departure
AM (08:00-08:59)	59	245	113	470	54	226
PM (17:00-17:59)	270	131	28	14	412	200

Commuting Trips

6.20 Using the data available from the NTS, a judgement has been made that in the AM peak period 26% of trips are for the purposes of commuting, increasing to 38% of trips in the PM peak period.

6.21 In order to estimate an appropriate mode split for the external employment trips, the 'Method of Travel to Work' Census data for 2011 for the 'Shirley South ward (the most comparable ward for which data is available) has been reviewed. The recorded mode split from the Census data is summarised in **Table 6.9.**

Table 6.9 – 'Shirley South' – Census Data 2011 – Method of Travel to Work

Mode	Percentage
Train	5%
Bus, Minibus or Coach	7%
Taxi	0%
Motorcycle, Scooter or Moped	0%
Driving a car or van	72%
Passenger in a car or van	5%
Bicycle	2%
On foot	8%
Other method of travel to work	0%
Total	100%

6.22 The proposed development is located within close proximity of a number of local employment sites. These include TRW, Monkspath Business Park and Solihull Retail Park. Further review of the 2011 Census data for the area demonstrates that 8% of residents work at these local employment sites. Therefore, the car driver trip rate has been reduced by 8% and has been added equally to the walking, cycling and bus trips.

6.23 Based on the methodology set out above, the external employment trips in a trip demand as summarised in **Table 6.10.**

Table 6.10 – Mode Split of 'External' Employment Trips

	AM Peak		PM Peak	
	Arrivals	**Departures**	**Arrivals**	**Departures**
Train	3	13	15	7
Bus, Minibus or Coach	5	21	24	11
Taxi	0	1	1	1
Motorcycle, Scooter or Moped	0	1	1	1
Driving a car or van	39	163	180	87
Passenger in a car or van	3	12	13	6
Bicycle	2	8	9	4
On foot	6	23	26	12
Other method of travel to work	0	1	1	1
Total	59	245	270	131

6.24 The distribution of these trips is considered later in this section.

Education Trips

6.25 The NTS demonstrates that in the AM peak 50% of journeys are undertaken for the purpose of education, reducing to 4% in the PM peak. Of these journeys, we have assumed that approximately 60% relate to primary education, and 40% to secondary education.

6.26 It is proposed to provide a new primary school on site to serve the development, which means that all future residents of the development will have a primary school within reasonable walking distance of their house. Therefore, for the purposes of assessment, we have applied the following mode split for primary school trips as shown in **Table 6.11.**

Table 6.11 – Primary Education Mode Split (NTS)

Primary Education	
Mode	**Split**
Walk	60%
Bicycle / Scoot	30%
Car / van	10%
All modes	100%

6.27 To be robust for the purposes of assessment, for the 41% car mode split, we have assumed that all children are driven to school individually, ignoring the potential of car sharing for journeys to and from school.

6.28 In terms of secondary education, the nearest secondary school to the site is Light Hall School which is located 1.4km (18-minute walk) from the site. It is likely that the majority of students from the site will walk to school. For the purposes of assessment, we have applied the following mode split for secondary school trips based on NTS data for education trips of all distances. This is shown in **Table 6.12.**

Table 6.12 – Secondary Education Mode Split (NTS)

Secondary Education	
Mode	**Split**
Walk	35%
Bicycle	4%
Car / van	26%
Private bus	13%
Local bus	18%
Surface rail	2%
Other transport	2%
All modes	100%

6.29 Once again, for the car mode split, we have ignored the potential for car sharing for journeys to and from school.

6.30 Applying the mode splits in **Table 6.11** and **Table 6.12** to the number of educational trips contained in **Table 6.6**, results in the multi-modal trip demand for the purpose of educational trips, as summarised in **Table 6.13.**

Table 6.13 – Educational Multi-Modal Trip Demand

	AM Peak		PM Peak	
Mode	**Arrivals**	**Departures**	**Arrivals**	**Departures**
Walk	57	236	14	7
Bicycle	22	91	6	3
Car / van	19	77	5	2
Private bus	6	24	1	1
Local bus	8	34	2	1
Surface rail	1	4	0	0
Other transport	1	5	0	0
All modes	113	470	28	14

6.31 For the purposes of assessment, and in line with the masterplan proposals, we have assumed a two-form entry primary school will be provided on site. Therefore, the primary school demand will remain within the site, and the secondary school demand will travel off site.

6.32 The distribution of the external trips on the network is considered later in this section.

Leisure / Recreation

6.33 The NTS data demonstrates that in the AM peak 24% of journeys are undertaken for the purpose of leisure / recreation (shopping, personal business, visiting friends, holiday / day trips etc), increasing to 58% in the PM peak.

6.34 The proposals include for a Local Centre, including retail and community facilities, and the scale of the development in terms of the number of dwellings, will ensure a number of trips are internalised within the site.

6.35 For the purpose of assessment, we have made a judgement that 15% of leisure / recreation trips are 'internal' trips which remain within the site, and 85% are 'external' trips which

travel off site. For the internal trips we have applied a mode split of 60% walking / 40% cycling. For the external trips, we have applied the same mode split used to distribute the 'employment' trips, as summarised in **Table 6.9**.

6.36 A breakdown of the 'internal' leisure / recreation trips is provided in **Table 6.14**. A breakdown of the 'external' leisure / recreation trips is provided in **Table 6.15**.

Table 6.14 – Mode Split of 'Internal' Trips

Mode	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Walking	5	20	37	18
Cycling	3	14	25	12
Total	8	34	62	30

Table 6.15 – Mode Split of 'External' Trips

	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Train	3	10	19	9
Bus, Minibus or Coach	3	13	24	12
Taxi	0	1	1	1
Motorcycle, Scooter or Moped	0	1	2	1
Driving a car or van	33	139	254	123
Passenger in a car or van	2	9	17	8
Bicycle	1	3	5	3
On foot	3	14	26	13
Other method of travel to work	0	1	2	1
Total	46	192	350	170

6.37 The total breakdown of leisure / recreation trips, combining all internal and external trips is provided in **Table 6.16.**

Table 6.16 – Total Leisure / Recreation Trips – 'Internal' and 'External'

	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Train	4	13	24	12
Bus, Minibus or Coach	5	16	30	15
Taxi	0	1	2	1
Motorcycle, Scooter or Moped	0	1	2	1
Driving a Car or Van	56	175	317	154
Passenger in a Car or Van	4	12	22	11
Cycling	7	21	37	18
Walking	14	44	79	39
Other Method of Travel to Work	0	1	2	1
Total	91	284	515	251

Total Residential Demand

6.38 The total residential demand, combining all journey purposes (employment, education, leisure / recreation) is summarised in **Table 6.17.**

Table 6.17 – Total Residential Demand

	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Train	7	28	34	16
Bus, Minibus or Coach	22	92	51	25
Taxi	0	2	3	1
Motorcycle, Scooter or Moped	1	2	3	1
Driving a Car or Van	91	379	438	212
Passenger in a Car or Van	5	22	31	15
Cycling	28	116	45	22
Walking	71	294	103	50
Other Method of Travel to Work	2	7	3	1
Total	227	941	710	344

6.39 The breakdown of the total residential demand, in terms of internal and external trips, is summarised in **Table 6.18** and **Table 6.19** respectively.

Table 6.18 – Total Internal Residential Trips

	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Train	0	0	0	0
Bus, Minibus or Coach	0	0	0	0
Taxi	0	0	0	0
Motorcycle, Scooter or Moped	0	0	0	0
Driving a Car or Van	7	28	2	1
Passenger in a Car or Van	0	0	0	0
Cycling	24	98	30	14
Walking	46	190	47	23
Other Method of Travel to Work	0	0	0	0
Total	76	316	79	38

Table 6.19 – Total External Residential Trips

	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Train	7	28	34	16
Bus, Minibus or Coach	22	92	51	25
Taxi	0	2	3	3
Motorcycle, Scooter or Moped	0	1	1	1
Driving a Car or Van	85	351	436	212
Passenger in a Car or Van	5	22	31	15
Cycling	4	18	15	7
Walking	25	104	56	27
Other Method of Travel to Work	2	7	3	1
Total	150	624	630	307

Primary School

6.40 It is likely that the primary school will be two-form entry, and it is expected will almost entirely serve the proposed residential development. Therefore, there will be no external student trips to or from the primary school.

6.41 In terms of staff demand, a judgement has been made that approximately 50 teachers will travel to the primary school in the AM peak period, and travel from the primary school in the PM peak period.

6.42 Applying the 'Method of Travel to Work' Census data for 2011 for the 'Solihull Blythe' ward to the forecast teacher demand, results in a demand breakdown as summarised in **Table 6.20**.

Table 6.20 – Primary School Teacher Demand

	AM Peak		PM Peak	
	Arrivals	**Departures**	**Arrivals**	**Departures**
Train	3	0	0	3
Bus, Minibus or Coach	3	0	0	3
Taxi	0	0	0	0
Motorcycle, Scooter or Moped	0	0	0	0
Driving a car or van	36	0	0	36
Passenger in a car or van	2	0	0	2
Bicycle	1	0	0	1
On foot	4	0	0	4
Other method of travel to work	0	0	0	0
Total	50	0	0	50

Local Centre

6.43 The local centre will include small scale retail and community facilities designed to serve the local community, and it is not expected that the local centre will attract any external demand. Indeed, it is forecast that the local centre will internalise a proportion of trips, thus enhancing the sustainability credentials of the proposals.

Total Demand

6.44 A summary of the total forecast demand, taking into account the residential demand, the primary school demand and the ancillary nature of the local centre, is summarised in **Table 6.21.**

Table 6.21 – Forecast Total Demand of Development Proposals

	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Train	9	28	34	19
Bus, Minibus or Coach	26	92	51	28
Taxi	1	2	3	1
Motorcycle, Scooter or Moped	1	2	3	2
Driving a Car or Van	128	379	438	249
Passenger in a Car or Van	8	22	31	17
Cycling	29	116	45	22
Walking	75	294	103	54
Other Method	2	7	3	2
TOTAL	277	941	710	394

6.45 The total 'internal' demand and 'external' demand is summarised in **Table 6.22** and **Table 6.23** respectively.

Table 6.22 – Forecast 'Internal' Demand

	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Train	0	0	0	0
Bus, Minibus or Coach	0	0	0	0
Taxi	0	0	0	0
Motorcycle, Scooter or Moped	0	0	0	0
Driving a Car or Van	7	28	2	1
Passenger in a Car or Van	0	0	0	0
Cycling	24	98	30	14
Walking	46	190	47	23
Other Method	0	0	0	0
Total	76	316	79	38

Table 6.23 – Forecast 'External' Demand

	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Train	9	28	34	19
Bus, Minibus or Coach	26	92	51	28
Taxi	1	2	3	3
Motorcycle, Scooter or Moped	1	1	1	2
Driving a Car or Van	121	351	436	248
Passenger in a Car or Van	8	22	31	17
Cycling	5	18	15	8
Walking	29	104	56	31
Other Method	2	7	3	2
Total	200	624	630	357

Trip Distribution

6.46 In the absence of any other more reliable data, to provide an indication of the likely distribution of vehicle traffic to / from the development site 2011 census data has been used to forecast where future residents in this area of Solihull may work and travel to, and where future employees may commute from.

6.47 It has been judged that the vehicle demand for the secondary school will travel to Light Hall School. The vehicle demand for the primary school will based on the same census distribution as for employees travelling to and from the employment development at the site.

6.48 Appropriate judgements relating to destinations, distributions and route choice through the local and strategic highway network have been made on this basis.

6.49 The spine road will be provided linking the site access junctions at the A34 Stratford Road and Tanworth Lane although this route will be designed so as not to act as a convenient thoroughfare through site for vehicles, although vehicles will be able to use the most convenient access.

6.50 The distribution of development trips is included at **Appendix D.**

Fettered Demand

6.51 The proposals will include a number of measures designed to promote and encourage active and sustainable travel, in line with policy. These include:

- Personalised Residential and School Travel Planning; and
- Travel Information Provision.

6.52 The forecast level of unfettered external trip demand, which is summarised in **Table 6.23,** ignores the potential effect of these measures, which can be significant.

6.53 For example, research demonstrates that PTP can affect a proportional reduction in car driver mode split of well in excess of 10%, and the proposed infrastructure could initiate a step change in how people choose to travel in this area of Solihull, particularly for local journeys.

6.54 A conservative estimate is that the measures proposed as part of the development will result in a 2% mode shift to each of the following modes – walking, cycling, bus, car sharing and rail – as a consequence of reducing the overall car driver mode split by 10%.

6.55 The forecast level of fettered demand, taking into account the measures proposed as part of the development, is summarised in **Table 6.26.**

Table 6.26 – Forecast Level of Fettered Trip Demand Following Mitigation

	AM Peak		PM Peak	
	Arrivals	**Departures**	**Arrivals**	**Departures**
Train	12	35	43	24
Bus, Minibus or Coach	28	99	60	33
Taxi	1	2	3	3
Motorcycle, Scooter or Moped	1	1	1	2
Driving a Car or Van	109	316	393	223
Passenger in a Car or Van	10	29	39	22
Cycling	7	25	24	13
Walking	31	111	65	36
Other Method of Travel to Work	2	7	3	2
Total	200	624	630	357

7 HIGHWAY NETWORK ASSESSMENT

7.1 It is understood that SMBC are currently undertaking a comprehensive modelling assessment to assess the impact of the Local Plan sites on the highway network. Details of the assessment and the modelling results are not currently available.

7.2 In the absence of this model, an initial assessment has been undertaken below which is based on standalone junction assessments on the local highway network.

Scope of Assessment

7.3 The scope of assessment comprises the following junctions:

- A34 Stratford Road/Monkspath Hall Road/Site Access Roundabout;
- Dog Kennel Lane/Site Access Junction (east);
- Dog Kennel Late/Site Access Junction (west); and
- Dickens Heath Road/Tanworth Lane/Site Access Roundabout.

7.4 To understand the capacity and potential future performance of the proposed access junctions the proposed access junctions as listed in paragraph 7.1 have been assessed using ARCADY and PICADY.

7.5 PICADY is a computer software modelling programme which forecasts capacity, queuing and delays at give way junctions. The output from these models is presented in terms of RFC – ratio of flow to capacity and queue lengths. ARCADY is a computer software modelling programme which forecasts capacity, queuing and delays at roundabout junctions. The output from these models is presented in terms of RFC and queue lengths. An RFC of 1.0 for a peak hour assessment indicates that the demand flow in that hour equals the capacity of that part of the junction in that hour.

7.6 The ARCADY and PICADY modelling software, nor indeed any traffic modelling software, is not an exact science, but rather a tool to help make informed judgements regarding the functionality of a junction. Certainly, within ARCADY, RFCs exceeding 0.9 cause the model to become unstable, and as such, the outputs should be considered with caution and should form the basis from which informed judgements can be made.

7.7 Traffic models can however act as a useful tool in making a judgement to be made on the likely effects of the proposed development but this needs to be balanced against the overall movement picture and matters pertaining to travel choice, sustainability and behavioural change which are fully policy compliant.

7.8 The junction assessments have been undertaken for the following scenarios:

- 2018 Base;
- 2018 Base + Committed;
- 2018 Base + Committed + Development.

Committed Development

The Green

7.9 A planning application was submitted in 2018 for up to 330 dwellings and 100,000 sqft car dealership dear (application reference: PL/2018/02731/MAJFOT) at the TRW site to the north of Dog Kennel Lane. As a result of the development proposals, 100% of the existing B1a office traffic was removed from the site.

7.10 As a result of this, the Transport Assessment concluded that in the final development scenario, there was a decrease in the volume of traffic at the majority of the junctions assessed apart from a moderate increase in trips at two junctions within the study area.

7.11 The traffic effect of the committed development has been considered as part of the assessment for the proposed development at Dog Kennel Lane.

Junction Modelling Results

A34 Stratford Road/Monkspath Hall Road/Site Access Roundabout

7.12 The A34 Stratford Road/Monkspath Hall Road junction has been assessed with and without the proposed development. The results are shown in **Table 7.1**.

Table 7.1 – A34 Stratford Road/Monkspath Hall Road/Site Access Roundabout – Modelling Results

Arm	AM		PM	
	RFC	Q (Veh)	RFC	Q (Veh)
2018 Base				
Monskpath Road	0.84	6	0.98	22
A34 Stratford Road S	0.92	11	0.87	7
A34 Stratford Road N	1.12	111	0.79	4
2018 Base + Committed				
Monskpath Road	0.84	5	0.94	14
A34 Stratford Road S	0.88	7	0.89	8
A34 Stratford Road N	1.15	130	0.75	3
2018 Base + Development				
Monskpath Road	0.98	20	1.32	246
A34 Stratford Road S	1.27	305	1.20	228
Site Access	1.28	13	1.94	64
A34 Stratford Road N	1.35	350	1.14	143
2018 Base + Committed + Development				
Monskpath Road	0.96	15	1.31	236
A34 Stratford Road S	1.21	231	1.23	256
Site Access	1.24	12	1.95	70
A34 Stratford Road N	1.41	415	1.08	93

7.13 The results in **Table 7.1** forecast that on this basis there will be greater demand for car movement in a single hour than the junction can accommodate within that hour and therefore the queue and journey time at the end of the period will be greater than at the beginning.

7.14 However, these results ignore any sustainable travel measures and personalised travel planning that will be implemented.

7.15 The model is not capable of making judgements about how people will act to minimise that inconvenience. The judgement based on these results is that the capacity of this junction will limit movement on the network within that period of assessment, meaning that there will be some additional commuter driver inconvenience at around this time and the trend will be to get mobility in other ways (compared with driving a car) as this will be more attractive and more likely within this period. The sustainable travel measures and personalised travel planning make that easier.

7.16 In this basic mathematical assessment, the '2018 Base' flows have been derived from the 2016 survey data used in the TRW planning application. TEMPro growth has been applied to these flows to obtain the 2018 flows, however this junction is already shown to be at capacity in the 2018 scenario meaning that it is also likely nearing or at capacity in a 2016 scenario. This reinforces the earlier judgement about this part of the network limiting capacity, and mobility being increasingly achieved through other methods and times.

7.17 Given that the junction is modelled to exceed its design capacity in the baseline scenario it is unrealistic to assume that there will be any growth on the local transport network, as road users act to minimise their own inconvenience and chose alterative travel routes, times, and modes. This is one of those scenarios, which is common throughout urban areas within the UK, where it may reasonably be expected that it is roadspace that significantly dictates changes in traffic volume in the commuter peak, with a much weaker link between traffic demand and economic growth (in accord with the aspirations of planning policy).

7.18 This junction is part of the Council's wider masterplan for development in this area and therefore is should not be considered a constraint for necessary growth in this region.

7.19 The need for additional tarmac to accommodate a larger vehicle demand which will only occur for a few minutes a day will cause detriment to pedestrian and cyclist demand across the course of the whole day. During the busy peaks, car drivers will then act to minimise their inconvenience by travelling outside the standard AM and PM peak hour or changing to sustainable travel. Therefore, the initial modelled constraints at this junction should not be considered a barrier for development.

Dog Kennel Lane/Site Access Junction (east)

7.20 The proposed site access junction on Dog Kennel Lane has been assessed. The results are shown in **Table 7.2**.

Table 7.2 – Dog Kennel Lane/Site Access Junction (east) – Modelling Results

Arm	AM		PM	
	RFC	Q (Veh)	RFC	Q (Veh)
2018 Base + Development				
B-AC	0.35	1	0.86	5
C-AB	0.06	1	0.09	1
2018 Base + Committed + Development				
B-AC	0.33	1	0.85	5
C-AB	0.05	1	0.09	1

A = Dog Kennel Lane E, B = Site Access, C = Dog Kennel Lane W

7.21 The results in **Table 7.2** demonstrate that the proposed site access junction is sufficient to accommodate the development traffic flows, with a maximum RFC of 0.86, while it is above the preferred maximum RFC of 0.85, and the theoretical capacity of the junction is when the RFC reaches 1.00. The maximum forecast queue is 5 vehicles on the site access arm. This is considered acceptable.

Dog Kennel Late/Site Access Junction (west)

7.22 The proposed site access junction on Dog Kennel Lane has been assessed. The results are shown in **Table 7.3**.

Table 7.3 – Dog Kennel Lane/Site Access Junction (west) – Modelling Results

Arm	AM		PM	
	RFC	Q (Veh)	RFC	Q (Veh)
2018 Base + Development				
B-AC	0.34	1	0.81	4
C-AB	0.05	1	0.08	1
2018 Base + Committed + Development				
B-AC	0.32	1	0.78	3
C-AB	0.05	1	0.08	1

A = Dog Kennel Lane E, B = Site Access, C = Dog Kennel Lane W

7.23 The results in **Table 7.3** demonstrate that the proposed site access junction can accommodate the demand flows within the assessed period with a maximum RFC of 0.81. This junction is unlikely to limit capacity.

Dickens Heath Road/Tanworth Lane/Site Access Roundabout

7.24 The Dickens Heath Road/Tanworth Lane/Site Access Roundabout has been assessed with and without the proposed development. The results are shown in **Table 7.4**.

Table 7.4 – Dicken Heat Road/Tanworth Lane/Site Access Roundabout – Modelling Results

Arm	AM		PM	
	RFC	Q (Veh)	RFC	Q (Veh)
2018 Base				
Tanworth Lane N	0.32	1	0.71	3
Tanworth Lane S	0.58	2	0.55	2
Dicken's Heath Road	0.79	4	0.36	1
2018 Base + Committed				
Tanworth Lane N	0.32	1	0.68	3
Tanworth Lane S	0.51	2	0.53	2
Dicken's Heath Road	0.68	3	0.36	1
2018 Base + Development				
Tanworth Lane N	0.36	1	0.80	4
Site Access	0.10	1	0.25	1
Tanworth Lane S	0.63	2	0.64	2
Dicken's Heath Road	0.84	5	0.39	1
2018 Base + Committed + Development				
Tanworth Lane N	0.36	1	0.77	4
Site Access	0.10	1	0.24	1
Tanworth Lane S	0.55	2	0.62	2
Dicken's Heath Road	0.72	3	0.39	1

7.25 The results in **Table 7.4** demonstrate that the proposed site access junction is sufficient to accommodate demand flows, with a maximum RFC of 0.84.

7.26 Further to this, the queueing would only increase by 1 additional vehicle on a single existing arm in both the AM and PM peaks when considering the development impact.

Summary

7.27 The initial highway network assessment demonstrates that there would be some capacity constraints on the local highway network as a result of the proposed development. This may be a benefit in terms of reducing overall congestion within the local area, and making best use of the sustainability, local living and healthy living aspirations. Peak periods are likely to grow as some temporal shift in mobility happens.

7.28 When considering the impacts of development, it is accepted that it is not the purpose of planning policy to protect the convenience of the private car user. Instead, policy is focussed on seeking to ensure that development is located in appropriate and sustainable locations, close to local facilities and with a choice of travel modes. This site meets that criteria and it is

noted that the Council include the local access junctions, including the A34 roundabout, and that this therefore must not be considered as a barrier to sustainable development in this area in line with national, and local policy.

7.29 Furthermore, numerous sustainable travel initiatives will be implemented at the site in order to influence the travel habits of both new and existing residents in the area. This will be the catalyst for wider sustainability and local living benefits within the area. This will run hand in hand with the general emphasis on mobility and health efficiency promoted by local and national authorities, and will aid in changing attitudes to travel and reducing trips made by single occupancy vehicles.

8 SUMMARY AND CONCLUSION

Summary

8.1 Taylor Wimpey Strategic Land propose to deliver approximately 1,200 new homes and a commercial/retail unit on land to the south of Dog Kennel Lane in Solihull. The site is identified as Site 12 in Solihull MBC's emerging Local Plan.

8.2 This location forms a natural extension of Shirley and takes advantage of the excellent sustainable travel links to local services and transport hubs. Access is achievable by active modes of travel as well as by public transport.

8.3 Vehicular access to the site is proposed to be in a number of locations from the A34 Stratford Road, Dog Kennel Lane and Tanworth Lane. Each junction will be designed to a safe standard and will be subject to a Stage 1 Road Safety Audit (RSA).

8.4 The traffic effect of approximately 1,200 dwellings is forecast to be in the order of 425 and 616 two-way movements in the AM and PM peak hours respectively, although this is considered to be conservative as attitudinal change toward travel progresses. In terms of vehicles this equates to a maximum of 11 vehicles every minute, split between all accesses and in both directions.

8.5 With the changing nature of travel, accounting for generational mindsets and the changing priorities reflected in policy, the potential to create sustainable travel habits for all residents from the outset is excellent. Therefore, delivery of this site should see fewer vehicle trips than forecasted by data from existing sites.

Conclusion

8.6 This is a well-located sustainable site which, in transport terms, is policy compliant.

8.7 The development provides opportunities to create a self-sustaining site offering community facilities suitable for day-to-day living. In this way the site is designed to a liveable standard and the transport case for Mobility provides the options necessary to promote sustainable travel modes before the private vehicle. The Transport Vision sets out some of the ways in which the site will offer travel choice and achieve inclusive mobility for all modes, which will aid in promoting social inclusion and sustainable mobility habits from the outset.

APPENDIX A

Illustrative Masterplan

SHIRLEY HEATH

Connection to Shirley Heath

Existing sports club

Existing allotments

Tanworth Lane

Main entrance to Country Park

Dog Kennel Lane

Connection to The Green

A34 Stratford Road

Existing pedestrian/cycle link to Hillfield Park

HILLFIELD PARK

Connection to Monkspath Business Park

Dickens Heath Road

B4102

Light Hall

Village Green

Potential School Site (2 ha)

Development edge set back from Stratford Road to maintain green character along southern edge

MONKSPATH

Potential Community Cafe

Potential visitor car park

SuDS

Central Green

Connection to Monkspath Business Park

Retained Agricultural Edge

A34 Stratford Road

B4102 Tanworth Lane

DICKENS HEATH

Proposed formal recreation area with club house & parking

Creynolds Lane

Stratford Upon Avon Canal

New residential development currently under construction

CHESWICK GREEN

SHIRLEY GOLF CLUB

RANDALL THORP

LANDSCAPE ARCHITECTURE
ENVIRONMENTAL PLANNING
MASTERPLANNING
URBAN DESIGN

Canada House, 3 Chepstow Street,
Manchester M1 5FW
0161 228 7721 mail@randallthorp.co.uk
www.randallthorp.co.uk

KEY:

- Site boundary
- Existing trees/woodland
- Existing hedgerows
- Existing waterbodies
- Existing Public Rights of Way
- Proposed development cells
- Proposed retail/commercial
- Potential school site
- Proposed vehicular access
- Proposed vehicular access to country park
- Proposed primary spine road
- Proposed secondary roads
- Proposed pedestrian/cycle routes
- Proposed structural woodland planting
- Proposed hedgerow
- Proposed green space
- Proposed country park
- Retained agricultural fields
- Proposed formal sports pitch
- Proposed car park
- Proposed pedestrian and/or cycle connections to surrounding area
- Proposed club house for formal sports pitch
- Existing off-site pedestrian/cycle link to Hillfield Park
- Proposed SuDS

Date: 12.03.19
Drawn by: SR
Checker: DL
Rev by: SR/YH
Rev checker: SR
QM Status: Checked
Product Status: Issue

Taylor Wimpey

Land at Light Hall, Solihull

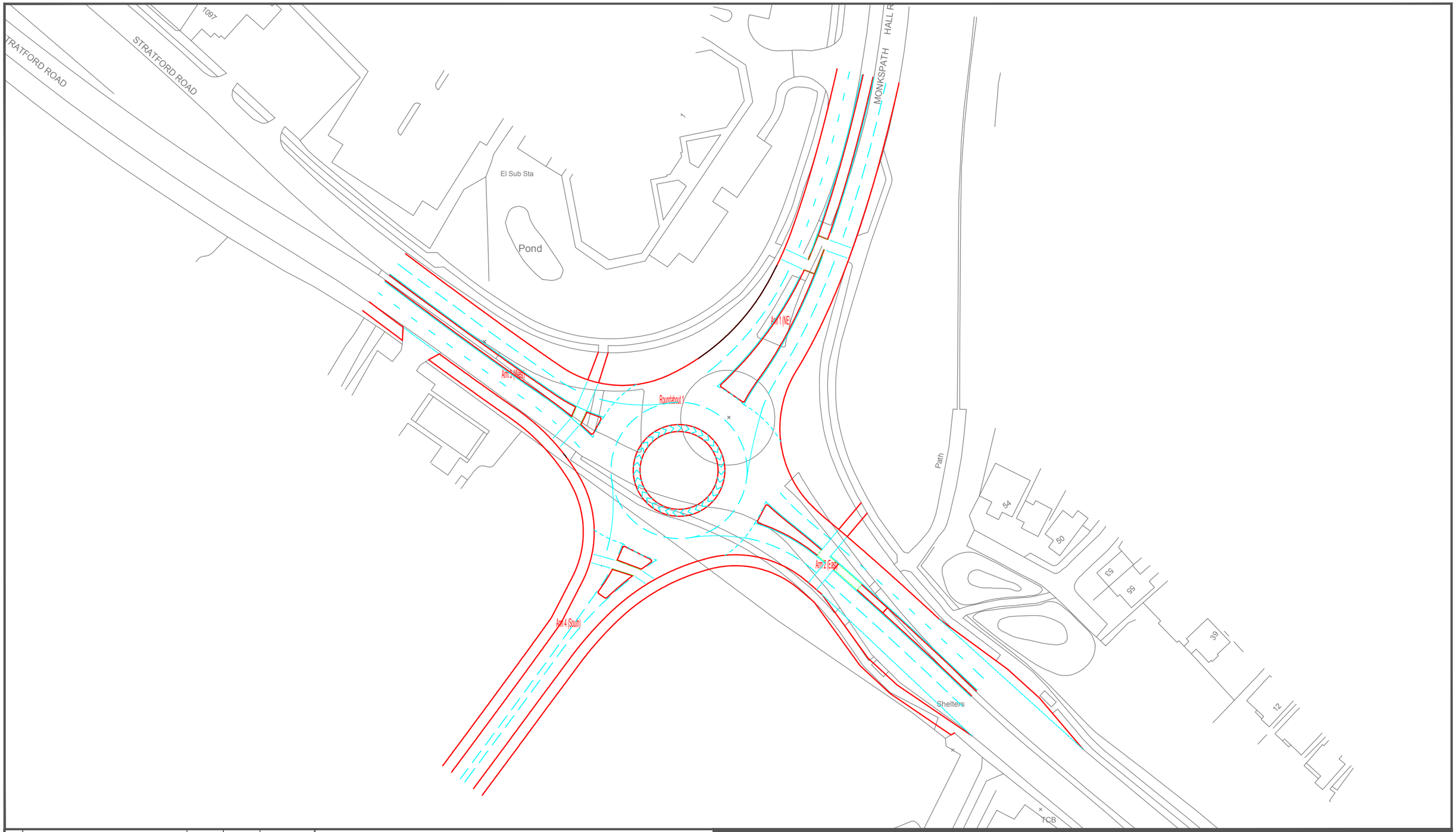
Illustrative Masterplan

Drwg No: 675A-28G

Scale: 1:5,000 @ A2

APPENDIX B

Preliminary Site Access Junctions



REV.	DETAILS	DRAWN	CHECKED	DATE
.	.	.	.	.

Notes:

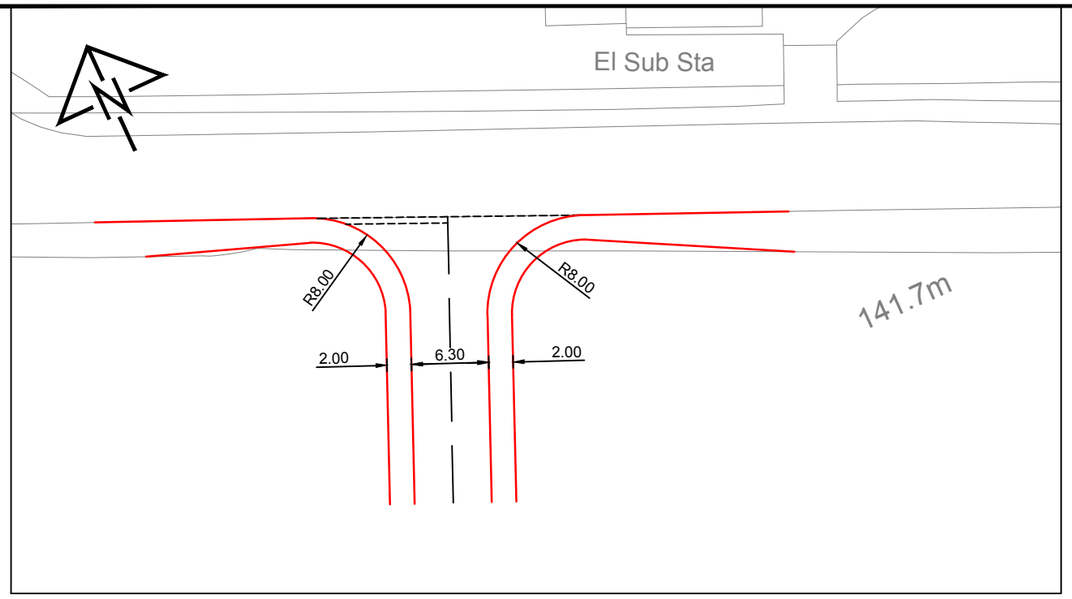
1. This is not a construction drawing and is intended for illustrative purposes only.
2. White lining is indicative only.

Land at Light Hall, Solihull

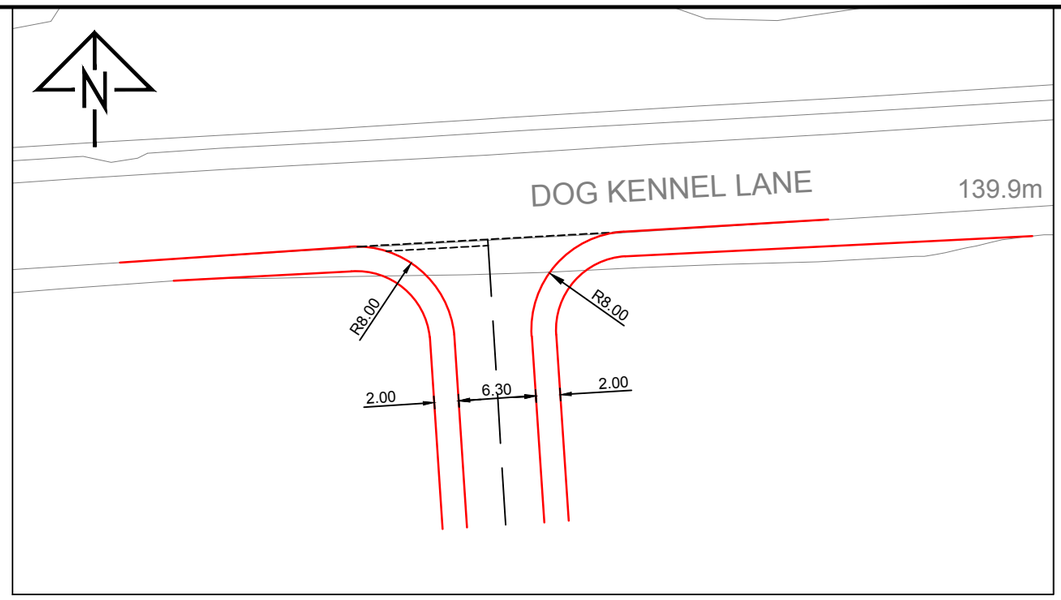
Proposed Site Access - Roundabout Option

vectos
Ground Floor Helmont House, Churchill Way, Cardiff, CF10 2HE
t: 029 2072 0861 e: enquiries@vectos.co.uk

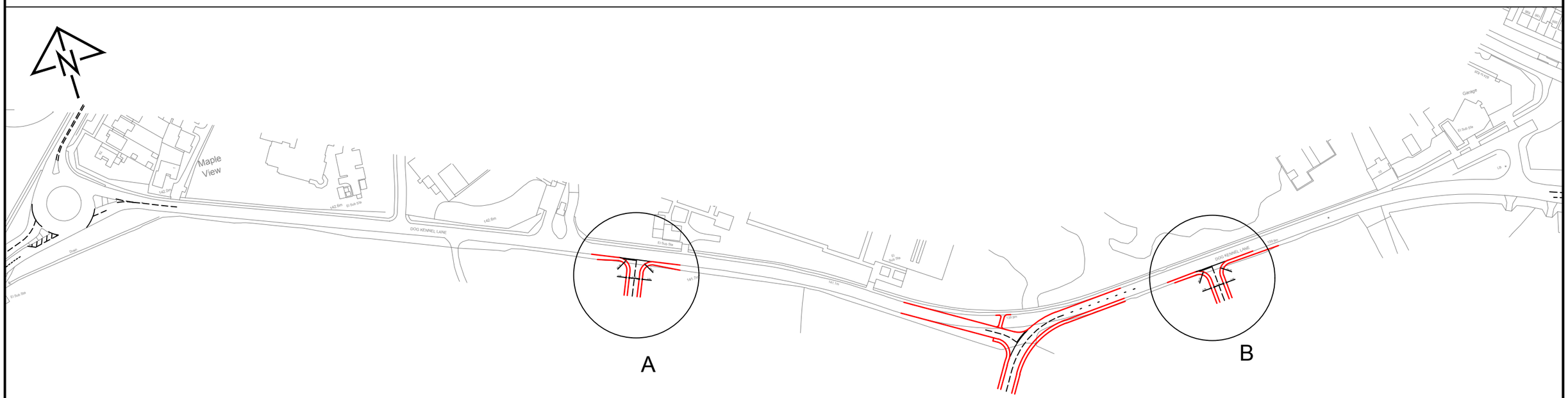
DRAWN:	CHECKED:	DATE:	SCALES:	DRAWING NUMBER:	REVISION:
LJ	CP	13.04.17	1:1000@A3	162088 / A / 09	-



Priority Junction A
Scale 1:500



Priority Junction B
Scale 1:500



Location Plan
Scale 1:2500

REV.	DETAILS	DRAWN	CHECKED	DATE
.	.	.	.	.

Notes:

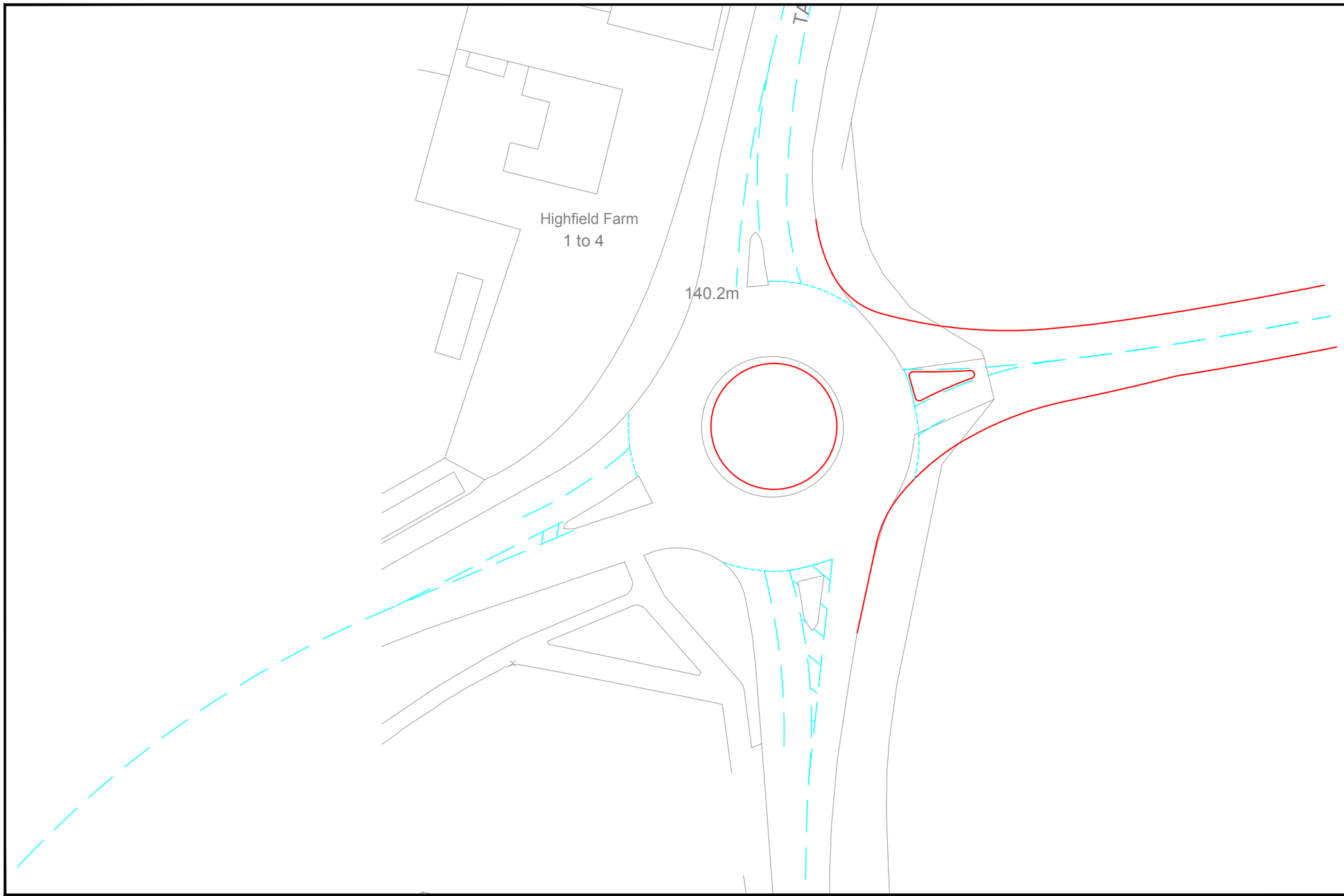
1. This is not a construction drawing and is intended for illustrative purposes only.
2. White lining is indicative only.

Land at Light Hall, Solihull

Priority Junctions - Dog Kennel Lane

vectos
Ground Floor Helmont House, Churchill Way, Cardiff, CF10 2HE
t: 029 2072 0861 e: enquiries@vectos.co.uk

DRAWN:	CHECKED:	DATE:	SCALES:	DRAWING NUMBER:	REVISION:
LT	CP	04.02.19	AS SHOWN@A3	162088 / A / 10	-



REV.	DETAILS	DRAWN	CHECKED	DATE
.	.	.	.	.

Notes:

1. This is not a construction drawing and is intended for illustrative purposes only.
2. White lining is indicative only.

Land at Light Hall, Solihull

Roundabout 1 - Tanworth Lane (Proposed)

vectos
Ground Floor Helmont House, Churchill Way, Cardiff, CF10 2HE
t: 029 2072 0861 e: enquiries@vectos.co.uk

DRAWN:	CHECKED:	DATE:	SCALES:	DRAWING NUMBER:	REVISION:
LJ	CP	28.02.17	1:500@A3	162088 / A / 02	-

APPENDIX C

TRICS Output Data

Calculation Reference: AUDIT-152302-190306-0321

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	2 days
	KC	KENT	3 days
	WS	WEST SUSSEX	4 days
03	SOUTH WEST		
	DV	DEVON	1 days
06	WEST MIDLANDS		
	ST	STAFFORDSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NE	NORTH EAST LINCOLNSHIRE	1 days
	NY	NORTH YORKSHIRE	1 days
11	SCOTLAND		
	FA	FALKIRK	1 days

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

Secondary Filtering 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: 110 to 805 (units:)
Range Selected by User: 100 to 805 (units:)

Parking Spaces Range: Selected: 12 to 1726 Actual: 12 to 1726

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/10 to 05/07/18

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
Wednesday	4 days
Thursday	4 days
Friday	4 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 undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	4
Edge of Town	10

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	13
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.

Secondary Filtering selection:

Use Class:

C3	14 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:

1,000 or Less	1 days
1,001 to 5,000	1 days
5,001 to 10,000	2 days
10,001 to 15,000	6 days
15,001 to 20,000	1 days
20,001 to 25,000	3 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	3 days
50,001 to 75,000	3 days
75,001 to 100,000	3 days
100,001 to 125,000	1 days
125,001 to 250,000	4 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	3 days
1.1 to 1.5	11 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	4 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.

PTAL Rating:

No PTAL Present	14 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 DV-03-A-02 HOUSES & BUNGALOWS DEVON
MILLHEAD ROAD
HONITON

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 116
Survey date: FRIDAY *25/09/15* *Survey Type: MANUAL*

2 ES-03-A-03 MIXED HOUSES & FLATS EAST SUSSEX
SHEPHAM LANE
POLEGATE

Edge of Town
Residential Zone
Total Number of dwellings: 212
Survey date: MONDAY *11/07/16* *Survey Type: MANUAL*

3 ES-03-A-04 MIXED HOUSES & FLATS EAST SUSSEX
NEW LYDD ROAD
CAMBER

Edge of Town
Residential Zone
Total Number of dwellings: 134
Survey date: FRIDAY *15/07/16* *Survey Type: MANUAL*

4 FA-03-A-02 MIXED HOUSES FALKIRK
ROSEBANK AVENUE & SPRINGFIELD DRIVE
FALKIRK

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 161
Survey date: WEDNESDAY *29/05/13* *Survey Type: MANUAL*

5 KC-03-A-04 SEMI-DETACHED & TERRACED KENT
KILN BARN ROAD
AYLESFORD
DITTON
Edge of Town
Residential Zone
Total Number of dwellings: 110
Survey date: FRIDAY *22/09/17* *Survey Type: MANUAL*

6 KC-03-A-06 MIXED HOUSES & FLATS KENT
MARGATE ROAD
HERNE BAY

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 363
Survey date: WEDNESDAY *27/09/17* *Survey Type: MANUAL*

7 KC-03-A-07 MIXED HOUSES KENT
RECULVER ROAD
HERNE BAY

Edge of Town
Residential Zone
Total Number of dwellings: 288
Survey date: WEDNESDAY *27/09/17* *Survey Type: MANUAL*

8 NE-03-A-02 SEMI DETACHED & DETACHED NORTH EAST LINCOLNSHIRE
HANOVER WALK
SCUNTHORPE

Edge of Town
No Sub Category
Total Number of dwellings: 432
Survey date: MONDAY *12/05/14* *Survey Type: MANUAL*

9 NY-03-A-06 BUNGALOWS & SEMI DET. NORTH YORKSHIRE
HORSEFAIR
BOROUGHBRIDGE

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 115
Survey date: FRIDAY *14/10/11* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

10	ST-03-A-07 BEACONSIDE STAFFORD MARSTON GATE Edge of Town Residential Zone Total Number of dwellings:	DETACHED & SEMI-DETACHED	248	STAFFORDSHIRE
	Survey date: WEDNESDAY		*22/11/17*	*Survey Type: MANUAL*
11	WS-03-A-04 HILLS FARM LANE HORSHAM BROADBRIDGE HEATH Edge of Town Residential Zone Total Number of dwellings:	MIXED HOUSES	151	WEST SUSSEX
	Survey date: THURSDAY		*11/12/14*	*Survey Type: MANUAL*
12	WS-03-A-06 ELLIS ROAD WEST HORSHAM S BROADBRIDGE HEATH Edge of Town Residential Zone Total Number of dwellings:	MIXED HOUSES	805	WEST SUSSEX
	Survey date: THURSDAY		*02/03/17*	*Survey Type: MANUAL*
13	WS-03-A-08 ROUNDSTONE LANE ANGMERING Edge of Town Residential Zone Total Number of dwellings:	MIXED HOUSES	180	WEST SUSSEX
	Survey date: THURSDAY		*19/04/18*	*Survey Type: MANUAL*
14	WS-03-A-09 LITTLEHAMPTON ROAD WORTHING WEST DURRINGTON Edge of Town Residential Zone Total Number of dwellings:	MIXED HOUSES & FLATS	197	WEST SUSSEX
	Survey date: THURSDAY		*05/07/18*	*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/A - HOUSES PRIVATELY OWNED
MULTI-MODAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	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	251	0.078	14	251	0.282	14	251	0.360
08:00 - 09:00	14	251	0.124	14	251	0.378	14	251	0.502
09:00 - 10:00	14	251	0.151	14	251	0.164	14	251	0.315
10:00 - 11:00	14	251	0.129	14	251	0.161	14	251	0.290
11:00 - 12:00	14	251	0.133	14	251	0.151	14	251	0.284
12:00 - 13:00	14	251	0.163	14	251	0.150	14	251	0.313
13:00 - 14:00	14	251	0.167	14	251	0.159	14	251	0.326
14:00 - 15:00	14	251	0.164	14	251	0.191	14	251	0.355
15:00 - 16:00	14	251	0.260	14	251	0.174	14	251	0.434
16:00 - 17:00	14	251	0.273	14	251	0.170	14	251	0.443
17:00 - 18:00	14	251	0.333	14	251	0.164	14	251	0.497
18:00 - 19:00	14	251	0.300	14	251	0.189	14	251	0.489
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.275			2.333			4.608

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.

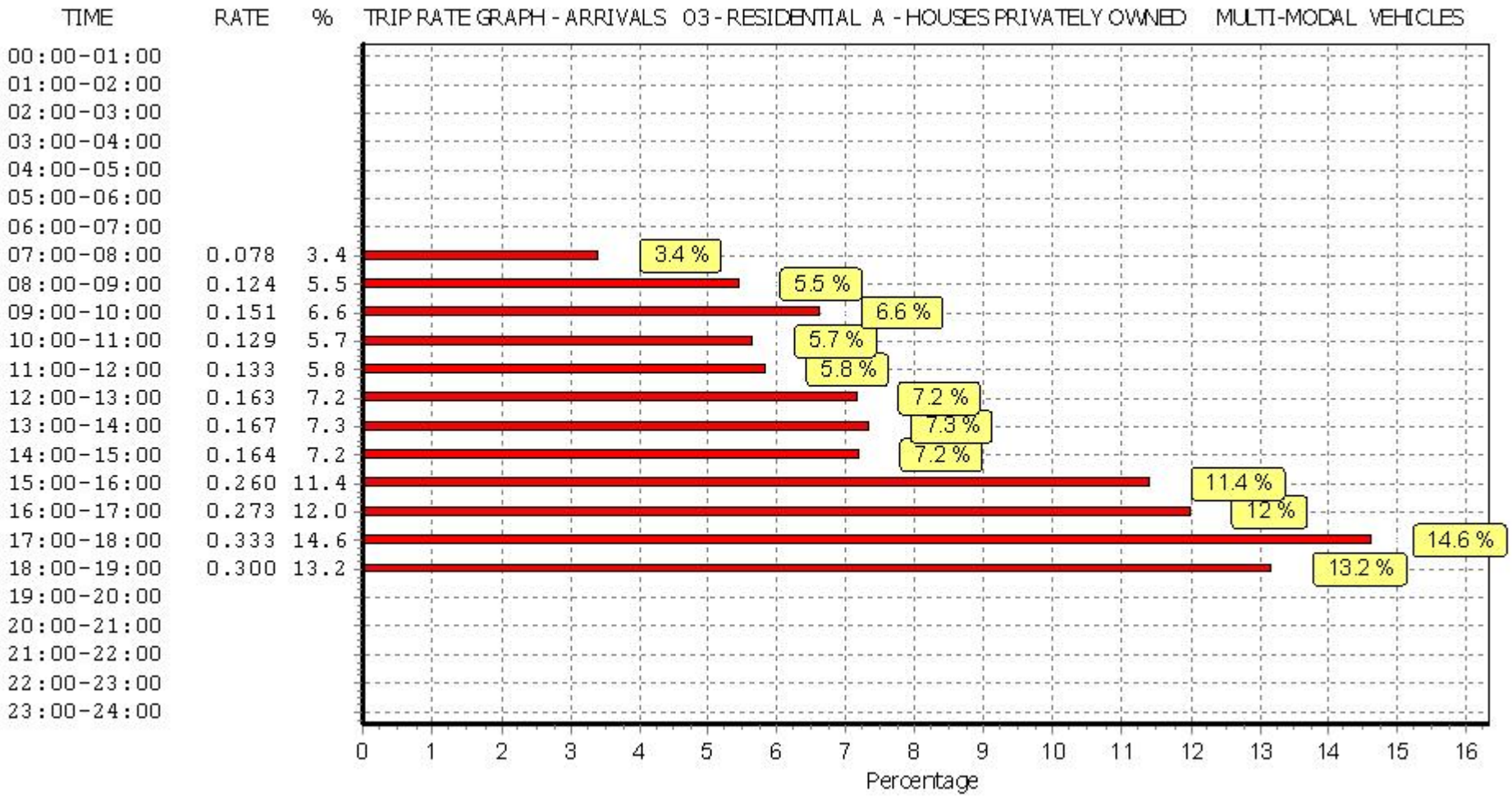
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected 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

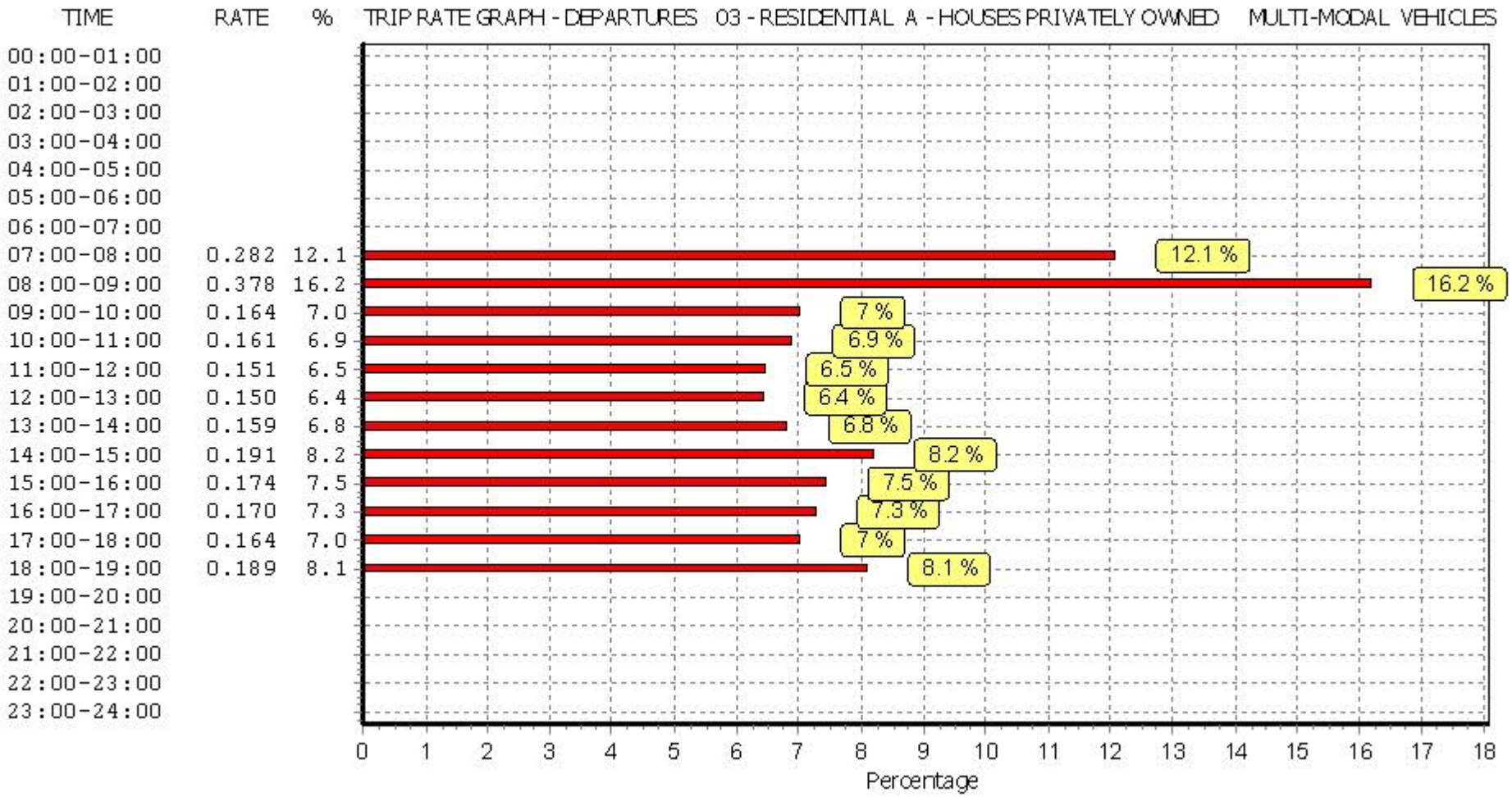
Trip rate parameter range selected:	110 - 805 (units:)
Survey date date range:	01/01/10 - 05/07/18
Number of weekdays (Monday-Friday):	14
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

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 show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

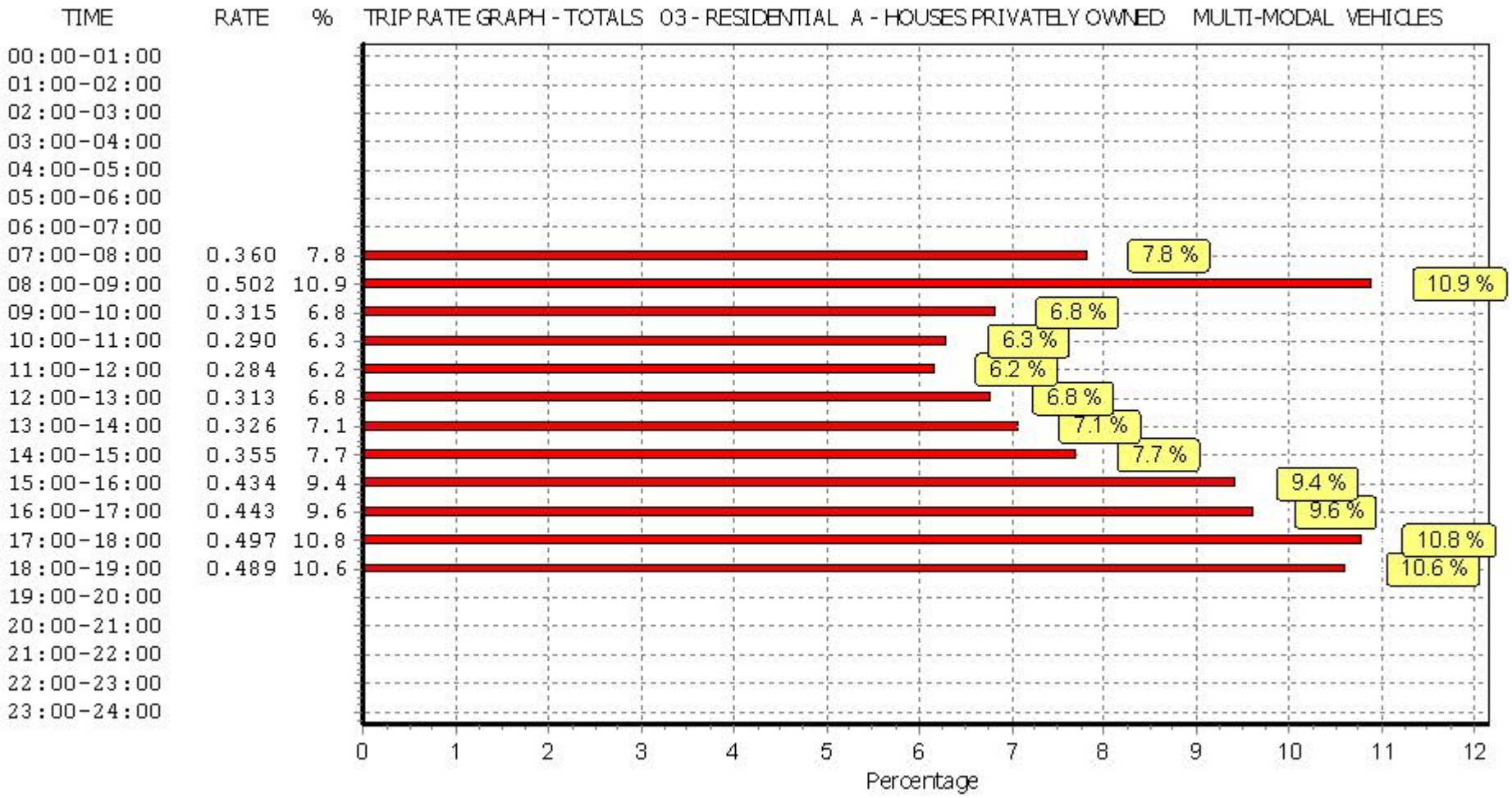
Vectos . . Licence No: 152302



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.

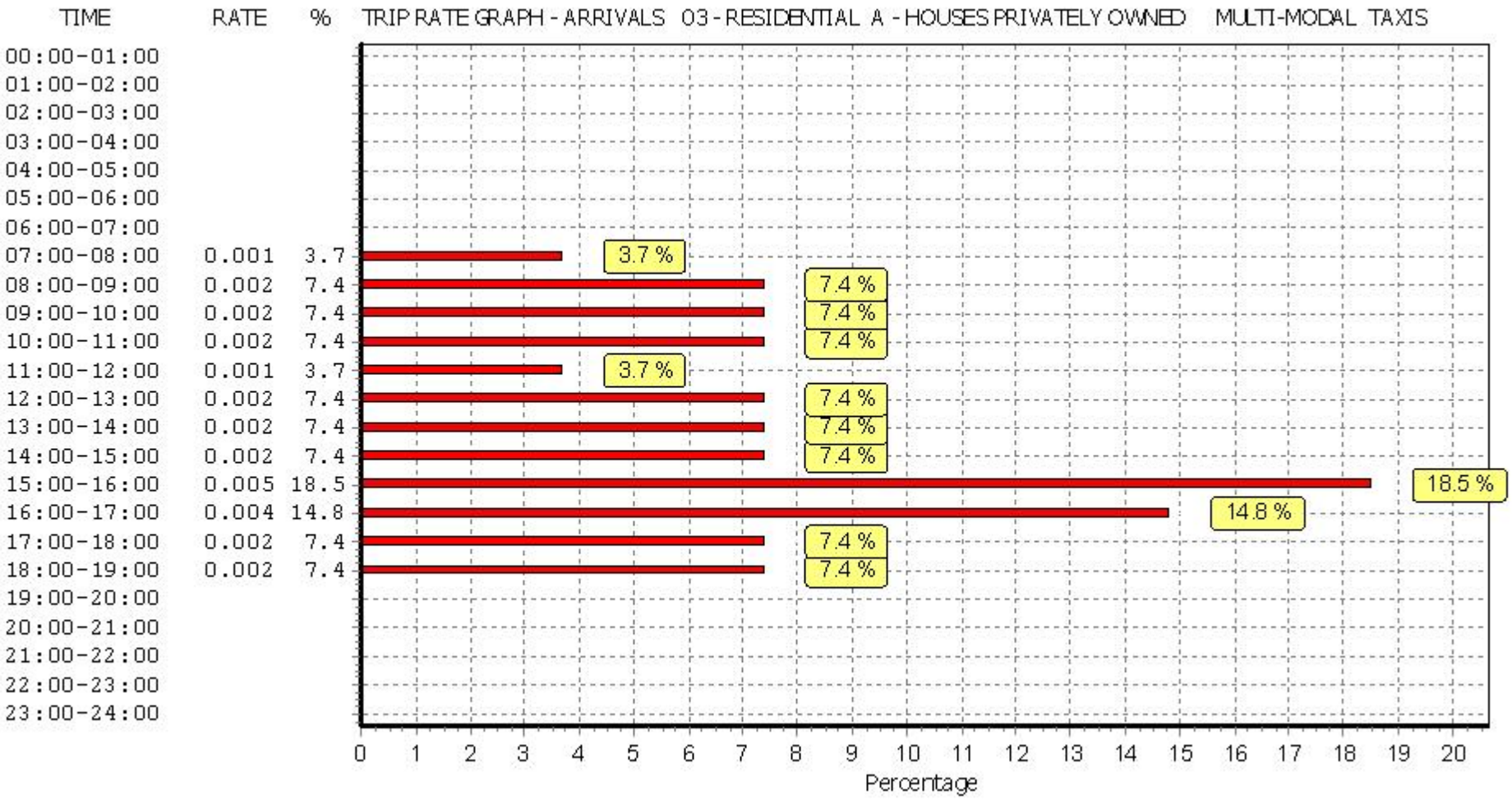
TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TAXIS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	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	251	0.001	14	251	0.001	14	251	0.002
08:00 - 09:00	14	251	0.002	14	251	0.002	14	251	0.004
09:00 - 10:00	14	251	0.002	14	251	0.001	14	251	0.003
10:00 - 11:00	14	251	0.002	14	251	0.003	14	251	0.005
11:00 - 12:00	14	251	0.001	14	251	0.001	14	251	0.002
12:00 - 13:00	14	251	0.002	14	251	0.002	14	251	0.004
13:00 - 14:00	14	251	0.002	14	251	0.001	14	251	0.003
14:00 - 15:00	14	251	0.002	14	251	0.002	14	251	0.004
15:00 - 16:00	14	251	0.005	14	251	0.005	14	251	0.010
16:00 - 17:00	14	251	0.004	14	251	0.004	14	251	0.008
17:00 - 18:00	14	251	0.002	14	251	0.001	14	251	0.003
18:00 - 19:00	14	251	0.002	14	251	0.002	14	251	0.004
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.027			0.025			0.052

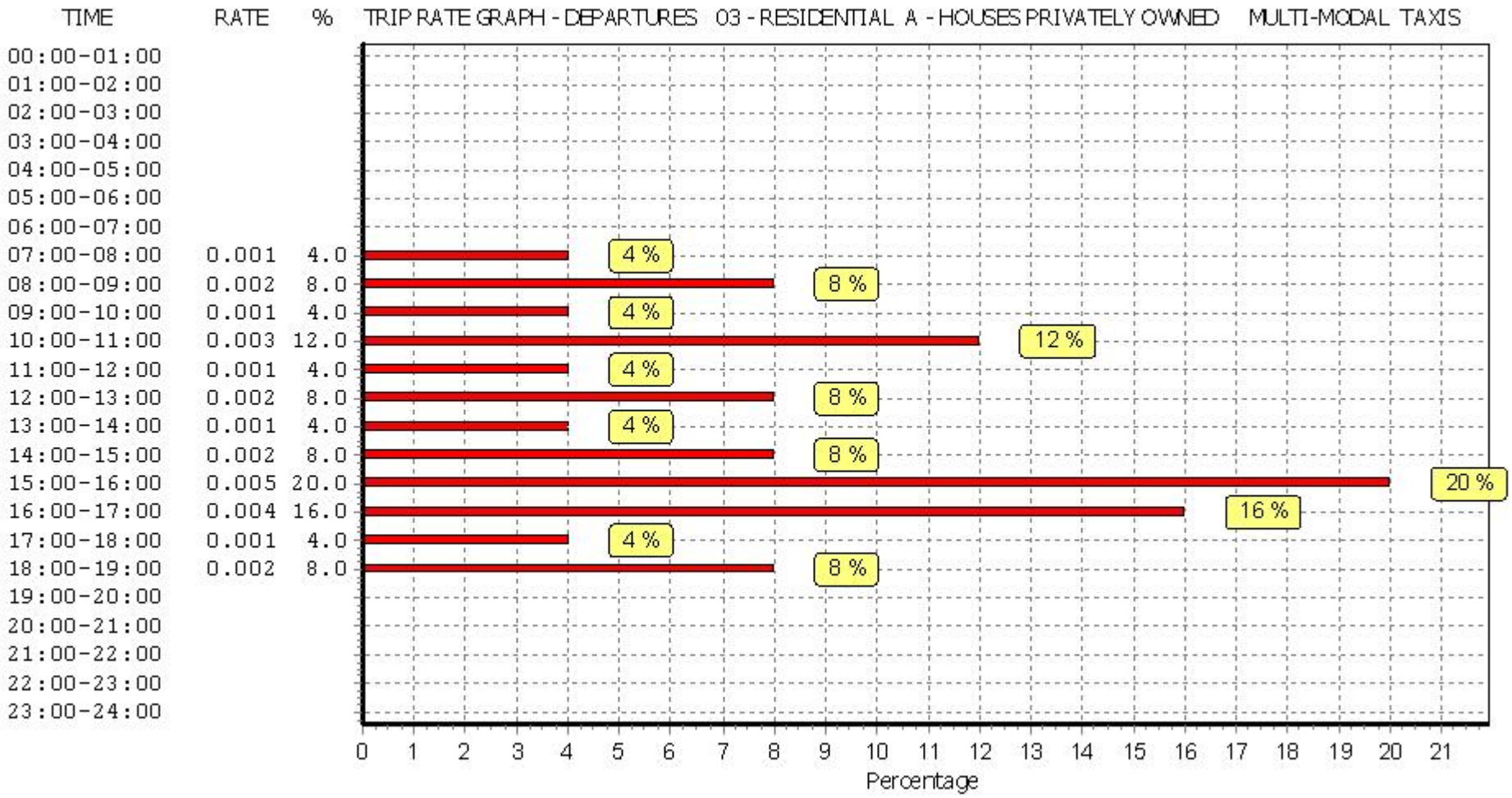
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are 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.*

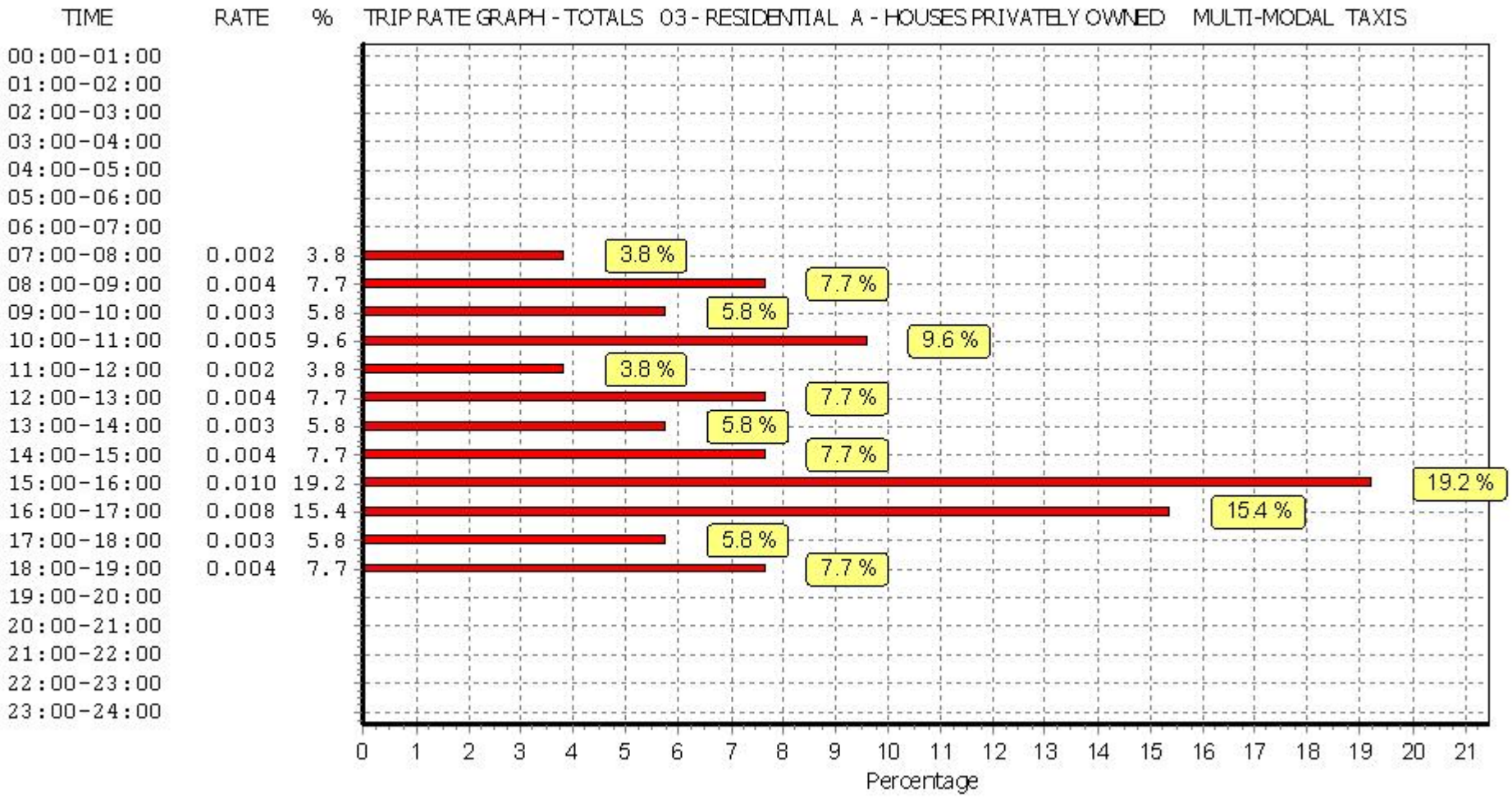
Vectos . . Licence No: 152302



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.



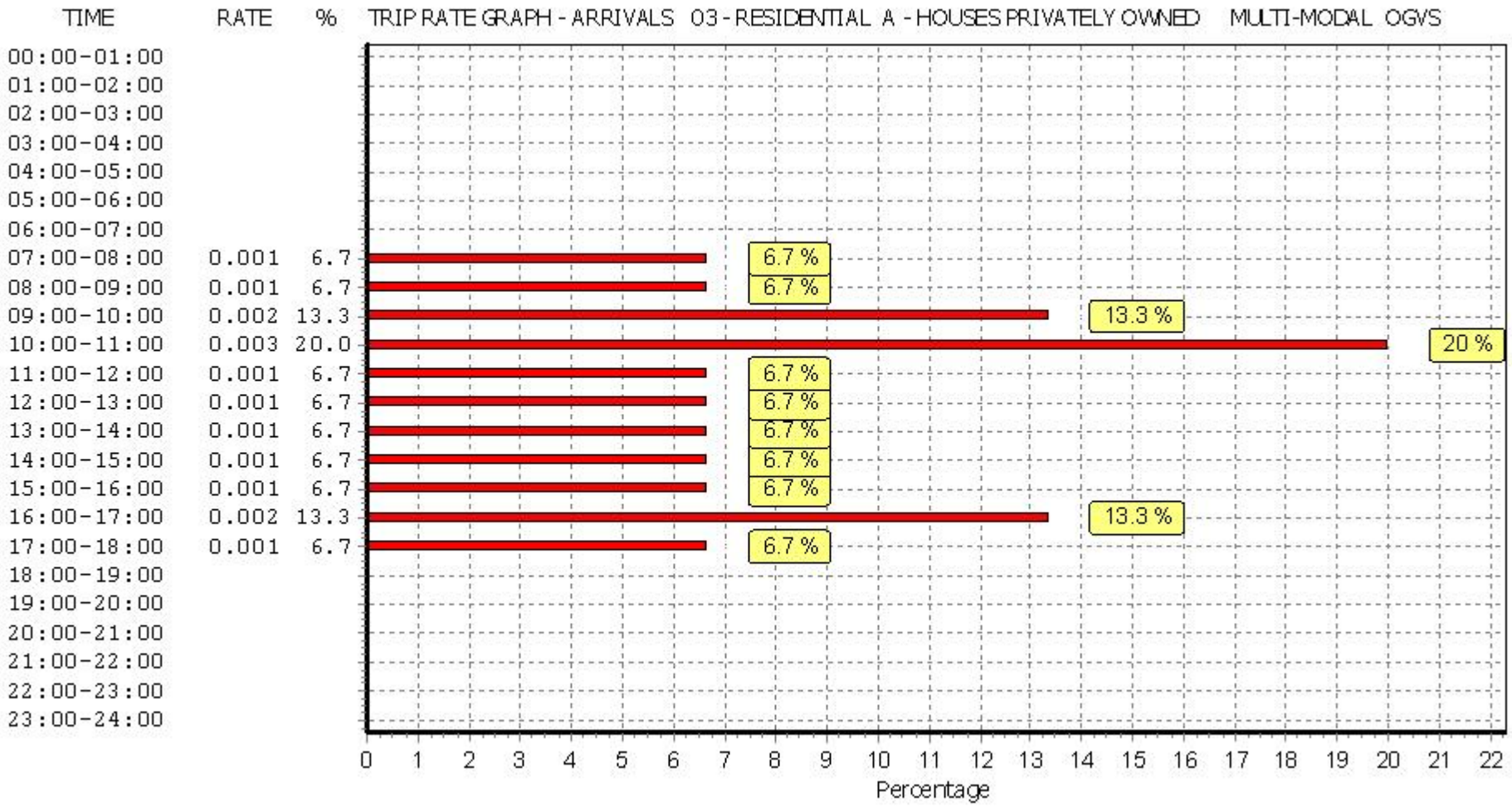
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

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

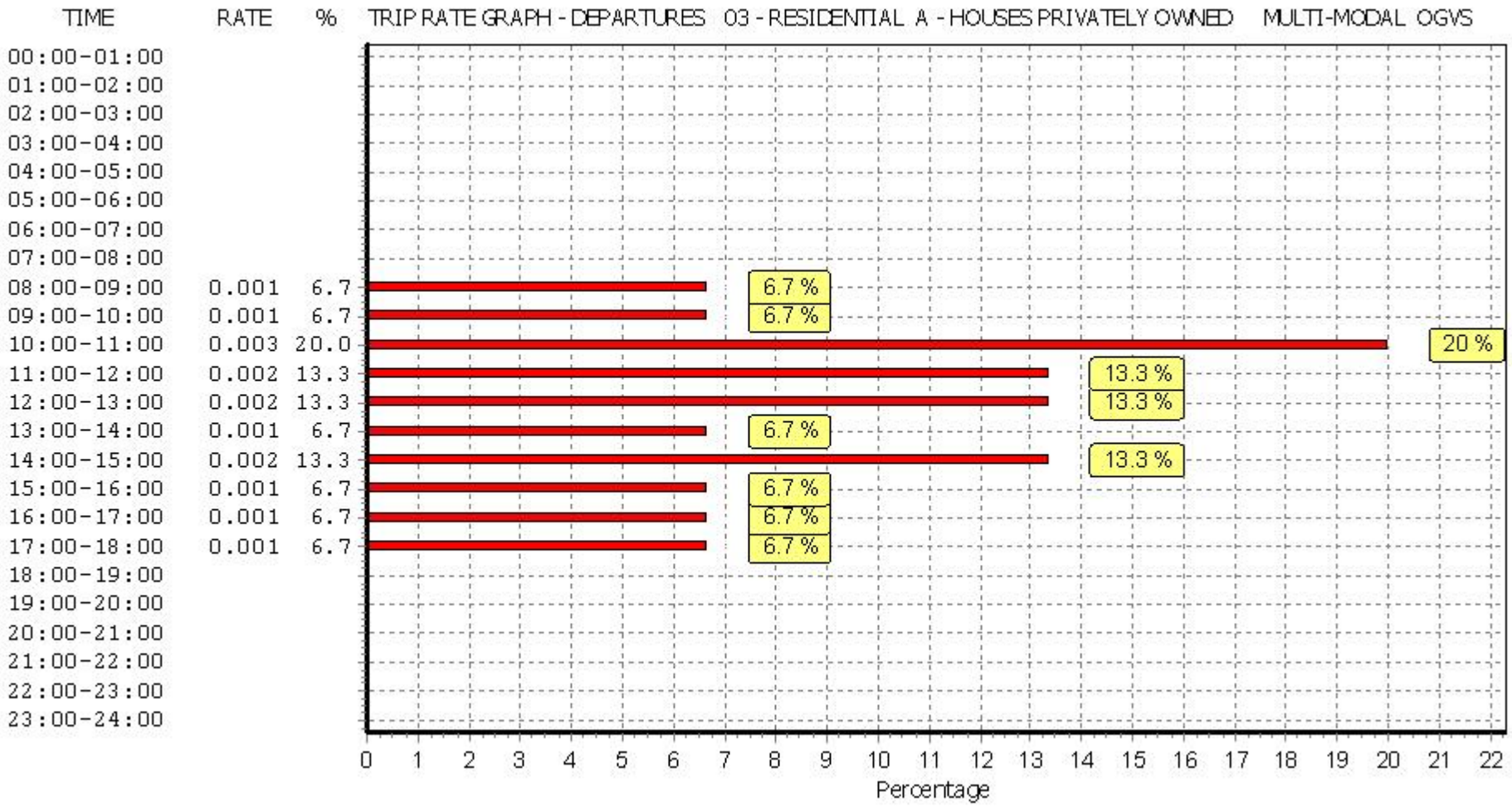
	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	14	251	0.001	14	251	0.000	14	251	0.001
08:00 - 09:00	14	251	0.001	14	251	0.001	14	251	0.002
09:00 - 10:00	14	251	0.002	14	251	0.001	14	251	0.003
10:00 - 11:00	14	251	0.003	14	251	0.003	14	251	0.006
11:00 - 12:00	14	251	0.001	14	251	0.002	14	251	0.003
12:00 - 13:00	14	251	0.001	14	251	0.002	14	251	0.003
13:00 - 14:00	14	251	0.001	14	251	0.001	14	251	0.002
14:00 - 15:00	14	251	0.001	14	251	0.002	14	251	0.003
15:00 - 16:00	14	251	0.001	14	251	0.001	14	251	0.002
16:00 - 17:00	14	251	0.002	14	251	0.001	14	251	0.003
17:00 - 18:00	14	251	0.001	14	251	0.001	14	251	0.002
18:00 - 19:00	14	251	0.000	14	251	0.000	14	251	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.015			0.015			0.030

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.*

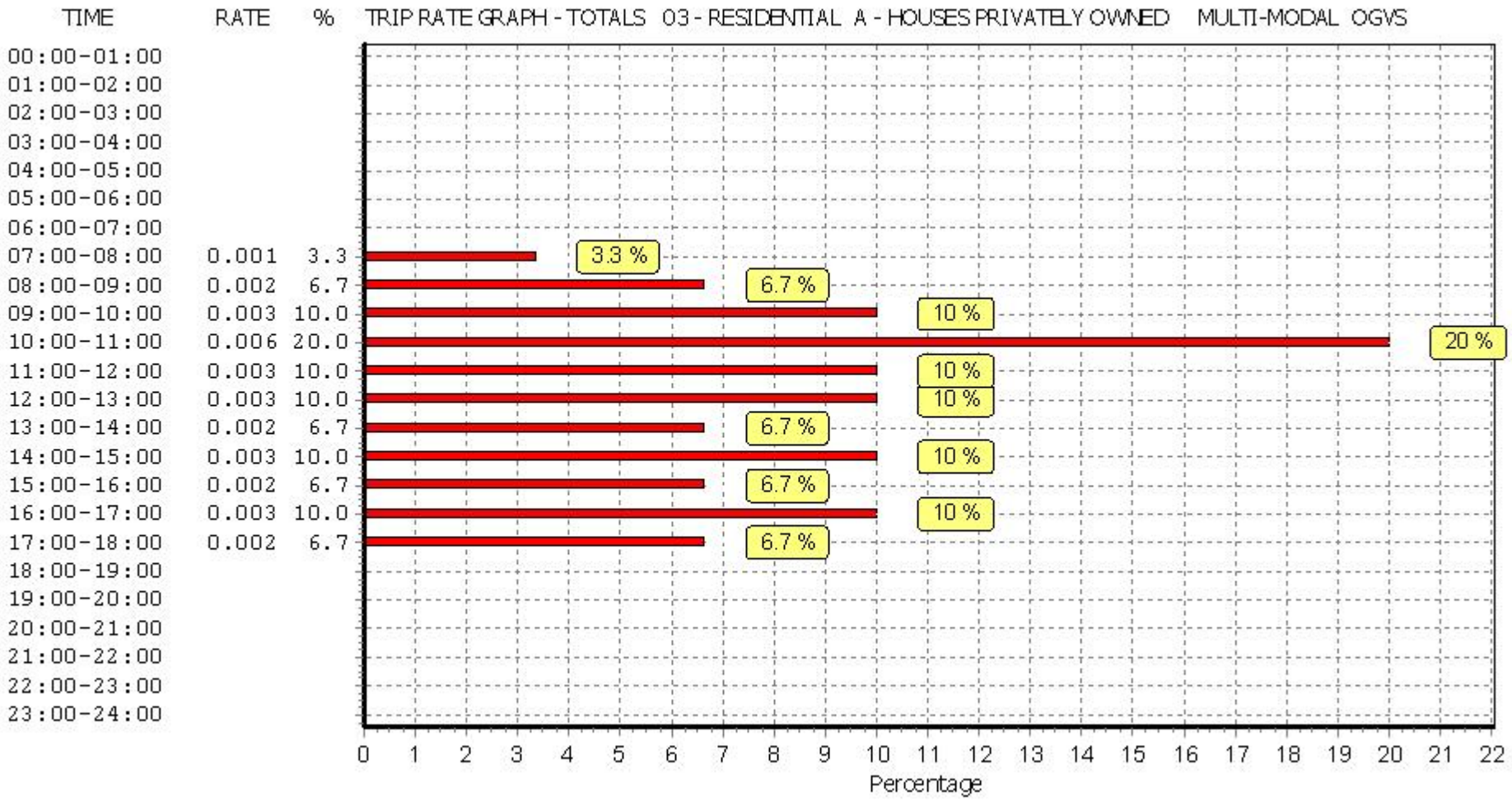


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

Vectos . . Licence No: 152302



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.

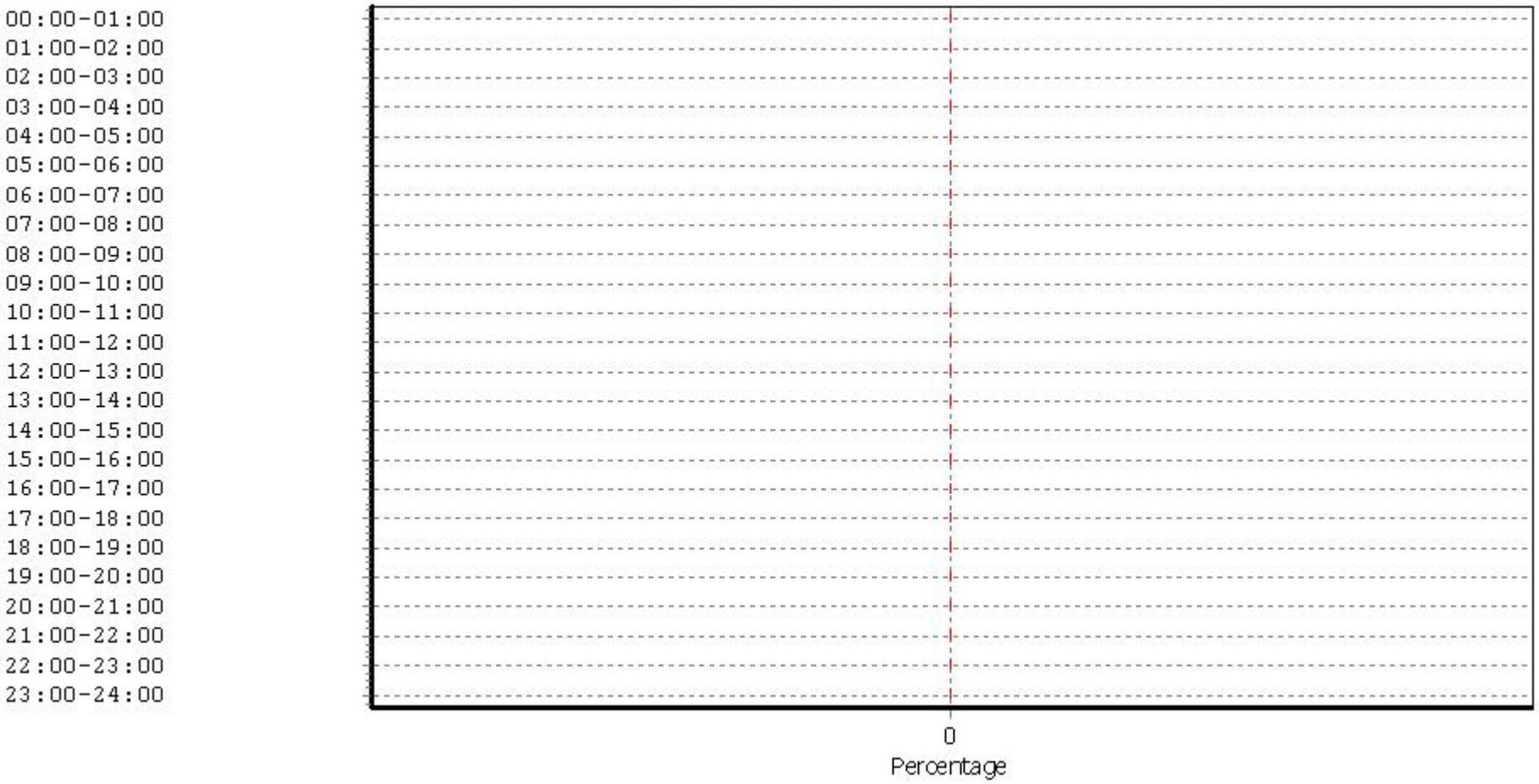
TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PSVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	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	251	0.000	14	251	0.000	14	251	0.000
08:00 - 09:00	14	251	0.000	14	251	0.000	14	251	0.000
09:00 - 10:00	14	251	0.000	14	251	0.000	14	251	0.000
10:00 - 11:00	14	251	0.000	14	251	0.000	14	251	0.000
11:00 - 12:00	14	251	0.000	14	251	0.000	14	251	0.000
12:00 - 13:00	14	251	0.000	14	251	0.000	14	251	0.000
13:00 - 14:00	14	251	0.000	14	251	0.000	14	251	0.000
14:00 - 15:00	14	251	0.000	14	251	0.000	14	251	0.000
15:00 - 16:00	14	251	0.000	14	251	0.000	14	251	0.000
16:00 - 17:00	14	251	0.000	14	251	0.000	14	251	0.000
17:00 - 18:00	14	251	0.000	14	251	0.000	14	251	0.000
18:00 - 19:00	14	251	0.000	14	251	0.000	14	251	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.000			0.000			0.000

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.*

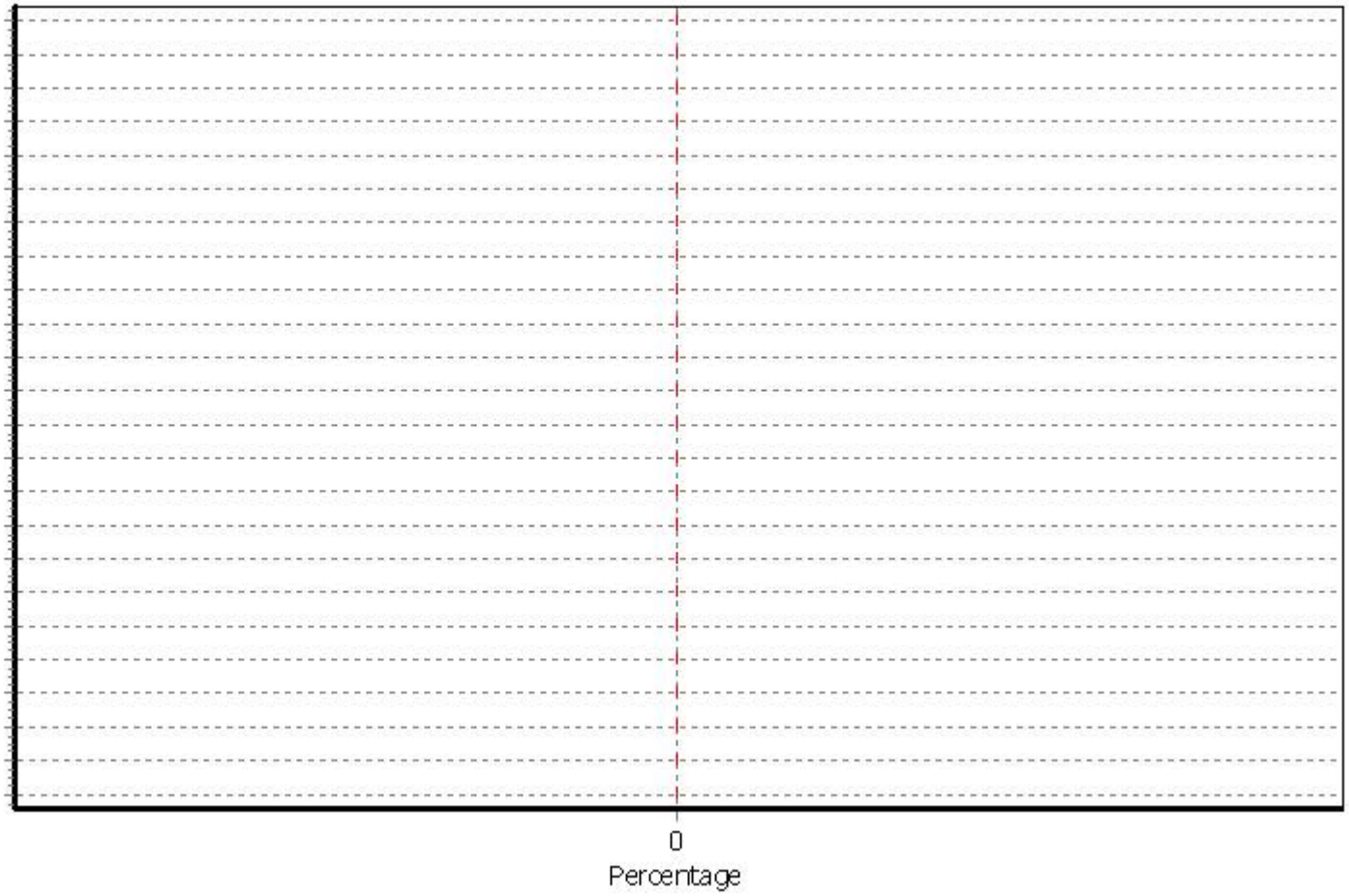
TIME RATE % TRIP RATE GRAPH - ARRIVALS FOR SITE: WS-03-A-06 MULTI-MODAL PSVS



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 GRAPH - DEPARTURES FOR SITE: WS-03-A-06 MULTI-MODAL PSVS

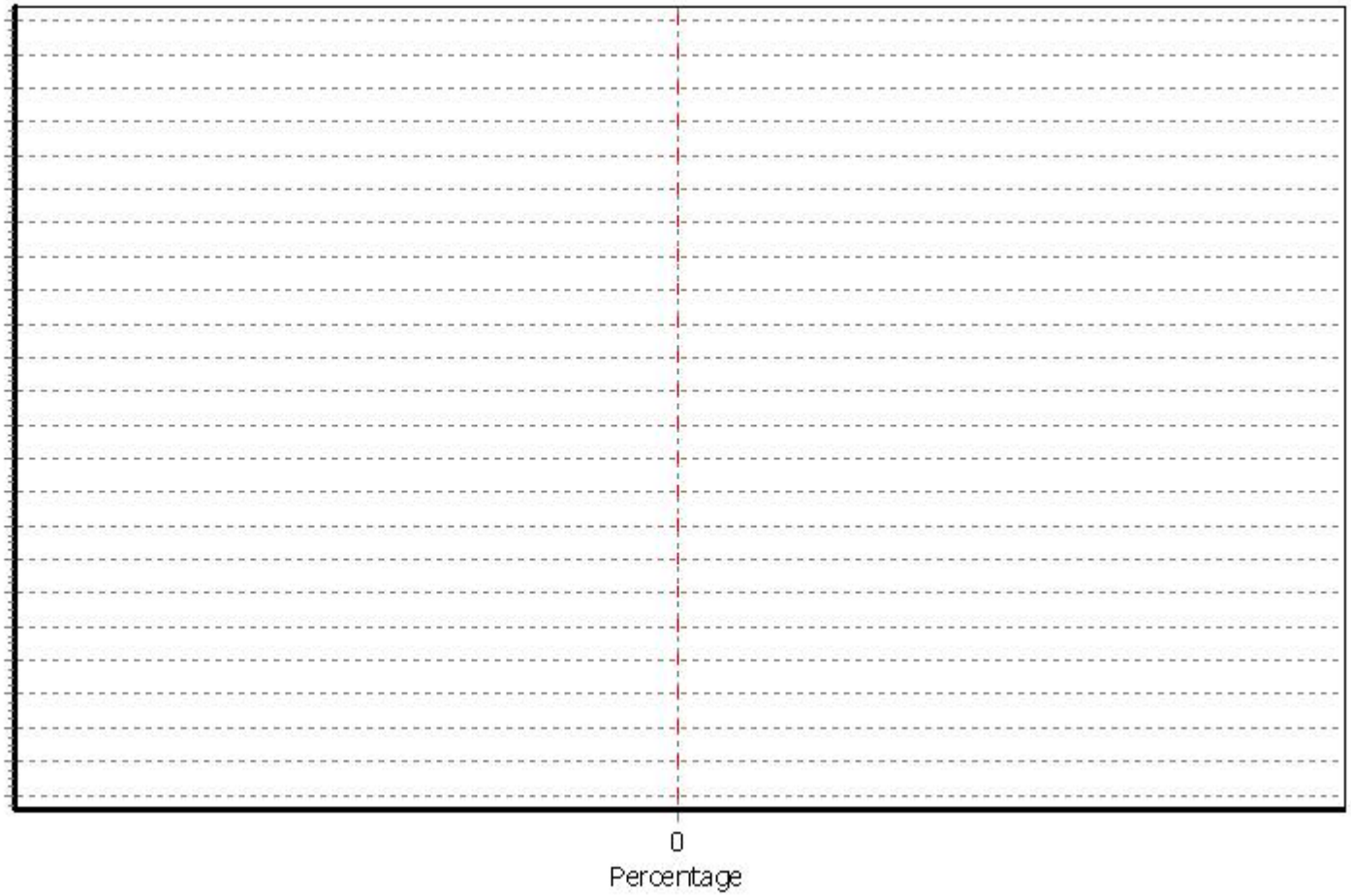
TIME	RATE	%
00:00-01:00		
01:00-02:00		
02:00-03:00		
03:00-04:00		
04:00-05:00		
05:00-06:00		
06:00-07:00		
07:00-08:00		
08:00-09:00		
09:00-10:00		
10:00-11:00		
11:00-12:00		
12:00-13:00		
13:00-14:00		
14:00-15:00		
15:00-16:00		
16:00-17:00		
17:00-18:00		
18:00-19:00		
19:00-20:00		
20:00-21:00		
21:00-22:00		
22:00-23:00		
23:00-24:00		



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 GRAPH - TOTALS FOR SITE: WS-03-A-06 MULTI-MODAL PSVS

TIME	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		
08:00-09:00		
09:00-10:00		
10:00-11:00		
11:00-12:00		
12:00-13:00		
13:00-14:00		
14:00-15:00		
15:00-16:00		
16:00-17:00		
17:00-18:00		
18:00-19:00		
19:00-20:00		
20:00-21:00		
21:00-22:00		
22:00-23:00		
23:00-24:00		



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.

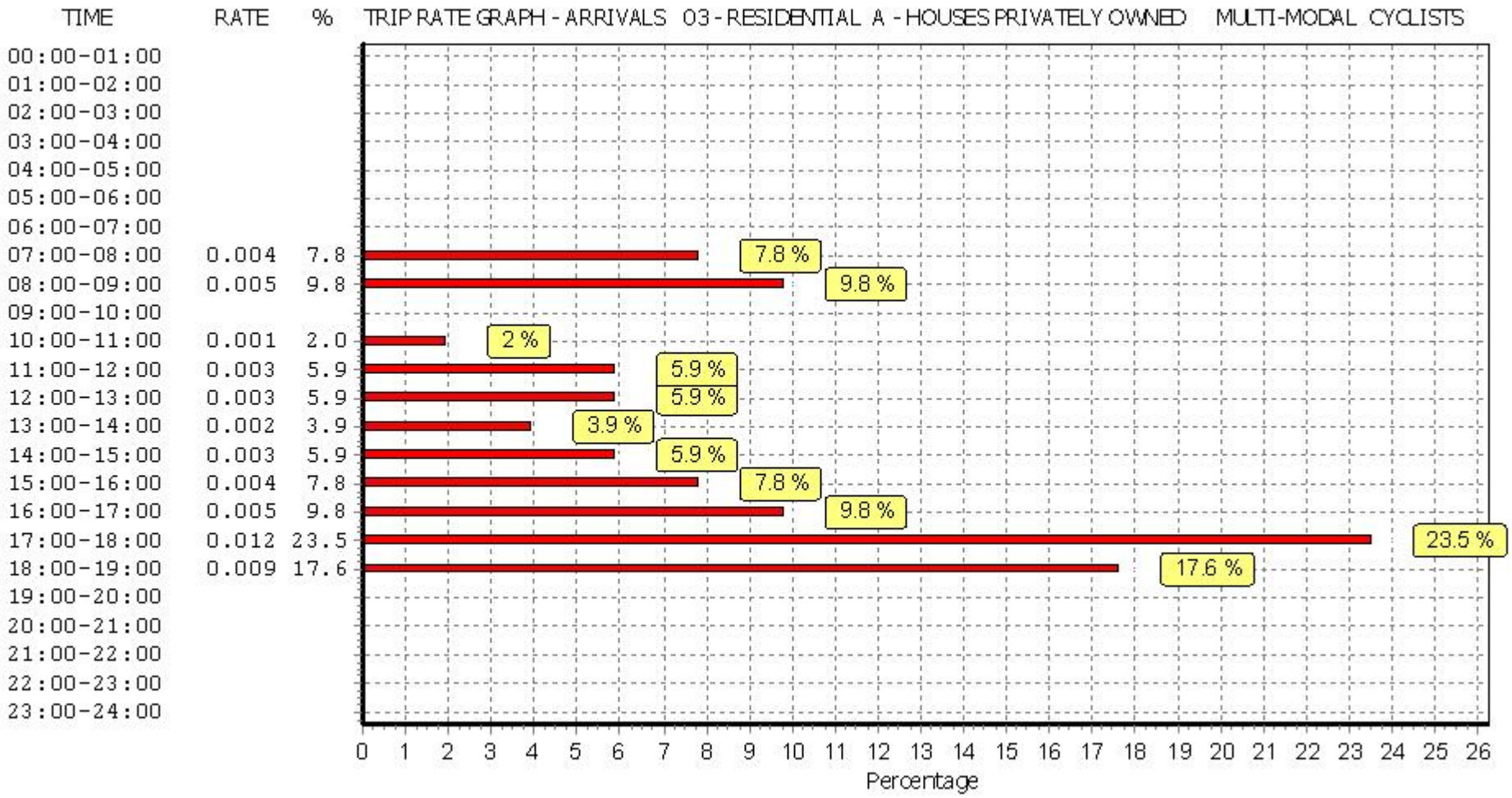
TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL CYCLISTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	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	251	0.004	14	251	0.007	14	251	0.011
08:00 - 09:00	14	251	0.005	14	251	0.009	14	251	0.014
09:00 - 10:00	14	251	0.000	14	251	0.001	14	251	0.001
10:00 - 11:00	14	251	0.001	14	251	0.003	14	251	0.004
11:00 - 12:00	14	251	0.003	14	251	0.002	14	251	0.005
12:00 - 13:00	14	251	0.003	14	251	0.005	14	251	0.008
13:00 - 14:00	14	251	0.002	14	251	0.003	14	251	0.005
14:00 - 15:00	14	251	0.003	14	251	0.002	14	251	0.005
15:00 - 16:00	14	251	0.004	14	251	0.004	14	251	0.008
16:00 - 17:00	14	251	0.005	14	251	0.008	14	251	0.013
17:00 - 18:00	14	251	0.012	14	251	0.009	14	251	0.021
18:00 - 19:00	14	251	0.009	14	251	0.006	14	251	0.015
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.051			0.059			0.110

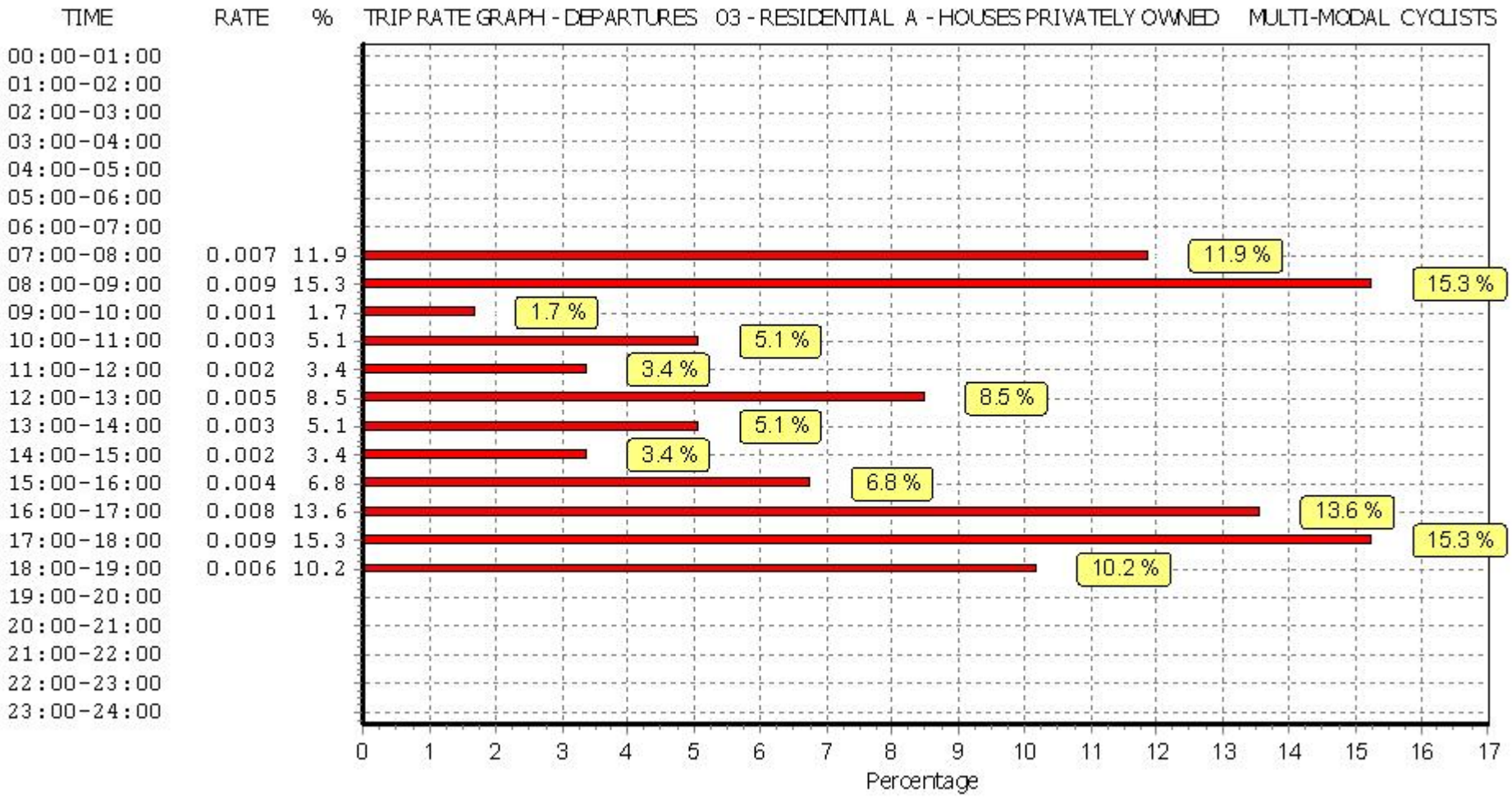
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are 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.*

Vectos . . Licence No: 152302

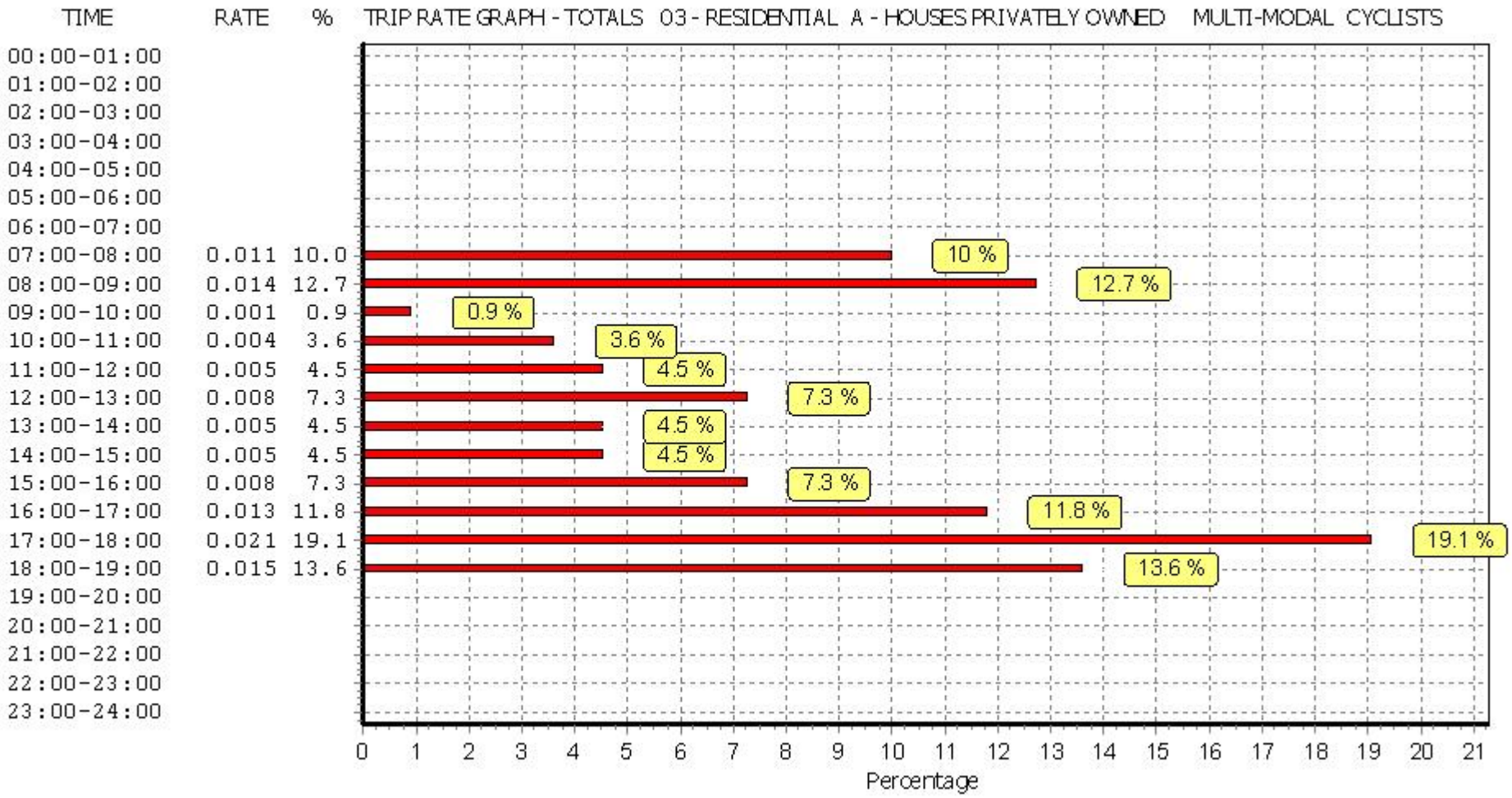


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

Vectos . . Licence No: 152302



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.

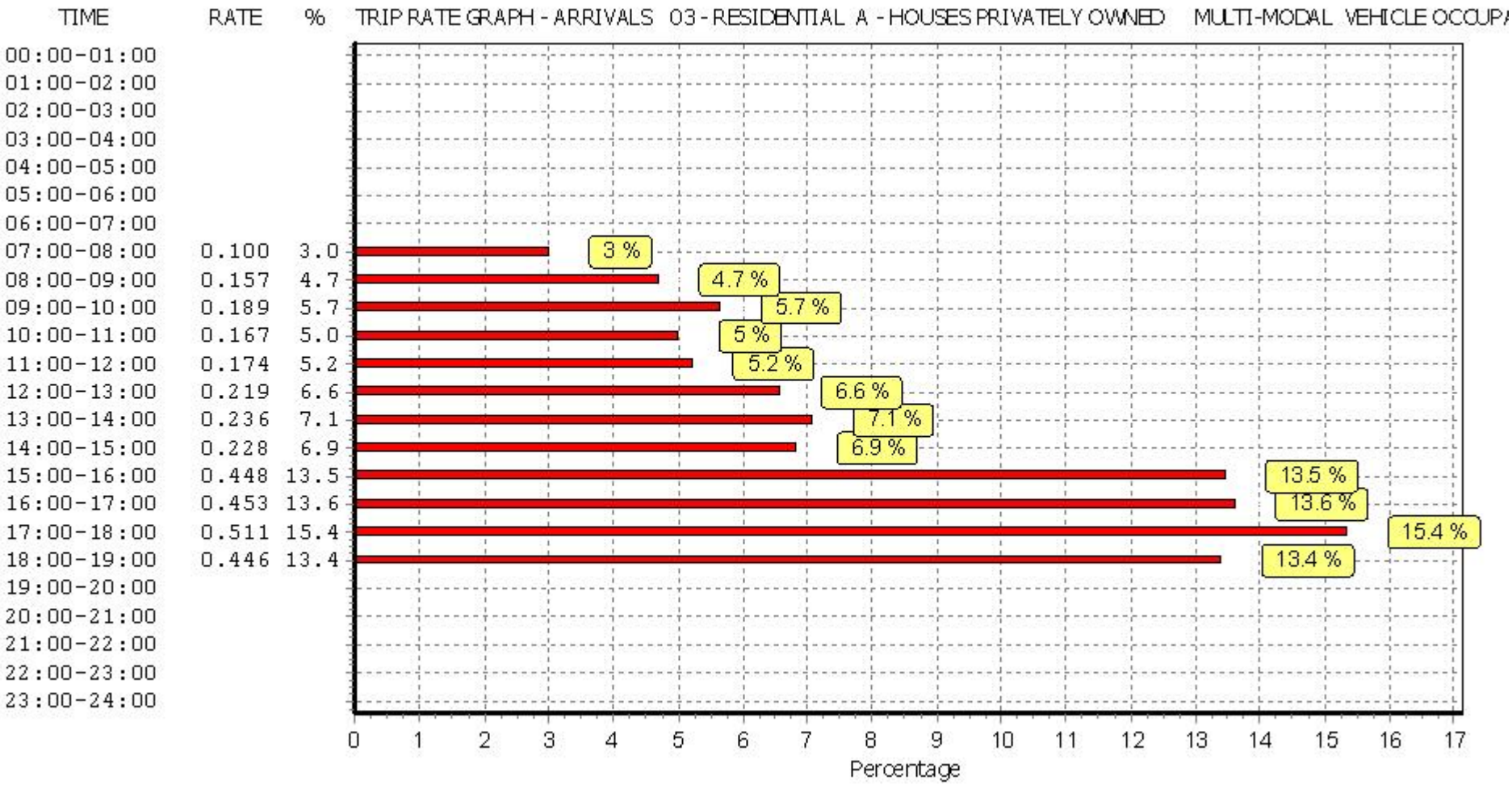
TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL VEHICLE OCCUPANTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	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	251	0.100	14	251	0.411	14	251	0.511
08:00 - 09:00	14	251	0.157	14	251	0.653	14	251	0.810
09:00 - 10:00	14	251	0.189	14	251	0.233	14	251	0.422
10:00 - 11:00	14	251	0.167	14	251	0.220	14	251	0.387
11:00 - 12:00	14	251	0.174	14	251	0.219	14	251	0.393
12:00 - 13:00	14	251	0.219	14	251	0.208	14	251	0.427
13:00 - 14:00	14	251	0.236	14	251	0.221	14	251	0.457
14:00 - 15:00	14	251	0.228	14	251	0.266	14	251	0.494
15:00 - 16:00	14	251	0.448	14	251	0.245	14	251	0.693
16:00 - 17:00	14	251	0.453	14	251	0.256	14	251	0.709
17:00 - 18:00	14	251	0.511	14	251	0.243	14	251	0.754
18:00 - 19:00	14	251	0.446	14	251	0.288	14	251	0.734
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.328			3.463			6.791

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.

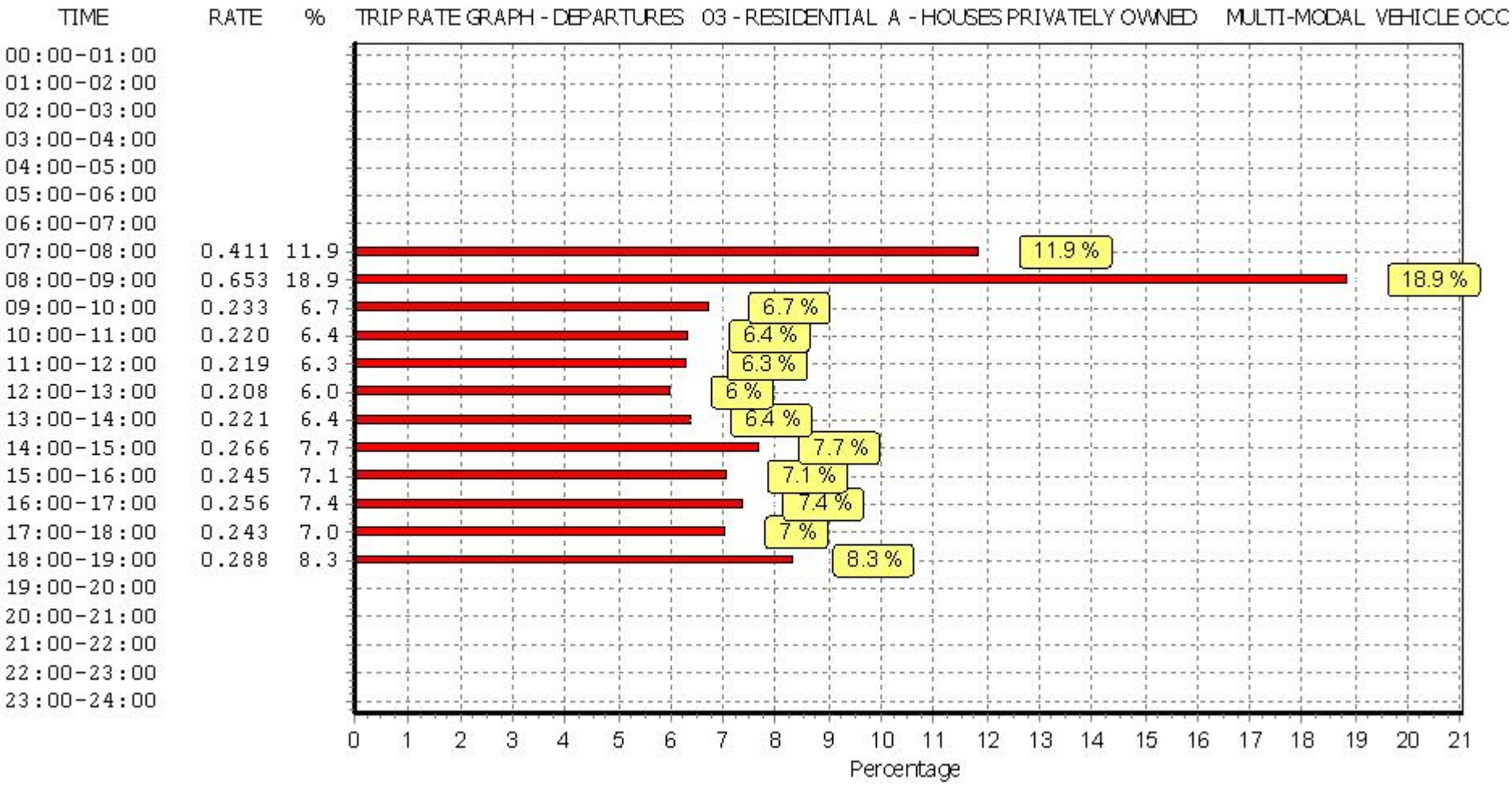
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected 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.*

Vectos . . Licence No: 152302

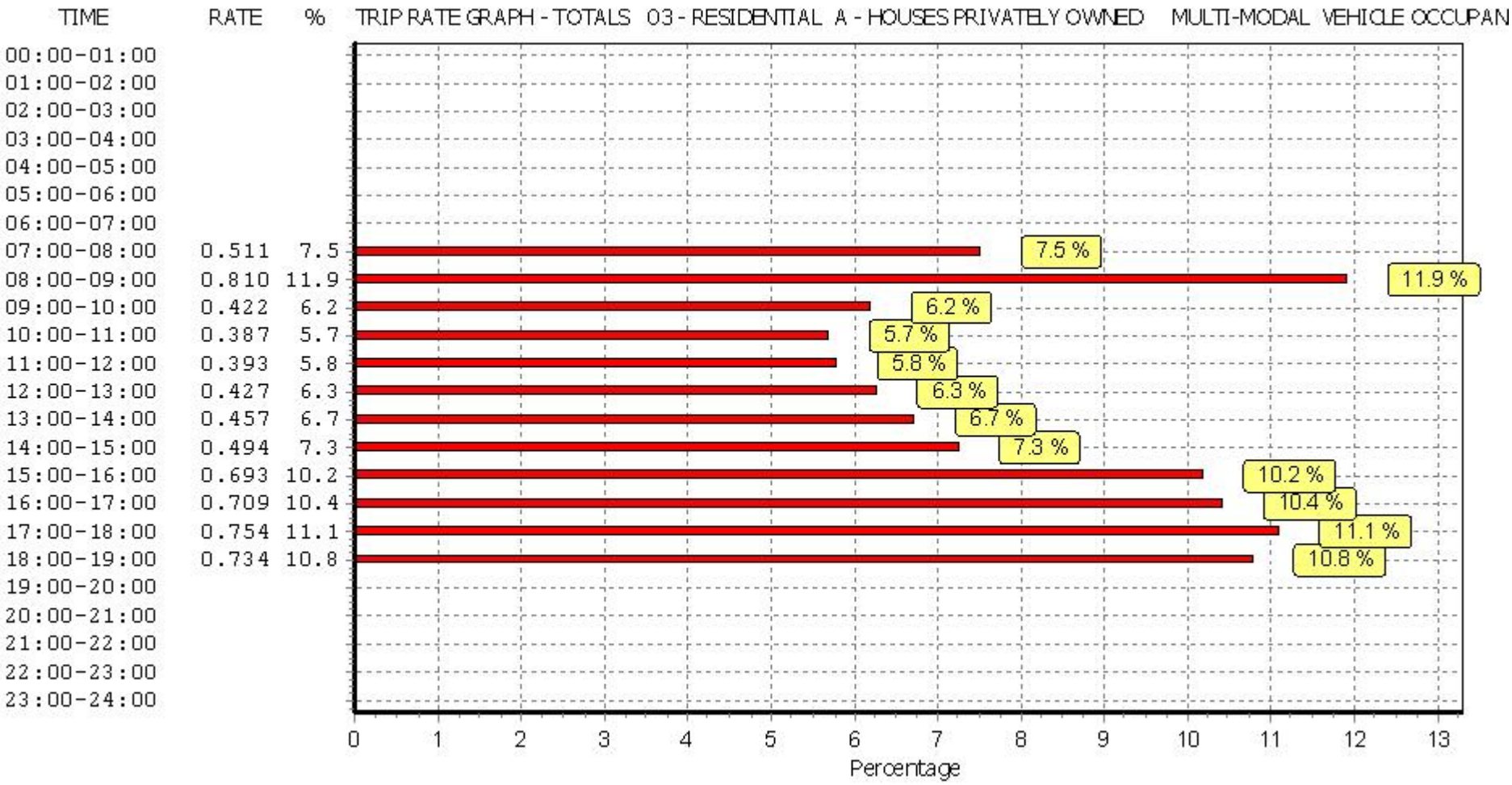


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

Vectos . . Licence No: 152302



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.



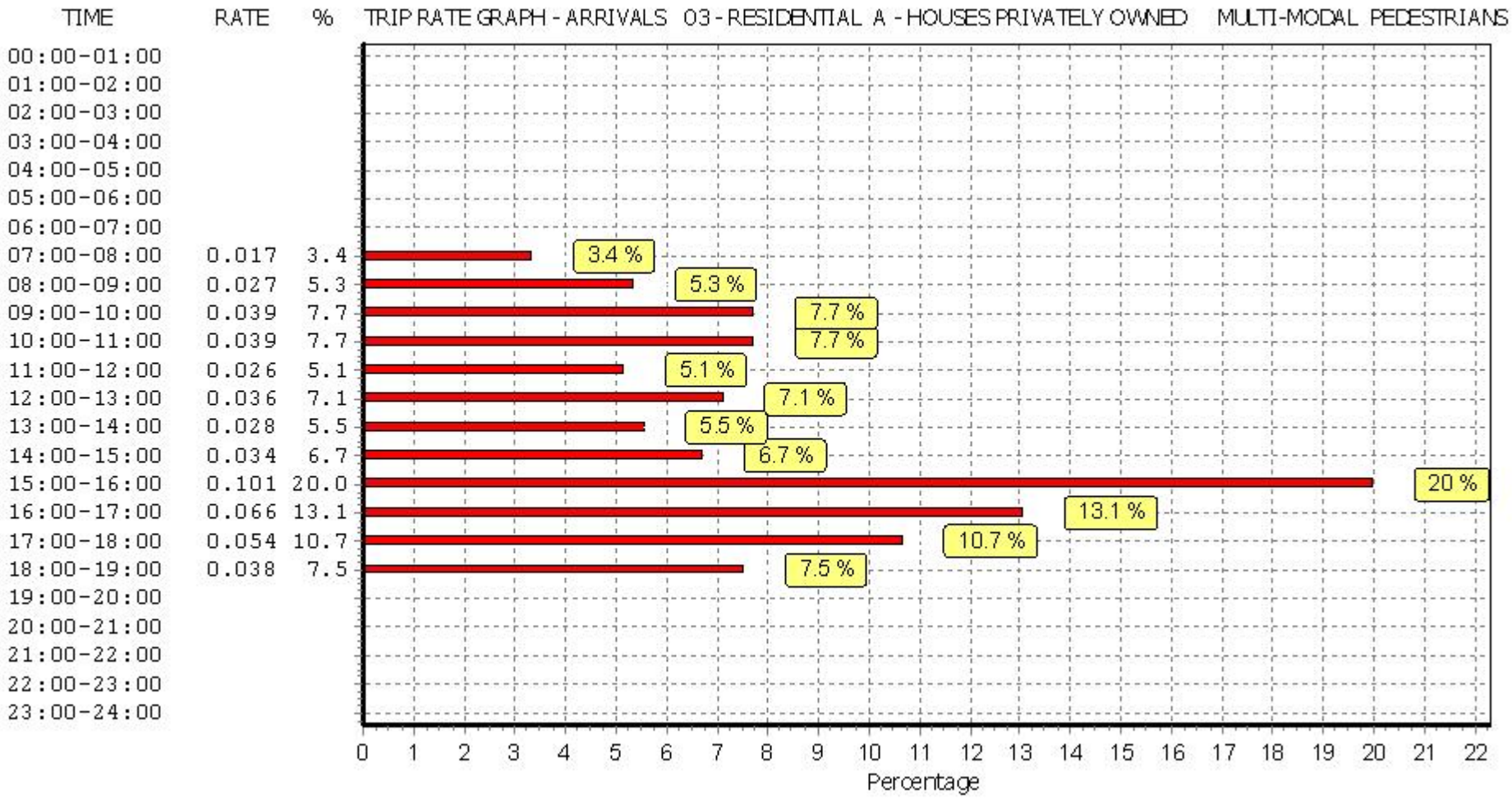
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	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	251	0.017	14	251	0.027	14	251	0.044
08:00 - 09:00	14	251	0.027	14	251	0.098	14	251	0.125
09:00 - 10:00	14	251	0.039	14	251	0.042	14	251	0.081
10:00 - 11:00	14	251	0.039	14	251	0.041	14	251	0.080
11:00 - 12:00	14	251	0.026	14	251	0.028	14	251	0.054
12:00 - 13:00	14	251	0.036	14	251	0.031	14	251	0.067
13:00 - 14:00	14	251	0.028	14	251	0.028	14	251	0.056
14:00 - 15:00	14	251	0.034	14	251	0.046	14	251	0.080
15:00 - 16:00	14	251	0.101	14	251	0.046	14	251	0.147
16:00 - 17:00	14	251	0.066	14	251	0.037	14	251	0.103
17:00 - 18:00	14	251	0.054	14	251	0.033	14	251	0.087
18:00 - 19:00	14	251	0.038	14	251	0.042	14	251	0.080
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.505			0.499			1.004

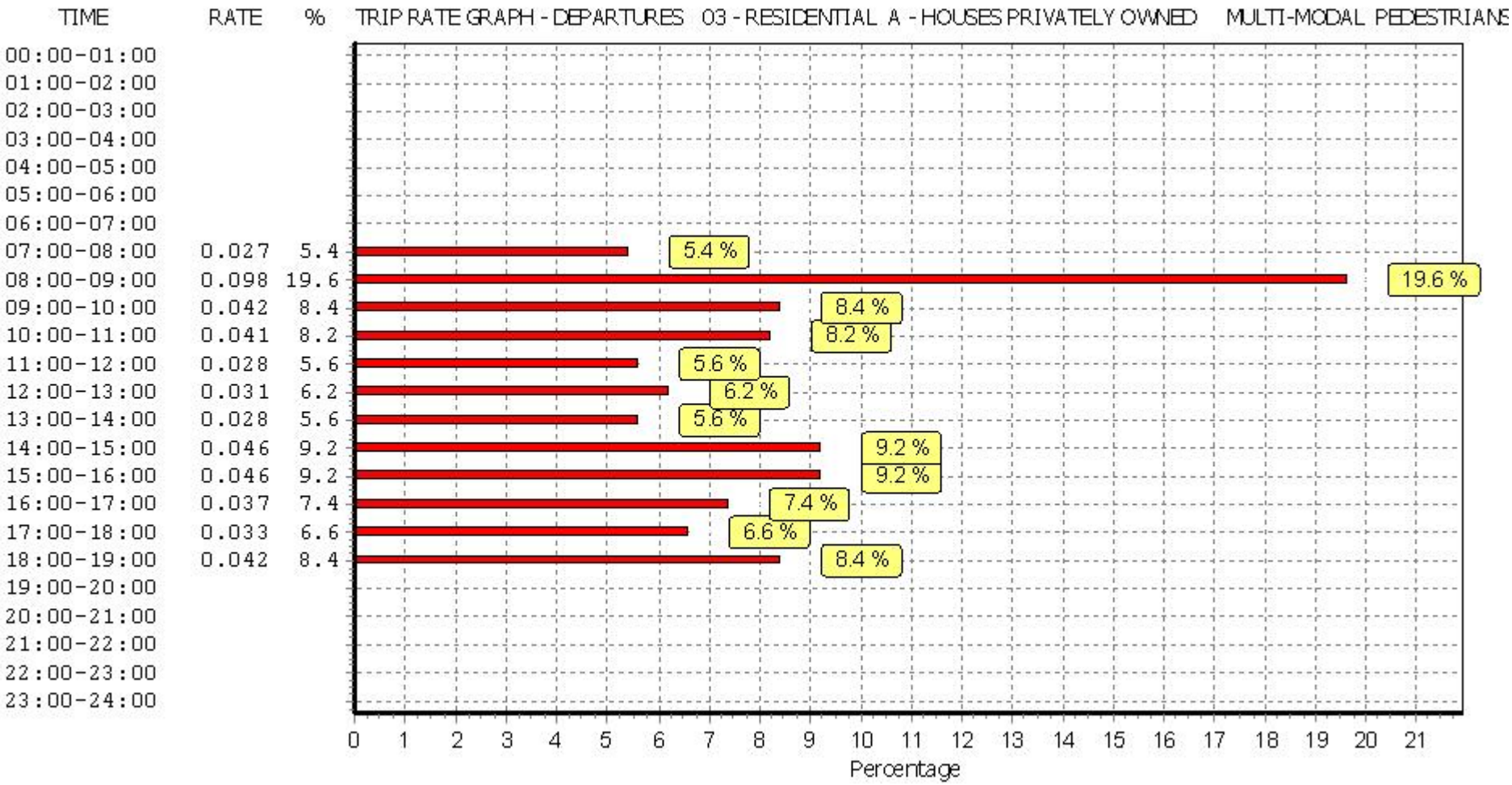
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are 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.*



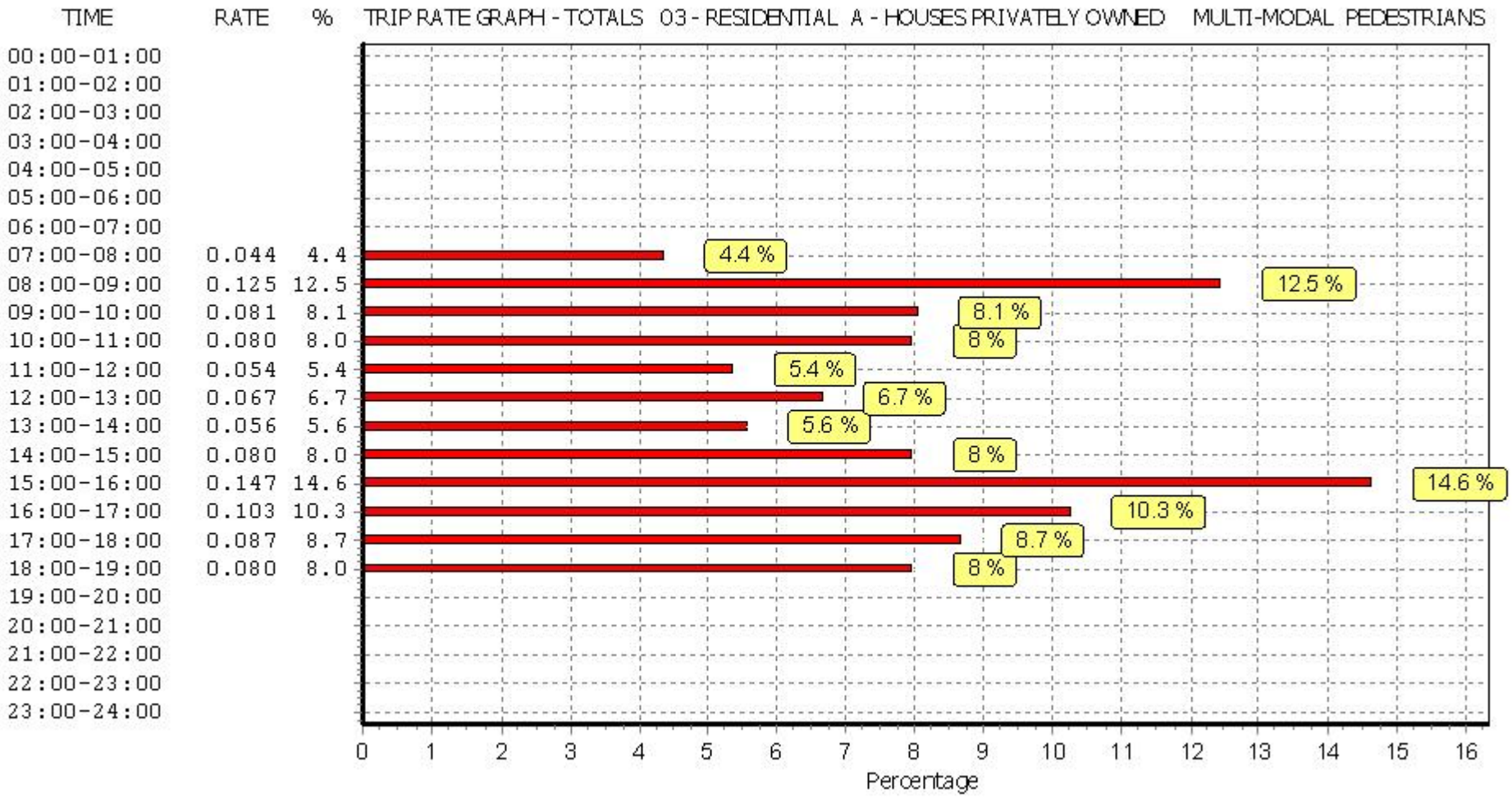
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

Vectos . . Licence No: 152302



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.

Vectos . . Licence No: 152302



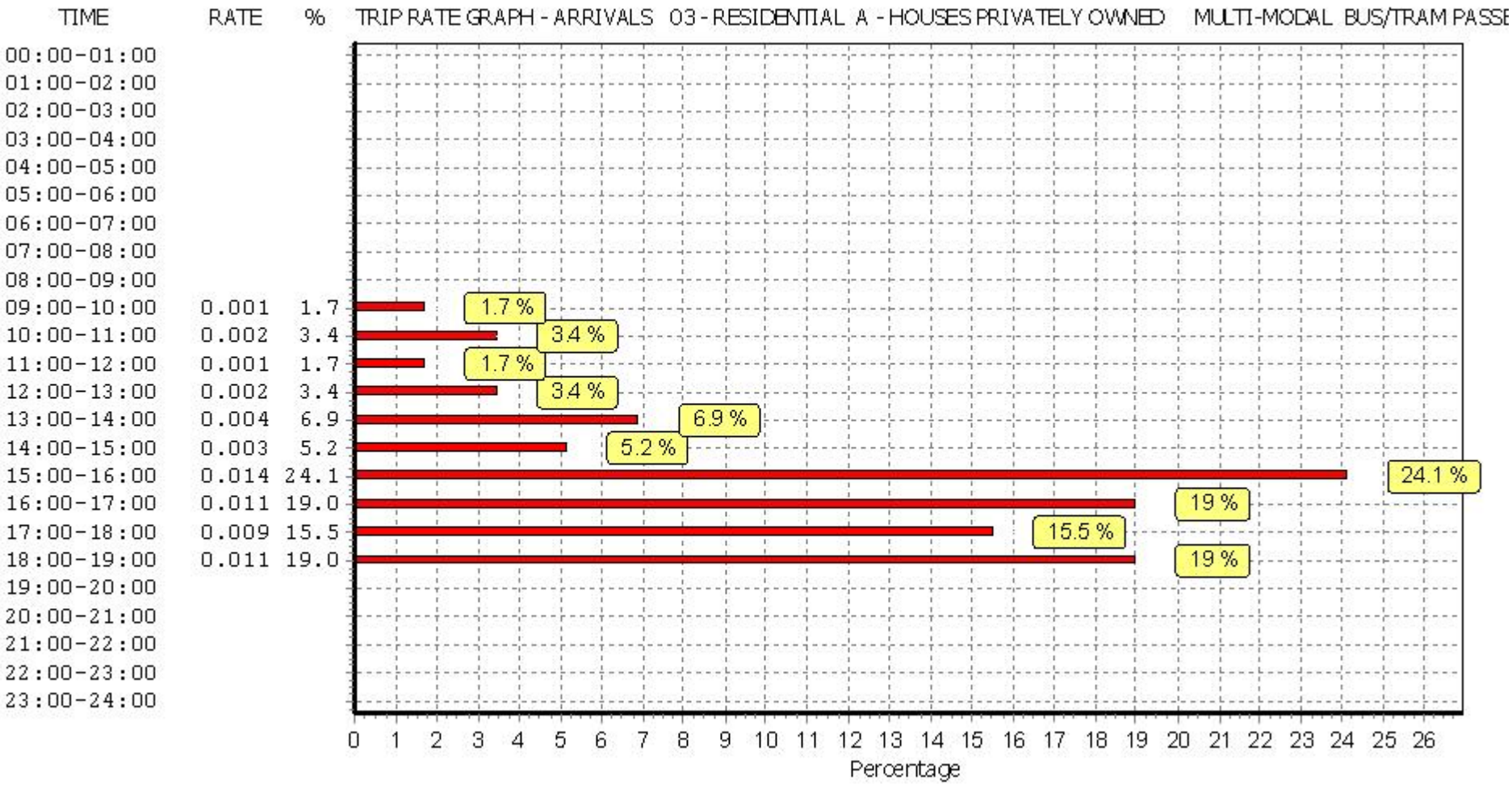
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

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

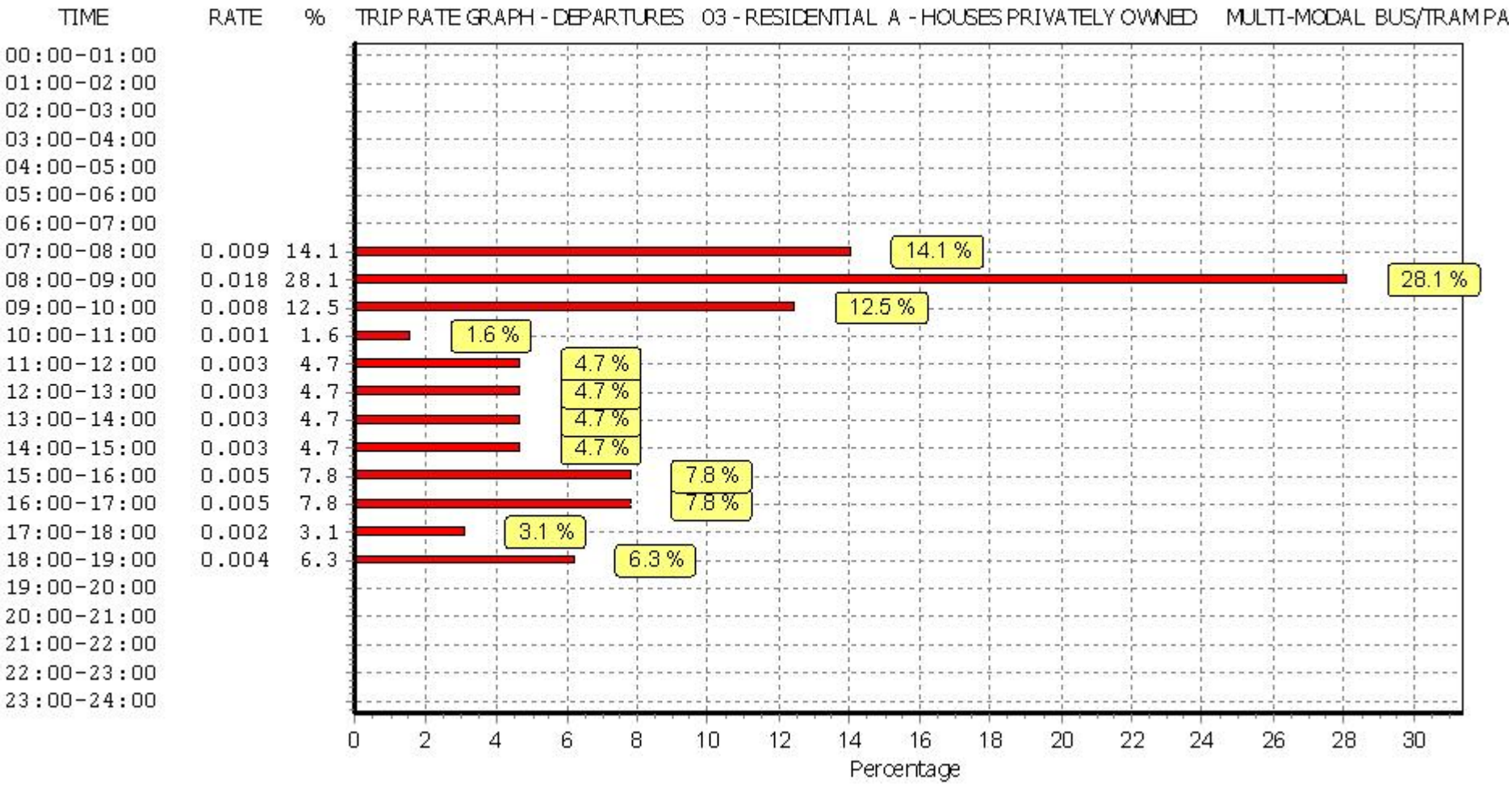
	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	14	251	0.000	14	251	0.009	14	251	0.009
08:00 - 09:00	14	251	0.000	14	251	0.018	14	251	0.018
09:00 - 10:00	14	251	0.001	14	251	0.008	14	251	0.009
10:00 - 11:00	14	251	0.002	14	251	0.001	14	251	0.003
11:00 - 12:00	14	251	0.001	14	251	0.003	14	251	0.004
12:00 - 13:00	14	251	0.002	14	251	0.003	14	251	0.005
13:00 - 14:00	14	251	0.004	14	251	0.003	14	251	0.007
14:00 - 15:00	14	251	0.003	14	251	0.003	14	251	0.006
15:00 - 16:00	14	251	0.014	14	251	0.005	14	251	0.019
16:00 - 17:00	14	251	0.011	14	251	0.005	14	251	0.016
17:00 - 18:00	14	251	0.009	14	251	0.002	14	251	0.011
18:00 - 19:00	14	251	0.011	14	251	0.004	14	251	0.015
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.058			0.064			0.122

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.*

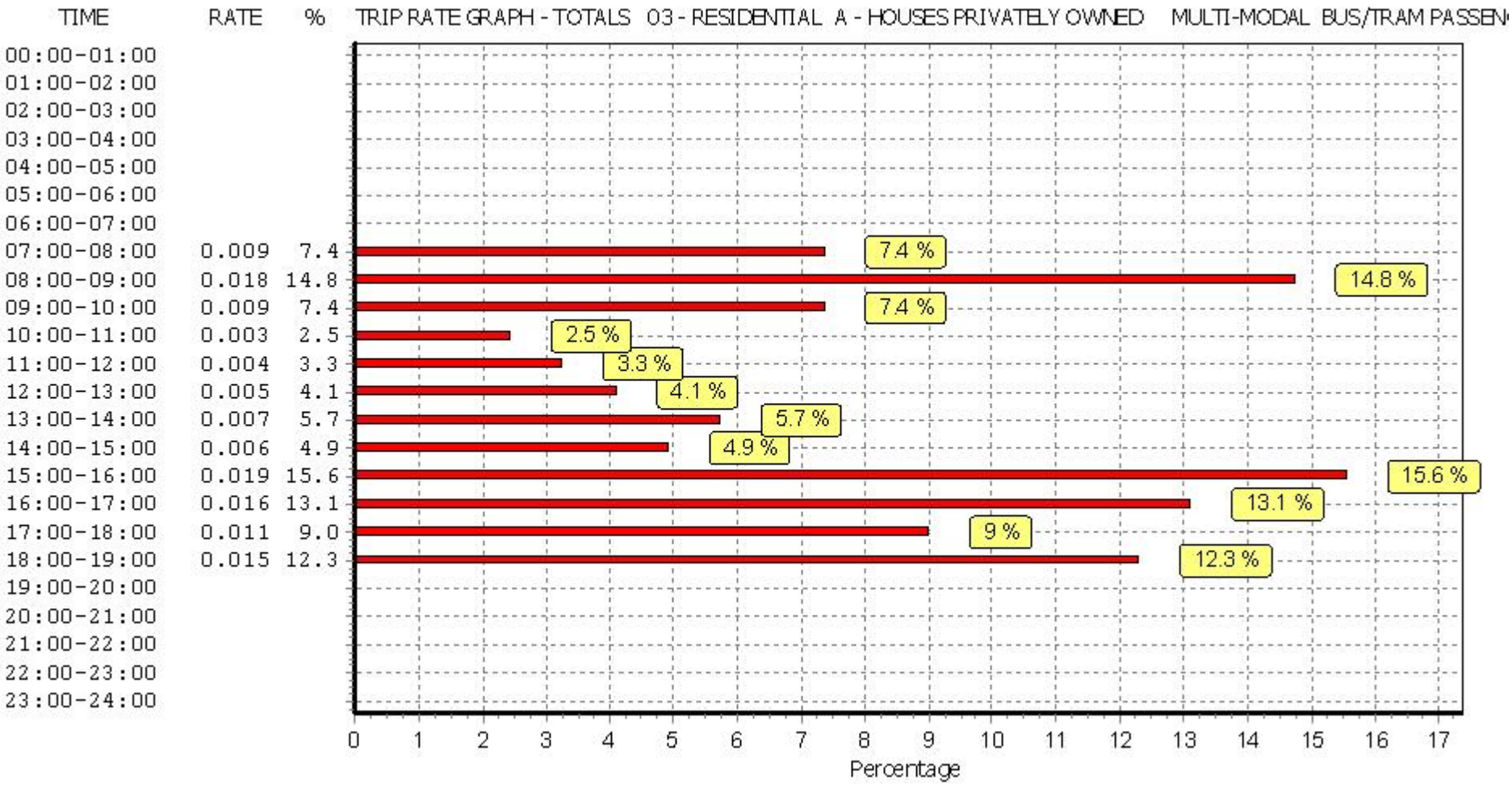


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

Vectos . . Licence No: 152302



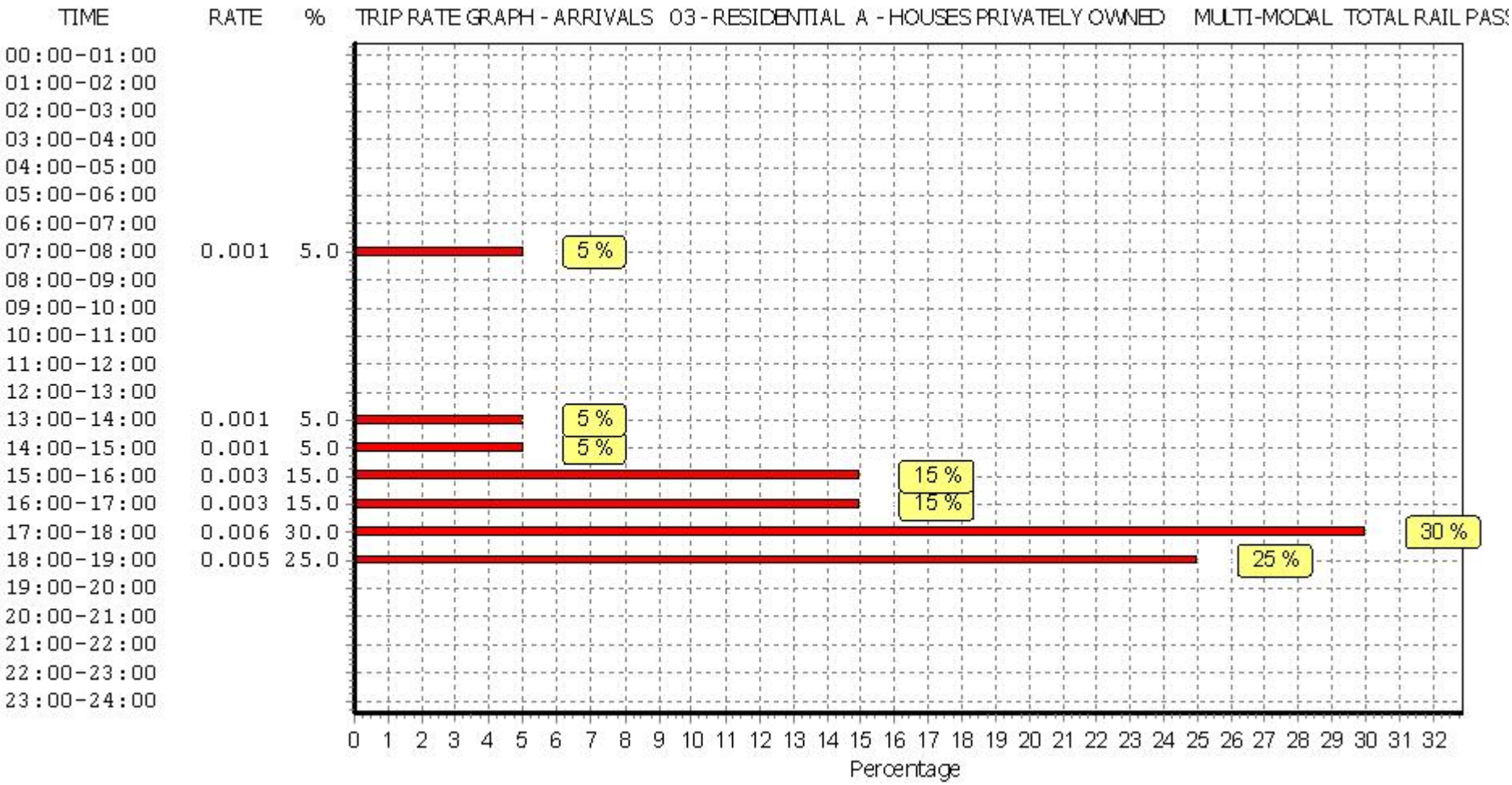
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

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

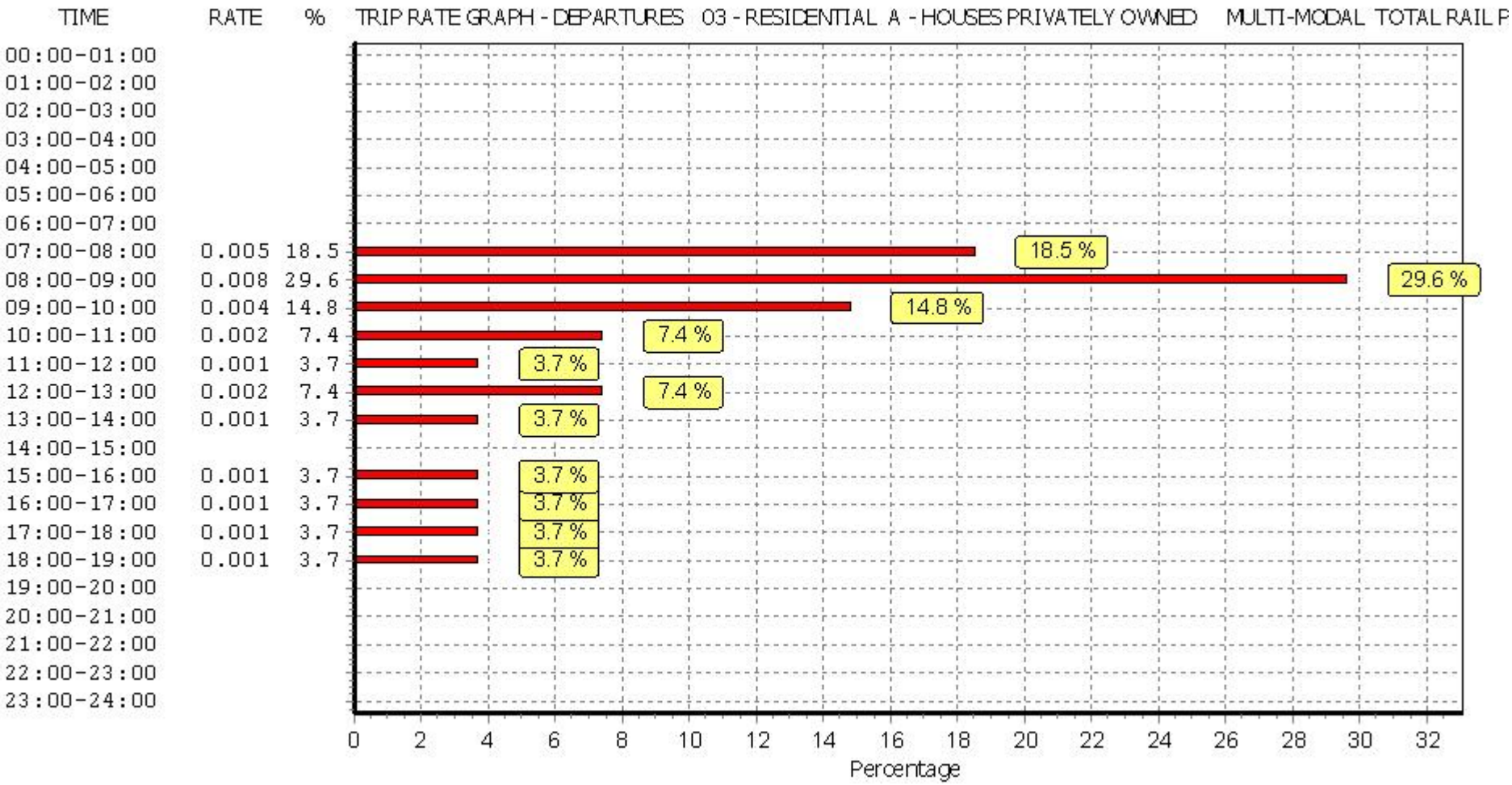
	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	14	251	0.001	14	251	0.005	14	251	0.006
08:00 - 09:00	14	251	0.000	14	251	0.008	14	251	0.008
09:00 - 10:00	14	251	0.000	14	251	0.004	14	251	0.004
10:00 - 11:00	14	251	0.000	14	251	0.002	14	251	0.002
11:00 - 12:00	14	251	0.000	14	251	0.001	14	251	0.001
12:00 - 13:00	14	251	0.000	14	251	0.002	14	251	0.002
13:00 - 14:00	14	251	0.001	14	251	0.001	14	251	0.002
14:00 - 15:00	14	251	0.001	14	251	0.000	14	251	0.001
15:00 - 16:00	14	251	0.003	14	251	0.001	14	251	0.004
16:00 - 17:00	14	251	0.003	14	251	0.001	14	251	0.004
17:00 - 18:00	14	251	0.006	14	251	0.001	14	251	0.007
18:00 - 19:00	14	251	0.005	14	251	0.001	14	251	0.006
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.020			0.027			0.047

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.

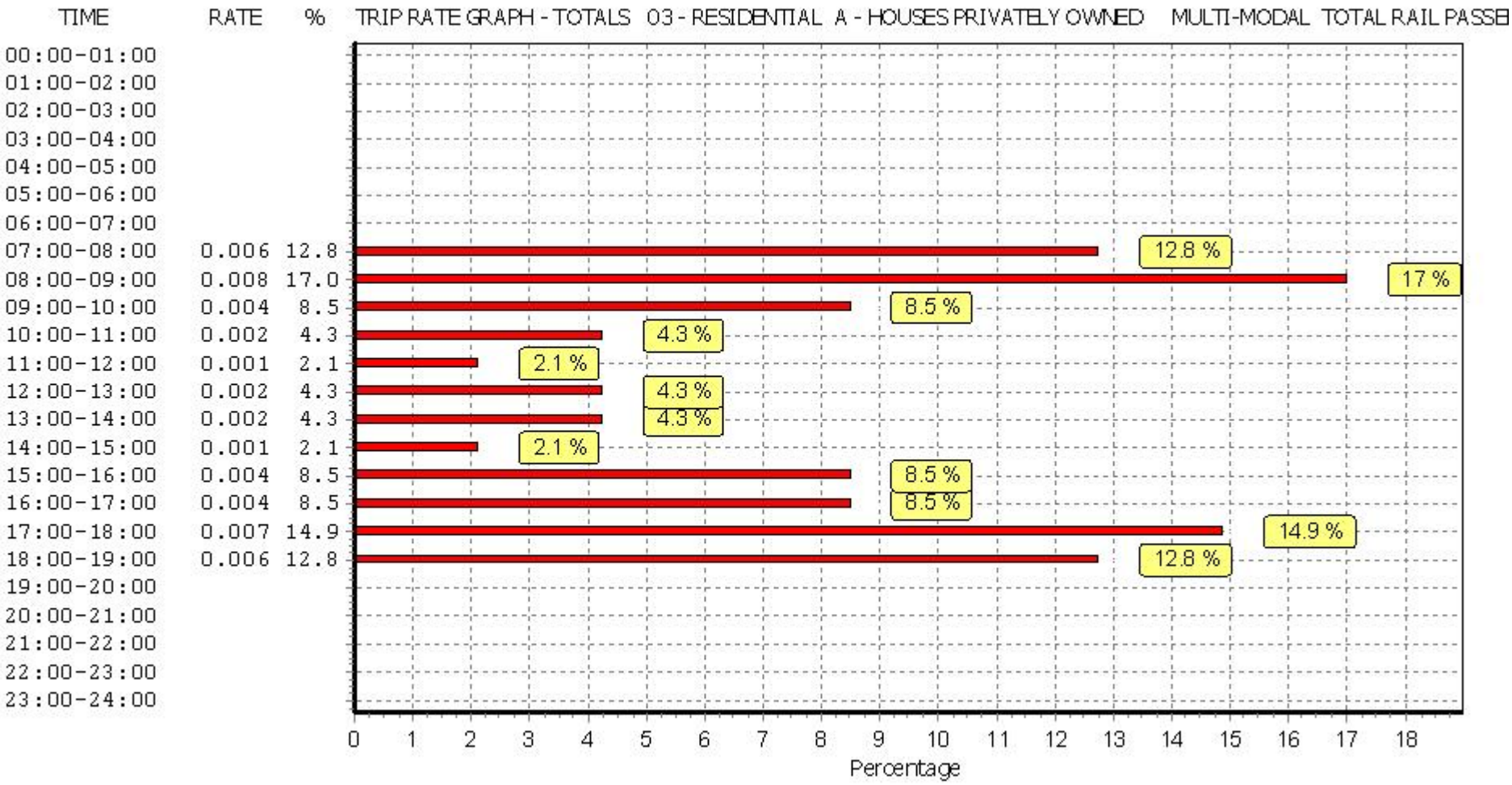
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected 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.*



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.



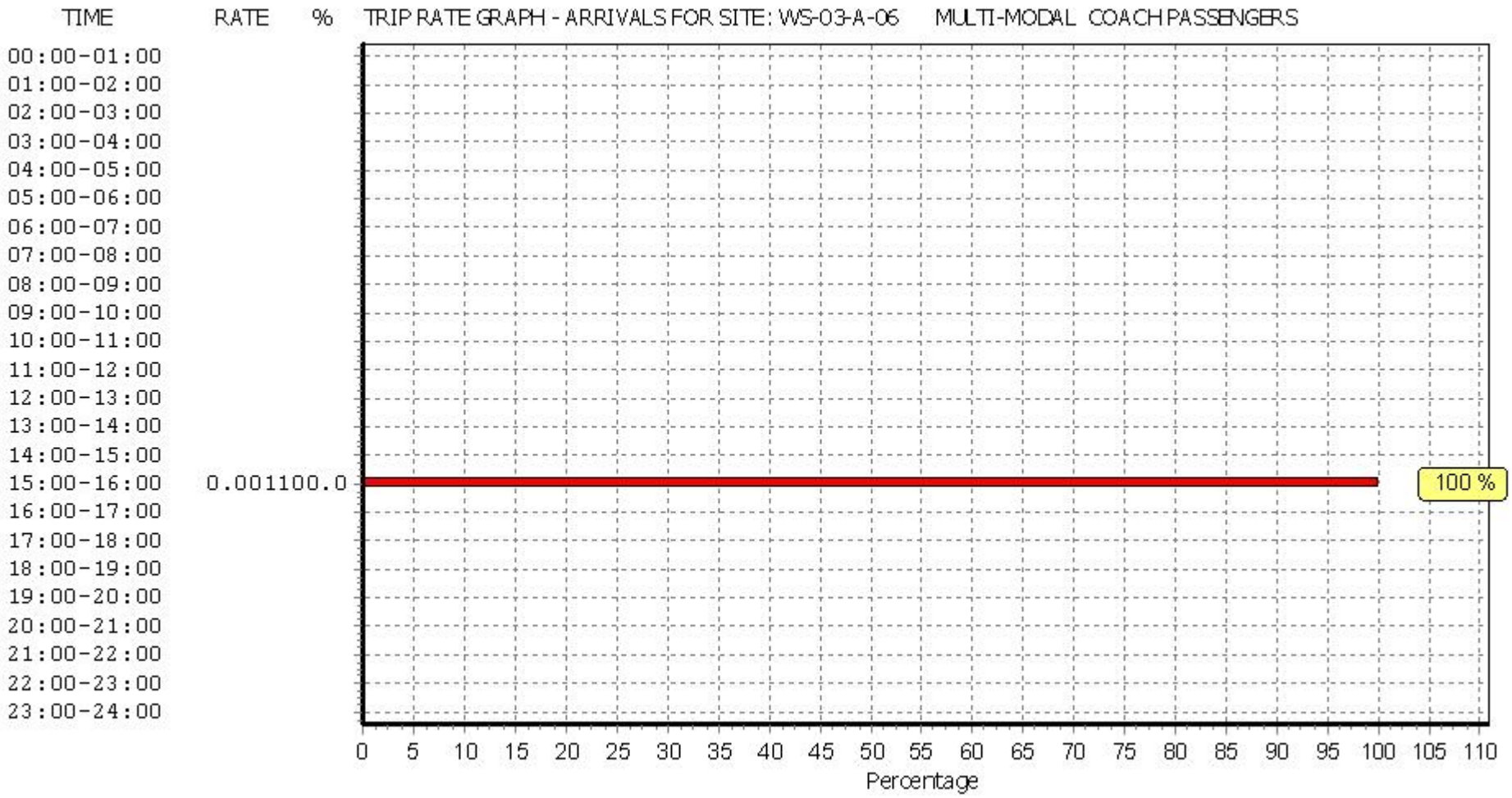
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	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	251	0.000	14	251	0.000	14	251	0.000
08:00 - 09:00	14	251	0.000	14	251	0.000	14	251	0.000
09:00 - 10:00	14	251	0.000	14	251	0.000	14	251	0.000
10:00 - 11:00	14	251	0.000	14	251	0.000	14	251	0.000
11:00 - 12:00	14	251	0.000	14	251	0.000	14	251	0.000
12:00 - 13:00	14	251	0.000	14	251	0.000	14	251	0.000
13:00 - 14:00	14	251	0.000	14	251	0.000	14	251	0.000
14:00 - 15:00	14	251	0.000	14	251	0.000	14	251	0.000
15:00 - 16:00	14	251	0.001	14	251	0.000	14	251	0.001
16:00 - 17:00	14	251	0.000	14	251	0.000	14	251	0.000
17:00 - 18:00	14	251	0.000	14	251	0.000	14	251	0.000
18:00 - 19:00	14	251	0.000	14	251	0.000	14	251	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.001			0.000			0.001

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.

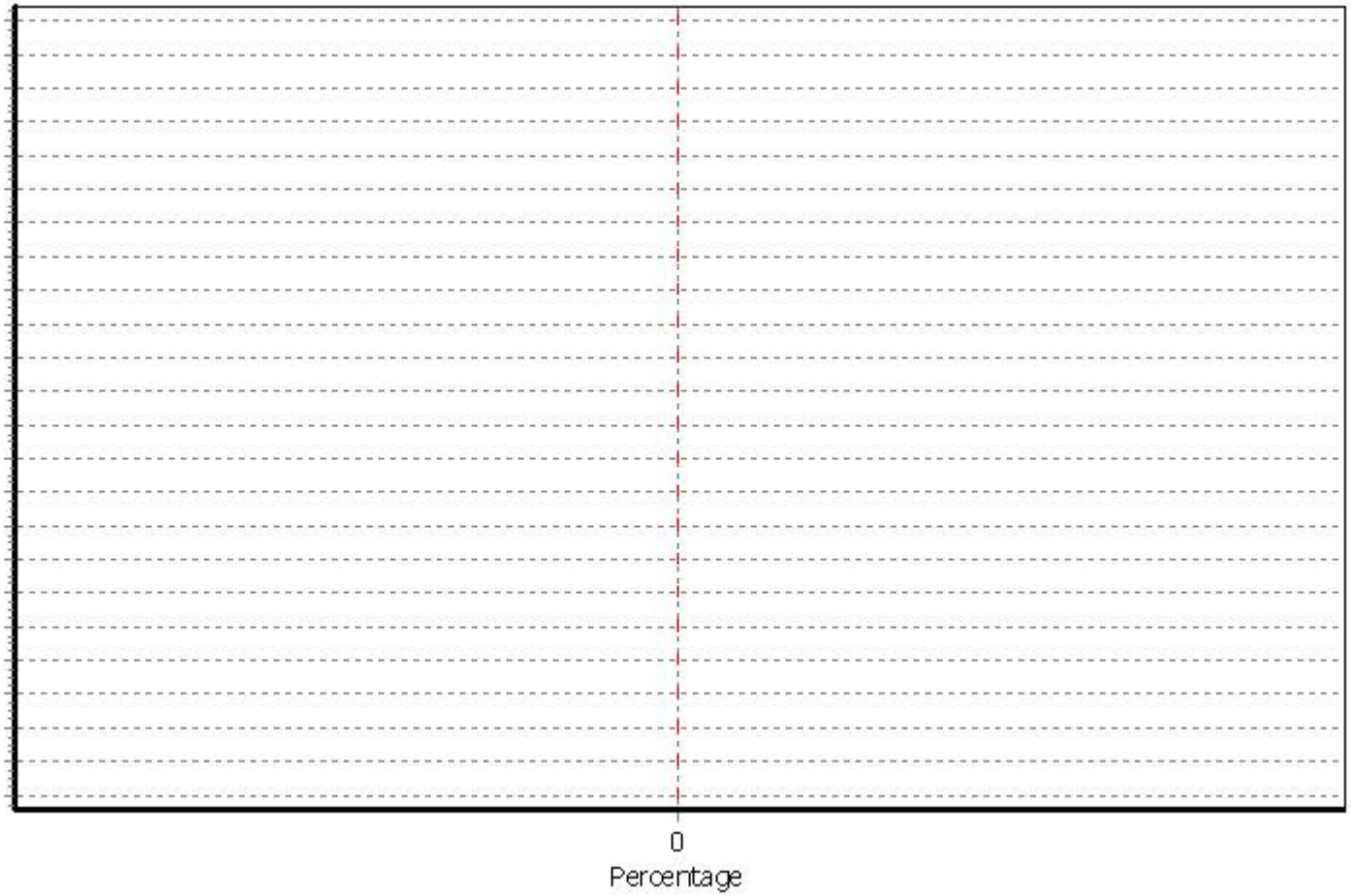
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected 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.*



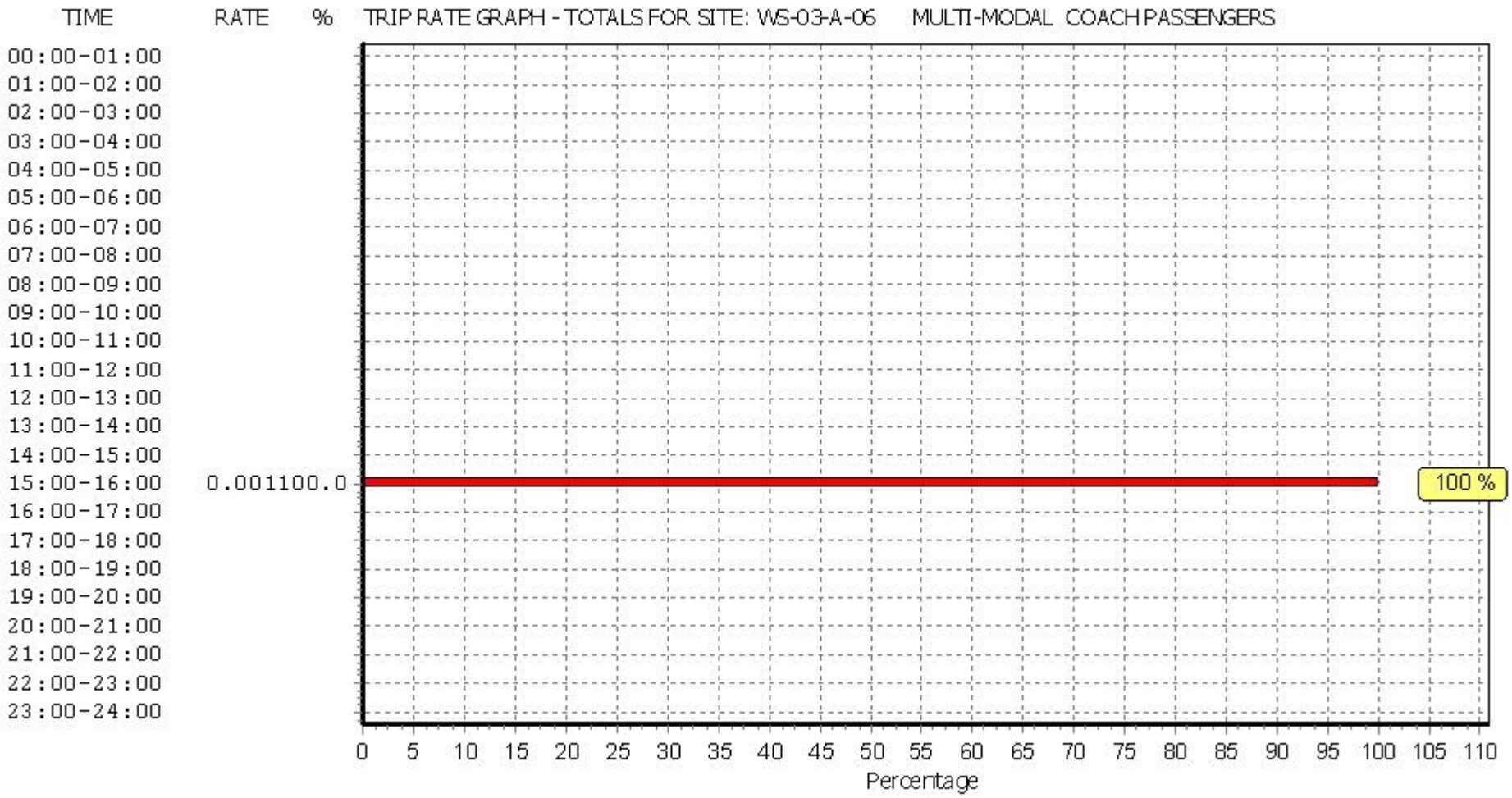
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

TRIP RATE GRAPH - DEPARTURES FOR SITE: WS-03-A-06 MULTI-MODAL COACH PASSENGERS

TIME	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		
08:00-09:00		
09:00-10:00		
10:00-11:00		
11:00-12:00		
12:00-13:00		
13:00-14:00		
14:00-15:00		
15:00-16:00		
16:00-17:00		
17:00-18:00		
18:00-19:00		
19:00-20:00		
20:00-21:00		
21:00-22:00		
22:00-23:00		
23:00-24:00		



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.



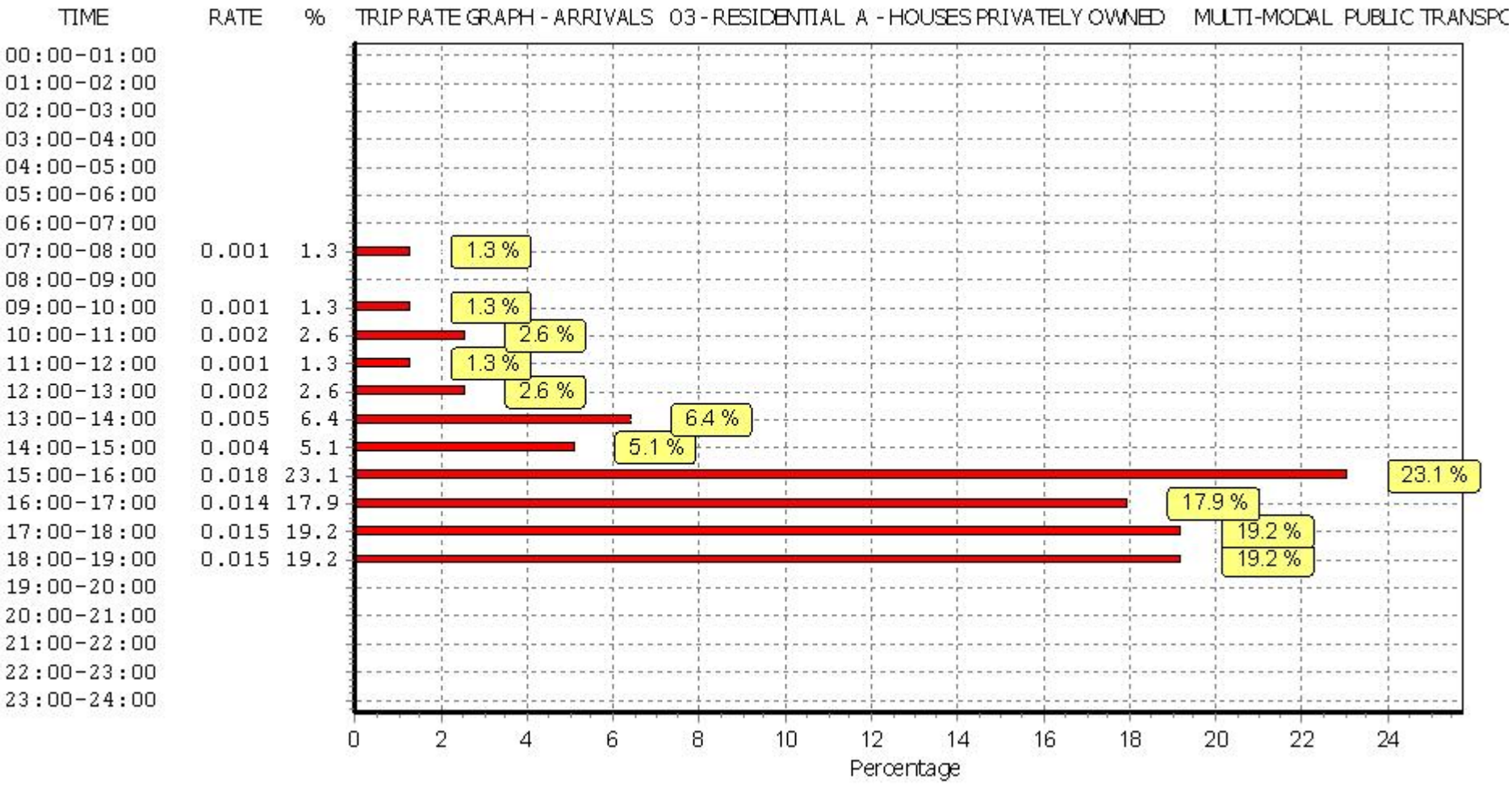
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

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

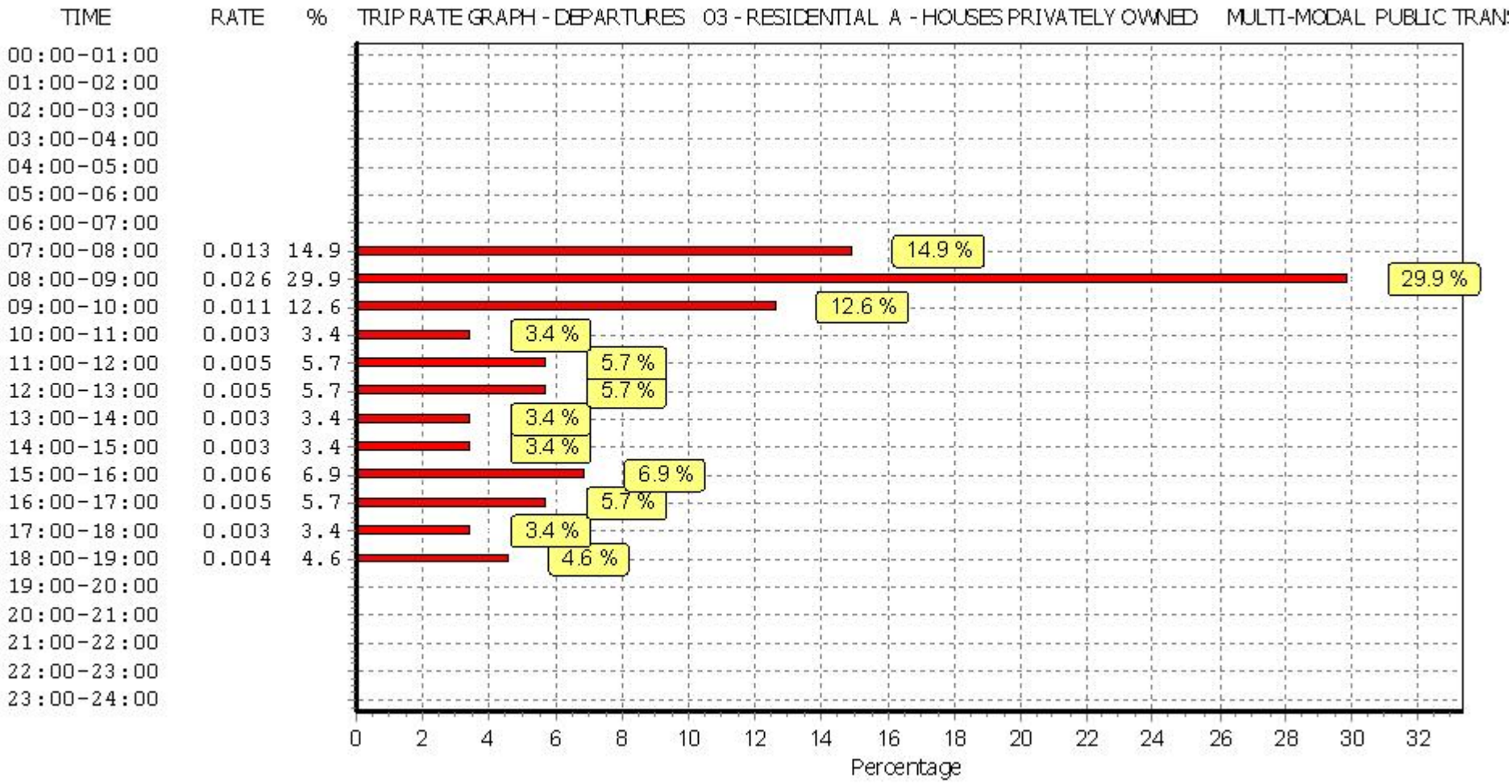
	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	14	251	0.001	14	251	0.013	14	251	0.014
08:00 - 09:00	14	251	0.000	14	251	0.026	14	251	0.026
09:00 - 10:00	14	251	0.001	14	251	0.011	14	251	0.012
10:00 - 11:00	14	251	0.002	14	251	0.003	14	251	0.005
11:00 - 12:00	14	251	0.001	14	251	0.005	14	251	0.006
12:00 - 13:00	14	251	0.002	14	251	0.005	14	251	0.007
13:00 - 14:00	14	251	0.005	14	251	0.003	14	251	0.008
14:00 - 15:00	14	251	0.004	14	251	0.003	14	251	0.007
15:00 - 16:00	14	251	0.018	14	251	0.006	14	251	0.024
16:00 - 17:00	14	251	0.014	14	251	0.005	14	251	0.019
17:00 - 18:00	14	251	0.015	14	251	0.003	14	251	0.018
18:00 - 19:00	14	251	0.015	14	251	0.004	14	251	0.019
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.078			0.087			0.165

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.*

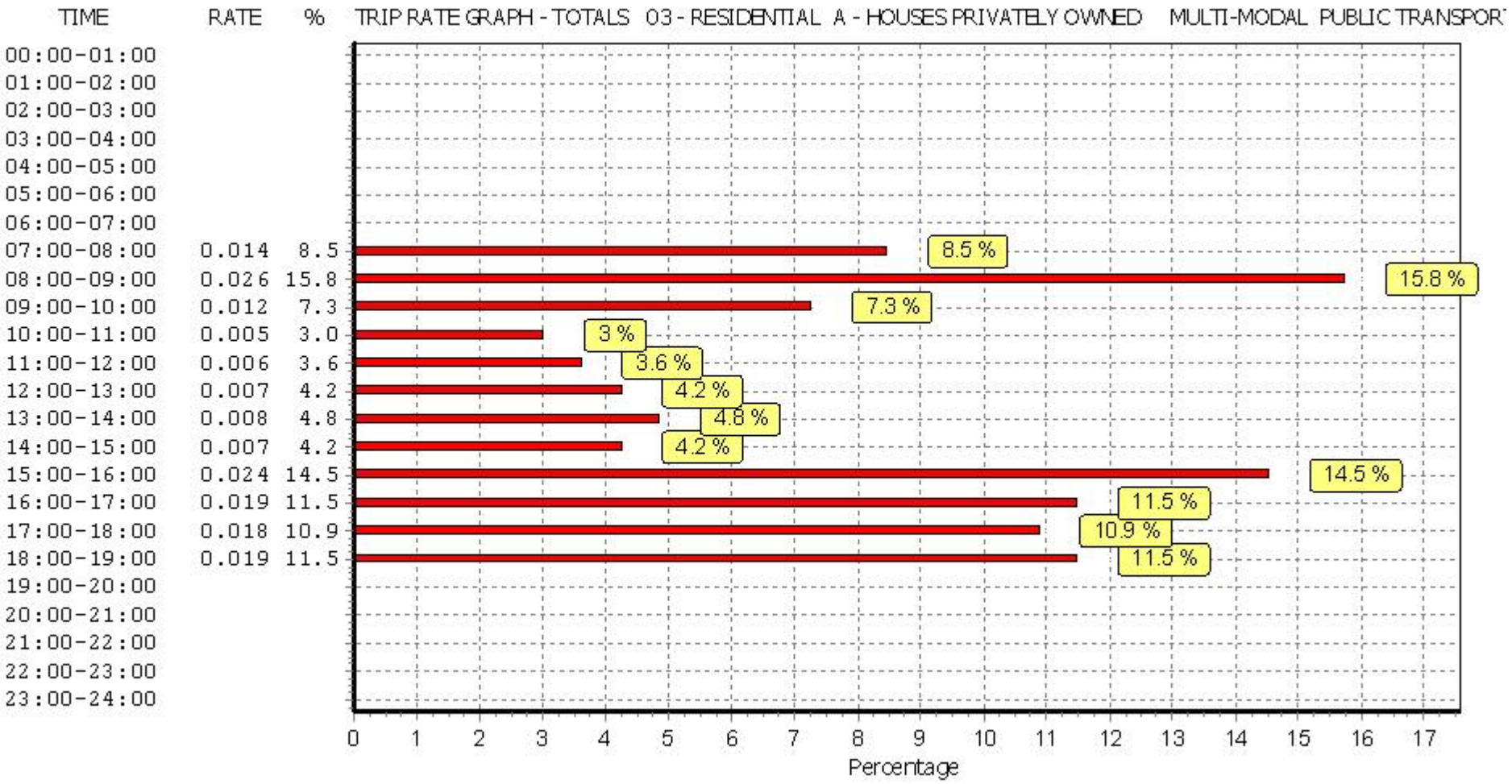


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

Vectos . . Licence No: 152302



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.

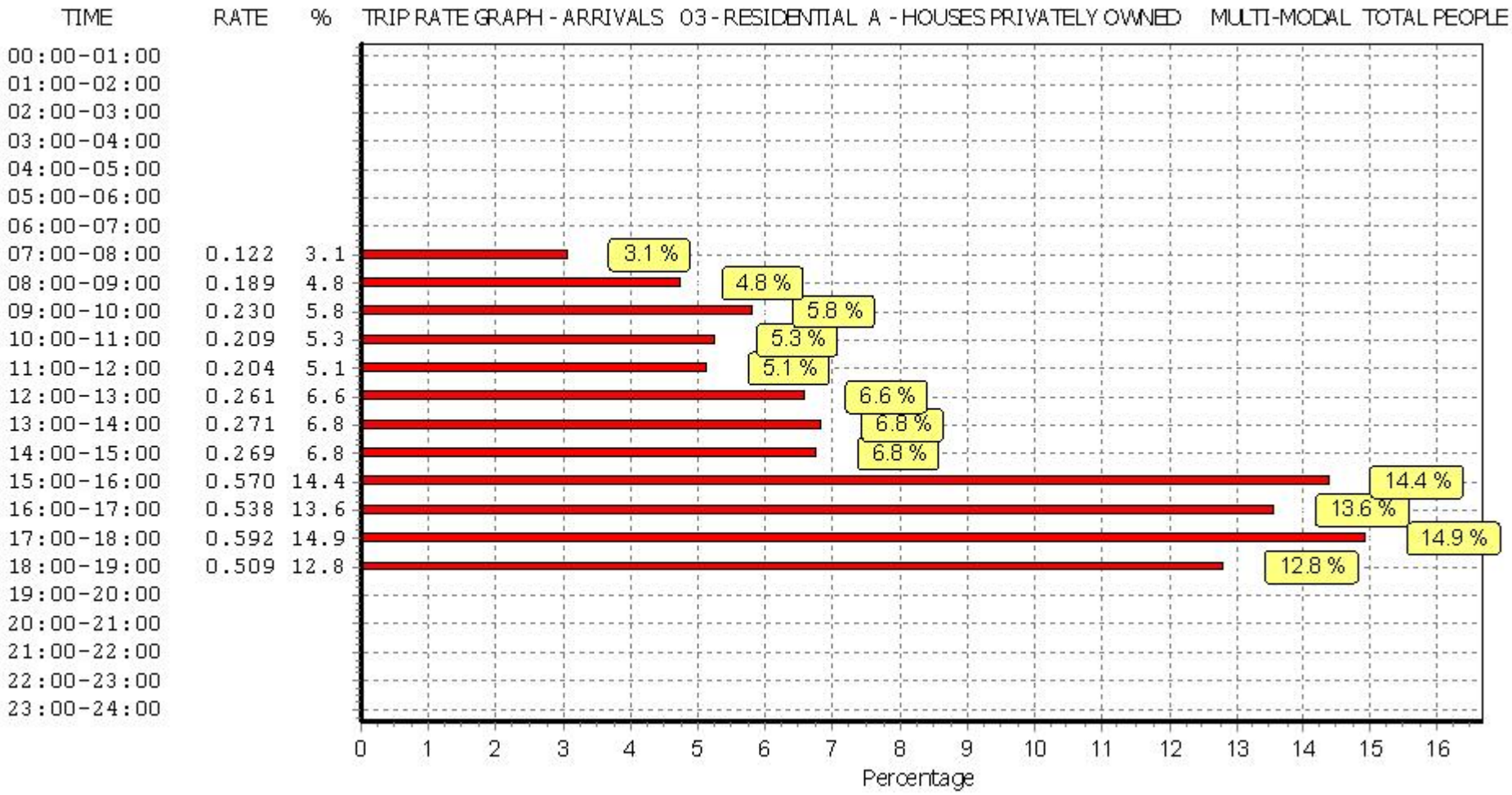
TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	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	251	0.122	14	251	0.459	14	251	0.581
08:00 - 09:00	14	251	0.189	14	251	0.784	14	251	0.973
09:00 - 10:00	14	251	0.230	14	251	0.288	14	251	0.518
10:00 - 11:00	14	251	0.209	14	251	0.267	14	251	0.476
11:00 - 12:00	14	251	0.204	14	251	0.253	14	251	0.457
12:00 - 13:00	14	251	0.261	14	251	0.249	14	251	0.510
13:00 - 14:00	14	251	0.271	14	251	0.255	14	251	0.526
14:00 - 15:00	14	251	0.269	14	251	0.316	14	251	0.585
15:00 - 16:00	14	251	0.570	14	251	0.301	14	251	0.871
16:00 - 17:00	14	251	0.538	14	251	0.306	14	251	0.844
17:00 - 18:00	14	251	0.592	14	251	0.287	14	251	0.879
18:00 - 19:00	14	251	0.509	14	251	0.340	14	251	0.849
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.964			4.105			8.069

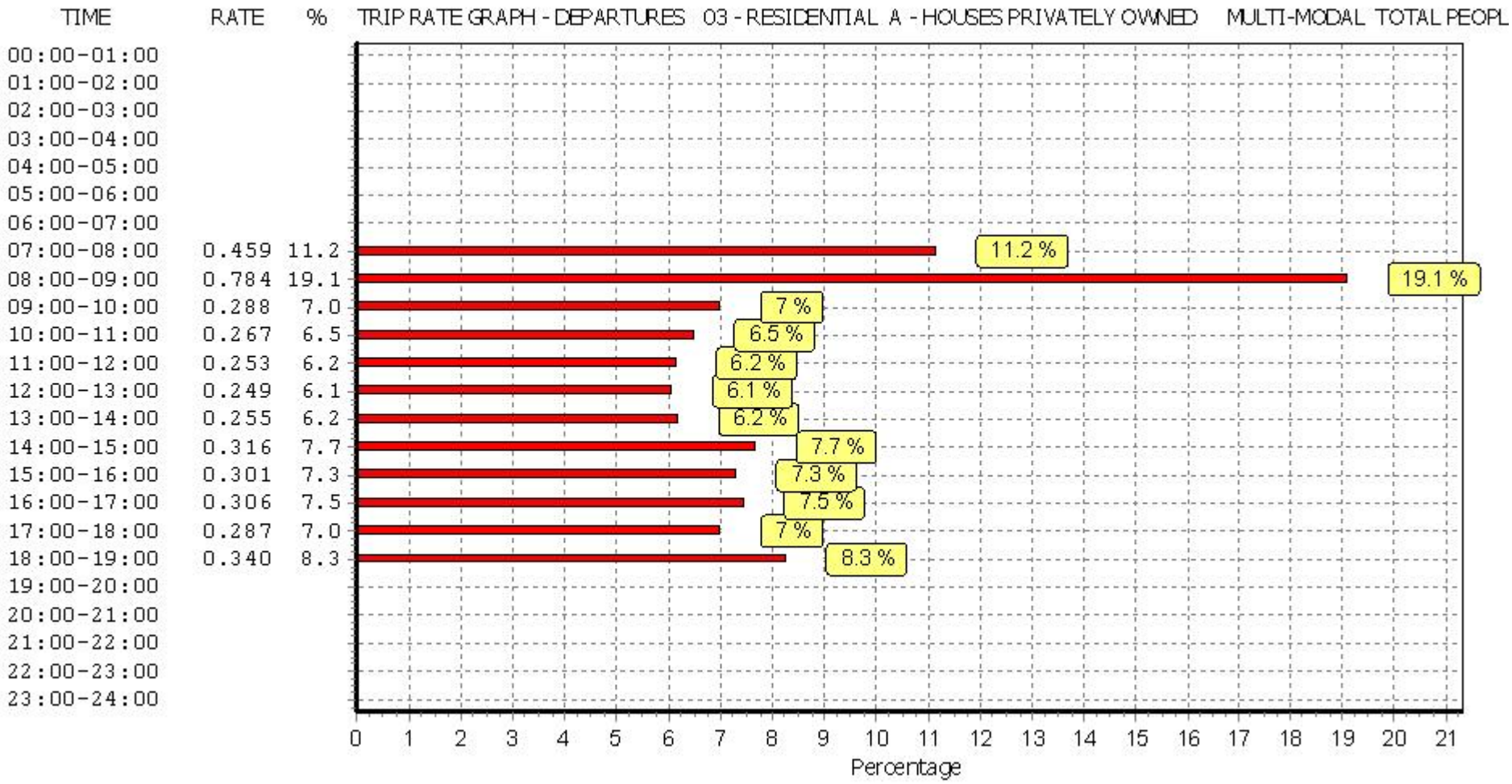
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are 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.*

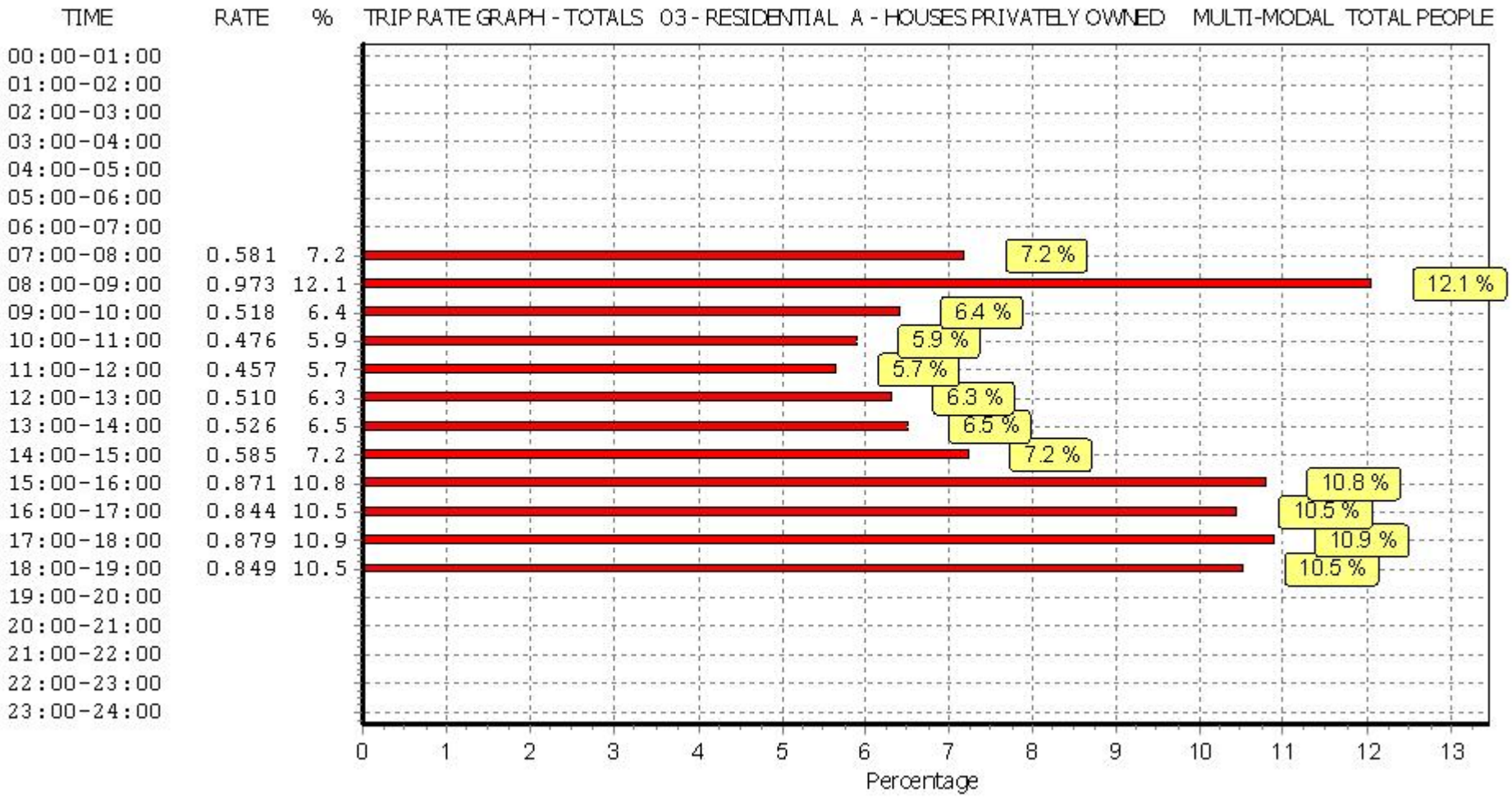
Vectos . . Licence No: 152302



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.



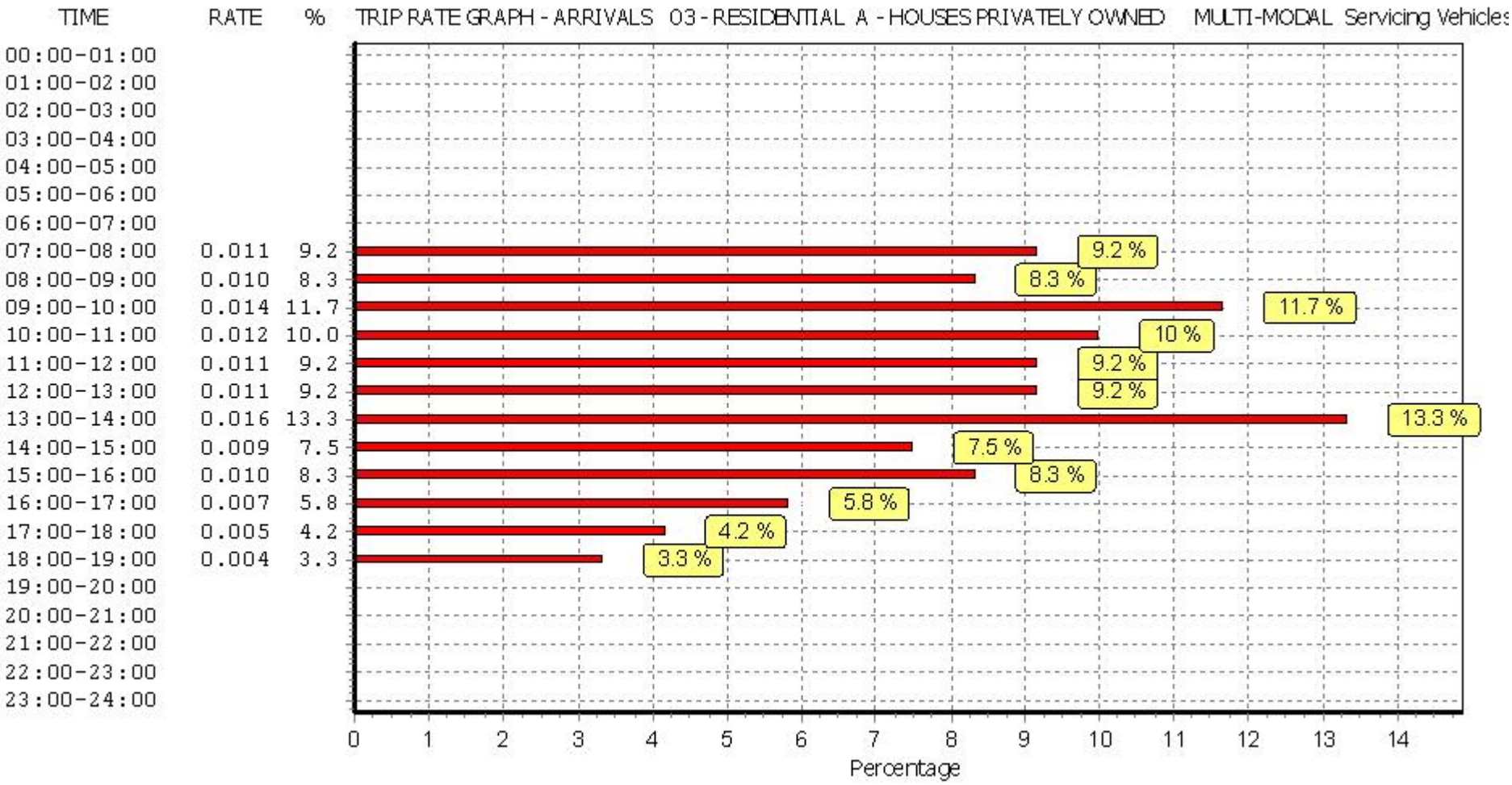
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

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

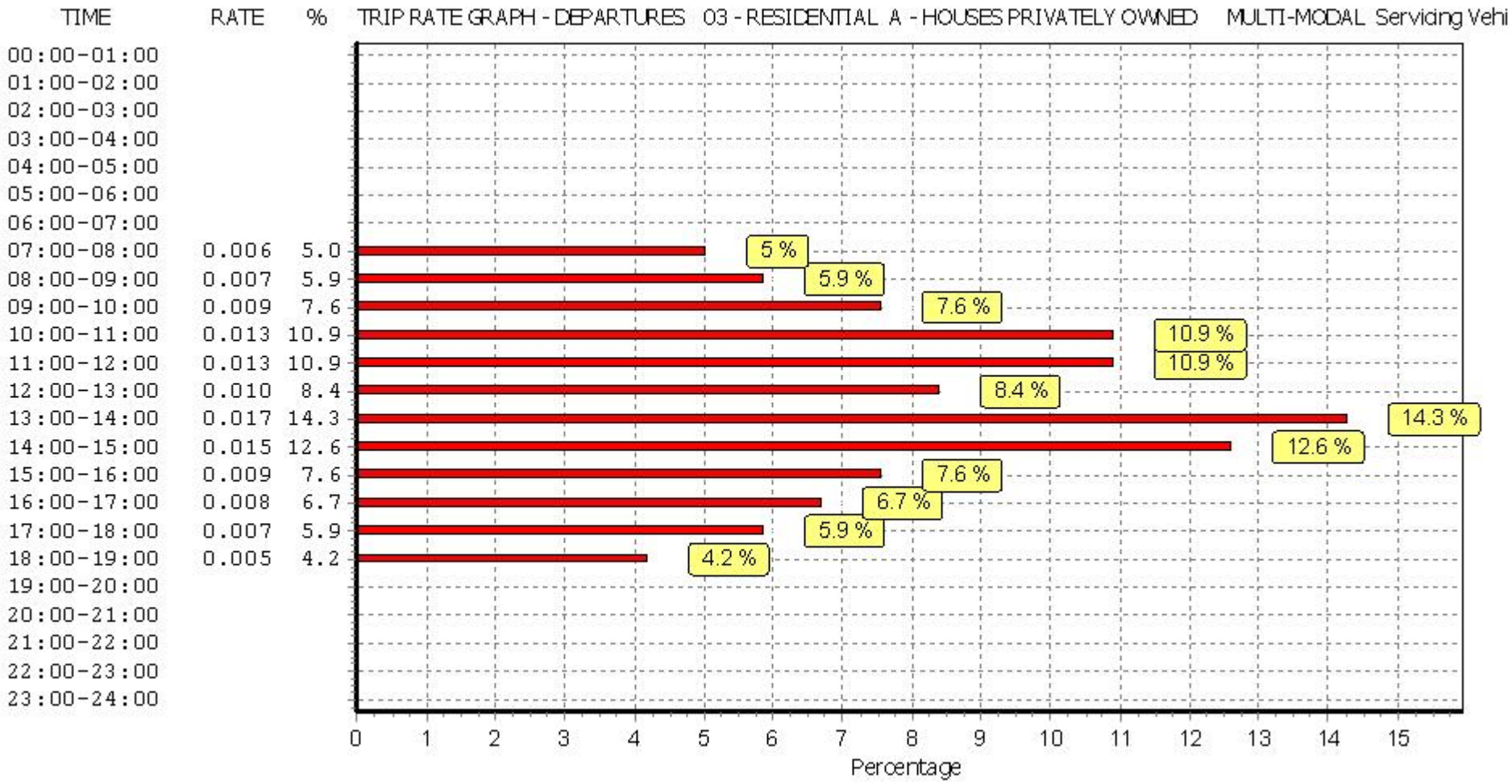
	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	14	251	0.011	14	251	0.006	14	251	0.017
08:00 - 09:00	14	251	0.010	14	251	0.007	14	251	0.017
09:00 - 10:00	14	251	0.014	14	251	0.009	14	251	0.023
10:00 - 11:00	14	251	0.012	14	251	0.013	14	251	0.025
11:00 - 12:00	14	251	0.011	14	251	0.013	14	251	0.024
12:00 - 13:00	14	251	0.011	14	251	0.010	14	251	0.021
13:00 - 14:00	14	251	0.016	14	251	0.017	14	251	0.033
14:00 - 15:00	14	251	0.009	14	251	0.015	14	251	0.024
15:00 - 16:00	14	251	0.010	14	251	0.009	14	251	0.019
16:00 - 17:00	14	251	0.007	14	251	0.008	14	251	0.015
17:00 - 18:00	14	251	0.005	14	251	0.007	14	251	0.012
18:00 - 19:00	14	251	0.004	14	251	0.005	14	251	0.009
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.120			0.119			0.239

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.

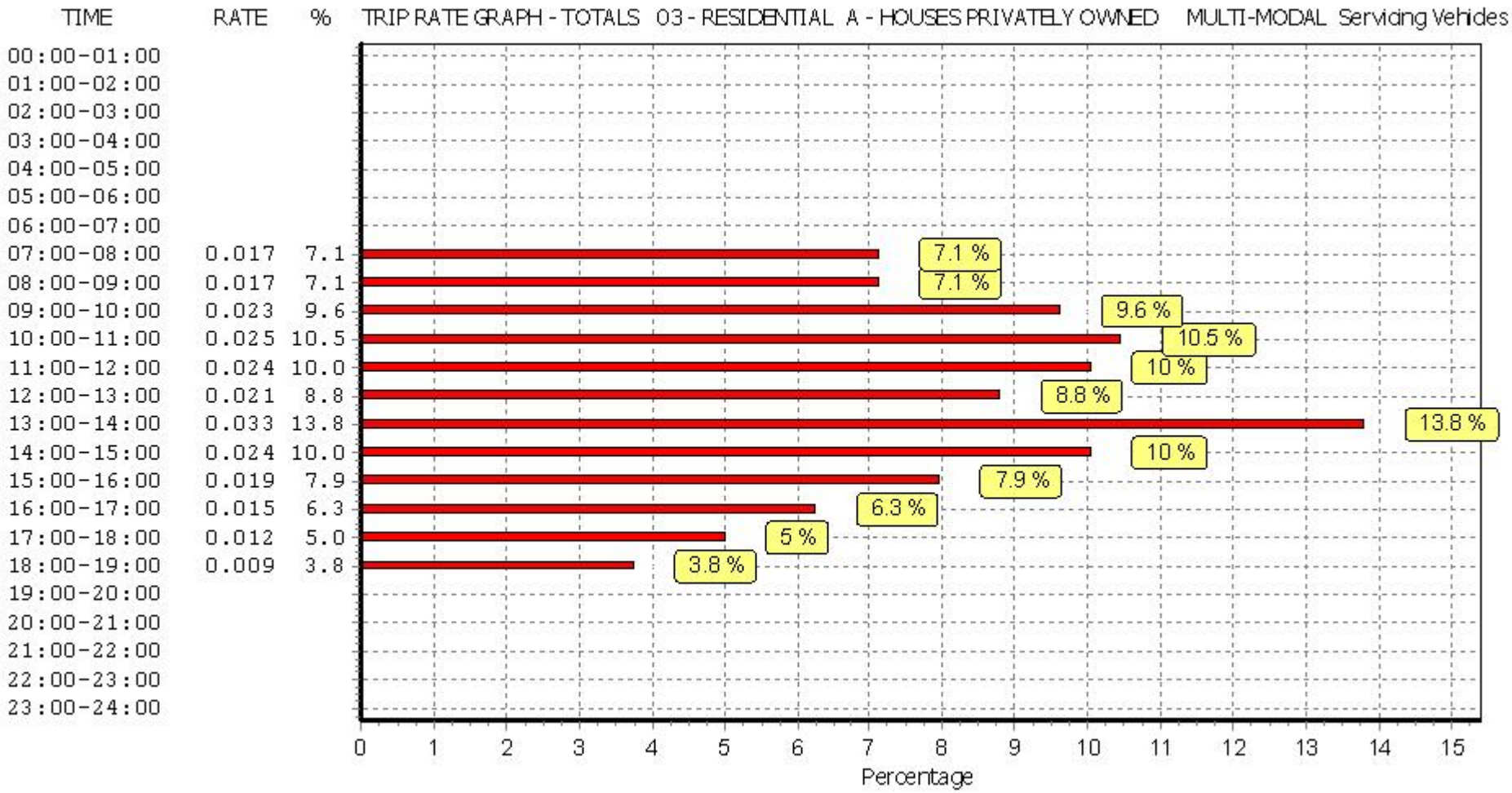
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected 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.*



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.



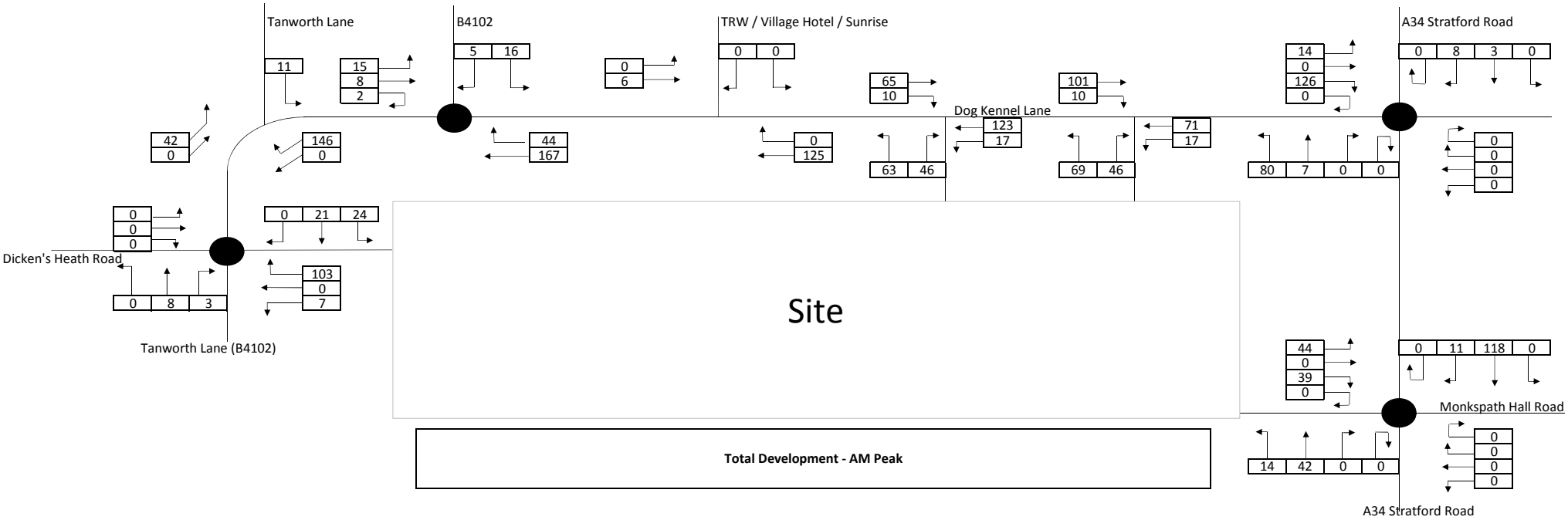
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

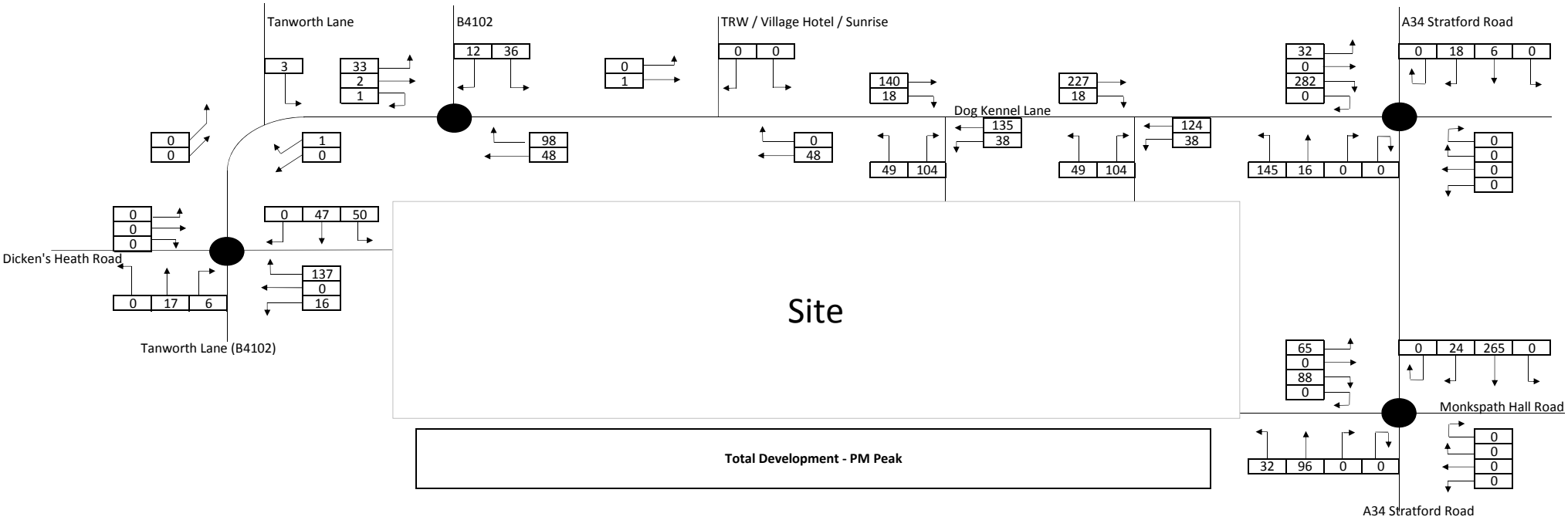


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through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

APPENDIX D

Development Trip Distribution


Tanworth Lane
B4102
TRW / Village Hotel / Sunrise
A34 Stratford Road
Dog Kennel Lane
Dicken's Heath Road
Tanworth Lane (B4102)
Site
Monkspath Hall Road
A34 Stratford Road
Total Development - AM Peak


Tanworth Lane
B4102
TRW / Village Hotel / Sunrise
A34 Stratford Road
Dog Kennel Lane
Dicken's Heath Road
Tanworth Lane (B4102)
Site
Monkspath Hall Road
A34 Stratford Road
Total Development - PM Peak